Automating Production of Cross Media Content for Multi-channel Distribution

www.AXMEDIS.org

DE5.0.1.3 AXMEDIS Major Tools User Manuals and installation manual. Third Update

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Abstract: This document contains the user manuals of the major tools provided by AXMEDIS

Keyword List: Authoring, content editing, content processing, players, GRID, content production, fingerprint estimation, content descriptors, metadata editor, metadata mapper, programme and publication, scheduler, workflow, DRM editor, license editor, plug ins, adaptation, etc.

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- You can attend AXMEDIS meetings that are open to public, for additional information see WWW.AXMEDIS.org or contact P. Nesi at nesi@dsi.unifi.it

Table of Content

1 Introduction

This deliverable aim is to describe the User Manuals of AXMEDIS tools. These tools are the following:

- AXMEDIS Editor
- AXMEDIS PC Player
- AXMEDIS PDA Player
- AXMEDIS ACTIVEX Control
- AXMEDIS DRM Editor
- AXMEDIS DRM Viewer
- AXMEDIS Rule Editor
- AXMEDIS Rule Engine – Rule Scheduler
- AXMEDIS Rule Engine – Rule Executor
- AXMEDIS Programme & Publication Editor
- AXMEDIS Programme & Publication Engine
- AXMEDIS Programme & Publication Monitor
- AXMEDIS Workflow and Workflow Manager – OpenFlow and Biztalk
- AXMEDIS Plug-ins

In the rest of this deliverable, the User Manuals of these tools are described.

For a general overview of AXMEDIS tools and for their download please access to:
http://www.AXMEDIS.org/documenti/documenti.php

2 AXMEDIS Editor

2.1 Main functionalities

The AXMEDIS Editor is used to create AXMEDIS Objects embedding "raw" digital resources or other AXMEDIS Objects.
The AXMEDIS Editor allows to:

- create a new AXMEDIS Object
- add resources (images, videos, documents, etc.)
- add AXMEDIS Objects from file or from database
- manipulate the AXMEDIS Object structure (remove any element, move the elements)
- save to file
- upload to database
- load an AXMEDIS Object from file
- load an AXMEDIS Object from database
- view the resources with the internal viewers
- manipulate the resources using the Content Processing Plug-ins
- associate metadata to the AXMEDIS Object (using the Metadata Editor),
- define the Potential Available Rights for the Object (using the internal DRM Editor)
- create a SMIL presentation for the resources inside the Object (using the Visual Editor)
- create rules to define the object behaviour (using the Behaviour Editor)
- define the protection information for the object (using the Protection Editor)
- see the status of the object in the Workflow process (using the Workflow Viewer)
- be launched from the workflow to do a specific job and when the user finishes it can notify the activity completion and thus to proceed to the next step in the production process.

2.2 Relationship with other tools

The AXMEDIS Editor:

- uses the AXMEDIS Database to search/retrieve for content and to store content
- can be launched form the Workflow engine and interact with it

- uses the content processing plug-ins to manipulate the digital resource

2.3 Detailed description of the functionalities and Screenshots

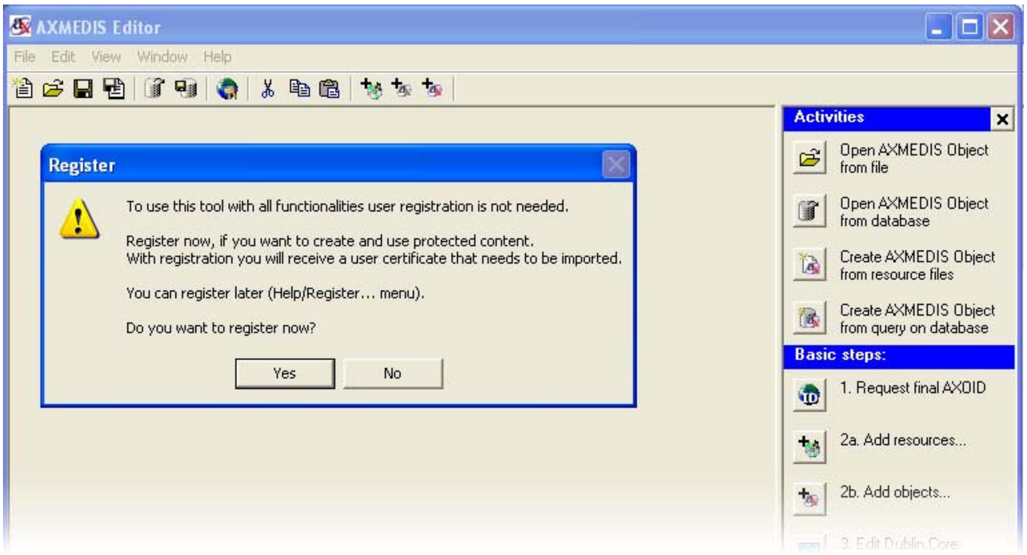
This section aims to describe the use of the AXMEDIS Editor to create AXMEDIS objects embedding “raw” digital resource or other AXMEDIS objects.

In the next sections, it is shown how to register and certify a tool, as well as a short tutorial to create a new AXMEDIS object.

Subsequently the next sections will show all the features available in the Editor more in detail. The menus and the integration of the AXMEDIS Editor with a database will also be explained.

2.3.1 Register the user and certificate the tool

When the AXMEDIS Editor is opened for the first time, a window asking to register the new user will be showed (see the figure below).


AXMEDIS Editor
File Edit View Window Help
Activities
Open AXMEDIS Object from file
Open AXMEDIS Object from database
Create AXMEDIS Object from resource files
Create AXMEDIS Object from query on database
Basic steps:
1. Request final AXOID
2a. Add resources...
2b. Add objects...
3. Edit Dublin Core
Register
Yes
No

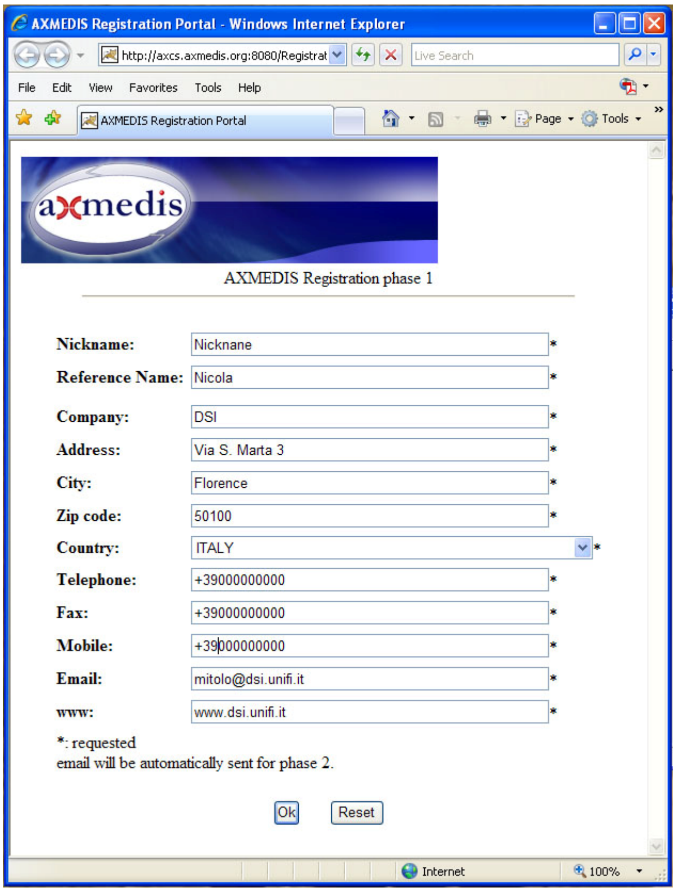
To use this tool with all functionalities user registration is not needed.

Register now, if you want to create and use protected content.
With registration you will receive a user certificate that needs to be imported.

You can register later (Help/Register... menu).

Do you want to register now?

By clicking the “Yes” button the certification procedure will start and a web page will be opened asking mandatory information to be filled in for the correct user registration. By clicking the “OK” button this information will be sent and collected by the AXCS and a confirmation email will be sent to the user at the email address specified in the field “Email”.


AXMEDIS Registration Portal - Windows Internet Explorer
http://axcs.axmedis.org:8080/Registrat
Live Search
File Edit View Favorites Tools Help
AXMEDIS Registration Portal
Page Tools
axmedis
Internet
100%

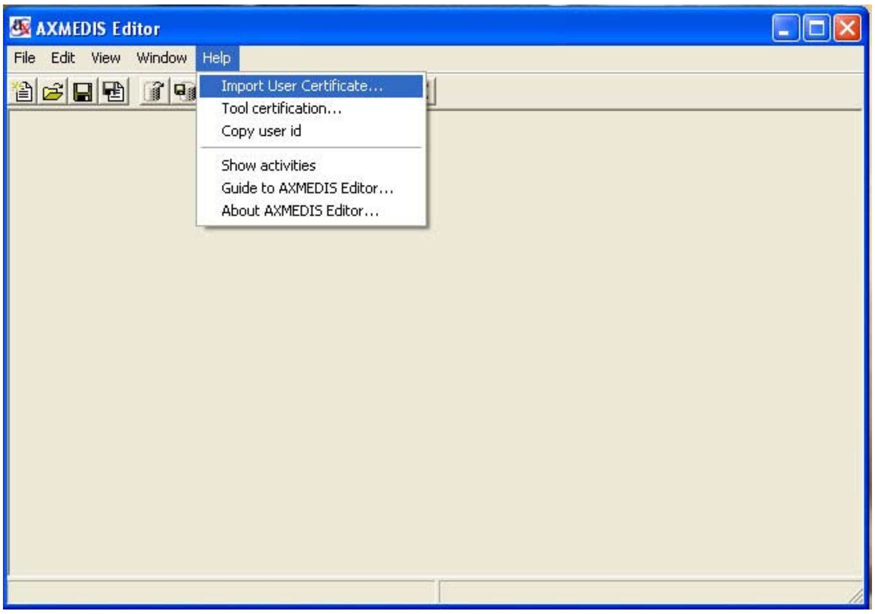
AXMEDIS Registration phase 1

Nickname:	Nicknane *
Reference Name:	Nicola *
Company:	DSI *
Address:	Via S. Marta 3 *
City:	Florence *
Zip code:	50100 *
Country:	ITALY *
Telephone:	+39000000000 *
Fax:	+39000000000 *
Mobile:	+39000000000 *
Email:	mitolo@dsi.unifi.it *
www:	www.dsi.unifi.it *

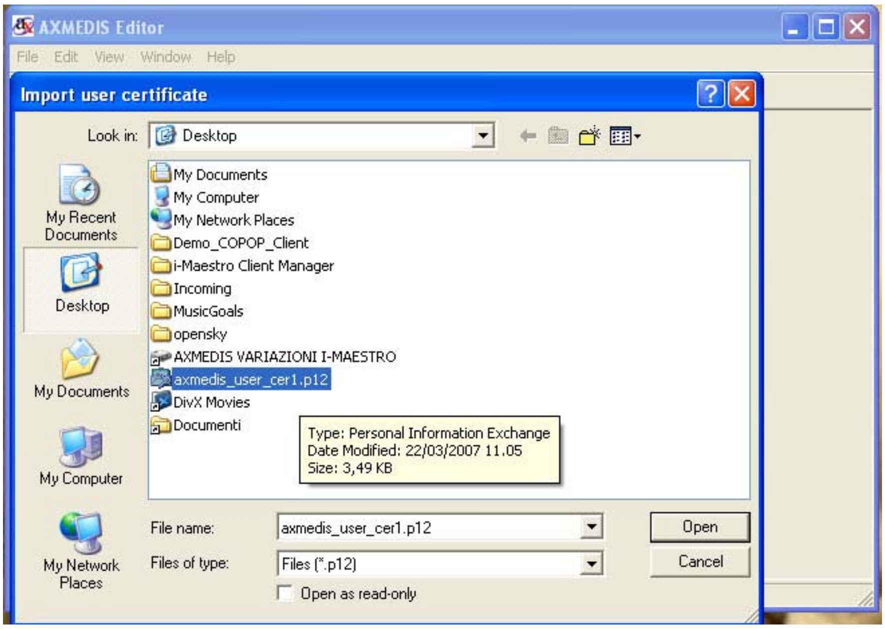
*: requested
email will be automatically sent for phase 2.

Ok Reset

The email received contains an URL to be clicked for the confirmation of the procedure: this is necessary to control the correctness of the specified email address. After the confirmation, another email will be received containing the user certificate (a .p12 file) and a password necessary to import the certificate.
The User Certificate has to be saved on the hard disk before starting the importation procedure.
To import the certificate select in the AXMEDIS Editor the menu **Help/Import User Certificate…**



Select the .p12 file received and press the **Open** button.



Look in: Desktop

My Documents
My Computer
My Network Places
Demo_COPOP_Client
i-Maestro Client Manager
Incoming
MusicGoals
opensky
AXMEDIS VARIAZIONI I-MAESTRO
axmedis_user_cer1.p12
DivX Movies
Documenti

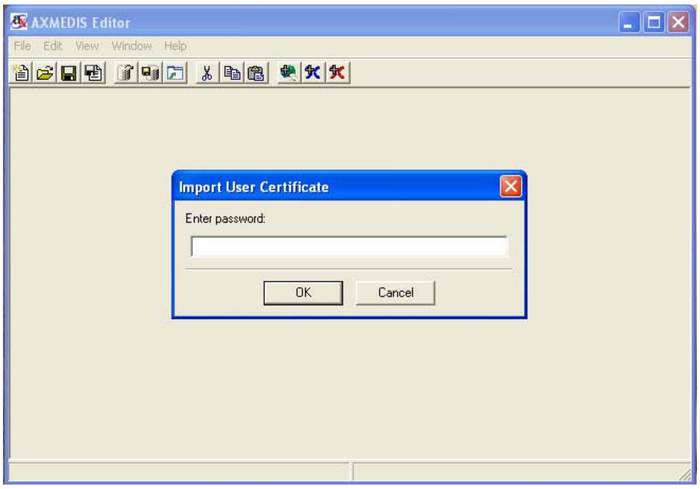
Type: Personal Information Exchange
Date Modified: 22/03/2007 11.05
Size: 3,49 KB

File name: axmedis_user_cer1.p12

Files of type: Files (*.p12)

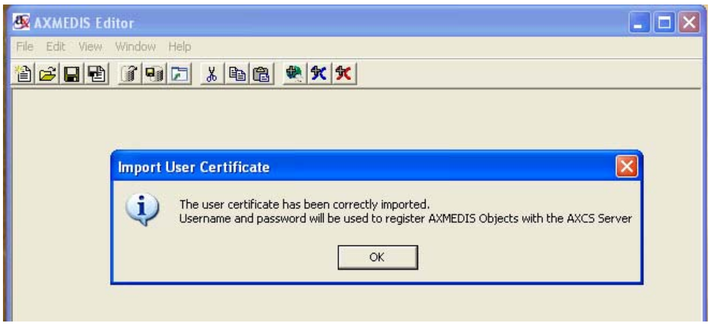
□ Open as read-only

Insert the password received by email to continue the registration procedure and press the **OK** button.



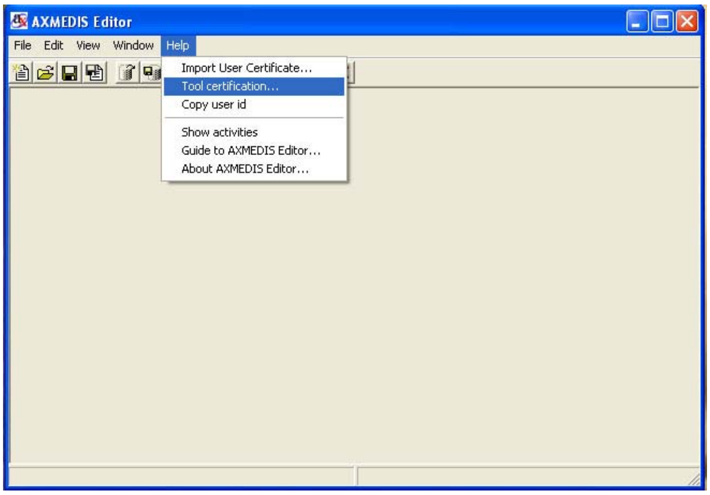
Enter password:

A message confirming the correctness of the registration procedure will be showed. Press the **OK** button to continue.

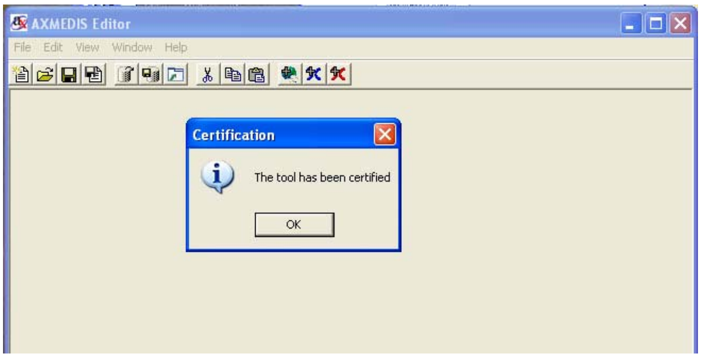


The user certificate has been correctly imported.
Username and password will be used to register AXMEDIS Objects with the AXCS Server

After the user registration it is necessary to certificate the tool. Open the menu **Help\Tool certification…**



Immediately a message will be showed confirming the correctness of the tool certification.



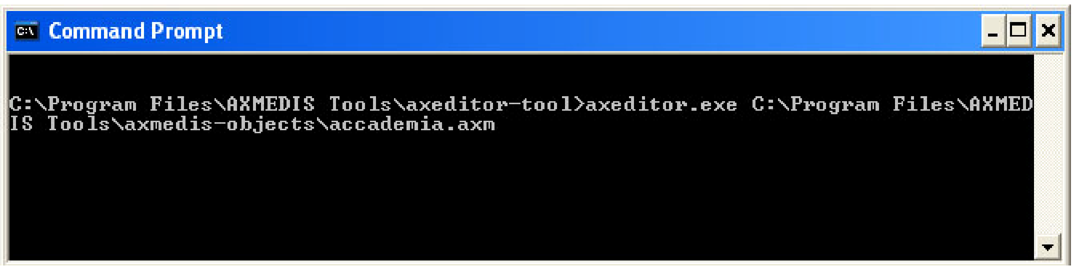
The tool has been certified

After this the user will be able to create protected AXMEDIS objects from scratch using the AXMEDIS Editor.

2.3.2 Command line options

It is possible to launch the axmedis editor by using the Command Pront. In this case it is sufficient to specify the installation folder of the AXMEDIS Editor and the filenale to be opened.

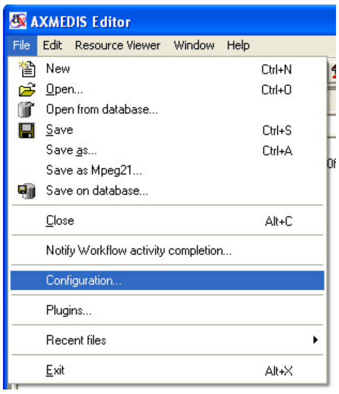
The following screenshot shows an example of command to open an object called *accademia.axm.*



```
C:\Program Files\AXMEDIS Tools\axeditor-tool>axeditor.exe C:\Program Files\AXMED
IS Tools\axmedis-objects\accademia.axm
```

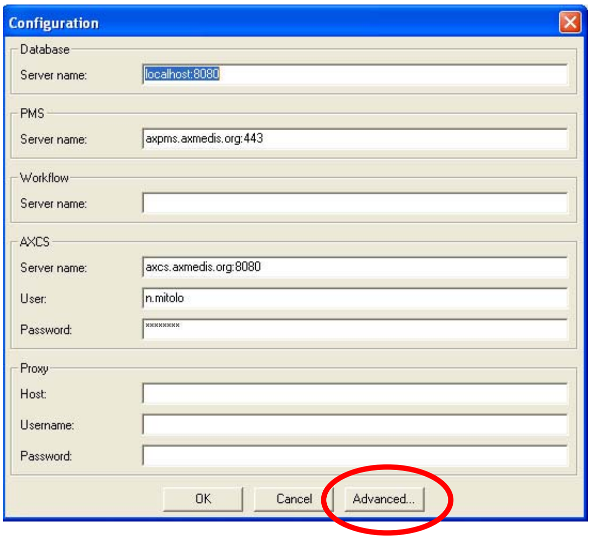
2.3.3 Edit configuration

The configuration menu allows editing the configuration parameters of the AXMEDIS Editor. By clicking in the **File/Configuration…** menu a new window will be showed containing some parameters related to different databases.



The following figure shows the configuration window containing the following fields to be configured:

- the **Database** server name
- the **PMS** server name
- the **Workflow** server name
- the **AXCS** server name, username and password
- The **Proxy** with the host name, username and password.


Configuration

Database
Server name: localhost:8080

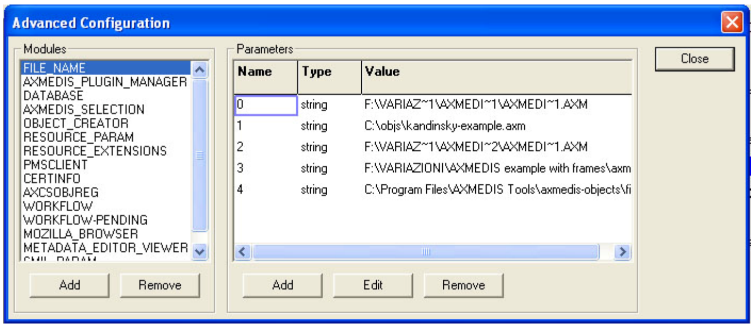
PMS
Server name: axpms.axmedis.org:443

Workflow
Server name:

AXCS
Server name: axcs.axmedis.org:8080
User: n.mitolo
Password: ********

Proxy
Host:
Username:
Password:

By clicking the **Advanced** button a more complete window will be opened containing many different parameters to be configured.


Advanced Configuration

Modules
FILE_NAME
AXMEDIS_PLUGIN_MANAGER
DATABASE
AXMEDIS_SELECTION
OBJECT_CREATOR
RESOURCE_PARAM
RESOURCE_EXTENSIONS
PMSCLIENT
CERTINFO
AXCSOBJREG
WORKFLOW
WORKFLOW-PENDING
MOZILLA_BROWSER
METADATA_EDITOR_VIEWER

Parameters

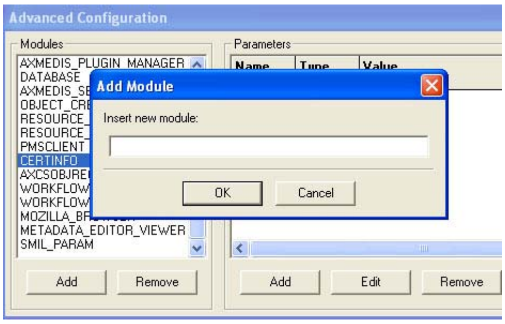
Name	Type	Value
0	string	F:\VARIAZ~1\AXMEDI~1\AXMEDI~1.AXM
1	string	C:\objs\kandinsky-example.axm
2	string	F:\VARIAZ~1\AXMEDI~2\AXMEDI~1.AXM
3	string	F:\VARIAZIONI\AXMEDIS example with frames\axm
4	string	C:\Program Files\AXMEDIS Tools\axmedis-objects\fi

The most significant modules and relative parameters to be configured are the following:

- AXMEDIS_PLUGIN_MANAGER
  - **PLUGINS_PATH**, the folder containing the AXMEDIS plug-ins are
- DATABASE
  - **User**, the username to access in the database

  - **Passwd**, the relative password
  - **LoaderWSEndPoint**, web service end point to load AXMEDIS objects
  - **ServerWSEndPoint**, web service end point to save AXMEDIS objects
  - **FTPPath**, ftp site where to upload the AXMEDIS objects when saving (e.g. ftp://axdbf.AXMEDIS.org)
  - **LockWSEndPoint**, web service end point to lock/unlock AXMEDIS objects
- AXMEDIS_SELETION
  - **MAIN_QUERY_SUPPORT_WSDL**, the WSDL to query the database
- OBJECT_CREATOR
  - **AXCID**, the ID of the object creator. If empty the AXUID received during user registration is used
  - **Name**, the name of the object creator
  - **URL**, the URL of the object creator
  - **Company**, the company of the object creator
  - **CompanyURL**, the URL of the company of the object creator
  - **Nationality**, the nationality of the object creator
- RESOURCE_PARAM
  - **IMAGE_TIMER (s)**, the time duration used in the slide show presentation
  - **COLOUR**, the background colour used in the resource viewer
- RESOURCE_EXTENSIONS
  - <file extension>, the mimetype associated with the file extension
- PMSCLIENT
  - **PMSClientEndpoint**, the end point used when connecting to PMS server
- CERTINFO
  - **CERTPATH**, the path where the certificate is stored on the hard disk
  - **USERPWD**, the user password received after the registration and used to read the user certificate
- AXCSOBJREG
  - **AXCSObjeRegEndpoin**t, the end point used for AXMEDIS object ID request and registration
  - **AXCSObjeRegUsr**, the user name used to request the AXMEDIS object ID
  - **AXCSObjeRegPsw** the password
- WORKFLOW
  - **workflowUrl**, the URL of the workflow server
  - **gatewayUrl**, the URL of the workflow gateway used to request workflow information
- WORKFLOW-PENDING
  - information related to the pending workflow operations
- METADATA_EDITOR_VIEWER
  - **MetadataView_CSS**, the CSS for the metadata viewer
  - **SCHEMA_PATH**, the path where to find the schema files
  - **<xml namespace>**, schema file associated with the namespace
- SMIL_PARAM
  - **HEIGHT, WIDTH, COLOR**, are the default values for the root layout element in the visual editor
  - **ZOOM**, default zoom factor for the behavioural view in the visual editor

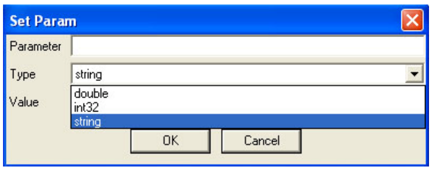
Below the left and right part of the Configuration windows, a number of buttons are present.
By clicking the **Add** button in the left part of the window it is possible to add a new configuration module, as showed in the figure below.



The **Remove** button permits to delete a module.

The right part of the window contains three buttons.
To add a parameter to a selected module press the **Add** button. As showed in the figure below, to add a parameter it is necessary to specify the following three values:

- the parameter name
- the parameter type (*double*, *int32* or *string*)
- the parameter value

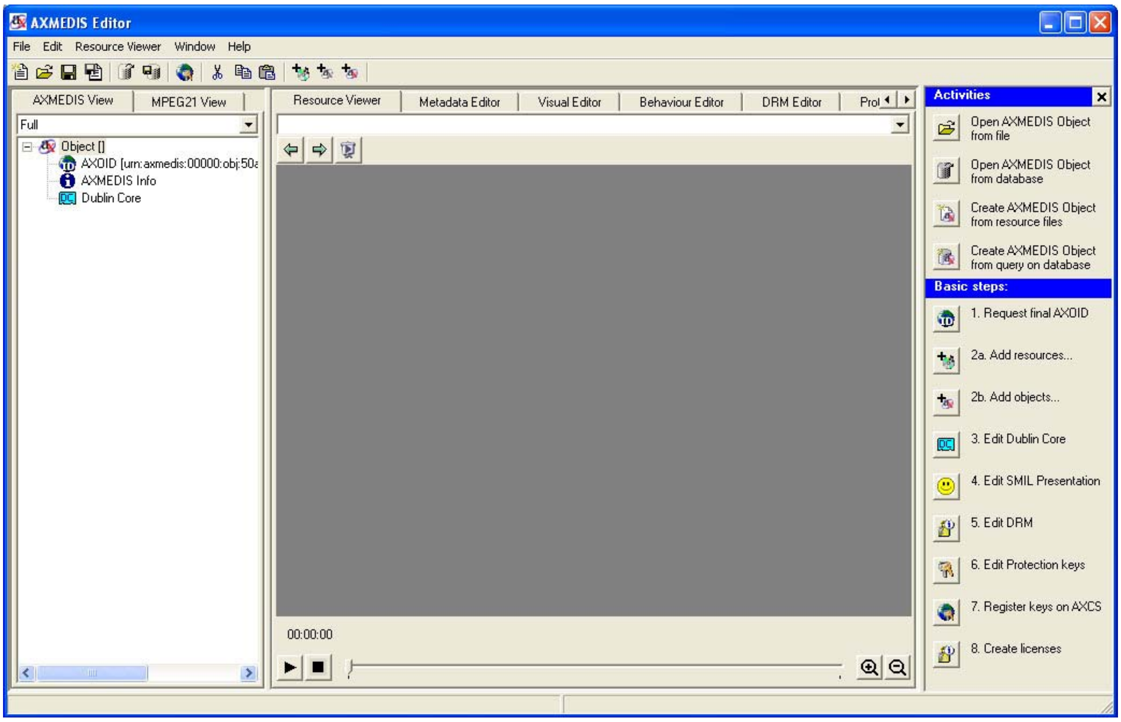


To edit a parameter select the parameter in the right window and press the **Edit** button.

To remove a parameter select the parameter in the right window and press the **Remove** button.

2.3.4 Create a new AXMEDIS Object

To create a new AXMEDIS object select **File/New** from the Menu or use the button on the toolbar



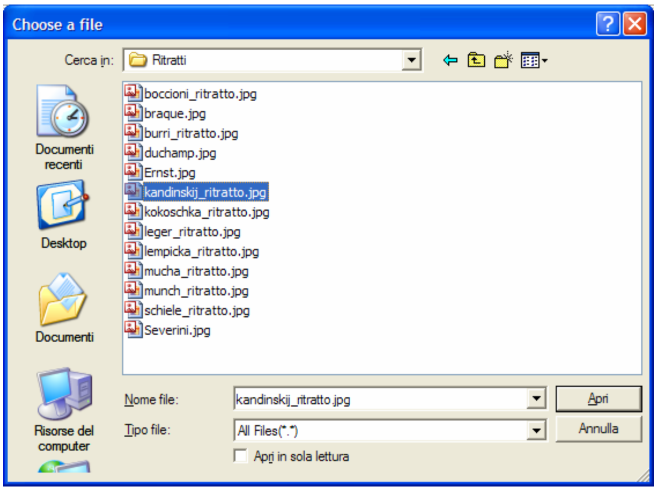
The AXMEDIS Editor will appear divided in three main parts:

- the Tree view window on the left, that provides a view of the AXMEDIS object structure; selecting the MPEG-21 panel it is possible to see the hierarchical view of the MPEG-21 structure of the object;
- the Panels View window in the middle, which shows the selected panel; below these panels a combo box is present showing all the resources available in the object and facilitating the applications of all the different features to them;
- the Activities windows on the right, that helps to find easily the main features of the Editor and to guide the user in the basic steps to create a new objects. If necessary this windows can be closed by clicking on the ☒ button in the high-right corner to enlarge the Resource View window.

In the Tree window initially are present only three items:
- the **AXOID**, that is the unique AXMEDIS Object Identification number
- the **AXMEDIS Info** item, double clicking on it will show information about the object creator, the creation date, etc.
- the **Dublin Core** item, containing the metadata information in Dublin Core standard format

The first thing to do to create a new object is to add a number of digital resources initially stored in the hard disk as single files.

To add a resource from a file on the local hard disk, select the button from the toolbar and select the file to be added:



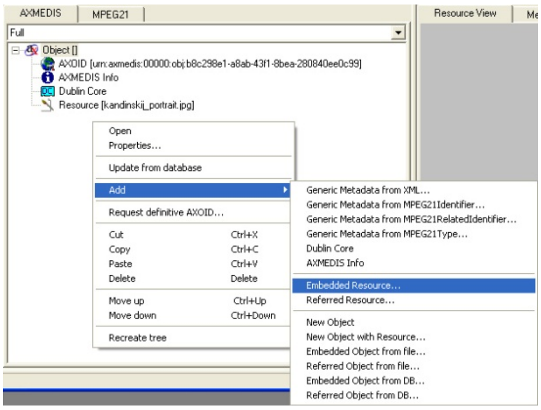
Cerca in: Ritratti

boccioni_ritratto.jpg
braque.jpg
burri_ritratto.jpg
duchamp.jpg
Ernst.jpg
kandinskij_ritratto.jpg
kokoschka_ritratto.jpg
leger_ritratto.jpg
lempicka_ritratto.jpg
mucha_ritratto.jpg
munch_ritratto.jpg
schiele_ritratto.jpg
Severini.jpg

Nome file: kandinskij_ritratto.jpg
Tipo file: All Files(*.*)
□ Apri in sola lettura

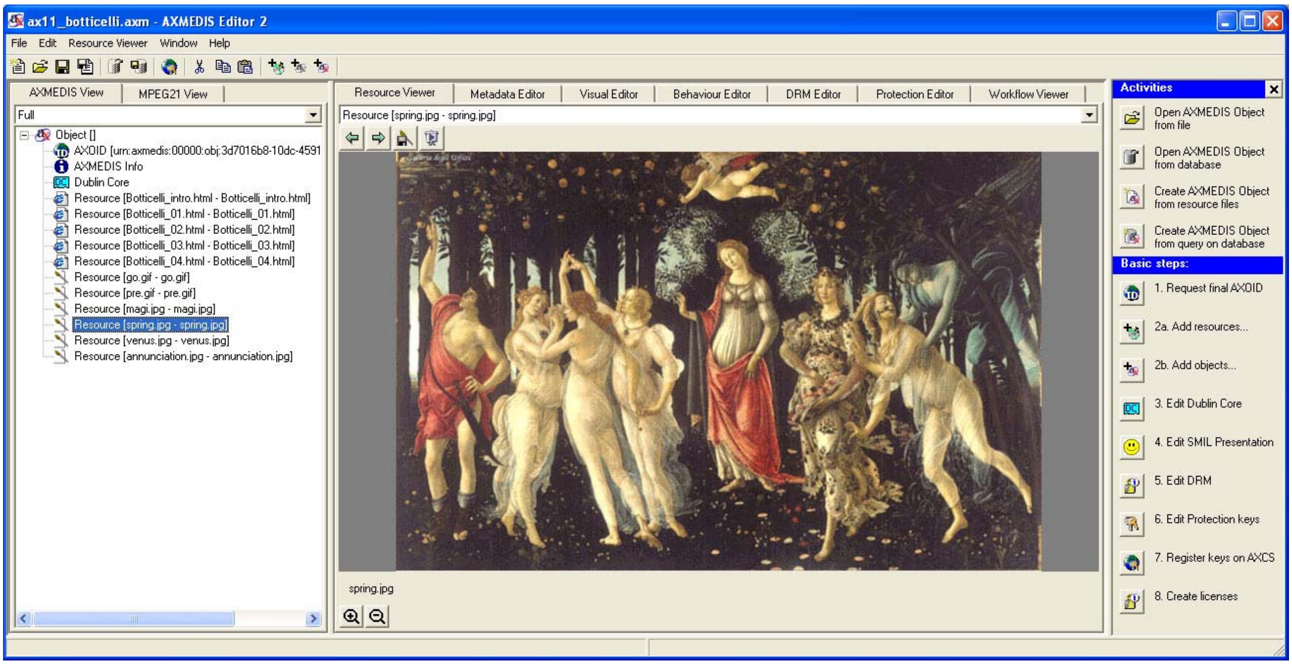
It is possible to add a resource also using the drag-and-drop feature, dragging the resource in the tree window. The AXMEDIS Editor is capable to automatically recognize all the most important file formats for documents (txt, doc, pdf, rtf, etc.), images (gif, tiff, png, jpg, etc.), audio (wma, mp3, wav, etc.), video (mpeg, mpg, etc.) and to play them using the internal player.

Finally it is possible to add a resource using the contextual menu with a right click on the tree window and selecting **Add/Embedded Resource…**


AXMEDIS
MPEG21
Resource View
Full
Object []
AXOID [urn:axmedis:00000:obj:b8c298e1-a8ab-43f1-8bea-280840ee0c99]
AXMEDIS Info
Dublin Core
Resource [kandinskij_portrait.jpg]
Open
Properties...
Update from database
Add
Request definitive AXOID...
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Delete Delete
Move up Ctrl+Up
Move down Ctrl+Down
Recreate tree
Generic Metadata from XML...
Generic Metadata from MPEG21Identifier...
Generic Metadata from MPEG21RelatedIdentifier...
Generic Metadata from MPEG21Type...
Dublin Core
AXMEDIS Info
Embedded Resource...
Referred Resource...
New Object
New Object with Resource...
Embedded Object from file...
Referred Object from file...
Embedded Object from DB...
Referred Object from DB...

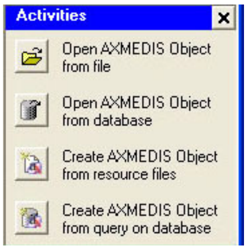
When a resource is correctly embedded, it appears in the tree window with an icon identifying the type of the resource followed by the prefix *Resource* and the resource name closed by square brackets.

Double clicking on the resource opens the ImageViewer:

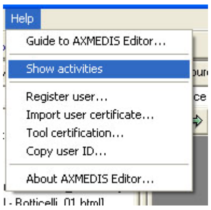

ax11_botticelli.axm - AXMEDIS Editor 2
File Edit Resource Viewer Window Help
AXMEDIS View
MPEG21 View
Full
Object []
AXOID [urn:axmedis:00000:obj:3d7016b8-10dc-4591
AXMEDIS Info
Dublin Core
Resource [Botticelli_intro.html - Botticelli_intro.html]
Resource [Botticelli_01.html - Botticelli_01.html]
Resource [Botticelli_02.html - Botticelli_02.html]
Resource [Botticelli_03.html - Botticelli_03.html]
Resource [Botticelli_04.html - Botticelli_04.html]
Resource [go.gif - go.gif]
Resource [pre.gif - pre.gif]
Resource [magi.jpg - magi.jpg]
Resource [spring.jpg - spring.jpg]
Resource [venus.jpg - venus.jpg]
Resource [annunciation.jpg - annunciation.jpg]
Resource Viewer
Metadata Editor
Visual Editor
Behaviour Editor
DRM Editor
Protection Editor
Workflow Viewer
Resource [spring.jpg - spring.jpg]
spring.jpg
Activities
Open AXMEDIS Object from file
Open AXMEDIS Object from database
Create AXMEDIS Object from resource files
Create AXMEDIS Object from query on database
Basic steps:
1. Request final AXOID
2a. Add resources...
2b. Add objects...
3. Edit Dublin Core
4. Edit SMIL Presentation
5. Edit DRM
6. Edit Protection keys
7. Register keys on AXCS
8. Create licenses

2.3.5 The Activities Window

The Activities window permits a simply access to basic features using intuitive shortcuts.


Activities
Open AXMEDIS Object from file
Open AXMEDIS Object from database
Create AXMEDIS Object from resource files
Create AXMEDIS Object from query on database

If not visible, it is possible to open the Activities window by clicking in the **Help/Show activities** menu.



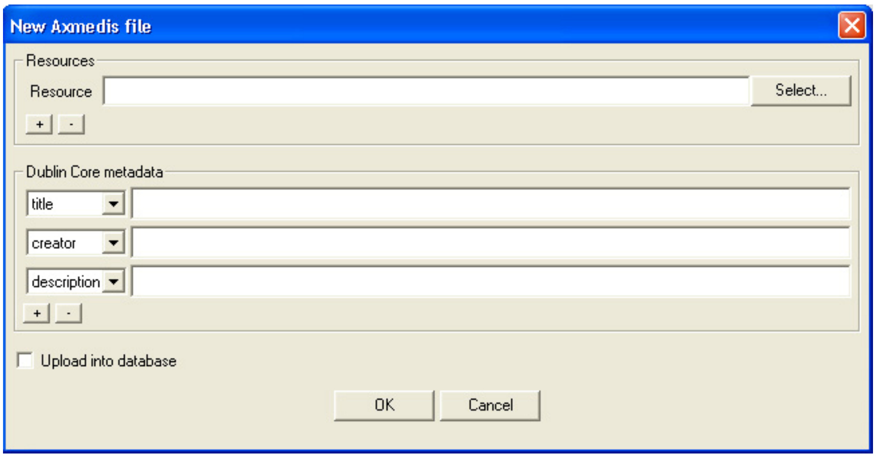
The available features in the Activities window are the following:

- **Open AXMEDIS Object from file**
- **Open AXMEDIS Object from database**
- **Create AXMEDIS Object from resource files**
- **Create AXMEDIS Object from query on database**

Clicking on **Open AXMEDIS Object from file** simply opens a window to select and load an AXMEDIS object from the disk.

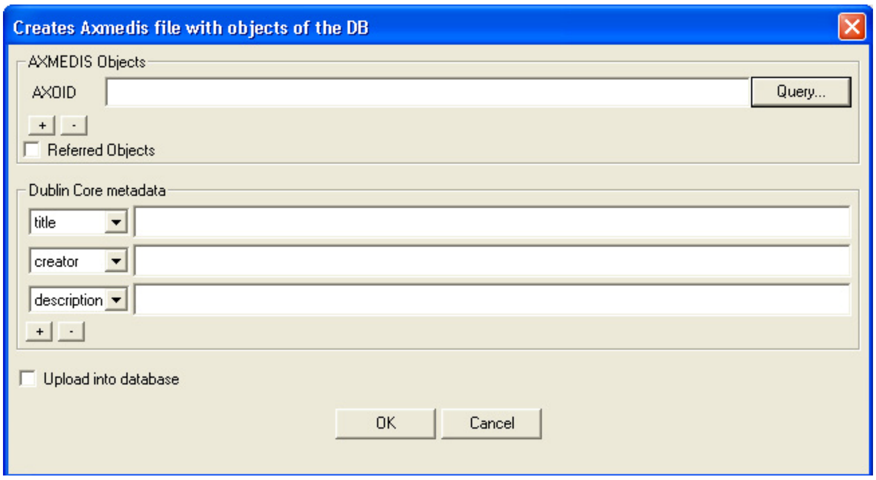
Clicking on **Open AXMEDIS Object from database** the Query dialog is open. See section "The Query Dialog" for more details about the Query dialog.

Clicking on **Create Object from resource files** opens a new dialog to help a user to create a new AXMEDIS object from scratch.



The **Resources** box permits to add external resource selecting them from the disk. Pressing the **+** button a new resource is added, otherwise pressing the **–** button the resource is deleted.
The **Dublin Core metadata** box permits to add metadata of the object before his creation as AXMEDIS object.
Ticking the **Upload into database** option the object is automatically uploaded into the database. Pressing OK the new object is created and, eventually, uploaded into the database.

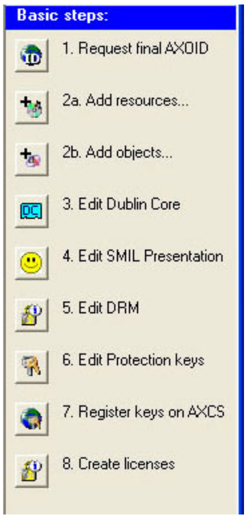
Clicking **Create AXMEDIS Object from query on database** opens a new dialog to help a user to create a new AXMEDIS object from scratch using existing objects stored in the database.



The functioning is very similar to the previous.
The only difference is in the first box now named **AXMEDIS Objects** that permits to add an object querying it from the database. Pressing the **Query** button the Query dialog is open. See section "The Query Dialog" for more details about the Query dialog.

2.3.6 The Basic Steps window

Below the **Activities** window a number of numbered buttons are showed to help users to create a new object showing the necessary steps to be followed, the **Basic Steps** window.



The first button **Request final AXOID** have the aim to request the final ID of the AXMEDIS object. This procedure can be done in any moment but in any case before the step no. **7.Register keys on AXCS**.

Press the button **2a.Add resources…** to add digital resources into the object or the button **2b.Add objects…** to add embedded AXMEDIS objects.

By pressing the button **3.Edit Dublin Core** the Metadata Editor will be showed (see section "AXMEDIS Metadata Editor" for additional information).

By pressing the button **4.Edit SMIL Presentation**, the Visual Editor will be opened (see section "AXMEDIS Visual and Behaviour Editor" for additional information).

By pressing the button **5.Edit DRM** the DRM editor will be opened (see section "AXMEDIS DRM Editor" for additional information).

By pressing the button **6.Edit Protection keys** the Protection Editor will be opened (see section “AXMEDIS Protection Information Editor” for additional information).

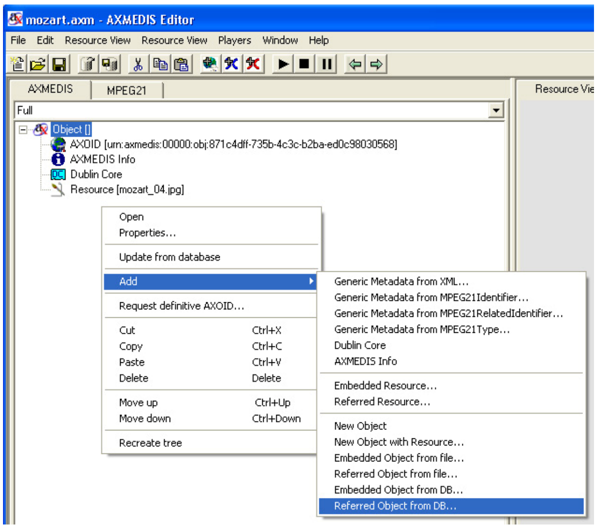
The button **7.Register keys on AXCS** is for the last operation to be performed before the content distribution and permits to send the protection information to the AXCS after the object protection.

The button **8. Create licenses** will open the DRM Editor to define the license.

2.3.7 Adding object reference

Using this feature it is possible to add into an AXMEDIS object a reference to another object stored into the database.

This feature is accessible in the toolbar pressing the button or **Edit/Add/Referred Object from DB** in the menu selecting.

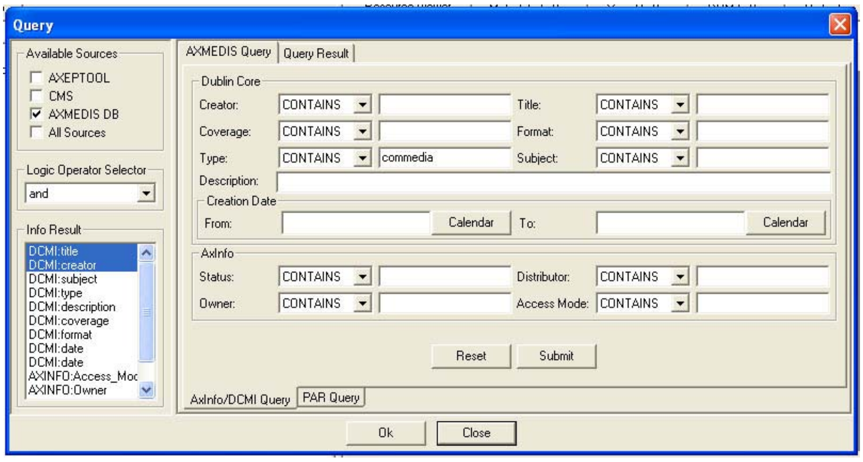


Selecting this option, a query dialog is open. The dialog permits to execute a search into the database using a number of pre-defined fields. If you need more information about the Query dialog see section “The Query Dialog”.

It is possible to search an object by using the following parameters:

- **Object creator**
- **Title**
- **Coverage**
- **Format**
- **Type**
- **Subject**
- **Description**
- **Creation Date**
- **AXInfo information** (such as Status, Distributor, Owner and Access Mode)

For example, to search into the database an AXMEDIS object containing a comedy film, it is necessary to write this parameter into the Type field, select into the Info Results box the information that will appear in the results (for example the creator and the title), and press the Submit button.



Available Sources

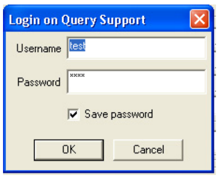
□ AXEPTOOL
□ CMS
☑ AXMEDIS DB
□ All Sources

Logic Operator Selector: and

Info Result: DCMI:title, DCMI:creator, DCMI:subject, DCMI:type, DCMI:description, DCMI:coverage, DCMI:format, DCMI:date, DCMI:date, AXINFO:Access_Moc, AXINFO:Owner

Creator: CONTAINS
Title: CONTAINS
Coverage: CONTAINS
Format: CONTAINS
Type: CONTAINS commedia
Subject: CONTAINS
Description:
From:
To:
Status: CONTAINS
Distributor: CONTAINS
Owner: CONTAINS
Access Mode: CONTAINS

A new dialog will appear where it is necessary to insert the User Name and the password to access the database.

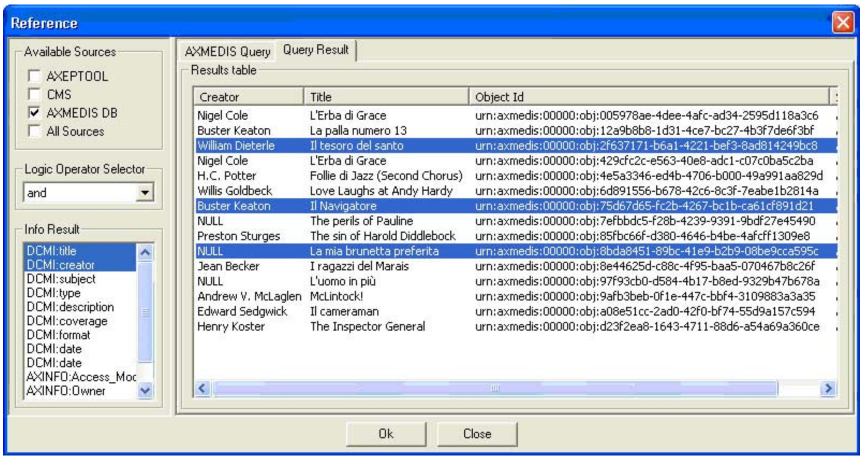


Username: test

Password: ****

☑ Save password

Pressing OK the query is sent to the database and the results are shown in a new window



Available Sources

□ AXEPTOOL
□ CMS
☑ AXMEDIS DB
□ All Sources

Logic Operator Selector: and

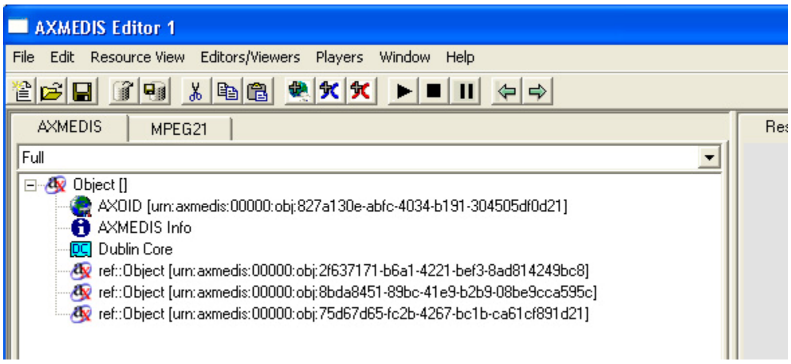
Info Result: DCMI:title, DCMI:creator, DCMI:subject, DCMI:type, DCMI:description, DCMI:coverage, DCMI:format, DCMI:date, DCMI:date, AXINFO:Access_Moc, AXINFO:Owner

Results table

Creator	Title	Object Id
Nigel Cole	L'Erba di Grace	urn:axmedis:00000:obj:005978ae-4dee-4afc-ad34-2595d118a3c6
Buster Keaton	La palla numero 13	urn:axmedis:00000:obj:12a9b8b8-1d31-4ce7-bc27-4b3f7de6f3bf
William Dieterle	Il tesoro del santo	urn:axmedis:00000:obj:2f637171-b6a1-4221-bef3-8ad814249bc8
Nigel Cole	L'Erba di Grace	urn:axmedis:00000:obj:429cfc2c-e563-40e8-adc1-c07c0ba5c2ba
H.C. Potter	Follie di Jazz (Second Chorus)	urn:axmedis:00000:obj:4e5a3346-ed4b-4706-b000-49a991aa829d
Willis Goldbeck	Love Laughs at Andy Hardy	urn:axmedis:00000:obj:6d891556-b678-42c6-8c3f-7eabe1b2814a
Buster Keaton	Il Navigatore	urn:axmedis:00000:obj:75d67d65-fc2b-4267-bc1b-ca61cf891d21
NULL	The perils of Pauline	urn:axmedis:00000:obj:7efbbdc5-f28b-4239-9391-9bdf27e45490
Preston Sturges	The sin of Harold Diddlebock	urn:axmedis:00000:obj:85fbc66f-d380-4646-b4be-4afcff1309e8
NULL	La mia brunetta preferita	urn:axmedis:00000:obj:8bda8451-89bc-41e9-b2b9-08be9cca595c
Jean Becker	I ragazzi del Marais	urn:axmedis:00000:obj:8e44625d-c88c-4f95-baa5-070467b8c26f
NULL	L'uomo in più	urn:axmedis:00000:obj:97f93cb0-d584-4b17-b8ed-9329b47b678a
Andrew V. McLaglen	McLintock!	urn:axmedis:00000:obj:9afb3beb-0f1e-447c-bbf4-3109883a3a35
Edward Sedgwick	Il cameraman	urn:axmedis:00000:obj:a08e51cc-2ad0-42f0-bf74-55d9a157c594
Henry Koster	The Inspector General	urn:axmedis:00000:obj:d23f2ea8-1643-4711-88d6-a54a69a360ce

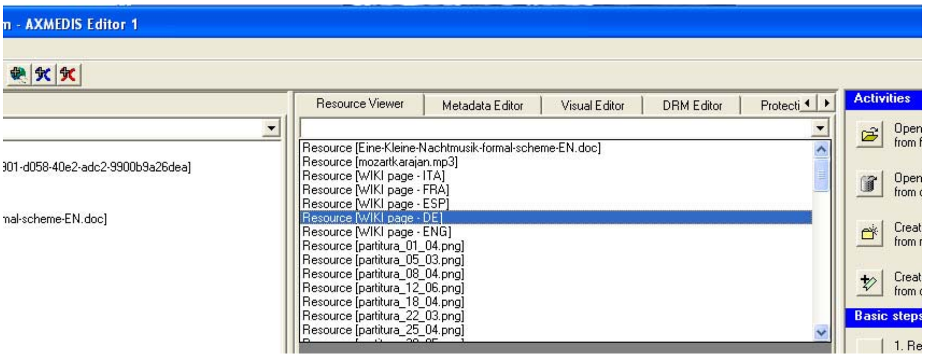
At this point it is possible to select the object in the list and press the OK button to continue. It is also possible to select more than only one object pressing the <SHIFT> or the <CTRL> keys and selecting all the needed objects.

After pressing OK, the selected objects are added in the Editor as reference objects (identified by the **ref** prefix).



Object []
AXOID [urn:axmedis:00000:obj:827a130e-abfc-4034-b191-304505df0d21]
AXMEDIS Info
Dublin Core
ref::Object [urn:axmedis:00000:obj:2f637171-b6a1-4221-bef3-8ad814249bc8]
ref::Object [urn:axmedis:00000:obj:8bda8451-89bc-41e9-b2b9-08be9cca595c]
ref::Object [urn:axmedis:00000:obj:75d67d65-fc2b-4267-bc1b-ca61cf891d21]

In the Panels window, immediately below the name of each tab, a combo box is present allowing selecting the different resources available in the object.



301-d058-40e2-adc2-9900b9a26dea]
mal-scheme-EN.doc]

Resource [Eine-Kleine-Nachtmusik-formal-scheme-EN.doc]
Resource [mozartkarajan.mp3]
Resource [WIKI page - ITA]
Resource [WIKI page - FRA]
Resource [WIKI page - ESP]
Resource [WIKI page - DE]
Resource [WIKI page - ENG]
Resource [partitura_01_04.png]
Resource [partitura_05_03.png]
Resource [partitura_08_04.png]
Resource [partitura_12_06.png]
Resource [partitura_18_04.png]
Resource [partitura_22_03.png]
Resource [partitura_25_04.png]

2.3.8 Adding embedded object

Using this feature it is possible to add into an AXMEDIS object another object stored into the database.

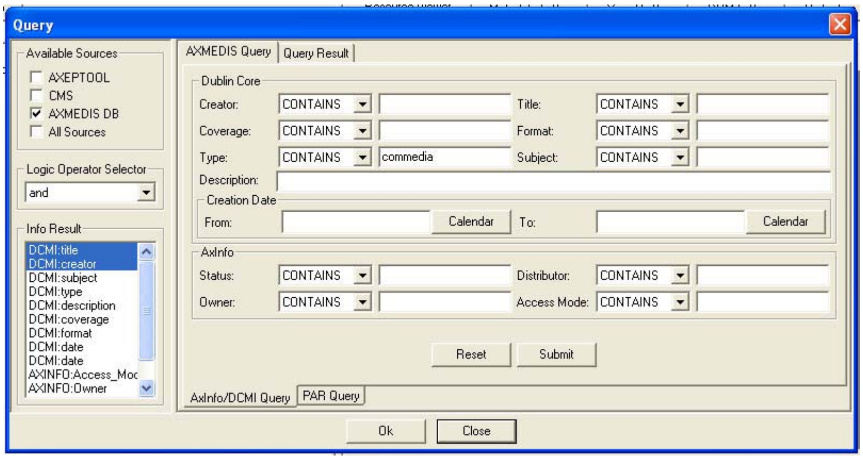
This feature is accessible in the toolbar pressing the 🛠 button or in the menu selecting **Edit/Add/Embedded Object from DB**. The procedure is very similar to what explained in the previous section.

Selecting this option, a query dialog is open. The dialog permits to execute a search into the database using a number of pre-defined fields. If you need more information about the Query dialog see section “The Query Dialog”.

It is possible to search an object using the following parameters:

- **Object creator**
- **Title**
- **Coverage**
- **Format**
- **Type**
- **Subject**
- **Description**
- **Creation Date**
- **AXInfo information** (such as Status, Distributor, Owner and Access Mode)

For example, to search into the database a comedy film, it is necessary to write this parameter into the **Type** field, select into the **Info Results** box the information that will appear in the results (for example the creator and the title), and press the Submit button.



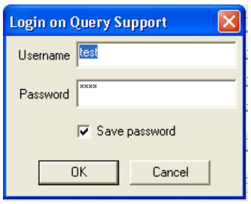
□ AXEPTOOL
□ CMS
☑ AXMEDIS DB
□ All Sources

Logic Operator Selector: and

Info Result: DCMI:title, DCMI:creator, DCMI:subject, DCMI:type, DCMI:description, DCMI:coverage, DCMI:format, DCMI:date, DCMI:date, AXINFO:Access_Moc, AXINFO:Owner

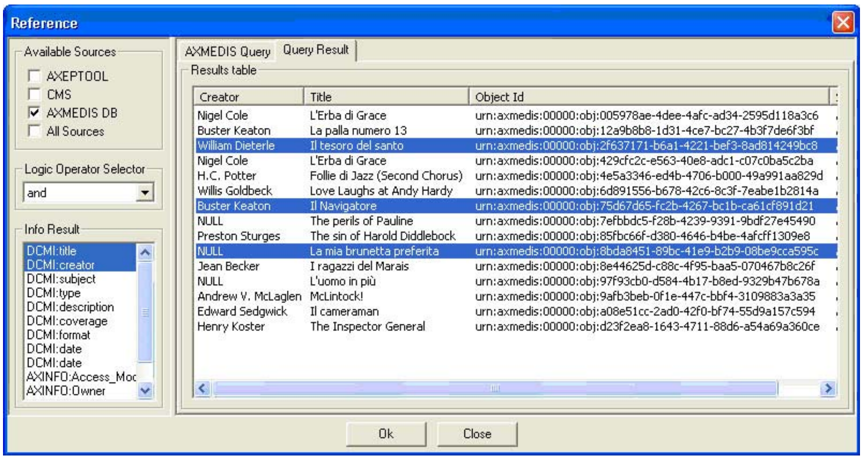
Creator: CONTAINS
Title: CONTAINS
Coverage: CONTAINS
Format: CONTAINS
Type: CONTAINS commedia
Subject: CONTAINS
Description:
From:
To:
Status: CONTAINS
Distributor: CONTAINS
Owner: CONTAINS
Access Mode: CONTAINS

A new dialog will appear where it is necessary to insert the User Name and the password to access into the database.



Username: test
Password: ****
☑ Save password

Pressing OK the query is sent to the database and the results are shown in a new window



□ AXEPTOOL
□ CMS
☑ AXMEDIS DB
□ All Sources

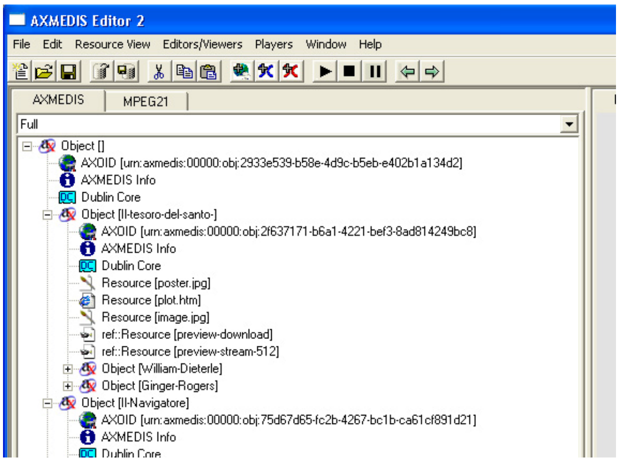
Logic Operator Selector: and

Info Result: DCMI:title, DCMI:creator, DCMI:subject, DCMI:type, DCMI:description, DCMI:coverage, DCMI:format, DCMI:date, DCMI:date, AXINFO:Access_Moc, AXINFO:Owner

Creator	Title	Object Id
Nigel Cole	L'Erba di Grace	urn:axmedis:00000:obj:005978ae-4dee-4afc-ad34-2595d118a3c6
Buster Keaton	La palla numero 13	urn:axmedis:00000:obj:12a9b8b8-1d31-4ce7-bc27-4b3f7de6f3bf
William Dieterle	Il tesoro del santo	urn:axmedis:00000:obj:2f637171-b6a1-4221-bef3-8ad814249bc8
Nigel Cole	L'Erba di Grace	urn:axmedis:00000:obj:429cfc2c-e563-40e8-adc1-c07c0ba5c2ba
H.C. Potter	Follie di Jazz (Second Chorus)	urn:axmedis:00000:obj:4e5a3346-ed4b-4706-b000-49a991aa829d
Willis Goldbeck	Love Laughs at Andy Hardy	urn:axmedis:00000:obj:6d891556-b678-42c6-8c3f-7eabe1b2814a
Buster Keaton	Il Navigatore	urn:axmedis:00000:obj:75d67d65-fc2b-4267-bc1b-ca61cf891d21
NULL	The perils of Pauline	urn:axmedis:00000:obj:7efbbdc5-f28b-4239-9391-9bdf27e45490
Preston Sturges	The sin of Harold Diddlebock	urn:axmedis:00000:obj:85fbc66f-d380-4646-b4be-4afcff1309e8
NULL	La mia brunetta preferita	urn:axmedis:00000:obj:8bda8451-89bc-41e9-b2b9-08be9cca595c
Jean Becker	I ragazzi del Marais	urn:axmedis:00000:obj:8e44625d-c88c-4f95-baa5-070467b8c26f
NULL	L'uomo in più	urn:axmedis:00000:obj:97f93cb0-d584-4b17-b8ed-9329b47b678a
Andrew V. McLaglen	McLintock!	urn:axmedis:00000:obj:9afb3beb-0f1e-447c-bbf4-3109883a3a35
Edward Sedgwick	Il cameraman	urn:axmedis:00000:obj:a08e51cc-2ad0-42f0-bf74-55d9a157c594
Henry Koster	The Inspector General	urn:axmedis:00000:obj:d23f2ea8-1643-4711-88d6-a54a69a360ce

At this point it is possible to select the object in the list and press the OK button to continue. It is also possible to select more than only one object pressing the <SHIFT> or the <CTRL> keys and selecting all the needed objects.

After the OK pressing, the selected objects are added in the Editor as embedded objects (identified by the **Object** prefix).

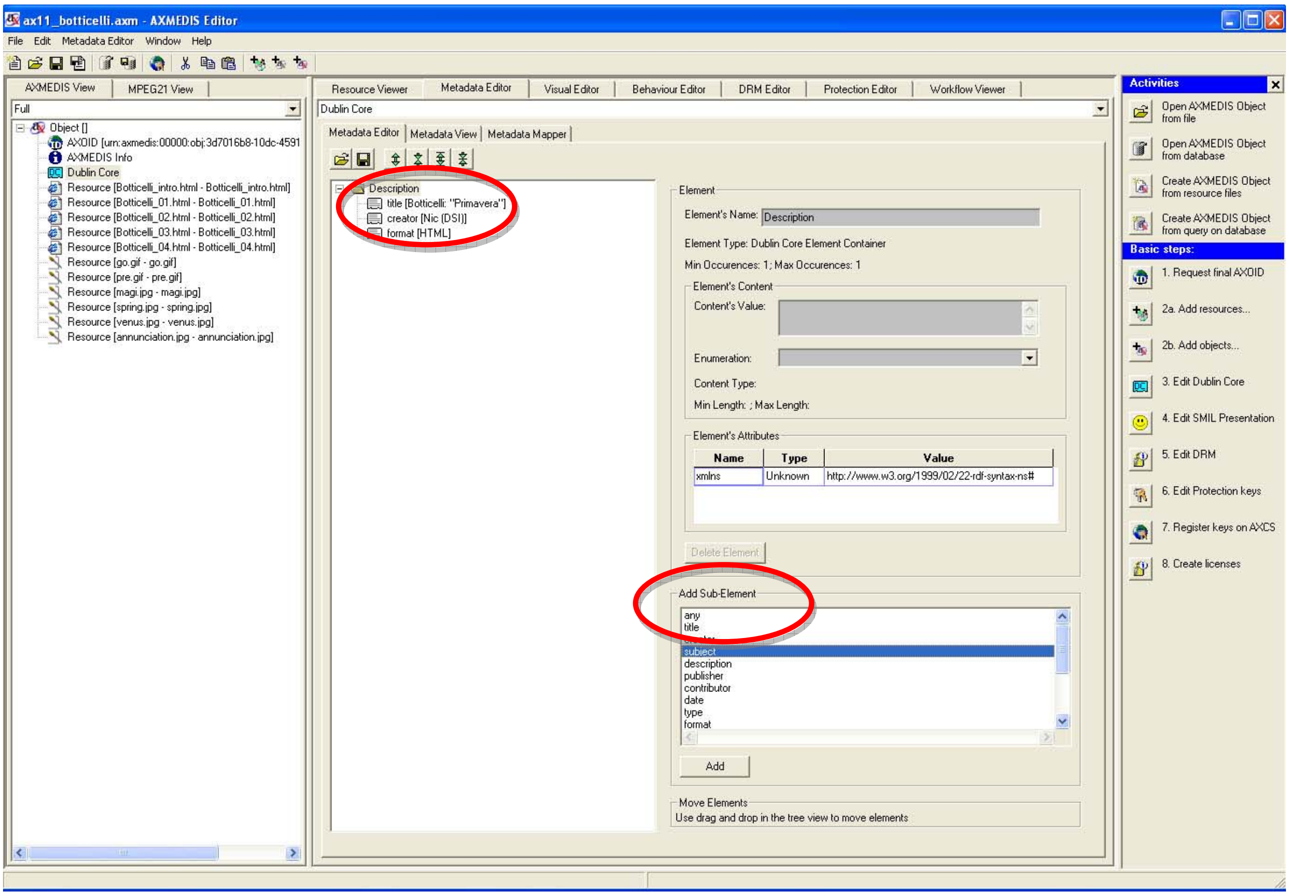


Object []
AXOID [urn:axmedis:00000:obj:2933e539-b58e-4d9c-b5eb-e402b1a134d2]
AXMEDIS Info
Dublin Core
Object [Il-tesoro-del-santo-]
AXOID [urn:axmedis:00000:obj:2f637171-b6a1-4221-bef3-8ad814249bc8]
AXMEDIS Info
Dublin Core
Resource [poster.jpg]
Resource [plot.htm]
Resource [image.jpg]
ref::Resource [preview-download]
ref::Resource [preview-stream-512]
Object [William-Dieterle]
Object [Ginger-Rogers]
Object [Il-Navigatore]
AXOID [urn:axmedis:00000:obj:75d67d65-fc2b-4267-bc1b-ca61cf891d21]
AXMEDIS Info
Dublin Core

2.3.9 Adding Dublin Core metadata

Double clicking on the **Dublin Core** item the metadata editor is opened:

To add new metadata elements, select them from the **Add Sub-Element** list box and then press the Add button.



Object []
AXOID [urn:axmedis:00000:obj:3d7016b8-10dc-4591
AXMEDIS Info
Dublin Core
Resource [Botticelli_intro.html - Botticelli_intro.html]
Resource [Botticelli_01.html - Botticelli_01.html]
Resource [Botticelli_02.html - Botticelli_02.html]
Resource [Botticelli_03.html - Botticelli_03.html]
Resource [Botticelli_04.html - Botticelli_04.html]
Resource [go.gif - go.gif]
Resource [pre.gif - pre.gif]
Resource [magi.jpg - magi.jpg]
Resource [spring.jpg - spring.jpg]
Resource [venus.jpg - venus.jpg]
Resource [annunciation.jpg - annunciation.jpg]

Description
title [Botticelli: "Primavera"]
creator [Nic (DSI)]
format [HTML]

Element
Element's Name: Description
Element Type: Dublin Core Element Container
Min Occurences: 1; Max Occurences: 1

Element's Content
Content's Value:
Enumeration:
Content Type:
Min Length: ; Max Length:

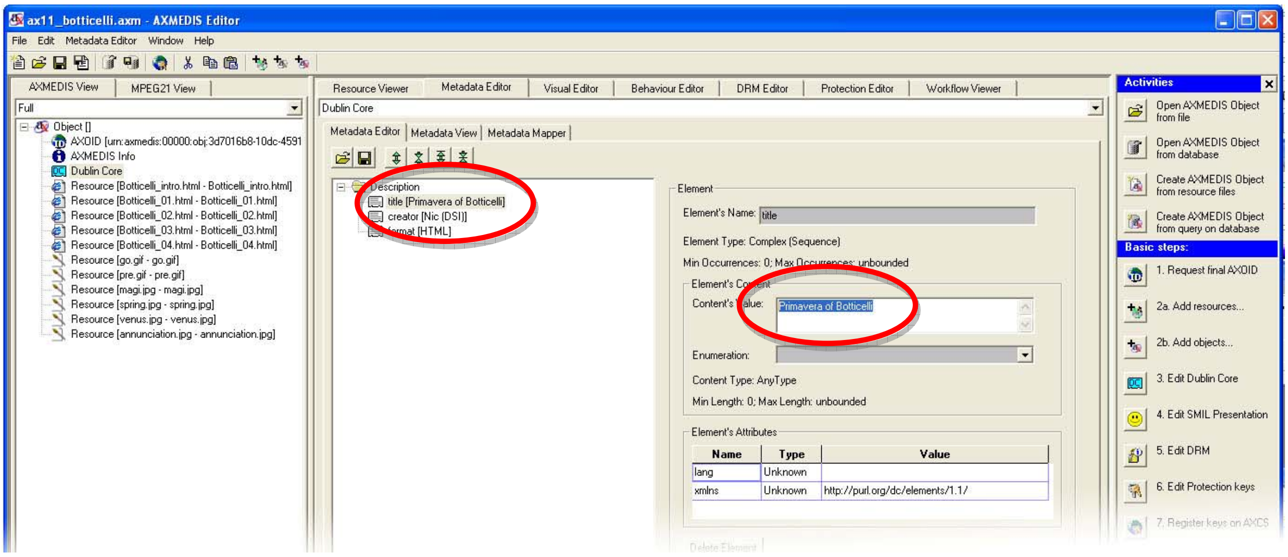
Element's Attributes

Name	Type	Value
xmlns	Unknown	http://www.w3.org/1999/02/22-rdf-syntax-ns#

Add Sub-Element
any
title
subject
description
publisher
contributor
date
type
format

Move Elements
Use drag and drop in the tree view to move elements

To set the value of an element, e.g. the “title” element, select it from the metadata tree and enter the value in the **Content’s Value** textbox as highlighted below on the right.


ax11_botticelli.axm - AXMEDIS Editor
File Edit Metadata Editor Window Help
AXMEDIS View | MPEG21 View
Resource Viewer | Metadata Editor | Visual Editor | Behaviour Editor | DRM Editor | Protection Editor | Workflow Viewer
Metadata Editor | Metadata View | Metadata Mapper
Activities
Open AXMEDIS Object from file
Open AXMEDIS Object from database
Create AXMEDIS Object from resource files
Create AXMEDIS Object from query on database
Basic steps:
1. Request final AXOID
2a. Add resources...
2b. Add objects...
3. Edit Dublin Core
4. Edit SMIL Presentation
5. Edit DRM
6. Edit Protection keys
7. Register keys on AXCS
Delete Element

Full

- Object []
  - AXOID [urn:axmedis:00000:obj:3d7016b8-10dc-4591
  - AXMEDIS Info
  - Dublin Core
  - Resource [Botticelli_intro.html - Botticelli_intro.html]
  - Resource [Botticelli_01.html - Botticelli_01.html]
  - Resource [Botticelli_02.html - Botticelli_02.html]
  - Resource [Botticelli_03.html - Botticelli_03.html]
  - Resource [Botticelli_04.html - Botticelli_04.html]
  - Resource [go.gif - go.gif]
  - Resource [pre.gif - pre.gif]
  - Resource [magi.jpg - magi.jpg]
  - Resource [spring.jpg - spring.jpg]
  - Resource [venus.jpg - venus.jpg]
  - Resource [annunciation.jpg - annunciation.jpg]

Dublin Core

- Description
  - title [Primavera of Botticelli]
  - creator [Nic (DSI)]
  - format [HTML]

Element

Element's Name: title

Element Type: Complex (Sequence)

Min Occurrences: 0; Max Occurrences: unbounded

Element's Content

Content's Value: Primavera of Botticelli

Enumeration:

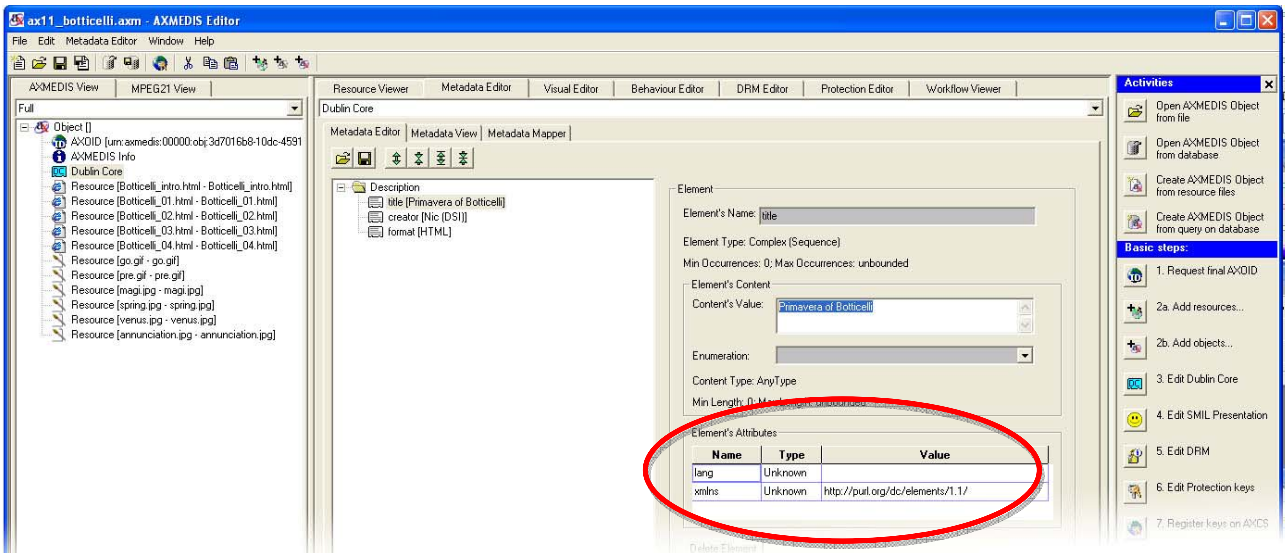
Content Type: AnyType

Min Length: 0; Max Length: unbounded

Element's Attributes

Name	Type	Value
lang	Unknown	
xmlns	Unknown	http://purl.org/dc/elements/1.1/

The user can also edit the attribute(s) of an element by using the **Element's Attribute** Grid to change the Value of the attribute such as the language of the title element to English (lang, EN) as shown below:


ax11_botticelli.axm - AXMEDIS Editor
File Edit Metadata Editor Window Help
AXMEDIS View | MPEG21 View
Resource Viewer | Metadata Editor | Visual Editor | Behaviour Editor | DRM Editor | Protection Editor | Workflow Viewer
Metadata Editor | Metadata View | Metadata Mapper
Activities
Open AXMEDIS Object from file
Open AXMEDIS Object from database
Create AXMEDIS Object from resource files
Create AXMEDIS Object from query on database
Basic steps:
1. Request final AXOID
2a. Add resources...
2b. Add objects...
3. Edit Dublin Core
4. Edit SMIL Presentation
5. Edit DRM
6. Edit Protection keys
7. Register keys on AXCS
Delete Element

Full

- Object []
  - AXOID [urn:axmedis:00000:obj:3d7016b8-10dc-4591
  - AXMEDIS Info
  - Dublin Core
  - Resource [Botticelli_intro.html - Botticelli_intro.html]
  - Resource [Botticelli_01.html - Botticelli_01.html]
  - Resource [Botticelli_02.html - Botticelli_02.html]
  - Resource [Botticelli_03.html - Botticelli_03.html]
  - Resource [Botticelli_04.html - Botticelli_04.html]
  - Resource [go.gif - go.gif]
  - Resource [pre.gif - pre.gif]
  - Resource [magi.jpg - magi.jpg]
  - Resource [spring.jpg - spring.jpg]
  - Resource [venus.jpg - venus.jpg]
  - Resource [annunciation.jpg - annunciation.jpg]

Dublin Core

- Description
  - title [Primavera of Botticelli]
  - creator [Nic (DSI)]
  - format [HTML]

Element

Element's Name: title

Element Type: Complex (Sequence)

Min Occurrences: 0; Max Occurrences: unbounded

Element's Content

Content's Value: Primavera of Botticelli

Enumeration:

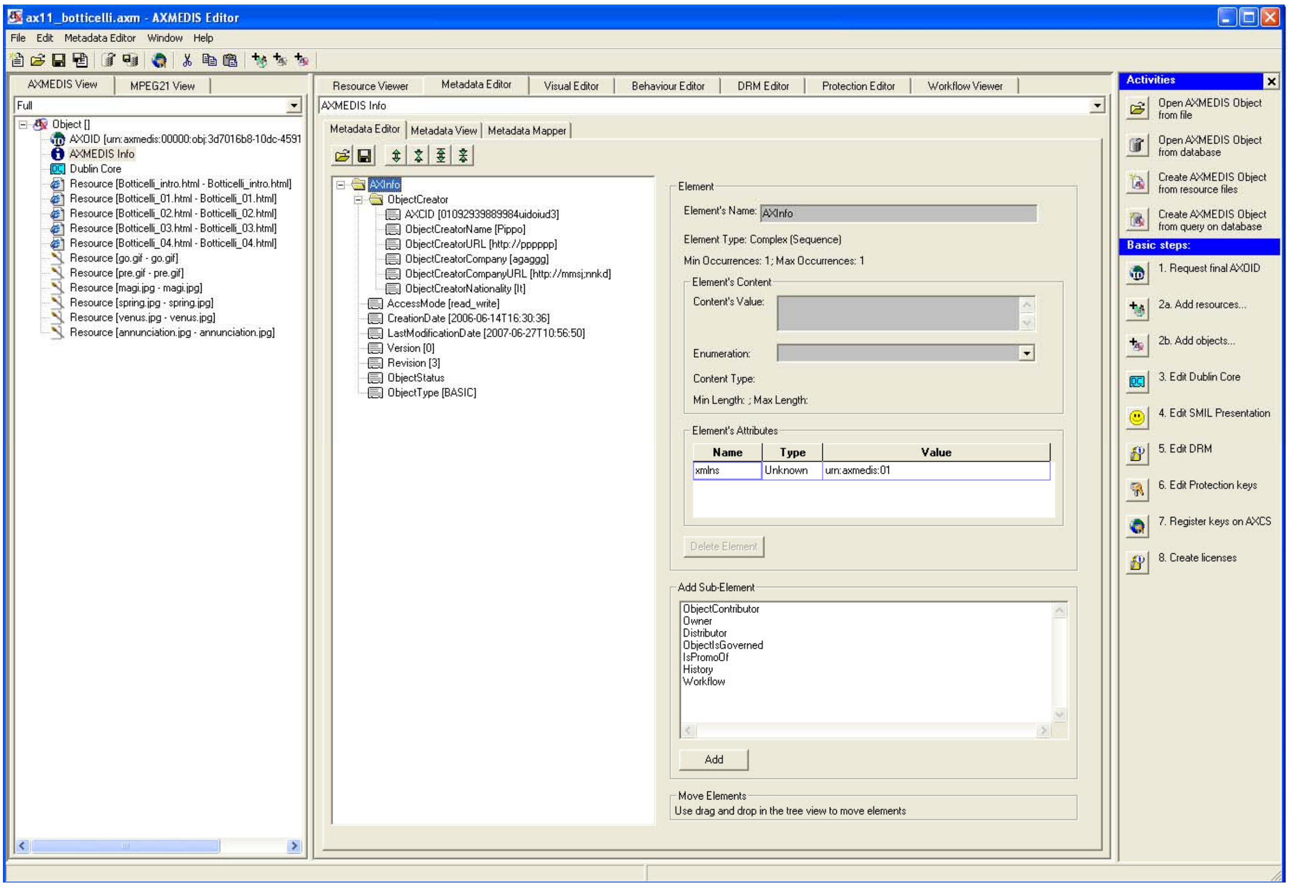
Content Type: AnyType

Min Length: 0; Max Length: unbounded

Element's Attributes

Name	Type	Value
lang	Unknown	
xmlns	Unknown	http://purl.org/dc/elements/1.1/

Double clicking on the **AXMEDIS Info** the **Metadata Viewer** shows the AXMEDIS specific information associated with the object:



Object []
AXOID [urn:axmedis:00000:obj:3d7016b8-10dc-4591
AXMEDIS Info
Dublin Core
Resource [Botticelli_intro.html - Botticelli_intro.html]
Resource [Botticelli_01.html - Botticelli_01.html]
Resource [Botticelli_02.html - Botticelli_02.html]
Resource [Botticelli_03.html - Botticelli_03.html]
Resource [Botticelli_04.html - Botticelli_04.html]
Resource [go.gif - go.gif]
Resource [pre.gif - pre.gif]
Resource [magi.jpg - magi.jpg]
Resource [spring.jpg - spring.jpg]
Resource [venus.jpg - venus.jpg]
Resource [annunciation.jpg - annunciation.jpg]

AXInfo
ObjectCreator
AXCID [01092939889984uidoiud3]
ObjectCreatorName [Pippo]
ObjectCreatorURL [http://pppppp]
ObjectCreatorCompany [agaggg]
ObjectCreatorCompanyURL [http://mmsj;nnkd]
ObjectCreatorNationality [It]
AccessMode [read_write]
CreationDate [2006-06-14T16:30:36]
LastModificationDate [2007-06-27T10:56:50]
Version [0]
Revision [3]
ObjectStatus
ObjectType [BASIC]

Element
Element's Name: AXInfo
Element Type: Complex (Sequence)
Min Occurrences: 1; Max Occurrences: 1
Element's Content
Content's Value:
Enumeration:
Content Type:
Min Length: ; Max Length:
Element's Attributes

Name	Type	Value
xmlns	Unknown	urn:axmedis:01

Add Sub-Element
ObjectContributor
Owner
Distributor
ObjectIsGoverned
IsPromoOf
History
Workflow

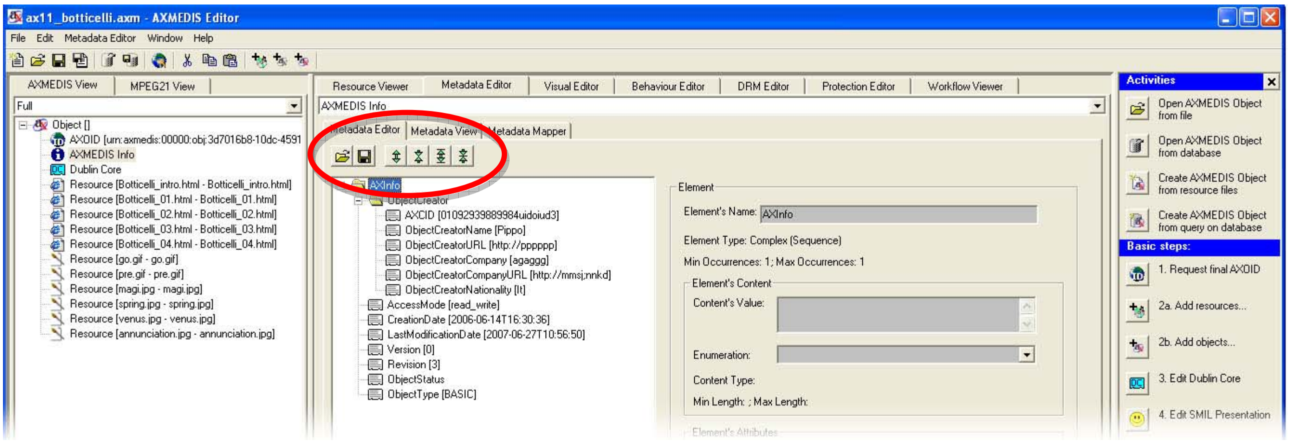
Move Elements
Use drag and drop in the tree view to move elements

The Object Creator information is automatically added getting information from the configuration (**File/Configuration…** from the menu)

The object can be overwritten on the local hard disk using **File/Save** (or using the 💾 button on the toolbar) or saved as new file using **File/Save As…** from the menu.

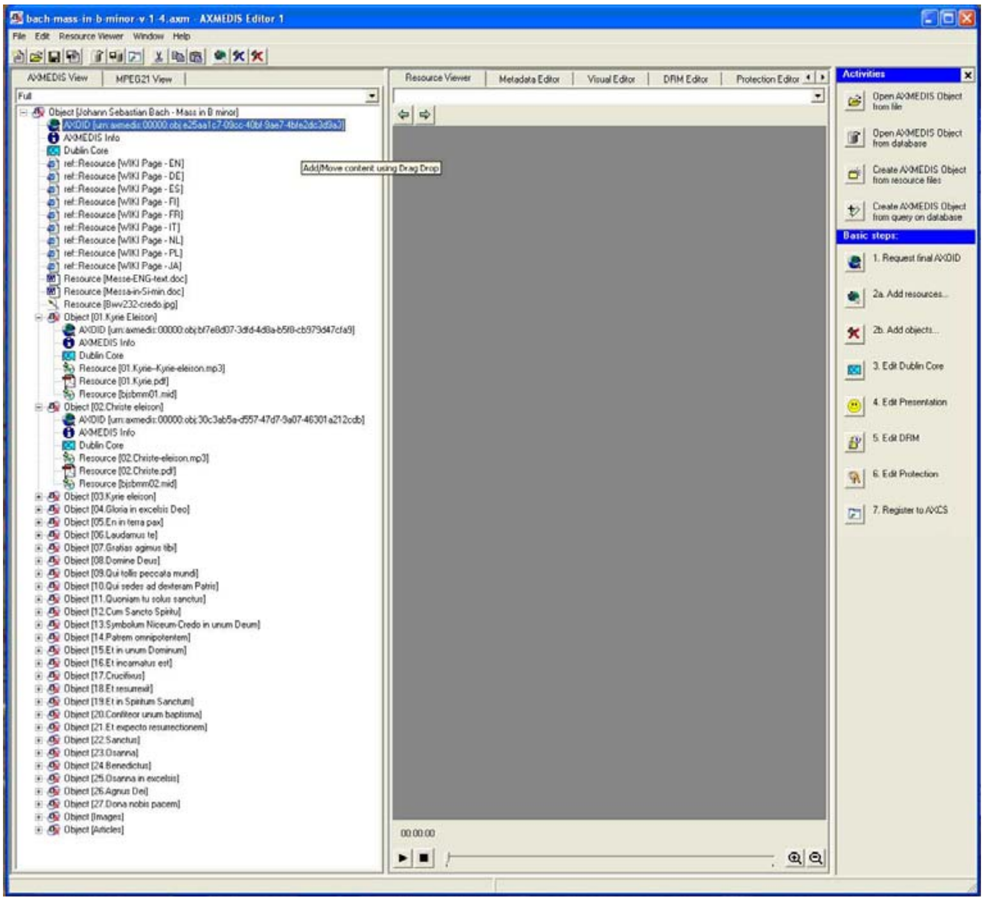
Also the object can be uploaded on the AXMEDIS Database using the button on the toolbar or **File/Upload into Database…** from the menu.

Please note that the **Metadata Editor** also has its own “local toolbar” with six buttons: load, save, expand, expand all, collapse, and collapse all. The **Load** button is used to load metadata from a separate file XML button, and the **Save** button is used to save metadata into a separate XML file. This allows the user to use the current metadata as a template:



Object []
AXOID [urn:axmedis:00000:obj:3d7016b8-10dc-4591
AXMEDIS Info
Dublin Core
Resource [Botticelli_intro.html - Botticelli_intro.html]
Resource [Botticelli_01.html - Botticelli_01.html]
Resource [Botticelli_02.html - Botticelli_02.html]
Resource [Botticelli_03.html - Botticelli_03.html]
Resource [Botticelli_04.html - Botticelli_04.html]
Resource [go.gif - go.gif]
Resource [pre.gif - pre.gif]
Resource [magi.jpg - magi.jpg]
Resource [spring.jpg - spring.jpg]
Resource [venus.jpg - venus.jpg]
Resource [annunciation.jpg - annunciation.jpg]
AXInfo
ObjectCreator
AXCID [01092939889984uidoiud3]
ObjectCreatorName [Pippo]
ObjectCreatorURL [http://pppppp]
ObjectCreatorCompany [agaggg]
ObjectCreatorCompanyURL [http://mmsj;nnkd]
ObjectCreatorNationality [It]
AccessMode [read_write]
CreationDate [2006-06-14T16:30:36]
LastModificationDate [2007-06-27T10:56:50]
Version [0]
Revision [3]
ObjectStatus
ObjectType [BASIC]
Element
Element's Name: AXInfo
Element Type: Complex (Sequence)
Min Occurrences: 1; Max Occurrences: 1
Element's Content
Content's Value:
Enumeration:
Content Type:
Min Length: ; Max Length:
Element's Attributes

The AXMEDIS Editor permits to create very easily complex objects with both simple and nested resources. The following figure shows an example of complex object with a big number of digital resources.

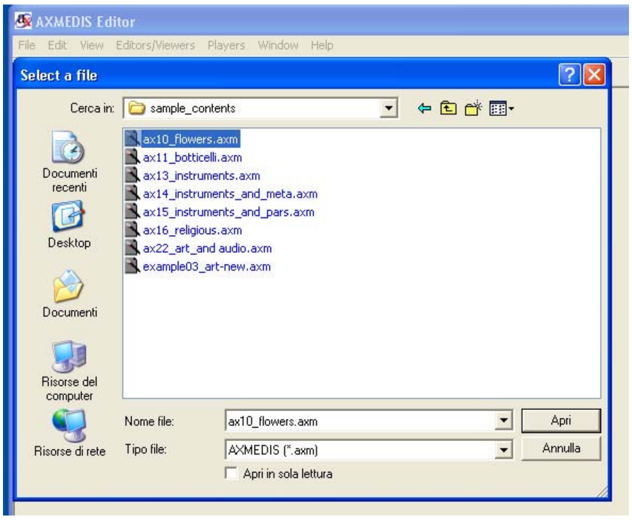


bach-mass-in-b-minor-v-1-4.axm - AXMEDIS Editor 1

```
Object [Johann Sebastian Bach - Mass in B minor]
    AXDID [urn:axmedis:00000:obj:e25aa1c7-09cc-40bf-9ae7-4bfe2dc3d9a3]
    AXMEDIS Info
    Dublin Core
    ref:Resource [WIKI Page - EN]
    ref:Resource [WIKI Page - DE]
    ref:Resource [WIKI Page - ES]
    ref:Resource [WIKI Page - FI]
    ref:Resource [WIKI Page - FR]
    ref:Resource [WIKI Page - IT]
    ref:Resource [WIKI Page - NL]
    ref:Resource [WIKI Page - PL]
    ref:Resource [WIKI Page - JA]
    Resource [Messe-ENG-text.doc]
    Resource [Messa-in-Si-min.doc]
    Resource [Bwv232-credo.jpg]
  Object [01.Kyrie Eleison]
      AXDID [urn:axmedis:00000:obj:bf7e8d07-3dfd-4d8a-b5f8-cb979d47cfa9]
      AXMEDIS Info
      Dublin Core
      Resource [01.Kyrie--Kyrie-eleison.mp3]
      Resource [01.Kyrie.pdf]
      Resource [bjsbmm01.mid]
  Object [02.Christe eleison]
      AXDID [urn:axmedis:00000:obj:30c3ab5a-d557-47d7-9a07-46301a212cdb]
      AXMEDIS Info
      Dublin Core
      Resource [02.Christe-eleison.mp3]
      Resource [02.Christe.pdf]
      Resource [bjsbmm02.mid]
  Object [03.Kyrie eleison]
  Object [04.Gloria in excelsis Deo]
  Object [05.En in terra pax]
  Object [06.Laudamus te]
  Object [07.Gratias agimus tibi]
  Object [08.Domine Deus]
  Object [09.Qui tollis peccata mundi]
  Object [10.Qui sedes ad dexteram Patris]
  Object [11.Quoniam tu solus sanctus]
  Object [12.Cum Sancto Spiritu]
  Object [13.Symbolum Niceum-Credo in unum Deum]
  Object [14.Patrem omnipotentem]
  Object [15.Et in unum Dominum]
  Object [16.Et incarnatus est]
  Object [17.Crucifixus]
  Object [18.Et resurrexit]
  Object [19.Et in Spiritum Sanctum]
  Object [20.Confiteor unum baptisma]
  Object [21.Et expecto resurrectionem]
  Object [22.Sanctus]
  Object [23.Osanna]
  Object [24.Benedictus]
  Object [25.Osanna in excelsis]
  Object [26.Agnus Dei]
  Object [27.Dona nobis pacem]
  Object [Images]
  Object [Articles]
```

2.3.10 Open an existing object

To open an existing AXMEDIS object select **File/Open…** from the Menu or use the 📂 button on the toolbar. The “Select a file” window appears where it is possible to select an AXMEDIS object to be opened.



AXMEDIS Editor

Select a file

Cerca in: sample_contents

ax10_flowers.axm
ax11_botticelli.axm
ax13_instruments.axm
ax14_instruments_and_meta.axm
ax15_instruments_and_pars.axm
ax16_religious.axm
ax22_art_and audio.axm
example03_art-new.axm

Nome file: ax10_flowers.axm

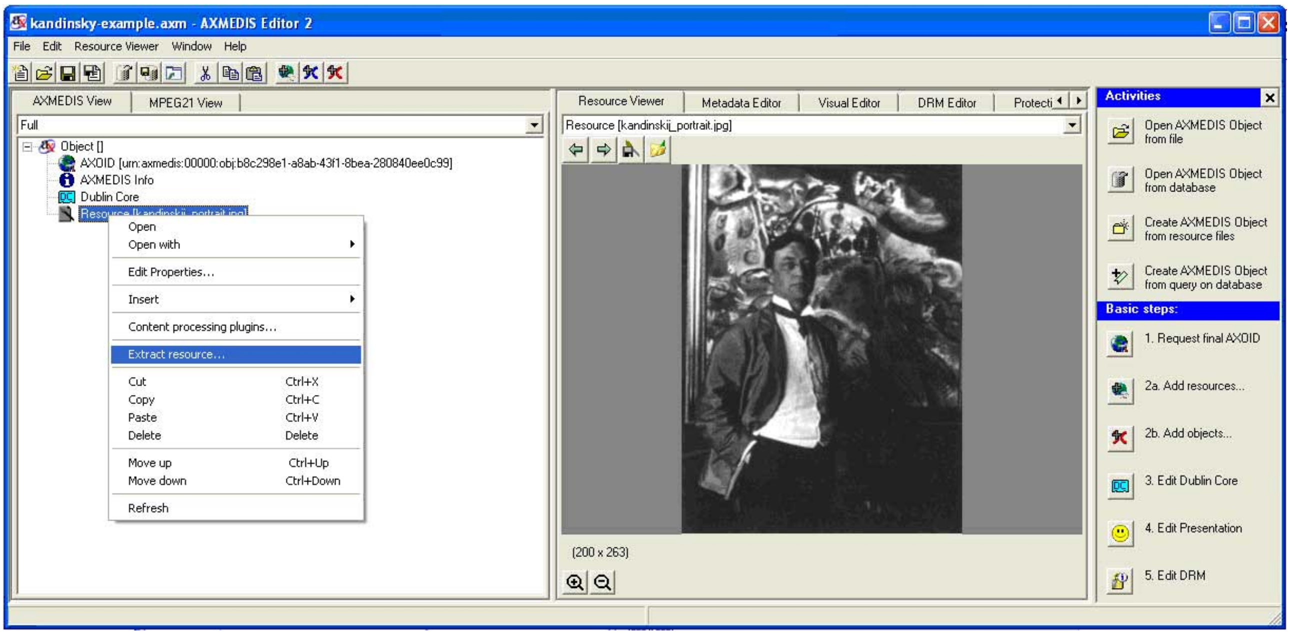
Tipo file: AXMEDIS (*.axm)

□ Apri in sola lettura

2.3.11 Extract an embedded resource

The AXMEDIS Editor permits to extract a resource embedded in an object to be saved as external file.

Select the resource in the tree window and right click on it to open the contextual menu. Select **Extract resource**, to save the file on the disk.



kandinsky-example.axm - AXMEDIS Editor 2

Full

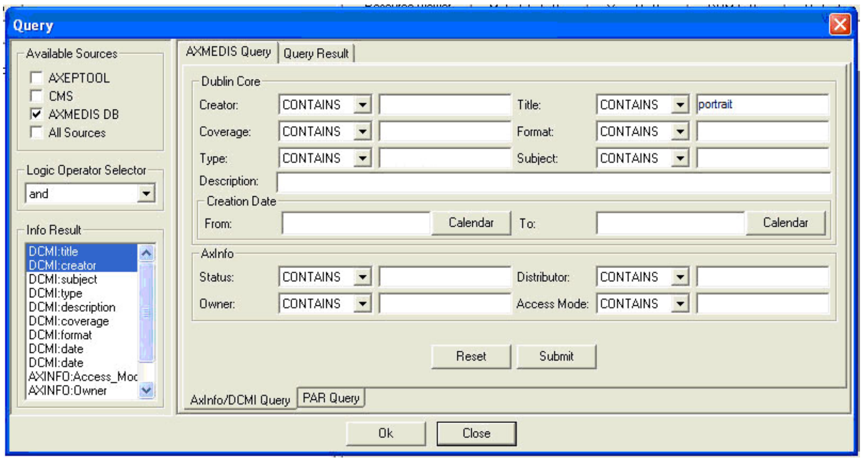
Object []
AXOID [urn:axmedis:00000:obj:b8c298e1-a8ab-43f1-8bea-280840ee0c99]
AXMEDIS Info
Dublin Core
Resource [kandinskij_portrait.jpg]

Resource [kandinskij_portrait.jpg]

(200 x 263)

2.3.12 Modifying an AXMEDIS Object stored on Database

To search for the AXMEDIS object on the Database select the button on the toolbar or using **File/Open from Database…** in the menu, the query dialog is opened and it is searched for an object with the title containing "portrait":



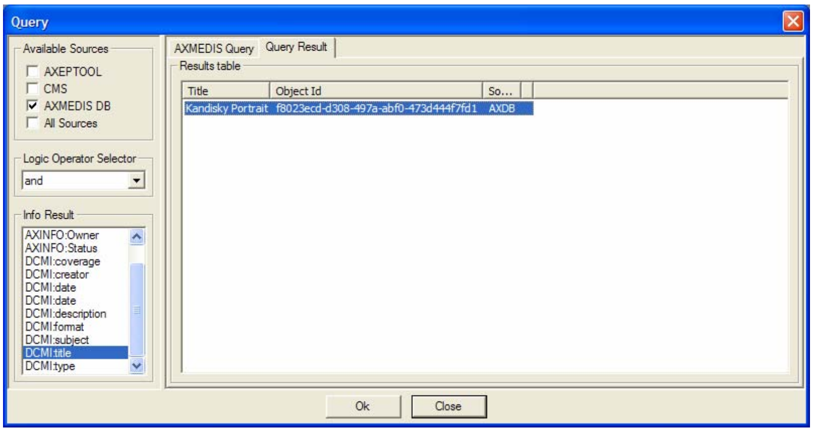
Query

Available Sources
☐ AXEPTOOL
☐ CMS
☑ AXMEDIS DB
☐ All Sources

Logic Operator Selector: and

Title: CONTAINS portrait

Pressing the Submit button, if the authentication procedure is successfully passed, the query is sent to the database and the results are shown:



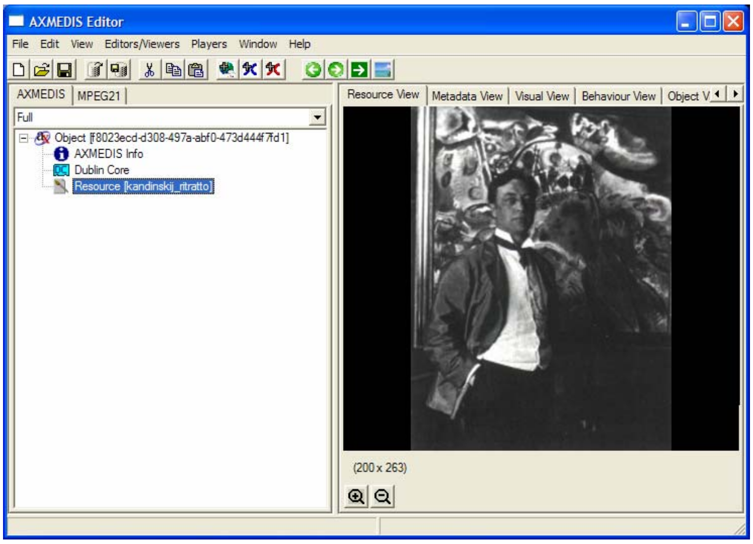
☐ AXEPTOOL
☐ CMS
☑ AXMEDIS DB
☐ All Sources

Logic Operator Selector: and

Info Result:
AXINFO:Owner
AXINFO:Status
DCMI:coverage
DCMI:creator
DCMI:date
DCMI:date
DCMI:description
DCMI:format
DCMI:subject
DCMI:title
DCMI:type

Title	Object Id	So...
Kandisky Portrait	f8023ecd-d308-497a-abf0-473d444f7fd1	AXDB

Pressing OK the object is recovered from the database and opened:

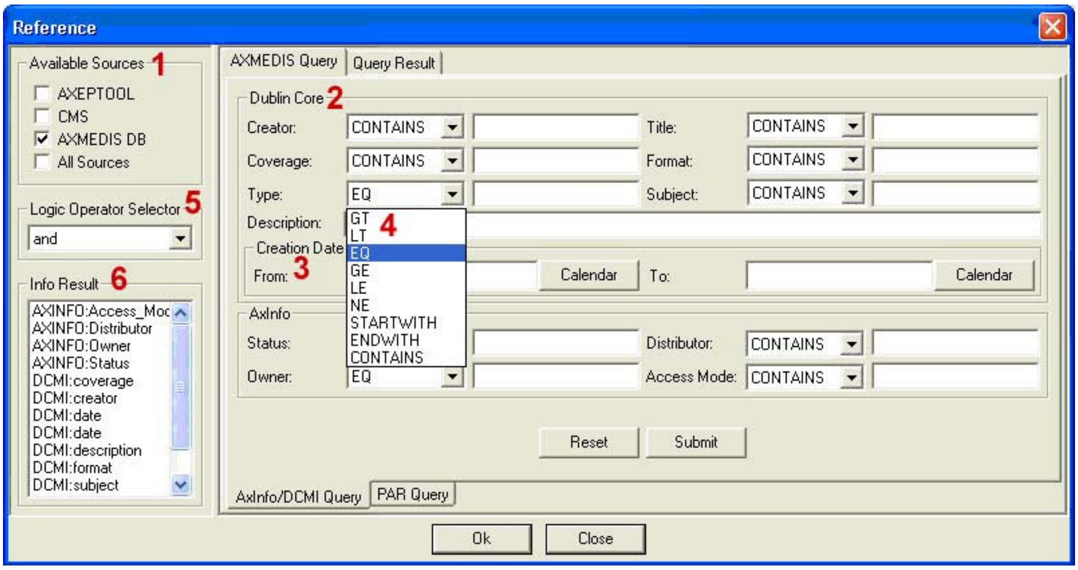


Object [f8023ecd-d308-497a-abf0-473d444f7fd1]
AXMEDIS Info
Dublin Core
Resource [kandinskij_ritratto]

(200 x 263)

2.3.13 The Query dialog

The Query dialog is the window that permits to start a query into the database to search a specific AXMEDIS object using parameters defined by the user.



Available Sources
☐ AXEPTOOL
☐ CMS
☑ AXMEDIS DB
☐ All Sources

Logic Operator Selector: and

Info Result:
AXINFO:Access_Moc
AXINFO:Distributor
AXINFO:Owner
AXINFO:Status
DCMI:coverage
DCMI:creator
DCMI:date
DCMI:date
DCMI:description
DCMI:format
DCMI:subject

Dublin Core
Creator: CONTAINS
Title: CONTAINS
Coverage: CONTAINS
Format: CONTAINS
Type: EQ
Subject: CONTAINS
Description:
GT
LT
EQ
GE
LE
NE
STARTWITH
ENDWITH
CONTAINS
Creation Date
From:
To:

AxInfo
Status:
Distributor: CONTAINS
Owner: EQ
Access Mode: CONTAINS

When the Query dialog is open, the user have to choose the sources where apply the query in the **Available Sources** box (1). The predefined available sources are **AXEPTOOL**, **CMS**, **AXMEDIS DB** and **All** of these.

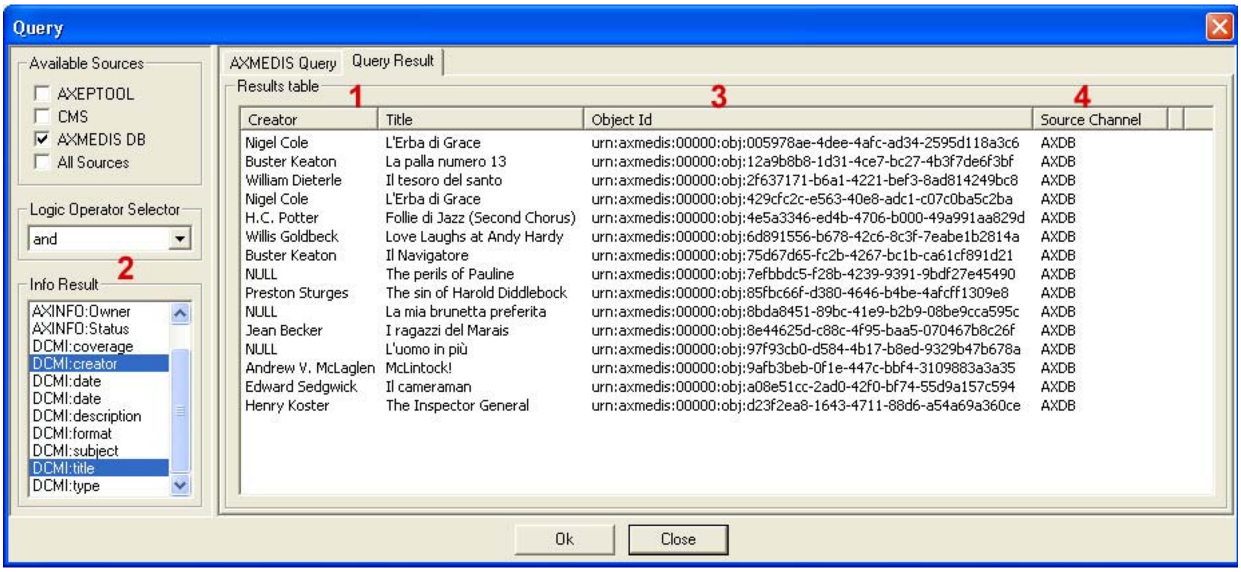
The search criteria supported by the Query dialog are organized into two main groups, (2) search by **Dublin Core** metadata information (with a specific sub-box for the search by creation date) and search by **AxInfo** information (3). Each group, along with its associated set of search criteria, is exposed on the dialog interface. Using this interface, a user enters a search string in the preferred field and chooses the correct criteria using comparison operators associated with that string (4).
The available criteria are:
GT, (>) the searched value is greater than the specified value
LT, (<) the searched value is less than the specified value
EQ, (=) the searched value is equal to the string specified by the user
GE, (>=) the searched value is greater or equal to the searched value
LE, (<=) the searched value is less than or equal to the specified value
NE, (!=) the searched value is not equal to the specified value
STARTWITH, the searched word start with the string specified by the user
ENDWITH, the searched word end with the string specified by the user
CONTAINS, the searched word contains the string specified by the user

The **Logic Operator Selector** box (5) specifies the and/or option to be applied for all the fields specified by the user.

Once all the search criteria have been specified, a user chooses the **Info Results** (6) to be showed in the **Query Result**. It is possible to select more that one Info selecting them pressing the <SHIFT> or the <CTRL> keys.
The information available for the results are divided in two groups, the **AXINFO** and the Dublin Core Metadata Information (prefix **DCMI**).

The Reset button deletes all the inserted information. The Submit button starts the query. After the pressing of the Submit button, it is necessary to insert the Username and the Password in the **Login on Query Support** dialog to authorize the query.

The results of the query are showed in the Query Result tab.



Creator	Title	Object Id	Source Channel
Nigel Cole	L'Erba di Grace	urn:axmedis:00000:obj:005978ae-4dee-4afc-ad34-2595d118a3c6	AXDB
Buster Keaton	La palla numero 13	urn:axmedis:00000:obj:12a9b8b8-1d31-4ce7-bc27-4b3f7de6f3bf	AXDB
William Dieterle	Il tesoro del santo	urn:axmedis:00000:obj:2f637171-b6a1-4221-bef3-8ad814249bc8	AXDB
Nigel Cole	L'Erba di Grace	urn:axmedis:00000:obj:429cfc2c-e563-40e8-adc1-c07c0ba5c2ba	AXDB
H.C. Potter	Follie di Jazz (Second Chorus)	urn:axmedis:00000:obj:4e5a3346-ed4b-4706-b000-49a991aa829d	AXDB
Willis Goldbeck	Love Laughs at Andy Hardy	urn:axmedis:00000:obj:6d891556-b678-42c6-8c3f-7eabe1b2814a	AXDB
Buster Keaton	Il Navigatore	urn:axmedis:00000:obj:75d67d65-fc2b-4267-bc1b-ca61cf891d21	AXDB
NULL	The perils of Pauline	urn:axmedis:00000:obj:7efbbdc5-f28b-4239-9391-9bdf27e45490	AXDB
Preston Sturges	The sin of Harold Diddlebock	urn:axmedis:00000:obj:85fbc66f-d380-4646-b4be-4afcff1309e8	AXDB
NULL	La mia brunetta preferita	urn:axmedis:00000:obj:8bda8451-89bc-41e9-b2b9-08be9cca595c	AXDB
Jean Becker	I ragazzi del Marais	urn:axmedis:00000:obj:8e44625d-c88c-4f95-baa5-070467b8c26f	AXDB
NULL	L'uomo in più	urn:axmedis:00000:obj:97f93cb0-d584-4b17-b8ed-9329b47b678a	AXDB
Andrew V. McLaglen	McLintock!	urn:axmedis:00000:obj:9afb3beb-0f1e-447c-bbf4-3109883a3a35	AXDB
Edward Sedgwick	Il cameraman	urn:axmedis:00000:obj:a08e51cc-2ad0-42f0-bf74-55d9a157c594	AXDB
Henry Koster	The Inspector General	urn:axmedis:00000:obj:d23f2ea8-1643-4711-88d6-a54a69a360ce	AXDB

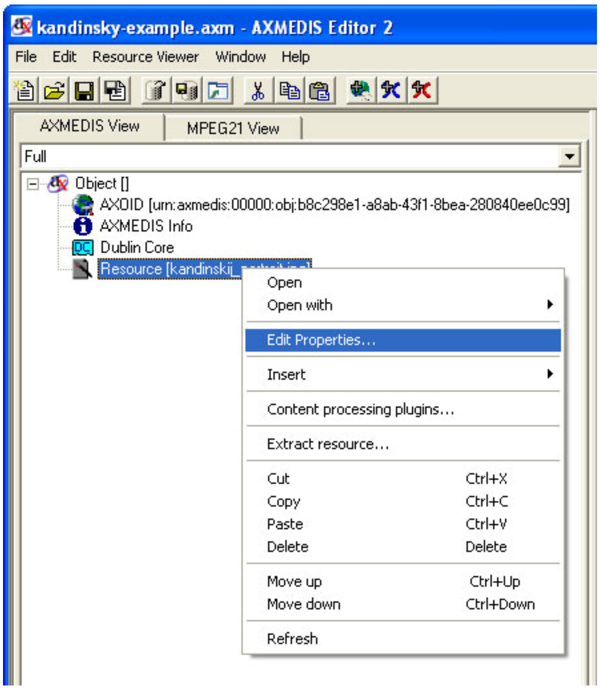
The information showed in the Query Result tab (1) are those selected in the Info Result box (2) followed by the UNR with the object ID (3) and the Source Channel (4).
In the previous figure the results table shows the AXMEDIS objects with Creator and Title fields as selected in the Info Results tab. The string "NULL" indicates that the info is not present in the object.

To load an object into the AXMEDIS Editor it is necessary to select it in the list and to press the OK button. It is also possible to select more than one object pressing the <SHIFT> or the <CTRL> keys and selecting all the needed objects.

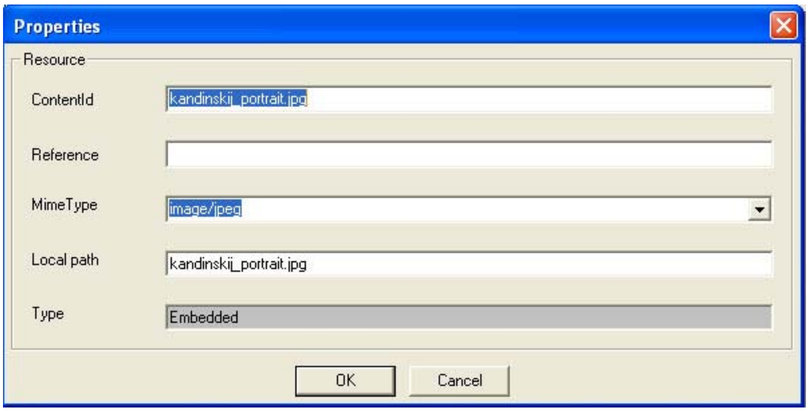
After the OK pressing again it is necessary to insert the Username and the Password to Login.

2.3.14 The resource property dialog

The Properties of a resource (and for any other element) can be edited right clicking on the element and selecting **Properties…** from the contextual menu:


kandinsky-example.axm - AXMEDIS Editor 2
File Edit Resource Viewer Window Help
AXMEDIS View
MPEG21 View
Full
Object []
AXOID [urn:axmedis:00000:obj:b8c298e1-a8ab-43f1-8bea-280840ee0c99]
AXMEDIS Info
Dublin Core
Resource [kandinskij_portrait.jpg]
Open
Open with
Edit Properties…
Insert
Content processing plugins…
Extract resource…
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Delete Delete
Move up Ctrl+Up
Move down Ctrl+Down
Refresh

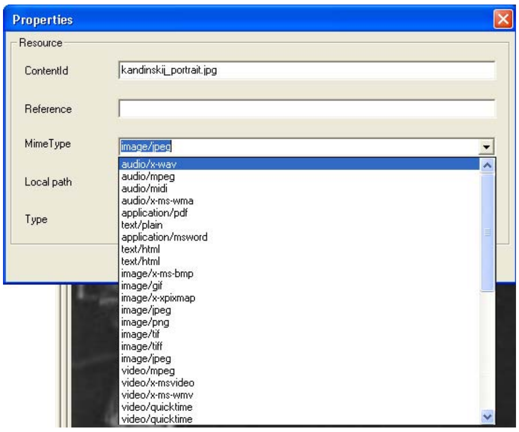
And the following dialog is opened and the properties can be modified:



ContentId: kandinskij_portrait.jpg
Reference:
MimeType: image/jpeg
Local path: kandinskij_portrait.jpg
Type: Embedded

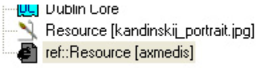
The **ContentId** is the name identifying the resource that appears in the Tree window closed into square brackets. As default the **ContentId** value is the same as the filename.
The **Reference** field contains (if present) the URL address of an external resource

The **MimeType** field identifies the file type and the format
The **Local path** specifies the resource file name



ContentId: kandinskij_portrait.jpg
Reference:
MimeType: image/jpeg

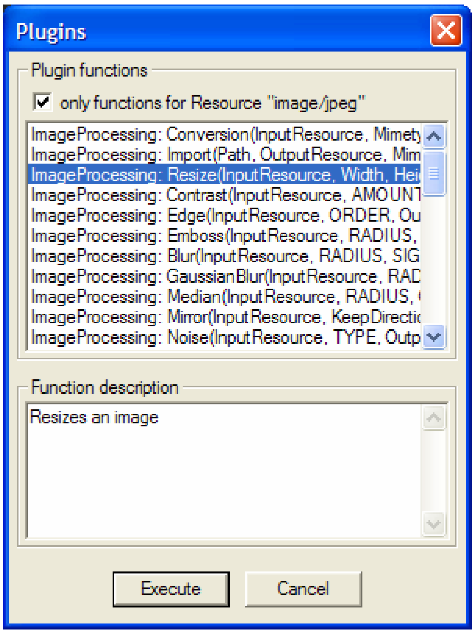
Finally the **Type** field specifies if a resource is embedded in the AXMEDIS object or if it is an external resource not physically present into the object.
If a resource is not embedded in the AXMEDIS object, it is represented in the Tree windows with the prefix “ref::”. In the following figure, the [AXMEDIS] external resource is a link to an external web site.



Dublin Core
Resource [kandinskij_portrait.jpg]
ref::Resource [axmedis]

2.3.15 The Content processing plug-ins

On a Resource the contextual menu enables to use content processing plug-ins. Selecting the **Content processing plug-ins…** menu option the plug-ins function list is provided with the list of applicable plug-ins functions (based on resource mimetype):

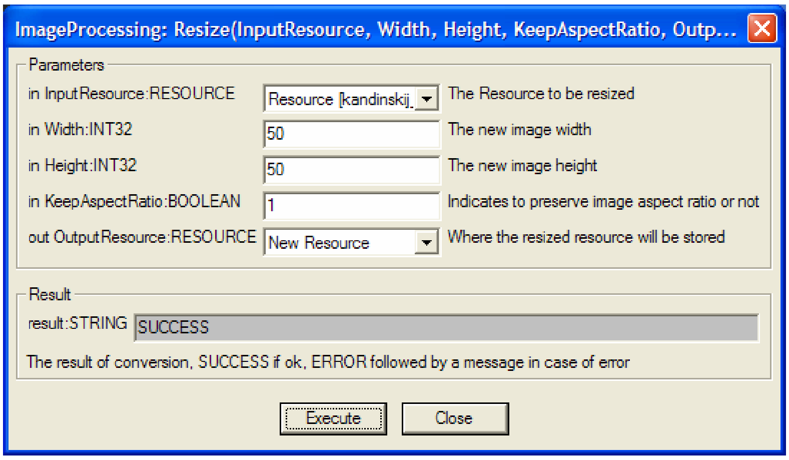


☑ only functions for Resource "image/jpeg"

Function description: Resizes an image

Plugins
Plugin functions
ImageProcessing: Conversion(InputResource, Mimety
ImageProcessing: Import(Path, OutputResource, Mim
ImageProcessing: Resize(InputResource, Width, Hei
ImageProcessing: Contrast(InputResource, AMOUNT
ImageProcessing: Edge(InputResource, ORDER, Ou
ImageProcessing: Emboss(InputResource, RADIUS,
ImageProcessing: Blur(InputResource, RADIUS, SIG
ImageProcessing: GaussianBlur(InputResource, RAD
ImageProcessing: Median(InputResource, RADIUS,
ImageProcessing: Mirror(InputResource, KeepDirectio
ImageProcessing: Noise(InputResource, TYPE, Outp
Execute
Cancel

Selecting a plug-in function and pressing the **Execute** button a dialog is presented allowing to provide the arguments for the function, clicking on the **Execute** button the plug-in function is executed:



ImageProcessing: Resize(InputResource, Width, Height, KeepAspectRatio, Outp...

Parameters

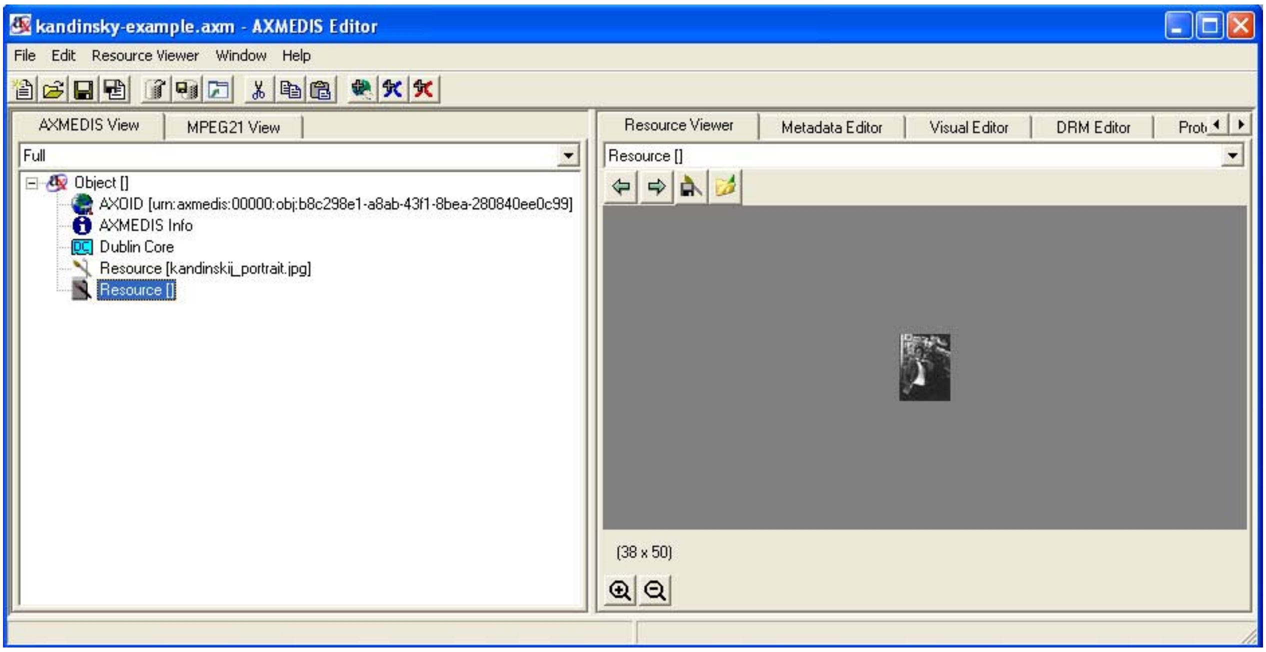
in InputResource:RESOURCE	Resource [kandinskij_	The Resource to be resized
in Width:INT32	50	The new image width
in Height:INT32	50	The new image height
in KeepAspectRatio:BOOLEAN	1	Indicates to preserve image aspect ratio or not
out OutputResource:RESOURCE	New Resource	Where the resized resource will be stored

Result

result:STRING SUCCESS

The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

In this example we will resize an image using the Resize function in the ImageProcessing plug-in. The result is the following:



kandinsky-example.axm - AXMEDIS Editor

Object []
AXOID [urn:axmedis:00000:obj:b8c298e1-a8ab-43f1-8bea-280840ee0c99]
AXMEDIS Info
Dublin Core
Resource [kandinskij_portrait.jpg]
Resource []

Resource []

(38 x 50)

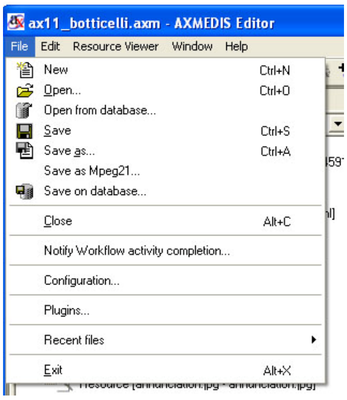
2.4 The AXMEDIS Editor menus

2.4.1 The File menu

The File menu contains a set of functions related to the edited (or to be loaded) object.
They are:

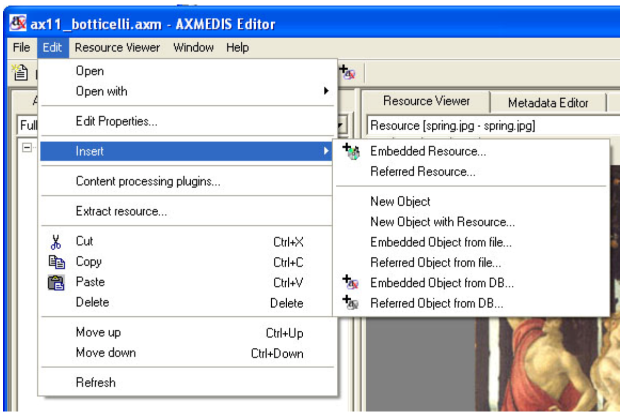
- **New**, to create a new AXMEDIS object
- **Open**, to open an AXMEDIS object loading it from the disk
- **Open from database**, to open an object searching it from the database
- **Save**, to overwrite the object
- **Save as…**, to save an object specifying the filename
- **Save as MPEG21**, to save the object as *.mp21 file
- **Upload on Database**, to upload an object into the database
- **Close**, to close the current opened object
- **Notify Workflow activity completion…**, to be used when the AXMEDIS Editor has been launched from the Workflow Server to notify that the activity to be done has been completed;
- **Configuration**, shows a number of dialogs to set the correct configuration of the Editor
- **Plugins…**, shows a box with the list of available plug-ins
- **Recent files**, shows a list of the recent opened objects

- **Exit**, to close the AXMEDIS Editor



2.4.2 Edit menu

The **Edit** menu contains a set of functionalities available for the resources in the object tree.



When a resource is selected in the tree, using the **Edit** menu is possible to select one of the following features:

- **Open**, open or play the resource in the Resource View panel
- **Open with**, play or view the selected resource selecting one of the viewers listed in the menu
- **Edit Properties**, view and modify the properties of the resource
- **Insert**, opens a menu with:
  - **Embedded Resource…,** add an embedded resource in the object
  - **Referred Resource…,** add an external resource
  - **New Object**, insert a new empty object in the tree
  - **New Object with Resource…,** insert an object in the tree selecting it from the disk
  - **Embedded Object from file…,** insert and embedded object from file
  - **Referred Object from file…,** insert a reference to an object choosing it from as file in the disk
  - **Embedded Object from DB…,** insert an embedded object from the database
  - **Referred Object from DB…,** insert a reference to an object choosing it from the database
- **Content processing plugins…,** opens a new window with the list of available plug-ins for the selected resource.
- **Extract resource**, to save an embedded resource in the disk as file
- **Cut, Copy, Paste** and **Delete** options
- **Move up, Move Down** to change the resource position in the tree
- **Refresh**, to force the tree update

2.4.3 The Resource Viewer menu

The **Resource View** menu shows a set of functionalities available according with the resource showed in the **Resource View** window. The list of functionalities is the same showed with a right click in the **Resource View** window

2.5 AXMEDIS Resource Viewer

2.5.1 Main functionalities

The Resource Viewer allows viewing and in some cases also editing the resources in the AXMEDIS Object, it is composed of:

- Image Viewer
- Audio Player
- Video Player
- Document Viewer
- SMIL Player
- MPEG4 Player

The functionalities provided are explained in the following sections.

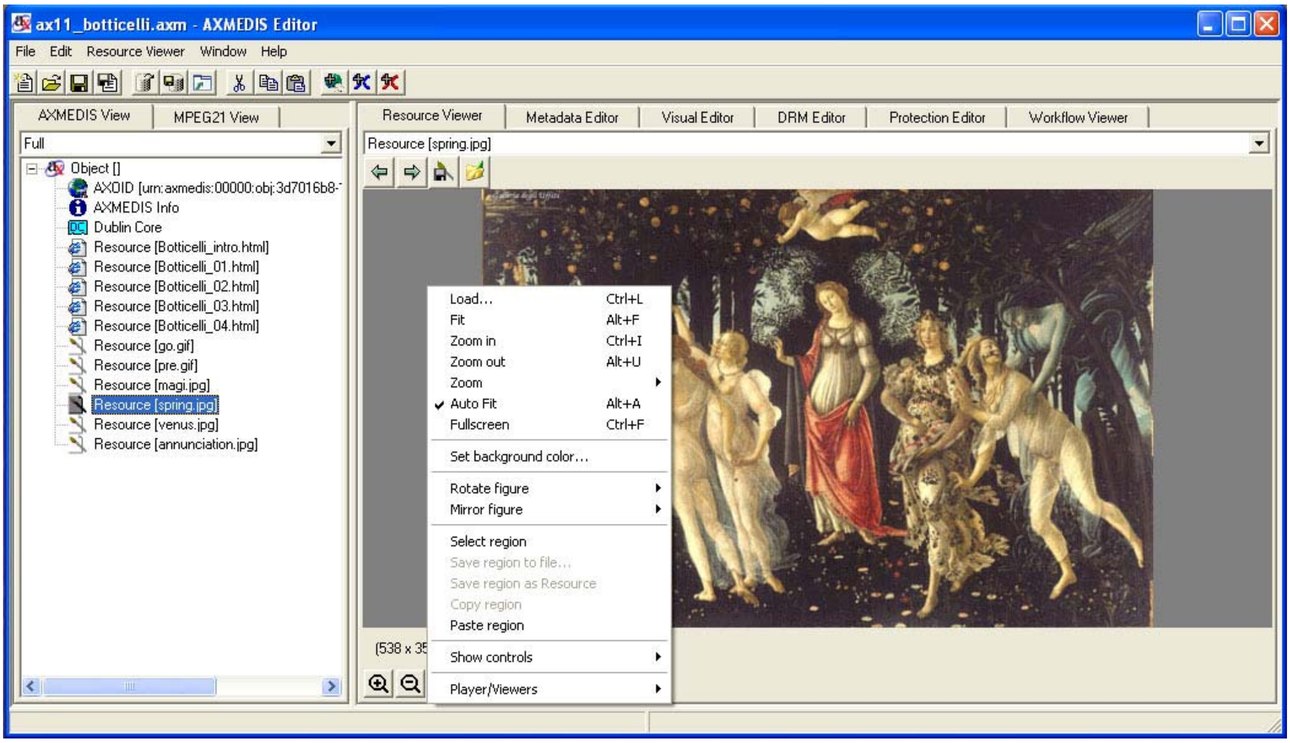
2.5.2 Relationship with other tools

The Resource viewer is integrated as a part of the AXMEDIS Editor.

2.5.3 Image Viewer - Detailed description of the functionalities and Screenshots

The Image Viewer is the part of the AXMEDIS Editor visualizing the images embedded as resources in an AXMEDIS object.

Double clicking on an image resource opens the Image Viewer. Right clicking on the image opens the contextual menu.



Features in the contextual menu of the image player are:

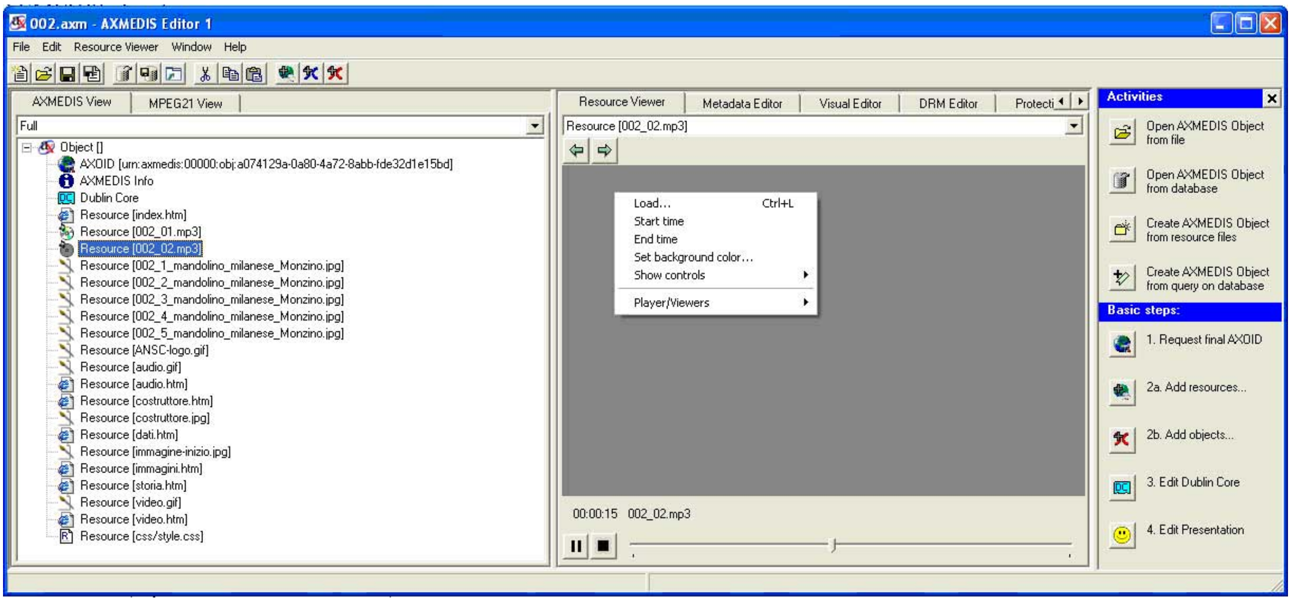
- **Load,** opens an external resource;
- **Fit,** fits the rendered image to the windows size;
- **Zoom In**, enlarges the image size view;
- **Zoom out**, reduces the image size view;
- **Zoom**, from 1% to 3000% to reduce or enlarge the size of the image by the given percent;
- **Autofit,** fits the rendered image to the windows size automatically

- **Fullscreen**, to zoom the image to fit the size of the screen. To return to the normal view size, right click on the image and deselect the “Fullscreen” option in the contextual menu;
- **Set background colour**, changes the colour of the background choosing it using a colour palette
- **Rotate figure**, rotates the image by 90, 180 and 270 degrees
- **Mirror Figure**, creates a mirror image reflecting in the horizontal or in the vertical direction
- **Select region**, permits to select a portion of the image
- **Save region to file**, to save the selected region on dick
- **Save region as Resource**, to save the selected region to be copied as new resource in the object tree
- **Copy region**, to copy the selected region in the clipboard
- **Paste region**, to paste the selected region
- **Show controls**, hides or shows additional information and functions below the image, such as
  - the “Status” with the name and the size of the image;
  - the “Zoom buttons”;
- **Players viewers**, opens a different player.

2.5.4 Audio Player - Detailed description of the functionalities and Screenshots

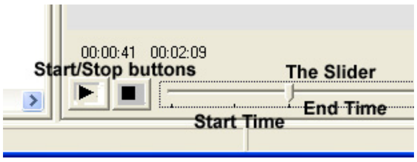
The Audio Player is the part of the AXMEDIS Editor playing the audio resources embedded in an AXMEDIS object

Double clicking on an audio resource opens the Image Viewer. Right clicking on the audio player opens the contextual menu.



Features in the contextual menu of the audio player are:

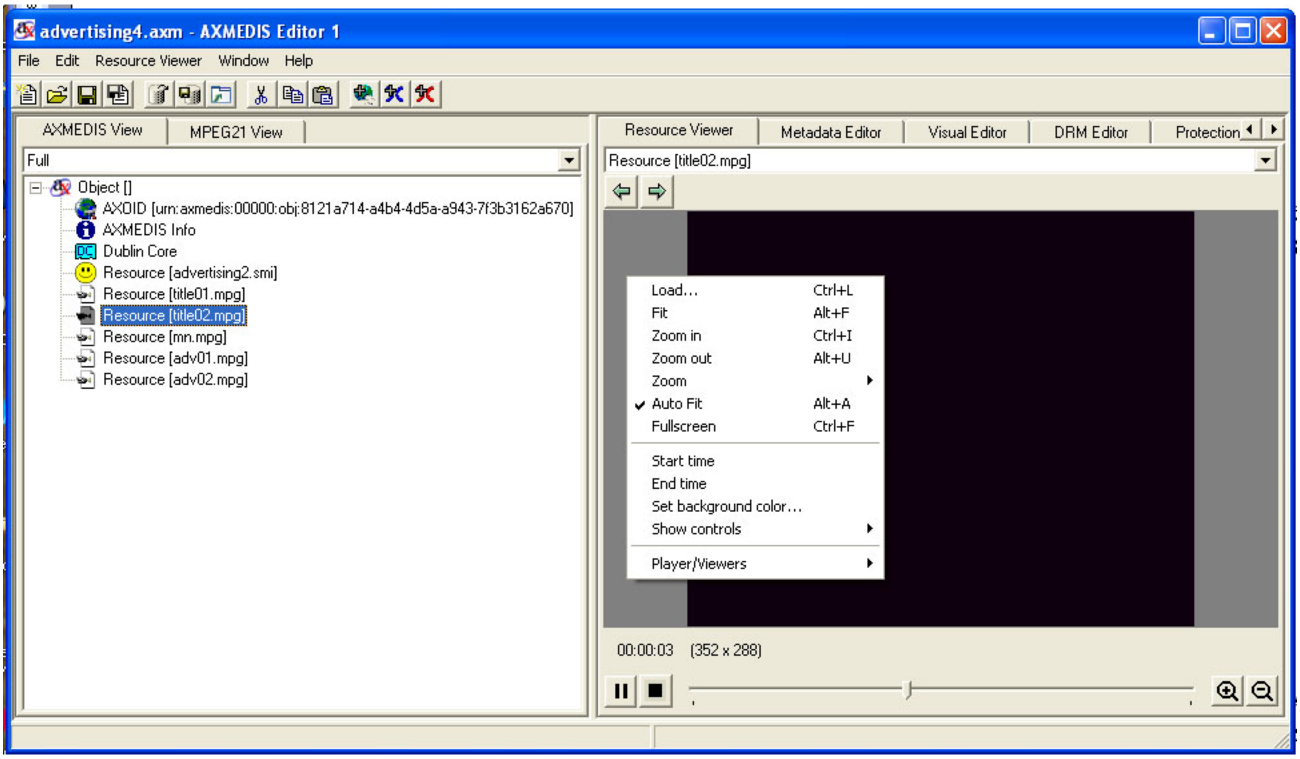
- **Load,** opens an external resource;
- **Start Time,** sets the point to start the audio playing
- **End Time**, sets the point to stop the audio playing
- **Set background colour**, changes the colour of the background choosing it using a colour palette
- **Show controls**, hides or shows additional information and functions, such as
  - the “Status” with the name of the file and the total duration,
  - the Current Time,
  - the Play/Stop buttons
  - the Slider;
  - the History button to go forward or back in the history of the showed resources
- **Players viewers**, opens a different player.



2.5.5 Video Player - Detailed description of the functionalities and Screenshots

The Video Player is the part of the AXMEDIS Editor playing the videos embedded as resources in an AXMEDIS object

Double clicking on a video resource opens the Video Player. Right clicking in the video player opens the contextual menu.



Features in the contextual menu of the Video Player are:

- **Load,** opens an external resource;
- **Fit,** fits the rendered video to the windows size;
- **Zoom In**, enlarges the video size view;
- **Zoom out**, reduces the video size view;
- **Zoom**, from 1% to 3000% to reduce or enlarge the size of the video by the given percent;
- **Fullscreen**, to zoom the video to fit the size of the screen. To return to the normal view size, right click on the image and deselect the “Fullscreen” option in the contextual menu;
- **Start Time,** sets the point to start the video playing
- **End Time**, sets the point to stop the video playing
- **Set background colour**, changes the colour of the background choosing it using a colour palette
- **Show controls**, hides or shows additional information and functions, such as
  - the “Status” with the name of the file,
  - the Current Time,
  - the Play/Stop buttons
  - the Slider;
  - the Zoom buttons
  - the History button to go forward or back in the history of the showed resources
- **Players viewers**, opens a different player.

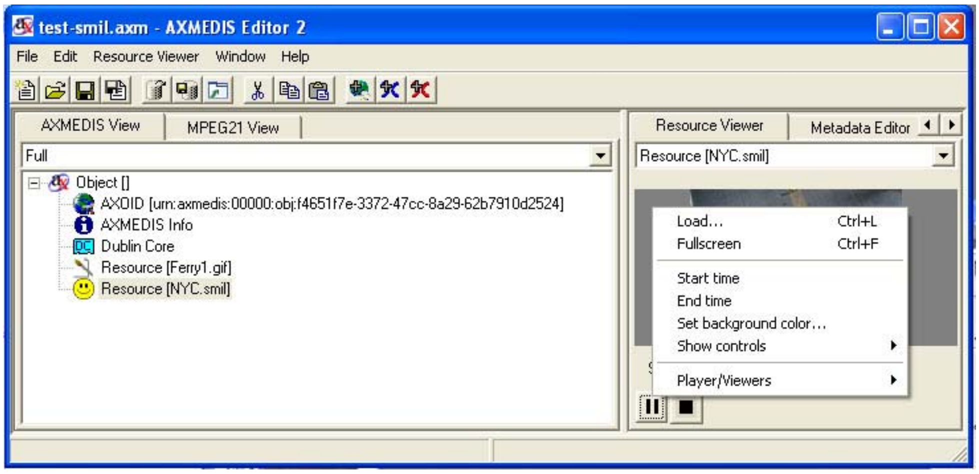
2.5.6 Document Viewer - Detailed description of the functionalities and Screenshots

The Document Viewer is the part of the AXMEDIS Editor visualizing the documents embedded as resources in an AXMEDIS object
Double clicking on a document resource (typically an html, pdf, .doc, .rft, or .txt resource) opens the corresponding Document Player according to the document type.

Particularly the html viewer permits to view images or play resources linked into the html code and stored as single resources into the same AXMEDIS object.

2.5.7 SMIL Player - Detailed description of the functionalities and Screenshots

The SMIL Player is the part of the AXMEDIS Editor visualizing the SMIL resources embedded in an AXMEDIS object
Double clicking on a SMIL resource in the tree opens the SMIL Player. Right clicking in the SMIL Player opens the contextual menu.



Features in the contextual menu of the SMIL Player are:

- **Load,** opens an external resource;
- **Fullscreen**, to view the SMIL resource in fullscreen. To return to the normal view, right click on the image and deselect the “Fullscreen” option in the contextual menu;
- **Start Time,** sets the point to start the SMIL resource playing
- **End Time**, sets the point to stop the SMIL resource playing
- **Set background colour**, changes the colour of the background choosing it using a colour palette
- **Show controls**, hides or shows additional information and functions, such as
  - the “Status” with the name of the file,
  - the Play/Stop buttons
- **Players viewers**, opens a different player.

2.5.8 MPEG4 Player - Detailed description of the functionalities and Screenshots

The MPEG-4 player is a part of the AXMEDIS Editor playing the MPEG-4 resources embedded in an AXMEDIS object.

Functionalities are similar to those of the Video player.

2.6 AXMEDIS Metadata Editor

2.6.1 Main functionalities

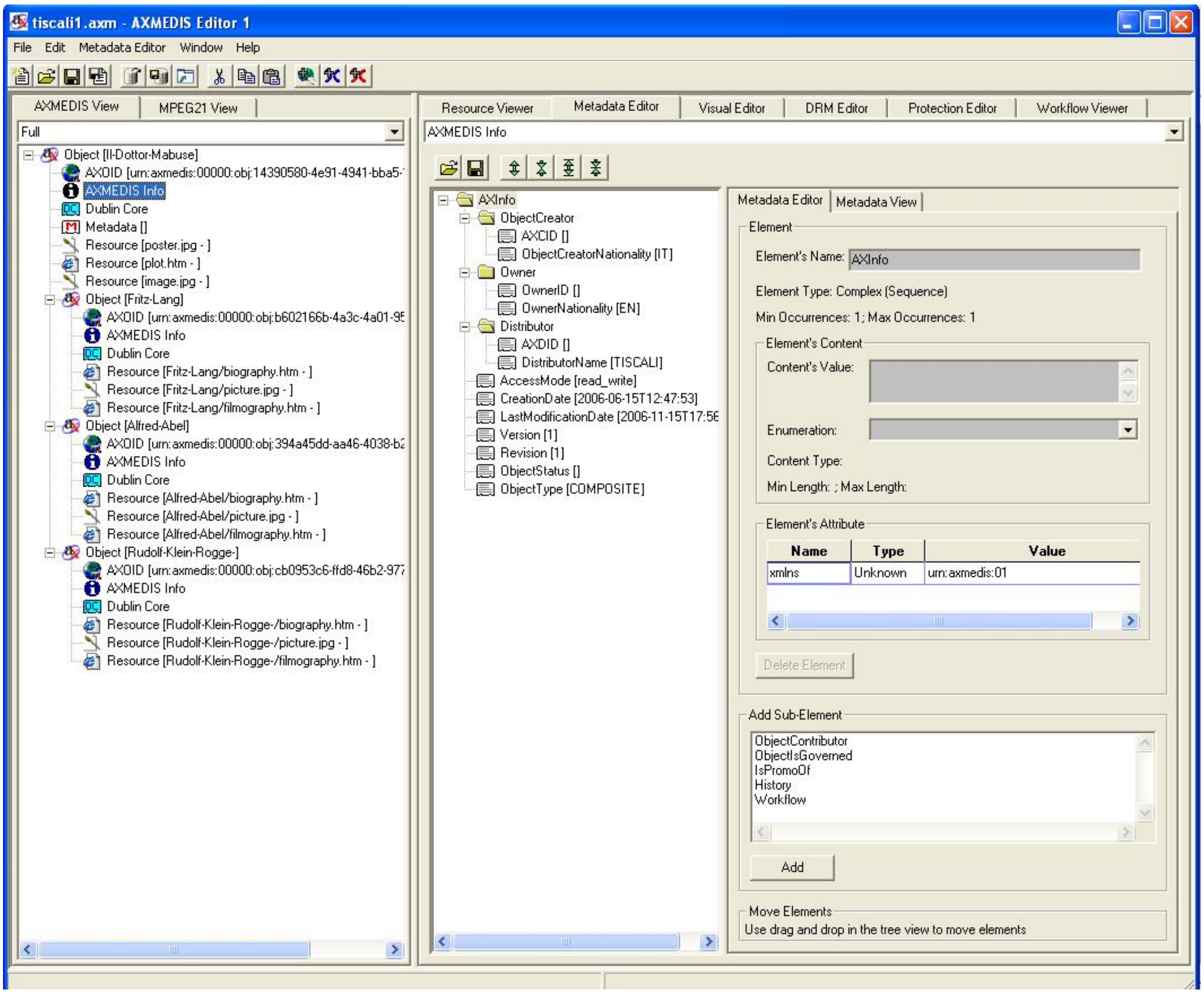
The Metadata Editor allows the user to add, edit, delete and view metadata elements including Dublin Core and AXMEDIS Info (AxInfo) using a simple HCI interface with pop up menus and editing boxes.

2.6.2 Relationship with other tools

The Metadata Editor is integrated as a part of the AXMEDIS Editor.

2.6.3 Detailed description of the functionalities and Screenshots

The Metadata Editor can be opened by selecting "Metadata Editor" tab or by double clicking on a metadata (e.g. AXMEDIS Info or Dublin Core) in the Hierarchical View on the left side of the main AXMEDIS Editor. The Metadata Editor consists of two areas: one area for a Tree View displaying the metadata elements and one area for the editor and viewer tabs as illustrated in Figure 1.



Full

- Object [Il-Dottor-Mabuse]
  - AXOID [urn:axmedis:00000:obj:14390580-4e91-4941-bba5-
  - AXMEDIS Info
  - Dublin Core
  - Metadata []
  - Resource [poster.jpg -]
  - Resource [plot.htm -]
  - Resource [image.jpg -]
  - Object [Fritz-Lang]
    - AXOID [urn:axmedis:00000:obj:b602166b-4a3c-4a01-95
    - AXMEDIS Info
    - Dublin Core
    - Resource [Fritz-Lang/biography.htm -]
    - Resource [Fritz-Lang/picture.jpg -]
    - Resource [Fritz-Lang/filmography.htm -]
  - Object [Alfred-Abel]
    - AXOID [urn:axmedis:00000:obj:394a45dd-aa46-4038-b2
    - AXMEDIS Info
    - Dublin Core
    - Resource [Alfred-Abel/biography.htm -]
    - Resource [Alfred-Abel/picture.jpg -]
    - Resource [Alfred-Abel/filmography.htm -]
  - Object [Rudolf-Klein-Rogge-]
    - AXOID [urn:axmedis:00000:obj:cb0953c6-ffd8-46b2-977
    - AXMEDIS Info
    - Dublin Core
    - Resource [Rudolf-Klein-Rogge-/biography.htm -]
    - Resource [Rudolf-Klein-Rogge-/picture.jpg -]
    - Resource [Rudolf-Klein-Rogge-/filmography.htm -]

AXMEDIS Info

- AXInfo
  - ObjectCreator
    - AXCID []
    - ObjectCreatorNationality [IT]
  - Owner
    - OwnerID []
    - OwnerNationality [EN]
  - Distributor
    - AXDID []
    - DistributorName [TISCALI]
  - AccessMode [read_write]
  - CreationDate [2006-06-15T12:47:53]
  - LastModificationDate [2006-11-15T17:5E
  - Version [1]
  - Revision [1]
  - ObjectStatus []
  - ObjectType [COMPOSITE]

Element

Element's Name: AXInfo

Element Type: Complex (Sequence)

Min Occurrences: 1; Max Occurrences: 1

Element's Content

Content's Value:

Enumeration:

Content Type:

Min Length: ; Max Length:

Element's Attribute

Name	Type	Value
xmlns	Unknown	urn:axmedis:01

Add Sub-Element

ObjectContributor
ObjectIsGoverned
IsPromoOf
History
Workflow

Move Elements

Use drag and drop in the tree view to move elements

Figure 1

The Editor provides the following functionalities:

- Adding child metadata elements to a Metadata element
- Inserting metadata elements
- Deleting Metadata elements
- Editing Metadata elements

2.6.3.1 Adding Metadata Elements

Adding metadata elements to the metadata is achieved by right clicking on the element the user wishes to add a child to. A popup menu appears and the user can navigate to the “Add New Child Element to …” to see a list of valid child elements from which the user can select. These elements are derived from the metadata’s associated schema.

