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Document responsible: Pierfrancesco Bellini
Email address: pbellini@dsi.unifi.it
Affiliation acronym: DSI
Authors:
- Pierfrancesco Bellini (DSI)
- Daniele Cenni (DSI)
- Ivan Bruno (DSI)

- Jaap Bloom (BNG)
- K. Komninou (NTUA)

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1   Executive Summary and Report Scope

This report is divided in two main parts: i) the integration and interoperability of the ECLAP portal with Europeana, where decisions taken and developed tools to integrate ECLAP Back-Office with Europeana are described; ii) accessibility and multilingual support for ECLAP solution, where the configuration and the decisions taken to cope with multilingual aspects are described.

This document has been structured in sections as following:

In Section 2, a summary of sub work packages 3.3 and 3.4 part of WP3 is reported according to the document regarding the description of work (DOW).

In Section 3 the status on the integration with Europeana is reported. The metadata mapping from the current ECLAP metadata model to Europeana Data Model (EDM) is presented, providing an Object-centric mapping and a possible mapping to an Event-centric model (currently not supported by Europeana ingestion). Moreover a preliminary mapping for Collections & Playlists to EDM is presented.
An OAI-PMH service has been set up to provide to Europeana the ECLAP metadata that will be transformed using a specific XSLT to EDM.
For the publication of content to Europeana an AXCP rule has been implemented that publish to the OAI-PMH service the ECLAP metadata content that is ready for publication to Europeana. The publication to Europeana will be integrated with the possibility to check for eventual duplicates both on ECLAP and on Europeana.

In Section 4 the status of the multilingual aspects is reported. Section 4.1 reports on the current status on multilingual metadata editing, Section 4.2 on automatic metadata translation as well as metadata (translation) validation. In Section 4.3 the current status of multilingual metadata indexing & search is provided. Section 4.4 reports on the current status of the translations to be used for the texts presented in the ECLAP portal. Section 4.5 reports on the multilingual taxonomy editor and Section 4.6 on the status of multilingual metadata management on mobile applications for iOS, WindowsPhone7 and Android devices.

Section 5 reports the current status of the portal accessibility for impaired people.

The part related to section 4 and 5 enhances what has been reported in "DE3.2 Accessibility and Multilingual support for ECLAP solution", in the "DE 3.3.1 Infrastructure: Content and Metadata processing and semantification".

1.1   Integration and interoperability of the ECLAP portal with Europeana

One of the main duty of ECLAP project is to provide metadata for Europeana to enrich the Europeana dataset with valuable performing arts content. In order to provide metadata to Europeana the ECLAP metadata model has to be mapped to EDM the new Europeana Data Model, in section 3.2 is reported the ECLAP metadata schema and in section 3.3 is reported how these metadata has been mapped to EDM Object Centric schema. Europeana EDM defines also an Event Centric schema but currently the ingestion of content described in this way it is not supported. However since performing arts content is very event based a possible mapping of ECLAP schema using the Event Centric schema has been defined (see section 3.3). Moreover Europeana EDM also supports the description of aggregated content and since ECLAP provides tools to aggregate content (playlists and collections) a possible mapping of playlists and collections to EDM has been defined, however europeana currently does not support the ingestion of aggregated content.

For the publication of content on Europeana an OAI-PMH server has been implemented, when a content reaches the 'Published' state in the ECLAP workflow model the metadata of this content is published on the OAI-PMH server so europeana can regularly harvest the repository and update their portal.

One possible problem that may arise is the presence of duplicates, meaning that the same content may be present on ECLAP with different metadata or the content/metadata may be already present on Europeana because provided by other content providers. To try to cope with this problem a duplication checking service will be implemented (see section 3.6.1 for details) using the Europeana API to check if objects with the 'same' metadata is already present on Europeana and using fingerprints to check if the same content has been already provided.

Since Europeana provides an API to query the rich Europeana dataset when the user searches something on ECLAP the same query is made on Europeana and some results are shown. This tool will be improved to take into account also the GPS position of the user, to query using also the fields enriched by Europeana and to eliminate from search results content coming from ECLAP

1.2   Accessibility and multilingual support for ECLAP solution

The Accessibility support focuses on the configurations and decisions taken to cope with accessibility aspects of the Metadata Ingestion Portal, ECLAP Social Service Portal, and the Mobile Tools Portal. The term Web accessibility refers to the strategies, guidelines, and resources to help make the ECLAP portal accessible to people of all abilities and disabilities. In order to ensure the accessibility of the ECLAP portals, we considered the recommendations described in the "Web Content Accessibility Guidelines 2.0" [6] document which is a World Wide Web Consortium (W3C) recommendation.

Multilingual support in ECLAP copes with the following aspects: metadata editing and translation, multilingual indexing and queries, multilingual taxonomy, multilingual GUI, multilingual metadata on mobile applications.
Regarding metadata editing and translation support it is based on metadata translation in different languages. Such operation is a kind of metadata enrichment and it can be manually and/or done automatically using an external service. The ECLAP Metadata Editor allows performing metadata editing manually. This tool provides a view where all metadata are organized according the languages managed by the portal and the user can interact and modify each metadata. To know how to use the ECLAP Metadata Editor as metadata validator, please refer to the section 4.1.4 of "DE 3.3.1 Infrastructure: Content and Metadata processing and semantification". No further updates are planned for this module.

The automatic approach for metadata translation is offered by the 'Automatic translation' AXCP Rule running in the ECLAP Back Office AXCP GRID. For more details, please refer to the section 4.2.1 "Content and metadata production" of "DE 3.3.1 Infrastructure: Content and Metadata processing and semantification". An automatic metadata translation back-office process has been defined and implemented by using the Google Translate 1.0 API in the next step such process will be finalized considering to use Google Translate 2.0 API or another translation service.

About multilingual indexing and queries, simple full-text search and advanced search are available for the user. Simple search is in the top center of the portal, and it allows the user to refine his search with a basic content type menu (archive, audio, cross-media etc.), while the advanced search provides extended functionalities (i.e. metadata search, or content search filtered by partner and language). Tthe advanced search section allows multilanguage queries. Every document is indexed in its original language with its original and translated metadata; taxonomies and groups associated with content are indexed too for each available language. The user can filter for language or for partner from the first advanced search tab. No further updates are planned for this module.

About the multilingual taxonomy, the main functionalities were defined as such:
-        Adding/editing/removing terms to build the taxonomy (by the administrator user)
-        Translating the taxonomy terms into ECLAP's 13 languages (by content partner users)
-        Exporting the multilingual taxonomy to XML and XML/RDF (by the administrator user)
All of the above functionalities were implemented and integrated in the portal. No further updates are planned for this module. For more details "DE3.2: Accessibility and Multilingual Support for ECLAP

Solution" described the functional design of the multilingual taxonomy editor (See DE3.2, section 9: Multilingual Taxonomy Editor). The goal of the taxonomy was to further enhance the multilingual searching capabilities on the ECLAP portal.

Regarding multilingual GUI, in ECLAP all of the static elements of the GUI are automatically translated using machine translation. As machine translation does not yield perfect translations, partners of the ECLAP consortium, representing the different languages used in the portal, need to be able to report and correct translation mistakes. For this, in DE3.2, a workflow was described to offer project partners a format to convey translation corrections to the developers of the portal. For this specific process there are no updates planned for the future. Translations and corrections of automatic translations will start in January 2012, using the basic format described in DE3.2.

Finally, multilingual metadata on mobile applications for iPhone/iPad and Windows Phone 7 allow downloading content from ECLAP portal and using it locally. Both applications "Content Organizer" are available on the iTunes App Store and on the Windows Marketplace.
The user with the mobile application can:
- Download content and multilingual metadata from the portal.
- Access to the multilingual metadata of the content downloaded.
- Open the content.
- Search for keywords on the locally stored metadata.
- Browse the downloaded content via taxonomy.

For both the iPhone/iPad and WindowsPhone7 applications the standard internationalization features of iOS and WindowsPhone7 has been used. It allows using the English and Italian user interfaces (the translations for other languages can be done quite easily), if the device language set is not English or Italian the English one is used. For the metadata shown to the user the application tries to show the metadata in the current device language, if not present the English metadata is used. Further updates will allow: i) translating the GUI in other languages (French, Spanish,…), ii) implementing multilingual GUI for the Android application, and iii)improving the Android application to store metadata in all languages (not only one) and search in all languages.

1.3 Conclusions

The following table briefly reports the work done and the work to be done or to be completed for the various sections.

Description	Work done	Work to be done/completed
Providing metadata to Europeana	• Mapping ECLAP metadata schema to EDM Object centric (via an XSLT) • Setup of an OAI-PMH server • Setup of the infrastructure for publishing metadata to OAI-PMH and for exporting metadata in general	• Finalize mapping ECLAP metadata to EDM Event centric • Finalize mapping of Collections/Playlists to EDM • Setup of validation and duplication avoidance service
Using Europeana API	• A search widget block to search on Europeana is available on ECLAP portal	• To be improved using user GPS position • To be improved using Europeana enriched fields • Avoid to show ECLAP results on europeana
Multilingual metadata editing	• Implemented the metadata editing service	• None

Automatic metadata translation	• A draft implementation of automatic metadata translation using Google Translate 1.0 API is available	• To be finalized the metadata translation rule considering using Google Translate 2.0 API or another translation service
Metadata validation	• A manual metadata validation workflow is available	• The rule for automatic metadata checking for publication needs to be finalized as well as the relative metrics need to be defined
Multilingual indexing & queries	• Implemented the indexing & query support	• None
Correction of Multilingual GUI	• Setup of the methodology to correct the errors in the translations of the texts shown on the portal	• Implement the methodology defined
Multilingual taxonomy editor	• Implemented and setup of taxonomy editor	• Integrate it in the current portal using the translation table
Multilingual GUI on mobile	• iOS and WindowsPhone7 applications support English and Italian GUI	• Translate the GUI in other languages (French, Spanish,…) • Implement multilingual GUI for the Android application
Multilingual metadata on mobile	• The iOS and WindowsPhone7 application allow showing and searching metadata in all languages available	• Improve the Android application to store metadata in all languages (not only one) and search in all languages
Accessibility support	• Defined guidelines for accessibility evaluation • Evaluated accessibility of the ECLAP Portal, the Mobile portal and the Metadata Mapping portal	• Evaluate again the accessibility of the portals for the next version of the deliverable

2 Introduction

This deliverable reports on the work done in WP3.3 *Accessibility and Multilingual support for ECLAP solution* and WP3.4 *Interoperability with Europeana*. On the part related with WP3.3 it enhances what has been reported in DE3.2 *Accessibility and Multilingual support for ECLAP solution*.

WP3.3 Accessibility and Multilingual support for ECLAP solution

Information or objects in ECLAP need to be searchable and presentable independent of the language. Therefore, multilingual interoperability is a key task in the development of the ECLAP infrastructure. This task is particularly concerned with enabling ECLAP users to navigate and find relevant content not described in their native or preferred language.

This is also a requirement from Europeana. Content in Europeana is described and accessible through its metadata descriptions (or surrogate descriptions), which are normalised and stored in a standardised way, but appear in their original language. The objective of this task is to ensure truly multilingual interoperability for all features within ECLAP and with Europeana.

This task will implement solutions to cope with multilingual access issues for users and objects alike within ECLAP. In order to provide multilingual access capabilities for ECLAP, the following services are proposed:

- Multilingual thesauri SKOSification. An automatic service will enable the SKOSification of the selected multilingual thesauri.
- Multilingual mapping tool for the alignment of controlled vocabularies and SKOS Thesauri. This service will be used to automatically align the SKOS thesauri.

- Automatic translation tools. Having SKOSified and aligned the multilingual thesauri, a translation tool will produce the necessary multilingual representations of the Users' queries. The WorldLingo APIs will be used to create machine queries. WorldLingo has been implemented successfully by partner BEELD EN GELUID in the framework of the Multimatch project.
- Coverage of 12 major languages for metadata: Danish, Polish, Slovenian, Greek, English, Italian, French, Dutch, Spanish, Hungarian, German, Portuguese

WP3.4 Interoperability with Europeana
This task is focussed on the set up and customisation of the integration module with Europeana and other external portal that would be interested in accessing to ECLAP content, or to receive posting of content from ECLAP community, a sort of B2B distribution.
The activities performed in this task are:
- Review of Europeana integration model, including metadata, identification model, semantic modelling, API for direct call, etc.
- Development of content and metadata integration/mapping with Europeana procedures
- Development of content modelling and gathering procedures, OAI-PMH
- Development of Interoperability with OAI-PMH, SBN, MAG, Dublin Core, etc.
- Development of an Interoperability module for multiple identification models and standards: ISBN, ISAN, ISRC, UOID, etc.
- Development and integration of Web Services for integration with Europeana Posting content on Europeana, periodically and sporadically according to their readiness
- Collecting logs and errors regarding content
- Development of a query support for inspecting Europeana to look for similar content before posting it. This procedure will be set up to establish connection and to avoid posting duplicated content,

To be noted that when the proposal was prepared the Europeana Data Model was not present and a great part of the work done is in adapting to this new model.

3 Integration with Europeana

In this section are reported decisions taken and the tools developed to integrate ECLAP automated back office with Europeana, detailed activities performed in posting content on Europeana, possible errors, corrections made, etc.

