

Platforms & Quality Assurance in eLearning

**Lab. of Distr. Information Systems & Applications
Technical University of Crete - TUC/MUSIC**

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Technical University of Crete

- TUC/MUSIC belongs to the Department of Electronic and Computer Engineering, Technical University of Crete
- The Department of Electronic and Computer Engineering has about 30 professors, accepts about 120 undergraduates per year, offers MEng, PhDs
- The University is an Engineering School, has six Departments, a seventh is about to start

TUC/MUSIC

- Is the first lab of the Department of Electronic and Computer Engineering, since 1990
- Cooperates with the laboratory of Software Engineering
- Has permanent Technical Personnel (6)
- Graduate and undergraduate students vary from 20-40 (all working in EU programs)
- Supports many undergraduate and graduate courses heavy in software development.
- Emphasis on undergraduate Thesis, MEng, and PhD Thesis

R&D in TUC/MUSIC

- MUSIC has participated in more than 40 European R&D projects, and several national projects
- EU projects have highly competitive selection, participation of European industry, participants from more than one country
- Music cooperated in these projects with almost all the major European industry in the areas of software, telecoms, consumer electronics
- In many projects was Prime Contractor or Technical Leader of the project
- MUSIC also participated in several European Networks of Excellence, and is currently in the Board of Directors of the Delos Excellence Network and Leader of the Multimedia Cluster in the Network
- List and description of some of the projects exists in www.music.tuc.gr.

Areas of Interest

- Multimedia Management Systems, Digital TV Systems and Applications.
- High performance distributed multimedia systems
- Databases and Knowledge Bases, Office Information Systems, Information Retrieval, Digital Libraries.
- Technologies, Architectures and Systems for Services over the Internet.
- Application emphasis in e-Learning, e-tourism, e-culture, etc.

Outline of the presentation

■ E-learning Platforms

- The DELOS and LOGOS projects
- The MOLE project – Multimedia Open Learning Environment: **WebCourses**
- The pSkills, Organic.Mednet and NaturalEurope projects