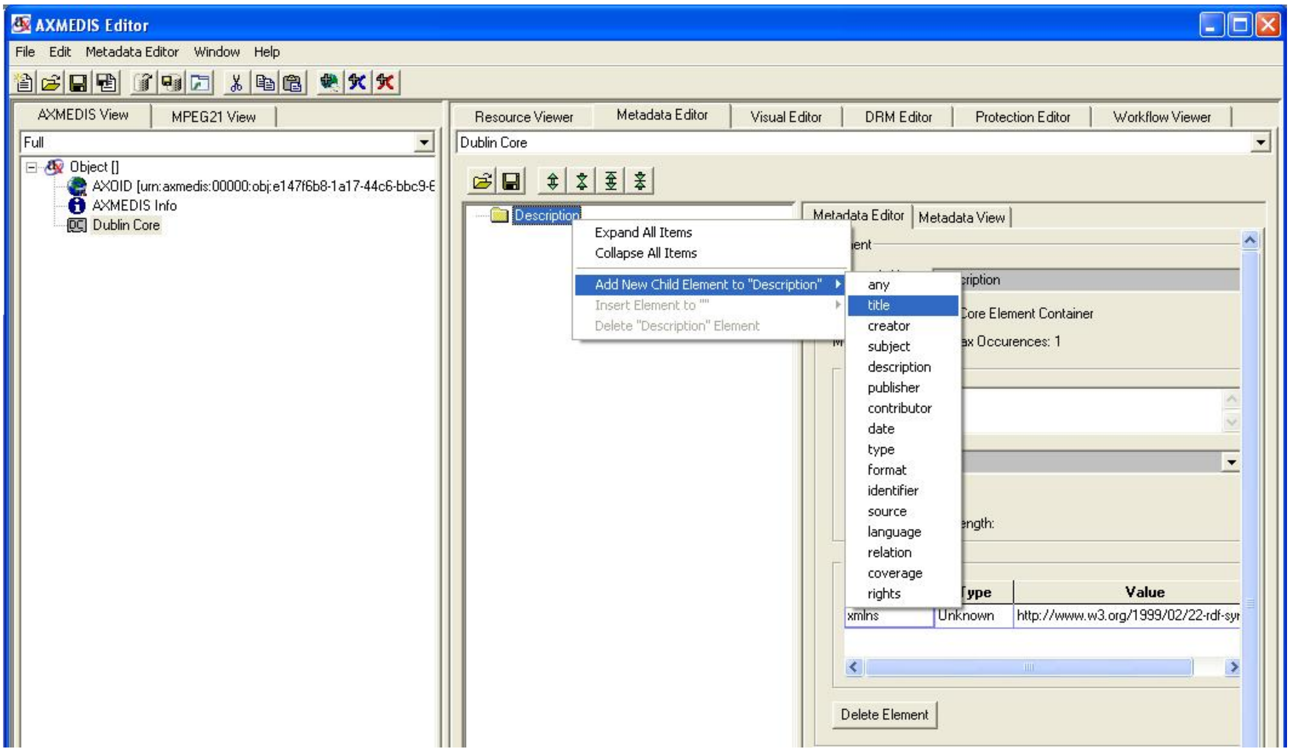


Figure 2

Another method for adding a child element is to use the Add Sub-Element list box in the Metadata Editor panel highlighted in Figure 3.

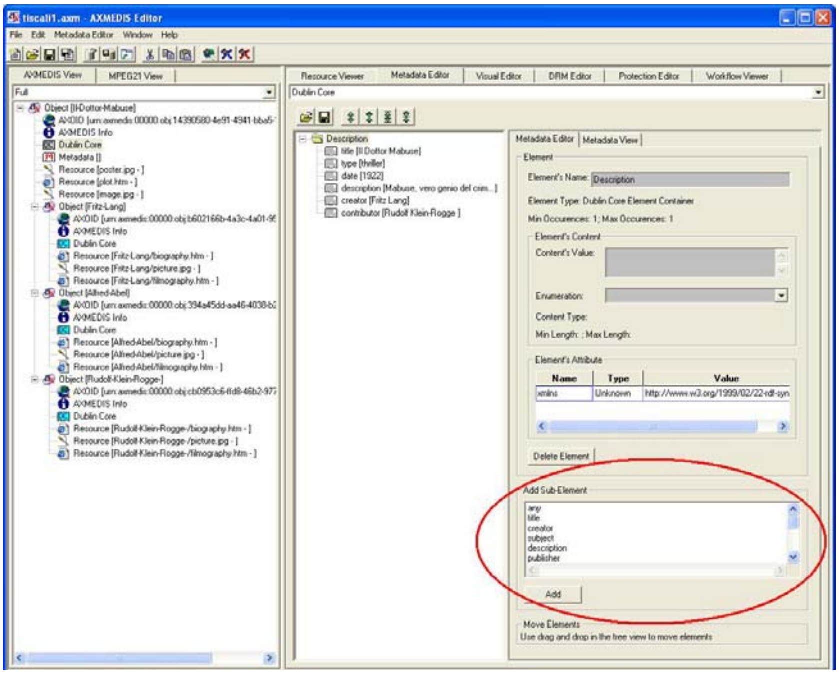
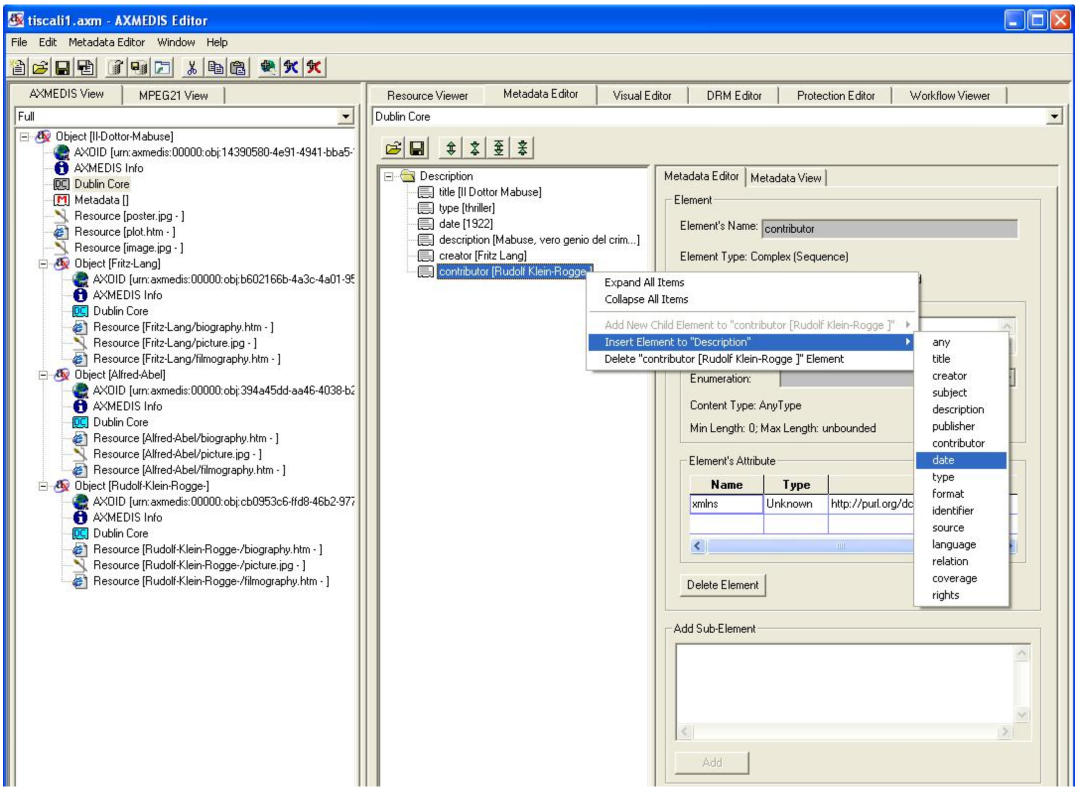


Figure 3

2.6.3.2 Inserting Metadata Elements

To insert elements into the metadata is similar to the Adding functionality. To insert elements, the user right clicks on an element and navigates through the popup menu to “Insert Element to … “ as shown in Figure 4. The new element will be inserted above the selected element.



Element's Name: contributor

Element Type: Complex (Sequence)

Content Type: AnyType

Min Length: 0; Max Length: unbounded

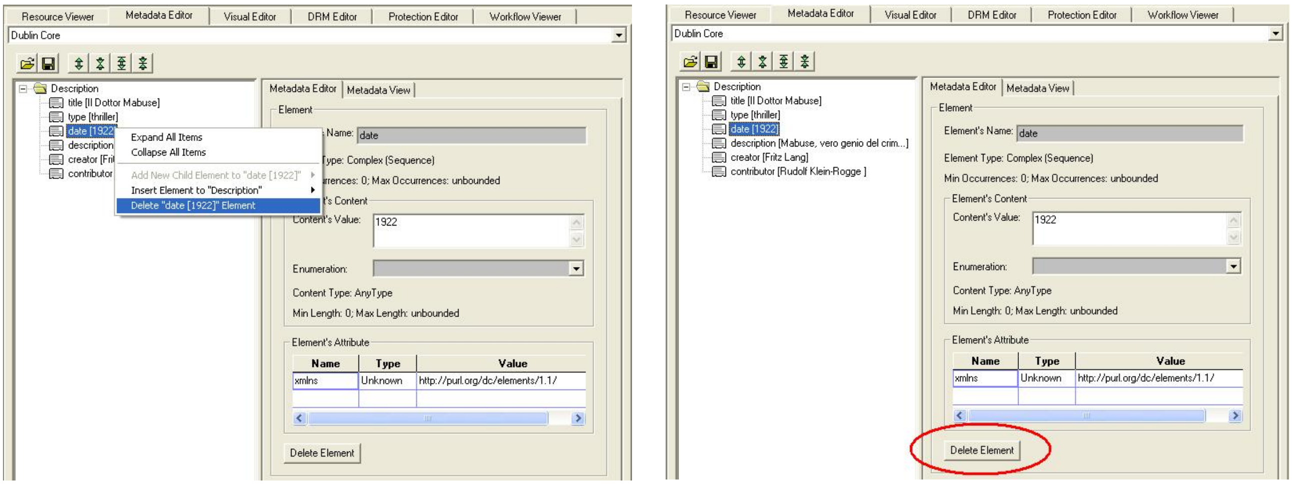
Name	Type	Value
xmlns	Unknown	http://purl.org/dc

tiscali1.axm - AXMEDIS Editor
File
Edit
Metadata Editor
Window
Help
AXMEDIS View
MPEG21 View
Full
Object [Il-Dottor-Mabuse]
AXOID [urn:axmedis:00000:obj:14390580-4e91-4941-bba5-
AXMEDIS Info
Dublin Core
Metadata []
Resource [poster.jpg -]
Resource [plot.htm -]
Resource [image.jpg -]
Object [Fritz-Lang]
AXOID [urn:axmedis:00000:obj:b602166b-4a3c-4a01-95
AXMEDIS Info
Dublin Core
Resource [Fritz-Lang/biography.htm -]
Resource [Fritz-Lang/picture.jpg -]
Resource [Fritz-Lang/filmography.htm -]
Object [Alfred-Abel]
AXOID [urn:axmedis:00000:obj:394a45dd-aa46-4038-b2
AXMEDIS Info
Dublin Core
Resource [Alfred-Abel/biography.htm -]
Resource [Alfred-Abel/picture.jpg -]
Resource [Alfred-Abel/filmography.htm -]
Object [Rudolf-Klein-Rogge-]
AXOID [urn:axmedis:00000:obj:cb0953c6-ffd8-46b2-977
AXMEDIS Info
Dublin Core
Resource [Rudolf-Klein-Rogge-/biography.htm -]
Resource [Rudolf-Klein-Rogge-/picture.jpg -]
Resource [Rudolf-Klein-Rogge-/filmography.htm -]
Resource Viewer
Metadata Editor
Visual Editor
DRM Editor
Protection Editor
Workflow Viewer
Dublin Core
Description
title [Il Dottor Mabuse]
type [thriller]
date [1922]
description [Mabuse, vero genio del crim...]
creator [Fritz Lang]
contributor [Rudolf Klein-Rogge]
Expand All Items
Collapse All Items
Add New Child Element to "contributor [Rudolf Klein-Rogge]"
Insert Element to "Description"
Delete "contributor [Rudolf Klein-Rogge]" Element
any
title
creator
subject
description
publisher
contributor
date
type
format
identifier
source
language
relation
coverage
rights
Metadata Editor
Metadata View
Element
Element's Name:
Element Type:
Enumeration:
Element's Attribute
Delete Element
Add Sub-Element
Add

Figure 4

2.6.3.3 Deleting Metadata Elements

The user right clicks on the element he wishes to delete and then navigates through the popup menu to “Remove … Element” (see the left image in Figure 5). In this example the Dublin Core element “date” is removed. Alternatively, the user can click on the button “Delete Element” as shown in the right image in Figure 5.



Element's Name: date

Element Type: Complex (Sequence)

Min Occurrences: 0; Max Occurrences: unbounded

Content's Value: 1922

Content Type: AnyType

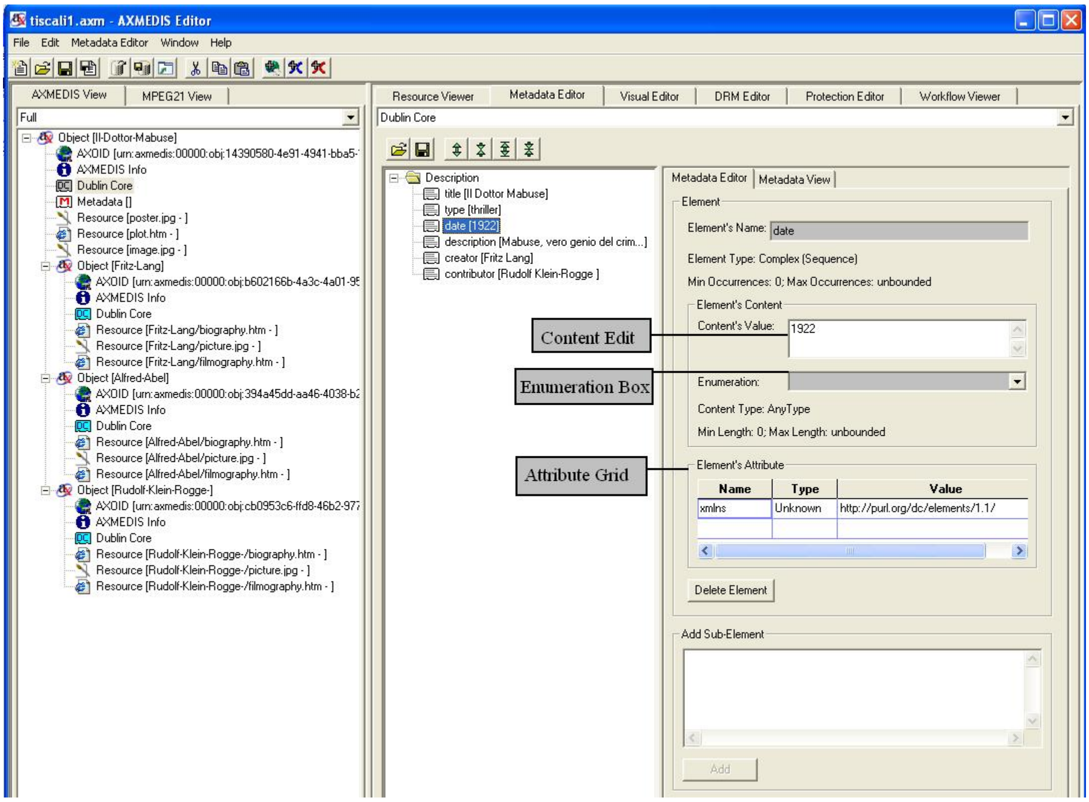
Min Length: 0; Max Length: unbounded

Name	Type	Value
xmlns	Unknown	http://purl.org/dc/elements/1.1/

Figure 5

2.6.3.4 Editing Metadata Elements

Editing metadata elements is achieved by using the “Content’s Value” textbox in the “Element’s Content” frame, the “Enumeration” drop down box and the “Attribute” grid as shown in Figure 6. “Enumeration” is the only choices which the user can select for the element’s content. If the schema does not allow a field to be edited, for example there are no enumerations in Figure 6, the field will be disabled and greyed out.



Full

- Object [Il-Dottor-Mabuse]
  - AXOID [urn:axmedis:00000:obj:14390580-4e91-4941-bba5-
  - AXMEDIS Info
  - Dublin Core
  - Metadata []
  - Resource [poster.jpg -]
  - Resource [plot.htm -]
  - Resource [image.jpg -]
  - Object [Fritz-Lang]
    - AXOID [urn:axmedis:00000:obj:b602166b-4a3c-4a01-95
    - AXMEDIS Info
    - Dublin Core
    - Resource [Fritz-Lang/biography.htm -]
    - Resource [Fritz-Lang/picture.jpg -]
    - Resource [Fritz-Lang/filmography.htm -]
  - Object [Alfred-Abel]
    - AXOID [urn:axmedis:00000:obj:394a45dd-aa46-4038-b2
    - AXMEDIS Info
    - Dublin Core
    - Resource [Alfred-Abel/biography.htm -]
    - Resource [Alfred-Abel/picture.jpg -]
    - Resource [Alfred-Abel/filmography.htm -]
  - Object [Rudolf-Klein-Rogge-]
    - AXOID [urn:axmedis:00000:obj:cb0953c6-ffd8-46b2-977
    - AXMEDIS Info
    - Dublin Core
    - Resource [Rudolf-Klein-Rogge-/biography.htm -]
    - Resource [Rudolf-Klein-Rogge-/picture.jpg -]
    - Resource [Rudolf-Klein-Rogge-/filmography.htm -]

Dublin Core

- Description
  - title [Il Dottor Mabuse]
  - type [thriller]
  - date [1922]
  - description [Mabuse, vero genio del crim...]
  - creator [Fritz Lang]
  - contributor [Rudolf Klein-Rogge]

Element

Element's Name: date

Element Type: Complex (Sequence)

Min Occurrences: 0; Max Occurrences: unbounded

Element's Content

Content's Value: 1922

Enumeration:

Content Type: AnyType

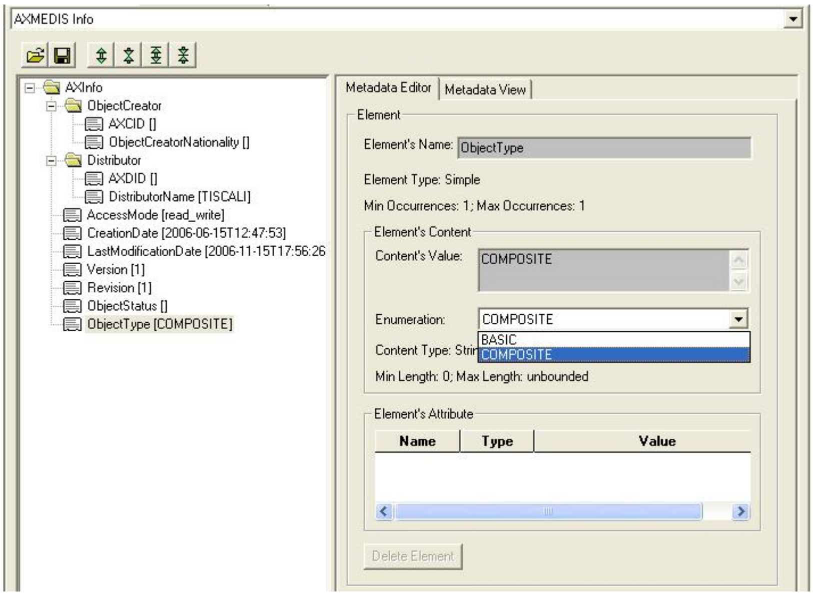
Min Length: 0; Max Length: unbounded

Element's Attribute

Name	Type	Value
xmlns	Unknown	http://purl.org/dc/elements/1.1/

Figure 6

To edit elements with enumeration choices, the user selected the enumeration value they require from the drop down box as shown in Figure 7.



AXMEDIS Info

- AXInfo
  - ObjectCreator
    - AXCID []
    - ObjectCreatorNationality []
  - Distributor
    - AXDID []
    - DistributorName [TISCALI]
  - AccessMode [read_write]
  - CreationDate [2006-06-15T12:47:53]
  - LastModificationDate [2006-11-15T17:56:26
  - Version [1]
  - Revision [1]
  - ObjectStatus []
  - ObjectType [COMPOSITE]

Element

Element's Name: ObjectType

Element Type: Simple

Min Occurrences: 1; Max Occurrences: 1

Element's Content

Content's Value: COMPOSITE

Enumeration: COMPOSITE

BASIC
COMPOSITE

Content Type: Strir

Min Length: 0; Max Length: unbounded

Element's Attribute

Name	Type	Value

Figure 7

2.7 AXMEDIS Metadata Mapper Editor

2.7.1 Main functionalities

This is a GUI interface where a user can define mapping information to enable transformation between metadata documents. This mapping can be used to generate a style sheet which can then be used to transform metadata information in the AXCP tools.

2.7.2 Relationship with other tools

The resulting style sheet can be used to transform metadata documents using the AXCP tools.

2.7.3 Detailed description of the functionalities and Screenshots

2.7.3.1 Creating a Transformation XSLT to map Metadata

The metadata mapper is integrated inside the AXMEDIS Editor, or more specifically inside the metadata editor. The main window of the metadata mapper consists of three components, the left hand component displays a tree view of the source metadata once it has been loaded, the right hand component displays a tree view of the destination metadata and the middle component is used to show the relationship between elements on either side.

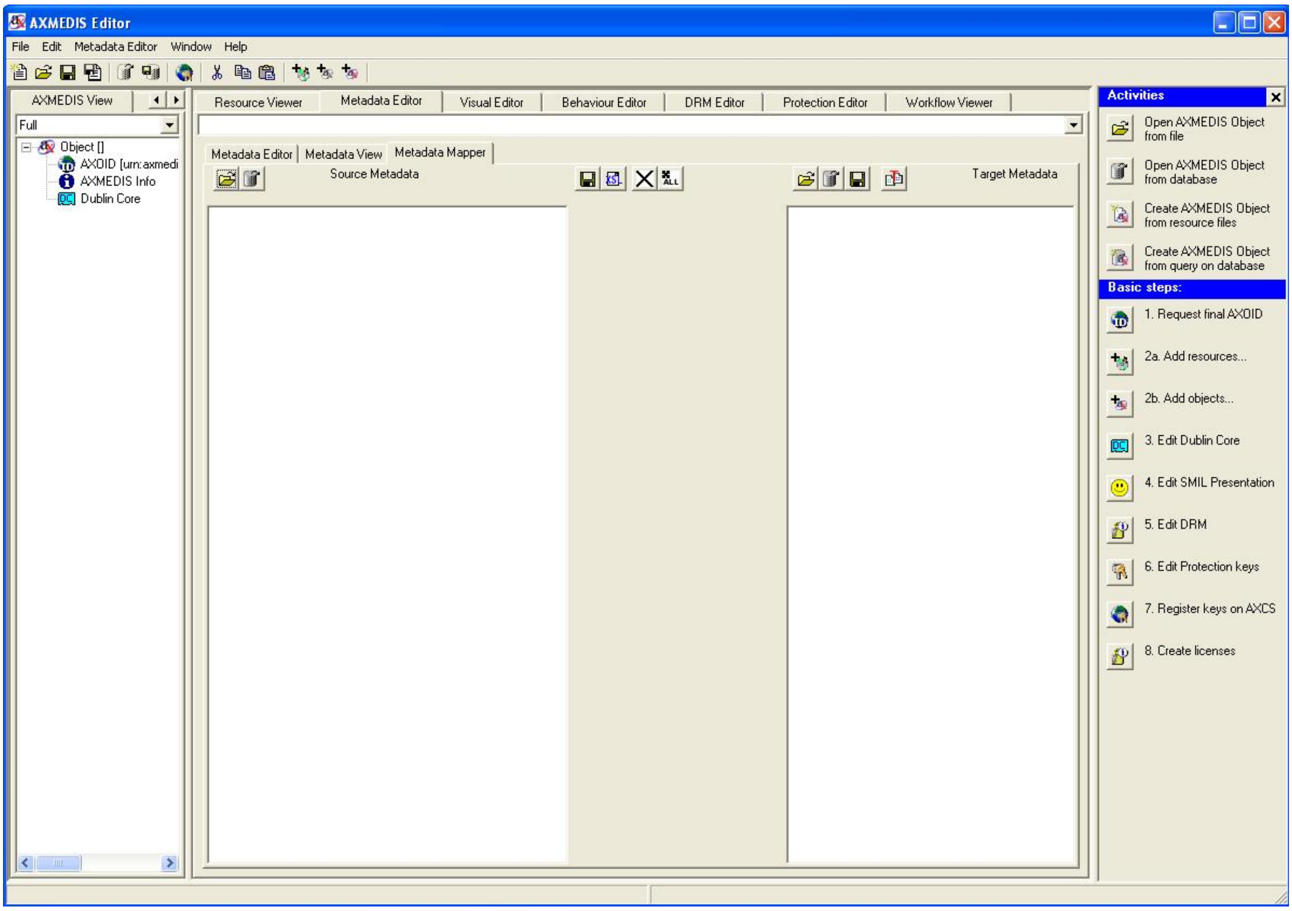


Figure: Metadata Mapper

2.7.3.2 Creating a Transformation XSLT to map Metadata

To create an XSLT style sheet, we first need to load two metadata documents. The first should contain an instance of the metadata you want to transform from (source metadata language), the second should contain an instance of the metadata you want to transform to (destination metadata language). This is achieved by selecting the “open” or “open from database” buttons on top of the source and destination panels and navigating to the file you want to open. These operations can also be found in the menu “File”.

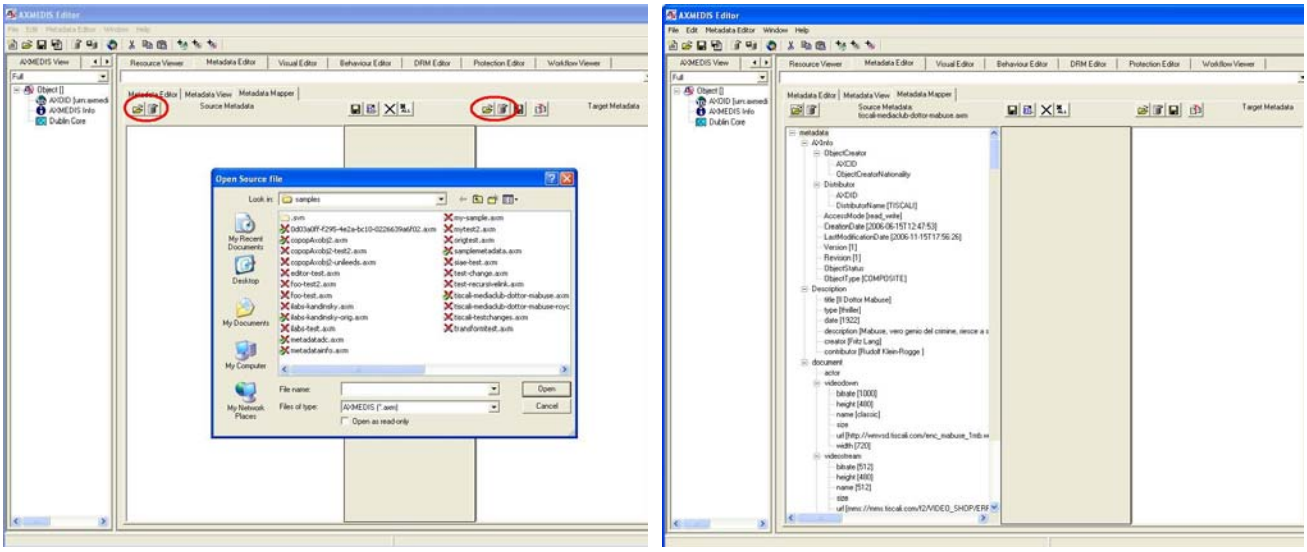
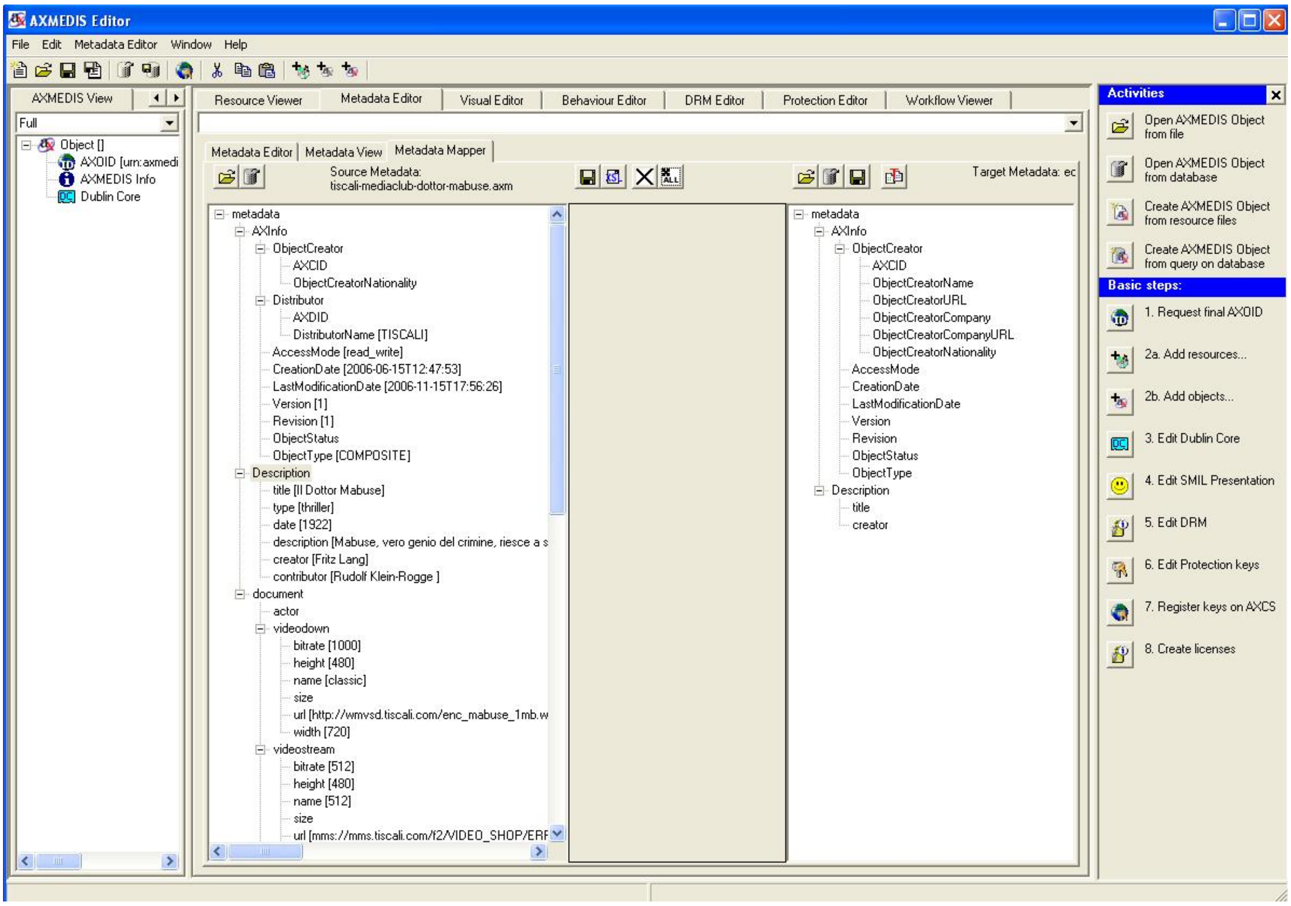


Figure: Opening the Source File

Once the two metadata documents have been successfully loaded, they will be displayed in the tree components as shown in the screenshot below.



```
metadata
  AXInfo
    ObjectCreator
      AXCID
      ObjectCreatorNationality
    Distributor
      AXCID
      DistributorName [TISCALI]
    AccessMode [read_write]
    CreationDate [2006-06-15T12:47:53]
    LastModificationDate [2006-11-15T17:56:26]
    Version [1]
    Revision [1]
    ObjectStatus
    ObjectType [COMPOSITE]
  Description
    title [Il Dottor Mabuse]
    type [thriller]
    date [1922]
    description [Mabuse, vero genio del crimine, riesce a s
    creator [Fritz Lang]
    contributor [Rudolf Klein-Rogge ]
  document
    actor
    videodown
      bitrate [1000]
      height [480]
      name [classic]
      size
      url [http://wmvsd.tiscali.com/enc_mabuse_1mb.w
      width [720]
    videostream
      bitrate [512]
      height [480]
      name [512]
      size
      url [mms://mms.tiscali.com/f2/VIDEO_SHOP/ERF
```

```
metadata
  AXInfo
    ObjectCreator
      AXCID
      ObjectCreatorName
      ObjectCreatorURL
      ObjectCreatorCompany
      ObjectCreatorCompanyURL
      ObjectCreatorNationality
    AccessMode
    CreationDate
    LastModificationDate
    Version
    Revision
    ObjectStatus
    ObjectType
  Description
    title
    creator
```

Figure: After opening source and destination Files

Relationships can now be made by selecting an element from the left hand side and then selecting the related element from the right hand side. These connections can be updated by selecting a new element on the right hand side while the same node on the left hand side is kept selected.

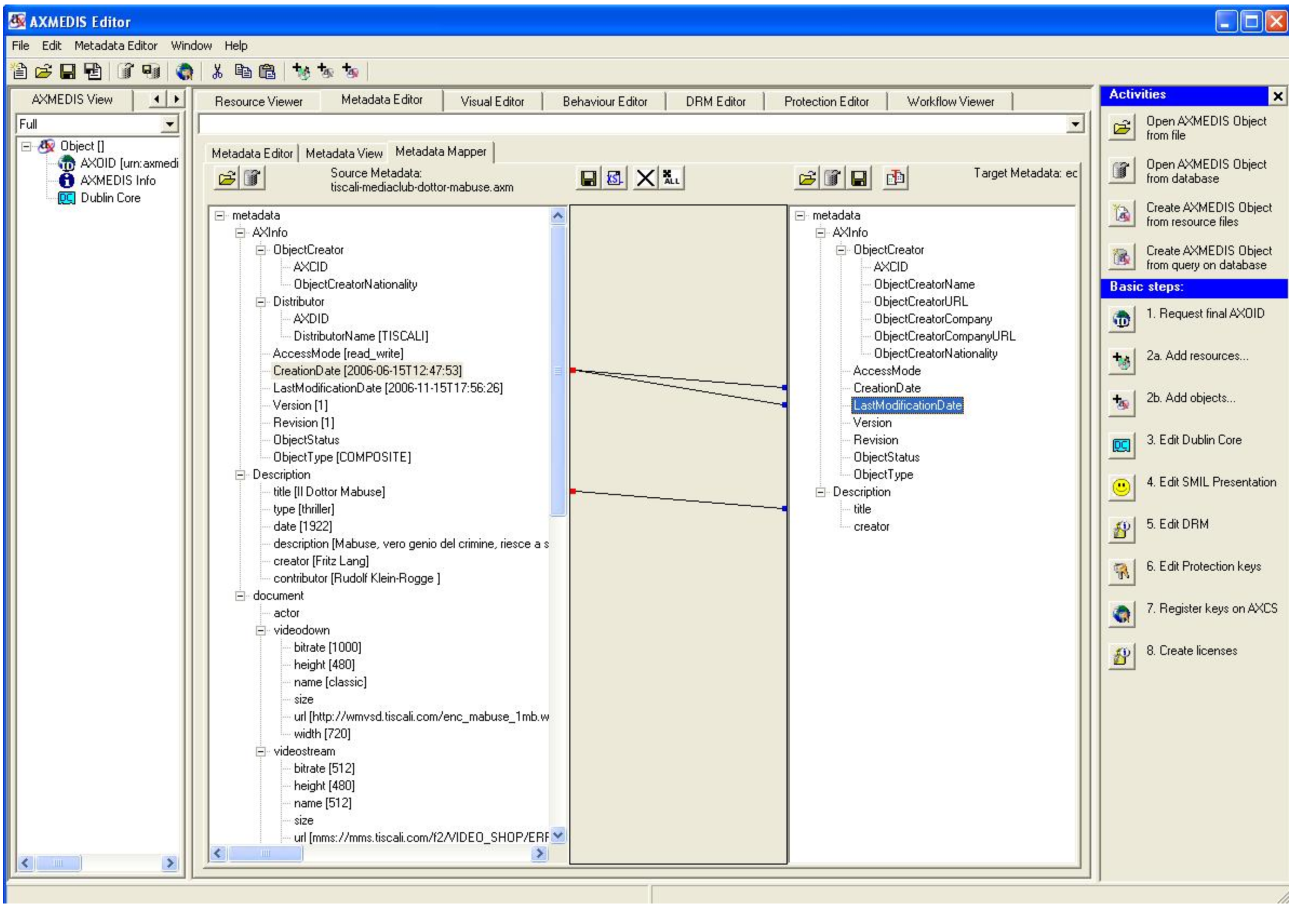


Figure: Creating mapping between source and destination

The user can also map two parent nodes. In this case, all the children whose names are the same will be connected automatically. In the figure below the “title” and “creator” elements are connected as a result of mapping their parent nodes (i.e. the “Description” element).

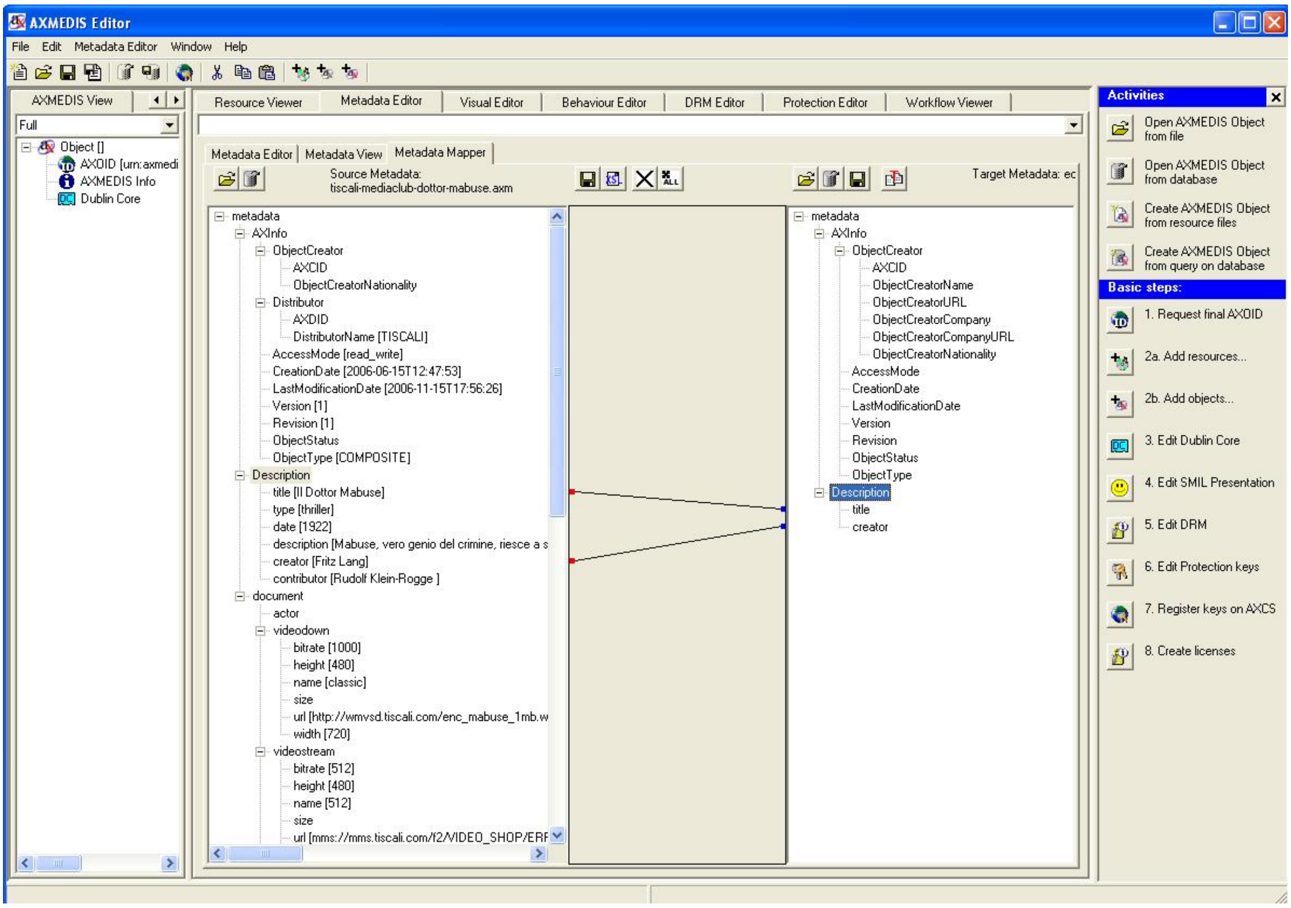


Figure: Mapping two parent nodes

A connection can be deleted by right clicking the connected element on the right hand side and selecting "Disconnect" from the popup menu. Alternatively, the user can select the source node and double click on the connected destination node to delete the connection. Deleting connection(s) is also available via the local toolbar buttons.

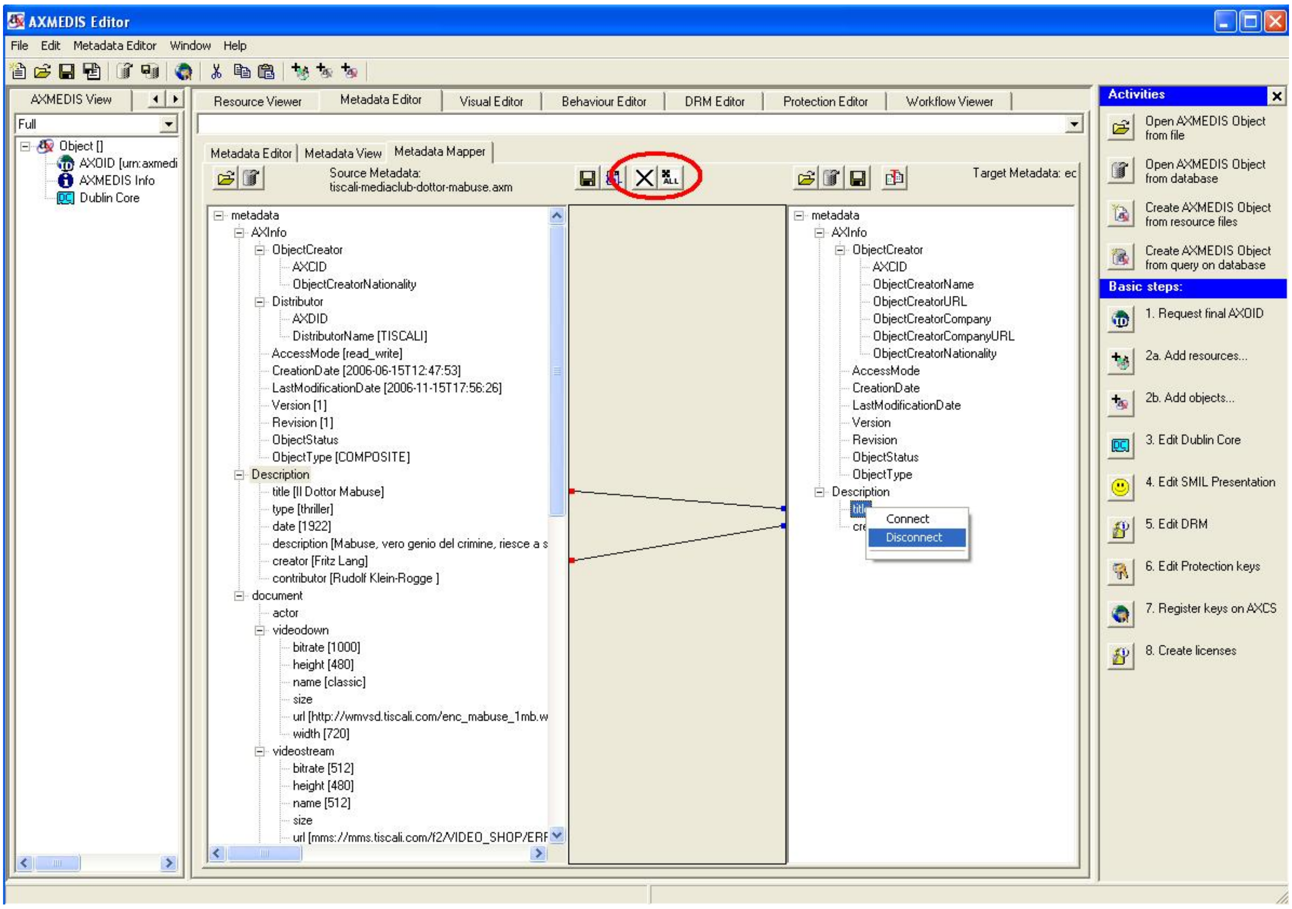


Figure: Deleting a connection

Once the user has finished mapping metadata, a XSLT style sheet can be saved which contains all the connection information. This is achieved by selecting the middle “save” toolbar button or using the menu “File -> Save XSL”. Viewing the XSLT style sheet is also via the “view mapping file” toolbar button (right next to the above “save” button).

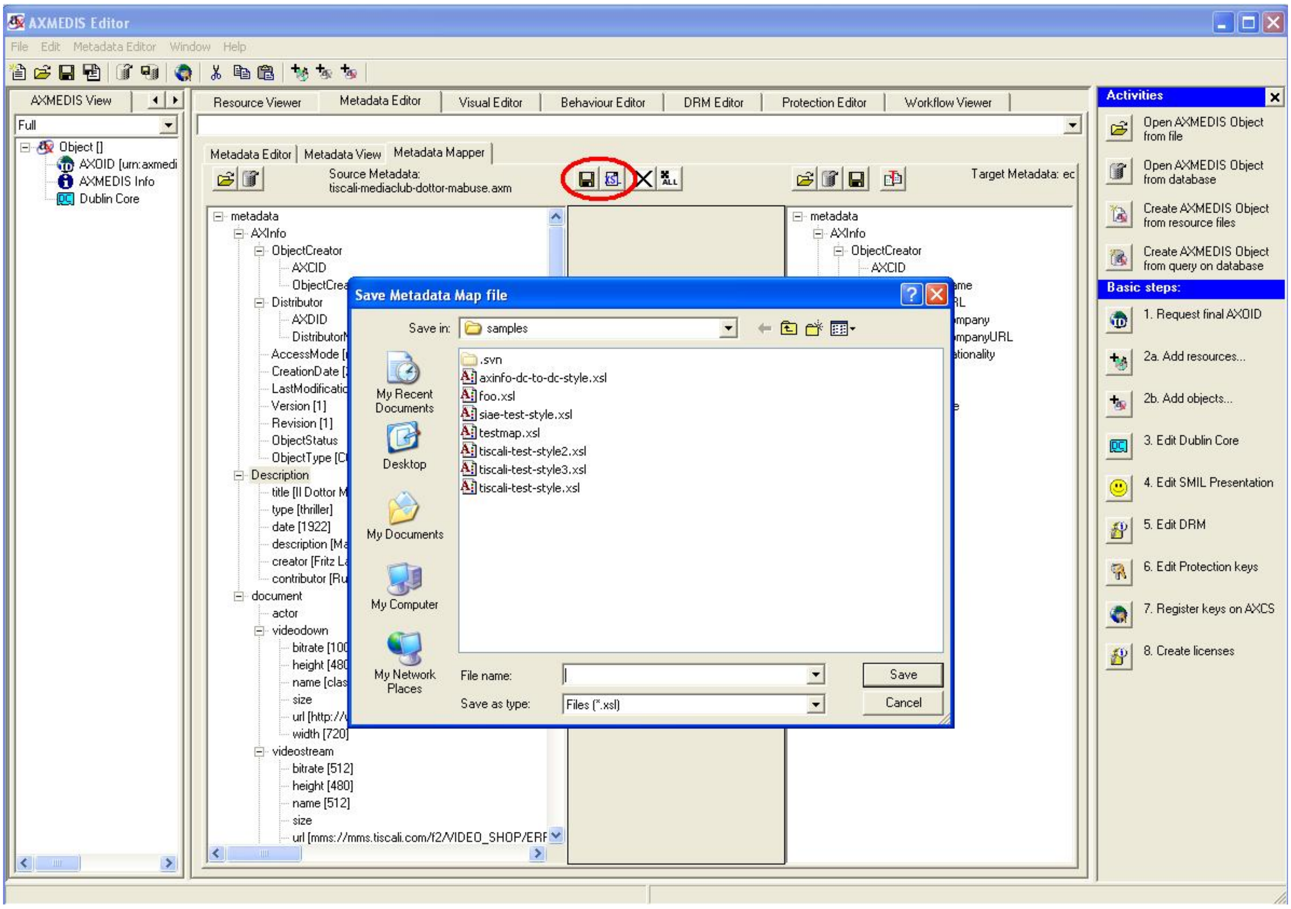
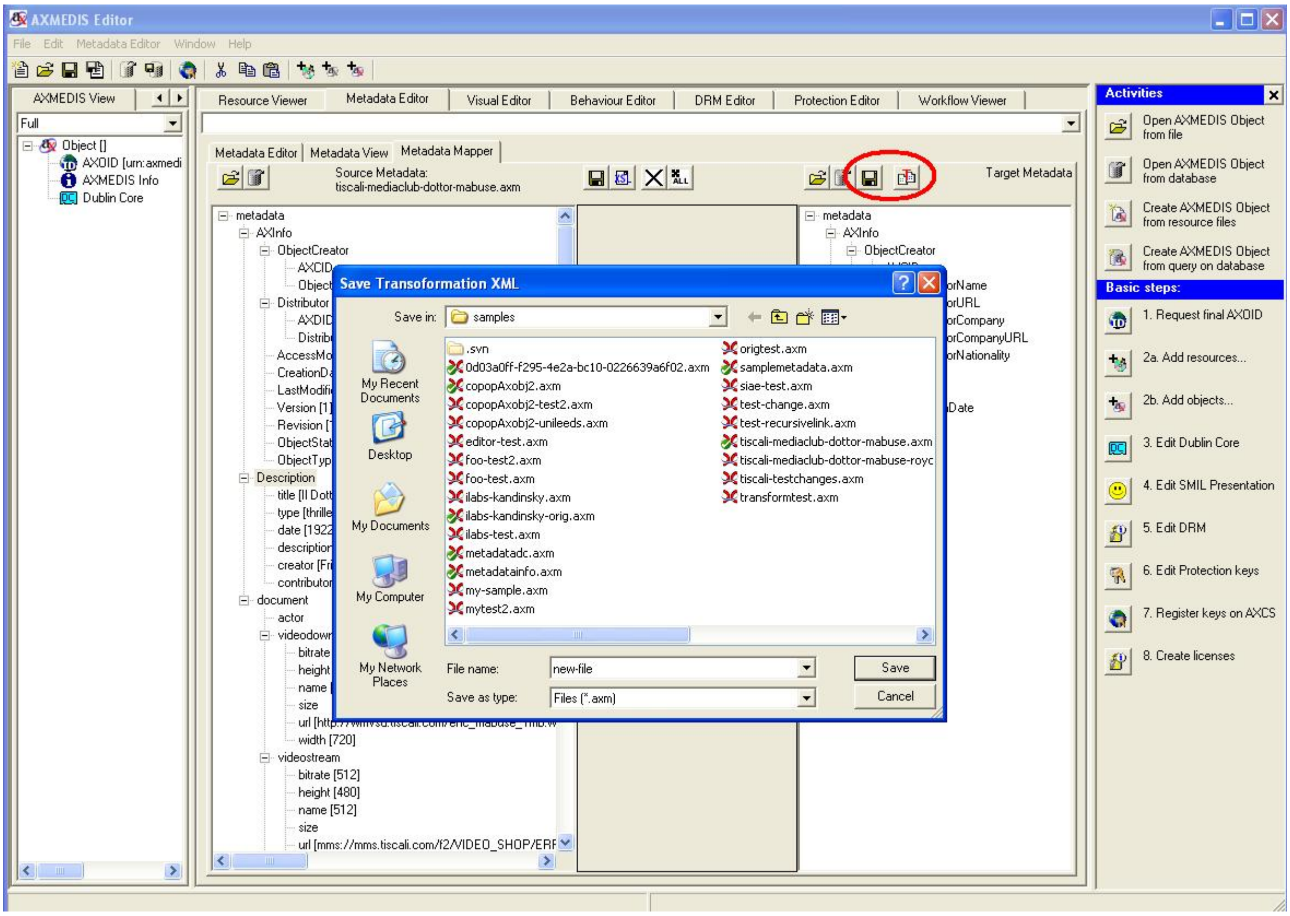


Figure: Saving Mapping as an XSLT file (.xsl)

2.7.3.3 Transforming Metadata using the XSLT

Now that we have a style sheet describing how to map metadata from the source language to the target language, we can use it to transform a document. Normally the style sheet is meant to be used in the AXCP tools for automatic transformation. However, transforming the current document is also possible. This is achieved by clicking the “save” toolbar button on top of the destination panel (see the figure below) or using the menu “File -> Save Transformed File”. The user can also view the transformation using the “view transformed metadata” toolbar button (right next to the above “save” button).



Save in: samples

.svn
0d03a0ff-f295-4e2a-bc10-0226639a6f02.axm
copopAxobj2.axm
copopAxobj2-test2.axm
copopAxobj2-unileeds.axm
editor-test.axm
foo-test2.axm
foo-test.axm
ilabs-kandinsky.axm
ilabs-kandinsky-orig.axm
ilabs-test.axm
metadatadc.axm
metadatainfo.axm
my-sample.axm
mytest2.axm
origtest.axm
samplemetadata.axm
siae-test.axm
test-change.axm
test-recursivelink.axm
tiscali-mediaclub-dottor-mabuse.axm
tiscali-mediaclub-dottor-mabuse-royc
tiscali-testchanges.axm
transformtest.axm

File name: new-file

Save as type: Files (*.axm)

Figure: Saving the transformed file

2.8 AXMEDIS Visual Editor

2.8.1 Main functionalities

The SMIL Editor allows editing of SMIL resources from the AxEditor by a visual interface. It is divided in three parts: the tree view part that shows the whole SMIL structure, the visual part that shows the regions used for resources displaying and the behaviour part that shows the timing structure and properties.

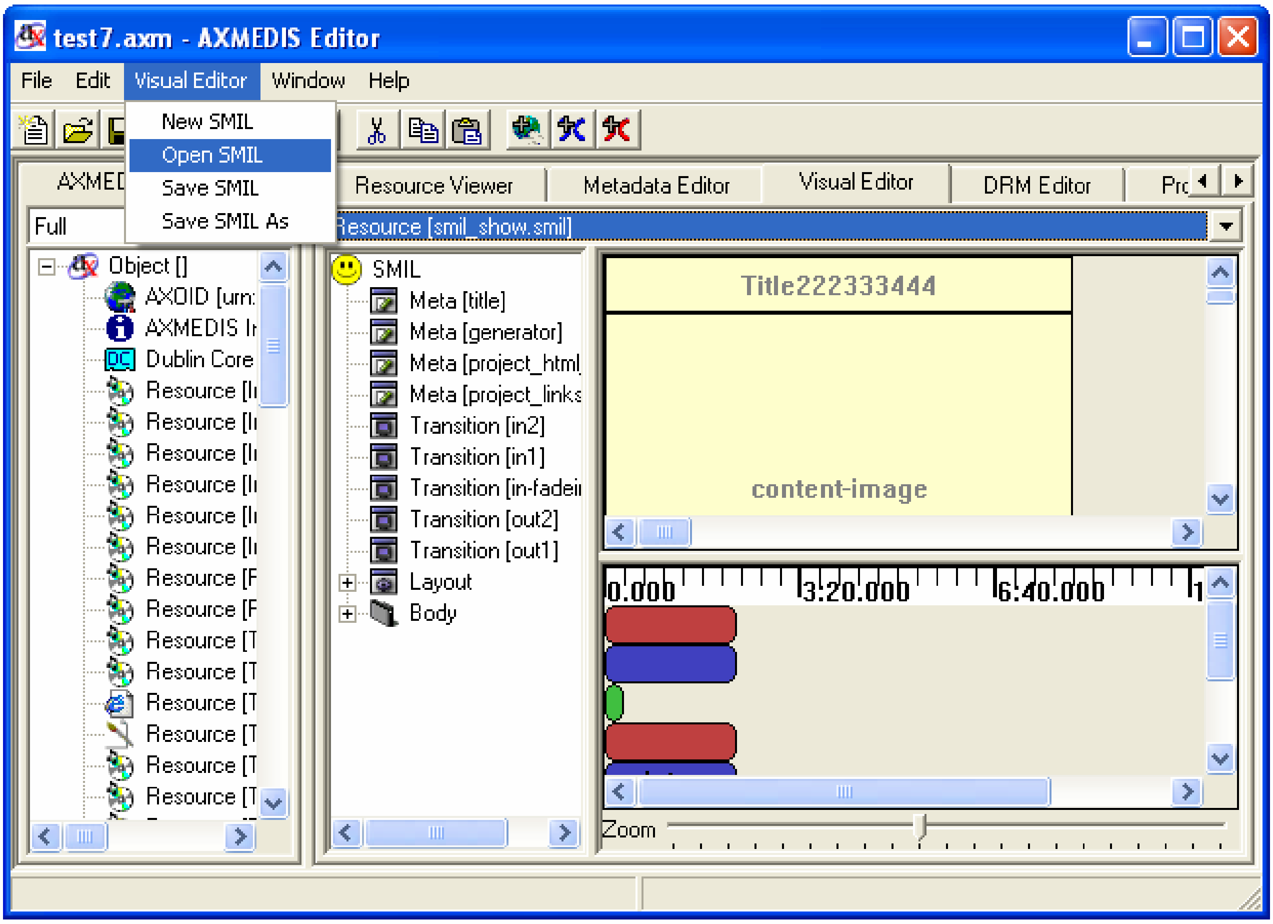
2.8.2 Relationship with other tools

The SMIL Editor and Player is integrated as a part of the AXMEDIS Editor.

2.8.3 Detailed description of the functionalities and Screenshots

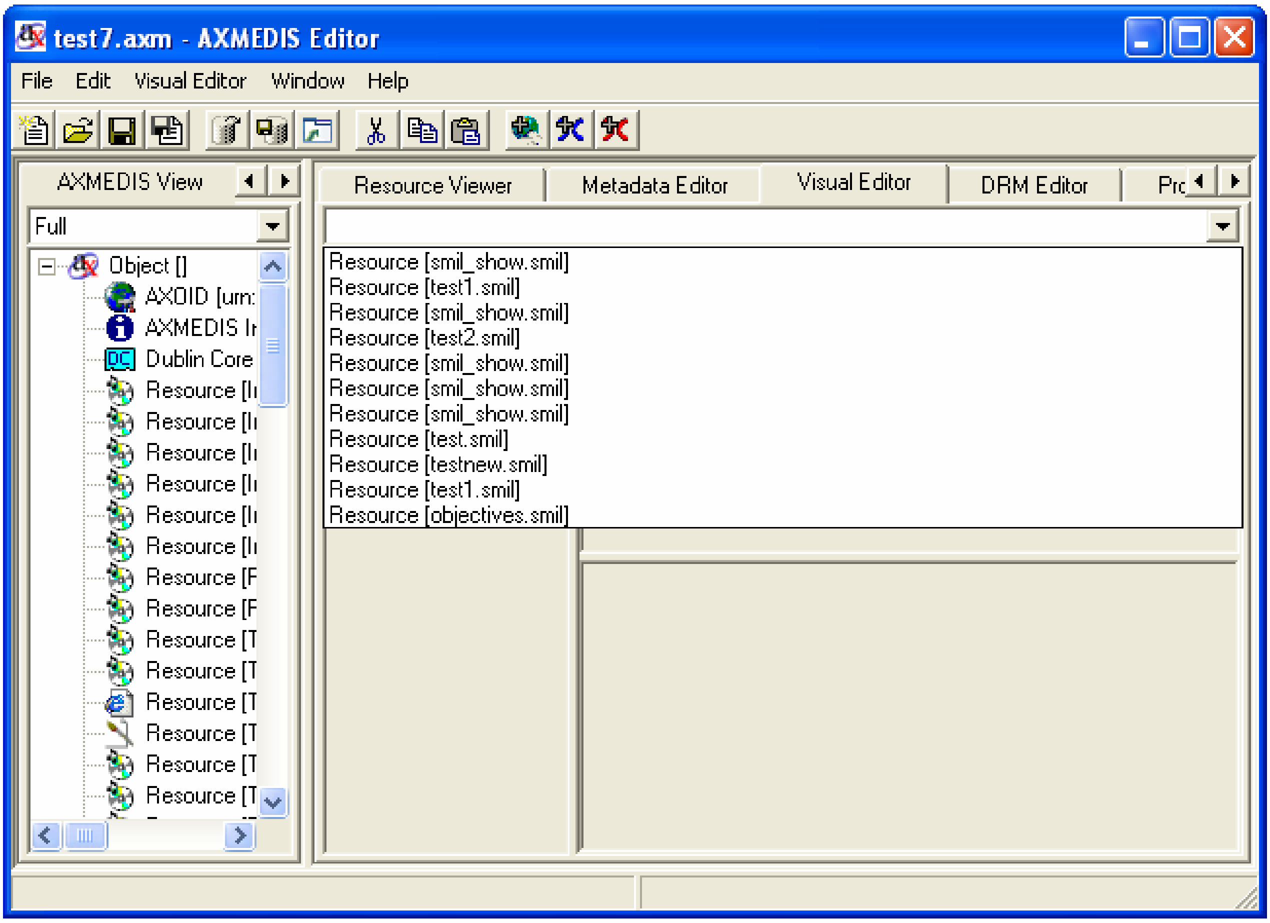
2.8.3.1 General Commands

You can use the functions from the AXMEDIS Editor to create a new SMIL resource, open an existing SMIL resource, save a SMIL resource, and save a SMIL resource as another SMIL resource as follows:



2.8.3.1.1 SMIL resource combo box

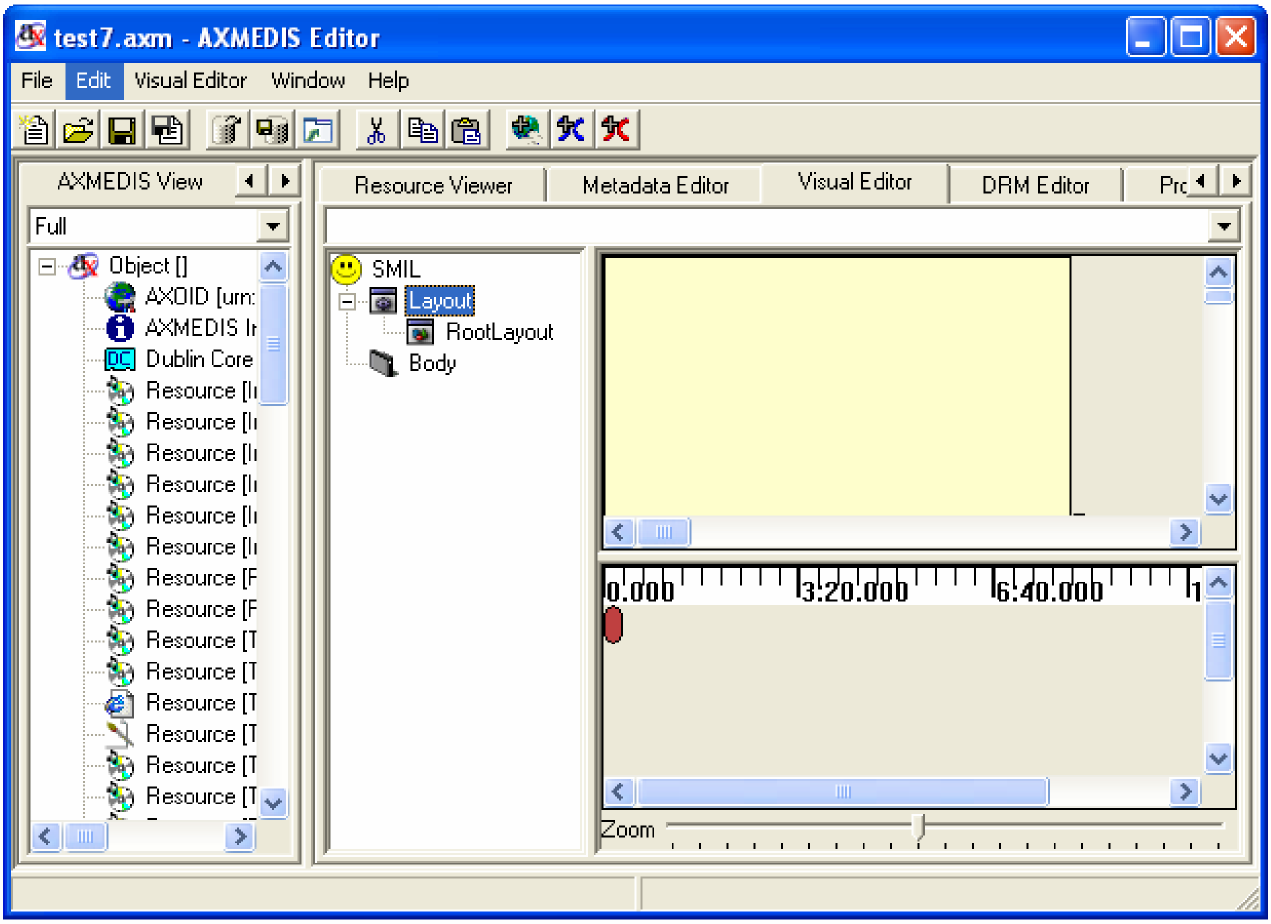
You can use this function to select the SMIL resources embedded inside the AXMEDIS object as follows.



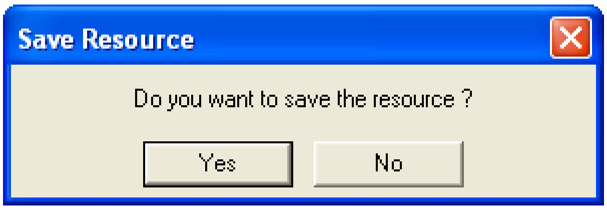
Resource [smil_show.smil]
Resource [test1.smil]
Resource [smil_show.smil]
Resource [test2.smil]
Resource [smil_show.smil]
Resource [smil_show.smil]
Resource [smil_show.smil]
Resource [test.smil]
Resource [testnew.smil]
Resource [test1.smil]
Resource [objectives.smil]

2.8.3.1.2 New SMIL

When you have no SMIL resource loaded and select the option of "New SMIL", the SMIL editor will create a very simple SMIL resource with only rootlayout and body container as follows:



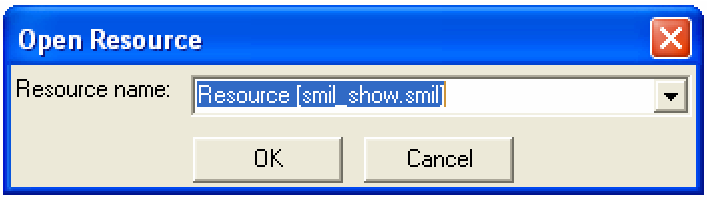
When you have a SMIL resource loaded and select the option of "New SMIL", the SMIL editor will first ask you if you want to save the current resource or not and then create a very simple SMIL resource with only rootlayout and body container:


Save Resource

Do you want to save the resource ?

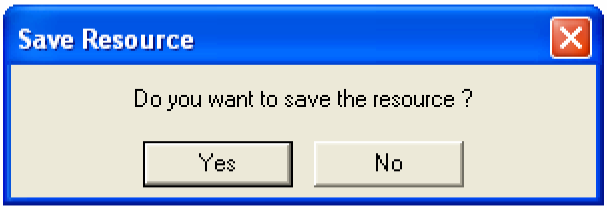
2.8.3.1.3 Open SMIL

When you have no SMIL resource loaded and select the option of “Open SMIL”, the SMIL editor will pop up a dialog for you to select the SMIL resources embedded inside the AXMEDIS object as follows:



Resource name: Resource [smil_show.smil]

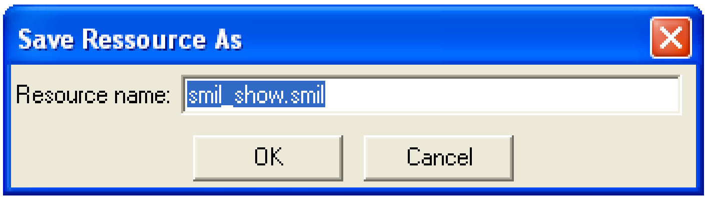
When you have a SMIL resource loaded and select the option of “Open SMIL”, the SMIL editor will first pop up a dialog to ask you if you want to save the current resource or not and then pop up a dialog for you to select the SMIL resources embedded inside the AXMEDIS object:



Do you want to save the resource ?

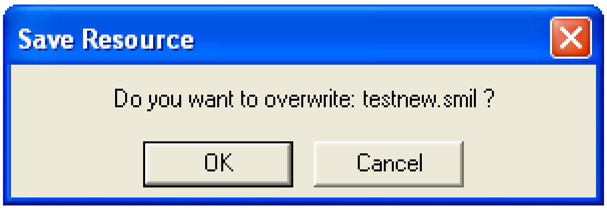
2.8.3.1.4 Save SMIL

When you have no SMIL resource loaded and select the option of “Save SMIL”, the SMIL editor will pop up a dialog for you to save the SMIL resources as a new resource embedded inside the AXMEDIS object as follows:



Resource name: smil_show.smil

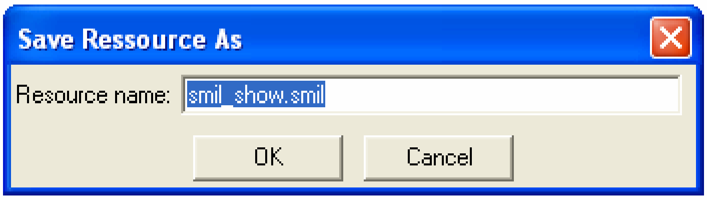
When you have a SMIL resource loaded and select the option of “Save SMIL”, there will pop up a dialog asking you if you want to overwrite the current one or not.



Do you want to overwrite: testnew.smil ?

2.8.3.1.5 Save SMIL As

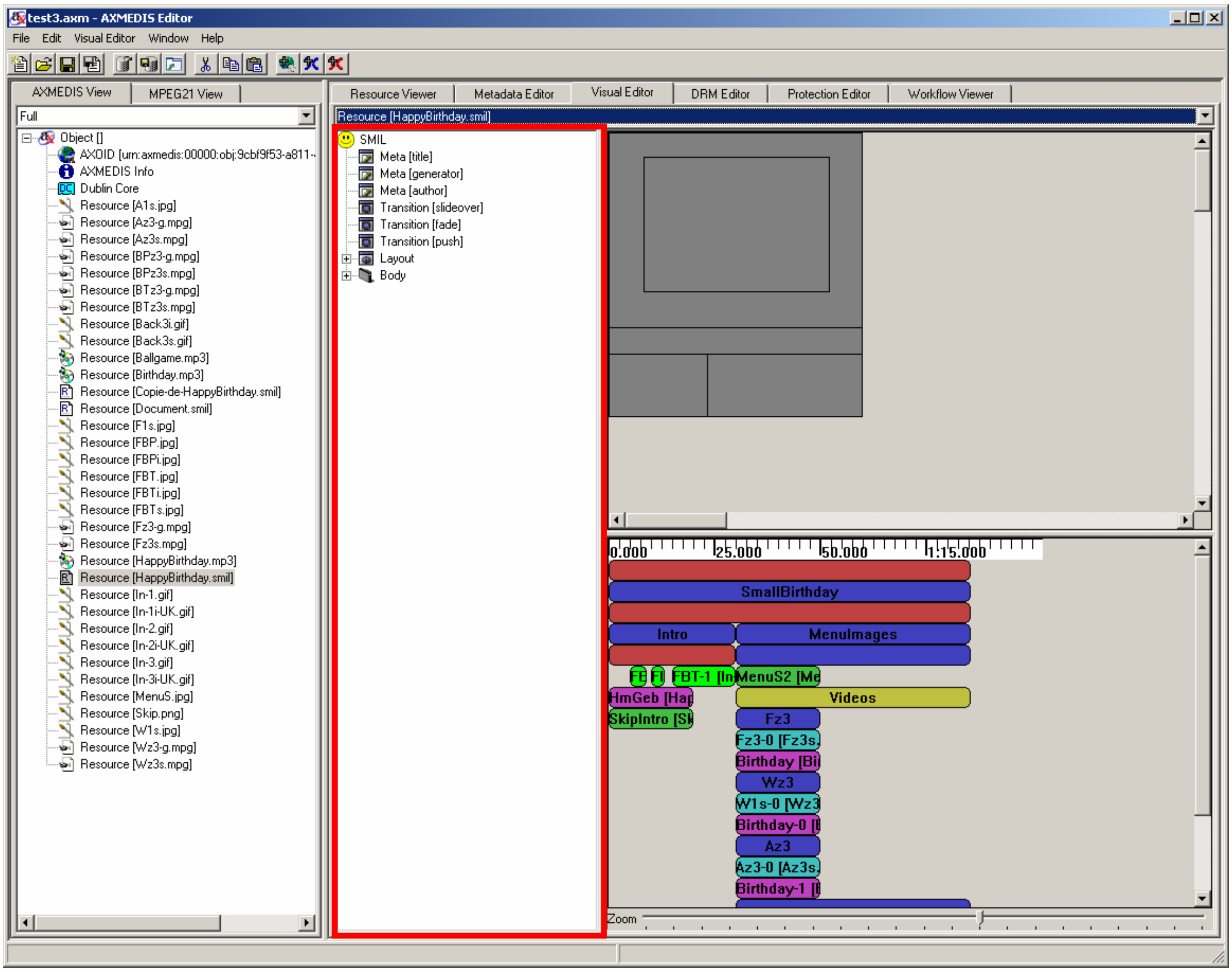
When you have a SMIL resource loaded and select the option of “Save SMIL As”, there will pop up a dialog for you to save this resource as another resource.



Resource name: smil_show.smil

2.8.3.2 Tree view part

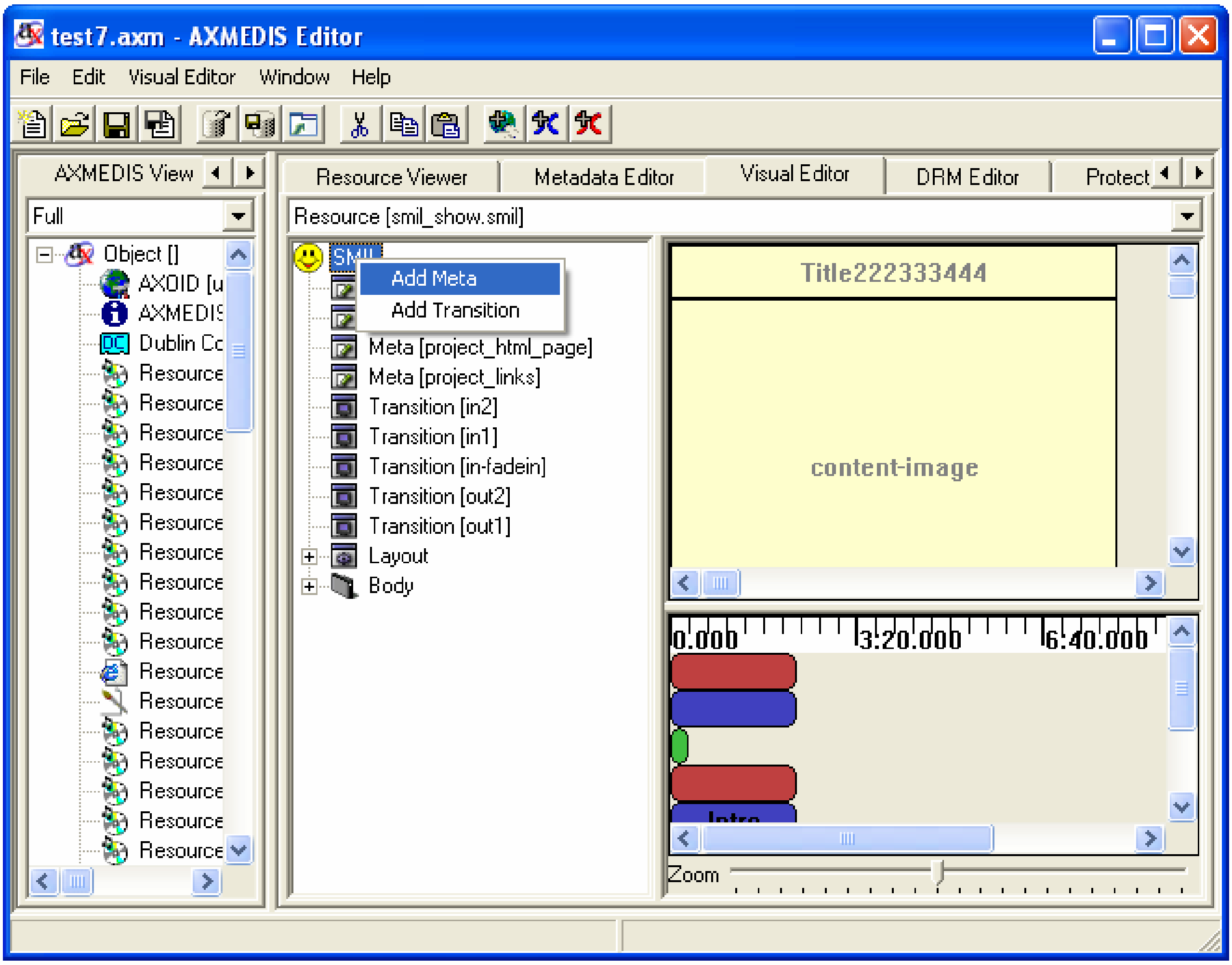
The tree part is located at the left of the SMIL Editor.



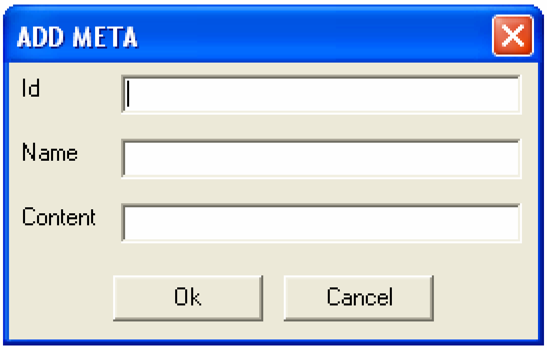
The tree view part of the SMIL editor is used for manipulating the whole SMIL with his internal structure. It is the only view that can display/edit completely Metas, Transitions and Links.

2.8.3.2.1 SMIL

You can add Metas and Transitions to the SMIL by right clicking the SMIL icon as follows.



2.8.3.2.1.1 Add Metas



Id: ID of the meta. It uniquely identifies the Meta within this SMIL.

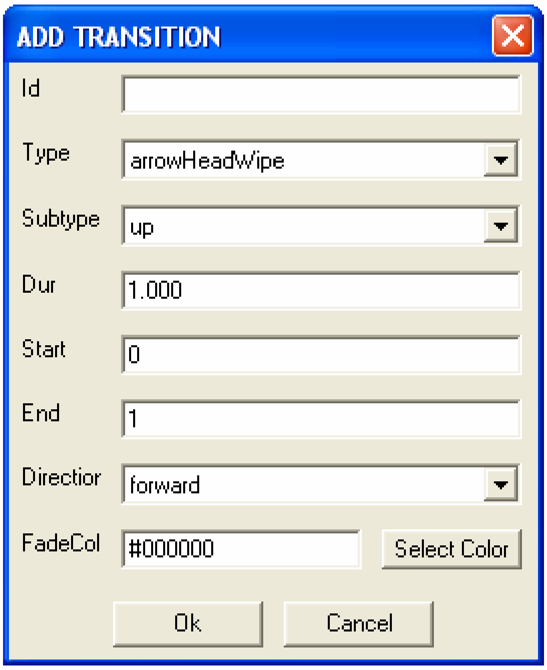
Name: Identifies a property name. It is required for Meta elements.

`name`	`abstract`	Gives the presentation abstract.

	`author`	Lists the presentation author's name.
	`base`	Sets the base URL for the source clips.
	`copyright`	Supplies the presentation copyright.
	`title`	Gives the presentation title.

Content: Provides the content for the `name` attribute..

2.8.3.2.1.2 Add Transitions



Id:
Type: arrowHeadWipe
Subtype: up
Dur: 1.000
Start: 0
End: 1
Direction: forward
FadeCol: #000000

Id: ID of the transition (default: empty). It uniquely identifies the transition within this SMIL.

Type: Specifies the main transition type (default: none).

Subtype: Defines an optional subtype for each type.

Dur: Defines the length of the transition effect.

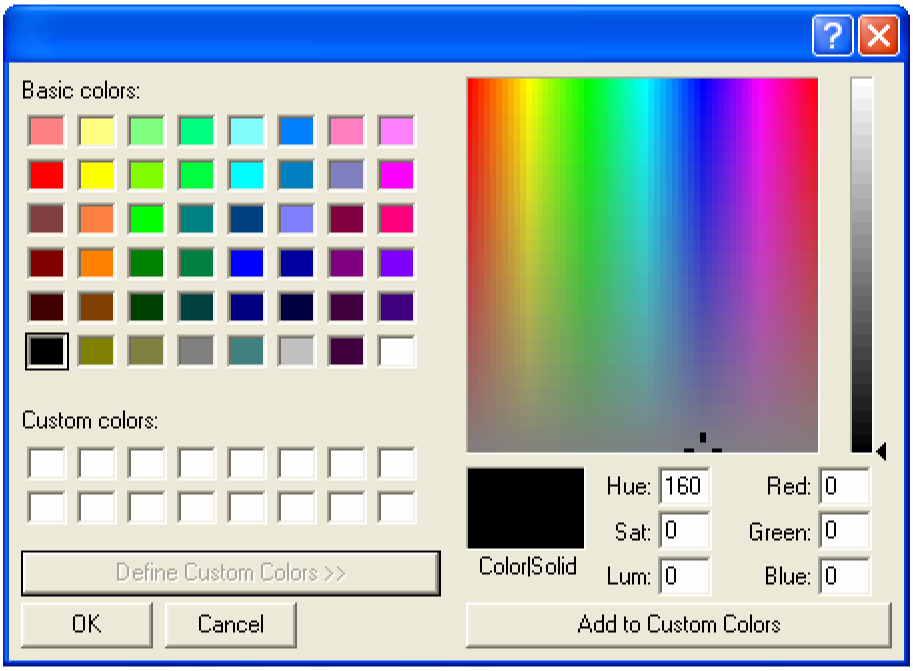
Start: Starts the effect at a midway point.

End: Ends the effect before it completes fully.

Direction: Specifies the transition direction (default value is forward).

FadeColor: Sets a colour for fades.

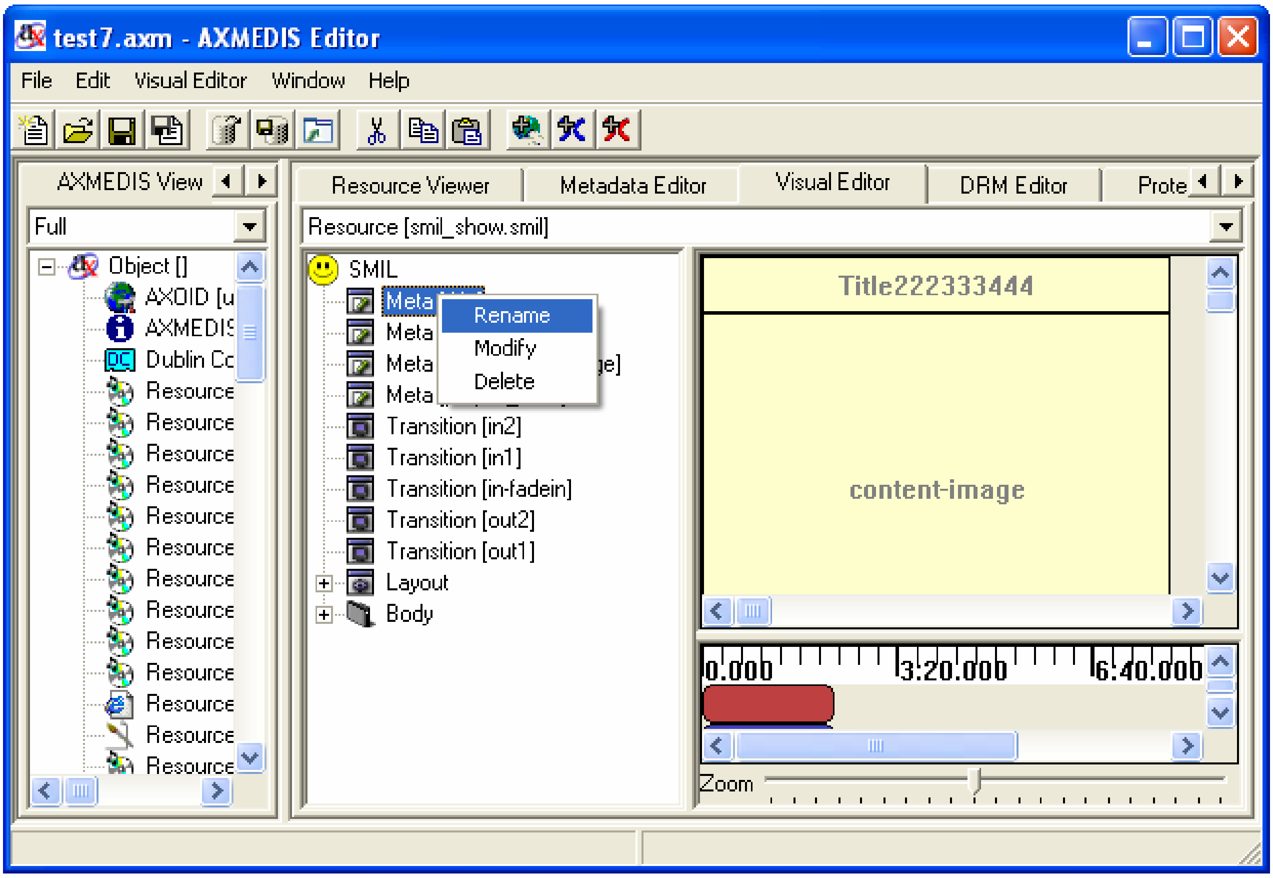
You can choose the option of “Select Colour” to customise the colour. There will pop up the following dialog.



Hue: 160
Sat: 0
Lum: 0
Red: 0
Green: 0
Blue: 0

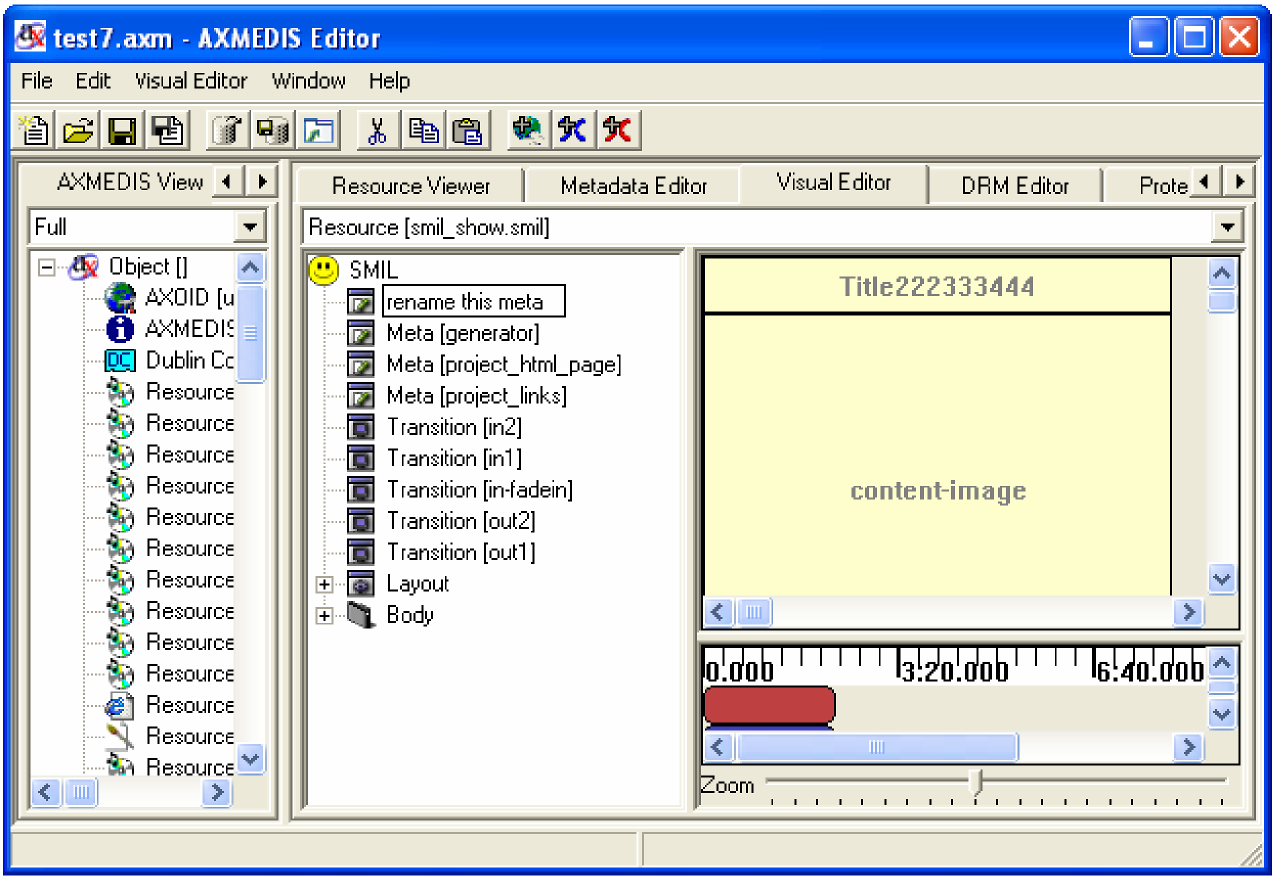
2.8.3.2.2 Meta

You can edit the Meta by right click the Meta. There would be three options: “Rename”, “Modify”, “Delete”



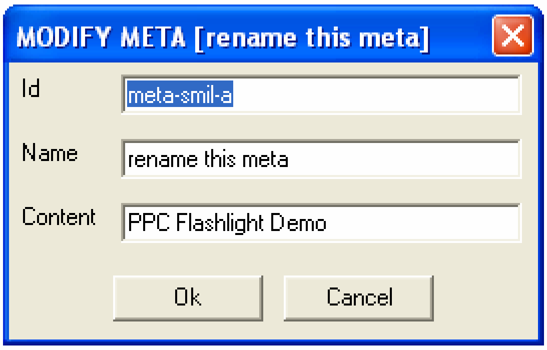
2.8.3.2.2.1 *Rename*

You can directly rename the Meta Name as the following.



2.8.3.2.2.2 *Modify*

By choosing the option of "Modify", you can modify the Meta with the following dialog:


MODIFY META [rename this meta]

Id: meta-smil-a

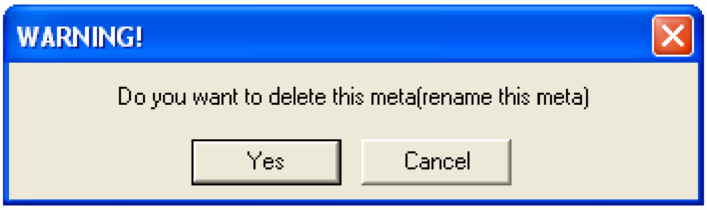
Name: rename this meta

Content: PPC Flashlight Demo

The attributes of this dialog are exactly the same as those of "Add Meta" described in 2.8.3.2.1.1.

2.8.3.2.2.3 Delete

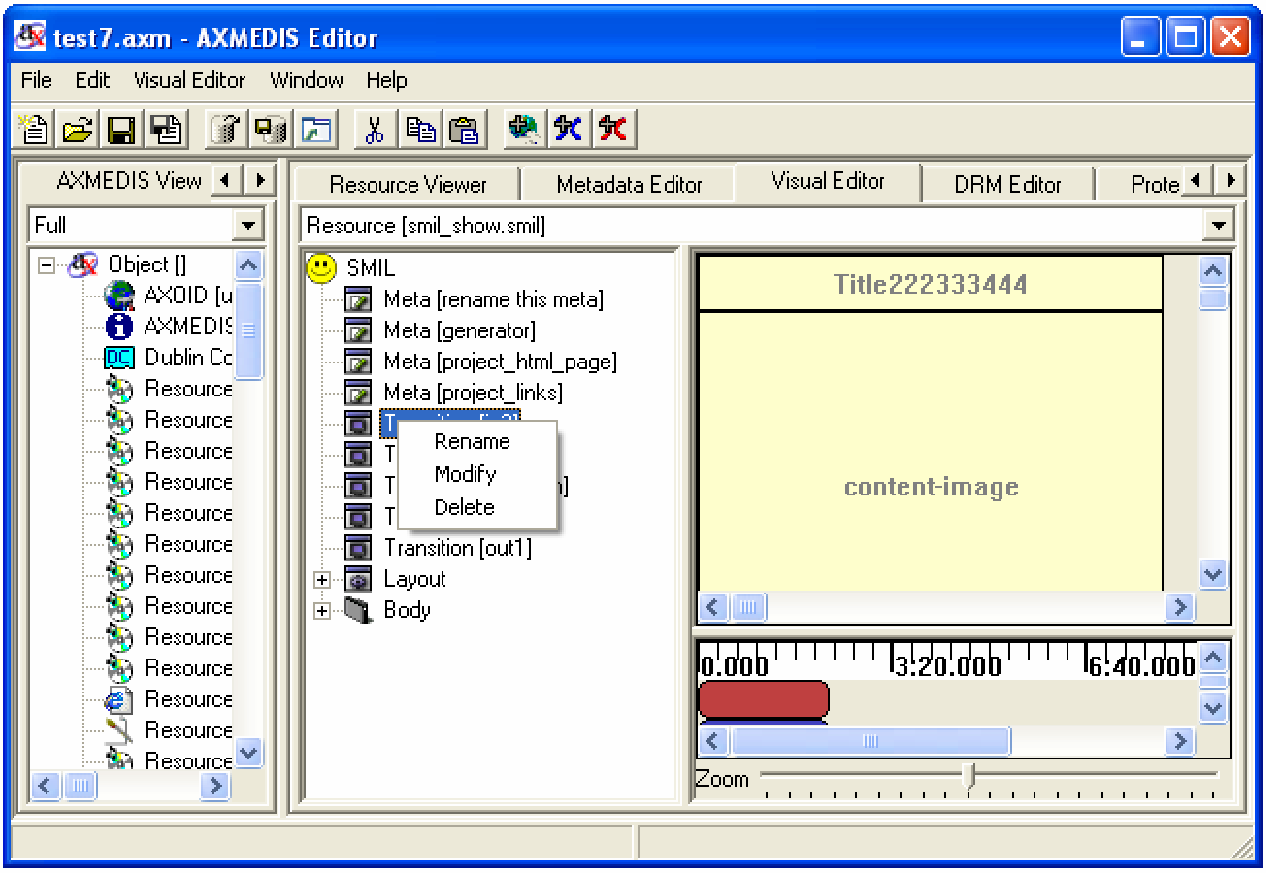
By choosing the option of "Delete", you can delete the Meta with the following dialog:



Do you want to delete this meta[rename this meta]

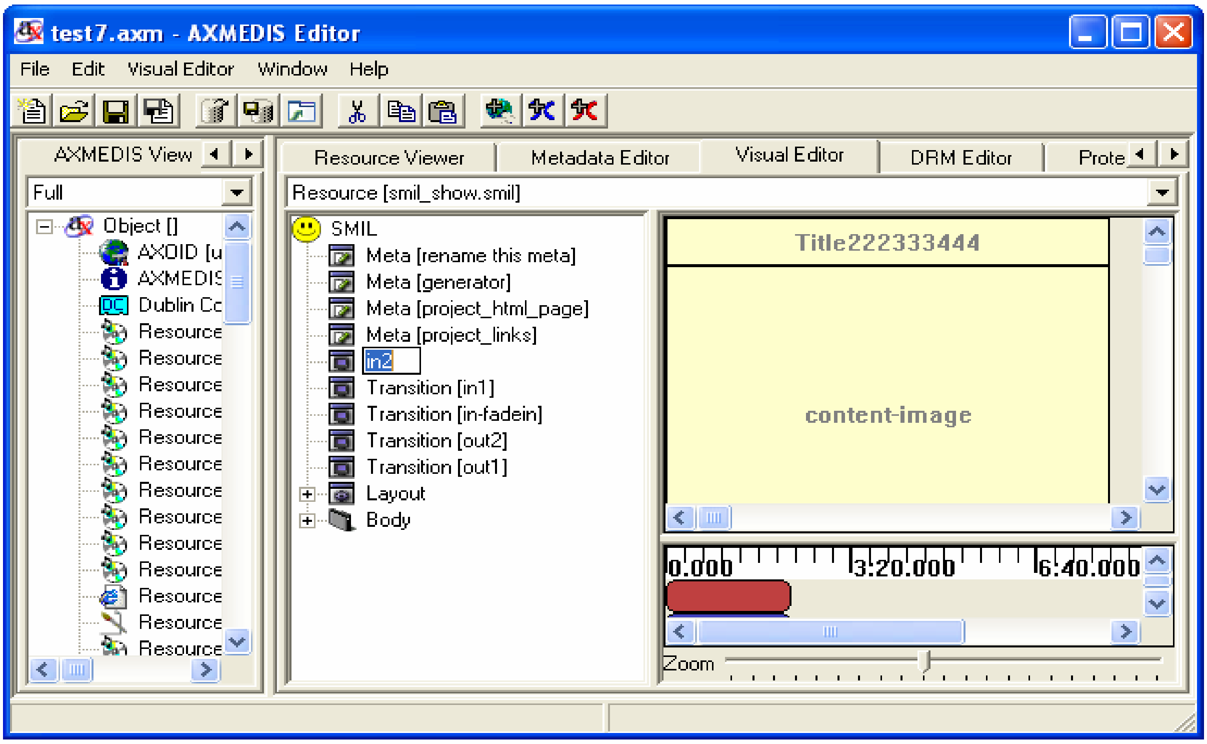
2.8.3.2.3 Transition

You can edit the transition by right click the transition. There would be three options: "Rename", "Modify", "Delete".



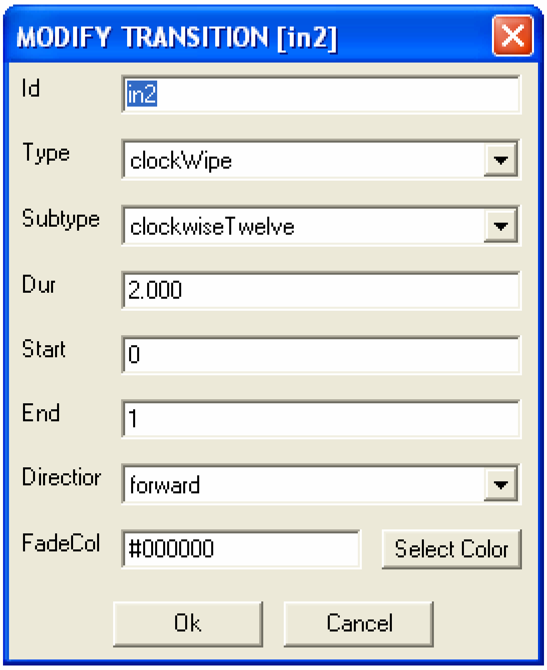
2.8.3.2.3.1 *Rename*

You can directly rename the transition name as the following:



2.8.3.2.3.2 *Modify*

By choosing the option of "Modify", you can modify the transition with the following dialog:


MODIFY TRANSITION [in2]

Id: in2

Type: clockWipe

Subtype: clockwiseTwelve

Dur: 2.000

Start: 0

End: 1

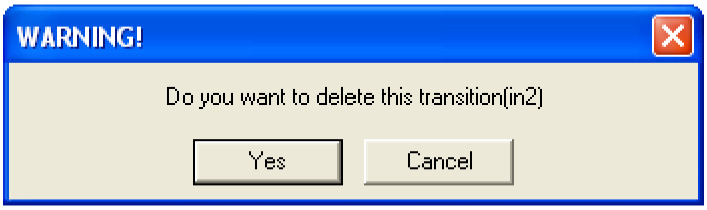
Direction: forward

FadeCol: #000000

The attributes of this dialog are exactly the same as those of "Add transition" described in 2.8.3.2.1.2.

2.8.3.2.3.3 Delete

By choosing the option of “Delete”, you can delete the transition with the following dialog:

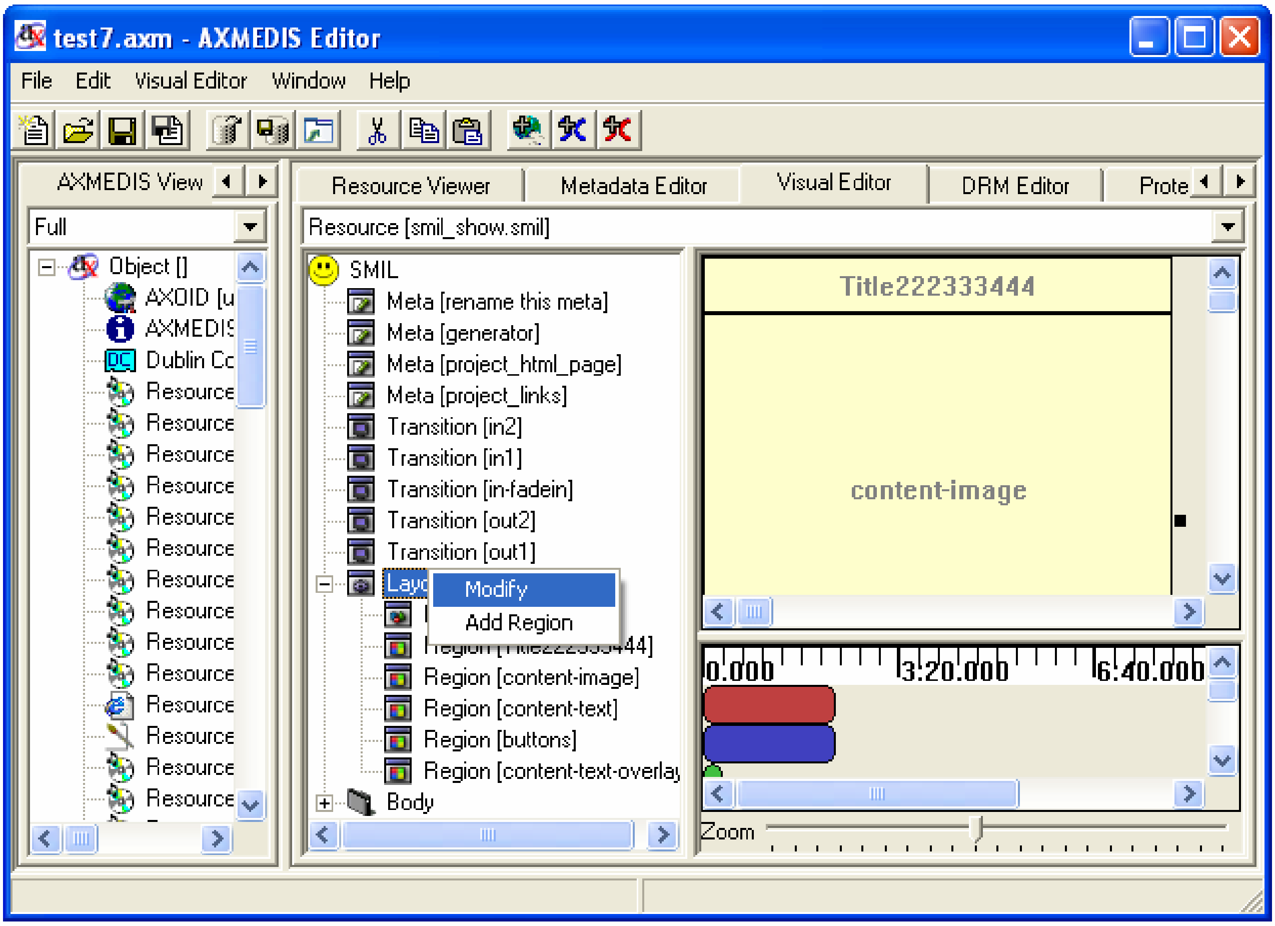


WARNING!

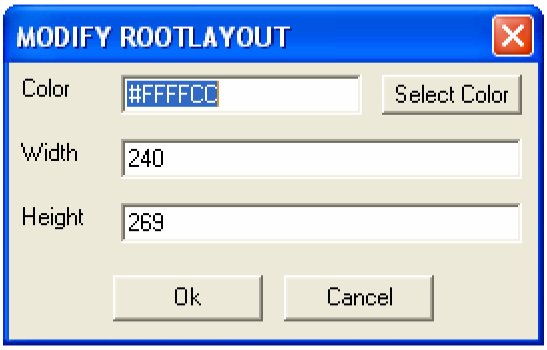
Do you want to delete this transition[in2]

2.8.3.2.4 Rootlayout

You can modify the size of the root-layout by right clicking the root-layout element in the Tree View part (The same function as in the Visual View part). There will pop up a menu. One option is to modify the size and colour of the root-layout. By inputting the values of the height and width, you can modify the size. With the dialog given, you can customize the colour as well. The left top position is fixed at the left top corner of the canvas.



2.8.3.2.4.1 *Modify*



Color: #FFFFCC

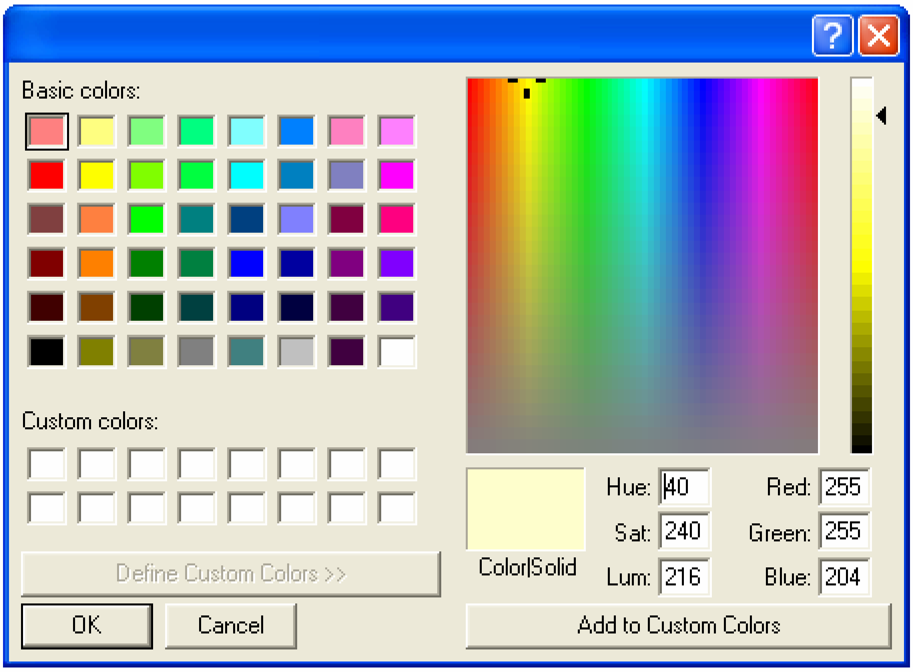
Width: 240

Height: 269

Colour: Sets the window background colour (default: black).

Width: Sets the main window width (default: 0).

Height: Sets the main window height (default: 0).



Hue: 40

Sat: 240

Lum: 216

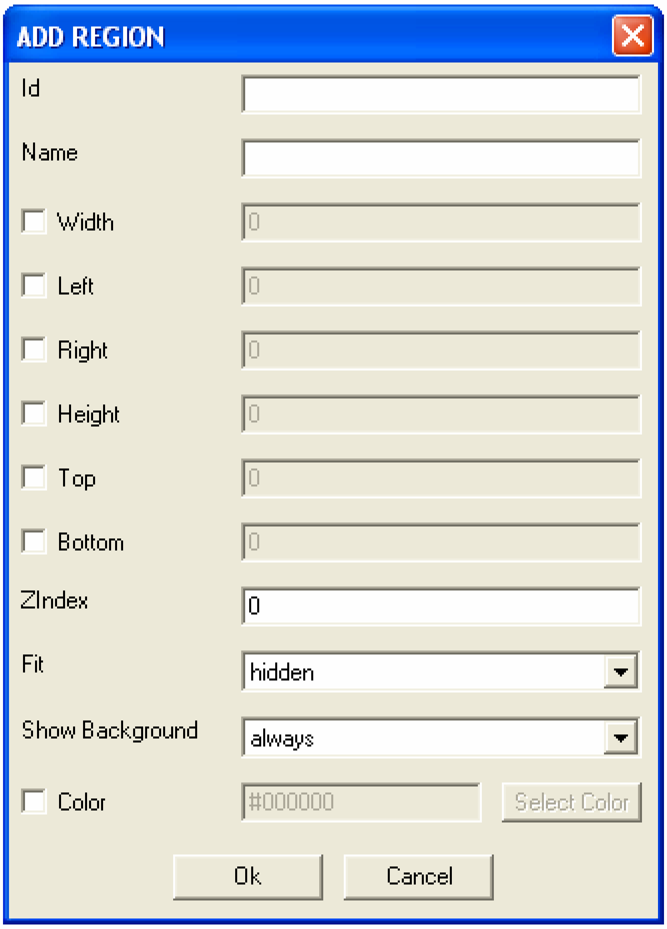
Red: 255

Green: 255

Blue: 204

You can select the colour by right-clicking the “Select Colour” and there will pop up the colour for choice.

2.8.3.2.4.2 Add region



ADD REGION

Id	
Name	
□ Width	0
□ Left	0
□ Right	0
□ Height	0
□ Top	0
□ Bottom	0
ZIndex	0
Fit	hidden
Show Background	always
□ Color	#000000

You can add the region into the root layout by selecting the option of “Add Region”.

Id: Uniquely identifies a region within the root-layout.

Name: Identified the region. It is not unique.

Width: Sets the region's width (default: auto).

Left: Sets the region's offset from the window's left side (default: auto).

Right: Sets the region's offset from the window's right side (default: auto).

Height: Sets the region's height (default: auto).

Top: Sets the region's offset from the top of the window (default: auto).

Bottom: Sets the region's offset from the bottom of the window (default: auto).

Z-Index: Sets the stacking order when the region overlaps another region (default: 0).

Fit: Controls how clips fit the region (default: `hidden`).

Show Background: Determines when the background colour appears (default: always).

The governing equation for the horizontal dimension is: bbw (bounding-box-width) = left + width + right. Given that each of these three parameters can have either a value of "auto" or a defined value not "auto", then there are 8 possibilities:

Attribute values			***Result before clipping to the bounding box***		
left	**width**	**right**	**left**	**width**	**right**
auto	auto	auto	0	bbw	0
auto	auto	defined	0	bbw - right	right
auto	defined	auto	0	width	bbw - width
auto	defined	defined	bbw - right - width	width	right
defined	auto	auto	left	bbw - left	0
defined	auto	defined	left	bbw - right - left	right
defined	defined	auto	left	width	bbw - left - width
defined	defined	defined	left	width	bbw - left - width

The vertical attributes height, bottom, and top are resolved similarly. The governing equation for the vertical dimension is: bbh (bounding-box-height) = top + height + bottom. Given that each of these three parameters can have either a value of "auto" or a defined value not "auto", then there are 8 possibilities:

Attribute values			***Result before clipping to the bounding box***		
top	**height**	**bottom**	**top**	**height**	**bottom**
auto	auto	auto	0	bbh	0
auto	auto	defined	0	bbh - bottom	bottom
auto	defined	auto	0	height	bbh - height
auto	defined	defined	bbh - bottom - height	height	bottom
defined	auto	auto	top	bbh - top	0
defined	auto	defined	top	bbh - bottom - top	bottom
defined	defined	auto	top	height	bbh - top - height
defined	defined	defined	top	height	bbh - top - height

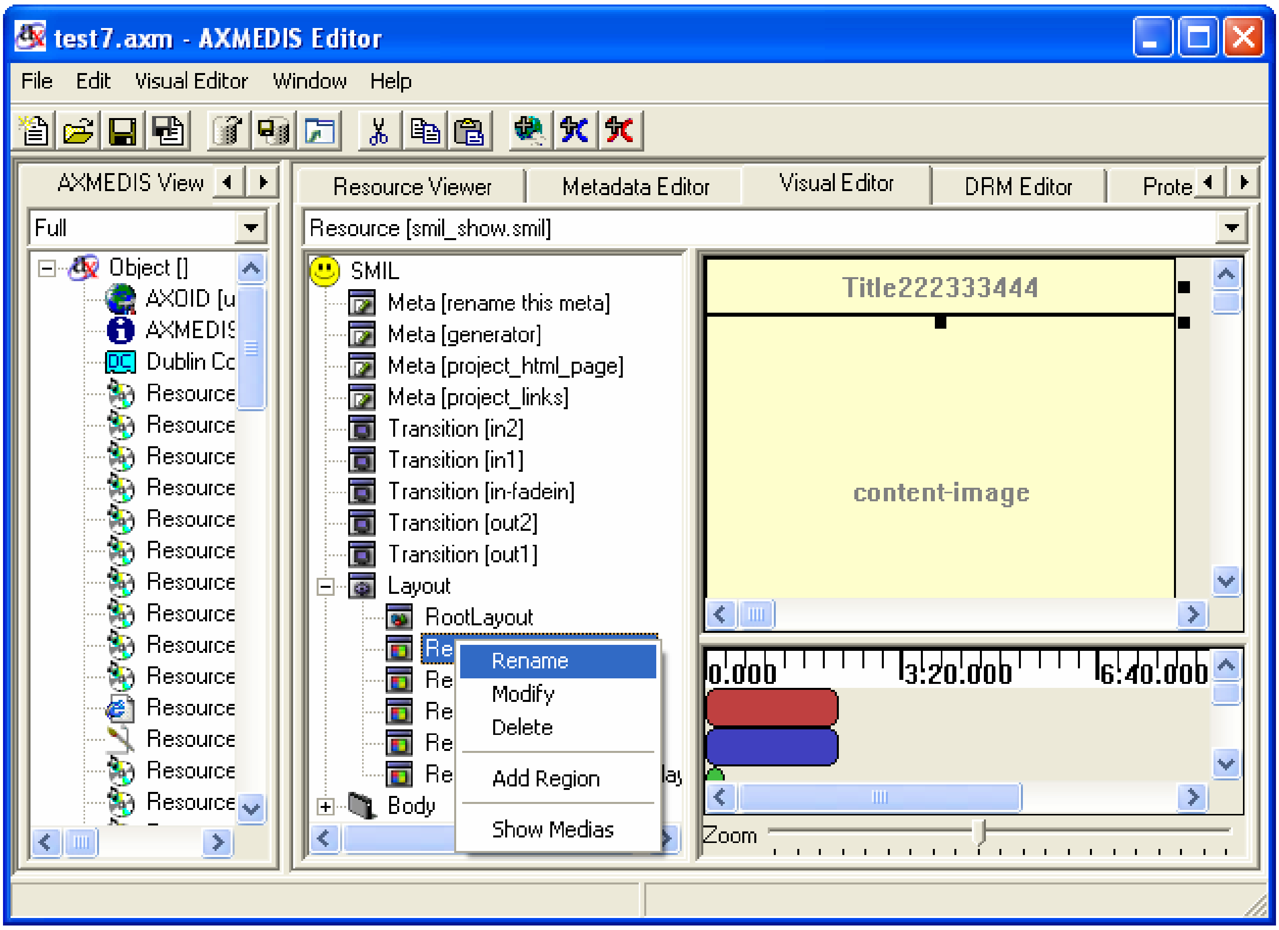
2.8.3.2.5 Region

You can modify the size of the region manually with dialog menu by right clicking the region element of the Tree View part (the same function of the Visual View part). There will pop up a menu.
Options available are:

- Rename this region
- Modify the size, position, index and colour of the region
- Delete this region
- Add some sub-regions inside this region

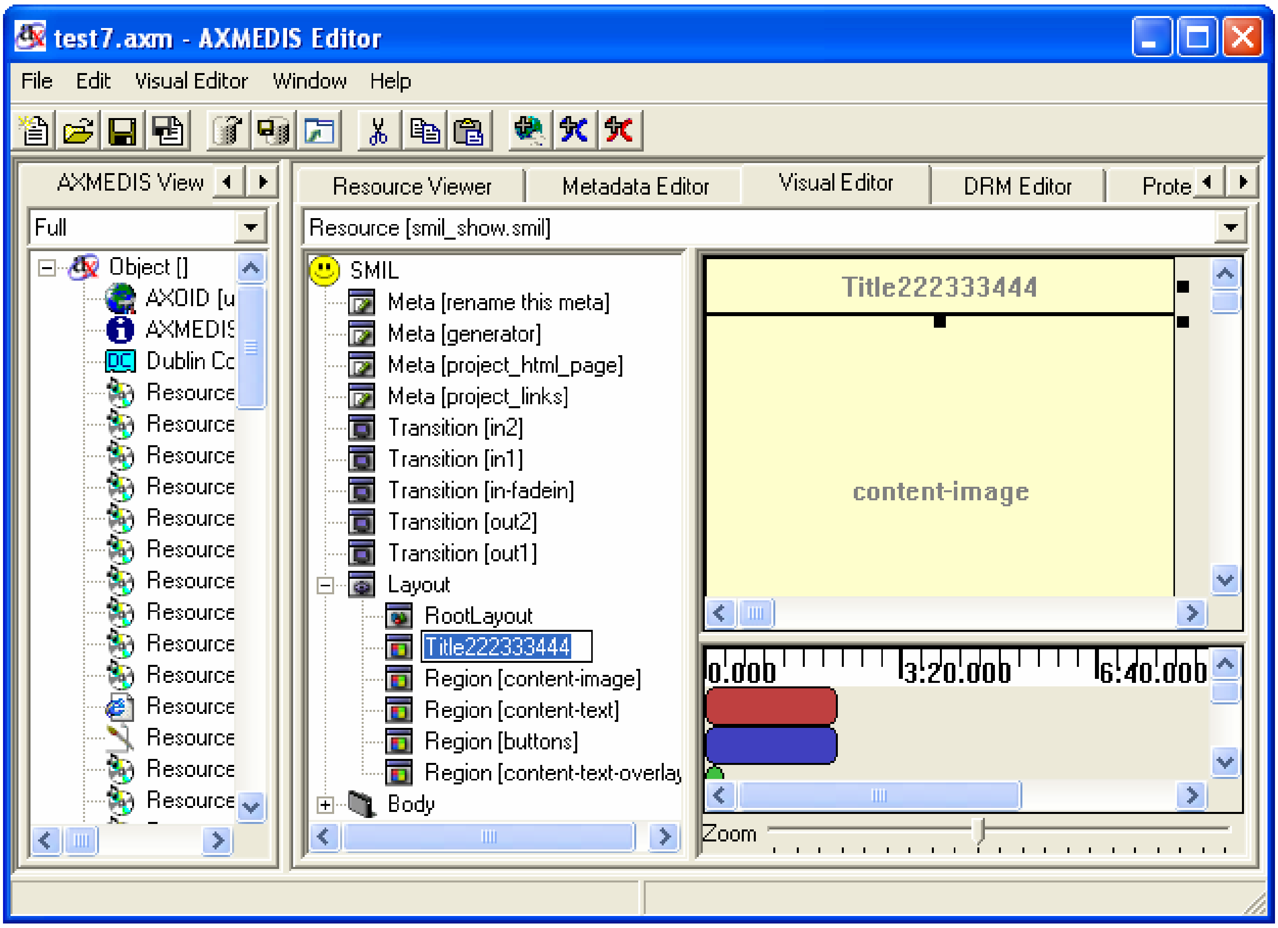
- Show media resources associated with this region

By inserting the values of the height and width, you can modify the size. With the dialog given, you can customize the colour as well.

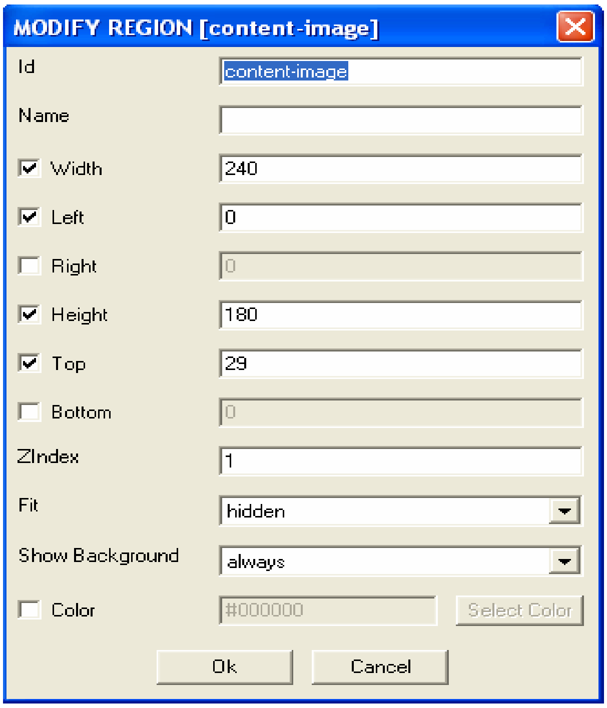


2.8.3.2.5.1 *Rename*

You can directly rename the region's name as the following:



2.8.3.2.5.2 *Modify*


MODIFY REGION [content-image]

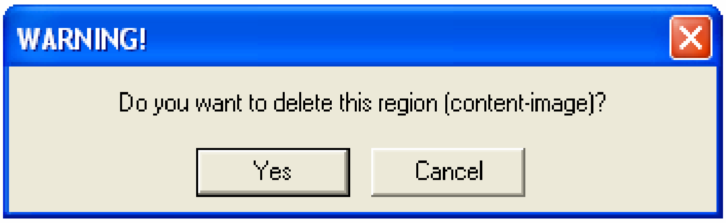
Id	content-image
Name	
☑ Width	240
☑ Left	0
□ Right	0
☑ Height	180
☑ Top	29
□ Bottom	0
ZIndex	1
Fit	hidden
Show Background	always
□ Color	#000000

You can modify the region by choosing the option of "modify region". There will pop up a dialog menu. The attributes are exactly the same as the part "add region" described in the root layout editing.

2.8.3.2.5.3 Delete

You can also delete the region by choosing the option of "delete".

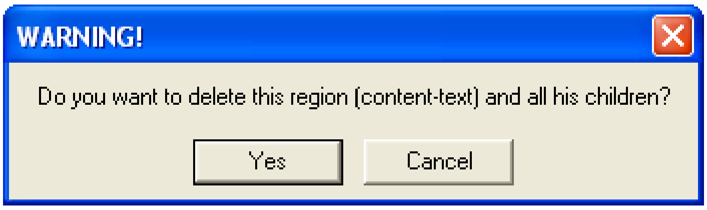
1) When there is no media resource associated with this region, there will popup the following warning dialog.



WARNING!

Do you want to delete this region (content-image)?

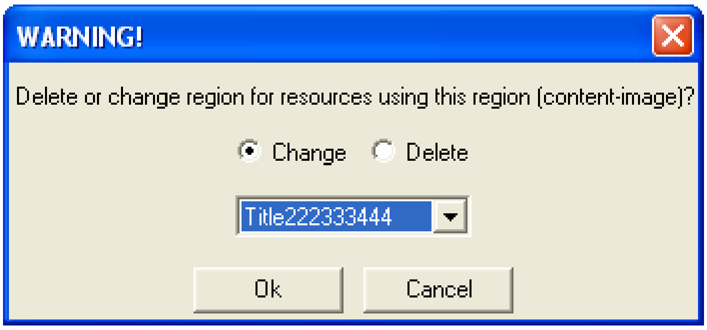
2) When there are some child regions associated with this region, there will popup the following warning dialog asking if you want to delete this region and all his children.



WARNING!

Do you want to delete this region (content-text) and all his children?

3) When there are some media resources associated with this region, there will popup the following warning dialog asking if you want to delete or change region for these resources. By option "Delete", you can delete the region and the resources inside.



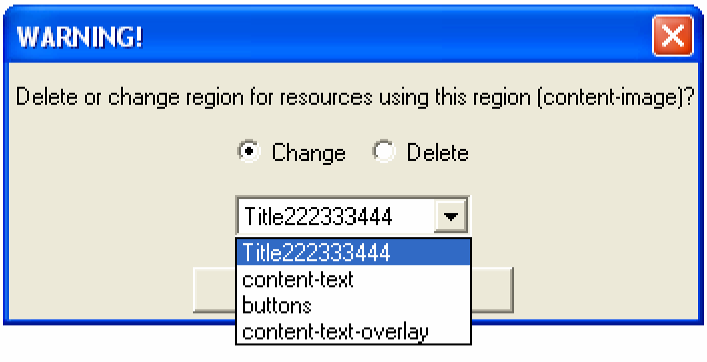
WARNING!

Delete or change region for resources using this region (content-image)?

● Change ○ Delete

Title222333444

You can choose to use other regions to host these resources as follows. There will appear a list of all the other regions for changing.



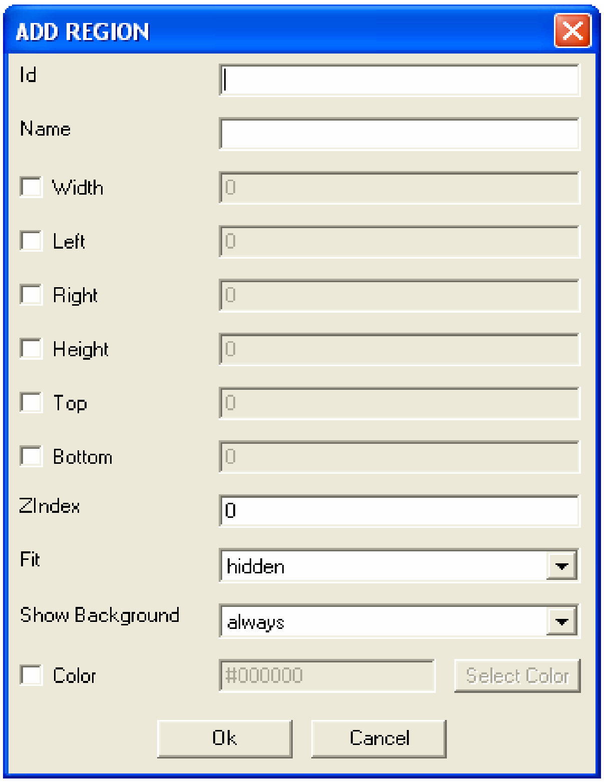
WARNING!

Delete or change region for resources using this region (content-image)?

● Change ○ Delete

Title222333444

2.8.3.2.5.4 Add Region



ADD REGION

Id:

Name:

□ Width: 0

□ Left: 0

□ Right: 0

□ Height: 0

□ Top: 0

□ Bottom: 0

ZIndex: 0

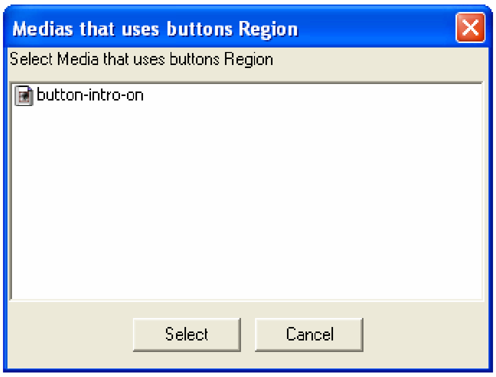
Fit: hidden

Show Background: always

□ Color: #000000

You can add new region by choosing the option of “Add Region”. There will pop up a dialog menu. The attributes of “Add Region” in region editing are exactly the same as the part “Add Region” described in the root layout editing.

2.8.3.2.5.5 Show Medias



Medias that uses buttons Region
Select Media that uses buttons Region
button-intro-on
Select
Cancel

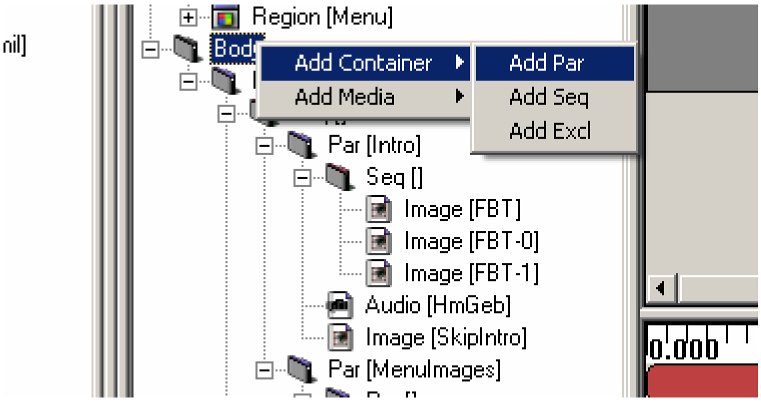
You can check which media is associated the region by choosing the option of “Show Medias”. You can select the Media from them for editing.

2.8.3.2.6 Body

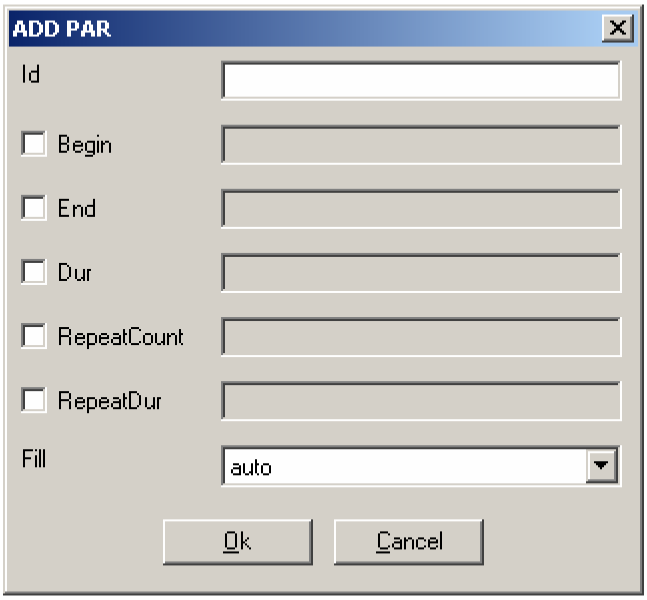
The Body is also the main sequence and is a not modifiable sequence of timings. You can add Containers and Medias to it by right clicking on it and using the menu.

2.8.3.2.6.1 Add Container

To add a Container to the Body right click on it and select the submenu “Add Container” and choose the type of container you want to add.



For example if you create a Par, a window like this will be displayed:

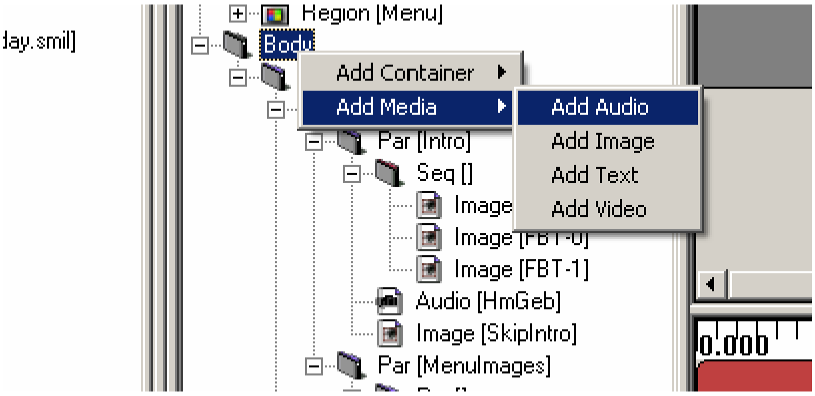


Fill: auto

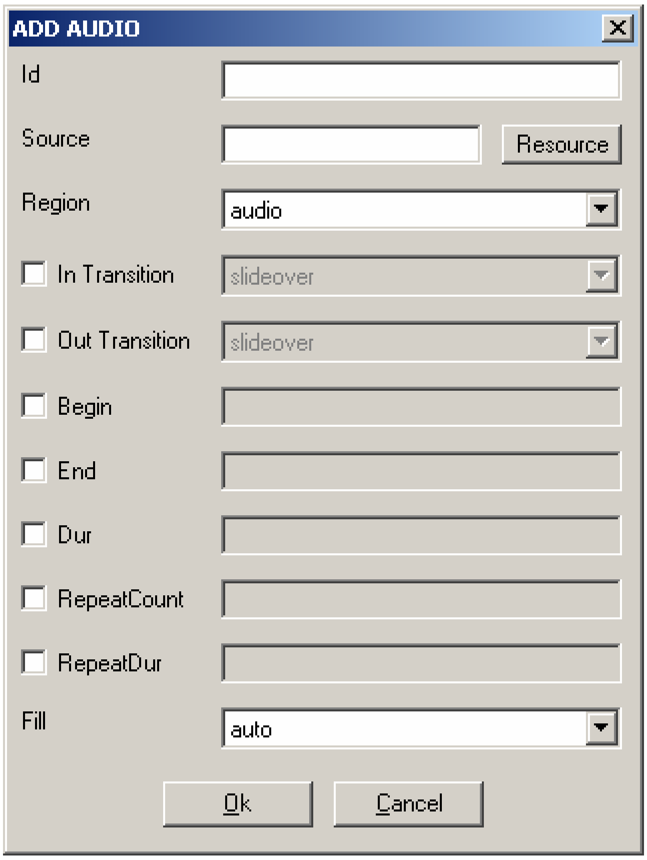
Now you can set the new Par properties and create it by clicking on “Ok”, you can also cancel the creation by clicking on “Cancel” or exiting the window.

2.8.3.2.6.2 Add Medias

To add a Media to the Body right click on it and select the submenu “Add Media” and choose the type of media you want to add.



For example if you create an Audio, a window like this will be displayed:



ADD AUDIO

Id

Source

Region: audio

□ In Transition: slideover

□ Out Transition: slideover

□ Begin

□ End

□ Dur

□ RepeatCount

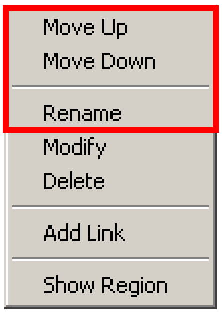
□ RepeatDur

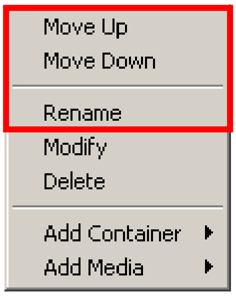
Fill: auto

Now you can set the new Audio properties and create it by clicking on “Ok”, you can also cancel the creation by clicking on “Cancel” or exiting the window.

2.8.3.2.7 Common timing operations

There are some common operations between Medias and Containers. You can see in the Menu the commands Move Up, Move Down and Rename are both in Media and Container Menus. Modify and delete are also common in the menus but loads different actions.





2.8.3.2.7.1 Move Up

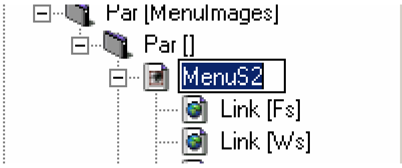
The Move Up command can be loaded by right click on the Media/Container and selecting Move Up. It moves the timing selected up in the structure (in the order of his parent). It is disabled when the timing selected is at the top of his parent.

2.8.3.2.7.2 Move Down

The Move Down command can be loaded by right click on the Media/Container and selecting Move Down. It moves the timing selected down in the structure (in the order of his parent). It is disabled when the timing selected is at the bottom of his parent.

2.8.3.2.7.3 Rename

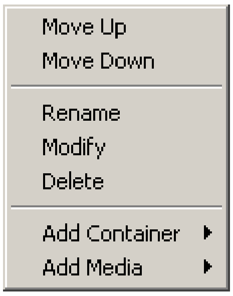
The Rename command can be loaded by right click on the Media/Container and selecting Rename. It opens the name editing. You can also open the editing by fast clicking on it.



When you end the editing, the name is changed.

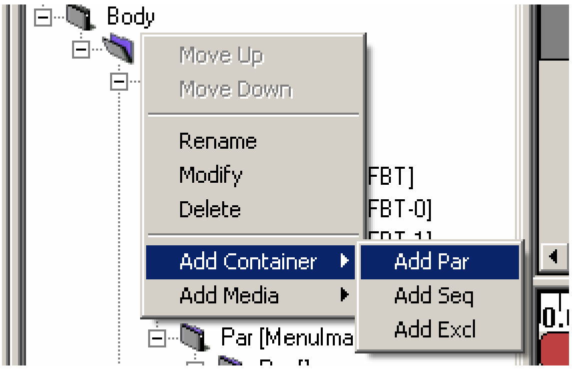
2.8.3.2.8 Containers

The Containers are the logical structure of the whole timing of the SMIL. You can add Containers and Medias to a Container by right clicking on it and using the menu. Containers could be Par, Seq or Excl for parallel, sequential and exclusive playing.

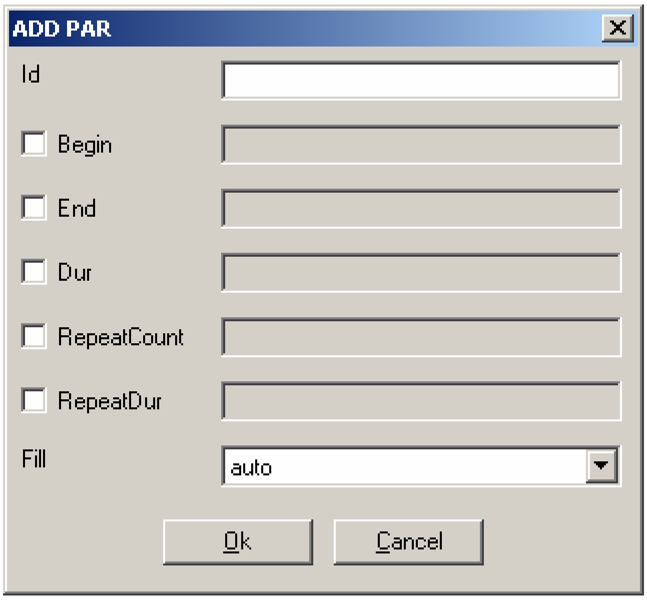


2.8.3.2.8.1 Add Container

To add a Container to a Container right click on it and select the submenu “Add Container” and choose the type of container you want to add.



For example if you create a Par, a window like this will be displayed:


ADD PAR

Id

□ Begin

□ End

□ Dur

□ RepeatCount

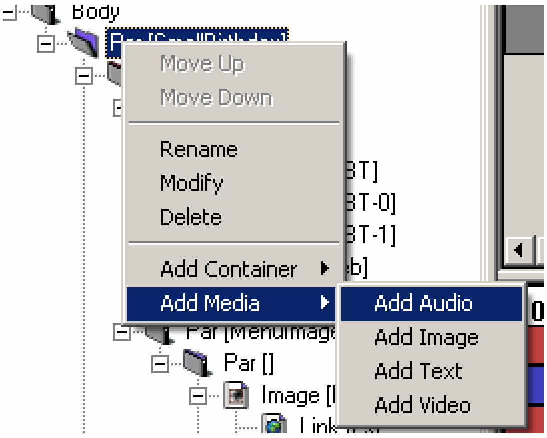
□ RepeatDur

Fill: auto

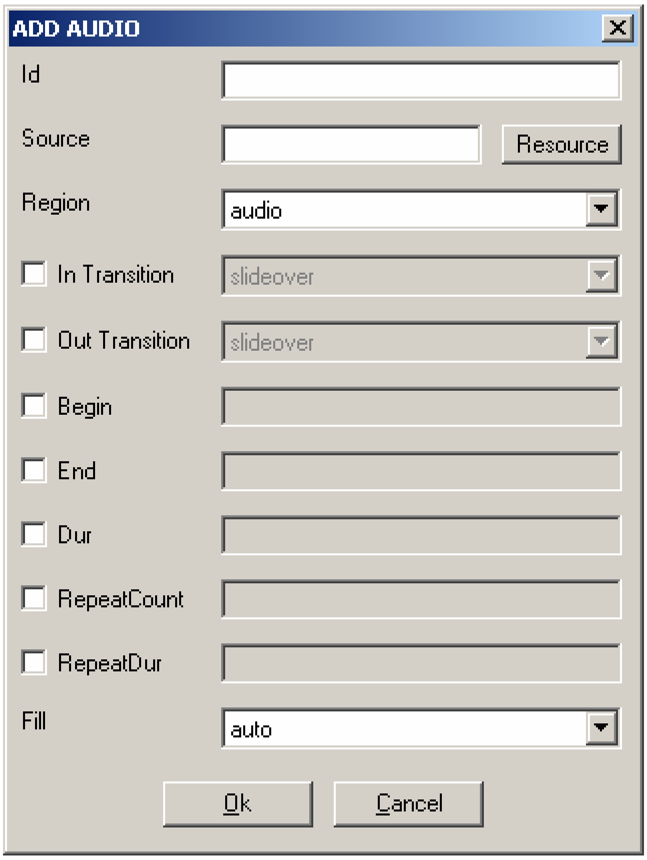
Now you can set the new Par properties and create it by clicking on “Ok”, you can also cancel the creation by clicking on “Cancel” or exiting the window.

2.8.3.2.8.2 *Add Medias*

To add a Media to a Container right click on it and select the submenu “Add Media” and choose the type of media you want to add.



For example if you create an Audio, a window like this will be displayed:



ADD AUDIO

Id

Source

Region: audio

☐ In Transition: slideover

☐ Out Transition: slideover

☐ Begin

☐ End

☐ Dur

☐ RepeatCount

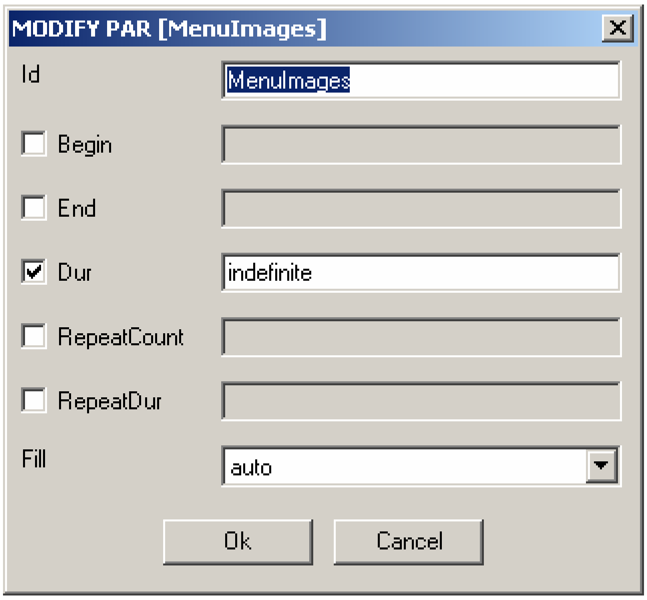
☐ RepeatDur

Fill: auto

Now you can set the new Audio properties and create it by clicking on “Ok”, you can also cancel the creation by clicking on “Cancel” or exiting the window.

2.8.3.2.8.3 Modify

To modify by dialog a Container right click on it and select “Modify”. A window like this will be displayed.



MODIFY PAR [MenuImages]

Id: MenuImages

☐ Begin

☐ End

☑ Dur: indefinite

☐ RepeatCount

☐ RepeatDur

Fill: auto

There you can set the following properties:

Id: ID of the container (default: empty)
The ID is used identify the Container in the SMIL

Begin: Begin of the container (default: not set)
The Begin set the start of the container; it is a list of beginnings. The general definition of W3C is supported: http://www.w3.org/TR/SMIL2/smil-timing.html#adef-begin

End: End of the container (default: not set)
The End set the end of the container; it is a list of endings. The general definition of W3C is supported: http://www.w3.org/TR/SMIL2/smil-timing.html#adef-end

Dur: Duration of the container (default: not set)
The Dur set the duration of the container; it is a single Duration value.

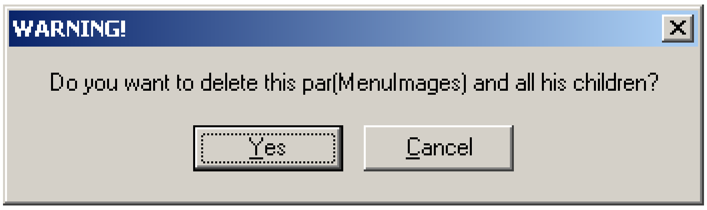
RepeatCount: Number of repetitions (default: not set)
The RepeatCount is used when you want to repeat the container a defined number of times.

RepeatDur: Duration of repetitions (default: not set)
The RepeatCount is used when you want to repeat the container for a defined duration.

Fill: Default Fill for Medias in this Container (default: auto)
The Fill is used to set default filling for Medias in the Container. It can have the following values: auto, remove, freeze, hold and transition.

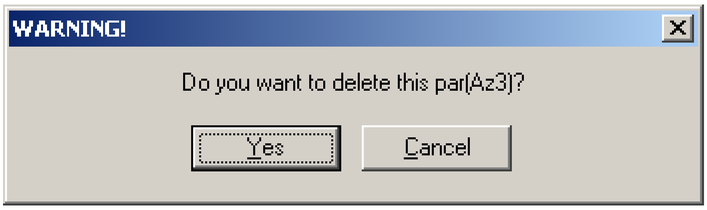
2.8.3.2.8.4 Delete

To delete a Container right click on it and click on “Delete”. A confirms dialog will appear:
Like this one if the Container contains something.


WARNING!

Do you want to delete this par(MenuImages) and all his children?

Like this one if not.

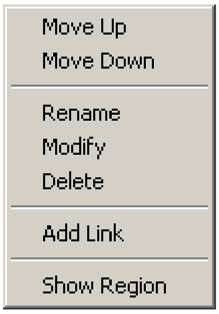

WARNING!

Do you want to delete this par(Az3)?

In both cases click Yes to delete the Container or Cancel or exit the window if you changed your mind.

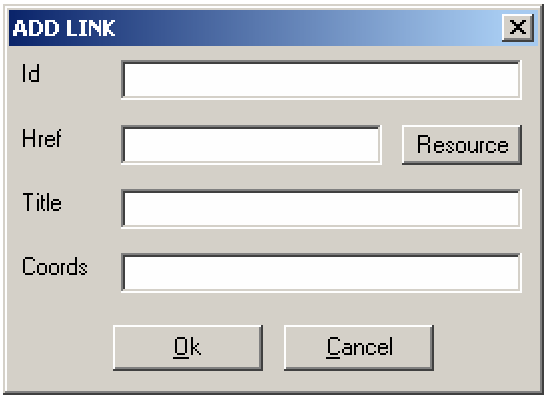
2.8.3.2.9 Medias

The Medias are the resources played in the SMIL. You can add Link to a Media or select his Region by right clicking on it and using the menu. Medias could be Audio, Image, Text and Video for respective type of files playing.



2.8.3.2.9.1 Add Link

To add a Link to a Media right click on it and click the menu “Add Link”, a window like this will be displayed:



There you can set the following properties of the new Link:

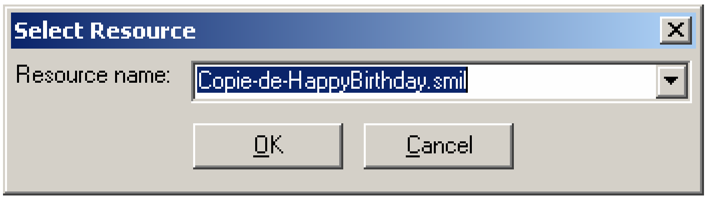
Id: ID of the link (default: empty)
The ID is used identify the Link in the SMIL (used most of time for internal links).

Href: Link to load (default: empty)
The Href is used for external Links by setting a link to another SMIL file.

Title: Title of the Link(default: empty)
The Title is displayed as information when the SMIL is played.

Coords: Coordinates of the Link Region (default: empty= entire Region)
The Coords are a list of coordinates to define a sub-region mouse sensitive to load this link (the entire Region is used if it is not defined)

The Resource button allows setting the Href by selecting a SMIL resource in Axom. It loads a window like this:



Resource name: Copie-de-HappyBirthday.smil

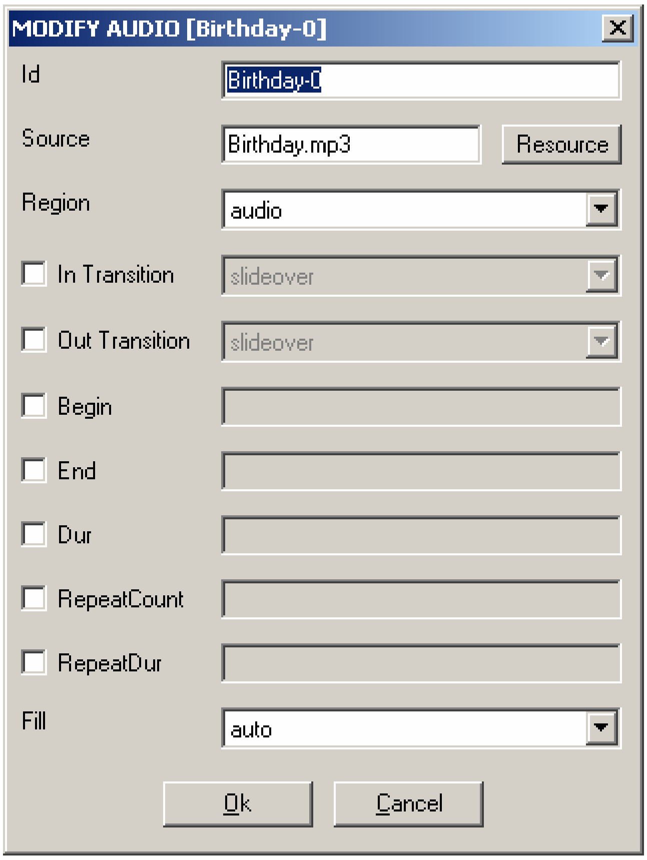
You simply select the resource you want to link and validate; the new Href will be set.

