Mobile Medicine

Università degli Studi di Firenze

powered by aXmedis

Semantic Processing and Management for MultiChannel Cross Media Social Networking
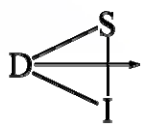## http://mobmed.axmedis.org

Pierfrancesco Bellini, Ivan Bruno,
Alice Fuzier, **Paolo Nesi**, Michela Paolucci
DISIT Lab: Sistemi Distribuiti e Tecnologie Internet
Dipartimento di Sistemi e Informatica
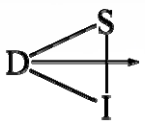Università degli Studi di Firenze

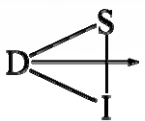nesi@dsi.unifi.it,   http://www.disit.dsi.unifi.it

Outline

- **Scenarios**
- **Mobile Medicine Content**
- **Content Access and technical requirements**
- **Intelligent content, AXMEDIS format**
- **Multichannel Social Mobile Medicine**
- **Architecture for Multichannel Social Management**
- **Recommendations and related problems**
- **Local recommendations, personal PDA organizer**
- **Conclusions**

Intelligent Cross Media Content

- **Evolved Business Models**:
  - **Educational**:
    - Sliding Shows, video, document, audio, images…
  - **Procedures/protocols**: (mini applications)
    - Assessing conditions: emergency..
    - Guidelines, routines/procedures, flows, …
  - **Calculators** for several aspects: (mini applications)
    - Dosages and formulas for intensive therapy
    - Estimation of rule for assessing conditions
    - Risk analysis, …e.g.: pulmonary emboli….
    - Classification of conditions/damages, …
  - **Wizards: active and proactive content**
    - Self-unpacking, guiding the user

Mobile Medicine Content

procedure

DOC

slide

video

Dosages

Assessment

Dosages

4

Intelligence Mobile Content

- Collect content on mobile device, PDA,.....
- Access to personal collection in any conditions
- Navigate into the collection via several views:
    - medical, taxonomy, classif., description, etc.
    - Use data based: less used, most, recent, etc.
- Querying into the collection
- Keep updated the content collection automatically
- Keep the same content accessible on PC/PDA
- Licensing and rights controls to access and use (patience info and/or record)

Intelligent Cross Media Content

- **AXMEDIS C**ross media content
  - **Structure**: ISOMEDIA + mpeg-21 + hierarchical + links, etc.
  - **Packaging**: Metadata + descriptors + essences
  - **Classification**: DC + taxonomy + descriptors, any MD,
  - **File format**: direct play video without unpack, ….
  - **Distribution**: download, streaming, progressive, P2P,..
  - **Intelligence**: profiling, decision, scripting, proaction, forms,
  - **Presentational/interaction**: SMIL, MPEG-4, HTML, …
  - **Protection**: sign, CAS vs DRM
  - **Tools**:
    - **Players and Authoring** tools
    - **Automated production**, repurposing, delivering
    - **Annotations**: ……….
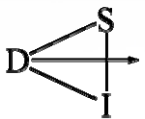
Interactive and intelligent content

- integrated media info
- proactive with the users
- attractive experience
- personalized
- multichannel interoperable
- device interoperable

