

EDEN 2006 ANNUAL CONFERENCE

E-COMPETENCES FOR LIFE, EMPLOYMENT AND INNOVATION



„E” is more!
E-learning Enabling Education
in Evolving Europe



CONFERENCE
PROCEEDINGS

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**András Szűcs and Ingeborg Bø
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DISTANT TRAINING OF E-COMPETENCES FOR DIGITALISATION AND CREATIVE USE OF CULTURAL HERITAGE

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Introduction

The importance of culture, in all its diversity manifested in different types of knowledge, traditions, lifestyles, languages and cultural expressions, is a key immaterial factor in the development of European knowledge society. This type of society requires access to the cultural and historical heritage on-line to largest number of people. Nowadays the professionals in cultural memory institutions work actively to acquire, organise, store, manage and use large amounts of human knowledge in digital form. The modern information technologies offer them continuously growing set of powerful means to digitise cultural content and to present it in the global information networks. In the same time the fast growth and enrichment of approaches, technological standards, tools and methodological facilities in the multimedia and web technologies require continuous update and acquisition of new knowledge and skills.

Vocational e-training is based on the e-learning paradigm which means sound pedagogical methods, wide availability, user-centred learning and an evident removal of the classroom element from the learning process. On-the-job training (OJT) is a form of individualized training that allows an employee in need of training to receive the necessary knowledge, develop the required skills and improve performance all while on the job. These aspects are very important both for the employee and the employer, since they provide the opportunity for quality training while limiting the effect on work plan.

The present paper discusses the aims and some results of the LdV project JASON “On the Job e-Training Skills to Deal with Digital Cultural Heritage Content”, developed by partners from Portugal, France, Hungary and Bulgaria. The partners work on JASON learning platform, aimed to develop facilities and learning content for OJT e-training aimed at building and enhancing e-competences for specific group of knowledge workers – librarians, archivists, museum curators, conservators, historians, archaeologists, art historians, artists, e-publishers, etc. to deal with digital objects of the cultural heritage.

In the first part of the paper results of the target groups’ educational background, ICT attitudes and learning needs analysis are summarised. The second part reviews directions and topics selected by the partners to develop appropriate e-competences for professionals from memory institutions. The third part presents briefly requirements and decisions for implementation of the JASON e-Learning environment.

E-competences and learning needs of memory institutions’ professionals

Analysis of the project target group’s typical educational backgrounds and job descriptions in the partner countries, using especially the experience of the Portuguese Network of Museums, outlined the following professional groups, directly concerned by the project:

- Curators, archaeologists and other graduate technicians – graduate professionals, commonly also having a MA, Msc. or PhD (more rarely). Their ICT aptitude varies enormously, depending on the individual professional curriculum, from the very familiar with ICT at various levels of use, to the computer inept person. Curators coordinate and perform tasks in researching, inventing, analysing, exhibiting, disseminating or otherwise organizing cultural heritage and coordinate conservation projects, especially preventive ones. Archaeologists and conservation architects will have a similar job description, but with a stronger emphasis on

concrete intervention projects on sites, monuments, collections, etc. Graduate technicians in libraries and archives will have their job description directed more clearly to day-to-day management of collections.

- Technical personnel – persons with a BSc. in a specific area (Conservation, Photography, Radiology, Archival techniques, Library inventorying, Archaeological excavation). Having more recent and more technical-oriented education ICT aptitude will be more widely spread. Job descriptions tend to be very case-specific, directed to the actual performance of a technically defined task (which is normally a part of a larger project designed and coordinated by a professional of a more empowered professional group) and they normally imply the personal responsibility of the technician in the performed job, from the choice of method to the documentation of the task for future reference.
- Professional technicians – they develop the various tasks needed to accomplish projects, but lack any actual responsibility for the final quality of the work. They are not supposed to work without direct supervision. Recruitment for these professional groups dispenses with university education, but generally requires professional training (or practice in an institution at an auxiliary level for a number of years, with adequate in-house training, leading to a promotion to this level). ICT aptitude will vary according to the specific field.

The current e-Competences of memory institutions professionals in the partner countries and their picture of the topics they need to learn in the field were additionally investigated by means of common questionnaire containing 9 groups of questions.