2.8.3.2.9.2 Select Region

To select the Region where a Media is played, simply right click on it and click the menu “Show Region”. The Region of the Media will be selected. (In Tree and Visual View)

2.8.3.2.9.3 Modify

To modify by dialog a Media right click on it and select “Modify”. A window like this will be displayed.



MODIFY AUDIO [Birthday-0]

Id: Birthday-0

Source: Birthday.mp3

Region: audio

□ In Transition: slideover

□ Out Transition: slideover

□ Begin:

□ End:

□ Dur:

□ RepeatCount:

□ RepeatDur:

Fill: auto

There you can set the following properties:

Id: ID of the Media (default: empty)
The ID is used identify the Media in the SMIL

Source: Source of the Media (default: empty)
The Source is used to link the resource played by this Media

Region: Region of the Media (default: first Region)
The Region defines the area where the Media will be played. You can select each region you have defined.

In Transition: Transition at start (default: not defined)
The In Transition defines the Transition at start where the Media will be played. You can select each Transition you have defined.

Out Transition: Transition at end (default: not defined)
The Out Transition defines the Transition at end where the Media will be played. You can select each Transition you have defined.

Begin: Begin of the Media (default: not set)
The Begin set the start of the Media; it is a list of beginnings. The general definition of W3C is supported:

http://www.w3.org/TR/SMIL2/smil-timing.html#adef-begin

End: End of the Media (default: not set)
The End set the end of the Media; it is a list of endings. The general definition of W3C is supported: http://www.w3.org/TR/SMIL2/smil-timing.html#adef-end

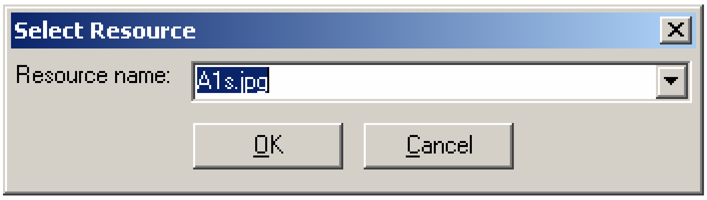
Dur: Duration of the Media (default: not set)
The Dur set the duration of the Media; it is a single Duration value.

RepeatCount: Number of repetitions (default: not set)
The RepeatCount is used when you want to repeat the Media a defined number of times.

RepeatDur: Duration of repetitions (default: not set)
The RepeatCount is used when you want to repeat the Media for a defined duration.

Fill: Filling of the Media (default: auto)
The Fill is used to set the filling for the Media. It can have the following values: auto, remove, freeze, hold and transition.

The Resource button allows setting the Source by selecting a resource in Axom (selected by mime type). It loads a window like this:

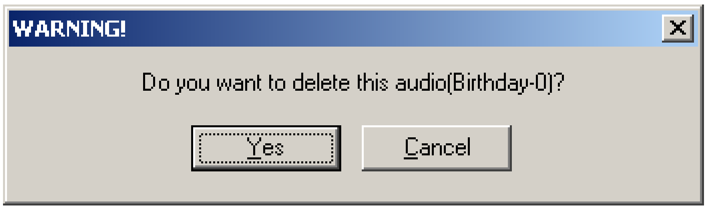


Resource name: A1s.jpg

You simply select the resource you want to link and validate; the new Source will be set.

2.8.3.2.9.4 Delete

To delete a Media right click on it and click on "Delete". A confirms dialog will appear:

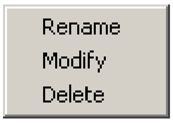


Do you want to delete this audio(Birthday-0)?

Click Yes to delete the Media or Cancel or exit the window if you changed your mind.

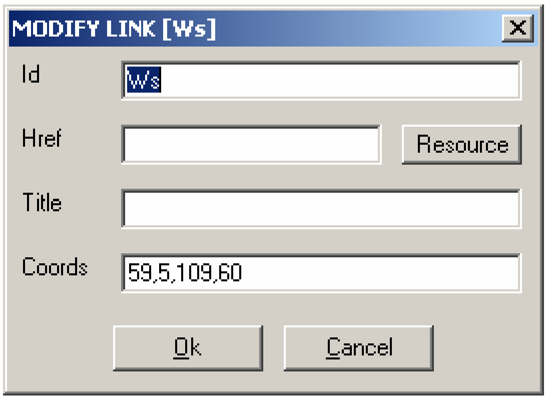
2.8.3.2.10 Links

The Links are the way to jump from a Media. They can be renamed, modified and deleted by menu.



2.8.3.2.10.1 Modify

To add a Link to a Media right click on it and click the menu "Modify", a window like this will be displayed:



MODIFY LINK [Ws]

Id: Ws

Href:

Title:

Coords: 59,5,109,60

There you can set the following properties of the new Link:

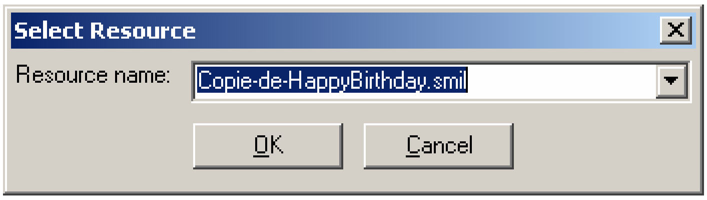
Id: ID of the link (default: empty)
The ID is used identify the Link in the SMIL (used most of time for internal links).

Href: Link to load (default: empty)
The Href is used for external Links by setting a link to another SMIL file.

Title: Title of the Link (default: empty)
The Title is displayed as information when the SMIL is played.

Coords: Coordinates of the Link Region (default: empty= entire Region)
The Coords are a list of coordinates to define a sub-region mouse sensitive to load this link (the entire Region is used if it is not defined)

The Resource button allows setting the Href by selecting a SMIL resource in Axom. It loads a window like this:



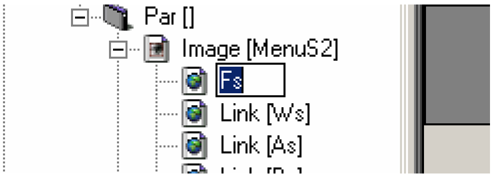
Select Resource

Resource name: Copie-de-HappyBirthday.smil

You simply select the resource you want to link and validate; the new Href will be set.

2.8.3.2.10.2 Rename

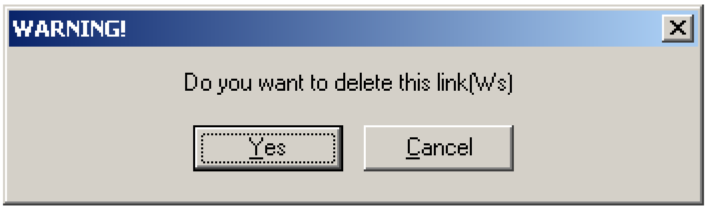
The Rename command can be loaded by right click on the Link and selecting Rename. It opens the name editing. You can also open the editing by fast clicking on it.



When you end the editing, the name is changed.

2.8.3.2.10.3 Delete

To delete a Link right click on it and click on “Delete”. A confirms dialog will appear:



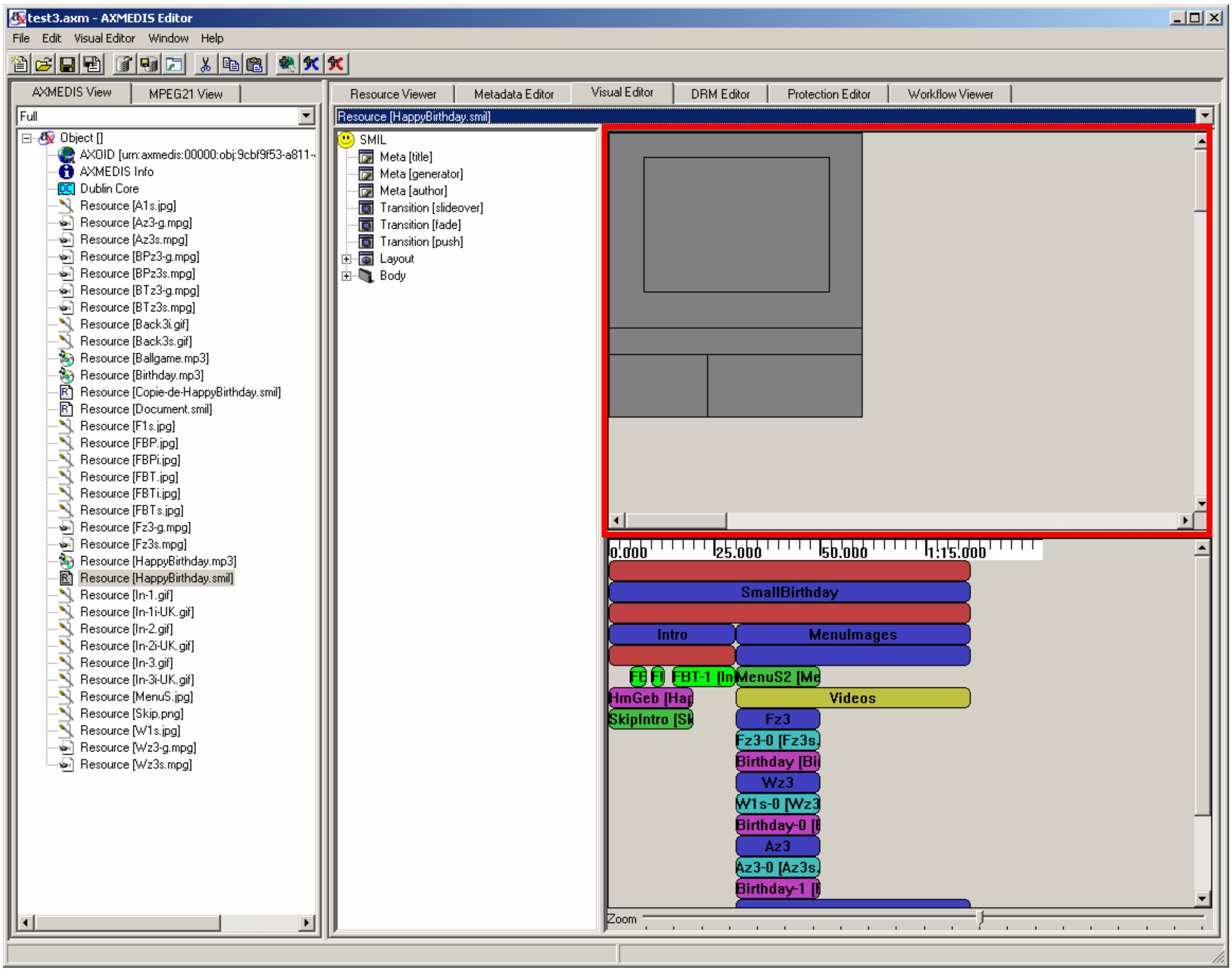
WARNING!

Do you want to delete this link(Ws)

Click Yes to delete the Link or Cancel or exit the window if you changed your mind.

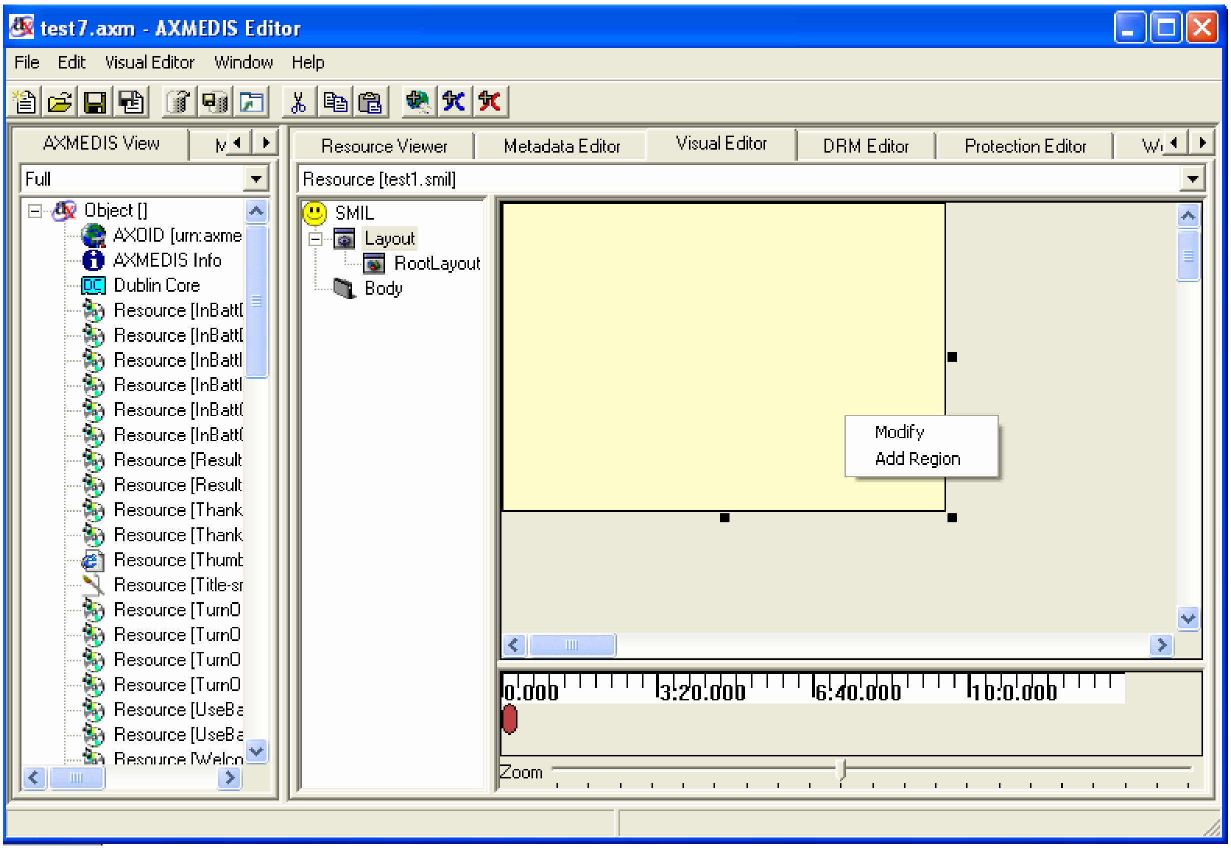
2.8.3.3 Visual view part

The visual part is located at the right top of the SMIL Editor.



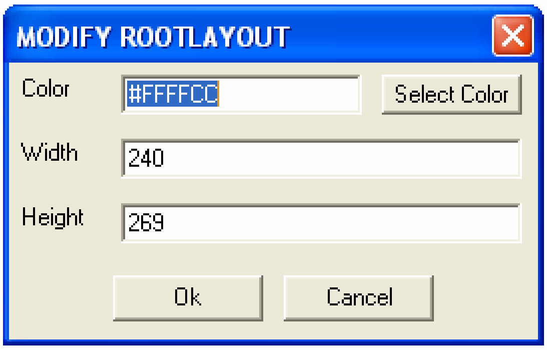
The visual view part of the SMIL editor is used for manipulating the SMIL layout which including the Rootlayout, Regions, Sub-regions of regions.

2.8.3.3.1 Root-layout Editing



You can modify the size of the root-layout by using the mouse to change the size directly or manually with dialog menu by right clicking the root-layout. There will pop up a menu for you. One option is to modify the size and colour of the root-layout. By inputting the values of the height and width, you can modify the size. With the dialog given, you can customize the colour as well. The left top position is fixed at the left top corner of the canvas.

2.8.3.3.1.1 Modify

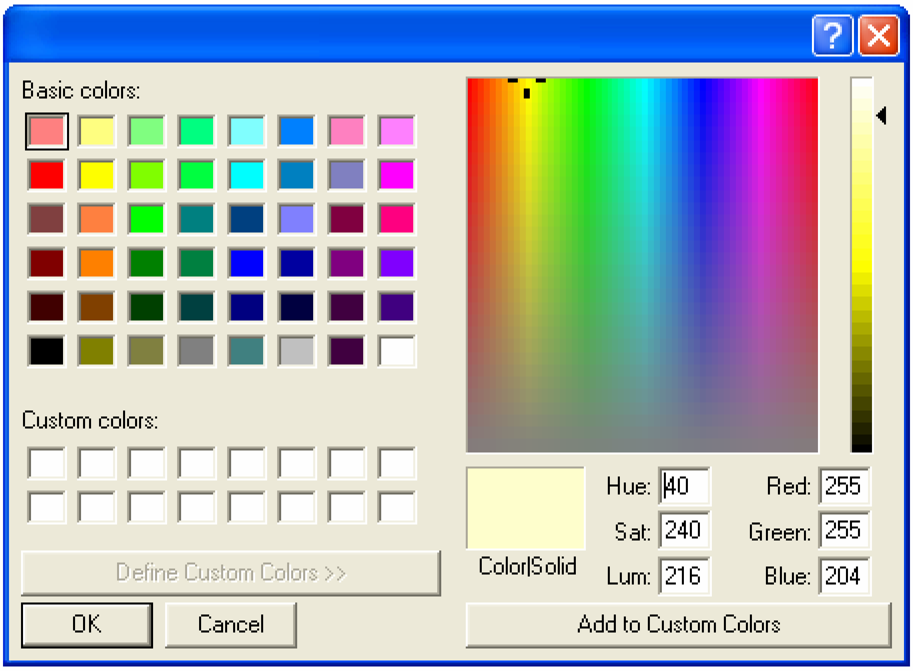

MODIFY ROOTLAYOUT

Color #FFFFCC

Width 240

Height 269

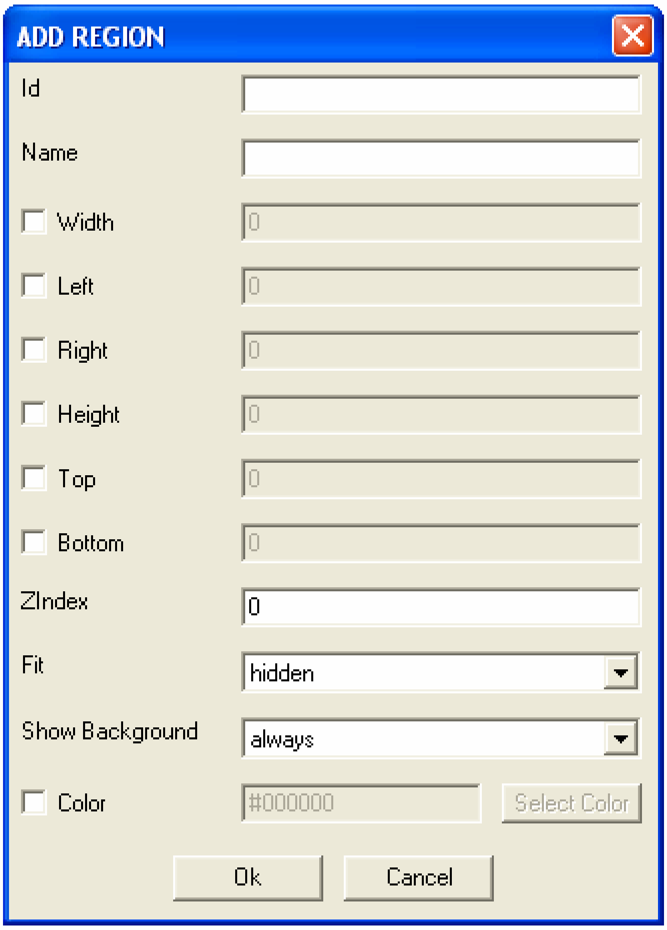
You modify the size and colour of the root-layout by inputting the values of the height and width.



Hue: 40
Sat: 240
Lum: 216
Red: 255
Green: 255
Blue: 204

You can select the colour by right-clicking the “select colour” and there will pop up the colour for choice.

2.8.3.3.1.2 *Add region*



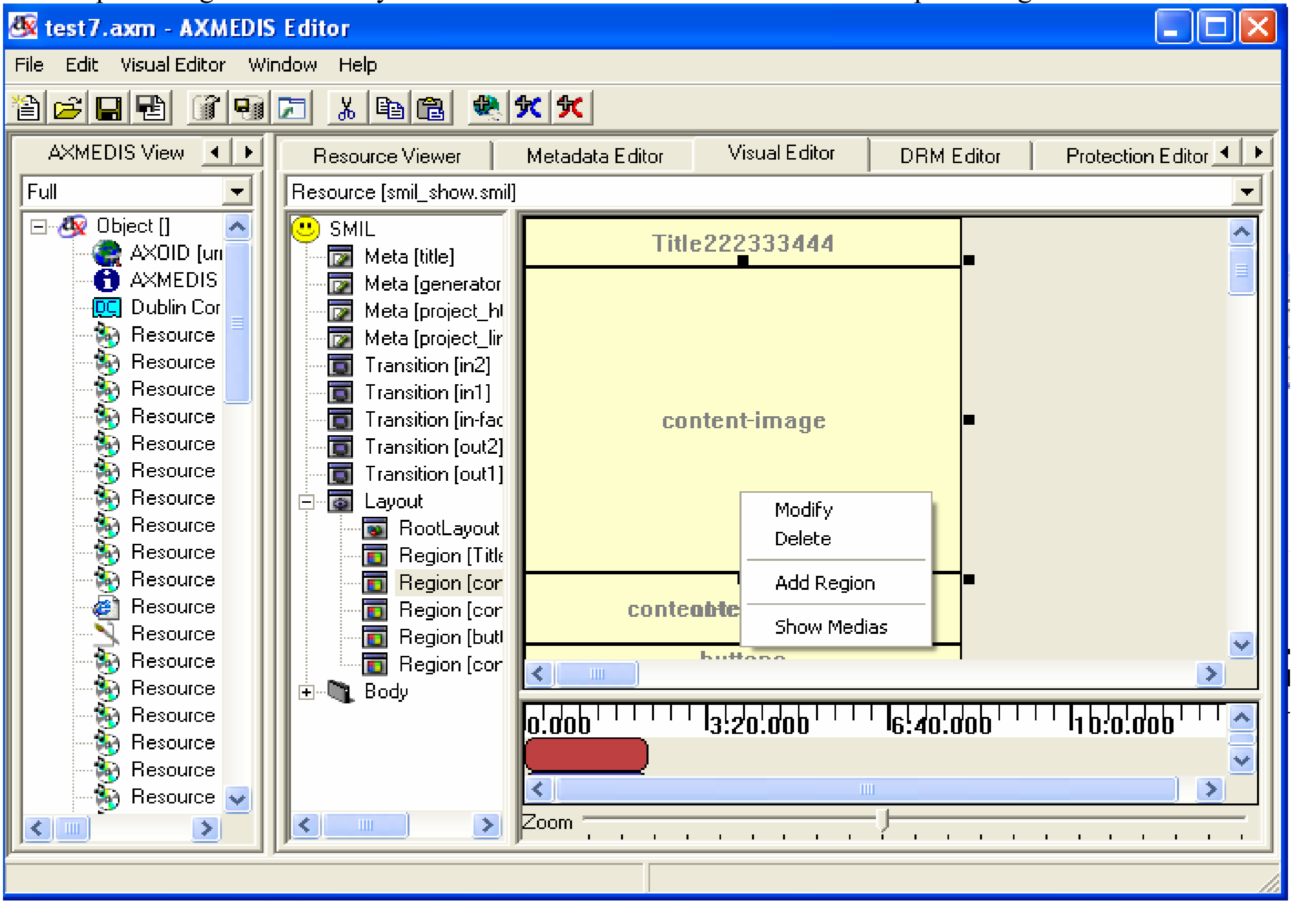
Id:
Name:
□ Width: 0
□ Left: 0
□ Right: 0
□ Height: 0
□ Top: 0
□ Bottom: 0
ZIndex: 0
Fit: hidden
Show Background: always
□ Color: #000000

You can add the region into the root layout by selecting the option of “add region”.

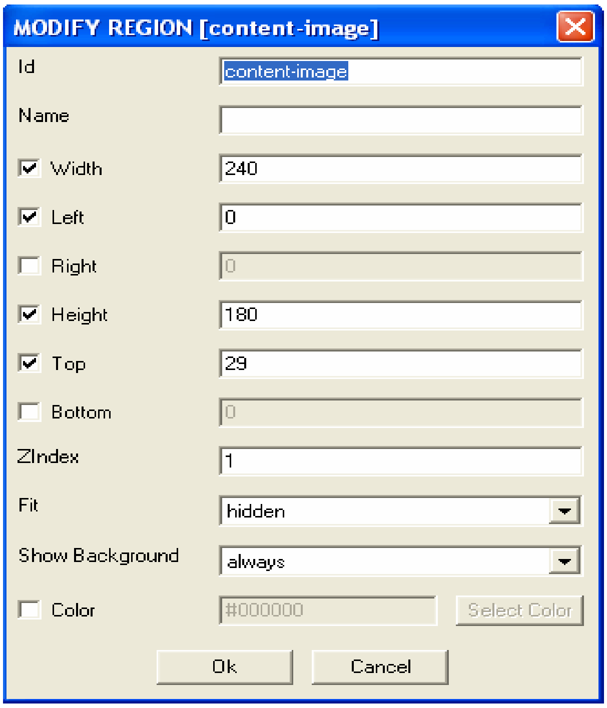
2.8.3.3.2 Region Editing

You can modify the size of the region by using the mouse to change the size directly or manually with dialog menu by right clicking the corresponding region. There will pop up a menu for you. One option is to modify the size, position, index, and colour of the region. One option is to delete this region. One option is add some sub-regions in side this region, one option is to show the media resources which are associated with this region. By inputting the values of the height and width, you can modify the size. With the dialog given, you can customize the colour as well.

By directly editing the region with mouse, you can move the region by holding the left key of the mouse and moving it. You can also drag the border of the region to resize it. The sub regions cannot exceed the borders of their parent regions. Also they cannot be moved out of the borders of their parent regions.



2.8.3.3.2.1 Modify



MODIFY REGION [content-image]

Id: content-image

Name:

☑ Width: 240

☑ Left: 0

□ Right: 0

☑ Height: 180

☑ Top: 29

□ Bottom: 0

ZIndex: 1

Fit: hidden

Show Background: always

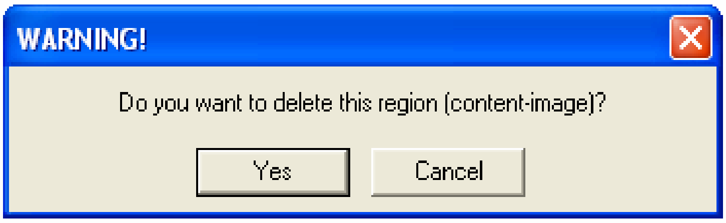
□ Color: #000000

You can modify the region by choosing the option of “Modify”. There will pop up a dialog menu for you.

2.8.3.3.2.2 Delete

You can also delete the region by choosing the option of “Delete”.

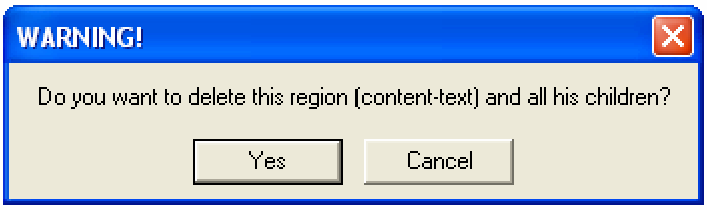
1) When there is no media resource associated with this region, there will popup the following warning dialog.



WARNING!

Do you want to delete this region (content-image)?

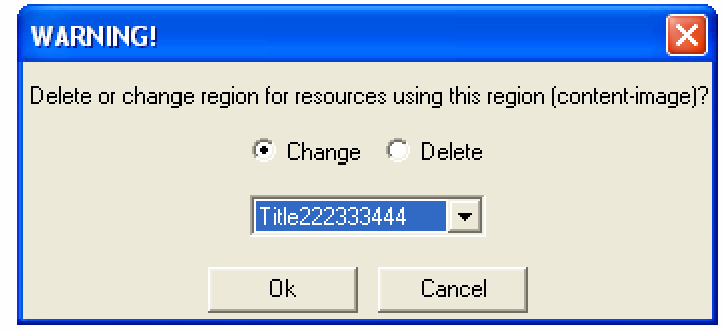
2) When there are some child regions associated with this region, there will popup the following warning dialog asking if you want to delete this region and all his children.



WARNING!

Do you want to delete this region (content-text) and all his children?

3) When there are some media resources associated with this region, there will popup the following warning dialog asking if you want to delete or change region for these resources. By option “Delete”, you can delete the region and the resources inside.



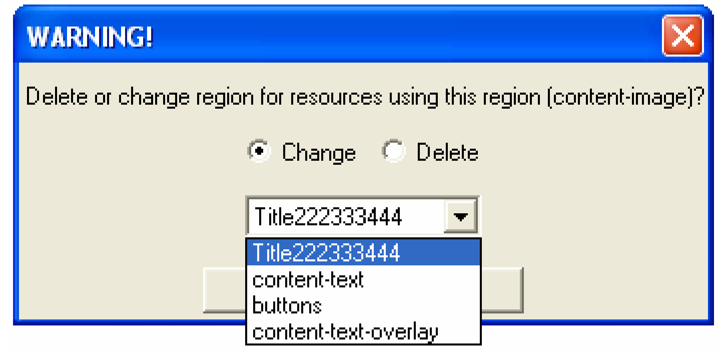
WARNING!

Delete or change region for resources using this region (content-image)?

● Change ○ Delete

Title222333444

You can choose to use other regions to host these resources as follows. There will appear a list of all the other regions for changing.



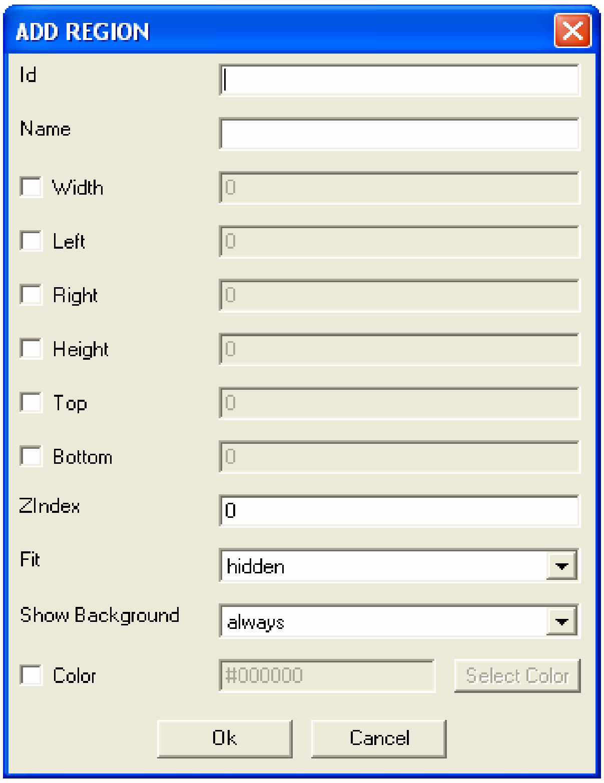
WARNING!

Delete or change region for resources using this region (content-image)?

● Change ○ Delete

Title222333444

2.8.3.3.2.3 *Add Region*

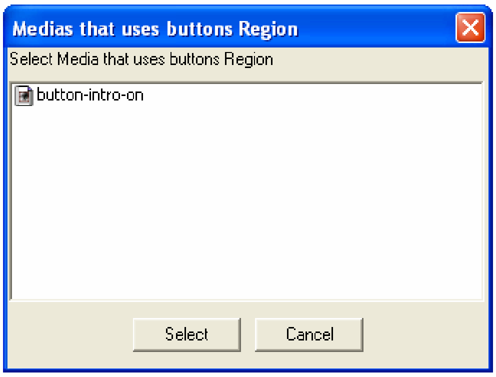


ADD REGION

Id	
Name	
□ Width	0
□ Left	0
□ Right	0
□ Height	0
□ Top	0
□ Bottom	0
ZIndex	0
Fit	hidden
Show Background	always
□ Color	#000000

You can add new region by choosing the option of "add region". There will pop up a dialog menu for you. The attributes of "add region" in region editing are exactly the same as the part "add region" described in the root layout editing.

2.8.3.3.2.4 Show Medias



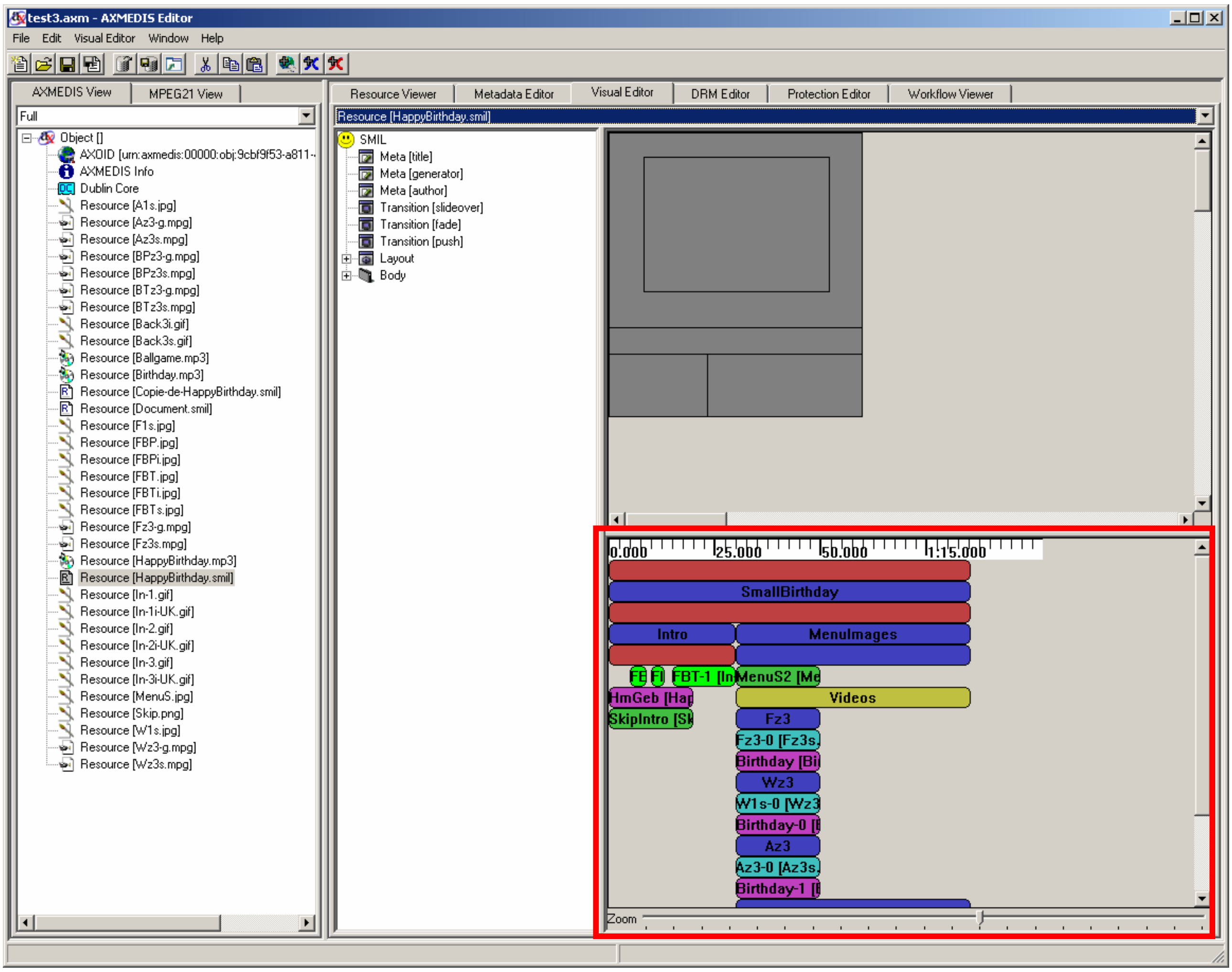
Medias that uses buttons Region

Select Media that uses buttons Region

You can check which media is associate the region by choosing the option of “Show Medias”. You can select the media from them for editing.

2.8.3.4 Behaviour view part

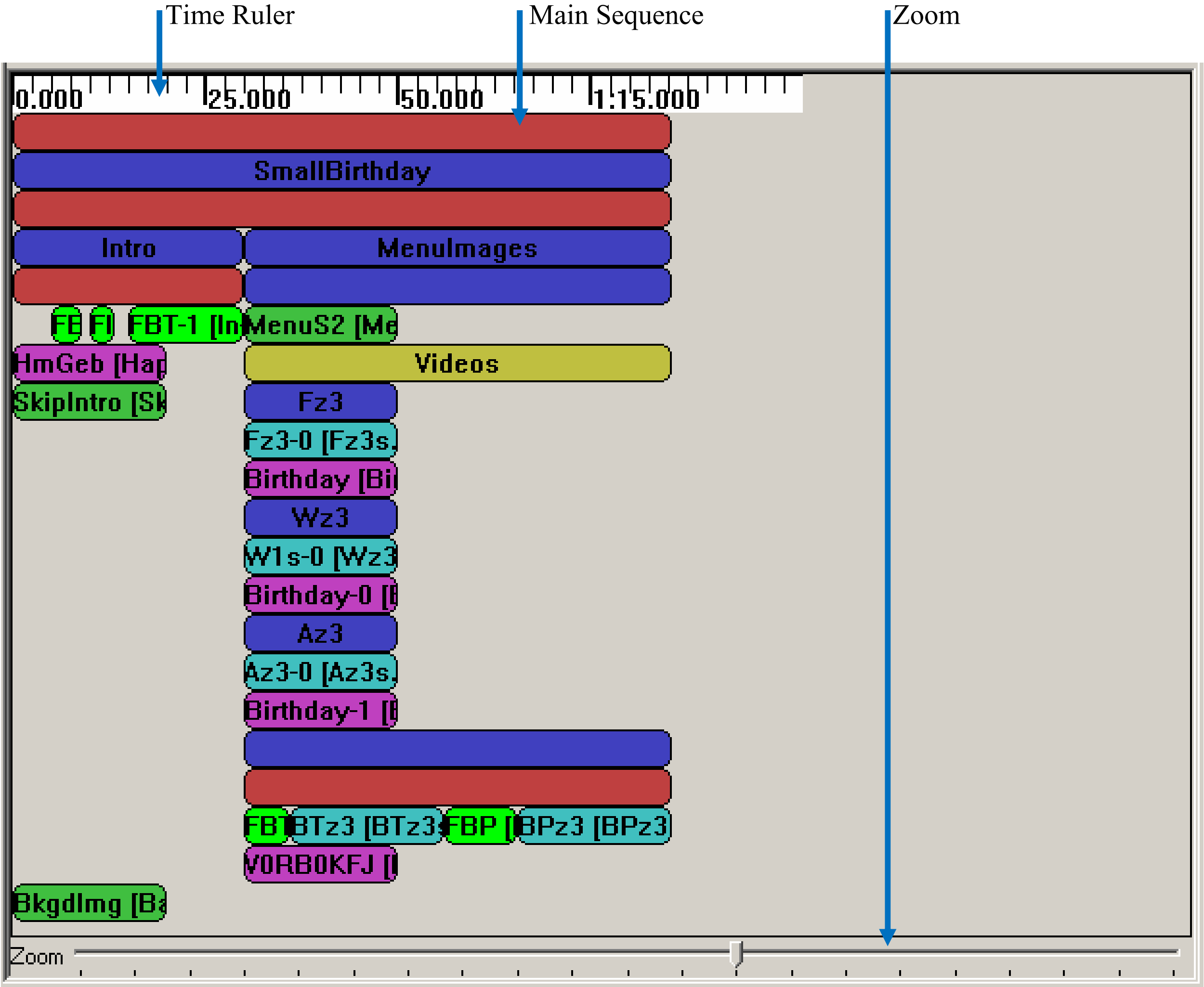
The behaviour part is located at the right bottom of the SMIL Editor.



2.8.3.4.1 Description of components

At the top of the behaviour view you can see the time ruler. This ruler gives timing information and a scaling view for the whole SMIL timing.

At the centre you can see and modify the timing attributes of the SMIL. At the top there is always a not modifiable anonym red bar that represents the main sequence that is the basic timing structure of the SMIL file. Under it, that means "in it", you can add/modify/delete others containers like "Par" for parallel playing (all the contained together), "Seq" for Sequential playing (all the contained one after another) and "Excl" for Exclusion playing (only one of the contained upon a time). You can also add/modify/delete the media that will be played.
If the timings are too big navigation scroll bars appears.
At the bottom, you can see and modify the zoom scale used for timing display.



2.8.3.4.2 Time Ruler and Zoom

Time ruler and zoom show and allow seeing the global timing. One important thing to remember is that if durations are not defined for the whole SMIL file, the timing you will get in a player will be different from the one displayed because all not known durations are set by default to 20 seconds in the behaviour view. (See below for more details).

2.8.3.4.3 Timings

Timings are both Main Sequence and other Medias and Containers (boxes in the middle). The meanings of the colours are:

Red: Sequence Container
Blue: Parallel Container
Yellow: Exclusive Container

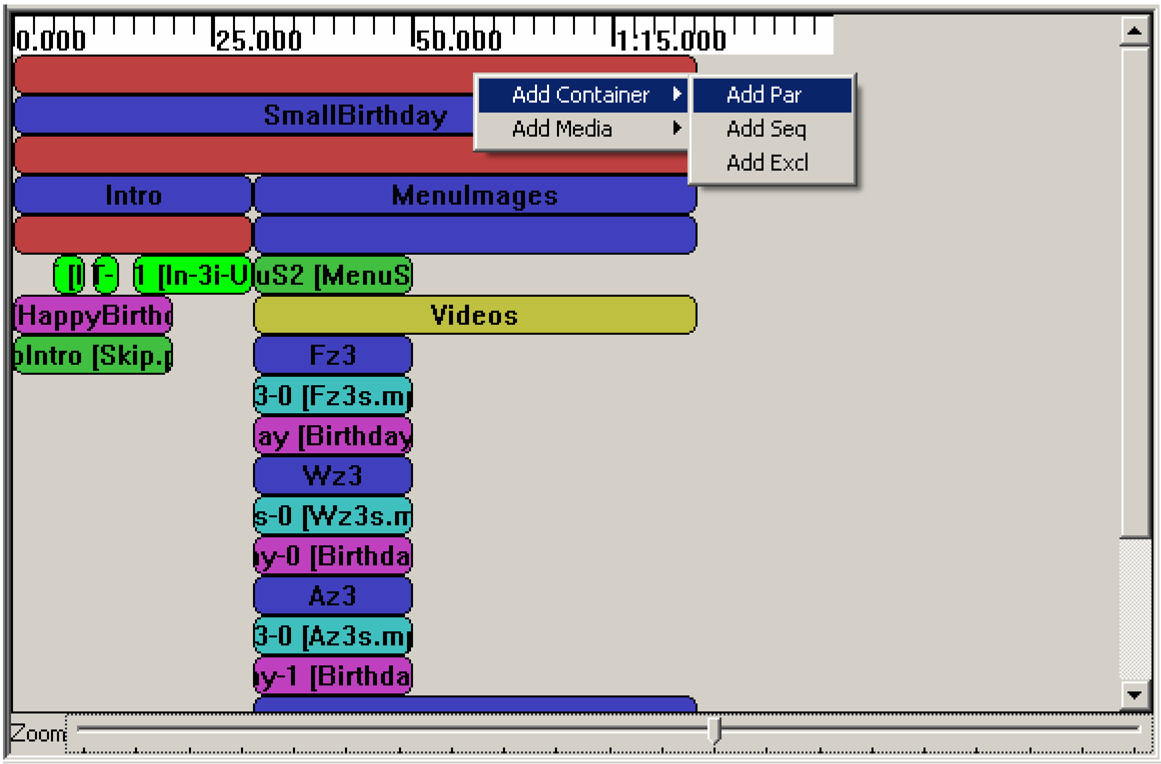
Pink:	Audio Media
Green:	Image Media
Cyan:	Video Media
White:	Text Media

When a colour is shining the duration of the Media/Container is set.
When a colour is greyed the duration of the Media/Container is not set.

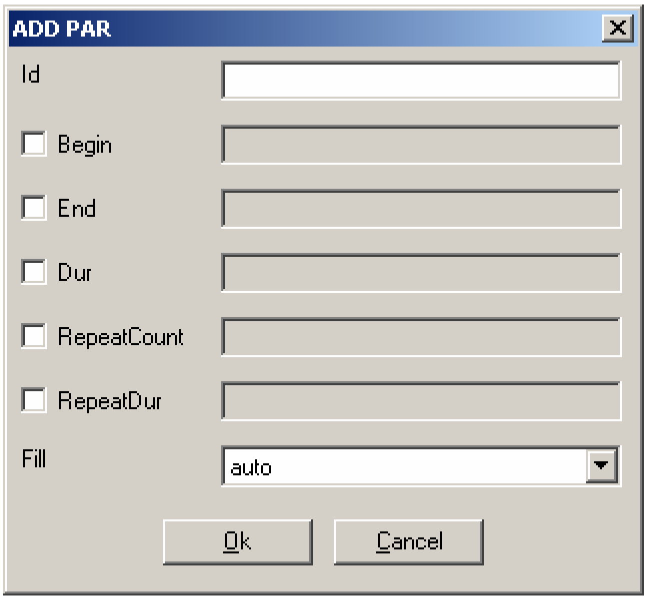
2.8.3.4.3.1 Main Sequence

The main sequence is a not modifiable sequence of timings. You can add Containers and Medias to it by right clicking on it and using the menu.

Add Container
To add a Container to the Main Sequence right click on it and select the submenu "Add Container" and choose the type of container you want to add.



For example if you create a Par, a window like this will be displayed:



ADD PAR

Id

□ Begin

□ End

□ Dur

□ RepeatCount

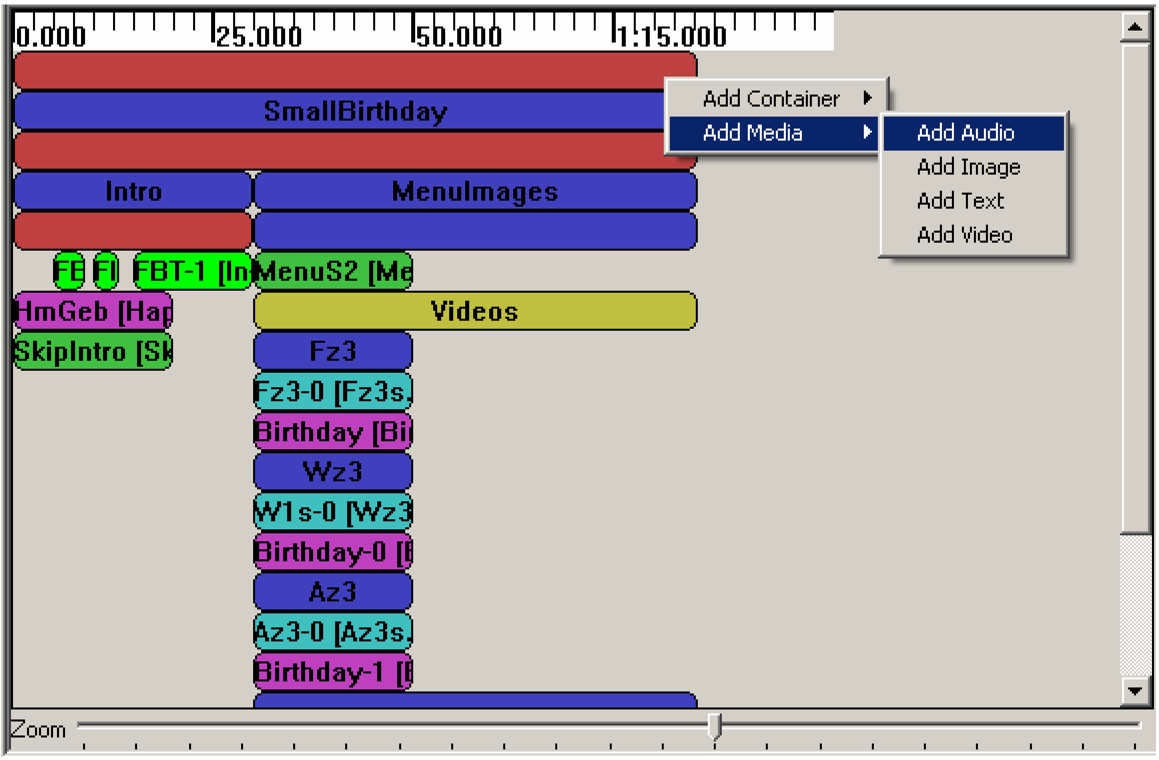
□ RepeatDur

Fill: auto

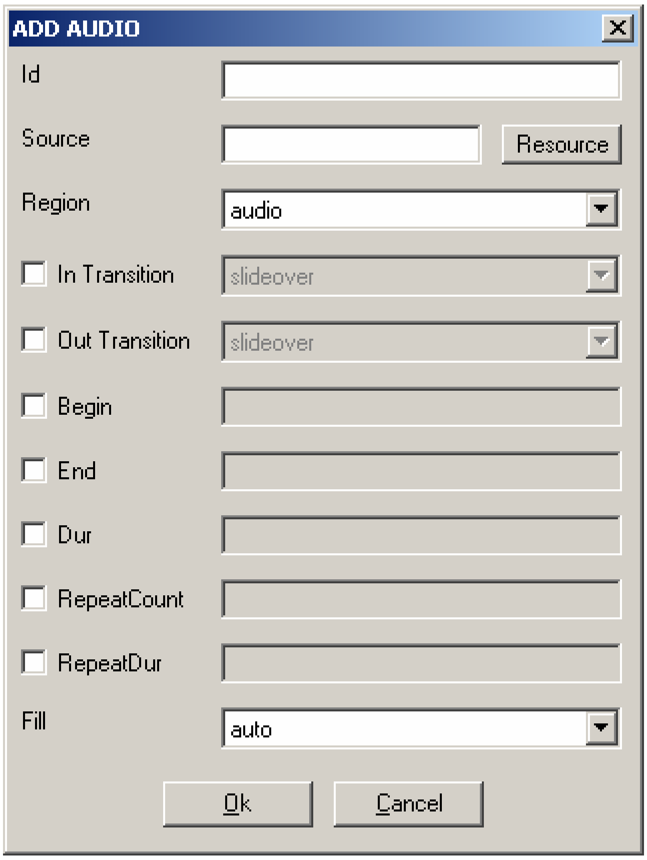
Now you can set the new Par properties and create it by clicking on “Ok”, you can also cancel the creation by clicking on “Cancel” or exiting the window.

Add Medias

To add a Media to the Main Sequence right click on it and select the submenu “Add Media” and choose the type of media you want to add.



For example if you create an Audio, a window like this will be displayed:



ADD AUDIO

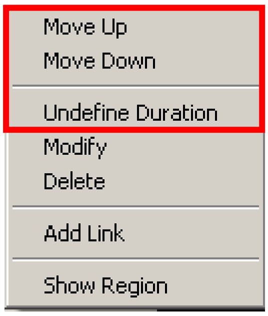
Id		
Source		Resource
Region	audio	
□ In Transition	slideover	
□ Out Transition	slideover	
□ Begin		
□ End		
□ Dur		
□ RepeatCount		
□ RepeatDur		
Fill	auto	

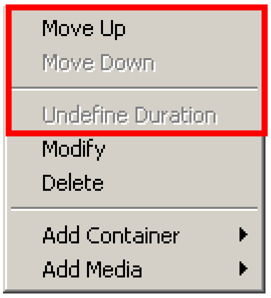
Ok Cancel

Now you can set the new Audio properties and create it by clicking on “Ok”, you can also cancel the creation by clicking on “Cancel” or exiting the window.

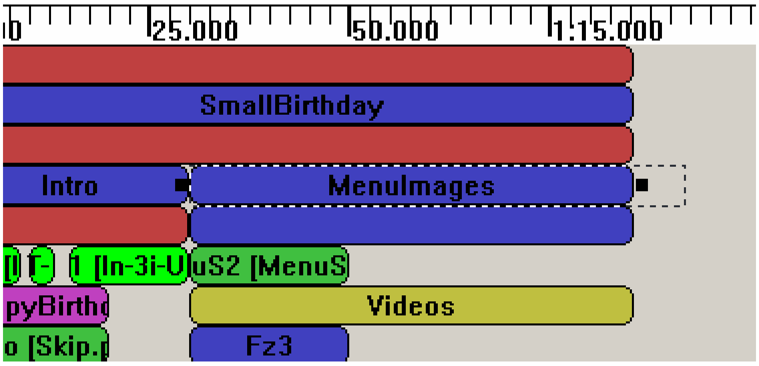
2.8.3.4.3.2 Common Timing operations

There are some common operations between Medias and Containers. You can see in the Menu the commands Move Up, Move Down and Undefine Duration are both in Media and Container Menus. Modify and delete are also common in the menus but loads different actions.





The mouse modifications are also in common.

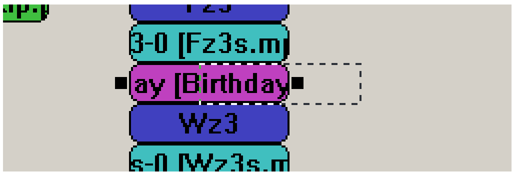


Move Up
The Move Up command can be loaded by right click on the Media/Container and selecting Move Up. It moves the timing selected up in the structure (in the order of his parent). It is disabled when the timing selected is at the top of his parent.

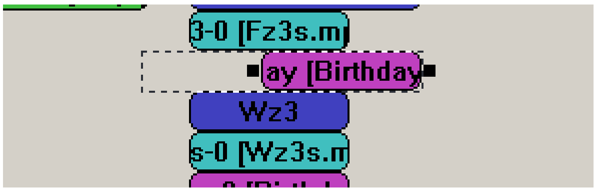
Move Down
The Move Down command can be loaded by right click on the Media/Container and selecting Move Down. It moves the timing selected down in the structure (in the order of his parent). It is disabled when the timing selected is at the bottom of his parent.

Undefine Duration
The Undefine Duration command can be loaded by right click on the Media/Container and selecting Undefine Duration. It removes a definition of Duration of the Timing (don't remove them all). In order (when available) : Dur, Ends in the order of apparition.

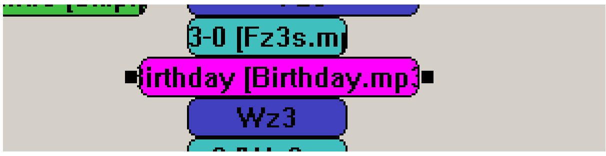
Mouse modifications
The Begin, End and Duration attributes of timings can also be modified by mouse. To modify media/container, left click on it. If you keep the left down drag & drop is activated. The resource can only be moved horizontally. When the resource is dropped it takes the new time offset for begin.



When the media/container is left clicked, a selection appears. When you drag and drop the black squares it changes durations and start (when using the left one).



Please note that Seq doesn't accept negative values, so the resource will be adjusted to be correct. Another thing to note is that if the duration of your timing was not defined, it changes his colour to the "duration set" one

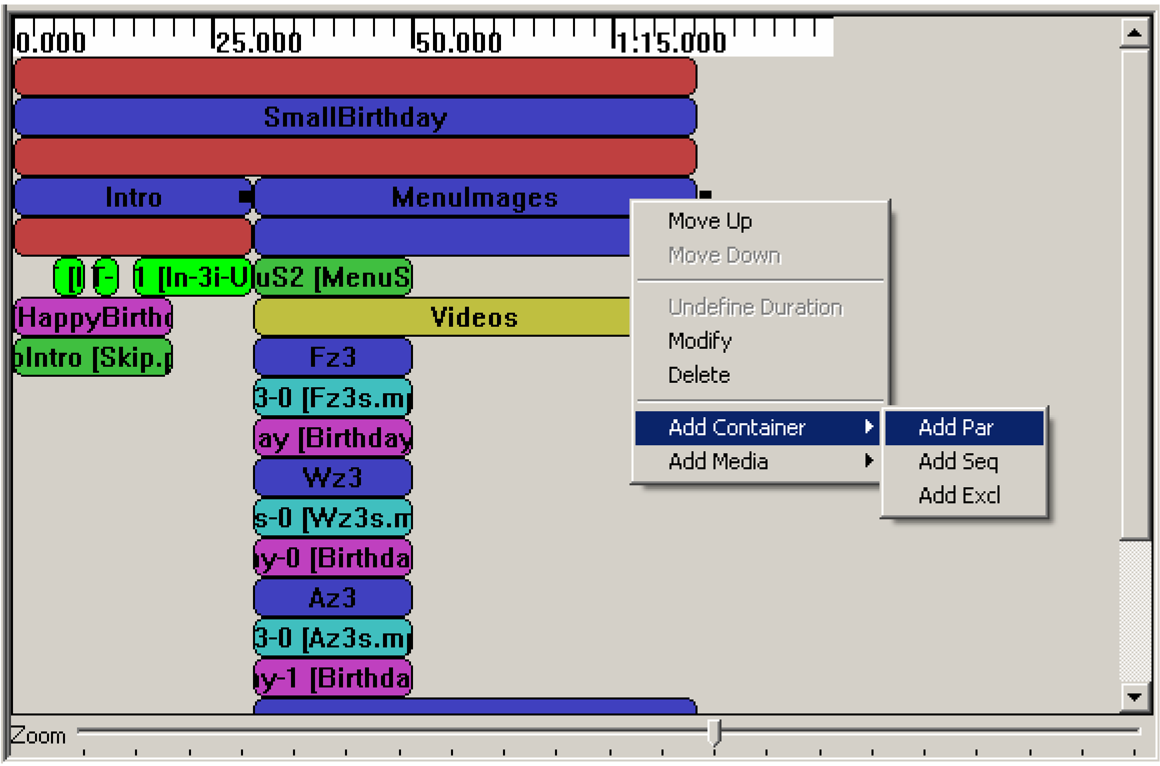


2.8.3.4.3.3 Containers

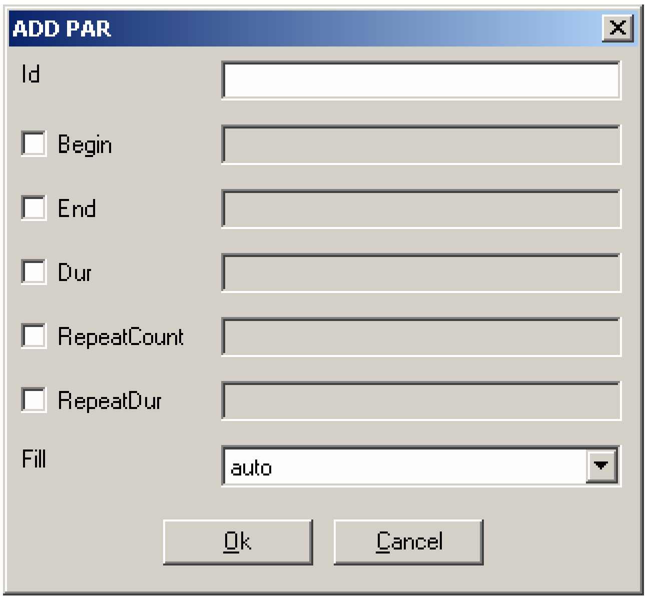
The Containers are the logical structure of the whole timing of the SMIL. You can add Containers and Medias to a Container by right clicking on it and using the menu. You can also set timings properties by mouse and by the menu. Containers could be Par, Seq or Excl for parallel, sequential and exclusive playing.

Add Container

To add a Container to a Container right click on it and select the submenu "Add Container" and choose the type of container you want to add.



For example if you create a Par, a window like this will be displayed:


ADD PAR

Id

□ Begin

□ End

□ Dur

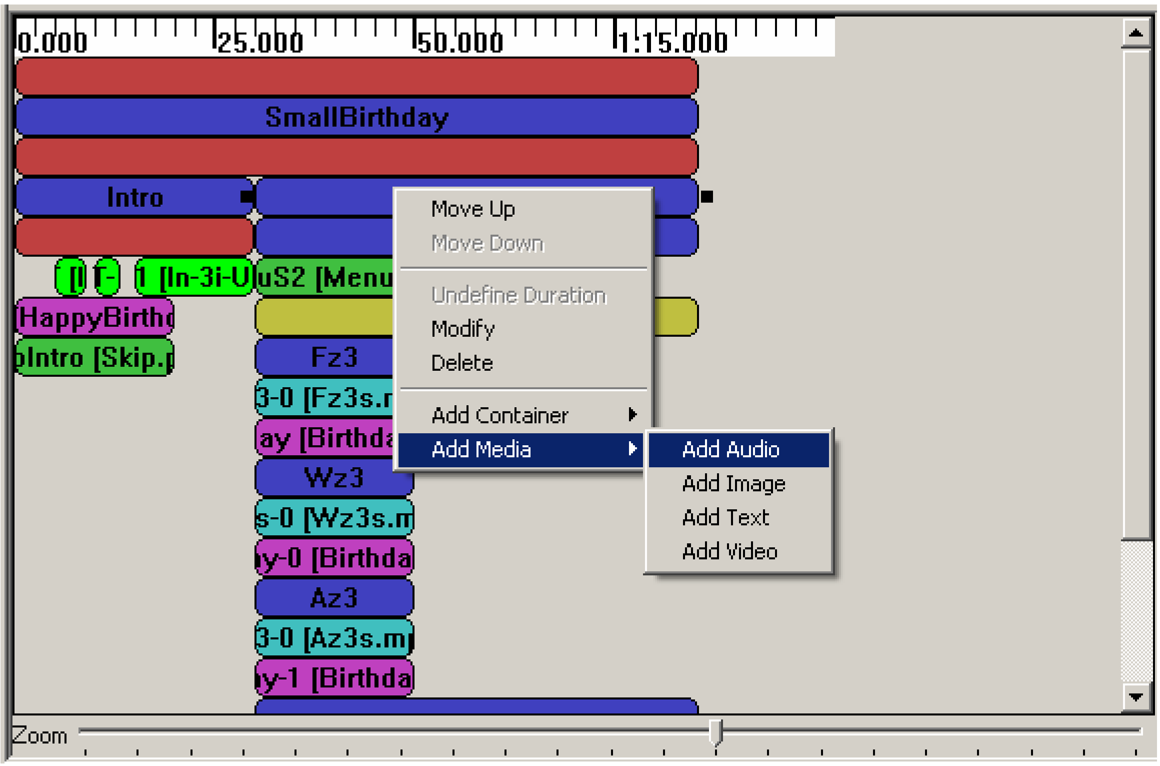
□ RepeatCount

□ RepeatDur

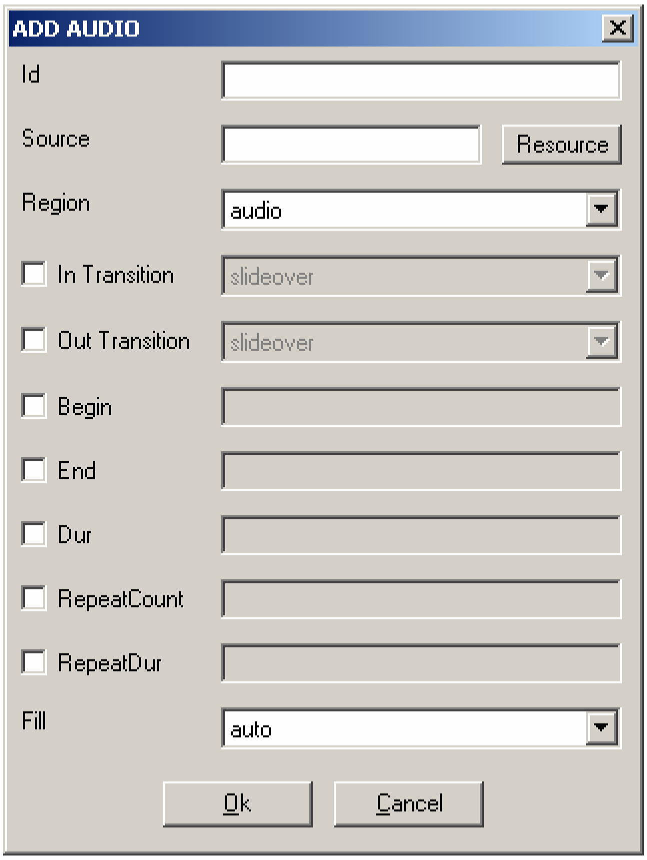
Fill: auto

Now you can set the new Par properties and create it by clicking on "Ok", you can also cancel the creation by clicking on "Cancel" or exiting the window.

Add Medias
To add a Media to a Container right click on it and select the submenu “Add Media” and choose the type of media you want to add.



For example if you create an Audio, a window like this will be displayed:



ADD AUDIO

Id:

Source:

Region: audio

□ In Transition: slideover

□ Out Transition: slideover

□ Begin

□ End

□ Dur

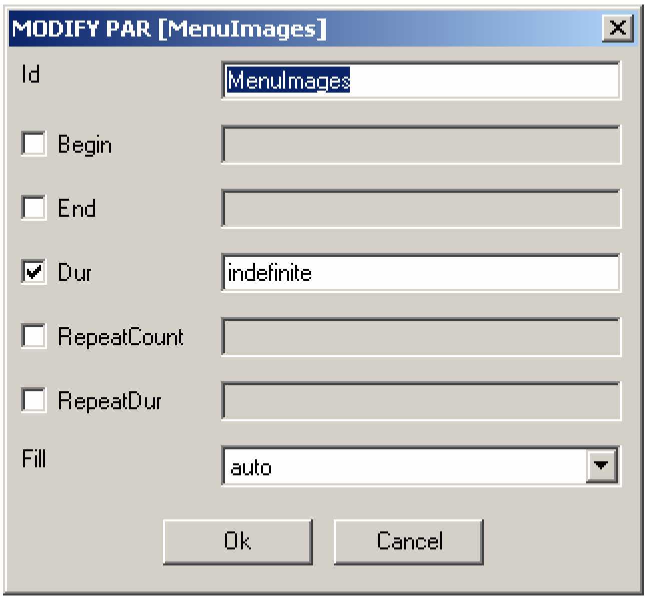
□ RepeatCount

□ RepeatDur

Fill: auto

Now you can set the new Audio properties and create it by clicking on “Ok”, you can also cancel the creation by clicking on “Cancel” or exiting the window.

Modify
To modify by dialog a Container right click on it and select “Modify”. A window like this will be displayed.



MODIFY PAR [MenuImages]

Id: MenuImages

□ Begin

□ End

☑ Dur: indefinite

□ RepeatCount

□ RepeatDur

Fill: auto

There you can set the following properties:

Id: ID of the container (default: empty)
The ID is used identify the Container in the SMIL

Begin: Begin of the container (default: not set)
The Begin set the start of the container; it is a list of beginnings. The general definition of W3C is supported: http://www.w3.org/TR/SMIL2/smil-timing.html#adef-begin

End: End of the container (default: not set)
The End set the end of the container; it is a list of endings. The general definition of W3C is supported: http://www.w3.org/TR/SMIL2/smil-timing.html#adef-end

Dur: Duration of the container (default: not set)
The Dur set the duration of the container; it is a single Duration value.

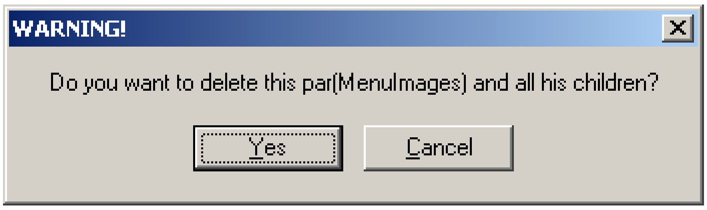
RepeatCount: Number of repetitions (default: not set)
The RepeatCount is used when you want to repeat the container a defined number of times.

RepeatDur: Duration of repetitions (default: not set)
The RepeatCount is used when you want to repeat the container for a defined duration.

Fill: Default Fill for Medias in this Container (default: auto)
The Fill is used to set default filling for Medias in the Container. It can have the following values: auto, remove, freeze, hold and transition.

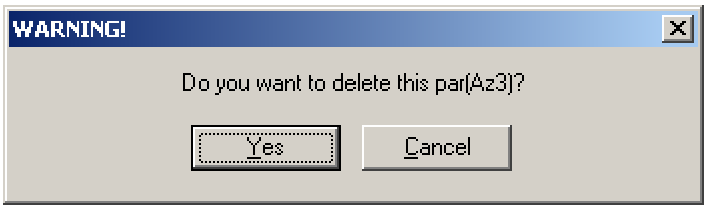
Note: the offset value for Begin, End and Dur can be also set by mouse.

Delete
To delete a Container right click on it and click on “Delete”. A confirms dialog will appear:
Like this one if the Container contains something.



Do you want to delete this par(MenuImages) and all his children?

Like this one if not.



Do you want to delete this par(Az3)?

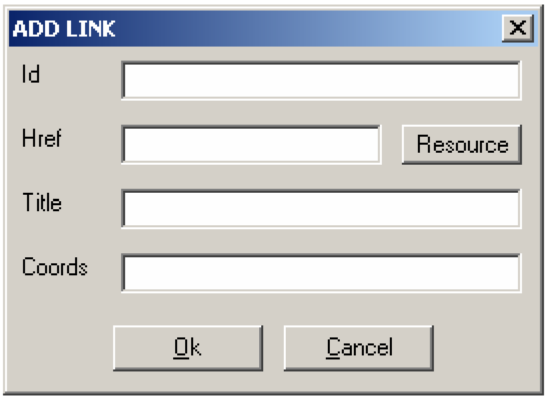
In both cases click Yes to delete the Container or Cancel or exit the window if you changed your mind.

2.8.3.4.3.4 Medias

The Medias are the resources played in the SMIL. You can add Link to a Media or select his Region by right clicking on it and using the menu. You can also set timings properties by mouse and by the menu. Medias could be Audio, Image, Text and Video for respective type of files playing.

Add Link

To add a Link to a Media right click on it and click the menu “Add Link”, a window like this will be displayed:



There you can set the following properties of the new Link:

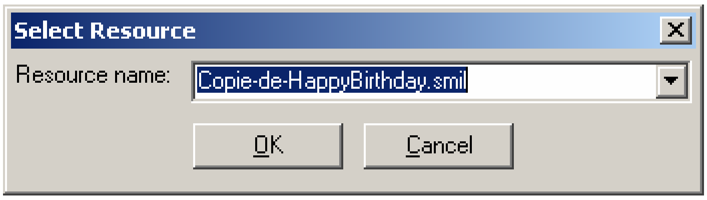
Id: ID of the link (default: empty)
The ID is used identify the Link in the SMIL (used most of time for internal links).

Href: Link to load (default: empty)
The Href is used for external Links by setting a link to another SMIL file.

Title: Title of the Link (default: empty)
The Title is displayed as information when the SMIL is played.

Coords: Coordinates of the Link Region (default: empty= entire Region)
The Coords are a list of coordinates to define a sub-region mouse sensitive to load this link (the entire Region is used if it is not defined)

The Resource button allows setting the Href by selecting a SMIL resource in Axom. It loads a window like this:



Resource name: Copie-de-HappyBirthday.smil

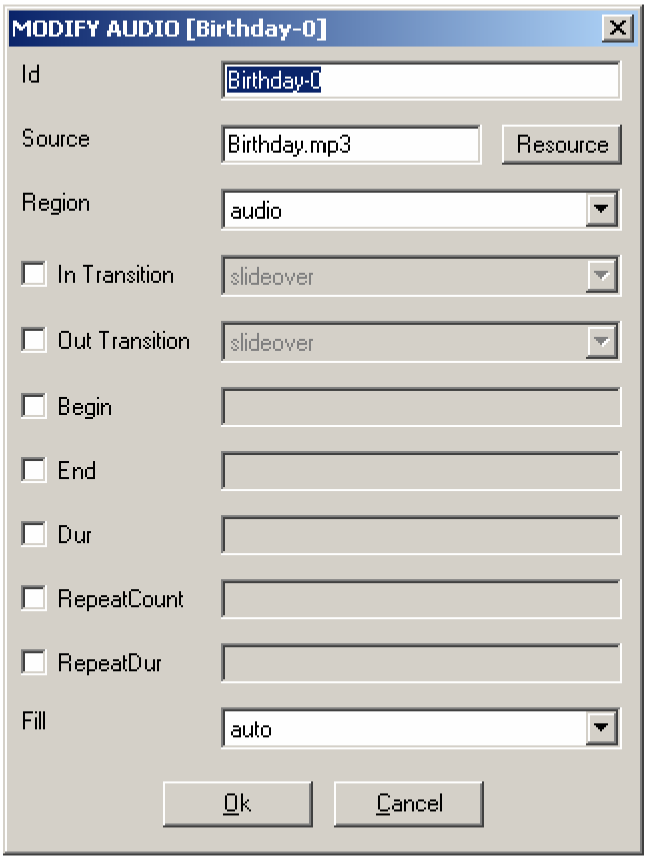
You simply select the resource you want to link and validate; the new Href will be set.

Select Region

To select the Region where a Media is played, simply right click on it and click the menu “Show Region”. The Region of the Media will be selected (in Tree and Visual View)

Modify

To modify by dialog a Media right click on it and select “Modify”. A window like this will be displayed.



MODIFY AUDIO [Birthday-0]

Id: Birthday-0

Source: Birthday.mp3

Region: audio

☐ In Transition: slideover

☐ Out Transition: slideover

☐ Begin

☐ End

☐ Dur

☐ RepeatCount

☐ RepeatDur

Fill: auto

There you can set the following properties:

Id: ID of the Media (default: empty)
The ID is used identify the Media in the SMIL

Source: Source of the Media (default: empty)
The Source is used to link the resource played by this Media

Region: Region of the Media (default: first Region)
The Region defines the area where the Media will be played. You can select each region you have defined.

In Transition: Transition at start (default: not defined)
The In Transition defines the Transition at start where the Media will be played. You can select each Transition you have defined.

Out Transition: Transition at end (default: not defined)
The Out Transition defines the Transition at end where the Media will be played. You can select each Transition you have defined.

Begin: Begin of the Media (default: not set)
The Begin set the start of the Media; it is a list of beginnings. The general definition of W3C is supported: http://www.w3.org/TR/SMIL2/smil-timing.html#adef-begin

End: End of the Media (default: not set)
The End set the end of the Media; it is a list of endings. The general definition of W3C is supported: http://www.w3.org/TR/SMIL2/smil-timing.html#adef-end

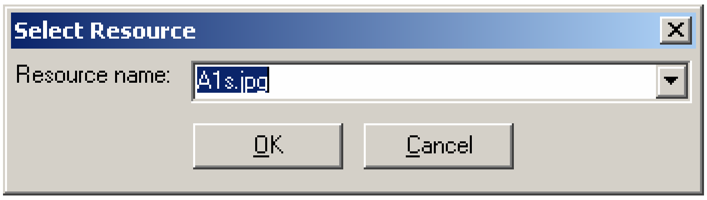
Dur: Duration of the Media (default: not set)
The Dur set the duration of the Media; it is a single Duration value.

RepeatCount: Number of repetitions (default: not set)
The RepeatCount is used when you want to repeat the Media a defined number of times.

RepeatDur: Duration of repetitions (default: not set)
The RepeatCount is used when you want to repeat the Media for a defined duration.

Fill: Filling of the Media (default: auto)
The Fill is used to set the filling for the Media. It can have the following values: auto, remove, freeze, hold and transition.

The Resource button allows setting the Source by selecting a resource in Axom (selected by mime type). It loads a window like this:

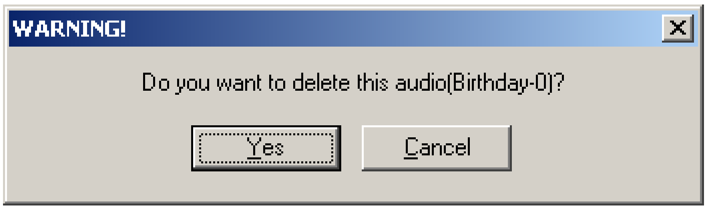

Select Resource

Resource name: A1s.jpg

You simply select the resource you want to link and validate; the new Source will be set.

Note: the offset value for Begin, End and Dur can be also set by mouse.

Delete
To delete a Media right click on it and click on "Delete". A confirms dialog will appear:


WARNING!

Do you want to delete this audio(Birthday-0)?

Click Yes to delete the Media or Cancel or exit the window if you changed your mind.

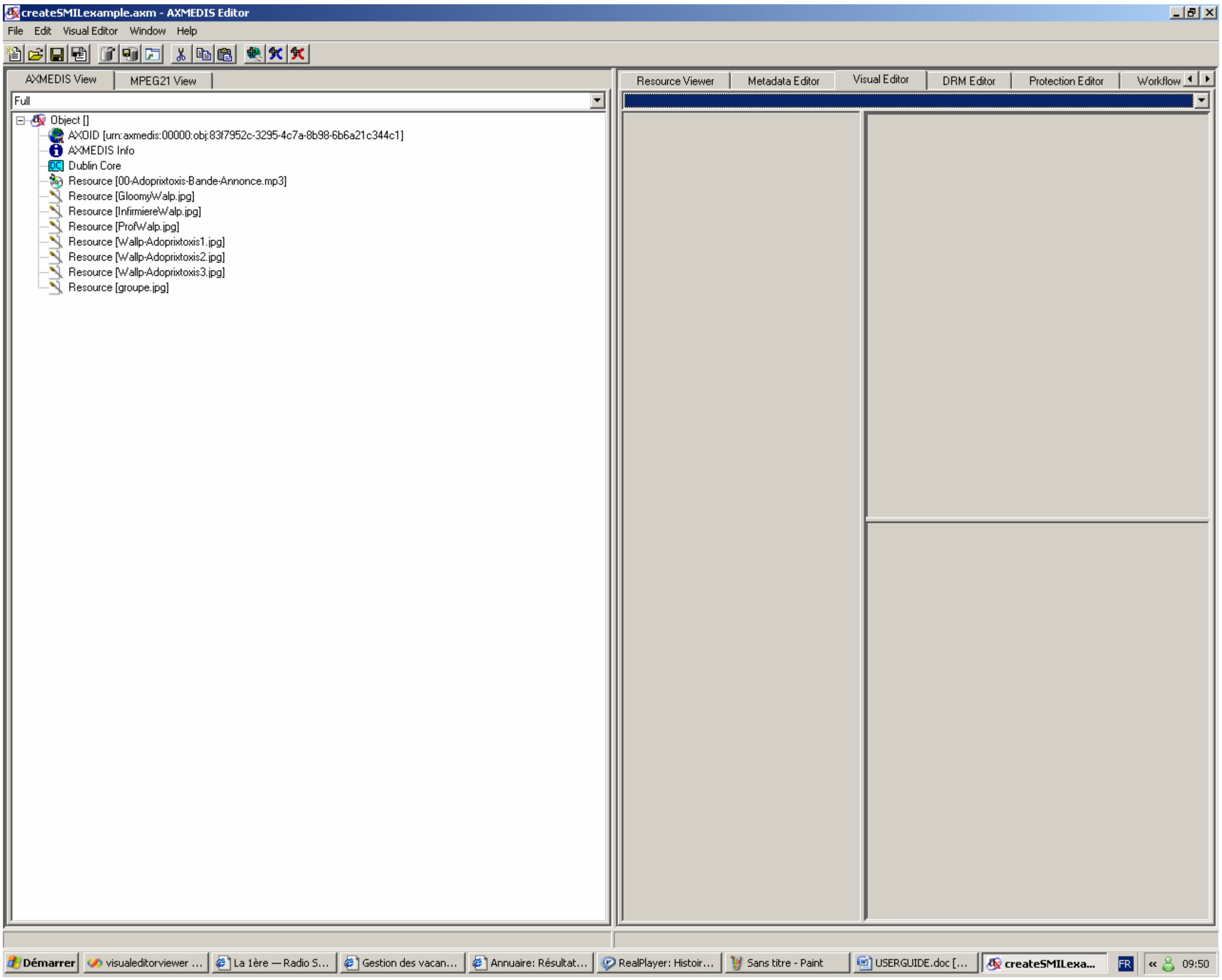
2.8.3.5 Example

2.8.3.5.1 Introduction

For this small example we will create a little SMIL presentation from scratch. It will demonstrate how to use this editor for a simple interactive presentation.

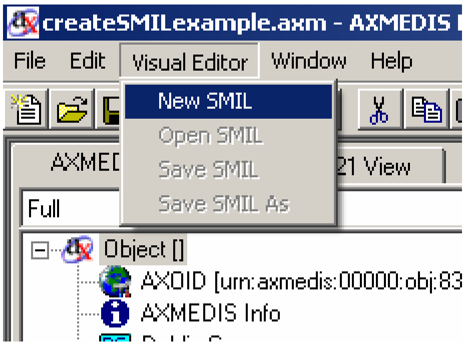
2.8.3.5.2 Basic Files

A SMIL play other files. So we will load the createSMILexample.axm file:

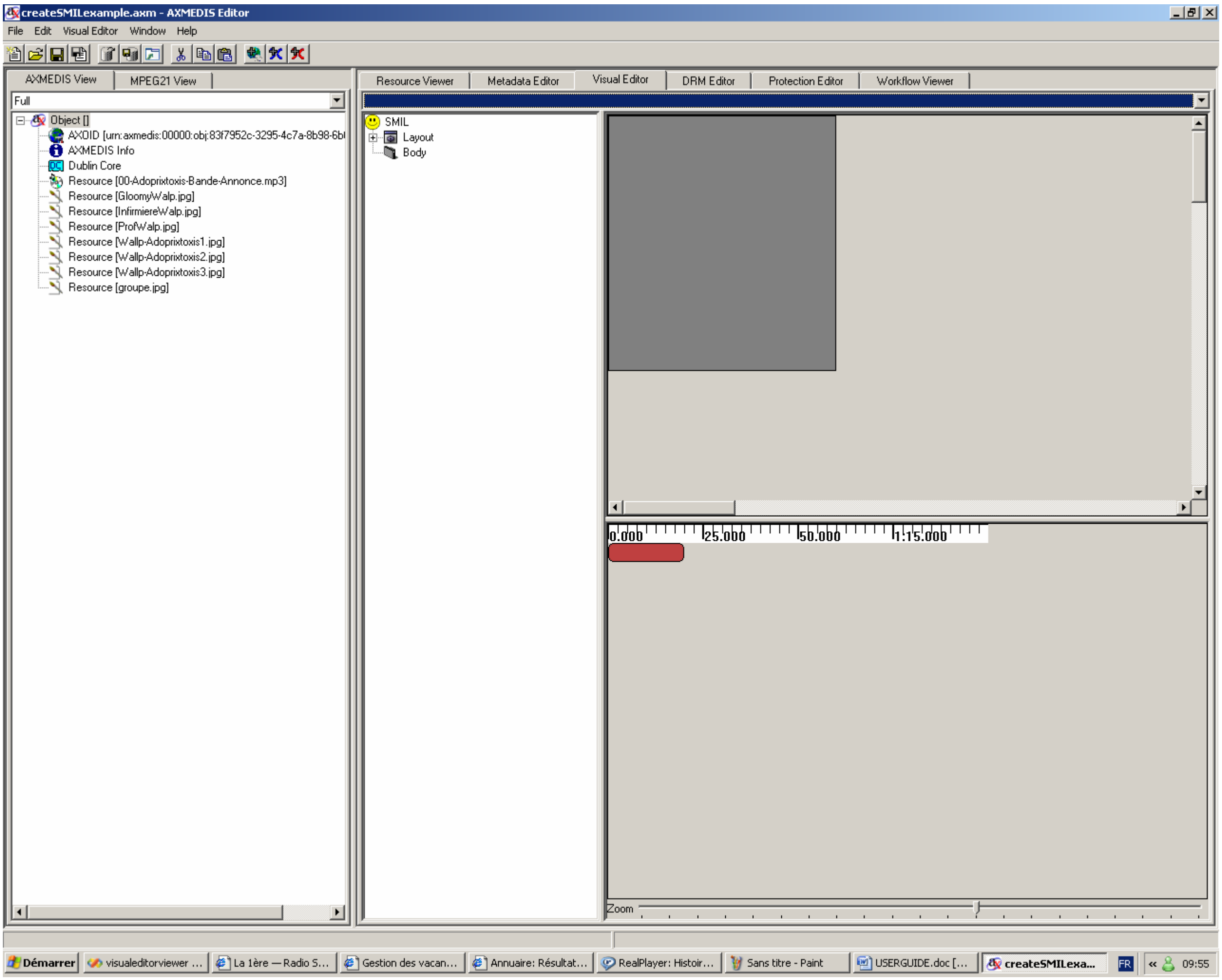


2.8.3.5.3 Create the SMIL

Now we have to create a new SMIL Resource. So we use the menu VisualEditor:


createSMILexample.axm - AXMEDIS
File Edit Visual Editor Window Help
New SMIL
Open SMIL
Save SMIL
Save SMIL As
AXMED
21 View
Full
Object []
AXOID [urn:axmedis:00000:obj:83
AXMEDIS Info

The New empty SMIL appears:

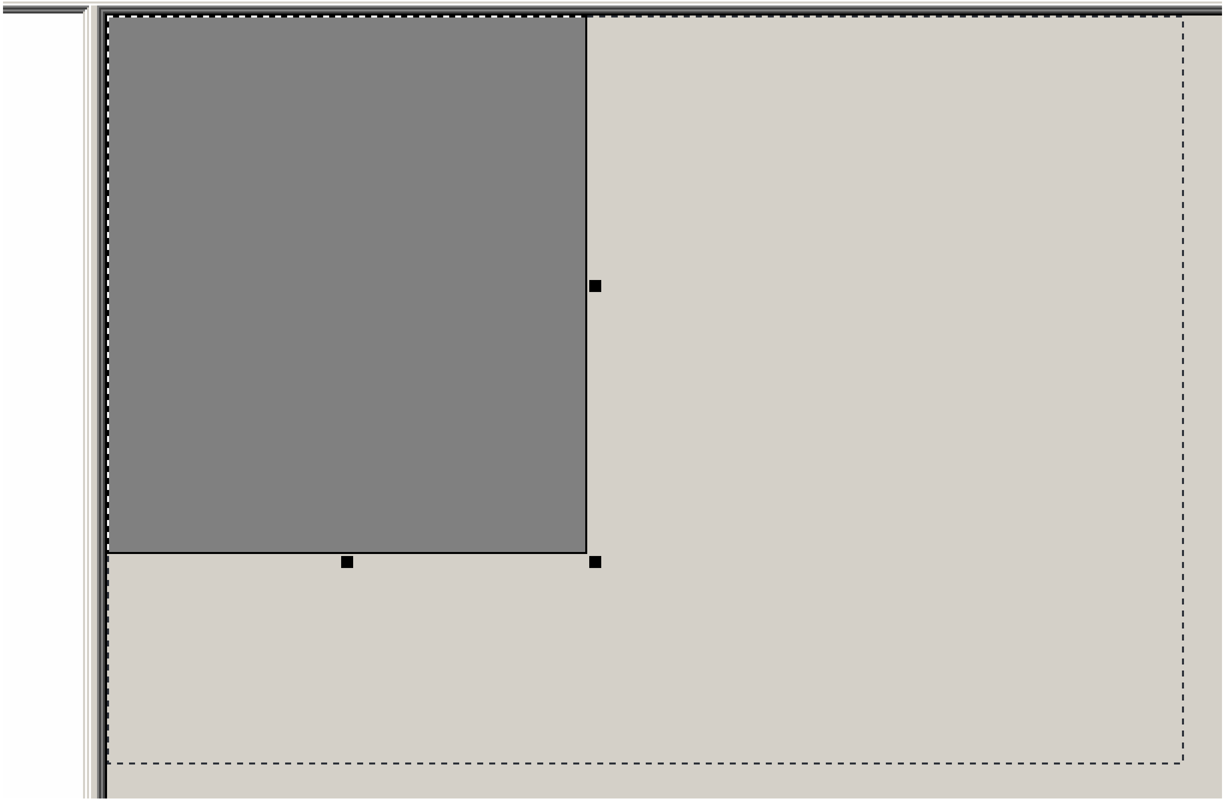

createSMILexample.axm - AXMEDIS Editor
File Edit Visual Editor Window Help
AXMEDIS View
MPEG21 View
Full
Object []
AXOID [urn:axmedis:00000:obj:83f7952c-3295-4c7a-8b98-6b
AXMEDIS Info
Dublin Core
Resource [00-Adoprixtoxis-Bande-Annonce.mp3]
Resource [GloomyWalp.jpg]
Resource [InfirmiereWalp.jpg]
Resource [ProfWalp.jpg]
Resource [Wallp-Adoprixtoxis1.jpg]
Resource [Wallp-Adoprixtoxis2.jpg]
Resource [Wallp-Adoprixtoxis3.jpg]
Resource [groupe.jpg]
Resource Viewer
Metadata Editor
Visual Editor
DRM Editor
Protection Editor
Workflow Viewer
SMIL
Layout
Body
0.000
25.000
50.000
1:15.000
Zoom
Démarrer
visualeditorviewer ...
La 1ère — Radio S...
Gestion des vacan...
Annuaire: Résultat...
RealPlayer: Histoir...
Sans titre - Paint
USERGUIDE.doc [...
createSMILexa...
FR
09:55

2.8.3.5.4 Edit SMIL

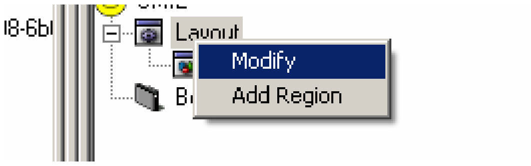
Now we can edit our new SMIL resource.

2.8.3.5.4.1 Modify Root Layout

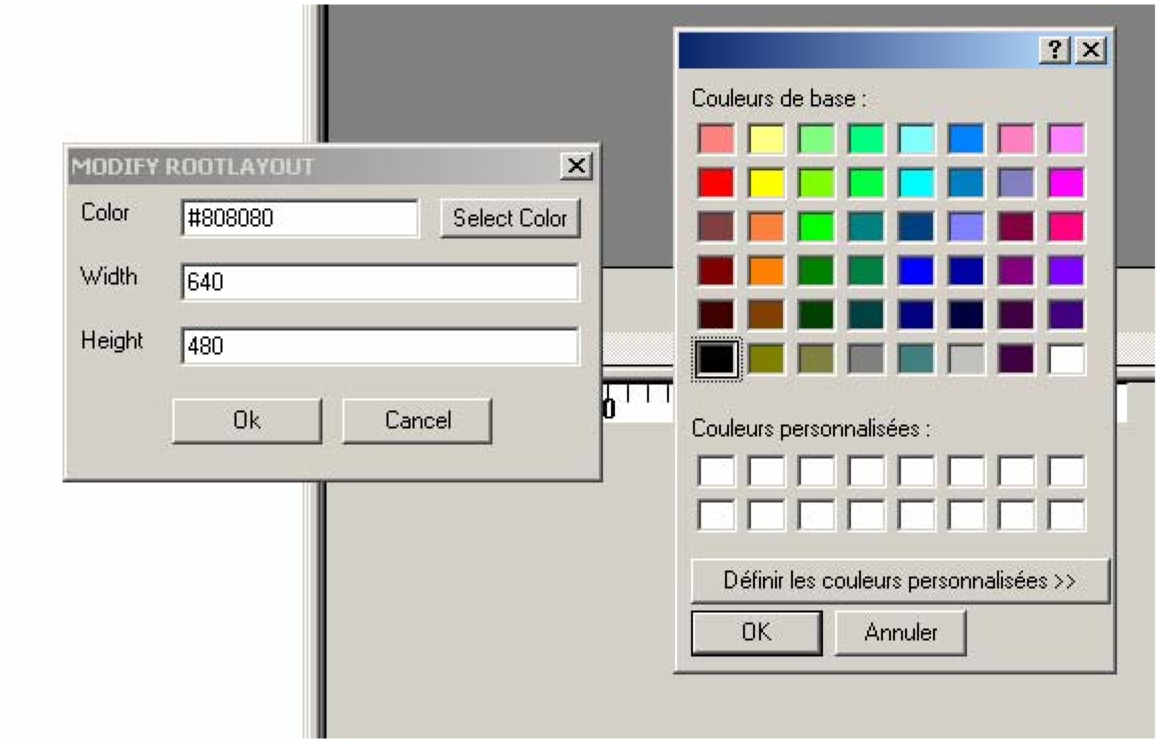
The Root Layout dimensions are not the one we want to use. So we change them:



And also by menu…



… we change the Colour and Adjust the Sizes



MODIFY ROOTLAYOUT

Color: #808080

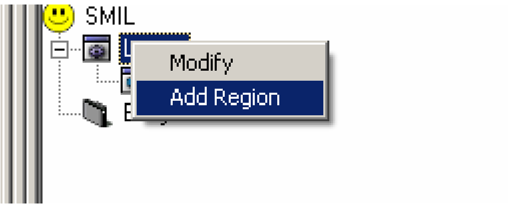
Width: 640

Height: 480

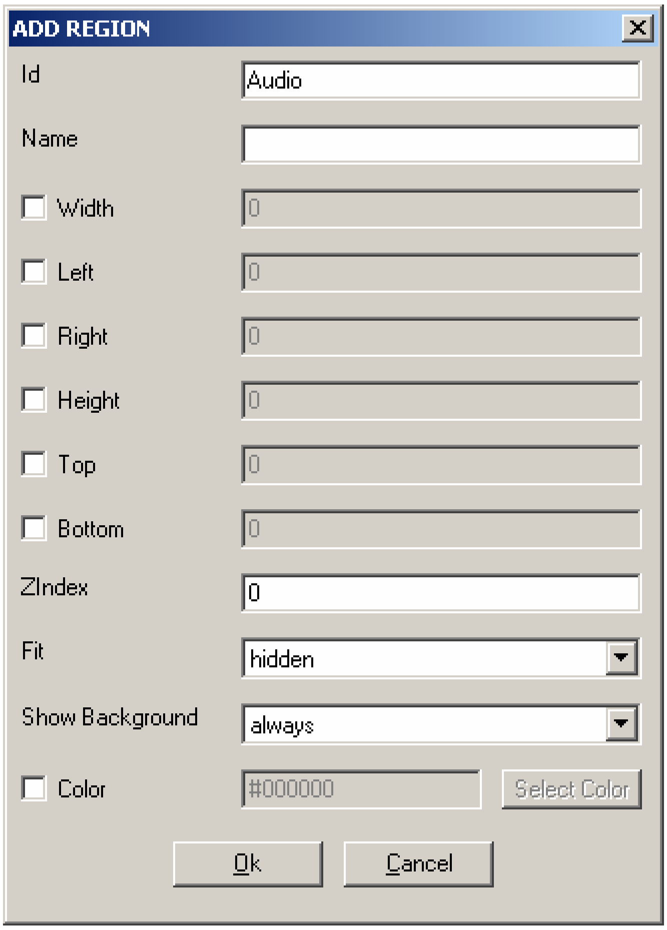
Select Color
Ok
Cancel
Couleurs de base :
Couleurs personnalisées :
Définir les couleurs personnalisées >>
OK
Annuler

2.8.3.5.4.2 *Add Regions*

To add the first Region we right click on Layout.



And add a new Region: Audio for Audio playing



ADD REGION

Id: Audio

Name:

□ Width: 0

□ Left: 0

□ Right: 0

□ Height: 0

□ Top: 0

□ Bottom: 0

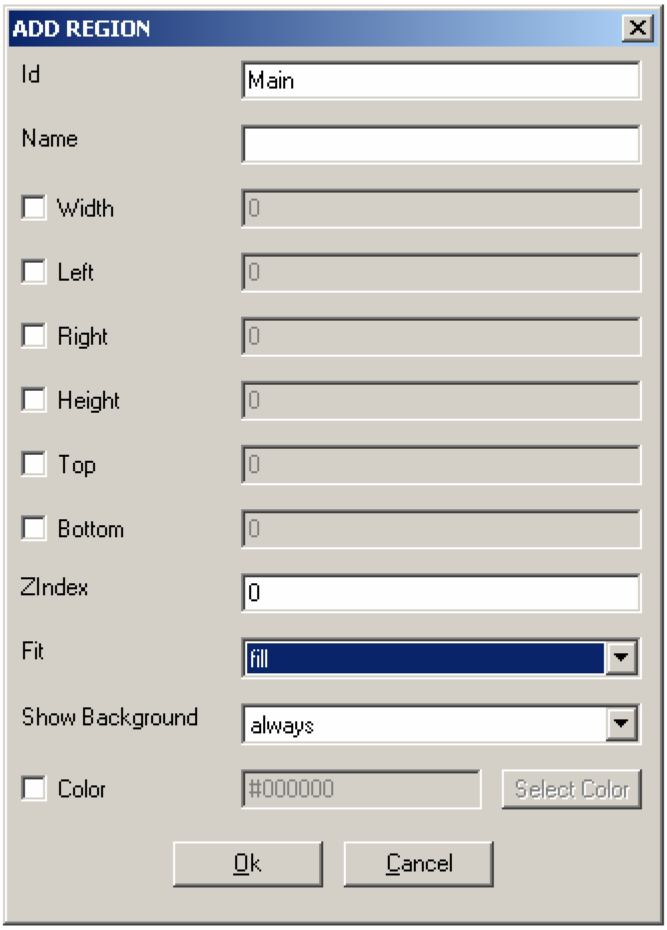
ZIndex: 0

Fit: hidden

Show Background: always

□ Color: #000000

And also another one named Main for Main window.



ADD REGION

Id: Main

Name:

☐ Width: 0

☐ Left: 0

☐ Right: 0

☐ Height: 0

☐ Top: 0

☐ Bottom: 0

ZIndex: 0

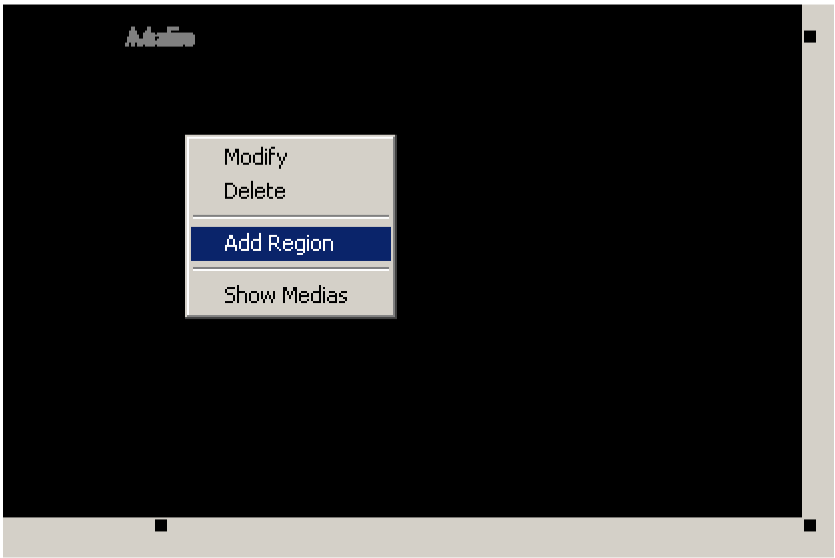
Fit: fill

Show Background: always

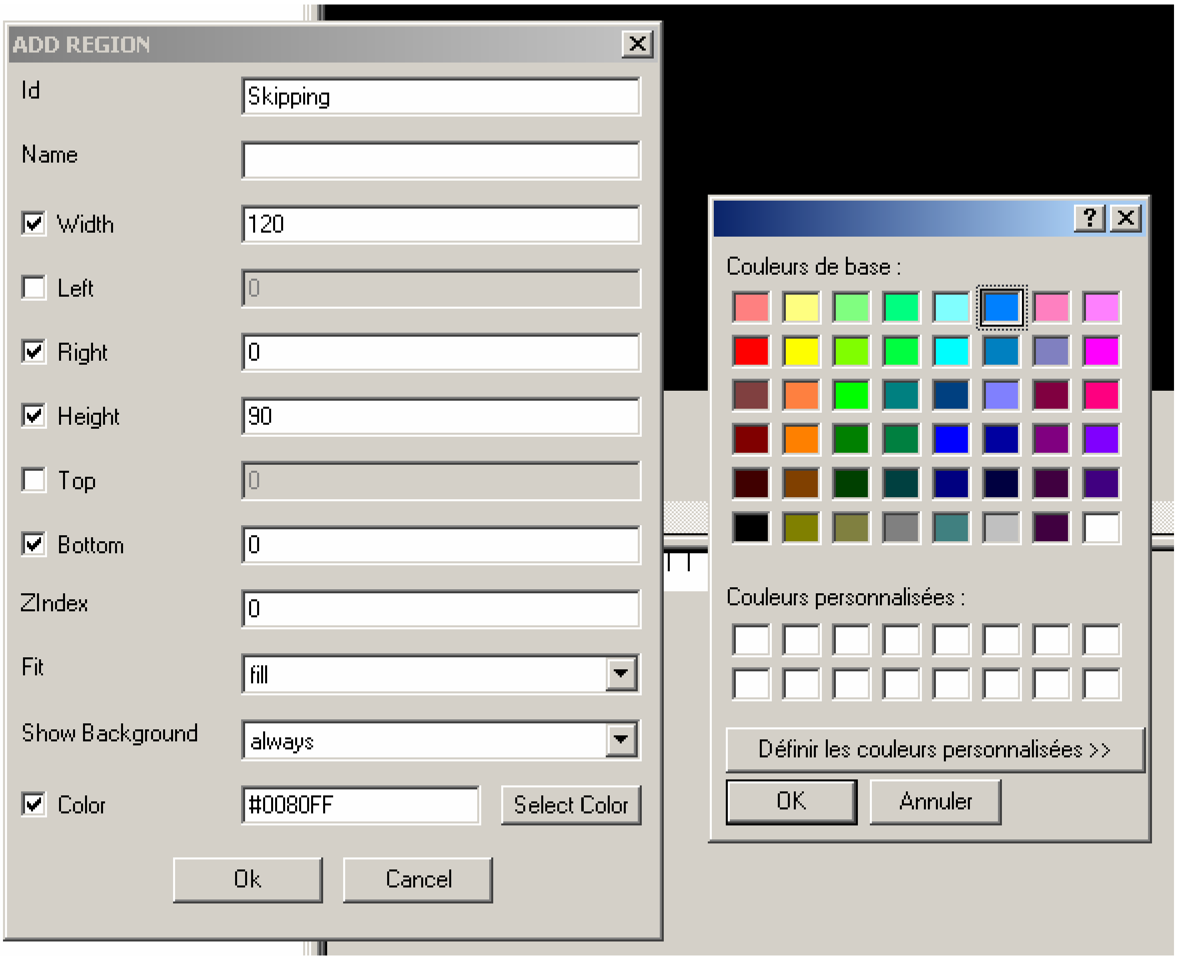
☐ Color: #000000 Select Color

Note that this time we have set the Fit to “fill”.

We finally add another Region in Main:



To be a little region in the right bottom part.



ADD REGION

Id: Skipping

Name:

☑ Width: 120

☐ Left: 0

☑ Right: 0

☑ Height: 90

☐ Top: 0

☑ Bottom: 0

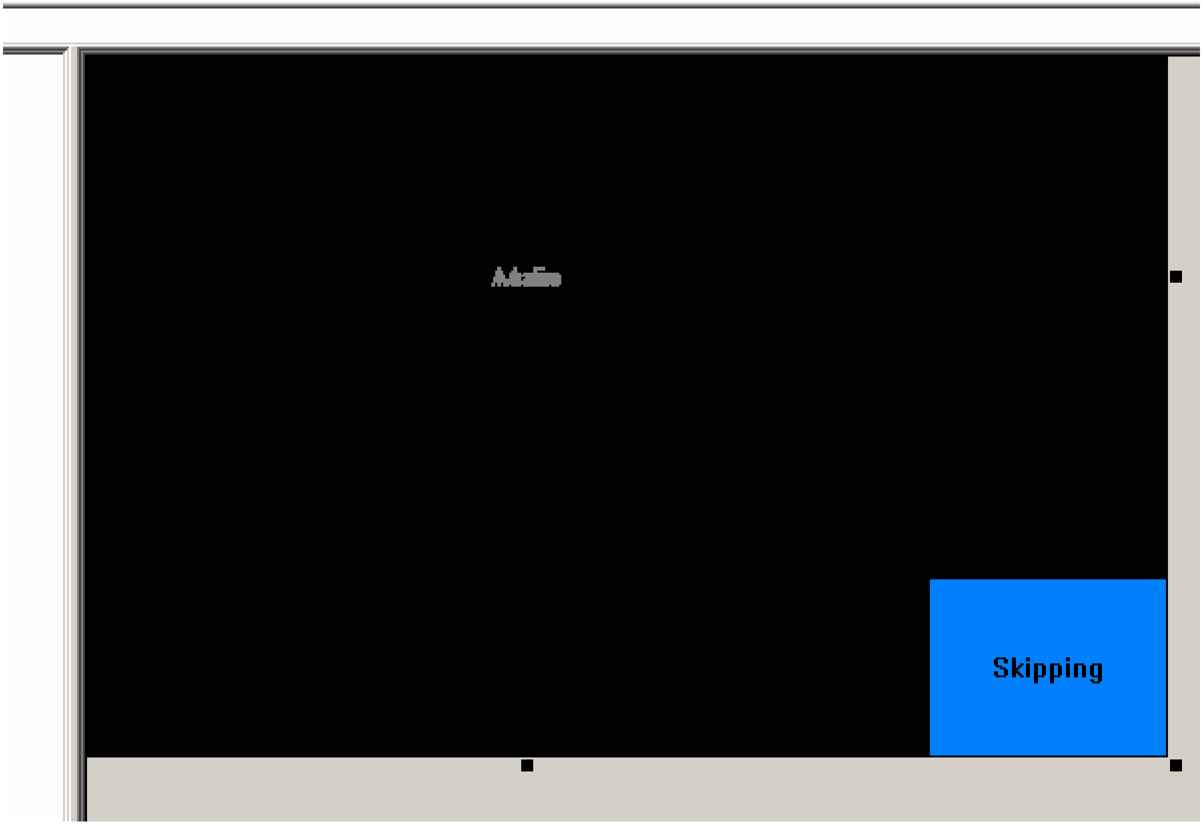
ZIndex: 0

Fit: fill

Show Background: always

☑ Color: #0080FF

Select Color
Ok
Cancel
Couleurs de base :
Couleurs personnalisées :
Définir les couleurs personnalisées >>
OK
Annuler

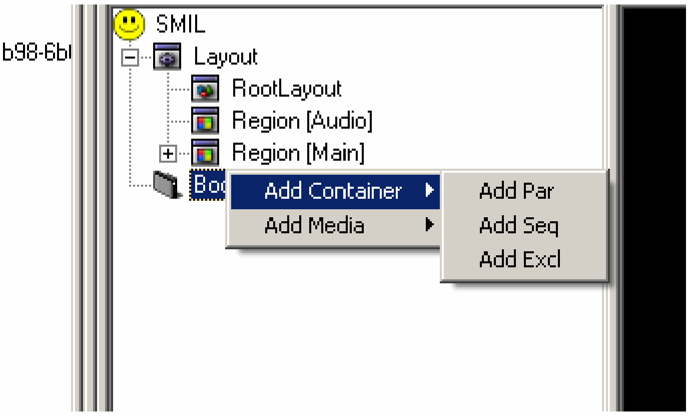


2.8.3.5.4.3 Timing

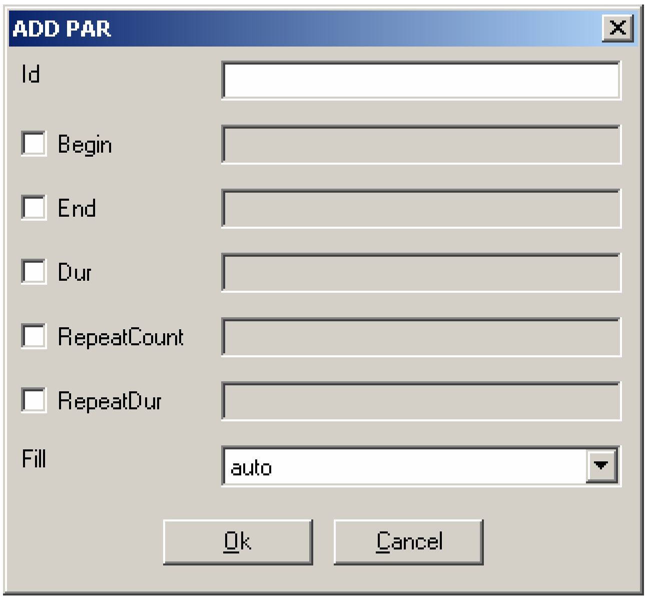
With the Region defined we can go to the Timing part.

Containers

First we will define some Containers.



A Par to play sound and images in parallel


ADD PAR

Id

□ Begin

□ End

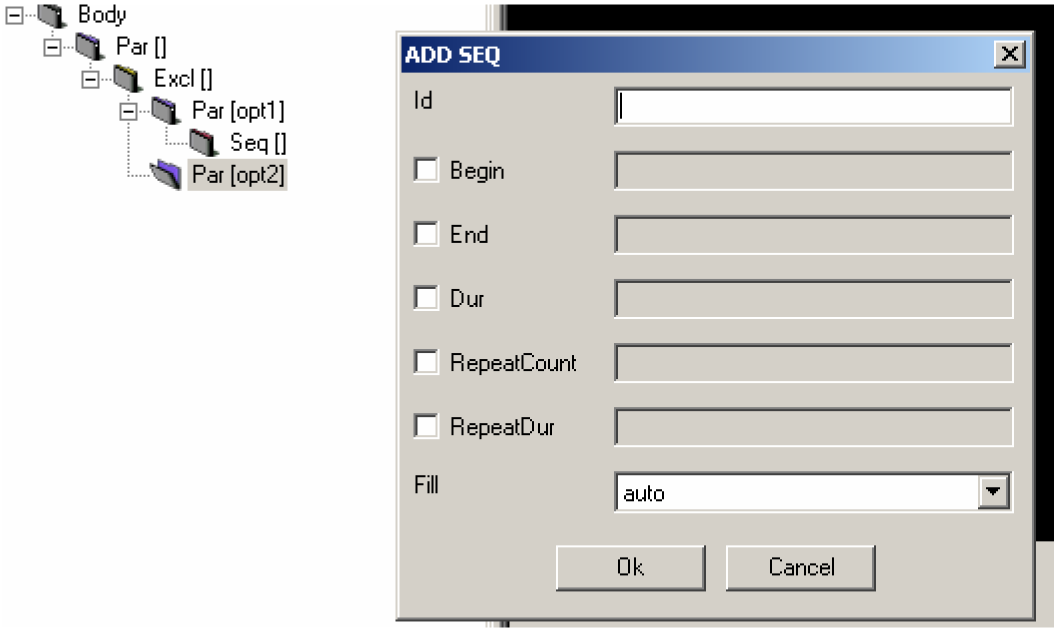
□ Dur

□ RepeatCount

□ RepeatDur

Fill: auto

And an Excl in it, 2 Par in the Excl named opt1 and opt2 and finally one Seq in the new Par.



Id

□ Begin

□ End

□ Dur

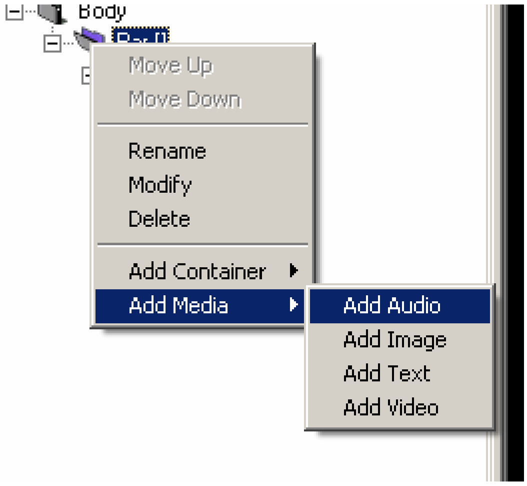
□ RepeatCount

□ RepeatDur

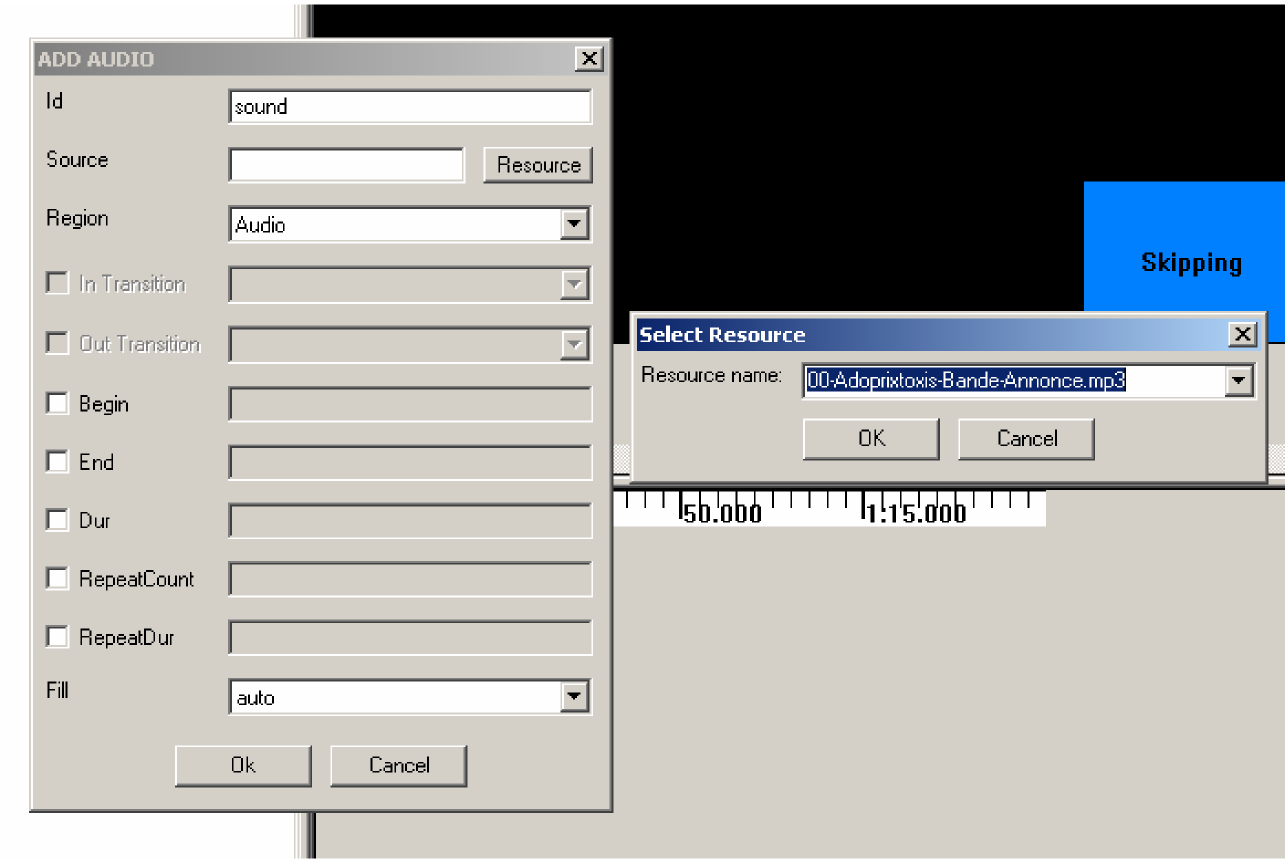
Fill: auto

Medias
Now we will add the Medias in the containers.

First we add an Audio Media named sound to play the mp3 file we have in the main Par.



We set the mp3 link by clicking on Resource. And select the Region to be Audio.



ADD AUDIO

Id: sound

Source:

Region: Audio

□ In Transition

□ Out Transition

□ Begin

□ End

□ Dur

□ RepeatCount

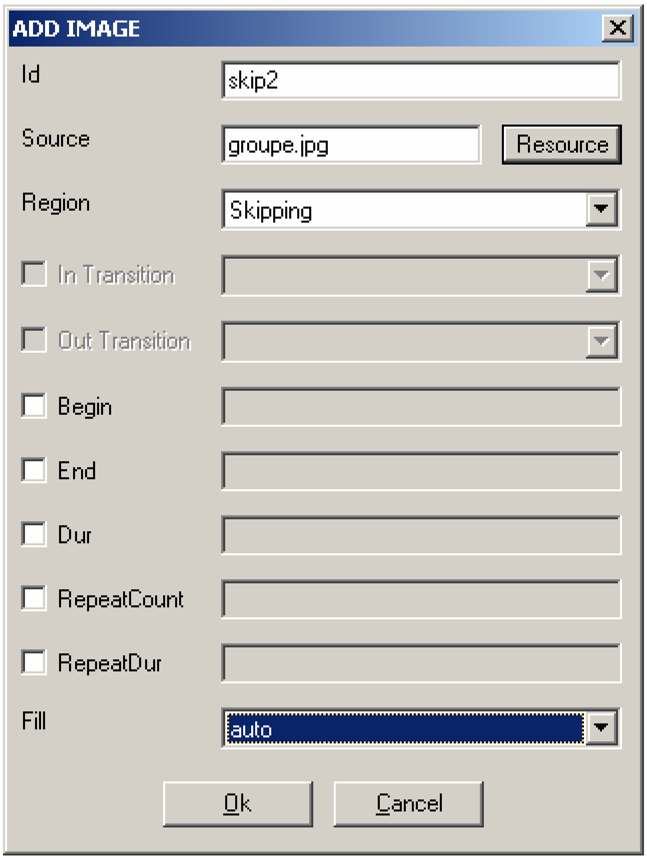
□ RepeatDur

Fill: auto

Select Resource

Resource name: 00-Adoprixtoxis-Bande-Annonce.mp3

In the two Pars we add the Image groupe.jpg with names skip1 and skip2 in the Skipping region.



ADD IMAGE

Id: skip2

Source: groupe.jpg

Region: Skipping

□ In Transition

□ Out Transition

□ Begin

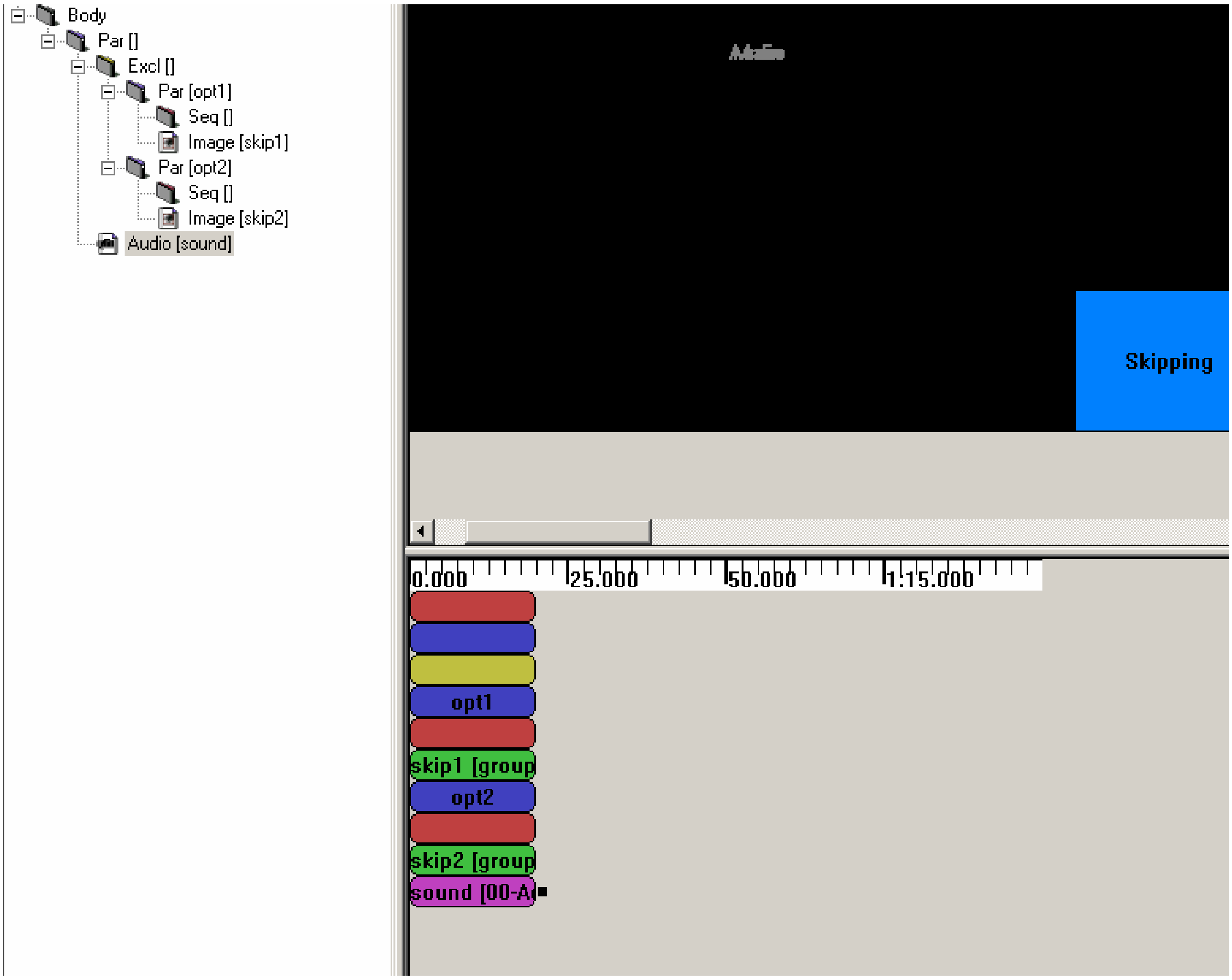
□ End

□ Dur

□ RepeatCount

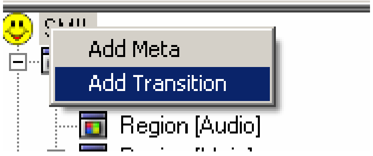
□ RepeatDur

Fill: auto

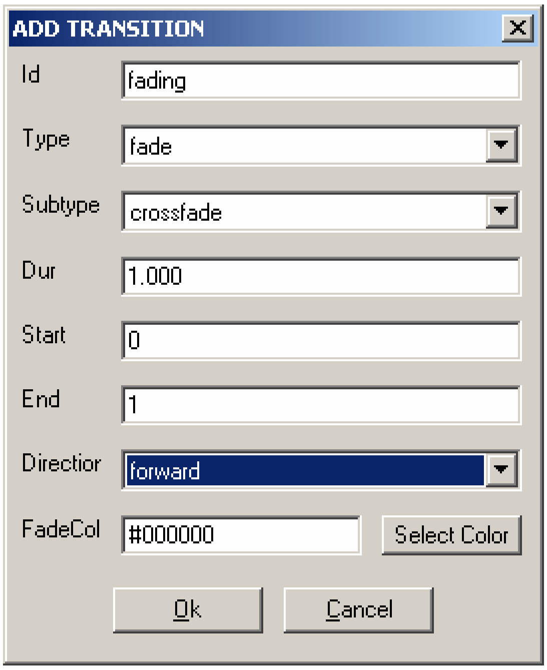


Finally we add images GloomyWalp.jpg, InfirmiereWalp.jpg, ProfWalp.jpg in Main Region in first Seq. And add images Wallp-Adoprixtoxis1.jpg Wallp-Adoprixtoxis2.jpg Wallp-Adoprixtoxis3.jpg in Main Region in second Seq.

CreatingTransitions
We haven't defined the Transitions since yet. We add a new transition in the SMIL

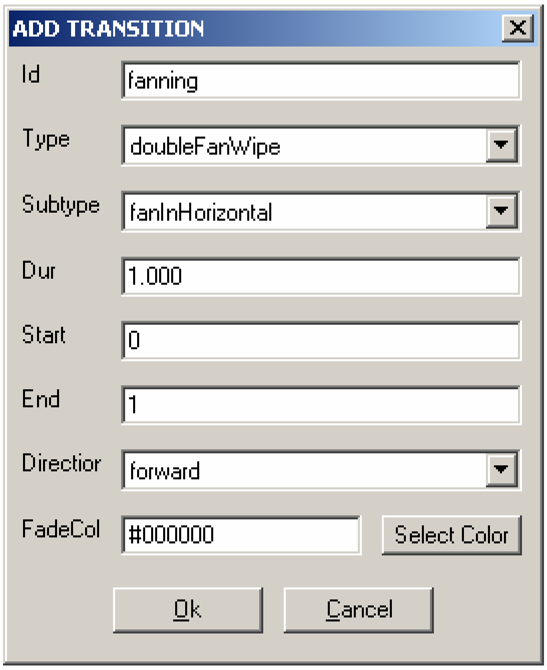


A fading one:



Id	fading
Type	fade
Subtype	crossfade
Dur	1.000
Start	0
End	1
Directior	forward
FadeCol	#000000

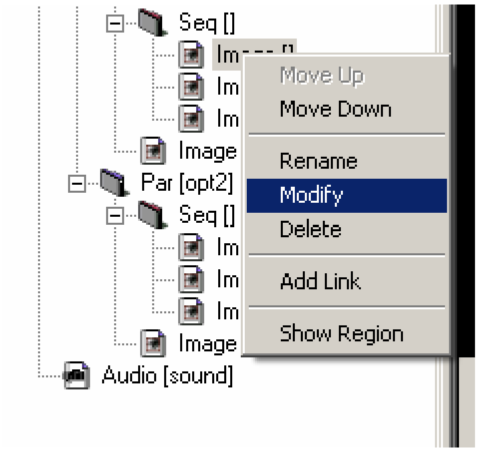
And a fanning one:



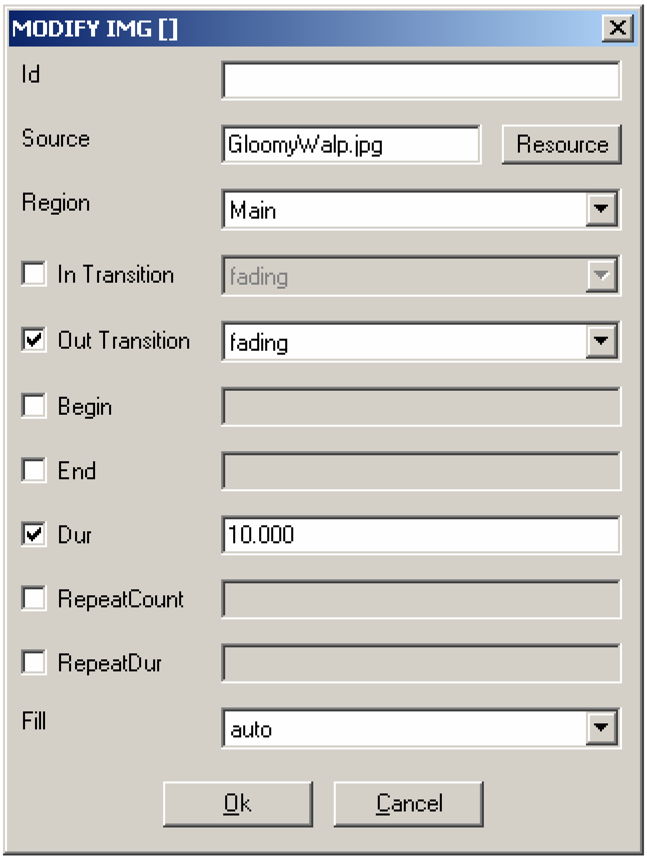
Id	fanning
Type	doubleFanWipe
Subtype	fanInHorizontal
Dur	1.000
Start	0
End	1
Directior	forward
FadeCol	#000000

Now we can use these Transitions.

Setting timing
Now we will set Timing properties to our images and a Transition between them.



We set all durations to 10 to the images in the Seq and fading transitions between images of the first Seq and fanning to the second one.


MODIFY IMG []

Id

Source GloomyWalp.jpg Resource

Region Main

□ In Transition fading

☑ Out Transition fading

□ Begin

□ End

☑ Dur 10.000

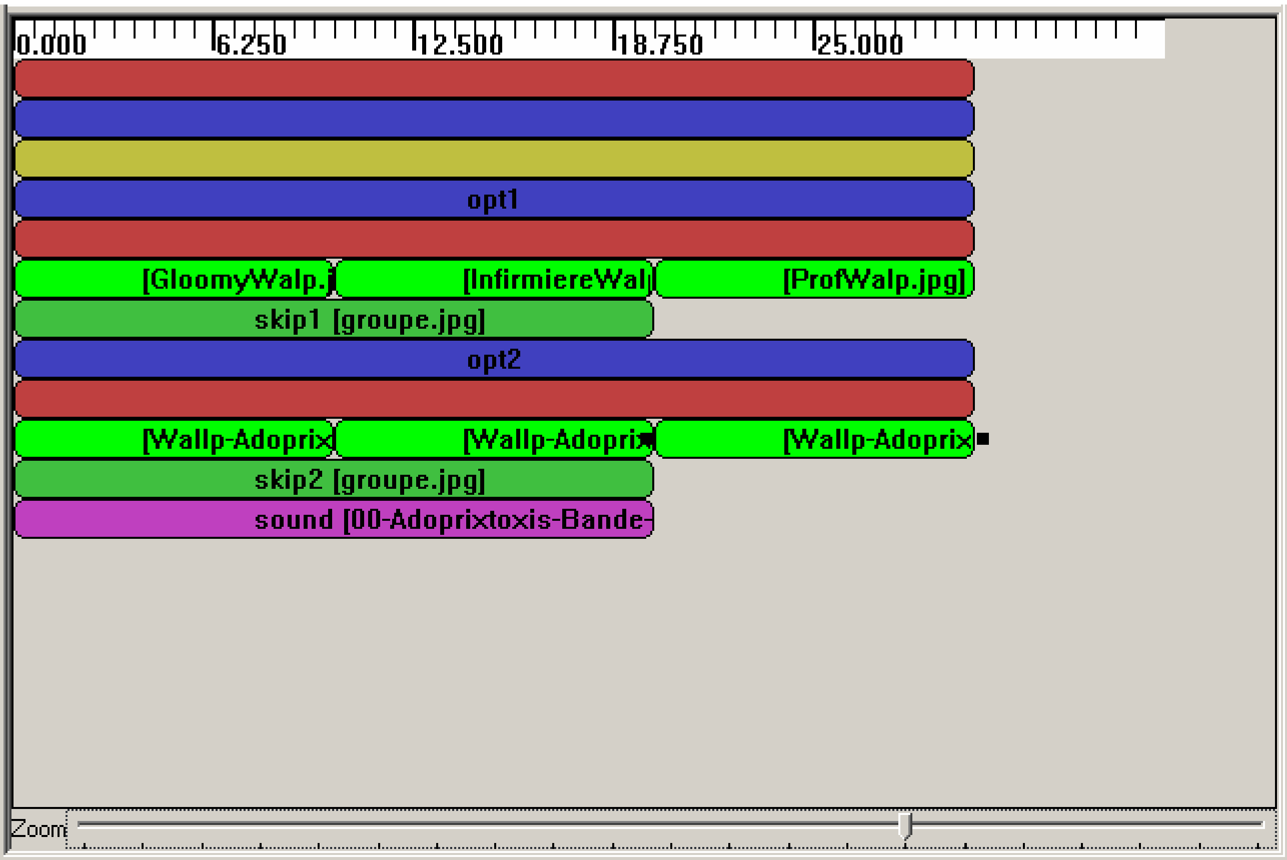
□ RepeatCount

□ RepeatDur

Fill auto

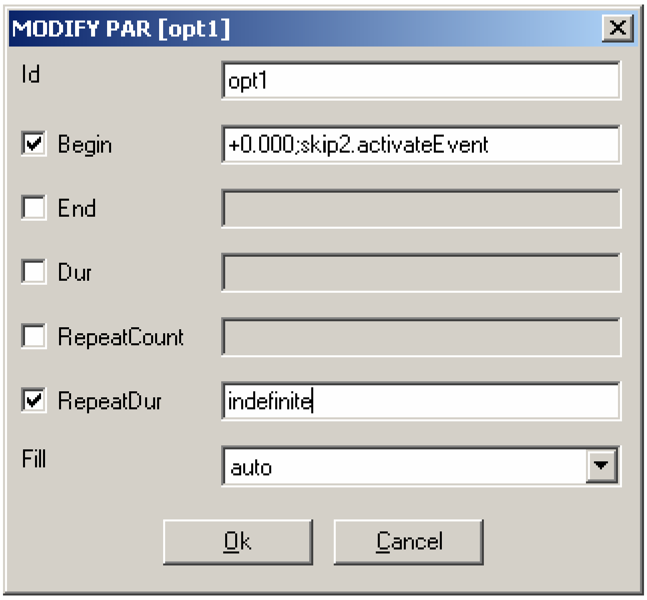
Ok Cancel

By using the Zoom we obtain a behaviour view like this:



Now we have only to define the start of Par in the Excl. We want that opt1 to be the default and to switch by the skipping. We also take the opportunity to cycle the Par by setting RepeatDur to indefinite.

So we edit opt1:


MODIFY PAR [opt1]

Id: opt1

☑ Begin: +0.000;skip2.activateEvent

☐ End:

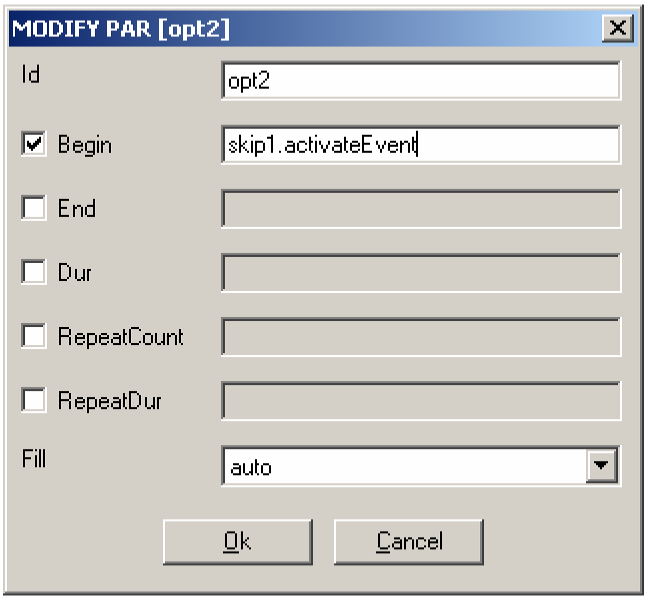
☐ Dur:

☐ RepeatCount:

☑ RepeatDur: indefinite

Fill: auto

And opt2



MODIFY PAR [opt2]

Id: opt2

☑ Begin: skip1.activateEvent

□ End

□ Dur

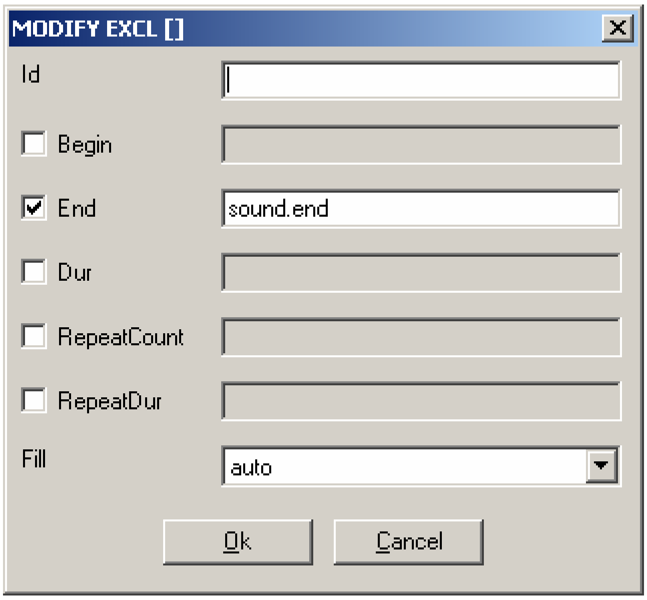
□ RepeatCount

□ RepeatDur

Fill: auto

:

And we add an end to the Excl:



MODIFY EXCL []

Id:

□ Begin

☑ End: sound.end

□ Dur

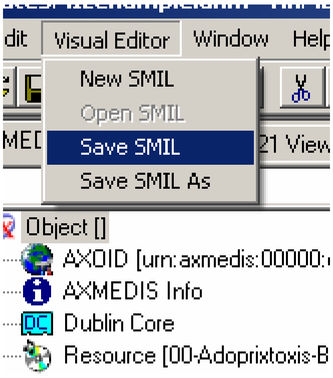
□ RepeatCount

□ RepeatDur

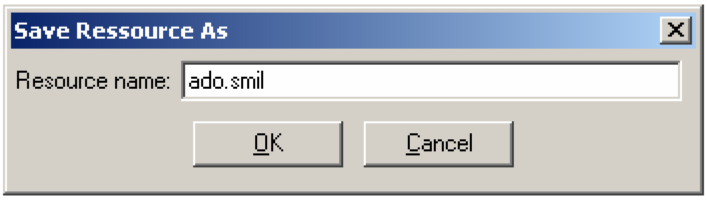
Fill: auto

2.8.3.5.5 Saving SMIL

Now we can save our work.



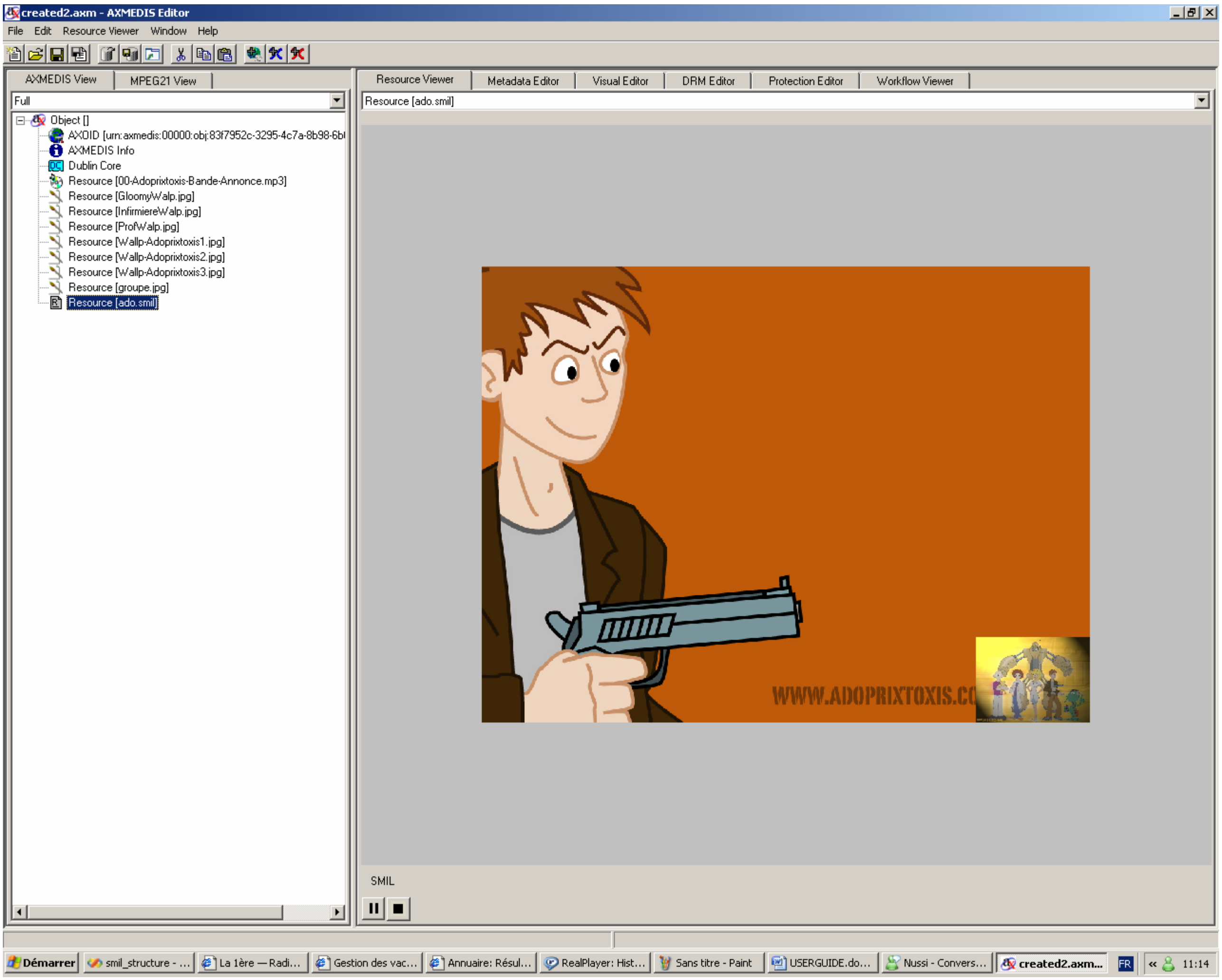
And find an original name.



Save Ressource As

Resource name: ado.smil

Now you can see it in the Resource Viewer. The image at right bottom is interactive, as set before.



created2.axm - AXMEDIS Editor

Full

- Object []
  - AXOID [urn:axmedis:00000:obj:83f7952c-3295-4c7a-8b98-6b
  - AXMEDIS Info
  - Dublin Core
  - Resource [00-Adoprixtoxis-Bande-Annonce.mp3]
  - Resource [GloomyWalp.jpg]
  - Resource [InfirmiereWalp.jpg]
  - Resource [ProfWalp.jpg]
  - Resource [Wallp-Adoprixtoxis1.jpg]
  - Resource [Wallp-Adoprixtoxis2.jpg]
  - Resource [Wallp-Adoprixtoxis3.jpg]
  - Resource [groupe.jpg]
  - Resource [ado.smil]

Resource [ado.smil]

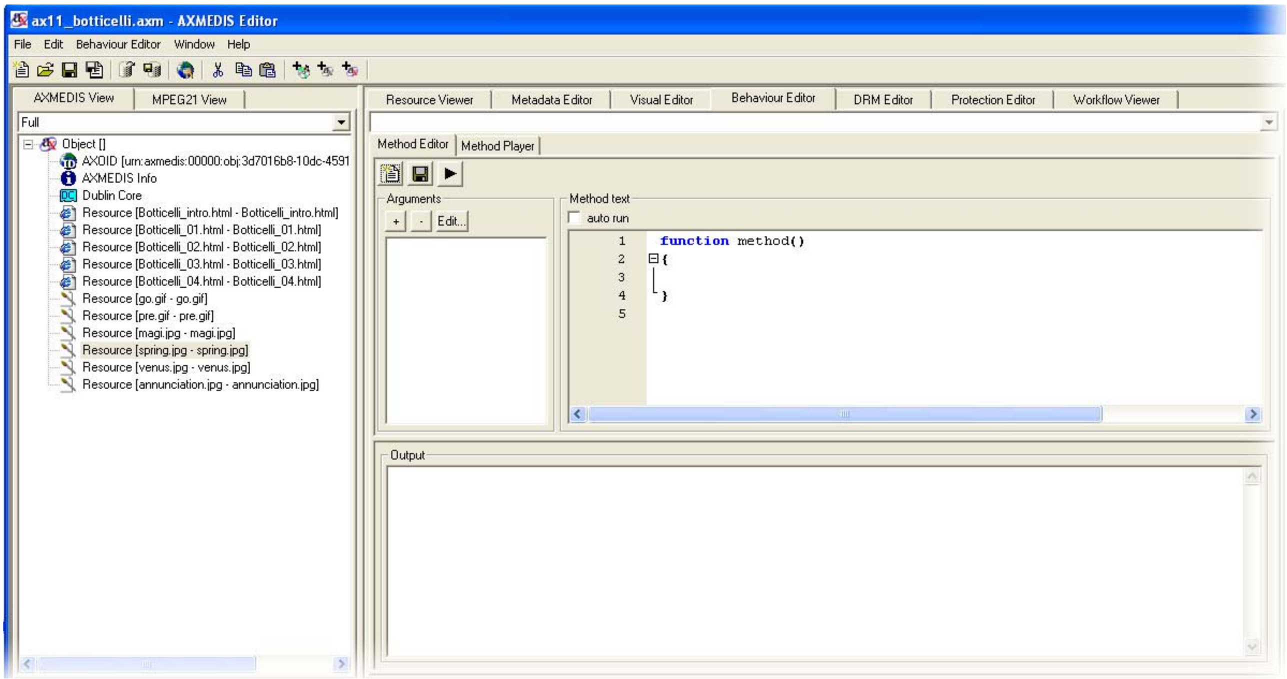
Ok, it is not perfect (and the sound in French), but now can modify it again… It's up to you now!

2.9 AXMEDIS Behaviour Editor

AXMEDIS objects embedded scripting support aims to add dynamic behaviour and intelligence to these objects. AXMEDIS object scripting capabilities combine MPEG-21 DIP scripting support with some of the already present AXMEDIS scripting extensions.
This may lead to enforce different degrees of intelligence and dynamic behaviour of the objects, leaving at the authors' creativity the option of proposing to final users new experiences for interaction and thus new business models.

The user interface of the Behaviour Editor is divided in three main parts:

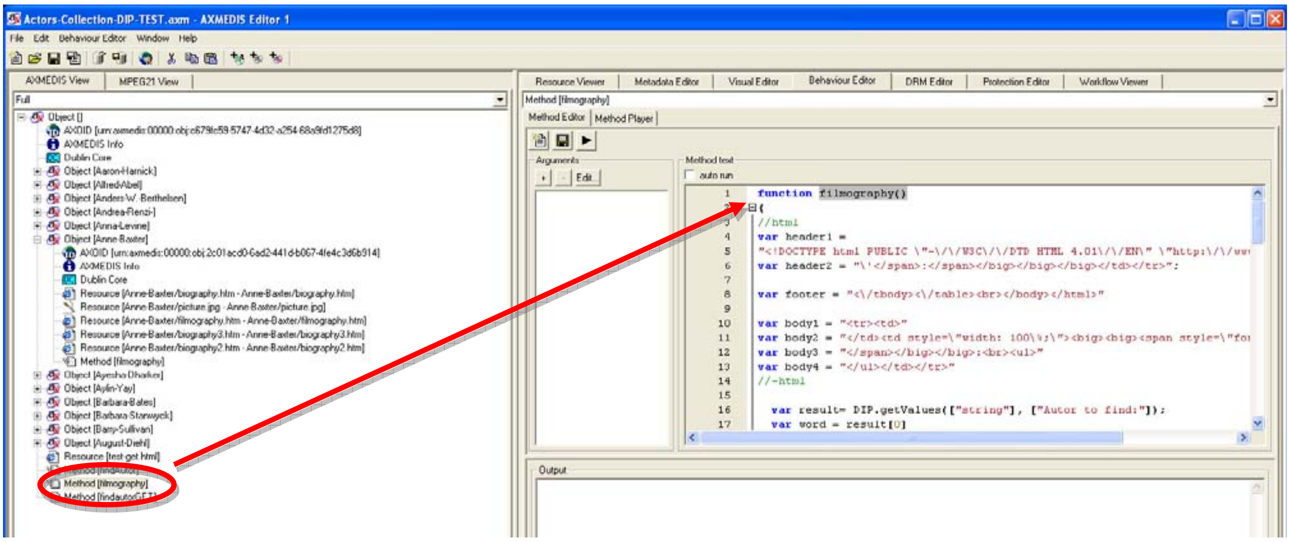
- The Method text part, where the rule in Javascript has to be written
- The Arguments part, where edit and add arguments
- The Output part, the some messages during the script execution is reported.


ax11_botticelli.axm - AXMEDIS Editor
File Edit Behaviour Editor Window Help
AXMEDIS View
MPEG21 View
Full
Object []
AXOID [urn:axmedis:00000:obj:3d7016b8-10dc-4591
AXMEDIS Info
Dublin Core
Resource [Botticelli_intro.html - Botticelli_intro.html]
Resource [Botticelli_01.html - Botticelli_01.html]
Resource [Botticelli_02.html - Botticelli_02.html]
Resource [Botticelli_03.html - Botticelli_03.html]
Resource [Botticelli_04.html - Botticelli_04.html]
Resource [go.gif - go.gif]
Resource [pre.gif - pre.gif]
Resource [magi.jpg - magi.jpg]
Resource [spring.jpg - spring.jpg]
Resource [venus.jpg - venus.jpg]
Resource [annunciation.jpg - annunciation.jpg]
Resource Viewer
Metadata Editor
Visual Editor
Behaviour Editor
DRM Editor
Protection Editor
Workflow Viewer
Method Editor
Method Player
Arguments
+
-
Edit...
Method text
auto run
Output

```
function method()
{

}
```

When a Javascript rule has been written in the Method text part, it is possible to save it by pressing the save button 💾. Immediately the new rule will be added in the resource tree list identified by the ***Method*** word followed by the method name in brackets.



```
function filmography()
{
//html
var header1 =
"<!DOCTYPE html PUBLIC \"-\/\/W3C\/\/DTD HTML 4.01\/\/EN\" \"http:\/\/ww
var header2 = "\'</span>:</span></big></big></big></td></tr>";

var footer = "<\/tbody><\/table><br></body></html>"

var body1 = "<tr><td>"
var body2 = "</td><td style=\"width: 100\%;\"><big><big><span style=\"fo
var body3 = "</span></big></big>:<br><ul>"
var body4 = "</ul></td></tr>"
//-html

  var result= DIP.getValues(["string"], ["Autor to find:"]);
  var word = result[0]
```

2.9.1 Axmedis Editor DIP functionalities

AXMEDIS supports and extends the MPEG-21 DIP standard set of functionalities. AXMEDIS already has a significant scripting support used for automating some tasks like content production. These capabilities are easily adaptable to be included in the DIP Architecture. Therefore, the functionalities suitable in DIP field could be converted and reused.