3.1 Europeana EDM – current status

Europeana Data Model is going to become the standard way to submit metadata to europeana but now (Dec. 2011) EDM is still in a prototyping phase, and not all the ingestion tools at europeana have been updated to support EDM (e.g. Content Checker). The ingestion with EDM is done getting metadata in the original XML schema and using an XSLT to map the original schema to the EDM schema. Metadata can be provided both as single XML files or by using an OAI-PMH service.

EDM can describe a wide range of cases (see [3], [4] for details) but in the simplest case it provides:

- a *ProvidedCHO* element representing the Cultural Heritage Object (CHO) that is going to be provided to europeana (e.g. a painting, a sculpture, a book, a manuscript), this element have associated the metadata (using dublin core) and the relations with the contextual information (e.g. Spatial, Temporal, Events) of the CHO;
- a *WebResource* element that is associated with an URL, that is used to represent the CHO on the Web, it can be a raw resource (e.g. an image) or a complete web page showing the resource, it can have specific metadata, in the current implementation only the dc:rights and edm:rights element can be provided;
- an *Aggregation* element that is used to associate the *ProvidedCHO* with the *WebResource* and with other information like the provider (ECLAP project in our case), the data provider (the ECLAP partner in our case).

Moreover other contextual information can be provided as:

- *Concepts* eventually organized in a taxonomy, representing abstract concepts (as subjects) to be associated with the CHO;
- *Agents*, representing persons or institutions that were important in the life of the CHO;
- *Places*, representing places where the CHO is present or it is depicted in the CHO;
- *TimeSpans*, representing a time period relevant for the CHO.
- *Events*, representing important events in the life of the CHO. Events can be related with *Agents* participating in an event, as well as a *TimeSpan* and a *Place* when/where the event occurred. The current implementation of EDM at europeana does not support *Events* that will be available in a future version.

All these elements are identified using an URI.

3.2 ECLAP metadata schema

In this section the description of the current ECLAP metadata schema is reported.

The metadata schema is divided in the following parts:

- General information about the content
- Information about the digital resource
- Information on IPR
- GeoSpatial information about the resource
- Dublin Core metadata (DC and DCTERMS)
- Performing Arts metadata
- Taxonomy based classifications
- ECLAP Groups
- ECLAP Aggregations (Collections & Playlists)

3.2.1 General information

axoid
unique identifier identifying the content on the portal, the id is based on UUID identification

url
The url on the portal where the content is available it is of the form:
http://www.eclap.eu/drupal?q=home&axoid=<axoid>

nid
drupal node id identifier, id associated by drupal to the content.

Version
Version number of the content, it is incremented when an update is performed

InsertUpdateTime
Date and time when the content was uploaded or when it was updated. The date is in the format YYYY-MM-DDThh:mm:ss.

ProviderId
ECLAP provider acronym used to identify the provider

ProviderName
Complete name of the provider

DefaultMetadataLanguage
default language used for the description of the resource, it should be a 2 letter ISO language code.

3.2.2 Digital resource information

Format
The resource format it can be "audio, video, document, image, crossmedia, archive, tool, playlist, collection"

Type
Specifies better the resource format for crossmedia (html, flash) and document (document, epub, pdf, excel, slide, braille music)

Width
Width of the frame for image or video

Height
Height of the frame for image or video

Duration
Duration of audio or video resource in the form "hh:mm:ss.mm"

AvlMDVideo
Is "yes" if a medium definition video resource is available

AvlHDVideo
Is "yes" if a high definition video resource is available

Extension
The file extension for the digital resource.

Preview

Url used for the content preview, for video it is an animated gif.

AvlForPDA
Is "yes" if a version for WindowsMobile 6.5 has been produced

AvlForIPhone
Is "yes" if the content can be used on iPhone or in general on Smart Phones (iOS, Android, WindowsPhone7)

AvlForPC
Is "yes" if the content can be used on a Personal Computer (Windows/MAC/Linux)

3.2.3 IPR information
IsPublic
Is "yes" if the IPR model associated with the content is public

IPRTitle
The title given to the IPR model associated with the content

IPRDescription
The description given to the IPR model associated with the content

EuropeanaRightsUrl
The Europeana Url given to the IPR model associated with the content

LicenseUrl
The license url given to the IPR model associated with the content

3.2.4 GeoSpatial Information
This section can provide a set of GPS coordinates
Latitude
The decimal representation of the latitude

Longitude
The decimal representation of the longitude

Radius
The radius in meters of the area where the content is "active"

3.2.5 Performing arts metadata
In this section are reported the metadata specific for performing arts.

FirstPerformance Place
Name of the theatre or venue where the performance taken place for the first time.

Examples	"Théâtre des Bouffes du Nord"
Count (1, 0..1, 0..many, 1..many)	0..1
Notes	the first performance is the première, therefore its "place", might not correspond with the place in which the show was recorded. For example: the opening night of "The Tragedy of Hamlet" directed by P. Brook might be held at: "Théâtre des Bouffes du Nord",

	but what we are looking at on the ECLAP portal might be a video of the performance held months later - while the show was touring – at "The Globe Theatre"
Refinement of	EDM Place

FirstPerformance City
Name of the city where the first performance taken place.

Examples	"Paris"
Count (1, 0..1, 0..many, 1..many)	0..1
Notes	the first performance is the première, therefore its "City", might not correspond with the city in which the show was recorded. For example: the opening night of "The Tragedy of Hamlet" directed by P. Brook might be held in: "Paris", but what we are looking at on the ECLAP portal might be a video of the performance held months later - while the show was touring – in "London"
Refinement of	EDM Place

FirstPerformance Country
Name of the country where the first performance taken place

Examples	"France"
Count (1, 0..1, 0..many, 1..many)	0..1
Notes	the first performance is the première, therefore its "Country", might not correspond with the country in which the show was recorded. For example: the opening night of "The Tragedy of Hamlet" directed by P. Brook might be held in: "France", but what we are looking at on the ECLAP portal might be a video of the performance held months later - while the show was touring – in "England".
Refinement of	EDM Place

FirstPerformance Date
Date of the first performance

Examples	"2000-11-20"
Count (1, 0..1, 0..many, 1..many)	0..1
Notes	the first performance is the première, therefore its "date", might not correspond with the date in which the show was recorded. For example: the opening night of "The Tragedy of Hamlet" directed by P. Brook might be held in: "2000-11-20", but what we are looking at on the ECLAP portal might be a video of the performance held months later, in "2001-04-05"
Refinement of	DCTerms.issued

Performance Place
Name of the theatre or venue where the shown performance taken place

Examples	"The Globe Theatre"
Count	0..1

(1, 0..1, 0..many, 1..many)	
Notes	the first performance is the première, therefore its "place", might not correspond with the place in which the show was recorded. For example: the opening night of "The Tragedy of Hamlet" directed by P. Brook might be held at: "Théâtre des Bouffes du Nord", but what we are looking at on the ECLAP portal might be a video of the performance held months later - while the show was touring – at "The Globe Theatre"
Refinement of	DCTerms.spatial? or EDM Place

Performance City

Name of the city where the shown performance taken place.

Examples	"London"
Count (1, 0..1, 0..many, 1..many)	0..1
Notes	the first performance is the première, therefore its "City", might not correspond with the city in which the show was recorded. For example: the opening night of "The Tragedy of Hamlet" directed by P. Brook might be held in: "Paris", but what we are looking at on the ECLAP portal might be a video of the performance held months later - while the show was touring – in "London"
Refinement of	DCTerms.spatial

Performance Country

Name of the country where the shown performance taken place

Examples	"England"
Count (1, 0..1, 0..many, 1..many)	0..1
Notes	the first performance is the première, therefore its "Country", might not correspond with the country in which the show was recorded. For example: the opening night of "The Tragedy of Hamlet" directed by P. Brook might be held in: "France", but what we are looking at on the ECLAP portal might be a video of the performance held months later - while the show was touring – in "England".
Refinement of	DCTerms.spatial

Performance Date

Date of the shown performance

Examples	"2001-04-05"
Count (1, 0..1, 0..many, 1..many)	0..1
Notes	the first performance is the première, therefore its "date", might not correspond with the date in which the show was recorded. For example: the opening night of "The Tragedy of Hamlet" directed by P. Brook might be held in: "2000-11-20", but what we are looking at on the ECLAP portal might be a video of the performance held months later, in "2001-04-05"
Refinement of	DCTerms.issued

PerformingArtsGroup

Name of the theatre or dance company or musical group (if present)

Examples	"Momix"
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	None
Refinement of	DC.creator

PlotSummary

Summary of the plot

Examples	"Prince Hamlet mourns both his father's death and his mother, Queen Gertrude's remarriage to Claudius. The ghost of Hamlet's father appears to him and tells him that Claudius has poisoned him: Hamlet swears revenge, etc."
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	None
Refinement of	DC.description

Cast

Name/Names of a member of the cast.

Examples	"Ryszard Cieślak, Rena Mirecka, Antoni Jahołkowski, Mieczysław Janowski, Maja Komorowska, Stanislaw Scierski"
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	Use this element only if the Professional elements cannot be used, as the case of a cast written in a single text that cannot be easily split in all the different professional people
Refinement of	DC.contributor

PerformersAndCrew

Name/Names of a performers and crew of a performance.

Examples	...
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	Use this element only if the Professional elements cannot be used, as the case of a performers written in a single text that cannot be easily split in all the different professional people
Refinement of	DC.contributor

Professional

A list of the people involved in the performance indicating which role each person had in the performance (eg. Actor, director, set designer etc.). It includes all the information listed in a playbill, such as the artistic cast of the show and the technicians, but also the names of the troupe which recorded the performance (eg. Cameraman, Director of Photography, etc.). Possible roles are:

- Acrobat
- Actor
- Adaptator
- Architect

- Assistant_director
- Casting
- Choreographer
- Clown
- Composer
- Concept_originator
- Costume_designer
- Critic
- Dancer
- Director
- Dramaturge
- Hairdresser
- Light_designer
- Make-up_artist
- Marketing_manager
- Mask_designer
- Mime
- Musician
- Patron
- Performer
- Playwright
- Producer
- Puppet_designer
- Scenographer
- Seamster
- Set_builder
- Set_designer
- Singer
- Sound_designer
- Stage_manager
- Technician
- Theatre_manager
- Theoretician
- Translator
- Other

Examples	…
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	None
Refinement of	DC.contributor

Object
Objects used in the performance, (i.e. Sets, Costumes, Props, Programs, Prints, Drawings,...)

Examples	…
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	
Refinement of	DC.description

Genre
The genre in which the work can be categorized (i.e. Ballet, Butho, Commedia dell'Arte, Drama, Feast Flamenco, etc)

Examples	"Tragedy"
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	we will work on a shared vocabulary for this
Refinement of	DC.subject

PerformingArtType
Type of performing art present in the content.

Examples	"theatre"
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	identified in WP4 as cinema, dance, music, theatre, performance art
Refinement of	DC.type

HistoricalPeriod
Historical period the topic of the resource refers to.

Examples	"XV century"
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	None
Refinement of	DCTerms.temporal

ArtisticMovementAndActingStyle
Artistic movement and acting styles in which the work can be categorized (e.g. Classicism, Dada, Epic, Expressionism, etc.)

Examples	"Futurism"
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	we will work on a shared vocabulary for this
Refinement of	DC.type

ManagementAndOrganization
management and organization…

Examples	…
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	Deprecated

RecordingDate
Date of creation of the digital object,

Examples	…
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	Use this element in case what it is recorded is not a public performance (e.g. an interview) otherwise use the Performance Date
Refinement of	DC.date

PersonRecord
Credits for the audio or video recording

Examples	…

Count (1, 0..1, 0..many, 1..many)	0..many
Notes	Deprecated, use Professional elements
Refinement of	DC.contributor

PieceRecord

Credits for the text or image. The meaning of this field is a bit complex.... The text we are dealing with in this field is the script of the play. We intend this field to be filled out with the original title of the performance (eg. Medea) - which might differ from the title of the item (eg. Photo of Medea_2) - and with the name of the person who wrote the script. The records pertaining to the novel or the literary work which inspired the script should be mapped in the field "reference" instead; the field "reference" should also include the title of the novel and its author(s).

Examples	Title: Il Principe Costante; scenario: Jerzy Grotoski; adaptation: Julius Slowacki
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	None
Refinement of	DCTerms.references

ProductionRecord

Credits of the production team. the name of the producer(s) and of other people involved in the organization.

Examples	…
Count (1, 0..1, 0..many, 1..many)	0..many
Notes	Deprectaed, use the Professional element with the appropriate role
Refinement of	DC.contributor

3.2.6 DC – dublin core metadata

This section contains information about the dublin core metadata to be associated with the content to be ingested:

title

The name given to the resource. Typically, a Title will be a name by which the resource is formally known. The title of the original analog or born digital object. The title should be significant.

Examples	"Romeo and Juliet"
Count (1, 0..1, 0..many, 1..many)	1..many
Language	Mandatory
Notes	None

creator

An entity primarily responsible for making the content of the resource. Examples of a Creator include a person, an organization, or a service. Typically the name of the Creator should be used to indicate the entity. In ECLAP, the name of Partner uploading is kept automatically in a separate field. This is the name of the creator of the original analog or born digital object. . This field should be used only to indicate the creator of the work of art (usually the director for a performance, the author if we are dealing with a book, the composer if we are uploading a script and so on). Often, in devised work, the creator might be the whole company or the actors might collaborate with the director. Nevertheless I guess we need to set a rule to be applied to every situation, so that I would consider actors and other artistic figures as contributors and eventually explain in the field "description" if their role as creator of the performance was capital.