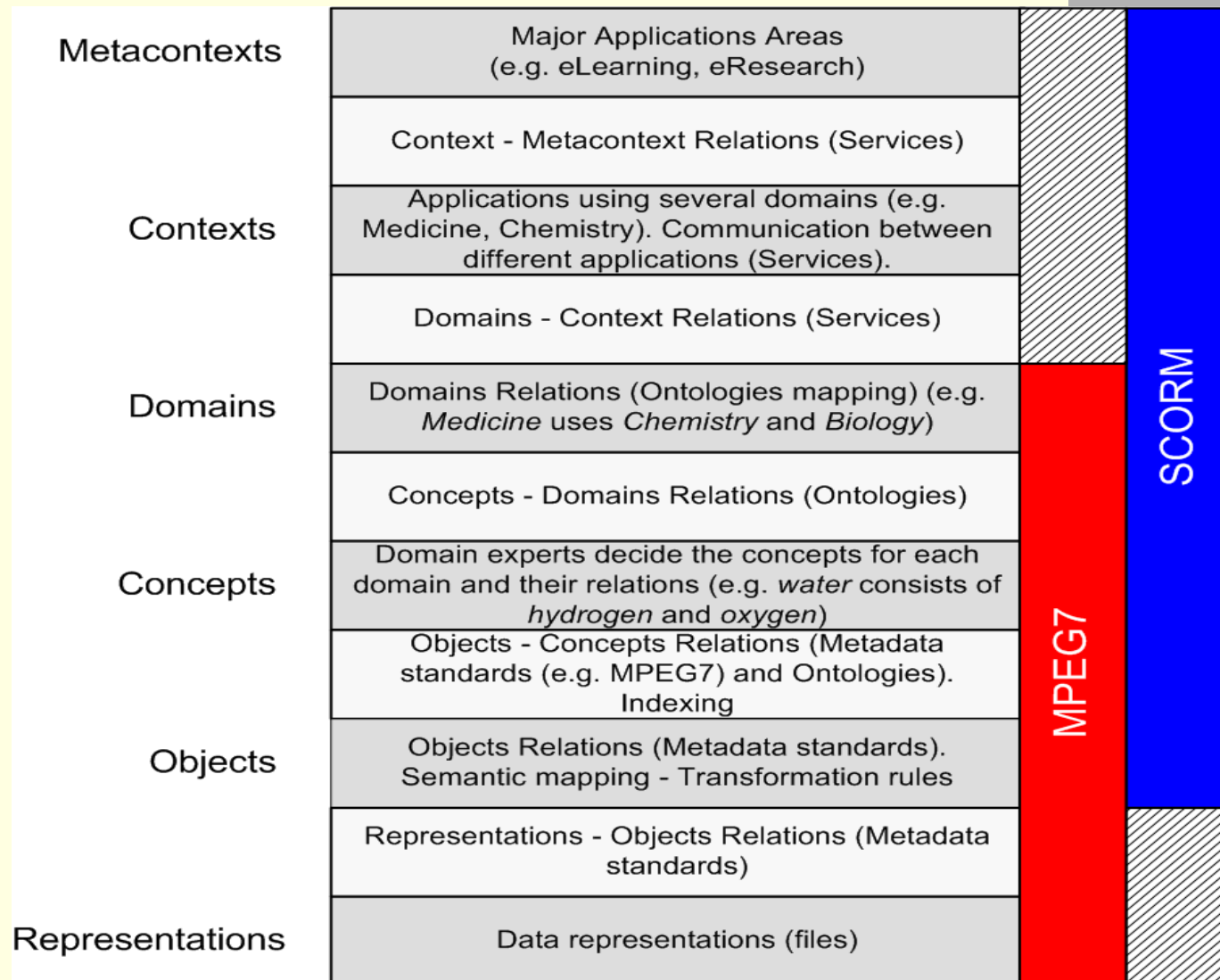
■ Quality Assurance in eLearning

- The iQTool project

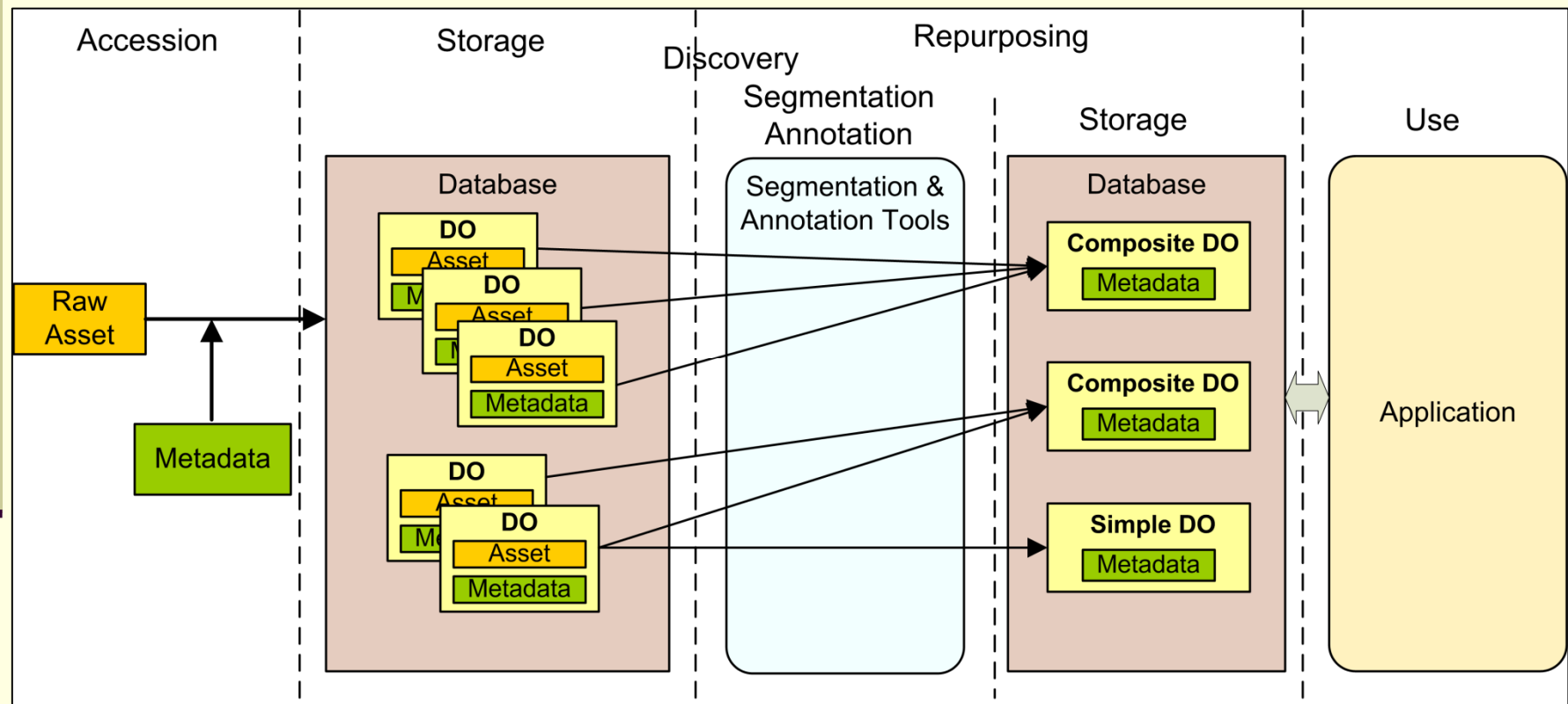
Reusing digital content to offer new learning opportunities

- eLearning applications provide multiple opportunities for learning anytime anywhere