Final users

Browse, search

User generated

proactive

Multichannel

User generated

Saving experience
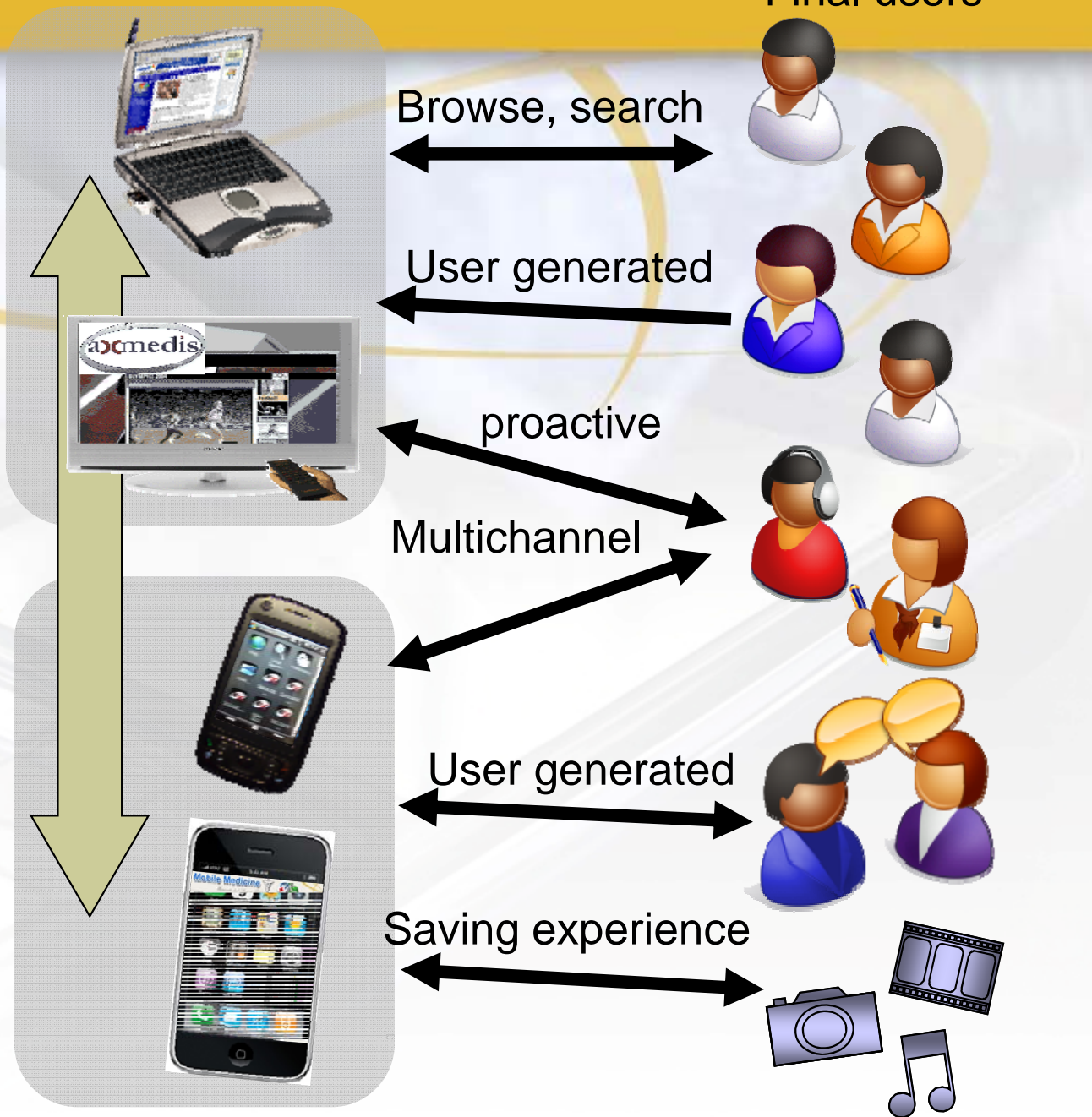
Mobile Medicine

Automated Back office

Complex content

UGC, web page, comments
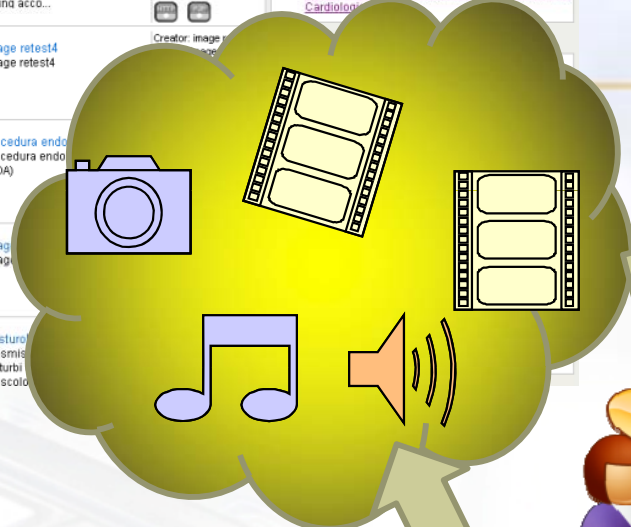
-PC, MACos, linux, …
-iPhone, iPod, Windows Mobile, Android(*), ….

Mobile Medicine

AXCP Quick Start,
Your tools commands,
Workflow systems,…

Monitoring & Reporting

AXMEDIS DRM Server

AXCP GRID

AXCP Scheduler

databases

AXCP Node

AXCP Node

AXCP Node

FTP, WS, etc.

Cross Media WEB Server for PC and Mobile, Content Upload

Internet, WEB, VOD, POD..