It is possible to access to the current Axmedis Object using two ways:

1) DIP/MPEG21 standard way via *didDocument* global object (it is a DOM object)

2) AXMEDIS way using *axDocument* global object (it is an AxmedisObject)

The next samples show how to implement a javascript SlideShow using the above mentioned objects:

Access using global object didDocument (MPEG21 based)

```
function slideshowDIP()
{
        var domResources=didDocument.getElementsByTagName("Resource")
        var audioStatus = null
        for(var i=0; i< domResources.length;i++)
        {
                var mimetype=domResources[i].getAttribute("mimeType")
                if(mimetype.toLowerCase().match("audio"))
                {
                        audioStatus=DIP.play(domResources [i],true)
                        break;
                }
        }
        for(var i=0; i<domResources.length;i++)
        {
                var mimetype=domResources[i].getAttribute("mimeType")
                if(mimetype!="application/mp21-method" && !mimetype.toLowerCase().match("audio"))
                {
                        var playStatus=DIP.play(domResources[i],true)
                        DIP.wait(1000)
                        DIP.release(playStatus)
                }
        }

        if(audioStatus != null)
                DIP.release(audioStatus)
}
```

Access using global object axDocument (AXMEDIS based)

```
function slideshowAX()
{
        var content = axDocument.getContent()
        var audioStatus = null
        for(var i=0; i<content.length;i++)
        {
                if(content[i] instanceof AxResource)
                {
                        var mimetype=content[i].mimeType
                        if(mimetype.toLowerCase().match("audio"))
                        {
                                audioStatus=DIP.play(content[i],true)
                                break;
                        }
                }
        }

        for(var i=0; i<content.length;i++)
        {
                if(content[i] instanceof AxResource)
                {
                        var mimetype=content[i].mimeType
                        if(mimetype!="application/mp21-method" &&
                        !mimetype.toLowerCase().match("audio"))
                        {
                                var playStatus=DIP.play(content[i],true)
                                DIP.wait(3000)
                                DIP.release(playStatus)
                        }
                }
        }

        if(audioStatus != null)
                DIP.release(audioStatus)
}
```

The commands and the objects available in the javascript language are the same already present in the ruleeditor in addiction to the MPEG21 standard objects.

2.9.2 AxMethod input parameters

Besides the MPG-21 DIP standard, now it is possible to send input parameters to an AxMhetod from an HTML standard FORM using the AxMethod name as action and GET as form method:

```
<form method="GET" action="axmethod/methodName()" name="test">)
...
<input name="search">
...
```

N.B.: method="POST" is not supported.

URL_QUERY_ARRAY associative array can be used into the AxMethod body to access to the variables defined into the HTML form (e.g. URL_QUERY_ARRAY['search'] will contain the text written into the corresponding HTML input field).

2.9.3 AxMethod invocation

Call a method from HTML, FLASH or SMIL is now possible.

For instance in html:

```
<a href="axmethod/methodname()">Method call</a>
```

2.9.4 Embedded Object URL representation

The urls usage in HTML and SMIL has been modified. Even if old objects are still compatible.

It is possible to use relative urls (for resources and methods contained into the same object) or absolute ulrs.

An example of relative url for an AxMehtod is:

```
axmethod/methodname()
```

Absolute urls are now composed in that manner:

```
axmedis://AXOID/resource-localpath (resource url)
axmedis://AXOID/axmethod/methodname() (method url)
```

In the above example is assumed that the resources/methods are contained into the root object.

For instance in case you have 10 nested objects and you want to refer to resources/methods contained into the tenth child, the correct absolute syntax is the following:

```
axmedis://AXOID/axoid-10nt-child/resource-localpath (resource url)
axmedis://AXOID//axoid-0nt-child/axmethod/methodname() (method url)
```

N.B.: the axoid is not the full axoid but just the last part as shown in the following example.

Example of full axoid:

```
urn:axmedis:00000:obj:42fc9a46-4a61-43a2-af34-f615abe3aab7
```

Part used in to links:

```
42fc9a46-4a61-43a2-af34-f615abe3aab7
```

Only the root object and the child containing the resources/methods axoids are required.

To maintain the new structure backward compatible all the resources and methods are reported into the root object as well.

If the object absolute url looks like the following:

```
axmedis://42fc9a46-4a61-43a2-af34-f615abe3aab7/68bcd4c8-464d-458b-8d40-b30a780dd257/resource-
localpath
```

it is also possible to use this syntax (even if it's not advised):
`axmedis://42fc9a46-4a61-43a2-af34-f615abe3aab7/resource-localpath`
as the resource was into the root object.
N.B.: if more than one object have the same link, just the first found into the axmedis file is accessible with this syntax.

2.9.5 DIP related operations

These DIBOs provide access to DIP related functionality. The DIBOs are provided as function properties of a `DIP` object. DIML includes such a `DIP` object as a property of the global.
EXAMPLE Calling a DIP DIBO

```
function foo(arg1)
{
    …
    DIP.Play( component, false );
    …
}
```

2.9.5.1 alert

Interface

Syntax:	`alert(message, messageType)`
Description:	Alerts the User with a message.
Parameters:	`message` A string value containing the message to be displayed.
	`messageType` A number value indicating the generic nature of the message. Valid values are `MSG_INFO`, `MSG_WARNING`, `MSG_ERROR` and `MSG_PLAIN` which are defined as value properties of the DIML global object.
Return value:	None
Exceptions:	DIPError With DIP error code `INVALID_PARAM` — If `message` is not a string value; or — if `messageType` does not specify a valid value.

Semantics

This DIBO provides simple textual feedback to the User.
EXAMPLE To notify the User of an error condition.

The textual message is specified by the `message` parameter. It is an error to invoke this DIBO if the message parameter is not a string value, in which case an invalid parameter exception is generated.
The `messageType` parameter indicates the nature of the message. It is an error to invoke this DIBO if the `messageType` parameter is not a valid number value, in which case an invalid parameter exception is generated (a valid number value is one of the values `MSG_INFO`, `MSG_WARNING`, `MSG_ERROR`, or `MSG_PLAIN` defined as number properties of the DIML global object).
NOTE The implementation of the alert is a DIBO implementation decision. For example, one DIBO implementation might present the message in a GUI to a human user. Another implementation might be intended to process a DI without human intervention and log the message to a log file.

2.9.5.2 getExternalData

Interface

Syntax:	`getExternalData(mimeTypes, requestMessages)`
Description:	Requests the User to select resources located external to the DI.
Parameters:	`mimeTypes` An array of arrays of string values specifying the media formats required.
	`requestMessages` An array whose elements are either string values or `null`.
Return value:	Returns an array whose elements are string values specifying the URLs that describe the location of the resources.
Exceptions:	`DIPError` With DIP error code `INVALID_PARAMETER` — if `mimeTypes` is not an array of arrays of string values, or — if `requestMessages` is not null and is not an array the same size as `mimeTypes` with each array member being a string value or null.

Semantics

This DIBO requests the User to select resources external to the current DID.

EXAMPLE An, audio or video resource.

The `mimeTypes` parameter specifies allowable MIME types of the resources to be selected. It is an array with an element for each resource which is to be selected. Each element is another array of string values. The string values in one array specify the allowed MIME types for a single resource for which the User is to select.

The MIME type values are given in the form `type/subtype`. The values for the `type` and `subtype` of the MIME type should be valid values.

EXAMPLE A value of `image/jpeg` specifies a JPEG image is allowed to be selected.

It is an error to invoke this DIBO if the `mimeTypes` parameter is not an array where each array entry is itself an array of string values, in which case an invalid parameter exception is generated.

The `requestMessages` parameter is an array of string values that contains a request message for each of the resource selections indicated by the members of the `mimeTypes` array. The `requestMessages` parameter may be null, in which case no explicit request messages are specified. If the `requestMessages` parameter is not null, it is an error if the number of members in the `requestMessages` parameter is not equal to the number of members in the `mimeTypes` parameter. However one or more of the members of the `requestMessages` parameter may be null. It is an error if a member of the `requestMessages` parameter is not null and is not a string value.

The selected resources are identified to the invoking DIM by the URLs returned by the DIBO. A null return value indicates that no resource was selected.

NOTE The presentation and selection of the resource is a DIBO implementation decision. For example, one DIBO implementation might present the resource selection in a GUI to a human allowing the human to select the resource. Another implementation might be intended to process a DI without human intervention and implement some form of automated resource selection.

Usage Example

EXAMPLE An example where this DIBO can be used is when a RESOURCE element is created and a DIM needs to set the ref attribute and requests the User to locate a resource to which the ref attribute will refer.

2.9.5.3 getObjectMap

Interface

Syntax:	`getObjectMap(document)`
Description:	Retrieves the Object Map from a DID instance document.
Parameters:	`document`

	A DOM `Document` representing the DID instance document containing the Object Type information.
Return value:	An `ObjectMap` object (see **Errore. L'origine riferimento non è stata trovata.**) representing the Object Map of the DID instance document.
Exceptions:	`DIPError` With DIP error code `INVALID_PARAMETER` if `document` is not a DOM `Document` object representing a DIDL instance document.

Semantics
This DIBO allows the retrieval of an Object Map (see **Errore. L'origine riferimento non è stata trovata.**) from a DID instance document.
The `document` parameter shall be a DOM `Document` object representing the DIDL instance document with the Object Type information needed to construct the Object Map. The Object Map is represented in DIML by an `ObjectMap` object (see **Errore. L'origine riferimento non è stata trovata.**). It is an error to invoke this DIBO if the `document` parameter is not a DOM `Document` object representing a DIDL document, in which case an invalid parameter exception is generated.

Usage Example
EXAMPLE An example where this DIBO can be used is if a DIM author wants to process all DID Objects of a particular Object Type. For example, in a music album Digital Item, to get all Objects associated with a music track Object Type, the DIM author can use the `getObjects` operation of the `ObjectMap` object. Prior to this, the DIM author would need to call the `getObjectMap` DIBO to first retrieve the `ObjectMap`.

2.9.5.4 getObjects

Interface

Syntax:	`getObjects(objectTypes, requestMessages)`
Description:	Provides the User with one or more selections of Objects of given Object Types. The Objects for each selection are those elements identified in the Object Map contained in the DI to be of the given Object Types (see also **Errore. L'origine riferimento non è stata trovata.**).
Parameters:	`objectTypes` An `Array` of string values specifying the Object Type names.
	`requestMessages` An array whose elements are either string values or `null`.
Return value:	Returns an array whose elements are either a DOM `Element` object or `null`. A DOM `Element` object represents the selected element of the corresponding Object Type as specified in the `objectTypes` array.
Exceptions:	`DIPError` With DIP error code `INVALID_PARAMETER` — if `objectTypes` is not an array of string values, or — if `requestMessages` is not null and is not an array the same size as `objectTypes` with each array member being a string value or null.

Semantics
This DIBO requests the User to select DIDL elements of specified Object Types from the current DID containing or referencing the DIM from which the DIBO is invoked.
DIM authors should provide DID Objects, representing DIDL elements, to be operated on in a DIM as DIM Arguments declared by the DIM declaration. DIM authors should only use the `getObjects` DIBO when it is not possible to provide a DID Object as an Argument.
NOTE 1 Use of the `getObjects` DIBO prevents DIP engines that, for example, present the User with a list of DID Objects, and then a list of DIMs that accept those Objects as Arguments, from identifying DIMs that operate on Objects that are not specified as the Arguments of a DIM in the DIM declaration.

The objectTypes parameter is an array of string values that specifies the Object Type for each element that the User will be requested to select. The Object Type is an Object Type that is found in the Object Map (see **Errore. L'origine riferimento non è stata trovata.**) for the current DID. It is an error to invoke this DIBO if the objectTypes parameter is not an array of string values, in which case an invalid parameter exception is generated.

For each Object Type specified in the objectTypes parameter, the DIBO allows the User to select one element that maps to that Object Type.

The requestMessages parameter is an array of string values that contains a request message for each of the element selections indicated by the members of the objectTypes array. The requestMessages parameter may be null, in which case no explicit request messages are specified. If the requestMessages parameter is not null, it is an error if the number of members of the requestMessages parameter is not equal to the number of messages in the objectTypes parameter. However one or more of the members of the requestMessages parameter may be null. It is an error if a member of the requestMessages parameter is not null and is not a string value.

The selected elements of the specified Object Types are available to the invoking DIM via the returned array of Element objects. These can then be used as parameters to other DIBOs.

NOTE The presentation and selection of the elements is a DIBO implementation decision. For example, one DIBO implementation might present the element selection in a GUI to a human allowing the human to select the elements. Another implementation might be intended to process a DI without human intervention and implement some form of automated element selection.

2.9.5.5 getValues

Interface

Syntax:	getValues(dataTypes, requestMessages)
Description:	Requests the User for input data of one of the primitive data types.
Parameters:	dataTypes An Array of string values specifying the data type of each datum.
	requestMessages An array whose elements are either string values or null.
Return value:	Returns an array whose elements are values of type boolean, string or number, corresponding to the data type specified in the dataTypes array.
Exceptions:	DIPError With DIP error code INVALID_PARAMETER if — dataTypes contains an invalid data type (not one of Boolean, String, or Number); or — requestMessages is not null and is not an array the same size as objectTypes with each array member being a string value or null.

Semantics

This DIBO requests the User to enter data values of one of the primitive DIML data types.

The dataTypes parameter is an array of string values that specifies primitive data type for each data value that the User will be requested to enter. The data type shall be one of: Boolean, String, or Number. It is an error to specify an invalid data type, in which case an invalid parameter exception is generated.

For each data type specified in the dataTypes parameter, the DIBO allows the User to enter a data value of that data type. The DIBO implementation should execute some basic validation on the value entered, at least to ensure the value is of the correct data type. It is an error to invoke this DIBO if the dataTypes parameter is not an array of string values, in which case an invalid parameter exception is generated.

The requestMessages parameter is an array of string values that contains a request message for each of the data values indicated by the members of the dataTypes array. The requestMessages parameter may be null, in which case no explicit request messages are specified. If the requestMessages parameter is not null, it is an error if the number of members of the requestMessages parameter is not equal to the number of messages in the dataTypes parameter. However one or more of the members of the requestMessages

parameter may be null. It is an error if a member of the `requestMessages` parameter is not null and is not a string value.
The User entered data values of the specified data types are available to the invoking DIM via the returned array of values. If a value was not entered for a requested datum then the corresponding entry in the returned array of values will be null. If no data values at all were entered then a null is returned by the DIBO.
NOTE The data entry mechanism for the requested data is a DIBO implementation decision. For example, one DIBO implementation might present a data entry GUI to a human allowing the human to enter the values. Another implementation might be intended to process a DI without human intervention and implement some form of automated data entry.

2.9.5.6 play

Interface

Syntax:	`play(element, async)`
Description:	Plays a specified COMPONENT, or DESCRIPTOR and optionally waits for completion before returning control to the calling DIM.
Parameters:	`element` A DOM `Element` object representing the COMPONENT, or DESCRIPTOR element to be played.
	`async` A boolean value indicating if the COMPONENT, or DESCRIPTOR should be played asynchronously or not. If `true` then the element is played asynchronously and the DIBO should return control immediately to the calling DIM after playing of the element is initiated. If `false` then the element is played synchronously and control is not returned to the calling DIM until the element media end time has been reached (if applicable).
Return value:	Returns a `PlayStatus` (see **Errore. L'origine riferimento non è stata trovata.**) object to identify the playing element. This is included so that the playing instance of the elements can be released at a later time.
Exceptions:	`DIPError` With DIP error code — `INVALID_PARAMETER` if — `element` is not a COMPONENT, or DESCRIPTOR; or — `async` is not a boolean value; or — `PLAYBACK_FAILED` if an error occurs during playback.

Semantics

This DIBO causes the DIDL element represented by the `element` parameter to be rendered into a transient and directly perceivable representation.
The `element` parameter shall be a DOM `Element` object representing a COMPONENT or DESCRIPTOR to be played. It is an error to invoke this DIBO if the `element` parameter is not a DOM `Element` object representing a COMPONENT or DESCRIPTOR, in which case an invalid parameter exception is generated.
The manner of playing the element, appropriate to its content, is left as an implementation choice of the DIBO implementer.
The `async` parameter shall be a boolean value indicating whether the element is to be played asynchronously or synchronously. It is an error to invoke this DIBO if the `async` parameter is not a boolean value, in which case an invalid parameter exception is generated.
For an asynchronous playing, once playing of the element is initiated, the DIBO should return execution control to the invoking DIM.
For synchronous playing, the DIBO should not return execution control to the invoking DIM until the play status transitions to `STATICPLAY` or `RELEASED`.

For time based media the play status on successful playing of the element will be TIMEPLAY. When the media end time is reached, the status will transition to STATICPLAY.
For non time based media the play status on successful playing of the element will be STATICPLAY.
If the element could not be successfully played the play status will be RELEASED.
The DIBO returns a PlayStatus (see **Errore. L'origine riferimento non è stata trovata.**) object which provides a handle to the playing instance of the element and its status. This handle is used as a parameter to other DIBOs to control the status of the playing instance of the element.
NOTE 1 Time based media is media that changes over time, such as animations, audio clips, and video clips. The MIME media type of resources associated with the element can be retrieved from the MIMETYPE attribute of any DIDL RESOURCE elements. In many cases this will allow the DIBO implementation to determine whether the resource is time based or not. For example, resources with a top-level media type of audio or video (such as audio/mpeg for MP3) are generally time based.

NOTE 2 For a synchronous call to the play DIBO for time based media, the play status transition through the TIMEPLAY state is effectively hidden from the invoking DIM, since the play DIBO will not return until the play status has transitioned to STATICPLAY.

NOTE 3 It is the responsibility of the DIBO implementation to locate the appropriate technology for playing of the element and to inform the User if this cannot be found. For example the resource could be played internally or a mechanism to locate and use some external 'third party' software to play the resource could be provided. The MIME media type of resources associated with the element can be retrieved from the MIMETYPE attribute of any DIDL RESOURCE elements. This will enable the DIBO implementation to determine how to play the associated resources.

NOTE 4 While the manner of playing the element is a DIBO implementation choice, it could be guided by additional available information, for example information contained within *descriptors* associated with the element to be played.

2.9.5.7 release

Interface

Syntax:	release(playStatus)
Description:	Stop playback of a COMPONENT or DESCRIPTOR and release related playback state information.
Parameters:	playStatus The PlayStatus object that was generated as a return value when playback of the DIDL element began. EXAMPLE As the result of an asynchronous call to the play (**Errore. L'origine riferimento non è stata trovata.**) DIBO.
Return value:	None.
Exceptions:	None.

Semantics

This DIBO causes playing of the DIDL element associated with the specified playStatus to be stopped and any state information to be released.
The playStatus parameter shall be an object of type PlayStatus (see **Errore. L'origine riferimento non è stata trovata.**) that was returned by a call to the play DIBO to play the associated element which is to be stopped.
After calling this DIBO the play status will transition to RELEASED.
If the current status is already RELEASED, then this DIBO does nothing.

Usage Example

EXAMPLE In some cases a DIM might play a *component* asynchronously, do some other operations, and then release the *component* before exiting. For example, if a Digital Item represents an electronic travel brochure, and an ITEM contains several *components* that contain information about a specific destination, a

DIM could be authored such that it starts playing some background audio asynchronously, displays synchronously the information *components*, then prior to exiting, releases the asynchronously playing *component* containing the audio resource.

2.9.5.8 runDIM

Interface

Syntax:	`runDIM(itemIdType, itemId, componentIdType, componentId, arguments)`
Description:	Runs a DIM declared in an identified COMPONENT.

Parameters:	`itemIdType`
	`A string value indicating the type of identifier (DII Identifier or URI) that is given by the itemId parameter.`
	`Valid values are dii to indicate a DII Identifier, or uri to inciate a URI.`

	`itemId` A string value identifying the ITEM that contains the DIM declaration of the DIM to be run or `null`.
	`componentIdType` A string value indicating the type of identifier (DII Identifier or URI) that is given by the `componentId` parameter. Valid values are `dii` to indicate a DII Identifier, or `uri` to indicate a URI.
	`componentId` A string value identifying the COMPONENT that contains the DIM declaration of the DIM to be run or `null`.
	`arguments` An array of zero or more objects that are to be the arguments to be passed on to the invoked DIM.
Return value:	None.
Exceptions:	`DIPError` With DIP error code — `INVALID_PARAM` if — either the `itemIdType` or `componentIdType` parameters do not specify a valid value; — both the `itemId` and `componentId` parameters are null; — the `itemId` or `componentId` are not string values or null values; — either the `itemId` parameter, if not null, identifies an element that is not an ITEM, or the `componentId` parameter, if not null, identifies an element that is not a COMPONENT; — both an ITEM is identified and a COMPONENT is identified, but the COMPONENT is not a child of the ITEM; or — if the arguments array does not contain objects of the required Argument Types for this DIM; or — `NOT_FOUND` if, given an identified ITEM and/or COMPONENT, a DIM to run cannot be determined; or — `GENERAL_EXCEPTION` if the DIM cannot be run for any other reason.

Semantics

This DIBO allows a DIM to be invoked from within another DIM.

Without the runDIM DIBO it would not be possible to call one DIM from within another DIM. The runDIM DIBO provides the DIM author with this capability.
EXAMPLE An example where this capability could be used, is the calling of a PlayTrack DIM from a PlayTracks DIM. The runDIM DIBO can then also be used from other DIMs that require playing a track.

The itemIdType parameter shall contain a value of either dii or uri to indicate the type of identifier given by the itemId parameter. A value of dii indicates the itemId parameter contains the value of a DII Identifier. A value of uri indicates the itemId parameter contains the value of a URI.
The itemId parameter shall contain a value that identifies the ITEM in which the DIM to be invoked is declared. If the value of the itemIdType parameter is dii, then the value of the itemId parameter shall match the value contained in a DII Identifier identifying the ITEM. If the value of the itemIdType parameter is uri, then the value of the itemId parameter shall be a URI identifying the ITEM.
The DIM to be invoked shall be directly declared within the identified ITEM, not in a sub-ITEM. If the DIM to be invoked is declared in a sub-ITEM, then that sub-ITEM should be the identified ITEM.
If the itemId parameter is null, then only the componentId is used.
The componentIdType parameter shall contain a value of either dii or uri to indicate the type of identifier given by the componentId parameter. A value of dii indicates the componentId parameter contains the value of a DII Identifier. A value of uri indicates the componentId parameter contains the value of a URI.
The componentId parameter shall contain a value that identifies the COMPONENT in which the DIM to be invoked is declared. If the value of the componentIdType parameter is dii, then the value of the componentId parameter shall match the value contained in a DII Identifier identifying the COMPONENT. If the value of the componentIdType parameter is uri, then the value of the componentId parameter shall be a URI identifying the COMPONENT.
If both the itemId and the componentId parameters are not null, then the identified COMPONENT shall be a child of the identified ITEM, and the DIM declared in the identified COMPONENT shall be run.
If the itemId parameter is null and the componentId parameter is not null, then the DIM declared in the identified COMPONENT shall be run.
If the itemId parameter is not null and the componentId parameter is null, then the DIBO implementation may choose any DIM declared directly in the identified ITEM (i.e., in a COMPONENT that is a child of the ITEM).
If both the itemId and the componentId parameters are null, then a DIPError exception is generated.
If the DIM to be invoked requires arguments, then the arguments parameter is an array of objects containing the arguments required by the DIM.
If the DIM cannot be invoked or an unhandled exception occurs during execution of the DIM, then a DIPError exception is generated.

Usage Example
EXAMPLE An example where this DIBO can be used is when a DI author would like to have a message, included as a *resource* in the DI, displayed prior to the playing of any one of a number of other *resources*. The display of the message might be determined by certain conditions. A DIM to check the conditions and if required display the message can be authored. This DIM can then be invoked by the runDIM DIBO from other DIMs prior to playing any other *resources* for which the message might be required.

2.9.5.9 wait

Interface

Syntax:	wait(timeInterval)
Description:	Waits for a given length of time.
Parameters:	timeInterval A number value indicating the time in milliseconds for the Wait operation to pause execution of the DIM.
Return value:	None.
Exceptions:	DIPError With DIP error code INVALID_PARAM

	— if timeInterval is not a positive number value

Semantics

This DIBO causes a pause in execution of the invoking DIM. On invocation of the DIBO, execution control is not returned to the DIM until the specified time interval has elapsed. It is an error to invoke this DIBO if the waitInterval parameter is not a positive number value, in which case an invalid parameter exception is generated.

The pause applies only to the execution of the invoking DIM.

The DIBO implementer should ensure the actual elapsed interval is as close as possible to the specified time interval, but is not obliged to ensure the exact specified time interval.

Usage Example

EXAMPLE An example where this DIBO can be used is when several resources are played asynchronously, and then the author wants to pause the execution of the DIM for an interval, before stopping one or more of the resources. For example, a Digital Item representing a travel brochure might contain an audio resource, a video resource, and an HTML resource representing a "brochure" of a travel destination. A DIM can be authored such that it plays all three resources asynchronously, and then waits for an interval of time, after which the audio and video resources are released.

2.9.6 Local objects, DIBOs and constants

The following additional supporting object types are also normatively included in the DIML specification.

The DIML object types are specified by the object properties (including primitive values, other objects, and functions), and attributes of those properties.

2.9.6.1 DIPError

This DIML object inherits from the ECMAScript Error object and is thrown as an exception whenever a runtime error specific to DIP occurs. In addition to the properties inherited from the Error object it has the properties specified below.

Other exceptions may also be thrown during execution of a DIM. These include ECMAScript native errors and exceptions derived from DIPError that are specified in this or other parts of ISO/IEC 21000.

EXAMPLE A DIML syntax error will generate an ECMAScript native SyntaxError exception.

Value Properties:	GENERAL_EXCEPTION A number value of 1. This indicates a general DIP error not covered by any other error code has occurred. This property has the attributes { ReadOnly, DontEnum, DontDelete }.
	INVALID_PARAM A number value of 2. This indicates a parameter passed to a DIBO is invalid. EXAMPLE A DIPError returning this value from the getDIPErrorCode() DIBO will be generated if the element parameter passed in a call to the Play DIBO is not an Element object representing a DIDL ITEM, COMPONENT, or DESCRIPTOR element. This property has the attributes { ReadOnly, DontEnum, DontDelete }.
	INVALID_PERMISSION A number value of 3 This indicates that an attempt was made to execute an operation for which required permission in the host environment is unavailable. EXAMPLE If the host environment does not allow execution of resources in Digital Item, a DIPError returning this value from the getDIPErrorCode() DIBO will be generated if the Execute DIBO is

	called. This property has the attributes { ReadOnly, DontEnum, DontDelete }.
	NOT_FOUND A number value of 4 This indicates something required to complete an operation was not found. The missing entity is dependent on the operation that was attempted. EXAMPLE A DIPError returning this value from the getDIPErrorCode() DIBO will be generated if a DIM with the required name is not found in the identified Item when the RunDIM DIBO is called. This property has the attributes { ReadOnly, DontEnum, DontDelete }.
	ADAPTION_FAILED A number value of 5. This indicates an error occurred during an attempt to adapt a resource. This property has the attributes { ReadOnly, DontEnum, DontDelete }.
	PLAYBACK_FAILED A number value of 6. This indicates an error occurred during an attempt to play. This property has the attributes { ReadOnly, DontEnum, DontDelete }.
	EXECUTE_FAILED A number value of 7. This indicates an error occurred during an attempt to execute. This property has the attributes { ReadOnly, DontEnum, DontDelete }.
	PRINT_FAILED A number value of 8 This indicates an error occurred during an attempt to print. This property has the attributes { ReadOnly, DontEnum, DontDelete }.
Object Properties:	None
DIBO Properties:	getDIPErrorCode() This DIBO returns a number value indicating the specific error that caused the exception represented by this error object to be thrown. The value returned may be one of the specified values above, or some other value specified by other parts of ISO/IEC 21000.

2.9.6.2 ObjectMap

This DIML object represents the DIP Object Map. It has the properties specified below.

Value Properties:	None
Object Properties:	None.
DIBO Properties:	getArgumentList(index) This DIBO returns an array of string values representing the list of Argument Types. The index parameter is a number value that indicates the index of the Argument list in the Object Map. The order of the Argument lists in the Object Map corresponds to the document order of the lists of DIP Argument children of all MethodInfo descriptors in the DIDL document and with subsequent instances of duplicate lists removed. This DIBO generates a DIPError exception with error code INVALID_PARAM if the index parameter is not a number value; or not a valid index (a valid index is a number ranging from 0 to one less than the value returned from getArgumentListCount()).

	getArgumentListCount() This DIBO returns a number value and is the number of Argument lists with Arguments in a specific order that are defined in the Object Map. This corresponds to the number of unique permutations for all lists of DIP Argument children of all MethodInfo descriptors in the DIDL document.
	getMethodCount(argumentList) This DIBO returns a number value and is the number of DIMs that are defined to accept as parameters the Arguments listed in argumentList. This corresponds to the number of DIM declarations in the DIDL document that have a DIP MethodInfo descriptor with zero or more child Argument elements such that the number and values of those Argument elements match the number and names of the specified Argument Types. The argumentList parameter is an array of string values that indicates the Argument Types. A zero length array passed as the argumentList parameter indicates DIMs declared to accept no Arguments. This DIBO generates a DIPError exception with error code INVALID_PARAM if the argumentList parameter is not an array of string values.
	getMethodsWithArgs(argumentList) This DIBO returns an array of Element objects representing the DIDL COMPONENT elements representing the DIM declaration for DIMs that accept as parameters the Arguments listed in argumentList. This corresponds to the list of DIDL Component elements, in document order, in the DIDL document that have a DIP MethodInfo descriptor with zero or more child Argument elements such that the number and values of those Argument elements match the number and names of the specified Argument Types. The argumentList parameter is an array of string values that indicates the Argument Types. A zero length array passed as the argumentList parameter indicates DIMs declared to accept no arguments. This DIBO generates a DIPError exception with error code INVALID_PARAM if the argumentList parameter is not an array of string values.
	getMethodWithArgs(argumentList, index) This DIBO returns an Element object representing the DIDL COMPONENT element representing the DIM declaration for a DIM that accepts as parameters the Arguments listed in argumentList. The argumentList parameter is an array of string values that indicates the Argument Types. A zero length array passed as the argumentList parameter indicates DIMs that are declared to accept no Arguments. The index parameter is a number value that indicates the index of the DIM in the list of DIMs that accept as parameters the Arguments listed in argumentNames. The order of the DIMs in the list of DIMs corresponds to the document order of the DIM declarations in the DIDL document that have a DIP MethodInfo descriptor with zero or more child Argument elements such that the number and values of those Argument elements match the number and names of the specified Argument Types. This DIBO generates a DIPError exception with error code INVALID_PARAM if the argumentList parameter is not an array of string values; the index parameter is not a number value; or the index parameter is not a valid index (a valid index is a number ranging from 0 to one less than the value returned from

	getMethodCount(argumentList)).
	getObjectOfType(typeName, index) This DIBO returns an Element object of a given Object Type. The typeName parameter is a string value that indicates the Object Type name. The index parameter is a number value that indicates the index of the Object in the list of Objects of the given Object Type. The order of the Objects in the list of Objects corresponds to the document order of the elements in the DIDL document that have a child descriptor containing a DIP ObjectType descriptor with a value matching the specified Object Type. This DIBO generates a DIPError exception with error code INVALID_PARAM if the typeName parameter is not a string value; the index parameter is not a number value; or the index parameter is not a valid index (a valid index is a number ranging from 0 to one less than the value returned from getObjectsOfTypeCount(typeName)).
	getObjectsOfType(typeName) This DIBO returns an array of Element objects of a given Object Type. This corresponds to the list of elements, in document order, in the DIDL document that have a child DIP ObjectType descriptor with value matching the specified Object Type. If there are no objects of the given Object Type, a zero length array shall be returned. The typeName parameter is a string value that indicates the Object Type name. This DIBO generates a DIPError exception with error code INVALID_PARAM if the typeName parameter is not a string value.
	getObjectsOfTypeCount(typeName) This DIBO returns a number value and is the number of Objects that are defined in the Object Map to be of a given Object Type. This corresponds to the number of elements in the DIDL document that have a child DIP ObjectType descriptor with value matching the specified Object Type. The typeName parameter is a String that indicates the Object Type name. This DIBO generates a DIPError exception with error code INVALID_PARAM if the typeName parameter is not a string value.
	getObjectTypeCount() This DIBO returns a number value and is the number of Object Types that are defined in the Object. This corresponds to the number of unique values for all DIP ObjectType descriptors in the DIDL document.
	getObjectTypeName(index) This DIBO returns a string value representing the Object Type name. The index parameter is a number value that indicates the index of the Object Type in the Object Map. The order of the Object Types in the Object Map corresponds to the document order of the DIP ObjectType descriptors in the DIDL document and with subsequent instances of duplicate values removed from the list. This DIBO generates a DIPError exception with error code INVALID_PARAM if the index parameter is not a number value; or

	not a valid index for an Object Type in the Object Map (a valid index is a number ranging from 0 to one less than the value returned from `getObjectTypeCount()`).

2.9.6.3 PlayStatus

This object is returned by the `Play` DIBO to enable subsequent operations on the particular instance of the Act invoked. It has the properties specified below.

Value Properties:	`RELEASED` A number value of 0. This value indicates the associated resource is not currently playing. NOTE A resource can be in the `RELEASED` state because an error prevented a request to play the resource from successfully completing, or as a result of an explicit request to release the resource. A `RELEASED` resource has no other preserved state information. Playing a `RELEASED` resource will commence with relevant state information in an initial state. EXAMPLE For a resource with time based media, playing a `RELEASED` resource will commence from the media start time. This property has the attributes { ReadOnly, DontEnum, DontDelete }.
	`STATICPLAY` A number value of 1. This value indicates the associated resource is currently playing. Time based state information related to playing the resource, if relevant, is paused for a `STATICPLAY` resource. NOTE For time based media, this status is equivalent to a state typically considered as 'paused'. This property has the attributes { ReadOnly, DontEnum, DontDelete }.
	`TIMEPLAY` A number value of 2. This value indicates the associated resource is currently playing. Time based state information related to playing the resource, if relevant, is advancing for a `TIMEPLAY` resource. NOTE Only time based media can have a status of `TIMEPLAY`. This property has the attributes { ReadOnly, DontEnum, DontDelete }.
Object Properties:	None.
DIBO Properties:	`getStatus()` This DIBO returns a number value indicating the status of the resource associated with the `PlayStatus` object. The returned value is one of the value properties specified above for the `PlayStatus` prototype.

2.9.7 Table of available MPEG21 DIP functionalities

List of ECMAScript bindings for DIBOs of global objects		
Object	**DIBO**	**implemented/not implemented**
`DIA`	`adapt(element,metadata)`	no
`DID`	`areConditionsSatisfied(element)`	no

	configureChoice(choice)	no
	setSelection(selection,state)	no
DII	getElementsByIdentifier(sourceDID,value)	no
	getElementsByRelatedIdentifier(sourceDID,value)	no
	getElementsByType(sourceDID,value)	no
DIP	alert(message,messageType)	implemented
	execute(element)	no
	getExternalData(mimeTypes,requestMessages)	implemented
	getObjectMap(document)	implemented
	play(element,async)	implemented
	print(element)	no
	release(playStatus)	implemented
	runDIM(itemIdType,itemId,componentIdType, componentId,arguments)	implemented
	runJDIXO(itemIdType,itemId,componentIdType, componentId,className,arguments)	no
	wait(timeInterval)	implemented
DOM Level 3 Core Specification	getElementsByTagNameNS(in DOMString namespaceURI, in DOMString localName)	implemented
	getElementsByTagName(in DOMString name)	implemented
	getAttributeNS(in DOMString namespaceURI, in DOMString localName)	implemented
	getAttribute(in DOMString name)	implemented
	getElementById(in DOMString elementId)	implemented
	hasChildNodes()	implemented
	getAttributes()	implemented
	getDocumentElement()	implemented
	getTagName()	implemented
	getChild()	implemented
	getChildNodes()	implemented
	getFirstChild()	implemented
	getLastChild()	implemented
	getParentNode()	implemented
DOM Level 3 Load and Save Specification		Not implemented
REL	getLicense(resource)	no
	queryLicenseAuthorization(license,resource, rightNs,rightLocal,addiontalInfo)	no

List of ECMAScript bindings for DIBOs of local objects

object	DIBO	implemented/ not implemented
DIPError	getDIPErrorCode()	implemented

ObjectMap	getArgumentList(index)	implemented
	getArgumentListCount()	implemented
	getMethodCount(argumentNames)	implemented
	getMethodWithArgs(argumentNames,index)	implemented
	getMethodsWithArgs(argumentNames)	implemented
	getObjectOfType(typeName, index)	implemented
	getObjectsOfType(typeName)	implemented
	getObjectsOfTypeCount(typeName)	implemented
	getObjectTypeCount()	implemented
	getObjectTypeName(index)	implemented
PlayStatus	getStatus()	implemented

2.10 AXMEDIS DRM Editor

2.10.1 Main functionalities

"*DRM Editor and Viewer*" is a software application to view and eventually edit MPEG-21 REL Licenses. This user manual refers to its version 2.6. "*DRM Editor and Viewer*" comes in the form of two different applications.

Its main features are:

Feature	DRM editor	DRM viewer
Load a license from a XML file	Yes	Yes
Load license from a remote host (PMS Server)	Yes	Yes
Create a new license form scratch	Yes	No
Display graphically the license	Yes	Yes
Store a license in a XML file	Yes	No
Store a license in a remote host (PMS Server)	Yes	No
Edit (modify) a License	Yes	No

2.10.2 Relationship with other tools

This tool can be embedded as a component in other tools (i.e. axeditor).

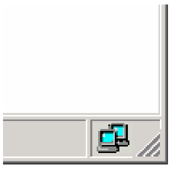
To start the DRM Editor and Viewer Standalone Application, there are two possible ways.

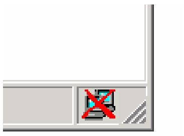
- From the PAR Editor, embedded in the Axeditor application, it is possible going to the menu and selection "Launch Standalone DRM Editor and Viewer"
- From the AXMEDIS Tools package, select the DRM Editor and Viewer application

The licenses created with the AXMEDIS DRM Editor can be stored locally or in a remote server (AXMEDIS PMS Server). In order to be able to store licenses in the remote server, a connection to it must be available, as explained in next section.

2.10.3 Detailed description of the functionalities and Screenshots

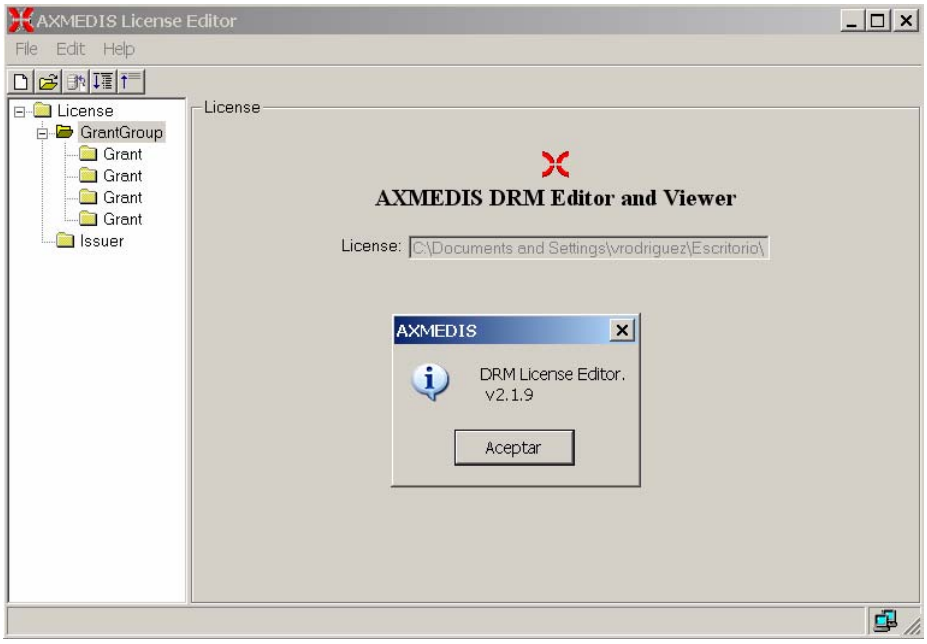
The application is a window application. (see figure DRM Editor View). As in a common window application, the following elements appear: menu bar, button bar, status bar. The status bar shows an icon informing whether connection to the server is available or not. If it does not exist, only file operations are possible





The main window shows two areas: in the left a hierarchically structure is displayed (also called tree), which is used to navigate through the license elements; in the right side there is a panel showing information related to the element marked in the tree. Functionalities can be accessed through the menu options, the buttons in the button bar, or the buttons that appear in the panel. Next we summarise the DRM Editor and Viewer main functionalities:

- DRM Editor and Viewer. Open a license from a file 📂 (see next figure). The panel displays the file path or an alternative description.

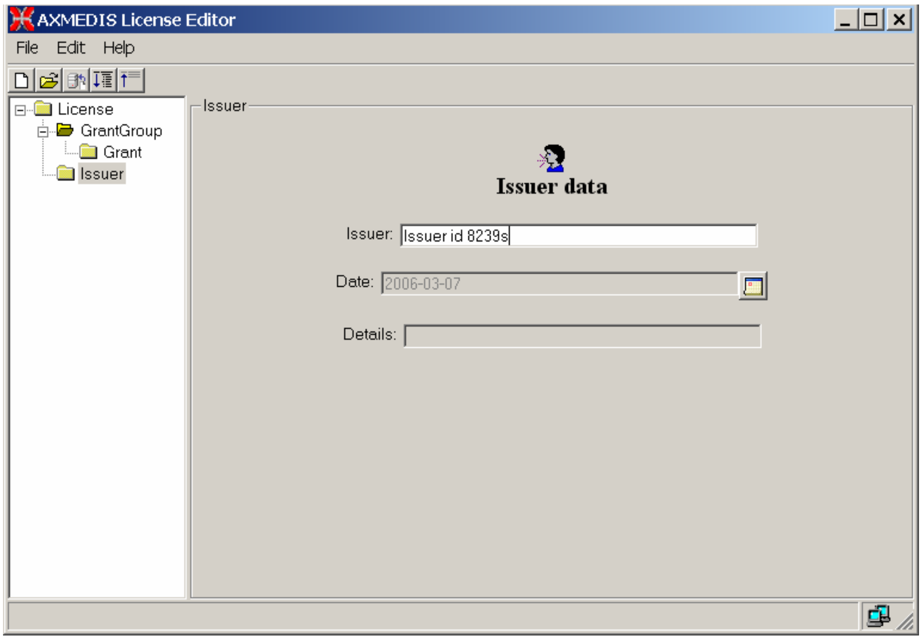


License: C:\Documents and Settings\vrodriguez\Escritorio\

DRM License Editor. v2.1.9

Figure: DRM Editor view

- DRM Editor. Create a new license 🗋. When a new license is created, it is empty. The tree appears with an "issuer" element and with a "Grant Group" element, but they are initially empty.
- DRM Editor. Modify a license.
  - o When the tree is clicked on its "issuer element", the Editor shows the issuer panel, where the issuer and the date of issuance can be set (see next figure).



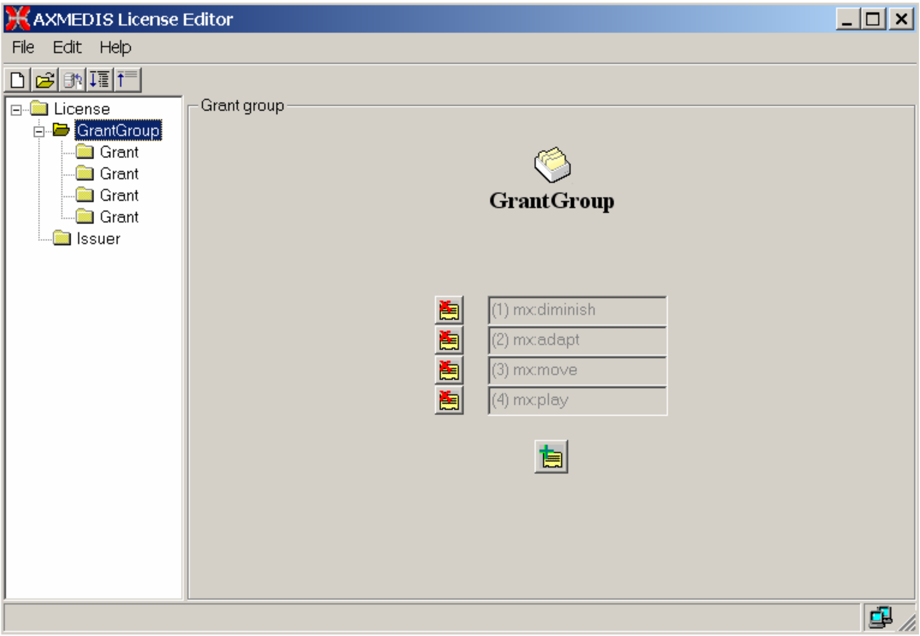
Issuer: Issuer id 8239s

Date: 2006-03-07

Details:

Figure: DRM Editor License Issuer view

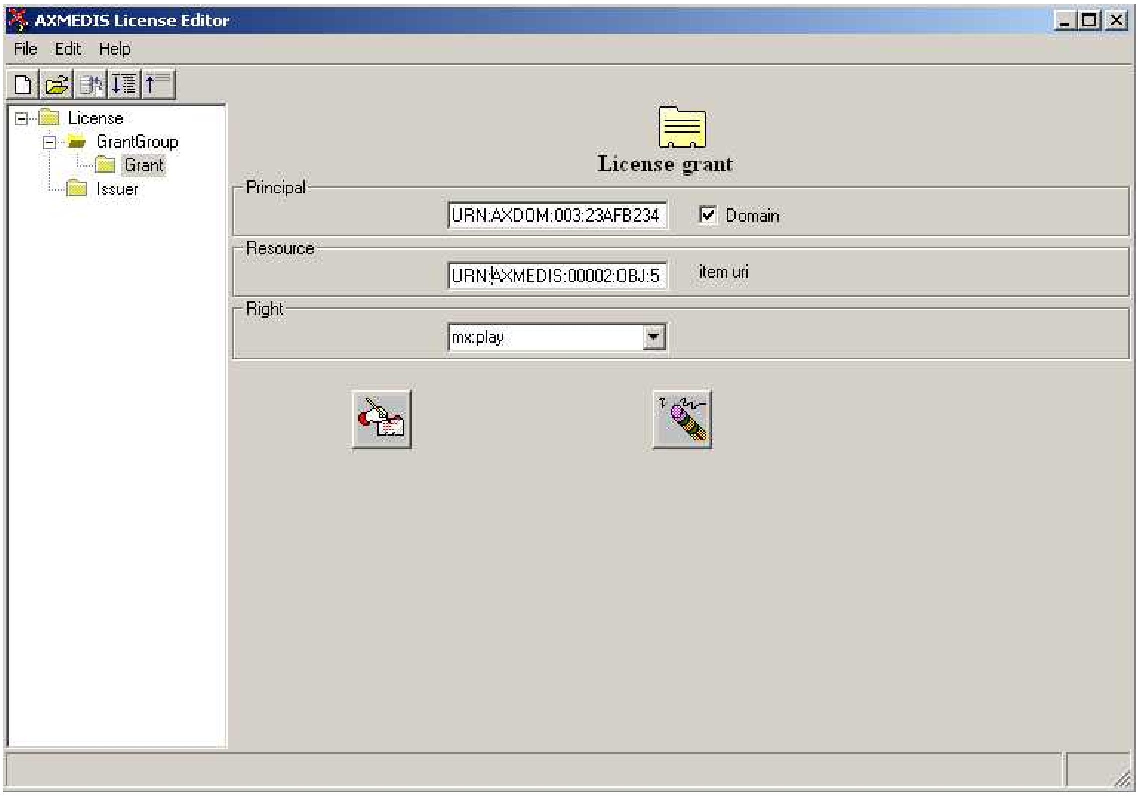
- When the tree is clicked on its "GrantGroup element", a Grant Group panel is displayed. (see next figure). From this panel it is possible to add or delete grants. The first icon creates an empty grant, the second deletes it. Once a grant has been created, it will be displayed in the tree.
-



(1) mx:diminish
(2) mx:adapt
(3) mx:move
(4) mx:play

Figure: DRM Editor and Viewer License Grant Group view

- When the tree is clicked on its "Grant" element (see next figure), the Grant panel is shown. From this panel, the following actions can be performed:
  - To change the following fields: principal, right, resource.
    - The resource is a free text, that should point to a Axmedis Object ID
    - The right is one of the string selectable in the combo-box
    - The principal is a free text that should point to an Axmedis User or an Axmedis Domain. The Principal is the user who will receive the rights granted in a license. The Principal appears as a text field that for each grant, and it can be filled in with the proper text describing the beneficiary of the grant. Usually, it will be an Axmedis User ID, but it can also be a Domain ID. In order to select a Domain, check the proper item besides Principal (see Figure below).



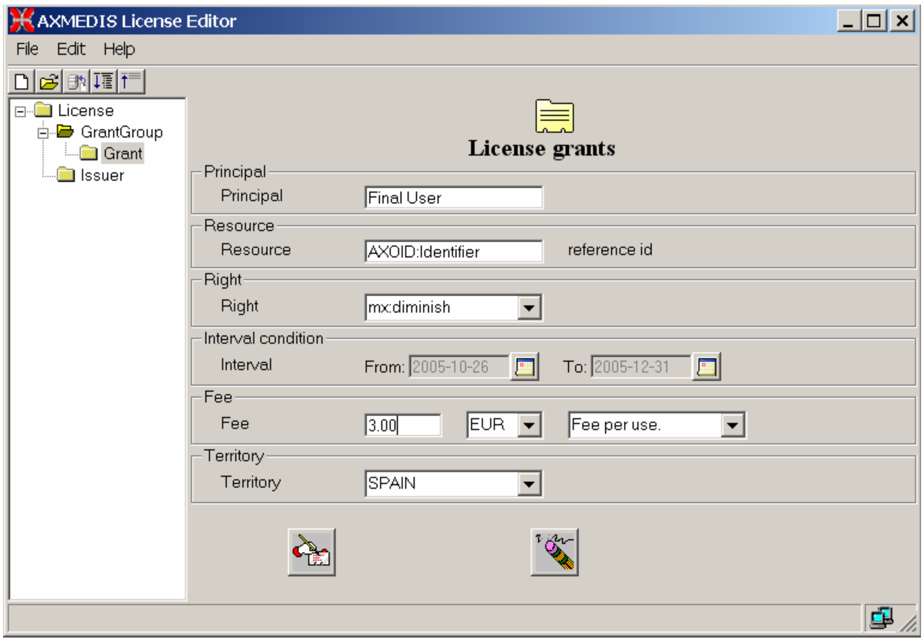
Principal: URN:AXDOM:003:23AFB234 ☑ Domain

Resource: URN:AXMEDIS:00002:OBJ:5 item uri

Right: mx:play

Figure 1. DRM Editor and Viewer, Standalone Version

- To add and remove conditions. The conditions that can be set are: *number*, *interval*, *territory* and/or *fee*. Each of them can be modified.



Principal — Principal: Final User

Resource — Resource: AXOID:Identifier reference id

Right — Right: mx:diminish

Interval condition — Interval From: 2005-10-26 To: 2005-12-31

Fee — Fee: 3.00 EUR Fee per use.

Territory — Territory: SPAIN

Figure: DRM Editor License Grant view

  - When the *issue* right is chosen, the license becomes a “distributor license”, and the Grants underneath are Grants to be given by the distributor. This is reflected in the tree, where a new sublevel is displayed containing additional grants.
- DRM Editor. Store a license to a file. This option is performed when selection the “File -> Save to File” option of the Editor.
- DRM Editor. Store a license into a remote server .

Limitations to be fixed in subsequent versions:

- In the current version only up to 8 grants can be added to the same grant group.
- Only a condition of each type can be added to a grant.

If the DRM Editor and Viewer are used in its classic version (the one which displays a simple tree) these limitations are overcome.

2.11 AXMEDIS Workflow Editor

2.11.1 Main functionalities

The AXMEDIS workflow Editor/Viewer provides user with the workflow information for the object being edited/viewed. It also shows the Workflow Engine's Interface for the user to see his worklist.

The Workflow information that is displayed is as follows:

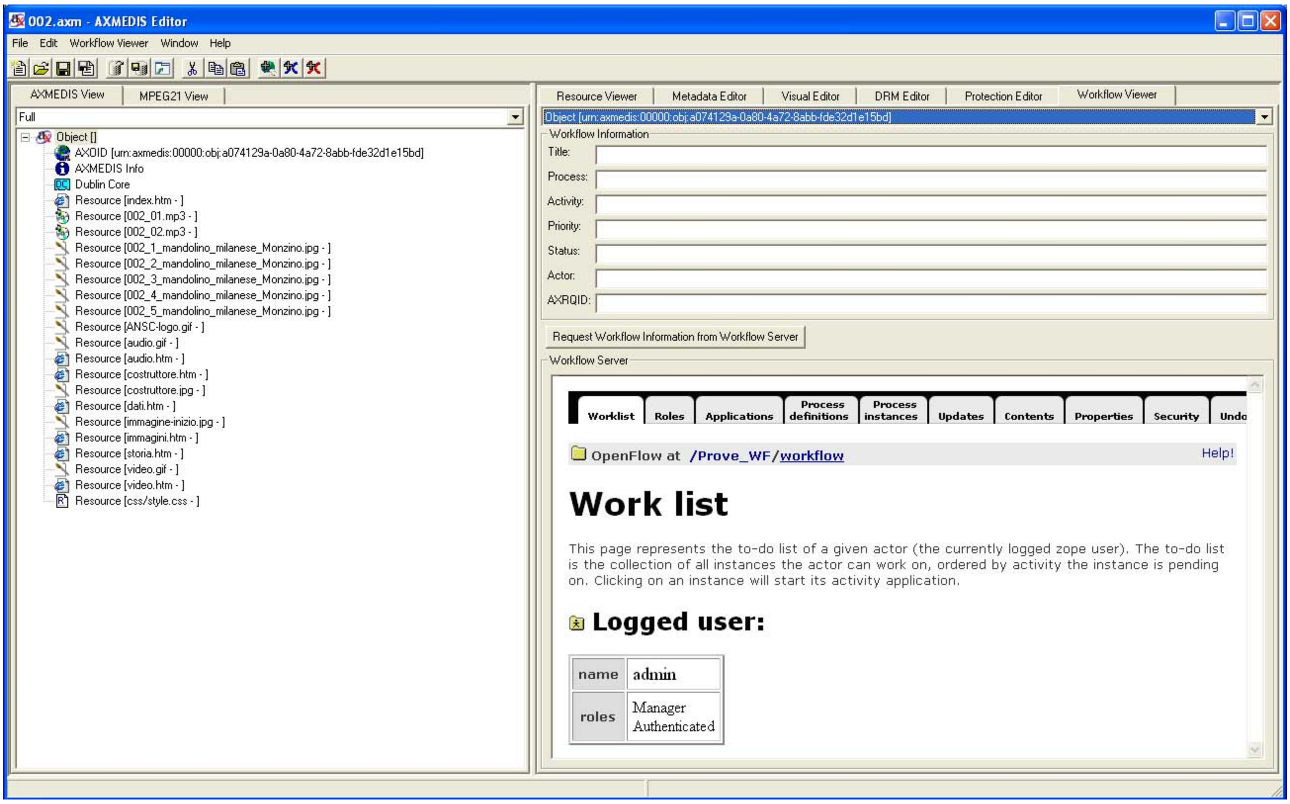
Parameter	Information
Title	The
Process	The workflow process that is being executed for the selected AXOID
Activity	The Activity that is currently being executed for the selected AXOID
Priority	The priority of the Workflow Process
Status	The status of the Workflow Process
Actor	The Actor responsible for the current Activity
AXRQID	The Workflow Request ID issued by the workflow engine for current request.

2.11.2 Relationship with other tools

This tool is embedded as a part of AxEditor. It uses the workflow editorPlugin to communicate with the Workflow Engine through Workflow Gateways (with OpenFlow). With Biztalk, it will communicate directly.

2.11.3 Detailed description of the functionalities and Screenshots

In order to view the workflow information, the user should select the "Workflow View" tab in the Axeditor. On activation the editor will show empty fields for the parameters.



Object []
- AXOID [urn:axmedis:00000:obj:a074129a-0a80-4a72-8abb-fde32d1e15bd]
- AXMEDIS Info
- Dublin Core
- Resource [index.htm -]
- Resource [002_01.mp3 -]
- Resource [002_02.mp3 -]
- Resource [002_1_mandolino_milanese_Monzino.jpg -]
- Resource [002_2_mandolino_milanese_Monzino.jpg -]
- Resource [002_3_mandolino_milanese_Monzino.jpg -]
- Resource [002_4_mandolino_milanese_Monzino.jpg -]
- Resource [002_5_mandolino_milanese_Monzino.jpg -]
- Resource [ANSC-logo.gif -]
- Resource [audio.gif -]
- Resource [audio.htm -]
- Resource [costruttore.htm -]
- Resource [costruttore.jpg -]
- Resource [dati.htm -]
- Resource [immagine-inizio.jpg -]
- Resource [immagini.htm -]
- Resource [storia.htm -]
- Resource [video.gif -]
- Resource [video.htm -]
- Resource [css/style.css -]

Object [urn:axmedis:00000:obj:a074129a-0a80-4a72-8abb-fde32d1e15bd]

Workflow Information

Title:

Process:

Activity:

Priority:

Status:

Actor:

AXRQID:

Workflow Server

OpenFlow at /Prove_WF/workflow

Work list

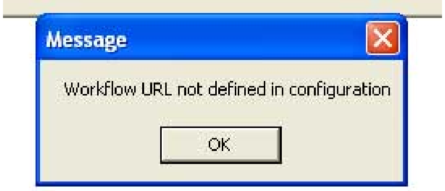
This page represents the to-do list of a given actor (the currently logged zope user). The to-do list is the collection of all instances the actor can work on, ordered by activity the instance is pending on. Clicking on an instance will start its activity application.

Logged user:

name	admin
roles	Manager Authenticated

Meanwhile it will retrieve the "Work List" for the logged user from the workflow engine.

When the user clicks on the "Request Workflow Information" button, the editor retrieves the workflow parameters from the Workflow Engine and displays in the upper half of the viewer.
If the information cannot be retrieve an error message is displayed (as showed in the picture below).



Workflow URL not defined in configuration

To configure appropriately the Workflow parameters it is necessary to select the menu **File/Configuration**.

2.12 AXMEDIS Protection Information Editor

2.12.1 Main functionalities

The Protection Information Editor and Viewer provides the functionalities to view and edit protection information.

The main features are:

- The user can browse the protection information, the list of protection operations that were applied to the selected part of an AXMEDIS object.
- The user can view detailed information about a specific protection operation including all parameters and the protection target.
- The user can alter the order of different protection operations.
- The user can delete one of the protection operations from the list of protection steps.
- The user can select one of the available tools for protection, e.g. encryption, scrambling or compression, and add an additional protection operation to a specific part of an AXMEDIS object.

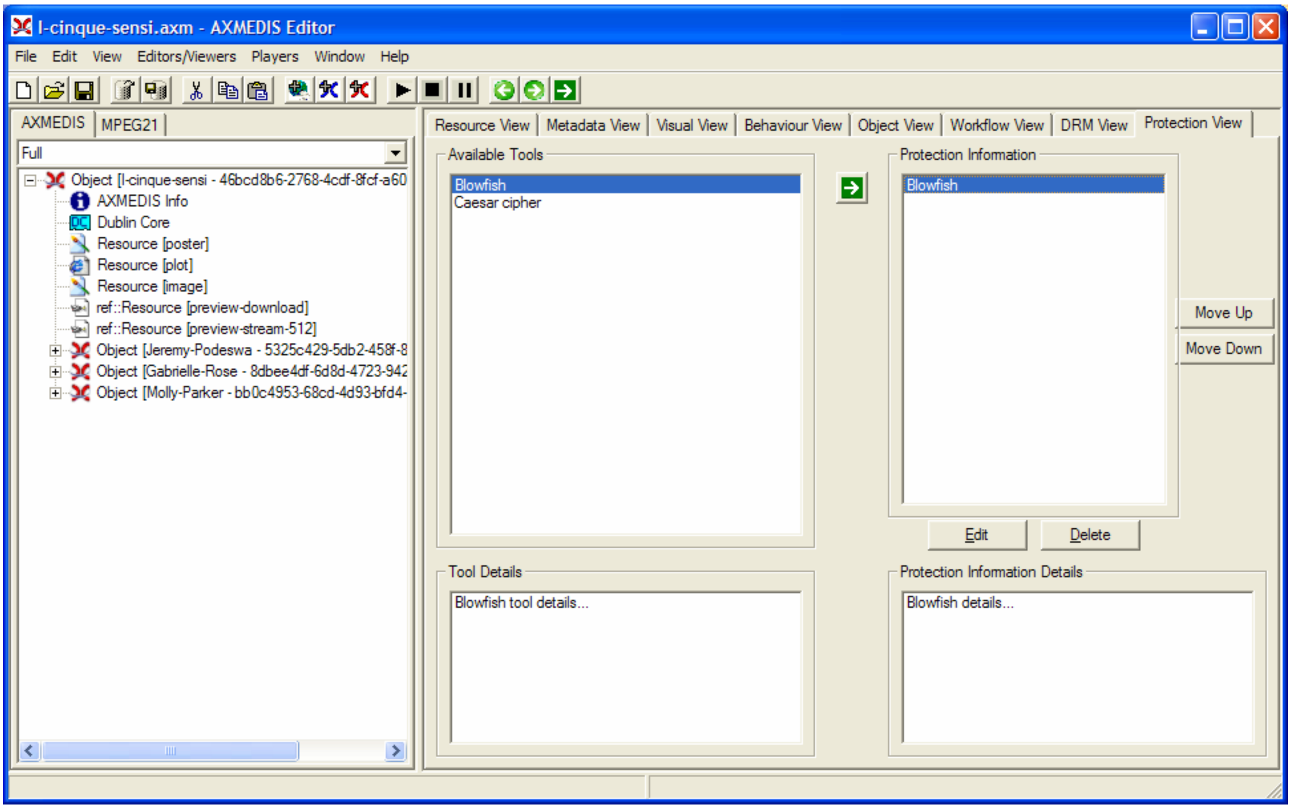
2.12.2 Relationship with other tools

The Protection Information Editor and Viewer uses the Protection Processor to access protection information, to apply protection operations to a specific part of an AXMEDIS object.

2.12.3 Detailed description of the functionalities and Screenshots

Here’s an example on how to use the AXMEDIS Protection Information Editor and Viewer. A part of an object is selected in the tree view of the object shown on the left side of the editor. For editing and viewing o protection information the tab “Protection Information” must be selected on the right side of the editor window.

The current user interface for the protection of resources and the viewing of protection information is shown in the following picture.


I-cinque-sensi.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS
MPEG21
Full
Object [I-cinque-sensi - 46bcd8b6-2768-4cdf-8fcf-a60
AXMEDIS Info
Dublin Core
Resource [poster]
Resource [plot]
Resource [image]
ref::Resource [preview-download]
ref::Resource [preview-stream-512]
Object [Jeremy-Podeswa - 5325c429-5db2-458f-8
Object [Gabrielle-Rose - 8dbee4df-6d8d-4723-942
Object [Molly-Parker - bb0c4953-68cd-4d93-bfd4-
Resource View
Metadata View
Visual View
Behaviour View
Object View
Workflow View
DRM View
Protection View
Available Tools
Blowfish
Caesar cipher
Protection Information
Blowfish
Move Up
Move Down
Edit
Delete
Tool Details
Protection Information Details

Tool Details: Blowfish tool details...

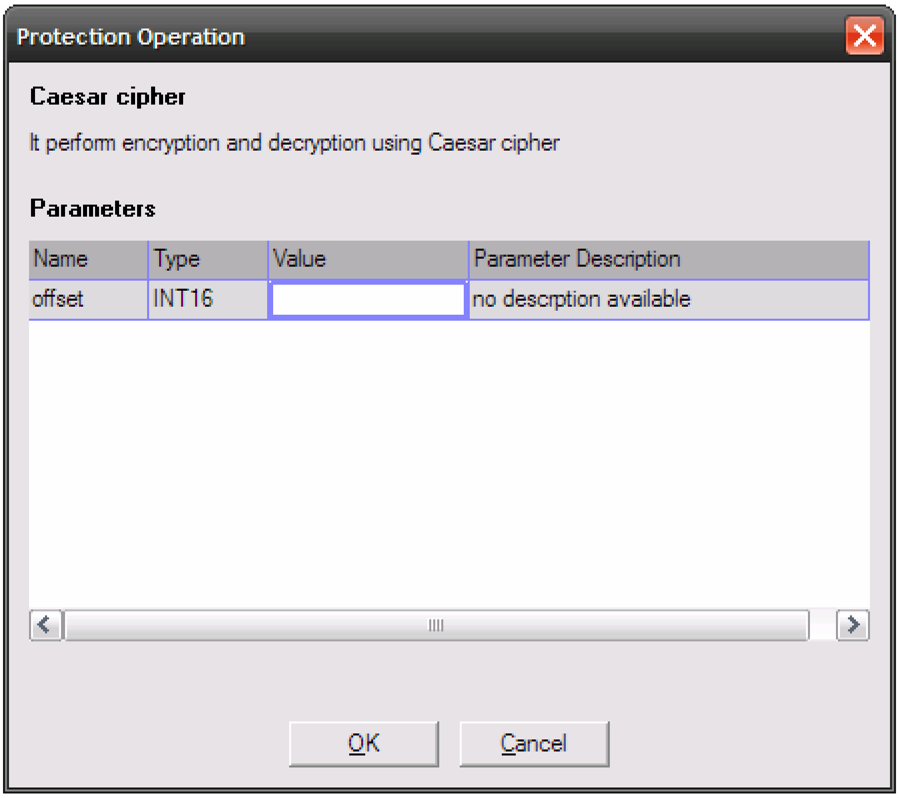
Protection Information Details: Blowfish details...

Figure. Protection Information Editor and Viewer user interface

2.12.3.1 Viewing of Protection Information

After the user selected a specific part of an object and switched to the protection view (as described above) a window appears which shows on the right side a list of the protections steps that were applied to this part of the object.

When the user selects one of these operations more detailed information is shown in the lower right part of the window ("Protection Information Details"). The user can open an additional window by double clicking one of the protection operations. This window displays the name of the tool that was applied, a list of the different parameters and the target to which this protection operation was applied to (see figure below).



Caesar cipher

It perform encryption and decryption using Caesar cipher

Parameters

Name	Type	Value	Parameter Description
offset	INT16		no descrption available

Figure: Parameter setting for a specific Protection Operation

2.12.3.2 Editing of Protection Information

When a user wants to change the protection information he has to select a part of an AXMEDIS and view the protection information as described above. The order of the different protection operations can be changed by selecting a specific operation and clicking on the up or down button on the right side.

If a user wants so add an additional protection step he can select a protection tool from the list on the left side of the protection window and click on the green arrow in the middle to add it to the list of protection steps. A new window appears in which the specific parameters for this new protection operation, e.g. key length.

A user can also edit existing protection operations by double clicking on an operation in the protection view window. A window appears that displays the different parameters for this protection operation which can be edited and saved by the user.

3 AXMEDIS PC Player

3.1 Main functionalities

The AXMEDIS Player allows to:

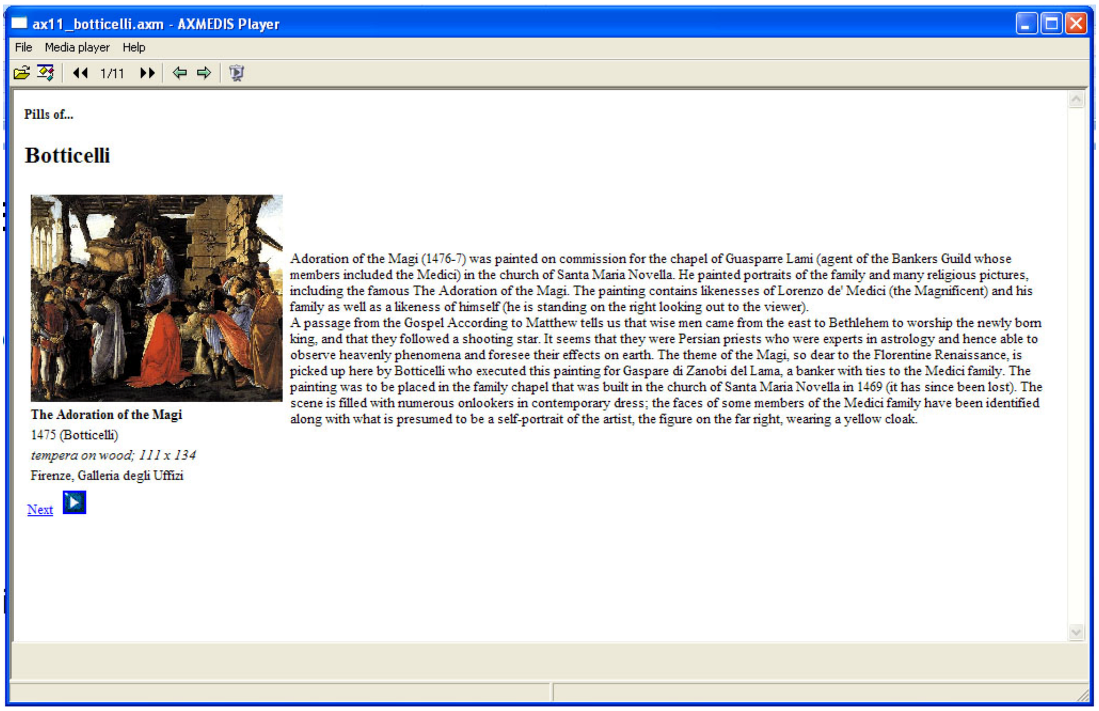
- view the resources present inside the object
- view the metadata of the object
- view the SMIL presentation built
- view the AXMEDIS structure

3.2 Relationship with other tools

None

3.3 Detailed description of the functionalities and Screenshots

When the player is started an AXMEDIS object may be loaded using the **File/Open…** menu or using the button on the toolbar.



Pills of...

Botticelli

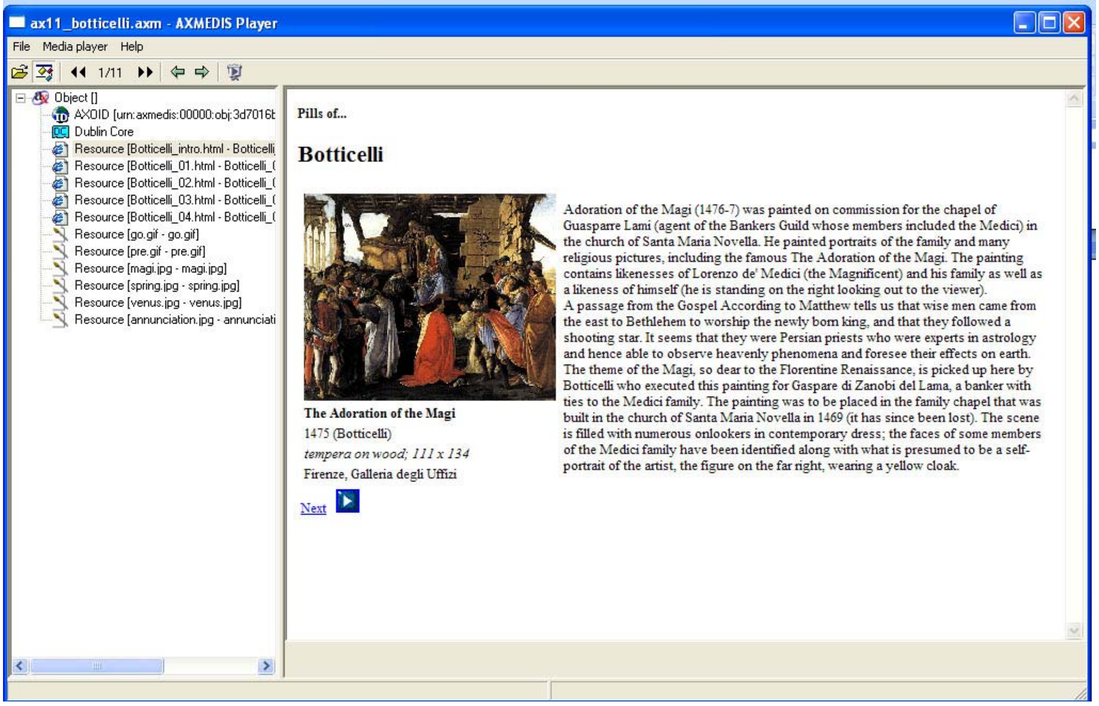
The Adoration of the Magi
1475 (Botticelli)
tempera on wood; 111 x 134
Firenze, Galleria degli Uffizi

Next

Adoration of the Magi (1476-7) was painted on commission for the chapel of Guasparre Lami (agent of the Bankers Guild whose members included the Medici) in the church of Santa Maria Novella. He painted portraits of the family and many religious pictures, including the famous The Adoration of the Magi. The painting contains likenesses of Lorenzo de' Medici (the Magnificent) and his family as well as a likeness of himself (he is standing on the right looking out to the viewer).
A passage from the Gospel According to Matthew tells us that wise men came from the east to Bethlehem to worship the newly born king, and that they followed a shooting star. It seems that they were Persian priests who were experts in astrology and hence able to observe heavenly phenomena and foresee their effects on earth. The theme of the Magi, so dear to the Florentine Renaissance, is picked up here by Botticelli who executed this painting for Gaspare di Zanobi del Lama, a banker with ties to the Medici family. The painting was to be placed in the family chapel that was built in the church of Santa Maria Novella in 1469 (it has since been lost). The scene is filled with numerous onlookers in contemporary dress; the faces of some members of the Medici family have been identified along with what is presumed to be a self-portrait of the artist, the figure on the far right, wearing a yellow cloak.

When the file is opened the first resource inside is opened:

The content of the AXMEDIS object may be browsed using the arrows in the toolbar or using the hierarchy view (opened using the button in toolbar)


ax11_botticelli.axm - AXMEDIS Player
File
Media player
Help
1/11
Object []
AXOID [urn:axmedis:00000:obj:3d7016b
Dublin Core
Resource [Botticelli_intro.html - Botticelli
Resource [Botticelli_01.html - Botticelli_(
Resource [Botticelli_02.html - Botticelli_(
Resource [Botticelli_03.html - Botticelli_(
Resource [Botticelli_04.html - Botticelli_(
Resource [go.gif - go.gif]
Resource [pre.gif - pre.gif]
Resource [magi.jpg - magi.jpg]
Resource [spring.jpg - spring.jpg]
Resource [venus.jpg - venus.jpg]
Resource [annunciation.jpg - annunciati

Pills of...

Botticelli

Adoration of the Magi (1476-7) was painted on commission for the chapel of Guasparre Lami (agent of the Bankers Guild whose members included the Medici) in the church of Santa Maria Novella. He painted portraits of the family and many religious pictures, including the famous The Adoration of the Magi. The painting contains likenesses of Lorenzo de' Medici (the Magnificent) and his family as well as a likeness of himself (he is standing on the right looking out to the viewer).
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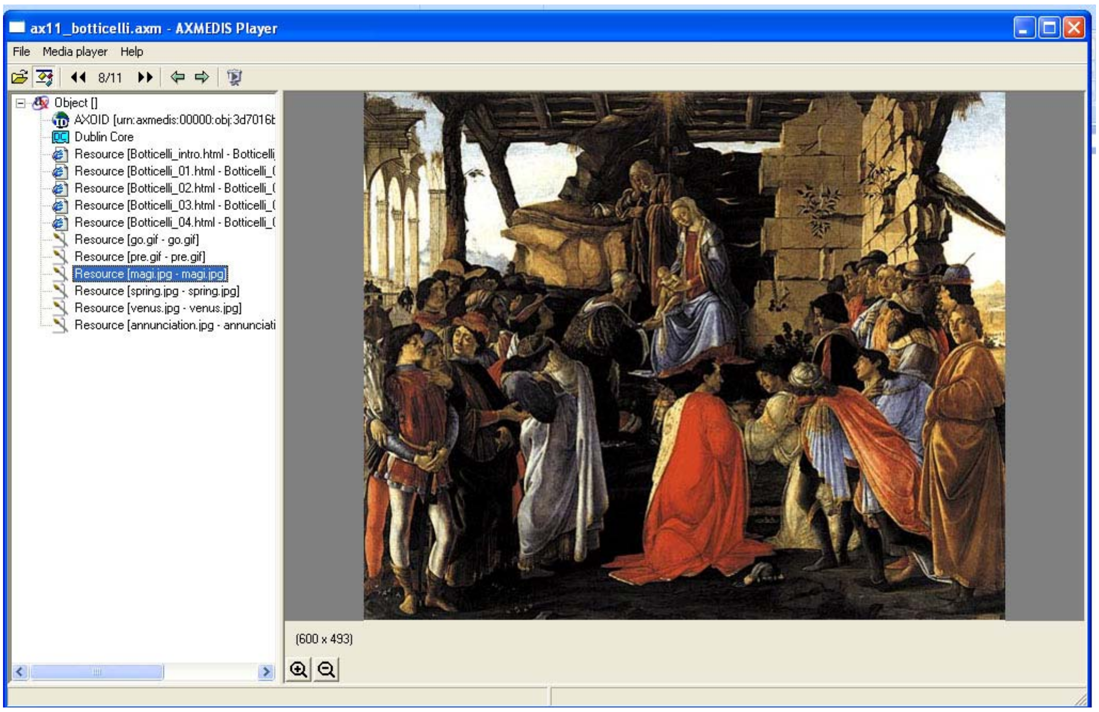
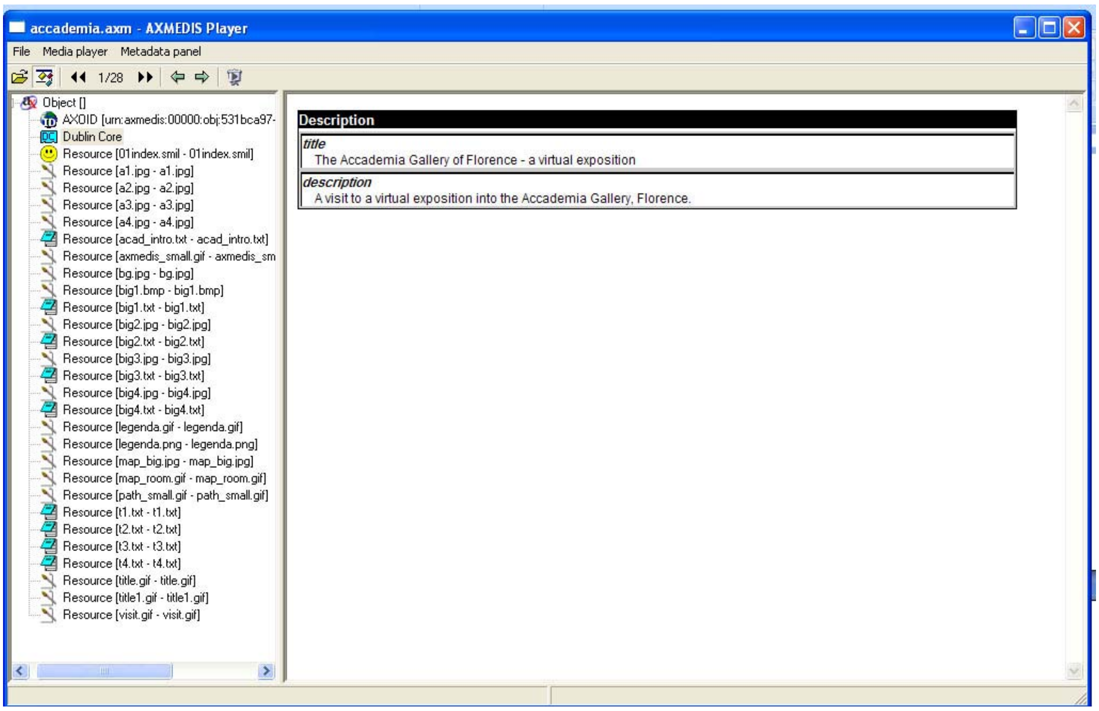
The Adoration of the Magi
1475 (Botticelli)
tempera on wood; 111 x 134
Firenze, Galleria degli Uffizi

Next


ax11_botticelli.axm - AXMEDIS Player
File
Media player
Help
8/11
Object []
AXOID [urn:axmedis:00000:obj:3d7016b
Dublin Core
Resource [Botticelli_intro.html - Botticelli
Resource [Botticelli_01.html - Botticelli_(
Resource [Botticelli_02.html - Botticelli_(
Resource [Botticelli_03.html - Botticelli_(
Resource [Botticelli_04.html - Botticelli_(
Resource [go.gif - go.gif]
Resource [pre.gif - pre.gif]
Resource [magi.jpg - magi.jpg]
Resource [spring.jpg - spring.jpg]
Resource [venus.jpg - venus.jpg]
Resource [annunciation.jpg - annunciati
(600 x 493)

The metadata of the object may be view double clicking on the Dublin Core element in the hierarchy view:



Object []
AXOID [urn:axmedis:00000:obj:531bca97-
Dublin Core
Resource [01index.smil - 01index.smil]
Resource [a1.jpg - a1.jpg]
Resource [a2.jpg - a2.jpg]
Resource [a3.jpg - a3.jpg]
Resource [a4.jpg - a4.jpg]
Resource [acad_intro.txt - acad_intro.txt]
Resource [axmedis_small.gif - axmedis_sm
Resource [bg.jpg - bg.jpg]
Resource [big1.bmp - big1.bmp]
Resource [big1.txt - big1.txt]
Resource [big2.jpg - big2.jpg]
Resource [big2.txt - big2.txt]
Resource [big3.jpg - big3.jpg]
Resource [big3.txt - big3.txt]
Resource [big4.jpg - big4.jpg]
Resource [big4.txt - big4.txt]
Resource [legenda.gif - legenda.gif]
Resource [legenda.png - legenda.png]
Resource [map_big.jpg - map_big.jpg]
Resource [map_room.gif - map_room.gif]
Resource [path_small.gif - path_small.gif]
Resource [t1.txt - t1.txt]
Resource [t2.txt - t2.txt]
Resource [t3.txt - t3.txt]
Resource [t4.txt - t4.txt]
Resource [title.gif - title.gif]
Resource [title1.gif - title1.gif]
Resource [visit.gif - visit.gif]

Description

title
The Accademia Gallery of Florence - a virtual exposition

description
A visit to a virtual exposition into the Accademia Gallery, Florence.

4 AXMEDIS PDA Player

4.1 Main functionalities

The PDA Player is the tool with the aim to execute AXMEDIS resources in a Windows Mobile device. The player has capabilities to play different kind of resources such as SMIL, MPEG-4, HTML, etc.

The AXMEDIS PDA Player main functionalities allow to:

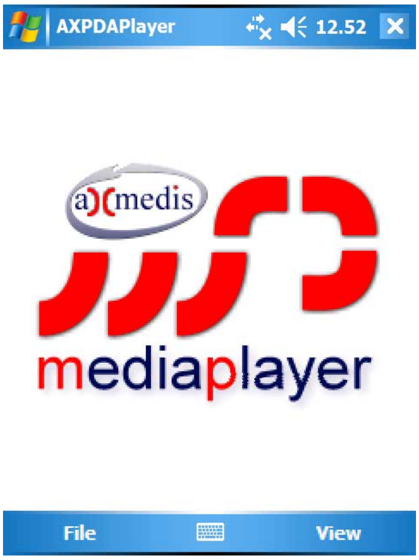
- view resources present inside the object
- view HTML, pages
- SMIL presentation
- view MPEG-4 presentation
- view SVG resources

4.2 Relationship with other tools

None

4.3 Detailed description of the functionalities and Screenshots

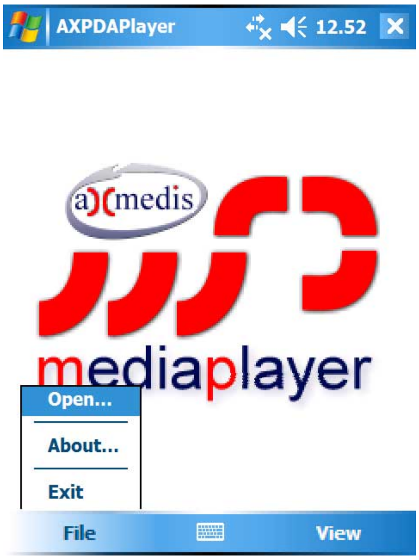
The following picture shows the GUI interface of the AXMEDIS PDA player..



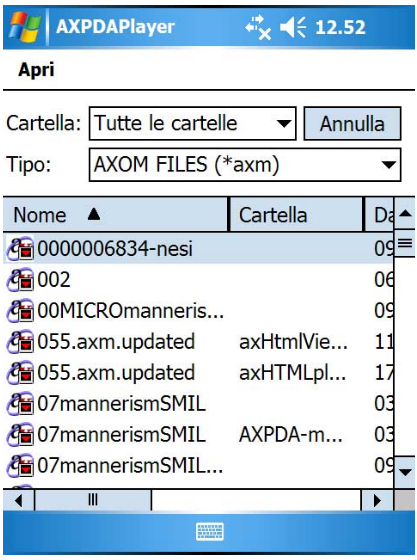
Two menus are available in the lower part of the screen: **File** and **Menu**.
By clicking the menu **File**, the following options are available:

- **Open**, to open an AXMEDIS objects or a resource
- **About**, to see information about the version of the player, etc.
- **Exit**, to close the player.

To open an existing object or a resource it is sufficient to select the menu **File/Open**, as showed in the following picture.



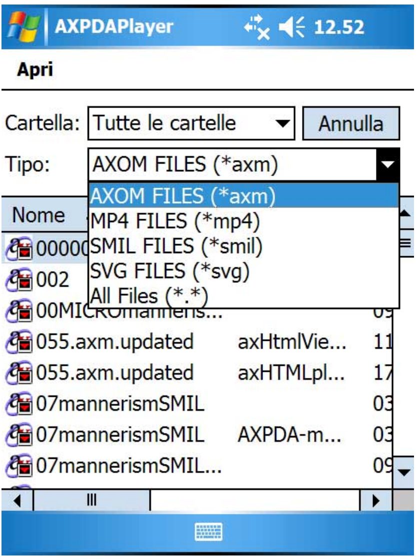
Then will be possible to select the resource to be opened by scrolling in the available menu, as showed in the following pictures

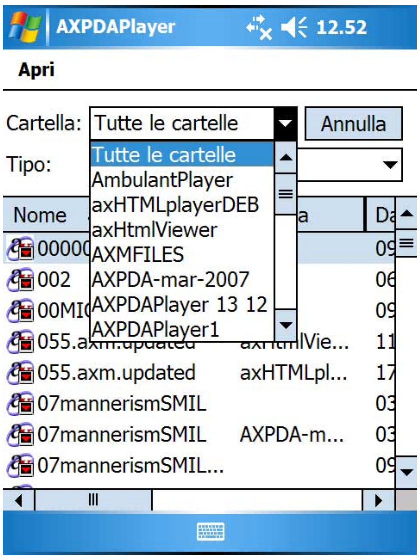


Cartella: Tutte le cartelle

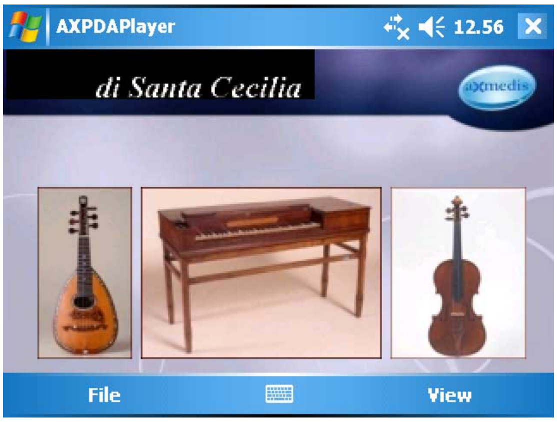
Tipo: AXOM FILES (*axm)

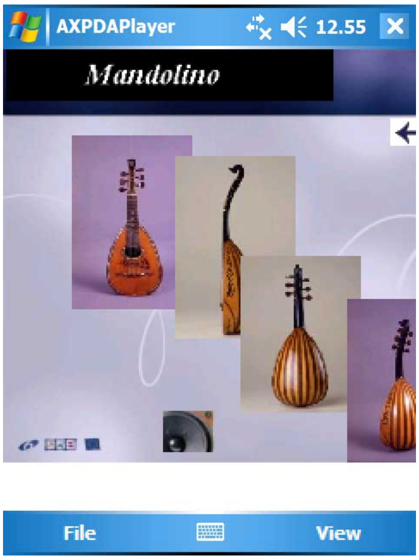
Nome ▲	Cartella	Da
0000006834-nesi		09
002		06
00MICROmanneris...		09
055.axm.updated	axHtmlVie...	11
055.axm.updated	axHTMLpl...	17
07mannerismSMIL		03
07mannerismSMIL	AXPDA-m...	03
07mannerismSMIL...		09



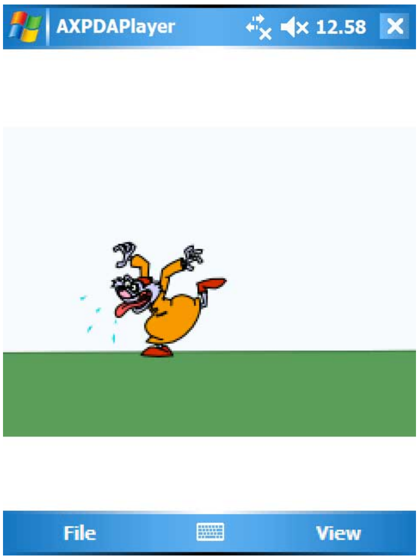


The following are examples of resources played with the AXMEDIS PDA player different screen orientation and resources.





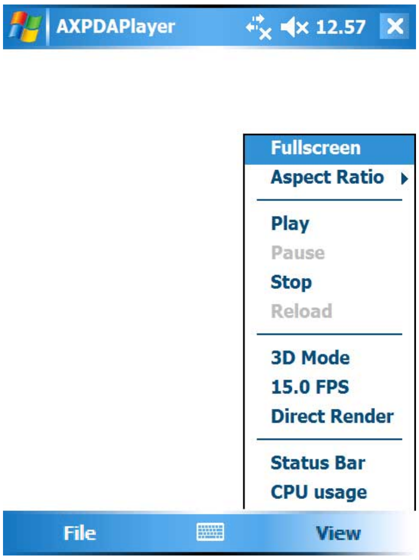
Example of SMIL resource

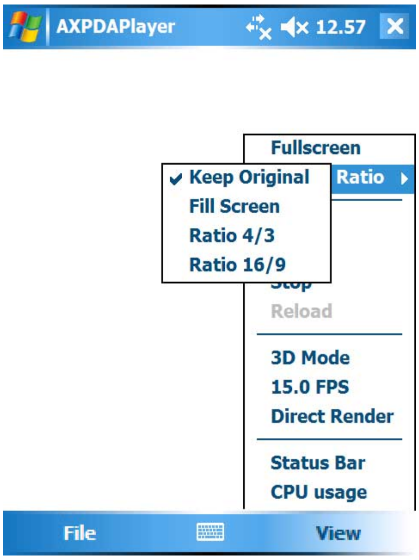


Example of MPEG-4 resource

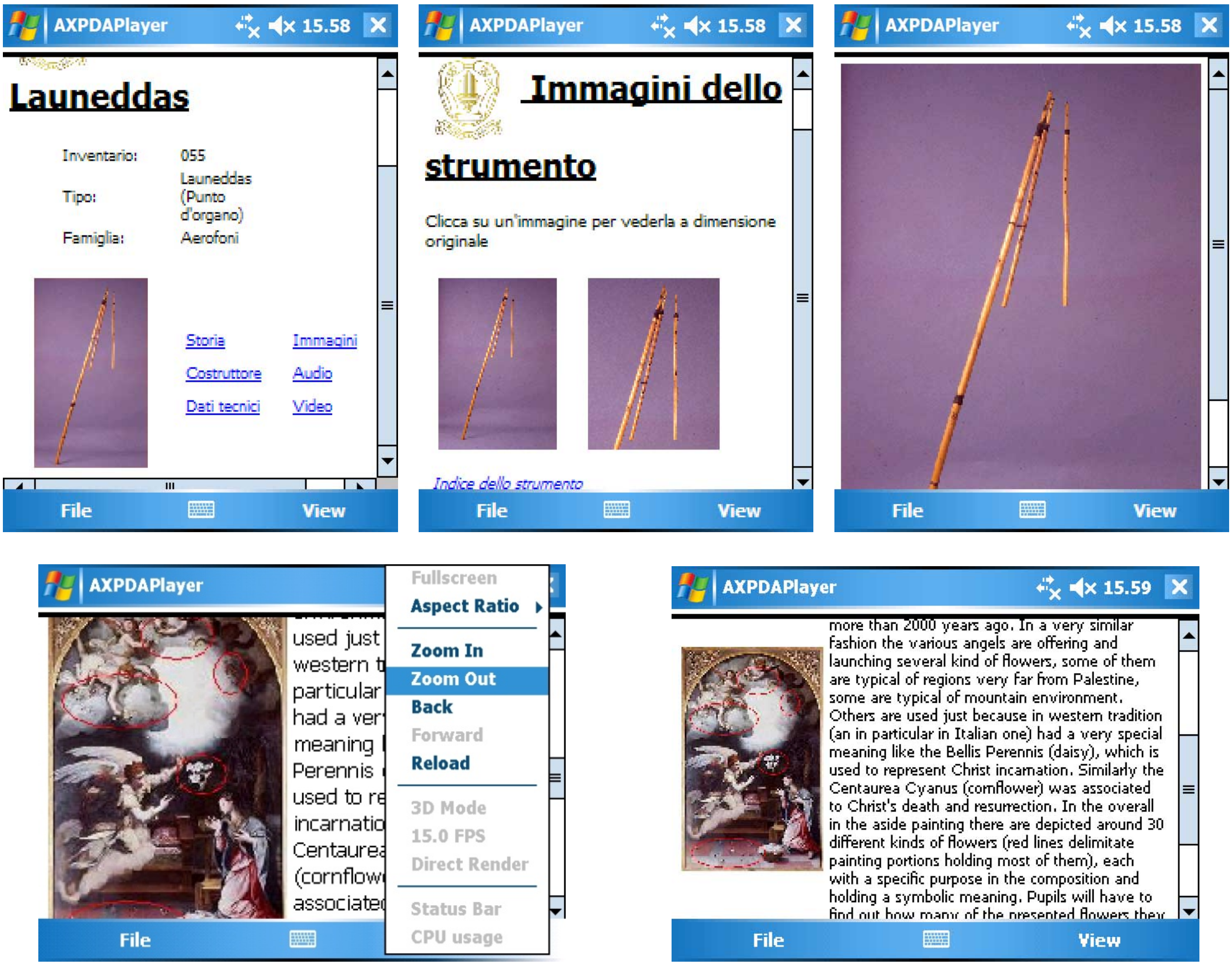
By clicking the menu **View** the following features are available:

- **CPU Usage**, to know the percentage of CPU use
- **Status Bar**, to show a status bar on the top of the screen showing additional information regarding the resource in execution
- **Reload**
- **Stop**
- **Play**
- **Aspect Ratio**
    - **Keep Original**
    - **Fill Screen**
    - **Ratio 4/3**
    - **Ratio 16/9**
- **Fullscreen**





The following screenshots show examples of different resources loaded in the AXMEDIS PDA player.



Launeddas

Inventario: 055

Tipo: Launeddas (Punto d'organo)

Famiglia: Aerofoni

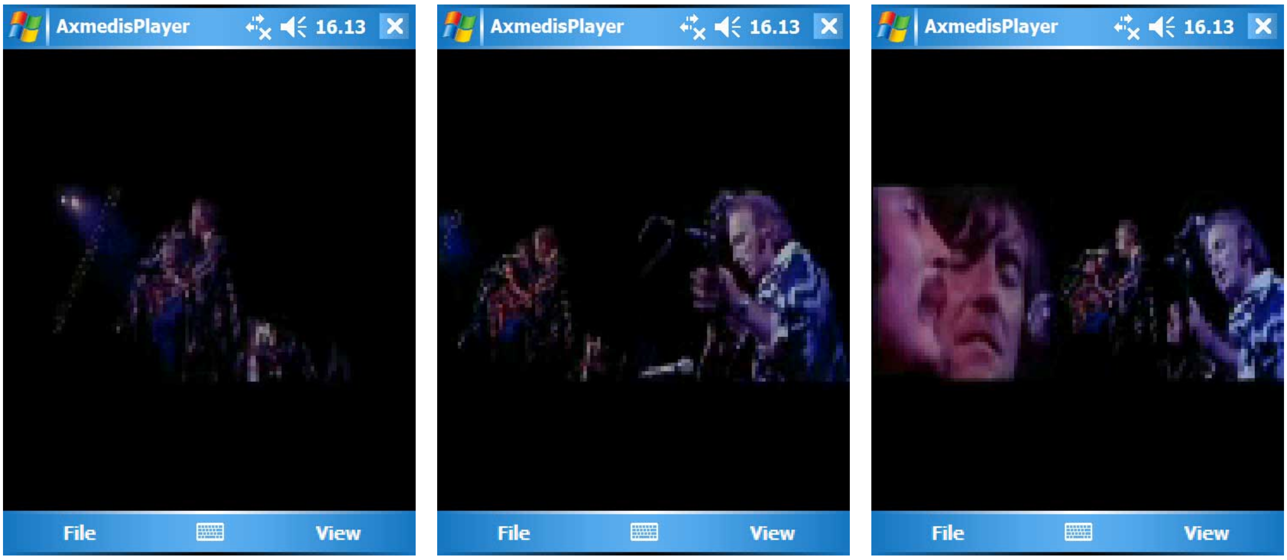
Immagini dello strumento

Clicca su un'immagine per vederla a dimensione originale

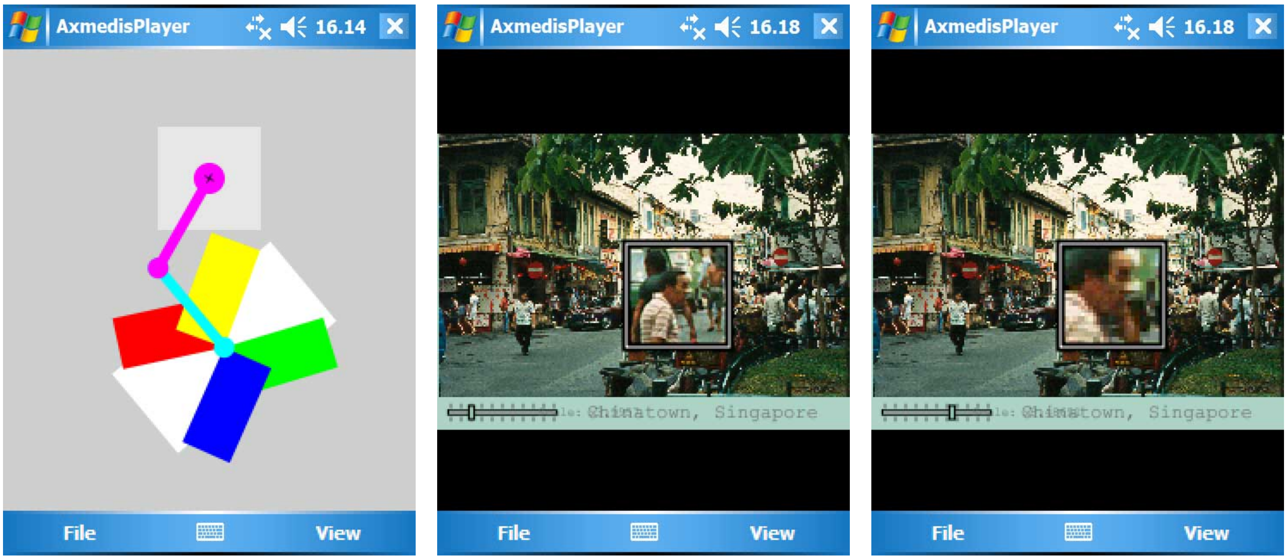
used just
western t
particular
had a ver
meaning
Perennis
used to re
incarnatio
Centaurea
(cornflow
associated

more than 2000 years ago. In a very similar fashion the various angels are offering and launching several kind of flowers, some of them are typical of regions very far from Palestine, some are typical of mountain environment. Others are used just because in western tradition (an in particular in Italian one) had a very special meaning like the Bellis Perennis (daisy), which is used to represent Christ incarnation. Similarly the Centaurea Cyanus (cornflower) was associated to Christ's death and resurrection. In the overall in the aside painting there are depicted around 30 different kinds of flowers (red lines delimitate painting portions holding most of them), each with a specific purpose in the composition and holding a symbolic meaning. Pupils will have to find out how many of the presented flowers they

HTML pages navigation and zooming capabilities



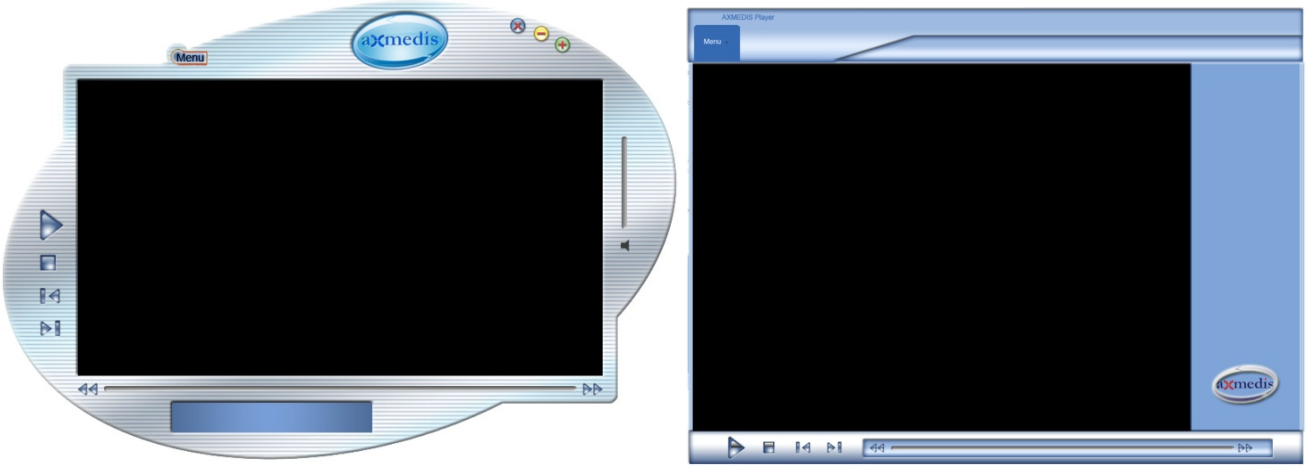
MPEG-4 video player



Examples of interactive MPEG-4 resources

5 AXMEDIS Skin Player

The AXMEDIS Skin player allows creating and using personalised skins for the AXMEDIS player.
This section illustrates how to create a new skin, and how to change from a skin to another.



Different examples of AXMEDIS players skins

4.1 Main functionalities

The AXMEDIS Player allows to:

- view the resources present inside the object
- view the metadata of the object
- view the SMIL presentation built
- view the AXMEDIS structure

4.2 Relationship with other tools

None

4.3 Detailed description of the functionalities and Screenshots

A skin is a graphical representation of the AXMEDIS player allowing to change the way it looks.

Also if many different skins are yet available and ready to be used, to create a new skin is an operation relatively simple.

Each skin is available as single file with .skn extension. If you change the .skn extension in .zip, you will see that the file is in fact formed by a number of different image files in bmp format. Also, the zip file will contain an xml file named *skin.xml* and containing some information regarding the positioning of each image in the skin and the definition of the clickable areas.

The image files available in a skin are the following:

- The background image that represents how the player looks
- The window buttons (close and minimize)
- The play buttons (play, forward, backward, pervious, next)

For each buttons, two different images are necessary: the first one is the normal image, the second is the image to be loaded when the mouse is over the button.

5.1 How to write the xml file

When all the images are ready (the background image and all the buttons), they have to be organized in the final skins by using the xml file.

The xml file contains the information regarding the images of each button.

Particularly for each image, the xml file specifies:

- the coordinates representing where the image has to be showed
- the button "id", i.e. the button name with the name of the image file
- the filename of the image to be loaded when the mouse is over of the button
- the filename of the image to be loaded hen the button has been clicked.

The background image needs also additional information. Particularly it is necessary to specify the background color that will be considered transparent when the skin will be loaded.

If for example, in the xml is specified as background color `ff0000`, each part of the background image in red color will be considered transparent.

The following is an example of xml file of a skin.

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<skin xmlns="http://www.axmedis.org/skin">
  <background cutPointX="320" cutPointY="370" transparentColor="#ff0000">varback3.bmp</background>
  <playerArea x="60" y="40" width="728" height="486"/>
  <button id="play" x="150" y="560">
    <normalImage>play.bmp</normalImage>
    <hoverImage>play_f2.bmp</hoverImage>
    <selectedImage>play_f2.bmp</selectedImage>
  </button>
  <button id="stop" x="185" y="560">
    <normalImage>stop.bmp</normalImage>
    <hoverImage>stop_f2.bmp</hoverImage>
    <selectedImage>stop_f2.bmp</selectedImage>
  </button>
  <button id="preview" x="220" y="563">
    <normalImage>skip_back.bmp</normalImage>
    <hoverImage>skip_back_f2.bmp</hoverImage>
    <selectedImage>skip_back_f2.bmp</selectedImage>
  </button>
  <button id="next" x="257" y="563">
    <normalImage>skip_fwd.bmp</normalImage>
    <hoverImage>skip_fwd_f2.bmp</hoverImage>
    <selectedImage>skip_fwd_f2.bmp</selectedImage>
  </button>
  <button id="rew" x="302" y="563">
    <normalImage>rew.bmp</normalImage>
    <hoverImage>rew_f2.bmp</hoverImage>
    <selectedImage>rew_f2.bmp</selectedImage>
  </button>
  <button id="ff" x="718" y="563">the button "id"
    <normalImage>ff.bmp</normalImage>
    <hoverImage>ff_f2.bmp</hoverImage>
    <selectedImage>ff_f2.bmp</selectedImage>
  </button>
  <button id="close" x="610" y="7">
    <normalImage>close.bmp</normalImage>
    <hoverImage>close_f2.bmp</hoverImage>
    <selectedImage>close_f2.bmp</selectedImage>
  </button>
  <button id="minimize" x="570" y="7">
    <normalImage>minimize.bmp</normalImage>
    <hoverImage>minimize_f2.bmp</hoverImage>
    <selectedImage>minimize_f2.bmp</selectedImage>
  </button>
  <button id="menu" x="100" y="10">
    <normalImage>menu.bmp</normalImage>
    <hoverImage>menu_f2.bmp</hoverImage>
    <selectedImage>menu_f2.bmp</selectedImage>
  </button>
  <togglebutton id="showhierarchy" x="540" y="47">
    <normalImage>showhierarchy.bmp</normalImage>
    <selectedImage>showhierarchy_f2.bmp</selectedImage>
  </togglebutton>
  <slider id="marker" x="334" y="565" width="380" height="20">
  <normalImage>markerbackground.bmp</normalImage>
```

```
    <cursor x="340" y="560">
       <normalImage>marker.bmp</normalImage>
       <hoverImage>marker_f2.bmp</hoverImage>
       <selectedImage>marker_f2.bmp</selectedImage>
    </cursor>
  </slider>
        </skin>
```

For the other functionalities, please refer to the section related to the AXMEDIS player per PC.

6 AXMEDIS Mobile Player

4.1 Main functionalities

The Mobile Player is the AXMEDIS player written to be executed on mobiles phones supporting the Java Platform 8.

The mobile player is able to play mp21 object protected and non protected containing SMIL, 3GP and MPEG-4 resources.

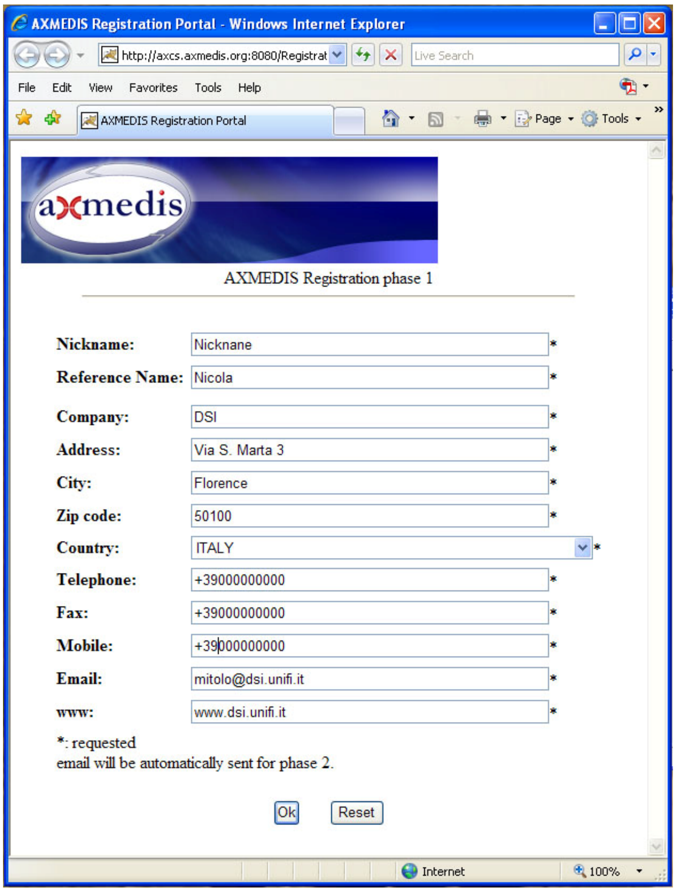
4.2 Relationship with other tools

None

4.3 Detailed description of the functionalities and Screenshots

When the mobile player is opened for the first time, it is necessary to start the user registration procedure.

The procedure is similar to the any other registration procedure of any other AXMEDIS tools: the user has to fill-in the registration form by using an Internet connection.


AXMEDIS Registration Portal - Windows Internet Explorer
http://axcs.axmedis.org:8080/Registrat
Live Search
File Edit View Favorites Tools Help
AXMEDIS Registration Portal
Page
Tools
axmedis
Ok
Reset
Internet
100%

AXMEDIS Registration phase 1

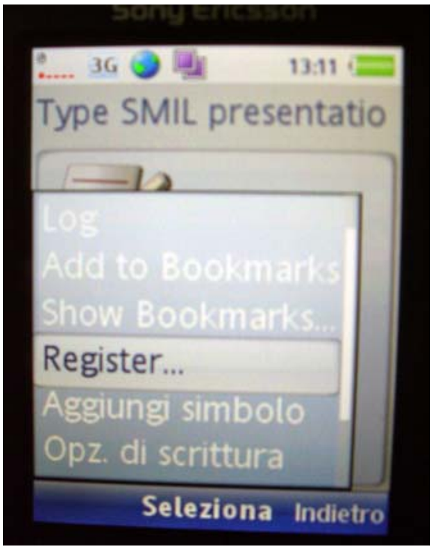
Nickname:	Nicknane	*
Reference Name:	Nicola	*
Company:	DSI	*
Address:	Via S. Marta 3	*
City:	Florence	*
Zip code:	50100	*
Country:	ITALY	*
Telephone:	+39000000000	*
Fax:	+39000000000	*
Mobile:	+39000000000	*
Email:	mitolo@dsi.unifi.it	*
www:	www.dsi.unifi.it	*

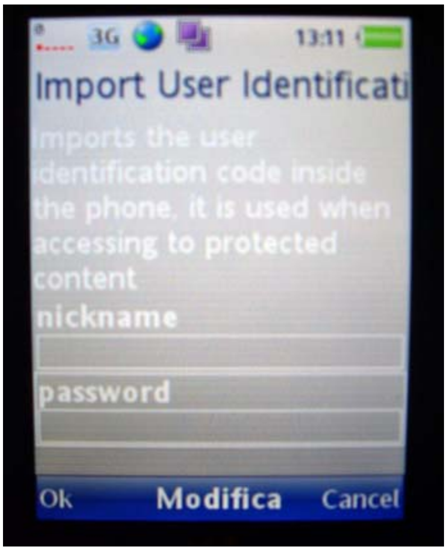
*: requested
email will be automatically sent for phase 2.

By clicking the “OK” button the information will be sent and collected by the AXCS and a confirmation email will be sent to the user at the email address specified in the field “Email”.

The email received contains an URL to be clicked for the confirmation of the procedure: this is necessary to control the correctness of the specified email address. After the confirmation, another email will be received containing the user certificate (a .p12 file), the AXUID (the ID identifying the user) and a password necessary to import the certificate.

In the menu of the phone it is necessary then to select “Register…” and insert manually the nickname and the password received by email.





Import User Identificati

Imports the user identification code inside the phone, it is used when accessing to protected content

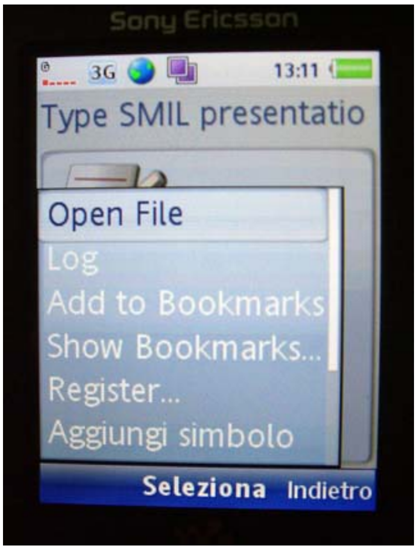
nickname

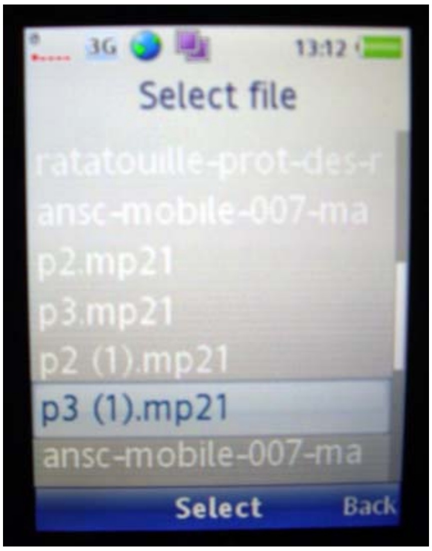
password

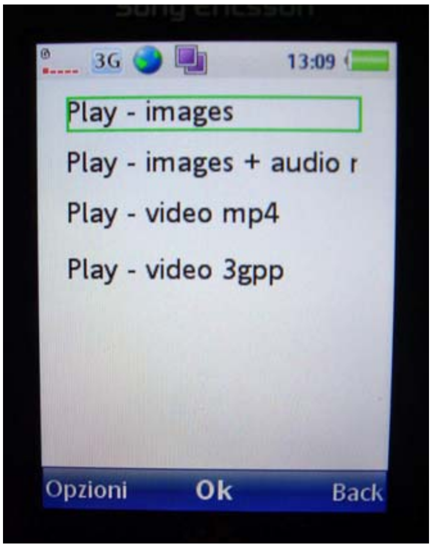
The menu of the mobile player allow to select one of the following options:

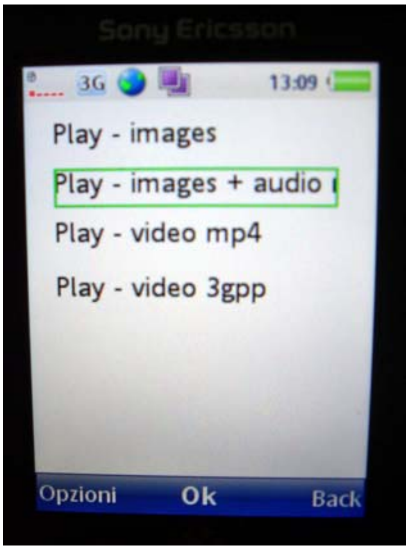
- **Open File**, to open an AXMEDIS object stored locally in the phone
- **Log,** to open the log file
- **Add Bookmarks**, to add an URL in the favorites list
- **Show Bookmarks**, to show the list of favorites
- **Register…**, to start the user registration procedure.

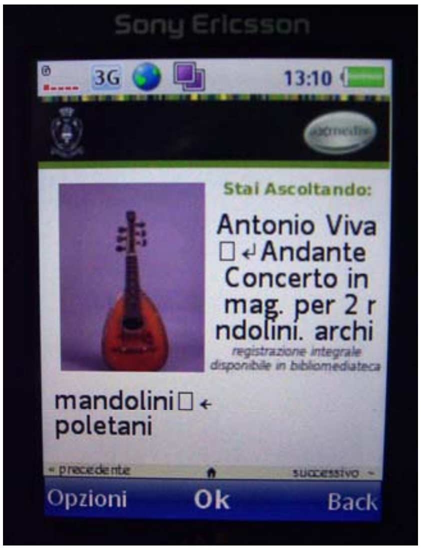
The following screenshots show the opening of an AXMEDIS mp21 object stored locally and containing a SMIL presentation.






Sony Ericsson
3G
13:09
Play - images
Play - images + audio r
Play - video mp4
Play - video 3gpp
Opzioni
Ok
Back


Sony Ericsson
3G
13:09
Play - images
Play - images + audio r
Play - video mp4
Play - video 3gpp
Opzioni
Ok
Back


Sony Ericsson
3G
13:10
axmedis
Stai Ascoltando:
Antonio Viva
□↵Andante
Concerto in
mag. per 2 r
ndolini. archi
registrazione integrale
disponibile in bibliomediateca
mandolini□↵
poletani
« precedente
successivo »
Opzioni
Ok
Back

7 AXMEDIS P2P. The AXEPTool and AXMEDIA

In AXMEDIS, the P2P technology is based on BitTorrent technology and it used for distributing and sharing AXMEDIS Content among:

- B2B partners such as content: producers, integrators, distributors, publishers, archives, etc.; realized with **AXEPTool** P2P B2B Tool
- final users of a content distributor, realized with **AXMEDIA** tool.

Many P2P network can be realized for P2P distribution to final user. Each of them refer to an AXMEDIS Query Support Server and to an AXMEDIS BitTorrent? Tracker.

7.1 Main functionalities

The general features of any AXMEDIS P2P tool are:

- legal usage of P2P content distribution;
- guarantee of consistency between the exposed metadata and the downloaded content;
- verification and certification of content distribution and sharing;
- monitoring and controlling downloads and uploads in the P2P network for B2B and B2C.

7.2 Relationship with other tools

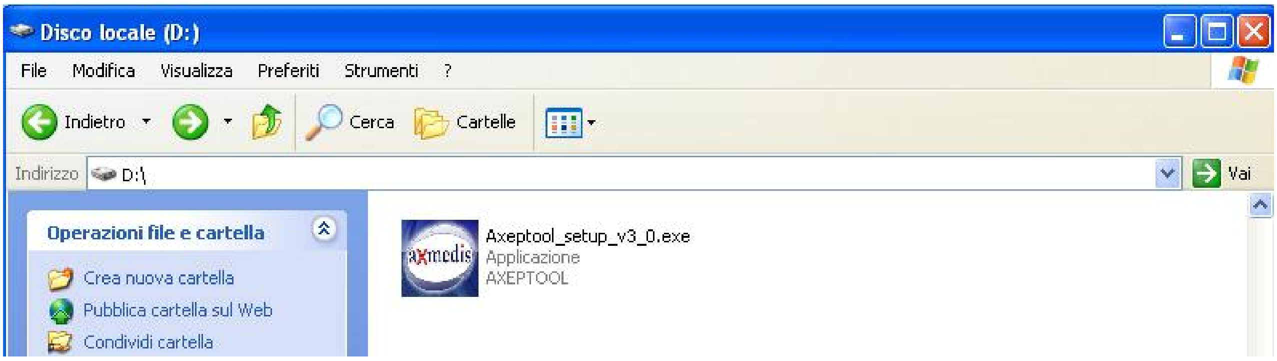
None

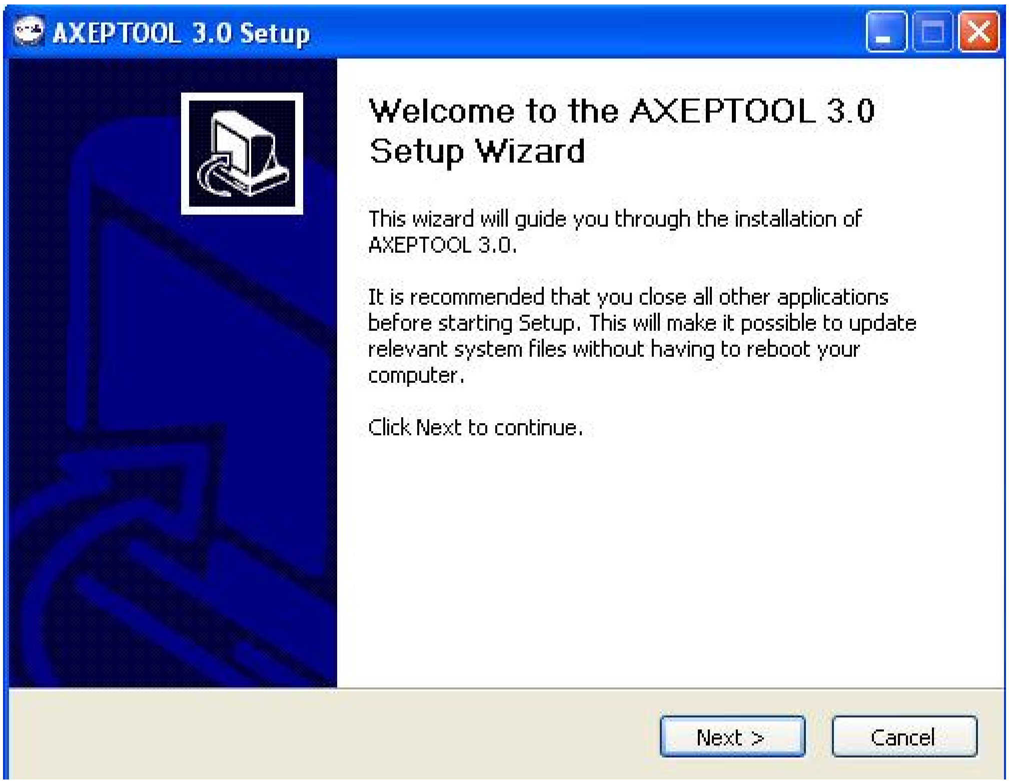
7.3 Detailed description of the functionalities and Screenshots

The AXEPTool and AXMEDIA can be installed on a wide variety of systems including most Unix and Linux based systems and Windows. Unix users must build from the source and install by hand. For windows users, an installation program has been developed.

The installation procedure is straightforward, when you double click on the installer executable, you'll be greeted with a wizard, providing you a step-by-step installation procedure. Both installers for AXEPTool and AXMEDIA work exactly in the same way. So these instructions apply for both products.

Double-click on the AXEPTool installer and proceed with the installation:





AXEPTOOL 3.0 Setup

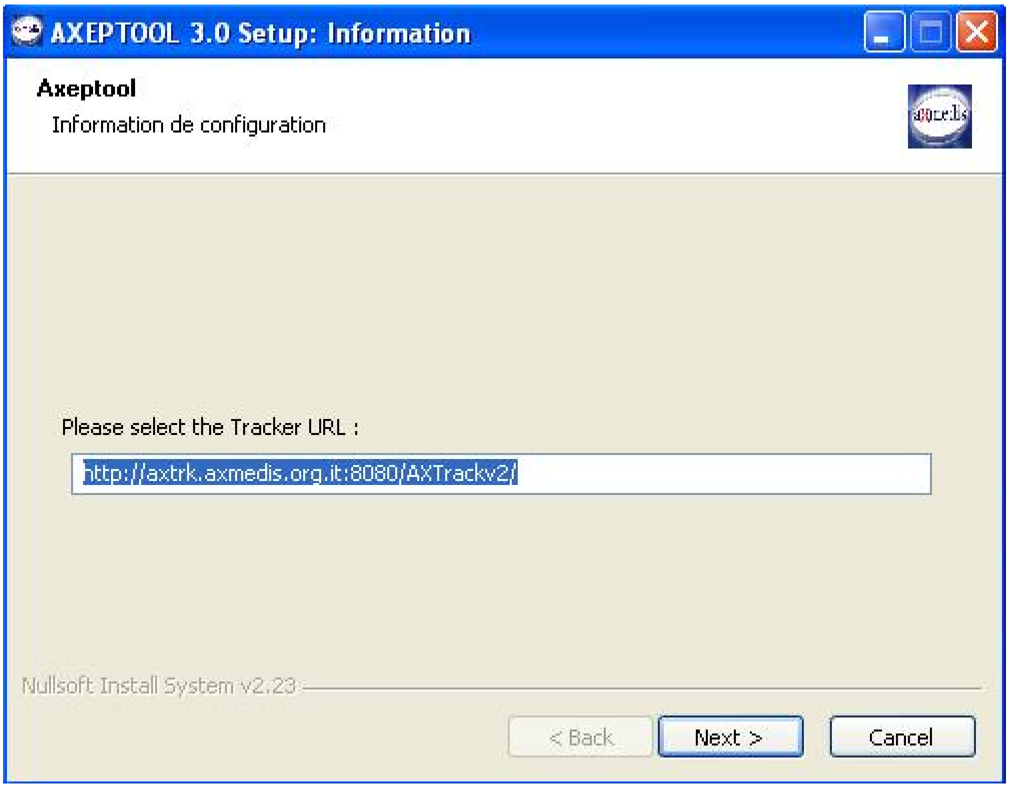
Welcome to the AXEPTOOL 3.0 Setup Wizard

This wizard will guide you through the installation of AXEPTOOL 3.0.

It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.

Click Next to continue.

You can change the default installation path if you want, but you don't have to modify the default Tracker URL:



AXEPTOOL 3.0 Setup: Information

Axeptool

Information de configuration

Please select the Tracker URL :

http://axtrk.axmedis.org.it:8080/AXTrackv2/

Once installed, you can customize which folders to use for the objects you want to publish or download by opening with your preferred editor the WinAXEPTool.conf file. You can find it in the AXEPTool installation directory.

The following is an example of configuration file followed by the explanation of each parameter:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<AXEPTool>
 <downloadDirectory path="C:\Programmi\AXEPTOOL\Download"/>
 <homePage url="http://www.axmedis.org"/>
 <catalogueURL url="http://axtrk.axmedis.org:8080/AXTrackv2/do/AXEPStore"/>
 <TrackerURL url="http://axtrk.axmedis.org:8080/AXTrackv2/"/>
 <portLocalHTTPServer port="7780"/>
 <publishDirectory path="C:\Programmi\AXEPTOOL\Seeds"/>
 <urlThisApplication url="150.217.15.245"/>
 <queryServiceURL
url="http://axp2pqs.axmedis.org:8080/P2PQueryServerUploader/UploadManager"/>
 <searchURL
url="http://axp2pqs.axmedis.org:8080/P2PQueryWebUserInterface/index.jsp"/>
 <tcpPort port="6881"/>
 <udpPort port="6881"/>
 <shortLog value="true"/>
 <dhtEnable value="false"/>
 <maxConnectionsByTransfert value="30"/>
 <maxConnectionsTotal value="150"/>
 <intervalAnnounce value="240"/>
 <maxUploads value="50"/>
 <maxUploadsSeeding value="50"/>
 <maxActiveTorrents value="50"/>
 <maxDownloads value="10"/>
</AXEPTool>
```

If you want to change the Download Directory (you can do this either from the AXEPTool Settings) you have to edit the line:

<downloadDirectory path="D:\axp2pobj"/>

Note that if you choose an non existent folder the AXEPTool will use a default directory for downloaded objects:

%your installation path%\AXEPTOOL\Download\

and a default directory for published objects:

%your installation path%\AXEPTOOL\Seeds\

Then you have to change this line in the WinAXEPTool.conf:

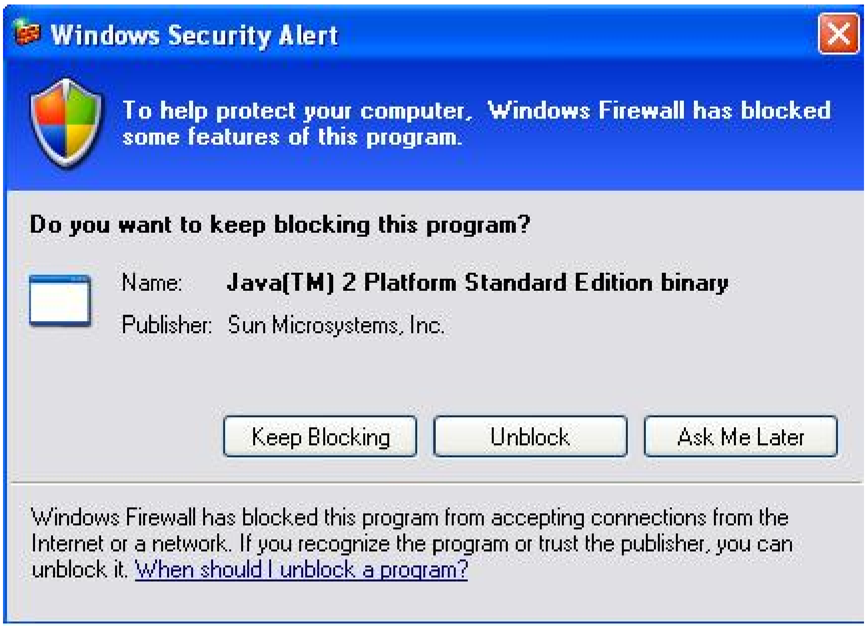
<urlAXEPTool url="http://lotar.dsi.unifi.it"/>

replacing the URL there with your own AXEPTool URL (public IP). Once done you can save the updated configuration file and start AXEPTool.

maxConnectionsByTransfert, indicates the max number of connection available for each download;
maxConnectionsTotal, indicates the max number of total connections;
intervalAnnounce, indicates the announce period (number of seconds that have to pass when a tool contact the tracker);
maxUploads, indicates the max number of connection in upload;
maxUploadsSeeding, indicates the max number of connection in upload that are in seeding status;
maxActiveTorrents, indicates the max number of active torrent;
maxDownloads, indicates the max number of downloads;
dhtEnable, (can be *true* or *false*) possibility to activate the DHT support or not (Distributed Hash Table);
udpPort: number of the UDP port;

short Log: (can be *true* or *false*) support to verbose log (if *false*).

If you have a firewall installed on your PC, remember to allow this application in the firewall rules. If you have Windows Firewall enabled, you have to allow the Java Virtual Machine in the Firewall Exceptions. Confirm to unlock it:



Windows Security Alert

To help protect your computer, Windows Firewall has blocked some features of this program.

Do you want to keep blocking this program?

Name: Java(TM) 2 Platform Standard Edition binary

Publisher: Sun Microsystems, Inc.

Windows Firewall has blocked this program from accepting connections from the Internet or a network. If you recognize the program or trust the publisher, you can unblock it. When should I unblock a program?

Note that AXEPTool uses BitTorrent protocol to establish communications between the peers.

BitTorrent by default uses ports in the range of 6881-6889. These are all TCP ports. The client starts with the lowest port in the range and sequentially tries higher ports until it can find one to which it can bind. This means that the first client you open will bind to 6881, the next to 6882, etc. Therefore, you only really need to open as many ports as simultaneous BitTorrent clients you would ever have open. For most people it's sufficient to open 6881-6889. Some recent BitTorrent implementations use DHT (Distributed hash tables), that is a dencentralized hash system allowing each node of the network to keep track of other connected peers. So, even without a tracker, the swarm can continue to work. For DHT purposes UDP protocol is used.

So, if you are using NAT you have to forward TCP ports 6881-6889 in your router (at least one of them, say TCP 6881) to your local IP address. You must open UDP protocol too on that port. Be sure to make a correspondent rule in the firewall to allow incoming connections on the ports you opened (you can customize your incoming TCP port range from AXEPTool settings too).

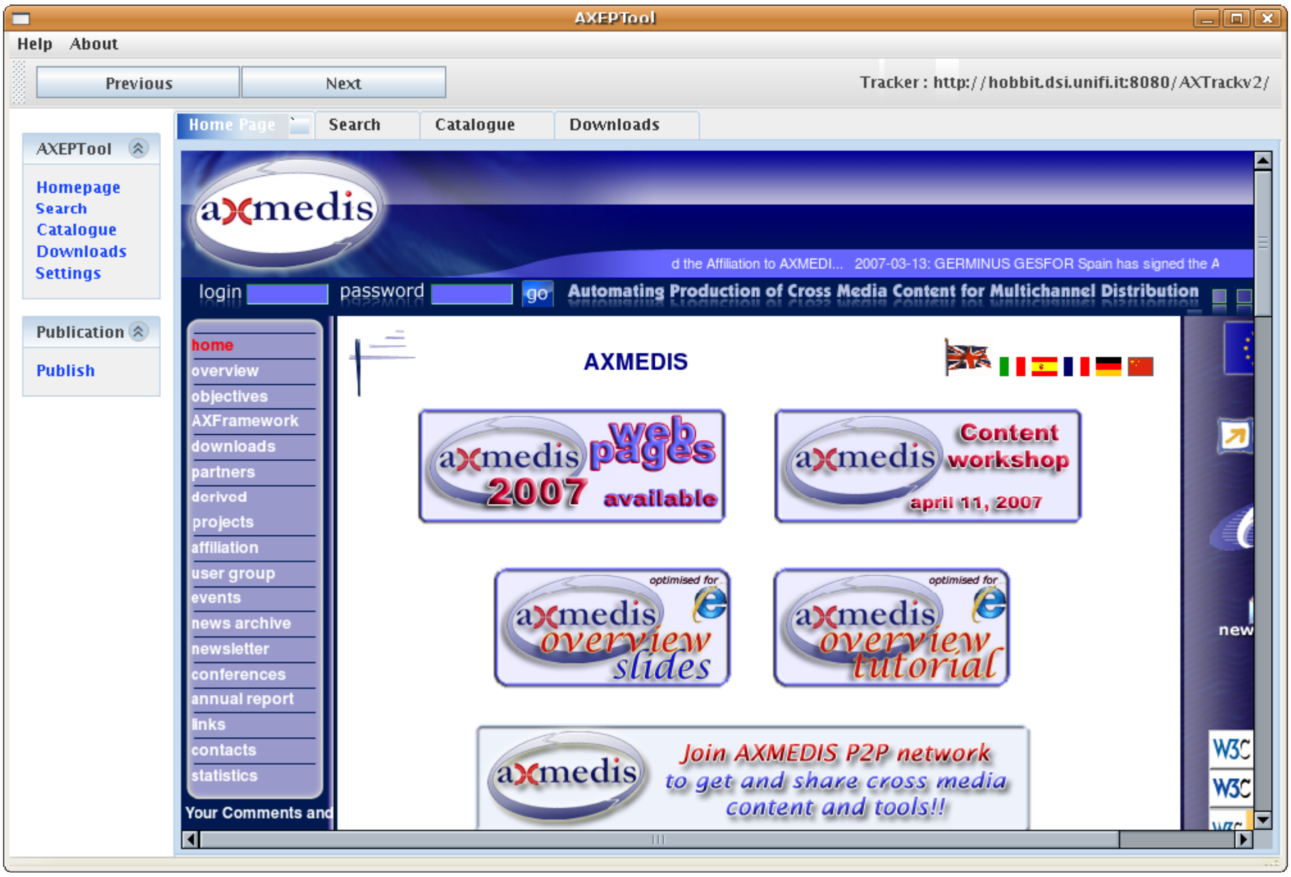
AXEPTool uses TCP port 7780 for grid purposes, since it integrates two different webservices for publishing objects and monitoring their status through the use of a remote client. Open and forward this port too.

PLEASE KEEP OPEN YOUR AXEPTOOL ONCE YOU FINISH YOUR DOWNLOAD AND DON’T DELETE YOUR DOWNLOADED OBJECTS FROM YOUR DISK.

7.3.1 Running the AXEPTool / AXMEDIA

The AXEPTool icon or AXMEDIA icon should be present on your desktop at this point. Double click to start the application. The main window should display itself. On the top-right of the windows, you can see the URL of the tracker to which this AXEPTool is connected. If it is not correct you can change it by going in the settings menu.

AXMEDIA is mainly a stripped down version of AXEPTool. As a result, instructions for using both product are the same. In the following documentation we will only indicate when a feature is AXEPTool specific.



The user interface is easy to use. It consist of a main browser (similar to a web browser) which allows you to browse the Axmedis network and ask for file downloads.

This browser window is using tabbed browsing (like Mozilla Firefox or Internet Explorer 7) and you can navigate between tabs in the same way. There are four tabs :

- **The home page tab:** This can be used to greet the user, ask for login credentials or any other similar activity. This is the first pane that will be displayed when you open the application. Network designers can customize this page by changing the AXEPTool.conf configuration file.
- **The search ta :** This tabs points to the location of an Axmedis Query Server (or any other online software supposed to provide search capabilities on the Axmedis network). Use it to search content on Axmedis network.
- **The catalogue tab:** This is a link to a catalogue allowing users to browse a commercial like store. Use it to discover the files available on the Axmedis network and start a download. The AXTrack tracker provides such a catalogue but it is limited in functionality. However, network designers can implement a catalogue suited to their needs and modify the configuration file.
- **The downloads tab:** Use this tab to monitor the progress of your downloads, start, stop and resume them.

Above the browser, the usual « Previous » and « Next » button retains their usual meaning in a browser.

You can close tabs if you will (with the close button on the right of the tab's name) and you will be able to reopen the tabs with the AXEPTool menu on the left of the window.

Other menu items and actions are:

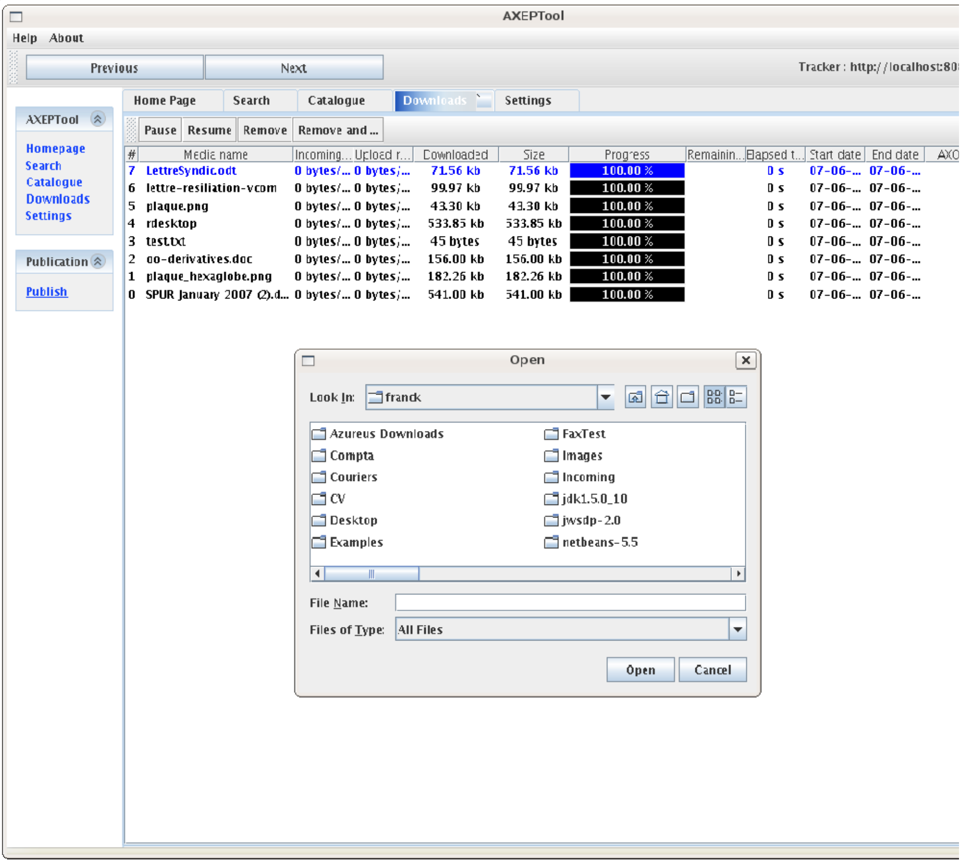
- **Settings:** Allow you to configure the software without touching the configuration file by hand. This is mostly for system administrators.

- **Publish:** Allow you to publish a new file (wether an Axmedis object or not) to the tracker to which the AXEPTool is connected.

7.3.2 Publishing a new file

You can use the AXEPTool to publish files on the network wether they are Axmedis objects or not. Files will be published on the tracker to which you are connected. Publishing a new file is a straightforward procedure.

After clicking on the « Publish » button of the publication menu, the application will open a file chooser dialog box. Just select the file you want to publish from your local hard disk and click on Open when you are done.



Tracker : http://localhost:80

#	Media name	Incoming...	Upload r...	Downloaded	Size	Progress	Remainin...	Elapsed t...	Start date	End date	AXO
7	LettreSyndic.odt	0 bytes/...	0 bytes/...	71.56 kb	71.56 kb	100.00 %		0 s	07-06-...	07-06-...	
6	lettre-resiliation-vcom	0 bytes/...	0 bytes/...	99.97 kb	99.97 kb	100.00 %		0 s	07-06-...	07-06-...	
5	plaque.png	0 bytes/...	0 bytes/...	43.30 kb	43.30 kb	100.00 %		0 s	07-06-...	07-06-...	
4	rdesktop	0 bytes/...	0 bytes/...	533.85 kb	533.85 kb	100.00 %		0 s	07-06-...	07-06-...	
3	test.txt	0 bytes/...	0 bytes/...	45 bytes	45 bytes	100.00 %		0 s	07-06-...	07-06-...	
2	oo-derivatives.doc	0 bytes/...	0 bytes/...	156.00 kb	156.00 kb	100.00 %		0 s	07-06-...	07-06-...	
1	plaque_hexaglobe.png	0 bytes/...	0 bytes/...	182.26 kb	182.26 kb	100.00 %		0 s	07-06-...	07-06-...	
0	SPUR January 2007 (2).d...	0 bytes/...	0 bytes/...	541.00 kb	541.00 kb	100.00 %		0 s	07-06-...	07-06-...	

Look In: franck

Azureus Downloads
Compta
Couriers
CV
Desktop
Examples
FaxTest
Images
Incoming
jdk1.5.0_10
jwsdp-2.0
netbeans-5.5

File Name:

Files of Type: All Files

The application will then open a popup window while the publication is in progress. At the end of the publication:

- The file will be published on the tracker server.
- The torrent file will be created on your local hard drive in the directory specified in your configuration.

7.3.3 Browsing the catalogue

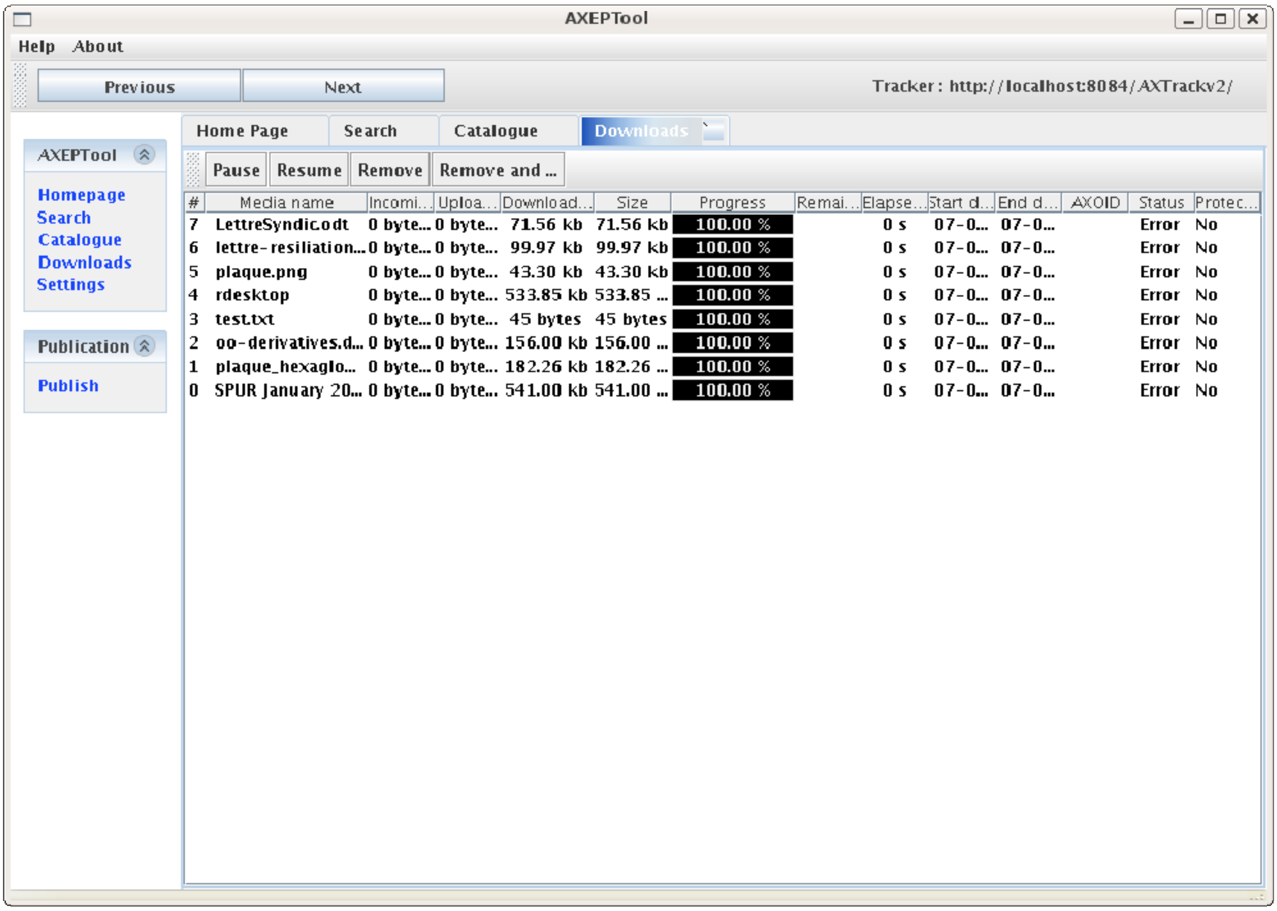
This section describe browsing the AXTrack provided Catalogue in order to download files. If your network administrator has choosen to use another catalogue, he must provides you with relevant instructions.

The catalogue is very simple. It displays both Axmedis Objects and Non Axmedis objects along with their size and meta-informations like AXOID and protected status.

Usage is very simple just click on the file you want to download. Once done, you can click on the « Downloads » tabs to see your download's progress.

7.3.4 The Downloads Tab

The following screenshot show the download tab:



#	Media name	Incomi...	Uploa...	Download...	Size	Progress	Remai...	Elapse...	Start d...	End d...	AXOID	Status	Protec...
7	LettreSyndic.odt	0 byte...	0 byte...	71.56 kb	71.56 kb	100.00 %		0 s	07-0...	07-0...		Error	No
6	lettre-resiliation...	0 byte...	0 byte...	99.97 kb	99.97 kb	100.00 %		0 s	07-0...	07-0...		Error	No
5	plaque.png	0 byte...	0 byte...	43.30 kb	43.30 kb	100.00 %		0 s	07-0...	07-0...		Error	No
4	rdesktop	0 byte...	0 byte...	533.85 kb	533.85 ...	100.00 %		0 s	07-0...	07-0...		Error	No
3	test.txt	0 byte...	0 byte...	45 bytes	45 bytes	100.00 %		0 s	07-0...	07-0...		Error	No
2	oo-derivatives.d...	0 byte...	0 byte...	156.00 kb	156.00 ...	100.00 %		0 s	07-0...	07-0...		Error	No
1	plaque_hexaglo...	0 byte...	0 byte...	182.26 kb	182.26 ...	100.00 %		0 s	07-0...	07-0...		Error	No
0	SPUR January 20...	0 byte...	0 byte...	541.00 kb	541.00 ...	100.00 %		0 s	07-0...	07-0...		Error	No

The table lists all the currently active downloads and or files you are publishing. For each file you can see :

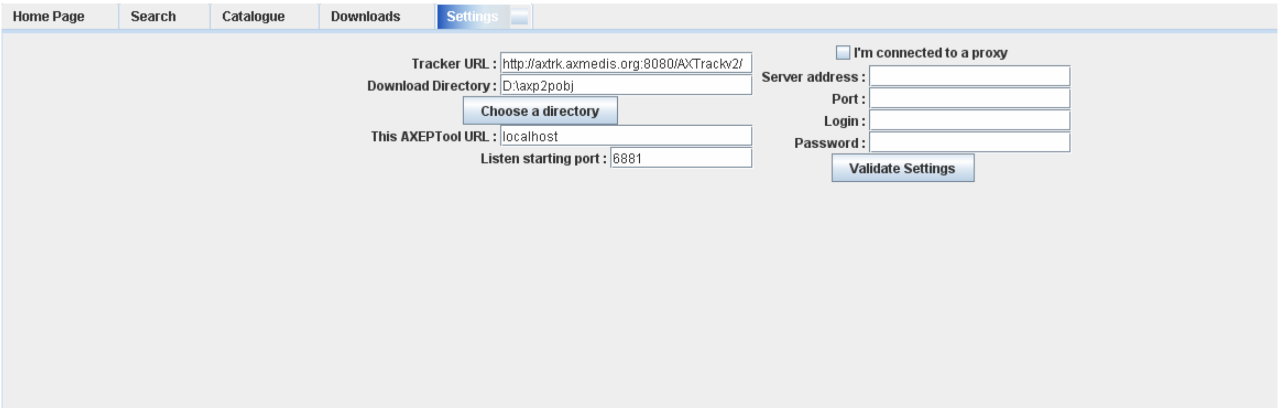
- **The file name:** The file will be stored with this name on your hard drive.
- **The Incoming data rate:** Allows you to see if the download is currently fast or not. Incoming data rate can fluctuate a lot on bittorrent network so you should be using the time estimation if you want a reliable estimation.
- **The Upload data rate:** The amount of data you are currently uploading to other peers. If this number is too high then probably it will disturb other network activities on your own network. Do not saturate your internet connection ! (Many of them are asymetrical).
- **The amount of bytes already downloaded along with total size**
- **A visual progress bar:** This allows you to see the progress instantly. Files which are at 100% progress are still in the list altough no download is occuring. This is because it is a peer to peer network and these files are now seeding to other peers. You should not remove them unless you are constrained in terms of disk space and/or bandwidth. Also please note that if you publish a file it will appear directly in the download list with a 100% progress bar set.
- **An estimation of the time remaining:** This estimation is based on past performance for the download. As speed can fluctuate gratly on peer to peer networks, this will not be as reliable as the time estimation for a regular internet download.
- **The elapsed time along with start date and end-date**
- **The AXOI :** Technical information for developpers, this is displayed only in the AXEPTool and not in the AXMEDIA tool.
- **The statu :** Displays the errors and status of downloads. If the status is in error, this is probably because the tracker is unreachable.
- **The protected bit (wether set or not)**

The buttons above the download list allows you to control a particular download. Just select with your mouse the downloads on which you want to act and click on the button :

- **Pause:** Will stop the download temporarily. Use this if for example you need all your bandwidth for an important VOIP call. As soon as a download is paused, the consumed bandwidth by your AXEPTool should fall in a few seconds. (Although you may expect incoming connections attempts for a few minutes due to the nature of the bittorrent protocol).
- **Resume:** Allows you to resume a paused download. The download will start again normally. Due to the nature of the bittorrent protocol, it will probably not resume as fast as it were when you stopped it. Finding peers takes times. (Especially when the number of seeds is far lower than the number of leechers).
- **Remove:** Remove the download from the download list but keeps everything (including download file and torrent file) on your hard disk
- **Remove and delet :** Removes the download from the download lists and delete everything from your hard disk.