- Digital libraries are an important source of learning resources
- complementary roles
 - Added value to existing material
 - New learning opportunities
- Two problems to be solved:
 - Interoperability issues
 - Personalization

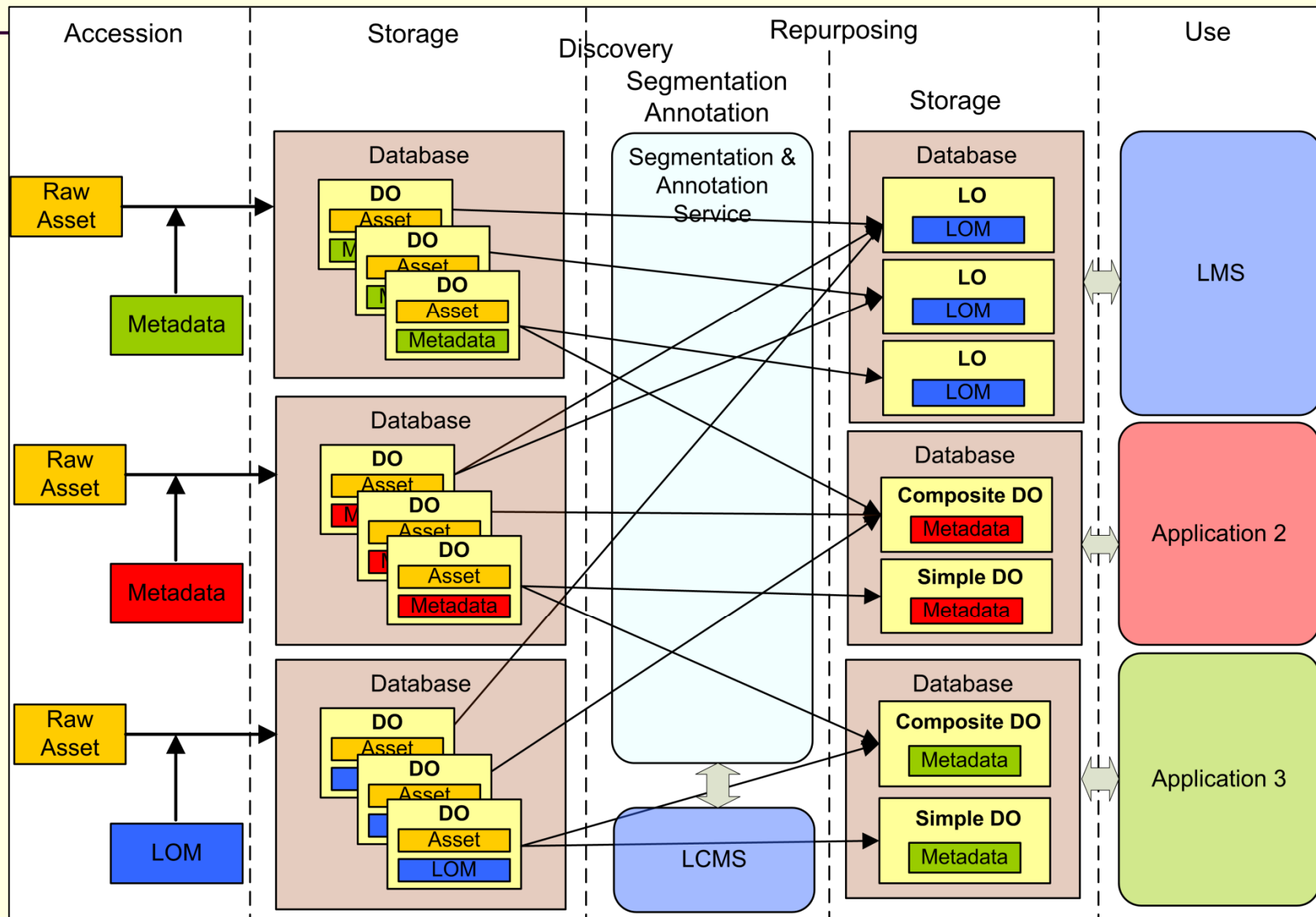
The multilevel problem of interoperability