Content and structure of JASON e-training courses

The analysis of the target groups job descriptions and current e-competences and needs allows to determine their specific learning needs for ICT knowledge and skills. On the base of this analysis JASON developers determined the scope of necessary e-competences in four sub-areas, considered central for acquiring competences to deal with digital objects of the cultural heritage and selected a set of topics to be covered by the project eLearning courses.

Technologies, standards and methods for digitising cultural heritage master pieces

These courses have to introduce the trainees from memory institutions to the modern computer multimedia technologies. The brief structure of the two basic courses is described below.

Introduction to Media Representation

The course contains 39 HTML pages (plus glossary and bibliography) and 54 pictures/multimedia objects, and consists of the following lessons:

- Digitalization – why use it and digital images
- Introduction of Image File Formats (GIF, JPEG, TIF, PNG)
- Animation
- Sound (attributes, types, perception of sounds, file formats)
- Video, video streams
- Devices for digitalization (scanner, digital camera, microphone, synthesizer, recorder, video camera, video editing card)
- Types of media manipulation software
- Navigational systems

The Digital Image

The course contains 99 HTML pages (plus glossary, bibliography, online documents, links) and 242 pictures/multimedia objects, and consists of the following lessons:

- Introduction to Graphics (proportion and intensity, contrast and dominance, shade and tints, screen resolution etc.)
- Colours (basics, features, combinations, contrast etc.)
- Digital Gallery
- Graphic file formats (raster vs. vector files, GIF, GIF compression, interlaced GIF, JPEG, PNG)
- Graphic file formats for the Web
- Imaging strategies (interface elements, photographs as GIFs, photographs as JPEGs, diagrams and illustrations as vector graphics)
- Multimedia (introduction, applications, standard formats, web multimedia strategies)
- Digital media processing (audio processing, video processing, delivery, streaming, downloading, drawbacks, design and multimedia)
- Scanning (introduction, scanning for printing or video screens, resolution, screen bit-depth)
- Scanner features (resolution for the video monitor, scan resolution and image size)
- Digital cameras (introduction, vocabulary, optics, viewfinder, storing images)

Processing of digital objects

The new acquired competencies are oriented to work with multimedia digital libraries, archives and galleries containing diverse multimedia types, with support for 2D and 3D objects. These competencies will permit the professionals of memory institutions and cultural industry to store and catalogue easier digital objects and to integrate the multimedia content in new complex digital artefacts, thus increasing the knowledge and reducing the costs to produce and publish educational and common-interest materials. The brief structure of the courses, developed up to now is described below.

Multimedia Authoring Packages

The course contains 95 HTML pages (plus glossary, bibliography, online documents, links) and 103 pictures/multimedia objects, and consists of the following lessons:

- Authoring tools versus programming tools
- Authoring tools (CD-ROM based, cards or page-based, Icon or object-based, time-based tools. examples – HyperCard, Asymetrix Toolbook, Macromedia Authorware, Macromedia Director)
- Web-based authoring tools (Microsoft FrontPage, Macromedia DreamWeaver, Claris HomePage, Adobe PageMill, Macromedia HomeSite)
- Main opportunities of multimedia authoring tools
- Choosing a right authoring tool (vs. users, projects purpose, multimedia elements, budget etc.)
- Introduction to Microsoft PowerPoint
- Introduction to Macromedia Director
- Introduction to Macromedia Flash
- Introduction to Adobe Premiere Pro

Use of digital images for museum activities

The course contains 44 HTML pages (plus glossary and bibliography) and 37 pictures/multimedia objects, and consists of the following lessons:

- Preparation for digitalization (hardware, software, environment)

- Project planning (management policy for digital assets, defining the audience, evaluating assets)
- Storage and management of the digital collections (capture and storage, preservation strategies)
- Metadata creation/capture (scope, standards, types of metadata, collection-level description)
- Process of publication of digital collections (accessibility, security, authenticity)
- Disclosure of resources (searching and retrieval, browsing, visual and content-based retrieval)

Using effectively new forms in remote collaborative working and work flow

This category covers themes such as portal technologies, shared work spaces, collaborative working, approbation strategies and policies for collective publishing, etc. One course is developed up to now.