Additionally if you want to test a media file you just downloaded, you can double-click on it in the transfer list. The relevant media-player for the media type will automatically launch.

7.3.5 The settings menu



Tracker URL : http://axtrk.axmedis.org:8080/AXTrackv2/
Download Directory : D:\axp2pobj
This AXEPTool URL : localhost
Listen starting port : 6881

□ I'm connected to a proxy
Server address :
Port :
Login :
Password :

(This is a feature specific to the AXEPTool, it is not present in AXMEDIA)
This tab allows you to configure your AXEPTool in order to integrate it with specific networks. This is an option for system administrators. Organizations releasing the Axmedia tool are expected to pre-configure it for their end-users.
The options accessible for AXEPTool configuration are as follows :

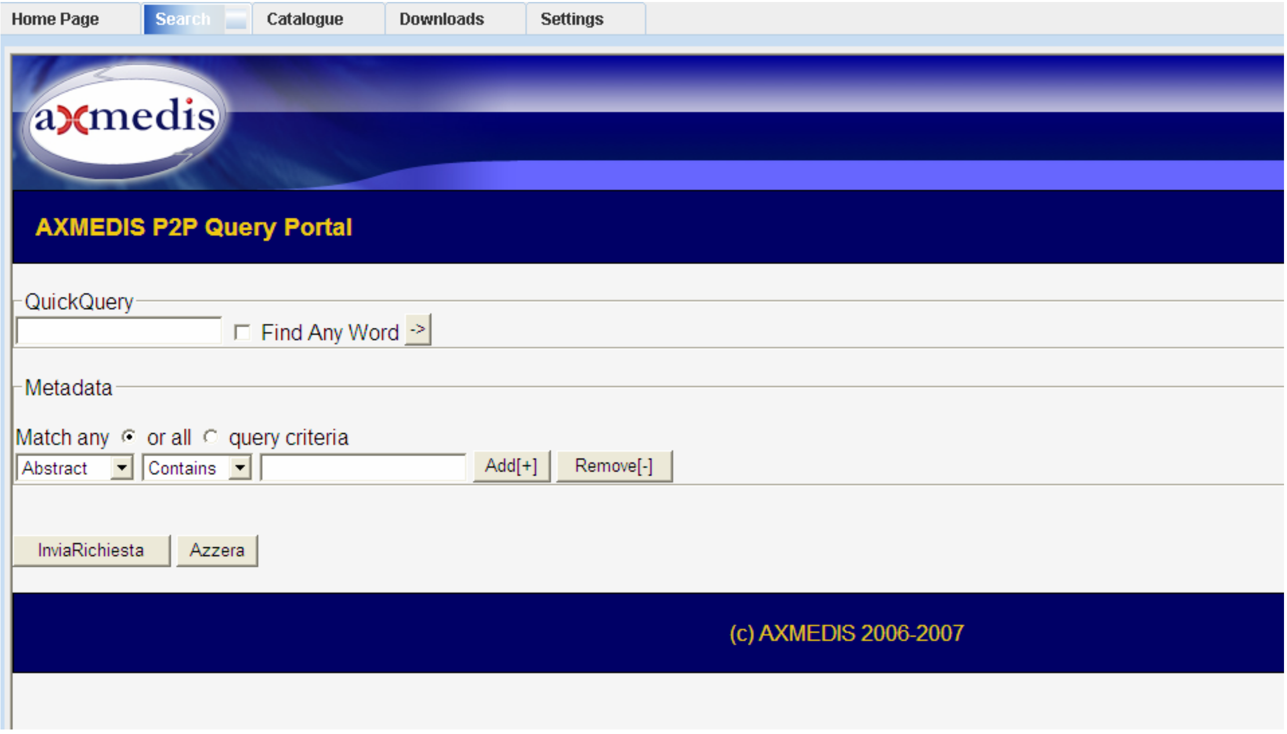
- **Tracker URL:** The URL of the tracker server you want to use. Please provide a tracker managed by the AXTrack tool.
- **Download Directory:** Enter the path where the files you download should be stored.
- **This AXEPTool URL:** Where the integrated web server should listen. This is for developpers and advanced users only.
- **Listen starting port:** The bittorrent port on which you can listen. This feature is useful if your AXEPTool is behind a NAT firewall. This way you can use port redirection to allow more than one AXEPTool behind this NAT firewall. If unsure of what this means, ask your system administrator.
- **I'm connected to a proxy:** If your company connects you to the internet through a proxy server, you should check this box. If you do so, you must fill in the parameters below. If you

do not, the values below will just be ignored. If the AXEPTool does not work in your corporate environement, ask your system administrator if there is a proxy and if so, fill the configuration.

- **Proxy Server Address**: The URL of your proxy server.
- **Proxy Port**: The port of your proxy server.
- **Proxy Login:** The login of your proxy server.
- **Proxy Password:** The password of your proxy server.

When you are satisfied with your settings, you can click on validate. Once done, you should restart your AXEPTool for everything to take effect.

7.3.6 The search tab



The search tab is only a browser link to AXMEDIS's query interface. In order to use it, please refer to the corresponding documentation.

8 AXMEDIS ActiveX Control

8.1 Main functionalities

The AXMEDIS ActiveX can be used to visualize and use AXMEDIS Objects inside MS Windows applications or inside web browsers.

The ActiveX exposes a set of functionality allowing to:

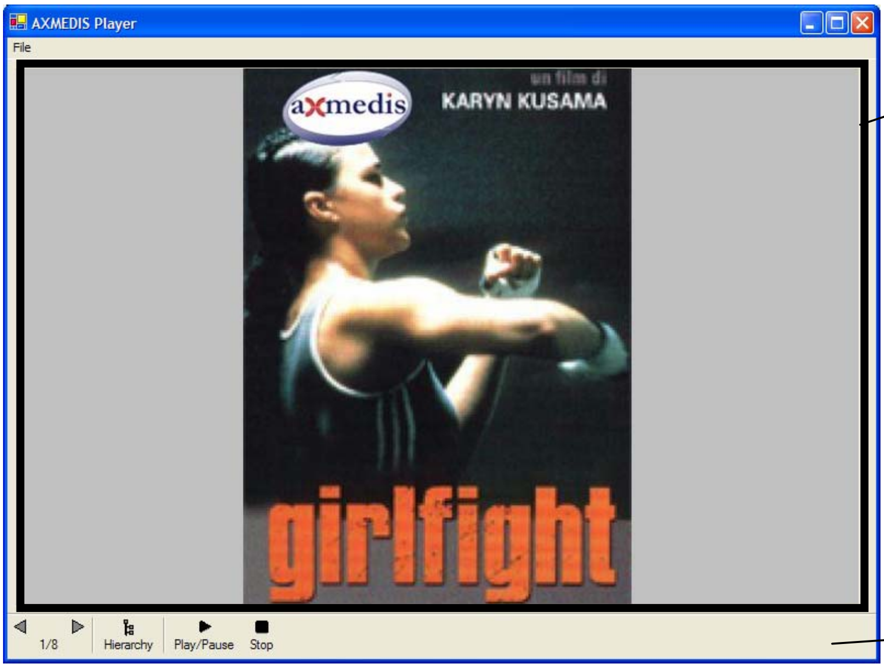
- open an AXMEDIS object from file system or from an URL (downloading)
- access to some information on the AXMEDIS Object, (e.g. content count, content mimetype)
- visualize the content that is present inside the AXMEDIS Object.
- control the visualization of the content (play, pause, stop, etc.)
- hide/show the hierarchy view of the object
- visualize the Dublin Core Metadata of the whole object
- show the licence available for the user on the object (not yet available)

8.2 Relationship with other tools

None

8.3 Detailed description of the functionalities and Screenshots

The following pictures show the use of the AXMEDIS ActiveX inside a Visual Basic Application implementing a basic player. The ActiveX user interface does not present any button controls to allow the customization of the user interface, the visual area is used to display the resources.

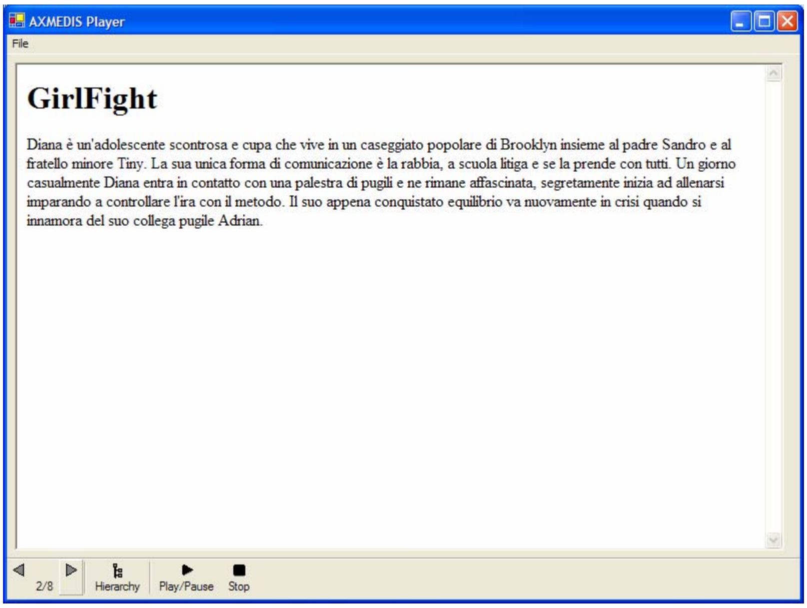


AXMEDIS ActiveX

Visual Basic .NET Application

The Left and Right arrow buttons (defined in the VB application) use the *OpenContent(n)* method of the ActiveX to open a specific content stored in the AXMEDIS object, the Hierarchy button use the *ViewHierarchy* property to view/hide the AXMEDIS Hierarchy, the Play/Stop button use the *Play/Stop* methods to control the execution of Audio/Video resources.

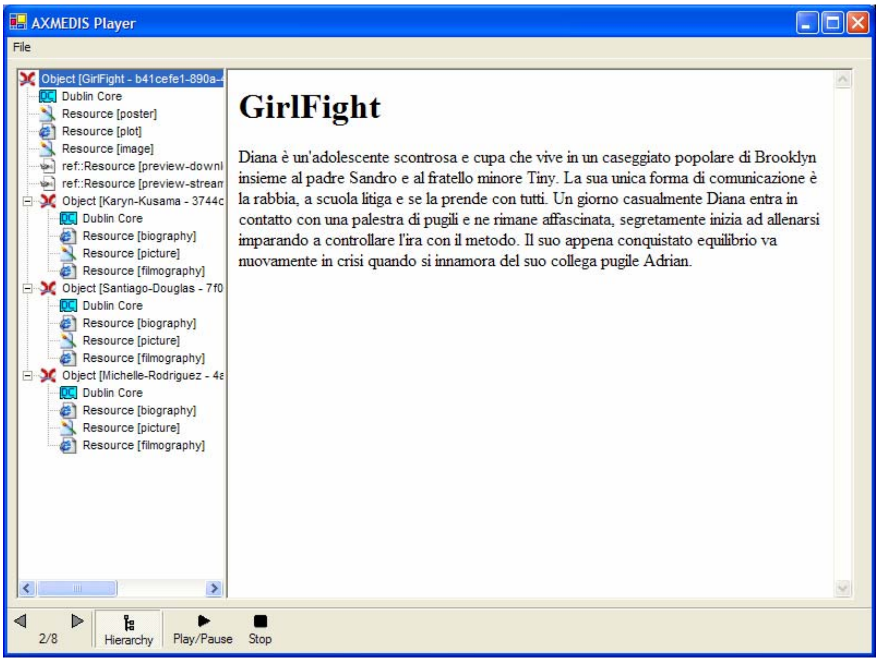
For example clicking on the Right arrow the second resource is shown (the movie plot):



GirlFight

Diana è un'adolescente scontrosa e cupa che vive in un caseggiato popolare di Brooklyn insieme al padre Sandro e al fratello minore Tiny. La sua unica forma di comunicazione è la rabbia, a scuola litiga e se la prende con tutti. Un giorno casualmente Diana entra in contatto con una palestra di pugili e ne rimane affascinata, segretamente inizia ad allenarsi imparando a controllare l'ira con il metodo. Il suo appena conquistato equilibrio va nuovamente in crisi quando si innamora del suo collega pugile Adrian.

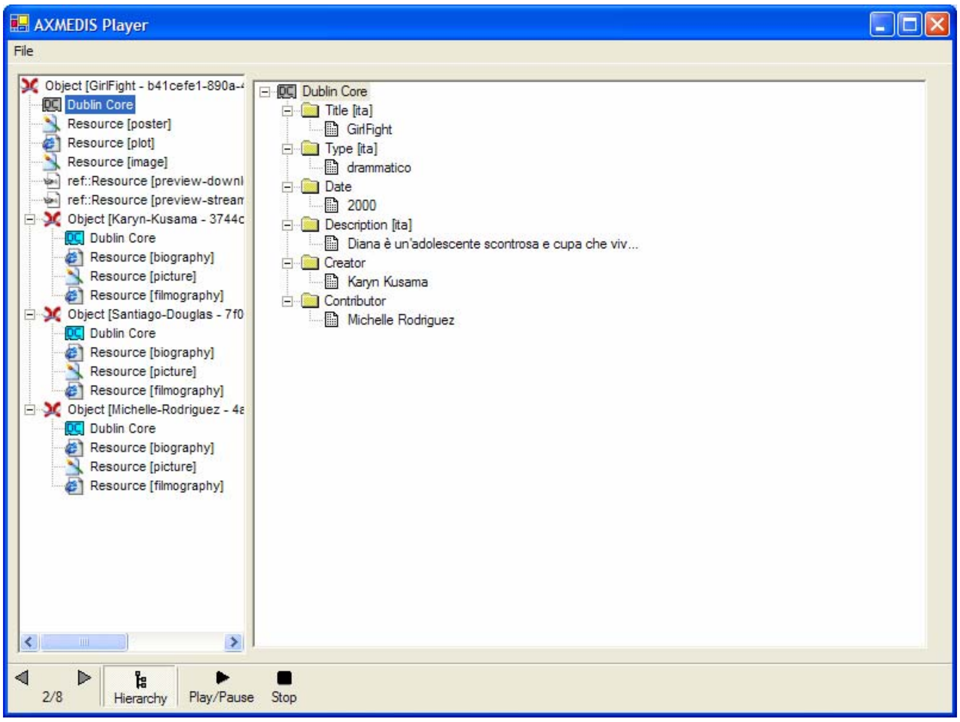
and clicking on the Hierarchy Button the hierarchy is shown:



GirlFight

Diana è un'adolescente scontrosa e cupa che vive in un caseggiato popolare di Brooklyn insieme al padre Sandro e al fratello minore Tiny. La sua unica forma di comunicazione è la rabbia, a scuola litiga e se la prende con tutti. Un giorno casualmente Diana entra in contatto con una palestra di pugili e ne rimane affascinata, segretamente inizia ad allenarsi imparando a controllare l'ira con il metodo. Il suo appena conquistato equilibrio va nuovamente in crisi quando si innamora del suo collega pugile Adrian.

Double clicking on the Dublin Core element the Metadata is shown:



```
Object [GirlFight - b41cefe1-890a-
  Dublin Core
  Resource [poster]
  Resource [plot]
  Resource [image]
  ref::Resource [preview-downl
  ref::Resource [preview-stream
  Object [Karyn-Kusama - 3744c
    Dublin Core
    Resource [biography]
    Resource [picture]
    Resource [filmography]
  Object [Santiago-Douglas - 7f0
    Dublin Core
    Resource [biography]
    Resource [picture]
    Resource [filmography]
  Object [Michelle-Rodriguez - 4a
    Dublin Core
    Resource [biography]
    Resource [picture]
    Resource [filmography]
```

```
Dublin Core
  Title [ita]
    GirlFight
  Type [ita]
    drammatico
  Date
    2000
  Description [ita]
    Diana è un'adolescente scontrosa e cupa che viv...
  Creator
    Karyn Kusama
  Contributor
    Michelle Rodriguez
```

8.3.1 AXMEDISViewerCtrl

8.3.1.1 Basic Interface

Method Load	
short Load(string url)	
Description	Loads and AXMEDIS object from an URL or from file system, it tries to open the first SMIL resource available or otherwise the first Resource/AXObject available
Input parameters	• *string url* – the url or file to be opened (e.g. "http://AXMEDIS.org/demo/demo1.axm", "c:\AXMEDIS-objects\test.axm"), protocols supported are be http and ftp,
Return value	returns *0* if the object can be successfully loaded, *1* if the object cannot be loaded, 2 if the content cannot be opened (missing license)
Remarks	In case of load failure an empty object is present
Property ContentCount (read only)	
short ContentCount	
Description	number of content elements (resources/axobjects) at the first level
DefaultValue	0
Property BackgroudColor (read write)	
string BackgroundColor	
Description	the colour to be used as background (e.g. "#ffffff" for white)
DefaultValue	"#ffffff"
Property ViewHierarchy (read write)	
bool ViewHierarchy	
Description	indicates if the AXMEDIS Hierarchy view has to be shown or not.
DefaultValue	False
Method GetContentType	
string GetContentType(short contentPos)	
Description	allows to get which kind of content is present at a specific position (1..ContentCount)

Input parameters	• *short contentPos* – position of the content to be analyzed
Return value	returns *"RESOURCE" or "AXOBJECT"*
Remarks	In case of invalid position returns ""
Method GetContentMimeType	
string GetContentMimeType(short contentPos)	
Description	allows to get the mimetype of content at a specific position (1..ContentCount)
Input parameters	• *short contentPos* – position of the content to be analyzed (1..ContentCount)
Return value	returns a mimetype for a resource and the mimetype of the resource really played in case of an embedded AXMEDIS object (e.g. it can return "application/smil" if the object contains a SMIL resource)
Remarks	In case of invalid position returns ""
Method OpenContent	
void OpenContent(short contentPos)	
Description	allows to open a content at a specific position (0..ContentCount), position 0 means the object itself. If the content to be opened is an AXMEDIS object it: - runs the first method with autorun set to true - otherwise opens the first smil resource found - otherwise opens the first html resource found - otherwise opens the first resource
Input parameters	• *short contentPos* – position of the content to be opened (0..ContentCount)
Return value	None
Remarks	None
Method ShowMetadata	
void ShowMetadata()	
Description	allows to show the metadata of the whole object (using Dublin Core information)
Input parameters	None
Return value	None
Remarks	None
Method ShowLicense	
void ShowLicense()	
Description	allows to show the license available on the object
Input parameters	None
Return value	None
Remarks	Not yet available
Property NeedLicense (read only)	
bool NeedLicense	
Description	Indicates if a license is needed to view the object
DefaultValue	False
Property HaveLicense (read only)	
bool HaveLicense	
Description	Indicates if is available a license to view the object
DefaultValue	False
Remarks	Not yet available
Property AXOID (read only)	
string AXOID	
Description	Indicates the AXOID of the opened object

DefaultValue	“”
Property AXUID (read only)	
string AXUID	
Description	Indicates the AXUID (user identifier) that registered the activex, this AXUID is used when performing actions under DRM. If empty means that the activex it is not bound to an user and operations under DRM will fail.
DefaultValue	“”
Remarks	It is set using the ImportUserCertificate method
Method ImportUserCertificate	
short ImportUserCertificate(string certificatePath, string password)	
Description	allows to bound the activex with an user via a user certificate.
Input parameters	• *string certificatePath* – the path to a local file containing a PKCS12 certificate identifying the user • *string password* – password of the certificate
Return value	Returns 0 when fails
Remarks	The password is stored in the activex configuration, the configuration is saved when the activex is unloaded
Method Certify	
short Certify()	
Description	allows to register on the AXCS server via PMS the tool and to obtain a certificate identifying the tool.
Input parameters	None
Return value	Returns 0 when fails
Remarks	If the tool is already certified this method does nothing. The activex have to be certified to perform actions under DRM otherwise they fail.

8.3.1.2 Visual Control Interface

Property SupportVisualControl (read only)	
bool SupportVisualControl	
Description	indicates if for the currently opened content the visual control methods can be used
DefaultValue	False
Property Zoom (read write)	
double Zoom	
Description	is the zoom factor to be applied (1 = 100%)
DefaultValue	False
Remark	if the zoom factor is changed the AutoFit property is set to false
Property AutoFit (read write)	
bool AutoFit	
Description	when true indicates to resize the visual content to be fitted inside the window
DefaultValue	True
Remark	None
Method Fit	
void Fit(double width, double height)	
Description	fits the zoom factor to display the image at the desired size (keeping aspect ratio)
Input parameters	• *double width, height* - the image size in pixels
Return value	None
Remarks	the AutoFit property is set to false
Method FitToWindow	

void FitToWindow()	
Description	fits the visual content to the size of the image
Input parameters	None
Return value	None
Remarks	the AutoFit property is maintained
Method ZoomIn	
void ZoomIn(double perc)	
Description	Increments the zoom factor of the given percentage
Input parameters	• *double perc* – the percentage used to increment the zoom factor (e.g. 10 for 10%)
Return value	None
Remarks	the AutoFit property is set to false
Method ZoomOut	
void ZoomOut(double perc)	
Description	Decrements the zoom factor of the given percentage
Input parameters	• *double perc* – the percentage used to decrement the zoom factor (e.g. 10 for 10%)
Return value	None
Remarks	the AutoFit property is set to false
Property FullScreen (read write)	
bool FullScreen	
Description	when true switch to full screen mode
DefaultValue	False
Remark	None

8.3.1.3 Time Control Interface

Property SupportTimeControl (read only)	
bool SupportTimeControl	
Description	indicates if for the currently opened content the time control methods can be used
DefaultValue	False
Method Play	
void Play()	
Description	Starts playing the content or continue in case of pause
Input parameters	None
Return value	none
Remarks	has no effect if it is already playing
Method Pause	
void Pause()	
Description	Pause the execution or continue execution
Input parameters	none
Return value	none
Remarks	none
Method Stop	
void Stop()	
Description	Stops execution
Input parameters	none
Return value	none
Remarks	none

Method JumpToTime	
void JumpToTime(ulong time)	
Description	Set the execution time in milliseconds
Input parameters	• *ulong time* – the time at which jump the execution
Return value	none
Remarks	none
Property IsPlaying (read only)	
bool IsPlaying	
Description	indicates if the content is being played
DefaultValue	false
Property Duration (read only)	
ulong Duration	
Description	indicates duration in milliseconds
DefaultValue	0
Property CurrentTime (read only)	
ulong CurrentTime	
Description	indicates current execution time in milliseconds
DefaultValue	0
Property StartTime (read write)	
ulong StartTime	
Description	indicates the time in milliseconds where to start
DefaultValue	0
Property EndTime (read write)	
ulong EndTime	
Description	indicates the time in milliseconds where to end execution
DefaultValue	Duration

8.3.1.4 Generic Command Interface

This interface allows executing commands giving a command identifier. The command identifiers are:

Command ID	Value
"Load"	string with the URL
"OpenContent"	content position
"ContentCount"	
"BackgroundColor"	string
"ShowMetadata"	none
"ShowLicense"	none
"NeedLicense"	bool
"HaveLicense"	bool
"Zoom"	double
"ZoomIn"	double
"ZoomOut"	double
"AutoFit"	
"Fit"	string "w,h" (e.g. "100, 400")
"FullScreen"	bool
"Print"	none
"Play"	none
"Stop"	none

"Pause"	none
"IsPlaying"	bool
"CurrentTime"	ulong (read only)
"Duration"	ulong (read only)
"StartTime"	ulong
"EndTime"	ulong

Method execCommand	
HRESULT execCommand(string cmdID, bool showUI, variant value, bool ret)*	
Description	executes the command described in cmdID, with an optional argument contained in value
Input parameters	• *string cmdID* – command to be done • *bool showUI* – indicates if UI update is needed • *variant value* – the argument for the command • *bool* ret* – contains if the command has been executed or not
Return value	S_OK if ok
Remarks	None
Method queryCommandEnabled	
HRESULT queryCommandEnabled(string cmdID, bool ret)*	
Description	looks if the specified command can be successfully executed in the current context
Input parameters	• *string cmdID* – command to be checked • *bool* ret* – contains the result (true if the command is enabled)
Return value	S_OK if ok
Remarks	None
Method queryCommandIndeterm	
HRESULT queryCommandIndeterm(string cmdID, bool ret)*	
Description	looks if the specified command is in the indeterminate state
Input parameters	• *string cmdID* – command to be checked • *bool* ret* – contains the result (true if the command is in the indeterminate state)
Return value	S_OK if ok
Remarks	None
Method queryCommandStatus	
HRESULT queryCommandStatus(string cmdID, bool ret)*	
Description	indicates if the specified command has been executed on the object or not
Input parameters	• *string cmdID* – command to be checked • *bool* ret* – contains the result
Return value	S_OK if ok
Remarks	None
Method queryCommandSupported	
HRESULT queryCommandSupported(string cmdID, bool ret)*	
Description	looks if the specified command is supported
Input parameters	• *string cmdID* – command to be checked • *bool* ret* – contains the result (true if the command is supported)
Return value	S_OK if ok
Remarks	None
Method queryCommandValue	
HRESULT queryCommandValue(string cmdID, variant ret)*	
Description	returns the current value for a command
Input parameters	• *string cmdID* – command • *variant* value* – contains value
Return value	S_OK if ok
Remarks	None

8.3.1.5 *Examples of usage*

8.3.1.5.1 Using in a .NET application

The following is an example of use of the activex to make a preview of an AXMEDIS object:

```
axactivex=new AXMEDISViewerCtrl();
axactivex.BackgroudColor="#ffffff";

//open the object downloading it from an URL
axactivex.Load(“http://www.axmedis.org/axmedis.axm”);

//show the metadata of the whole object
axactivex.ShowMetadata();

//look for a license and if not present acquire it
if(axactivex.NeedsLicense && !axactivex.HaveLicense)
    axactivex.AcquireLicense(licenseID);
else
    axactivex.ShowLicense();

// open all content elements inside the object and make a preview for 10s each
for(int i=1; i<=axactivex.ContentCount; i++)
{
    axactivex.OpenContent(i);

    //if currently opened content is image/video/document fit it to 100x100 preview
    if(axactivex.SupportVisualControl)
        axactivex.fit(100,100);

    //if currently opened content is audio/video preview it for 10s other wise wait for 10s
    if(axactivex.SupportTimeControl)
        axactivex.EndTime=10000; //10s preview
    else
        wait(10000); //wait 10s
}
```

8.3.1.5.2 Using in a HTML page

The AXMEDIS activex can be used inside any HTML page using the OBJECT tag (the embed tag is for the Mozilla plugin)

```
<OBJECT id="Object1"
    height="100%" width="100%" classid="clsid:B30B789D-2378-45BD-A1B5-AFC0B43919D3"
    name="axviewer" VIEWASTEXT>
    <PARAM NAME="SRC" VALUE="http://www.axmedis.org/axmedis.mp21">
    <PARAM NAME="BGCOLOR" VALUE="#99ccff">
    <embed id="axviewer" type="application/axmedisplayer-plugin"
        width="100%" height="100%" viewHierarchy="false"> </embed>
</OBJECT>
```

The SRC parameter indicates the absolute URL to the .mp21/.axm file to load (it also opens the default resource like in OpenContent(0)) and the BGCOLOR parameter indicates the background color to use.

```
<script>
var axviewer;

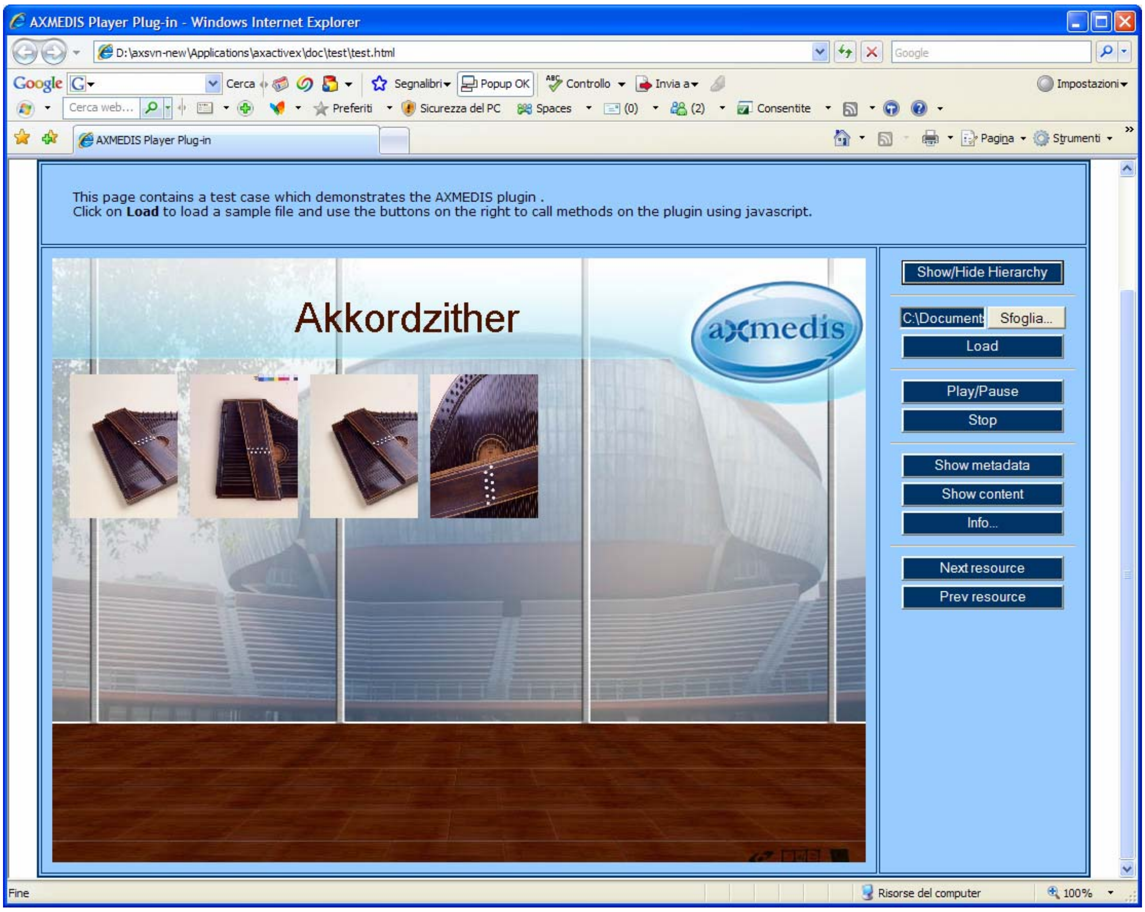
if (document.embeds != null && document.embeds.length > 0) {
    //mozilla
    axviewer = document.getElementById('axviewer');
} else {
    // IE
    axviewer = document.all['axviewer'];;
}
…

function load() {
    var filename = document.all["File1"].value;
    if(filename != null && filename!="") {
        axviewer.load(filename);

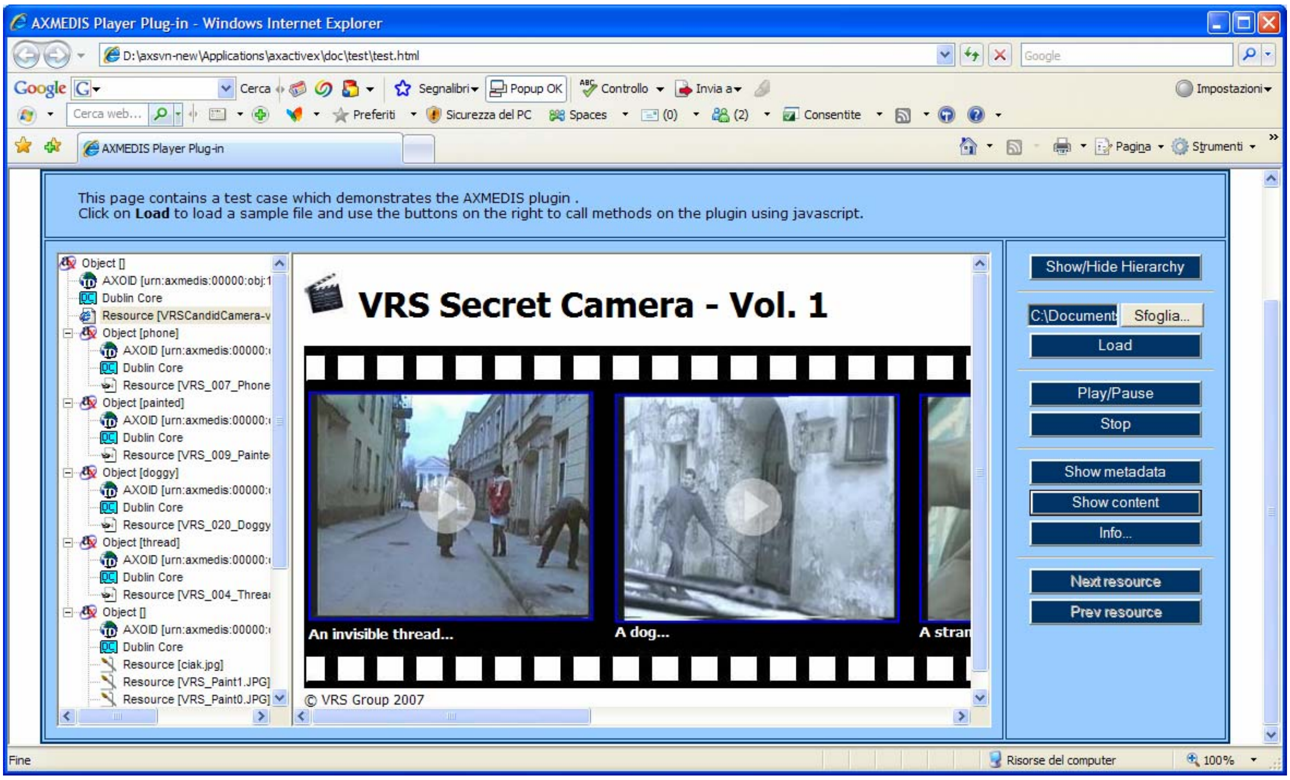
        if(axviewer.needsLicense)
        {
                if(axviewer.AXUID=="")
                        alert("You need to be a registered user to use the content");
                else
                        axviewer.certify();
        }
        content=1
        //if in the content there is a smil or html file disable the next/prev buttons
        var n=axviewer.ContentCount;
        if(n>0)
        {
                indexFound=false;
                for(i=1; i<=n; i++)
                        if(axviewer.GetContentMimeType(i)=="application/smil"||
                                axviewer.GetContentMimeType(i)=="text/html")
                                indexFound=true;

                next.disabled=indexFound;
                prev.disabled=indexFound;
                axviewer.openContent(0); //content=0 means open the default resource
        }
    }
}
…
function ShowInfo() {
    var n=axviewer.ContentCount;
    var msg = "AXOID: "+axviewer.AXOID+"\n"
    for(i=1; i<=n; i++)
        msg += "   "+axviewer.GetContentType(i)+" "+axviewer.GetContentMimeType(i)+"\n";

    alert(msg+"\nUser ID: "+axviewer.AXUID+"\nNeeds license: "+axviewer.needsLicense);
}
```



This page contains a test case which demonstrates the AXMEDIS plugin .
Click on **Load** to load a sample file and use the buttons on the right to call methods on the plugin using javascript.



This page contains a test case which demonstrates the AXMEDIS plugin .
Click on **Load** to load a sample file and use the buttons on the right to call methods on the plugin using javascript.

9 AXMEDIS DRM Editor

9.1 Main functionalities

“*DRM Editor and Viewer*” is a software application to view and eventually edit MPEG-21 REL Licenses. This user manual refers to its version 2.1.9. “*DRM Editor and Viewer*” and comes in the form of two different applications. They are two different executable files, although they come with the same `setup.exe` installation file, which in turn will ask whether one or both programs are to be installed.

Its main features are:

Feature	DRM editor	DRM viewer
Load a license from a XML file	Yes	Yes
Load license from a remote host (PMS Server)	Yes	Yes
Create a new license form scratch	Yes	No
Display graphically the license	Yes	Yes
Store a license in a XML file	Yes	No
Store a license in a remote host (PMS Server)	Yes	No
Edit (modify) a License	Yes	No

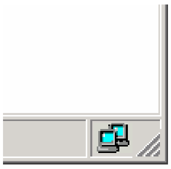
9.2 Relationship with other tools

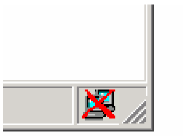
This tool can be embedded as a component in other tools (i.e. axeditor).

The licenses created with the AXMEDIS DRM Editor can be stored locally or in a remote server (AXMEDIS PMS Server). In order to be able to store licenses in the remote server, a connection to it must be available, as explained in next section.

9.3 Detailed description of the functionalities and Screenshots

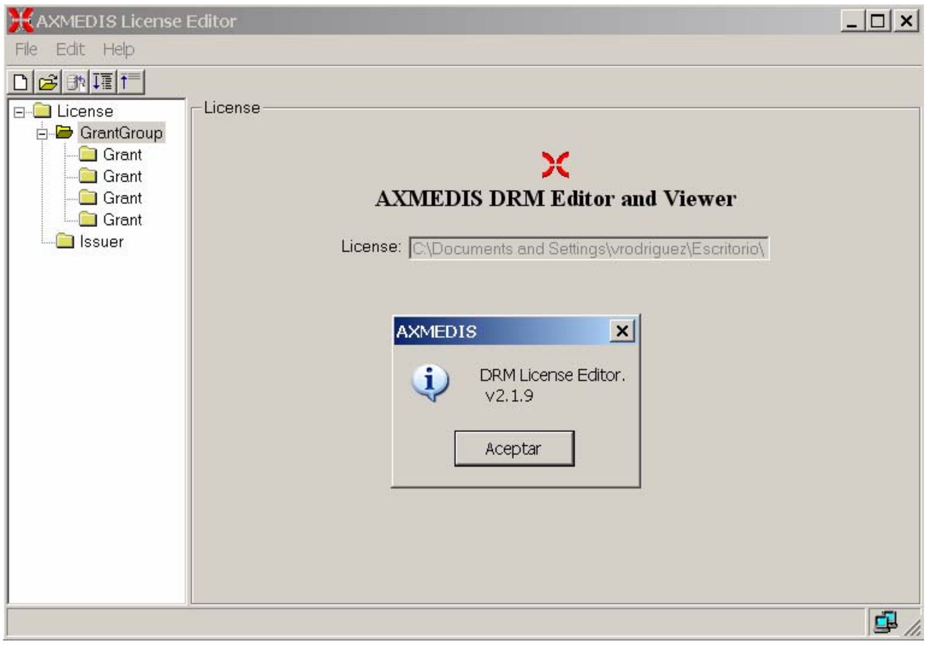
The application is a window application. (see figure DRM Editor View). As in a common window application, the following elements appear: menu bar, button bar, status bar. The status bar shows an icon informing whether connection to the server is available or not. If it does not exist, only file operations are possible





The main window shows two areas: in the left a hierarchically structure is displayed (also called tree), which is used to navigate through the license elements; in the right side there is a panel showing information related to the element marked in the tree. Functionalities can be accessed through the menu options, the buttons in the button bar, or the buttons that appear in the panel. Next we summarise the DRM Editor and Viewer main functionalities:

- DRM Editor and Viewer. Open a license from a file 📂 (see next figure). The panel displays the file path or an alternative description.



AXMEDIS DRM Editor and Viewer

License: C:\Documents and Settings\vrodriguez\Escritorio\

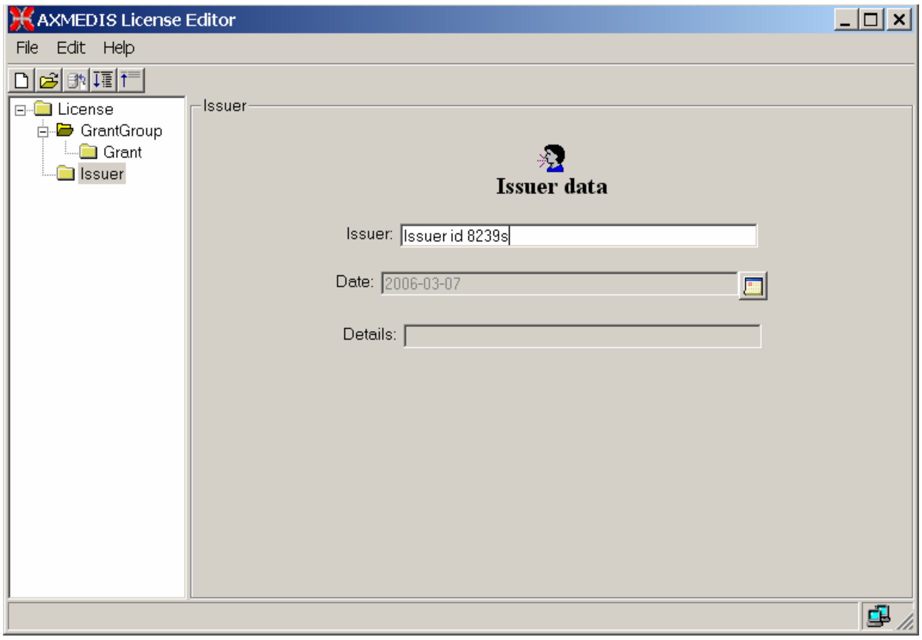
AXMEDIS

DRM License Editor.
v2.1.9

Aceptar

Figure: DRM Editor view

- DRM Editor. Create a new license . When a new license is created, it is empty. The tree appears with an "issuer" element and with a "Grant Group" element, but they are initially empty.
- DRM Editor. Modify a license.
    - When the tree is clicked on its "issuer element", the Editor shows the issuer panel, where the issuer and the date of issuance can be set (see next figure).



Issuer data

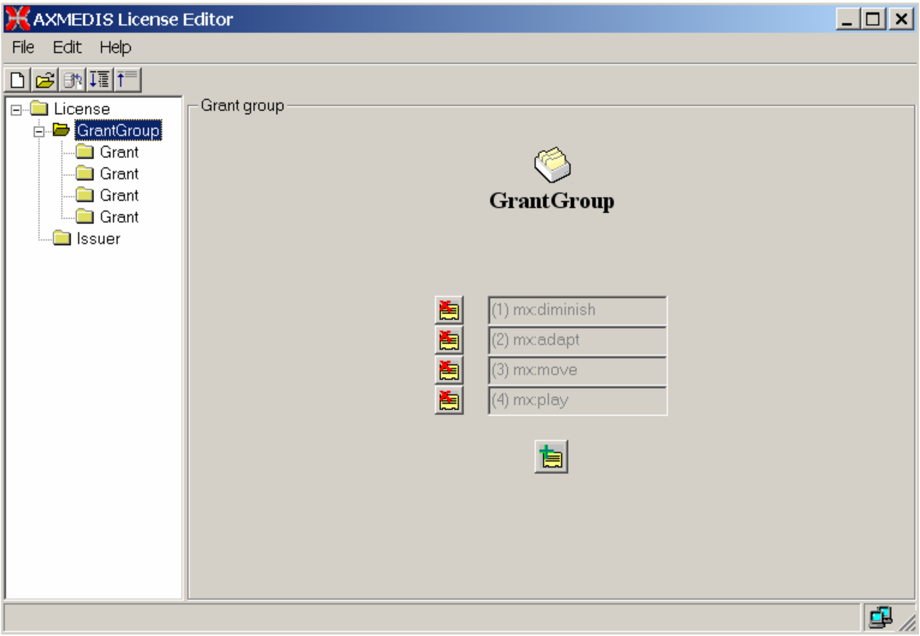
Issuer: Issuer id 8239s

Date: 2006-03-07

Details:

Figure: DRM Editor License Issuer view

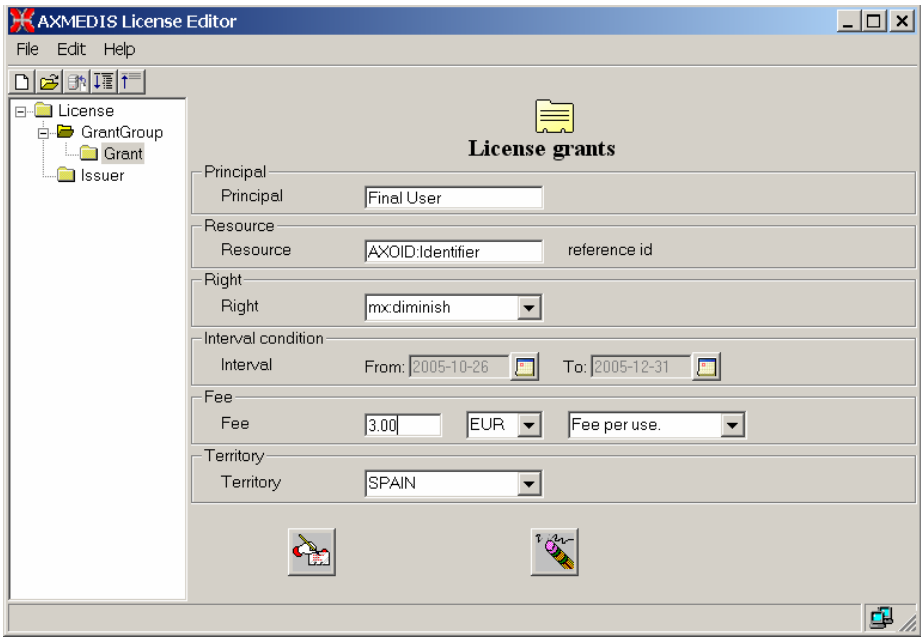
- When the tree is clicked on its "GrantGroup element", a Grant Group panel is displayed. (see next figure). From this panel it is possible to add or delete grants. The first icon creates an empty grant, the second deletes it. Once a grant has been created, it will be displayed in the tree.



(1) mx:diminish
(2) mx:adapt
(3) mx:move
(4) mx:play

Figure: DRM Editor and Viewer License Grant Group view

- When the tree is clicked on its "Grant" element (see next figure), the Grant panel is shown. From this panel, the following actions can be performed:
  - To change the following fields: principal, right, resource.
  - To add and remove conditions. The conditions that can be set are: *number*, *interval*, *territory* and/or *fee*. Each of them can be modified.



Principal
Principal: Final User

Resource
Resource: AXOID:Identifier reference id

Right
Right: mx:diminish

Interval condition
Interval From: 2005-10-26 To: 2005-12-31

Fee
Fee: 3.00 EUR Fee per use.

Territory
Territory: SPAIN

Figure: DRM Editor License Grant view

- When the *issue* right is chosen, the license becomes a "distributor license", and the Grants underneath are Grants to be given by the distributor. This is reflected in the tree, where a new sublevel is displayed containing additional grants.

- DRM Editor. Store a license to a file. This option is performed when selection the "File -> Save to File" option of the Editor.

- DRM Editor. Store a license into a remote server .

Limitations to be fixed in subsequent versions:

- In the current version only up to 8 grants can be added to the same grant group.
- Only a condition of each type can be added to a grant.

If the DRM Editor and Viewer are used in its classic version (the one which displays a simple tree) these limitations are overcome.

10 AXMEDIS DRM Viewer

10.1 Main functionalities

Refer to section “DRM Editor” for the viewing functionalities of “DRM Editor and Viewer”.

10.2 Relationship with other tools

Refer to section “DRM Editor” for the viewing functionalities of “DRM Editor and Viewer”.

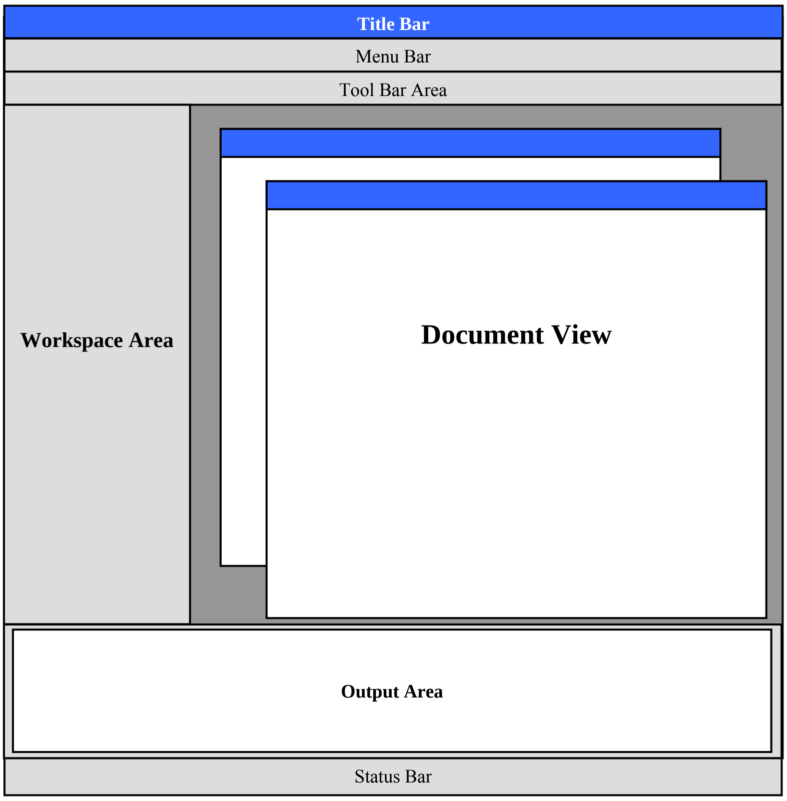
10.3 Detailed description of the functionalities and Screenshots

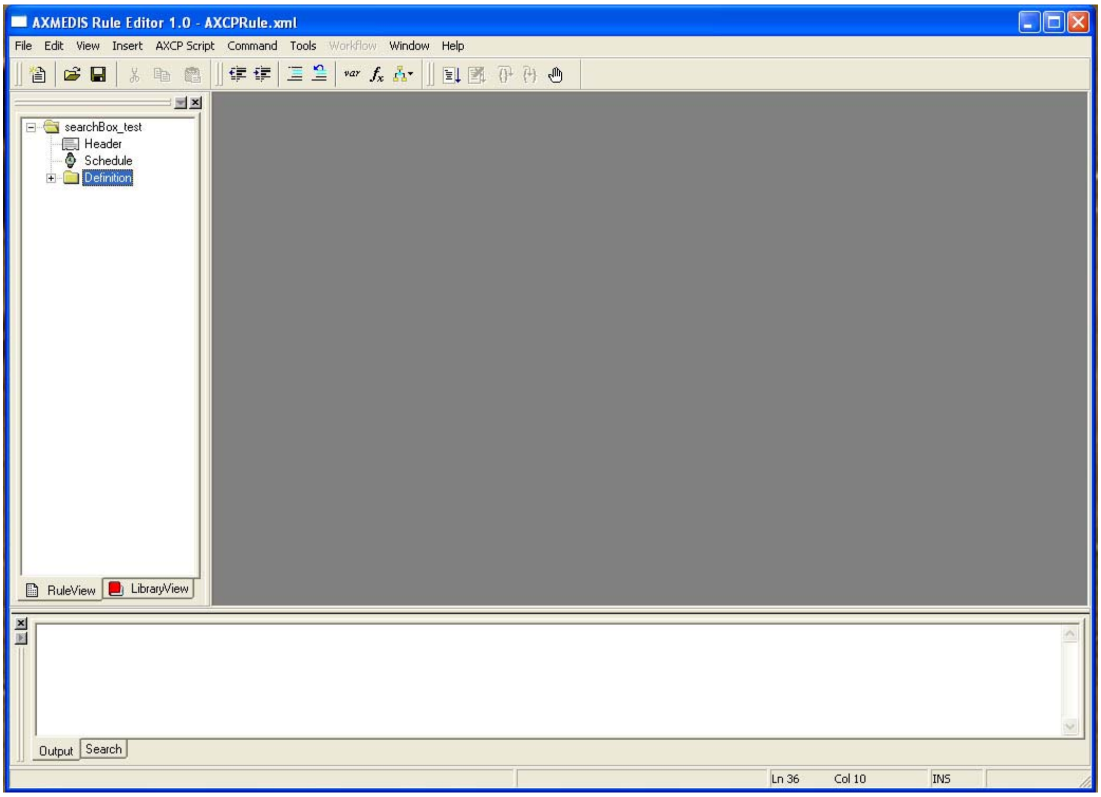
Refer to section “DRM Editor” for the viewing functionalities of “DRM Editor and Viewer”.

11 AXMEDIS Rule Editor

11.1 Main functionalities

The AXCP Rule Editor GUI is a MDI window that manages an AXCP rule document. It provides a set of tools and views to help the user during the editing and building of rule. It hosts an instance of the AXCP rule executor in order to provide functionalities for debugging, testing and validating the script code associated with a rule. To help the user in writing rule, the editor is equipped with a Help on line and area where the user can access to a library of script functions. The GUI is structured as:





Main view of the AXMEDIS Rule Editor GUI

11.1.1 The Menu Bar

The menu bar is constituted of the following entries:

File

- **New** – create a new rule document
- **Open** – Open a AXCP rule in the Rule Editor
- **Close** – Close the current rule document
- **Save** – save the current rule using the current file name
- **Save as** – save the current rule by name
- **Import JScript** – import a script in the rule
- **Export JScript** – export the script on file system
- **Properties** – it shows a report on the
- **Page setup** – allow preparing the page for printing document
- **Print preview** – open the print preview dialog
- **Print** – send the document to the printer
- **Recent Files** – History of files
- **Exit** – Quit the editor

Edit

- **Undo** – to revoke the last performed actions
- **Redo** – Once something has been undone this button permits to redo that step
- **Cut** – delete and copy a selection in the clipboard
- **Copy** – copy a selection in the clipboard
- **Paste** – paste a selection available in the clipboard
- **Delete** – delete a selection
- **Find…** – Search a word in the text
- **Find next** – search again for a new location of the current text
- **Replace…** – replace a word with another

- **Replace again** – replace again the word with a new entry
- **Match brace** – match the brace
- **Go to…** – go to a specific line text
- **Advanced menu**:
    - **Indent increase**
    - **Indent reduce**
    - **Overwrite mode**
    - **Wrap mode**
    - **Show line endings**
    - **Show indent guides**
    - **Show line numbers**
    - **Show long line markers**
    - **Show whitespace**
- **Select All** – select all content
- **Select line** – select the line where cursor is blinking

View

- **Workspace** – It opens the Workspace area
- **Output –** It opens the Output area
- **Debug Monitor**
- **Preferences**

Insert

- **Selection –** Adds a selection item in the rule
- **Parameter –** Adds a parameter item in the rule
- **Script** - Adds a script item in the rule
- **Dependency** - Adds a dependency item in the rule
    - **Tool**
    - **Script**

AXCP Script

- **Var**
- **Function**
- **Statement**
    - **if**
    - **if…else**
    - **switch**
    - **do…while**
    - **while**
    - **for**
    - **for in**
    - **try…catch**

Commands

- **AXCP Engine**
    - **Activate Rule** – It is the activate rule command and will allow sending the current rule to the scheduler and the notification to the AXMEDIS Workflow Manager. A connection with the Rule Engine Scheduler will be open in order to perform the installation of rule in the Scheduler.
    - **Install**
    - **Get rules**
    - **Run rule**
- **Find Rule…** – Allows making queries to the rules repository of the Rule Editor
- **Rules List…** – Shows the list of rules inside the repository of the Rule Editor

- **Check** – Tests the feasibility of the rule (like a compiler plus some tests on AXMEDIS objects and estimation of some parameters such as the files complexity and required workload)

Debug

- **Start** – Enter in the debug mode or if the script is stopped, continue execution until the script is finished, or a breakpoint is reached.
- **Stop** – Stop the script execution and close the debug mode
- **Step Over** - Executes the current line of the script, then pauses. This differs from the "Trace" command in that it will not step into functions and scripts that are called by the current line.
- **Trace Into** – Executes the current line of the script, then pauses. This differs from the "Step" command in that if the current line calls a function, or another script, the debugger will trace into the called function or script.
- **Insert/Remove Breakpoint** – Set a breakpoint on the currently selected line of the script code. Every time the selected line is reached, the debugger will stop. Clear a breakpoint from the currently selected line of the script code.
- **View Breakpoints list** – Open the debug window showing all breakpoints in the script code.

Tools

- **Quick Starter**
- **Metadata Mapper**

Workflow

- **Pending Rules list…**
- **Notify activity completion…**

Window (provided automatically by the MDI GUI)

- **Cascade**
- **Tile Horizontal**
- **Tile Vertical**
- **Arrange Icons –** Arrange the all minimized document views
- **Next –** Activate the next document view
- **Previous** - Activate the previous document view
- **Close All –** Close all document views

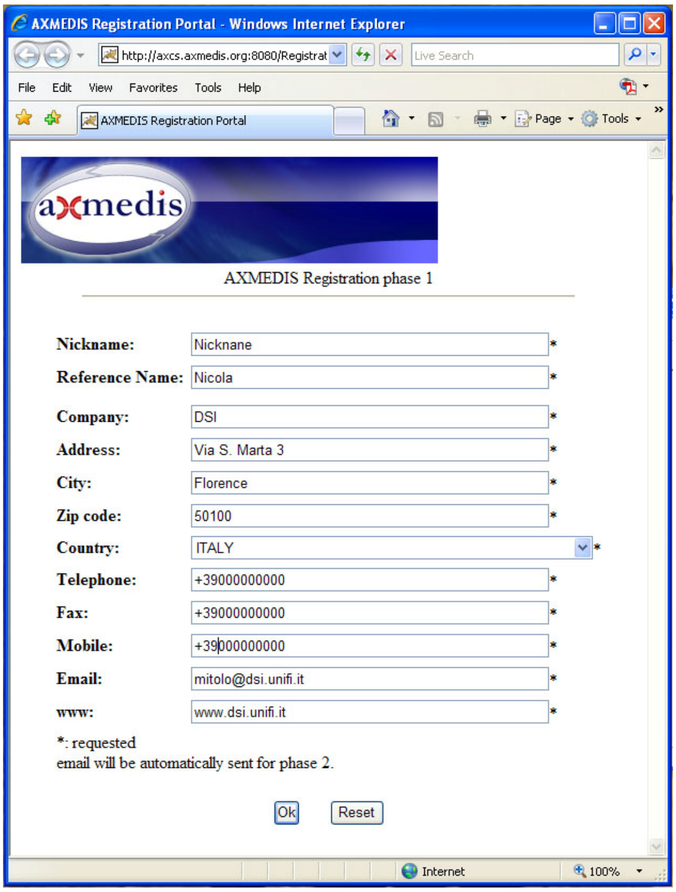
Help

- **Help…**
- **Registration…**
- **Import User Certificate…**
- **Tools certification…**
- **About** – Information about the authors, version, etc

11.1.2 Register the user and certify the tool

When the AXMEDIS Rule Editor is opened for the first time, the user has to start the registration process and to certificate the tool.

By selecting the menu **Help\Registration…** the certification procedure will start and a web page will be opened asking mandatory information to be filled in for the correct user registration. By clicking the “OK” button this information will be sent and collected by the AXCS and a confirmation email will be sent to the user at the email address specified in the field “Email”.


AXMEDIS Registration Portal - Windows Internet Explorer
http://axcs.axmedis.org:8080/Registrat
Live Search
File Edit View Favorites Tools Help
AXMEDIS Registration Portal
Page Tools
axmedis
Internet
100%

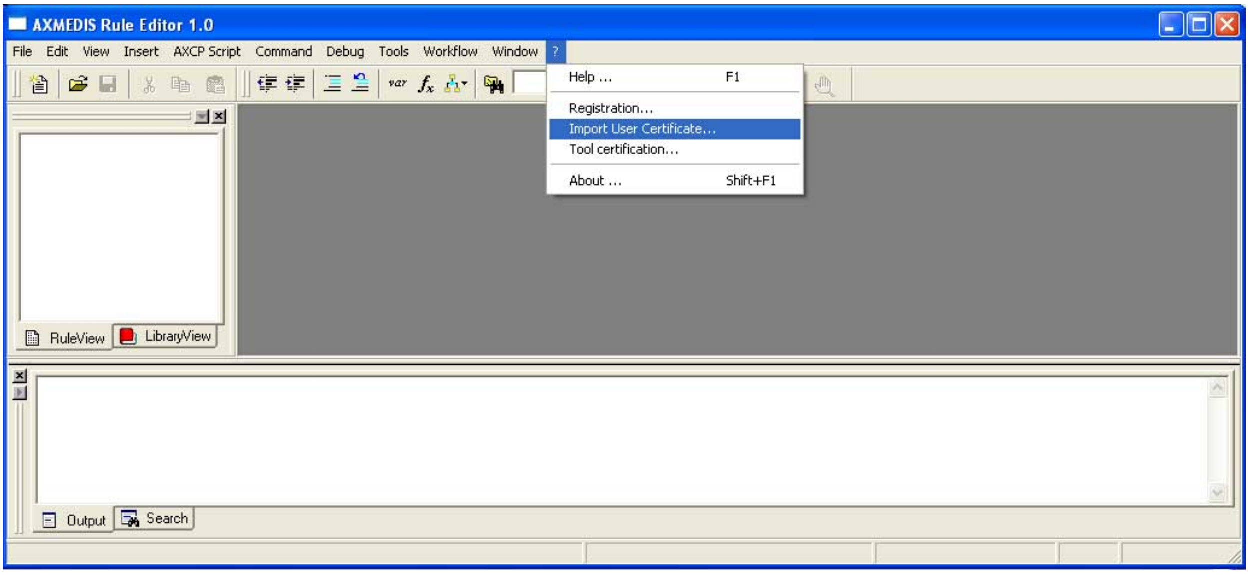
AXMEDIS Registration phase 1

Nickname: Nicknane *
Reference Name: Nicola *
Company: DSI *
Address: Via S. Marta 3 *
City: Florence *
Zip code: 50100 *
Country: ITALY *
Telephone: +39000000000 *
Fax: +39000000000 *
Mobile: +39000000000 *
Email: mitolo@dsi.unifi.it *
www: www.dsi.unifi.it *

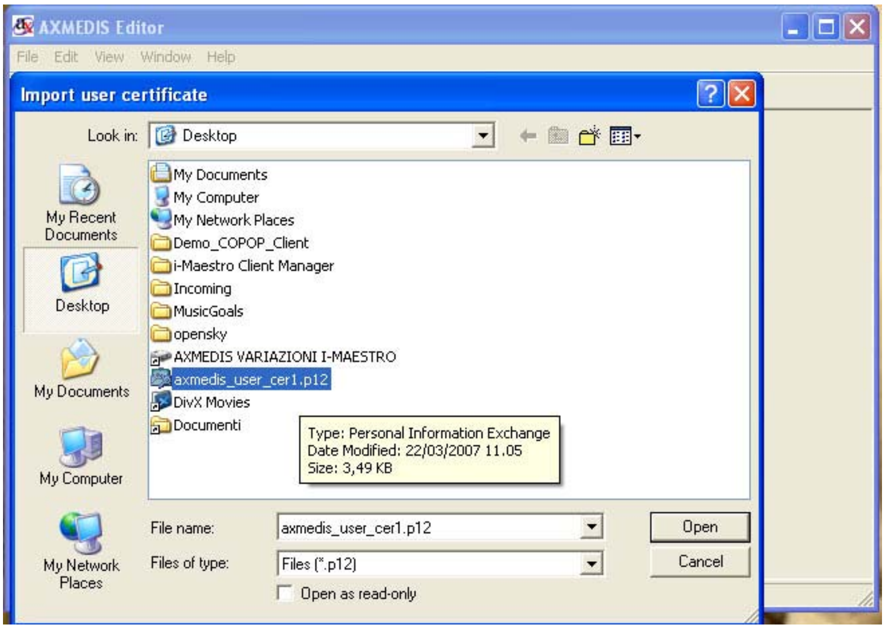
*: requested
email will be automatically sent for phase 2.

Ok Reset

The email received contains an URL to be clicked for the confirmation of the procedure: this is necessary to control the correctness of the specified email address. After the confirmation, another email will be received containing the user certificate (a .p12 file) and a password necessary to import the certificate.
The User Certificate has to be saved on the hard disk before starting the importation procedure.
To import the certificate select in the AXMEDIS Editor the menu **Help/Import User Certificate…**



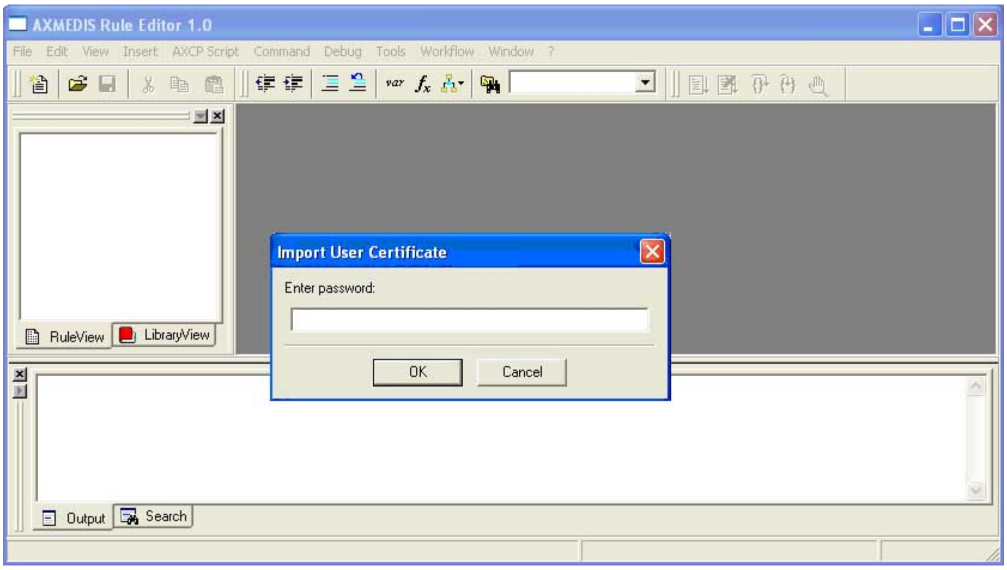
Select the .p12 file received and press the **Open** button.



Type: Personal Information Exchange
Date Modified: 22/03/2007 11.05
Size: 3,49 KB

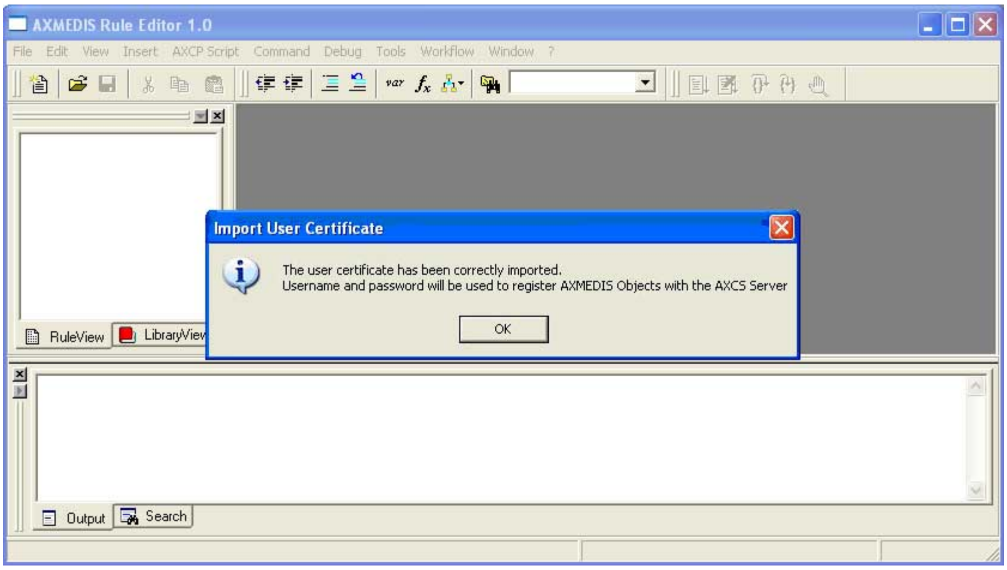
File name: axmedis_user_cer1.p12
Files of type: Files (*.p12)

Insert the password received by email to continue the registration procedure and press the **OK** button..



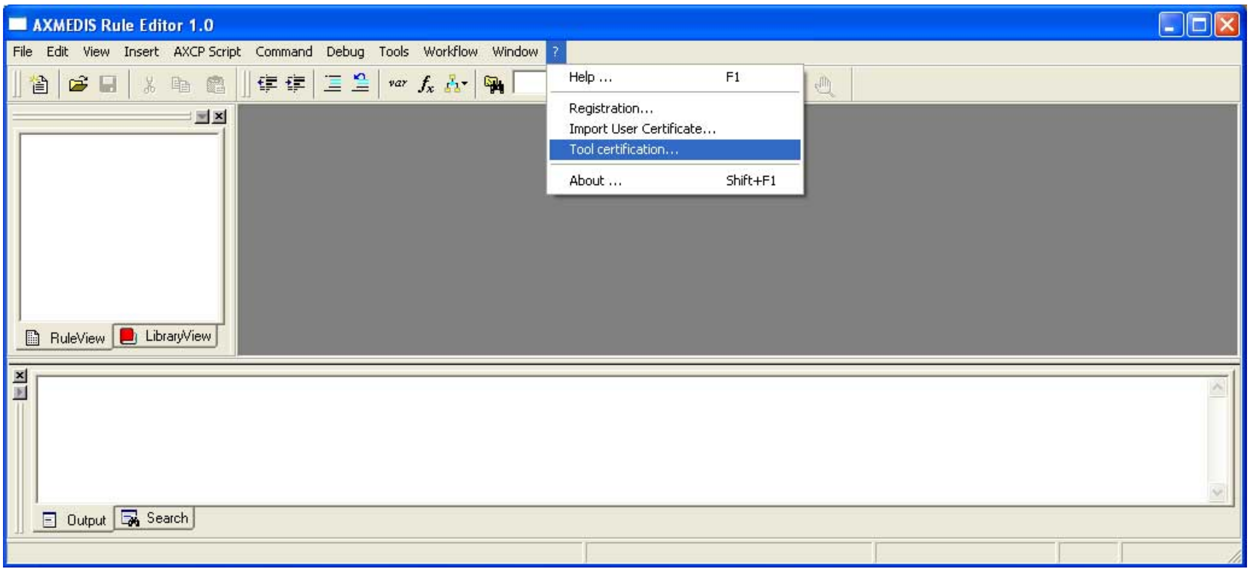
Enter password:

A message confirming the correctness of the registration procedure will be showed. Press the **OK** button to continue.



The user certificate has been correctly imported.
Username and password will be used to register AXMEDIS Objects with the AXCS Server

After the user registration it is necessary to certificate the tool. Open the menu **Help\Tool certification…**

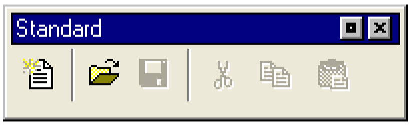


Immediately a message will be showed confirming the correctness of the tool certification.

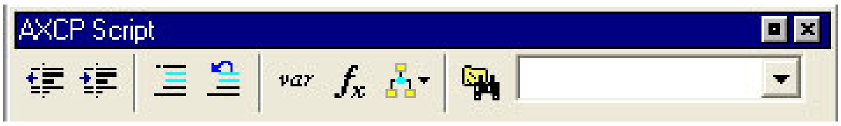
11.1.3 ToolBar Area

The toolbar area will host a set of icon buttons that will allow calling functions without accessing to the menu bar. The toolbar area will be based on dockable toolbars and will allow the dynamic customisation by adding or removing sub-toolbars. For this end the editor will provide sub-toolbars for:

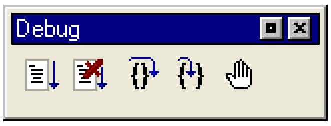
- *Standard* – it will provide main functionalities for managing rule files and editing (new, open, save, etc…) for:
  - *New rule document*
  - *Open from disk*
  - *Save*
  - *Cut*
  - *Copy*
  - *Paste*



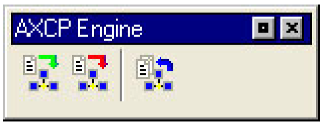
- *AXCP Script* – it will provide controls for:
    - *Reduce indent*
    - *Increase indent*
    - *Set selected rows as comments*
    - *Remove comment from selected rows*
    - *Var*
    - *Function*
    - *Code*
    - *Search in Script*, to search a string in the document



- *Debug* – it will provide main controls for:
    - *Start Debug*
    - *Stop Debug*
    - *Step Over*
    - *Trace Into*
    - *Add/Remove Breakpoint*



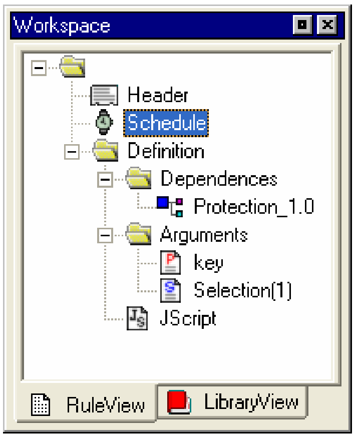
- *AXCP Engine* – it will provide controls for:
    - *Install and activate the rule on AXCP Engine*
    - *Install the rule without activation on AXCP Engine*
    - *Get the rules installed on AXCP Engine*



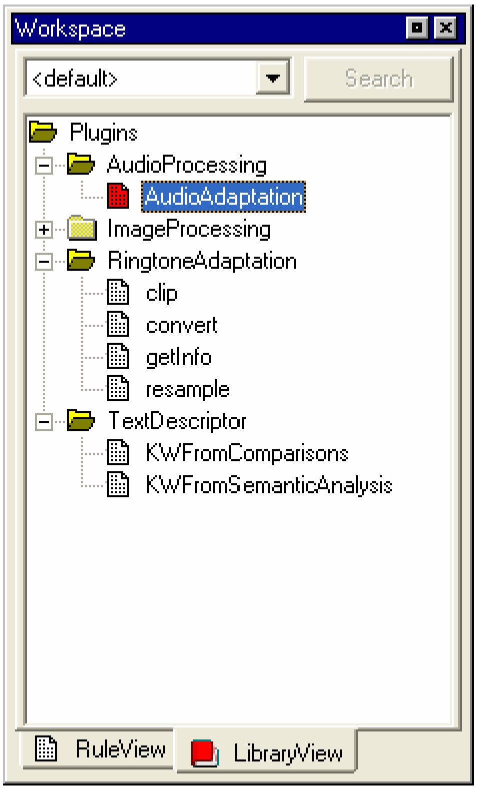
11.1.4 Workspace Area

It is a resizable docking panel and includes a notebook control where the rule view and the library view are shown.

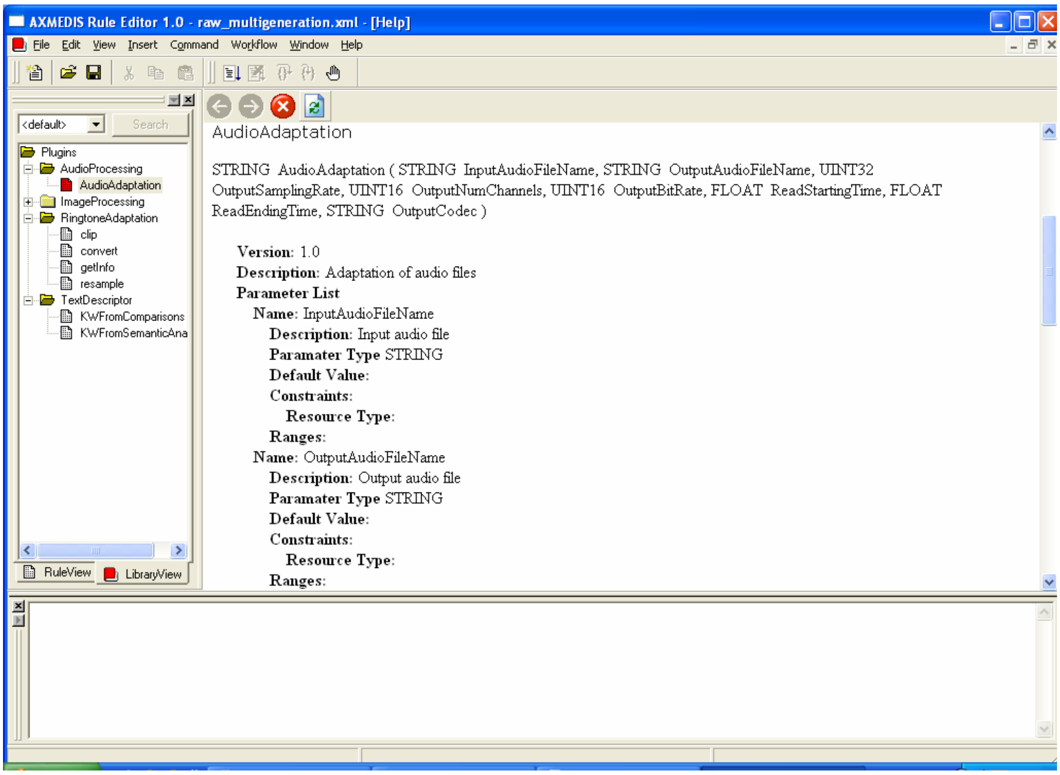
Rule Tree View - Such view is a tree view that display the structure of the rule. A dynamic popup menu is available for a quick access to functions that allows the quick management of items (edit and view metadata, delete, Insert, Cancel, Move up/Down, Rename, Open/Edit, …). Appropriate icons allow identifying intuitively components of rule in view. In the following picture the actual structure of the Rule View area is depicted:



Library view – It is an on-line book that could be used as help by the user. It displays the set of functionalities provided by the Plug-ins installed and automatically detected by the editor. It is a tree control that permits to show and browse plug-ins module and the functionalities that they provide according to their profile.



The user can see the documentation associated with each selected function by interacting with each item of the tree by double clicking or accessing to a contextual popup menu. The selected documentation is displayed in the **Text/Html document view.**



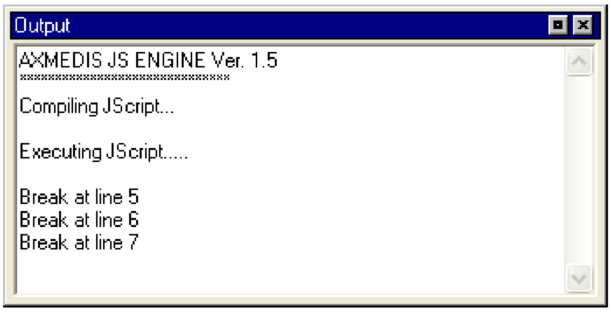
AudioAdaptation

STRING AudioAdaptation (STRING InputAudioFileName, STRING OutputAudioFileName, UINT32 OutputSamplingRate, UINT16 OutputNumChannels, UINT16 OutputBitRate, FLOAT ReadStartingTime, FLOAT ReadEndingTime, STRING OutputCodec)

Version: 1.0
Description: Adaptation of audio files
Parameter List
Name: InputAudioFileName
Description: Input audio file
Paramater Type STRING
Default Value:
Constraints:
Resource Type:
Ranges:
Name: OutputAudioFileName
Description: Output audio file
Paramater Type STRING
Default Value:
Constraints:
Resource Type:
Ranges:

11.1.5 Output area

This is a text control where messages, textual description, errors, debugging info, alert, etc… will be displayed.



```
AXMEDIS JS ENGINE Ver. 1.5
************************************

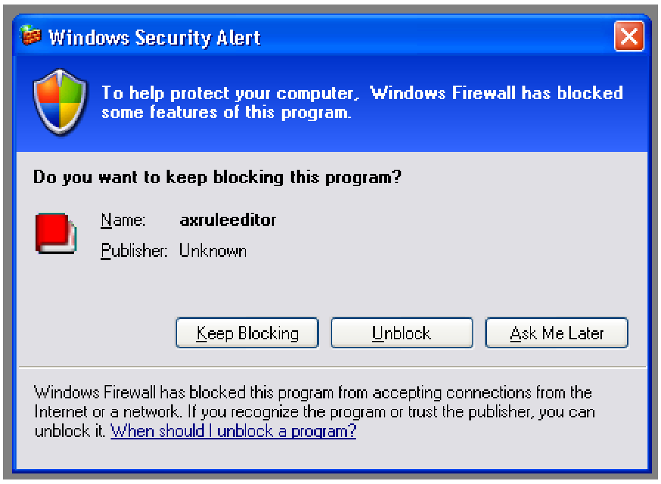
Compiling JScript...

Executing JScript.....

Break at line 5
Break at line 6
Break at line 7
```

11.1.6 MS Windows Firewall Alert at startup

The picture bellow shows the Windows Security Alert Dialog. To run AXCP Tools, please unlock the application clicking on the “Unlock” button. This operation allows AXCP tools to use network services and run properly.



To help protect your computer, Windows Firewall has blocked some features of this program.

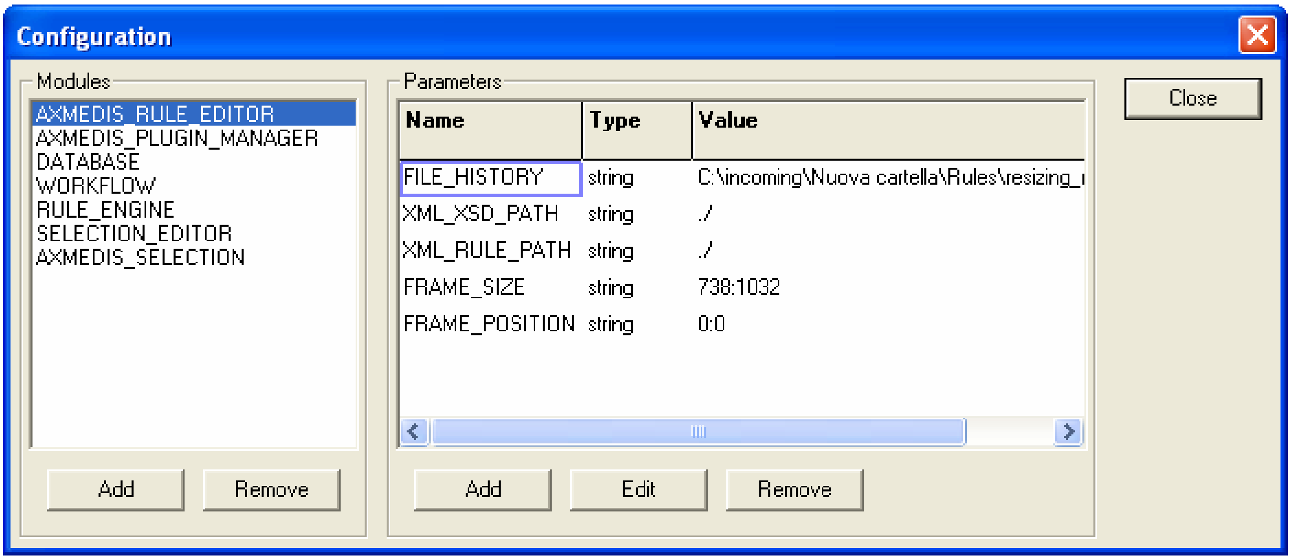
Do you want to keep blocking this program?

Name: axruleeditor
Publisher: Unknown

Windows Firewall has blocked this program from accepting connections from the Internet or a network. If you recognize the program or trust the publisher, you can unblock it. When should I unblock a program?

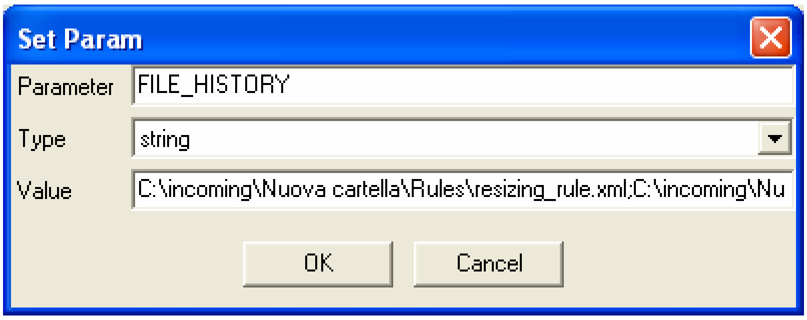
11.1.7 Configuration

The AXCP Rule Editor allows accessing to the configuration dialog when it is necessary to modify the configuration file.



Modules:
- AXMEDIS_RULE_EDITOR
- AXMEDIS_PLUGIN_MANAGER
- DATABASE
- WORKFLOW
- RULE_ENGINE
- SELECTION_EDITOR
- AXMEDIS_SELECTION

Name	Type	Value
FILE_HISTORY	string	C:\incoming\Nuova cartella\Rules\resizing_r
XML_XSD_PATH	string	./
XML_RULE_PATH	string	./
FRAME_SIZE	string	738:1032
FRAME_POSITION	string	0:0



Parameter: FILE_HISTORY
Type: string
Value: C:\incoming\Nuova cartella\Rules\resizing_rule.xml;C:\incoming\Nu

In the following tables the set of parameters regarding the configuration of the editor are listed. Such parameters are grouped into modules as reported below:

AXMEDIS Rule Editor

Config parameter	Possible values
XML_RULE_PATH	it is the directory where the rule will be saved
XML_XSD_PATH	It is the directory where xml schema (XSD files) are stored
FRAME_SIZE	it is the information about the last width and height of the main frame
FRAME_POSITION	It is the information about the last position (x,y) of the main frame
FILE_HISTORY	It is the list of recent rule documents

Workflow Manager

Config parameter	Possible values
workflowUrl	It is the URL for the workflow plug-in
gatewayUrl	It is the gateway URL for the workflow

AXMEDIS Plugin Manager

Config parameter	Possible values
PLUGINS_PATH	It is the directory where the DLL of plug-ins with their profiles (workflow, adaptation, descriptor and fingerprint estimators) are stored.

AXMEDIS Database

Config parameter	Possible values
user	The user name for logging into Database
passwd	The password for logging into Database
LoaderWSEndPoint	It is the URL for the loader
HTTPPath	It the HTTP path
UploadPath	It is the Upload path
SaverWSEndPoint	It is the URL for the saver

AXMEDIS Rule Engine

Config parameter	Possible values
gatewayUrl	it is the URL of the AXCP Rule Scheduler/GRID

AXMEDIS Selection

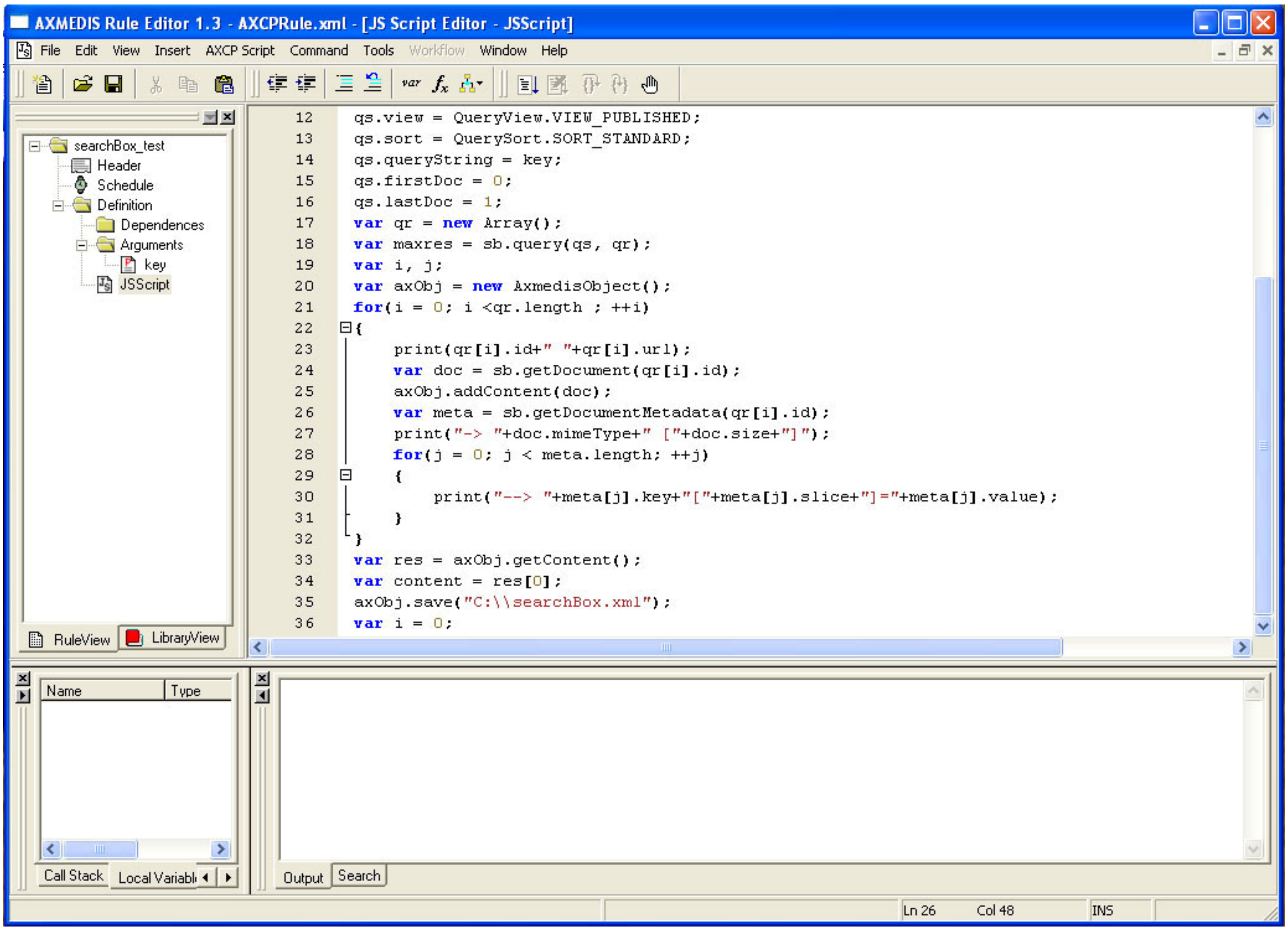
Config parameter	Possible values
MAIN_QUERY_SUPPORT_WSDL	It is the URL of the WSDL for using the Main Query Support
SELECTION_ARCHIVE_WSDL	It is the URL of the WSDL for using the Selection Archive

11.1.8 Tools, Viewers and Editors

Some different types of tools and editor were designed for visualizing and/or editing different type of documents.

1. **Javascript editing window** – This is the window client where the user can use to write the script code. It is a multiline text control where it is possible to edit the script. The textual editor supports some facilities such as:
    - Auto completion of words - a window listing possible completions for strings the user has typed
    - Syntax highlighting – keywords will be colourised
    - Brace highlighting
    - Folding/Hiding - making lines invisible or visible. It shows or hides a range of lines.
    - Multiple views - to have multiple views of the same Document. (Split view)
    - Breakpoint insertion/removal – to control the code in the debugging session

- Visualisation of line numbers



```
qs.view = QueryView.VIEW_PUBLISHED;
qs.sort = QuerySort.SORT_STANDARD;
qs.queryString = key;
qs.firstDoc = 0;
qs.lastDoc = 1;
var qr = new Array();
var maxres = sb.query(qs, qr);
var i, j;
var axObj = new AxmedisObject();
for(i = 0; i <qr.length ; ++i)
{
    print(qr[i].id+" "+qr[i].url);
    var doc = sb.getDocument(qr[i].id);
    axObj.addContent(doc);
    var meta = sb.getDocumentMetadata(qr[i].id);
    print("-> "+doc.mimeType+" ["+doc.size+"]");
    for(j = 0; j < meta.length; ++j)
    {
        print("--> "+meta[j].key+"["+meta[j].slice+"]="+meta[j].value);
    }
}
var res = axObj.getContent();
var content = res[0];
axObj.save("C:\\searchBox.xml");
var i = 0;
```

2. **Text/Html document view –** This is the window for the visualisation of the documentation provided by the help on line. It is opened when the user double clicks on a voice of the index in the *Library view* or when the internal help is called. It provides functionalities for browsing TXT or HTML pages. For example, all the information related to the description of a function selected from the *Library view* is shown in such window.

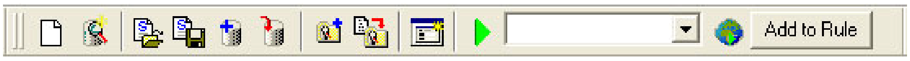
3. **Quick Starter -** It is be an interactive html page that will be displayed by means the HTML document viewer. It will provide functionality for:
    a. Edit a selection
    b. Save/Load a selection
    c. Actualise the selection

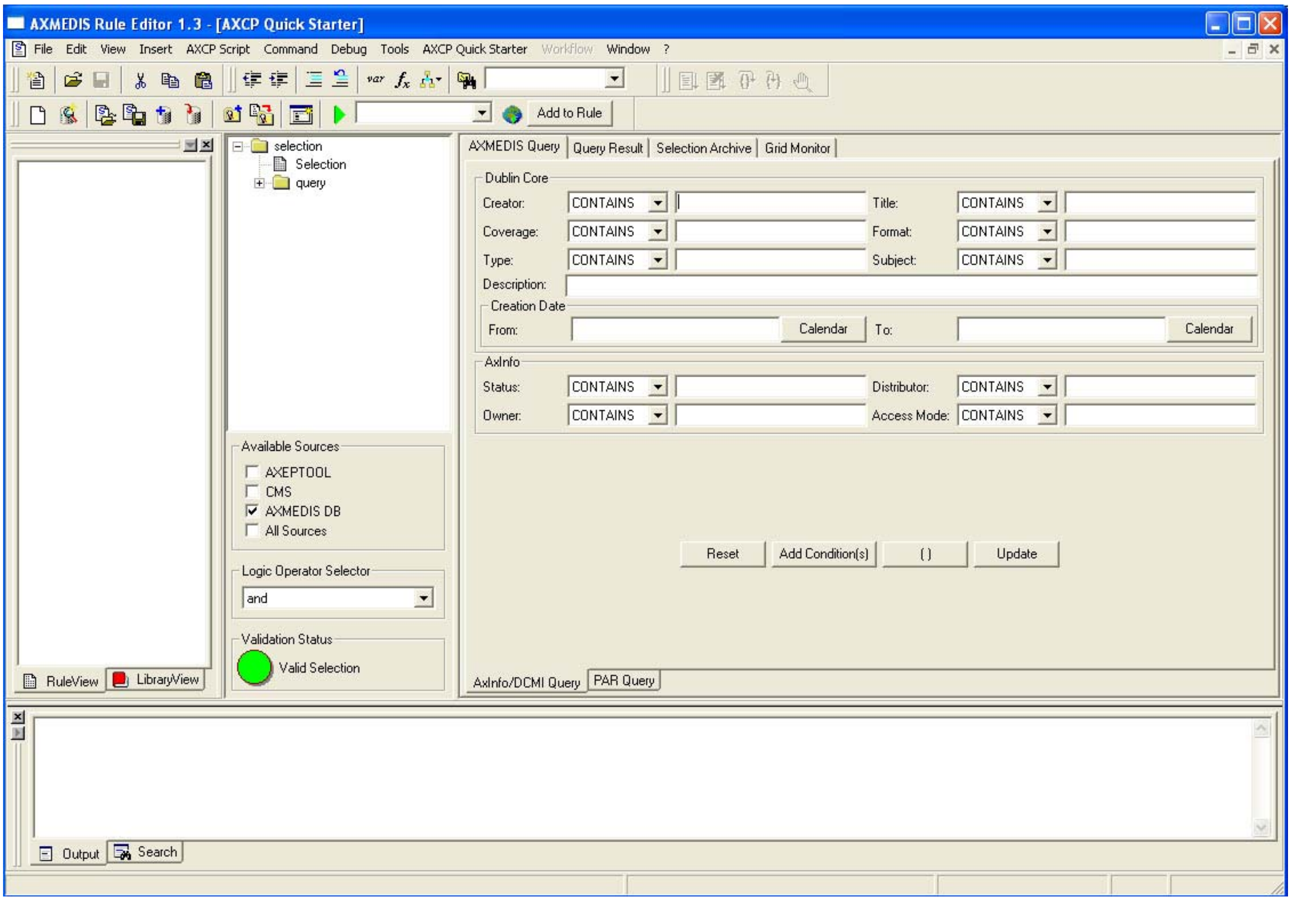
11.1.9 Quick starter ToolBar

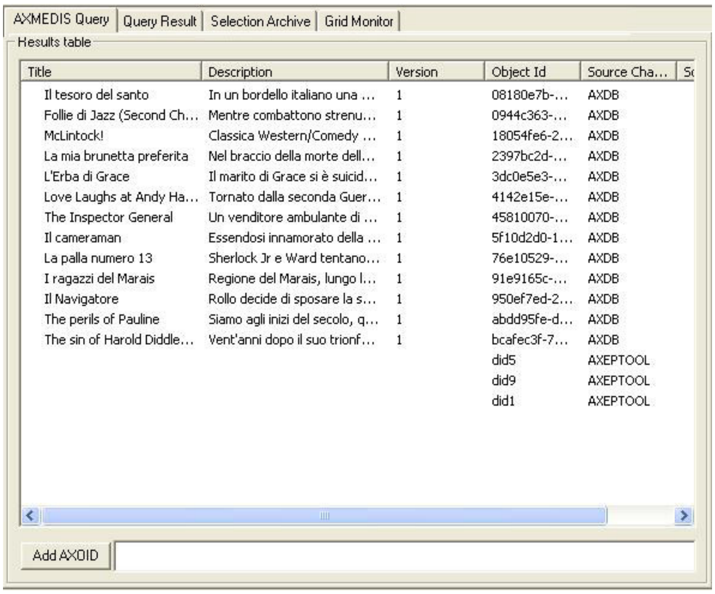
The Quick Starter provides a quick access to functions by means the following toolbar for:

1. Create a new selection
2. Insert a New Query
3. Open a Selection from disk
4. Save a Selection on disk
5. Import Selection from DB
6. Export Selection into DB
7. Import Query from Disk
8. Export Query to disk
9. Customize Query Panels

10. Run query
11. Selected query
12. Run selection
13. Add to Rule







Title	Description	Version	Object Id	Source Cha...	Sc
Il tesoro del santo	In un bordello italiano una ...	1	08180e7b-...	AXDB	
Follie di Jazz (Second Ch...	Mentre combattono strenu...	1	0944c363-...	AXDB	
McLintock!	Classica Western/Comedy ...	1	18054fe6-2...	AXDB	
La mia brunetta preferita	Nel braccio della morte dell...	1	2397bc2d-...	AXDB	
L'Erba di Grace	Il marito di Grace si è suicid...	1	3dc0e5e3-...	AXDB	
Love Laughs at Andy Ha...	Tornato dalla seconda Guer...	1	4142e15e-...	AXDB	
The Inspector General	Un venditore ambulante di ...	1	45810070-...	AXDB	
Il cameraman	Essendosi innamorato della ...	1	5f10d2d0-1...	AXDB	
La palla numero 13	Sherlock Jr e Ward tentano...	1	76e10529-...	AXDB	
I ragazzi del Marais	Regione del Marais, lungo l...	1	91e9165c-...	AXDB	
Il Navigatore	Rollo decide di sposare la s...	1	950ef7ed-2...	AXDB	
The perils of Pauline	Siamo agli inizi del secolo, q...	1	abdd95fe-d...	AXDB	
The sin of Harold Diddle...	Vent'anni dopo il suo trionf...	1	bcafec3f-7...	AXDB	
			did5	AXEPTOOL	
			did9	AXEPTOOL	
			did1	AXEPTOOL	

Query Result Panel

11.2 Relationship with other tools

The AXCP Rule Editor is related to Workflow tools and AXCP Rule Scheduler. The former for monitoring the rule creation and editing activity, the latter for posting and installing rules into the AXCP Grid Environment.

Finally, the current version of the Rule Editor embeds the Quick starter for creating, testing and simulating complex queries onto the AXMEDIS Query Support.

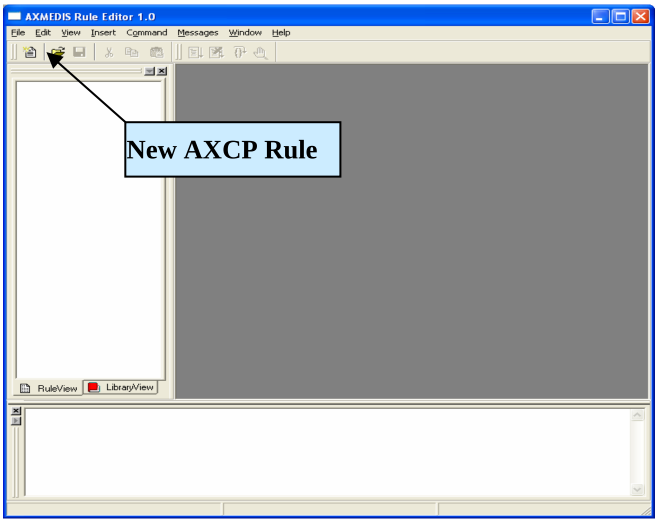
11.3 Detailed description of the functionalities and Screenshots

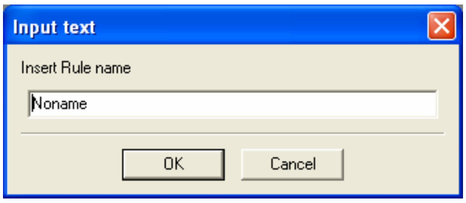
11.3.1 Editing on AXCP Rule

A content producer or manager wishes to create a content processing rule called AXCP Rule for manipulating/creating AXMEDIS multimedia objects. The AXCP Rule Editor is the editor for writing AXCP Rule. The AXCP Rule Editor GUI is a MDI window that manages a rule document at a time. The editor provides a set of tools and views to help the user during the editing and building of rule, writing JavaScript code. By opening the AXCP Rule Editor the user can create a rule to specify the time of firing. Once a rule has been created, the user can save it for re-editing at a future time or test the rule. Testing the rule enables the rule to be checked and debugged for any arising problems when executing the Javascript code and allows the user within the editor to make changes to successfully activating the rule.

11.3.2 Creating a new rule

To create a rule, the user starts the AXCP Rule Editor and from the opening screen creates a new Rule by selecting "*New*" from the tool bar or using the File menu (File → New) or using the keyboard shortcut "Ctrl+N" (see Screenshot 1). On requesting a new rule, the dialog box pops up and the user enters the name of the draft AXCP Rule and selects "OK" (see Screenshot 2).





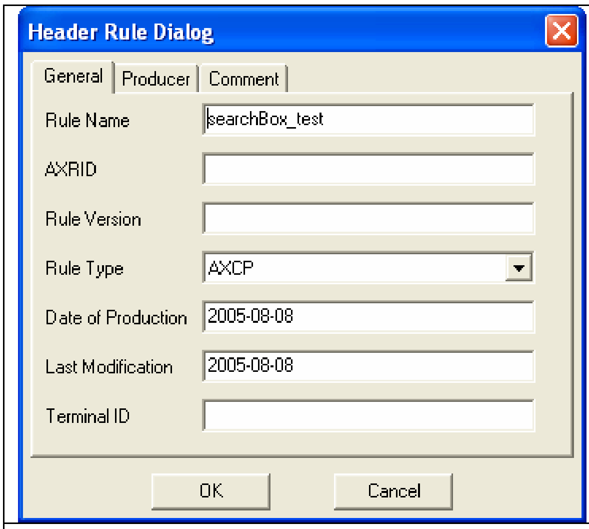
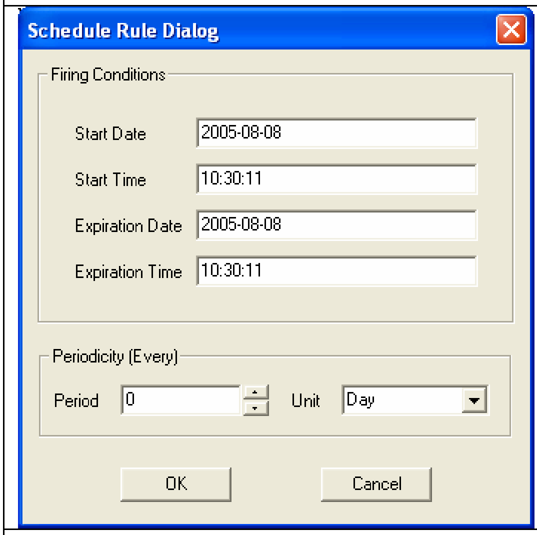
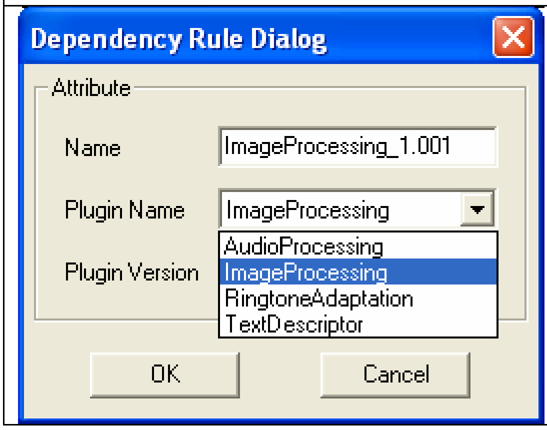
Insert Rule name

Noname

Open a new rule

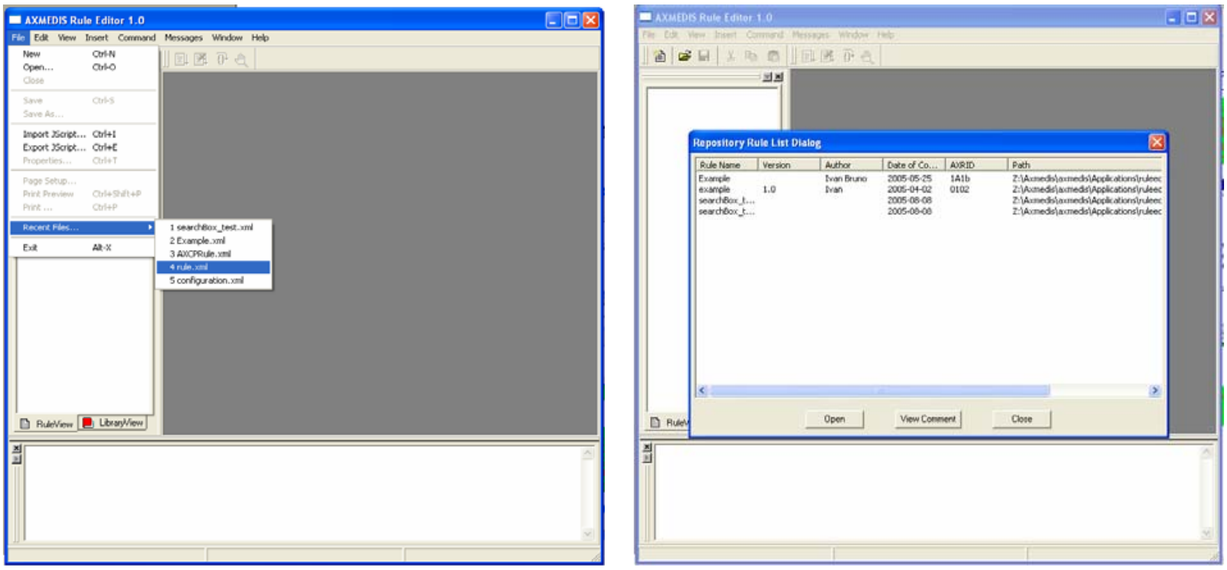
Input rule name dialog

After the rule name has been entered, the new rule is ready for editing with the '*tree view*' used as a workspace and the editing dialogs for editing the rule details and making a rule schedule.

 Header Rule Dialog General Producer Comment OK Cancel Rule Name: searchBox_test AXRID: Rule Version: Rule Type: AXCP Date of Production: 2005-08-08 Last Modification: 2005-08-08 Terminal ID:	**Header dialog** This is the dialog that allows filling fields of the header section. The dialog is an OK/Cancel modal dialog in a notebook style with *General*, *Producer* and *Comment* tab where the list of items to edit is displayed. **Note**: The AXRID field is read only and it is pre-filled with the identification code assigned by the rule editor
 Schedule Rule Dialog Firing Conditions Periodicity (Every) OK Cancel Start Date: 2005-08-08 Start Time: 10:30:11 Expiration Date: 2005-08-08 Expiration Time: 10:30:11 Period: 0 Unit: Day	**Schedule dialog** This dialog allows filling/editing fields for a schedule item. The dialog is as an OK/Cancel modal dialog and displays the list of items to edit. The dialog allows setting the start date and time, the expiration date and time, and the conditions of periodicity (how may times in term of unit such as days, week, month and so on)
 Dependency Rule Dialog Attribute AudioProcessing ImageProcessing RingtoneAdaptation TextDescriptor OK Cancel Name: ImageProcessing_1.001 Plugin Name: ImageProcessing Plugin Version:	**Dependency dialog** This dialog allows filling fields for a dependency item. The dialog is an OK/Cancel modal dialog and displays the list of available plug-ins in order to facilitate the choice.

11.3.3 Loading an existing rule

Instead of creating a new rule, the user may wish to edit an existing draft rule. The user may have saved it as a file somewhere or saved it in the AXCP Rule Repository. By selecting '*open*' or '*Rule List*' or selecting a file in the history list ('*Recent Files…*'), as seen in screenshot 4 and 5, the rule editor can load an existing draft rule from the Repository or elsewhere on the system.



Rule Name	Version	Author	Date of Co...	AXRID	Path
Example		Ivan Bruno	2005-05-25	1A1b	Z:\Axmedis\axmedis\Applications\ruleec
example	1.0	Ivan	2005-04-02	0102	Z:\Axmedis\axmedis\Applications\ruleec
searchBox_t...			2005-08-08		Z:\Axmedis\axmedis\Applications\ruleec
searchBox_t...			2005-08-08		Z:\Axmedis\axmedis\Applications\ruleec

Open commands shows the command Open dialog

The *Rule List* command opens a rules list modal dialog displaying all rules stored in the repository of the AXCP Rule editor. In this window, the list of rules will be organised in a table built on the following subset of metadata:

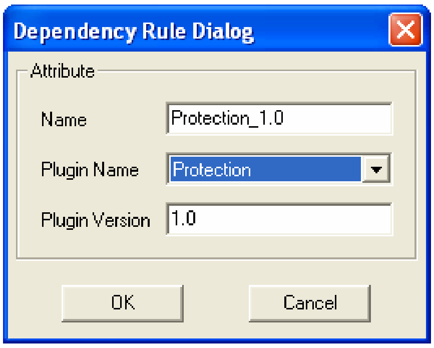
- *Rule Name*
- *Rule Version*
- *Author*
- *Date of composition*
- *Rule ID (AXRID)*

The user can select a specific rule in order to open it in the rule editor. Such operation is possible by pushing the *Open* button or double clicking on the line of the chosen rule. The user can visualize the comment associated with rule by pushing the *View Comment* button, the comment is displayed the *Output Area*. Otherwise the user can cancel the operation by closing the dialog or pushing the *Close* button.

11.3.4 Editing a rule

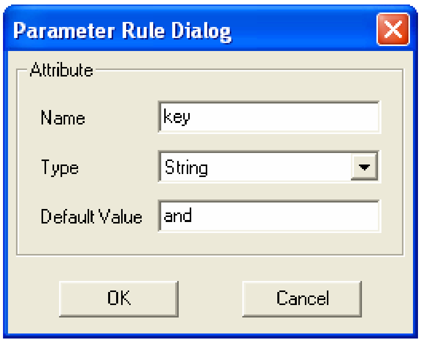
The user can use the set of dialog and text editor to edit the AXCP rule (as shown in screenshots), and edit rule data such as:

- Parameter dialog for editing the attributes of a rule parameter
- Dependency dialog for editing the attributes of a AXMEDIS Plug-In
- XML Quick starter (XML viewer/editor for the XML representation of selections) and JavaScript Editor based on Scintilla Editor for text/javascript code editing. It provides full editing capabilities (copy, cut, paste, redo, undo, syntax highlighting, etc…), print preview, page setup and print functionalities, syntax highlighting, brace highlighting, folding/hiding of lines, breakpoint insertion/removal, visualisation of line numbers



Name: Protection_1.0
Plugin Name: Protection
Plugin Version: 1.0

Dependency dialog



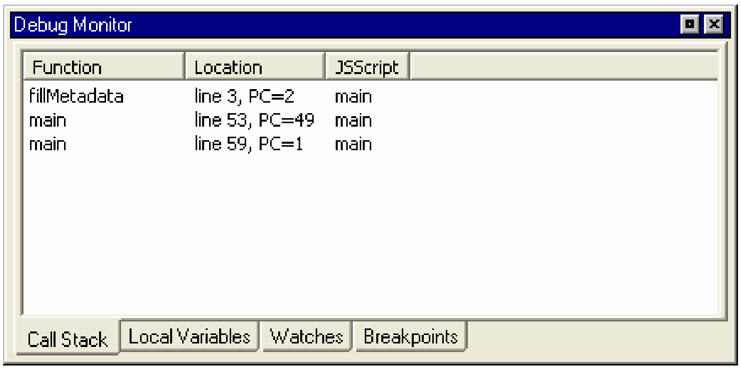
Name: key
Type: String
Default Value: and

Parameter dialog

11.3.5 Debugging Rule functionalities

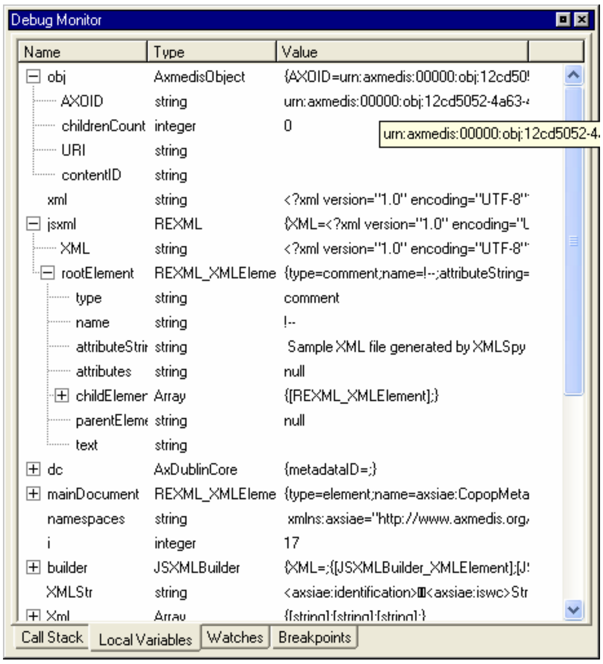
The editor provides functions to add/remove breakpoints (F9), start debug (F5), next breakpoint (F5), step over (F10) and step into (F11), stack calls monitoring, local variables visualization. In the output window a textual output provides internal errors or communication when script runs and during the debug session.

1. **Call Stack –** This a page of the Debug dockable window that displays stack of functions calls. It displays the script name and the line of the call. Double clicking on an entry level of the stack allows focusing the view of the script where the corresponding call is located.



Function	Location	JSScript
fillMetadata	line 3, PC=2	main
main	line 53, PC=49	main
main	line 59, PC=1	main

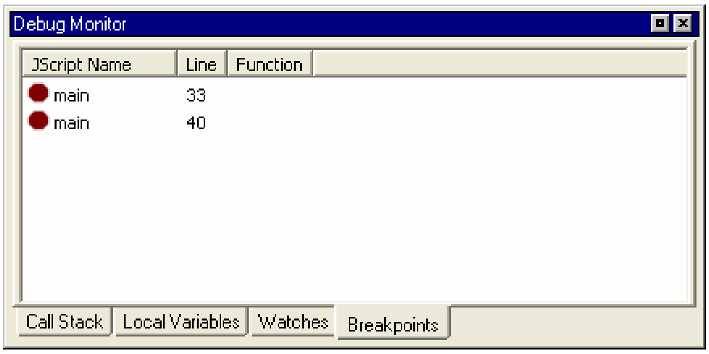
2. **Local Variables –** This is a page of the Debug dockable window that displays variables and instances of objects allocated by the script. They are displayed as tree list control with folding-unfolding capability for displaying the list of attributes of the object instance.



Name	Type	Value
⊟ obj	AxmedisObject	{AXOID=urn:axmedis:00000:obj:12cd50!
AXOID	string	urn:axmedis:00000:obj:12cd5052-4a63-4
childrenCount	integer	0
URI	string	
contentID	string	
xml	string	<?xml version="1.0" encoding="UTF-8"
⊟ jsxml	REXML	{XML=<?xml version="1.0" encoding="U
XML	string	<?xml version="1.0" encoding="UTF-8"
⊟ rootElement	REXML_XMLEleme	{type=comment;name=!--;attributeString=
type	string	comment
name	string	!--
attributeStrir	string	Sample XML file generated by XMLSpy
attributes	string	null
⊞ childElemer	Array	{[REXML_XMLElement];}
parentEleme	string	null
text	string	
⊞ dc	AxDublinCore	{metadataID=;}
⊞ mainDocument	REXML_XMLEleme	{type=element;name=axsiae:CopopMeta
namespaces	string	xmlns:axsiae="http://www.axmedis.org/
i	integer	17
⊞ builder	JSXMLBuilder	{XML=;{[JSXMLBuilder_XMLElement];[J!
XMLStr	string	<axsiae:identification>▯<axsiae:iswc>Str
⊞ Xml	Array	{[string]:[string]:[string]:}

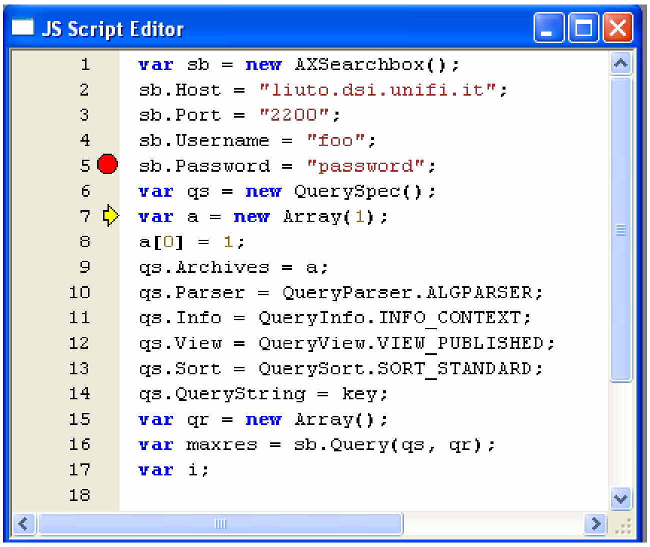
3. **Watches –** Not available in the current version.

4. **Breakpoints -** This a page of the Debug dockable window that displays the list of breakpoints inserted in the scripts: each breakpoint is associated with the name of the script and relative line number and status (Enabled or Disabled). Double clicking on a breakpoint allows focusing the view of the script where the breakpoint is placed.



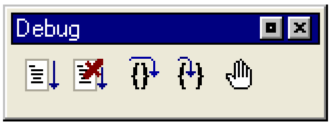
JScript Name	Line	Function
● main	33	
● main	40	

5. **Debug markers**:
   - A red filled cURle indicates an Enabled breakpoint
   - A red empty cURle indicates a Disabled breakpoint
   - A yellow arrow indicates the line that will be executed.



```
var sb = new AXSearchbox();
sb.Host = "liuto.dsi.unifi.it";
sb.Port = "2200";
sb.Username = "foo";
sb.Password = "password";
var qs = new QuerySpec();
var a = new Array(1);
a[0] = 1;
qs.Archives = a;
qs.Parser = QueryParser.ALGPARSER;
qs.Info = QueryInfo.INFO_CONTEXT;
qs.View = QueryView.VIEW_PUBLISHED;
qs.Sort = QuerySort.SORT_STANDARD;
qs.QueryString = key;
var qr = new Array();
var maxres = sb.Query(qs, qr);
var i;

```



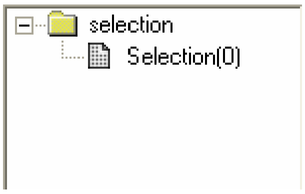
Main navigation interface of a Debug session

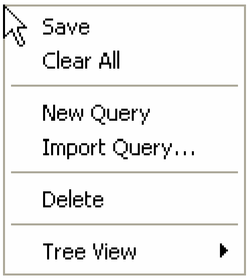
11.3.6 Activating a rule

The current version of the prototype allows installing a rule in the rule engine and notifying the completeness of the rule to the workflow manager. The activation can be done by using the *Activate* function in the Command menu or manually as described in the scenario 2.

11.3.7 Creating a selection Parameter

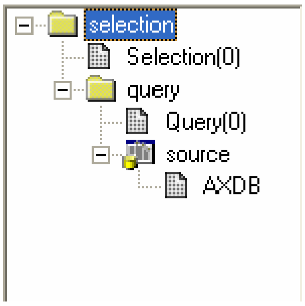
This section describes how to create a selection document as parameter for an AXCP Rule. The user has to Insert a selection parameter in the Arguments section (Insert→ Selection), the Quick starter opens an empty Selection document.



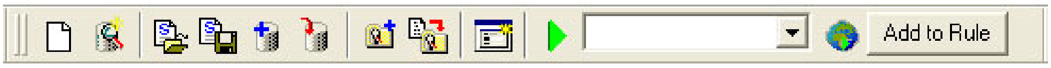


To add a new query the user can:

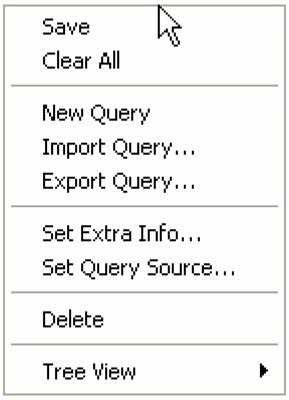
- Access to the popup menu on the tree view by right clicking on the “selection” item and then selecting the “New Query” function
- Use the AddQuery button of the toolbar



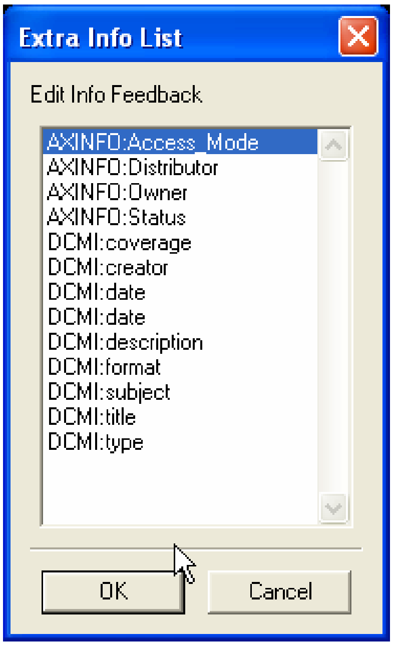
The new query becomes the current query and all operations affect it. The current query is displayed in the toolbar:



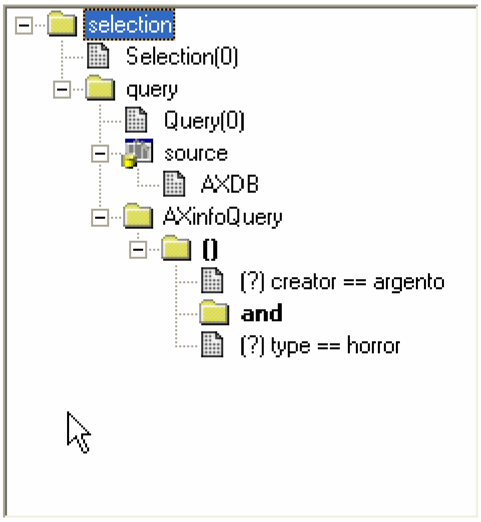
The new query is inserted and is filled with the source data choices currently set on the Available Sources. The source can be modified before adding or after the query. In both case the user has to selects sources in the corresponding panel. After the query insertion by right clicking on the new "query" item the popup menu on the tree view the user can select the "Set Query Source" function to apply the new sources.



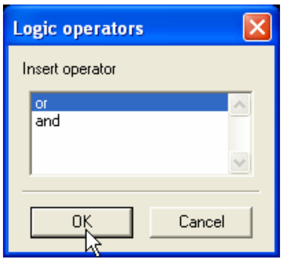
By means the Set Extra Info function on the same popup menu, the user can fill the query with the list of information to retrieve when the query is submitted to the Main Query Support. The function opens a multiple choice dialog as following:



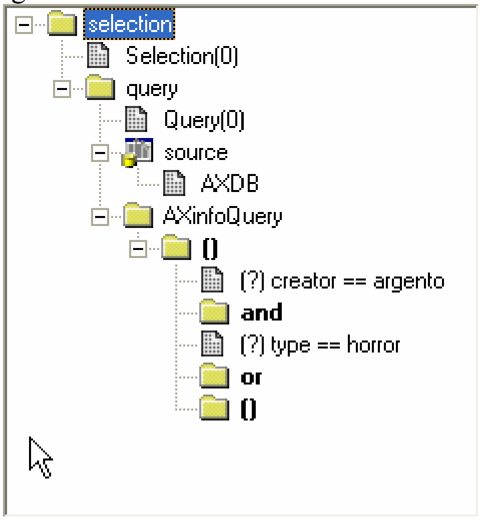
The user can start to insert conditions in the query by filling the fields in the Query Composer in a single or both panels. After filling, the user has to press the "AddCondition(s)" button to add them in the query.



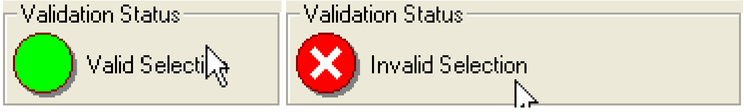
To add a nesting level, the user has to press the "()" button in the Query Composer. A dialog will appear asking for the logic connector to use



The "( )" will be inserted in the query and it will be the current level that can be edit. To change level the user has to select an existing nesting level.



During the editing the document is validated at runtime and the Validation Status panel provides the current status of the document:



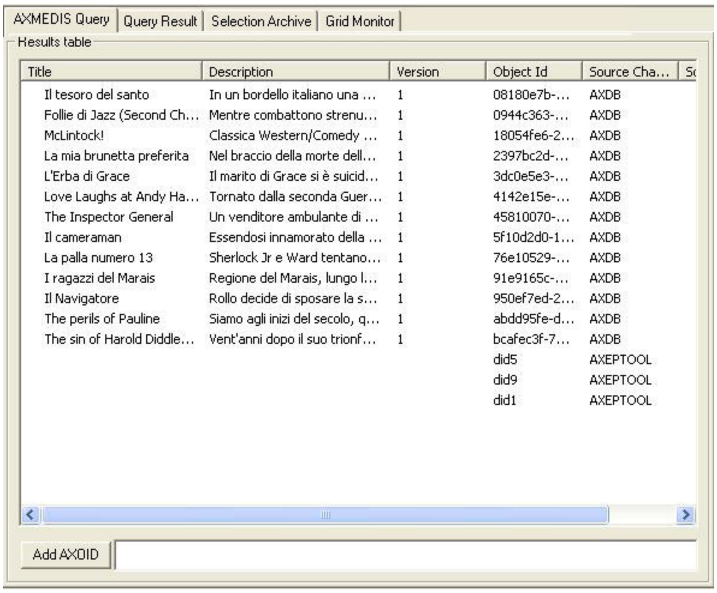
To remove an item the user can select the item on the tree and by accessing to the popup menu calls the "delete" function.

11.3.8 Editing a selection Parameter

We assume to have an existing selection parameter to edit. The user has to open the popup menu by right clicking on the selection item in the tree view.

11.3.9 Testing a query

The user selects the query or by clicking on the query item of the tree or by choosing it on the toolbar in the choice box. Then, the user clicks on the ▶ button on the toolbar to send the submission to the Query Support. The result is displayed in the Query Result panel.



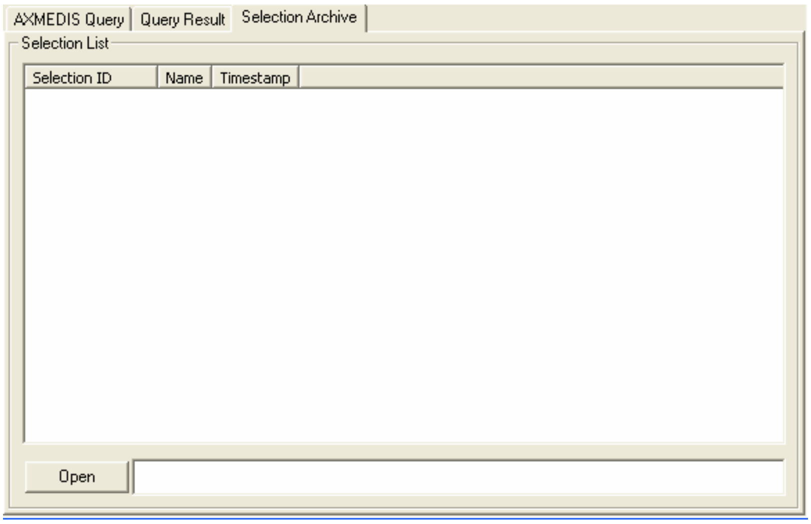
Title	Description	Version	Object Id	Source Cha...	S
Il tesoro del santo	In un bordello italiano una ...	1	08180e7b-...	AXDB	
Follie di Jazz (Second Ch...	Mentre combattono strenu...	1	0944c363-...	AXDB	
McLintock!	Classica Western/Comedy ...	1	18054fe6-2...	AXDB	
La mia brunetta preferita	Nel braccio della morte dell...	1	2397bc2d-...	AXDB	
L'Erba di Grace	Il marito di Grace si è suicid...	1	3dc0e5e3-...	AXDB	
Love Laughs at Andy Ha...	Tornato dalla seconda Guer...	1	4142e15e-...	AXDB	
The Inspector General	Un venditore ambulante di ...	1	45810070-...	AXDB	
Il cameraman	Essendosi innamorato della ...	1	5f10d2d0-1...	AXDB	
La palla numero 13	Sherlock Jr e Ward tentano...	1	76e10529-...	AXDB	
I ragazzi del Marais	Regione del Marais, lungo l...	1	91e9165c-...	AXDB	
Il Navigatore	Rollo decide di sposare la s...	1	950ef7ed-2...	AXDB	
The perils of Pauline	Siamo agli inizi del secolo, q...	1	abdd95fe-d...	AXDB	
The sin of Harold Diddle...	Vent'anni dopo il suo trionf...	1	bcafec3f-7...	AXDB	
			did5	AXEPTOOL	
			did9	AXEPTOOL	
			did1	AXEPTOOL	

11.3.10 Load and Save a selection from/to the Selection Archive

A selection document can be loaded/saved from/to the Selection Archive.

To save a selection into the Archive, the user can clicks on the icon.

To open an existing selection by loading from the Archive the user can click on the icon and the list of available selection document is displayed in the Selection Archive panel. To ask for loading a document, the user selects the selection and by pressing the Open button, it will be loaded and the displayed in the editor.



11.3.11 Load and Save a selection from/to the File System

A selection document can be loaded/saved from/to the File System.

To save a selection into the File System , the user can clicks on the icon.

To open an existing selection by loading from the File System the user can click on the icon

11.3.12 Conclusion

Using the AXCP Rule Editor, the user can write an AXCP Rule and edit it to set when and how the digital contents have to be processed. Once checked, the activated rule is sent to the AXCP Rule Engine which uses AXMEDIS tools to run the javascript that describes the content processing procedure.

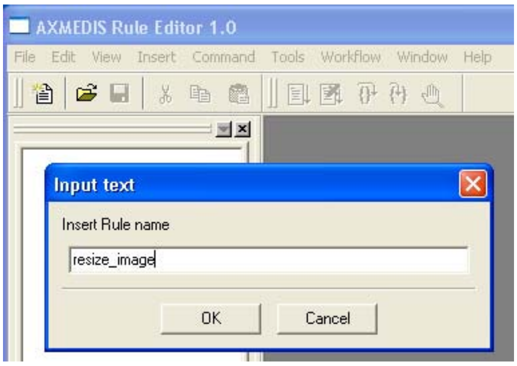
11.4 How to Create a rule, a small tutorial

In this tutorial we will show how to create a number of simple rules from scratch.

11.4.1 EXAMPLE 1 – Rule without parameters (Simple rule)

The first example will show how to create a simple script for resizing an image resource named *AXMEDIS_logo.png* stored in the C:\\ path and saving the new resized image on the disk.

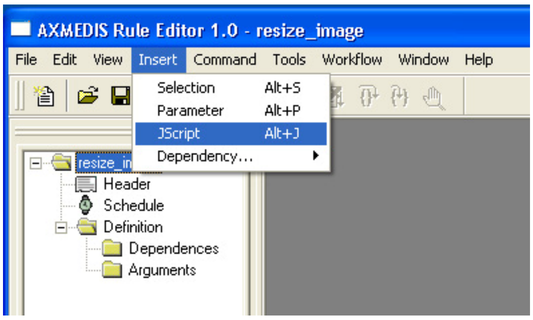
- Choose menu **File/New** or click on the icon;
- Insert the name of the rule , for example *resize_image;*



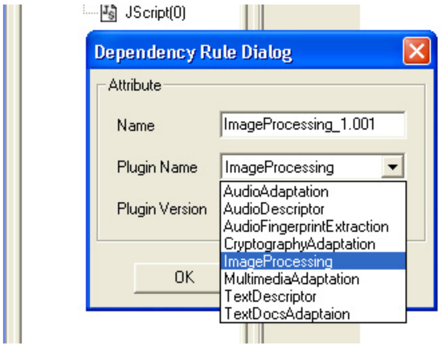
Insert Rule name

resize_image

- Choose the menu **Insert/JScript**, a new window will be opened where to write the JavaScript for the rule;



- In the tree view (Rule view in the workspace panel) select "Dependences" folder and right click on it Choose **Insert Dependencies/Tool** in the menu to use functionalities provided by the AXMEDIS plug-ins.
- In the Dependency Rule Dialog select **ImageProcessing** in the **Plugin Name** choice box


Dependency Rule Dialog

Attribute

Name: ImageProcessing_1.001

Plugin Name: ImageProcessing

Plugin Version

- Selecting the **JScript** element on the tree view, the JS Editor, previously opened, will be activated. Then, write the following javascript piece of code in it

```
1   // 1) create an empty resource
2   var image = new AxResource();
3
4   // 2) load the image file by the selected path
5   image.load("C:\\AXMEDIS_logo.png");
6
7   // 3) Use the Image Processing plugin for scaling the image
8   ImageProcessing.Resize(image,320,200,true,image);
9   // the Resize function of the Image Processing plugin scales the image at 320*200
10  // size maintaining the Aspect ratio and overwriting the new image
11
12  // 4) the scaled image is saved as "img_scaled.png
13  image.save("c:\\img_scaled");
```

Note: The line with "//" are comments and describe the meaning of javascript instruction.

In this example, the instruction to resize the image is the function in line 8 `ImageProcessing.Resize` followed by a number of parameters into parenthesis. Selecting the **LibraryView** tab it is possible to see the complete list of available processing functions. By double clicking on the **Resize** function in the **ImageProcessing** folder will appear the help window showing the needed parameters.
In this case the **Resize** function needs the following parameters:

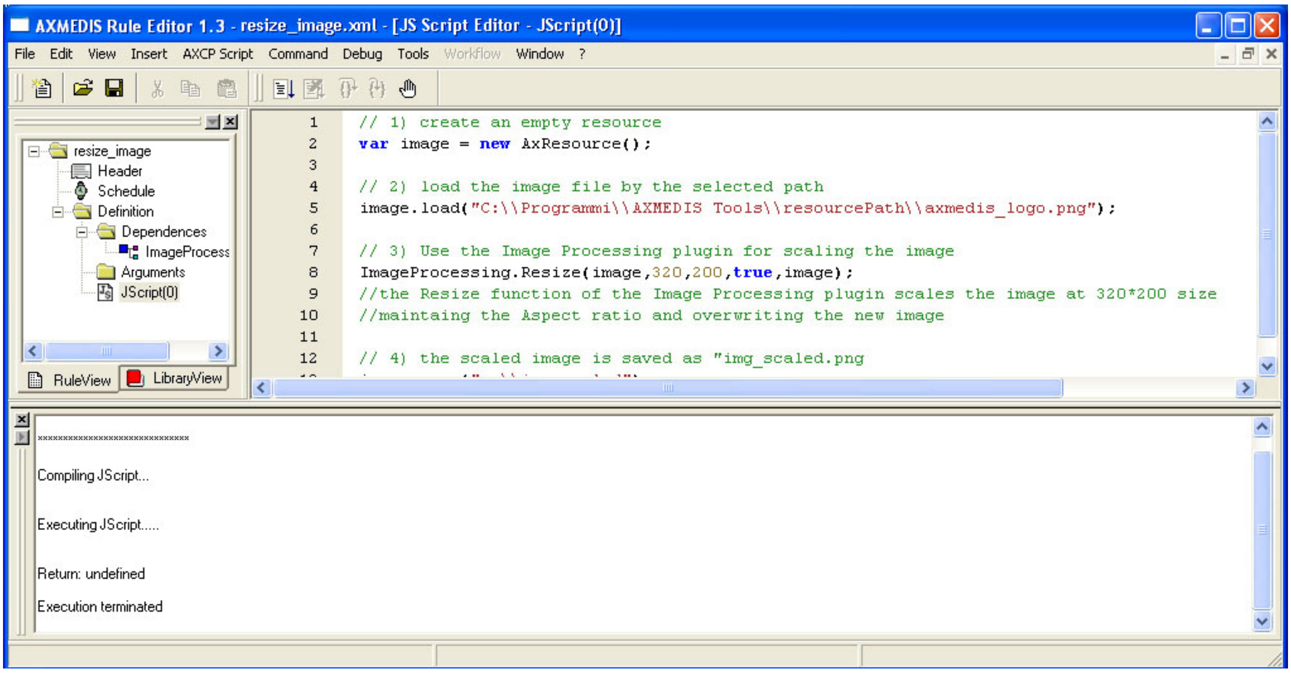
- the resource to be resized (i.e. in our script is `image)`
- the new image width (i.e. `320` in our script)
- the new image height (i.e. `200` in our script)

- an indication for preserving the image aspect ratio or not (i.e. `true` in our case will preserve the aspect ratio)
- the output resource, (i.e. `image` in our case: this will replace the original image with the new resized one)

The order of parameters is important to use correctly the function and avoid possible execution errors.

Now, we can continue to produce our first rule by:

- Saving the rule in the menu **File/Save**
- Running the rule pressing the **Start Debug** button
- The output windows, on bottom of the editor, will show if errors are present in the script, the "Execution terminated" message advises the end of run.



AXMEDIS Rule Editor 1.3 - resize_image.xml - [JS Script Editor - JScript(0)]
File Edit View Insert AXCP Script Command Debug Tools Workflow Window ?
resize_image
Header
Schedule
Definition
Dependences
ImageProcess
Arguments
JScript(0)
RuleView
LibraryView

```
// 1) create an empty resource
var image = new AxResource();

// 2) load the image file by the selected path
image.load("C:\\Programmi\\AXMEDIS Tools\\resourcePath\\axmedis_logo.png");

// 3) Use the Image Processing plugin for scaling the image
ImageProcessing.Resize(image,320,200,true,image);
//the Resize function of the Image Processing plugin scales the image at 320*200 size
//maintaining the Aspect ratio and overwriting the new image

// 4) the scaled image is saved as "img_scaled.png
```

```
******************************

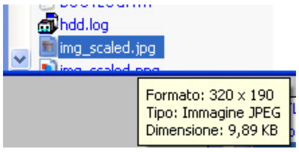
Compiling JScript...

Executing JScript.....

Return: undefined

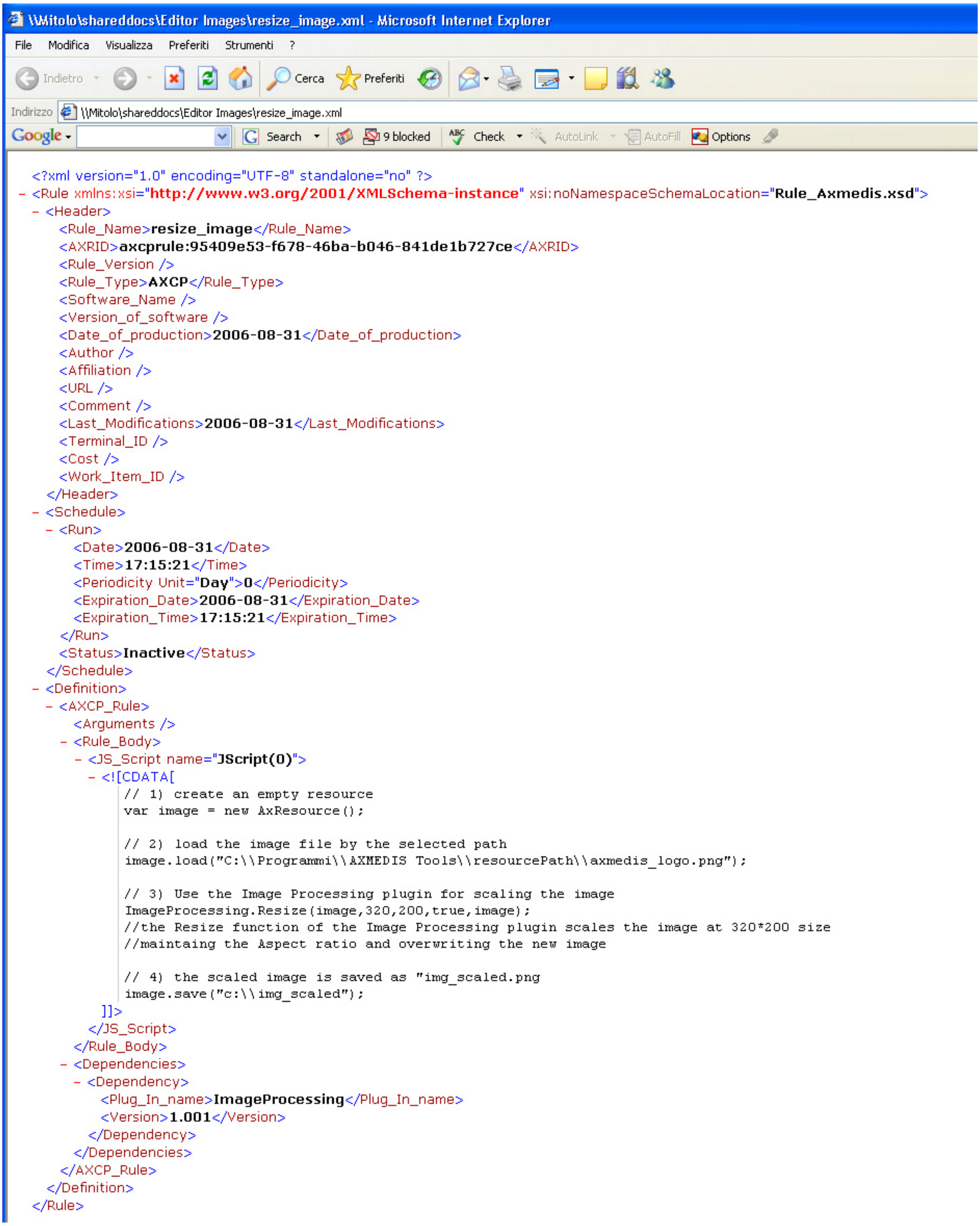
Execution terminated
```

- After the rule execution , it is possible to open the new resource created on the disk in the C:\\ path and named *img_scaled.png*.



Formato: 320 x 190
Tipo: Immagine JPEG
Dimensione: 9,89 KB

When we save a rule initially edited as JavaScript code the Rule Editor saves it in an xml file. In the previous example, the *image_resize.xml* file is the following:


\\Mitolo\shareddocs\Editor Images\resize_image.xml - Microsoft Internet Explorer
File Modifica Visualizza Preferiti Strumenti ?
Indietro
Cerca
Preferiti
Indirizzo \\Mitolo\shareddocs\Editor Images\resize_image.xml
Google
Search
9 blocked
Check
AutoLink
AutoFill
Options

```
  <?xml version="1.0" encoding="UTF-8" standalone="no" ?>
- <Rule xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="Rule_Axmedis.xsd">
  - <Header>
      <Rule_Name>resize_image</Rule_Name>
      <AXRID>axcprule:95409e53-f678-46ba-b046-841de1b727ce</AXRID>
      <Rule_Version />
      <Rule_Type>AXCP</Rule_Type>
      <Software_Name />
      <Version_of_software />
      <Date_of_production>2006-08-31</Date_of_production>
      <Author />
      <Affiliation />
      <URL />
      <Comment />
      <Last_Modifications>2006-08-31</Last_Modifications>
      <Terminal_ID />
      <Cost />
      <Work_Item_ID />
    </Header>
  - <Schedule>
    - <Run>
        <Date>2006-08-31</Date>
        <Time>17:15:21</Time>
        <Periodicity Unit="Day">0</Periodicity>
        <Expiration_Date>2006-08-31</Expiration_Date>
        <Expiration_Time>17:15:21</Expiration_Time>
      </Run>
      <Status>Inactive</Status>
    </Schedule>
  - <Definition>
    - <AXCP_Rule>
        <Arguments />
      - <Rule_Body>
        - <JS_Script name="JScript(0)">
          - <![CDATA[
               // 1) create an empty resource
               var image = new AxResource();

               // 2) load the image file by the selected path
               image.load("C:\\Programmi\\AXMEDIS Tools\\resourcePath\\axmedis_logo.png");

               // 3) Use the Image Processing plugin for scaling the image
               ImageProcessing.Resize(image,320,200,true,image);
               //the Resize function of the Image Processing plugin scales the image at 320*200 size
               //maintaing the Aspect ratio and overwriting the new image

               // 4) the scaled image is saved as "img_scaled.png
               image.save("c:\\img_scaled");
            ]]>
          </JS_Script>
        </Rule_Body>
      - <Dependencies>
        - <Dependency>
            <Plug_In_name>ImageProcessing</Plug_In_name>
            <Version>1.001</Version>
          </Dependency>
        </Dependencies>
      </AXCP_Rule>
    </Definition>
  </Rule>
```

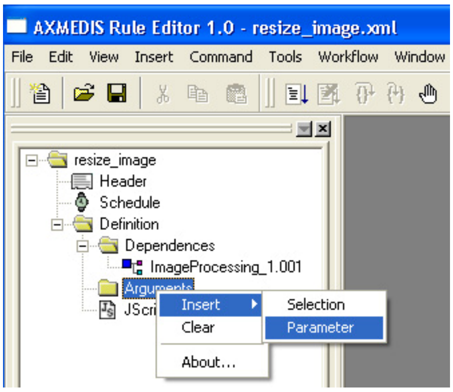
11.4.2 EXAMPLE 2 – Rule with Parameters

In the following example we will generalize the previous script inserting some generic arguments in the script.

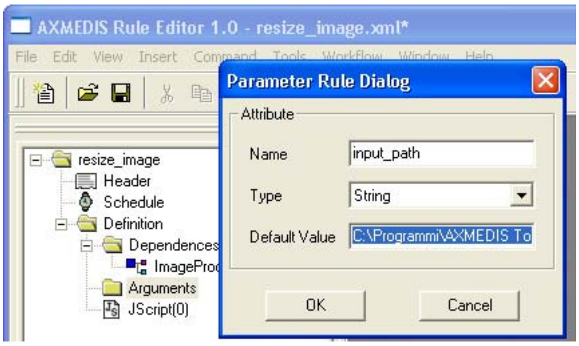
Instead to specify directly in the rule where the resource has to be loaded and saved (as specified in line 5 and 13 of the previous script), we can specify a generic argument in the script. In this manner the rule will remain valid and will be not modified in the future.

To do this we have to add a number of parameters in our rule.