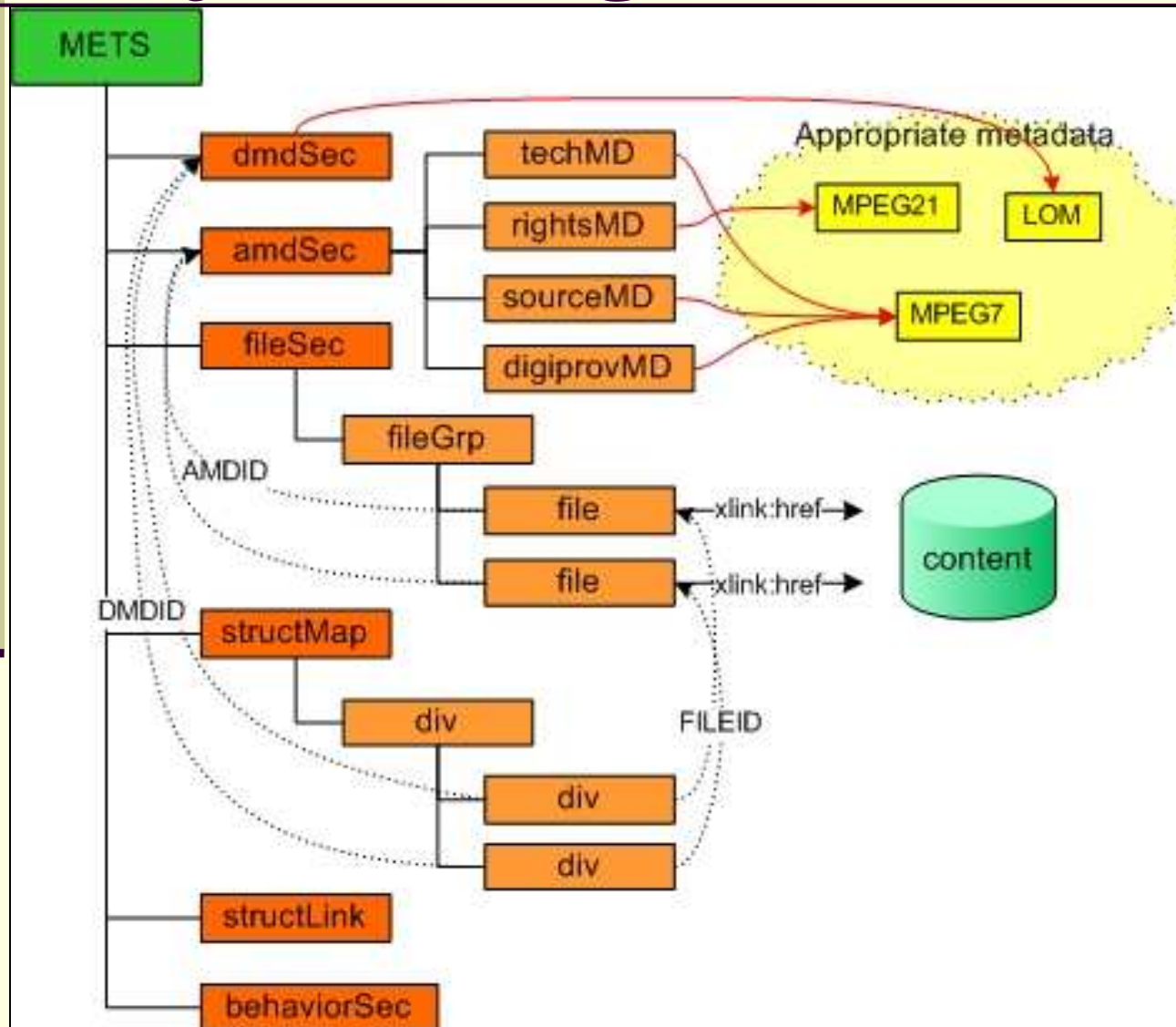
Repurposing: traditional scenario



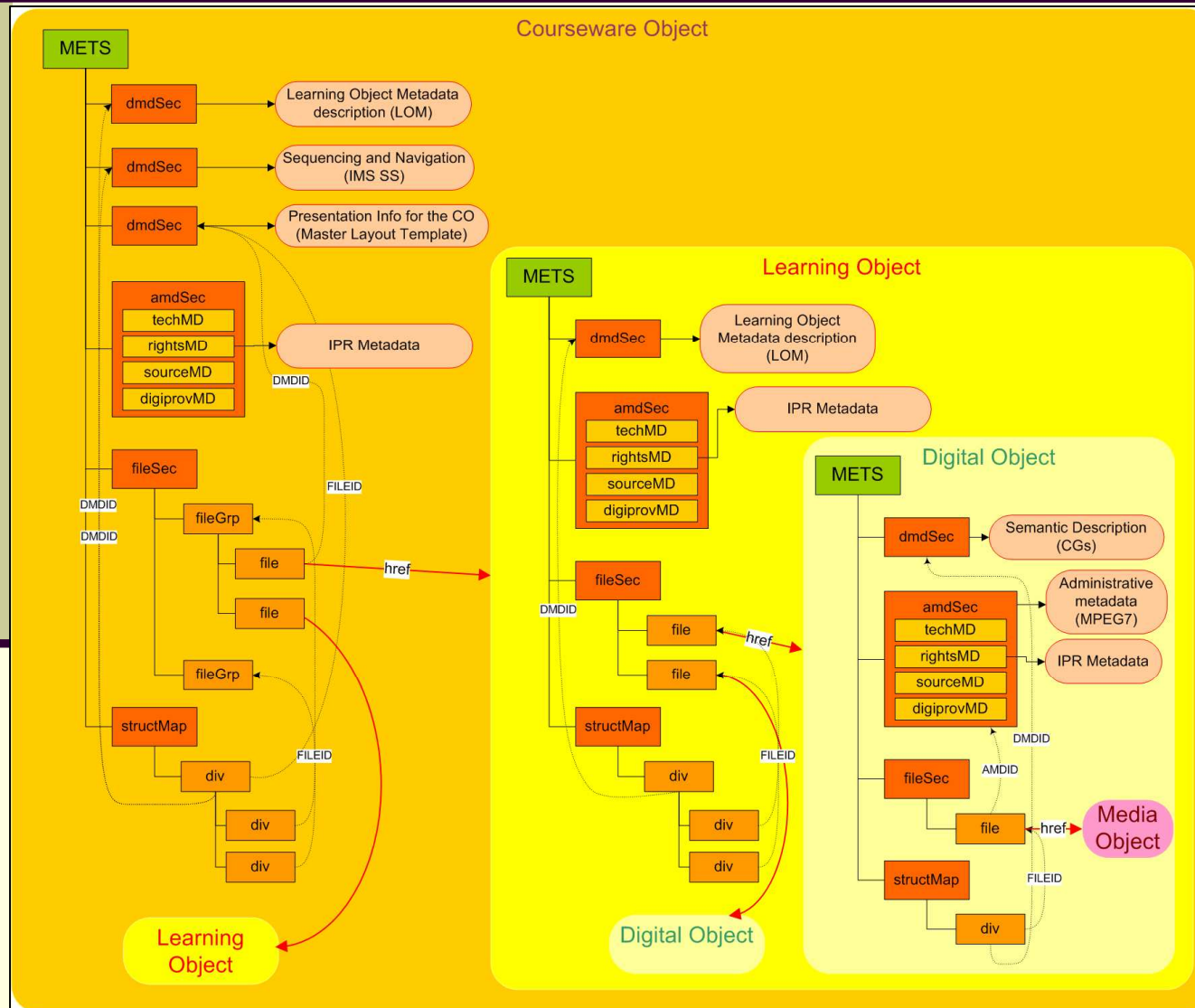
The LOGOS/DELOS scenario



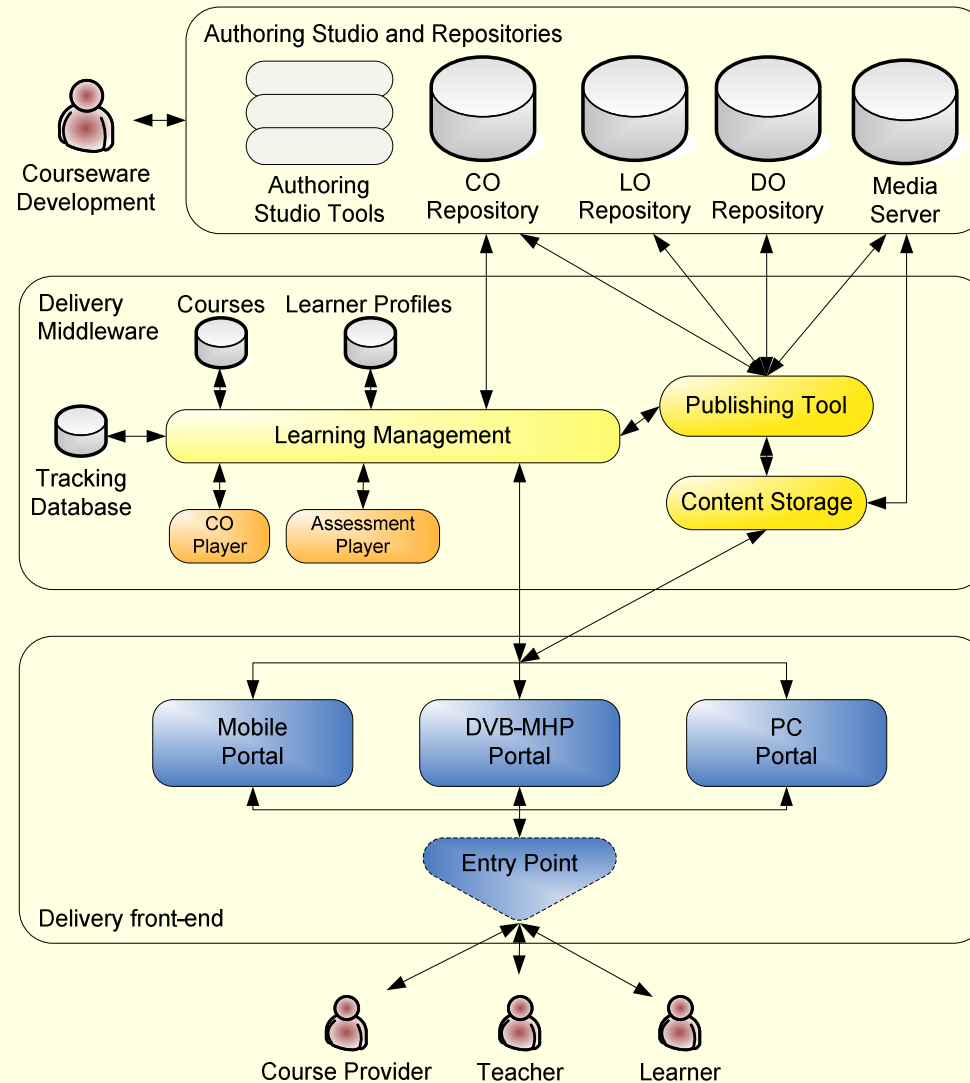
Mutliple context views of digital objects using METS