Examples	…
Count (1, 0..1, 0..many, 1..many)	0..many

Language	Optional
Notes	None

subject

The topic of the content of the resource. Typically, a Subject will be expressed as keywords or key phrases or classification codes that describe the topic of the resource. Recommended best practice is to select a value from your own classification scheme. This is the subject of the original analog or born digital object.

Examples	…
Count (1, 0..1, 0..many, 1..many)	0..many
Language	Mandatory
Notes	None

description

An account of the content of the resource. Description may include but is not limited to: an abstract, table of contents, reference to a graphical representation of content or a free-text account of the content. A description of the original analog or born digital object.

Examples	…
Count (1, 0..1, 0..many, 1..many)	0..many
Language	Mandatory
Notes	None

publisher

The entity responsible for making the resource available. Examples of a Publisher include a person, an organization, or a service. Typically, the name of a Publisher should be used to indicate the entity. In ECLAP, the name of Partner that has provided the content is automatically tracked and stored in a different field. The name of the publisher of the original analog or born digital object.

Examples	In case of a performance review the name of the newspaper where the review was published
Count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
Notes	None

contributor

An entity responsible for making contributions to the content of the resource. Examples of a Contributor include a person, an organization or a service. Typically, the name of a Contributor should be used to indicate the entity. In most cases, the authors of a document are listed here. The name of contributors to the original analog or born digital object. This could be a person, an organisation or a service.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

date

A date associated with an event in the life cycle of the resource. Typically, Date will be associated with the creation or availability of the resource. Recommended best practice for encoding the date value is defined in a profile of ISO 8601 [Date and Time Formats, W3C Note, http://www.w3.org/TR/NOTE-datetime] and

follows the YYYY-MM-DD format. If the full date is unknown, month and year (YYYY-MM) or just year (YYYY) may be used. Many other schemes are possible, but if used, they may not be easily interpreted by users or software. Use for a significant date in the life of the original analog or born digital object. Use dcterms:temporal (or dc:coverage) if the date is associated with the topic of the resource.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

type

The nature or genre of the content of the resource. Type includes terms describing general categories, functions, genres, or aggregation levels for content. Recommended best practice is to select a value from a controlled vocabulary (for example, the DCMIType vocabulary http://dublincore.org/documents/dcmi-type-vocabulary/). To describe the physical or digital manifestation of the resource, use the FORMAT element. The type of the original analog or born digital object as recorded by the content holder, this element typically includes values such as photograph, painting, sculpture etc.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Mandatory
notes	None

format

The physical or digital manifestation of the resource. Typically, Format may include the media-type or dimensions of the resource. Examples of dimensions include size and duration. Format may be used to determine the software, hardware or other equipment needed to display or operate the resource. Recommended best practice is to select a value from a controlled vocabulary (for example, the list of Internet Media Types [http://www.iana.org/ assignments/media-types/] defining computer media formats). The unqualified element includes file format, physical medium or dimensions of the original and/or digital object. Use this element for the file format of the digital object or born digital originals. Internet Media Types [MIME] are highly recommended (http://www.iana.org/assignments/media-types/). Use of the more specific elements dcterms:extent (dimensions) and dcterms:medium (physical medium) is preferred where appropriate.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

identifier

An unambiguous reference to the resource within a given context. Recommended best practice is to identify the resource by means of a string or number conforming to a formal identification system. Examples of formal identification systems include the Uniform Resource Identifier (URI) (including the Uniform Resource Locator (URL), the Digital Object Identifier (DOI) and the International Standard Book Number (ISBN). This is the identifier for the original analog or born digital object.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

source

A Reference to a resource from which the present resource is derived. The present resource may be derived from the Source resource in whole or part. Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system. In general, include in this area information about a resource that is related intellectually to the described resource but does not fit easily into a Relation element. In ECLAP, this value should be the URL or the filename of the original resource. The file uploaded and the URL provided in the upload form are tracked automatically in different fields. This element can be used for several different types of source that are related to the object (such as reference sources). The name of the content holder should no longer be recorded here as a new element.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

language

A language of the resource. Use ISO 639 two letter language tags (it, en, fr, de, el, …) Use this element for the language of textual objects and also where there is a language aspect to other objects e.g. sound recordings, posters, newspapers etc). If there is no language aspect to the digital object (e.g. a photograph), please ignore this element. This element is not for the language of the metadata of a resource, which may be described in xml:lang attribute. In case the digital object presents more languages, use more language elements, one for each language.

examples	en, it, fr, de, el, hu, es, ca
count (1, 0..1, 0..many, 1..many)	0..many
language	No
notes	None

relation

A reference to a related resource. Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system. This is information about resources that are related to the original analog or born digital object.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

coverage

The extent or scope of the content of the resource. Coverage will typically include spatial location (a place name or geographic co-ordinates), temporal period (a period label, date, or date range) or jurisdiction (such as a named administrative entity). Recommended best practice is to select a value from a controlled vocabulary (for example, the Thesaurus of Geographic Names [Getty Thesaurus of Geographic Names, http://www. getty.edu/research/tools/vocabulary/tgn/]). Where appropriate, named places or time periods should be used in preference to numeric identifiers such as sets of co-ordinates or date ranges. Coverage is the unqualified spatial or temporal coverage of the original analog or born digital object. Use of the more specific dcterms:spatial and dcterms:temporal elements is preferred where possible.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

rights

Information about rights held in and over the resource. Typically a Rights element will contain a rights management statement for the resource, or reference a service providing such information. Rights information often encompasses Intellectual Property Rights (IPR), Copyright, and various Property Rights. If the rights element is absent, no assumptions can be made about the status of these and other rights with respect to the resource. This is a free text element and should be used for information about intellectual property rights or access arrangements for the digital object that is additional to the controlled value provided in europeana:rights.

examples	"All rights reserved"
count (1, 0..1, 0..many, 1..many)	0..many
language	Mandatory
notes	None

3.2.7   DCTERMS – dublin core terms metadata

In this section are reported the dcterms elements that are supported, that are the ones supported by Europeana.

alternative

An alternative name given to the resource. Typically, an Alternative title will be a name by which the resource is alternatively referred and it is different from the formal Title. Any alternative title by which the original analog or born digital object is known. This can include abbreviations or translations of the title.

Examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Mandatory
notes	None

tableOfContents

A list of subunits of the resource. A list of the units within the original analog or born digital resource object.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Mandatory
notes	None

created

Date of creation of the resource. This is the date when the original analog or born digital object was created.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

issued

Date of formal issuance (e.g., publication) of the resource. The date when the original analog or born digital object was issued or published.

examples	…
count	0..many

(1, 0..1, 0..many, 1..many)	
language	Optional
notes	None

extent

The size or duration of the resource. Refinement of format. Size or duration of the digital object and the original object may be recorded.

examples	"30 pages", "01:15:20"
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

medium

The material or physical carrier of the resource. Refinement of dc:format.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

isVersionOf

A related resource of which the described resource is a version, edition, or adaptation. Changes in version imply substantive changes in content rather than differences in format. Refinement of dc:relation. See also dcterms:hasVersion.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

hasVersion

A related resource that is a version, edition, or adaptation of the described resource. Changes in version imply substantive changes in content rather than differences in format. Refinement of dc:relation. See also dcterms:isVersionOf. Use dcterms:hasFormat for differences in format.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

isReplacedBy

A related resource that supplants, displaces, or supersedes the described resource.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

replaces

A related resource that is supplanted, displaced, or superseded by the described resource.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

isRequiredBy

A related resource that requires the described resource to support its function, delivery, or coherence.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

requires

A related resource that is required by the described resource to support its function, delivery, or coherence.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

isPartOf

Is Part Of - A related resource in which the described resource is physically or logically included. Use for the name of the collection which the digital object is part of.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

hasPart

A related resource that is included either physically or logically in the described resource. Refinement of dc:relation. See also dcterms:isPartOf.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

isReferencedBy

Is Referenced By: A related resource that references, cites, or otherwise points to the described resource.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

references

A related resource that is referenced, cited, or otherwise pointed to by the described resource.

examples	…

count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

isFormatOf

A related resource that is substantially the same as the described resource, but in another format. Refinement of dc:relation. See also dcterms:hasFormat.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

hasFormat

A related resource that is substantially the same as the pre-existing described resource, but in another format. Refinement of dc:relation. See also dcterms:isFormatOf. Use dcterms:hasVersion for differences in version.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

conformsTo

An established standard to which the described resource conforms. Refinement of dc:relation. The names of standards that the digital object (digitized or born digital) complies with and which are useful for the use of the object.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

spatial

Spatial characteristics of the resource. Information about the spatial characteristics of the original analog or born digital object, i.e. what the resource represents or depicts in terms of space. This may be a named place, a location, a spatial coordinate or a named administrative entity.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

temporal

Temporal characteristics of the resource. The temporal characteristics of the original analog or born digital object i.e. what the resource is about or depicts in terms of time. This may be a period, date or date range.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

provenance

A statement of any changes in ownership and custody of the resource since its creation that are significant for its authenticity, integrity, and interpretation. The statement may include a description of any changes successive custodians made to the resource. This relates to the ownership and custody of the original analog or born digital object.

examples	…
count (1, 0..1, 0..many, 1..many)	0..many
language	Optional
notes	None

3.2.8 Taxonomy Classification

For each drupal taxonomy term associated with the content it is reported:

label

The label of the term in each available language

id

attribute with the drupal id for the term

root

attribute with the id of the root term where the term is a descendent.

vid

attribute with the id of the vocabulary of the term

path

attribute with the term ids separated by spaces from the root to the term (e.g. "664 668")

3.2.9 ECLAP Groups

For each drupal og group associated with the content it is reported:

label

the label of the group

id

attribute with the id of the group

3.2.10 ECLAP Aggregations

If the content is a playlist or a collection are reported the set of axoids that belong to the playlist/collection.

For playlists more information is provided for each content in the playlist:

For audio and video:

startTime

attribute with the time instant in seconds from the audio/video start representing the time in the resource to start resource Audio/Visual rendering, if omitted the resource start time is intended

endTime

attribute with the time instant in seconds from the audio/video start representing the time in the resource to end the resource Audio/Visual rendering, if omitted the resource end time is intended

For images:

duration

the duration in seconds of the image display

3.3 Mapping ECLAP metadata to EDM Object Centric

In this section is reported how the ECLAP metadata is mapped to EDM using an Object centric perspective (the only one that now europeana supports), it have to be noted that in the material to be provided to europeana in many cases it does not represent strictly an Object (like a book, a painting, a sculpture, …) while often it represents an event happened in the past, the performance.

In the following is reported how the ECLAP metadata are mapped to EDM elements. The Dublin core elements (dc and dcterms) are mapped directly to the ProvidedCHO elements while the PerformingArts metadata are mapped to DublinCore elements where possible, also the taxonomy associations are mapped to DublinCore depending on the top hierarchy element (Subject is mapped to dc:subject, PerformingArtType to dc:type, HistoricalPeriod to dcterm:temporal, etc.).
For each ECLAP content is provided: one *ProvidedCHO* element, one *WebResource* element representing the ECLAP portal page showing the content and one *Aggregation* element aggregating the two preceding ones. The @ sign indicate an attribute of the element.

edm:ProvidedCHO

@rdf:about	*axoid*
dcterms:*	All ECLAP dcterms fields
dcterms:issued	"<PerfArts.FirstPerformance.Date> (first performance)"
dcterms:issued	PerfArts.Performance.Date
dcterms:spatial	PerfArts.Performance.Place
dcterms:spatial	PerfArts.Performance.City
dcterms:spatial	PerfArts.Performance.Country
dcterms:temporal	PerfArts.HistoricalPeriod
dcterms:temporal	
@rdf:resource	"http://www.eclap.eu/Classification/HistoricalPeriod/<histPeriodId>"
dcterms:references	PerfArts.PieceRecord
dc:*	All ECLAP dc fields
dc:date	PerfArts.RecordingDate
dc:creator	PerfArts.PerformingArtsGroup
dc:contributor	"<PerfArts.Professional> (<role>)"
dc:contributor	PerfArts.Cast
dc:contributor	PerfArts.PerformersAndCrew
dc:contributor	PerfArts.PersonRecord
dc:contributor	PerfArts.ProductionRecord
dc:description	PerfArts.PlotSummary
dc:description	PerfArts.Object
dc:subject	
@rdf:resource	"http://www.eclap.eu/Classification/Subject/<subjId>"
dc:subject	PerfArts.Genre
dc:subject	
@rdf:resource	"http://www.eclap.eu/Classification/Genre/<genreId>"
dc:type	PerfArts.PerformingArtsType
dc:type	
@rdf:resource	"http://www.eclap.eu/Classification/PerformingArtType/<paTypeId>"
dc:type	PerfArts.ArtisticMovementAndActingStyle
dc:type	
@rdf:resource	"http://www.eclap.eu/Classification/ArtisticMovementAndActingStyle/<amasId>"
edm:type	based on Resource.Format (video, audio, image, document)

The *histPerdiodId, subjId, genreId, paTypeId, amasId* are the ids of the terms in the ECLAP taxonomy to which the content is associated with. The SKOS taxonomy defining the concepts used are provided to europeana using a specific file.

edm:WebResource

@rdf:about	"http://www.eclap.eu/drupal?q=home&axoid=<*axoid*>"
edm:rights	IPR.EuropeanaRightsUrl

ore:Aggregation

@rdf:about	"<*axoid*>:aggregation"
edm:aggregatedCHO	*axoid*
edm:dataProvider	eclap:ProviderName
edm:provider	"ECLAP, e-library of Performing Arts"
edm:rights	IPR.EuropeanaRightsUrl
edm:isShownAt	"http://www.eclap.eu/drupal?q=home&axoid=<axoid>"
edm:object	eclap:Preview

This mapping should be enhanced by enriching the metadata with associations with Places, TimeSpans, Agents thus integrating the text metadata with an association with an rdf resource coming from linked open data initiatives or well known authority files as VIAF for person names, GeoNames for places etc.

