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Technology-enhanced Learning with Ubiquitous Applications of Integrated Web, Digital TV and Mobile Technologies

**HUBUSKA Open Workshop, 6th eLearning Forum
Budapest, Hungary, 9-10 June, 2005**

Proceedings

HUBUSKA

Networking Centres of
High Quality Research on
Knowledge Technologies
and Applications

MTA SZTAKI

IMI BAS, IIT BAS

NOVITECH

UNIVERSITY
KLAGENFURT

István Simonics – Radoslav Pavlov – Tatiana Urbanova
Editors

Technology-enhanced Learning with Ubiquitous Applications of Integrated Web, Digital TV and Mobile Technologies

Open Workshop

6th eLearning Forum
Budapest, Hungary, 10 June, 2005

Proceedings

Workshop programme and organising committee

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Tatiana Urbanová (*Editor*), Novitech Partner Ltd. TeleDom, Slovakia

PREFACE

In June 2005 we organized our first Open Workshop of HUBUSKA project. It was the starting event of series of Open Workshops for disseminating of results of our common researches. First we selected the topic of "TECHNOLOGY-ENHANCED LEARNING WITH UBIQUITOUS APPLICATIONS OF INTEGRATED WEB, DIGITAL TV AND MOBILE TECHNOLOGIES". We organized this workshop in Budapest as a satelite programme of 6th eLearning Forum.

There was important for us to show a really broad picture about technology enhenced learning. We invited **FABRIZIO CARDINALI** as a keynote speaker, the Vice President of *European eLearning Industry Group – eLIG –*, who has several important position in different profesional bodies. (See "AUTHOR BIOGRAPHY" in the end of his paper.) He gave two presentations, both at 6th eLearning Forum and our HUBUSKA Open Workshop. We start the Proceedings with his paper about Narrowcasting & Ambient Publishing.

The Bulgarian researchers present their ambitious results on technology enhenced learning. They are representing two project partners *IIT and IMI BAS*. **Danail Dochev – Radoslav Pavlov – Nektarios Moumoutzis – Aszen Aszenov** – Bulgarian, Greek and Hungarian author group –, describe the broader Learning Content and Multiple Channels Delivery in eLearning Systems. **Desislava Paneva** gave the results of realization of interactive TV-based learning process. **Ivo Marinchev – Danail Dochev** presented experiences of in-Company Training and Knowledge Management in several organizations. From paper of **Mariya Monova-Zheleva** we can gain information about design and development of Intended Instructional Flows in Web-based Learning Environments.

From Slovakia D. Šiškovičová described the opportunities of using the Macromedia Flash© in creation of study materials. This paper were presented at the Open Workshop by **Tatiana Urbanova.** Both of them are representing *Novitech Partner Ltd.* participating in HUBUSKA project.

In the next part there are two papers from partner *University Klagenfurt Institute for Information Technology (ITEC)*, Austria. **Armin Müller – Michael Kropfberger – László Böszörményi** described the research result of annotation and presentation of content-variations in a web-based search environment for video. **Michael Kropfberger – László Böszörményi – Daniela Ebner** analysed eLearning impacts of Next-Generation Mobile MultiMedia Museum Guides.

In the last part of the Proceedings the representative of partner *MTA SZTAKI* **István Simonics** shares the experiences of research of comprehensive application of eLearning, showing the result of analyses of questionnaire.

There are lot of new concepts in the presented papers. The editors would like to support the immersement in technology enhenced learning. In the Appendix the reader can find the Glossary for better understanding in three languages: English, Bulgarian and Hungarian.

Budapest, June 2005

<div align="right">

István Simonics – Radoslav Pavlov – Tatiana Urbanova
Editors

</div>

Presentation of project HUBUSKA
Networking Centres of High Quality Research on Knowledge Technologies and Applications

EU FP6 programme Specific Support Actions
Contract No. INCO-CT-2003-003401

Summary

The main objective of the project is to promote the co-operation of educational and research institutes active in IST area of knowledge technologies and their applications in eLearning, and to accelerate the dissemination and application of the research results in associated candidate countries.

The current cooperation between the partner institutions will be enhanced by specific support and coordination of their network activities by means of visits, working meetings and joint workshops for presenting and analysing their research outcomes, experiments and best practice solutions.

It will exploit the educational potential of the embedded intelligence applications and the integration of web, digital TV and mobile technologies, which will touch the lives of millions of people, many of them currently not affected by the Internet revolution.

The integration of high quality research institutions for exchange of research information, results and personnel in priority IST areas (Semantic-based knowledge systems, Technology-enhanced learning) will be an effective instrument for dissemination and deployment of knowledge intensive applications in the partner ACC in their transition to the Knowledge Society.

The project disseminates research results on modelling content information of audio-visual data and contributes to the spread query, indexing, and retrieval systems using the model. MPEG-7 description is a proper tool for encoding the content and any other information related to the multimedia data. Such a model enables novel multimedia services. A query language and a cost-based query optimiser can enhance the efficiency of the query and retrieval system based on the content model. The project will exploit new multimedia algebra to increase the performance of the retrieval system.