Mobiles, PDA, etc.
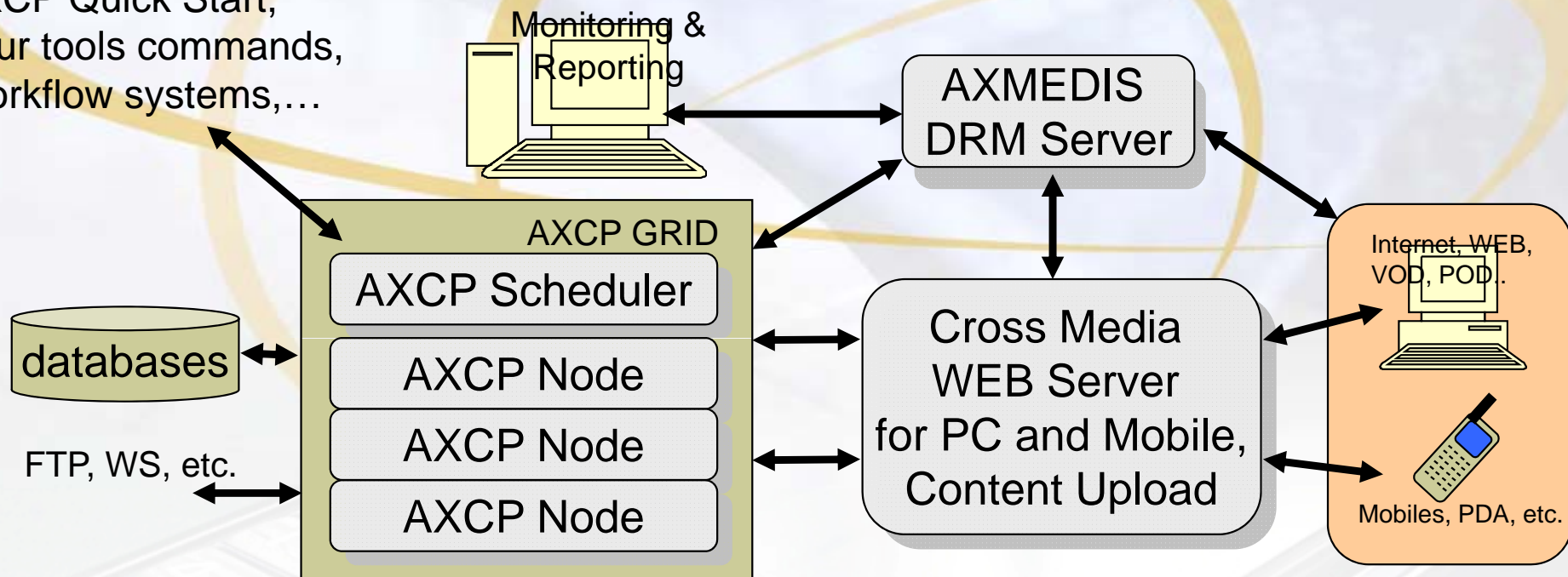
- Cross Media distribution portal for multichannel:
  - PC, PDA, iPhone, iPod, mobile, etc.
- Production tools and players, for PC and PDA
- AXMEDIS AXCP GRID backoffice server: **semantic computing**
- AXMEDIS DRM: for rights control and security
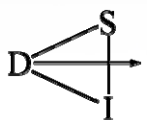
AXMEDIS Content Processing GRID
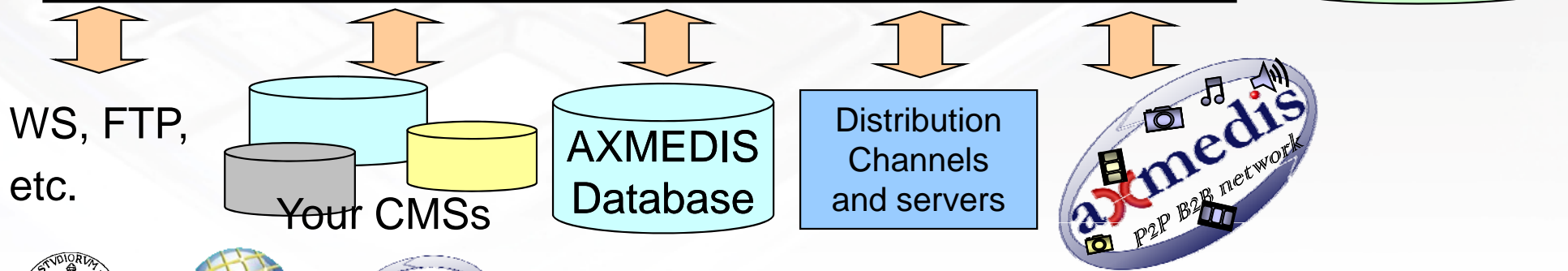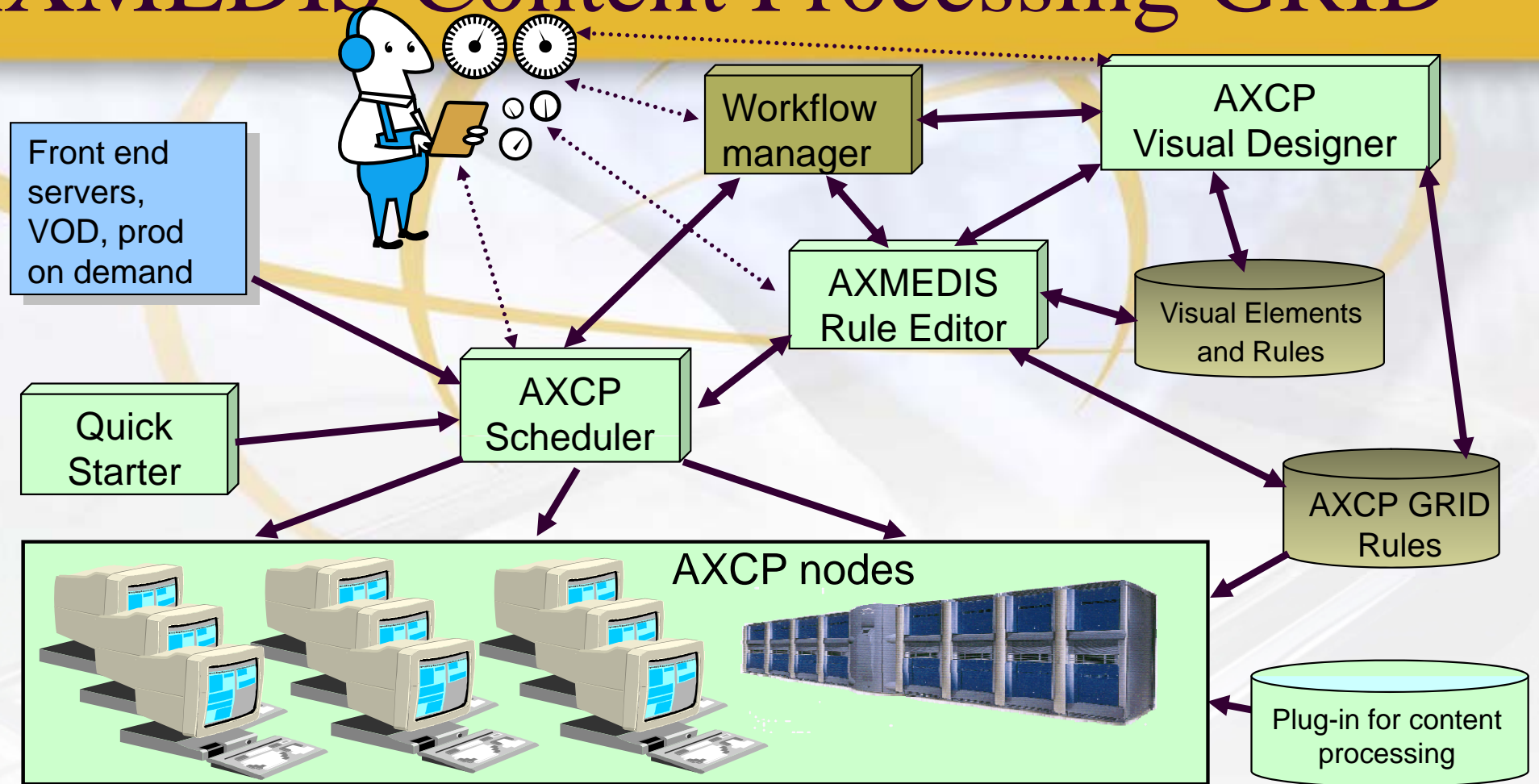
Recommendations