The following is an example of mapping the metadata of an Image from the Dario Fo and Franca Rame Archive.

The source metadata is:

```xml
<eclap:Content axoid="urn:axmedis:00000:obj:36b2407e-0ca0-4f44-892b-ebf254118a2d">
  <eclap:url>http://www.eclap.eu/drupal?q=home&amp;axoid=urn:axmedis:00000:obj:36b2407e-0ca0-4f44-892b-ebf254118a2d</eclap:url>
  <eclap:nid>35923</eclap:nid>
  <eclap:Version>2</eclap:Version>
  <eclap:InsertUpdateTime>2011-08-06T00:36:26</eclap:InsertUpdateTime>
  <eclap:ProviderId>CTFR</eclap:ProviderId>
  <eclap:ProviderName>Dario Fo &amp; Franca Rame Archive</eclap:ProviderName>
  <eclap:DefaultMetadataLanguage>it</eclap:DefaultMetadataLanguage>
  <eclap:Resource>
    <eclap:Format>image</eclap:Format>
    <eclap:Type>image</eclap:Type>
    <eclap:Width>597</eclap:Width>
    <eclap:Height>800</eclap:Height>
    <eclap:Extension>.jpg</eclap:Extension>
  </eclap:Resource>
  <eclap:Platforms>
    <eclap:AvlForPDA>yes</eclap:AvlForPDA>
    <eclap:AvlForIPhone>yes</eclap:AvlForIPhone>
    <eclap:AvlForPC>yes</eclap:AvlForPC>
  </eclap:Platforms>
  <eclap:IPR>
    <eclap:IsPublic>yes</eclap:IsPublic>
    <eclap:IPRTitle>CTFR IPR</eclap:IPRTitle>
    <eclap:IPRDescription>CTFR model</eclap:IPRDescription>
    <eclap:EuropeanaRightsUrl>http://www.europeana.eu/rights/rr-f/</eclap:EuropeanaRightsUrl>
    <eclap:LicenseUrl>http://bpnet.eclap.eu/drupal/?q=node/2862</eclap:LicenseUrl>
  </eclap:IPR>
  <eclap:Preview>http://www.eclap.eu/gif/urn_axmedis_00000_obj_36b2407e-0ca0-4f44-892b-ebf254118a2d.gif</eclap:Preview>
  <eclap:DublinCoreMetadata>
    <dc:description xml:lang="it">Tavole a colori di Dario Fo.</dc:description>
    <dcterms:extent xml:lang="it">1 pagine</dcterms:extent>
    <dc:rights xml:lang="it">Archivio Dario Fo e Franca Rame, alcuni diritti riservati</dc:rights>
    <dc:title xml:lang="it">Sant'Ambrogio - 2005 Testo teatrale di Dario Fo. 32/116</dc:title>
    <dc:type xml:lang="it">Disegni</dc:type>
    <dc:date xml:lang="it">2005</dc:date>
    <dc:language xml:lang="it">it</dc:language>
  </eclap:DublinCoreMetadata>
  <eclap:PerformingArtsMetadata xml:lang="it">
    <eclap:Performance>
      <eclap:Country>Italia</eclap:Country>
    </eclap:Performance>
  </eclap:PerformingArtsMetadata>
```

```
<eclap:Classification>
    <eclap:term id="504" vid="5" root="664" path="664">
        <eclap:label xml:lang="it">Teatro</eclap:label>
        <eclap:label xml:lang="en">Theatre</eclap:label>
        <eclap:label xml:lang="da">Teater</eclap:label>
        <eclap:label xml:lang="nl">Theater</eclap:label>
        <eclap:label xml:lang="fr">Théâtre</eclap:label>
        <eclap:label xml:lang="de">Theater</eclap:label>
        <eclap:label xml:lang="el">Θέατρο</eclap:label>
        <eclap:label xml:lang="hu">Színház</eclap:label>
        <eclap:label xml:lang="pl">Teatr</eclap:label>
        <eclap:label xml:lang="pt">Teatro</eclap:label>
        <eclap:label xml:lang="es">Teatro</eclap:label>
        <eclap:label xml:lang="ca">Teatre</eclap:label>
        <eclap:label xml:lang="sl">Gledališče</eclap:label>
    </eclap:term>
</eclap:Classification>
<eclap:Group id="2862">
    <eclap:label xml:lang="en">Dario Fo &amp; Franca Rame Archive</eclap:label>
</eclap:Group>
</eclap:Content>
```

That is mapped to EDM as:

```
<rdf:RDF …>
    <edm:ProvidedCHO rdf:about="urn:axmedis:00000:obj:36b2407e-0ca0-4f44-892b-ebf254118a2d">
        <dcterms:extent xml:lang="it">1 pagine</dcterms:extent>
        <dcterms:spatial>Italia</dcterms:spatial>
        <dc:description xml:lang="it">Tavole a colori di Dario Fo.</dc:description>
        <dc:rights xml:lang="it">Archivio Dario Fo e Franca Rame, alcuni diritti riservati</dc:rights>
        <dc:title xml:lang="it">Sant'Ambrogio - 2005 Testo teatrale di Dario Fo. 32/116</dc:title>
        <dc:type xml:lang="it">Disegni</dc:type>
        <dc:date xml:lang="it">2005</dc:date>
        <dc:language xml:lang="it">it</dc:language>
        <dc:type rdf:resource="http://www.eclap.eu/Classification/PerformingArtsType/504"/>
        <edm:type>IMAGE</edm:type>
    </edm:ProvidedCHO>

    <edm:WebResource rdf:about="http://www.eclap.eu/drupal?q=home&amp;axoid=urn:axmedis:00000:obj:36b2407e-0ca0-4f44-892b-ebf254118a2d">
        <edm:rights>http://www.europeana.eu/rights/rr-f/</edm:rights>
    </edm:WebResource>

    <ore:Aggregation rdf:about="urn:axmedis:00000:obj:36b2407e-0ca0-4f44-892b-ebf254118a2d:aggregation">
        <edm:aggregatedCHO rdf:resource="urn:axmedis:00000:obj:36b2407e-0ca0-4f44-892b-ebf254118a2d"/>
        <edm:dataProvider>Dario Fo &amp; Franca Rame Archive</edm:dataProvider>
        <edm:provider>ECLAP, e-library for Performing Arts</edm:provider>
        <edm:rights>http://www.europeana.eu/rights/rr-f/</edm:rights>
        <edm:isShownAt rdf:resource="http://www.eclap.eu/drupal?q=home&amp;axoid=urn:axmedis:00000:obj:36b2407e-0ca0-4f44-892b-ebf254118a2d"/>
        <edm:object rdf:resource="http://www.eclap.eu/gif/urn_axmedis_00000_obj_36b2407e-0ca0-4f44-892b-ebf254118a2d.gif"/>
    </ore:Aggregation>
    <skos:Concept rdf:about="http://www.eclap.eu/Classification/PerformingArtsType/504">
        <skos:prefLabel xml:lang="it">Teatro</skos:prefLabel>
        <skos:prefLabel xml:lang="en">Theatre</skos:prefLabel>
        <skos:prefLabel xml:lang="da">Teater</skos:prefLabel>
        <skos:prefLabel xml:lang="nl">Theater</skos:prefLabel>
        <skos:prefLabel xml:lang="fr">Théâtre</skos:prefLabel>
        <skos:prefLabel xml:lang="de">Theater</skos:prefLabel>
        <skos:prefLabel xml:lang="el">Θέατρο</skos:prefLabel>
        <skos:prefLabel xml:lang="hu">Színház</skos:prefLabel>
        <skos:prefLabel xml:lang="pl">Teatr</skos:prefLabel>
        <skos:prefLabel xml:lang="pt">Teatro</skos:prefLabel>
        <skos:prefLabel xml:lang="es">Teatro</skos:prefLabel>
        <skos:prefLabel xml:lang="ca">Teatre</skos:prefLabel>
        <skos:prefLabel xml:lang="sl">Gledališče</skos:prefLabel>
    </skos:Concept>
</rdf:RDF>
```

In the portal there is a way to preview the metadata mapping for Europeana that displays the EDM using an XSL stylesheet as shown in Figure 3.1.

Europeana metadata preview

Europeana Type	
	IMAGE
Is Shown At	
	http://www.eclap.eu/drupal?q=home&axoid=urn:axmedis:00000:obj:36b2407e-0ca0-4f44-892b-ebf254118a2d
Object	

Europeana Rights Url	
	http://www.europeana.eu/rights/rr-f/
Data Provider	
	Dario Fo & Franca Rame Archive
Provider	
	ECLAP, e-library for Performing Arts
title	
it	Sant'Ambrogio - 2005 Testo teatrale di Dario Fo. 32/116
description	
it	Tavole a colori di Dario Fo.
date	
it	2005
language	
it	it
spatial	
	Italia
rights	
it	Archivio Dario Fo e Franca Rame, alcuni diritti riservati
extent	
it	1 pagine
type	
it	Disegni
	Theatre (http://www.eclap.eu/Classification/PerformingArtsType/504)

Figure 3.1 EDM mapping preview on the portal

3.4 Mapping ECLAP metadata to EDM Event Centric

A mapping to an Event centric metadata representation will be done when it will be supported by europeana. The events that may be mapped are the Performance and the FirstPerformance Events.
For example if we consider a photo shot during a performance held in Rome, at the ApolloTheater, the 25/12/2011 while the premiere was at the Venus Theatre in Paris the 01/01/2010. In eclap metadata this information is represented as:

```
<eclap:Content axoid=" urn:axmedis:….">
  …
  <eclap:PerformingArtsMetadata>
    <eclap:FirstPerformance>
        <eclap:Place>Venus Theatre<eclap:Place>
        <eclap:City>Paris<eclap:City>
        <eclap:Country>France</eclap:Country>
        <eclap:Date>2010-01-01</eclap:Date>
    </eclap:FirstPerformance>
    <eclap:Performance>
        <eclap:Place>Apollo Theatre<eclap:Place>
        <eclap:City>Rome<eclap:City>
        <eclap:Country>Italy</eclap:Country>
        <eclap:Date>2011-12-25</eclap:Date>
    </eclap:Performance>
    …
  </eclap:PerformingArtsMetadata>
</eclap:Content>
```

The following can be a way to represent in EDM this information:

```
<rdf:RDF>
  <edm:ProvidedCHO rdf:about="urn:axmedis:….">
    <dc:title>The Amlet, photo</dc:title>
    ….
    <edm:wasPresentAt rdf:resource="http://www.eclap.eu/event/performance/a2d5e245b"/>
    <dc:relation rdf:resource="http://www.eclap.eu/event/performance/b6a75634d6"/>
    <edm:type>IMAGE</edm:type>
  </edm:ProvidedCHO>
```

```xml
<edm:Event rdf:about="http://www.eclap.eu/event/performance/a2d5e245b">
   <dc:date>2011-12-25</dc:date>
   <edm:happenedAt rdf:resource="http://www.eclap.eu/places/ApolloTheatreRomeItaly"/>
</edm:Event>
<edm:Place rdf:about="http://www.eclap.eu/places/ApolloTheatreRomeItaly">
   <skos:prefLabel xml:lang="en">Apollo Theatre</skos:prefLabel>
   <dc:isPartOf rdf:resource="http://sws.geonames.org/3169070/"/>
</edm:Place>
<edm:Place rdf:about=" http://sws.geonames.org/3169070/">
   <skos:prefLabel xml:lang="en">Rome</skos:prefLabel>
   <dc:isPartOf rdf:resource="http://sws.geonames.org/3175395/"/>
</edm:Place>
<edm:Place rdf:about=" http://sws.geonames.org/3175395">
   <skos:prefLabel xml:lang="en">Italy</skos:prefLabel>
</edm:Place>
<edm:Event rdf:about="http://www.eclap.eu/event/performance/b6a75634d6">
   <dc:date>2001-01-01</dc:date>
   <edm:happenedAt rdf:resource="http://www.eclap.eu/places/VenusTheatreParisFrance"/>
</edm:Event>
<edm:Place rdf:about="http://www.eclap.eu/places/VenusTheatreParisFrance">
   <skos:prefLabel xml:lang="en">Venus Theatre</skos:prefLabel>
   <dc:isPartOf rdf:resource="http://sws.geonames.org/2988507/"/>
</edm:Place>
<edm:Place rdf:about="http://sws.geonames.org/2988507/">
   <skos:prefLabel xml:lang="en">Paris</skos:prefLabel>
   <dc:isPartOf rdf:resource="http://sws.geonames.org/3017382/"/>
</edm:Place>
<edm:Place rdf:about="http://sws.geonames.org/3017382/">
   <skos:prefLabel xml:lang="en">France</skos:prefLabel>
</edm:Place>
</rdf:RDF>
```

It can be seen that it is mandatory that the place, city and country are identified with an URI to allow the associations.