Another aim of the project is to promote applications of the partners' research results in promising segments of the eContent industry – production of the multimedia-based educational materials, permitting interoperability between different eLearning platforms and multilingual re-usability of eLearning content in different language environments.

The project objective will be achieved by realisation of a set of specific activities as follows: .

A/ Organisation and maintenance of information structure for networking between the partners for thematic exchange of high quality research information and results of their participation in European R&D programmes in the field of knowledge technologies and their applications. The information structure will include:

- Project web site integrating all the dynamic information exchanges between partners and presenting the project on-going activities in the global information space.
- Electronic journal for publication of presentations, lectures, surveys and analyses, technical reports and proceedings of the project workshops.
- Thematic virtual forums for each work package at the project web site. They will be moderated by the work package leaders.

B/ Organisation of visits and short research stays in the partner institutions

C/ Organisation of 4 open workshops for demonstration and dissemination of RTD results and solutions on specific project topics.

D/ Periodical production of extended state-of-the-art summaries for the national ACC policy-making institutions.

The project addresses a broad spectrum of knowledge technologies allowing embedded intelligence applications. The major expected impacts of the project are based on the effective cooperation of leading

ACC research institutions, benefiting from the exchange of their research production as well as from the complementarities of their research directions of IST.

The interests of the partners in the framework of the project are focused on the following priority action lines:

- generic issues of knowledge technologies (data and web-mining techniques, multi-agent models and platforms);
- semantic web approaches to organisation, access, processing and use of context-sensitive information;
- methods and tools for development of semantic-enabled systems and services for multimedia content, interoperability, re-usability;
- technology-enhanced learning with ubiquitous applications of integrated web, digital TV and mobile technologies.

The major expected impacts of the project in the area of technology-enhanced learning concern raising public understanding and awareness of eLearning potential and requirements, taking into account the different background, interests and needs of the consumers of such information.

The long term impact of the project will be achieved through ICT providers and research experts active in innovative applications of knowledge technologies. The actors from this group will move the project results to the eLearning sector and eContent industry practice by implementing future real applications and making them attractive to wide audience of end-users.

Partners

Computer and Automation Research Institute Hungarian Academy of Sciences MTA SZTAKI, Hungary *coordinator*

Institute of Mathematics and Informatics of the Bulgarian Academy of Sciences – IMI BAS, Bulgaria

Institute of Information Technologies of the Bulgarian Academy of Sciences – IIT BAS, Bulgaria

Klagenfurt University Institute for Information Technology – ITEC, Austria

Novitech Partner Ltd, Slovakia

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TOWARDS NARROWCASTING & AMBIENT PUBLISHING

NEW MOBILE, LOCATION AND CONTEXT AWARE FORMATS FOR THE EUROPEAN CONTENT INDUSTRY TOWARDS THE LISBON TARGET

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Abstract

This paper addresses the hopes and fears of Europe's Publishing Industry towards the overall common effort of making Europe a leading market player in the Knowledge Society by 2010. The paper introduces new content management technologies and models, proposing new formats (e.g. Narrowcasting and Ambient Publishing) for Publishers willing to keep up to pace at the dawn of a new Content Era.

Keywords

Location Based, Context Aware, Ambient Content, Mobile Learning, Learning Content Management Systems.

1. INTRODUCTION

Several new eContent Publishing and Management Architectures are expected to hit the market place in the short term, as a concrete market outcome from international R&D work programs launched in EU, US and Japan to support native media industry at the dawn of new Ubiquitous and Broadband networks.

In general new media revolutions always start with the migration of old formats since it takes a while to understand and embrace new, device specific, content design skills and capabilities.

First TV shows dubbed radio talk shows whilst film actors and formats were recasting theatrical set ups in their early days. When new skills and competencies were then developed, they all proved to be revolutionary means to establish new Industries and Markets.

Also first generation publishing formats on the web were too poor to immediately prove the revolutionary media internet was eventually due to become .

Echoing the early days of local circuit TV production, where many of today's big broadcasters emerged, also the web publishing revolution is now starting grass rooted; whilst the net still lacks larger publishers investments due to first generation poor returns home grown production is inventing itself as a new playground for digital born producers and authors.

Blogs, Ipod Casting and digital photos file sharing today are starting to demonstrate that users are ready for new ways and formats for publishing and communication.

Once again the Mac Luhan warning that the *Medium is the Message* is more relevant than ever.

2. PUBLISHING FOR PERSONAL LEARNING AND DEVELOPMENT COMMUNITIES : TOWARDS NARROWCASTING

The development of learning technologies over the last 30 years has been impressive, but only some technologies have better helped to achieve quantum leaps in the possible implementation of new educational strategies and models.

