



## Innovative Vocational Training System in Archaeological Heritage

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### 1. Introduction

The construction of system solutions designed to handle the training needs of users with different levels of competence and expectations, requires selecting models capable of providing greater flexibility in running training courses with similar themes. In the situation where the target groups are dispersed and with significant time constraints, the training should be run in distant mode in the Internet environment using e-learning solutions. This approach gives the opportunity to offer training for groups of similar training needs but geographically dispersed. This model shall also facilitate a flexible time management in the implementation of training. Distance training applying e-learning solutions can be organized in different ways. For the training was effective, it is necessary to take into account different needs of the target group and guarantee the high quality of teaching. It is also important that the training was implemented with the use of teaching materials in electronic form, which will be adapted to online learning.

An important factor contributing to increasing flexibility of the educational system is the availability of mechanisms enabling the authoring of teaching materials through the compilation of available didactic materials. This allows the creation of a training curriculum in the form making possible to fully correspond to the training needs of any group. This need is particularly important when the distance training model is chosen in which the source of knowledge is not a teacher, but teaching material in electronic format. Then, in order to fully support the training needs of the group, e.g. by expanding the training program, one needs flexible authoring mechanisms to compile teaching materials of the available didactic content.

These requirements are met by the educational system designed to provide training in the field of protection and management of archaeological heritage. It has the following characteristics:

- is prepared to conduct distance training via the Internet,
- distance training is carried out in the assisted e-learning model, i.e. in the model in which training is performed asynchronously, the source of knowledge is the e-learning content, not the teacher, while the role of teachers is limited to providing support and monitoring the learning process,
- distance training is carried out by using e-learning content in the form of multimedia and interactive elements, which is compiled for the purpose of training,
- e-learning content is stored in a content repository in the form of learning objects; their classification is logical and substantially consistent,
- content repository is understood as a database and a single authoring tool that facilitates finding the necessary learning content and enables construction of a new course via drag and drop mechanism.

Educational system has been produced and tested within two consecutive Leonardo da Vinci projects ([www.e-archaeology.org](http://www.e-archaeology.org)). The aim of the first project (E-learning as a tool of knowledge transfer in the field of protection and management of archaeological heritage, 2007-2009) was to define needs and expectations of major target groups in this field and define content of the course "Archaeological heritage in contemporary Europe" that meets these requirements [2]. Furthermore, methodology of running distant trainings in the Internet has also been prepared. A comprehensive multimedia and interactive e-learning content was then produced to facilitate the course implementation. The second Leonardo project (Vocational training system in archaeological heritage based upon e-learning resources, 2010-2012) was intended to define training needs of new target groups interested in a range of different issues in the domain of protection and management of archaeological heritage as well as prepare training curricula to meet these different expectations. Additionally, e-learning content was enriched by producing new materials that are of interest to these new groups as well as broaden existing materials. Furthermore, methodology of curriculum construction and use of content repository of didactic materials represented in the SCORM standard has also been produced. A specially designed content repository tool, aimed to facilitate authoring new e-learning content out of the content stored in the system, has also been constructed.

### 2. Needs of target groups

Archaeological heritage is an increasingly important social resources which significance goes far beyond academic community [3]. It plays significant role in spatial planning, infrastructure development, leisure and entertainment industry as well as remains to be extremely important for building up and maintaining local and national identities. Accordingly, an increasingly growing group of professionals and the general public demand systematic knowledge of different facets of archaeological heritage. Hence, it required to carefully craft the training curricula addressed to different groups to meet their needs and expectations.

Understandably, these groups are largely dispersed and are characterized by varied competences and different access to the newest knowledge in the field. They are often professionally very active. Hence, methods of vocational training designed for them need to combine efficiency of the educational process and their obvious time constraints. Since these are largely dispersed groups, the Internet has provided the most efficient means for communication and high quality vocational knowledge distribution.



### 3. Training curricula in protection and management of archaeological heritage

Educational system is made of numerous curricula, such as e.g.

- "Archaeological heritage in contemporary Europe" – a thorough and detailed course on archaeological heritage and management directed to the heritage professionals
- "Introduction to archaeology for engineers" – a course presenting basic information about archaeology and archaeological heritage for the engineering construction sector
- "Teaching of the past – archaeological heritage for teachers" – the course on social significance of archaeological heritage designed for teachers of elementary and secondary schools
- Training curricula are composed of didactic content covering a range of issues in the domain of protection and management of archaeological heritage, such as:
  - Theory of archaeological heritage
    - Theorizing cultural heritage
    - Mentalities and perspectives in archaeological heritage management
  - Mapping of archaeological heritage resources
    - Concepts of understanding – spatial valorisation of archaeological heritage resources
    - Aerial survey in archaeological protection and management systems
    - Geographic Information System as a method of management of spatial data
    - Geophysical prospection in archaeological protection and management systems
  - Valorisation of archaeological heritage
    - Images of the past
    - Cultural biography of landscape
  - Protection and management of archaeological heritage
    - International conventions and legal frameworks
    - Sustainable development in the archaeological heritage sector
    - Management cycle and information systems in the archaeological heritage sector
    - Commercial archaeology
  - Politicising archaeological heritage
    - A single voice? Archaeological heritage, information boards and public dialogue
    - Methods of engagement, publicity and media relationships
    - Public outreach – museums, schools, services
  - Urban archaeology
  - Maritime archeology
  - Archaeology and politics
  - Unwanted heritage