One problem is how to create a unique URI to be associated with the event. A possible solution could be to use a hash function applied to the Performance Place, City, Country and Date to generate a uri like "http://www.eclap.eu/event/performance/--hash--".

However problems may happen in cases where partial information is provided, for example if only the city and the year are provided (e.g. Rome, 1989) it may happen that two different performances held in the city in the same year have the same identifier.

Moreover using the "wasPresentAt" relation for the "FirstPerformance" seems not right as the video or photo were not really present at the first performance (unless it is a photo or video of the first performance) and thus we need to use the more generic "dc:relation" property (edm:wasPresentAt is a specialization of dc:relation) or if supported a specific specialization of the dc:relation. However the problem behind is the fact that the "Cultural Heritage Object" in case of a photo/video of a performance is not a Physical thing as a painting or a sculpture can be.

3.5   Mapping ECLAP Collections and Playlist to EDM

EDM supports the representation of hierarchically structured objects (see the EDM Primer section 7.1 [3]). It uses the ORE Proxy elements to create a proxy for each element belonging to the structured aggregation and the proxy representing the aggregation is connected with the proxies of the "parts" with dc:hasPart relation.

In ECLAP Collections and Playlists are used to create aggregations that have themselves metadata. The following is an example of a collection with 3 contents.

```xml
<eclap:Content axoid="urn:axmedis:00000:obj:819568c0-86d1-445c-8a9e-249489529378">
   <eclap:url>http://bpnetgraaa/drupal?q=home&amp;axoid=urn:axmedis:00000:obj:819568c0-86d1-445c-8a9e-249489529378</eclap:url>
   …
   <eclap:DefaultMetadataLanguage>en</eclap:DefaultMetadataLanguage>
   <eclap:Resource>
      <eclap:Format>collection</eclap:Format>
      <eclap:Type>collection</eclap:Type>
```

```
      <eclap:Extension>.xcl</eclap:Extension>
  </eclap:Resource>
  …
  <eclap:DublinCoreMetadata>
      <dc:title xml:lang="en">a Collection</dc:title>
      …
  </eclap:DublinCoreMetadata>
  <eclap:Aggregate>
      <eclap:ContentRef>urn:axmedis:00000:obj:04e0caef-b33b-4f4a-ba50-a80d96766192</eclap:ContentRef>
      <eclap:ContentRef>urn:axmedis:00000:obj:5e89d7c9-20db-47ce-b9d6-0ab0cb0d7088</eclap:ContentRef>
      <eclap:ContentRef>urn:axmedis:00000:obj:b1e4a114-ec98-4d0d-b8b6-329b1e817c3e</eclap:ContentRef>
  </eclap:Aggregate>
</eclap:Content>
```

This can be mapped using the XSLT to EDM in the following way:

```
<rdf:RDF …>
  <edm:ProvidedCHO rdf:about="urn:axmedis:00000:obj:819568c0-86d1-445c-8a9e-249489529378">
      <dc:title xml:lang="en">a Collection</dc:title>
      …
      <edm:type>???</edm:type>
  </edm:ProvidedCHO>
  <edm:WebResource rdf:about="http://www.eclap.eu/drupal?q=home&amp;axoid=urn:axmedis:00000:obj:819568c0-86d1-445c-8a9e-249489529378">
      <edm:rights>...</edm:rights>
  </edm:WebResource>
  <ore:Aggregation rdf:about="urn:axmedis:00000:obj:819568c0-86d1-445c-8a9e-249489529378:aggregation">
      <edm:aggregatedCHO rdf:resource="urn:axmedis:00000:obj:819568c0-86d1-445c-8a9e-249489529378"/>
      <edm:dataProvider>...</edm:dataProvider>
      <edm:provider>ECLAP, e-library for Performing Arts</edm:provider>
      <edm:rights>...</edm:rights>
      <edm:isShownAt rdf:resource="http://www.eclap.eu/drupal?q=home&amp;axoid=urn:axmedis:00000:obj:819568c0-86d1-445c-8a9e-249489529378"/>
  </ore:Aggregation>
  <ore:Proxy rdf:about="urn:axmedis:00000:obj:819568c0-86d1-445c-8a9e-249489529378:collection">
      <ore:proxyFor rdf:reference="urn:axmedis:00000:obj:819568c0-86d1-445c-8a9e-249489529378"/>
      <ore:proxyIn rdf:reference="urn:axmedis:00000:obj:819568c0-86d1-445c-8a9e-249489529378:aggregation"/>
      <dcterms:hasPart rdf:resource="urn:axmedis:00000:obj:04e0caef-b33b-4f4a-ba50-a80d96766192:collection_item"/>
      <dcterms:hasPart rdf:resource="urn:axmedis:00000:obj:5e89d7c9-20db-47ce-b9d6-0ab0cb0d7088:collection_item"/>
      <dcterms:hasPart rdf:resource="urn:axmedis:00000:obj:b1e4a114-ec98-4d0d-b8b6-329b1e817c3e:collection_item"/>
  </ore:Proxy>
  <ore:Proxy rdf:about="urn:axmedis:00000:obj:04e0caef-b33b-4f4a-ba50-a80d96766192:collection_item">
      <ore:proxyFor rdf:resource="urn:axmedis:00000:obj:04e0caef-b33b-4f4a-ba50-a80d96766192"/>
      <ore:proxyIn rdf:resource="urn:axmedis:00000:obj:04e0caef-b33b-4f4a-ba50-a80d96766192:aggregation"/>
  </ore:Proxy>
  <ore:Proxy rdf:about="urn:axmedis:00000:obj:5e89d7c9-20db-47ce-b9d6-0ab0cb0d7088:collection_item">
      <ore:proxyFor rdf:resource="urn:axmedis:00000:obj:5e89d7c9-20db-47ce-b9d6-0ab0cb0d7088"/>
      <ore:proxyIn rdf:resource="urn:axmedis:00000:obj:5e89d7c9-20db-47ce-b9d6-0ab0cb0d7088:aggregation"/>
      <edm:isNextInSequence>urn:axmedis:00000:obj:04e0caef-b33b-4f4a-ba50-a80d96766192:collection_item</edm:isNextInSequence>
  </ore:Proxy>
  <ore:Proxy rdf:about="urn:axmedis:00000:obj:b1e4a114-ec98-4d0d-b8b6-329b1e817c3e:collection_item">
      <ore:proxyFor rdf:resource="urn:axmedis:00000:obj:b1e4a114-ec98-4d0d-b8b6-329b1e817c3e"/>
      <ore:proxyIn rdf:resource="urn:axmedis:00000:obj:b1e4a114-ec98-4d0d-b8b6-329b1e817c3e:aggregation"/>
      <edm:isNextInSequence>urn:axmedis:00000:obj:5e89d7c9-20db-47ce-b9d6-0ab0cb0d7088:collection_item</edm:isNextInSequence>
  </ore:Proxy>
</rdf:RDF>
```

The first Proxy is associated with the collection while the following three *ore:Proxy* are associated with the content items in the collection. The collection proxy have a *dc:hasPart* relation with the proxies of the items inside the collection. The *edm:isNextInSequence* is used to give an ordering to the collection items.

Have to be noted that the schema that is provided by Europeana for validating the provided xml does not allow the *ore:Proxy* elements. Moreover it is not clear what to write in the mandatory *edm:type* element for the collection as it is allowed only (IMAGE, AUDIO, VIDEO, TEXT, 3D) and no one of these values are satisfactory. Thus we have to discuss with the Europeana team about this issue, however we can provide collections later in the project when a great part of the basic items have been already submitted.

The ECLAP portal supports the preview of collections as shown in Figure 3.2.

Europeana metadata preview

Europeana Type

Is Shown At
http://www.eclap.eu/drupal?q=home&axoid=urn:axmedis:00000:obj:c8664cbb-c6ed-4eee-b27e-26053beeec37

Object

Europeana Rights Url

Data Provider
History of Art at University of Glasgow

Provider
ECLAP, e-library for Performing Arts

title
en King Lea Photographs Collection

description
en Collection of photographs of performances of 'King Lear' by the Royal Shakespeare Company 1976-1993. These digital images originally appeared in The Cambridge King Lear CD:ROM: Text and Performance History Archive edited by Christie Carson and Jacky Bratton. The PADS gratefully acknowledges the support of Dr Christie Carson and photographer Donald Cooper in making this collection available for educational use.

creator
en University of London Royal Holloway

contributor
en Christie Carson

date
en created 00/03/01 refreshed 01/11/15

subject
en Shakespeare William (1564-1615); Royal Shakespeare Company; King Lea

publisher
en University of London Royal Holloway College

rights
en Copyright Donald Cooper/Photostage. Images may be used for educational purposes only.

format
en JPEG

type
en Collection

identifier
en ADHS-pa-1013-1

Collection
urn:axmedis:00000:obj:bce92975-463d-4fd2-b580-140d13ece04c
urn:axmedis:00000:obj:6f901ff7-8e3a-4ef4-aefd-ae8e9d9a88c4
urn:axmedis:00000:obj:259ad53c-35b5-4ef7-af8d-4a0e3b47192b
urn:axmedis:00000:obj:d365bca1-bc3a-44ff-b574-fa357ef5804e
urn:axmedis:00000:obj:ad60d0de-662d-4525-94c3-cc75291c2172
urn:axmedis:00000:obj:6b934341-e861-475f-ad1d-b9dcfc02109f

Figure 3.2 – EDM preview of a collection

3.6   Providing metadata to Europeana

In this section the infrastructure used to transmit the ECLAP metadata to europeana (OAI-PMH service) and the techniques used to avoid duplications is presented.
When a content on the ECLAP portal is ready to be published to Europeana the group manager marks it as ready, after that an AXCP rule is executed to publish the metadata on the OAI-PMH server from where Europeana harvests the metadata but before will be checked if duplications are present both locally on ECLAP and on europeana.

3.6.1   Validation and duplication avoidance

Before putting metadata on the OAI-PMH server the AXCP publishing rule should check if the same content has been already sent to Europeana by ECLAP or this content is already present on Europeana from other sources. To check if the same content has been already sent by ECLAP the publishing rule can check if it is present on the OAI-PMH a record with the same metadata or with the same content. To do this we can store a fingerprint of the content file (e.g. using SHA-1) and a fingerprint of the metadata, in this way we can check if the same content is already published or it is going to be published on Europeana by ECLAP; in case a duplicate is found an email is sent to the administrator and to the group manager notifying the issue and the content is put back in the workflow status "Uploaded" and this event is stored .

When we know that no duplication has been performed in ECLAP we need to check if the same content is not already present on Europeana from other providers, to check this condition the publishing rule will make a query to Europeana using the Europeana Search API giving the complete "title", "creator" and

"description" if it matches a content an email to the administrator and to the group manager will be sent notifying the issue. The content will be put back in the workflow status "Uploaded" and this event is stored. Then the group manager can check if a real duplication is present and decide to publish it again and in this case the duplication check on Europeana is not done and the publication will be done.

In the current implementation no checks for duplications are performed during the publication.

3.6.2   OAI-PMH service
A PHP based OAI-PMH service has been setup to publish ECLAP metadata to be harvested from europeana. Only the eclap metadata format is supported for harvesting. The url is http://www.eclap.eu/oai2. The metadata is get from a table and as identifier is used the axoid. To publish a new content the publish rule adds or update a row in the metadata table.

3.7   Using Europeana API

Europeana offers an API to access content and metadata on their portal [1]. The API has the capability to search Europeana using full-text search across semantically enriched metadata fields.

In ECLAP a module based on this API was implemented, which main purpose is to recommend items from Europeana to users. In this sense, recommendation is based on the analysis of user's search queries and their geographical location information. The module was implemented in the form of a widget [1] that can be configured by the user to be shown alongside the ECLAP content.

A detailed description of the capabilities of the widget (and its currently planned features) as well as the possibilities of the Europeana API are available in DE3.3.1: *Infrastructure: Content and metadata processing and semantification.*

An impression of the current state of the module (Figure 3.6-1) is shown below.


Figure 3.6-1 Europeana widget

4 Multilingual Support

Configuration and decision taken to cope with multilingual aspects.