Figure 1 shows that new learning technologies are about to benefit of the higher levels of user interactivity and cross community collaboration empowered by new mobile and broadband technologies, favouring a heavy migration from cognitive to constructive models for online learning.
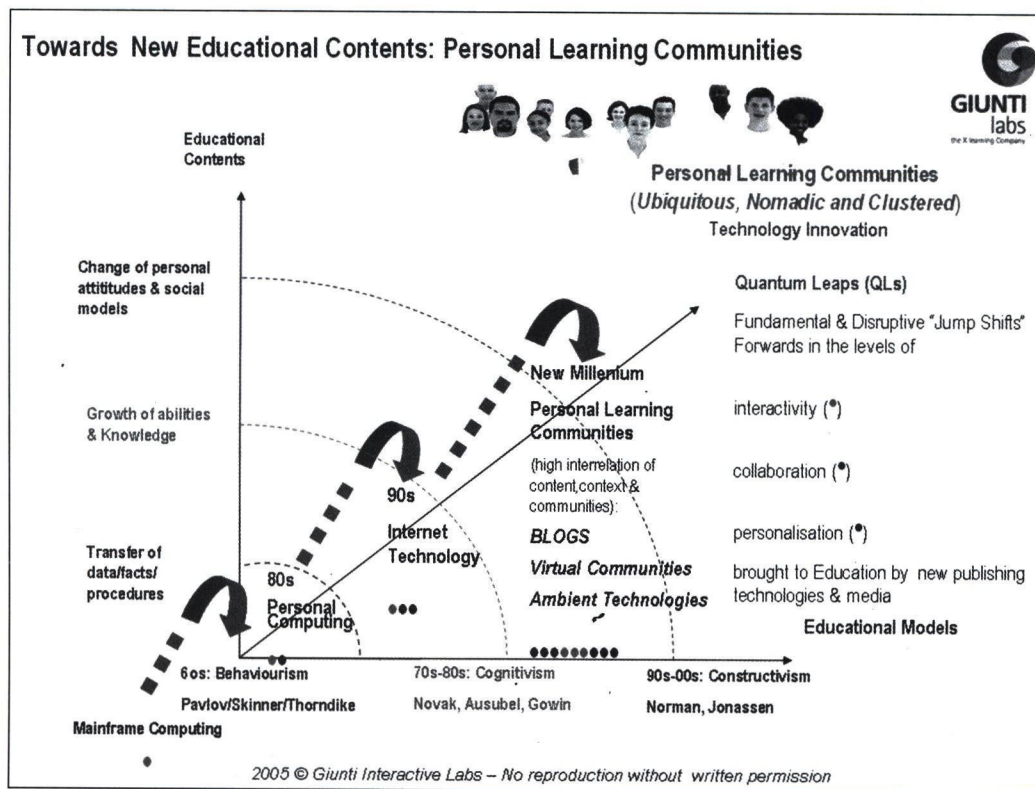
Figures 1: Towards Personal Learning Communities

Blogs, Virtual Communities and Mobile devices are starting to demonstrate their effectiveness for online education, giving evidence that where students interact amongst themselves, they construct cumulative knowledge far beyond self learning alone.

Interacting amongst students and employees adds a multiplication factor to the cognitive model each one develops when interacting with learning information and contents alone.

The learning implication of grouping would therefore alone be enough to justify the expected tenfold increase of internet usage in the educational scenarios of the coming years.

In addition the current trend towards online education is enforced by increasing social and organisational forces towards more rapid learning cycles with more flexible regulatory set ups where managing personal development is becoming a life long task for employees and workers.

On such evidence central and local Governments, wanting to gain a leading position in the emerging Global Knowledge Society competition, are riding the tiger of life long learning and online learning.

As a result, today, the economical forces represented by telecom and media industry, are starting again to rally the holy land of digital content for education.

To do this by preserving the short term returns demanded by today's economy, they are focussing on new business models to foster adoption far beyond the first internet bubble, of emerging new media and channels, such as mobile, interactive TV and broadband internet.

By doing this they realise that getting location based, context aware and "always on" access is becoming a must for people on the move on a continuously evolving labour and professional market; and the nomadic learner is no exception.
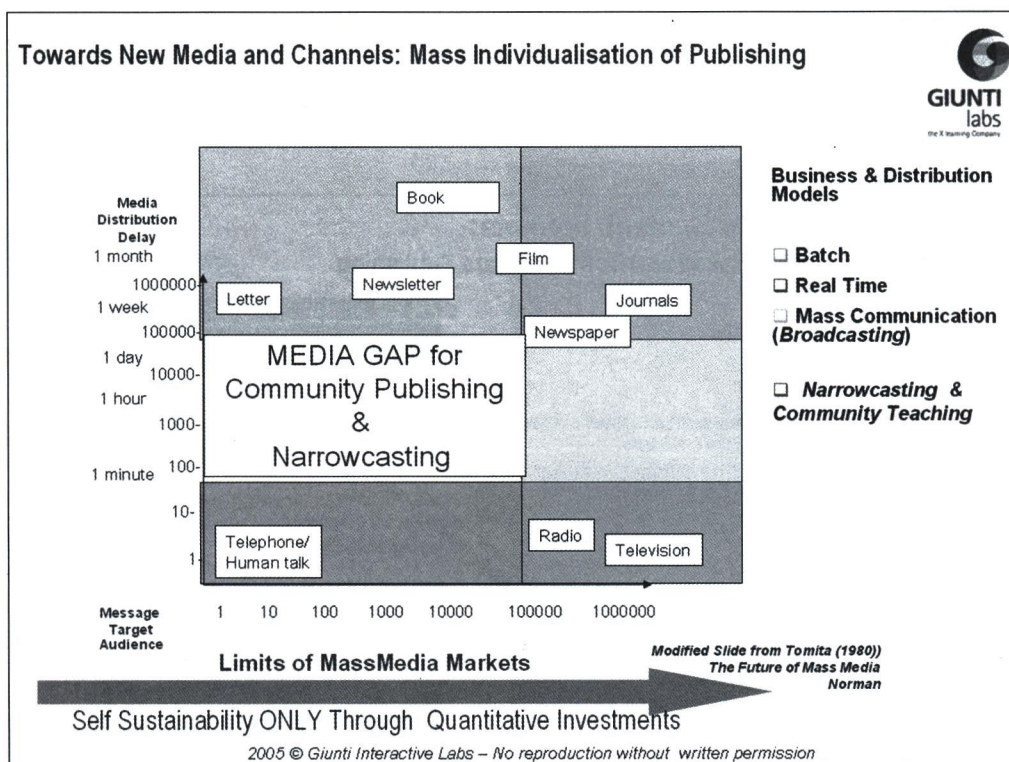
Figures 2: Towards Narrowcasting (Publishing for clustered, ubiquitous and nomadic communities)