- **Users**:
  - Static: User Profile as provided
  - Dynamic: play, UGC post, friends, votes, comments, ..
- **Cross Media Content (Objects):**
  - Technical description + semantics
  - MD + semantic description as Taxonomy
- **Distances among dynamic symbolic entities**:
  - **U→U, C→U, C→C, G→C, …**
- **Problems:**
  - Computational Complexity:
    - AXCP scalable
    - Clustering, K-means, K-Medoids, ….
  - To find distances among symbolic descriptors

Distances for symbolic descriptors

- **Definition of metrics** among semantics symbolic descriptors for user, content, actions, etc.
- **UU:** D (U(s,d), U(s,d))
  - U(.,d): play, UGC, friends, comments, votes, etc.
- **UO:** D (U(s,d), O(s))
  - …..

Resource type
sense
Velocity Info

static / dynamic
ear / see / ear / see
fast / slow / fast / slow / fast / slow / fast / slow

CrossMedia, CrossMedia, Image/CM, Document/CM, Audio/CM/Video, CrossMedia, Video/CM, CrossMedia

Resource type
feeling
energy

artistic / informative
dark / positive / entertainment / mindWork / application
energic / calm / calm / energico / passive / active / business / generic
activity / genre

Recommendations: UU, UC, CC, ..

Potential friends

phistestasla
26
ECUADOR, Orellana
Add to your friends Details

shastu
29
CHRISTMAS ISLAND
Add to your friends Details

driphifras
15
FRENCH POLYNESIA
Add to your friends Details

kuslechi
16
SRI LANKA, Kurunegala
Add to your friends Details

hetheruno
15
MALDIVES, Raa
Add to your friends Details

1 2 next › last »

phistestasla proximity details
languages:
favorites:
location:
interests:
friends:
activity:
age:
school_job:
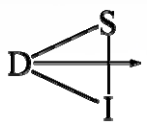
Personal Mobile Social Intelligence

AxObjectFinder

HTML & CSS Based Presentation Engine

AxPDAPlayer

Media Player

PDF player

..... player

Download/updateManager
File Explorer
Local Browser
Search Engine
Taxonomy Browser
User Behavior collection
Contextual information