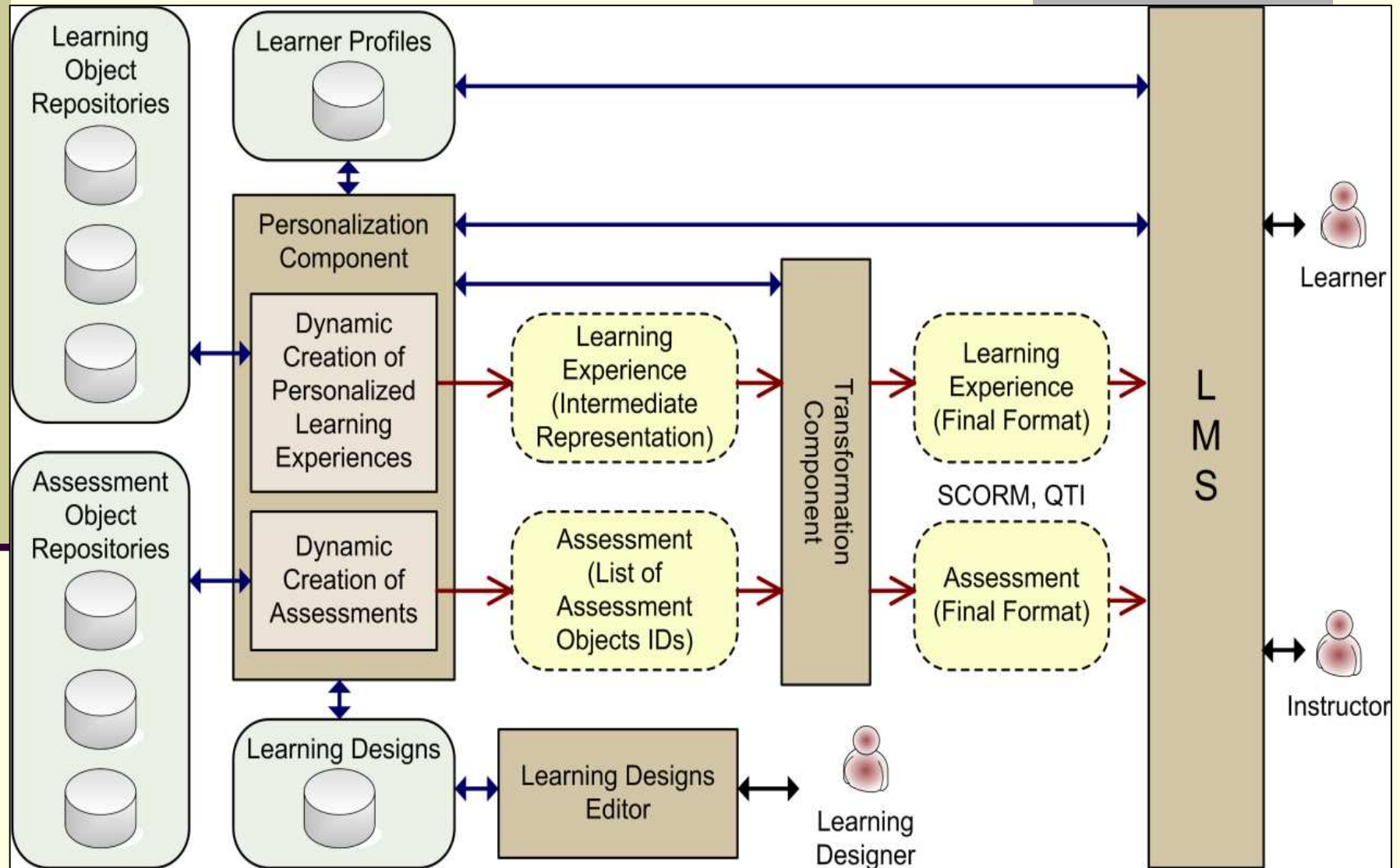
Gradual development of information objects