Narrowcasting, i.e. delivering filtered information to profiled and clustered communities of interests, is emerging as a new marketplace as opposed to the unfiltered and uncontrolled (by users) content delivery paradigm at the basis of mass media.

As figure 2 depicts, Narrowcasting is addressing the communicational gap left by "traditional" media and more than 50 years of Broadcasting, where content quality was only sustainable by addressing Mass Markets audiences leaving personal communication and development undeployable.

Today, publishing information to communities of interests and within discussion led communities, something quite usual in pre-mass media teaching and communication, becomes again possible.

The Socratic way to teaching re-emerges after years of mass media communication within Blogs, virtual communities and mobile networks.

3. NEW FORMATS FOR LOCATION BASED AND CONTEXT AWARE CONTENTS: TOWARDS AMBIENT PUBLISHING

Given the scenario depicted in the previous paragraph it is not difficult to forecast that in the next years, users, including students and employees, will want to get increasing nomadic and ubiquitous access to their online communities of interest making *narrowcasting* one of the main Eldorados in the future Digital Economy becoming a converging interest of Publishing, Media and Telecom players.

As figure 3 depicts, currently widespread eLearning formats such as WBT Tutorials are far too limited to compete with the high value of traditional class or labs based formats.

Delivering Ambient Content Formats to students visiting Museums, Cultural Sites and working scenarios, taking into account their background portfolio expressed in their digital ego, will make eLearning far more attractive and interesting than today, enabling it to finally compete with academy led teaching formats.

Conceiving new content formats by publishers is therefore again a matter of urgency to make this media revolution meaningful and satisfactory also for learners and knowledge workers.

Ambient Content, i.e. Content designed to favour seamless access to users whilst adapting to their skills and competencies, in the location they are, the digital device they have and the context they are in, will become the main format for publishers willing to position their services in the Knowledge Society.

Ambient content will be the likely engine of the Knowledge Society as electricity was the booster of the Industrial revolution.
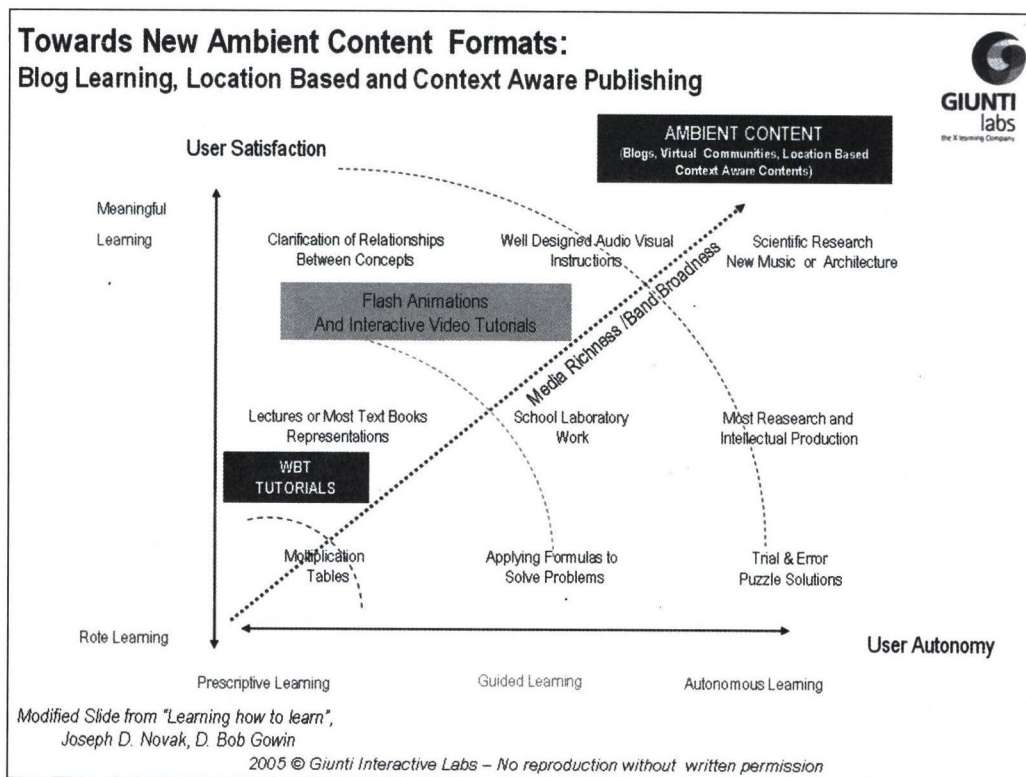
Figures 3: Towards Ambient Content (Blog Learning, Location Based and Context Aware formats)