Content Indexer, semantic ingestion/processing

Local PDA files

SQLite DB
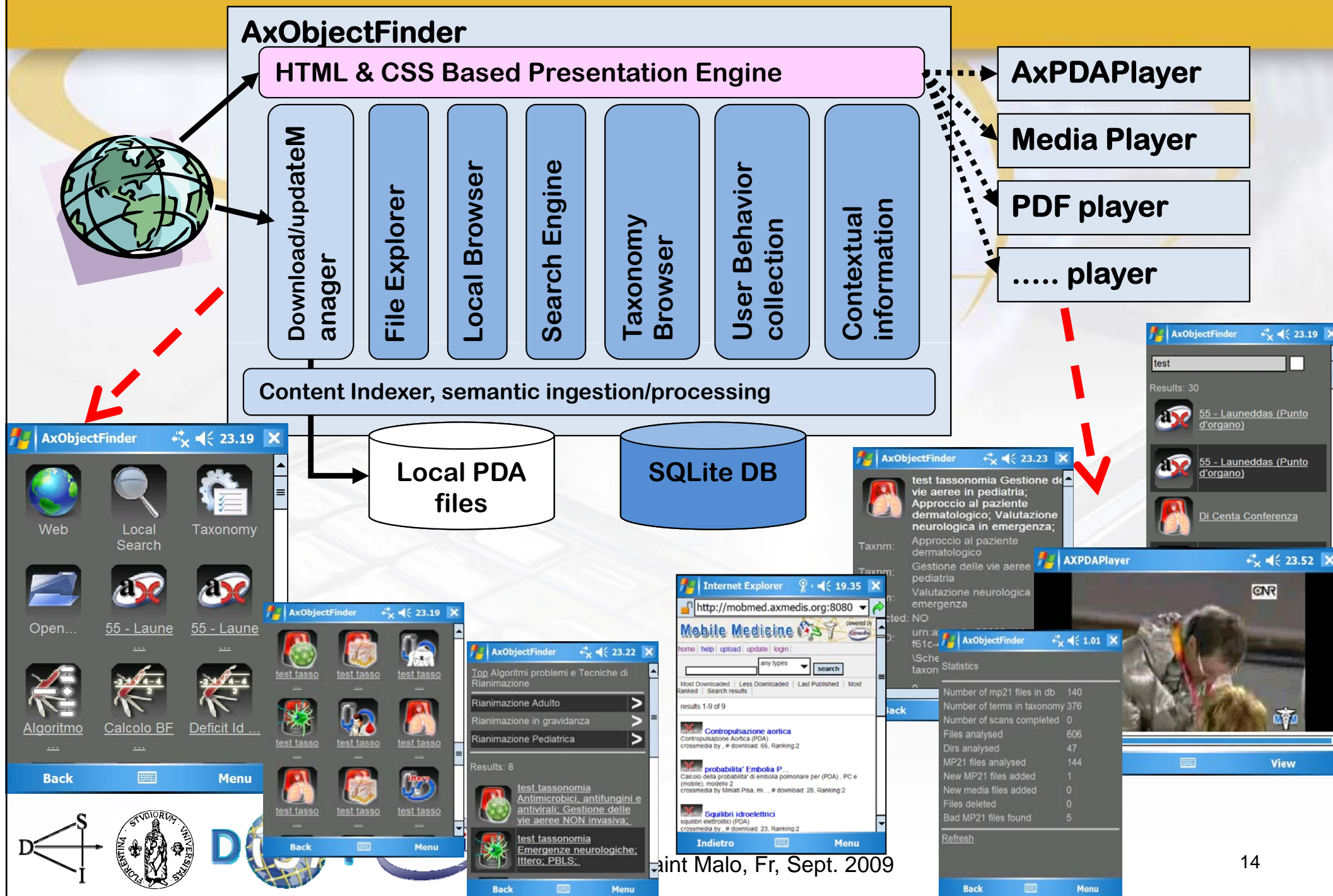
Semantic flows

User Local Side

- User Profile → • *Local User Profile*
- User behavior ⟸ • Local User behavior
- Use data ⟸ • Local Use data
- Content → • Content

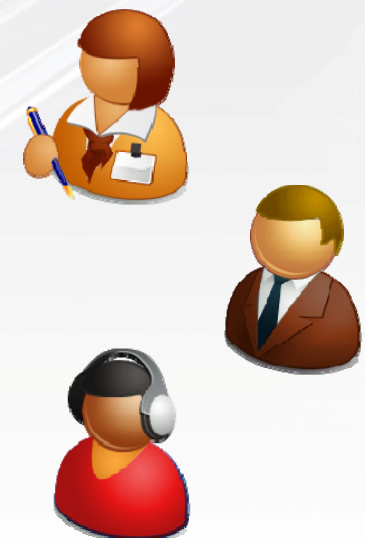**+ Content action data**

- •DC+IDs
- •AXInfo: ver, prod., rights,..
- •Descriptors
- •Taxonomy
- •Groups

- •DC+IDs
- •AXInfo: ver, prod, rights, ...
- •Descriptors
- •Taxonomy
- •Groups

- •Recommendation
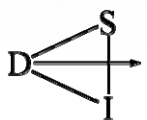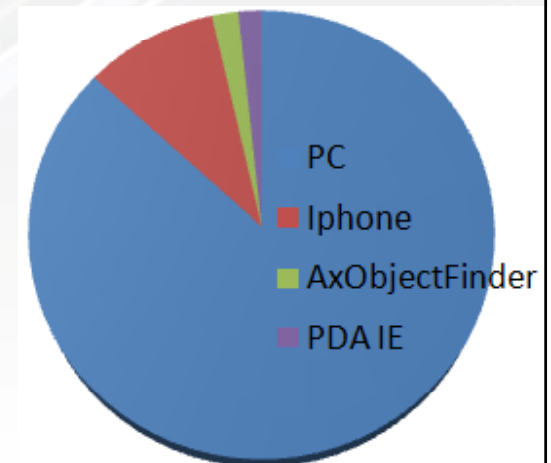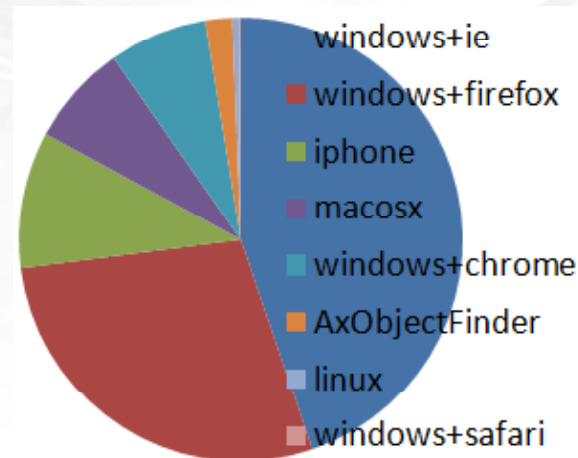- •Suggestions on the basis of user behavior