New forms for remote collaborative working and workflow in memory institutions

The course consists of the following lessons:

- Introduction to the Internet (basics, getting connected, Intranet/Extranet)
- Using the Internet (browsing, bookmarking, download/upload, cache, data compression)
- Finding information on the Internet (where and how to search, search results)
- Web database (models, implementation, digital archives)
- Information workflow (e-mail client, address book, mailing list, sending e-mails)
- Manage time (meetings schedule)
- Collaborative tools (forums, glossaries, chat, videoconference, virtual networking)

Effective use of Web digital content (including search by semantic web approach)

One course is developed up to now in this category and its brief structure is described below.

Semantic Web approach to access information on Internet

A sample view of a screen is shown on Figure 1. The course consists of the following lessons:

- Problems with the current information retrieval in Internet
- Semantic Web scheme and levels
- Resources and identifiers in the Semantic Web
- Ontologies – concepts, structure, examples
- Ontology description languages
- Problems with actuality, reliability, trust-worthiness of the Internet information
- Information preparation and retrieval in the Semantic Web Annotations
- Agent technologies in the Semantic Web
- Perspectives and problems; integration of information sources
- Example of Semantic Web site for cultural heritage

JASON eLearning platform

According to the investigation of JASON e-training forms and learning context, and considering some previous experience of the authors with e-training on the workplace, the following functional requirements for the JASON learning environment were formulated:

- It has to support sufficient level of interactivity for learning-by-doing operation mode.
- It has to supply facilities for skills acquisition.

- It has to permit fast activation of the learning environment and fast restoring of the working environment.
- It has to store the current status of the trainee on exiting the learning environment.
- It has to allow fast restoring and continuation of the e-training process.
- It is desirable to simulate operation in apprentice mode, presenting exemplary solutions of practical problems.
- It has to allow easy and natural communication of the trainees with the instructor and with peers.