4. NARROWCASTING & AMBIENT PUBLISHING: ARE EUROPEAN PUBLISHERS READY?

Although Europe has always been at the very front of new publishing and media technologies Research and Development programs, in general its Publishing and Media Industry has never been rapid to uptake innovation at start.

An unverified anecdote tells that when Gutenberg first disclosed his revolutionary invention to the then European scientific community, he was echoed as the inventor of a useless solution presumably not capable to go beyond the limited scope of printing Bibles.

And we all know how that story ended....

Today Europe's RD is again at the front row of the Narrowcasting and Ambient Content Publishing revolution.

Projects such as *Mobilearn, Natacha, Ieye and Sculpteur* (Project data in figure 4) have managed to set up interdisciplinary consortia joining telecom operators, broadcasters, content owners, publishers and educational & cultural site managers (e.g. Museums, Art exhibits, Archaeological sites, exhibits) starting to demonstrate self sustainability and effectiveness of blended models based on the seamless streaming of context based information to home, work, classroom and outdoor users, keeping track of their needs, habits, skills and "digital story" whilst in their nomadic routing.

But is the European Publishing and Media Industry ready to uptake such achievements or does the rapid pace at which this *Mobile Revolution* is likely to take place, risks, once again, to find the European content industry unprepared and unfocussed?

The MOBIlearn Project

Next-generation paradigms and interfaces for technology supported learning in a mobile environment exploring the potential of ambient intelligence

• Project Area
Vº FP EC R&D Learning Technologies IST Action line III.5.3 KA3 (Pioneering research)

•Coordinator
Giunti Interactive Labs

•Partners
24 partners from nine European countries and outside EU, including USA, Israel, Switzerland, and Australia

• Ambient Learning Scenarios
•*WIFI MASTER®* by Giunti Labs (I)
(WIFI Museum Access Services for Training & Education through Repositories)
•Campus MBA by Zurich University (CH)
•First Aid Training by Open University (UK)

•Start date
July 1st 2002

•Duration
30 months

•SIG
400 Companies/Universities

•URL
www.mobilearn.org

The Natacha Project
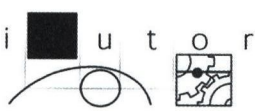
Network Architecture and Technologies for Airborne Communication Of Internet High Bandwidth Applications

• Project Area
V FP R&D GROWTH
Project n. G4RD-CT-2002-00771

•Coordinator
EADS

•Partners
GIUNTI LABS, KID-SYSTEME, THALES AVIONICS
SOCIÉTÉ INTERNATIONALE DE TÉLÉCOMMUNICATIONS AÉRONAUTIQUES, CEBENETWORK GESELLSCHAFT FUER COMPUTERSIMULATION UND BREITBANDKOMMUNIKATION
UNIVERSITY OF ROME "LA SAPIENZA", CENTRE NATIONAL D'ETUDES SPATIALES, ASTRIUM , UNIVERSITY OF SURREY
AIRBUS DEUTSCHLAND , XPLORE TECHNOLOGIES INTERNATIONAL

• Ambient Learning Scenarios
CrossAIR@: eXtended onAir & Airport based Access to Information Repositories

Tested on AIRBUS 380 between Toulous and Hamburg and using On Deck Edutainment System with context aware and destination based content upload via Satellite Uplink

•Start date
May 2002

•Duration
27 Months

•URL
http:// www.natachaweb.org

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Figures 4: Narrowcasting and Ambient Publishing Scenarios from EU RD Projects

To avoid an educational eContent invasion, Europe has to rapidly conceive new publishing and distribution models for its contents being economically viable, technologically advanced and pedagogically sounded.

To compete in the emerging international marketplace for eLearning content, higher degrees of content interoperability, localization and personalization must be achieved in Europe, preserving cultural differences yet underpinning alignment of diverse educational systems by means of technology and credits interoperability standards.

Learning Resources must be designed for future proof reusability and internetworking based upon new generation technologies such as XML and Web Services, adopting application profiles and fostering design by Content Objects to support flexible repackaging and reversioning for different learning paths, contexts, profiles and devices.

Good practices in eLearning infrastructures and technologies together with needed pedagogical models, content formats and human resources skills and competencies must be rapidly promoted.