- •Local Recommendation
- •Local Suggestions on the basis of user behavior and local content

Conclusions

- Accessible since June 2009
- Several objects and mini-applications,
  - calculators for dosages, verification, etc.
- Intelligent Content Organizer for PDA WM5/6
  - Medical taxonomy allows to make navigation into content
  - Central and local recommendations
  - Offline/online
- iPhone supported via regular portal, only for online

windows+ie
windows+firefox
iphone
macosx
windows+chrome
AxObjectFinder
linux
windows+safari

PC
Iphone
AxObjectFinder
PDA IE

Contact Information

- **Prof. Paolo Nesi, Ph.D.**

  DISIT-DSI, Department of Systems and Informatics

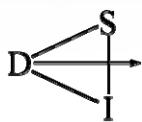 *Distributed Systems and Internet Technology Lab*

  University of Florence

  Via S. Marta 3, 50139 Firenze, Italy
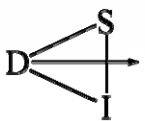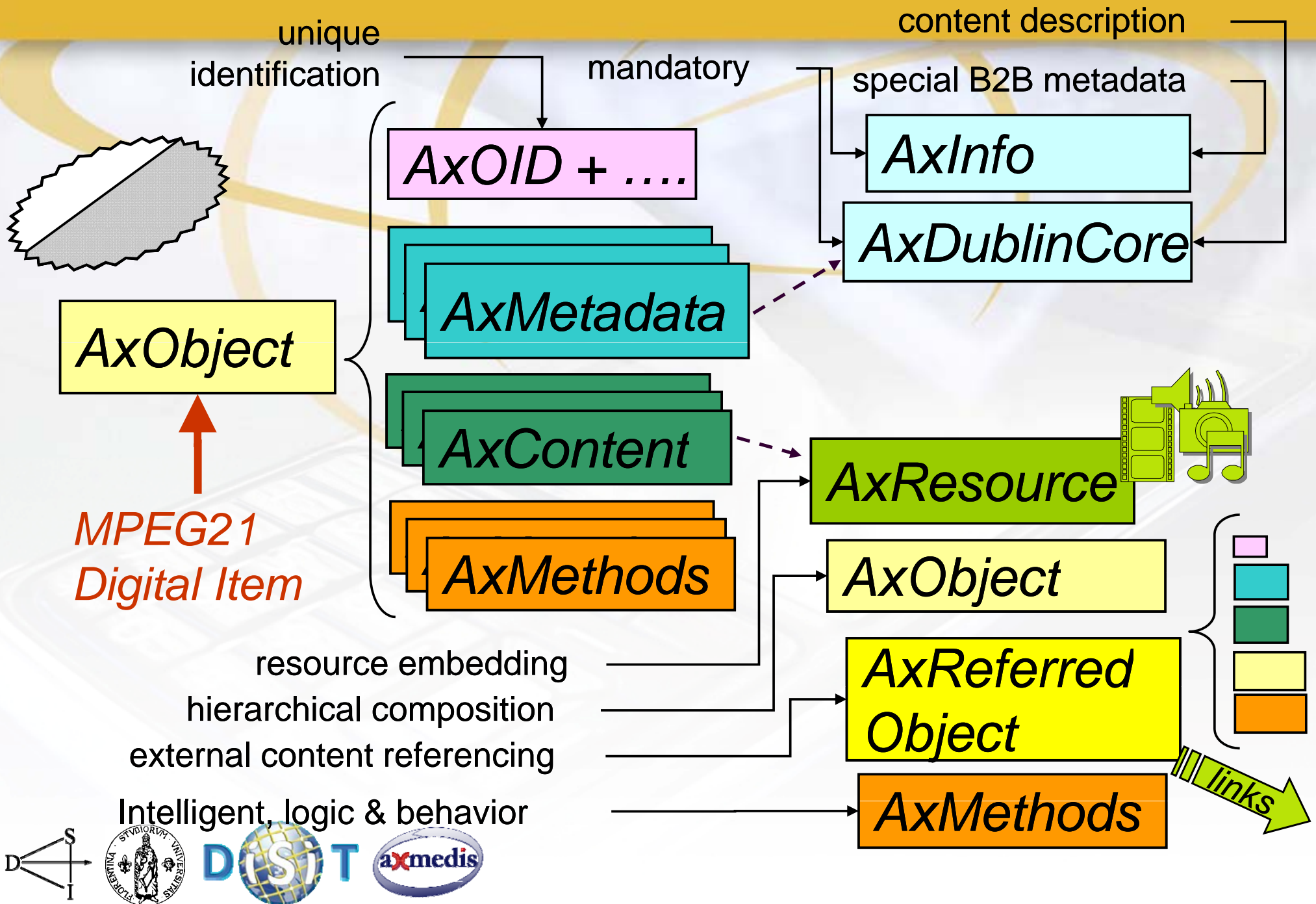
  Email: nesi@dsi.unifi.it