4.1 Multilingual metadata editing

When metadata are uploaded with content via the ECLAP Upload Web Page they come in a specific language. Multilingual metadata editing is necessary to translate original metadata in other languages. This task is a kind of metadata enrichment. On ELACP, this editing can be manually done by using the ECLAP Metadata Editor. This tool provides a view where all metadata are organized according the languages managed by the portal. Such view is called *Metadata Panel*. The DCMI tab shows the Dublin Core metadata provided by the user when he uploaded the content.
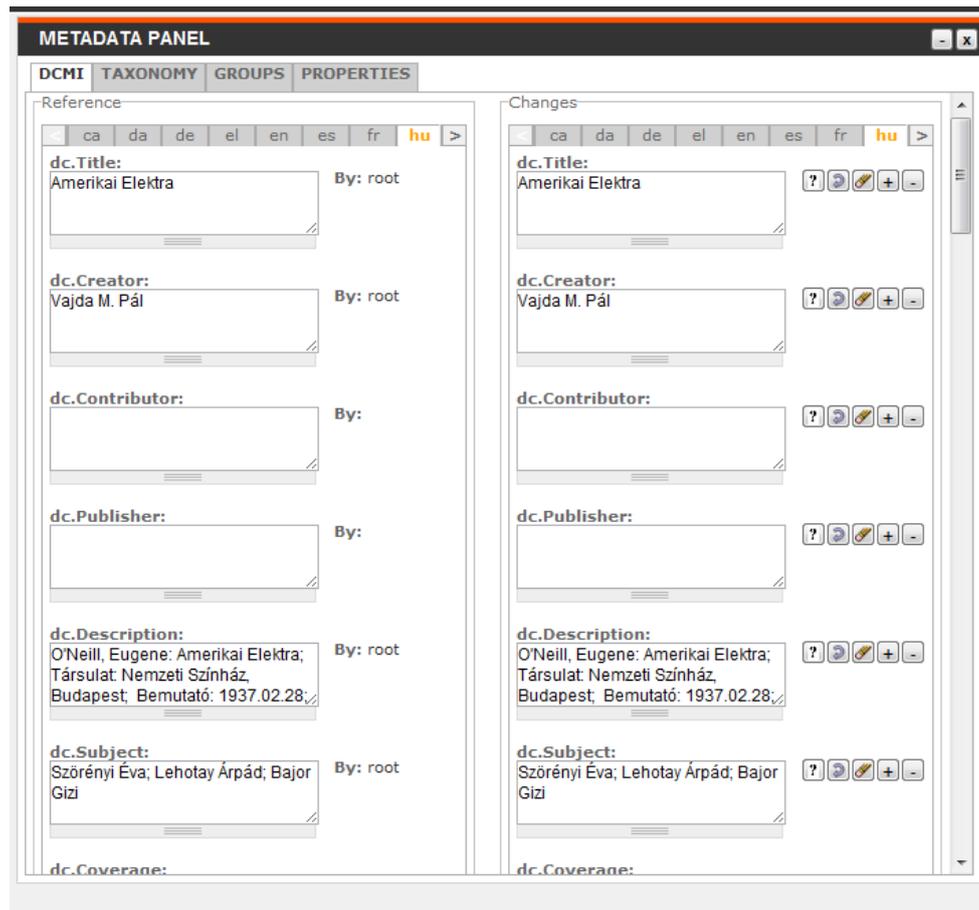
DCMI Metadata

The DCMI metadata tab is divided into two sub-areas: *Reference* and *Changes*.

The Reference field set shows the current metadata values in read-only mode and for each of them the username who made the last change/edit or provided at first (**By**). The Changes field set shows a copy of the reference set where the user can edit/adding values. In both case each metadata is displayed in a text box with a label reporting the metadata field name.

A language tabs allow browsing on available languages in both views and this allows comparing a language with another or to help the user in translating the metadata.

The original language of metadata is coloured by orange.

The tabs show the original language of metadata and the languages of user associated with his workflow role. The content owner (who uploaded the content) can browse on all languages managed by ECLAP . In the following picture the tabs of a user skilled in English and Italian language for content with Hungarian metadata.

To understand how Metadata Editor works when user has to enrich metadata by translating them, please refer to the section 4.1.4 of "DE 3.3.1 Infrastructure: Content and Metadata processing and semantification".

4.2 Metadata translation and validation

Translating metadata in different languages is a kind of metadata enrichment. Metadata can be translated automatically using an external service and/or manually using the ECLAP Metadata Editor as described before. Anyway metadata validation has to be done (or modified) by a human. Metadata Validation is executed using ECLAP Metadata Editor accessing as Validator User according to the ECLAP Workflow role.

To know how to use the ECLAP Metadata Editor as metadata validator, please refer to the section 4.1.4 of "DE 3.3.1 Infrastructure: Content and Metadata processing and semantification".

Another way to cope with metadata translation is offered by the 'Automatic translation' AXCP Rule running in the ECLAP Back Office AXCP GRID. For more details, please refer to the section 4.2.1 "Content and metadata production" of "DE 3.3.1 Infrastructure: Content and Metadata processing and semantification".

4.3 Multilingual indexing & queries

4.3.1 General features

Simple full-text search and advanced search are available for the user. Simple search is in the top center of the portal, and it allows the user to refine his search with a basic content type menu (archive, audio, cross-media etc.), while the advanced search provides extended functionalities (i.e. metadata search, or content search filtered by partner and language). User is allowed to compose an arbitrary number of Boolean clauses in the advanced search page, thus allowing the building of a rich metadata query; for example restricting the search to some metadata fields that only match any or all of them (OR/ALL).

Searches can be performed with fuzzy techniques too. The querying string is compared to similar strings in the index to retrieve documents with a high degree of similarity (e.g. "documant" should match "document"), thus allowing an efficient search in case of mistyping. This fuzzy weight is customizable by the administrator in the portal. Each query string is automatically prefixed / suffixed with a special wildcard, in a transparent way to the user, to allow searching of substrings (e.g. query "test" matches "testing").

A checkbox in the full text frontal search lets the user enable/disable a deep search in the substrings.

Each field in the Solr document structure is boosted with a value, customizable by the administrator, so as to allow searching by giving more relevance to one field with respect to others. (e.g. title, subject, description etc.). For the search tuning, in the settings section of the portal, the administrator is able to change the boosting for these search fields:

- Title
- Body
- Description
- Subject
- Taxonomy

The administrator is able to change the fuzzy search similarity in the same section. (< 1 means fuzzy logic, = 1 means Boolean).

Faceted search is allowed both from the simple and advanced search. Each faceted term is indexed untokenized in the Solr index, thus enabling a faceting count based on the whole facet. The user can select/remove any facet in any order to refine the search. Adding/removing a facet results in adding/deleting a search filter and performs again the search query with/without it. Relevant facets are:

- Resource Category
- Format
- Type
- Group
- Classification - Genre
- Classification – Historical Period
- Classification – Management & Organisation
- Classification – Performing Arts
- Classification – Subject
- Creator
- Content Language
- Duration
- Video Quality
- Device
- Publisher
- Original Metadata Language
- Upload Time

These facets can be subject to change. For instance, locations and dates (different from historical period) can be added.

4.3.2 Multilingual features

In addition to the above functionalities, the advanced search section allows multilanguage queries. Every document is indexed in its original language with its original and translated metadata; taxonomies and groups associated with content are indexed too for each available language. The user can filter for language or for partner from the first advanced search tab. The other advanced search is built for metadata queries and can deal with a large set of metadata:

- Contributor
- Coverage
- Creator
- Date
- Description
- Abstract
- Format
- Identifier
- Language
- Publisher
- Relation
- Rights
- Source
- Subject

- Title
- Type
- Taxonomy
- Group
- Axoid
- creationDate
- deflanguage
- duration
- dx
- dy
- filesecco
- httpdownload
- iphone
- lastModificationDate
- latitude
- longitude
- partner
- pda
- published
- ranking
- dcformat
- dctype

4.4   Correction of Multilingual GUI

In DE3.2: *Accessibility and Multilingual Support for ECLAP Solution*, in the section called *Multilingual Portal Interface Validation and Acceptation Process*, the workflow for correcting the multilingual GUI (Graphical User Interface) of the ECLAP portal was described.

To clarify the context, in ECLAP all of the static elements of the GUI are automatically translated using machine translation (See section 4: Multilingual Support). As machine translation does not yield perfect translations, partners of the ECLAP consortium, representing the different languages used in the portal, need to be able to report and correct translation mistakes. For this, in DE3.2, a workflow was described to offer project partners a format to convey translation corrections to the developers of the portal.

For this specific process there are no updates planned for the future. Translations and corrections of automatic translations will start in January 2012, using the basic format described in DE3.2.

4.5   Multilingual taxonomy editor

DE3.2: *Accessibility and Multilingual Support for ECLAP Solution* described the functional design of the multilingual taxonomy editor (See DE3.2, section 9: *Multilingual Taxonomy Editor*). The goal of the taxonomy was to further enhance the multilingual searching capabilities on the ECLAP portal.

The main functionalities of the multilingual taxonomy were defined as such:
- Adding/editing/removing terms to build the taxonomy (by the administrator user)
- Translating the taxonomy terms into ECLAP's 13 languages (by content partner users)
- Exporting the multilingual taxonomy to XML and XML/RDF (by the administrator user)

All of the above functionalities were implemented and integrated in the portal. No further updates are planned for this module.

4.6 Multilingual metadata and GUI on mobile

Mobile applications for iPhone/iPad and Windows Phone 7 allow to download content from ECLAP portal and use it locally. Both applications "Content Organizer" are available on the iTunes App Store and on the Windows Marketplace.

The user with the mobile application can:
- Download content and multilingual metadata from the portal.
- Access to the multilingual metadata of the content downloaded.
- Open the content.
- Search for keywords on the locally stored metadata.
- Browse the downloaded content via taxonomy.

For both the iPhone/iPad and WindowsPhone7 applications the standard internationalization features of iOS and WindowsPhone7 has been used. It allows to use the English and Italian user interfaces (the translations for other languages can be done quite easily), if the device language set is not English or Italian the English one is used.

For the metadata shown to the user the application tries to show the metadata in the current device language, if not present the English metadata is used. See Figure 4.1 where on the left is present the English user interface while on the right is present the Italian one. In Figure 4.1 has been highlighted an object shown with English title when using the English language and the Italian title when using the Italian language. In Figure 11.2 the metadata section of the same content is shown using English, Italian and Spanish languages, a button has been added on the iOS application to view the metadata in the different languages.

When searching a text the match is done on all the metadata languages available not only the current language.

An application for Android is under development (see Figure 4.3) but it does not support a multilingual user interface (only in Italian) and does not support multilingual metadata rendering when changing the phone language. On the iOS and WP7 apps the visualization of taxonomies and groups (see Figure 4.4) currently use only the English language, in the next version a multilingual taxonomy will be shown.
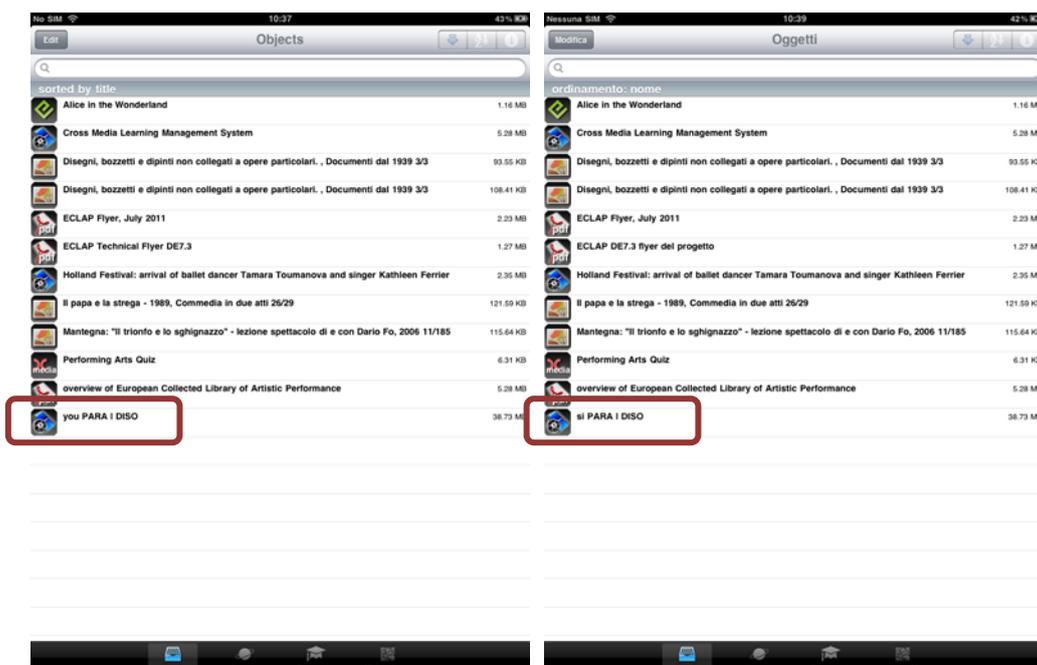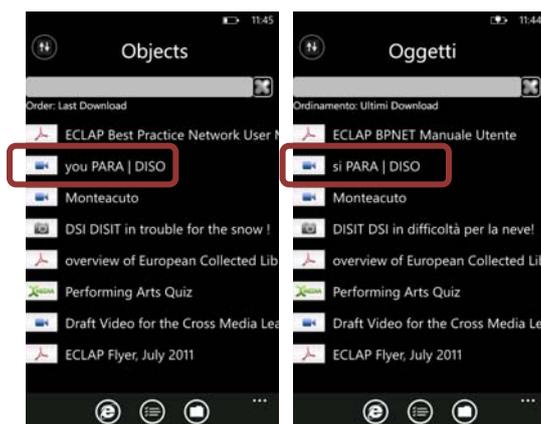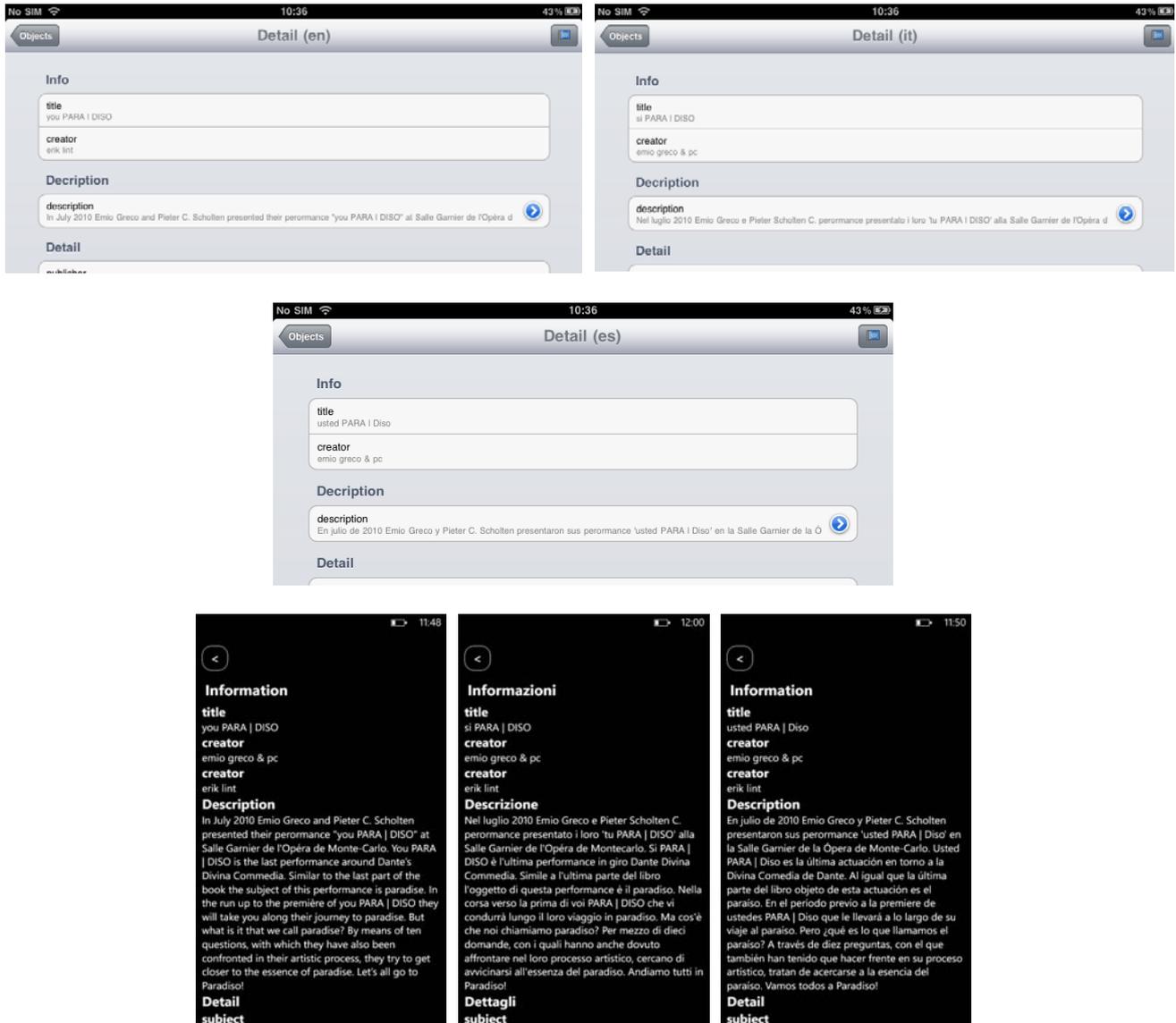
Figure 4.1: English and Italian user interface on iPad and WindowsPhone7