Publishing and educational innovation must be coupled with new content management technologies, dedicated to learning and mobile deployments, to help publishers better interchange and interoperate contents across national borders and different educational systems in Europe.

5. CONCLUSION

Today the transformation of educational system with new opportunities to teach and learn both within and outside the normal classroom setting is a global challenge.

Those who manage to master the media technicalities before others usually rule the message markets (i.e. content) for years to come, as today's Hollywood film industry monopoly well represents.

Europe's Publishing and Media Industry must be called upon a steady reaction if we want the Lisbon target (e.g. having Europe as the leading Knowledge Economy by 2010) to be an achievable goal.

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As an answer the European Publishing and Media Industry should leverage what is unique to it: the blending of innovation with its cultural heritage, a unique multilingual and multiethnic background with a still largely unexploited basis of high value content repositories.

Underestimating the needed urgency for promoting new skills and competencies to make this happen, would be a great threat to Europe's role in the digital Content Industry.

A risk no Economy can afford to take in today's high paced trend towards the Knowledge Society.

AUTHOR BIOGRAPHY

FABRIZIO CARDINALI was born in London, UK and went to the University of Genoa (Italy) where he studied Electronic Engineering and obtained a degree in 1988 specializing in Artificial Intelligence and Machine Learning.

After launching and managing the Expert System and Multimedia division in Hay Space Consulting Technologies (European Hi Tech branch of World's leading HR consulting firm HAY Management, Boston, US), he set up the new media and eLearning Company of Giunti Publisher, Southern Europe leading Publisher in Primary Education and Cultural Heritage, Giunti Interactive Labs.

Today Giunti Interactive Labs is Europe's main private eLearning Standardization and RD actor with official positioning in all major international sector standardization bodies and more than 30 ongoing RD projects on the future of eLearning, knowledge and ePublishing.

Giunti Interactive Labs is also licensor, of learn eXact, Europe's first and Worlds leading Content Management Solution provider, installed in more than 500 eContent authoring teams world wide and now moving to Mobile, location based and context aware content management (eXact Mobile).

Today he is CEO of Giunti Interactive Labs and one of Europe's main eLearning standards experts and author of numerous papers in international journals and conference proceedings on the future of eContent, with official roles in main international eLearning Open Specifications bodies (e.g. Technical Board Cochair of IMS Global Learning Consortium, Board of Directors of European IMS Network, VicePresident of European eLearning Industry Group, MIT's OKI Global Strategy Advisor and ADL SCORM cowriter and reviewer). He serves as a regular expert for the European Commission Experts Group on eContent from DG Information Society and DG Culture & Education and on several National Governments eContent strategy plans for eLearning uptake towards the Knowledge Society (e.g. Recently in Italian, Russian and Polish national eLearning plans)

TOWARDS BROADER LEARNING CONTENT AND MULTIPLE CHANNELS DELIVERY IN ELEARNING SYSTEMS

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Abstract

The present paper discusses development of methods and instruments, allowing wide range of learners to access and to follow courses by web-based tools and DVB tools at training institution and/or on workplace (typically with Internet protocol based information infrastructure), or at home (with much bigger presence of TV sets than of computer equipment), combined with the practically ubiquitous connectivity of the mobile devices. A project for an e-learning platform for creating new forms of learning content, suitable for integrated delivery through web-based, DVB and mobile technologies is sketched as a result of the discussion.

Keywords

eLearning, ubiquitous learning, tLearning, learning objects,. digital archives, multi-channel delivery

1. INTRODUCTION

The emerging knowledge economy requires continual enrichment and expansion of the scope of knowledge and competences of European citizens and organizations. In the dynamic environment of the contemporary society these requirements can be met by enforcing ubiquity of access and delivery of knowledge by means of the modern achievements of Information and Communication Technologies – at any place, any time, for all. The huge amounts of digital information resources produced by the Information society activities may be rich sources of learning content. This potential has to be fully exploited and applied, but there are two main obstacles for this: a/ the content often is not structured according the learning needs; b/ there are not easy and effective ways to find and access the really needed materials outside the curricula of the formal education institutions. A promising direction in the current R&D eLearning activities addresses the openness for ubiquitous learning of the large-scale repositories of digitised text, graphics, audio, video objects and the process of their transformation into learning content, adequately enhancing and facilitating the knowledge building. This direction considers innovative development of the main components of the learning processes – resources, services, communication spaces.

The present paper discusses development of methods and instruments, allowing wide range of learners to access and to follow courses by web-based tools and Digital Video Broadcasting /DVB/ tools at training

institution and/or on workplace (typically with Internet protocol based information infrastructure), or at home (with much bigger presence of TV sets than of computer equipment), combined with the practically ubiquitous connectivity of the mobile devices. A project for an e-learning platform for creating new forms of learning content, suitable for integrated delivery through web-based, DVB and mobile technologies is sketched as a result of the discussion. Besides its direct purpose the platform may serve as a test-bed for further experimentation of new methodologies for creation of learning content in order to enhance the learning potential of DVB, exploiting also appropriate levels of interactivity.