- right click on the **Arguments** element in the tree view and select **Insert/Parameter** in the contextual menu;



- Add a first argument (the resource to be resized, in this case is the AXMEDIS logo in png format stored in the `C:\Programmi\AXMEDISTools\resourcePath` path)
  - **Name** `input_path`
  - **Type** `String`
  - **Default Value** `C:\Programmi\AXMEDISTools\resourcePath\AXMEDIS_logo.png`



Name: input_path
Type: String
Default Value: C:\Programmi\AXMEDIS To

- Add a second argument (the resized output resource will be saved in C:)
  - **Name** `output_path`
  - **Type** `String`
  - **Default Value** `c:\img_scaled`
- Add a second argument (the new image width is 320 pixels)
  - **Name** `width`
  - **Type** `Integer`
  - **Default Value** `320`
- Add a third argument (the new image height is 200 pixel)
  - **Name** `height`
  - **Type** `Integer`

  - **Default Value** `200`
- Add a forth argument for a conversion of the image in jpeg format
  - **Name** `out_mime_type`
  - **Type** `String`
  - **Default Value** `image/jpeg`

Now we have to change the script deleting the specific path overwriting then with the new generic arguments and adding a new line for the format conversion. The script is the following:

```
1   // 1) create an empty resource
2   var image = new AxResource();
3
4   // 2) load the image file by the "input_path" argument
5   image.load(input_path);
6
7   // 3) Use the Image Processing plugin for scaling the image
8   ImageProcessing.Resize(image,width,height,true,image);
9   // the "Resize" function of the Image Processing plugin scales the image at 320*200
10  // size maintaining the Aspect ratio and overwriting the new image
11
12  // 4) Use the Image Processing plugin for "Conversion" the image
13  ImageProcessing.Conversion(image,out_mime_type,image);
14  // the "Conversion" function of the Image Processing plugin converts the image
15  // and overwriting the new image
16
17  // 5) the scaled image is saved in the location specified by the "output_path" argument
18  image.save(output_path);
```

When the rule is executed a new image named `img_scaled.jpg` will be saved in C:

11.4.3 EXAMPLE 3 – Rule for creating AXMEDIS Object

As third example we will se how apply the rule to an AXMEDIS object.
More in deep we will create a new AXMEDIS object with the new converted image as embedded resource.
To do this we have firstly to delete the output image path in line 18 adding only three instructions:

```
// Create an empty AXMEDIS object
var axObj = new AXMEDISObject();

// Add the image resource as a new content
axObj.addContent(image);

// Save the AXMEDIS object
axObj.save("c:\\newAXMEDISObject.axm");
```

The final script is the following:

```
1   // 1) create an empty resource
2   var image = new AxResource();
3
4   // 2) load the image file by the "input_path" argument
5   image.load(input_path);
6
7   // 3) Use the Image Processing plugin for scaling the image
8   ImageProcessing.Resize(image,width,height,true,image);
9   // the "Resize" function of the Image Processing plugin scales the image at 320*200
10  // size maintaining the Aspect ratio and overwriting the new image
11
12  // 4) Use the Image Processing plugin for "Conversion" the image
13  ImageProcessing.Conversion(image,out_mime_type,image);
14  // the "Conversion" function of the Image Processing plugin converts the image
15  // and overwriting the new image
```

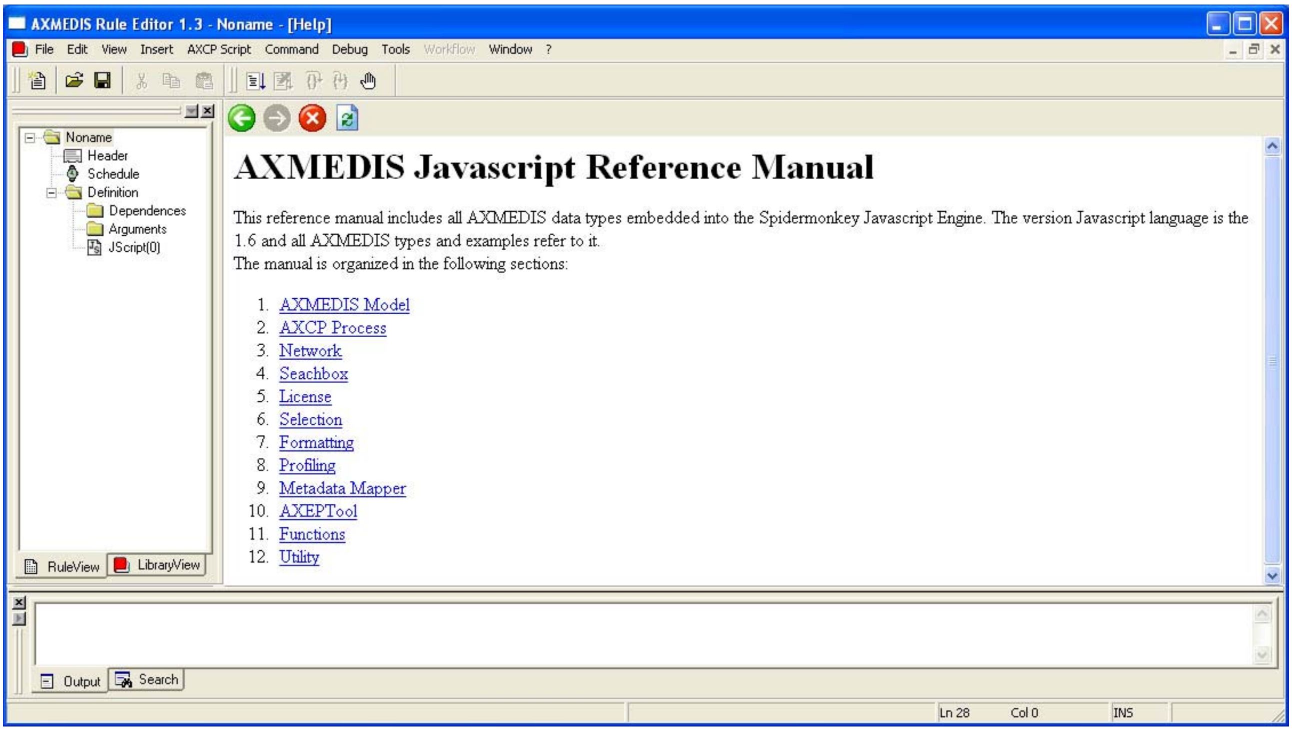
```

// Create an empty AXMEDIS object
var axObj = new AXMEDISObject();

// Add the image resource as a new content
axObj.addContent(image);

// Save the AXMEDIS object
axObj.save("c:\\newAXMEDISObject.axm");
```

All the available functions interacting with the AXMEDIS Editor are listed and explained in the **AXMEDIS Javascript Reference Manual** available in the **Help/About** menu.


AXMEDIS Rule Editor 1.3 - Noname - [Help]
File Edit View Insert AXCP Script Command Debug Tools Workflow Window ?
Noname
Header
Schedule
Definition
Dependences
Arguments
JScript(0)
RuleView
LibraryView
Output
Search
Ln 28
Col 0
INS

AXMEDIS Javascript Reference Manual

This reference manual includes all AXMEDIS data types embedded into the Spidermonkey Javascript Engine. The version Javascript language is the 1.6 and all AXMEDIS types and examples refer to it.
The manual is organized in the following sections:

1. AXMEDIS Model
2. AXCP Process
3. Network
4. Seachbox
5. License
6. Selection
7. Formatting
8. Profiling
9. Metadata Mapper
10. AXEPTool
11. Functions
12. Utility

12 AXMEDIS Rule Engine - Rule Scheduler

12.1 Main functionalities

The AXCP Rule engine is divided in two main components:

- **Rule Scheduler (Server Side)** – It consists of an internal Scheduler and Dispatcher. It performs the operations of rule installation, rule firing, rule executor discovering and management, rules dispatching, communication with the AXMEDIS environment, etc….
- **Rule Remote Executor** (**Client Side**) – It is the executor of rules and consists of a script engine based on JavaScript (JS) SpiderMonkey released by Mozilla. It runs the JavaScript code associated with rule.

12.2 Relationship with other tools

The AXCP Rule Scheduler is related to Workflow tools for monitoring the GRID activity and rules.

12.3 Detailed description of the functionalities and Screenshots

The Rule Scheduler GUI is the main window that allows the interaction with the Scheduler. It is constituted of:

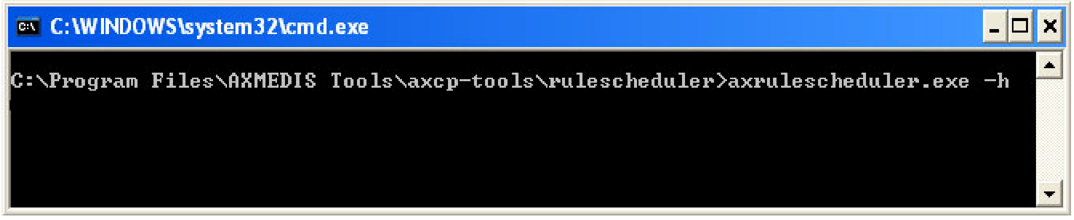
1. A menu bar
2. Two main areas where the list of rules and the list of remote executors are displayed.
3. A status bar where the current clock and the current date are displayed.

12.3.1 Command line options

The stand alone Rule Scheduler can be also launched by using the command line, specifying the program name (axrulescheduler.exe)followed by one or more parameters.

In the command line it is possible to use the following options:
-*s* to launch the scheduler and to start the Grid Peer functions
-*h* to minimize the rule scheduler in the task bar

The following is an example of command line to launch the Rule Scheduler minimized in the task bar.

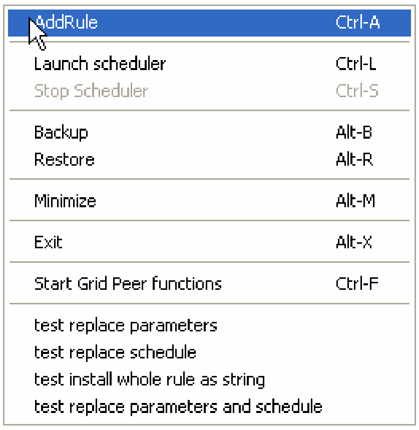


```
C:\Program Files\AXMEDIS Tools\axcp-tools\rulescheduler>axrulescheduler.exe -h
```

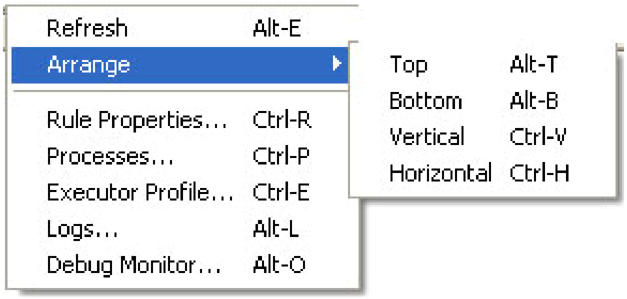
12.3.2 Menu bar

It provides the access to the following set of functions:

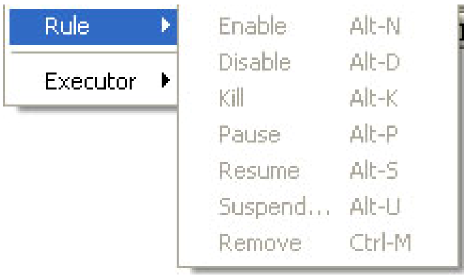
1. **Program**
   a. *Add Rule* – It allows to load rules and install into the scheduler
   b. *Launch scheduler* - Start the scheduler activity.
   c. *Stop scheduler* - Stop the scheduler activity.
   d. *Backup* - Backup Copy of the last jobs list.
   e. *Restore* – Restore a backup copy
   f. *Minimize* - It reduces at icon on the taskbar.
   g. *Exit* - Close the application.
   h. *Start Grid Peer Functions* – It starts the components for P2P network access

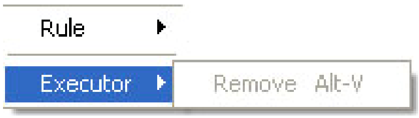


2. **Settings**
   a. *Preferences* - Open an editable dialog with the set of configuration parameters.
3. **View**
   a. *Refresh* – Update the list of jobs and list of remote executors.
   b. *Arrange* – Repainting modes of tables in the main frame
      i. *Top* – It shows only the top table (Table of rules)
      ii. *Bottom* – It shows only the bottom table (Table of executors)
      iii. *Vertical* – It shows tables vertically
      iv. *Horizontal* – It shows tables horizontally
   c. *Rule Properties…* - Open a Rule Properties dialog.
   d. *Executor Profile…*- Open an Executor Profile dialog.
   e. *Logs…*- Open a dialog to show the list of log messages
   f. *Debug Monitor…*A dialog for debug purpose



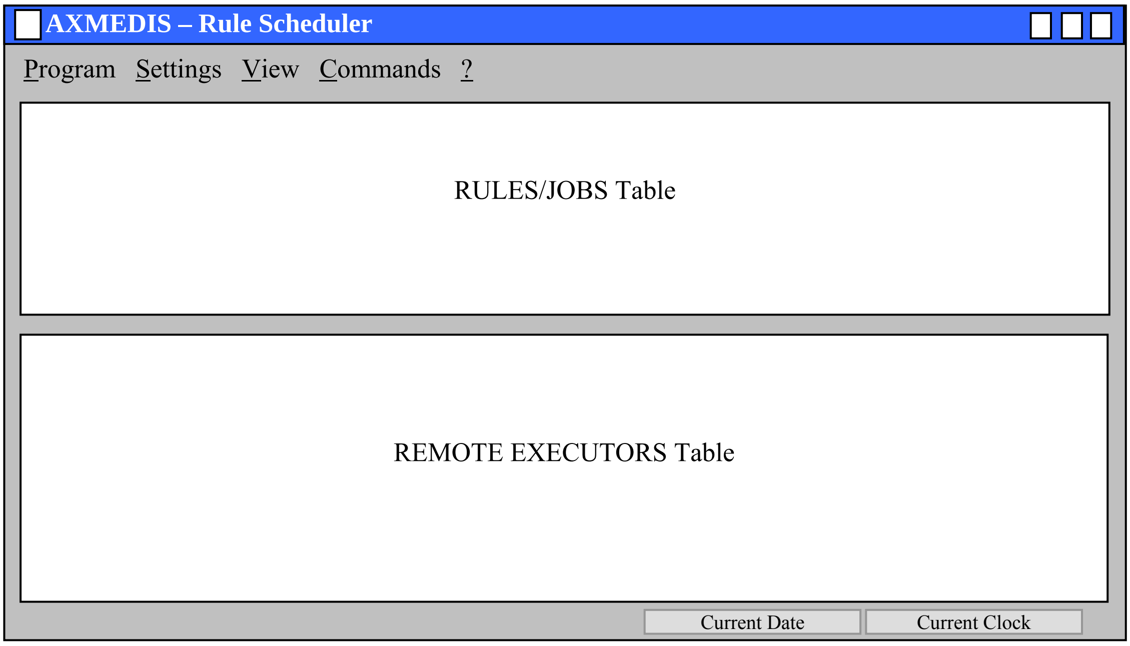
4. **Commands**
   a. *Rule*
      i. *Enable Rule* - Put in the “ACTIVE” status the current selected inactive rule.
      ii. *Disable Rule* - Put in the “INACTIVE” status the current selected active rule.
      iii. *Kill Rule* - Kill the current execution of the current selected rule.
      iv. *Pause Rule* - Put in pause the execution the current selected rule.
      v. *Resume Rule* - Resume the execution of the current selected rule.
      vi. *Suspend Rule…* - Open a dialog to edit the temporal interval for rule resuming and then suspend the current selected rule.
      vii. *Remove Rule* – Remove the rule from the list of rules
   b. *Executor*
      i. *Remove*

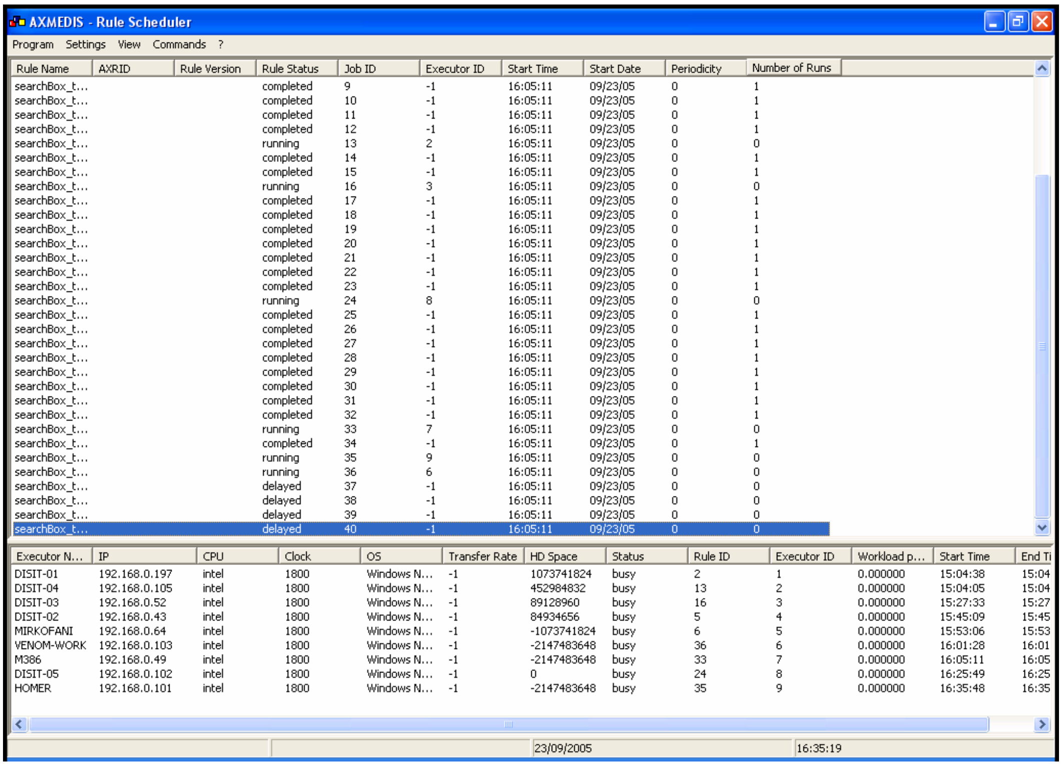




5. **Other**
   a. *Help* - Open the On Line help.
   b. *About* - Open a dialog with credits.

All this functionalities are also accessible by means shortcuts.





Rule Name	AXRID	Rule Version	Rule Status	Job ID	Executor ID	Start Time	Start Date	Periodicity	Number of Runs
searchBox_t...			completed	9	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	10	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	11	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	12	-1	16:05:11	09/23/05	0	1
searchBox_t...			running	13	2	16:05:11	09/23/05	0	0
searchBox_t...			completed	14	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	15	-1	16:05:11	09/23/05	0	1
searchBox_t...			running	16	3	16:05:11	09/23/05	0	0
searchBox_t...			completed	17	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	18	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	19	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	20	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	21	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	22	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	23	-1	16:05:11	09/23/05	0	1
searchBox_t...			running	24	8	16:05:11	09/23/05	0	0
searchBox_t...			completed	25	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	26	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	27	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	28	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	29	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	30	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	31	-1	16:05:11	09/23/05	0	1
searchBox_t...			completed	32	-1	16:05:11	09/23/05	0	1
searchBox_t...			running	33	7	16:05:11	09/23/05	0	0
searchBox_t...			completed	34	-1	16:05:11	09/23/05	0	1
searchBox_t...			running	35	9	16:05:11	09/23/05	0	0
searchBox_t...			running	36	6	16:05:11	09/23/05	0	0
searchBox_t...			delayed	37	-1	16:05:11	09/23/05	0	0
searchBox_t...			delayed	38	-1	16:05:11	09/23/05	0	0
searchBox_t...			delayed	39	-1	16:05:11	09/23/05	0	0
searchBox_t...			delayed	40	-1	16:05:11	09/23/05	0	0

Executor N...	IP	CPU	Clock	OS	Transfer Rate	HD Space	Status	Rule ID	Executor ID	Workload p...	Start Time	End Ti
DISIT-01	192.168.0.197	intel	1800	Windows N...	-1	1073741824	busy	2	1	0.000000	15:04:38	15:04
DISIT-04	192.168.0.105	intel	1800	Windows N...	-1	452984832	busy	13	2	0.000000	15:04:05	15:04
DISIT-03	192.168.0.52	intel	1800	Windows N...	-1	89128960	busy	16	3	0.000000	15:27:33	15:27
DISIT-02	192.168.0.43	intel	1800	Windows N...	-1	84934656	busy	5	4	0.000000	15:45:09	15:45
MIRKOFANI	192.168.0.64	intel	1800	Windows N...	-1	-1073741824	busy	6	5	0.000000	15:53:06	15:53
VENOM-WORK	192.168.0.103	intel	1800	Windows N...	-1	-2147483648	busy	36	6	0.000000	16:01:28	16:01
M386	192.168.0.49	intel	1800	Windows N...	-1	-2147483648	busy	33	7	0.000000	16:05:11	16:05
DISIT-05	192.168.0.102	intel	1800	Windows N...	-1	0	busy	24	8	0.000000	16:25:49	16:25
HOMER	192.168.0.101	intel	1800	Windows N...	-1	-2147483648	busy	35	9	0.000000	16:35:48	16:35

23/09/2005 16:35:19

12.3.3 Rules/Jobs Table

It is the area where scheduled rules are displayed. It is a list control constituted of a set of columns where the following list of metadata is displayed:

- *Rule name* –the name of the rule
- *Rule version* –the version of rule
- *Rule status* –the current status of rule
- *Rule ID* –the identifier of rule
- *Executor ID* –the identifier of the executor associated with rule
- *Start Time* –the time to fire the rule
- *Start Date* –the date to fire the rule
- *Periodicity* –the periodic attribute
- *N° Runs* –the number of time the rule was fired.

Name	Version	Status	ID	Executor ID	Start Date	Start Time	Periodicity	N° Runs

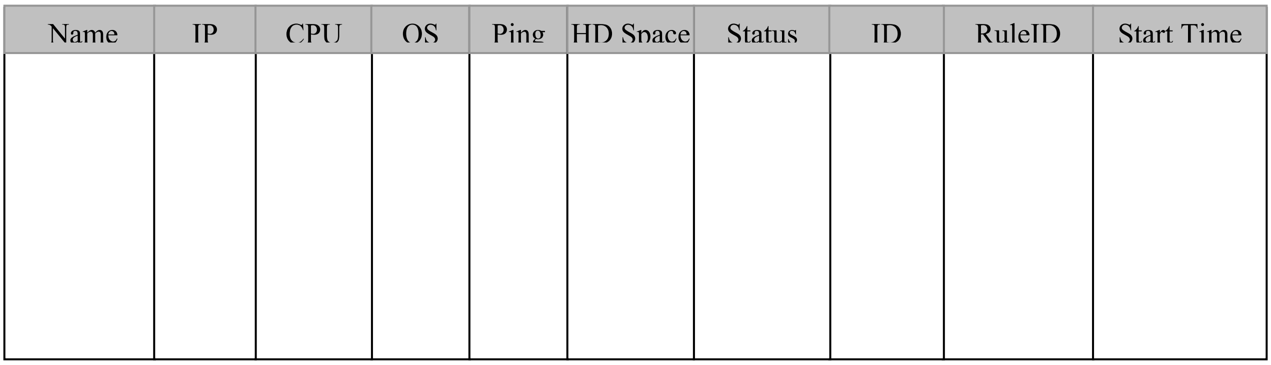
The following functionalities are provided by means a contextual popup menu:

- Ordering rules alphabetically by name
- Ordering rules by start running time
- Ordering rules by ID

12.3.4 Remote Executors Table

It is the area where remote executors are displayed. It is a list control constituted of a set of columns where the following list of metadata is displayed:

- *Name* - Computer Name
- *IP* - IP address
- *CPU* - CPU & Clock
- *OS* - OS & Version
- *Ping* – The network capabilities in term of transmission time.
- *HD Space* – The space available on the disk of the executor
- *Status* – The status of the executor
- *Rule ID* – The ID of the running rule
- *Executor ID* – The Id of the executor assigned by the scheduler
- *Start Time* – At what time the run is started.



Name	IP	CPU	OS	Ping	HD Space	Status	ID	RuleID	Start Time

The following functionalities are provided by means a contextual popup menu:

- Ordering executors alphabetically by computer name
- Ordering executors by ID

12.3.5 Auxiliary dialogs

The Scheduler GUI is supported by the following set of dialogs:

12.3.6 Rule Properties Dialog

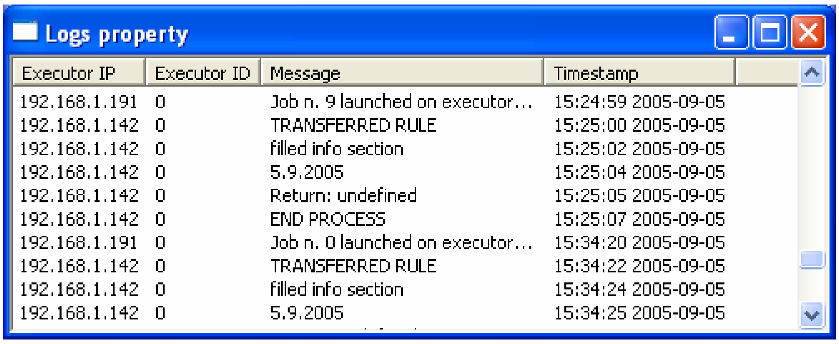
It is an editable no modal dialog where the properties of the selected rule are displayed. Some of these properties are extracted from the XML file associated with rule.

12.3.7 Executor Profile Dialog

It is a not editable no modal dialog where the properties of the selected executor are displayed. Some of these properties are extracted from the executor profile.

12.3.8 Logs Dialog

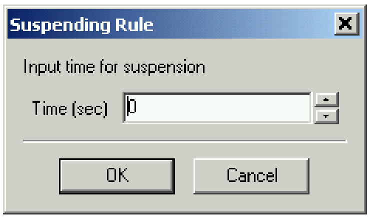
This dialog allows viewing the logs of scheduler activity.



Executor IP	Executor ID	Message	Timestamp
192.168.1.191	0	Job n. 9 launched on executor...	15:24:59 2005-09-05
192.168.1.142	0	TRANSFERRED RULE	15:25:00 2005-09-05
192.168.1.142	0	filled info section	15:25:02 2005-09-05
192.168.1.142	0	5.9.2005	15:25:04 2005-09-05
192.168.1.142	0	Return: undefined	15:25:05 2005-09-05
192.168.1.142	0	END PROCESS	15:25:07 2005-09-05
192.168.1.191	0	Job n. 0 launched on executor...	15:34:20 2005-09-05
192.168.1.142	0	TRANSFERRED RULE	15:34:22 2005-09-05
192.168.1.142	0	filled info section	15:34:24 2005-09-05
192.168.1.142	0	5.9.2005	15:34:25 2005-09-05

12.3.9 Suspend Rule Dialog

It is an editable no modal dialog where the user puts the time for the suspension.



Input time for suspension

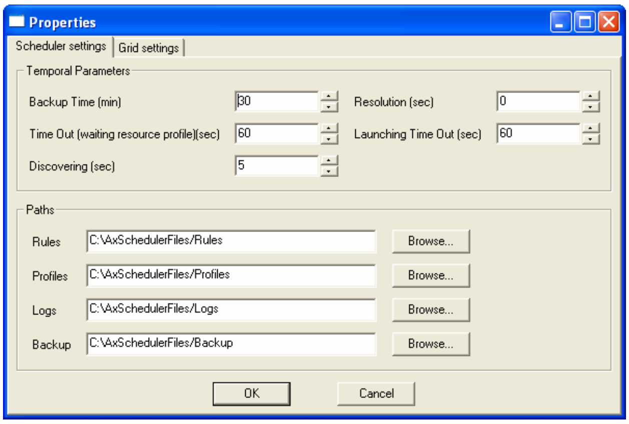
Time (sec) 0

12.3.10 Preferences Dialog

It is a tabbed dialog that allows editing settings parameters regarding the scheduler activity (*Scheduler settings*) and the GRID support (*GRID settings*).

Scheduler settings – It consists of a set of configuration parameters contains settings about:

- **Backup Time -** Backup interval for logging the set of submitted rule and tracing operations. It is expressed in minutes.
- **Time Out -** Time out on client activity. It is expressed in seconds.
- **Time Resolution -** Time Resolution of the scheduler. It is expressed in seconds.
- **Refresh Time -** Time Resolution for discovering new rule executors
- **Rules Path -** Rule Repository Path
- **Log Path -** Log Repository Path
- **Profile Path -** Executor Profile Repository Path
- **Backup Path** – The path where the scheduler periodically saves the current rules list.



Temporal Parameters

Backup Time (min) 30

Resolution (sec) 0

Time Out (waiting resource profile)(sec) 60

Launching Time Out (sec) 60

Discovering (sec) 5

Paths

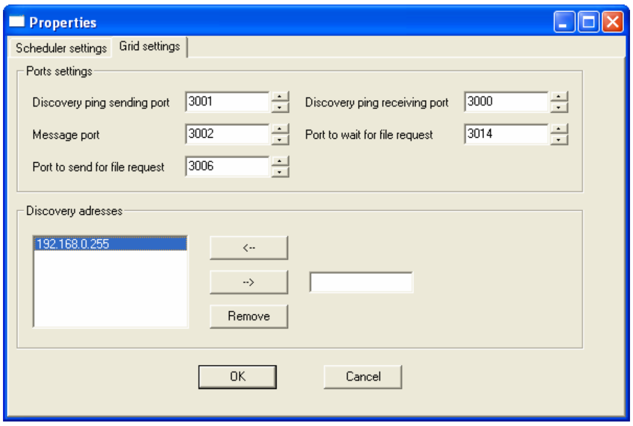
Rules C:\AxSchedulerFiles/Rules

Profiles C:\AxSchedulerFiles/Profiles

Logs C:\AxSchedulerFiles/Logs

Backup C:\AxSchedulerFiles/Backup

Grid settings – It provides a set of settings to setup the communication support. It allows defining the number of ports to use when receiving file, messages, sending files, responding to the discovering request. It allows also defining IPs of LANs to use when the scheduler performs the discovering of peers.



Discovery ping sending port 3001

Discovery ping receiving port 3000

Message port 3002

Port to wait for file request 3014

Port to send for file request 3006

192.168.0.255

12.3.11 Configuration Parameters

In this section the set of parameters regarding the configuration of the rule scheduler are listed. Such parameters are grouped into modules as reported below:

AXMEDIS Rule Scheduler Frame

Config parameter	Possible values
FRAME_SIZE	it is the frame size information
FRAME_POSITION	it is the frame position information
XML_XSD_PATH	It is the directory where xml schema (XSD files) are stored

AXMEDIS Rule Scheduler Settings

Config parameter	Possible values
BACKUP_TIME	It is the interval of Backup
RESOLUTION	It is the resolution in terms of time
TIME_OUT	It is the value of time out for waiting in the communication
DISCOVERING	It the discovering time
LAUNCHING_TIME_OUT	It is the maximum interval time for launching a rule
RULES_PATH	it is the directory where the rule will be saved
PROFILES_PATH	It is the directory where profiles of executors are stored
BACKUP_PATH	It is the directory where the backup file is saved
LOGS_PATH	It is the directory where logs are stored

AXMEDIS_GRID_SUPPORT_SETTINGS

Config parameter	Possible values
SERV_PORT	It is the value of the port used by the Grid Interface
SERV_PORT2	It is the value of the port used by the Grid Interface
SERV_PORT3	It is the value of the port used by the Grid Interface
SERV_PORT4	It is the value of the port used by the Grid Interface
SERV_PORT5	It is the value of the port used by the Grid Interface
DEFAULT_NET	It is the list of IP address

AXMEDIS Plugin Manager

Config parameter	Possible values
PLUGINS_PATH	it is the frame size information

WORKFLOW

Config parameter	Possible values
workflowUrl	it is the URL for workflow plug-in

`gatewayUrl`	it is the gatewayURL for workflow plug-in

12.3.12 Activating and stopping a rule

When the user is happy with his AXCP Rule and validated it with a quick and/or full trial, the final option is to activate the AXCP Rule in the AXCP Rule Engine. In the current version of the prototype the user has to install manually the AXCP in the Scheduler by selecting "*Add rule*" in Program menu. The scheduler will process the rule information and at the specified times will distribute the rule to a rule executor. During the running of the rule, the user can also stop it from the Scheduler by selecting "*Kill Rule*" in the Command menu.

12.3.13 Conclusion

Using the AXCP Rule Scheduler, the user can manually setup the AXCP Rule Engine and install an AXCP Rule in the AXCP Rule Engine. The user can also monitor the whole activity of the engine by means of logs.
Using the AXCP GRID Node Executor, the user adds a new Node Executor to the GRID Environment.
Using the AXCP Stand Alone Executor, the user can run AXCP Rule independently from the GRID.

13 AXMEDIS Rule Engine - Rule Executor

13.1 Main functionalities

The AXCP Rule engine is divided in two main components:

- **Rule Scheduler (Server Side)** – It consists of an internal Scheduler and Dispatcher. It performs the operations of rule installation, rule firing, rule executor discovering and management, rules dispatching, communication with the AXMEDIS environment, etc….
- **Rule Remote Executor** (**Client Side**) – It is the executor of rules and consists of a script engine based on JavaScript (JS) SpiderMonkey released by Mozilla. It runs the JavaScript code associated with rule.

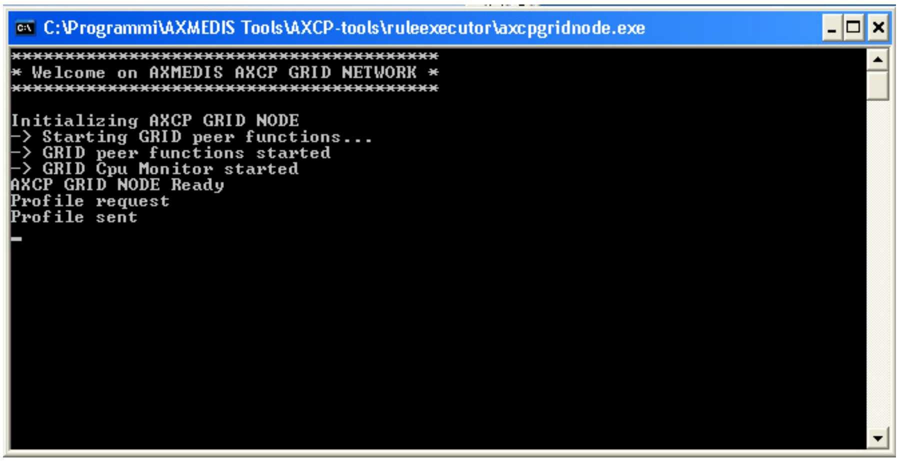
13.2 Relationship with other tools

The AXCP Rule Scheduler is related to Workflow tools for monitoring the GRID activity and rules.

13.3 Detailed description of the functionalities and Screenshots

The AXCP Rule Executor is provided as two executable files:

- **Stand alone AXCP Executor -** To run the Executor with an AXCP Rule, the user has to open the CMD dialog of Windows and type the line command using the option 0 as following:
  axruleexecutor.exe <rule path> -0
- **AXCP Grid Node Executor -** To launch the AXCP Grid Node, the user has to double click on axcpgridnone.exe executable file, the application is ready to be discovered by the AXCP Rule Scheduler and it is in waiting state. The User Interface of the rule executor as GRID Node is shown in the following picture. It is a console application and the output of the engine for direct messages.


C:\Programmi\AXMEDIS Tools\AXCP-tools\ruleexecutor\axcpgridnode.exe

```
****************************************
* Welcome on AXMEDIS AXCP GRID NETWORK *
****************************************

Initializing AXCP GRID NODE
-> Starting GRID peer functions...
-> GRID peer functions started
-> GRID Cpu Monitor started
AXCP GRID NODE Ready
Profile request
Profile sent
_
```

Before the first launch of both applications, the user should setup the configuration file in order to provide the right value to the constants and parameters used by the application. See the following tables for the Configuration Parameters

AXMEDIS Rule Executor

Config parameter	Possible values
XML_RULE_PATH	it is the directory where the rule will be saved
XML_XSD_PATH	It is the directory where xml schema (XSD files) are stored
LOGS_PATH	It is the directory where logs are stored

AXMEDIS_GRID_SUPPORT_SETTINGS (only for GRID Node)

Config parameter	Possible values
SERV_PORT	It is the value of the port used by the Grid Interface

SERV_PORT2	It is the value of the port used by the Grid Interface
SERV_PORT3	It is the value of the port used by the Grid Interface
SERV_PORT4	It is the value of the port used by the Grid Interface
SERV_PORT5	It is the value of the port used by the Grid Interface
DEFAULT_NET	It is the list of IP address

AXMEDIS Plugin Manager

Config parameter	Possible values
PLUGINS_PATH	It is the directory where the DLL of plug-ins with their profiles (workflow, adaptation, descriptor and fingerprint estimators) are stored.

AXMEDIS Database

Config parameter	Possible values
user	The user name for logging into Database
passwd	The password for logging into Database
LoaderWSEndPoint	It is the URL for accessing to the load web service
HTTPPath	
UploadPath	
SaverWSEndPoint	It is the URL for accessing to the save web service

AXMEDIS Selection

Config parameter	Possible values
MAIN_QUERY_SUPPORT_WSDL	It is the URL of the WSDL for using the Main Query Support
SELECTION_ARCHIVE_WSDL	It is the URL of the WSDL for using the Selection Archive

13.3.1 Command line options

The following options are available to launch the Rule Executor via command line:

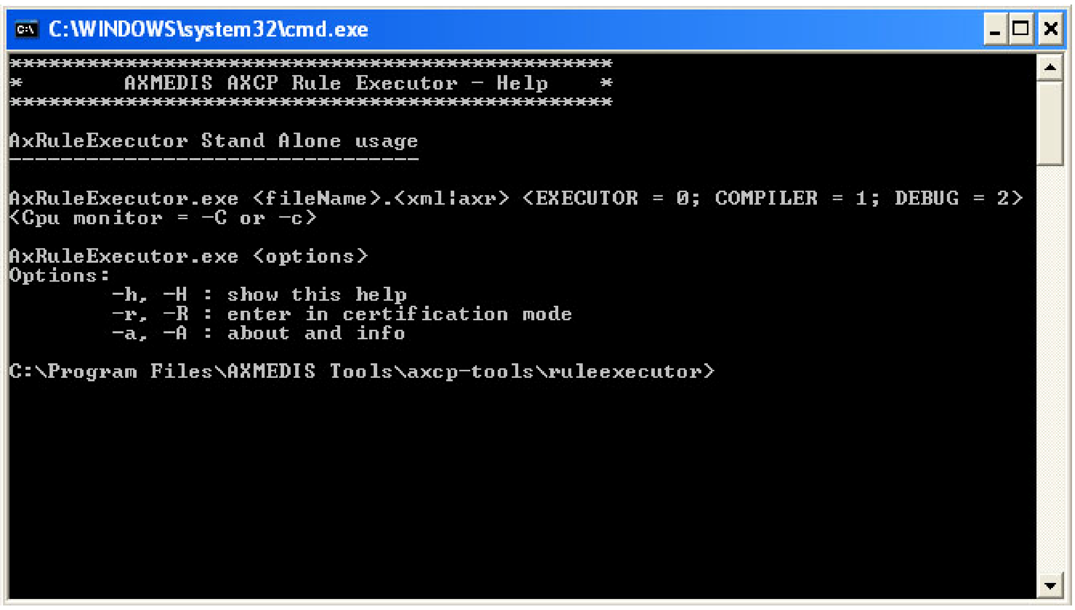
-*a* (or -*A*), about

-*r* (or -*R*), registration/certification tool mode

-*h* (or -*H*), help

The following snapshot shows the execution of the following command:

```
C:\Program Files\AXMEDIS Tools\axcp-tools\ruleexecutor\axruleexecutor.exe –h
```



```
*******************************************
*        AXMEDIS AXCP Rule Executor - Help    *
*******************************************

AxRuleExecutor Stand Alone usage
--------------------------------

AxRuleExecutor.exe <fileName>.<xml!axr> <EXECUTOR = 0; COMPILER = 1; DEBUG = 2>
<Cpu monitor = -C or -c>

AxRuleExecutor.exe <options>
Options:
        -h, -H : show this help
        -r, -R : enter in certification mode
        -a, -A : about and info

C:\Program Files\AXMEDIS Tools\axcp-tools\ruleexecutor>
```

13.3.2 Conclusion

Using the AXCP Rule Scheduler, the user can manually setup the AXCP Rule Engine and install an AXCP Rule in the AXCP Rule Engine. The user can also monitor the whole activity of the engine by means of logs.
Using the AXCP GRID Node Executor, the user add a new Node Executor to the GRID Environment.
Using the AXCP Stand Alone Executor, the user can run AXCP Rule independently from the GRID.

13.4 How to use the GRID and Rule Executor stand alone, a small tutorial

In this tutorial we will see how to use the GRID (Rule Scheduler and Rule Executors) and the stand alone version of the Rule Executor by using the script of the rule created in previous sections and reported below:

```
// 1) create an empty resource
var image = new AxResource();

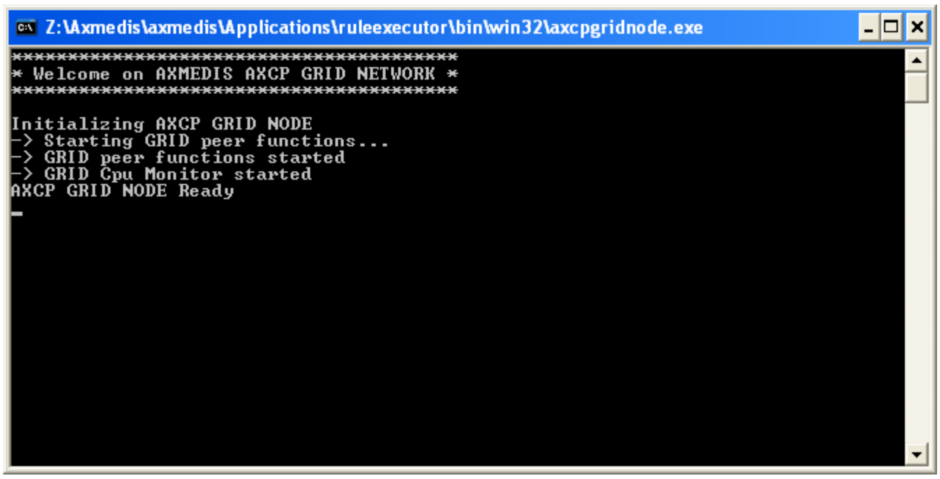
// 2) load the image file by the selected path
image.load("C:\\AXMEDIS_logo.png");

// 3) Use the Image Processing plugin for scaling the image
ImageProcessing.Resize(image,320,200,true,image);
// the Resize function of the Image Processing plugin scales the image at 320*200
// size maintaining the Aspect ratio and overwriting the new image

// 4) the scaled image is saved as "img_scaled.png
image.save("c:\\img_scaled");
```

13.4.1 Rule execution in the AXCP GRID environment

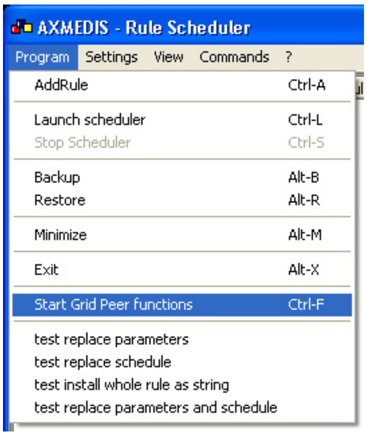
First of all it is necessary to install in one or more PCs the **Rule Executor,** then start them by double clicking on **axcpgridnode.exe** executable file. It is also possible to start it in the local machine. If the **Rule Executor** started correctly you will see the following messages.


Z:\Axmedis\axmedis\Applications\ruleexecutor\bin\win32\axcpgridnode.exe

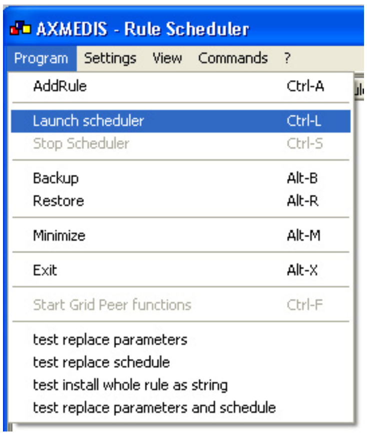
```
*******************************************
* Welcome on AXMEDIS AXCP GRID NETWORK *
*******************************************

Initializing AXCP GRID NODE
-> Starting GRID peer functions...
-> GRID peer functions started
-> GRID Cpu Monitor started
AXCP GRID NODE Ready
_
```

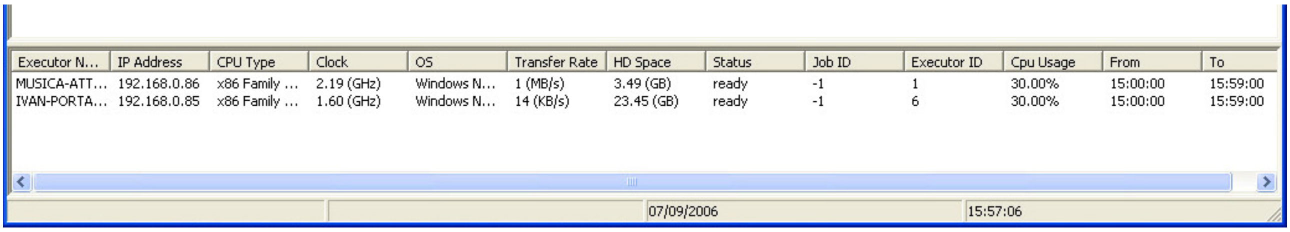
Then start the **Rule Scheduler** executable file. In the menu **Program** select **Start Grid Peer Functions**;



In the menu **Program** select **Launch Scheduler**



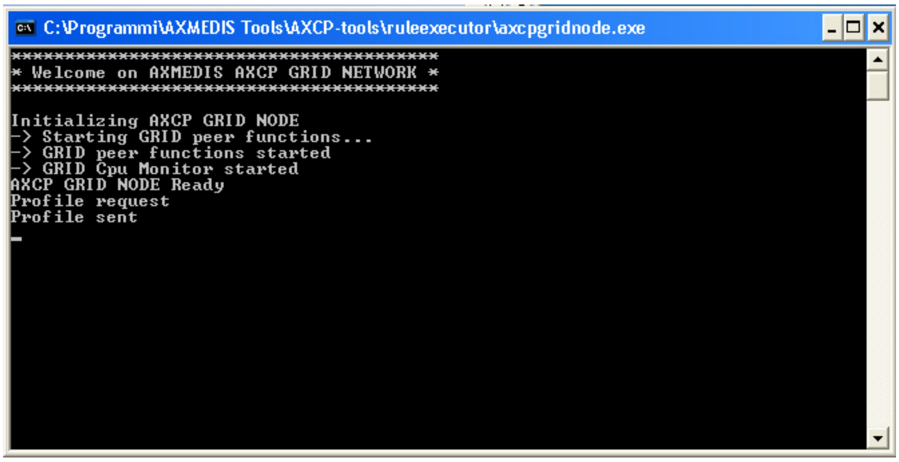
After a few seconds the list of computer connected in the P2P network appears with a number of additional information



Executor N...	IP Address	CPU Type	Clock	OS	Transfer Rate	HD Space	Status	Job ID	Executor ID	Cpu Usage	From	To
MUSICA-ATT...	192.168.0.86	x86 Family ...	2.19 (GHz)	Windows N...	1 (MB/s)	3.49 (GB)	ready	-1	1	30.00%	15:00:00	15:59:00
IVAN-PORTA...	192.168.0.85	x86 Family ...	1.60 (GHz)	Windows N...	14 (KB/s)	23.45 (GB)	ready	-1	6	30.00%	15:00:00	15:59:00

07/09/2006 15:57:06

The AXCPGrid node will show message about the profile request as depicted in the following picture:



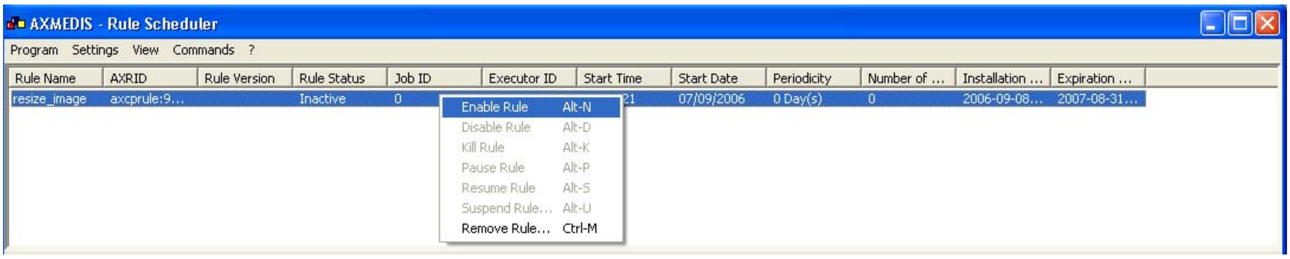
C:\Programmi\AXMEDIS Tools\AXCP-tools\ruleexecutor\axcpgridnode.exe

```
****************************************
* Welcome on AXMEDIS AXCP GRID NETWORK *
****************************************

Initializing AXCP GRID NODE
-> Starting GRID peer functions...
-> GRID peer functions started
-> GRID Cpu Monitor started
AXCP GRID NODE Ready
Profile request
Profile sent
_
```

Now it is possible to add a rule to be processed dragging it into the Scheduler or using the **Add Rule** function in the **Program** menu. The rule appears in the bottom area.

If the **Rule Status** is **Inactive**, the rule has to be activated by right-clicking on it and selecting **the Enable Rule** option in the contextual menu:

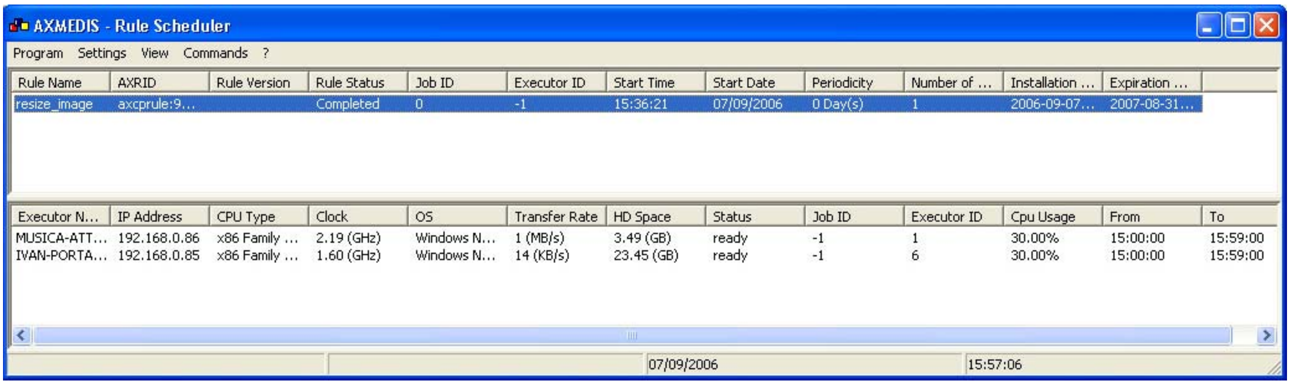


Rule Name	AXRID	Rule Version	Rule Status	Job ID	Executor ID	Start Time	Start Date	Periodicity	Number of ...	Installation ...	Expiration ...
resize_image	axcprule:9...		Inactive	0		21	07/09/2006	0 Day(s)	0	2006-09-08...	2007-08-31...

If the temporal conditions are not valid the status becomes failure. This means that you have to modify by using the rule editor the Schedule item by inserting the right value for start time, start date, expiration time and date. Then, you have to install again the rule in the scheduler.

During the rule execution the showed status is **Running** and the Rule Scheduler shows also the computer executing the rule in the **Executor ID** column.

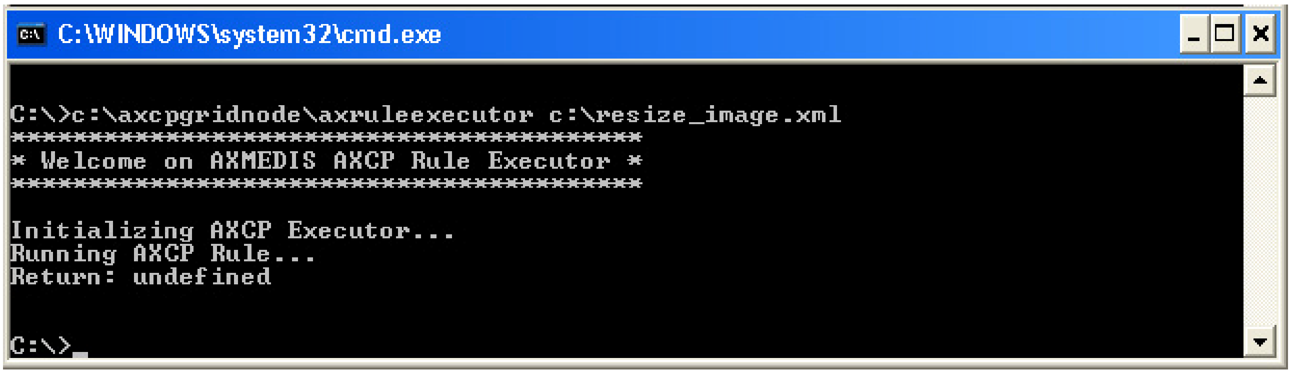
When the rule has been executed, its status changes to **Completed**.



Rule Name	AXRID	Rule Version	Rule Status	Job ID	Executor ID	Start Time	Start Date	Periodicity	Number of ...	Installation ...	Expiration ...
resize_image	axcprule:9...		Completed	0	-1	15:36:21	07/09/2006	0 Day(s)	1	2006-09-07...	2007-08-31...

Executor N...	IP Address	CPU Type	Clock	OS	Transfer Rate	HD Space	Status	Job ID	Executor ID	Cpu Usage	From	To
MUSICA-ATT...	192.168.0.86	x86 Family ...	2.19 (GHz)	Windows N...	1 (MB/s)	3.49 (GB)	ready	-1	1	30.00%	15:00:00	15:59:00
IVAN-PORTA...	192.168.0.85	x86 Family ...	1.60 (GHz)	Windows N...	14 (KB/s)	23.45 (GB)	ready	-1	6	30.00%	15:00:00	15:59:00

During the rule execution, the Rule Executor window could show output messages if coming from the script or internal ones.



```
C:\>c:\axcpgridnode\axruleexecutor c:\resize_image.xml
*****************************************
* Welcome on AXMEDIS AXCP Rule Executor *
*****************************************

Initializing AXCP Executor...
Running AXCP Rule...
Return: undefined

C:\>_
```

13.4.2 Rule execution by means the stand alone version of the Rule Executor

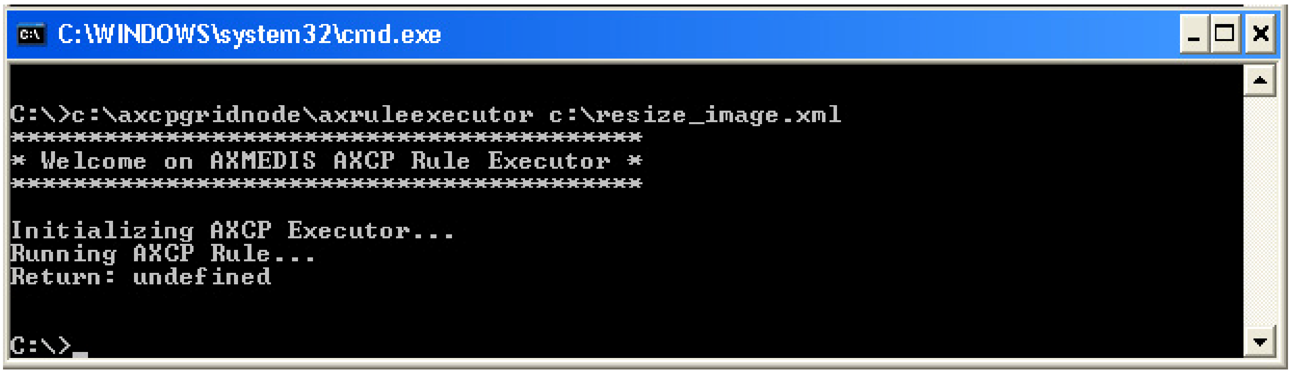
In this section we will see how to execute a rule using the Command Prompt. We suppose that the rule to be executed is stored in C:\ as ***resize_image.xml*** and the **axcpgridnode.exe** executable running.

To open the Command Prompt click **Run** in the **Start** menu, type **cmd** and then click **OK**

To successfully launch the Rule Executor it is necessary also to specify the rule to be applied. For example, if the Rule Executor executable (`axruleexecutor.exe`) is in the path `C:\AXCPGridNode\` and the rule is in `c:\resize_image.xml` the command syntax is the following:

```
C:\AXCPGridNode\axruleexecutor c:\resize_image.xml
```

During the rule execution also the Rule Executor window shows output messages.



```
C:\>c:\axcpgridnode\axruleexecutor c:\resize_image.xml
*****************************************
* Welcome on AXMEDIS AXCP Rule Executor *
*****************************************

Initializing AXCP Executor...
Running AXCP Rule...
Return: undefined

C:\>_
```

14 AXMEDIS Programme & Publication Editor

The P&P Editor is a GUI, which interacts with AXMEDIS Query Support to make selections from the Query results in order to schedule some programmes (e.g. day, week, month, and year) with the following programme specifications (rules):

- WHAT: the AXMEDIS object of interest
- WHERE: destination channel, where to publish e.g. iTV or kiosk or other, and "where" profile
- WHEN: date, time, slot, duration
- HOW: direct transfer, reference or require formatting engine

The representation of the above programmes rules is represented using XML.

14.1 Main functionalities

The Programme and Publication Programme Editor provides the following functionality:

- Create: a Programme Manager uses a GUI to create some P&P Programmes using the Query Support User Interface to browse the AXMEDIS database, to select, to schedule, and to return with a list of relevant objects
- Edit: a Programme Manager make changes to the programme rules selected from a list in the GUI read from the P&P Programme Repository. Changes can also include using Query Support to browse the AXMEDIS database to select and to return with a list of relevant objects
- Save: send the P&P Programme to a P&P Repository for archiving (configured local file)
- Test: Test the P&P Programme through the P&P Engine
- Activate: send the P&P Programme to the P&P Engine

Functionalities presented in the P&P Editor User Manual are sectioned with the following sections:

- Creating a P&P Programme
- Loading an Existing P&P Programme
- Editing a P&P Programme
- Querying for AXMEDIS Objects in the P&P Editor
- Testing a complete P&P Programme
- Activating and Stopping a P&P Programme
- Configuring the P&P Editor

14.2 Relationship with other tools

The P&P Editor communicates with the P&P Engine either directly or using AXMEDIS Workflow and with the AXMEDIS Database (AXDB) using Query Support as shown in the following Figure.

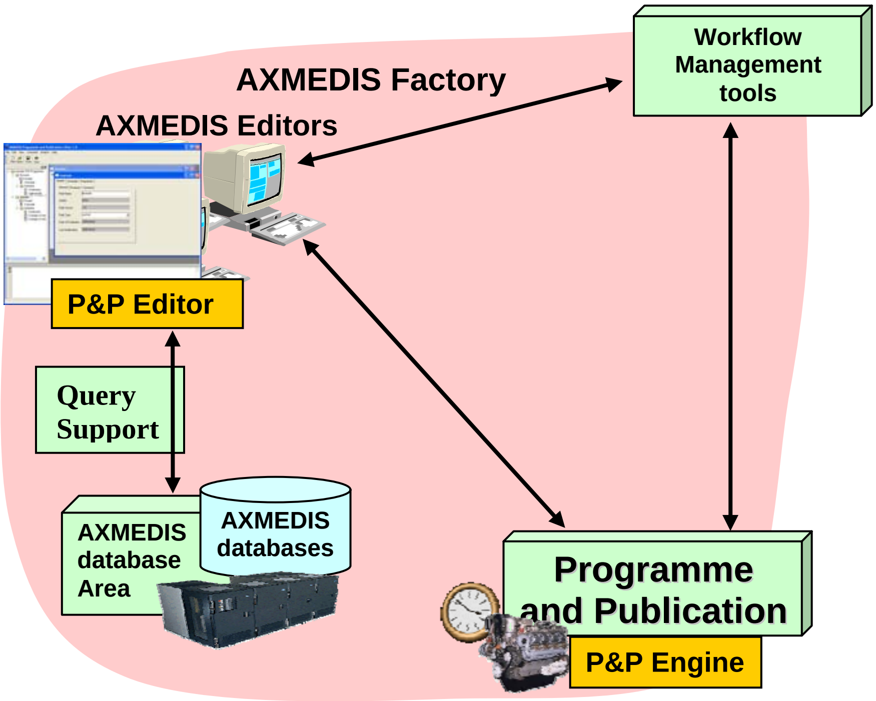
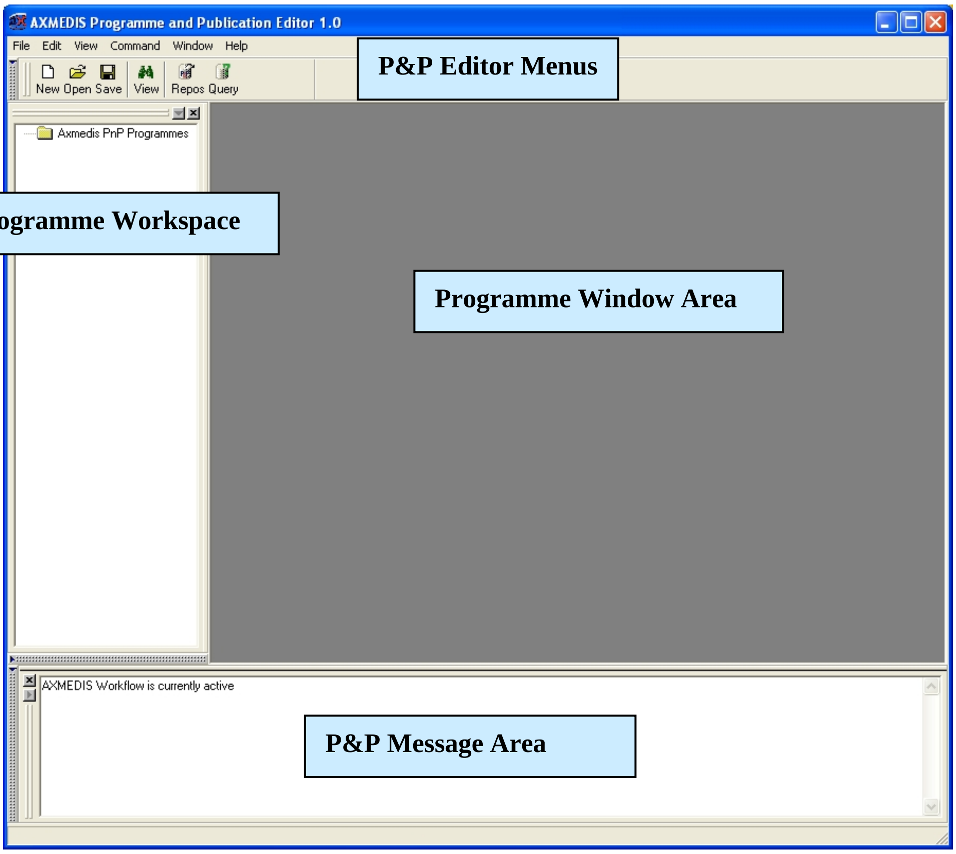


Figure: Relation between the P&P Editor and other AXMEDIS tools

When the actor is required to add a new object to the P&P Programme for scheduling, the actor opens the Query Support Dialog window in the P&P Editor and queries for an object by adding details to the query text fields and drop down selections. The results are returned to the Dialog and objects selected are added to the P&P Programme.

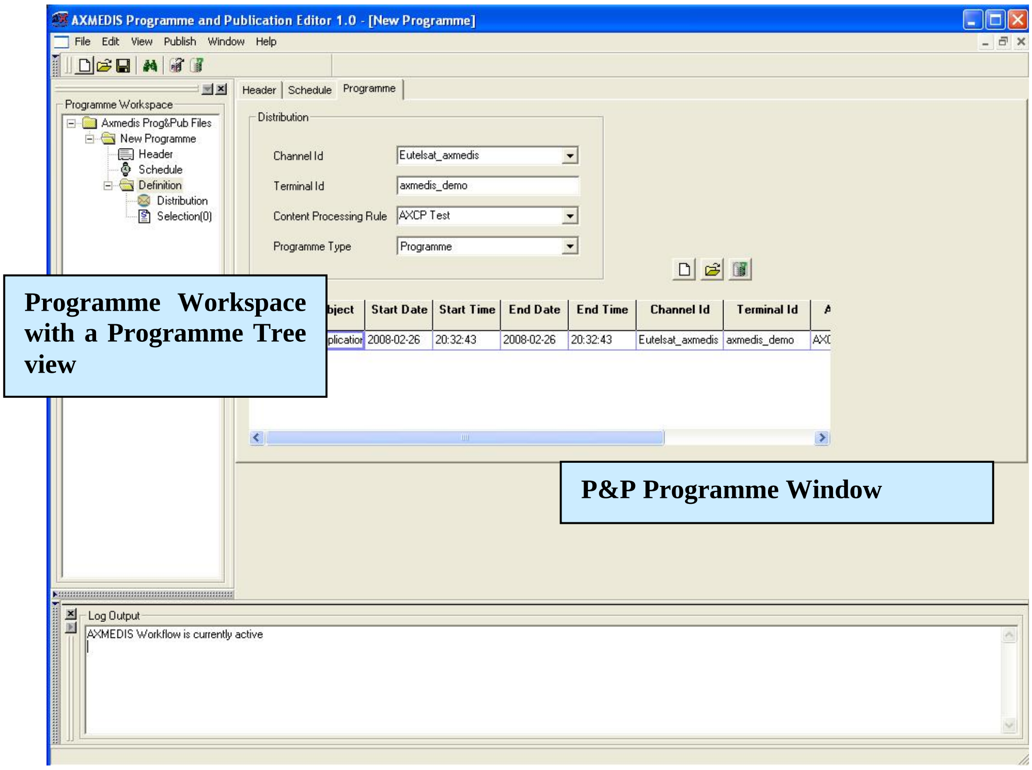
On activation or test, the P&P Editor connects to the P&P Engine (through AXMEDIS Workflow if it has been activated) and sends a completed P&P Programme for processing by the P&P Engine.

14.3 Detailed description of the functionalities and Screenshots


AXMEDIS Programme and Publication Editor 1.0
File Edit View Command Window Help
New Open Save View Repos Query
Axmedis PnP Programmes
P&P Editor Menus
Programme Workspace
Programme Window Area
P&P Message Area

AXMEDIS Workflow is currently active

Figure: Initial P&P Editor View


AXMEDIS Programme and Publication Editor 1.0 - [New Programme]
File Edit View Publish Window Help
Header Schedule Programme
Programme Workspace
Axmedis Prog&Pub Files
New Programme
Header
Schedule
Definition
Distribution
Selection(0)
Distribution
Programme Workspace with a Programme Tree view
P&P Programme Window
Log Output

Channel Id: Eutelsat_axmedis

Terminal Id: axmedis_demo

Content Processing Rule: AXCP Test

Programme Type: Programme

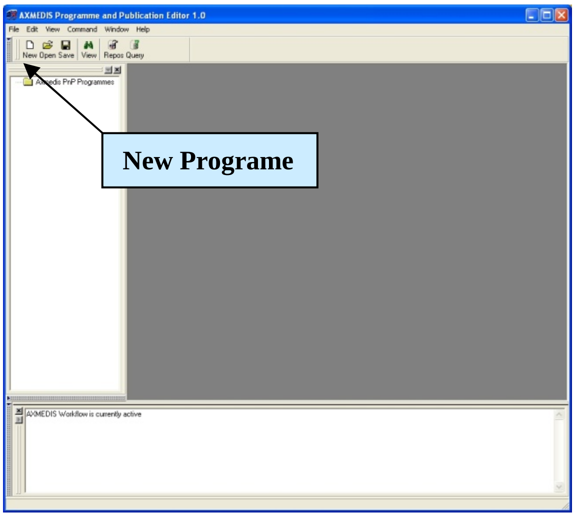
bject	Start Date	Start Time	End Date	End Time	Channel Id	Terminal Id	A
plication	2008-02-26	20:32:43	2008-02-26	20:32:43	Eutelsat_axmedis	axmedis_demo	AX(

AXMEDIS Workflow is currently active

Figure: P&P Editor Displaying Programme Window and Workspace with Tree View if the AXML Programme

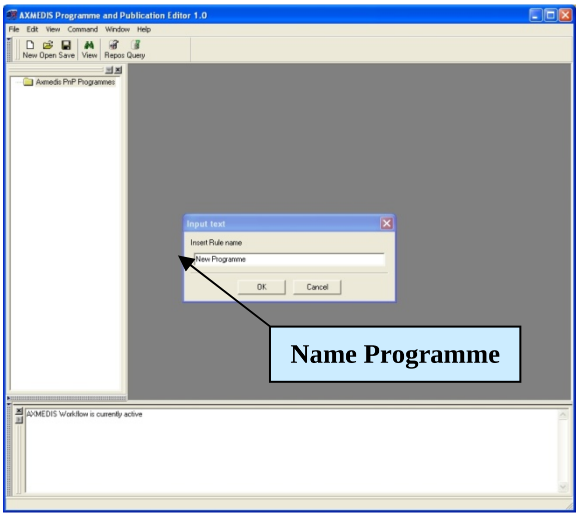
14.3.1 Creating a P&P Programme

To create a P&P Programme, the programme manager starts the P&P Editor and from the opening screen creates a new P&P Programme by selecting "*New*" from the tool bar or using the File menu (File → New) or using the keyboard short cut "Ctrl-N" (see Figure 1). On requesting a new programme, the dialog box pops up and the programme managers enters the name of the draft P&P Programme and selects "OK" (see Figure 2).


AXMEDIS Programme and Publication Editor 1.0
File Edit View Command Window Help
New Open Save View Repos Query
Axmedis PnP Programmes
New Programe

AXMEDIS Workflow is currently active

Figure 1

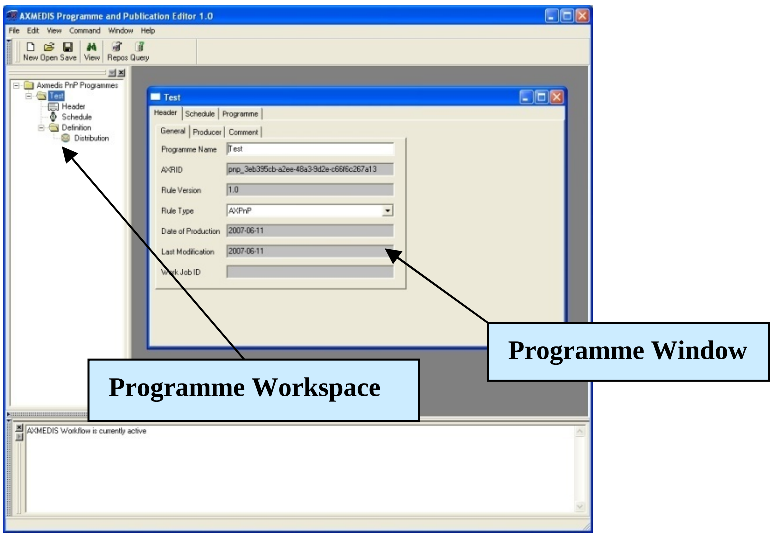

AXMEDIS Programme and Publication Editor 1.0
File Edit View Command Window Help
New Open Save View Repos Query
Axmedis PnP Programmes
Input text
OK
Cancel
Name Programme

Insert Rule name: New Programme

AXMEDIS Workflow is currently active

Figure 2

After the P&P Programme name has been OK'd, the new P&P Programme is ready for editing with the '*tree view'* used as a workspace and the P&P Programme window for editing the programme details and making a programme schedule (see Figure 3).


AXMEDIS Programme and Publication Editor 1.0
File Edit View Command Window Help
New Open Save View Repos Query
Axmedis PnP Programmes
Test
Header
Schedule
Definition
Distribution
Test
Header Schedule Programme
General Producer Comment
Programme Window
Programme Workspace

Programme Name: Test
AXRID: pnp_3eb395cb-a2ee-48a3-9d2e-c66f6c267a13
Rule Version: 1.0
Rule Type: AXPnP
Date of Production: 2007-06-11
Last Modification: 2007-06-11
Work Job ID:

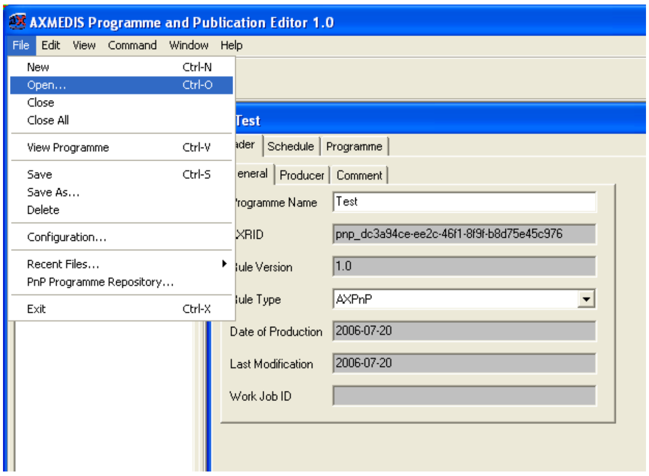
AXMEDIS Workflow is currently active

Figure 3

14.3.2 Loading an Existing P&P Programme

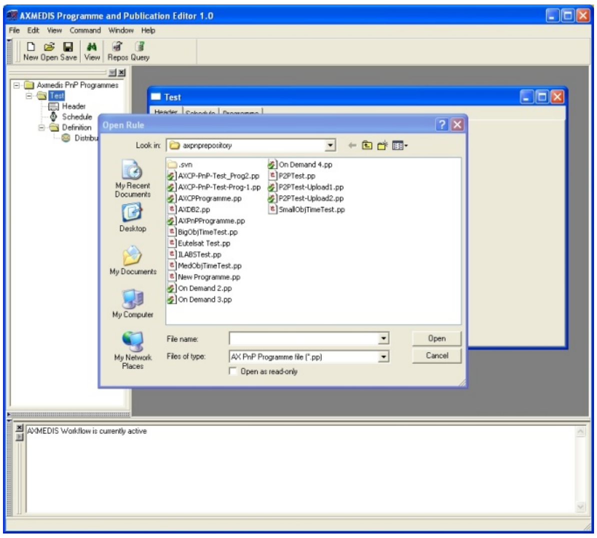
The programme manager may wish to edit an existing draft programme that has already been saved. The programme manager may have saved the P&P Programme as a file on the local system or in the P&P Programme Repository. By selecting '*Open*', (see Figure 4 and 5) or '*P&P Programme Repository*', (see

Figure 6 and 7), the programme manager can load an existing draft programme from either the P&P Programme Repository or elsewhere on the local system.



rogramme Name: Test
XRID: pnp_dc3a94ce-ee2c-46f1-8f9f-b8d75e45c976
ule Version: 1.0
ule Type: AXPnP
Date of Production: 2006-07-20
Last Modification: 2006-07-20
Work Job ID:

Figure 4



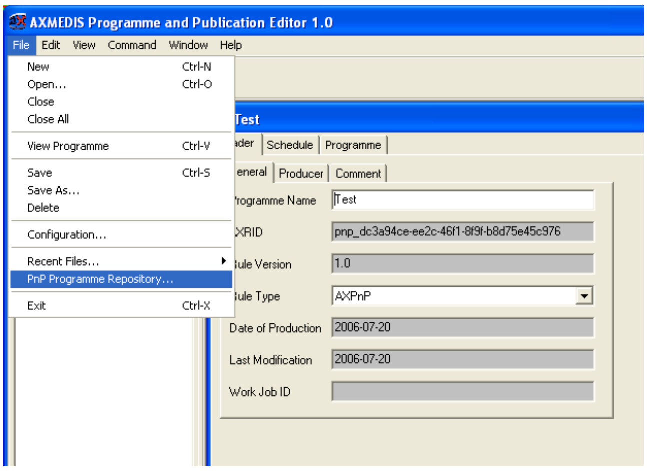
Look in: axpnprepository

.svn
AXCP-PnP-Test_Prog2.pp
AXCP-PnP-Test-Prog-1.pp
AXCPProgramme.pp
AXDB2.pp
AXPnPProgramme.pp
BigObjTimeTest.pp
Eutelsat Test.pp
ILABSTest.pp
MedObjTimeTest.pp
New Programme.pp
On Demand 2.pp
On Demand 3.pp
On Demand 4.pp
P2PTest.pp
P2PTest-Upload1.pp
P2PTest-Upload2.pp
SmallObjTimeTest.pp

File name:
Files of type: AX PnP Programme file (*.pp)
□ Open as read-only

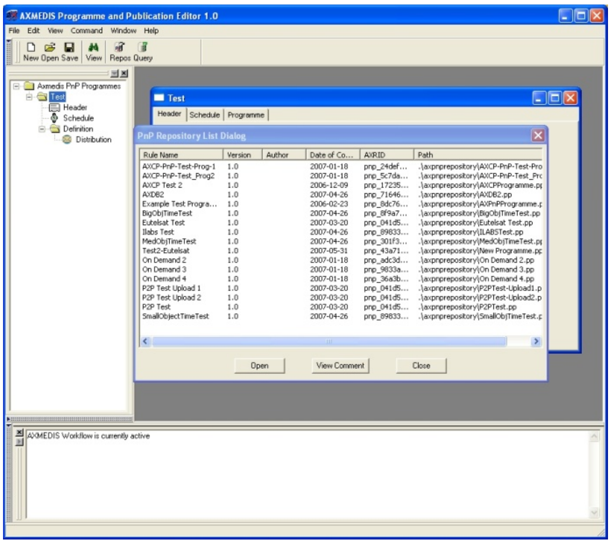
AXMEDIS Workflow is currently active

Figure 5



rogramme Name: Test
XRID: pnp_dc3a94ce-ee2c-46f1-8f9f-b8d75e45c976
ule Version: 1.0
ule Type: AXPnP
Date of Production: 2006-07-20
Last Modification: 2006-07-20
Work Job ID:

Figure 6



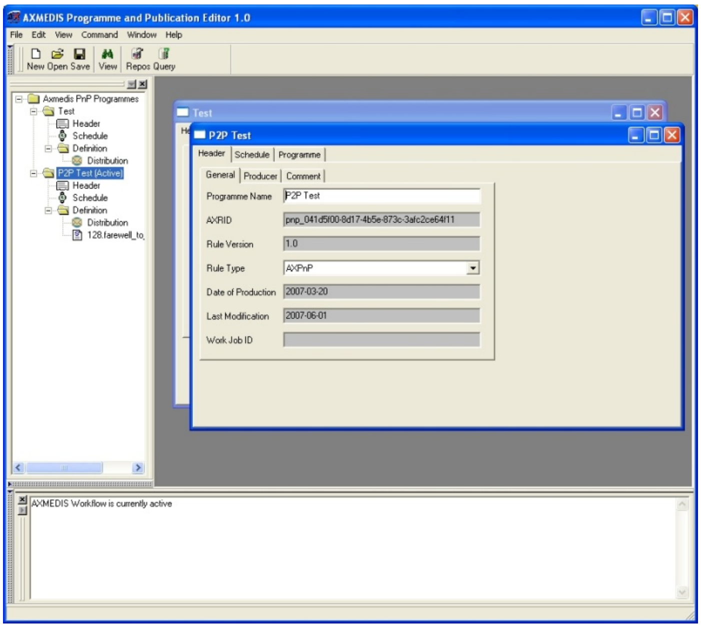
Rule Name	Version	Author	Date of Co...	AXRID	Path
AXCP-PnP-Test-Prog-1	1.0		2007-01-18	pnp_24def...	.\axpnprepository\AXCP-PnP-Test-Pro
AXCP-PnP-Test_Prog2	1.0		2007-01-18	pnp_5c7da...	.\axpnprepository\AXCP-PnP-Test_Prc
AXCP Test 2	1.0		2006-12-09	pnp_17235...	.\axpnprepository\AXCPProgramme.pp
AXDB2	1.0		2007-04-26	pnp_71646...	.\axpnprepository\AXDB2.pp
Example Test Progra...	1.0		2006-02-23	pnp_8dc76...	.\axpnprepository\AXPnPProgramme.p
BigObjTimeTest	1.0		2007-04-26	pnp_8f9a7...	.\axpnprepository\BigObjTimeTest.pp
Eutelsat Test	1.0		2007-03-20	pnp_041d5...	.\axpnprepository\Eutelsat Test.pp
Ilabs Test	1.0		2007-04-26	pnp_89833...	.\axpnprepository\ILABSTest.pp
MedObjTimeTest	1.0		2007-04-26	pnp_301f3...	.\axpnprepository\MedObjTimeTest.pp
Test2-Eutelsat	1.0		2007-05-31	pnp_43a71...	.\axpnprepository\New Programme.pp
On Demand 2	1.0		2007-01-18	pnp_adc3d...	.\axpnprepository\On Demand 2.pp
On Demand 3	1.0		2007-01-18	pnp_9833a...	.\axpnprepository\On Demand 3.pp
On Demand 4	1.0		2007-01-18	pnp_36a3b...	.\axpnprepository\On Demand 4.pp
P2P Test Upload 1	1.0		2007-03-20	pnp_041d5...	.\axpnprepository\P2PTest-Upload1.p
P2P Test Upload 2	1.0		2007-03-20	pnp_041d5...	.\axpnprepository\P2PTest-Upload2.p
P2P Test	1.0		2007-03-20	pnp_041d5...	.\axpnprepository\P2PTest.pp
SmallObjectTimeTest	1.0		2007-04-26	pnp_89833...	.\axpnprepository\SmallObjTimeTest.p

AXMEDIS Workflow is currently active

Figure 7

14.3.3 Editing a P&P Programme

The programme manager can use the editor to edit multiple P&P Programmes (as shown in Figure 8), and edit P&P Programme data such as general, producer and content information; and set the specifications for delivering a multimedia object. This includes setting the channel and terminal as well as distribution date and time.

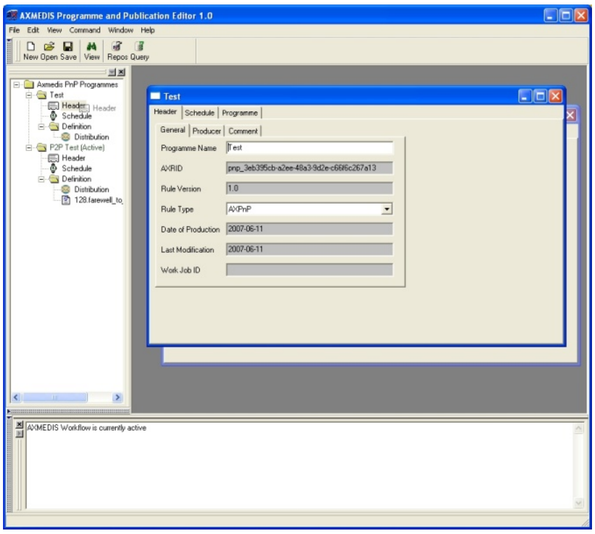


Programme Name: P2P Test
AXRID: pnp_041d5f00-8d17-4b5e-873c-3afc2ce64f11
Rule Version: 1.0
Rule Type: AXPnP
Date of Production: 2007-03-20
Last Modification: 2007-06-01
Work Job ID:

AXMEDIS Workflow is currently active

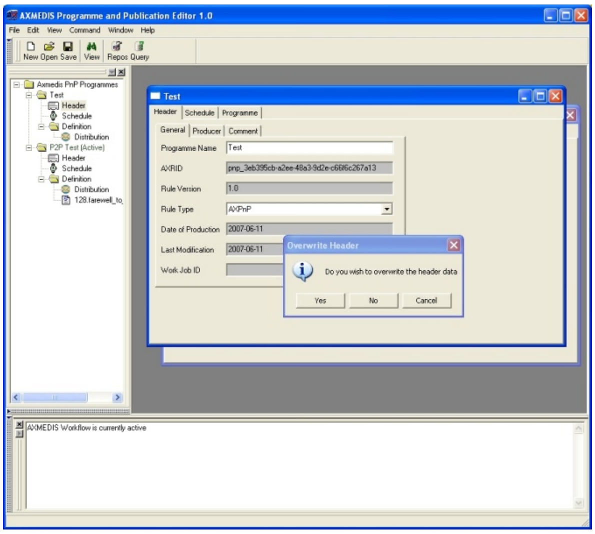
Figure 8

Editing functionalities include being able to drag and drop information from one P&P Programme to another using the workspace tree area as shown in the tree view in Figure 9 and the popup box in Figure 10.



Programme Name: Test
AXRID: pnp_3eb395cb-a2ee-48a3-9d2e-c66f6c267a13
Rule Version: 1.0
Rule Type: AXPnP
Date of Production: 2007-06-11
Last Modification: 2007-06-11
Work Job ID:

AXMEDIS Workflow is currently active



Programme Name: Test
AXRID: pnp_3eb395cb-a2ee-48a3-9d2e-c66f6c267a13
Rule Version: 1.0
Rule Type: AXPnP
Date of Production: 2007-06-11
Last Modification: 2007-06-11
Work Job ID:

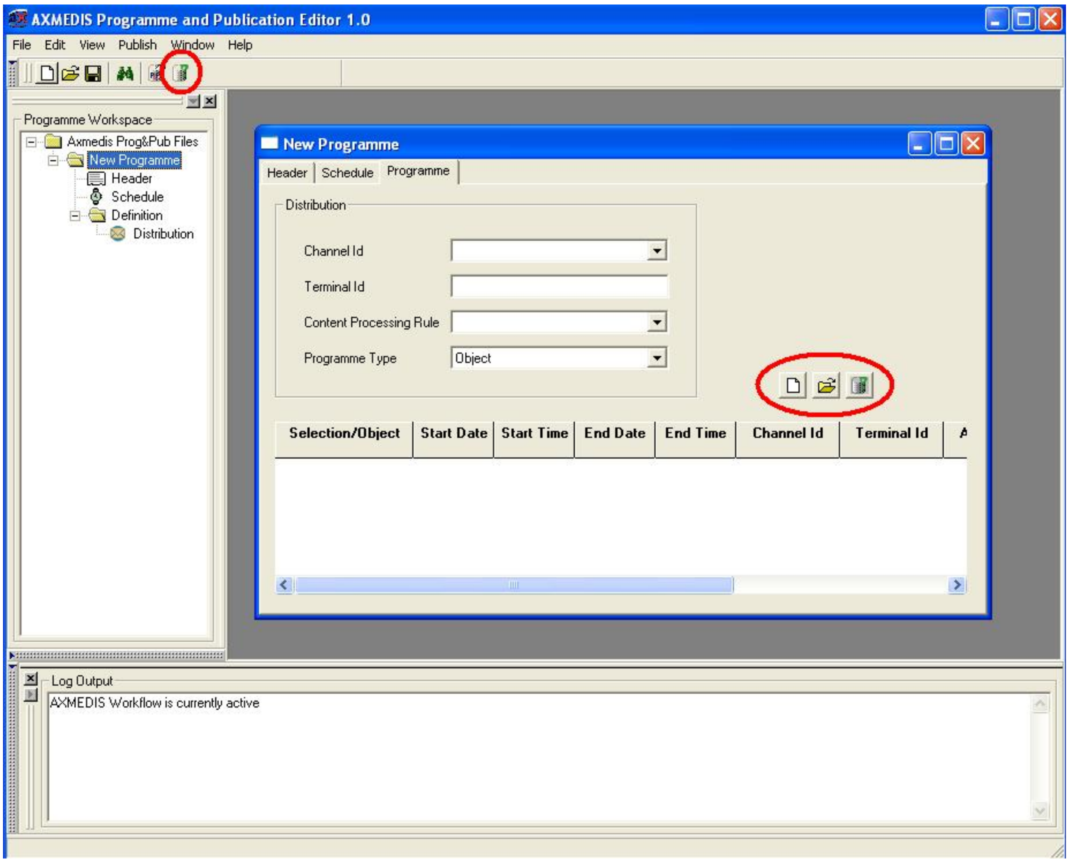
Do you wish to overwrite the header data

AXMEDIS Workflow is currently active

Figure 9 **Figure 10**

14.3.4 Querying for AXMEDIS Objects in the P&P Editor

The P&P Editor has integrated the Query Selection Dialog to select AXMEDIS Objects to load into the P&P Programme. This is accessed by clicking on the Query button in the "Programme View" in the Programme Window or in the Tool Bar, as highlighted in Figure 11

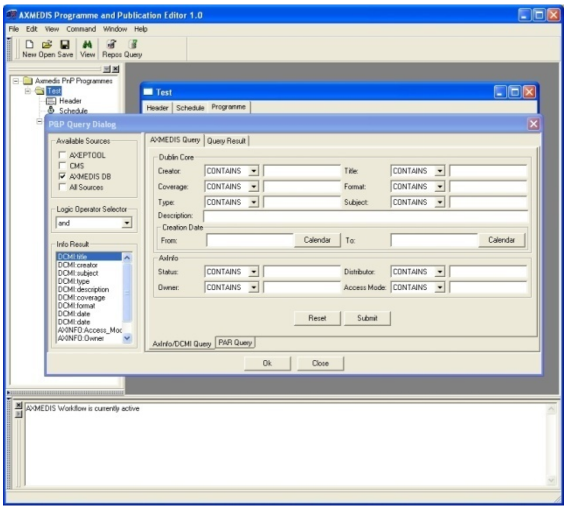


Programme Type: Object

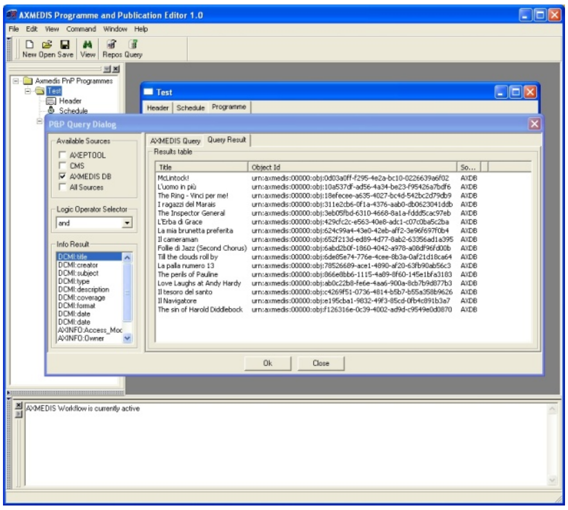
AXMEDIS Workflow is currently active

Figure 11

In Figure 12 we see the Dialog Query view to create a search query to find AXMEDIS objects and in Figure 13 the result of a query. One or more objects can be selected in the results view and by clicking OK adds the objects the P&P Programme



AXMEDIS Workflow is currently active



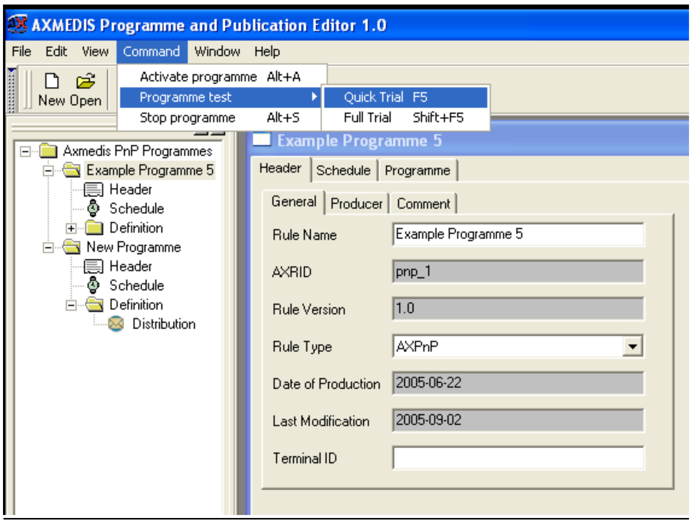
Title	Object Id	So...
McLintock!	urn:axmedis:00000:obj:0d03a0ff-f295-4e2a-bc10-0226639a6f02	AXDB
L'uomo in più	urn:axmedis:00000:obj:10a537df-ad56-4a34-be23-f95426a7bdf6	AXDB
The Ring - Vinci per me!	urn:axmedis:00000:obj:18efecee-a635-4027-bc4d-542bc2d79db9	AXDB
I ragazzi del Marais	urn:axmedis:00000:obj:311e2cb6-0f1a-4376-aab0-db0623041ddb	AXDB
The Inspector General	urn:axmedis:00000:obj:3eb05fbd-6310-4668-8a1a-fddd5cac97eb	AXDB
L'Erba di Grace	urn:axmedis:00000:obj:429cfc2c-e563-40e8-adc1-c07c0ba5c2ba	AXDB
La mia brunetta preferita	urn:axmedis:00000:obj:624c99a4-43e0-42eb-aff2-3e96f697f0b4	AXDB
Il cameraman	urn:axmedis:00000:obj:652f213d-ed89-4d77-8ab2-63356ad1a395	AXDB
Follie di Jazz (Second Chorus)	urn:axmedis:00000:obj:6abd2b0f-1860-4042-a978-a08df96fd00b	AXDB
Till the clouds roll by	urn:axmedis:00000:obj:6de85e74-776e-4cee-8b3a-0af21d18ca64	AXDB
La palla numero 13	urn:axmedis:00000:obj:78526689-ace1-4890-af20-63fb90ab56c3	AXDB
The perils of Pauline	urn:axmedis:00000:obj:866e8bb6-1115-4a89-8f60-145e1bfa3183	AXDB
Love Laughs at Andy Hardy	urn:axmedis:00000:obj:ab0c22b8-fe6e-4aa6-900a-8cb7b9d877b3	AXDB
Il tesoro del santo	urn:axmedis:00000:obj:c4269f51-0736-4814-b5b7-b55a358b9626	AXDB
Il Navigatore	urn:axmedis:00000:obj:e195cba1-9832-49f3-85cd-0fb4c891b3a7	AXDB
The sin of Harold Diddlebock	urn:axmedis:00000:obj:f126316e-0c39-4002-ad9d-c9549e0d0870	AXDB

AXMEDIS Workflow is currently active

Figure 12 **Figure 13**

14.3.5 Testing a complete P&P Programme

After the creation and editing of a complete P&P Programme ready for distribution, the programme manager has two options: the first is to run a quick trial; this ensures the programme devised is valid without any of the processing taking place in the P&P Engine (see Figure 14). This means request are made to AXMEDIS tools to make sure tasks can be accomplished for processing the P&P Programme. A message is return to the P&P Editor informing the user if the trial was successful or not. The second option is to run a full trial which enforces the P&P engine to request all the processing to be run if required with the exception of the final distribution to the distribution area. The processing jobs are requested and executed and on completion the results are returned. The final action of distribution is the only processing not requested in the full trial.



Rule Name	Example Programme 5
AXRID	pnp_1
Rule Version	1.0
Rule Type	AXPnP
Date of Production	2005-06-22
Last Modification	2005-09-02
Terminal ID	

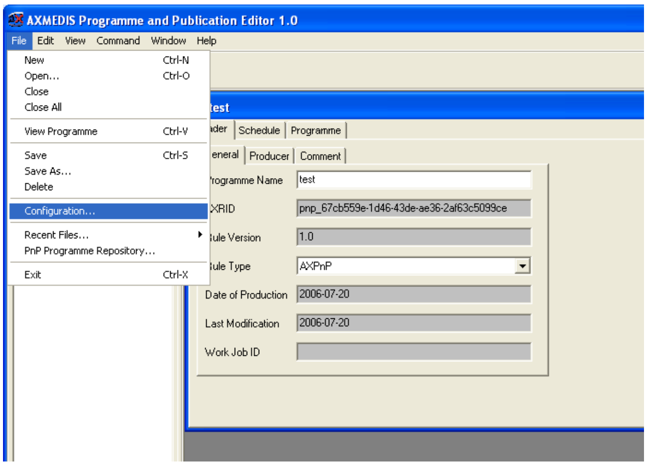
Figure 14

14.3.6 Activating and Stopping a P&P Programme

A complete P&P Programme to distribute AXMEDIS objects is activated in the Command menu (see Figure 14). This sends the P&P Programme to the P&P Engine to processes the programme information, request formatting if required for the specified distribution channel and at the specified times distributes the correctly adapted multimedia object to the distribution channel. During the lifespan of the active programme, the programme manager can also stop a P&P Programme from the P&P Editor by selecting "*Stop Programme*" in the Command menu as shown in Figure 14.

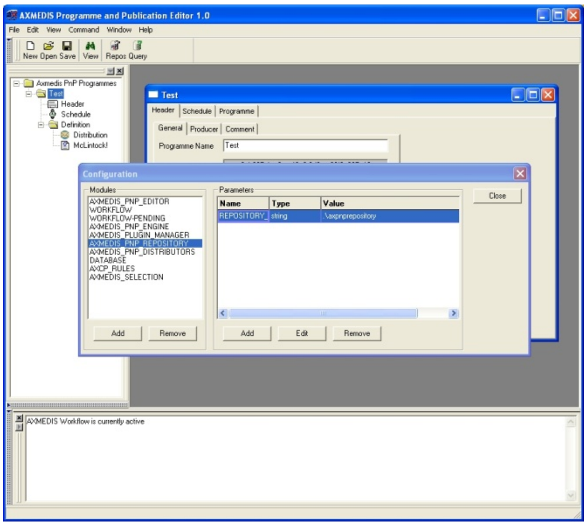
14.3.7 Configuring the P&P Editor

The P&P Editor has relationships with other modules within the AXMEDIS project and therefore the P&P Editor is required to be configured. This is achieved by opening the Configuration dialog using the File menu as shown in Figure 15 and Figure 16.



rogramme Name	test
XRID	pnp_67cb559e-1d46-43de-ae36-2af63c5099ce
ule Version	1.0
ule Type	AXPnP
Date of Production	2006-07-20
Last Modification	2006-07-20
Work Job ID	

Figure 15



Programme Name: Test

AXMEDIS_PNP_EDITOR
WORKFLOW
WORKFLOW-PENDING
AXMEDIS_PNP_ENGINE
AXMEDIS_PLUGIN_MANAGER
AXMEDIS_PNP_REPOSITORY
AXMEDIS_PNP_DISTRIBUTORS
DATABASE
AXCP_RULES
AXMEDIS_SELECTION

Name	Type	Value
REPOSITORY_	string	.\axpnprepository

AXMEDIS Workflow is currently active

Figure 16

The main configuration parameters required are the settings to communicate with the other AXMEDIS modules and tools and to define the Distribution Channels which are sent to the P&P Engine. The following are the parameters that are required to be set:

AXMEDIS_PnP_EDITOR

Config parameter	Possible values
XML_XSD_PATH	It is the directory where xml schema (XSD files) are stored

AXMEDIS_PnP_REPOSITORY

Config parameter	Possible values
REPOSITORY_PATH	It is the directory where PnP Programmes (*.pp) are stored

AXMEDIS_PLUGIN_MANAGER

Config parameter	Possible values
PLUGINS_PATH	The directory where the DLL of plug-ins with their profiles (e.g. workflow) are stored (e.g. ./plugin)

AXMEDIS_SELECTION

Config parameter	Possible values
MAIN_QUERY_SUPPORT_WSDL	It is the URL of the WSDL for using the Main Query Support
SELECTION_ARCHIVE_WSDL	It is the URL of the WSDL for using the Selection Archive

WORKFLOW

Config parameter	Possible values
gatewayUrl	It is the URL of the WSDL for the Workflow response gateway

AXMEDIS Workflow: To configure this parameter, please see the manual related to Workflow. If this is not set, then all communications go directly to the modules and not through Workflow.

AXMEDIS_PnP_ENGINE

Config parameter	Possible values
SERVER_ADDRESS	It is the address and port of the P&P Engine (e.g. localhost:3004)
FTPUser	FTP user name for the Query on Demand
FTPPass	FTP password for the Query on Demand
FTPAddress	FTP address for the Query on Demand

AXMEDIS_PnP_DISTRIBUTORS

Config parameter	Possible values
<Distributor name>	Name to display in the P&P Editor | Satellite Group or Terminal ID or URI address for AXEPTool and FTP | Programme Type (Object distributes by object, Programme distributes the whole programme, OnDemand distributes ignoring times)

AXCP_RULES

Config parameter	Possible values
<AXCP Rule name>	Rule Name to display in the P&P Editor | AXCP Rule ID - e.g. AXCP Test|axcprule:7a148fce-a17a-417a-969d-4f9d556d1c69

15 AXMEDIS Programme & Publication Engine

The Programme and Publication Engine will be developed exploiting the work performed for the Publication tool in WP4.4. This will allow the reception of specific commands (requests) for creating content produced by exploiting the capabilities of the AXMEDIS formatting engine. In addition, the Programme and Publication Engine will also have the capabilities for the publication the Programme based on the specific programmes.

The active engine is continuous running software accessing the system clock to process a list of programmes, which consists of "rules" to make available AXMEDIS objects to the specified destination channels at the correct time, taking into account the transfer and/or formatting (if required) time. This is achieved by the input of *activated* P&P Programme for scheduled distribution.

15.1 Main functionalities

The active Programme and Publications Engine's main function is to continually run looking for active publication rules and make the objects in the rules available for distribution. The main points to consider:

- Access to correct system clock
- Keep a track of newly activated P&P Programmes to add to the delivery system
- The API to the AXMEDIS formatting engine (AXCP) to request an appropriate format for distribution and retrieving the correct object from the AXDB
- Providing the AXMEDIS objects to a AXMEDIS distribution server allowing for delivery time

15.2 Relationship with other tools

The P&P Engine is integrated with AXMEDIS Database (AXDB) and P&P Editor and the AXMEDIS Content Processing Engine (AXCP). Communication to the AXMEDIS tools can be performed with or without AXMEDIS Workflow. The relationship between the AXMEDIS tools and the P&P Engine can be seen in the Figure below.

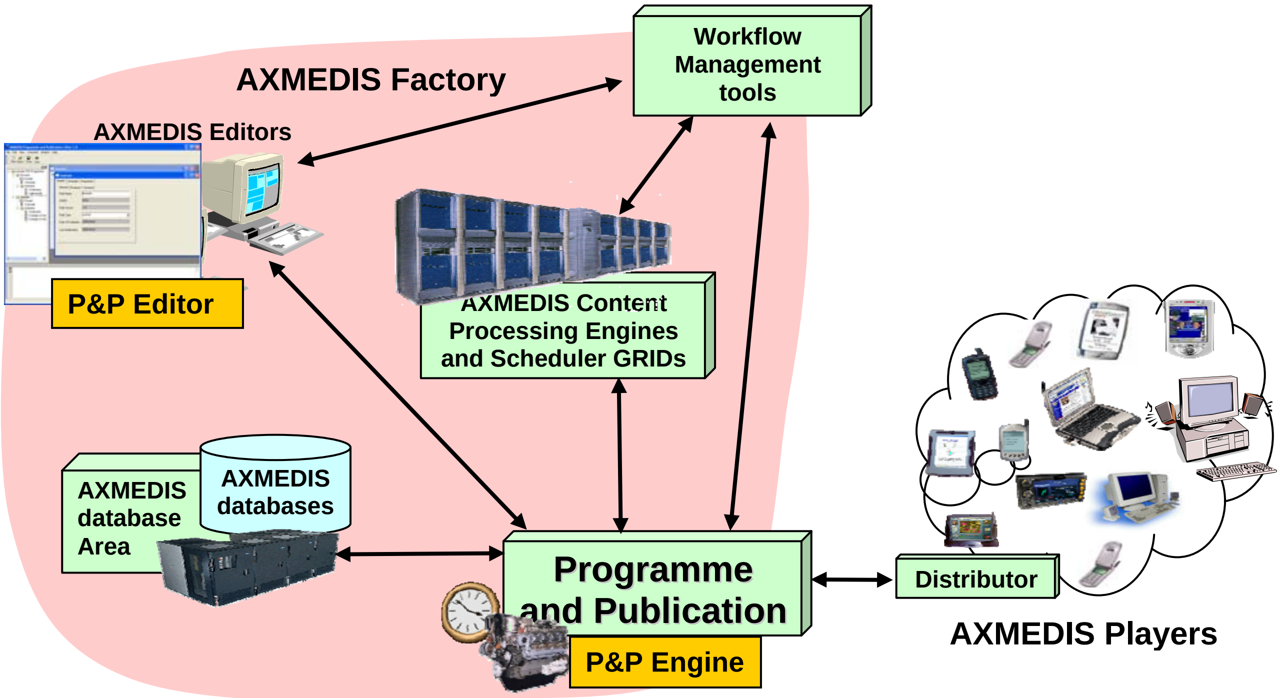
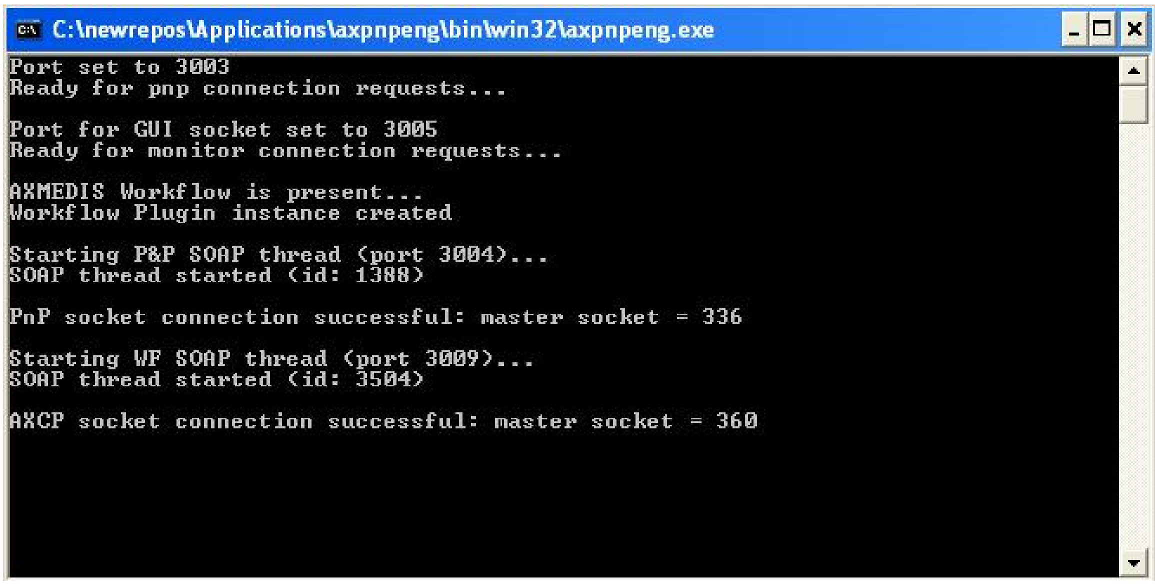


Figure: Relation between the P&P Engine and other AXMEDIS tools

15.3 Detailed description of the functionalities and Screenshots

The P&P Engine is a continuous running engine processing P&P Programmes from the P&P Editor or On-Demand either directly or through WF. When set running, the user is presented with a DOS window as shown in the Figure below including the port that the P&P Engine is using to listen to the P&P Editor and P&P Engine Monitor (in this example 3004) and the port to listen to the P&P Engine Monitor (3001). Other communications are handled using the Workflow SOAP plug-in.



```
Port set to 3003
Ready for pnp connection requests...

Port for GUI socket set to 3005
Ready for monitor connection requests...

AXMEDIS Workflow is present...
Workflow Plugin instance created

Starting P&P SOAP thread (port 3004)...
SOAP thread started (id: 1388)

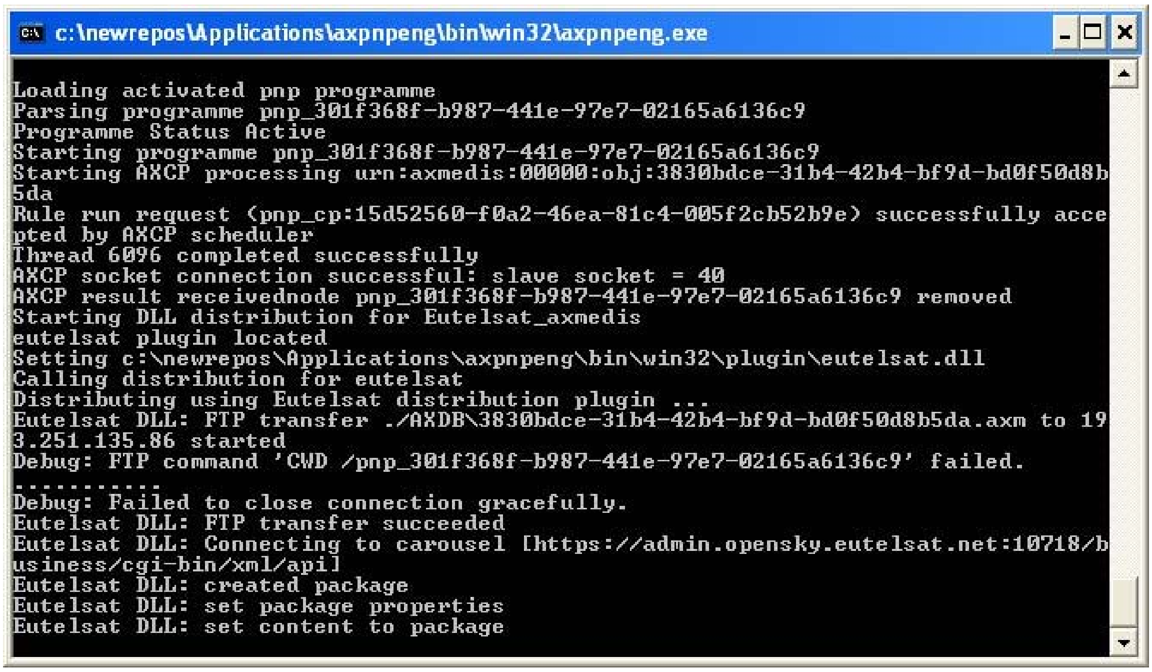
PnP socket connection successful: master socket = 336

Starting WF SOAP thread (port 3009)...
SOAP thread started (id: 3504)

AXCP socket connection successful: master socket = 360
```

Figure: DOS Prompt with the initiated P&P Engine

The DOS prompt informs the user when P&P Programmes have been activated by displaying logged messages during the parsing and processing of the P&P Programme.



```
Loading activated pnp programme
Parsing programme pnp_301f368f-b987-441e-97e7-02165a6136c9
Programme Status Active
Starting programme pnp_301f368f-b987-441e-97e7-02165a6136c9
Starting AXCP processing urn:axmedis:00000:obj:3830bdce-31b4-42b4-bf9d-bd0f50d8b
5da
Rule run request (pnp_cp:15d52560-f0a2-46ea-81c4-005f2cb52b9e) successfully acce
pted by AXCP scheduler
Thread 6096 completed successfully
AXCP socket connection successful: slave socket = 40
AXCP result receivednode pnp_301f368f-b987-441e-97e7-02165a6136c9 removed
Starting DLL distribution for Eutelsat_axmedis
eutelsat plugin located
Setting c:\newrepos\Applications\axpnpeng\bin\win32\plugin\eutelsat.dll
Calling distribution for eutelsat
Distributing using Eutelsat distribution plugin ...
Eutelsat DLL: FTP transfer ./AXDB\3830bdce-31b4-42b4-bf9d-bd0f50d8b5da.axm to 19
3.251.135.86 started
Debug: FTP command 'CWD /pnp_301f368f-b987-441e-97e7-02165a6136c9' failed.
...........
Debug: Failed to close connection gracefully.
Eutelsat DLL: FTP transfer succeeded
Eutelsat DLL: Connecting to carousel [https://admin.opensky.eutelsat.net:10718/b
usiness/cgi-bin/xml/api]
Eutelsat DLL: created package
Eutelsat DLL: set package properties
Eutelsat DLL: set content to package
```

Figure: DOS Prompt with logged message with distribution to the Eutelsat Satellite channel

15.4 Configuring the P&P Engine

The P&P Engine has relationships and communicates with other modules within the AXMEDIS project and therefore the P&P Engine is required to be configured. The configuration is stored in an XML file in the same directory as the P&P engine executable called “engine-configuration.xml”.

The main configuration parameters required are the settings to communicate with the other AXMEDIS modules and tools and the definition of the distribution channels. The following are the parameters that are required to be set:

AXPNPENGINE

Config parameter	Possible values
PNPURI	Address of the Engine for returned communication messages
PORT	Listening port for the P&P Editor using sockets
MONITOR_PORT	Listening port for the P&P Engine Monitor using web services
PnP_SOAP_PORT	Listening port for the P&P Editor using web services
WF_SOAP_PORT	Listening port for the Workflow Web services
NAME	Software name for other modules to identify requests
OBJECT_REPOITORY	The directory where the downloaded objects are saved from the AXDB before distribution
PROGRAMME_REPOSITORY	The directory where the P&P rules are stored

AXMEDIS Plugin Manager

Config parameter	Possible values
PLUGINS_PATH	The directory where the DLL of plug-ins with their profiles (e.g. workflow, distribution plug-ins) are stored (e.g. ./plugin)

AXMEDIS_TEST_PLAYER

Config parameter	Possible values
PLAYER_NAME	The name of the executable AXMEDIS Player

AXMEDIS Selection

Config parameter	Possible values
MAIN_QUERY_SUPPORT_WSDL	It is the URL of the WSDL for using the Main Query Support
SELECTION_ARCHIVE_WSDL	It is the URL of the WSDL for using the Selection Archive

AXMEDIS Database

Config parameter	Possible values
user	The user name for logging into Database
passwd	The password for logging into Database
LoaderWSEndPoint	It is the URL for accessing to the load web service

WORKFLOW

Config parameter	Possible values
gatewayUrl	It is the URL of the WSDL for the Workflow response gateway

AXMEDIS Workflow: To configure this parameter, please see the manual related to Workflow. If this is not set, then all communications go directly to the modules and not through Workflow.

AXEPTOOL

Config parameter	Possible values
LoaderWSEndPoint	The URL of the WSDL for the AXEPTool Webservices

TrackerURL	The URL for the tracker URL for P2P Objects for downloading and uploading to the AXEPTool
DownloadPath	It is the directory where downloaded files from the AXEPTool are stored

FTPGET

Config parameter	Possible values
FTPUser	The username of the FTP to where objects will be distributed
FTPPass	The password of the FTP to where objects will be distributed
FTPAddress	The address of the FTP to where objects will be distributed

AXMEDIS_PNP_DISTRIBUTION_TYPE

Config parameter	Possible values
<Distribution name>	The distribution type e.g. ftp, dll, or p2p
FTP	
<Distribution name>_address	The URL for the FTP server
<Distribution name>_user	The username for the FTP server
<Distribution name>_pass	The password for the FTP server
<Distribution name>_cd	The directory on the FTP server to upload the AXMEDIS Objects
DLL (Euletsat Example)	
<Distribution name>_plugin	The name of the dll for the following parameters
<Distribution name>_FTP_user	The URL for the FTP server
<Distribution name>_ FTP_pass	The username for the FTP server
<Distribution name>_ FTP_address	The password for the FTP server
<Distribution name>_API_user	The URL for the API communication
<Distribution name>_ API_pass	The username for the API communication
<Distribution name>_ API_address	The address for the API communication
<Distribution name>_ API_programme	The Eutelsat distribution carousel programme name
<Distribution name>_ API_group	The Eutelsat Group name for the carousel distribution
<Distribution name>_auto_listen	True or false whether the group requires the receiver to auto listen

CONTENT_PROCESSING

Config parameter	Possible values
WSDLURI	The URL of the WSDL for the AXCP Scheduler
ENGINEURL	The AXCP Scheduler address and port number

16 AXMEDIS Programme & Publication Engine Monitor

16.1 Main functionalities

The main functionality of the P&P Engine Monitor is to provide the user with information concerning the status of the P&P Engine and the status of the activated P&P Programmes being processed by the P&P Engine. It can also be used to send an abort request directly to the P&P Engine to remove a particular programme from the engine.

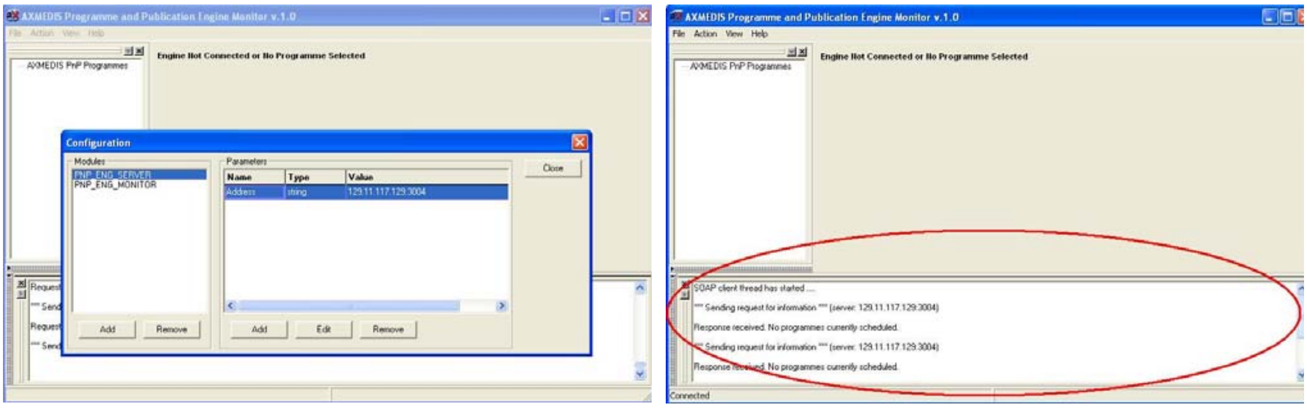
16.2 Relationship with other tools

The P&P Engine Monitor is a viewing management tool for the P&P Engine. It communicates to the P&P Engine requesting status information concerning the engine and active P&P Programmes currently being processed by the P&P Engine.

16.3 Detailed description of the functionalities and Screenshots

16.3.1 Running the Monitor

After starting, the Monitor will automatically try to connect to the Engine. The server address of the Engine can be configured by selecting the “File -> Configuration” menu. A dialog will pop up allowing the user to edit the Engine address (see the left figure below). Once a connection has been established the “Log” window will show that a connection has been made and requests have been sent to the Engine to get the updated list of active programmes (see the right figure below). The “Log” windows is also the place where all the activities (e.g. making connections, sending requests, failing, etc.) are presented. The user can hide/display the “Log” window using the menu “View → Log Window”.



Modules: PNP_ENG_SERVER, PNP_ENG_MONITOR

Name	Type	Value
Address	string	129.11.117.129:3004

```
SOAP client thread has started ....
*** Sending request for information *** (server: 129.11.117.129:3004)
Response received. No programmes currently scheduled.
*** Sending request for information *** (server: 129.11.117.129:3004)
Response received. No programmes currently scheduled.
```

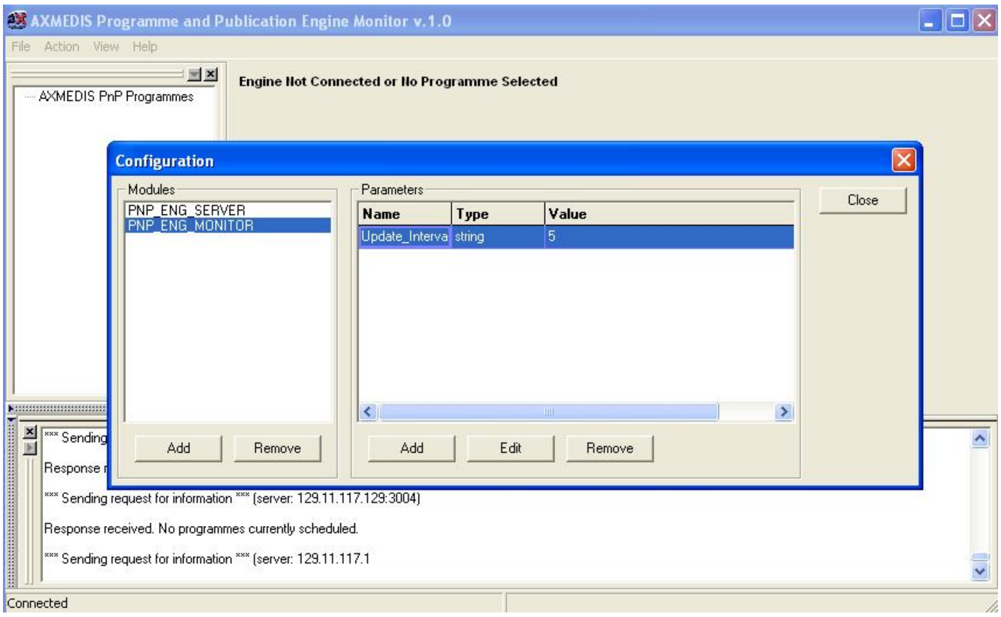
Figure: the P&P Engine Monitor with the configuration dialog (left screenshot) and the “Log” window displaying activities’ information (right screenshot)

The user can disconnect or refresh the connection using the menu “Action -> Disconnect” and “Action -> Refresh” respectively.

16.3.2 Programmes Management

If there are active programmes in the Engine, the Monitor will display all programmes in the tree view. Clicking on a specific programme will show its details on the right panel. The tree view can also be hidden/displayed using the menu “View -> Programmes Tree”.

The Monitor updates the information from the Engine at a fixed interval. That interval can be configured using the menu “File → Configuration” and selecting the second item (PNP_ENG_MONITOR) in the dialog. The value is in second. This is illustrated in the figure below:



Engine Not Connected or No Programme Selected

Modules: PNP_ENG_SERVER, PNP_ENG_MONITOR

Name	Type	Value
Update_Interva	string	5

```
*** Sending
Response r
*** Sending request for information *** (server: 129.11.117.129:3004)
Response received. No programmes currently scheduled.
*** Sending request for information *** (server: 129.11.117.1
```

To delete an active programme from the engine the user must first select a programme, then click on the ‘Remove’ button. There is a small delay while the engine wakes up the programme and destroys it before the window is refreshed and the programme is removed.

17 AXMEDIS Workflow and Workflow manager - Openflow

17.1 Main functionalities

- Openflow is a workflow engine developed and released as free software under a GNU GPL licence.
- It is based on an object-oriented structure and has a powerful exception handling system along with dynamic redesign support.
- These features make OpenFlow much more flexible than any other existing workflow engines.
- OpenFlow supports most of the open standards (XML/XML-RPC) including also the web standards.
- It has got a simple access to most of the relational DBMSs and thus it facilitates the integration of heterogeneous system.
- OpenFlow is activity-based, web-based, WFMC inspired, built and integrated with the application server Zope.
- OpenFlow is capable of running on most operating systems including Linux, Windows 9x, NT/2000, XP, MacOs.
- Through an integrated role assignment system, OpenFlow can assign tasks and activities to single users or workgroups and also to automatic applications.
- At every moment OpenFlow can trace the complete history of a certain situation e.g. participants involved, activities and actions executed and invoked.
- It is possible to carry out performance and efficiency analysis and verify the correct implementation of the adopted model.
- OpenFlow is strongly web-oriented and offers complete support for developing and executing workflows via a browser.
- The interaction with OpenFlow uses simple HTTP requests as in, for example, process modelling, assignment of users to activities, definition of the interaction with the applications.
- Every user receives his task which interacts with appropriate applications through the network

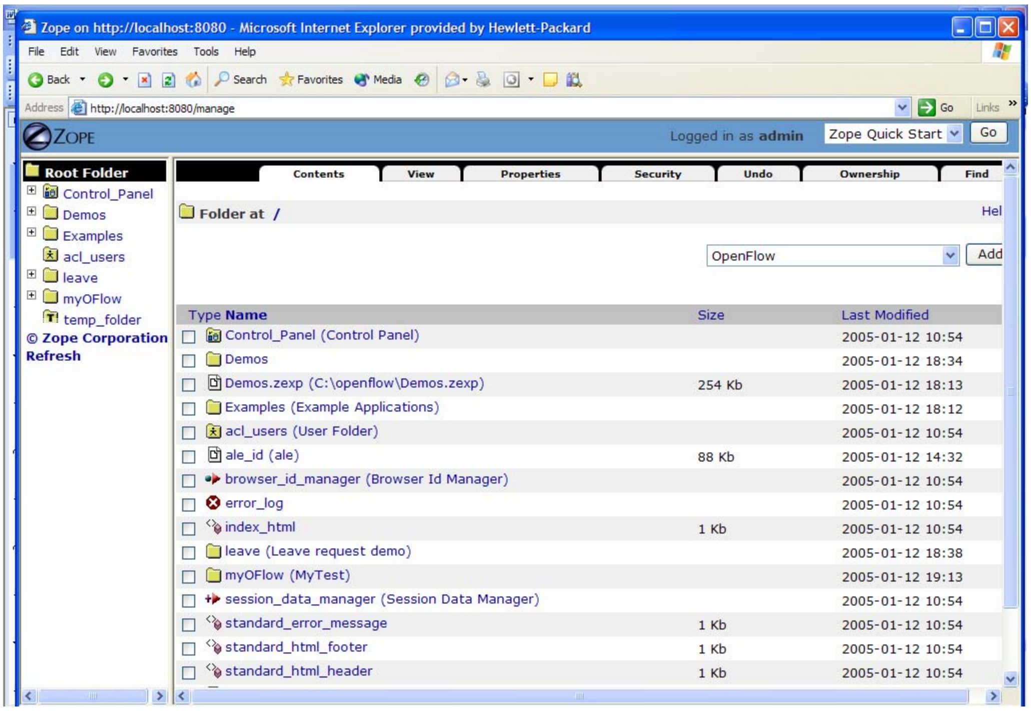
17.2 Relationship with other tools

The Openflow Engine should be deployed on Zope Server. Additionally the user should import the Workflow Adaptors (Prove_WF.zexp and extensions) in the Zope Server. The openflow Engine communicates to AXMEDIS tools through Workflow Gateways (Request & Response) which should be deployed on IIS server with .NET V2 or later.

17.3 Detailed description of the functionalities and Screenshots

Openflow runs on the Zope platform which is managed through the "Zope Management Interface" using industry standard browsers, typically by logging on as the administrator (admin) at URL http://localhost:8080/manage. The screen shot below shows an example of this management interface.

Creating a new process in openflow is a multi-step process which begins with adding an OpenFlow container using the Zope management interface as shown below (delineated by an ellipse in red).

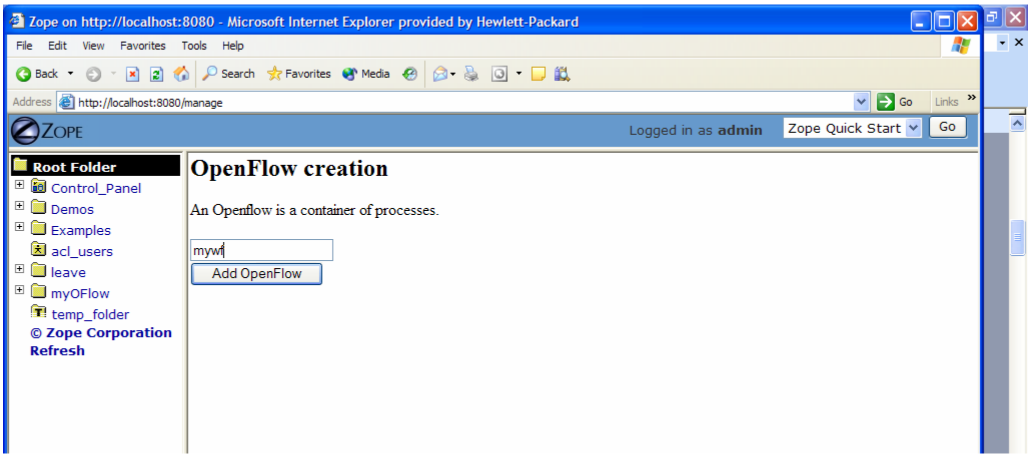

Zope on http://localhost:8080 - Microsoft Internet Explorer provided by Hewlett-Packard
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://localhost:8080/manage
Go Links
ZOPE
Logged in as admin
Zope Quick Start
Go
Root Folder
Control_Panel
Demos
Examples
acl_users
leave
myOFlow
temp_folder
© Zope Corporation
Refresh
Contents View Properties Security Undo Ownership Find
Folder at /
Hel
OpenFlow
Add

Type Name	Size	Last Modified
□ Control_Panel (Control Panel)		2005-01-12 10:54
□ Demos		2005-01-12 18:34
□ Demos.zexp (C:\openflow\Demos.zexp)	254 Kb	2005-01-12 18:13
□ Examples (Example Applications)		2005-01-12 18:12
□ acl_users (User Folder)		2005-01-12 10:54
□ ale_id (ale)	88 Kb	2005-01-12 14:32
□ browser_id_manager (Browser Id Manager)		2005-01-12 10:54
□ error_log		2005-01-12 10:54
□ index_html	1 Kb	2005-01-12 10:54
□ leave (Leave request demo)		2005-01-12 18:38
□ myOFlow (MyTest)		2005-01-12 19:13
□ session_data_manager (Session Data Manager)		2005-01-12 10:54
□ standard_error_message	1 Kb	2005-01-12 10:54
□ standard_html_footer	1 Kb	2005-01-12 10:54
□ standard_html_header	1 Kb	2005-01-12 10:54

Figure 2: Adding an OpenFlow container through the Zope Management Interface

During the creation of the OpenFlow container, the name of the container must be specified as shown in the next screen-shot.

.


Zope on http://localhost:8080 - Microsoft Internet Explorer provided by Hewlett-Packard
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://localhost:8080/manage
Go Links
ZOPE
Logged in as admin
Zope Quick Start
Go
Root Folder
Control_Panel
Demos
Examples
acl_users
leave
myOFlow
temp_folder
© Zope Corporation
Refresh
Add OpenFlow

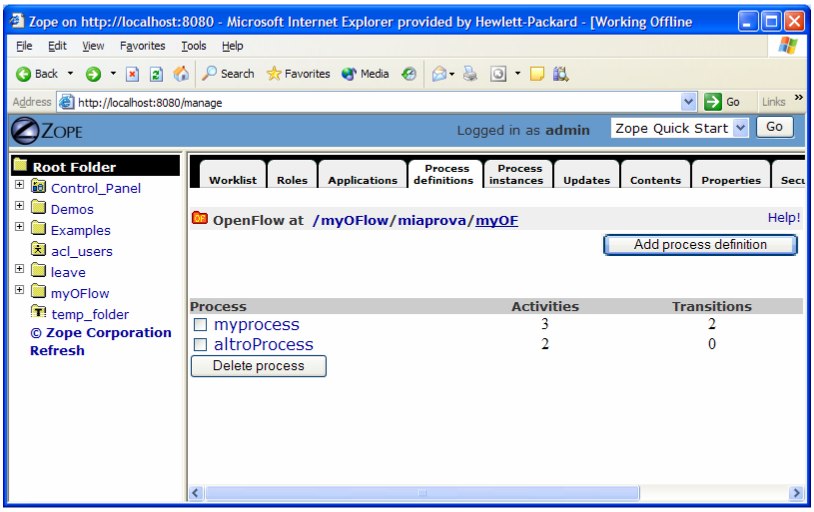
OpenFlow creation

An Openflow is a container of processes.

mywf

Figure 3: Creating the OpenFlow container

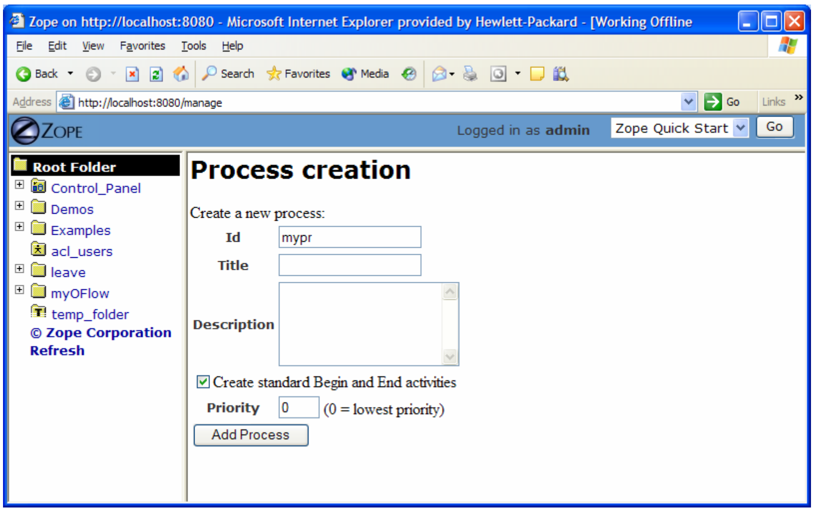
Next it is necessary to define the process and the activities pertaining to the process, together with their transitions (From Activity and To Activity). These operations are performed by accessing the tabs in the Openflow container as shown in the following screen-shots:



OpenFlow at /myOFlow/miaprova/myOF

Process	Activities	Transitions
□ myprocess	3	2
□ altroProcess	2	0

Figure 4: The process definition tab


Zope on http://localhost:8080 - Microsoft Internet Explorer provided by Hewlett-Packard - [Working Offline
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://localhost:8080/manage
Go Links
ZOPE
Logged in as admin
Zope Quick Start
Go
Root Folder
Control_Panel
Demos
Examples
acl_users
leave
myOFlow
temp_folder
© Zope Corporation
Refresh
Add Process

Process creation

Create a new process:

Id: mypr

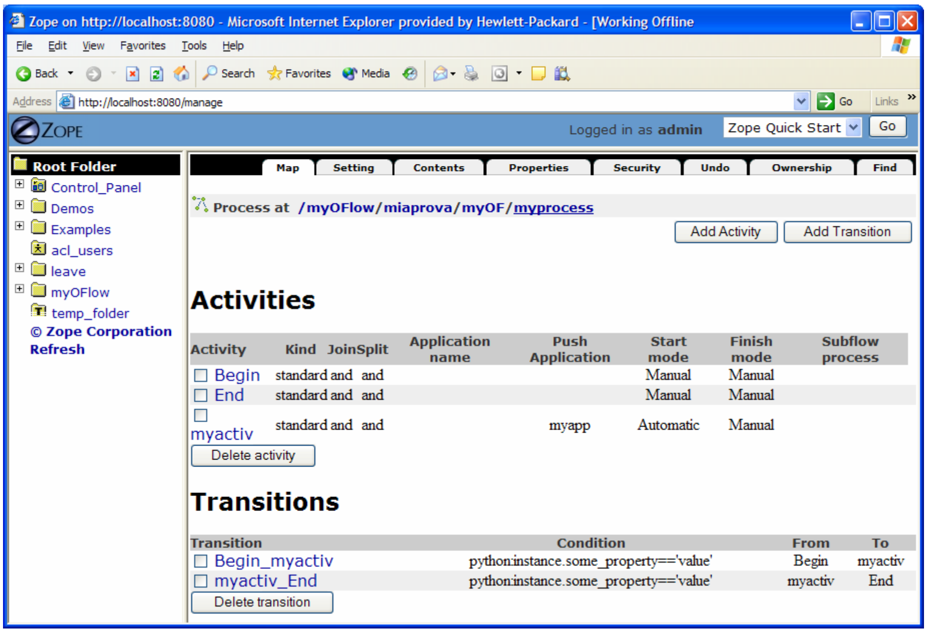
Title:

Description:

☑ Create standard Begin and End activities

Priority: 0 (0 = lowest priority)

Figure 5: Creating a new Process definition



Process at /myOFlow/miaprova/myOF/myprocess

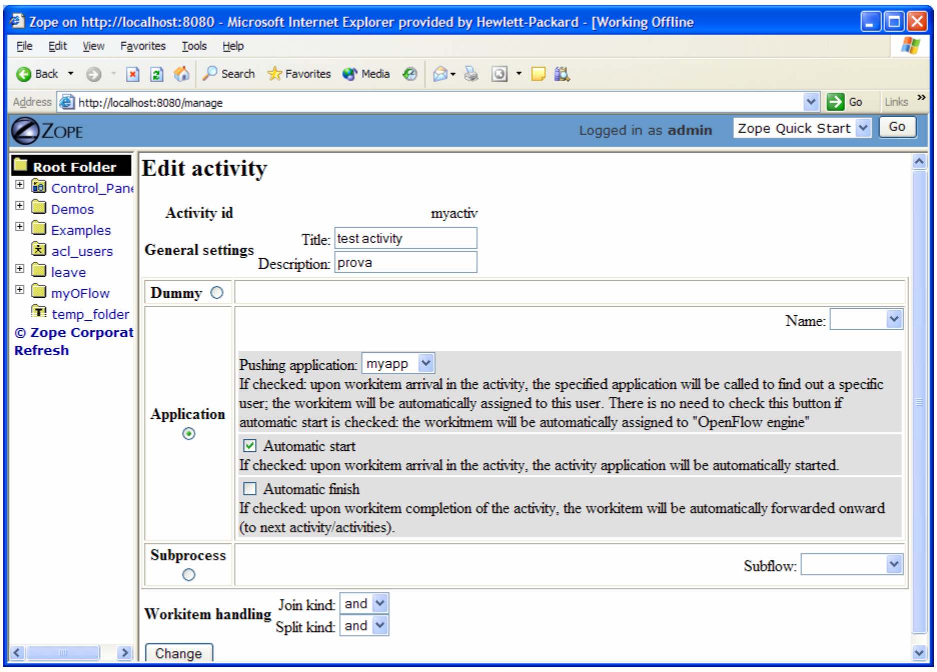
Activities

Activity	Kind	JoinSplit	Application name	Push Application	Start mode	Finish mode	Subflow process
□ Begin	standard	and and			Manual	Manual	
□ End	standard	and and			Manual	Manual	
□ myactiv	standard	and and		myapp	Automatic	Manual	

Transitions

Transition	Condition	From	To
□ Begin_myactiv	python:instance.some_property=='value'	Begin	myactiv
□ myactiv_End	python:instance.some_property=='value'	myactiv	End

Figure 6: Management of activity and transitions of a process


Zope on http://localhost:8080 - Microsoft Internet Explorer provided by Hewlett-Packard - [Working Offline
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://localhost:8080/manage
Go Links
ZOPE
Logged in as admin
Zope Quick Start
Go
Root Folder
Control_Pan
Demos
Examples
acl_users
leave
myOFlow
temp_folder
© Zope Corporat
Refresh
Change

Edit activity

Activity id: myactiv

General settings
Title: test activity
Description: prova

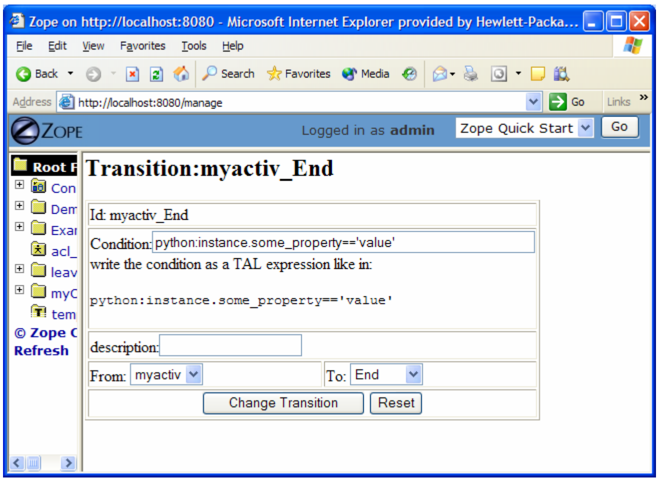
Dummy ○

Application ●
Name:
Pushing application: myapp
If checked: upon workitem arrival in the activity, the specified application will be called to find out a specific user; the workitem will be automatically assigned to this user. There is no need to check this button if automatic start is checked: the workitmem will be automatically assigned to "OpenFlow engine"
☑ Automatic start
If checked: upon workitem arrival in the activity, the activity application will be automatically started.
□ Automatic finish
If checked: upon workitem completion of the activity, the workitem will be automatically forwarded onward (to next activity/activities).

Subprocess ○
Subflow:

Workitem handling
Join kind: and
Split kind: and

Figure 7: Editing a process activity


Zope on http://localhost:8080 - Microsoft Internet Explorer provided by Hewlett-Packa...
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://localhost:8080/manage
Go Links
ZOPE
Logged in as admin
Zope Quick Start
Go
Root F
Con
Dem
Exai
acl_
leav
myC
tem
© Zope C
Refresh

Transition:myactiv_End

Id: myactiv_End

Condition: python:instance.some_property=='value'

write the condition as a TAL expression like in:

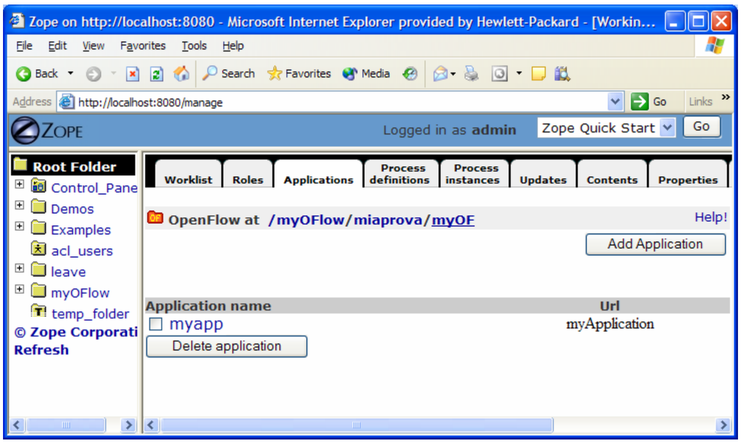
```
python:instance.some_property=='value'
```

description:

From: myactiv To: End

Figure 8: Defining process transition and related conditions

Applications associated to the activities are then specified selecting the Applications Tab.



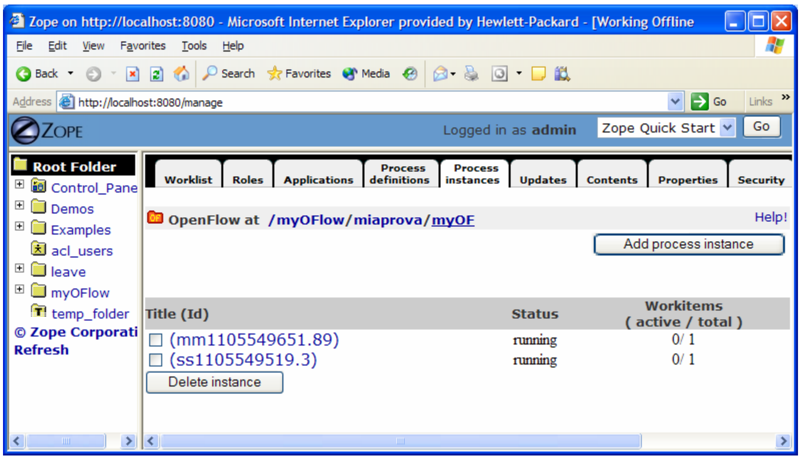
OpenFlow at /myOFlow/miaprova/myOF

Application name	Url
□ myapp	myApplication

Figure 9: Defining process applications

The users and roles are configured as Zope users and roles as access control list (acl_users).

Once a process has been defined it can be tested. An instance of the process can be created and executed directly in the processflow-instance management tab shown below.

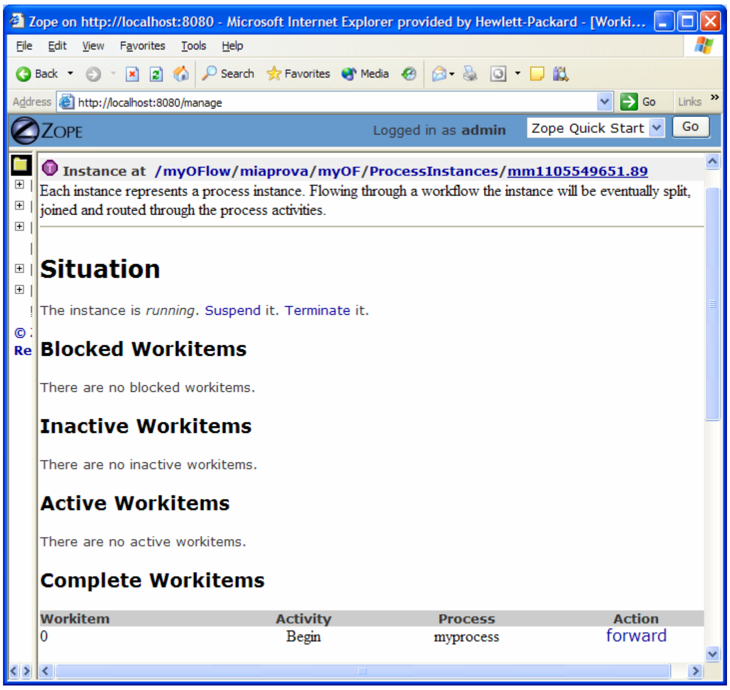


OpenFlow at /myOFlow/miaprova/myOF

Title (Id)	Status	Workitems (active / total)
□ (mm1105549651.89)	running	0/ 1
□ (ss1105549519.3)	running	0/ 1

Figure 10: Process instance management tab

The following Figure shows the workitems involved in the process instance that has been created.


Zope on http://localhost:8080 - Microsoft Internet Explorer provided by Hewlett-Packard - [Worki...
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://localhost:8080/manage
Go Links
ZOPE
Logged in as admin
Zope Quick Start
Go
Re

Instance at /myOFlow/miaprova/myOF/ProcessInstances/mm1105549651.89

Each instance represents a process instance. Flowing through a workflow the instance will be eventually split, joined and routed through the process activities.

Situation

The instance is *running*. Suspend it. Terminate it.

Blocked Workitems

There are no blocked workitems.

Inactive Workitems

There are no inactive workitems.

Active Workitems

There are no active workitems.

Complete Workitems

Workitem	Activity	Process	Action
0	Begin	myprocess	forward

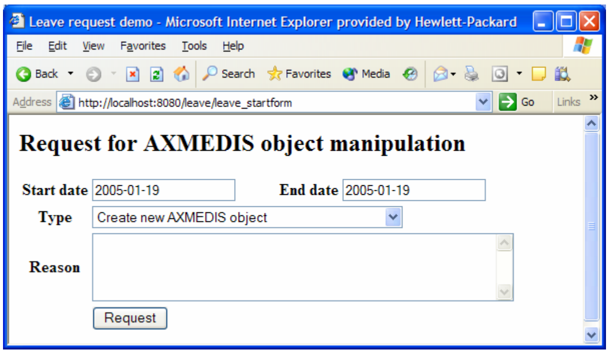
Figure 11: Monitoring and management of a specific process instance

Process Example:

The following simple example illustrates a process to request a AXMEDIS object manipulation (*a mock-up process*). This is an example of explicit forwarding to different actors having different roles. The first actor requests the creation of a new AXMEDIS object by filling out a form. The request goes to the second actor (called Socius) who checks that the request is acceptable. The request is then forwarded to the third actor (called Prefectus) for approval.

The following steps are necessary for the above example process to be enacted:

The first actor (called Tertius) enters an AXMEDIS object manipulation request by filling out the following form as shown in the screen-shot below:


Leave request demo - Microsoft Internet Explorer provided by Hewlett-Packard
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://localhost:8080/leave/leave_startform
Go Links

Request for AXMEDIS object manipulation

Start date 2005-01-19 End date 2005-01-19

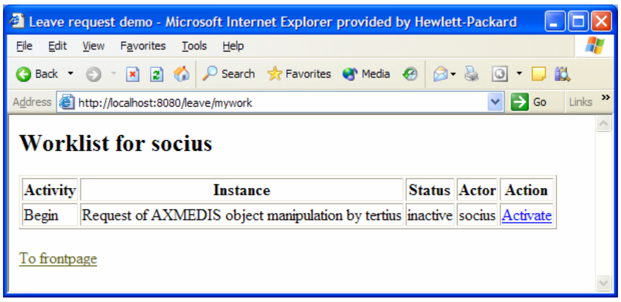
Type Create new AXMEDIS object

Reason

Request

Figure 12: Tertius' AXMEDIS object manipulation form

According to the processflow, the request goes to the next actor (called Socius). When Socius logs in, his work list shows that there is a workitem in his worklist as shown in the screen-shot below:


Leave request demo - Microsoft Internet Explorer provided by Hewlett-Packard
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://localhost:8080/leave/mywork
Go Links

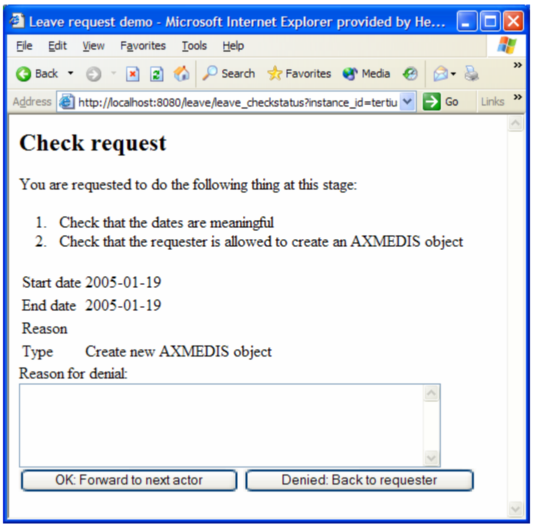
Worklist for socius

Activity	Instance	Status	Actor	Action
Begin	Request of AXMEDIS object manipulation by tertius	inactive	socius	Activate

To frontpage

Figure 13: Socius' worklist and workitem activation

To execute the workitem, the actor (Socius) has to activate the workitem (Begin) and perform the related activities. Next this actor either forwards the workitem to the next actor, which in this case is the supervisor (called Prefectus), or rejects the request; as illustrated by the screen-shot below:


Leave request demo - Microsoft Internet Explorer provided by He...
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://localhost:8080/leave/leave_checkstatus?instance_id=tertiu
Go Links

Check request

You are requested to do the following thing at this stage:

1. Check that the dates are meaningful
2. Check that the requester is allowed to create an AXMEDIS object

Start date 2005-01-19
End date 2005-01-19
Reason
Type Create new AXMEDIS object
Reason for denial:

OK: Forward to next actor | Denied: Back to requester

Figure 14: Socius' workitem execution and forwarding

Then the activity is forwarded to the last actor and the process ends.

18 AXMEDIS Workflow and Workflow manager – Microsoft Biztalk

18.1 Main functionalities

- BizTalk Server 2004, an integration server, lets you to develop, deploy, and manage integrated business processes and XML-based Web services
- Traditionally, BizTalk Server has been used for application integration, where the following two scenarios are most important:
  - Connecting applications within a single organization, commonly referred to as enterprise application integration (EAI)
  - Connecting applications in different organizations, often called business-to-business (B2B) integration
- BizTalk Server 2004 also adds technology for creating Human Workflow Services (HWS), making possible business processes that people can interact with from Microsoft Outlook and other familiar clients
- The HWS infrastructure is accessed through Web services, and so it can be used by any client application

18.2 Relationship with other tools

The Microsoft Biztalk Server Communicates to AXMEDIS Tools using Workflow Plug-ins directly without the need of Workflow Gateways.

18.3 Detailed description of the functionalities and Screenshots

Please refer to http://www.microsoft.com/biztalk/default.mspx for detailed description of functionality and usage for Microsoft Biztalk Server. Functionality of current Biztalk developments is fairly limited thus far, in terms of managing the system, and providing the same functionality as the Openflow WfMS.

19 AXMEDIS PLUG-INS

19.1 Audio Adaptation Plug-in

19.1.1 Main functionalities

The audio_adaptation_plug-in allows adapting audio content to various use cases. For example, it can be used for transcoding applications to transform a high-quality audio file into a low bit rate audio file well suited for distribution on a network with reduced bandwidth. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

19.1.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.1.3 Detailed description of the functionalities and Screenshots

19.1.3.1 FFMPEG

Here's an example on how to use the FFmpeg audio adaptation transcoding function as a plug-in with for the AXMEDIS editor.