Figure 4.2: Metadata shown in English, Italian and Spanish on iPad and WindowsPhone7.
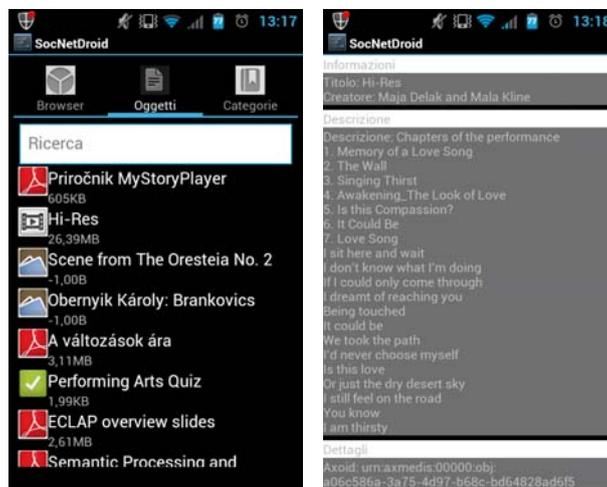
Figure 4.3: Android application in Italian

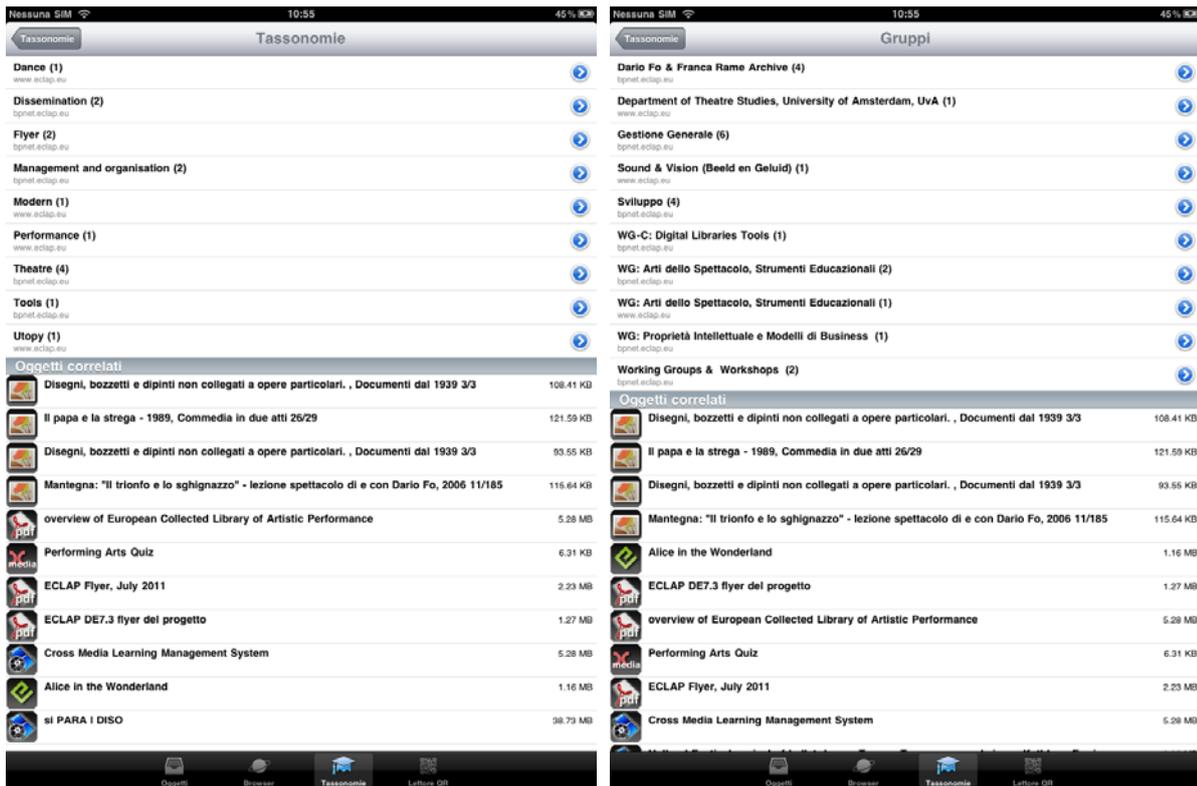Figure 4.4 Taxonomy and Groups on iPad

5 Accessibility support

This section focuses on the configurations and decisions taken to cope with accessibility aspects of the Metadata Ingestion Portal, ECLAP Social Service Portal, and the Mobile Tools Portal. The term Web accessibility refers to the strategies, guidelines, and resources to help make the ECLAP portal accessible to people of all abilities and disabilities.

In order to ensure the accessibility of the ECLAP portals, we considered the recommendations described in the "Web Content Accessibility Guidelines 2.0" [6] document which is a World Wide Web Consortium (W3C) recommendation.

The rest of this section is as follows, Paragraph 5.1 describes in short the "Web Content Accessibility Guidelines". Paragraph 5.2 examines if each one of the ECLAP's component complies with the Guidelines described in Paragraph 5.1. Finally Paragraph 5.3 describes actions that could be taken in order to make the content of the ECLAP portal more accessible.

5.1 Web Content Accessibility Guidelines

Web Content Accessibility Guidelines (WCAG) 2.0 covers a wide range of recommendations for making Web content more accessible. Following these guidelines will make content accessible to a wider range of people with disabilities, including blindness and low vision, deafness and hearing loss, learning disabilities, cognitive limitations, limited movement, speech disabilities, photosensitivity and combinations of these. Following these guidelines will make the ECLAP content more usable to users in general.

The accessibility guidelines are structured as follows: several layers of guidance are provided including overall principles, general guidelines and testable success criteria. For a more comprehensive understanding of each one of these, the user is referred to the WCAG documentation[1].

5.1.1 Principle 1: Perceivable - Information and user interface components must be presentable to users in ways they can perceive.

Guideline 1.1 Text Alternatives: Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, Braille, speech, symbols or simpler language.
* All non-text content that is presented to the user has a text alternative that serves the equivalent purpose.

Guideline 1.2 Time-based Media: Provide alternatives for time-based media.
* Audio-only and Video-only (Prerecorded): For prerecorded audio-only and prerecorded video-only media, an alternative for time-based media is provided that presents equivalent information for prerecorded audio-only (video-only) content.
* Captions (Prerecorded): Captions are provided for all prerecorded audio content in synchronized media.
* Audio Description or Media Alternative (Prerecorded): An alternative for time-based media or audio description of the prerecorded video content is provided for synchronized media, except when the media is a media alternative for text and is clearly labeled as such.
* Captions (Live): Captions are provided for all live audio content in synchronized media.
* Audio Description (Prerecorded): Audio description is provided for all prerecorded video content in synchronized media. .
* Sign Language (Prerecorded): Sign language interpretation is provided for all prerecorded audio content in synchronized media.
* Extended Audio Description (Prerecorded): Where pauses in foreground audio are insufficient to allow audio descriptions to convey the sense of the video, extended audio description is provided for all prerecorded video content in synchronized media. .

- Media Alternative (Prerecorded): An alternative for time-based media is provided for all prerecorded synchronized media and for all prerecorded video-only media. .
- Audio-only (Live): An alternative for time-based media that presents equivalent information for live audio-only content is provided.

Guideline 1.3 Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure.
- Info and Relationships: Information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text.
- Meaningful Sequence: When the sequence in which content is presented affects its meaning, a correct reading sequence can be programmatically determined.
- Sensory Characteristics: Instructions provided for understanding and operating content do not rely solely on sensory characteristics of components such as shape, size, visual location, orientation, or sound.

Guideline 1.4 Distinguishable: Make it easier for users to see and hear content including separating foreground from background.
- Use of Color: Color is not used as the only visual means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.
- Audio Control: If any audio on a Web page plays automatically for more than 3 seconds, either a mechanism is available to pause or stop the audio, or a mechanism is available to control audio volume independently from the overall system volume level.
- Resize text: Except for captions and images of text, text can be resized without assistive technology up to 200 percent without loss of content or functionality.
- Images of Text: If the technologies being used can achieve the visual presentation, text is used to convey information rather than images of text except for the following:
- Contrast (Enhanced): The visual presentation of text and images of text has a contrast ratio of at least 7:1, except for the following:
- Low or No Background Audio: For prerecorded audio-only content that (1) contains primarily speech in the foreground, (2) is not an audio CAPTCHA or audio logo, and (3) is not vocalization intended to be primarily musical expression such as singing or rapping, at least one of the following is true:
- Visual Presentation: For the visual presentation of blocks of text, a mechanism is available to achieve the following: (1) Foreground and background colors can be selected by the user. (2) Width is no more than 80 characters or glyphs (40 if CJK). (3) Text is not justified (aligned to both the left and the right margins). (4) Line spacing (leading) is at least space-and-a-half within paragraphs, and paragraph spacing is at least 1.5 times larger than the line spacing. (5) Text can be resized without assistive technology up to 200 percent in a way that does not require the user to scroll horizontally to read a line of text on a full-screen window.
- Images of Text (No Exception): Images of text are only used for pure decoration or where a particular presentation of text is essential to the information being conveyed.

5.1.2 Principle 2: Operable - User interface components and navigation must be operable.

Guideline 2.1 Keyboard Accessible: Make all functionality available from a keyboard.
- Keyboard: All functionality of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes, except where the underlying function requires input that depends on the path of the user's movement and not just the endpoints.
- No Keyboard Trap: If keyboard focus can be moved to a component of the page using a keyboard interface, then focus can be moved away from that component using only a keyboard interface, and, if it requires more than unmodified arrow or tab keys or other standard exit methods, the user is advised of the method for moving focus away.

- Keyboard (No Exception): All functionality of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes.