2. SOME STATE-OF-THE-ART CONSIDERATIONS

The following paragraphs present short descriptions of the state-of-the-art in the main areas of the paper:

I/ Accessing and reusing audiovisual material requires to go beyond the traditional textual description and to interact with the non-symbolic information conveyed through images and sounds. An increasing number of research activities in the area of metadata modelling have emerged the last few years. They aim to provide professional communities with standardized metadata dictionaries and schemas fitting particular activities and uses, to model metadata for specific applications, to provide standard conceptual frameworks describing digital heterogeneous media resources. Modelling metadata describing audiovisual (AV) documents is one of these activities. The more authoritative reference initiatives for the description of AV documents are represented by the specifications of the Moving Picture Experts Group (MPEG) [1], a working group of the International Organization for Standardization (ISO) [2] and the International Electro-technical Committee (IEC) [3] – the group that designed MPEG-1 (which includes MP3 digital audio) and MPEG-2 (the standard for the digital television, both DVB and DVD). These specifications are listed below:

- MPEG-4 [4], which provides the standardized technological elements enabling the integration of the production, distribution and content access paradigms of the Digital television, Interactive graphics applications and Interactive multimedia.
- MPEG-7 [5] – formally referred as "Multimedia Content Description Interface" – aims at defining a standard interface for describing multimedia content structure and features, in order to allow for efficient search and filtering. In MPEG-7, multimedia data are described with respect to their features (i.e., distinctive data characteristics) using a set of descriptors, structured into description schemes, which are specified by an XML Schema-based Description Definition Language (DDL).
- MPEG-21 [6] – formally referred as "Multimedia framework" – defines a framework for supporting the content delivery chain, addressing also interoperability issues. MPEG-21 represents only a subset of the semantic characteristics of an audiovisual resource – namely, its structure.

The TV-Anytime forum [7] has produced a series of XML-based standards for ubiquitous personalized Digital TV services. These services are, in a large extent, similar (and often the same) with Audiovisual Digital Library services (e.g. personalization, content-based access and retrieval etc.).

The most important synthetic multimedia objects are the 3D objects. The X3D format [12], under development by the Web3D consortium, is now the dominant standard in the 3D visualization.

The Synchronized Multimedia Integration Language (SMIL) [8] aims to allow the description of interactive multimedia presentations. The SGML (Standard Generalized Mark-up Language) [11] community proposed a language with similar functionality, the HyTime [9], several years ago, but it failed to work the Web connection to its advantage. SMIL is less robust than HyTime, but it has representatives from several companies (including Microsoft and Netscape) as authors, and as such it is much more likely to be implemented in products that millions of people use. HyTime, for all its strengths, was proven to be so abstract that most developers have ignored it.

II/ The IDC whitepaper "Learning Content Management Systems: Comparative Analysis of Emerging Technologies," identifies the components of an LCMS as an authoring application, a data repository, a delivery interface, and administration tools. The authoring tools provide templates and storyboarding capabilities, and may be used to convert existing content. The data repository uses metadata to store and

manage individual learning objects. The delivery interface dynamically serves content that can be modified to reflect a certain look or feel, such as organizational branding. The administrative applications manage learner profiles, course catalogues, and so forth. Some LCMSs offer collaboration tools, including chat, integrated email, and threaded discussion groups. A set of open LCMS are available which support SCORM or IMS content packaging specification.

III/ Television is already a powerful learning tool, with the public broadcasting organisations of most countries having an educational remit. There are two main approaches to take: add interactivity to the scheduled broadcast stream (enhanced TV); provide specialist interactive educational services for TV to be accessed or downloaded on demand.

The most visible of current *tLearning* initiatives have taken the enhanced television approach, i.e. providing a context to broadcast video. Those viewers without access to interactivity simply receive the broadcast programme as usual, whereas interactive viewers can use a "call to action" to view extra educational information, games, production information and so on. This information may be co-terminous with the broadcast stream, or may be available for a set period to allow viewers to explore material in their own time. This model has been extended to include non-linear narratives, voting and message boards, using the return channel via telephone lines or cable.

The other major model uses the television set as delivery platform for personalised video on demand. These services are already popular for e.g. films and football matches. Business models are being developed for similar "learning on demand" services, which might well be popular for non-curriculum based learning of e.g. do it yourself skills, fitness programmes, language learning and so on, possibly leading to a taste for more formal learning. Home storage, using personal digital video recorders expands the possibilities for this type of service. Capturing and archiving interactive material alongside broadcast video remains a technical challenge but is one that is being addressed [13].

Other functionality that could be used for providing educational services includes:

- TV Internet - viewing web pages via television screen;
- "Walled gardens" - stand alone interactive areas independent of broadcast stream, created by platform providers;
- Email - using conventional or infrared keyboard;
- Communication tools - chat and message boards;
- Navigation tools - electronic programme guides.

Some of these facilities are already pressed into service for learning. For instance, several walled gardens now include learning zones, e.g. the cable company NTL provides a learning portal for small children and another for children revising for national examinations. Cross platform interactivity involving the television is now commonplace, with viewers invited to communicate with broadcasters and intermediaries via telephone and increasing, text messaging.