The plug-in must be applied on an audio resource of an AXMEDIS object. The adaptation plug-in is called by right-clicking on the interesting resource and selecting the 'Plugin…' command:

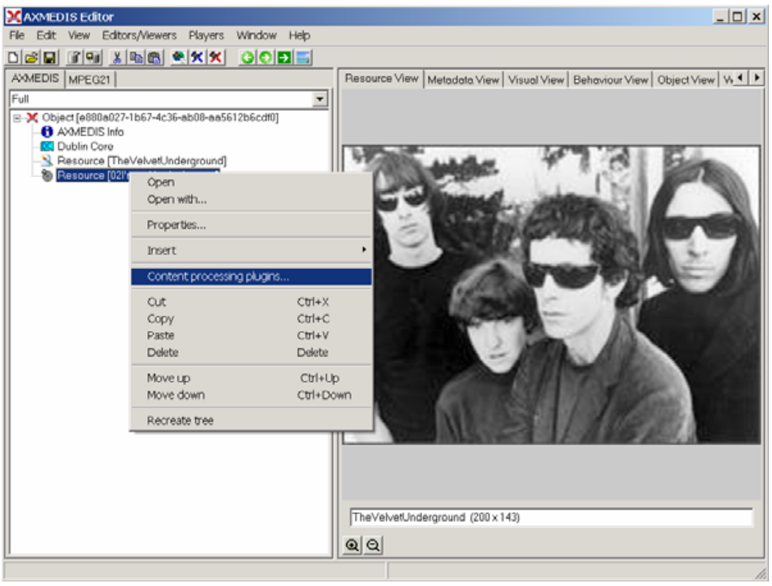
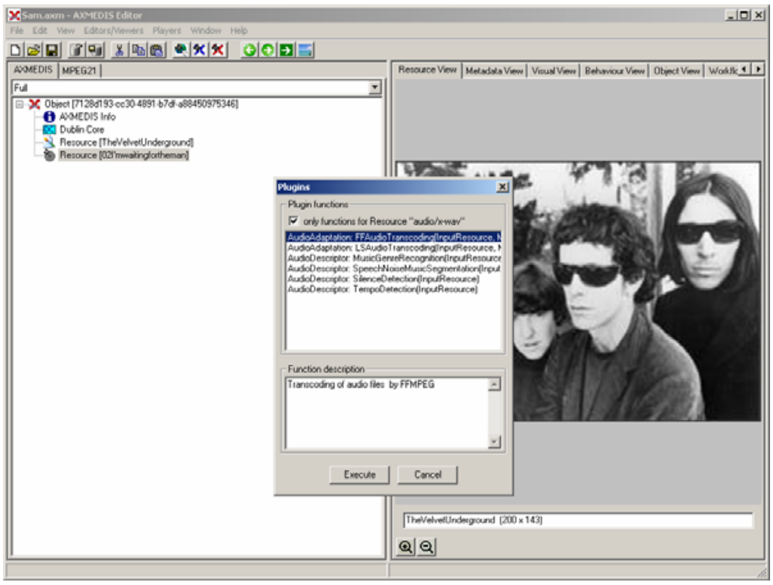

AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object [e880a027-1b67-4c36-ab08-aa5612b6cdf0]
AXMEDIS Info
Dublin Core
Resource [TheVelvetUnderground]
Resource [021
Open
Open with...
Properties...
Insert
Content processing plugins...
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Delete Delete
Move up Ctrl+Up
Move down Ctrl+Down
Recreate tree
Resource View Metadata View Visual View Behaviour View Object View
TheVelvetUnderground (200 x 143)

Figure – Calling the content processing plug-ins

A window showing the functionalities available for the kind of resource selected appears:


Sam.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Resource View Metadata View Visual View Behaviour View Object View Workfl
Plugins
Plugin functions
Function description
Execute Cancel

Object [7128d193-cc30-4891-b7df-a88450975346]
AXMEDIS Info
Dublin Core
Resource [TheVelvetUnderground]
Resource [02I'mwaitingfortheman]

☑ only functions for Resource "audio/x-wav"

AudioAdaptation: FFAudioTranscoding(InputResource, N
AudioAdaptation: LSAudioTranscoding(InputResource, N
AudioDescriptor: MusicGenreRecognition(InputResource
AudioDescriptor: SpeechNoiseMusicSegmentation(Input
AudioDescriptor: SilenceDetection(InputResource)
AudioDescriptor: TempoDetection(InputResource)

Transcoding of audio files by FFMPEG

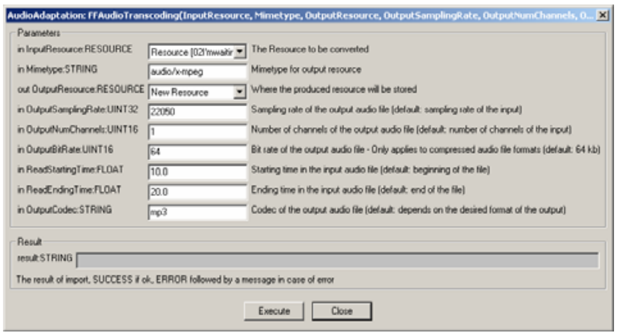
TheVelvetUnderground (200 x 143)

Figure – Selecting the FFMPEG audio transcoding function

The first audio adaptation function available is the FFmpeg transcoding function which is selected by clicking on FFAudioAdaptation: FFAudioTranscoding. A new window appears showing the interface to the audio transcoding function. In the example of the following figure, the transcoding function is used to create a 10 second snapshot with reduced bit rate of the input audio file:

Mp3 compression is selected with a bit rate of 64 kB (which corresponds to a low quality)
Further bit rate reduction is achieved by using a lower sampling rate for the output (22050 Hz) and mixing audio channels into a single mono channel
Only a portion of 10 seconds of the input resource is selected (starting at time 10 seconds and ending at time 20 seconds)

A snapshot with reduced bit rate is particularly useful to allow a customer to pre-view an item before purchasing the corresponding high quality object.


AudioAdaptation: FFAudioTranscoding(InputResource, Mimetype, OutputResource, OutputSamplingRate, OutputNumChannels, O...
Parameters
Result
Execute Close

in InputResource:RESOURCE	Resource [02I'mwaitir	The Resource to be converted
in Mimetype:STRING	audio/x-mpeg	Mimetype for output resource
out OutputResource:RESOURCE	New Resource	Where the produced resource will be stored
in OutputSamplingRate:UINT32	22050	Sampling rate of the output audio file (default: sampling rate of the input)
in OutputNumChannels:UINT16	1	Number of channels of the output audio file (default: number of channels of the input)
in OutputBitRate:UINT16	64	Bit rate of the output audio file - Only applies to compressed audio file formats (default: 64 kb)
in ReadStartingTime:FLOAT	10.0	Starting time in the input audio file (default: beginning of the file)
in ReadEndingTime:FLOAT	20.0	Ending time in the input audio file (default: end of the file)
in OutputCodec:STRING	mp3	Codec of the output audio file (default: depends on the desired format of the output)

result:STRING
The result of import, SUCCESS if ok, ERROR followed by a message in case of error

Figure – The FFMPEG audio transcoding function

Here follows a more complete description of the parameters of the FFMPEG audio transcoding function:

InputResource

Description: the resource to be converted
Parameter Type: AxResource
Default Value:
Constraints:
Resource Type: audio

Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)

Ranges:

MimeType

Description: MimeType for the output resource
Parameter Type: string
Default Value:
Constraints:
Resource Type: audio
Resource Format: x-mpeg, x-aiff, x-wav, basic, x-vorbis, x-ac3
Ranges:

OutputResource

Description: Where the output resource will be stored
Parameter Type: AxResource
Default Value:
Constraints:
Range:

OutputSamplingRate

Description: The sampling rate of the output resource in Hertz
Parameter Type: uint32
Default Value: by default, the sampling rate of the input resource is used
Constraints:
Range:

OutputNumChannels

Description: The number of channels of the audio resource after transcoding
Parameter Type: uint16
Default Value: by default, the number of channels of the input resource is used
Constraints:
Range:

OutputBitRate

Description: The bit rate of the audio resource after transcoding in kilo-Bytes (this parameter is used when transcoding towards a compressed audio format such as MP3)
Parameter Type: uint16
Default Value: by default, the bit rate is set to 64 kB
Constraints:
Range:

ReadStartingTime

Description: set the beginning of the output resource to ReadStartingTime seconds from the beginning of the input resource
Parameter Type: float
Default Value: by default, the read starting time is set to 0 seconds which means that the input resource is considered from the beginning
Constraints:
Range:

ReadEndingTime

Description: set the end of the output resource at ReadEndingTime seconds from the beginning of the input resource
Parameter Type: float

Default Value: by default, the read ending time is set to the end of the input resource
Constraints:
Range:

OutputCodec

Description: set the codec of the output resource; depending on the mime type selected for the output resource, only a certain subset of codec will be supported (the following table shows the possible codecs according to the possible mime types)
Parameter Type: string
Default Value: the default codec depend on the mime type selected for the output resource (the following table shows the default codec according to the possible mime types)
Constraints:
Range:

Result

Result Type: string
Result Description: the result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

File Formats

For a list of codecs and formats supported by FFMPEG, please see http://ffmpeg.mplayerhq.hu/ffmpeg-doc.html#SEC21

Mime type accepted

audio/x-wav
audio/x-ms-wma
audio/basic
audio/x-mpeg
audio/x-vorbis
audio/x-pn-realaudio
audio/x-ac3
audio/x-dv
audio/x-mace
audio/x-adpcm
audio/x-aac
audio/32KADPCM
audio/amr
video/x-mpeg
video/x-mpeg2
video/mp4
video/x-raw
video/x-h263
video/x-mjpeg
video/x-ms-wmv
video/x-ms-asf
video/x-flv
video/x-svq
video/x-dv
video/x-h264
video/x-indeo
video/x-vp3
video/x-ffv
video/x-vcr

video/x-msvideo
video/x-nut
application/x-pcm
application/vnd.rn-realmedia

19.1.3.2 libsndfile

Here’s an example on how to use the libsndfile audio adaptation transcoding function as a plug-in with for the AXMEDIS editor.

The plug-in must be applied on an audio resource of an AXMEDIS object. The adaptation plug-in is called by right-clicking on the interesting resource and selecting the ‘Plugin…’ command:

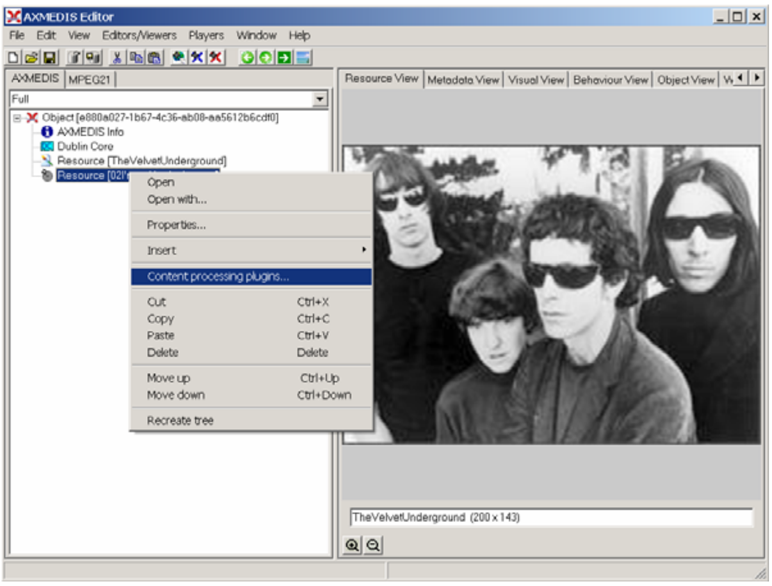
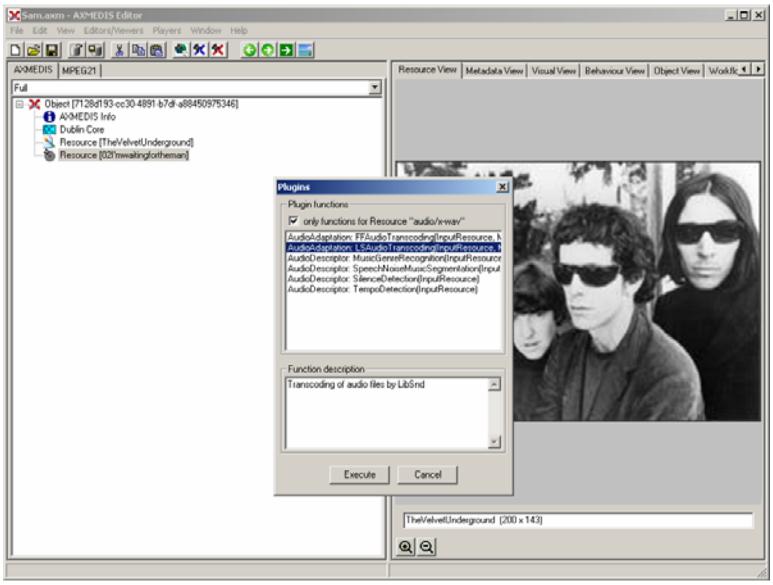


Figure – Calling the content processing plug-ins

A window showing the functionalities available for the kind of resource selected appears:


Sam.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object [7128d193-cc30-4891-b7df-a88450975346]
AXMEDIS Info
Dublin Core
Resource [TheVelvetUnderground]
Resource [02I'mwaitingfortheman]
Resource View
Metadata View
Visual View
Behaviour View
Object View
Workfl
Plugins
Plugin functions
Function description
Execute
Cancel
TheVelvetUnderground (200 x 143)

☑ only functions for Resource "audio/x-wav"

AudioAdaptation: FFAudioTranscoding(InputResource, N
AudioAdaptation: LSAudioTranscoding(InputResource, N
AudioDescriptor: MusicGenreRecognition(InputResource
AudioDescriptor: SpeechNoiseMusicSegmentation(Input
AudioDescriptor: SilenceDetection(InputResource)
AudioDescriptor: TempoDetection(InputResource)

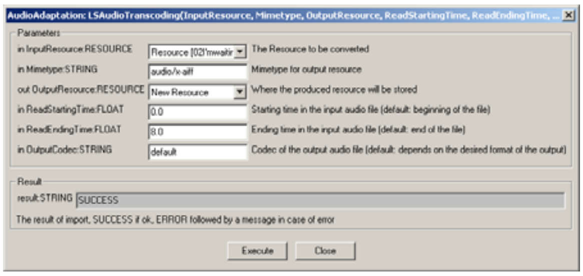
Transcoding of audio files by LibSnd

Figure – Selecting the libsndfile audio transcoding function

The first audio adaptation function available is the libsndfile transcoding function which is selected by clicking on LSAudioAdaptation: LSAudioTranscoding. A new window appears showing the interface to the audio transcoding function. In the example of the following figure, the transcoding function is used to create a 10 second snapshot with reduced bit rate of the input audio file:

AIFF format
Only a portion of 8 seconds of the input resource is selected (just the beginning of the sound track)

Such a snapshot could be useful for small audio sampling.



AudioAdaptation: LSAudioTranscoding(InputResource, Mimetype, OutputResource, ReadStartingTime, ReadEndingTime, ...

Parameters

in InputResource:RESOURCE	Resource [02]'mwaitir	The Resource to be converted
in Mimetype:STRING	audio/x-aiff	Mimetype for output resource
out OutputResource:RESOURCE	New Resource	Where the produced resource will be stored
in ReadStartingTime:FLOAT	0.0	Starting time in the input audio file (default: beginning of the file)
in ReadEndingTime:FLOAT	8.0	Ending time in the input audio file (default: end of the file)
in OutputCodec:STRING	default	Codec of the output audio file (default: depends on the desired format of the output)

Result

result:STRING SUCCESS

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

Figure – The libsndfile audio transcoding function

Description: encode an audio file in another format or another codec and change its sample rate and number of audio channels if needed.

Signature:

string Trancoding(AxResource InputResource, string MimeType, AxResource OutputResource, float ReadStartingTime, float ReadEndingTime, string OutputCodec)

Parameter List:

InputResource
Description: the resource to be converted
Parameter Type: AxResource
Default Value:
Constraints:
Resource Type: audio
Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)
Ranges:

MimeType
Description: MimeType for the output resource
Parameter Type: string
Default Value:
Constraints:
Resource Type: audio
Resource Format: x-mpeg, x-aiff, x-wav, basic, x-vorbis, x-ac3
Ranges:

OutputResource
Description: Where the output resource will be stored
Parameter Type: AxResource
Default Value:

Constraints:
Range:

ReadStartingTime

Description: set the beginning of the output resource to ReadStartingTime seconds from the beginning of the input resource
Parameter Type: float
Default Value: by default, the read starting time is set to 0 seconds which means that the input resource is considered from the beginning
Constraints:
Range:

ReadEndingTime

Description: set the end of the output resource at ReadEndingTime seconds from the beginning of the input resource
Parameter Type: float
Default Value: by default, the read ending time is set to the end of the input resource
Constraints:
Range:

OutputCodec

Description: set the codec of the output resource; depending on the mime type selected for the output resource, only a certain subset of codec will be supported (the following table shows the possible codecs according to the possible mime types)
Parameter Type: string
Default Value: the default codec depend on the mime type selected for the output resource (the following table shows the default codec according to the possible mime types)
Constraints:
Range:

Result

Result Type: string
Result Description: the result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

19.1.3.2.1 Libsndfile supported types and codecs

Mime Type accepted:

audio/x-wav
audio/x-basic
audio/x-paris
audio/x-svx
audio/x-nist
audio/x-voc
audio/x-URam
audio/x-w64
audio/x-sd2
audio/x-flac
application/x-pcm
application/x-pagerecall

19.1.3.3 Tricks/Errors

Some tricks for plug-in testing:
Don’t use the same file for input and output (generates an unknown error, due to the editor ?)
Don’t try to use vorbis related files with these actual FMPEG dlls (.ogg)
We endured problems with AMR and it could still fail.

If the reply is that this is Unknown output mime type, check the corresponding mime-type table.
If you don’t have to trunk the audio files don’t change ReadStartingTime and ReadEndingTime options. (the same caution may be used for other FFMPEG advanced options)

19.2 Audio Descriptor Plug-in

19.2.1 Main functionalities

The audiodescriptorplugin aims at extracting automatically metadata from audio signals by audio signal analysis. The functionalities implemented include a segmentation algorithm, a music genre recognizer, a tempo detection algorithm plus a set of low level descriptors extraction algorithms. This document describes these functionalities forming a minimal user guide.

19.2.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.2.3 Detailed description of the functionalities and Screenshots

Here's an example on how to use the plug-in with the AXMEDIS editor.

The plug-in must be applied on an audio resource of an AXMEDIS object. The descriptor extraction plug-in is called by right-clicking on the interesting resource and selecting the 'Plugin…' command (see figure 1).

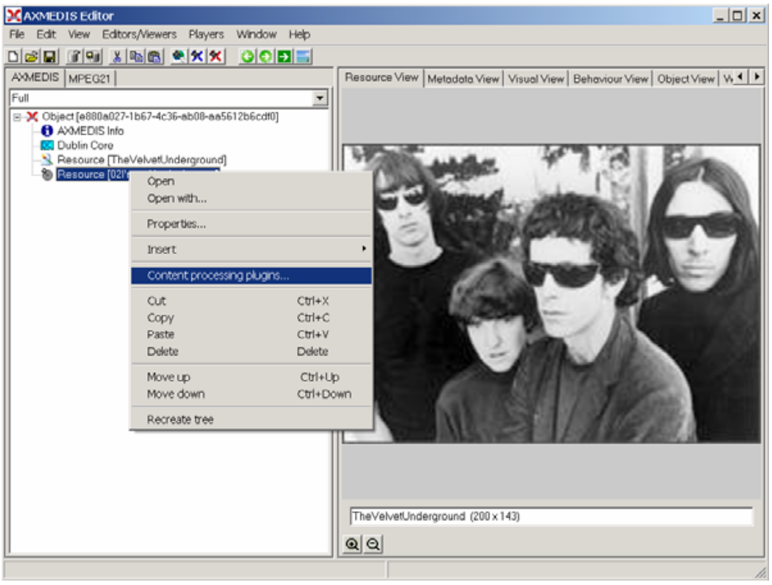
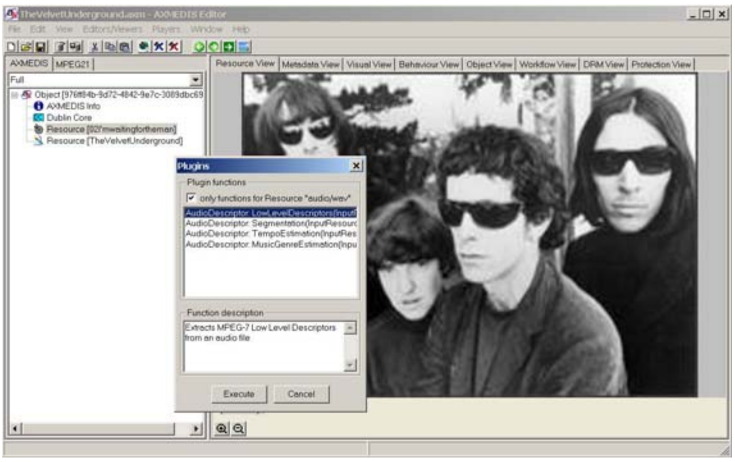


Figure – Calling the content processing plug-ins

A window showing the functionalities available for the kind of resource selected appears (see figure 2).
In the following parts, we discuss independently each available functionality.

19.2.3.1 Low Level Descriptors Extraction

The Low Level Descriptors extraction algorithm allows extracting MPEG-7 compliant descriptors of the audio signal. Such descriptors are said to be "low-level" since they describe the shape and the properties of the audio signal but can not be directly interpreted by humans (as opposed to "high-level" descriptors such as music genre or tempo). The Low-Level Descriptors extraction algorithm is launched by selecting the **AudioDescriptor: LowLevelDescriptors** function:


TheVelvetUnderground.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Resource View Metadata View Visual View Behaviour View Object View Workflow View DRM View Protection View
Object [976ff84b-9d72-4842-9e7c-3089dbc69
AXMEDIS Info
Dublin Core
Resource [02I'mwaitingfortheman]
Resource [TheVelvetUnderground]
Plugins
Execute
Cancel

Plugin functions

☑ only functions for Resource "audio/wav"

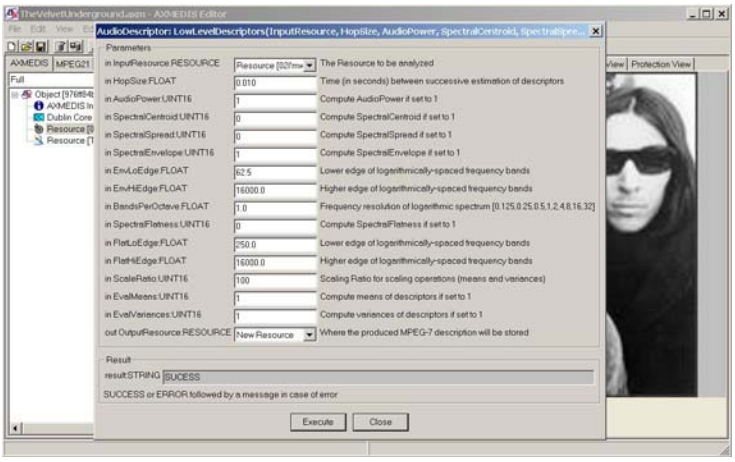
AudioDescriptor: LowLevelDescriptors(InputI
AudioDescriptor: Segmentation(InputResourc
AudioDescriptor: TempoEstimation(InputRes
AudioDescriptor: MusicGenreEstimation(Inpu

Function description

Extracts MPEG-7 Low Level Descriptors from an audio file

Figure – Selecting the low level descriptors extraction function

A new window appears showing the interface to the low level descriptors extraction algorithm (see figure 3).



AudioDescriptor: LowLevelDescriptors(InputResource, HopSize, AudioPower, SpectralCentroid, SpectralSpre...

Parameters

in InputResource:RESOURCE	Resource [02I'm▾	The Resource to be analyzed
in HopSize:FLOAT	0.010	Time (in seconds) between successive estimation of descriptors
in AudioPower:UINT16	1	Compute AudioPower if set to 1
in SpectralCentroid:UINT16	0	Compute SpectralCentroid if set to 1
in SpectralSpread:UINT16	0	Compute SpectralSpread if set to 1
in SpectralEnvelope:UINT16	1	Compute SpectralEnvelope if set to 1
in EnvLoEdge:FLOAT	62.5	Lower edge of logarithmically-spaced frequency bands
in EnvHiEdge:FLOAT	16000.0	Higher edge of logarithmically-spaced frequency bands
in BandsPerOctave:FLOAT	1.0	Frequency resolution of logarithmic spectrum [0.125,0.25,0.5,1,2,4,8,16,32]
in SpectralFlatness:UINT16	0	Compute SpectralFlatness if set to 1
in FlatLoEdge:FLOAT	250.0	Lower edge of logarithmically-spaced frequency bands
in FlatHiEdge:FLOAT	16000.0	Higher edge of logarithmically-spaced frequency bands
in ScaleRatio:UINT16	100	Scaling Ratio for scaling operations (means and variances)
in EvalMeans:UINT16	1	Compute means of descriptors if set to 1
in EvalVariances:UINT16	1	Compute variances of descriptors if set to 1
out OutputResource:RESOURCE	New Resource ▾	Where the produced MPEG-7 description will be stored

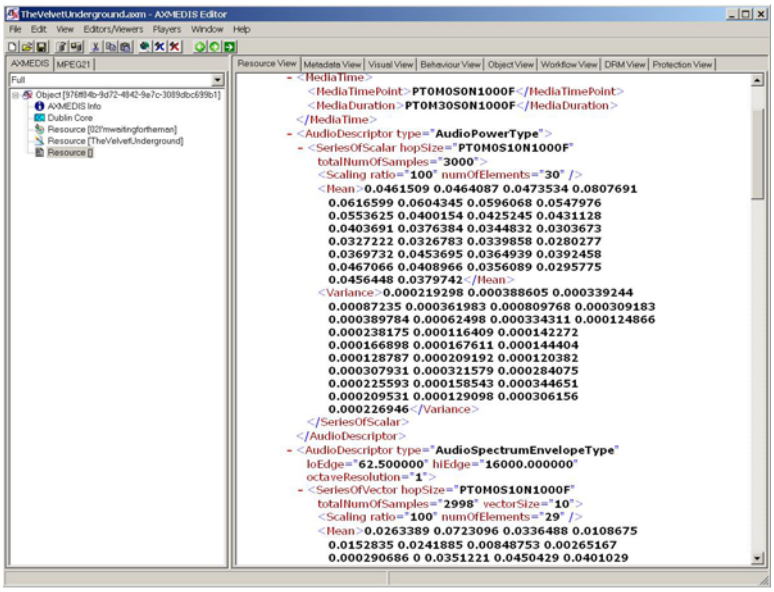
Result

result:STRING SUCESS

SUCCESS or ERROR followed by a message in case of error

Figure – The low level descriptors extraction function

The input audio file to be analysed is selected with first parameter. The last parameter allows specifying where the resulting MPEG-7 compliant description will be saved. The other parameters allow selecting which low level descriptors should be extracted. The analysis is launched by clicking on the **Execute** button. Once the analysis completed, one can display the resulting MPEG-7 description by double-clicking on the resource in which the description was saved (figure 4).



TheVelvetUnderground.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object [976ff84b-9d72-4842-9e7c-3089dbc699b1]
AXMEDIS Info
Dublin Core
Resource [02I'mwaitingfortheman]
Resource [TheVelvetUnderground]
Resource []
Resource View Metadata View Visual View Behaviour View Object View Workflow View DRM View Protection View

```
- <MediaTime>
    <MediaTimePoint>PT0M0S0N1000F</MediaTimePoint>
    <MediaDuration>PT0M30S0N1000F</MediaDuration>
  </MediaTime>
- <AudioDescriptor type="AudioPowerType">
  - <SeriesOfScalar hopSize="PT0M0S10N1000F"
      totalNumOfSamples="3000">
      <Scaling ratio="100" numOfElements="30" />
      <Mean>0.0461509 0.0464087 0.0473534 0.0807691
        0.0616599 0.0604345 0.0596068 0.0547976
        0.0553625 0.0400154 0.0425245 0.0431128
        0.0403691 0.0376384 0.0344832 0.0303673
        0.0327222 0.0326783 0.0339858 0.0280277
        0.0369732 0.0453695 0.0364939 0.0392458
        0.0467066 0.0408966 0.0356089 0.0295775
        0.0456448 0.0379742</Mean>
      <Variance>0.000219298 0.000388605 0.000339244
        0.00087235 0.000361983 0.000809768 0.000309183
        0.000389784 0.00062498 0.000334311 0.000124866
        0.000238175 0.000116409 0.000142272
        0.000166898 0.000167611 0.000144404
        0.000128787 0.000209192 0.000120382
        0.000307931 0.000321579 0.000284075
        0.000225593 0.000158543 0.000344651
        0.000209531 0.000129098 0.000306156
        0.000226946</Variance>
    </SeriesOfScalar>
  </AudioDescriptor>
- <AudioDescriptor type="AudioSpectrumEnvelopeType"
    loEdge="62.500000" hiEdge="16000.000000"
    octaveResolution="1">
  - <SeriesOfVector hopSize="PT0M0S10N1000F"
      totalNumOfSamples="2998" vectorSize="10">
      <Scaling ratio="100" numOfElements="29" />
      <Mean>0.0263389 0.0723096 0.0336488 0.0108675
        0.0152835 0.0241885 0.00848753 0.00265167
        0.000290686 0 0.0351221 0.0450429 0.0401029
```

Figure – The resulting MPEG-7 description

Here follows a more complete description of the parameters of the tempo estimation function:

- **InputResource**: the audio resource to be analysed; reading of audio resources is supported for the following mime types (corresponding to uncompressed audio formats):

    1. audio/x-aiff (.aif, .aiff)
    2. audio/x-wav (.wav)
    3. audio/x-basic (.au, .snd)

- **HopSize**: the HopSize defines the temporal distance (in seconds) between two successive analyses (set to 10 ms by default).
- **AudioPower**: computes the AudioPower descriptor if set to 1.The AudioPower descriptor describes the temporally-smoothed instantaneous power of the audio signal. Instantaneous power is a useful measure of the amplitude of a signal as a function of time.
- **SpectralCentroid**: computes the SpectralCentroid descriptor if set to 1. .The SpectralCentroid descriptor describes the centre of gravity of the log-frequency power spectrum. It is an economical description of the shape of the power spectrum. It indicates whether the power spectrum is dominated by low or high frequencies and, additionally, it is correlated with a major perceptual dimension of timbre, i.e. sharpness.
- **SpectralSpread**: computes the SpectralSpread descriptor if set to 1.The SpectralSpread descriptor describes the second moment of the log-frequency power spectrum. SpectralSpread is an economical descriptor of the shape of the power spectrum that indicates whether it is concentrated in the vicinity of its centroid, or else spread out over the spectrum. It allows differentiating between tone-like and noise-like sounds.
- **SpectralEnvelope**: computes the SpectralEnvelope descriptor if set to 1. The SpectralEnvelope descriptor describes the spectrum of the audio according to a logarithmic frequency scale. A logarithmic frequency axis is used to conciliate requirements of concision and descriptive power. Peripheral frequency analysis in the ear roughly follows a frequency axis.
- **EnvLoEdge**: set lower edge of logarithmically-spaced frequency bands for the extraction of the SpectralEnvelope descriptor (62.5 Hz by default).
- **EnvHiEdge**: set higher edge of logarithmically-spaced frequency bands for the extraction of the SpectralEnvelope descriptor (16000.0 Hz by default).
- **BandsPerOctave**: frequency resolution of logarithmic spectrum for the extraction of the SpectralEnvelope descriptor (width of each spectrum band between EndLoEdge and EnvHiEdge).

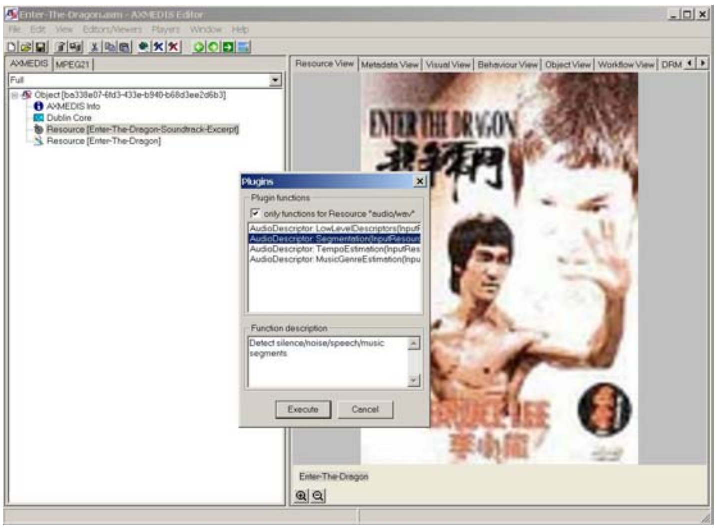
- **SpectralFlatness**: computes the SpectralFlatness descriptor if set to 1. The SpectralFlatness descriptor properties of the spectrum of an audio signal within a given number of frequency bands. This descriptor expresses the deviation of the signal's power spectrum over frequency from a flat shape (corresponding to a noise-like or impulse-like signal). A high deviation from a flat shape may indicate the presence of tonal components.
- **FlatLoEdge**: set lower edge of logarithmically-spaced frequency bands for the extraction of the SpectralFlatness descriptor (250.0 Hz by default).
- **FlatHiEdge**: set higher edge of logarithmically-spaced frequency bands for the extraction of the SpectralFlatness descriptor (16000.0 Hz by default).
- **ScaleRatio**: the ScaleRatio is the number of original samples represented by each scaled sample when using a scaling operation (such as mean or variance of the descriptors)
- **EvalMeans**: computes the mean of the descriptors if set to 1.
- **EvalVariances**: computes the variance of the descriptors if set to 1.
- **OutputResource**: the MPEG-7 description of the audio resource.

19.2.3.2 Segmentation into Silence / Speech / Noise / Music

The Silence / Speech / Noise / Music segmentation algorithm allows segmenting the audio stream into 4 kind of semantically coherent segments:

- Silence segment: silence segments are defined as regions of the audio file in which no significant sound is heard.
- Speech segment: speech segments are defined as regions of the audio file in which spoken content is dominant.
- Music segment: music segments are defined as regions of the audio file in which music content is dominant.
- Noise segment: noise segments are defined as regions of the audio file in which noise is dominant; noise is loosely defined as audio content which is not speech, music nor silence.

The segmentation algorithm is called by selecting the **AudioDescriptor: Segmentation** function:



Enter-The-Dragon.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS
MPEG21
Full
Object [ba338e07-6fd3-433e-b940-b68d3ee2d6b3]
AXMEDIS Info
Dublin Core
Resource [Enter-The-Dragon-Soundtrack-Excerpt]
Resource [Enter-The-Dragon]
Resource View
Metadata View
Visual View
Behaviour View
Object View
Workflow View
DRM
Plugins
Plugin functions
Function description
Execute
Cancel
Enter-The-Dragon

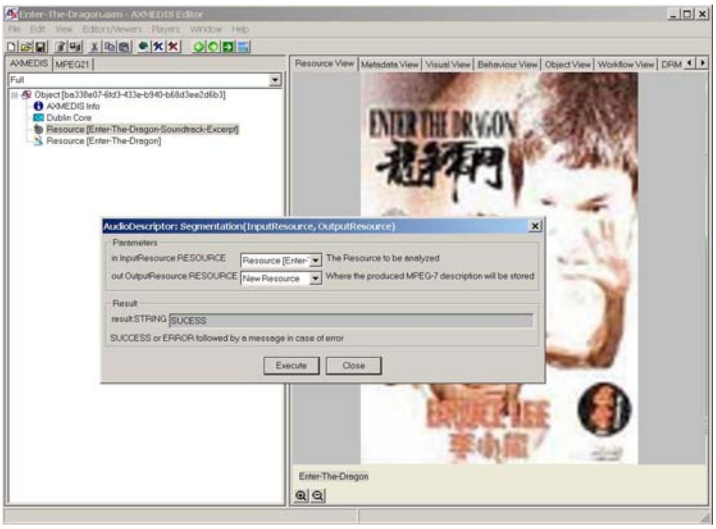
☑ only functions for Resource "audio/wav"

AudioDescriptor: LowLevelDescriptors(InputF
AudioDescriptor: Segmentation(InputResour
AudioDescriptor: TempoEstimation(InputRes
AudioDescriptor: MusicGenreEstimation(Inpu

Detect silence/noise/speech/music segments

Figure – Selecting the segmentation function

A new window appears showing the interface to the segmentation function (see figure 6).



Enter-The-Dragon.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS
MPEG21
Full
Object [ba338e07-6fd3-433e-b940-b68d3ee2d6b3]
AXMEDIS Info
Dublin Core
Resource [Enter-The-Dragon-Soundtrack-Excerpt]
Resource [Enter-The-Dragon]
Resource View
Metadata View
Visual View
Behaviour View
Object View
Workflow View
DRM
ENTER THE DRAGON
Enter-The-Dragon

AudioDescriptor: Segmentation(InputResource, OutputResource)

Parameters

in InputResource RESOURCE: Resource [Enter- — The Resource to be analyzed

out OutputResource RESOURCE: New Resource — Where the produced MPEG-7 description will be stored

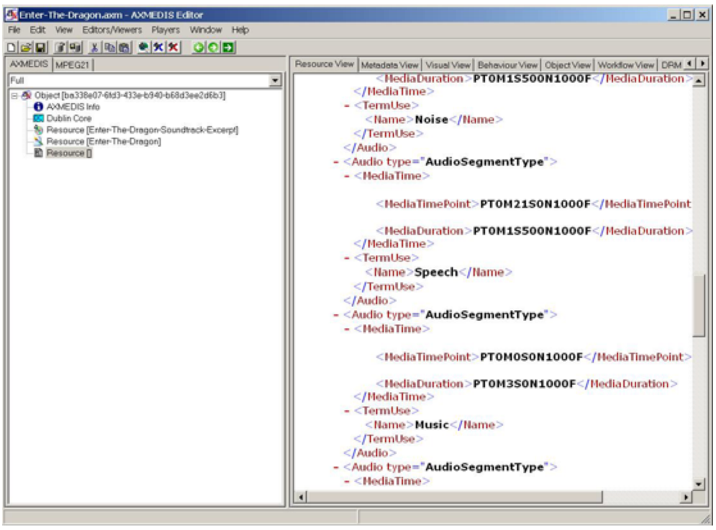
Result

result STRING: SUCESS

SUCCESS or ERROR followed by a message in case of error

Figure – The speech/noise/music segmentation function

The input audio file to be analysed is selected with first parameter while the second parameter allows specifying where the resulting MPEG-7 compliant description will be saved. The analysis is launched by clicking on the **Execute** button. Once the analysis completed, one can display the resulting MPEG-7 description by double-clicking on the resource in which the description was saved (figure 7).


Enter-The-Dragon.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object [ba338e07-6fd3-433e-b940-b68d3ee2d6b3]
AXMEDIS Info
Dublin Core
Resource [Enter-The-Dragon-Soundtrack-Excerpt]
Resource [Enter-The-Dragon]
Resource []
Resource View
Metadata View
Visual View
Behaviour View
Object View
Workflow View
DRM

```
        <MediaDuration>PT0M1S500N1000F</MediaDuration>
      </MediaTime>
    - <TermUse>
        <Name>Noise</Name>
      </TermUse>
    </Audio>
  - <Audio type="AudioSegmentType">
    - <MediaTime>

        <MediaTimePoint>PT0M21S0N1000F</MediaTimePoint

        <MediaDuration>PT0M1S500N1000F</MediaDuration>
      </MediaTime>
    - <TermUse>
        <Name>Speech</Name>
      </TermUse>
    </Audio>
  - <Audio type="AudioSegmentType">
    - <MediaTime>

        <MediaTimePoint>PT0M0S0N1000F</MediaTimePoint>

        <MediaDuration>PT0M3S0N1000F</MediaDuration>
      </MediaTime>
    - <TermUse>
        <Name>Music</Name>
      </TermUse>
    </Audio>
  - <Audio type="AudioSegmentType">
    - <MediaTime>
```

Figure – The resulting MPEG-7 description

Here follows a more complete description of the parameters of the segmentation function:

- **InputResource**: the audio resource to be analysed; reading of audio resources is supported for the following mime types (corresponding to uncompressed audio formats):

    1. audio/x-aiff (.aif, .aiff)
    2. audio/x-wav (.wav)
    3. audio/x-basic (.au, .snd)

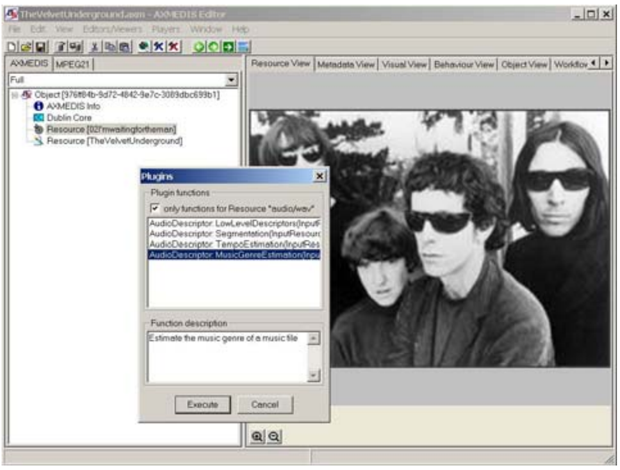
- **OutputResource**: the MPEG-7 description of the audio resource.

19.2.3.3 Music Genre recognition

The Music Genre recognizer allows characterizing music segments in terms of music genres. The provided model classifies music into one of the following categories:

- Classical
- Jazz
- Rap
- Rock

The Music Genre recognizer is called by selecting the **AudioDescriptor: MusicGenreEstimation** function:



TheVelvetUnderground.axm - AXMEDIS Editor

Full

Object [976f84b-9d72-4842-9e7c-3089dbc693b1]
AXMEDIS Info
Dublin Core
Resource [02I'mwaitingfortheman]
Resource [TheVelvetUnderground]

Plugins

Plugin functions

☑ only functions for Resource "audio/wav"

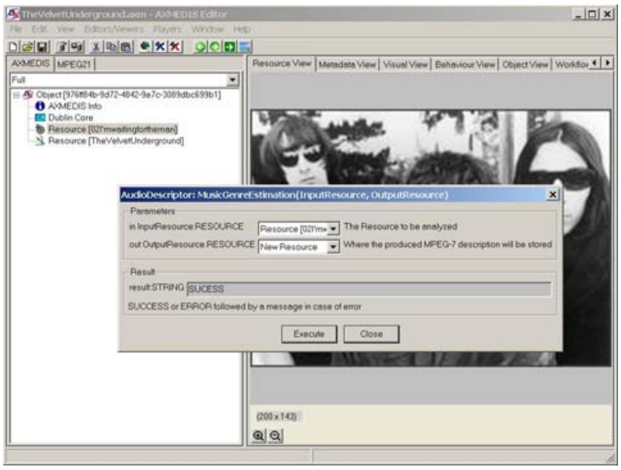
AudioDescriptor: LowLevelDescriptors(InputF
AudioDescriptor: Segmentation(InputResourc
AudioDescriptor: TempoEstimation(InputRes
AudioDescriptor: MusicGenreEstimation(Inpu

Function description

Estimate the music genre of a music file

Figure – Selecting the music genre recognition function

A new window appears showing the interface to the music genre recognizer (see figure 9).



TheVelvetUnderground.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object [976f84b-9d72-4842-9e7c-3089dbc693b1]
AXMEDIS Info
Dublin Core
Resource [02I'mwaitingfortheman]
Resource [TheVelvetUnderground]
Resource View Metadata View Visual View Behaviour View Object View Workflow
(200 x 143)
Execute
Close

AudioDescriptor: MusicGenreEstimation(InputResource, OutputResource)

Parameters

in InputResource:RESOURCE Resource [02I'm... The Resource to be analyzed

out OutputResource:RESOURCE New Resource Where the produced MPEG-7 description will be stored

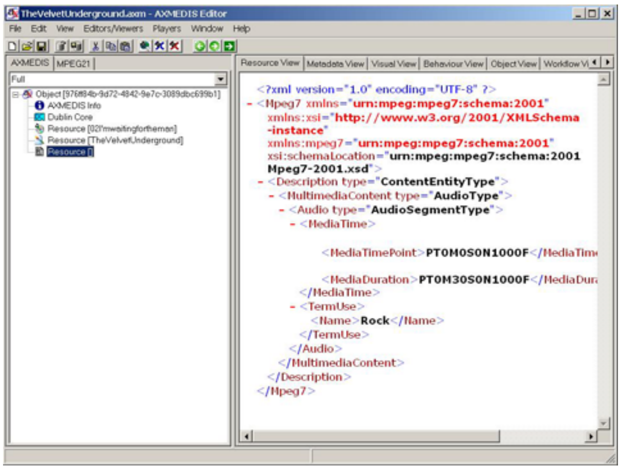
Result

result:STRING SUCESS

SUCCESS or ERROR followed by a message in case of error

Figure – The music genre recognition function

The input audio file to be analysed is selected with first parameter while the second parameter allows specifying where the resulting MPEG-7 compliant description will be saved. The analysis is launched by clicking on the **Execute** button. Once the analysis completed, one can display the resulting MPEG-7 description by double-clicking on the resource in which the description was saved (figure 10).


TheVelvetUnderground.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object [976f84b-9d72-4842-9e7c-3089dbc699b1]
AXMEDIS Info
Dublin Core
Resource [02I'mwaitingfortheman]
Resource [TheVelvetUnderground]
Resource []
Resource View Metadata View Visual View Behaviour View Object View Workflow Vi

```
  <?xml version="1.0" encoding="UTF-8" ?>
- <Mpeg7 xmlns="urn:mpeg:mpeg7:schema:2001"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema
    -instance"
    xmlns:mpeg7="urn:mpeg:mpeg7:schema:2001"
    xsi:schemaLocation="urn:mpeg:mpeg7:schema:2001
    Mpeg7-2001.xsd">
  - <Description type="ContentEntityType">
    - <MultimediaContent type="AudioType">
      - <Audio type="AudioSegmentType">
        - <MediaTime>

              <MediaTimePoint>PT0M0S0N1000F</MediaTim

              <MediaDuration>PT0M30S0N1000F</MediaDur
          </MediaTime>
        - <TermUse>
            <Name>Rock</Name>
          </TermUse>
        </Audio>
      </MultimediaContent>
    </Description>
  </Mpeg7>
```

Figure – The resulting MPEG-7 description

Here follows a more complete description of the parameters of the music genre recognition function:

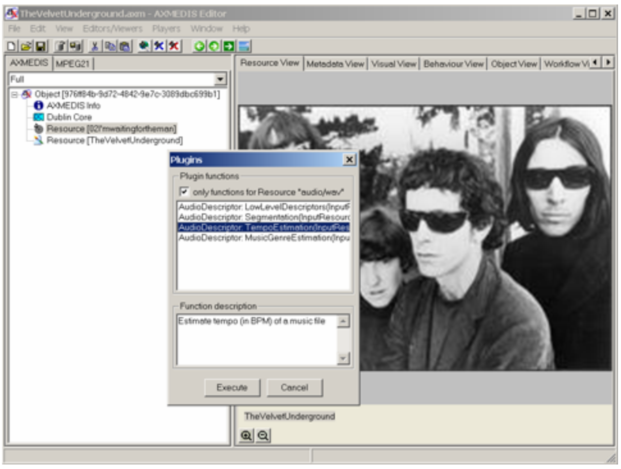
- **InputResource**: the audio resource to be analysed; reading of audio resources is supported for the following mime types (corresponding to uncompressed audio formats):

  4. audio/x-aiff (.aif, .aiff)
  5. audio/x-wav (.wav)
  6. audio/x-basic (.au, .snd)

- **OutputResource**: the MPEG-7 description of the audio resource.

19.2.3.4 Tempo detection

The tempo detection algorithm allows detecting the tempo in beats per minute of a music segment. It is launched by selecting the **AudioDescriptor: TempoEstimation** function:


TheVelvetUnderground.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Resource View Metadata View Visual View Behaviour View Object View Workflow Vi
Full
Object [976ff84b-9d72-4842-9e7c-3089dbc699b1]
AXMEDIS Info
Dublin Core
Resource [02I'mwaitingfortheman]
Resource [TheVelvetUnderground]
TheVelvetUnderground
Execute
Cancel

Plugins

Plugin functions

☑ only functions for Resource "audio/wav"

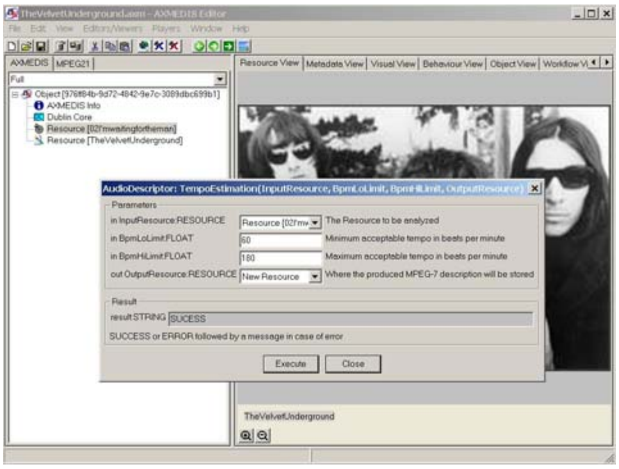
AudioDescriptor: LowLevelDescriptors(InputF
AudioDescriptor: Segmentation(InputResourc
AudioDescriptor: TempoEstimation(InputRes
AudioDescriptor: MusicGenreEstimation(Inpu

Function description

Estimate tempo (in BPM) of a music file

Figure – Selecting the tempo estimation function

A new window appears showing the interface to the music genre recognizer (see figure 12).


TheVelvetUnderground.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Resource View Metadata View Visual View Behaviour View Object View Workflow Vi
Full
Object [976ff84b-9d72-4842-9e7c-3089dbc699b1]
AXMEDIS Info
Dublin Core
Resource [02I'mwaitingfortheman]
Resource [TheVelvetUnderground]
TheVelvetUnderground
Execute
Close

AudioDescriptor: TempoEstimation(InputResource, BpmLoLimit, BpmHiLimit, OutputResource)

Parameters

in InputResource:RESOURCE	Resource [02I'mw	The Resource to be analyzed
in BpmLoLimit:FLOAT	60	Minimum acceptable tempo in beats per minute
in BpmHiLimit:FLOAT	180	Maximum acceptable tempo in beats per minute
out OutputResource:RESOURCE	New Resource	Where the produced MPEG-7 description will be stored

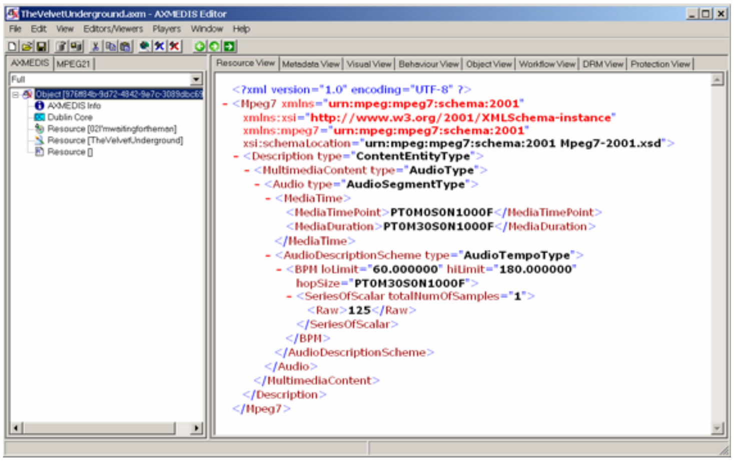
Result

result:STRING SUCESS

SUCCESS or ERROR followed by a message in case of error

Figure – The tempo estimation function

The input audio file to be analysed is selected with first parameter. The last parameter allows specifying where the resulting MPEG-7 compliant description will be saved. The parameters **BpmLoLimit** and **BpmHiLimit** allow to set boundaries to the estimation of tempo, i.e. the estimated tempo will fit in between these limits. The analysis is launched by clicking on the **Execute** button. Once the analysis completed, one can display the resulting MPEG-7 description by double-clicking on the resource in which the description was saved (figure 13).


TheVelvetUnderground.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS
MPEG21
Full
Object [976ff84b-9d72-4842-9e7c-3089dbc6
AXMEDIS Info
Dublin Core
Resource [02I'mwaitingforthemen]
Resource [TheVelvetUnderground]
Resource []
Resource View
Metadata View
Visual View
Behaviour View
Object View
Workflow View
DRM View
Protection View

```
  <?xml version="1.0" encoding="UTF-8" ?>
- <Mpeg7 xmlns="urn:mpeg:mpeg7:schema:2001"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:mpeg7="urn:mpeg:mpeg7:schema:2001"
    xsi:schemaLocation="urn:mpeg:mpeg7:schema:2001 Mpeg7-2001.xsd">
  - <Description type="ContentEntityType">
    - <MultimediaContent type="AudioType">
      - <Audio type="AudioSegmentType">
        - <MediaTime>
            <MediaTimePoint>PT0M0S0N1000F</MediaTimePoint>
            <MediaDuration>PT0M30S0N1000F</MediaDuration>
          </MediaTime>
        - <AudioDescriptionScheme type="AudioTempoType">
          - <BPM loLimit="60.000000" hiLimit="180.000000"
              hopSize="PT0M30S0N1000F">
            - <SeriesOfScalar totalNumOfSamples="1">
                <Raw>125</Raw>
              </SeriesOfScalar>
            </BPM>
          </AudioDescriptionScheme>
        </Audio>
      </MultimediaContent>
    </Description>
  </Mpeg7>
```

Figure – The resulting MPEG-7 description

Here follows a more complete description of the parameters of the tempo estimation function:

- **InputResource**: the audio resource to be analysed; reading of audio resources is supported for the following mime types (corresponding to uncompressed audio formats):

    1. audio/x-aiff (.aif, .aiff)
    2. audio/x-wav (.wav)
    3. audio/x-basic (.au, .snd)

- **BpmLoLimit**: the minimum acceptable tempo in beats per minute (BPM).
- **BpmHiLimit**: the maximum acceptable tempo in beats per minute (BPM).
- **OutputResource**: the MPEG-7 description of the audio resource.

19.3 Multimedia Adaptation Plug-in

19.3.1 Main functionalities

The multimedia_adaptation_plug-in allows adapting multimedia content to various use cases. For example, it can be used to transcode an MP4 file into a 3GP file or to extract the media resources embedded into a complex multimedia file. The plug-in is composed by five functions that are: Extract Media Track, Mp4 To 3GP, Mp4 to Isma, Add Media files and Cat Media Files. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

19.3.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.3.3 Detailed description of the functionalities and Screenshots

Here is an example on how to use the plug-in with the AXMEDIS editor.
The plug-in must be applied on an mp4 resource of an AXMEDIS object. The adaptation plug-in is called by right-clicking on the interesting resource and selecting the 'Content processing plugins…' command (see figure 1).

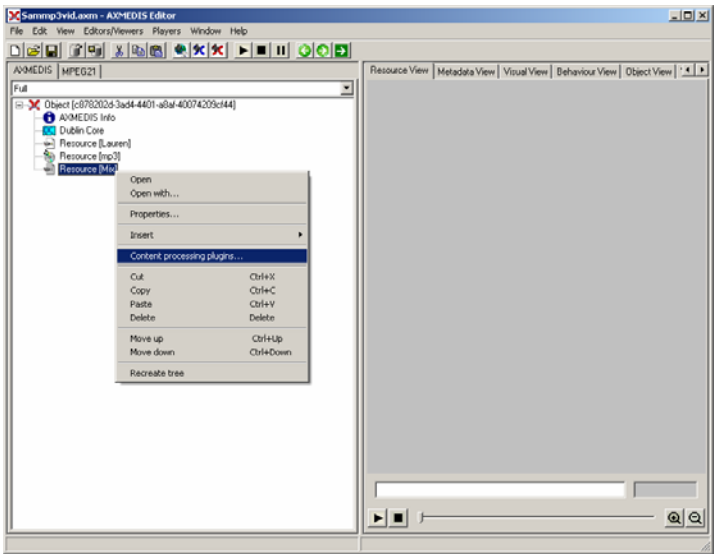
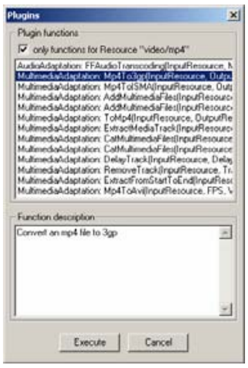


Figure – Calling the multimedia adaptation plug-in

A window showing the functionalities available for the kind of resource selected appears (see figure 2).



☑ only functions for Resource "video/mp4"

AudioAdaptation: FFAudioTranscoding(InputResource, N
MultimediaAdaptation: Mp4To3gp(InputResource, Outpu
MultimediaAdaptation: Mp4ToISMA(InputResource, Outp
MultimediaAdaptation: AddMultimediaFiles(InputResourc
MultimediaAdaptation: AddMultimediaFiles(InputResourc
MultimediaAdaptation: ToMp4(InputResource, OutputRe
MultimediaAdaptation: ExtractMediaTrack(InputResourc
MultimediaAdaptation: CatMultimediaFiles(InputResource
MultimediaAdaptation: CatMultimediaFiles(InputResource
MultimediaAdaptation: DelayTrack(InputResource, Delay
MultimediaAdaptation: RemoveTrack(InputResource, Tr
MultimediaAdaptation: ExtractFromStartToEnd(InputResc
MultimediaAdaptation: Mp4ToAvi(InputResource, FPS, V

Convert an mp4 file to 3gp

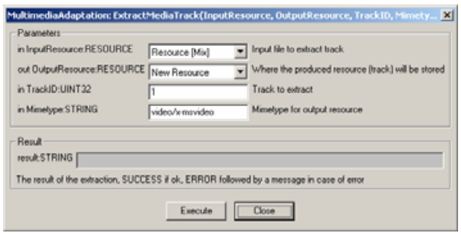
Figure – Selecting one of the multimedia adaptation functions

The following section summarizes the multimedia adaptation functions.

19.3.3.1 EXTRACT MEDIA TRACK

This function extracts one track from the original source (without deleting this track) and leaves it into a separated new file. The supported output mime types are: video/x-cmp, video/x-msvideo, video/mp4 and audio/x-gsm.

This function is selected by clicking on MultimediaAdaptation: ExtractMediaTrack.. After clicking "execute", a new window appears showing the interface to the extraction function (see figure 3).



MultimediaAdaptation: ExtractMediaTrack(InputResource, OutputResource, TrackID, Mimety...

Parameters

in InputResource:RESOURCE — Resource [Mix] — Input file to extract track

out OutputResource:RESOURCE — New Resource — Where the produced resource (track) will be stored

in TrackID:UINT32 — 1 — Track to extract

in Mimetype:STRING — video/x-msvideo — Mimetype for output resource

Result

result:STRING

The result of the extraction, SUCCESS if ok, ERROR followed by a message in case of error

Figure – The Extract Media Track function

Here follows a brief description of the parameters of the Extract Media Track function:

- **InputResource**: the multimedia resource where the track is going to be extracted (not deleted). Its use is only allowed for the video/mp4 (.mp4) files.

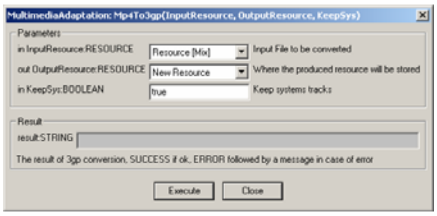
- **OutputResource**: the multimedia resource after the extraction, it is to say, the track already extracted into a new file. It can be part of all the allowed mpeg-4 compliant formats.

- **TrackID**: track to be extracted from the InputResource. If the track does not exist, the result will show "ERROR: Bad parameter".

- **Mimetype**: mime type of the OutputResource. Supports video/x-cmp, video/x-msvideo, video/mp4 and audio/x-gsm.

19.3.3.2 MP4 TO 3GP

This function will translate the input resource that is supposed to be .mp4 into a new file with the 3gp format. This function is selected by clicking on MultimediaAdaptation: Mp4To3GP. After clicking “execute”, a new window appears showing the interface to the Mp4 to 3GP function (see figure 4).



MultimediaAdaptation: Mp4To3gp(InputResource, OutputResource, KeepSys)

Parameters

in InputResource:RESOURCE	Resource [Mix]	Input File to be converted
out OutputResource:RESOURCE	New Resource	Where the produced resource will be stored
in KeepSys:BOOLEAN	true	Keep systems tracks

Result

result:STRING

The result of 3gp conversion, SUCCESS if ok, ERROR followed by a message in case of error

Figure – The Mp4 to 3GP function

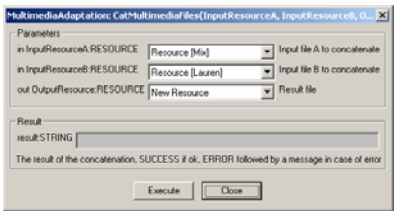
Here follows a brief description of the parameters of the Mp4 to 3GP function:

- **InputResource**: The multimedia resource to be translated into 3gp. At first, it is only allowed to use an mp4 resource.
- **OutputResource**: The multimedia output that is obtained after the transformation performed by the function. The obtained file is an .3gp file.
- **KeepSys**: If it should keep system tracks within the translation.

19.3.3.3 CAT MULTIMEDIA FILES

This function concatenates two whole multimedia resources and gives a new file containing the result of the concatenation.

This function is selected by clicking on MultimediaAdaptation: CatMultimediaFiles. After clicking “execute”, a new window appears showing the interface to the concatenation function (see figure 5).



MultimediaAdaptation: CatMultimediaFiles(InputResourceA, InputResourceB, O...

Parameters

in InputResourceA:RESOURCE: Resource [Mix] — Input file A to concatenate

in InputResourceB:RESOURCE: Resource [Lauren] — Input file B to concatenate

out OutputResource:RESOURCE: New Resource — Result file

Result

result:STRING

The result of the concatenation, SUCCESS if ok, ERROR followed by a message in case of error

Figure – The Cat Media Files function

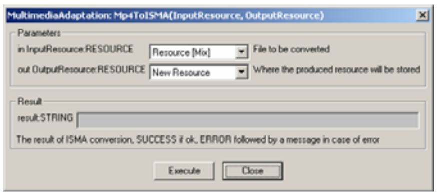
Here follows a brief description of the parameters of the Cat Media Files function:

- **InputResourceA**: It is one of the multimedia sources to concatenate. It will be the first in the timeline of the output file. By the moment, it is only allowed to introduce .mp4 files.
- **InputResourceB**: It is one of the multimedia sources to concatenate. It will be included after the InputResourceA into the new output resource. By the moment, it is only allowed to introduce .mp4 files.
- **OutputResource**: Is the result of the concatenation of InputResourceA and InputResourceB. The format of this file is .mp4.

19.3.3.4 MP4 TO ISMA

This function converts the input resource to the ISMA specification.

The function is selected by clicking on MultimediaAdaptation: Mp4ToISMA. After clicking “execute”, a new window appears showing the interface to the conversion function (see figure 6).



MultimediaAdaptation: Mp4ToISMA(InputResource, OutputResource)

Parameters

in InputResource:RESOURCE Resource [Mix] File to be converted

out OutputResource:RESOURCE New Resource Where the produced resource will be stored

Result

result:STRING

The result of ISMA conversion, SUCCESS if ok, ERROR followed by a message in case of error

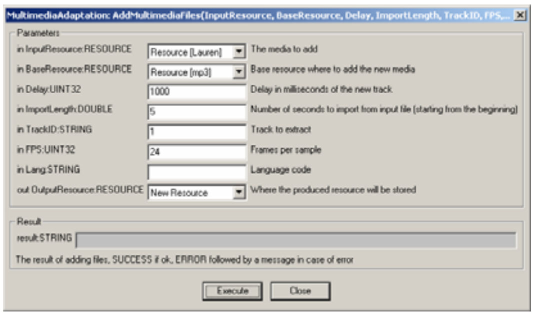
Figure – The Mp4 to ISMA function

Here follows a brief description of the parameters of the Mp4 to ISMA function:

- **InputResource**: Mp4 file to be converted into the ISMA specification.
- **OutputResource**: Output file of the conversion to ISMA of the InputResource.

19.3.3.5 ADD MULTIMEDIA FILES

This function takes multimedia resources and adds them as new tracks into new or already existing mp4 file. It must specify the size (amount of seconds) of the multimedia resource that is imported and when should it begin inside the destination file, it is to say, the delay of the new track.
The function is selected by clicking on MultimediaAdaptation: AddMultimediaFiles. After clicking "execute", a new window appears showing the interface to the Add Multimedia Files function (see figure 7).



MultimediaAdaptation: AddMultimediaFiles(InputResource, BaseResource, Delay, ImportLength, TrackID, FPS,...

Parameters

in InputResource:RESOURCE	Resource [Lauren]	The media to add
in BaseResource:RESOURCE	Resource [mp3]	Base resource where to add the new media
in Delay:UINT32	1000	Delay in milliseconds of the new track
in ImportLength:DOUBLE	5	Number of seconds to import from input file (starting from the beginning)
in TrackID:STRING	1	Track to extract
in FPS:UINT32	24	Frames per sample
in Lang:STRING		Language code
out OutputResource:RESOURCE	New Resource	Where the produced resource will be stored

Result

result:STRING

The result of adding files, SUCCESS if ok, ERROR followed by a message in case of error

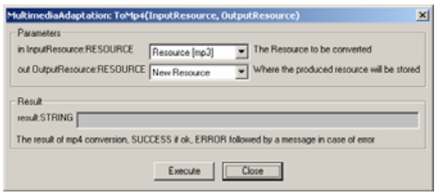
Figure – The Add Media Files function

Here follows a brief description of the parameters of the Add Media Files function:

- **<u>InputResource</u>**: File to be included into a new MP4 file.
- **<u>BaseResource</u>**: Base MP4 file where to add the InputResource
- **<u>Delay</u>**: Delay in milliseconds to be applied at the track to be included into the MP4 output file.
- **<u>ImportLength</u>**: Number of seconds to import from the input file starting from the beginning.
- **<u>TrackID</u>**: Track to extract in the file. If empty take the whole file.
- **<u>FPS</u>**: Frames per sample of the new track. 0 means source file FPS.
- **<u>Lang</u>**: Optional: Language code of the new track
- **<u>OutputResource</u>**: Output file where the track is included

19.3.3.6 TO MP4

This function converts the input resource to Mp4.
The function is selected by clicking on MultimediaAdaptation: ToMp4. After clicking "execute", a new window appears showing the interface to the conversion function (see figure 8).



MultimediaAdaptation: ToMp4(InputResource, OutputResource)

Parameters

in InputResource:RESOURCE Resource [mp3] The Resource to be converted

out OutputResource:RESOURCE New Resource Where the produced resource will be stored

Result

result:STRING

The result of mp4 conversion, SUCCESS if ok, ERROR followed by a message in case of error

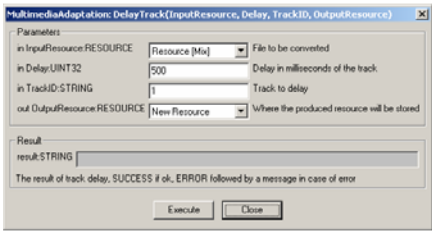
Figure – The To Mp4 function

Here follows a brief description of the parameters of the To Mp4 function:

- **InputResource**: File to be converted to Mp4.
- **OutputResource**: Output file of the conversion to Mp4 of the InputResource.

19.3.3.7 DELAY TRACK

This function set the delay to a track from a mp4 file.
The function is selected by clicking on MultimediaAdaptation: DelayTrack. After clicking "execute", a new window appears showing the interface to the Delay Track function (see figure 9).



MultimediaAdaptation: DelayTrack(InputResource, Delay, TrackID, OutputResource)

Parameters

in InputResource:RESOURCE Resource [Mix] File to be converted

in Delay:UINT32 500 Delay in milliseconds of the track

in TrackID:STRING 1 Track to delay

out OutputResource:RESOURCE New Resource Where the produced resource will be stored

Result

result:STRING

The result of track delay, SUCCESS if ok, ERROR followed by a message in case of error

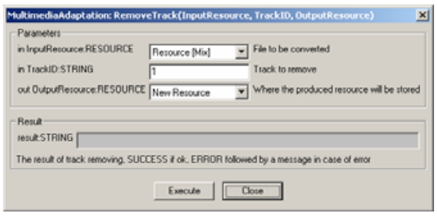
Figure – The Delay Track function

Here follows a brief description of the parameters of the Delay Track function:

- **InputResource**: Mp4 file where to delay a track.
- **Delay**: New delay in milliseconds applied at the track of the MP4 output file.
- **TrackID**: Track to be delayed in the file.
- **OutputResource**: Output Mp4 file where the track is included delayed.

19.3.3.8 REMOVE TRACK

This function removes a track from a mp4 file.
The function is selected by clicking on MultimediaAdaptation: RemoveTrack. After clicking "execute", a new window appears showing the interface to the Remove Track function (see figure 10).



MultimediaAdaptation: RemoveTrack(InputResource, TrackID, OutputResource)

Parameters

in InputResource:RESOURCE Resource [Mix] File to be converted

in TrackID:STRING 1 Track to remove

out OutputResource:RESOURCE New Resource Where the produced resource will be stored

Result

result:STRING

The result of track removing, SUCCESS if ok, ERROR followed by a message in case of error

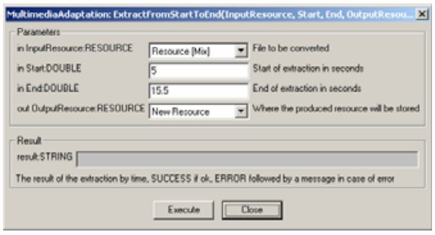
Figure – The Remove Track function

Here follows a brief description of the parameters of the Remove Track function:

- **InputResource**: Mp4 file where to remove a track.
- **TrackID**: Track to be removed from the file.
- **OutputResource**: Output mp4 file where the track is removed.

19.3.3.9 EXTRACT FROM START TO END

This function extracts a new mp4 file from a mp4 file by time limitation.
The function is selected by clicking on MultimediaAdaptation: ExtractFromStartToEnd. After clicking "execute", a new window appears showing the interface to the Extract from Start to End function (see figure 11).



MultimediaAdaptation: ExtractfromStartToEnd(InputResource, Start, End, OutputResou...

Parameters

in InputResource:RESOURCE Resource [Mix] File to be converted

in Start:DOUBLE 5 Start of extraction in seconds

in End:DOUBLE 15.5 End of extraction in seconds

out OutputResource:RESOURCE New Resource Where the produced resource will be stored

Result

result:STRING

The result of the extraction by time, SUCCESS if ok, ERROR followed by a message in case of error

Figure – The Extract from Start to End function

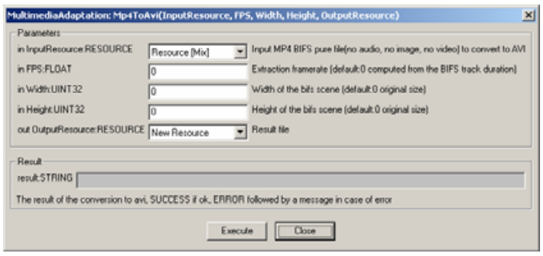
Here follows a brief description of the parameters of the Extract from Start to End function:

- **InputResource**: File where to extract the new mp4 file.
- **Start**: Start of extraction in seconds
- **End**: End of extraction in seconds
- **OutputResource**: Output mp4 file limited by time

19.3.3.10 MP4 TO AVI

This function will translate the input resource that is supposed to be .mp4 pure BIFS file into a new file with the avi format.

This function is selected by clicking on MultimediaAdaptation: Mp4ToAvi. After clicking “execute”, a new window appears showing the interface to the Mp4 to Avi function (see figure 12).



MultimediaAdaptation: Mp4ToAvi(InputResource, FPS, Width, Height, OutputResource)

Parameters

in InputResource:RESOURCE Resource [Mix] Input MP4 BIFS pure file(no audio, no image, no video) to convert to AVI

in FPS:FLOAT 0 Extraction framerate (default:0 computed from the BIFS track duration)

in Width:UINT32 0 Width of the bifs scene (default:0 original size)

in Height:UINT32 0 Height of the bifs scene (default:0 original size)

out OutputResource:RESOURCE New Resource Result file

Result

result:STRING

The result of the conversion to avi, SUCCESS if ok, ERROR followed by a message in case of error

Figure – The Mp4 to Avi function

Here follows a brief description of the parameters of the Mp4 to Avi function:

- **InputResource**: The Mp4 pure BIFS file to be translated to Avi format.
- **FPS**: Extraction frame rate (0 compute from the BIFS track duration)
- **Width**: Width of the bifs scene (0 takes original size)
- **Height**: Height of the bifs scene (0 takes original size)
- **OutputResource**: The multimedia output that is obtained after the transformation performed by the function. The obtained file is an .avi file.

19.4 Document CryptLib Plug-in

19.4.1 Main functionalities

Cryptlibplugin is a tool that can encrypt/decrypt AXMEDIS object. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

19.4.2 Relationship with other tools

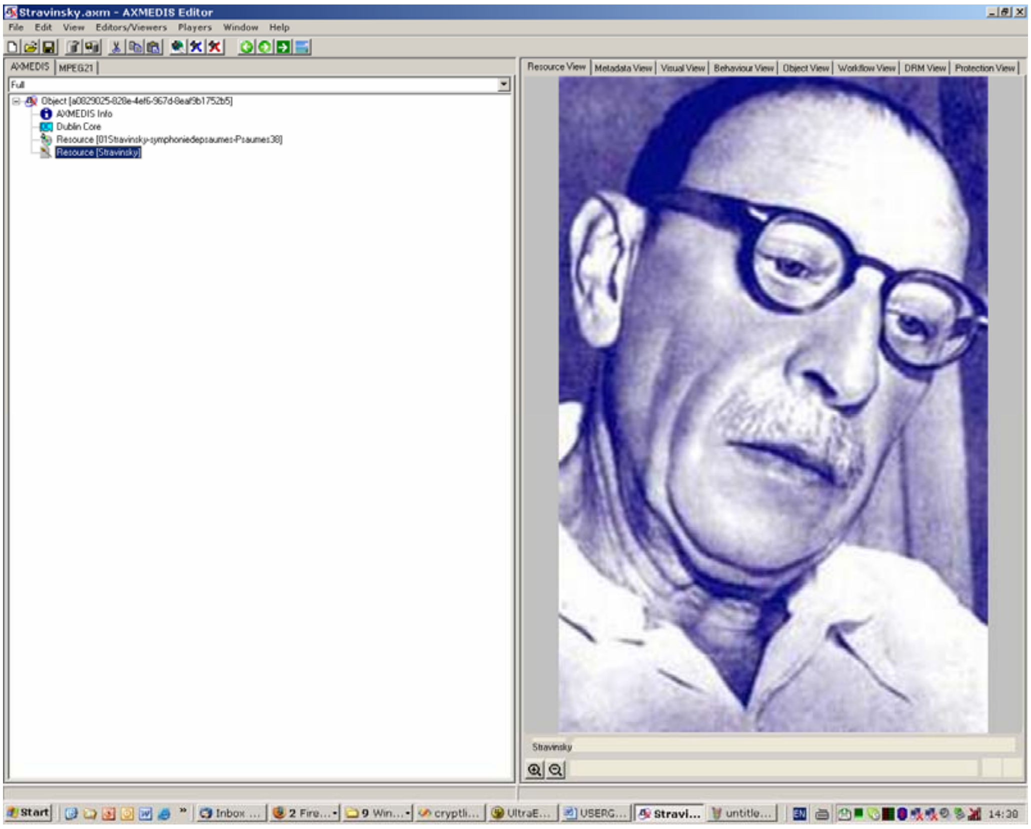
This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.4.3 Detailed description of the functionalities and Screenshots

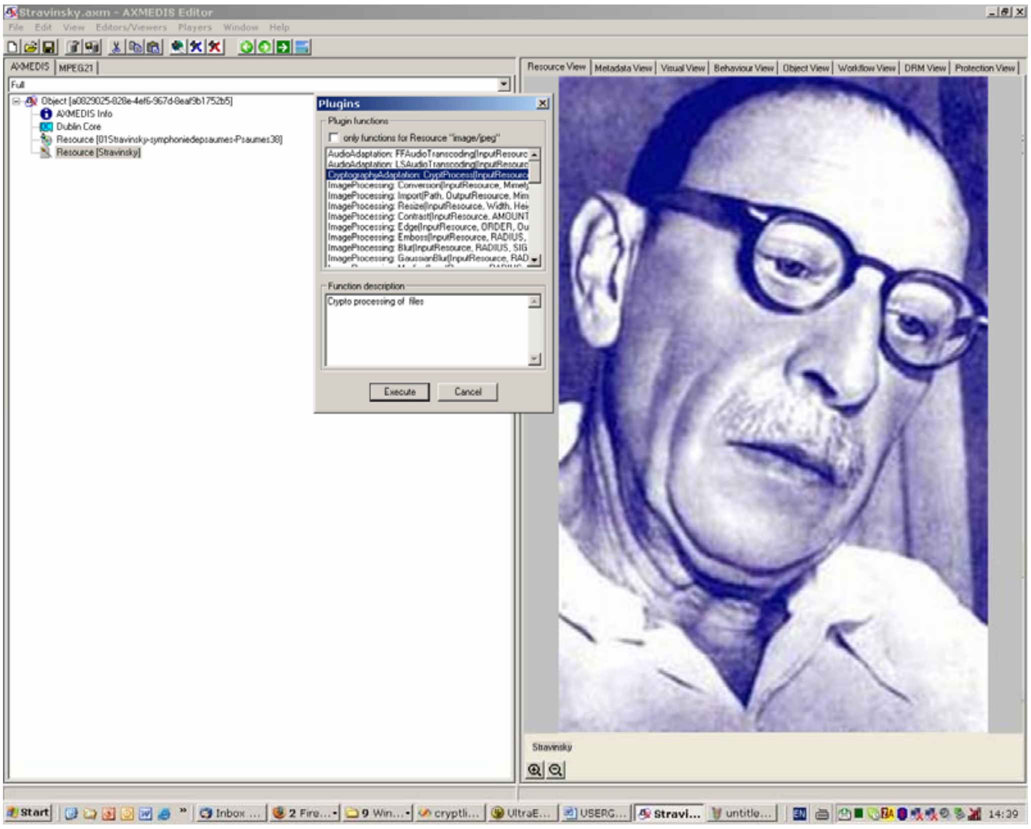
Here's an example on how to use the plug-in with Axeditor.

The plug-in can be applied to all AXMEDIS objects. In the resourcePath directory, there is a sample AXMEDIS file.

Select one of the AXMEDIS object.


Stravinsky.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object [a0829025-828e-4ef6-967d-8eaf9b1752b5]
AXMEDIS Info
Dublin Core
Resource [01Stravinsky-symphoniedepsaumes-Psaumes38]
Resource [Stravinsky]
Resource View Metadata View Visual View Behaviour View Object View Workflow View DRM View Protection View
Stravinsky
Start
14:38

Then select 'Content Processing Plug-in…' command; the following window should appear:


Stravinsky.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object [a0829025-828e-4ef6-967d-8eaf9b1752b5]
AXMEDIS Info
Dublin Core
Resource [01Stravinsky-symphoniedepsaumes-Psaumes38]
Resource [Stravinsky]
Resource View | Metadata View | Visual View | Behaviour View | Object View | Workflow View | DRM View | Protection View
Stravinsky
Plugins
Execute
Cancel

Plugin functions

□ only functions for Resource "image/jpeg"

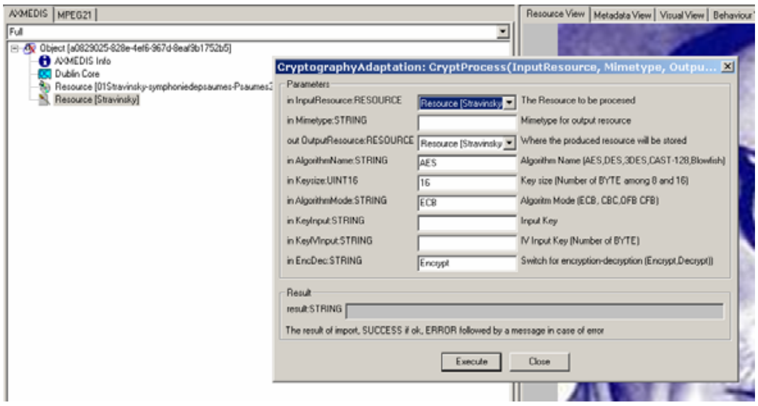
AudioAdaptation: FFAudioTranscoding(InputResourc
AudioAdaptation: LSAudioTranscoding(InputResourc
CryptographyAdaptation: CryptProcess(InputResourc
ImageProcessing: Conversion(InputResource, Mimety
ImageProcessing: Import(Path, OutputResource, Mim
ImageProcessing: Resize(InputResource, Width, Hei
ImageProcessing: Contrast(InputResource, AMOUNT
ImageProcessing: Edge(InputResource, ORDER, Ou
ImageProcessing: Emboss(InputResource, RADIUS,
ImageProcessing: Blur(InputResource, RADIUS, SIG
ImageProcessing: GaussianBlur(InputResource, RAD

Function description

Crypto processing of files

There is one function available: Select Cryptography Adaptation.

The function accepts the parameters showed in the next figure


AXMEDIS MPEG21
Full
Object [a0829025-828e-4ef6-967d-8eaf9b1752b5]
AXMEDIS Info
Dublin Core
Resource [01Stravinsky-symphoniedepsaumes-Psaumes2
Resource [Stravinsky]
Resource View | Metadata View | Visual View | Behaviour
Execute
Close

CryptographyAdaptation: CryptProcess(InputResource, Mimetype, Outpu...

Parameters

in InputResource:RESOURCE	Resource [Stravinsky	The Resource to be procesed
in Mimetype:STRING		Mimetype for output resource
out OutputResource:RESOURCE	Resource [Stravinsky	Where the produced resource will be stored
in AlgorithmName:STRING	AES	Algorithm Name (AES,DES,3DES,CAST-128,Blowfish)
in Keysize:UINT16	16	Key size (Number of BYTE among 8 and 16)
in AlgorithmMode:STRING	ECB	Algoritm Mode (ECB, CBC,OFB CFB)
in KeyInput:STRING		Input Key
in KeyIVinput:STRING		IV Input Key (Number of BYTE)
in EncDec:STRING	Encrypt	Switch for encryption-decryption (Encrypt,Decrypt))

Result

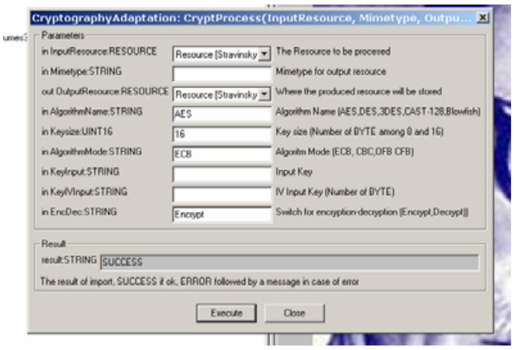
result:STRING

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

In detail:

- InputResource: it describes the resource input
- Mimetype: it describes the object type
- OutputResource: it is the destination object
- AlgorithmName: it is the encryption/decryption algorithm that the user wants to use. The algorithms supported are AES, DES, 3DES, CAST-128 and Blowfish. The key size is related to the algorithm selected.
- Keysize: it is the number of byte of the input key. The DES algorithm wants, for instance, 8 bytes (64 bit key). The AES works with 128 bits.
- KeyInput: it is the input key
- AlgorithmMode: it is the encryption/decryption mode. If the user wants to use a mode different from ECB, he as to provide the KeyIVInput parameter.
- KeyIVInput: it is the key needed for the mode different from ECB
- EncDec: it is the flag to select the encryption or decryption operation-

Clicking on execute makes the plug-in run. Output is given in the 'out' field:



CryptographyAdaptation: CryptProcess(InputResource, Mimetype, Outpu...

Parameters

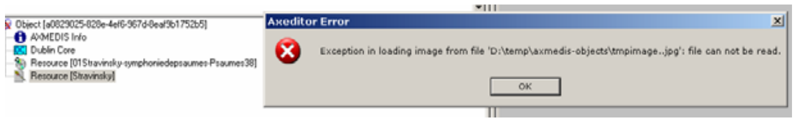
in InputResource:RESOURCE | Resource [Stravinsky | The Resource to be procesed
in Mimetype:STRING | | Mimetype for output resource
out OutputResource:RESOURCE | Resource [Stravinsky | Where the produced resource will be stored
in AlgorithmName:STRING | AES | Algorithm Name (AES,DES,3DES,CAST-128,Blowfish)
in Keysize:UINT16 | 16 | Key size (Number of BYTE among 8 and 16)
in AlgorithmMode:STRING | ECB | Algoritm Mode (ECB, CBC,OFB CFB)
in KeyInput:STRING | | Input Key
in KeyIVInput:STRING | | IV Input Key (Number of BYTE)
in EncDec:STRING | Encrypt | Switch for encryption-decryption (Encrypt,Decrypt])

Result

result:STRING SUCCESS

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

If you try to open the "new" AXMEDIS resource an error appears.



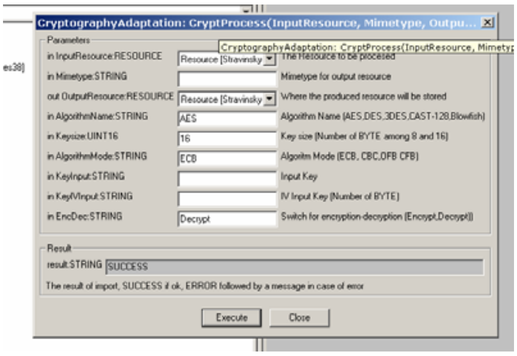
Object [a0829025-828e-4ef6-967d-8eaf9b1752b5]
AXMEDIS Info
Dublin Core
Resource [01Stravinsky-symphoniedepsaumes-Psaumes38]
Resource [Stravinsky]

Axeditor Error

Exception in loading image from file 'D:\temp\axmedis-objects\tmpimage..jpg': file can not be read.

Due to the encryption of the object the image cannot be read.

Doing the "Decryp" operation the resource can be open again.



CryptographyAdaptation: CryptProcess(InputResource, Mimetype, Outpu...

Parameters

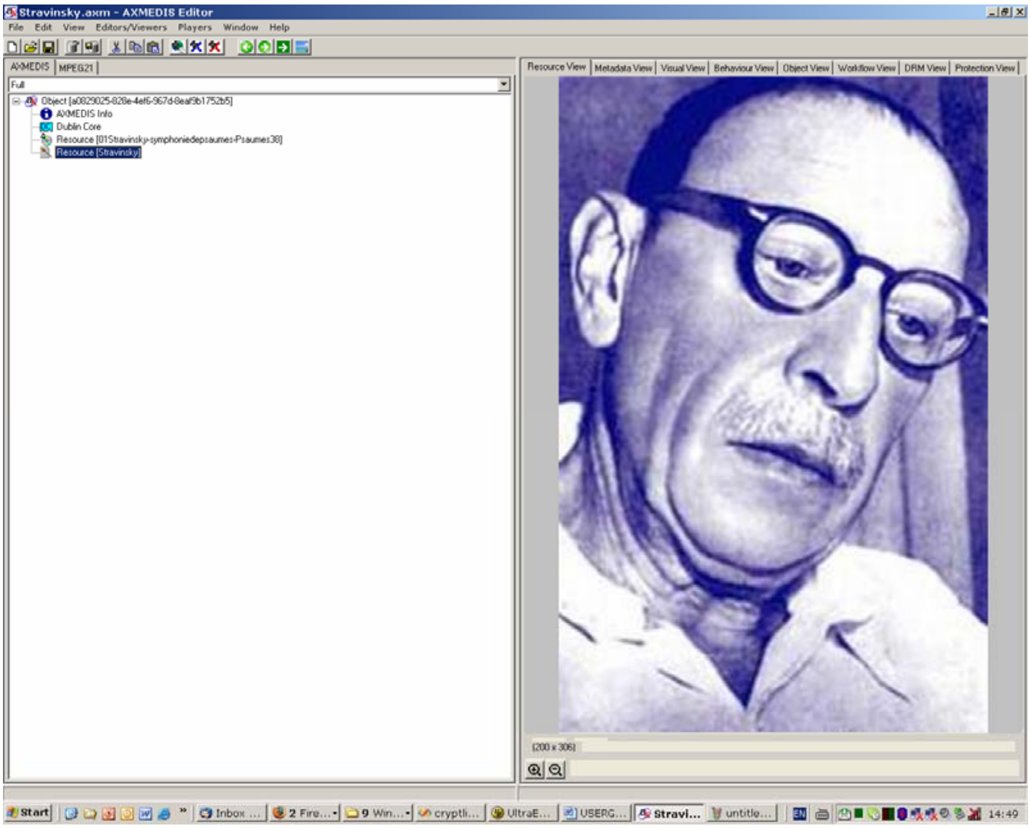
in InputResource:RESOURCE: Resource [Stravinsky — The Resource to be procesed
in Mimetype:STRING: — Mimetype for output resource
out OutputResource:RESOURCE: Resource [Stravinsky — Where the produced resource will be stored
in AlgorithmName:STRING: AES — Algorithm Name (AES,DES,3DES,CAST-128,Blowfish)
in Keysize:UINT16: 16 — Key size (Number of BYTE among 8 and 16)
in AlgorithmMode:STRING: ECB — Algoritm Mode (ECB, CBC,OFB CFB)
in KeyInput:STRING: — Input Key
in KeyIVInput:STRING: — IV Input Key (Number of BYTE)
in EncDec:STRING: Decrypt — Switch for encryption-decryption (Encrypt,Decrypt))

Result

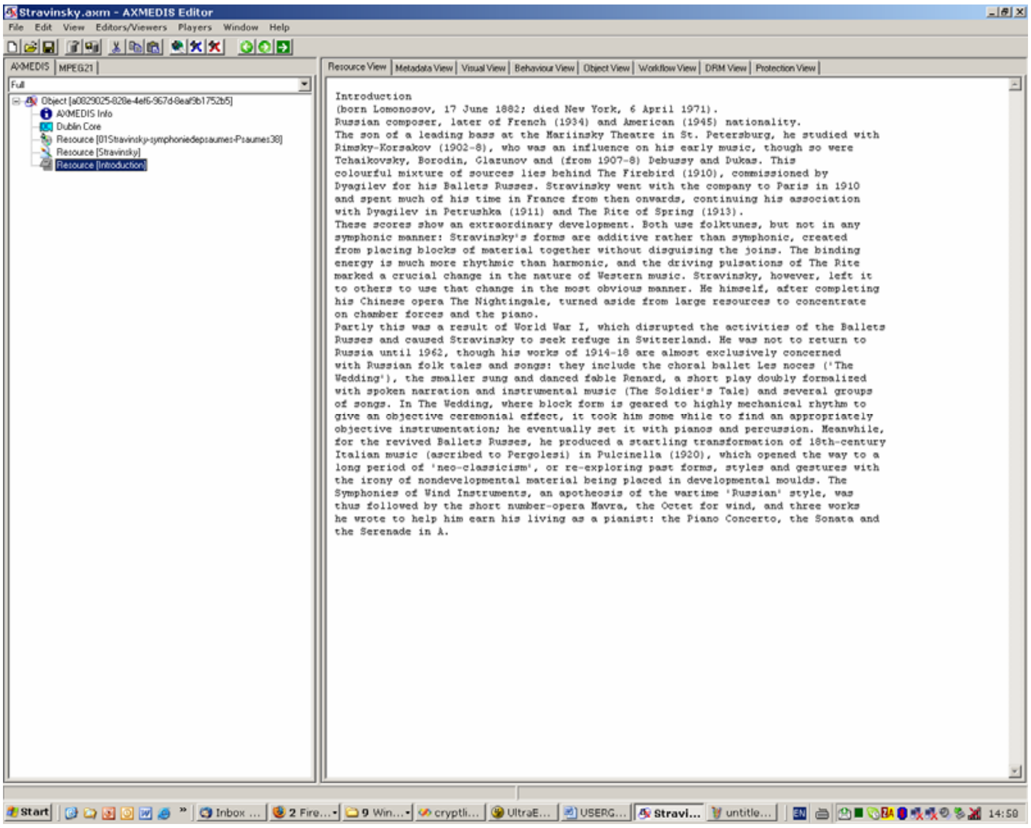
result:STRING: SUCCESS

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

The result:

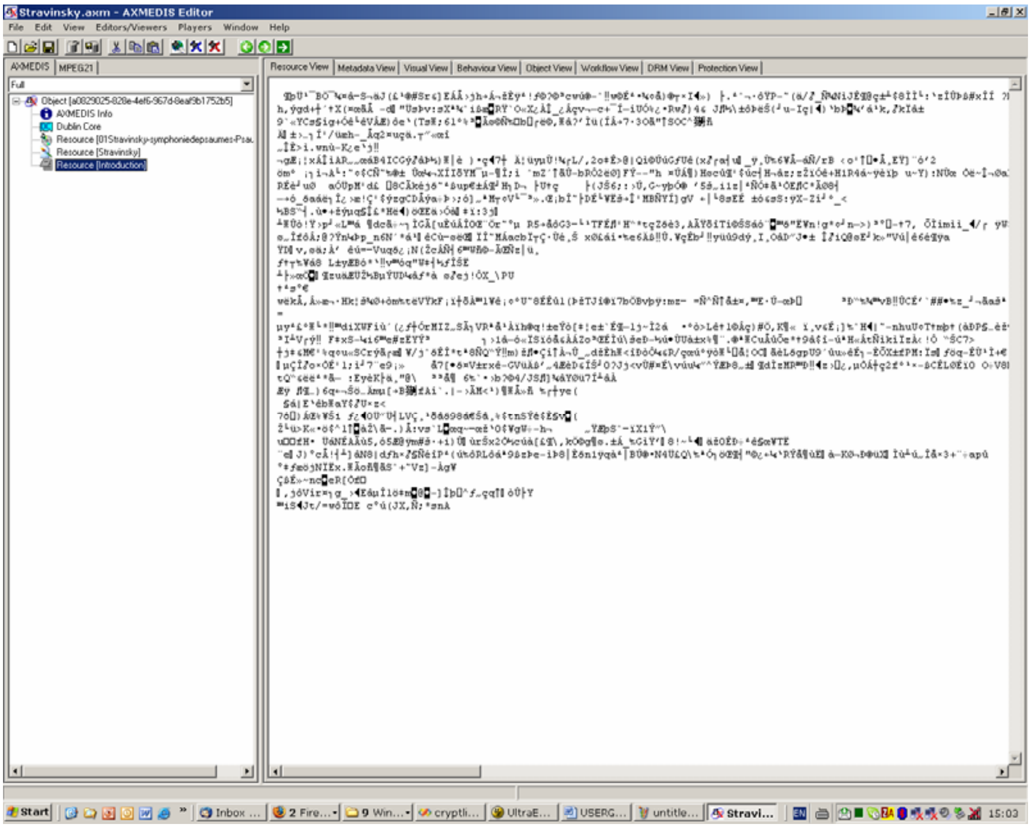


The encryption can be seen better using a text resource. Add the Introduction.txt file that you can find in the resourcePath folder.



```
Introduction
(born Lomonosov, 17 June 1882; died New York, 6 April 1971).
Russian composer, later of French (1934) and American (1945) nationality.
The son of a leading bass at the Mariinsky Theatre in St. Petersburg, he studied with
Rimsky-Korsakov (1902-8), who was an influence on his early music, though so were
Tchaikovsky, Borodin, Glazunov and (from 1907-8) Debussy and Dukas. This
colourful mixture of sources lies behind The Firebird (1910), commissioned by
Dyagilev for his Ballets Russes. Stravinsky went with the company to Paris in 1910
and spent much of his time in France from then onwards, continuing his association
with Dyagilev in Petrushka (1911) and The Rite of Spring (1913).
These scores show an extraordinary development. Both use folktunes, but not in any
symphonic manner: Stravinsky's forms are additive rather than symphonic, created
from placing blocks of material together without disguising the joins. The binding
energy is much more rhythmic than harmonic, and the driving pulsations of The Rite
marked a crucial change in the nature of Western music. Stravinsky, however, left it
to others to use that change in the most obvious manner. He himself, after completing
his Chinese opera The Nightingale, turned aside from large resources to concentrate
on chamber forces and the piano.
Partly this was a result of World War I, which disrupted the activities of the Ballets
Russes and caused Stravinsky to seek refuge in Switzerland. He was not to return to
Russia until 1962, though his works of 1914-18 are almost exclusively concerned
with Russian folk tales and songs: they include the choral ballet Les noces ('The
Wedding'), the smaller sung and danced fable Renard, a short play doubly formalized
with spoken narration and instrumental music (The Soldier's Tale) and several groups
of songs. In The Wedding, where block form is geared to highly mechanical rhythm to
give an objective ceremonial effect, it took him some while to find an appropriately
objective instrumentation; he eventually set it with pianos and percussion. Meanwhile,
for the revived Ballets Russes, he produced a startling transformation of 18th-century
Italian music (ascribed to Pergolesi) in Pulcinella (1920), which opened the way to a
long period of 'neo-classicism', or re-exploring past forms, styles and gestures with
the irony of nondevelopmental material being placed in developmental moulds. The
Symphonies of Wind Instruments, an apotheosis of the wartime 'Russian' style, was
thus followed by the short number-opera Mavra, the Octet for wind, and three works
he wrote to help him earn his living as a pianist: the Piano Concerto, the Sonata and
the Serenade in A.
```

Follow the steps previously described for the plug in.
As the user can see the text file now is a "random" sequence of chars.



19.5 CryptLib Plug-in

19.5.1 Main functionalities

Cryptlib plug-in is a protection tool that brings into AXMEDIS the ability to exploit cryptlib functionalities, this way any kind of file can be encrypted/decrypted with several symmetric cryptography algorithms.
This plug-in is an IPMP tool. It cannot be used directly from a user but it should rather be used by developers.

Implemented algorithms:

- BlowFish
- AES
- 3DES
- CAST128

19.5.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.5.3 Detailed description of the functionalities and Screenshots

Please refer to the cryptlib manual for further implementation details. (www.cryptlib.com)

Parameters:
Every encryption tool should be created with the following parameters, described in cryptlib.xml:

- Key: the key for the encryption
- Iv: the initialization vector for the encryption
- Keylength: the length of the key
- Ivlength: the length of the initialization vector

If a mismatch is detected between the length and the corresponding string an exception is raised.
If length is not specified the plug-in defaults to an appropriate length which is different for each algorithm.

19.6 Language Guesser Plug-in

19.6.1 Main functionalities

Language_guesser_plug-in is a tool that can detect the main language of a text document. Supported languages are: German, English, Spanish, French and Italian. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

19.6.2 Relationship with other tools

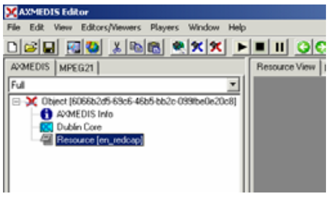
This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.6.3 Detailed description of the functionalities and Screenshots

Here's an example on how to use the plug-in with Axeditor.

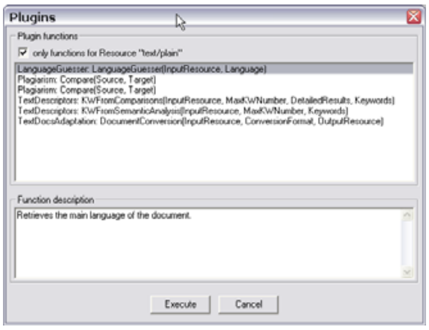
The plug-in can be applied only to plain text. In the resourcePath directory, you can choose any of the .txt files (e.g. en_redcap.txt, which is the well known Red Cap tale).

Create a new AXMEDIS object and add the txt file as an embedded resource.



Object [6066b2d5-69c6-46b5-bb2c-099fbe0e20c8]
AXMEDIS Info
Dublin Core
Resource [en_redcap]

Then select 'Content Processing Plug-in…' command; the following window should appear:

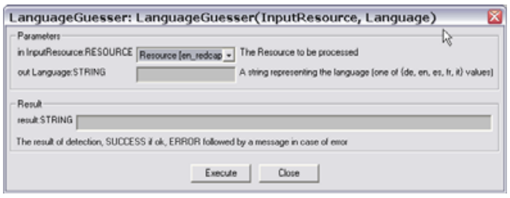


☑ only functions for Resource "text/plain"

LanguageGuesser: LanguageGuesser(InputResource, Language)
Plagiarism: Compare(Source, Target)
Plagiarism: Compare(Source, Target)
TextDescriptors: KWFromComparisons(InputResource, MaxKWNumber, DetailedResults, Keywords)
TextDescriptors: KWFromSemanticAnalysis(InputResource, MaxKWNumber, Keywords)
TextDocsAdaptation: DocumentConversion(InputResource, ConversionFormat, OutputResource)

Retrieves the main language of the document.

Select LanguageGuesser and press execute.

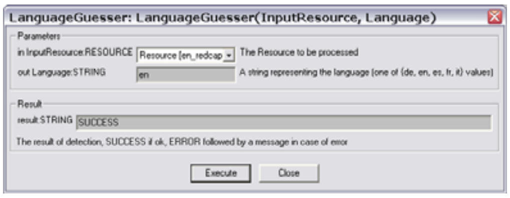


in InputResource:RESOURCE Resource [en_redcap The Resource to be processed
out Language:STRING A string representing the language (one of {de, en, es, fr, it} values)
result:STRING
The result of detection, SUCCESS if ok, ERROR followed by a message in case of error

Press Execute again. In the out field a string of the detected language should appear. Possible values are:

Output string	Language
de	German
en	English
es	Spanish
fr	French

it	Italian



LanguageGuesser: LanguageGuesser(InputResource, Language)

Parameters

in InputResource:RESOURCE Resource [en_redcap The Resource to be processed

out Language:STRING en A string representing the language (one of {de, en, es, fr, it} values)

Result

result:STRING SUCCESS

The result of detection, SUCCESS if ok, ERROR followed by a message in case of error

19.7 Plagiarism Detection Plug-in

19.7.1 Main functionalities

The plagiarism plug-in is meant to detect possible plagiarism of textual documents.

It is based on an algorithm that takes into account the plagiarist behaviour.

This behaviour is modelled as a set of actions like insertion, deletion, substitution or transposition and gives as a result a similarity value which is normalized between 0 and 1.

Next we will show the main functionalities provided by a first prototype of the tool.

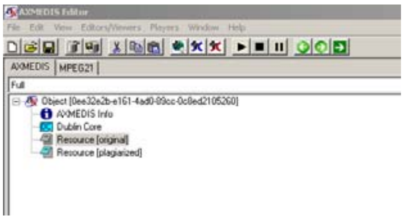
19.7.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.7.3 Detailed description of the functionalities and Screenshots

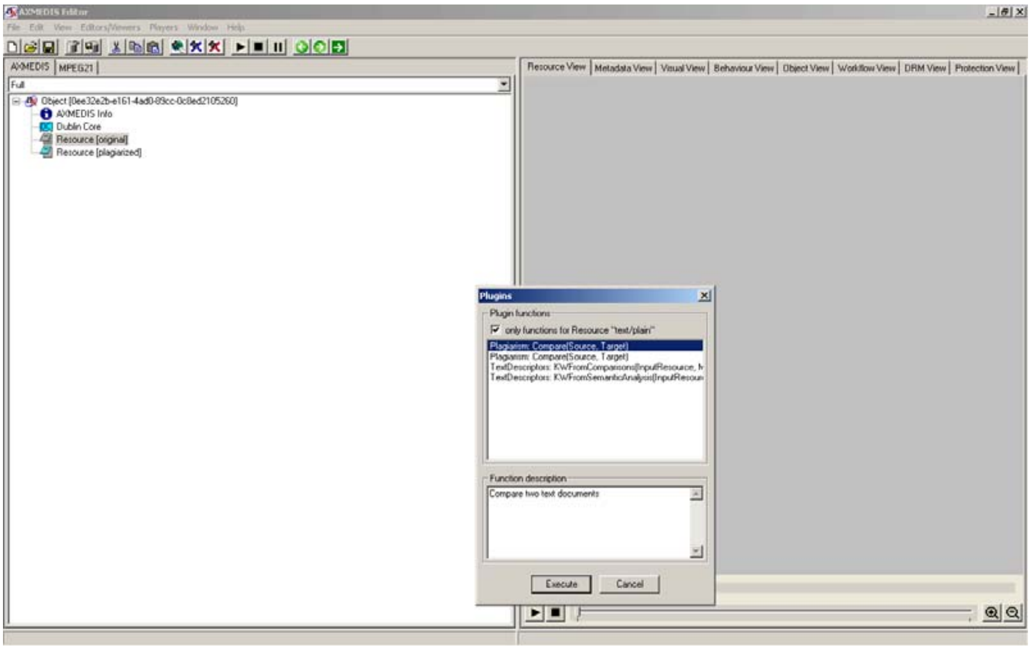
Here’s an example on how to use the plug-in within the Axeditor. The plug-in can be applied only to plain text resource.

Create a new AXMEDIS object and add the text files to be checked (original and suspect plagiarized) as embedded resources.



Object [0ee32e2b-e161-4ad0-89cc-0c8ed2105260]
AXMEDIS Info
Dublin Core
Resource [original]
Resource [plagiarized]

Then selecting the ‘Content Processing Plug-in…’ command; the following window should appear:


AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object [0ee32e2b-e161-4ad0-89cc-0c8ed2105260]
AXMEDIS Info
Dublin Core
Resource [original]
Resource [plagiarized]
Resource View | Metadata View | Visual View | Behaviour View | Object View | Workflow View | DRM View | Protection View

Plugins

Plugin functions

☑ only functions for Resource "text/plain"

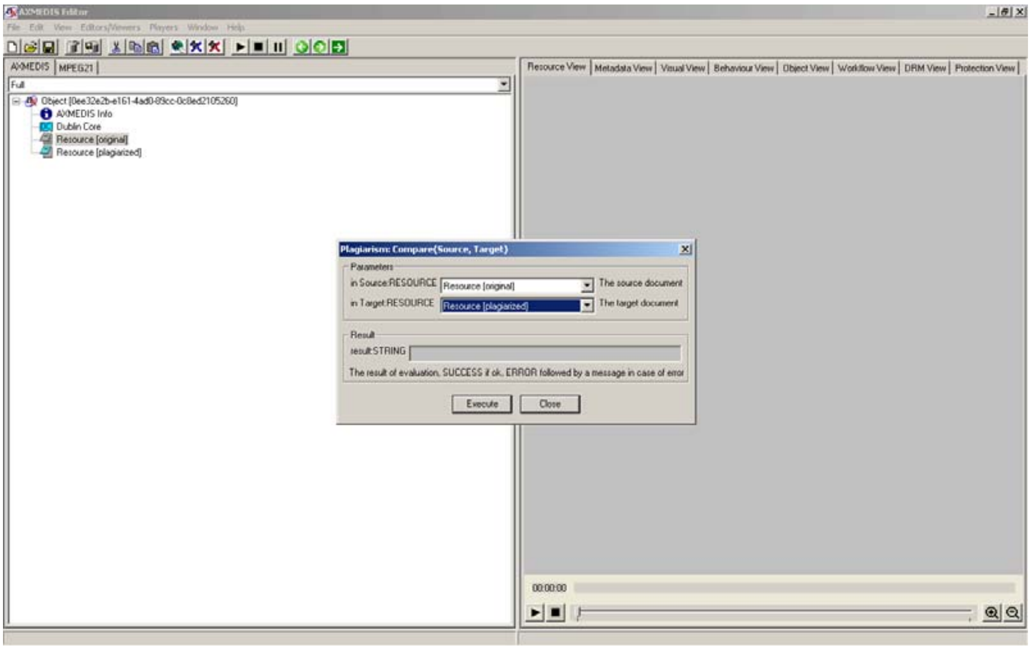
- Plagiarism: Compare(Souce, Target)
- Plagiarism: Compare(Souce, Target)
- TextDescriptors: KWFromComparisons(InputResource, I
- TextDescriptors: KWFromSemanticAnalysis(InputResour

Function description

Compare two text documents

Execute | Cancel

Select the plagiarism plug-in the following window should appear:


AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object [0ee32e2b-e161-4ad0-89cc-0c8ed2105260]
AXMEDIS Info
Dublin Core
Resource [original]
Resource [plagiarized]
Resource View | Metadata View | Visual View | Behaviour View | Object View | Workflow View | DRM View | Protection View
00:00:00

Plagiarism: Compare(Source, Target)

Parameters

in Source:RESOURCE: Resource [original] — The source document

in Target:RESOURCE: Resource [plagiarized] — The target document

Result

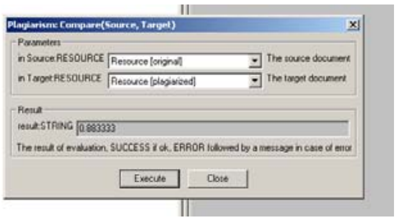
result:STRING

The result of evaluation. SUCCESS if ok. ERROR followed by a message in case of error

Execute | Close

Select the source and target file to be compared and then click on execute.

Clicking on execute makes the plug-in run. The algorithm compares two plain text documents and gives as a result a similarity value which is normalized between 0 and 1. Output is given in the ‘out’ field.



Plagiarism: Compare(Source, Target)

Parameters

in Source:RESOURCE Resource [original] The source document

in Target:RESOURCE Resource [plagiarized] The target document

Result

result:STRING 0.883333

The result of evaluation, SUCCESS if ok, ERROR followed by a message in case of error

19.8 Document Descriptor Extractor Plug-in

19.8.1 Main functionalities

Descriptor_extractor_plug-in is a tool that can extract high-level metadata from text documents. So far, metadata include single and multi-word keywords. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

19.8.2 Relationship with other tools

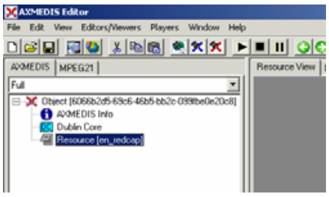
This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.8.3 Detailed description of the functionalities and Screenshots

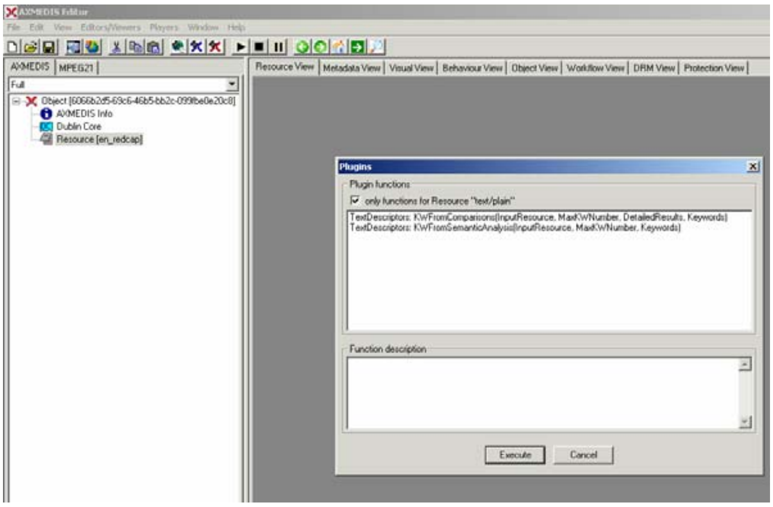
Here's an example on how to use the plug-in with Axeditor.

The plug-in can be applied only to plain text resources and will give meaningful results to the following five supported languages: English, French, German, Italian and Spanish. In the resourcePath directory, there is a sample file to test: en_redcap.txt. It's the well known Red Cap tale.

Create a new AXMEDIS object and add the txt file as an embedded resource.



Then select 'Content Processing Plug-in…' command; the following window should appear:



☑ only functions for Resource "text/plain"

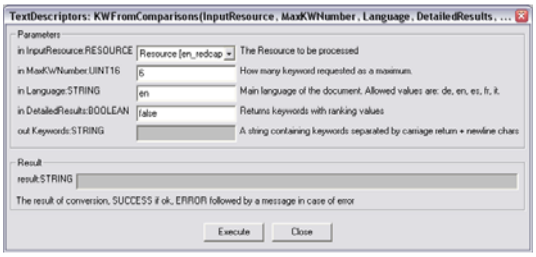
TextDescriptors: KWFromComparisons(InputResource, MaxKWNumber, DetailedResults, Keywords)
TextDescriptors: KWFromSemanticAnalysis(InputResource, MaxKWNumber, Keywords)

There are 2 functions available:

- KWFromComparisons: extracts single and multi-words making a statistical comparison against reference corpora.
- KWFromSemanticAnalysis: extracts single and multi-words making a further analysis with the help of a semantic resource (WordNet): this function is available only for English and it doesn't give satisfactory results, so it won't be extended to other languages.

The first function accepts three parameters:

the number of requested keyword
the language of the document (supported values are: de, en, es, fr, it)
a true/false parameter used to get numeric values beside keywords



TextDescriptors: KWFromComparisons(InputResource, MaxKWNumber, Language, DetailedResults, ...

Parameters

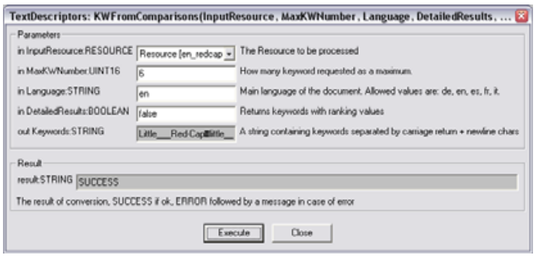
in InputResource:RESOURCE	Resource [en_redcap	The Resource to be processed
in MaxKWNumber:UINT16	6	How many keyword requested as a maximum.
in Language:STRING	en	Main language of the document. Allowed values are: de, en, es, fr, it.
in DetailedResults:BOOLEAN	false	Returns keywords with ranking values
out Keywords:STRING		A string containing keywords separated by carriage return + newline chars

Result

result:STRING

The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

Clicking on execute makes the plug-in run. Output is given in the ‘out’ field as a carriage-return separated list of words/multi-words:



TextDescriptors: KWFromComparisons(InputResource, MaxKWNumber, Language, DetailedResults, ...

Parameters

in InputResource:RESOURCE	Resource [en_redcap	The Resource to be processed
in MaxKWNumber:UINT16	6	How many keyword requested as a maximum.
in Language:STRING	en	Main language of the document. Allowed values are: de, en, es, fr, it.
in DetailedResults:BOOLEAN	false	Returns keywords with ranking values
out Keywords:STRING	Little___Red Cap▮little_	A string containing keywords separated by carriage return + newline chars

Result

result:STRING SUCCESS

The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

19.9 Document Adaptation Plug-in

19.9.1 Main functionalities

Document_adaptation _plug-in is a tool that can transcode text documents between various formats. The following text formats are supported: Adobe© PDF, Rich Text Format (RTF), plain text, Postscript, Hyper-Text Markup Language (HTML). It is possible any type of transcoding among these formats.
In order to exploit the plug-in MIME types for supported formats must be known:

Format	MIME type
Plain text	text/plain
HTML	text/html
Postscript	application/postscript
PDF	application/pdf
RTF	Application/rtf

This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

19.9.2 Relationship with other tools

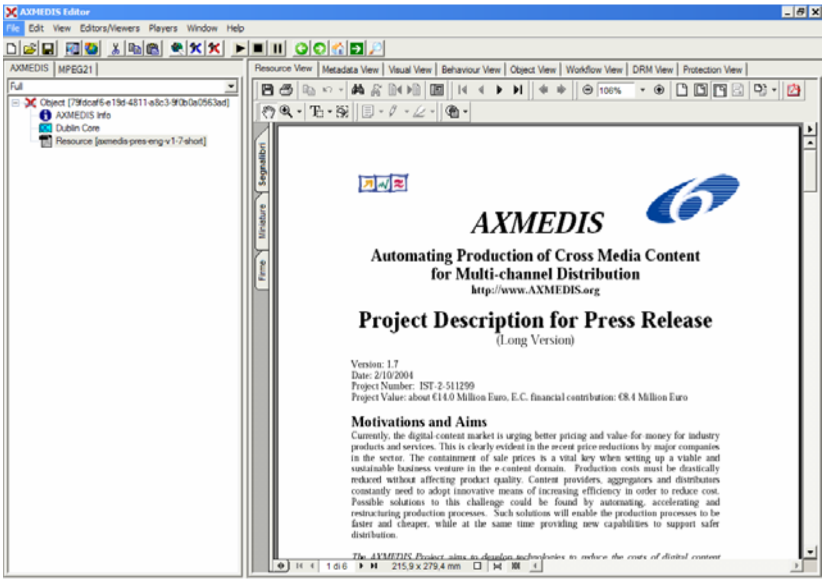
This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.9.3 Detailed description of the functionalities and Screenshots

Here’s an example on how to use the plug-in with Axeditor.

In the package there is a sample PDF file to test: AXMEDIS-pres-eng-v1-7-short.pdf.

Create a new AXMEDIS object and add the PDF file as an embedded resource.



Object [79fdcaf6-e19d-4811-a8c3-9f0b0a0563ad]
AXMEDIS Info
Dublin Core
Resource [axmedis-pres-eng-v1-7-short]

AXMEDIS

Automating Production of Cross Media Content
for Multi-channel Distribution
http://www.AXMEDIS.org

Project Description for Press Release
(Long Version)

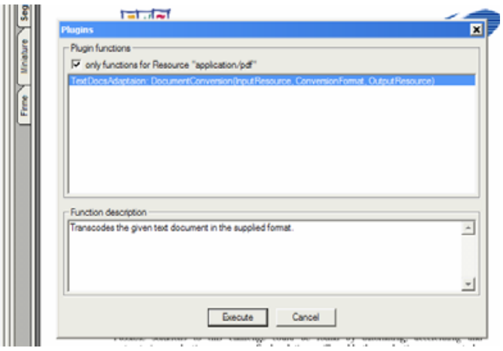
Version: 1.7
Date: 2/10/2004
Project Number: IST-2-511299
Project Value: about €14.0 Million Euro, E.C. financial contribution: €8.4 Million Euro

Motivations and Aims

Currently, the digital-content market is urging better pricing and value-for-money for industry products and services. This is clearly evident in the recent price reductions by major companies in the sector. The containment of sale prices is a vital key when setting up a viable and sustainable business venture in the e-content domain. Production costs must be drastically reduced without affecting product quality. Content providers, aggregators and distributors constantly need to adopt innovative means of increasing efficiency in order to reduce cost. Possible solutions to this challenge could be found by automating, accelerating and restructuring production processes. Such solutions will enable the production processes to be faster and cheaper, while at the same time providing new capabilities to support safer distribution.

The AXMEDIS Project aims to develop technologies to reduce the costs of digital content

Then select ‘Content Processing Plug-in…’ command; the following window should appear:



☑ only functions for Resource "application/pdf"

TextDocsAdaptaion: DocumentConversion(InputResource, ConversionFormat, OutputResource)

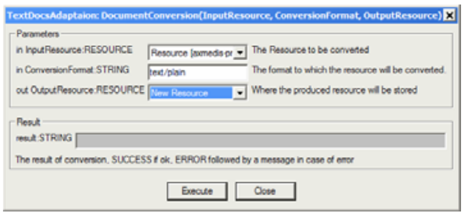
Transcodes the given text document in the supplied format.

There is only one function available:

- DocumentConversion: it will make the transcoding to the format specified as the requested parameter.

For example, let’s convert the document to plain text, so let’s write in the ConversionFormat text box: text/plain

Make output a new resource, and click execute


TextDocsAdaptaion: DocumentConversion(InputResource, ConversionFormat, OutputResource)

in InputResource:RESOURCE Resource [axmedis-pr The Resource to be converted

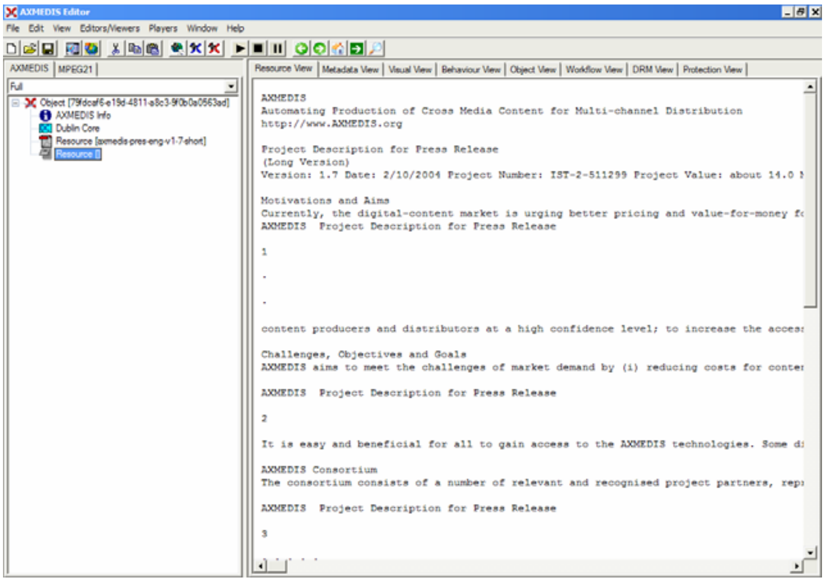
in ConversionFormat:STRING text/plain The format to which the resource will be converted.

out OutputResource:RESOURCE New Resource Where the produced resource will be stored

result:STRING

The result of conversion. SUCCESS if ok, ERROR followed by a message in case of error

Here’s the plain text version of the file:



```
AXMEDIS
Automating Production of Cross Media Content for Multi-channel Distribution
http://www.AXMEDIS.org

Project Description for Press Release
(Long Version)
Version: 1.7 Date: 2/10/2004 Project Number: IST-2-511299 Project Value: about 14.0 M

Motivations and Aims
Currently, the digital-content market is urging better pricing and value-for-money fo
AXMEDIS  Project Description for Press Release

1

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content producers and distributors at a high confidence level; to increase the acces

Challenges, Objectives and Goals
AXMEDIS aims to meet the challenges of market demand by (i) reducing costs for conte

AXMEDIS  Project Description for Press Release

2

It is easy and beneficial for all to gain access to the AXMEDIS technologies. Some d

AXMEDIS Consortium
The consortium consists of a number of relevant and recognised project partners, rep

AXMEDIS  Project Description for Press Release

3
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19.10 Audio FP Plug-in

19.10.1 Main functionalities

Audio-Fingerprinting Plug-in is a tool that extracts an audio fingerprint of a given audio stream within a multimedia file. A fingerprint is perceptual digest of the given multimedia content. Therefore it is also called a perceptual hash value.

The audio stream can be embedded either in a standard audio file (mpg, wav, wma, etc…) or within a video file (mpeg, wmv, avi, etc…). This document shows the main functionalities provided by the prototype of the tool forming a minimal user guide. For testing purposes the prototype also includes a basic matching function.

19.10.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.10.3 Detailed description of the functionalities and Screenshots

Information related to the installation can be found in file README.txt.

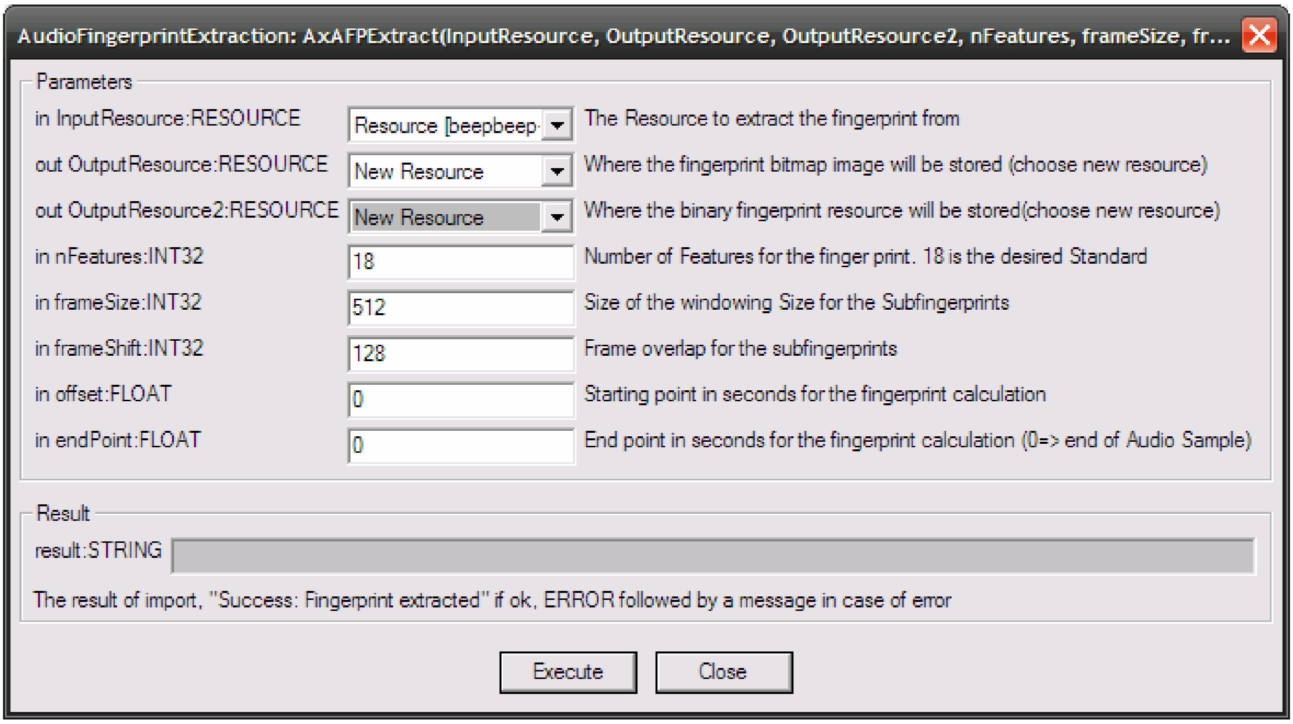
Here is an example on how to use the plug-in with AXMEDIS Editor (AXEditor).

19.10.3.1 Fingerprint Extraction

The plug-in can be applied to any audio or video resource, provided this was declared in the MIME type attribute of the resource. The output is a binary file containing the fingerprint itself and an image file of any supported format (more than 90 MIME type formats). The PNG format is recommended.

For demonstration purposes the package contains a 10 second sample wave file: “test_full.wav” and a 3 second short extract of this file: “test_snippet.wav”.

Create a new AXMEDIS object and add the wave files as embedded resources by right clicking on the object.



AudioFingerprintExtraction: AxAFPExtract(InputResource, OutputResource, OutputResource2, nFeatures, frameSize, fr...

Parameters

in InputResource:RESOURCE — Resource [beepbeep· — The Resource to extract the fingerprint from

out OutputResource:RESOURCE — New Resource — Where the fingerprint bitmap image will be stored (choose new resource)

out OutputResource2:RESOURCE — New Resource — Where the binary fingerprint resource will be stored(choose new resource)

in nFeatures:INT32 — 18 — Number of Features for the finger print. 18 is the desired Standard

in frameSize:INT32 — 512 — Size of the windowing Size for the Subfingerprints

in frameShift:INT32 — 128 — Frame overlap for the subfingerprints

in offset:FLOAT — 0 — Starting point in seconds for the fingerprint calculation

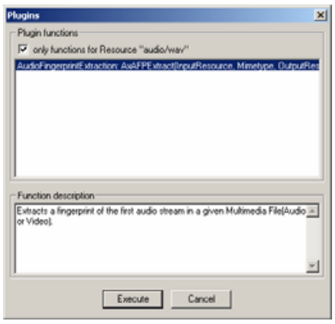
in endPoint:FLOAT — 0 — End point in seconds for the fingerprint calculation (0=> end of Audio Sample)

Result

result:STRING

The result of import, "Success: Fingerprint extracted" if ok, ERROR followed by a message in case of error

Right click on the “test_full.wav” resource and select ‘Content Processing Plug-ins’



Plugins

Plugin functions

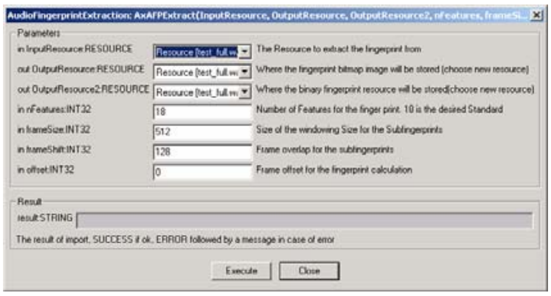
☑ only functions for Resource "audio/wav"

AudioFingerprintExtraction: AxAFPExtract(InputResource, Mimetype, OutputRes

Function description

Extracts a fingerprint of the first audio stream in a given Multimedia File(Audio or Video).

Select ‘AudioFingerprintExtraction’ and the following window appears:



AudioFingerprintExtraction: AxAFPExtract(InputResource, OutputResource, OutputResource2, nFeatures, frameSi...

Parameters

in InputResource:RESOURCE — Resource [test_full.w — The Resource to extract the fingerprint from

out OutputResource:RESOURCE — Resource [test_full.w — Where the fingerprint bitmap image will be stored (choose new resource)

out OutputResource2:RESOURCE — Resource [test_full.w — Where the binary fingerprint resource will be stored(choose new resource)

in nFeatures:INT32 — 18 — Number of Features for the finger print. 10 is the desired Standard

in frameSize:INT32 — 512 — Size of the windowing Size for the Subfingerprints

in frameShift:INT32 — 128 — Frame overlap for the subfingerprints

in offset:INT32 — 0 — Frame offset for the fingerprint calculation

Result

result:STRING

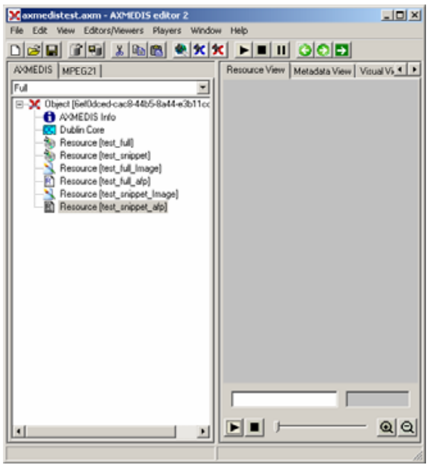
The result of import, SUCCESS if ok, ERROR followed by a message in case of error

The algorithm parameters are:

- **nFeatures** defines the number of frequency bands in which the input stream is divided into. This affects the size of the resulting perceptual hash (default value: 18).
- **frameSize** defines the number of sample values that are considered for one perceptual hash (default value: 512).

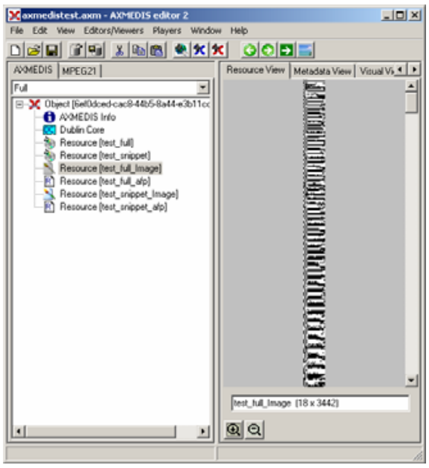
- **frameShift** defines the shift of the window (default value: 128).
- **offset** defines the point in seconds where the plug-in starts extracting the fingerprint (default value: 0).
- **endPoint** defines the end point in seconds up till which the plug-in extracts the fingerprint (default value: 0 means end of audio file).

Choose for both outputs a new resource and click execute.
After receiving the "success" message, close the window and you should have a new image resource and a new resource of the MIME type "fingerprint/audio" in the AXEditor. It is advised to edit the object's properties and set the resource filename.


axmedistest.axm - AXMEDIS editor 2
File Edit View Editors/Viewers Players Window Help
AXMEDIS
MPEG21
Full
Object [6ef0dced-cac8-44b5-8a44-e3b11cc
AXMEDIS Info
Dublin Core
Resource [test_full]
Resource [test_snippet]
Resource [test_full_Image]
Resource [test_full_afp]
Resource [test_snippet_Image]
Resource [test_snippet_afp]
Resource View
Metadata View
Visual Vi

To view it, just double-click on the image resource.

Here is the graphical display of the fingerprint:

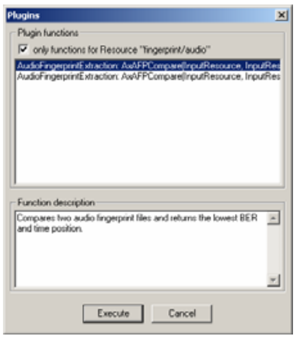

axmedistest.axm - AXMEDIS editor 2
File Edit View Editors/Viewers Players Window Help
AXMEDIS
MPEG21
Full
Object [6ef0dced-cac8-44b5-8a44-e3b11cc
AXMEDIS Info
Dublin Core
Resource [test_full]
Resource [test_snippet]
Resource [test_full_Image]
Resource [test_full_afp]
Resource [test_snippet_Image]
Resource [test_snippet_afp]
Resource View
Metadata View
Visual Vi
test_full_Image (18 x 3442)

19.10.3.2 Fingerprint Matching

For demonstration purposes a basic matching function was implemented.

Repeat the extraction steps for the "test_snippet.wav" file.

After the extraction process has finished right click on any "fingerprint/audio" object, select the "AXAFPCompare" function and execute it:

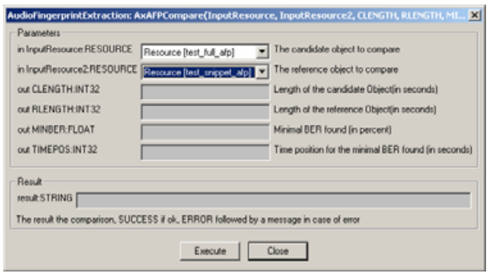


☑ only functions for Resource "fingerprint/audio"

AudioFingerprintExtraction: AxAFPCompare(InputResource, InputRes
AudioFingerprintExtraction: AxAFPCompare(InputResource, InputRes

Compares two audio fingerprint files and returns the lowest BER and time position.

On the following window just select the two fingerprint files to be compared and click on execute
The order is not important; the algorithm automatically decides the candidate and reference object order:

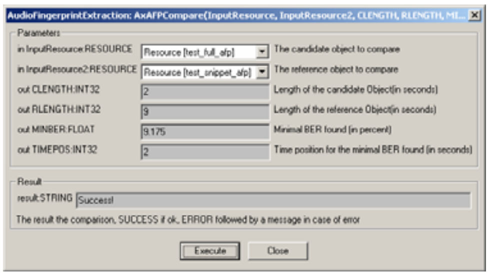

AudioFingerprintExtraction: AxAFPCompare(InputResource, InputResource2, CLENGTH, RLENGTH, MI...
Parameters
Result
Execute
Close

in InputResource:RESOURCE	Resource [test_full_afp]	The candidate object to compare
in InputResource2:RESOURCE	Resource [test_snippet_afp]	The reference object to compare
out CLENGTH:INT32		Length of the candidate Object(in seconds)
out RLENGTH:INT32		Length of the reference Object(in seconds)
out MINBER:FLOAT		Minimal BER found (in percent)
out TIMEPOS:INT32		Time position for the minimal BER found (in seconds)

result:STRING

The result the comparison, SUCCESS if ok, ERROR followed by a message in case of error

The result shows the length in seconds of the original candidate and the reference objects (the audio files the fingerprint was extracted from).


AudioFingerprintExtraction: AxAFPCompare(InputResource, InputResource2, CLENGTH, RLENGTH, MI...
Parameters
Result
Execute
Close

in InputResource:RESOURCE	Resource [test_full_afp]	The candidate object to compare
in InputResource2:RESOURCE	Resource [test_snippet_afp]	The reference object to compare
out CLENGTH:INT32	2	Length of the candidate Object(in seconds)
out RLENGTH:INT32	9	Length of the reference Object(in seconds)
out MINBER:FLOAT	9.175	Minimal BER found (in percent)
out TIMEPOS:INT32	2	Time position for the minimal BER found (in seconds)

result:STRING Success!

The result the comparison, SUCCESS if ok, ERROR followed by a message in case of error

The parameter MINBER (minimum bit error rate) is the minimal bit error rate (BER) found during the comparison. The TIMEPOS is the time position for the minimal BER.

The result value will show “Success!” if the comparison was performed without errors. Otherwise an error message will be displayed. Please note, that the “Success!” message indicates the technical success of the comparison process and not the matching probability.

19.11 M2ANY - Audio FP Plug-in

19.11.1 Main functionalities

M2ANYAudio_fingerprint _plug-in is a tool that extracts an audio fingerprint of a given audio stream within a WAV file. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide. A matching function is still in development.

19.11.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

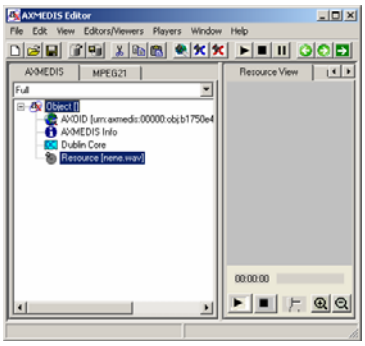
19.11.3 Detailed description of the functionalities and Screenshots

CAVEAT: This guide assumes you licensed the corresponding technology from M2ANY! The licensed executables (cfymain.exe, xtrmain.exe, cfy.dll, xtr.dll and asign.dll) have to be installed in the plug-in directory! You also need to indicate the path to an existing fingerprint database which is also provided by M2ANY.

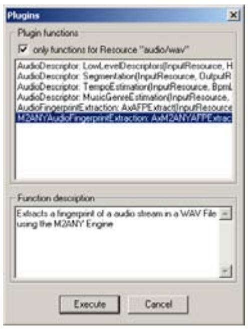
Information related to the installation can be found in file README.txt.

The plug-in can be applied to WAV files, provided this was declared in the MIME type attribute of the resource. The output is a binary file containing the fingerprint in binary format.

Create a new AXMEDIS object and add a wave file as an embedded resource by right clicking on the object. The provided audio file excerpt ("nene.wav") is used here as a complete fingerprint of the complete song is contained within the M2ANY Database.



Right click on the WAV resource and select 'Content Processing Plug-ins'



Plugin functions

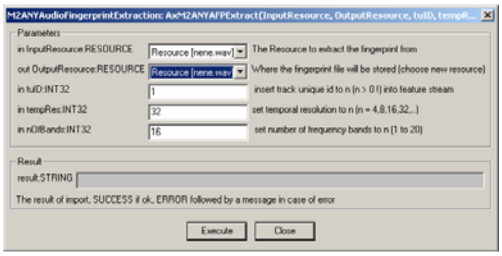
☑ only functions for Resource "audio/wav"

AudioDescriptor: LowLevelDescriptors(InputResource, H
AudioDescriptor: Segmentation(InputResource, OutputR
AudioDescriptor: TempoEstimation(InputResource, BpmL
AudioDescriptor: MusicGenreEstimation(InputResource,
AudioFingerprintExtraction: AxAFPExtract(InputResource
M2ANYAudioFingerprintExtraction: AxM2ANYAFPExtrac

Function description

Extracts a fingerprint of a audio stream in a WAV File using the M2ANY Engine

Select 'M2ANYAudioFingerprintExtraction' and click "Execute" the following window should appear:



M2ANYAudioFingerprintExtraction: AxM2ANYAFPExtract(InputResource, OutputResource, tuID, tempR...

Parameters

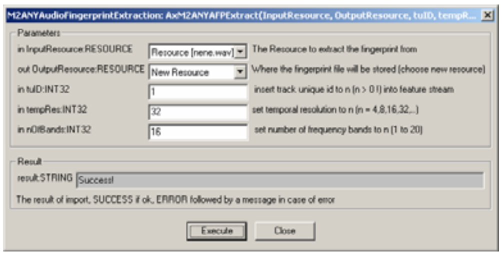
in InputResource:RESOURCE	Resource [nene.wav]	The Resource to extract the fingerprint from
out OutputResource:RESOURCE	Resource [nene.wav	Where the fingerprint file will be stored (choose new resource)
in tuID:INT32	1	insert track unique id to n (n > 0 !) into feature stream
in tempRes:INT32	32	set temporal resolution to n (n = 4,8,16,32,..)
in nOfBands:INT32	16	set number of frequency bands to n (1 to 20)

Result

result:STRING

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

Choose for the output a new resource and click execute.



M2ANYAudioFingerprintExtraction: AxM2ANYAFPExtract(InputResource, OutputResource, tuID, tempR...

Parameters

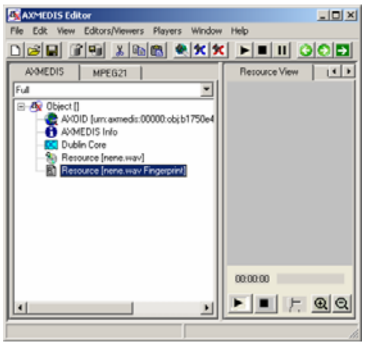
in InputResource:RESOURCE	Resource [nene.wav]	The Resource to extract the fingerprint from
out OutputResource:RESOURCE	New Resource	Where the fingerprint file will be stored (choose new resource)
in tuID:INT32	1	insert track unique id to n (n > 0 !) into feature stream
in tempRes:INT32	32	set temporal resolution to n (n = 4,8,16,32,..)
in nOfBands:INT32	16	set number of frequency bands to n (1 to 20)

Result

result:STRING Success!

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

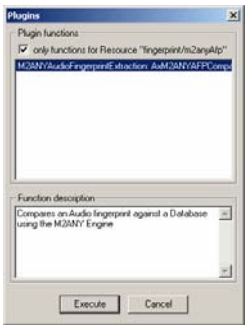
A console window will shortly appear indicating the extraction process. After receiving the "success"-message, close the window and you should have a new resource of the MIME type "fingerprint/m2anyAfp" in the AXMEDIS editor. It is advised to edit the objects properties with the original resource filename



Object []
AXOID [urn:axmedis:00000:obj:b1750e4
AXMEDIS Info
Dublin Core
Resource [nene.wav]
Resource [nene.wav Fingerprint]

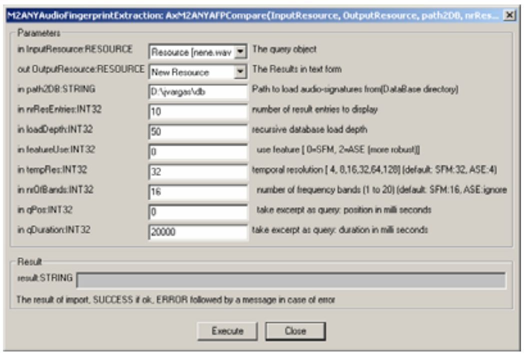
For demonstration purposes a basic matching function was included. For this section the fingerprint previously generated will be used.

After the extraction process has finished right click on any "fingerprint/ m2anyAfp" object, select the "M2ANYAXAFPCompare" function and execute it:


Plugins
Plugin functions
☑ only functions for Resource "fingerprint/m2anyAfp"
M2ANYAudioFingerprintExtraction: AxM2ANYAFPCompa
Function description
Execute
Cancel

Compares an Audio fingerprint against a Database using the M2ANY Engine

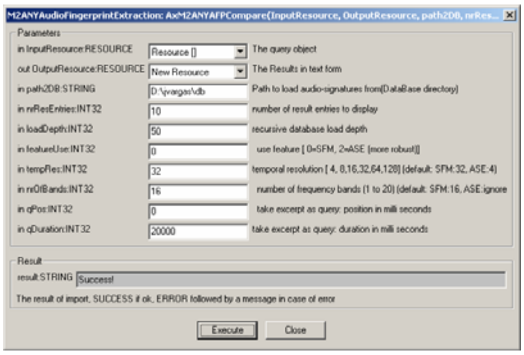
On the following window select a new resource as the output resource and provide the path to an existing database directory (containing at least 10 fingerprint files in it) and click on execute:


M2ANYAudioFingerprintExtraction: AxM2ANYAFPCompare(InputResource, OutputResource, path2DB, nrRes...
Parameters
Result
Execute
Close

in InputResource:RESOURCE	Resource [nene.wav	The query object
out OutputResource:RESOURCE	New Resource	The Results in text form
in path2DB:STRING	D:\jvargas\db	Path to load audio-signatures from(DataBase directory)
in nrResEntries:INT32	10	number of result entries to display
in loadDepth:INT32	50	recursive database load depth
in featureUse:INT32	0	use feature [0=SFM, 2=ASE (more robust)]
in tempRes:INT32	32	temporal resolution [4, 8,16,32,64,128] (default: SFM:32, ASE:4)
in nrOfBands:INT32	16	number of frequency bands (1 to 20) (default: SFM:16, ASE:ignore
in qPos:INT32	0	take excerpt as query: position in milli seconds
in qDuration:INT32	20000	take excerpt as query: duration in milli seconds

result:STRING

The result of import, SUCCESS if ok, ERROR followed by a message in case of error


M2ANYAudioFingerprintExtraction: AxM2ANYAFPCompare(InputResource, OutputResource, path2DB, nrRes...
Parameters
Result
Execute
Close

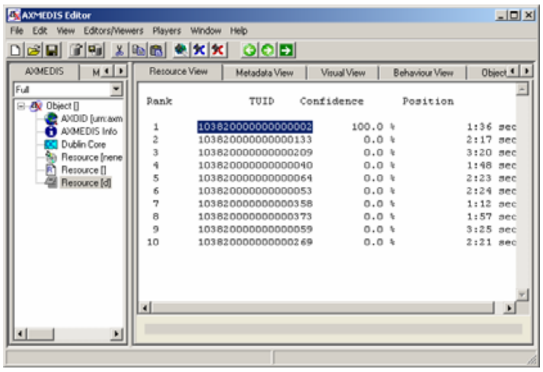
in InputResource:RESOURCE	Resource []	The query object
out OutputResource:RESOURCE	New Resource	The Results in text form
in path2DB:STRING	D:\jvargas\db	Path to load audio-signatures from(DataBase directory)
in nrResEntries:INT32	10	number of result entries to display
in loadDepth:INT32	50	recursive database load depth
in featureUse:INT32	0	use feature [0=SFM, 2=ASE (more robust)]
in tempRes:INT32	32	temporal resolution [4, 8,16,32,64,128] (default: SFM:32, ASE:4)
in nrOfBands:INT32	16	number of frequency bands (1 to 20) (default: SFM:16, ASE:ignore
in qPos:INT32	0	take excerpt as query: position in milli seconds
in qDuration:INT32	20000	take excerpt as query: duration in milli seconds

result:STRING Success!

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

The result value will show “Success!” if the comparison was performed without errors. Else an error message will display. The resulting resource will be a text file. Please edit its properties and add an arbitrary content ID. This prevents the AXEditor from crashing. This issue is soon to be fixed.

The matching TUID (Track unique ID) for the excerpt should be the ID: 103820000000000002 which belongs to the song “7 Seconds” by Neneh Cherry. (Unfortunately the provided binary demonstration package does not allow resolving the TUIDs to their source files.)