The LOGOS Platform



Personalization aspects



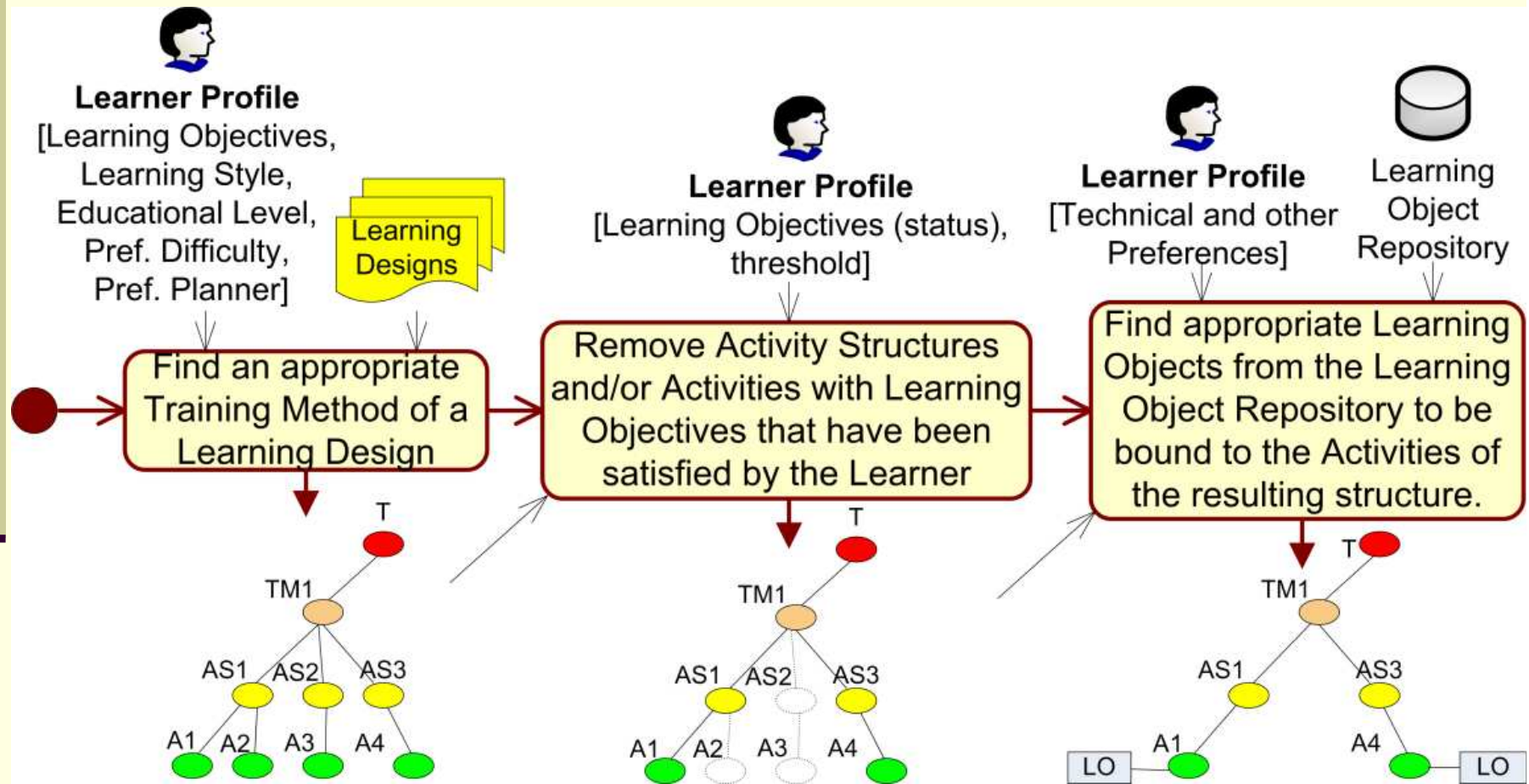
Learning Designs Editor

The screenshot displays the Learning Design Editor application window. The interface is divided into several sections:

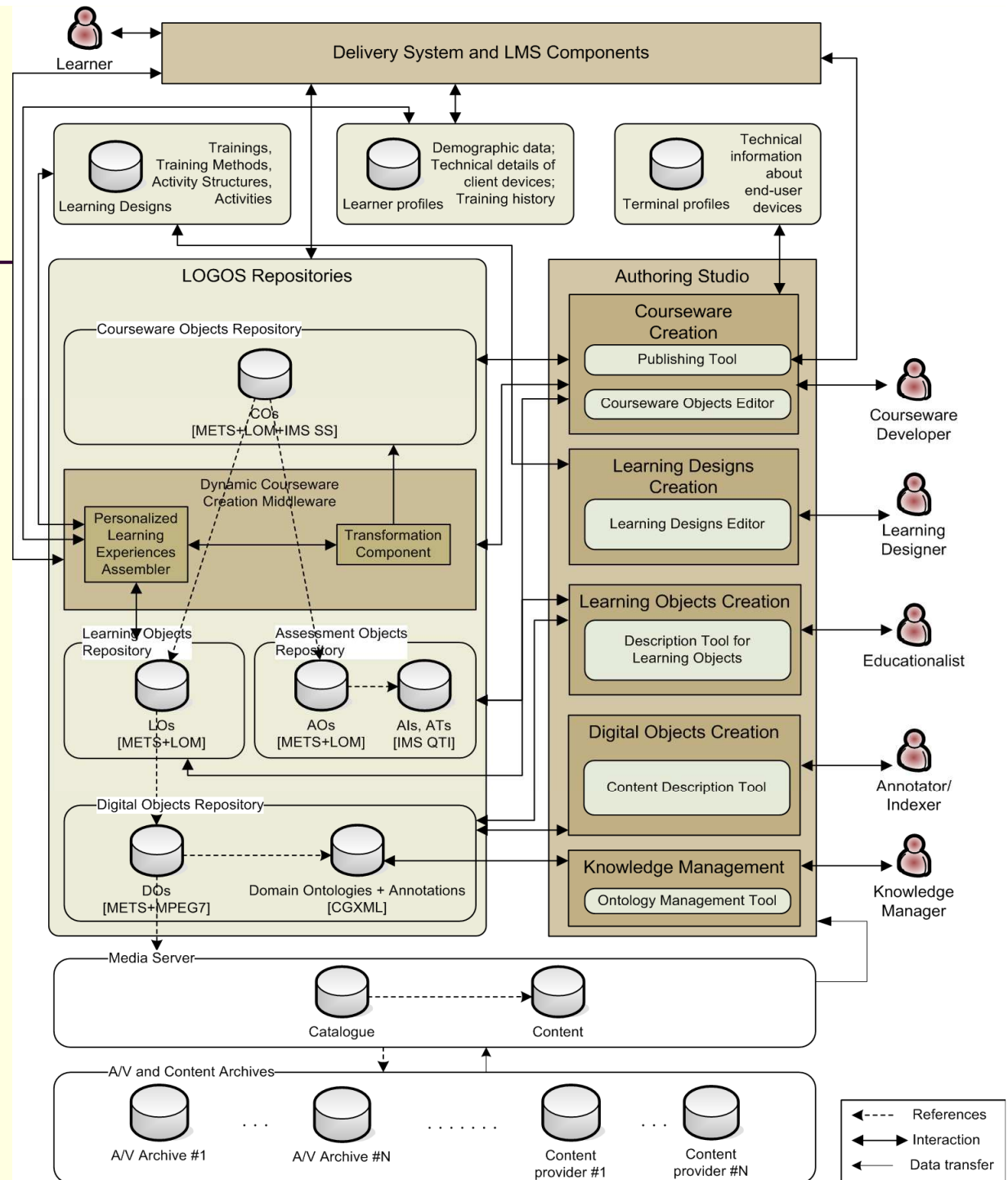
- Tree Viewer (Left):** A hierarchical tree structure showing the project's organization. The root is "Developing courseware using LOGOS Authoring Studio (v4)". It branches into "Introduction", "Developing Ontologies", "Developing Media Objects", "Developing Digital Objects", "Developing Learning Objects", "Developing Courseware Objects", "Developing Assessment Objects", and "Developing Learning Designs". Each branch contains sub-items, some with green checkmarks indicating completion.
- Editor (Right):** The main workspace for editing an activity. It is titled "Activity Editor" and contains the following sections:
 - General Information:** Includes fields for "Activity's Title" (Using Ontology Management Tool (CoGUI) to develop Ontologies) and "Activity's Description" (none).
 - Learning Objective:** Includes a "Verb" dropdown (set to "use") and a "Topic" text area containing "Concept Value: Ontology Management Tool - OMT", "Ontology Name: logos20090106b.xml", and "Ontology Type: cogxml". A "Select Topic" button is located below.
 - Learning Object Type:** Includes dropdowns for "Learning Resource type" (problem statement), "Interactivity type" (active), "Interactivity level" (low), and "Semantic Density" (very high).
 - Base Ontology:** A text field containing "logos20090106b.xml".
 - Semantics:** A text area containing XML code. Below it are "Add" and "Remove" buttons.