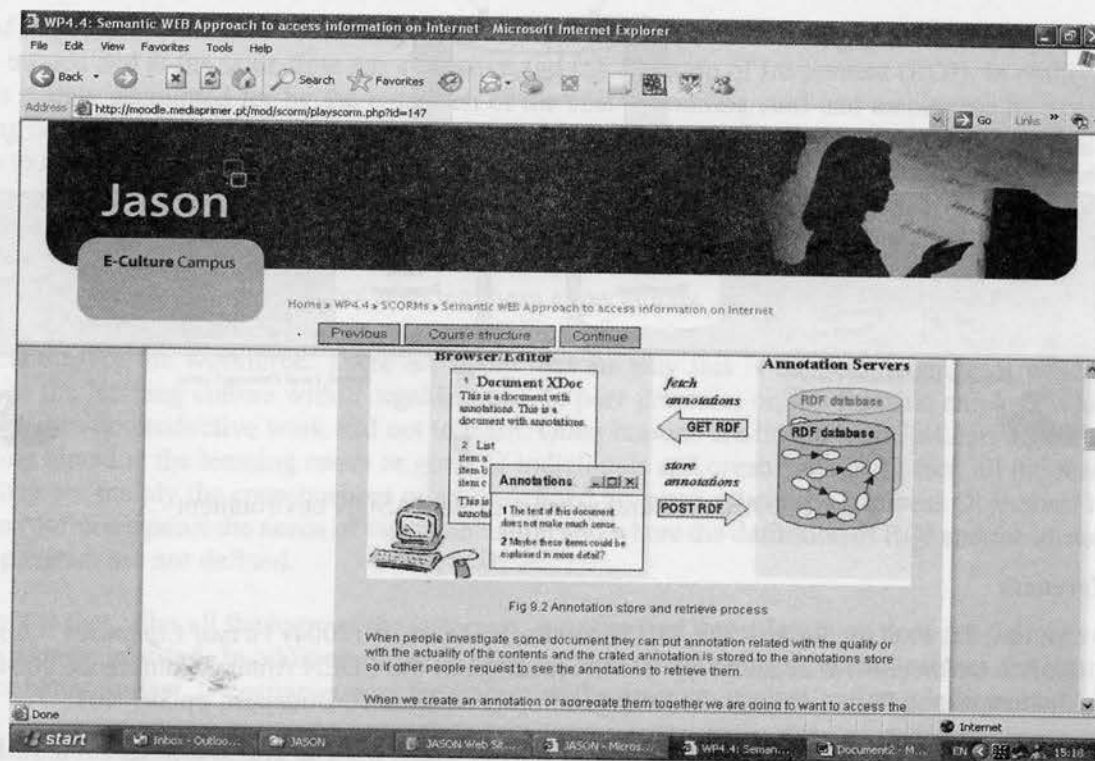


Figure 1. Sample screen of a JASON e-training course

The JASON environment implementation (Figure 2.) contains 4 local distance training centres in the partner countries, each integrating two functional software subsystems: virtual training studio for implementation of OJT process, and authors' studio for creation of multimedia training materials. To use JASON environment (<http://moodle.mediaprimer.pt/>) the user needs only to have a multimedia computer connected to Internet. It does not require the installation of any specific software, just a standard software platform: operation system, browser, video, sound reading programs, etc. The JASON environment allows different users to use its resources all the time. The role of the instructor is to assist and guide the learners if they experience difficulties. The environment supports the learning process with synchronous and asynchronous communications and includes context-oriented forums, chat rooms, message board. The communication tools are available for interaction both among the learners themselves, and between the learners and the instructors as well. The local training centres are developed through modification and customization of an open source Learning Content Management System (Moodle), as it meets the basic JASON requirements. The e-training courses are organized according to the SCORM standard for re-usable eLearning materials.

Conclusion

The JASON developers determined the scope of e-competences, necessary for memory institutions professionals to handle and access digital objects of the cultural heritage. The created e-training courses have just started their experimental use in their partners' languages versions in order to supply feedback for improvement and enhancement of the courses content as well as of the JASON environment functionality.

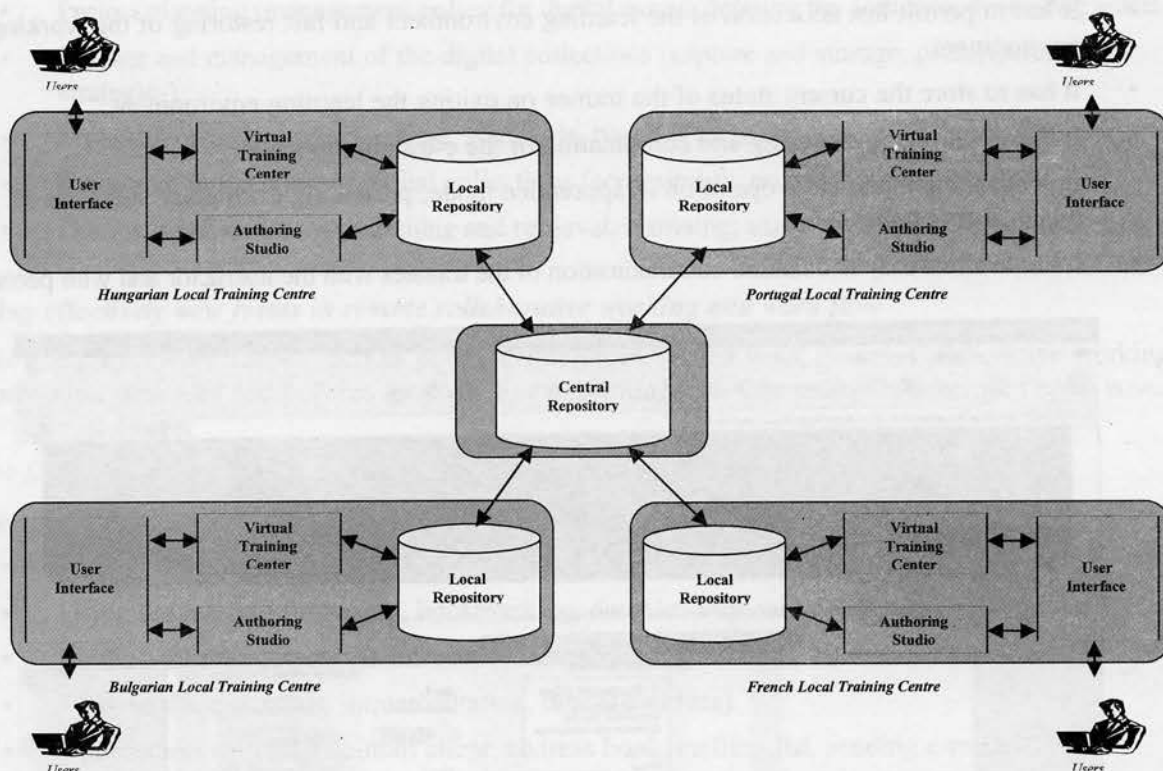


Figure 2. Architectural scheme of the JASON environment

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