  Web: http://www.AXMEDIS.org

Some references

- **Mobile Medicine**: http://mobmed.axmedis.org
  - Manuale: http://mobmed.axmedis.org/Mobile-Medicine-Manual.pdf
  - Development and production tools
- **AXMEDIS**: http://www.axmedis.org
  - Report and documentation, development tools and demos
- **DISIT Lab**, Univ. Firenze, DSI: http://www.disit.dsi.unifi.it/
- P. Bellini, I. Bruno, A. Fuzier, P. Nesi, M. Paolucci, "*Semantic Processing and Management for MultiChannel Cross Media Social Networking*", NEM conference, Saint Malo, France, September 2009.
- P. Bellini, I. Bruno, D. Cenni, P. Nesi, M. Paolucci, "*Personal Content Management on PDA for Health Care Applications*", 2009 IEEE International Workshop on Semantic Computing and Multimedia Systems (IEEE-SCMS 2009), Berkeley, CA, USA - September 14-16, 2009
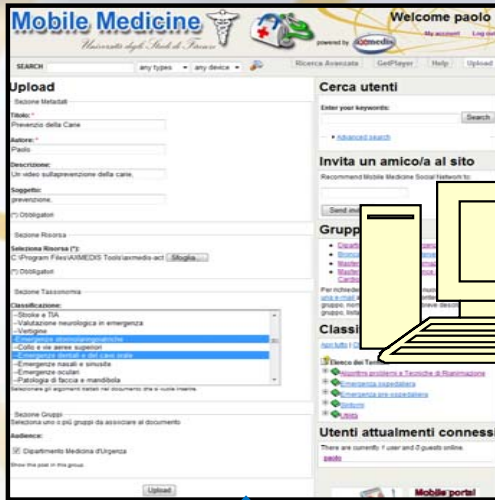
AXMEDIS Object/Package Model

unique identification

mandatory

content description

special B2B metadata

AxOID + ...

AxInfo

AxDublinCore

AxObject

AxMetadata

MPEG21
Digital Item

AxContent

AxResource

AxMethods

AxObject

resource embedding

hierarchical composition

AxReferred Object

external content referencing

Intelligent, logic & behavior
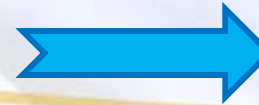
AxMethods

links

Content Production

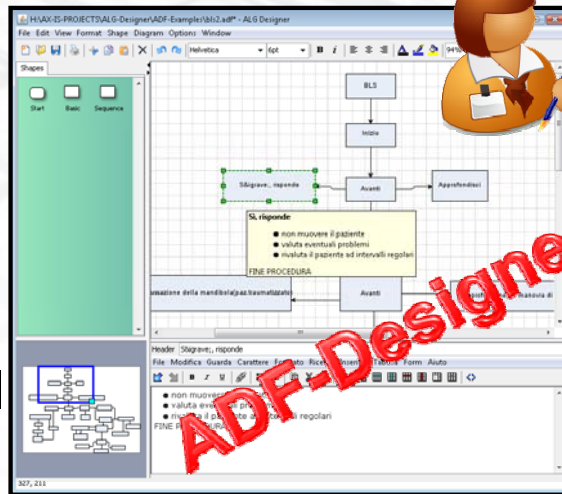User: upload/propose Single file content directly
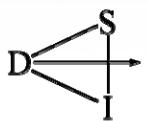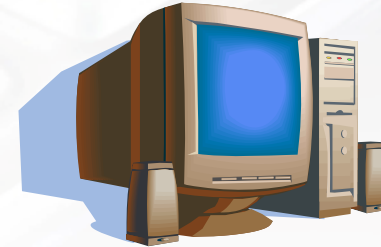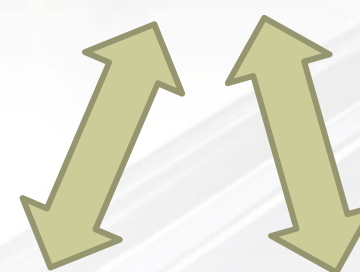
Automated backoffice: Transcode, adapt, ..

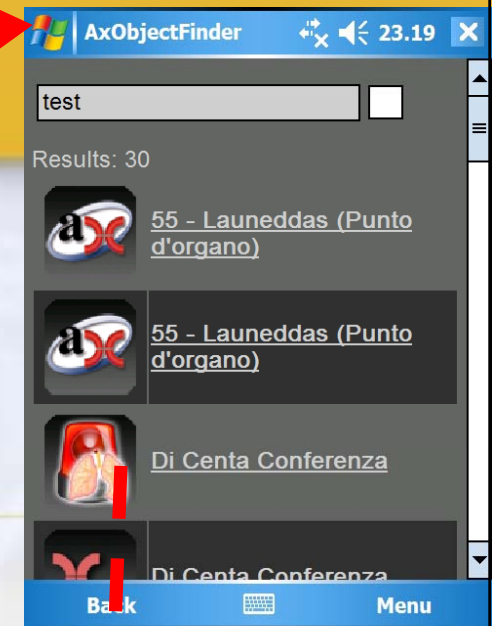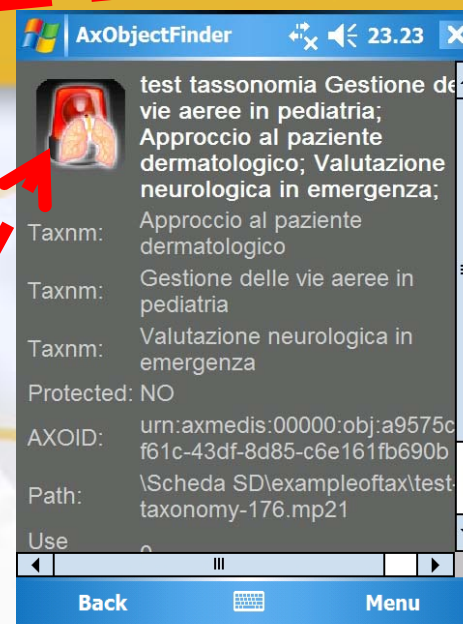ADMIN, validate send in publication