The Windows taskbar at the bottom shows the Start button and several open applications, including "3 M...", "S W...", "4 M...", "Epp...", "Lear...", "Medi...", "www...", "Micro...", "mylo...", "Sign...", "cogul...", "CoG...", "Stylu...", and system icons on the right.

Personalization Component



LOGOS Platform in detail





Supporting the learning activities in ECE-TUC

- A multimedia information system for managing courses, supporting educational activities and learning communities
- Organization and management of digital educational content (Lectures, notes, exercises, technical lab material, FAQs etc.)
- Informing learners (Announcements, Calendar, literature, personal grades etc)
- Learning communities (Mailing lists, live chat rooms, forums, personal messaging, instant messaging)
- Supporting educational activities (Registration to courses, formation of lab teams, exercise uploads and deadline management, assessment tests, annotation tools)
- Monitoring courses (Course usage statistics, class performance indicators)

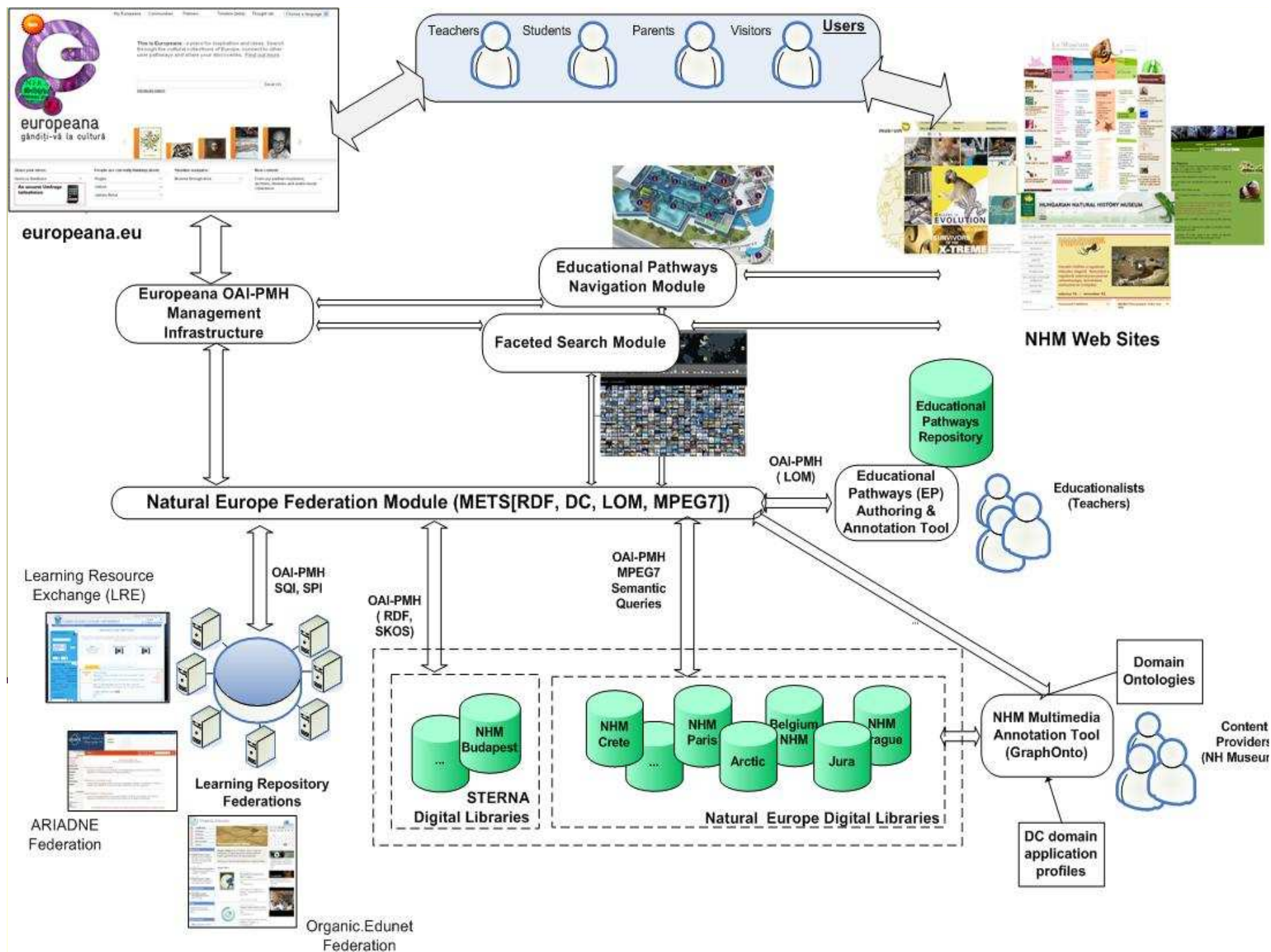
Services

Announcements
Calendar
Course Mailing List
Lectures Management
Notes
Useful Documents
Document Presentation
Annotations
Course Lab/Team Work
Exercise Upload
Forums
Chat rooms
Course/Lab FAQs
Grades (management, presentation)
Content search tool
Literature and Links
Assessment Tests
Course Statistics
Video Conference Rooms
Multimedia presentations (live/recorded)
SCORM export



Exploiting the infrastructure in 3 important domains

- Organic.Mednet (LLP/Leonardo da Vinci)
 - Training in organic farming
- pSkills (LLP/Comenius)
 - In-service training of computer science teachers to enable them exploit modern educational programming languages in their classes
- NaturalEurope (ICT Policy Support/DL Theme)
 - Improve the availability and relevance of environmental culture content for education and life-long learning use