Guideline 2.2 Enough Time: Provide users enough time to read and use content.
- Timing Adjustable: For each time limit that is set by the content, at least one of the following is true: (1) Turn off: The user is allowed to turn off the time limit before encountering it; or (2) Adjust: The user is allowed to adjust the time limit before encountering it over a wide range that is at least ten times the length of the default setting; or (3) Extend: The user is warned before time expires and given at least 20 seconds to extend the time limit with a simple action (for example, "press the space bar"), and the user is allowed to extend the time limit at least ten times; or (4) Real-time Exception: The time limit is a required part of a real-time event (for example, an auction), and no alternative to the time limit is possible; or (5) Essential Exception: The time limit is essential and extending it would invalidate the activity; or (6) 20 Hour Exception: The time limit is longer than 20 hours.
- Pause, Stop, Hide: For moving, blinking, scrolling, or auto-updating information, all of the following are true: Moving, blinking, scrolling: For any moving, blinking or scrolling information that (1) starts automatically, (2) lasts more than five seconds, and (3) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it unless the movement, blinking, or scrolling is part of an activity where it is essential; and Auto-updating: For any auto-updating information that (1) starts automatically and (2) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it or to control the frequency of the update unless the auto-updating is part of an activity where it is essential.
- No Timing: Timing is not an essential part of the event or activity presented by the content, except for non-interactive synchronized media and real-time events.
- Interruptions: Interruptions can be postponed or suppressed by the user, except interruptions involving an emergency.
- Re-authenticating: When an authenticated session expires, the user can continue the activity without loss of data after re-authenticating.

Guideline 2.3 Seizures: Do not design content in a way that is known to cause seizures.
- Three Flashes or Below Threshold: Web pages do not contain anything that flashes more than three times in any one second period, or the flash is below the general flash and red flash thresholds.
- Three Flashes: Web pages do not contain anything that flashes more than three times in any one second period.

Guideline 2.4 Navigable: Provide ways to help users navigate, find content, and determine where they are.
- Bypass Blocks: A mechanism is available to bypass blocks of content that are repeated on multiple Web pages.
- Page Titled: Web pages have titles that describe topic or purpose.
- Focus Order: If a Web page can be navigated sequentially and the navigation sequences affect meaning or operation, focusable components receive focus in an order that preserves meaning and operability.
- Link Purpose (In Context): The purpose of each link can be determined from the link text alone or from the link text together with its programmatically determined link context, except where the purpose of the link would be ambiguous to users in general.
- Multiple Ways: More than one way is available to locate a Web page within a set of Web pages except where the Web Page is the result of, or a step in, a process.
- Headings and Labels: Headings and labels describe topic or purpose.
- Focus Visible: Any keyboard operable user interface has a mode of operation where the keyboard focus indicator is visible.
- Location: Information about the user's location within a set of Web pages is available.

- Link Purpose (Link Only): A mechanism is available to allow the purpose of each link to be identified from link text alone, except where the purpose of the link would be ambiguous to users in general.
- Section Headings: Section headings are used to organize the content.

5.1.3 Principle 3: Understandable - Information and the operation of user interface must be understandable.

Guideline 3.1 Readable: Make text content readable and understandable.
- Language of Page: The default human language of each Web page can be programmatically determined.
- Language of Parts: The human language of each passage or phrase in the content can be programmatically determined except for proper names, technical terms, words of indeterminate language, and words or phrases that have become part of the vernacular of the immediately surrounding text.
- Unusual Words: A mechanism is available for identifying specific definitions of words or phrases used in an unusual or restricted way, including idioms and jargon.
- Abbreviations: A mechanism for identifying the expanded form or meaning of abbreviations is available.
- Reading Level: When text requires reading ability more advanced than the lower secondary education level after removal of proper names and titles, supplemental content, or a version that does not require reading ability more advanced than the lower secondary education level, is available.
- Pronunciation: A mechanism is available for identifying specific pronunciation of words where meaning of the words, in context, is ambiguous without knowing the pronunciation.

Guideline 3.2 Predictable: Make Web pages appear and operate in predictable ways.
- On Focus: When any component receives focus, it does not initiate a change of context.
- On Input: Changing the setting of any user interface component does not automatically cause a change of context unless the user has been advised of the behavior before using the component.
- Consistent Navigation: Navigational mechanisms that are repeated on multiple Web pages within a set of Web pages occur in the same relative order each time they are repeated, unless a change is initiated by the user.
- Consistent Identification: Components that have the same functionality within a set of Web pages are identified consistently.
- Change on Request: Changes of context are initiated only by user request or a mechanism is available to turn off such changes.

Guideline 3.3 Input Assistance: Help users avoid and correct mistakes.
- Error Identification: If an input error is automatically detected, the item that is in error is identified and the error is described to the user in text.
- Labels or Instructions: Labels or instructions are provided when content requires user input.
- Error Suggestion: If an input error is automatically detected and suggestions for correction are known, then the suggestions are provided to the user, unless it would jeopardize the security or purpose of the content.
- Help: Context-sensitive help is available.
- Error Prevention (All): For Web pages that require the user to submit information, at least one of the following is true: (1) Reversible: Submissions are reversible. (2) Checked: Data entered by the user is checked for input errors and the user is provided an opportunity to correct them. (3) Confirmed: A mechanism is available for reviewing, confirming, and correcting information before finalizing the submission.

5.1.4 Principle 4: Robust - Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

Guideline 4.1 Compatible: Maximize compatibility with current and future user agents, including assistive technologies.

- Parsing: In content implemented using markup languages, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and any IDs are unique, except where the specifications allow these features.
- Name, Role, Value: For all user interface components (including but not limited to: form elements, links and components generated by scripts), the name and role can be programmatically determined; states, properties, and values that can be set by the user can be programmatically set; and notification of changes to these items is available to user agents, including assistive technologies.

5.2 Conformance to Web Content Accessibility Guidelines

This paragraph examines the "Metadata Ingestion Tool", the "ECLAP Social Service Portal" and the "Mobile Tools Portal", w.r.t. the Web Content Accessibility Guidelines.

The purpose of each tool and portal is the following:

The "Metadata Ingestion Servers" are responsible for transferring the metadata & content in the content partners' archives to the ECLAP Social portal and how these are adapted to be accessible to users on the portal as well as via Europeana.

The "ECLAP Social Service Portal" is a socially enabled portal that is the main front end for the networked user to upload, enrich and work on content. It provides support for access to the content, make queries via PC/Mobile, create communities/groups for the ECLAP Networking, discussions on content and on group topics, augment content and metadata with additional information and free tagging etc.

The "Mobile Tools Portal" refers to the subset of "Social Service Portal Tools" responsible for remote access to the ECLAP portal via mobile devices for collecting and organizing ECLAP content on the mobile device.

In the following table we examine the conformance of each tool to the principles/guidelines/criteria presented in the previous section. The symbols ✓,✗,– are used to indicate that a criterion is met, not met, or if the specific criterion should not be considered by one of the components.

Principle 1: Perceivable - Information and user interface components must be presentable to users in ways they can perceive.

	Text Alternatives	Time-based Media								
		Audio-only and Video-only (Prerecorded)	Captions (Prerecorded)	Audio Description or Media Alternative (Prerecorded)	Captions (Live)	Audio Description (Prerecorded)	Sign Language (Prerecorded)	Extended Audio Description (Prerecorded)	Media Alternative (Prerecorded)	Audio-only (Live)
Metadata Ingestion Portal	✓	-	-	-	-	-	-	-	-	-
ECLAP Social Service Portal	✓	✕	✕	✕	✕	✕	✕	✕	✕	✕
Mobile Tools Portal	✓	✕	✕	✕	✕	✕	✕	✕	✕	✕

	Adaptable			*Distinguishable*							
	Info and Relationships	Meaningful Sequence	Sensory Characteristics	Use of Color	Audio Control	Resize text	Images of Text	Contrast	Low or No Background Audio	Visual Presentation	Images of Text
Metadata Ingestion Portal	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ECLAP Social Service Portal	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mobile Tools Portal	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Principle 2: Operable - User interface components and navigation must be operable.

	Keyboard Accessible			Enough Time				
	Keyboard	No Keyboard Trap	Keyboard (No Exception)	Timing Adjustable	Pause, Stop, Hide	No Timing	Interruptions	Re-authenticating
Metadata Ingestion Portal	✗	✗	✗	✓	✓	✓	✓	✓
ECLAP Social Service Portal	✗	✗	✗	✓	✓	✓	✓	✓
Mobile Tools Portal	-	-	-	✓	✓	✓	✓	✓

	Seizures		Navigable									
	Three Flashes or Below Threshold	Three Flashes	Bypass Blocks	Page Titled	Focus Order	Link Purpose (In Context)	Multiple Ways	Headings and Labels	Focus Visible	Location	Link Purpose	Section Headings
Metadata Ingestion Portal	✓	✓	✓	✓	✗	✓	-	✓	✓	✗	✓	✓
ECLAP Social Service Portal	✓	✓	✓	✓	✗	✓	✓	✓	✓	✗	✓	✓
Mobile Tools Portal	✓	✓	✓	✓	-	✓	✓	✓	✓	-	✓	✓

Principle 3: Understandable - Information and the operation of user interface must be understandable.

	Readable					Predictable				
	Language of Page	Language of Parts	Abbreviations	Reading Level	Pronunciation	On Focus	On Input	Consistent Navigation	Consistent Identification	Change on Request
Metadata Ingestion Portal	✓	✓	✓	✗	✗	✓	✓	✓	✓	✓
ECLAP Social Service Portal	✓	✓	✓	✗	✗	✓	✓	✓	✓	✓
Mobile Tools Portal	✓	✓	✓	✗	✗	✓	✓	✓	✓	✓

	Input Assistance				
	Error Identification	Labels or Instructions	Error Suggestion	Help	Error Prevention (All)
Metadata Ingestion Portal	✓	✓	✓	✓	✓
ECLAP Social Service Portal	✓	✓	✓	✓	✓
Mobile Tools Portal	✓	✓	✓	✓	✓

Principle 4: Robust - Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

	Compatible	
	Parsing	Name, Role, Value
Metadata Ingestion Portal	✓	✓
ECLAP Social Service Portal	✓	✓
Mobile Tools Portal	✓	✓

5.3   Conclusions and future actions

Based on the criteria proposed by the "Web Content Accessibility Guidelines" we conclude that the current version of the ECLAP meets most of the previously mentioned accessibility guidelines. There are some issues concerning the current version of the portal related to the following guidelines:

Guideline 1.2 Time-based Media: Provide alternatives for time-based media: Since the content of the ECLAP portal, among others, consists of a large amount of audio and video content, it would be desirable to have an alternative time-based representation of each available audio and video clip. Such an alternative representation would:

- Aid people who have difficulty perceiving visual content. Assistive technology can read text alternatives aloud, present them visually, or convert them to Braille.
- Help some people who have difficulty understanding the meaning of prerecorded video content by providing alternatives for timed-based media that are text based.
- Aid people who are deaf, or are hard of hearing, or who are having trouble understanding audio information for any reason since they could simply read the text presentation.
- Aid people who are deaf-blind by giving them the ability to read the text in Braille,
- Additionally, text supports the ability to search for non-text content and to repurpose content in a variety of ways.

The technical aspects that should currently be considered in order to reach the point of providing alternatives for time-based media are the following:

- Provide the ability to relate different media types through a "description" relation. For example we could say that an audio file describes a video file.
- Provide the ability to enter subtitles and captions to an existing video or audio file. For example a recorded speech can be accompanied by its textual description in order to be accessible to people with hearing problems. A W3C's proposed standard towards this direction is the *Synchronized Multimedia Integration Language (SMIL)* [7] which enables simple authoring of interactive audiovisual presentations.

Even if ECLAP portal is able to represent this type of alternative information in order to meet Guideline 1.2, it is also required that the ECLAP users will also provide the additionally required information. Therefore it should be considered if there is a point in implementing the previously mentioned of changes.

Guideline 2.1 *Keyboard Accessible: Make all functionality available from a keyboard.* It is currently difficult to have keyboard access to the current form of the ECLAP Metadata Ingestion Portal and ECLAP Social Service Portal. It should be considered in which scenarios this type of accessibility is desirable and make the corresponding changes.

The intent of this guideline is to ensure that, wherever possible, content can be operated through a keyboard or keyboard interface (so an alternate keyboard can be used). When content can be operated through a keyboard or alternate keyboard, it is operable by people with no vision (who cannot use devices such as mice that require eye-hand coordination) as well as by people who must use alternate keyboards or input devices that act as keyboard emulators. Keyboard emulators include speech input software, sip-and-puff software, on-screen keyboards, scanning software and a variety of assistive technologies and alternate keyboards. Individuals with low vision also may have trouble tracking a pointer and find the use of software much easier if they can control it from the keyboard.

6   Bibliography

[1] *Europeana API* - http://www.version1.europeana.eu/web/api

[2] *Definition of: Widget* - http://en.wikipedia.org/wiki/GUI_widget

[3*] Europeana Data Model Primer*, 26/10/2011, Europeana 1.0

[4] *Definition of the Europeana Data Model elements*, version 5.2.2, 31/5/2011, Europeana 1.0

[5] *Europeana Data Model Mapping Guidelines*, 27/10/2011, Europeana 1.0

[6] *Web Content Accessibility Guidelines 2.0* http://www.w3.org/TR/2004/WD-WCAG20-20040311/

[7] *Synchronized Multimedia Integration Language (SMIL)* http://www.w3.org/TR/SMIL2/

7 Glossary & Acronyms

API	Application Programming Interface
AXCP	AXMEDIS Content Processing
AXOID	AXMEDIS Object Identifier
CHO	Cultural Heritage Object
DC	Dublin Core
EDM	Europeana Data Model
IPR	Intellectual Property Rights
OAI-PMH	Open Archive Initiative – Protocol for Metadata Harvesting
PDA	Personal Digital Assistant
SKOS	Simple Knowledge Organization System
URI	Uniform Resource Identifier
UUID	Universally Unique Identifier
VIAF	Virtual International Authority File
XML	Extensible Markup Language
XSLT	Extensible Stylesheet Language Transformations