```
Rank          TUID       Confidence      Position

 1     103820000000000002     100.0 %       1:36 sec
 2     103820000000000133       0.0 %       2:17 sec
 3     103820000000000209       0.0 %       3:20 sec
 4     103820000000000040       0.0 %       1:48 sec
 5     103820000000000064       0.0 %       2:23 sec
 6     103820000000000053       0.0 %       2:24 sec
 7     103820000000000358       0.0 %       1:12 sec
 8     103820000000000373       0.0 %       1:57 sec
 9     103820000000000059       0.0 %       3:25 sec
10     103820000000000269       0.0 %       2:21 sec
```

19.12 Video FP Plug-in

19.12.1 Main functionalities

Video_fingerprint _plug-in is a tool that extracts a fingerprint of a given video stream. The video stream can be embedded in a video file (mpeg, wmv, avi, etc…).

This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

19.12.2 Relationship with other tools

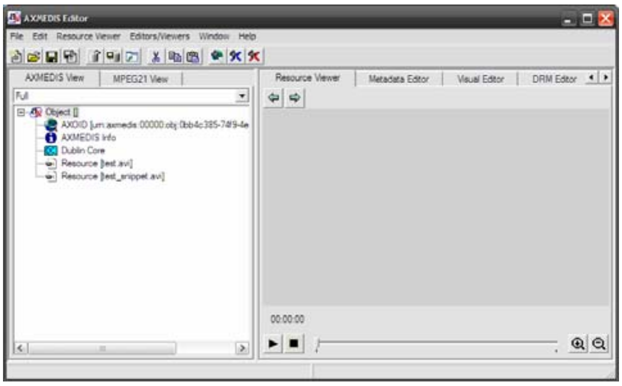
This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.12.3 Detailed description of the functionalities and Screenshots

19.12.3.1 Fingerprint Extraction

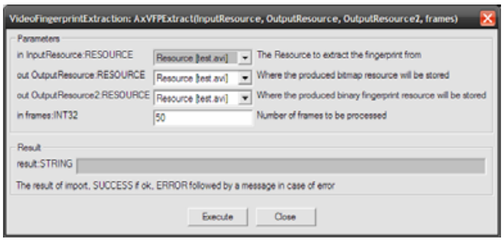
The plug-in can be applied to any video resources, provided this was declared in the MIME type attribute of the resource. The output can be any mimetype within the image/* format. The **PNG** format is recommended. In the package there are two sample avi files to do a test: “test.avi” and “test_snippet.avi”.

Create a new AXMEDIS object and with a right click, add the avi files as embedded resources.



With a right Click on a resource, select ‘Content Processing Plug-ins’. Then you should search for the option ‘VideoFingerprintExtraction’ and click execute.

After the selection, the following window should appear:


VideoFingerprintExtraction: AxVFPExtract(InputResource, OutputResource, OutputResource2, frames)

Parameters

in InputResource:RESOURCE Resource [test.avi] The Resource to extract the fingerprint from

out OutputResource:RESOURCE Resource [test.avi] Where the produced bitmap resource will be stored

out OutputResource2:RESOURCE Resource [test.avi] Where the produced binary fingerprint resource will be stored

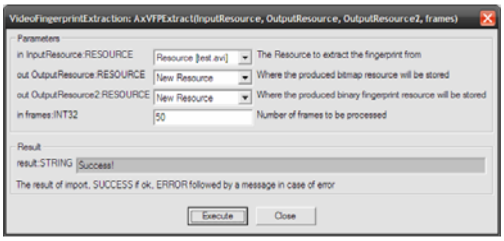
in frames:INT32 50 Number of frames to be processed

Result

result:STRING

The result of import. SUCCESS if ok. ERROR followed by a message in case of error

Make output a new resource, select the desired number of frames to be processed and click execute.



VideoFingerprintExtraction: AxVFPExtract(InputResource, OutputResource, OutputResource2, frames)

Parameters

in InputResource:RESOURCE: Resource [test.avi] — The Resource to extract the fingerprint from

out OutputResource:RESOURCE: New Resource — Where the produced bitmap resource will be stored

out OutputResource2:RESOURCE: New Resource — Where the produced binary fingerprint resource will be stored

in frames:INT32: 50 — Number of frames to be processed

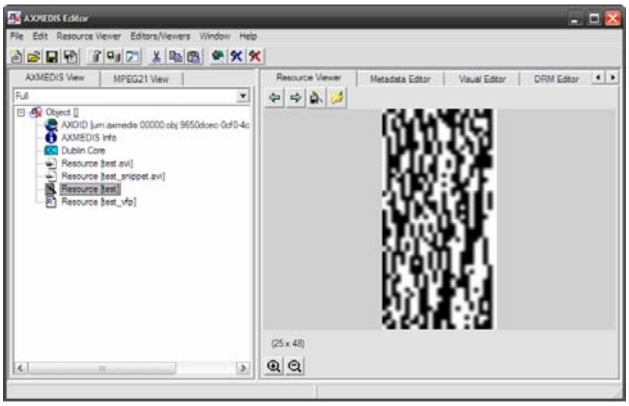
Result

result:STRING: Success!

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

After receiving the “success” message, close the window and you should have a new image resource and a new resource of the MIME type “fingerprint/video” in the AXEditor. It is advised to edit the objects properties to change the resource filename.

With a double click in the resource, the following graphical of the fingerprint will be shown:

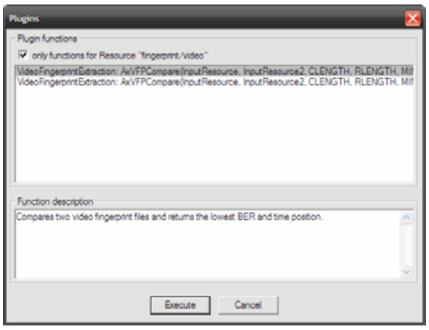


19.12.3.2 Fingerprint Matching

For demonstration purposes a basic matching function was implemented.

Repeat the extraction steps for the “test_snippet.avi” file.

After the extraction process has finished right click on any “fingerprint/video” object, select the “AxVFPCompare” function and execute it:



Plugins

Plugin functions

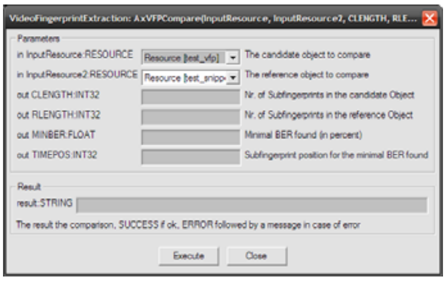
☑ only functions for Resource "fingerprint/video"

VideoFingerprintExtraction: AxVFPCompare(InputResource, InputResource2, CLENGTH, RLENGTH, MI
VideoFingerprintExtraction: AxVFPCompare(InputResource, InputResource2, CLENGTH, RLENGTH, MI

Function description

Compares two video fingerprint files and returns the lowest BER and time position.

On the following window just select the two fingerprint files to be compared and click on execute
The order is not important; the algorithm automatically decides the candidate and reference object order:



VideoFingerprintExtraction: AxVFPCompare(InputResource, InputResource2, CLENGTH, RLE...

Parameters

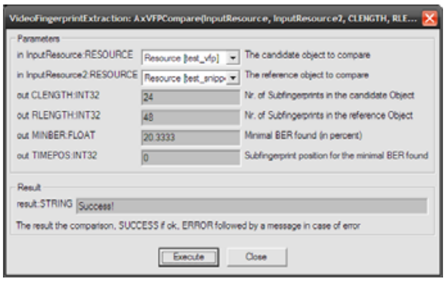
in InputResource:RESOURCE	Resource [test_vfp]	The candidate object to compare
in InputResource2:RESOURCE	Resource [test_snipp	The reference object to compare
out CLENGTH:INT32		Nr. of Subfingerprints in the candidate Object
out RLENGTH:INT32		Nr. of Subfingerprints in the reference Object
out MINBER:FLOAT		Minimal BER found (in percent)
out TIMEPOS:INT32		Subfingerprint position for the minimal BER found

Result

result:STRING

The result the comparison, SUCCESS if ok, ERROR followed by a message in case of error

The result shows the length in seconds of the original candidate and reference objects (the video files the fingerprint was extracted from).



VideoFingerprintExtraction: AxVFPCompare(InputResource, InputResource2, CLENGTH, RLE...

Parameters

in InputResource:RESOURCE	Resource [test_vfp]	The candidate object to compare
in InputResource2:RESOURCE	Resource [test_snipp	The reference object to compare
out CLENGTH:INT32	24	Nr. of Subfingerprints in the candidate Object
out RLENGTH:INT32	48	Nr. of Subfingerprints in the reference Object
out MINBER:FLOAT	20.3333	Minimal BER found (in percent)
out TIMEPOS:INT32	0	Subfingerprint position for the minimal BER found

Result

result:STRING Success!

The result the comparison, SUCCESS if ok, ERROR followed by a message in case of error

The parameter MINBER (minimum bit error rate) is the minimal bit error rate (BER) found during the comparison. The TIMEPOS is the time position for the minimal BER.

The result value will show “Success!” if the comparison was performed without errors. Else an error message will display. Please note, that the “Success!” message indicates the technical success of the comparison process and not the matching probability.

19.13 Generic Resource Files FP Plug-in

19.13.1 Main functionalities

GenericFiles_fingerprint _plug-in is a tool that calculates a fingerprint (a cryptographic hash) for a given arbitrary file. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

19.13.2 Relationship with other tools

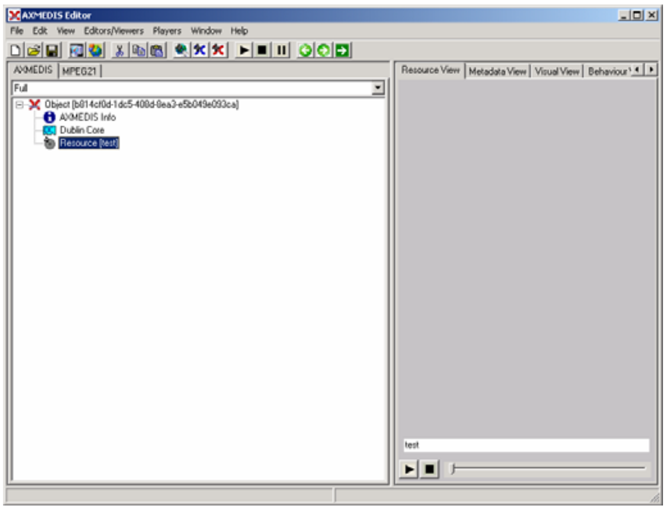
This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.13.3 Detailed description of the functionalities and Screenshots

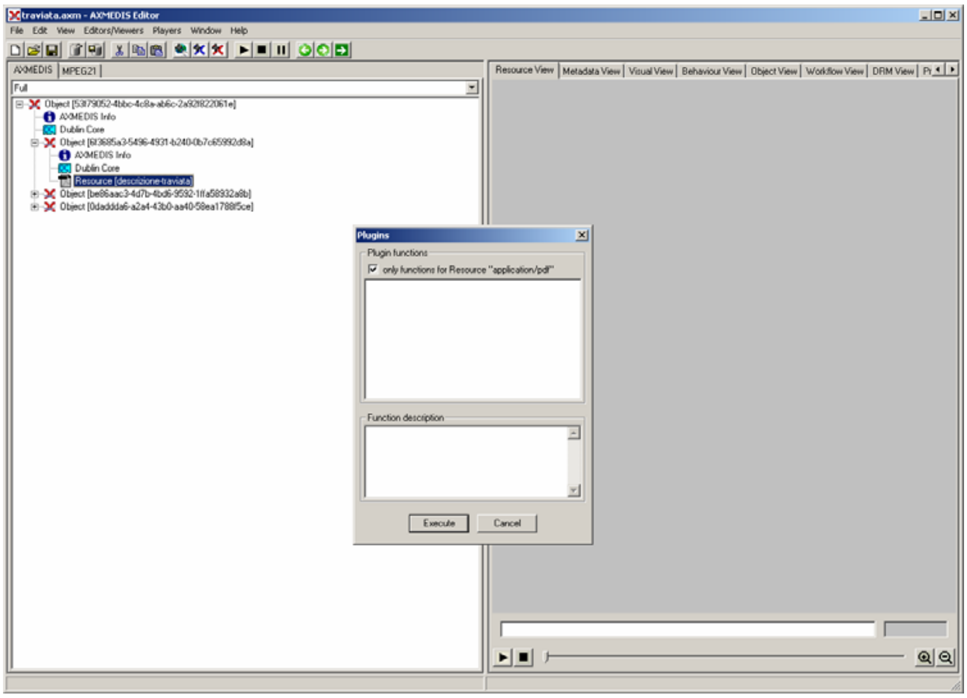
Information related to the installation can be found in file README.txt.

The plug-in can be applied to any content type. The output is a string. In the package there is a test file: test.pdf.

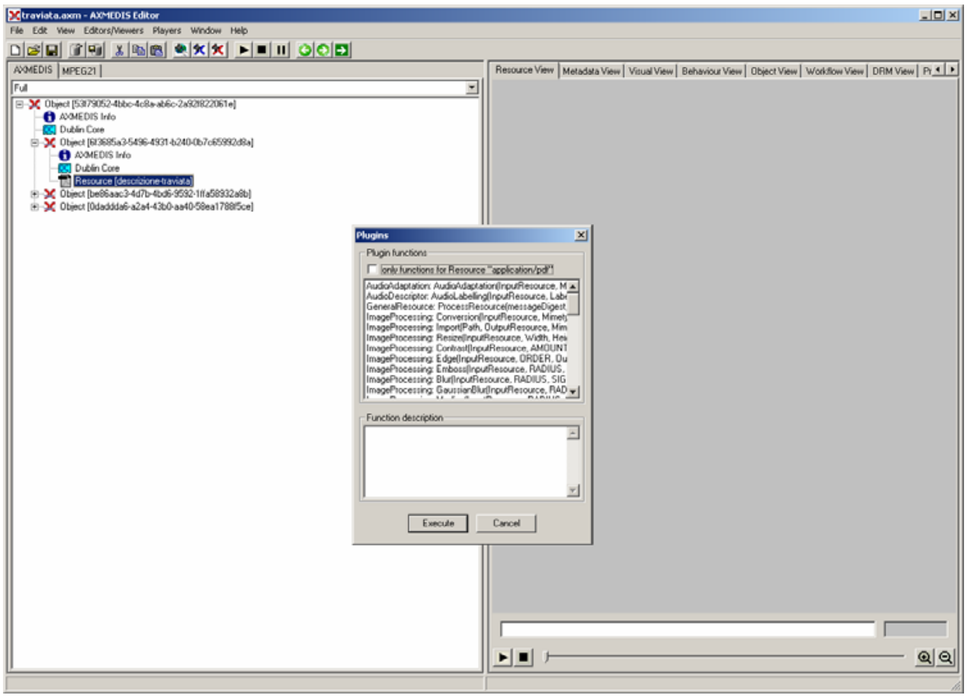
Create a new AXMEDIS object and add the wav file as an embedded resource.



Right Click on the resource and select ‘Content Processing Plug-ins’. The following window should appear:

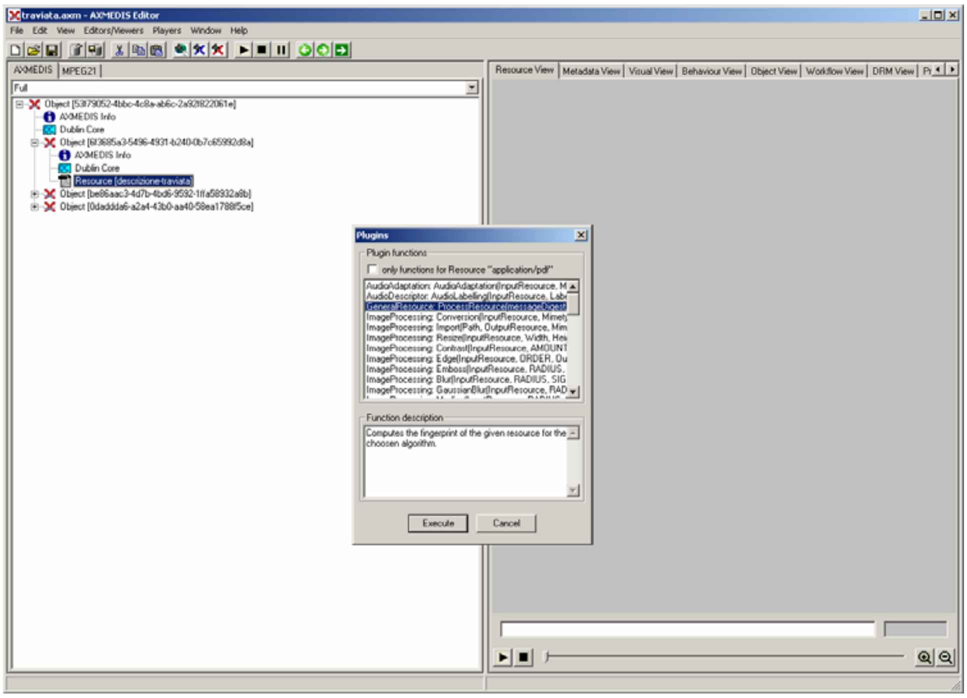

traviata.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object [53f79052-4bbc-4c8a-ab6c-2a92f822061e]
AXMEDIS Info
Dublin Core
Object [6f3685a3-5496-4931-b240-0b7c65992d8a]
AXMEDIS Info
Dublin Core
Resource [descrizione-traviata]
Object [be86aac3-4d7b-4bd6-9592-1ffa58932a8b]
Object [0daddda6-a2a4-43b0-aa40-58ea1788f5ce]
Resource View Metadata View Visual View Behaviour View Object View Workflow View DRM View Pi
Plugins
Plugin functions
☑ only functions for Resource "application/pdf"
Function description
Execute
Cancel

Unselect the check-box (“only functions for Resource XXX”):


traviata.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object [53f79052-4bbc-4c8a-ab6c-2a92f822061e]
AXMEDIS Info
Dublin Core
Object [6f3685a3-5496-4931-b240-0b7c65992d8a]
AXMEDIS Info
Dublin Core
Resource [descrizione-traviata]
Object [be86aac3-4d7b-4bd6-9592-1ffa58932a8b]
Object [0daddda6-a2a4-43b0-aa40-58ea1788f5ce]
Resource View Metadata View Visual View Behaviour View Object View Workflow View DRM View Pi
Plugins
Plugin functions
☐ only functions for Resource "application/pdf"
Function description
Execute
Cancel

AudioAdaptation: AudioAdaptation(InputResource, M
AudioDescriptor: AudioLabelling(InputResource, Labe
GeneralResource: ProcessResource(messageDigest
ImageProcessing: Conversion(InputResource, Mimety
ImageProcessing: Import(Path, OutputResource, Mim
ImageProcessing: Resize(InputResource, Width, Hei
ImageProcessing: Contrast(InputResource, AMOUNT
ImageProcessing: Edge(InputResource, ORDER, Ou
ImageProcessing: Emboss(InputResource, RADIUS,
ImageProcessing: Blur(InputResource, RADIUS, SIG
ImageProcessing: GaussianBlur(InputResource, RAD

Select ‘GenericRessource::ProcessResourceMessageDigest’


traviata.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Resource View Metadata View Visual View Behaviour View Object View Workflow View DRM View Pr
Plugins
Plugin functions
Function description
Execute
Cancel

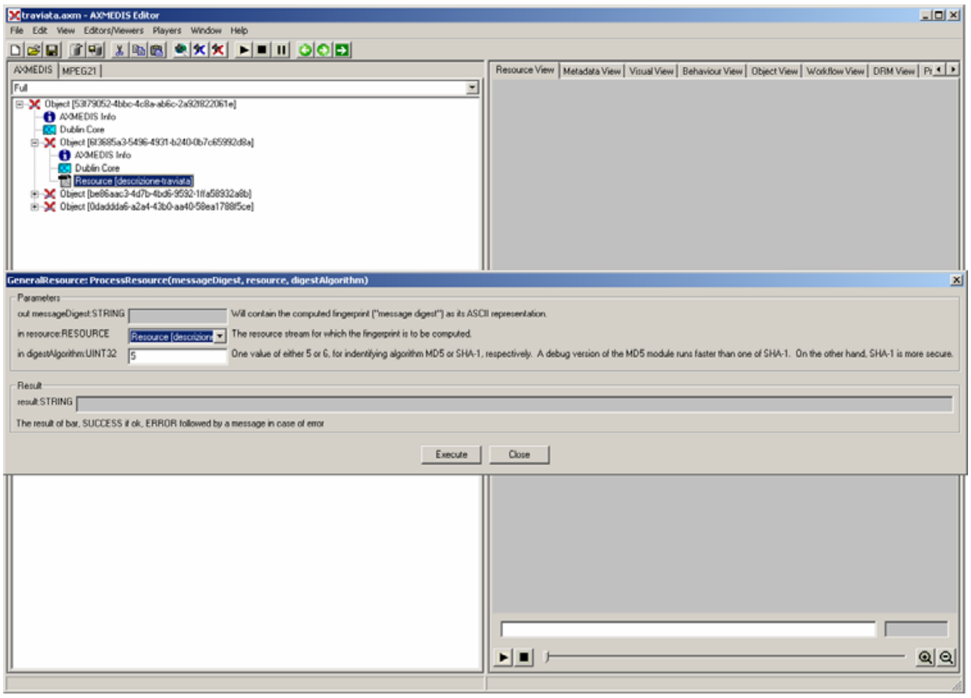
Object [53f79052-4bbc-4c8a-ab6c-2a92f822061e]
AXMEDIS Info
Dublin Core
Object [6f3685a3-5496-4931-b240-0b7c65992d8a]
AXMEDIS Info
Dublin Core
Resource [descrizione-traviata]
Object [be86aac3-4d7b-4bd6-9592-1ffa58932a8b]
Object [0daddda6-a2a4-43b0-aa40-58ea1788f5ce]

□ only functions for Resource "application/pdf"

AudioAdaptation: AudioAdaptation(InputResource, M
AudioDescriptor: AudioLabelling(InputResource, Lab
GeneralResource: ProcessResource(messageDigest
ImageProcessing: Conversion(InputResource, Mimety
ImageProcessing: Import(Path, OutputResource, Mim
ImageProcessing: Resize(InputResource, Width, Hei
ImageProcessing: Contrast(InputResource, AMOUNT
ImageProcessing: Edge(InputResource, ORDER, Ou
ImageProcessing: Emboss(InputResource, RADIUS,
ImageProcessing: Blur(InputResource, RADIUS, SIG
ImageProcessing: GaussianBlur(InputResource, RAD

Computes the fingerprint of the given resource for the choosen algorithm.

Select the available algorithm (5: MD5, 6: SHA-1):


traviata.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Resource View Metadata View Visual View Behaviour View Object View Workflow View DRM View Pr
Execute
Close

Object [53f79052-4bbc-4c8a-ab6c-2a92f822061e]
AXMEDIS Info
Dublin Core
Object [6f3685a3-5496-4931-b240-0b7c65992d8a]
AXMEDIS Info
Dublin Core
Resource [descrizione-traviata]
Object [be86aac3-4d7b-4bd6-9592-1ffa58932a8b]
Object [0dadddа6-a2a4-43b0-aa40-58ea1788f5ce]

GeneralResource: ProcessResource(messageDigest, resource, digestAlgorithm)

Parameters

out messageDigest:STRING — Will contain the computed fingerprint ("message digest") as its ASCII representation.

in resource:RESOURCE: Resource [descrizione — The resource stream for which the fingerprint is to be computed.

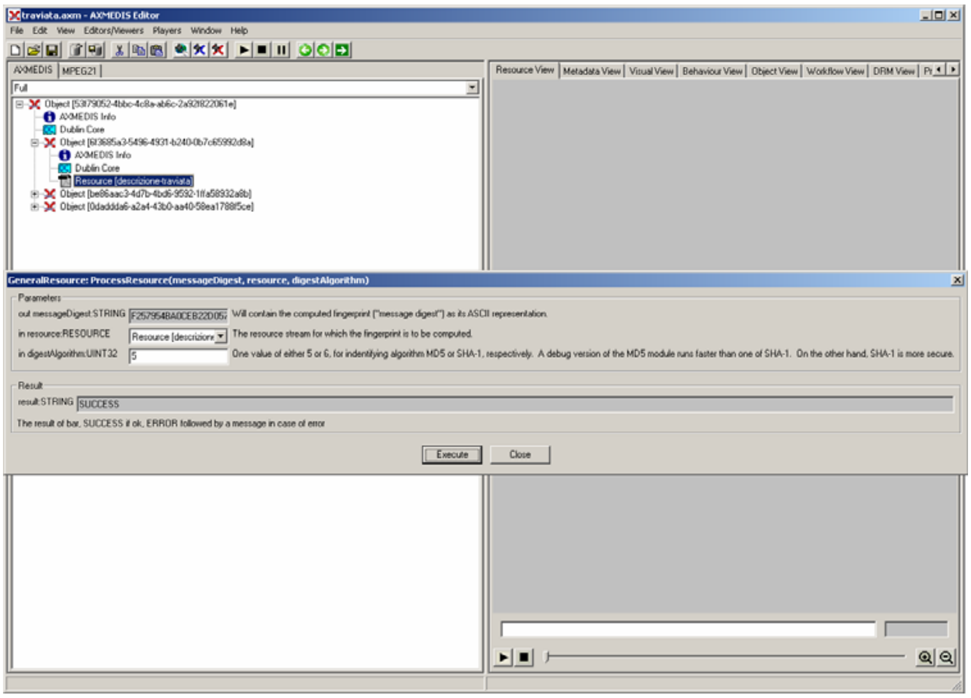
in digestAlgorithm:UINT32: 5 — One value of either 5 or 6, for indentifying algorithm MD5 or SHA-1, respectively. A debug version of the MD5 module runs faster than one of SHA-1. On the other hand, SHA-1 is more secure.

Result

result:STRING

The result of bar, SUCCESS if ok, ERROR followed by a message in case of error

So far, the result is calculated and shown in a dialog:


traviata.axm - AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Resource View Metadata View Visual View Behaviour View Object View Workflow View DRM View Pr
Execute
Close

Object [53f79052-4bbc-4c8a-ab6c-2a92f822061e]
AXMEDIS Info
Dublin Core
Object [6f3685a3-5496-4931-b240-0b7c65992d8a]
AXMEDIS Info
Dublin Core
Resource [descrizione-traviata]
Object [be86aac3-4d7b-4bd6-9592-1ffa58932a8b]
Object [0dadddа6-a2a4-43b0-aa40-58ea1788f5ce]

GeneralResource: ProcessResource(messageDigest, resource, digestAlgorithm)

Parameters

out messageDigest:STRING: F257954BA0CEB22D05 — Will contain the computed fingerprint ("message digest") as its ASCII representation.

in resource:RESOURCE: Resource [descrizione — The resource stream for which the fingerprint is to be computed.

in digestAlgorithm:UINT32: 5 — One value of either 5 or 6, for indentifying algorithm MD5 or SHA-1, respectively. A debug version of the MD5 module runs faster than one of SHA-1. On the other hand, SHA-1 is more secure.

Result

result:STRING: SUCCESS

The result of bar, SUCCESS if ok, ERROR followed by a message in case of error

19.14 Video Descriptor Plug-in

19.14.1 Main functionalities

MP7 Videodescriptor Extraction plug-in is a tool that extracts a MPEG-7 XML descriptor of a provided MPEG video file. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide. The MPEG-7 eXperimental Model (XM) was used as a base library for this plug-in (see readme.txt for download link).

19.14.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.14.3 Detailed description of the functionalities and Screenshots

Taken from the MPEG-7 eXperimental Model (XM) documentation. For a more detailed description please refer to it.

19.14.3.1 GoF/GoP Colour Descriptor

Name: Santhana Krishnamachari, Mufit Ferman
E-Mail santhana.krishnamachari@philips.com
Input Video
Summary This library implements the GoF/GoP Colour descriptor which is used to describe the colour characteristics of a collection of video frames (and a collection of images). It consists of one primary and four secondary attributes. Since the feature vector is short, a simple absolute distance or squared distance criterion can be used for matching.
Strong Points None.
Limitations Use mean or median aggregation for matching
Known Problems None.

19.14.3.2 Dominant Color Descriptor

Name Jungmin Song, Heon Jun Kim, Leszek Cieplinski, Prof. Manjunath
E-Mail jmsong73@mail.lgcit.com, hjk@lge.co.kr, Leszek.Cieplinski@vil.ite.mee.com,
manj@ece.ucsb.edu
Contact Jungmin Song(general), Leszek Cieplinski(color variance),
Prof. Manjunath(dominant color extraction and search algorithm)
Input Images
Summary The dominant color descriptor is useful for image and video retrieval. It targets content-based retrieval for color, either for the whole image or for any arbitrary shaped region (rectangular or irregular). It is a very compact descriptor, requiring less than 6-8 colors per region. Since colors are not pre-quantized as in the histogram type color descriptors, the representation is more accurate. To accomplish high accuracy in retrieval, Spatial Coherency and/or Color Variance can be utilized. It is intended for applications that use object based representations (objects or regions in an image).
Limitations The maximum allowed number of dominant colors is 8.
Known Problems None.
Parameters Color space and color quantization parameters (Implementation preset to standard values)

HomogeneousTexture Descriptor

Name	yanglim Choi, M/M Lab, Samsung Advanced Institute of Technology
E-Mail	yanglimc@samsung.com
Input	Images/Regions(JPEG,BMP,etc)
Summary	This component generates a texture descriptor for a homogeneously textured Image/Region for Search and Retrieval using texture features. The descriptor components are the average and the standard deviation of the image together with the energies and the energy deviations of Gabor filtered reponse of each (predefined) frequency channels.
Strong Points	Statistically very precise description of homogeneously textured region.
Limitations	Relatively large in size (32 components for the basic layer and 62 components for the enhanced layer).
Known Problems	NONE
Parameters	Plug-in implementation set to standard values.

19.14.3.3 Color Structure Descriptor

Name	Jim Errico, Sharp Labs of America; Dean Messing, Sharp Labs of America
E-Mail	jerrico@sharplabs.com; deanm@sharplabs.com
Input	Images
Summary	This component is the implementation of the extraction and search functionality for the ColorStructure Descriptor.
Strong Points	NA
Limitations	NA
Known Problems	NA
Parameters	ColorQuantSize : one of {256, 128, 64, 32}

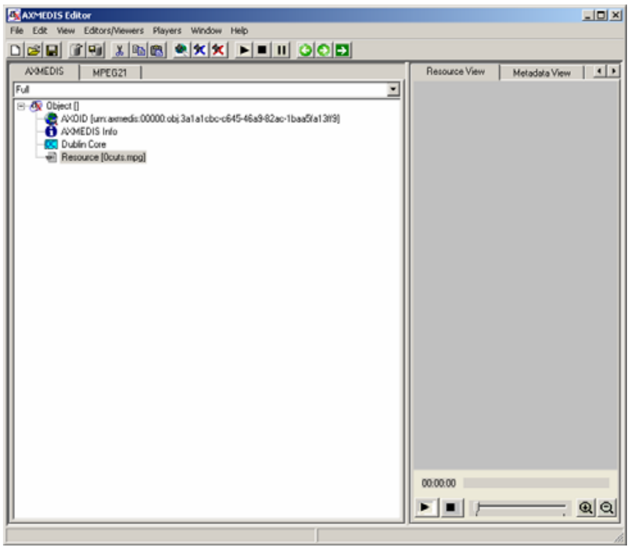
19.14.3.4 Usage Example

Here’s an example on how to use the plug-in with AXEditor.

GoF/GoP Color Descriptor

The plug-in can be applied to video MPEG resources, provided this was declared in the mime type attribute of the resource. The output is a XML file containing the descriptor data.

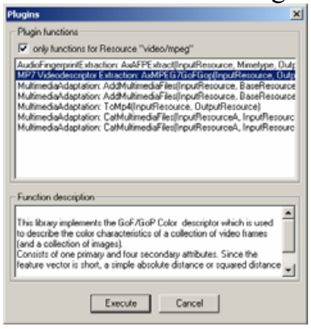
Create a new AXMEDIS object and add a MPEG file as a embedded resource by right clicking on the new created object.



Full

- Object []
  - AXOID [urn:axmedis:00000:obj:3a1a1cbc-c645-46a9-82ac-1baa5fa13ff9]
  - AXMEDIS Info
  - Dublin Core
  - Resource [0cuts.mpg]

Right click on the MPEG resource and select ‘Content Processing Plug-ins’

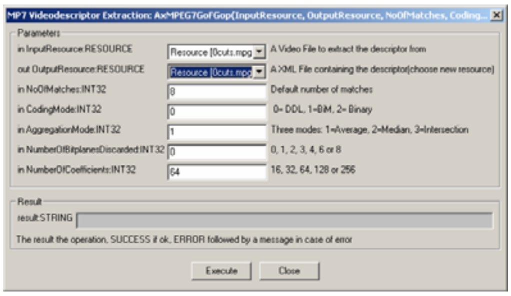


☑ only functions for Resource "video/mpeg"

AudioFingerprintExtraction: AxAFPExtract(InputResource, Mimetype, Outp
MP7 Videodescriptor Extraction: AxMPEG7GoFGop(InputResource, Outp
MultimediaAdaptation: AddMultimediaFiles(InputResource, BaseResource
MultimediaAdaptation: AddMultimediaFiles(InputResource, BaseResource
MultimediaAdaptation: ToMp4(InputResource, OutputResource)
MultimediaAdaptation: CatMultimediaFiles(InputResourceA, InputResourc
MultimediaAdaptation: CatMultimediaFiles(InputResourceA, InputResourc

This library implements the GoF/GoP Color descriptor which is used to describe the color characteristics of a collection of video frames (and a collection of images).
Consists of one primary and four secondary attributes. Since the feature vector is short, a simple absolute distance or squared distance

In the upcoming menu select ‘MP7 Videodescriptor Extraction: AxMPEG7GoFGop’. Press “Execute” and the following window should appear:


MP7 Videodescriptor Extraction: AxMPEG7GoFGop(InputResource, OutputResource, NoOfMatches, Coding...
Parameters
Result
Execute
Close

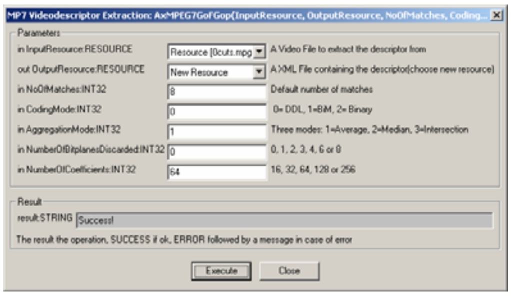
in InputResource:RESOURCE	Resource [0cuts.mpg	A Video File to extract the descriptor from
out OutputResource:RESOURCE	Resource [0cuts.mpg	A XML File containing the descriptor(choose new resource)
in NoOfMatches:INT32	8	Default number of matches
in CodingMode:INT32	0	0= DDL, 1=BiM, 2= Binary
in AggregationMode:INT32	1	Three modes: 1=Average, 2=Median, 3=Intersection
in NumberOfBitplanesDiscarded:INT32	0	0, 1, 2, 3, 4, 6 or 8
in NumberOfCoefficients:INT32	64	16, 32, 64, 128 or 256

result:STRING

The result the operation, SUCCESS if ok, ERROR followed by a message in case of error

.

The preset configuration should be optimal for most use cases. Choose as the output a new resource and click “Execute”. A console window will appear and stay for a few seconds. This is normal due to the nature of the used original Extraction module.

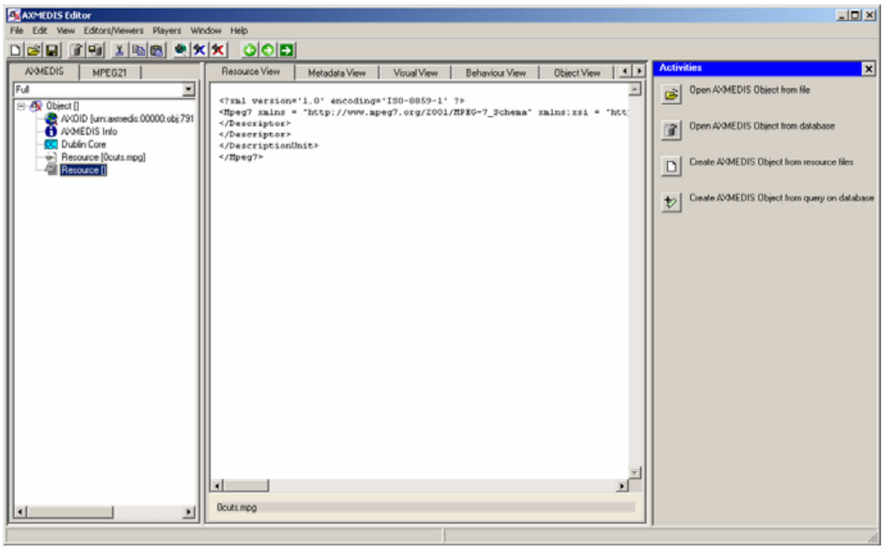

MP7 Videodescriptor Extraction: AxMPEG7GoFGop(InputResource, OutputResource, NoOfMatches, Coding...
Parameters
Result
Execute
Close

in InputResource:RESOURCE	Resource [0cuts.mpg	A Video File to extract the descriptor from
out OutputResource:RESOURCE	New Resource	A XML File containing the descriptor(choose new resource)
in NoOfMatches:INT32	8	Default number of matches
in CodingMode:INT32	0	0= DDL, 1=BiM, 2= Binary
in AggregationMode:INT32	1	Three modes: 1=Average, 2=Median, 3=Intersection
in NumberOfBitplanesDiscarded:INT32	0	0, 1, 2, 3, 4, 6 or 8
in NumberOfCoefficients:INT32	64	16, 32, 64, 128 or 256

result:STRING Success!

The result the operation, SUCCESS if ok, ERROR followed by a message in case of error

After receiving the “success”-message, close the window and you should have a text resource in the AXMEDIS editor containing the XML descriptor data. It is advised to edit the objects properties and add the original resource filename

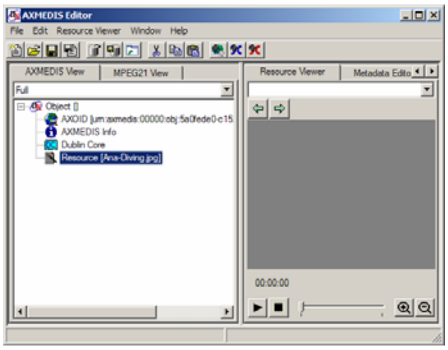


```
<?xml version='1.0' encoding='ISO-8859-1' ?>
<Mpeg7 xmlns = "http://www.mpeg7.org/2001/MPEG-7_Schema" xmlns:xsi = "htt
</Descriptor>
</Descriptor>
</DescriptionUnit>
</Mpeg7>
```

AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object []
AXOID [urn:axmedis:00000:obj:791
AXMEDIS Info
Dublin Core
Resource [0cuts.mpg]
Resource []
Resource View Metadata View Visual View Behaviour View Object View
0cuts.mpg
Activities
Open AXMEDIS Object from file
Open AXMEDIS Object from database
Create AXMEDIS Object from resource files
Create AXMEDIS Object from query on database

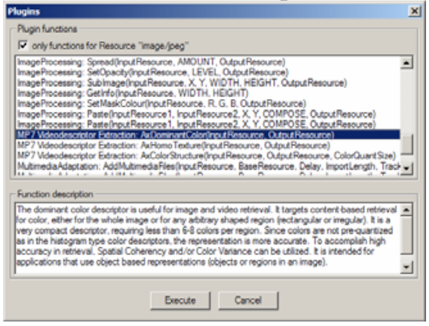
Dominant Color Descriptor

The plug-in can be applied to image resources, provided this was declared in the mime type attribute of the resource. The output is a XML file containing the descriptor data.
Create a new AXMEDIS object and add an image resource as a embedded resource by right clicking on the new created object. Right click on the MPEG resource and select ‘Content Processing Plug-ins’



AXMEDIS Editor
File Edit Resource Viewer Window Help
AXMEDIS View MPEG21 View
Full
Object []
AXOID [urn:axmedis:00000:obj:5a0fede0-c15
AXMEDIS Info
Dublin Core
Resource [Ana-Diving.jpg]
Resource Viewer Metadata Edito
00:00:00

In the upcoming menu select ‘MP7 Videodescriptor Extraction: AxDominantColor’.



Plugins

Plugin functions

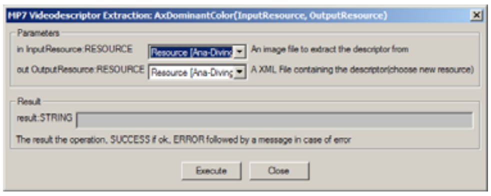
☑ only functions for Resource "image/jpeg"

- ImageProcessing: Spread(InputResource, AMOUNT, OutputResource)
- ImageProcessing: SetOpacity(InputResource, LEVEL, OutputResource)
- ImageProcessing: SubImage(InputResource, X, Y, WIDTH, HEIGHT, OutputResource)
- ImageProcessing: GetInfo(InputResource, WIDTH, HEIGHT)
- ImageProcessing: SetMaskColour(InputResource, R, G, B, OutputResource)
- ImageProcessing: Paste(InputResource1, InputResource2, X, Y, COMPOSE, OutputResource)
- ImageProcessing: Paste(InputResource1, InputResource2, X, Y, COMPOSE, OutputResource)
- MP7 Videodescriptor Extraction: AxDominantColor(InputResource, OutputResource)
- MP7 Videodescriptor Extraction: AxHomoTexture(InputResource, OutputResource)
- MP7 Videodescriptor Extraction: AxColorStructure(InputResource, OutputResource, ColorQuantSize)
- MultimediaAdaptation: AddMultimediaFiles(InputResource, BaseResource, Delay, ImportLength, Track

Function description

The dominant color descriptor is useful for image and video retrieval. It targets content-based retrieval for color, either for the whole image or for any arbitrary shaped region (rectangular or irregular). It is a very compact descriptor, requiring less than 6-8 colors per region. Since colors are not pre-quantized as in the histogram type color descriptors, the representation is more accurate. To accomplish high accuracy in retrieval, Spatial Coherency and/or Color Variance can be utilized. It is intended for applications that use object based representations (objects or regions in an image).

Press “Execute” and the following window should appear:



MP7 Videodescriptor Extraction: AxDominantColor(InputResource, OutputResource)

Parameters

in InputResource:RESOURCE — Resource [Ana-Diving — An image file to extract the descriptor from

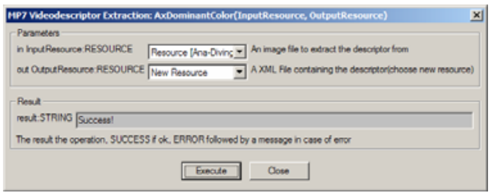
out OutputResource:RESOURCE — Resource [Ana-Diving — A XML File containing the descriptor(choose new resource)

Result

result:STRING

The result the operation, SUCCESS if ok, ERROR followed by a message in case of error

This descriptor does not take any specific parameters. Choose as the output a new resource and click “Execute”. A console window will appear and stay for a few seconds. This is normal due to the nature of the used original Extraction module.



MP7 Videodescriptor Extraction: AxDominantColor(InputResource, OutputResource)

Parameters

in InputResource:RESOURCE — Resource [Ana-Diving — An image file to extract the descriptor from

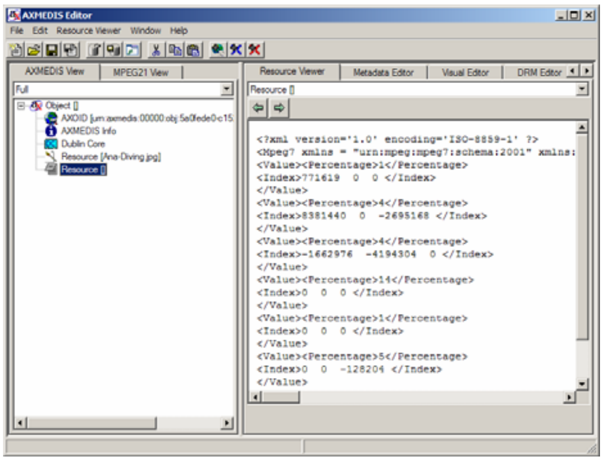
out OutputResource:RESOURCE — New Resource — A XML File containing the descriptor(choose new resource)

Result

result:STRING — Success!

The result the operation, SUCCESS if ok, ERROR followed by a message in case of error

After receiving the “success”-message, close the window and you should have a text resource in the AXMEDIS editor containing the XML descriptor data. It is advised to edit the objects properties and add the original resource filename

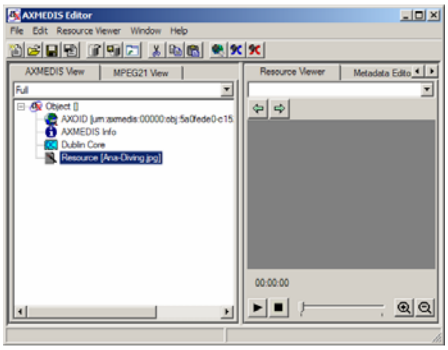


```
<?xml version='1.0' encoding='ISO-8859-1' ?>
<Mpeg7 xmlns = "urn:mpeg:mpeg7:schema:2001" xmlns:
<Value><Percentage>1</Percentage>
<Index>771619  0  0 </Index>
</Value>
<Value><Percentage>4</Percentage>
<Index>8381440  0  -2695168 </Index>
</Value>
<Value><Percentage>4</Percentage>
<Index>-1662976  -4194304  0 </Index>
</Value>
<Value><Percentage>14</Percentage>
<Index>0  0  0 </Index>
</Value>
<Value><Percentage>1</Percentage>
<Index>0  0  0 </Index>
</Value>
<Value><Percentage>5</Percentage>
<Index>0  0  -128204 </Index>
</Value>
```

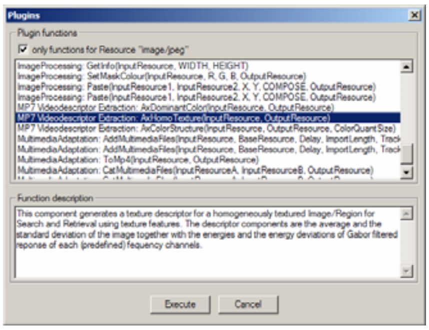
Homogeneous Texture Descriptor

The plug-in can be applied to image resources, provided this was declared in the mime type attribute of the resource. The output is a XML file containing the descriptor data.

Create a new AXMEDIS object and add an image resource as a embedded resource by right clicking on the new created object. Right click on the MPEG resource and select ‘Content Processing Plug-ins’



In the upcoming menu select ‘MP7 Videodescriptor Extraction: AxHomoTexture’.



Plugins

Plugin functions

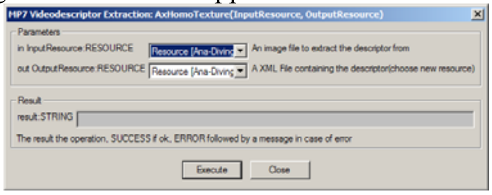
☑ only functions for Resource "image/jpeg"

```
ImageProcessing: GetInfo(InputResource, WIDTH, HEIGHT)
ImageProcessing: SetMaskColour(InputResource, R, G, B, OutputResource)
ImageProcessing: Paste(InputResource1, InputResource2, X, Y, COMPOSE, OutputResource)
ImageProcessing: Paste(InputResource1, InputResource2, X, Y, COMPOSE, OutputResource)
MP7 Videodescriptor Extraction: AxDominantColor(InputResource, OutputResource)
MP7 Videodescriptor Extraction: AxHomoTexture(InputResource, OutputResource)
MP7 Videodescriptor Extraction: AxColorStructure(InputResource, OutputResource, ColorQuantSize)
MultimediaAdaptation: AddMultimediaFiles(InputResource, BaseResource, Delay, ImportLength, Track
MultimediaAdaptation: AddMultimediaFiles(InputResource, BaseResource, Delay, ImportLength, Track
MultimediaAdaptation: ToMp4(InputResource, OutputResource)
MultimediaAdaptation: CatMultimediaFiles(InputResourceA, InputResourceB, OutputResource)
```

Function description

This component generates a texture descriptor for a homogeneously textured Image/Region for Search and Retrieval using texture features. The descriptor components are the average and the standard deviation of the image together with the energies and the energy deviations of Gabor filtered reponse of each (predefined) fequency channels.

Press “Execute” and the following window should appear:



MP7 Videodescriptor Extraction: AxHomoTexture(InputResource, OutputResource)

Parameters

in InputResource:RESOURCE: Resource [Ana-Diving — An image file to extract the descriptor from

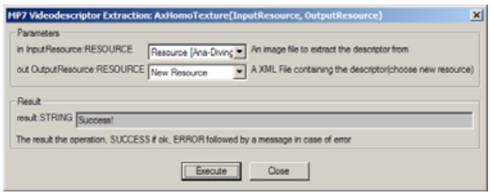
out OutputResource:RESOURCE: Resource [Ana-Diving — A XML File containing the descriptor(choose new resource)

Result

result:STRING:

The result the operation, SUCCESS if ok, ERROR followed by a message in case of error

This descriptor does not take any specific parameters. Choose as the output a new resource and click “Execute”. A console window will appear and stay for a few seconds. This is normal due to the nature of the used original Extraction module.



MP7 Videodescriptor Extraction: AxHomoTexture(InputResource, OutputResource)

Parameters

in InputResource:RESOURCE: Resource [Ana-Diving — An image file to extract the descriptor from

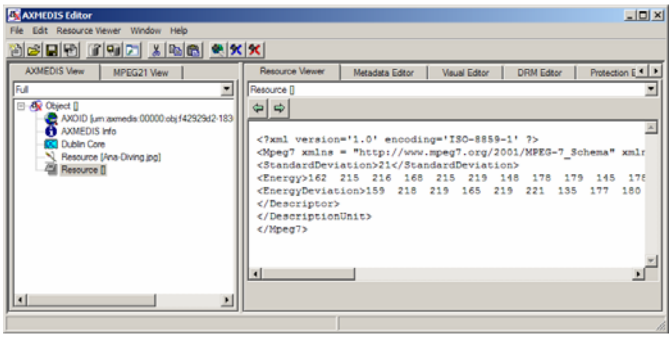
out OutputResource:RESOURCE: New Resource — A XML File containing the descriptor(choose new resource)

Result

result:STRING: Success!

The result the operation, SUCCESS if ok, ERROR followed by a message in case of error

After receiving the “success”-message, close the window and you should have a text resource in the AXMEDIS editor containing the XML descriptor data. It is advised to edit the objects properties and add the original resource filename

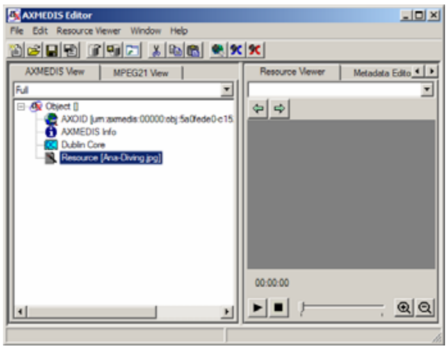


```
<?xml version='1.0' encoding='ISO-8859-1' ?>
<Mpeg7 xmlns = "http://www.mpeg7.org/2001/MPEG-7_Schema" xmlr
<StandardDeviation>21</StandardDeviation>
<Energy>162  215  216  168  215  219  148  178  179  145  178
<EnergyDeviation>159  218  219  165  219  221  135  177  180
</Descriptor>
</DescriptionUnit>
</Mpeg7>
```

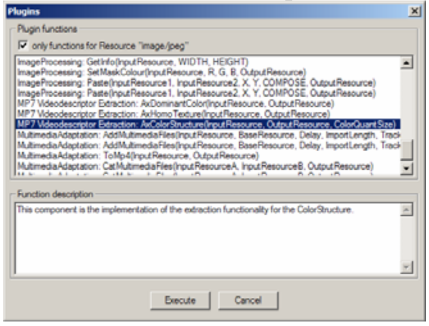
Color Structure Descriptor

The plug-in can be applied to image resources, provided this was declared in the mime type attribute of the resource. The output is a XML file containing the descriptor data.

Create a new AXMEDIS object and add an image resource as a embedded resource by right clicking on the new created object. Right click on the MPEG resource and select ‘Content Processing Plug-ins’



In the upcoming menu select ‘MP7 Videodescriptor Extraction: AxColorStructure’.



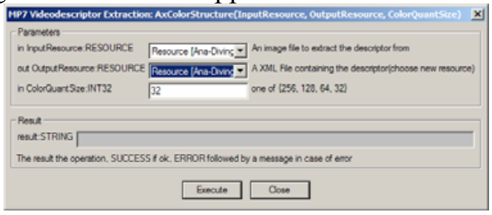
☑ only functions for Resource "image/jpeg"

ImageProcessing: GetInfo(InputResource, WIDTH, HEIGHT)
ImageProcessing: SetMaskColour(InputResource, R, G, B, OutputResource)
ImageProcessing: Paste(InputResource1, InputResource2, X, Y, COMPOSE, OutputResource)
ImageProcessing: Paste(InputResource1, InputResource2, X, Y, COMPOSE, OutputResource)
MP7 Videodescriptor Extraction: AxDominantColor(InputResource, OutputResource)
MP7 Videodescriptor Extraction: AxHomoTexture(InputResource, OutputResource)
MP7 Videodescriptor Extraction: AxColorStructure(InputResource, OutputResource, ColorQuantSize)
MultimediaAdaptation: AddMultimediaFiles(InputResource, BaseResource, Delay, ImportLength, Track
MultimediaAdaptation: AddMultimediaFiles(InputResource, BaseResource, Delay, ImportLength, Track
MultimediaAdaptation: ToMp4(InputResource, OutputResource)
MultimediaAdaptation: CatMultimediaFiles(InputResourceA, InputResourceB, OutputResource)

Function description

This component is the implementation of the extraction functionality for the ColorStructure.

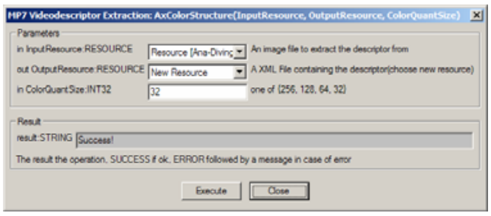
Press “Execute” and the following window should appear:


MP7 Videodescriptor Extraction: AxColorStructure(InputResource, OutputResource, ColorQuantSize)
Parameters

in InputResource:RESOURCE Resource [Ana-Diving An image file to extract the descriptor from
out OutputResource:RESOURCE Resource [Ana-Diving A XML File containing the descriptor(choose new resource)
in ColorQuantSize:INT32 32 one of {256, 128, 64, 32}

Result
result:STRING
The result the operation. SUCCESS if ok, ERROR followed by a message in case of error

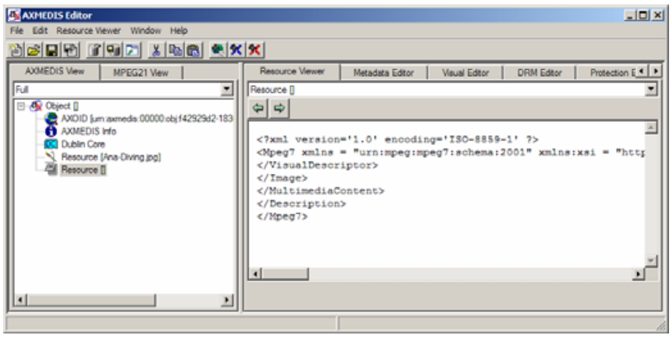
Choose as the output a new resource and click “Execute”. A console window will appear and stay for a few seconds. This is normal due to the nature of the used original Extraction module.


MP7 Videodescriptor Extraction: AxColorStructure(InputResource, OutputResource, ColorQuantSize)
Parameters

in InputResource:RESOURCE Resource [Ana-Diving An image file to extract the descriptor from
out OutputResource:RESOURCE New Resource A XML File containing the descriptor(choose new resource)
in ColorQuantSize:INT32 32 one of {256, 128, 64, 32}

Result
result:STRING Success!
The result the operation. SUCCESS if ok, ERROR followed by a message in case of error

After receiving the “success”-message, close the window and you should have a text resource in the AXMEDIS editor containing the XML descriptor data. It is advised to edit the objects properties and add the original resource filename



```
<?xml version='1.0' encoding='ISO-8859-1' ?>
<Mpeg7 xmlns = "urn:mpeg:mpeg7:schema:2001" xmlns:xsi = "http
</VisualDescriptor>
</Image>
</MultimediaContent>
</Description>
</Mpeg7>
```

19.15 Video Adaptation Plug-in

19.15.1 Main functionalities

FFmpegTranscoder.dll_plug-in is a tool that can process video objects. Operations such as size scaling, format transcoding, changing of such parameters such as the aspect ratio, video frame rate, bitrate, audio bit rate, audio sampling rate, the number of audio channels, and disabling the audio, video or both streams can be performed.

The plug-in makes use of the FFMPEG library and can process a wide range of audio and video formats contained within video files (mpeg, wmv, avi, mp2, mp3, PCM, etc…). This document shows the main functionalities provided by the prototype of the tool forming a minimal user guide. For testing purposes the demonstration package includes a small video file.

19.15.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.15.3 Detailed description of the functionalities and Screenshots

The plug-in makes use of the following parameters. The default settings will not change the input in any way. Changing any parameter will activate its usage in the transcoding process.

OutExtension	Mimetype for output video.
vidAspectRatio	The aspect ratio(Width/Height) either as a relation (4:3, 16:9) or as a floating point number (1.3333, 1.7777)
vidBitrate	Sets the video bitrate (in kbit/s)
vidFRate	Sets the frame rate (Hz value). Please note that some video formats do not support all frame rate values.
vidXFSize	Sets frame size. Both parameters have to be provided in order for this option to be used.
vidYFSize	
audioBitrate	Sets the audio bitrate (in kbit/s)
audioSamplingrate	Sets the audio sampling rate (in Hz)
audioChannels	Sets the number of audio channels
disableVid	Disables the video stream
disableAudio	Disables the audio stream
sameQ	Use same video quality as source (implies VBR)

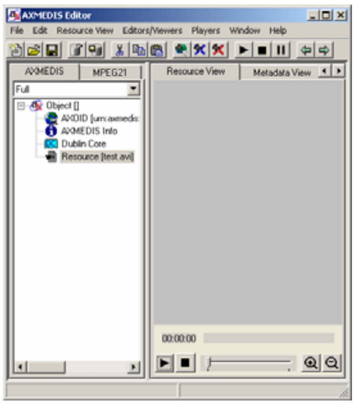
19.15.3.1 Usage example

Here's an example on how to use the plug-in with AXMEDIS Editor (AXEditor).

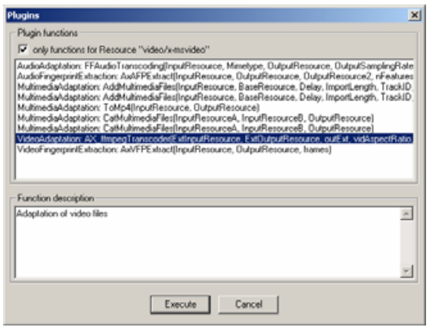
Video format transcoding

The plug-in can be applied to any video resources, provided this was declared in the MIME type attribute of the resource. The output is a video file containing the result of the transcoding process.

For demonstration purposes the package contains a 5 second sample video file: "test.avi".
This file can not be played by the player included within the AXMEDIS Editor. In this guide the file will be transcoded to the MPEG format, which can be played by the built-in video player.
Create a new AXMEDIS object and add the video file as embedded resource by right clicking on the object.



Right click on the “test.avi” resource and select ‘Content Processing Plug-ins’


Plugins

Plugin functions

☑ only functions for Resource "video/x-msvideo"

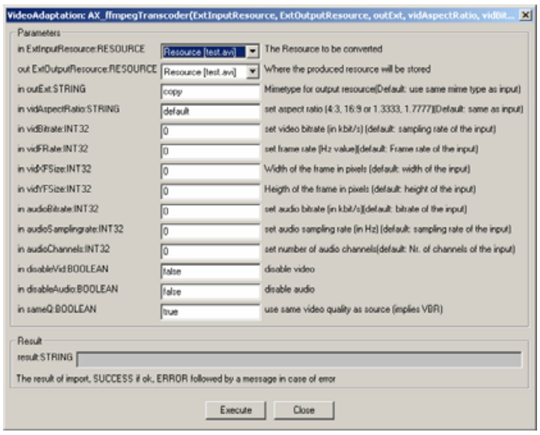
AudioAdaptation: FFAudioTranscoding(InputResource, Mimetype, OutputResource, OutputSamplingRate
AudioFingerprintExtraction: AxAFPExtract(InputResource, OutputResource, OutputResource2, nFeatures
MultimediaAdaptation: AddMultimediaFiles(InputResource, BaseResource, Delay, ImportLength, TrackID,
MultimediaAdaptation: AddMultimediaFiles(InputResource, BaseResource, Delay, ImportLength, TrackID,
MultimediaAdaptation: ToMp4(InputResource, OutputResource)
MultimediaAdaptation: CatMultimediaFiles(InputResourceA, InputResourceB, OutputResource)
MultimediaAdaptation: CatMultimediaFiles(InputResourceA, InputResourceB, OutputResource)
VideoAdaptation: AX_ffmpegTranscoder(ExtInputResource, ExtOutputResource, outExt, vidAspectRatio
VideoFingerprintExtraction: AxVFPExtract(InputResource, OutputResource, frames)

Function description

Adaptation of video files

Execute Cancel

Select “VideoAdaptation:AX_ffmpegTranscoder”, click “Execute” and the following window will appear:


VideoAdaptation: AX_ffmpegTranscoder(ExtInputResource, ExtOutputResource, outExt, vidAspectRatio, vidBit...

Parameters

in ExtInputResource:RESOURCE	Resource [test.avi]	The Resource to be converted
out ExtOutputResource:RESOURCE	Resource [test.avi]	Where the produced resource will be stored
in outExt:STRING	copy	Mimetype for output resource(Default: use same mime type as input)
in vidAspectRatio:STRING	default	set aspect ratio (4:3, 16:9 or 1.3333, 1.7777)(Default: same as input)
in vidBitrate:INT32	0	set video bitrate (in kbit/s) (default: sampling rate of the input)
in vidFRate:INT32	0	set frame rate (Hz value)(default: Frame rate of the input)
in vidXFSize:INT32	0	Width of the frame in pixels (default: width of the input)
in vidYFSize:INT32	0	Heigth of the frame in pixels (default: height of the input)
in audioBitrate:INT32	0	set audio bitrate (in kbit/s)(default: bitrate of the input)
in audioSamplingrate:INT32	0	set audio sampling rate (in Hz) (default: sampling rate of the input)
in audioChannels:INT32	0	set number of audio channels(default: Nr. of channels of the input)
in disableVid:BOOLEAN	false	disable video
in disableAudio:BOOLEAN	false	disable audio
in sameQ:BOOLEAN	true	use same video quality as source (implies VBR)

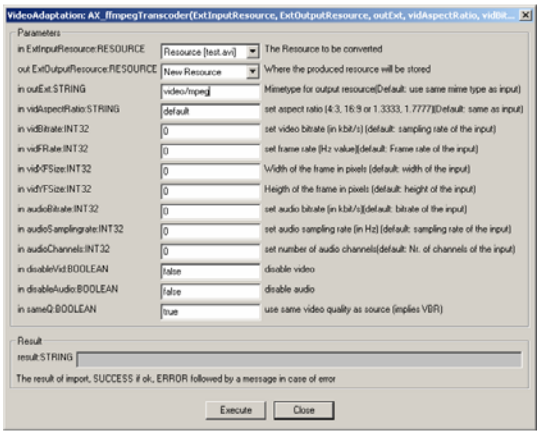
Result

result:STRING

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

Execute Close

Select “New Resource” as the output resource and change the output Mimetype to the desired format, in this case “video/mpeg”. Since no other transcoding processing is needed just click on “Execute”.

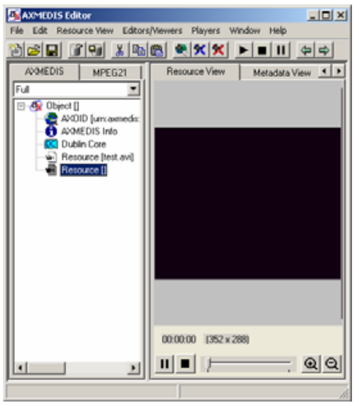

VideoAdaptation: AX_ffmpegTranscoder(ExtInputResource, ExtOutputResource, outExt, vidAspectRatio, vidBit...
Parameters
Result
Execute
Close

in ExtInputResource:RESOURCE	Resource [test.avi]	The Resource to be converted
out ExtOutputResource:RESOURCE	New Resource	Where the produced resource will be stored
in outExt:STRING	video/mpeg	Mimetype for output resource(Default: use same mime type as input)
in vidAspectRatio:STRING	default	set aspect ratio (4:3, 16:9 or 1.3333, 1.7777)(Default: same as input)
in vidBitrate:INT32	0	set video bitrate (in kbit/s) (default: sampling rate of the input)
in vidFRate:INT32	0	set frame rate (Hz value)(default: Frame rate of the input)
in vidXFSize:INT32	0	Width of the frame in pixels (default: width of the input)
in vidYFSize:INT32	0	Heigth of the frame in pixels (default: height of the input)
in audioBitrate:INT32	0	set audio bitrate (in kbit/s)(default: bitrate of the input)
in audioSamplingrate:INT32	0	set audio sampling rate (in Hz) (default: sampling rate of the input)
in audioChannels:INT32	0	set number of audio channels(default: Nr. of channels of the input)
in disableVid:BOOLEAN	false	disable video
in disableAudio:BOOLEAN	false	disable audio
in sameQ:BOOLEAN	true	use same video quality as source (implies VBR)

result:STRING

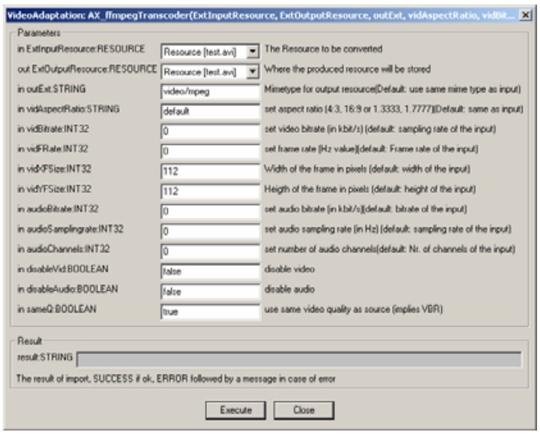
The result of import, SUCCESS if ok, ERROR followed by a message in case of error

After receiving the "success"-message, close the window and you should have a new video resource of the MIME type "video/mpeg" in the AXEditor. To view the video just double click on it.



Video Resizing

In this guide the sample video will be transcoded to the MPEG format and it also will be resized from the original 352x288 to 112x112 pixels.
Follow the steps in section **"Video format transcoding"** up to the plug-in parameter window.
Select the desired output format ("video/mpeg") and enter the desired dimensions for the video.


VideoAdaptation: AX_ffmpegTranscoder(ExtInputResource, ExtOutputResource, outExt, vidAspectRatio, vidBit...
Parameters
Result
Execute
Close

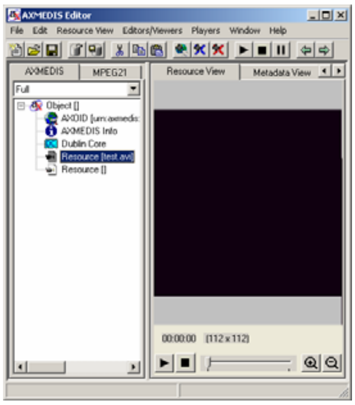
in ExtInputResource:RESOURCE	Resource [test.avi]	The Resource to be converted
out ExtOutputResource:RESOURCE	Resource [test.avi]	Where the produced resource will be stored
in outExt:STRING	video/mpeg	Mimetype for output resource(Default: use same mime type as input)
in vidAspectRatio:STRING	default	set aspect ratio (4:3, 16:9 or 1.3333, 1.7777)(Default: same as input)
in vidBitrate:INT32	0	set video bitrate (in kbit/s) (default: sampling rate of the input)
in vidFRate:INT32	0	set frame rate (Hz value)(default: Frame rate of the input)
in vidXFSize:INT32	112	Width of the frame in pixels (default: width of the input)
in vidYFSize:INT32	112	Heigth of the frame in pixels (default: height of the input)
in audioBitrate:INT32	0	set audio bitrate (in kbit/s)(default: bitrate of the input)
in audioSamplingrate:INT32	0	set audio sampling rate (in Hz) (default: sampling rate of the input)
in audioChannels:INT32	0	set number of audio channels(default: Nr. of channels of the input)
in disableVid:BOOLEAN	false	disable video
in disableAudio:BOOLEAN	false	disable audio
in sameQ:BOOLEAN	true	use same video quality as source (implies VBR)

result:STRING

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

Please note that you have to provide both dimensions for the new frame in order to resize a video. For example: only providing the height and leaving the width at "0" will lead to both parameters being ignored.

After clicking on execute the new video resource will appear in the AXMEDIS Editor and can be viewed by double clicking on it.



For a complete list of supported codecs visit:
http://ffmpeg.mplayerhq.hu/ffmpeg-doc.html#SEC21

19.16 Workflow Editor Plug-in

19.16.1 Main functionalities

The Workflow Editor Plug-in is a library used by AXMEDIS Editor to enable communication with AXMEDIS workflow engine. It exposes following functions:

Functionality	Details
Notification of Completion	This method is invoked by the editor to send back the notification towards workflow engine for the completion of previously issues asynchronous request.
Get Workflow Information	This method is invoked by the application to request workflow information from workflow engine.
Editing of Object	This method is invoked through a webservice call coming from Workflow Request Gateway. This method will load the specified object (AXOID) and will allow the user to edit the object in the AXMEDIS Editor.
View Object Attributes	This method is invoked through a webservice call coming from Workflow Request Gateway. This method will allow the workflow engine to retrieve the object attributes for the object specified by the AXOID.
Add History Information	This method is invoked through a webservice call coming from Workflow Request Gateway. This method will allow the workflow engine to add the object history for the object specified by the AXOID.

19.16.2 Relationship with other tools

The Workflow Editor Plug-in is loaded by the AXMEDIS Editor. This plug-in communicates directly with AXMEDIS Workflow Request Gateway and AXMEDIS Workflow Response Gateway. For Microsoft Biztalk server, this plug-in communicates directly with the workflow engine. There are currently two versions of the plug-in – one for communicating with OpenFlow, and one for Biztalk. These will eventually be unified.

19.16.3 Detailed description of the functionalities and Screenshots

The functions of this plug-in are invoked by AXMEDIS Editor. Also the Functions can be invoked by the workflow engine automatically. The following Screenshots shows the empty AXMEDIS Editor.

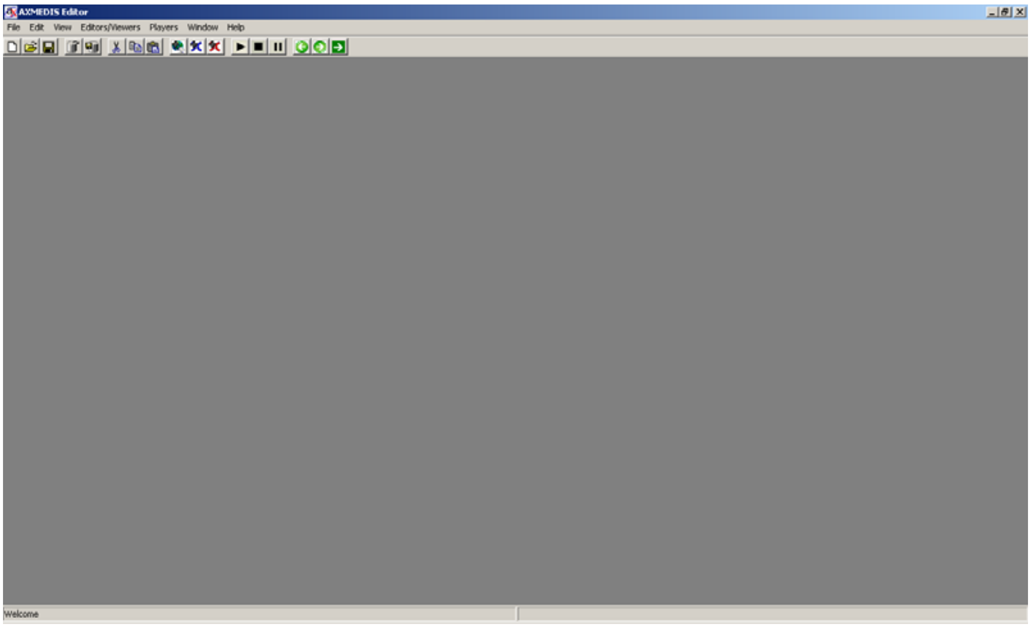


Figure 1: Empty AXMEDIS Editor

When the Workflow Editor Plug-in receives request from Workflow Engine for the editing of Object, it will load the specified object from the AXMEDIS Database or if the AXOID is not specified then it will create a new object as shown in the following figure:

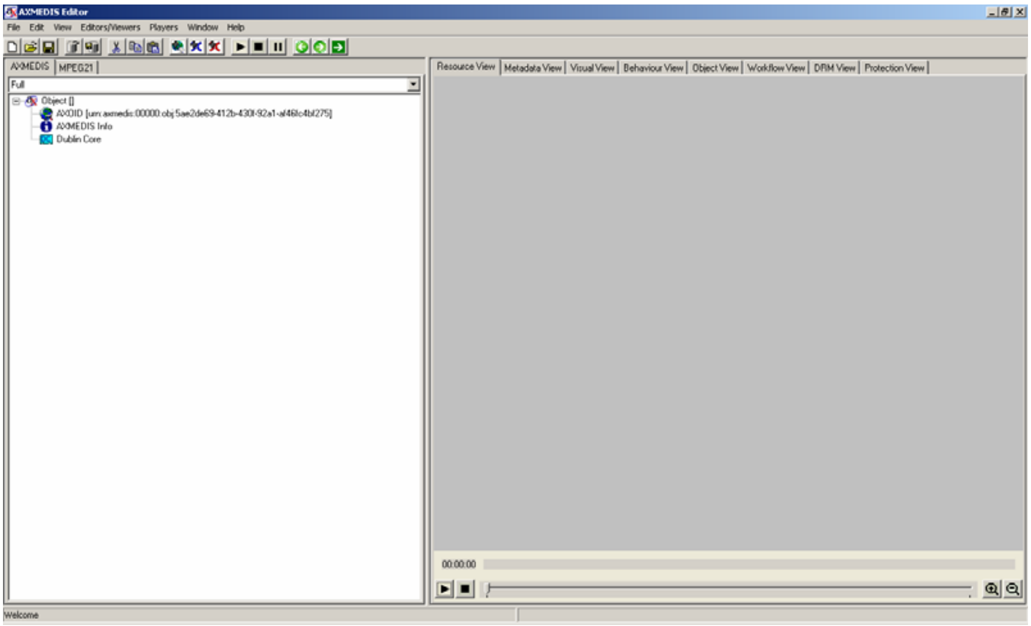
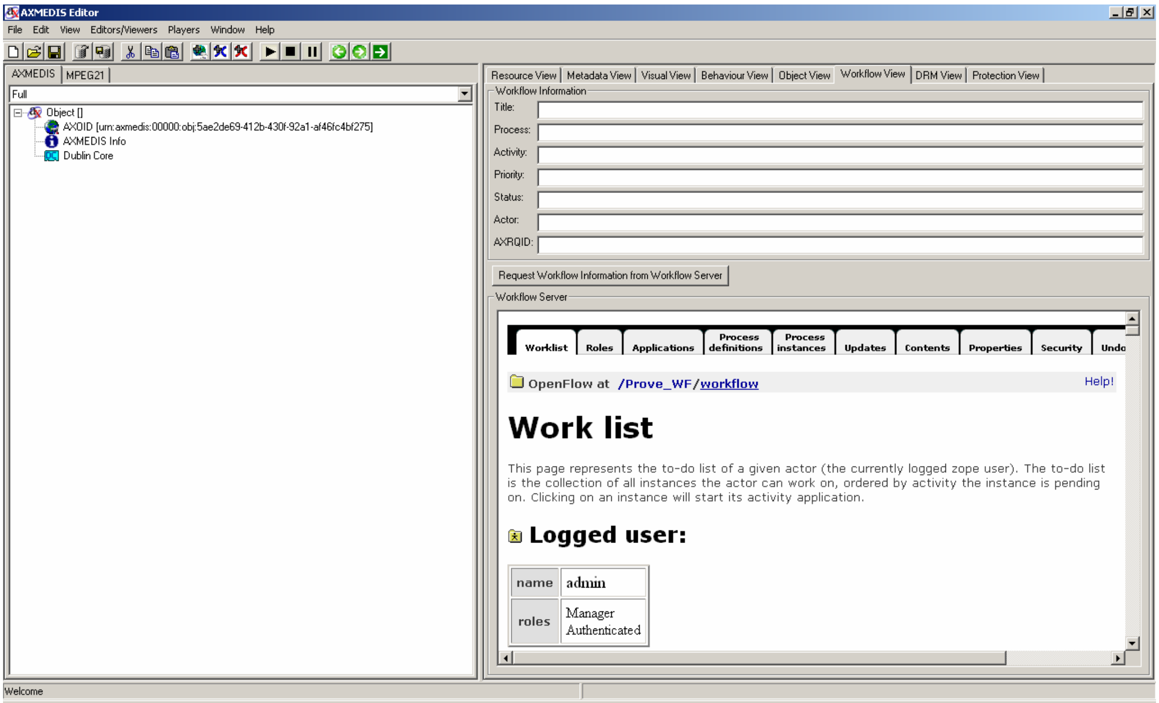


Figure 2: Creation of new Object following the Workflow Request

The user can also select the “Workflow View” tab from the Editor. This will display the workflow related information for the object currently being edited/viewed as shown in following figure.


AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
AXMEDIS MPEG21
Full
Object []
AXOID [urn:axmedis:00000:obj:5ae2de69-412b-430f-92a1-af46fc4bf275]
AXMEDIS Info
Dublin Core
Resource View | Metadata View | Visual View | Behaviour View | Object View | Workflow View | DRM View | Protection View
Request Workflow Information from Workflow Server
Worklist | Roles | Applications | Process definitions | Process instances | Updates | Contents | Properties | Security | Undo
Help!
Welcome

Workflow Information

Title:

Process:

Activity:

Priority:

Status:

Actor:

AXRQID:

Workflow Server

OpenFlow at /Prove_WF/workflow

Work list

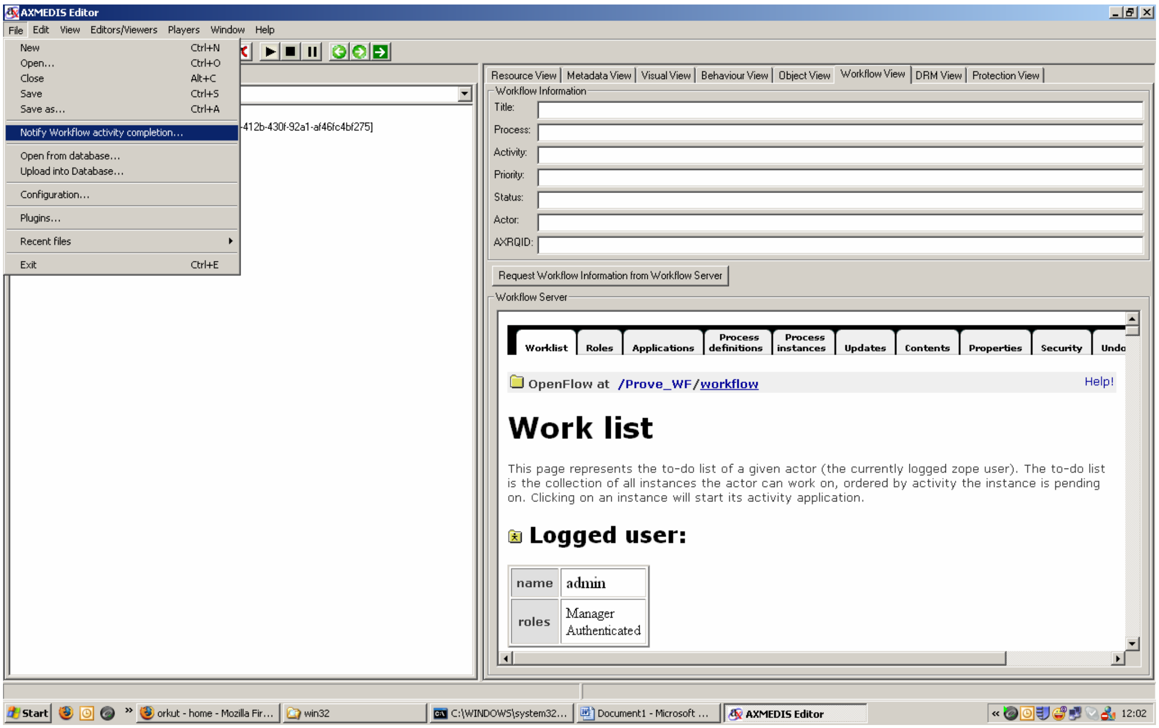
This page represents the to-do list of a given actor (the currently logged zope user). The to-do list is the collection of all instances the actor can work on, ordered by activity the instance is pending on. Clicking on an instance will start its activity application.

Logged user:

name	admin
roles	Manager Authenticated

Figure 3: The Workflow View for the Object

When the editing of Object is completed, the user can notify workflow by selecting “Notify Workflow Activity Completion” command from the File Menu as shown in the following figure. This will send a notification signal to workflow engine.


AXMEDIS Editor
File Edit View Editors/Viewers Players Window Help
New Ctrl+N
Open... Ctrl+O
Close Alt+C
Save Ctrl+S
Save as... Ctrl+A
Notify Workflow activity completion...
Open from database...
Upload into Database...
Configuration...
Plugins...
Recent files
Exit Ctrl+E
-412b-430f-92a1-af46fc4bf275]
Resource View | Metadata View | Visual View | Behaviour View | Object View | Workflow View | DRM View | Protection View
Request Workflow Information from Workflow Server
Worklist | Roles | Applications | Process definitions | Process instances | Updates | Contents | Properties | Security | Undo
Help!
Start
orkut - home - Mozilla Fir...
win32
C:\WINDOWS\system32...
Document1 - Microsoft ...
AXMEDIS Editor
12:02

Workflow Information

Title:

Process:

Activity:

Priority:

Status:

Actor:

AXRQID:

Workflow Server

OpenFlow at /Prove_WF/workflow

Work list

This page represents the to-do list of a given actor (the currently logged zope user). The to-do list is the collection of all instances the actor can work on, ordered by activity the instance is pending on. Clicking on an instance will start its activity application.

Logged user:

name	admin
roles	Manager Authenticated

Figure 4: Sending Notification of Completion to Workflow Engine

19.17 Workflow Rule Editor Plug-in

19.17.1 Main functionalities

The Workflow Rule Editor Plug-in is a library used by AXCP Rule Editor and AXMEDIS PnP Editor to enable communication with AXMEDIS workflow engine. It exposes following functions:

Functionality	Details
Notification of Completion	This method is invoked by the editor to send back the notification towards workflow engine for the completion of previously issues asynchronous request.
Editing of AXCP Rule	This method is invoked through a webservice call coming from Workflow Request Gateway. This method will load the AXCP Rule editor with the specified Rule Header and will allow the user to edit the AXCP Rule in the AXCP Rule Editor.
Edit PnP Programme	This method is invoked through a webservice call coming from Workflow Request Gateway. This method will load the AXMEDIS PnP editor with the specified Programme Header and will allow the user to edit the AXMEDIS PnP Programme in the PnP Editor.

19.17.2 Relationship with other tools

The Workflow Rule Editor Plug-in is loaded by the AXCP Rule Editor and PnP Editor. This plug-in communicates directly with AXMEDIS Workflow Request Gateway and AXMEDIS Workflow Response Gateway. For Microsoft Biztalk server, this plug-in communicates directly with the workflow engine. There are currently two versions of the plug-in – one for communicating with OpenFlow, and one for Biztalk. These will eventually be unified.

19.17.3 Detailed description of the functionalities and Screenshots

The functions of this plug-in are invoked by AXCP Rule Editor. Also the Functions can be invoked by the workflow engine automatically. The following Screenshots shows the empty AXCP Rule Editor.

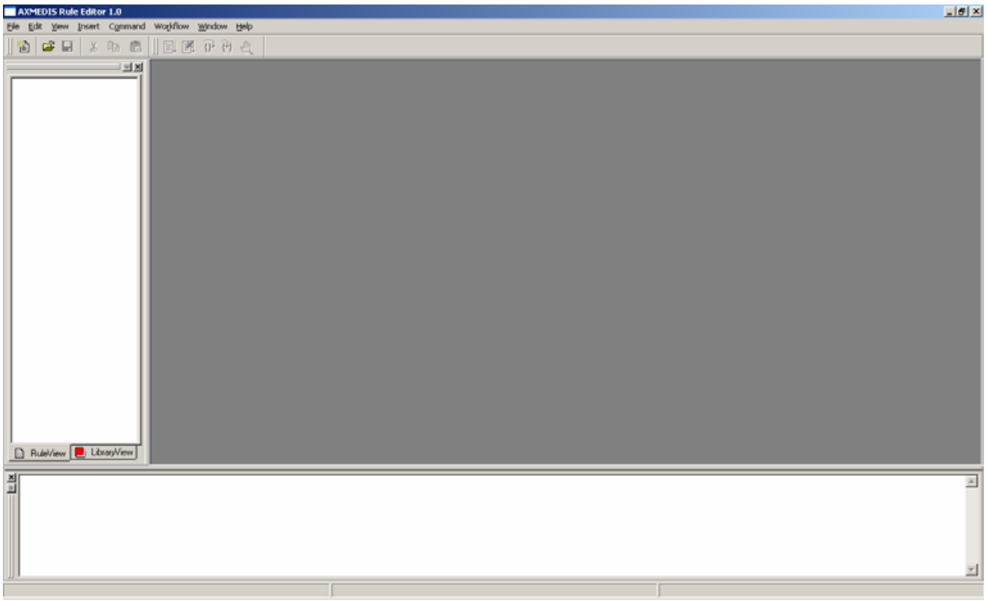


Figure 1: Empty AXCP Rule Editor

When the Workflow Rule Editor Plug-in receives request from Workflow Engine for the editing of a Rule, it will load the specified XML Rule from the Workflow Request as shown in the following figure:

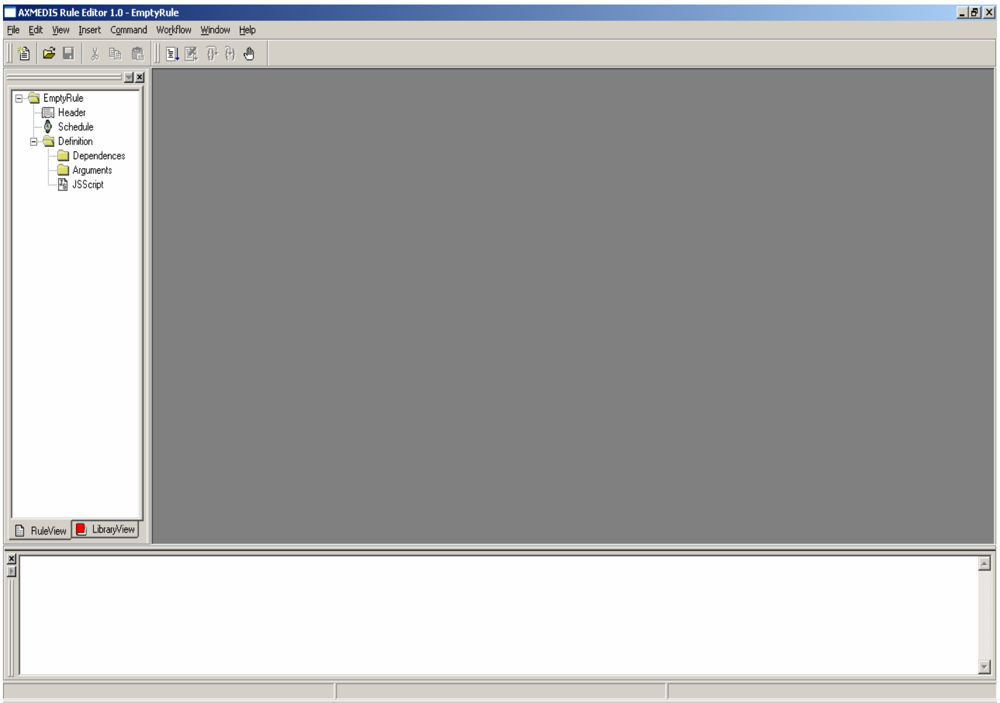

AXMEDIS Rule Editor 1.0 - EmptyRule
File Edit View Insert Command Workflow Window Help
EmptyRule
Header
Schedule
Definition
Dependences
Arguments
JSScript
RuleView
LibraryView

Figure 2: Rule Loaded from Workflow Engine

When the editing of the rule is completed, the user can notify workflow by selecting "Notify Workflow Activity Completion" command from the Workflow Menu as shown in the following figure. This will send a notification signal to workflow engine.

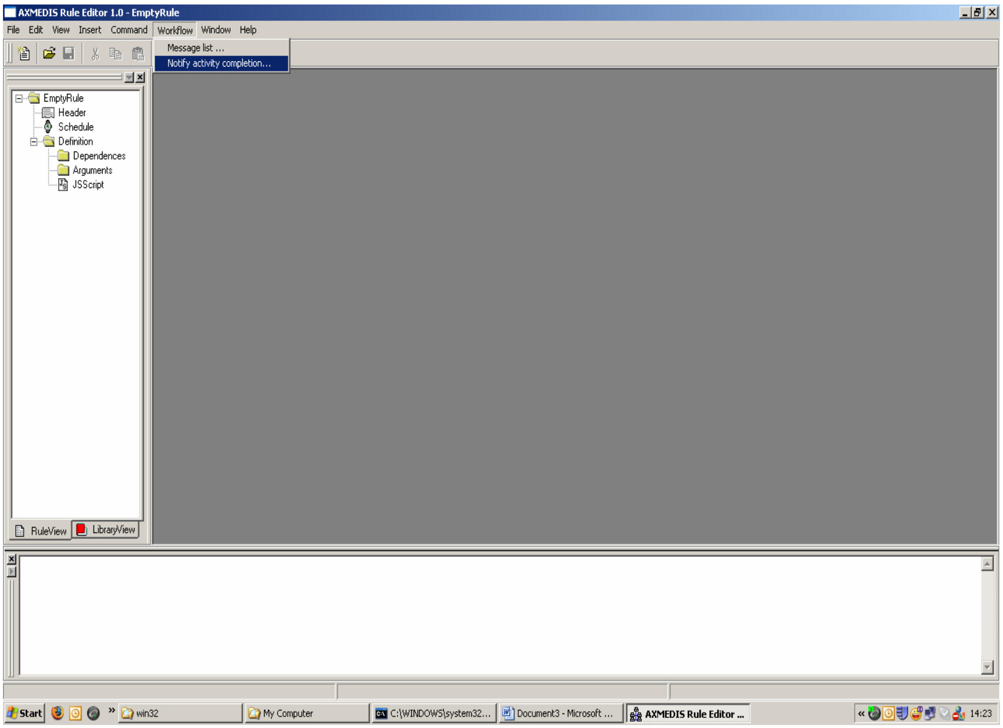
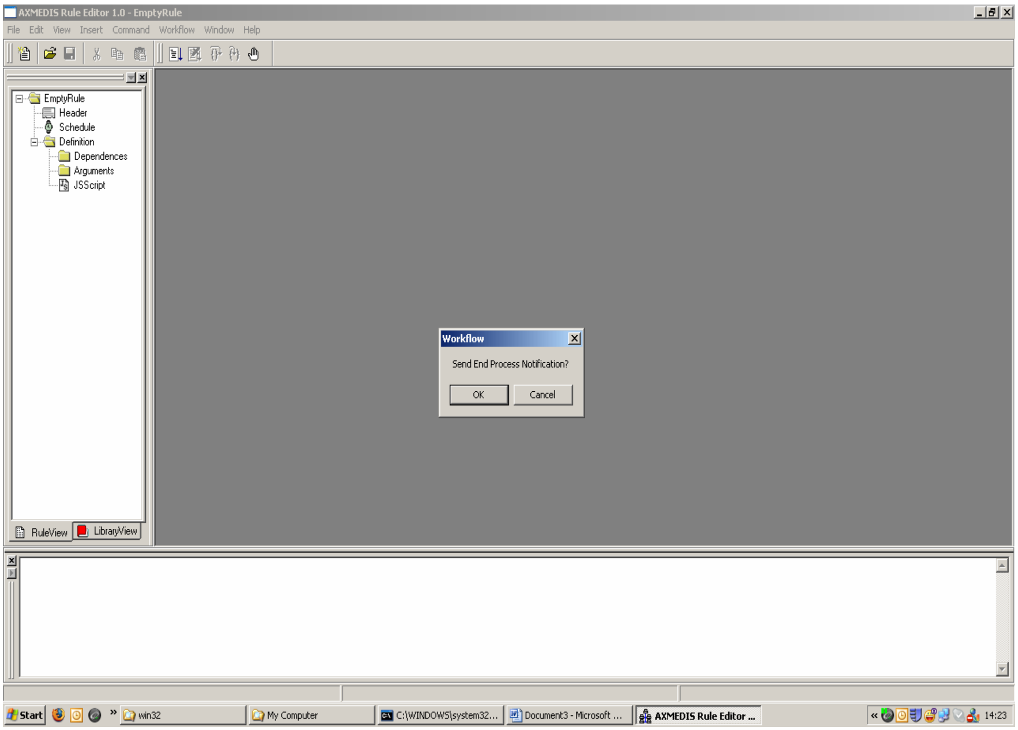


Figure 3: Sending of Notification of Completion

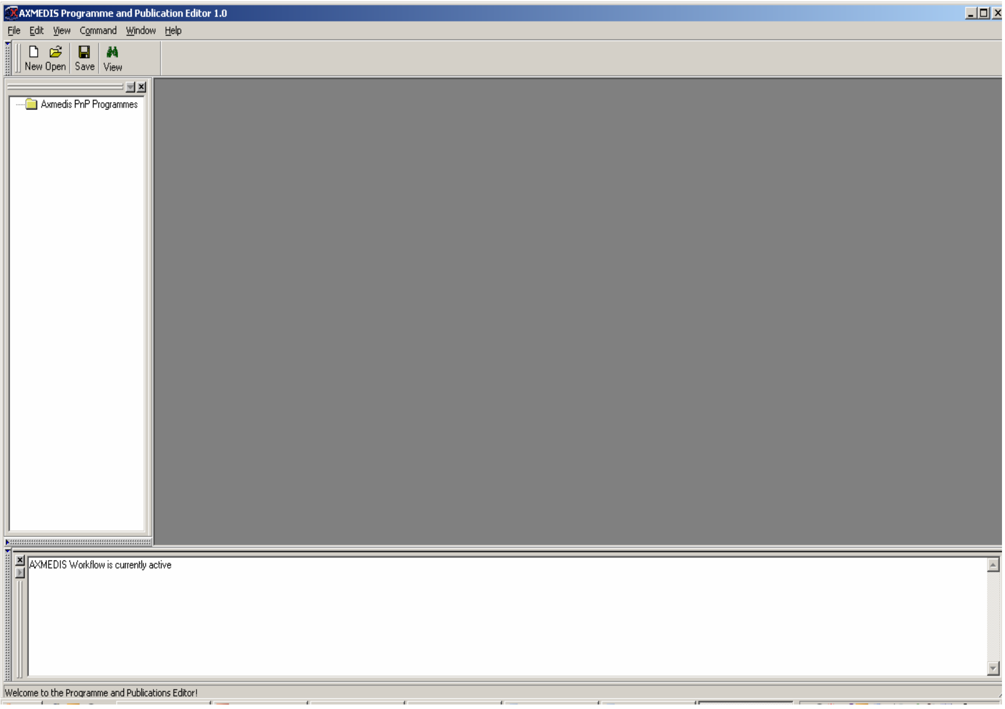
The User can confirm the notification command by selecting ‘OK’ from the message box.



Send End Process Notification?

Figure 4: Confirmation for the Notification

The functions of this plug-in can also be invoked by PnP Editor. Also the Functions can be invoked by the workflow engine automatically. The following Screenshots shows the empty PnP Editor.



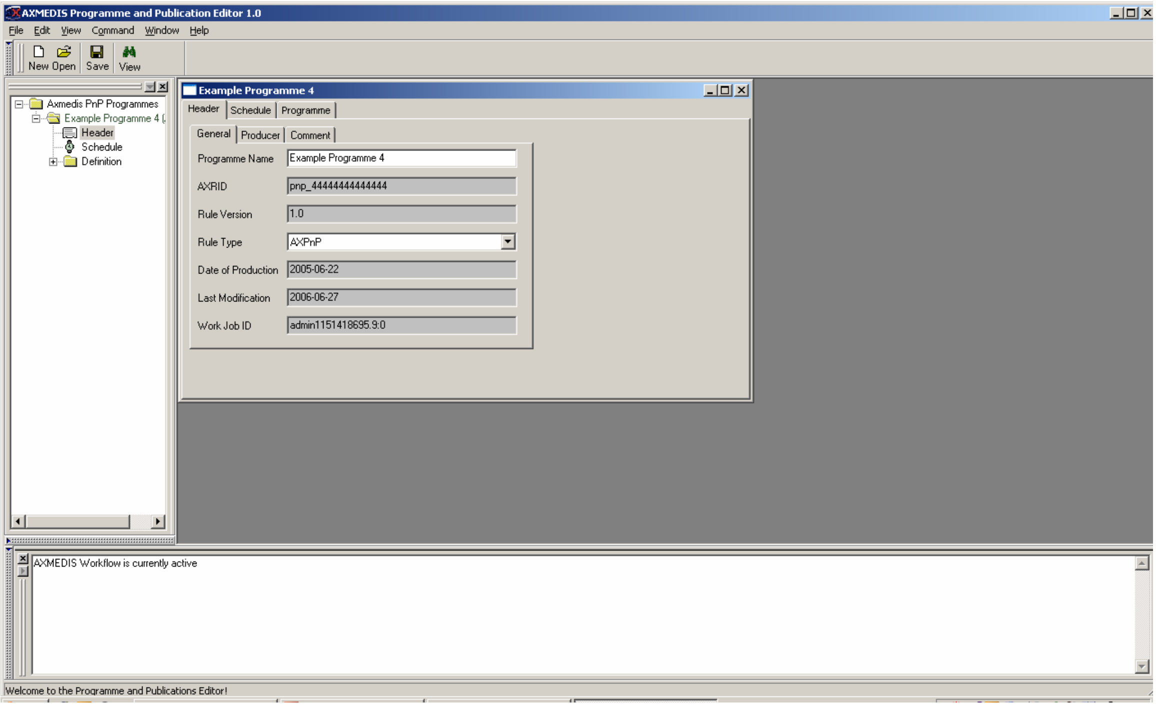
AXMEDIS Programme and Publication Editor 1.0
File Edit View Command Window Help
New Open Save View
Axmedis PnP Programmes

AXMEDIS Workflow is currently active

Welcome to the Programme and Publications Editor!

Figure 5: Empty PnP Editor

When the Workflow Rule Editor Plug-in receives request from Workflow Engine for the editing of a PnP Programme, it will load the specified XML from the Workflow Request as shown in the following figure:



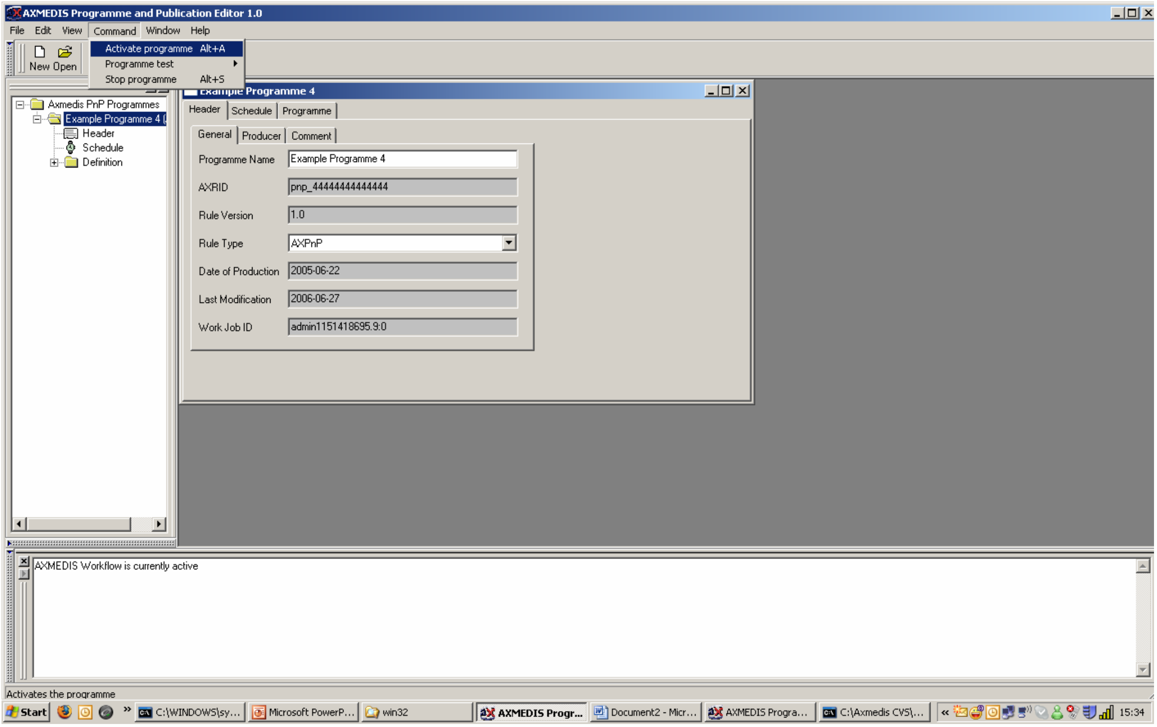
Programme Name: Example Programme 4
AXRID: pnp_44444444444444
Rule Version: 1.0
Rule Type: AXPnP
Date of Production: 2005-06-22
Last Modification: 2006-06-27
Work Job ID: admin1151418695.9:0

AXMEDIS Workflow is currently active

Welcome to the Programme and Publications Editor!

Figure 6: Programme Loaded from Workflow Engine

When the editing of the Programme is completed, the user can notify workflow by Activating the Programme in the PnP Engine as shown in the following figure. This will send a notification signal to workflow engine.



Programme Name: Example Programme 4
AXRID: pnp_44444444444444
Rule Version: 1.0
Rule Type: AXPnP
Date of Production: 2005-06-22
Last Modification: 2006-06-27
Work Job ID: admin1151418695.9:0

AXMEDIS Workflow is currently active

Activates the programme

Figure 7: Sending of Notification of Completion

19.18 Workflow Engine Plug-in

The Workflow Engine Plug-in is loaded by the AXCP Scheduler and by PnP Engine. Generally the functions offered by this plug-in are invoked automatically by these tools without the intervention of the User.

19.18.1 Main functionalities

Functionality	Details
Notification of Completion	This method is invoked by the editor to send back the notification towards workflow engine for the completion of previously issues asynchronous request.
Workflow Process Request	This method is invoked by the PnP engine to send request for activation of a workflow process identified the supplied processID.
Install and Activate	This method allows the workflow engine to install a new rule in the AXCP engine. The ruleID of the newly installed rule will be returned as ruleID.
Run Rule	This method allows the workflow engine to run a rule in the AXCP engine as per the supplied parameters.
Deactivate Rule	This method allows the workflow engine to deactivate a rule in the AXCP engine as per the supplied parameters.
Suspend Rule	This method allows the workflow engine to suspend a rule in the AXCP engine as per the supplied parameters.
Pause Rule	This method allows the workflow engine to pause a rule in the AXCP engine as per the supplied parameters.
Kill Rule	This method allows the workflow engine to kill a rule in the AXCP engine as per the supplied parameters.
Remove Rule	This method allows the workflow engine to remove a rule from the AXCP engine as per the supplied parameters.
Resume Rule	This method allows the workflow engine to resume a rule in the AXCP engine as per the supplied parameters.
Get Rule Status	This method allows the workflow engine to know the status of the a rule in the AXCP engine as per the supplied parameters.
Get Rule Log	This method allows the workflow engine to know the run log for a rule in the AXCP engine as per the supplied parameters.
Get List of Rules	This method allows the workflow engine to retrieve the list of currently installed rules in the AXCP engine as per the supplied parameters.
Get Rule	This method allows the workflow engine to retrieve the rule schema from the AXCP engine as per the supplied parameters.
Status Request to PnP Engine	This method allows the workflow engine to retrieve the status of the PnP engine.
Suspend PnP Programme	This method allows the workflow engine to suspend a program in the PnP engine.
Abort PnP Programme	This method allows the workflow engine to abort a program in the PnP engine.
Resume PnP Programme	This method allows the workflow engine to resume a program in the PnP engine.
Activate PnP Programme	This method allows the workflow engine to activate a program in the PnP engine.
Workflow Notification	This method allows the workflow engine to send the notification to the PnP engine for the previously issues request to activate a process.

19.18.2 Relationship with other tools

The Workflow Engine Plug-in is loaded by the AXCP Scheduler and PnP Engine. This plug-in communicates directly with AXMEDIS Workflow Request Gateway and AXMEDIS Workflow Response Gateway. For Microsoft Biztalk server, this plug-in communicates directly with the workflow engine. There are currently two versions of the plug-in – one for communicating with OpenFlow, and one for Biztalk. These will eventually be unified.

19.18.3 Detailed description of the functionalities and Screenshots

The functionality offered by this plug-in is hidden from the user. Hence there are no screenshots for it.

19.19 Ringtone Adaptation Plug-in

19.19.1 Main functionalities

Ringtone Adaptation refers to the adaptation of ringtones of popular formats to enhance usability and manage the variable delivery to cater for heterogeneous client devices and user requirements on-demand. It can be used to transcode the ringtones depending on the client devices e. g. some mobile phones may support only low bit rate ringtones while others will be having restrictions on the size of the ringtone.

19.19.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

19.19.3 Detailed description of the functionalities and Screenshots

A step by step Example showing how to use the functions is given below.

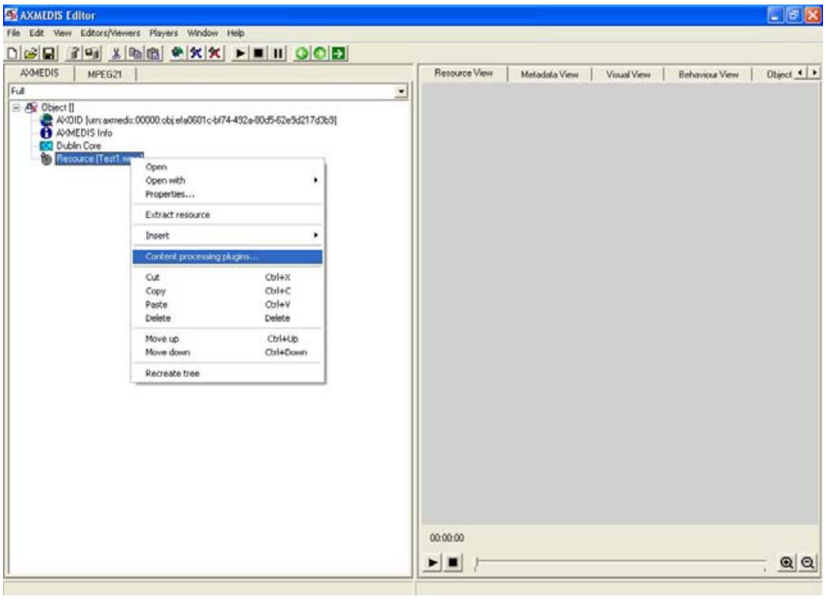
19.19.3.1 Convert Function

Description: Used to Convert a ringtone to different formats. The formats supported currently are x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)

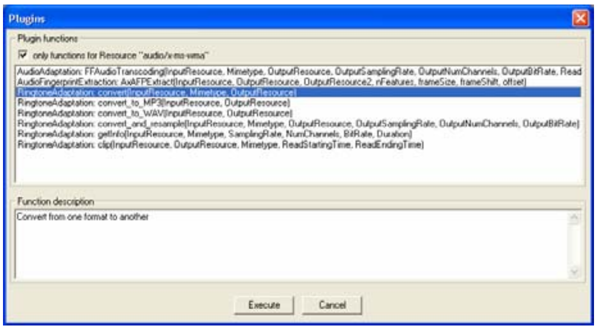
How to use:

Load an embedded resource (audio/ringtone file) into the AXMEDIS Editor

Right click on the resource and select Content processing plug-ins



It will pop up a new window showing the different content processing plug-ins available for the particular resource, in our case it is ringtone.



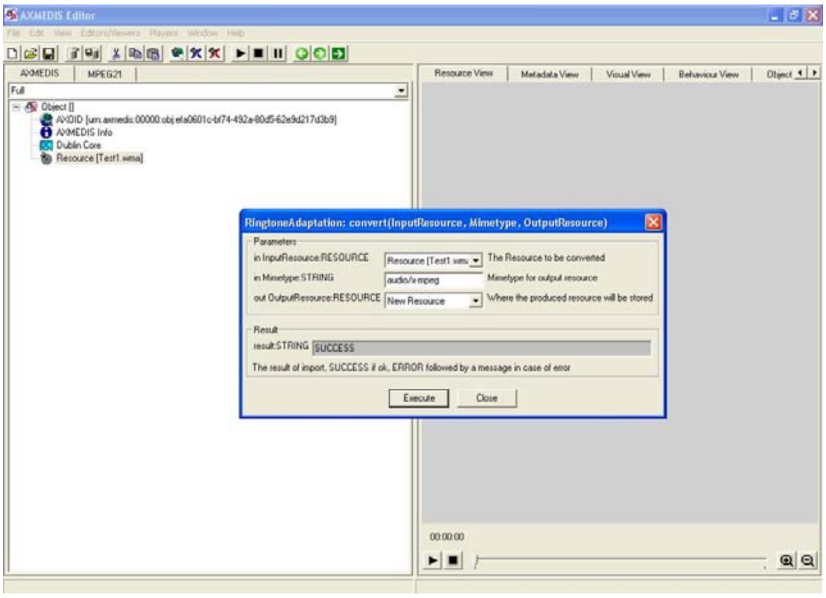
☑ only functions for Resource "audio/x-ms-wma"

AudioAdaptation: FFAudioTranscoding(InputResource, Mimetype, OutputResource, OutputSamplingRate, OutputNumChannels, OutputBitRate, Read
AudioFingerprintExtraction: AxAFPExtract(InputResource, OutputResource, OutputResource2, nFeatures, frameSize, frameShift, offset)
RingtoneAdaptation: convert(InputResource, Mimetype, OutputResource)
RingtoneAdaptation: convert_to_MP3(InputResource, OutputResource)
RingtoneAdaptation: convert_to_WAV(InputResource, OutputResource)
RingtoneAdaptation: convert_and_resample(InputResource, Mimetype, OutputResource, OutputSamplingRate, OutputNumChannels, OutputBitRate)
RingtoneAdaptation: getInfo(InputResource, Mimetype, SamplingRate, NumChannels, BitRate, Duration)
RingtoneAdaptation: clip(InputResource, OutputResource, Mimetype, ReadStartingTime, ReadEndingTime)

Convert from one format to another

Select the Convert function to convert the ringtone to any popular format. The formats supported are x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)

It will take you to the next screen where you can specify the various parameters for converting the ringtone. Once you enter the parameters and click execute, it will convert the ringtone to the appropriate format. If the ringtone conversion is successful then in result's space you can see SUCCESS or else it will return Error along with an error message.



Object []
AXOID [urn:axmedis:00000:obj:efa0601c-bf74-492a-80d5-62e9d217d3b9]
AXMEDIS Info
Dublin Core
Resource [Test1.wma]

RingtoneAdaptation: convert(InputResource, Mimetype, OutputResource)

in InputResource:RESOURCE Resource [Test1.wma] The Resource to be converted
in Mimetype:STRING audio/x-mpeg Mimetype for output resource
out OutputResource:RESOURCE New Resource Where the produced resource will be stored

result:STRING SUCCESS
The result of import, SUCCESS if ok, ERROR followed by a message in case of error

The description of each parameter is given below.

InputResource

Description: The Resource to be converted
Parameter Type *AxResource*
Default Value:
Constraints:
Resource Type: audio
Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x- ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)
Ranges:

Mimetype

Description: Mimetype for output resource
Parameter Type *string*
Default Value:
Constraints:
Resource Type: audio

Resource Format: x-mpeg, x-aiff, x-wav, basic, x-vorbis, x-ac3

OutputResource

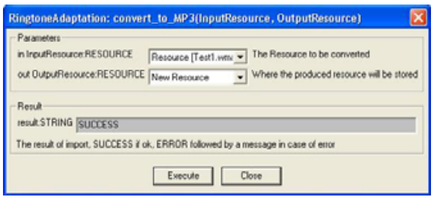
Description: Where the produced resource will be stored
Parameter Type *AxResource*
Default Value:
Constraints:

Result

Result type: string
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

19.19.3.2 Convert_to-MP3 Function

Description: Used to convert a ringtone to MP3 format. The input formats supported currently are x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)



RingtoneAdaptation: convert_to_MP3(InputResource, OutputResource)

Parameters

in InputResource:RESOURCE: Resource [Test1.wm — The Resource to be converted

out OutputResource:RESOURCE: New Resource — Where the produced resource will be stored

Result

result:STRING: SUCCESS

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

Fig: Convert_to_MP3 Function Screenshot

InputResource

Description: The Resource to be converted
Parameter Type *AxResource*
Default Value:
Constraints:

Resource Type: audio
Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)

Ranges:

OutputResource

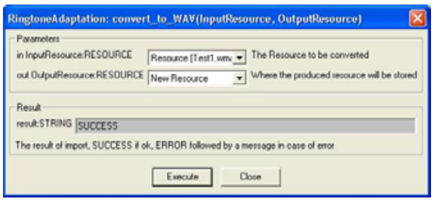
Description: Where the produced resource will be stored
Parameter Type *AxResource*
Default Value:
Constraints:

Result

Result type: *string*
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

19.19.3.3 Convert_to_WAV Function

Description: Used to convert a ringtone to WAV format. The input formats supported currently are x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)



RingtoneAdaptation: convert_to_WAV(InputResource, OutputResource)

Parameters

in InputResource:RESOURCE | Resource [Test1.wm | The Resource to be converted

out OutputResource:RESOURCE | New Resource | Where the produced resource will be stored

Result

result:STRING | SUCCESS

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

Fig: Convert_to_WAV Function Screenshot

InputResource

Description: The Resource to be converted
Parameter Type *AxResource*
Default Value:
Constraints:
Resource Type: audio
Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)
Ranges:

OutputResource

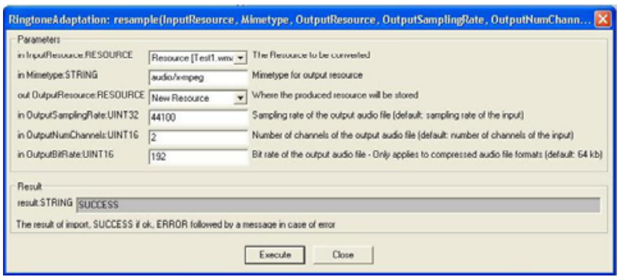
Description: Where the produced resource will be stored
Parameter Type *AxResource*
Default Value:
Constraints:

Result

Result type: string
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

19.19.3.4 *Resample Function*

Description: Resamples the input file (i.e. changing frequency, bitrate, sampling rate etc)



RingtoneAdaptation: resample(InputResource, Mimetype, OutputResource, OutputSamplingRate, OutputNumChann...

Parameters

in InputResource:RESOURCE | Resource [Test1.wm | The Resource to be converted

in Mimetype:STRING | audio/x-mpeg | Mimetype for output resource

out OutputResource:RESOURCE | New Resource | Where the produced resource will be stored

in OutputSamplingRate:UINT32 | 44100 | Sampling rate of the output audio file (default: sampling rate of the input)

in OutputNumChannels:UINT16 | 2 | Number of channels of the output audio file (default: number of channels of the input)

in OutputBitRate:UINT16 | 192 | Bit rate of the output audio file - Only applies to compressed audio file formats (default: 64 kb)

Result

result:STRING | SUCCESS

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

InputResource

Description: The Resource to be converted
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: audio
Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)
Ranges:

Mimetype

Description: Mimetype for output resource
Parameter Type STRING

Default Value:
Constraints:
Resource Type: audio
Resource Format: x-mpeg, x-aiff, x-wav, basic, x-vorbis, x-ac3

OutputResource
Description: Where the produced resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:

OutputSamplingRate
Description: Sampling rate of the output audio file (default: sampling rate of the input)
Parameter Type UINT32
Default Value:
Constraints:
Resource Type:
Ranges:

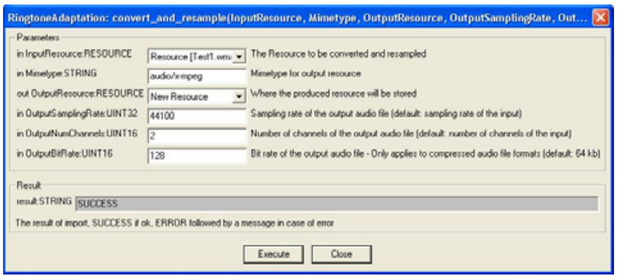
OutputNumChannels
Description: Number of channels of the output audio file (default: number of channels of the input)
Parameter Type UINT16
Default Value:
Constraints:
Resource Type:
Ranges:

OutputBitRate
Description: Bit rate of the output audio file - Only applies to compressed audio file formats (default: 64 kb)
Parameter Type UINT16
Default Value:
Constraints:
Resource Type:
Ranges:

Result
Result type: STRING
Result Description: The result of import, SUCCESS if ok, ERROR followed by a message in case of error

19.19.3.5 Convert_And_Resample Function

Description: Converts the file into any supporting formats and resample it (i.e. changing frequency, bitrate, sampling rate etc) at the same time. Please note that some values of the Sampling rates and frequencies cannot exist together according to the ffmpeg library used and hence if the plug-in shows an unknown exception then the user has to restart the plug-in and give different values.



RingtoneAdaptation: convert_and_resample(InputResource, Mimetype, OutputResource, OutputSamplingRate, Out...

Parameters

in InputResource:RESOURCE	Resource [Test1.wm	The Resource to be converted and resampled
in Mimetype:STRING	audio/x-mpeg	Mimetype for output resource
out OutputResource:RESOURCE	New Resource	Where the produced resource will be stored
in OutputSamplingRate:UINT32	44100	Sampling rate of the output audio file (default: sampling rate of the input)
in OutputNumChannels:UINT16	2	Number of channels of the output audio file (default: number of channels of the input)
in OutputBitRate:UINT16	128	Bit rate of the output audio file - Only applies to compressed audio file formats (default: 64 kb)

Result

result:STRING SUCCESS

The result of import, SUCCESS if ok, ERROR followed by a message in case of error

Fig: Convert_And_Resample Function Screenshot

InputResource

Description: The Resource to be converted
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: audio
Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)
Ranges:

Mimetype

Description: Mimetype for output resource
Parameter Type STRING
Default Value:
Constraints:
Resource Type: audio
Resource Format: x-mpeg, x-aiff, x-wav, basic, x-vorbis, x-ac3

OutputResource

Description: Where the produced resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:

OutputSamplingRate

Description: Sampling rate of the output audio file (default: sampling rate of the input)
Parameter Type UINT32
Default Value:
Constraints:
Resource Type:
Ranges:

OutputNumChannels

Description: Number of channels of the output audio file (default: number of channels of the input)
Parameter Type UINT16
Default Value:
Constraints:
Resource Type:
Ranges:

OutputBitRate

Description: Bit rate of the output audio file - Only applies to compressed audio file formats (default: 64 kb)
Parameter Type UINT16
Default Value:

Constraints:

Resource Type:

Ranges:

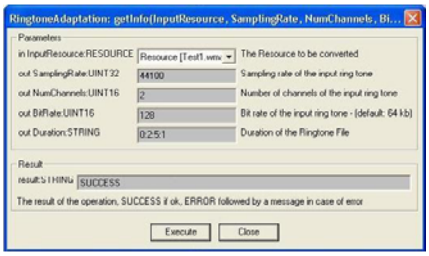
Result

Result type: STRING

Result Description: The result of import, SUCCESS if ok, ERROR followed by a message in case of error

19.19.3.6 *getInfo Function*

Description: Get all the information about the input Ring Tone



RingtoneAdaptation: getInfo(InputResource, SamplingRate, NumChannels, Bi...

Parameters

in InputResource:RESOURCE Resource [Test1.wmv The Resource to be converted

out SamplingRate:UINT32 44100 Sampling rate of the input ring tone

out NumChannels:UINT16 2 Number of channels of the input ring tone

out BitRate:UINT16 128 Bit rate of the input ring tone - (default: 64 kb)

out Duration:STRING 0:2:5:1 Duration of the Ringtone File

Result

result:STRING SUCCESS

The result of the operation, SUCCESS if ok, ERROR followed by a message in case of error

InputResource

Description: The Resource to be converted

Parameter Type RESOURCE

Default Value:

Constraints:

Resource Type: audio

Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)

Ranges:

SamplingRate

Description: Sampling rate of the input ring tone

Parameter Type UINT32

Default Value:

Constraints:

Resource Type:

Ranges:

NumChannels

Description: Number of channels of the input ring tone

Parameter Type UINT16

Default Value:

Constraints:

Resource Type:

Ranges:

BitRate

Description: Bit rate of the input ring tone - (default: 64 kb)

Parameter Type UINT16

Default Value:

Constraints:

Resource Type:

Ranges:

Duration

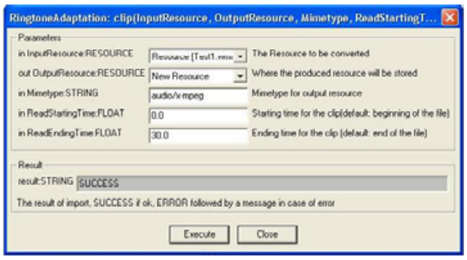
Description: Duration of the Ringtone File (In the format Hours: Mins: Secs: milliseconds)
Parameter Type STRING
Default Value:
Constraints:
Resource Type:
Ranges:

Result

Result type: STRING
Result Description: The result of import, SUCCESS if ok, ERROR followed by a message in case of error

19.19.3.7 *Clip Function*

Description: Clips the file for the specified time (for e.g. reducing it to a 30 sec clip)



RingtoneAdaptation: clip(InputResource, OutputResource, Mimetype, ReadStartingT...

Parameters

in InputResource:RESOURCE	Resource [Test1.mm	The Resource to be converted
out OutputResource:RESOURCE	New Resource	Where the produced resource will be stored
in Mimetype:STRING	audio/x-mpeg	Mimetype for output resource
in ReadStartingTime:FLOAT	0.0	Starting time for the clip(default: beginning of the file)
in ReadEndingTime:FLOAT	30.0	Ending time for the clip (default: end of the file)

Result

result:STRING SUCCESS

The result of import. SUCCESS if ok, ERROR followed by a message in case of error

InputResource

Description: The Resource to be converted
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: audio
Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)
Ranges:

OutputResource

Description: Where the produced resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:

Mimetype

Description: Mimetype for output resource
Parameter Type STRING
Default Value:
Constraints:
Resource Type: audio
Resource Format: x-mpeg, x-aiff, x-wav, basic, x-vorbis, x-ac3

ReadStartingTime

Description: Starting time for the clip(default: beginning of the file)
Parameter Type FLOAT
Default Value:
Constraints:

Resource Type:

Ranges:

ReadEndingTime

Description: Ending time for the clip (default: end of the file)

Parameter Type FLOAT

Default Value:

Constraints:

Resource Type:

Ranges:

Result

Result type: STRING

Result Description: The result of import, SUCCESS if ok, ERROR followed by a message in case of error

19.20 Image Processing Plug-in

19.20.1 Main functionalities

The image processing plug-in allows adapting image resources to various use case. For example it can be used to convert different image formats, to apply various effects, to resize, to mirror, etc. In total the plug-in is composed of forty-one functions that are:

- **Conversion**, to convert the image
- **Import**, to import an image
- **Resize**, to resize the image
- **Contrast**, to change the image contrast
- **Edge**, to highlight edges of the image
- **Embross**, to highlight edges with 3D effect
- **Blur**, to blur the image
- **GaussianBlur**, to apply a Gaussian Blur to the image
- **Median**, to apply a median filter to the image
- **Mirror**, to mirror the image
- **Noise**, to add noise in the image
- **Despeckle**, to reduce the noise from the image using the despeckle filter
- **Equalize**, to apply an histogram equalization to the image
- **Enhance**, to minimize the noise of the image
- **ExtractChannel**,
- **GrayScale**, to convert a coloured image to grayscale
- **Magnify**, to scale up the image
- **Minimize**, to scale down the image
- **Modulate**, to modulate hue, saturation, and brightness of the image
- **Monochrome**, to create a monochrome image
- **Negate**, to negate colours in the image
- **Normalize**, to increase contrast by normalizing the pixel values
- **OilPaint**, to create a image looks like oil painting
- **Quality**, to change the JPEG/MIFF/PNG compression
- **Quantize**, to set the preferred number of colours in the image
- **Raise**, to highlight or dark the edges of an image to give a 3D raised or lowered effect
- **ReduceNoise**, to reduce the noise of the image
- **Replace**, to replace the image
- **FloodFill**, to apply a flood-fill texture
- **Rool**, to roll the image by a specified number of columns and rows
- **Rotate**, to rotate the image specifying a number of degrees
- **Scale**, to scale the image by using a specified ratio
- **Shear**, to create a parallelogram by sliding the image by X of Y axis
- **Shade**, to shade the image using distant light source
- **Spread**, to spread pixels randomly
- **SetOpacity to set the opacity of the image**
- **SubImage**,
- **GetInfo**, to see information about the image
- **SetMaskColour,**
- **Paste,** to paste the image
- **Test,** to test the image

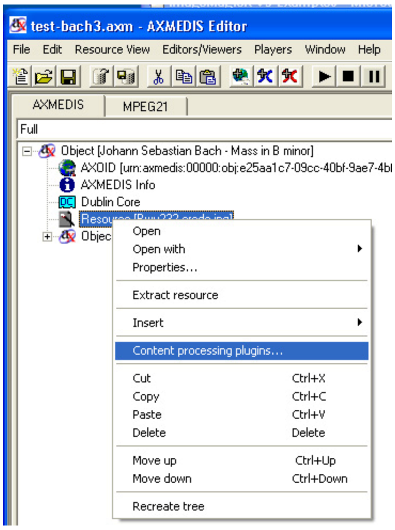
19.20.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

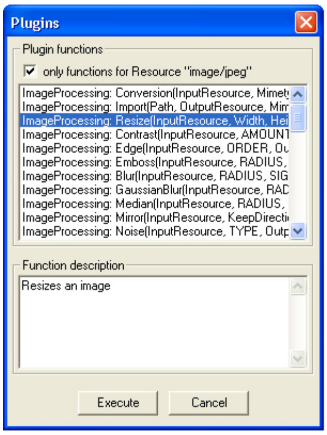
19.20.3 Detailed description of the functionalities and Screenshots

Here's an example on how to use the plug-in with AXMEDIS Editor.

The plug-in can be applied to all images resources in all formats embedded into an AXMEDIS object. Selecting one resource in the tree and right clicking, select **Content Processing plugins…**



A new dialog will appear will the list of available functionalities. Selecting a functionality will a appear a brief description in the **Function description** box.



☑ only functions for Resource "image/jpeg"

ImageProcessing: Conversion(InputResource, Mimet
ImageProcessing: Import(Path, OutputResource, Mim
ImageProcessing: Resize(InputResource, Width, Hei
ImageProcessing: Contrast(InputResource, AMOUNT
ImageProcessing: Edge(InputResource, ORDER, Ou
ImageProcessing: Emboss(InputResource, RADIUS,
ImageProcessing: Blur(InputResource, RADIUS, SIG
ImageProcessing: GaussianBlur(InputResource, RAD
ImageProcessing: Median(InputResource, RADIUS,
ImageProcessing: Mirror(InputResource, KeepDirecti
ImageProcessing: Noise(InputResource, TYPE, Outp

Resizes an image

Selecting the appropriate function and pressing the **Execute** button a new dialog appears with a number of fields to be filled-in. the aspect of the dialog and the number of fields is different for each function.

Please, refer to next sections for a detailed description of the values needed for each functionality.

In the **Output Resource** cascading menu is possible to decide if the function will produce a new resource or will overwrite the old one.

Here's a brief analysis of image processing functionalities.

Since the image processing plug-in is based on the GPL source code of ImageMagick, for a more detailed description of these functionalities, please refer to the following links:

- ImageMagick website: http://www.imagemagick.org/script/index.php
- **The Definitive Guide to ImageMagick** by Michael Still, available on: http://www.amazon.com/Definitive-Guide-ImageMagick/dp/1590595904/sr=8-1/qid=1157030444/ref=pd_bbs_1/104-0533291-5821542?ie=UTF8
- Examples of ImageMagick usage are available here: http://www.cit.gu.edu.au/~anthony/graphics/imagick6

19.20.3.1 Conversion

STRING Conversion (RESOURCE InputResource, STRING Mimetype, RESOURCE OutputResource)

Version: 1.0
Description: Convert an image
Parameter List
Name: InputResource
Description: The Resource to be converted
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: Mimetype
Description: Mimetype for output resource
Parameter Type STRING
Default Value:
Constraints:
Name: OutputResource
Description: Where the produced resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.2 Import

STRING Import (STRING Path, RESOURCE OutputResource, STRING MimeType)

Version: 1.0
Description: Import an image
Parameter List
Name: Path
Description: Path to the image
Parameter Type STRING
Default Value:
Constraints:
Name: OutputResource
Description: Where the imported resource will be stored
Parameter Type RESOURCE
Default Value:

Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: MimeType
Description: Test
Parameter Type STRING
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.3 Resize

STRING Resize (RESOURCE InputResource, INT32 Width, INT32 Height, BOOLEAN KeepAspectRatio, RESOURCE OutputResource)

Version: 1.0
Description: Resizes an image
Parameter List
Name: InputResource
Description: The Resource to be resized
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: Width
Description: The new image width
Parameter Type INT32
Default Value:
Constraints:
Name: Height
Description: The new image height
Parameter Type INT32
Default Value:
Constraints:
Name: KeepAspectRatio
Description: Indicates to preserve image aspect ratio or not
Parameter Type BOOLEAN
Default Value:
Constraints:
Name: OutputResource
Description: Where the resized resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.4 Contrast

STRING Contrast (RESOURCE InputResource, INT32 AMOUNT, RESOURCE OutputResource)

Version: 1.0
Description: Change image contrast
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: AMOUNT
Description: The contrast amount
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.5 Edge

STRING Edge (RESOURCE InputResource, INT32 ORDER, RESOURCE OutputResource)

Version: 1.0
Description: Edge image (highlight edges in image). The radius is the radius of the pixel neighbourhood.. Specify a radius of zero for automatic radius selection.
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: ORDER
Description: The Order Edge
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:

Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.6 Emboss

STRING Emboss (RESOURCE InputResource, INT32 RADIUS, INT32 SIGMA, RESOURCE OutputResource)

Version: 1.0
Description: Emboss image (highlight edges with 3D effect). The radius_ parameter specifies the radius of the Gaussian, in pixels, not counting the centre pixel. The sigma_ parameter specifies the standard deviation of the Laplacian, in pixels.
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: RADIUS
Description: The Radius Emboss
Parameter Type INT32
Default Value:
Constraints:
Name: SIGMA
Description: The sigma Emboss
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.7 Blur

STRING Blur (RESOURCE InputResource, INT32 RADIUS, INT32 SIGMA, RESOURCE OutputResource)

Version: 1.0
Description: Blur image. The radius_ parameter specifies the radius of the Gaussian, in pixels, not counting the centre pixel. The sigma_ parameter specifies the standard deviation of the Laplacian, in pixels.
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:

Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: RADIUS
Description: The Radius Blur
Parameter Type INT32
Default Value:
Constraints:
Name: SIGMA
Description: The sigma Blur
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.8 GaussianBlur

STRING GaussianBlur (RESOURCE InputResource, INT32 RADIUS, INT32 SIGMA, RESOURCE OutputResource)

Version: 1.0
Description: GaussianBlur the image
Parameter List
Name: InputResource
Description: Gaussian blur image. The number of neighbour pixels to be included in the convolution mask is specified by 'width_'. For example, a width of one gives a (standard) 3x3 convolution mask. The standard deviation of the gaussian bell curve is specified by 'sigma'.
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: RADIUS
Description: The Radius GaussianBlur
Parameter Type INT32
Default Value:
Constraints:
Name: SIGMA
Description: The sigma GaussianBlur
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:

Constraints:

Result: Result

Result type: STRING

Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.9 Median

STRING Median (RESOURCE InputResource, INT32 RADIUS, RESOURCE OutputResource)

Version: 1.0

Description: Median the image

Parameter List

Name: InputResource

Description: The Resource to be manipulated

Parameter Type RESOURCE

Default Value:

Constraints:

Resource Type: image

Resource Format: jpeg gif png

Ranges:

Name: RADIUS

Description: The Radius Median

Parameter Type INT32

Default Value:

Constraints:

Name: OutputResource

Description: Where the manipulated resource will be stored

Parameter Type RESOURCE

Default Value:

Constraints:

Result: Result

Result type: STRING

Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.10 Mirror

STRING Mirror (RESOURCE InputResource, BOOLEAN KeepDirection, RESOURCE OutputResource)

Version: 1.0

Description: Mirror the image

Parameter List

Name: InputResource

Description: The Resource to be manipulated

Parameter Type RESOURCE

Default Value:

Constraints:

Resource Type: image

Resource Format: jpeg gif png

Ranges:

Name: KeepDirection

Description: The KeepDirection Mirror

Parameter Type BOOLEAN

Default Value:

Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.11 Noise

STRING Noise (RESOURCE InputResource, INT32 TYPE, RESOURCE OutputResource)

Version: 1.0
Description: Noise the image
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: TYPE
Description: The Type Noise
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.12 Despeckle

STRING Despeckle (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0
Description: Despeckle image (reduce speckle noise)
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:

Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.13 Equalize

STRING Equalize (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0
Description: Equalize image (histogram equalization)
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.14 Enhance

STRING Enhance (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0
Description: Enhance image (minimize noise)
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.15 ExtractChannel

STRING ExtractChannel (RESOURCE InputResource, INT32 CHANNEL, RESOURCE OutputResource)

Version: 1.0
Description: ExtractChannel the image
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: CHANNEL
Description: The Channel ExtractChannel
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.16 Grayscale

STRING Grayscale (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0
Description: Grayscale the image
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.17 Magnify

STRING Magnify (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0
Description: Magnify image by integral size
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.18 Minify

STRING Minify (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0
Description: Reduce image by integral size
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.19 Modulate

STRING Modulate (RESOURCE InputResource, INT32 BRIGHTNESS, INT32 SATURATION, INT32 HUE, RESOURCE OutputResource)

Version: 1.0
Description: Modulate percent hue, saturation, and brightness of an image.Modulation of saturation and brightness is as a ratio of the current value(1.0 for no change). Modulation of hue is an absolute rotation of -180 degrees to +180 degrees from the current position corresponding to an argument range of 0 to 2.0 (1.0 for no change).
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: BRIGHTNESS
Description: Brightness modulate
Parameter Type INT32
Default Value:
Constraints:
Name: SATURATION
Description: Saturation modulate
Parameter Type INT32
Default Value:
Constraints:
Name: HUE
Description: Hue modulate

Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.20 Monochrome

STRING Monochrome (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0
Description: Monochrome the image
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.21 Negate

STRING Negate (RESOURCE InputResource, BOOLEAN GRAYSCALE, RESOURCE OutputResource)

Version: 1.0
Description: Negate colours in image. Replace every pixel with its complementary color (white becomes black, yellow becomes blue, etc.). Set grayscale to only negate grayscale values in image.
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: GRAYSCALE

Description: Where the manipulated resource will be stored
Parameter Type BOOLEAN
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.22 Normalize

STRING Normalize (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0
Description: Normalize image (increase contrast by normalizing the pixel values to span the full range of colour values)
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.23 OilPaint

STRING OilPaint (RESOURCE InputResource, INT32 RADIUS, RESOURCE OutputResource)

Version: 1.0
Description: Oilpaint image (image looks like oil painting)
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: RADIUS

Description: the radius OilPaint
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.24 Quality

STRING Quality (RESOURCE InputResource, INT32 LEVEL, RESOURCE OutputResource)

Version: 1.0
Description: JPEG/MIFF/PNG compression level (default 75).
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: LEVEL
Description: the quality of the compress level
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.25 Quantize

STRING Quantize (RESOURCE InputResource, INT32 NCOLORS, RESOURCE OutputResource)

Version: 1.0
Description: Preferred number of colours in the image. The actual number of colours in the image may be less than your request, but never more. Images with less unique colours than specified with this option will have any duplicate or unused colours removed.
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE

Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: NCOLORS
Description: the number of color
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.26 Raise

STRING Raise (RESOURCE InputResource, INT32 WIDTH, INT32 HEIGHT, INT32 XOFFSET, INT32 YOFFSET, BOOLEAN RISED, RESOURCE OutputResource)

Version: 1.0
Description: Raise image (lighten or darken the edges of an image to give a 3-D raised or lowered effect)
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: WIDTH
Description: The width is parts of the geometry specification are measured in pixels
Parameter Type INT32
Default Value:
Constraints:
Name: HEIGHT
Description: The height is parts of the geometry specification are measured in pixels
Parameter Type INT32
Default Value:
Constraints:
Name: XOFFSET
Description: The left edge of the object is to be placed xoffset pixels in from the left edge of the image.
Parameter Type INT32
Default Value:
Constraints:
Name: YOFFSET
Description: The top edge of the object is to be yoffset pixels below the top edge of the image.
Parameter Type INT32

Default Value:
Constraints:
Name: RISED
Description: raisedFlag
Parameter Type BOOLEAN
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.27 ReduceNoise

STRING ReduceNoise (RESOURCE InputResource, INT32 ORDER, RESOURCE OutputResource)

Version: 1.0
Description: Reduce noise in image using a noise peak elimination filter.
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: ORDER
Description: order
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.28 Replace

STRING Replace (RESOURCE InputResource, INT32 R1, INT32 G1, INT32 B1, INT32 R2, INT32 G2, INT32 B2, RESOURCE OutputResource)

Version: 1.0
Description: Replace the image
Parameter List
Name: InputResource

Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: R1
Description: r1
Parameter Type INT32
Default Value:
Constraints:
Name: G1
Description: g1
Parameter Type INT32
Default Value:
Constraints:
Name: B1
Description: b1
Parameter Type INT32
Default Value:
Constraints:
Name: R2
Description: r2
Parameter Type INT32
Default Value:
Constraints:
Name: G2
Description: g2
Parameter Type INT32
Default Value:
Constraints:
Name: B2
Description: b2
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.29 FloodFill

STRING FloodFill (RESOURCE InputResource, INT32 X, INT32 Y, INT32 B, INT32 R, INT32 G, RESOURCE OutputResource)

Version: 1.0
Description: Flood-fill texture across pixels that match the colour of the target pixel and are neighbours of the target pixel. It uses current fuzz setting when determining colour match.
Parameter List

Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: X
Description: x
Parameter Type INT32
Default Value:
Constraints:
Name: Y
Description: y
Parameter Type INT32
Default Value:
Constraints:
Name: B
Description: b
Parameter Type INT32
Default Value:
Constraints:
Name: R
Description: r
Parameter Type INT32
Default Value:
Constraints:
Name: G
Description: g
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.30 Roll

STRING Roll (RESOURCE InputResource, INT32 X, INT32 Y, RESOURCE OutputResource)

Version: 1.0
Description: Roll image (rolls image vertically and horizontally) by specified number of columnms and rows)
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:

Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: X
Description: x
Parameter Type INT32
Default Value:
Constraints:
Name: Y
Description: y
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.31 Rotate

STRING Rotate (RESOURCE InputResource, INT32 ANGLE, RESOURCE OutputResource)

Version: 1.0
Description: Rotate image counter-clockwise by specified number of degrees.
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: ANGLE
Description: Number of the degrees
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.32 Scale

STRING Scale (RESOURCE InputResource, INT32 WIDTH, INT32 HEIGHT, INT32 MODE, RESOURCE OutputResource)

Version: 1.0
Description: Resize image by using simple ratio algorithm
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: WIDTH
Description: Width
Parameter Type INT32
Default Value:
Constraints:
Name: HEIGHT
Description: Height
Parameter Type INT32
Default Value:
Constraints:
Name: MODE
Description: Mode
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.33 Shear

STRING Shear (RESOURCE InputResource, INT32 XSHEAR, INT32 Yshear, RESOURCE OutputResource)

Version: 1.0
Description: Shear image (create parallelogram by sliding image by X or Y axis). Shearing slides one edge of an image along the X or Y axis, creating a parallelogram. An X direction shear slides an edge along the X axis, while a Y direction shear slides an edge along the Y axis. The amount of the shear is controlled by a shear angle. For X direction shears, x degrees is measured relative to the Y axis, and similarly, for Y direction shears y degrees is measured relative to the X axis. Empty triangles left over from shearing the image are filled with the colour defined as borderColor.
Parameter List
Name: InputResource
Description: The Resource to be manipulated

Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: XSHEAR
Description: XSHEAR
Parameter Type INT32
Default Value:
Constraints:
Name: Yshear
Description: Yshear
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.34 Shade

STRING Shade (RESOURCE InputResource, INT32 AZIMUTH, INT32 ELEVATION, BOOLEAN COLOR, RESOURCE OutputResource)

Version: 1.0
Description: Shade image using distant light source. Specify azimuth_ and elevation_ as the position of the light source. By default, the shading results as a grayscale image.. Set colorShading_ to true to shade the red, green, and blue components of the image.
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: AZIMUTH
Description: AZIMUTH
Parameter Type INT32
Default Value:
Constraints:
Name: ELEVATION
Description: ELEVATION
Parameter Type INT32
Default Value:
Constraints:
Name: COLOR
Description: COLOR

Parameter Type BOOLEAN
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.35 Spread

STRING Spread (RESOURCE InputResource, INT32 AMOUNT, RESOURCE OutputResource)

Version: 1.0
Description: Spread pixels randomly within image by specified amount.
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: AMOUNT
Description: AMOUNT
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.36 SetOpacity

STRING SetOpacity (RESOURCE InputResource, INT32 LEVEL, RESOURCE OutputResource)

Version: 1.0
Description: Set the opacity of the image.
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image

Resource Format: jpeg gif png
Ranges:
Name: LEVEL
Description: LEVEL
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.37 SubImage

STRING SubImage (RESOURCE InputResource, INT32 X, INT32 Y, INT32 WIDTH, INT32 HEIGHT, RESOURCE OutputResource)

Version: 1.0
Description: SubImage image.
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: X
Description: x coordinate of the top-level corner of the rectangle
Parameter Type INT32
Default Value:
Constraints:
Name: Y
Description: y coordinate of the top-level corner of the rectangle
Parameter Type INT32
Default Value:
Constraints:
Name: WIDTH
Description: Width member
Parameter Type INT32
Default Value:
Constraints:
Name: HEIGHT
Description: Height member
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE

Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.38 GetInfo

STRING GetInfo (RESOURCE InputResource, INT32 WIDTH, INT32 HEIGHT)

Version: 1.0
Description: Return the size of the image.
Parameter List
Name: InputResource
Description: The Resource under analysis
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: WIDTH
Description: The width of the Image
Parameter Type INT32
Default Value:
Constraints:
Name: HEIGHT
Description: The height of the Image
Parameter Type INT32
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.39 SetMaskColour

STRING SetMaskColour (RESOURCE InputResource, INT32 R, INT32 G, INT32 B, RESOURCE OutputResource)

Version: 1.0
Description: Sets the colour
Parameter List
Name: InputResource
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: R
Description: Red
Parameter Type INT32

Default Value:
Constraints:
Name: G
Description: Green
Parameter Type INT32
Default Value:
Constraints:
Name: B
Description: Blue
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.40 Paste

STRING Paste (RESOURCE InputResource1, RESOURCE InputResource2, INT32 X, INT32 Y, INT32 COMPOSE, RESOURCE OutputResource)

Version: 1.0
Description: Paste image
Parameter List
Name: InputResource1
Description: The Resource to be manipulated
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: InputResource2
Description: The Resource paste
Parameter Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: X
Description: X
Parameter Type INT32
Default Value:
Constraints:
Name: Y
Description: Y
Parameter Type INT32
Default Value:
Constraints:

Name: COMPOSE
Description: Compose
Parameter Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Parameter Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

19.20.3.41 Test

RESOURCE Test (RESOURCE InputResource, AXOM Axom)
Version: 1.0
Description: Test an image
Parameter List
Name: InputResource
Description: The Resource to be tested
Parameter Type RESOURCE
Default Value:
Constraints:
Name: Axom
Description: The object
Parameter Type AXOM
Default Value:
Constraints:
Result: Result
Result type: RESOURCE
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error.

20 References and links

20.1 AXMEDIS Tutorials

- General Tutorial and Overview (November 2007, Barcelona, Spain)
  - PPT: http://www.axmedis.org/documenti/view_documenti.php?doc_id=3653
  - Video on part 1
  - Video on part 2
  - Video on part 3
  - Video on part 4
  - Video on part 5
  - Video on part 6
- Content Production Tutorial (AXMEDIS 2007 Conference) http://www.axmedis.org/documenti/view_documenti.php?doc_id=3869
- Content Distribution Tutorial (AXMEDIS 2006 Conference) http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2666
- Content Processing Tutorial (AXMEDIS 2006 Conference) http://www.axmedis.org/documenti/view_documenti.php?doc_id=3868
- Workflow Tutorial (AXMEDIS 2006 Conference) http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2652
- AXMEDIS general overview and content production tutorial, March 2008

20.2 AXMEDIS tools for free download

- General download page: http://www.axmedis.org/documenti/documenti.php
- AXMEDIS content production tools include: http://www.axmedis.org/documenti/view_documenti.php?doc_id=3722
  Free Download of AXMEDIS Content Production Tools (editor and GRID AXCP tools, PnP, DRM editor, etc.), all what you need to create AXMEDIS objects and process any kind of content automatically: SMIL, HTML, MPEG-21, content adptation,, fingerprint, crawling, indexing, cms, search, retrieval, control of P2P, etc. and much more. See documentation included
- AXMEDIS players for PC: http://www.axmedis.org/documenti/view_documenti.php?doc_id=3715
  AXMEDIS PC player version 1.2 January 2008. Free download, AXMEDIS player, MPEG-21 player, cross media player, SMIL, HTML, MPEG-4 ,etc
- AXMEDIS multiskin player for PC: http://www.axmedis.org/documenti/view_documenti.php?doc_id=3716
  AXMEDIS MultiSkin PC player version 1.2 january 2008. Free download, AXMEDIS player, MPEG-21 player, cross media player, SMIL, HTML, MPEG-4, with different skins available.
- AXMEDIS player plus EUTELSAT OPENSKY client integrated http://www.axmedis.org/documenti/view_documenti.php?doc_id=3767
- AXEPTools: P2P client tool for establishing connection with the AXMEDIS P2P B2B network as Business User: http://www.axmedis.org/documenti/view_documenti.php?doc_id=3840
- AXMEDIA: P2P client tool for establishing connection with the AXMEDIS P2P B2B network as final users: http://www.axmedis.org/documenti/view_documenti.php?doc_id=3841
- AXMEDIS PDA player for Windows Mobiles 5 and 6: http://www.axmedis.org/documenti/view_documenti.php?doc_id=3842
  It is capable to play AXMEDIS objects based on SMIL, HTML, video, audio, MPEG-4 files, etc. AXMEDIS PDA player for AXMEDIS MPEG-21 content including resources with presentations layer based on MPEG-4, HTML and SMIL Unzip the file, copy the CAB file and execute it on the PDA
- Collection of Objects for AXMEDIS player for PDA (Jan 2008): http://www.axmedis.org/documenti/view_documenti.php?doc_id=3748

20.3 AXMEDIS Technical Notes

- AXMEDIS Content Model and Tools, Authoring Tools, Players for MPEG-21, PC, PDA, Mobile, STB, PVR, HDR, etc. (in English)

- AXMEDIS Content Model and Tools, Authoring Tools, Players for MPEG-21, PC, PDA, Mobile, STB, PVR, HDR, etc. (in Italian)
- AXMEDIS Content Processing GRID all features listed (in English)
- AXMEDIS Content Processing GRID Tutte le caratteristiche descritte (in Italian)
- AXMEDIS P2P Controlled network all features listed with cases (in English)
- AXMEDIS P2P Controlled network tutte le caratteristiche, con alcune casistiche (in Italian)
- AXMEDIS DRM, MPEG-21 DRM, Interoperable DRM (in English)
- AXMEDIS DRM, MPEG-21 DRM, DRM interoperabile (in Italian)
- Technical note on how to integrate the AXMEDIS DRM into an e-commerce portal and content distribution solution for content on demand and subscription
- Come integrare AXMEDIS DRM in un portale per la distribuzione di contenuti digitali (in Italian)
- AXMEDIS Show Case, AXMEDIS Mpeg-21 Content distribution via datellite dta broadcast, EUTELSAT OPENSKY
- Technical note on the ELION AXMEDIS content on demand trial and solution, how to exploit AXMEDIS framework to create an cross media content distribution with DRM and automated production, and connection with P2P
- Technical note on the TEO IPTV AXMEDIS trial and solution, how to exploit AXMEDIS framework to create an IPTV with DRM and automated production, and connection with P2P.

20.4 AXMEDIS Solutions

- Content Management Automation, AXCP: http://www.axmedis.org/com/index.php?option=com_content&task=view&id=94&Itemid=33
- AXMEDIS controlled P2P: http://www.axmedis.org/com/index.php?option=com_content&task=view&id=97&Itemid=34
- AXMEDIS production tools and players: http://www.axmedis.org/com/index.php?option=com_content&task=view&id=101&Itemid=35
- AXMEDIS DRM, MPEG-21 DRM: http://www.axmedis.org/com/index.php?option=com_content&task=view&id=99&Itemid=36
- FAQs: http://www.axmedis.org/com/index.php?option=com_content&task=blogcategory&id=7&Itemid=73

20.5 AXMEDIS showcases

- Content Distribution to Licensed Domains via DVB-T and P2P (BBC)
- Protected Video on Demand Distribution via P2P toward PC (Tiscali)
- Protected Video on Demand (VOD) Distribution to PC (ELION)
- Content Distribution via Satellite Data Broadcast (DVB-S) to PC and STB (EUTELSAT)
- Content Distribution to Kiosks (ILABS)
- Video on Demand (VOD) Distribution to Set Top Box (TEO)
- Content Posting Tool, for Final User content production/publication/DRM (SIAE)
- Variazioni: Enrichment of Cultural Content
- AXMEDIS Content and Tools: Automatic Production
- AXMEDIS Controlled P2P Network

20.6 AXMEDIS Framework Specification

- AXMEDIS Framework General aspects, Editor and Model http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1891
- AXMEDIS Command Manager http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2686
- AXMEDIS Object Manager and Protection Processor: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1972
- AXMEDIS Editor and Viewers: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2213
- AXMEDIS External Editors, Viewers and Players: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2211

- AXMEDIS Content Processing Area: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1958
- AXMEDIS External Processing Algorithms: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2017
- AXMEDIS CMS Crawling capabilities: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1907
- AXMEDIS Database and query support: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1932
- AXMEDIS AXEPTool and AXMedia Tools: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2718
- AXMEDIS Programme and Publication Tools: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1885
- AXMEDIS Workflow Tools: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1883
- AXMEDIS Certifier and Supervisor and networks of AXCS http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1952
- AXMEDIS Protection Support http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1882
- AXMEDIS Accounting and Reporting : http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1887
- Definitions Terms tables links http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1388

AXMEDIS reports on basic enabling technologies

- Content Model and Managing, MPEG-21, authoring, etc. http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2324
- Content indexing and querying: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2436
- Content processing, Composition and Formatting http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2374
- Content sharing and Production on P2P: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2454
- Content Protection and Supervision http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2371
- Content Distribution via Internet http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2451
- Content Distribution via Mobile http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2442
- Content Distribution via Satellite data broadcast http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2313
- Usability issues http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2339
- AXMEDIS vs DMP MPEG21 Analysis http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1063
- AXMEDIS Framework Infrastructure, guidelines and some tools http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1391
- AXMEDIS Framework Validation and integration http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2445

Basic knowledge reports

- User requirements http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1712
- Use Cases http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1824
- Test Case http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2023

Content Modeling and Test Cases

- Content Aspect Specification http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1389
- Content Aspect Specification Appendix http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1670
- Content for Test Cases and Validation http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1393
- Content Selection Guidelines http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1390
- Multilingual Guidelines and Technical Solutions http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1427
- AXMEDIS Editorial Format Guidelines and basic examples http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1394

20.7 AXMEDIS Framework Demonstrators, Cases, Trials, for distribution etc.

- requirements and use cases of AXMEDIS ELTEO of the content distribution for DVB-T to STB of Telecom Lithuania, and content distribution of Telecom Estonia http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2978
- requirements and use cases of the 4HOME take up, demonstrators of BBC, TI, SDAE, including domains, AXMEDIS for broadcasting, and OMA integration and distribution http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2976
- Specification final version of Take up AXMEDIS ELTEO for Video on demand, STB, IPTV solutions based on AXMEDIS technology: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=3096
- Integrated CMS integration aspects: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2853
- Integrated prototype: automated content production and formatting: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2939
- Integrated Distribution on demand via Internet http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2951
- Integrated distribution via satellite data broadcast: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2954
- Integrated distribution towards mobiles: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2945
- Integrated Distribution towards PDA via Kiosks: http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2944
- Content Posting Portal, Content Posting for Final User publication, SIAE Trial presentation:
  - http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2922
  - http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2923
- VARIAZIONI project portal: http://www.variazioniproject.org/

20.8 Brochures and press cutting (a part)

- AXMEDIS Project Brochure http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2712
- Annual Public Report (2007): http://www.axmedis.org/documenti/view_documenti.php?doc_id=3621
- Annual Public Report (2006) http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=2471
- Annual Public Report (2005) http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1439
- AXMEDIS Project Synopsis http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1668
- Digital Media in Italy presentation http://www.AXMEDIS.org/documenti/view_documenti.php?doc_id=1669

20.9 Other references

- ISO/IEC, ISO/IEC FDIS 21000-5 - Rights Expression Language. ISO/IEC JTC1/SC 29/WG 11/N5839. July 2003.
- ISO/IEC, ISO/IEC FDIS 21000-6 - Rights Data Dictionary. ISO/IEC JTC 1/SC 29/WG 11/N5842. July 2003.
- Iannella, R.: Open Digital Right Language (ODRL) Version 1.1. http://odrl.net/1.1/ODRL-11.pdf . August 2002.
- Open Mobile Alliance (OMA), http://www.openmobilealliance.com/

- OMA DRM Rights Expression Language version 2 (OMA DRM REL v.2), http://www.openmobilealliance.com/
- ISO/IEC, Study of ISO/IEC FCD 21000-4 IPMP Components. ISO/IEC JTC 1/SC 29/WG 11/N7426. July 2005.