User: study and design complex content, then upload

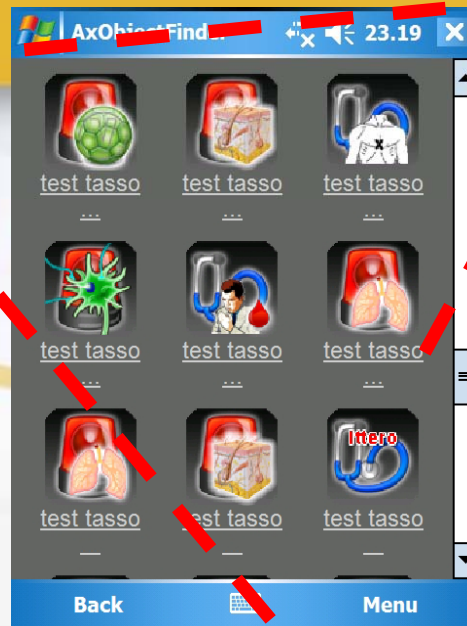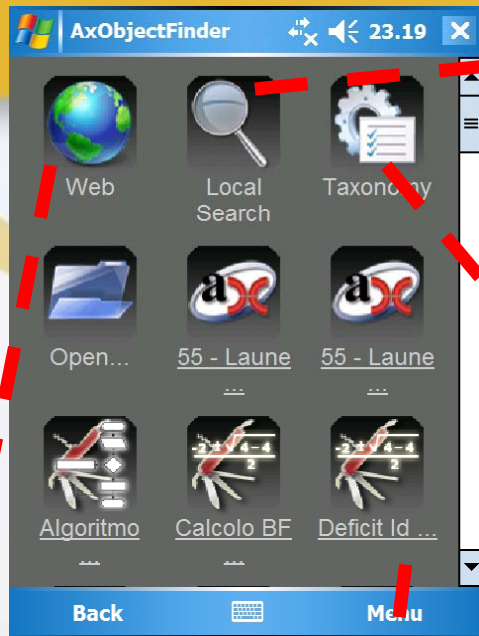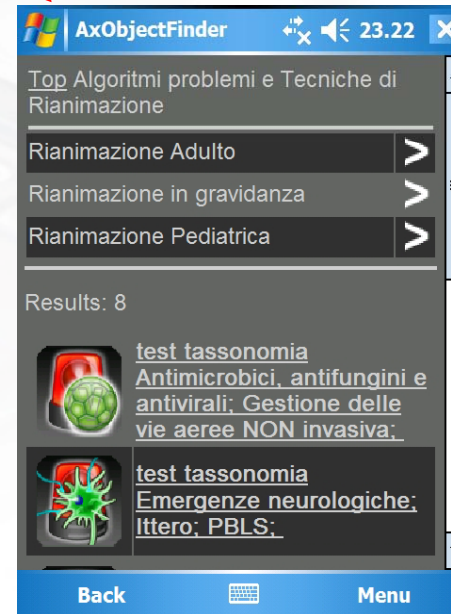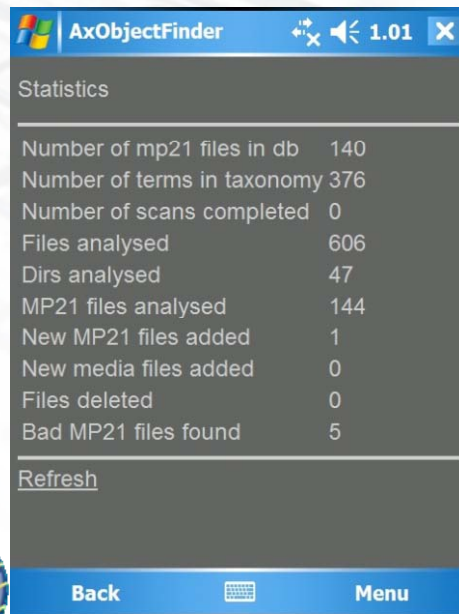Produce the complex content with authoring tool

20

Mobile Medicine AxObjectFinder

Suggestions on the basis of user behavior

Multichannel social integration

AXCP Quick Start,
Your tools commands,
Workflow systems,…

DB

CMS

FTP, WS, etc.

AXCP GRID

Content: Search, Selection, Acquisition, Production, Adaptation, Transcoding, Formatting, Packaging, Protection, Publication and Licensing on Demand

Monitoring & Reporting

AXMEDIS DRM

Registering & licensing

licensing

Control and supervision

WEB Server

Broadcasting Srv

Web+Strm Server

P2P distrib & monitor

User generated content

Social Networks

News Networks

Internet, WEB, VOD, ...

DVB, IPTV, i-TV, VOD, ...

Mobiles, PDA, etc.

AXMEDIS Automated and Manual Factory Tools

AXMEDIS Automated and Manual Factory Tools

AXMEDIS Automated and Manual Factory Tools

a×medis P2P network

Personalized Content on Demand