### 4. Distance training model

Distance training has been conducted, as specified in the model presented in [4]. Premises of didactic process in the distance learning training are as follows:

- the didactic process is realized through the Internet in the assisted e-learning mode of the Web based training model [1], i.e. the teacher supports the course, and is not a source of knowledge,
- a focal point of the training is didactic material provided to trainees in the form of multimedia and interactive e-learning courses,
- the teacher can facilitate didactic process by using auxiliary materials, taking into account the character of the trained group,
- the training is run in the system supporting distance education - LMS/LCMS system, such as Blackboard, Edumatic, Dokeos, Moodle, etc.
- discussion forums along with other individual and group task i.e. essays, are integral elements of the training process,
- progress of the work in the course is monitored by the teacher,
- there is a lack of traditional meetings during the training; however, it is possible that part of the training is completed in the form of blended learning.

### 5. Multimedia and interactive e-learning content

Didactic content used for distance training were developed in the initial phase of the production process as a collection of essays in text form. After the adaptation phase, they were transferred into the format of multimedia and interactive e-learning content. Multimedia and interactive e-learning content are the most suitable format for conducting training in the Internet. They are made available in a form resembling delivery of information in the internet i.e. in the form utilizing multimedia and interactive elements. In particular, multimedia e-learning courses are understood as a mode of didactic content organization with the following characteristics [4]:

- The content contains multimedia and interactive elements making the delivered content attractive and facilitating efficiency of the training,
  - The content has a hierarchical structure adapted to the Internet education needs and is composed of independent units of knowledge known as Learning objects
  - The course can be easily uploaded in the learning management system due to its availability in the form of a popular standard of the didactic content representation, e.g. SCORM.
- Hierarchical structure and delivery of didactic content in the form of learning objects comprise important feature of e-learning content designed for the educational system. Content has been divided into small portions of knowledge, in a way making possible their easy assemblaging into larger segments, depending on the training needs of any target group. A segment of the material, making up a single learning object, requires 5 to 15 minutes of the trainee's time for mastering the purpose (Fig. 1).



Fig. 1 – Learning object from the course “Archaeological heritage in contemporary Europe” in LMS/LCMS (Edumatic) system


## 6. Flexible content authoring - content repository

The weakness of solutions adopted in the first Leonardo project, despite its overall high value, was the lack of capacity to create e-learning tailored content based upon available materials. In a situation in which the original training curriculum must have been modified because, for example the need to remove a certain batch of material, an assistance of e-learning experts was needed. In the case of working with different target group, the problem shall only be more pronounced as the new users expect the content be tailored to their needs. In addition, e-learning content has been expanded with new content. It was then necessary to develop methods and tools enabling content authoring by domain specialists without IT competence.

The flexible content authoring system has been made possible with Content Repository software enabling the storage and processing of e-learning content in SCORM standard. E-learning content, after being uploaded into the system and thanks to the use of nomenclature derived from the UCTS (Universal Curricular Taxonomy System), is available in smaller segments relevant to teaching needs. The UCTS model allows for the division of content into three categories of the so-called Processable Units (PUs): curriculum, module and unit. These components of SCORM content are placed in the system and can be further processed, i.e. integrated with other Processable Units and downloaded from the system in the format ready for the training (after being uploaded to any of the LMS / LCMS compatible system).

Other components of e-learning content, i.e. learning objects that are not recognized as PUs are also visible and searchable in the system. Content repository provides also advanced searching engine of available resources, including tools for finding standard SCORM metadata and tags.

All content in the form of Processable Units and learning objects have been tagged, based upon the wordnet-based ontology using the approach presented in [5]. At this moment, content repository contains c. 250 processable units (curricula, modules and units) and 1250 learning objects. The semantic search using tags makes exploring the repository significantly easier (Fig. 2).


Log in

• Home
• Browse Repository
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Advanced search »

Local

Open

Show 10 entries
Table
Reverse tree
Filter
Clear filters

Title	UCTS	PU type	Scorm version	General Title
concepts				
Concepts of understanding - spatial valorization of archaeological heritage resources	Module (level 1)	Basic	1.2	Concepts of understanding - spatial valorization of archaeological heritage resources
Concepts of understanding - spatial valorization of archaeological heritage resources (along with case studies)	Module (level 1)	Basic	1.2	
Introduction to concepts related to the cultural biography of landscape	Unit (level 0)	Basic	1.2	
Problematic cultural heritage in memory processes and politics – basic concepts	Unit (level 0)	Basic	1.2	
Problematic cultural heritage in memory processes and politics – basic concepts: Further Reading	Unit (level 0)	Basic	1.2	

Showing 1 to 5 of 5 entries
First
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1
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Filter
Columns

PU (Processable Units):

☒ UCTS

☒ Curriculum (level 2)

☒ Module (level 1)

☒ Unit (level 0)

☐ Other (not PU)

SCORM:

☐ SCORM types

☒ COURSE

☒ BLOCK

☒ SCO

☐ ASSET

☐ RESOURCE

☐ FILE

Fig. 2 – Content repository with content (PUs) from the course “Archaeological heritage in contemporary Europe”

## 7. Final remarks

Educational system was built up to handle the training needs of different audiences. At the moment, it contains e-learning content in five languages (English, Polish, Spanish, Latvian, and German). The proposed method can be used in different educational contexts and training run on different e-learning platforms. It is very flexible and can easily accommodate needs of different target groups.

## References

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