Quality Assurance in eLearning

- iQTool: Innovative eLearning Tool for Quality Training Material in VET
 - Quality Assurance methodology
 - Training material
 - Open Source tool that can be integrated with LMSs

Quality assurance - QA

- QA addresses the need to ensure suitability of products for their intended purpose
- It is related to quality control of final products by specifying critical parameters that need to be tested
- It also identifies issues for quality improvement
- It can be applied, with appropriate adaptation, to any production process

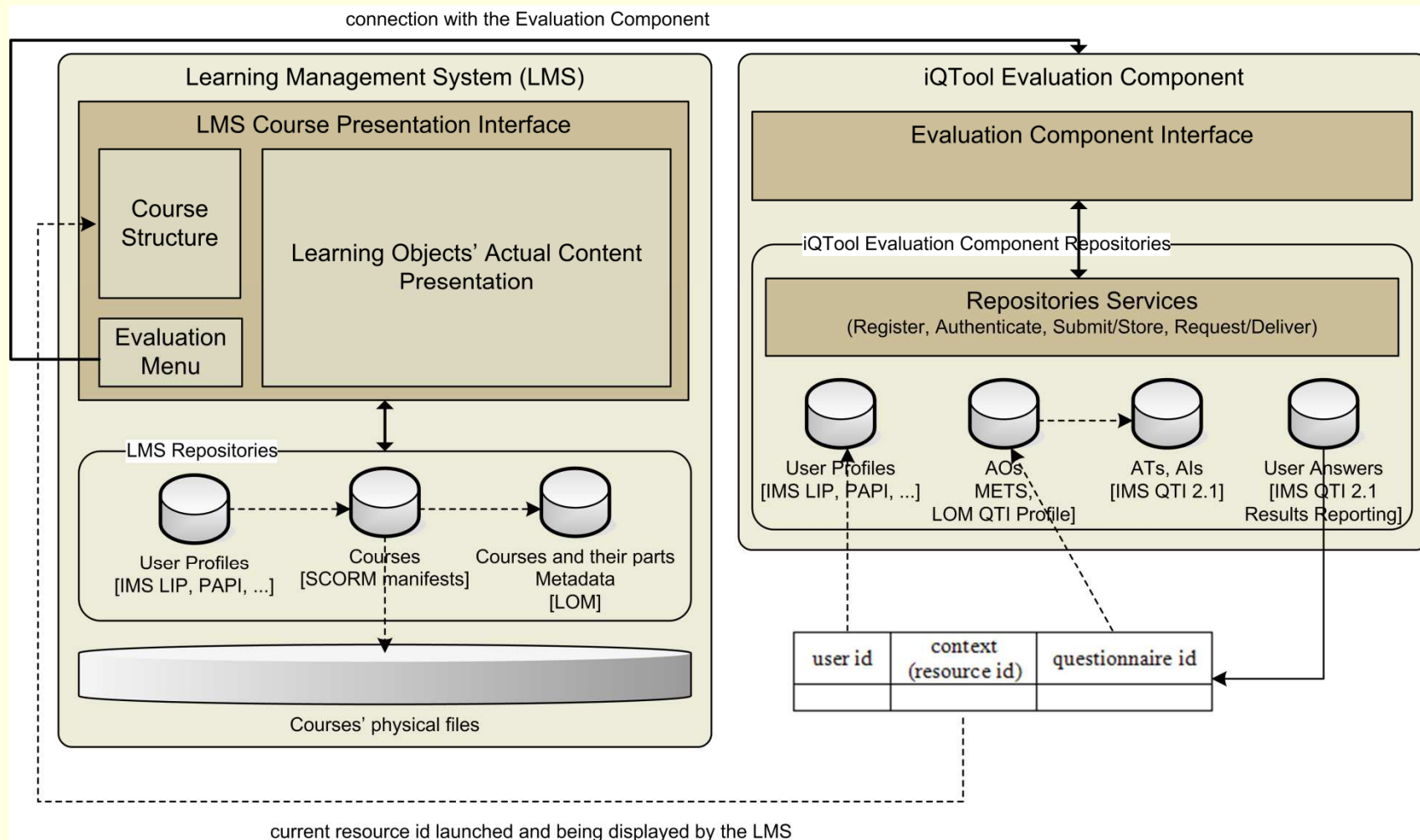
QA in eLearning

- Learning and eLearning → special case of production process
 - need QA methodologies to meet the needs of Learners
- Learning services, materials → products → quality should be ensured and controlled
- Quality in eLearning is significant in two perspectives:
 - Quality **through** eLearning
 - Quality **for** eLearning
- The need to produce quality eLearning products is widely accepted
- However, most of the eLearning organizations do not apply QA methodologies (“quality gap”)
- Need to promote a quality culture in a systematic manner

iQTool Evaluation Component

- Self-standing component that can be used in many LMSs with minimal adaptation each time
 - It can also be used for evaluation in other contexts (not only e-learning)
- By integrating this component in an LMS, the Evaluator can evaluate what (s)he actually experiences
- It can store the answers related to the quality simultaneously when the training material pages are displayed on the screen.
- Standards-based and service-oriented

iQTool Evaluation Component Architecture



The Evaluation Component Repository

- User Profiles
 - Represented using IMS LIP
 - Web services allowing:
 - Creation, retrieval, update, export, import of user profiles
- Assessment Objects (items/tests)
 - METS, LOM, QTI
 - Web services allowing:
 - Creation, retrieval, update, searching of Assessment Objects (boolean and fuzzy filters)
- Responses
 - Represented using QTI
 - Web services allowing:
 - Storage, retrieval, update of responses

Additional Services of the Evaluation Component Repository

- Specification of evaluation (quality control) parameters
 - Who evaluates, what, when and how
- Specification and presentation of statistics
 - Statistical processing of responses given in the context of an evaluation (quality control) process
 - Simple and combined statistics
- Special kind of questions/questionnaires are used to address the need for extensibility of user profiles

Thank you for your attention

TUC/MUSIC <http://www.music.tuc.gr>

Research on eLearning infrastructures

http://helios.ced.tuc.gr:8080/music/Controller?event=SHOW_RESEARCH_SUBJECT&ID=19

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<http://www.slideshare.net/moumoutzis/platforms-quality-assurance-in-elearning>