In terms of the potential of *interactive television* /iTV/ for providing learning opportunities, it is useful to distinguish between three types of learning: curriculum based, curiosity based and problem based [14]. It is generally agreed that iTV does not immediately lend itself to curriculum based learning: it affords less engagement than other ways of learning and involves competition for use of the TV.

For curiosity-led learning however, there appear to be real opportunities, ranging from trivia quizzes for the family, through collaborative educational games, to learning journeys from TV programmes [15]. Commercial models for use of interactive TV provide suggestions on how to engage viewers in such learning opportunities through iTV. For instance, viewers might click through from a sports programme to sports science, from a holiday programme to a language learning material or from a soap opera to a basic skills or training site. Mobile phones can now be used as interaction devices for digital television, making this type of TV-to-mobile content transfer quite feasible. Some current iTV authoring systems give developers the ability to attach information to graphical elements on the screen, e.g. an individual person or a part of the setting, thus making them individually available as interactive objects.

Problem-led learning also provides a good fit for interactive television. Just as computer users use the Internet as a first port of call for information when faced with a practical problem, for instance in financial services, home health, cooking, hobbies, so television viewers could access this same information via the television. The social nature of viewing could also be leveraged here.

3. ABOUT THE REQUIRED FUNCTIONALITY OF E-LEARNING PLATFORM FOR MULTICHANNEL DELIVERY OF RICH E-LEARNING CONTENT

The modern viewpoint on the practice of the technology enhanced learning /TEL/ reveals that in order to target new quality of TEL much more attention has to be paid on the learning process as a process of knowledge construction [16], [17]. Knowledge must be constructed – not by the teacher (or courseware author) for the learner, but by the learner himself with the teacher's assistance. When we have to consider not only the learning of certain facts or simple procedures, but rather pieces of knowledge of a higher order, with either a complex procedural or conceptual dimension, a TEL environment becomes a component of a learning situation of which the teacher or the trainer has to be the architect; its relevance and efficiency depends on the characteristics of this situation. Technology has to provide information and create situations, enabling activities for constructing knowledge.

From this viewpoint the design and development of an e-learning platform for multi-channel delivery of rich e-learning content have to aim two main objectives:

A.) To exploit the integration of the IP-based, DVB and mobile delivery of learning materials

This objective is oriented to enhance the ubiquity of the learner's access to structured educational content by investigating the synergy of the integrated use of these delivery channels, permitting:
- functionality enhancement by combination of broad-band communication channel, ensuring fast access and better quality for video and audio presentations of DVB with much higher interactivity and currently much more developed e-Learning instruments on Internet, and with the ubiquity of the mobile devices;
- enlargement of the physical learning space by allowing various combinations to follow courses by web-based tools, DVB tools and mobile devices at training institution, on workplace, at home, on the move etc;
- to lessen substantially the time limitations on the learning process, approaching the goal for AnyTime learning;
- and, as a result, to lower the barriers between the formal and informal learning, making possible "blending" and enhancing various e-Learning forms.

The educational and organisational models to be developed for integration of web-based, DVB-based and mobile devices delivery of learning materials should focus not on the channel alternativeness, but on their integration and mutual complementarity.

B.) To enable the use of existing digital archives as sources of adaptable learning resources

This objective aims to make accessible mainly the large collections of digital audio and video objects in the available (and constantly enlarging) archives for learning purposes, re-structuring their components as learning content. It requires development and experimenting with effective methods and tools for pre-processing of digital text, audio and video objects (segmentation, indexing, annotation, semantic description etc.) in order to be easily applicable as components of complex learning materials.

In order to achieve these objectives the investigation and development activities have to be structured to target at the following results:

1/ Development of learning scenarios for use of the platform in different learning contexts, modelling learning process and learning materials for ubiquitous learning by considering different ways and phases of cross-media authoring, access, delivery, study and assessments through different modes and levels of

integrated web-based, DVB and mobile technologies. These models will serve as a base for creating the eLearning platform architecture, integrating IP-based, DVB and mobile delivery of learning materials.

2/ Development of authoring studio for generation of learning resources from existing digital archives. The authoring studio will include an working environment with tools for pre-processing of digital audio and video objects from existing archives. The pre-processing tasks may include format transformation, segmentation, indexing, annotation, semantic description etc. The authoring studio will permit building-up of reusable and compound learning objects. The versatile pre-processing of the available audio and video materials will allow the users - authors of learning materials, lecturers and/or advanced learners - to achieve a good personalisation level of the produced courseware, considering the learning context - learners aims, stimuli and interests, educational and cultural background, learning place/s, learning styles, course organisation, course duration etc. The creation of the courseware will be based on sound educational model of the learning process, considering the specifics of combined (web-based, DVB-based, mobile) delivery mode. The web-based versions of courseware, produced by means of the authoring studio, will be formed according to international learning standards (e.g. SCORM) in order to be applicable for different Learning Management Systems /LMS/.

3/ Development and implementation of knowledge-on-demand ubiquitous learning platform.
The platform will integrate the platform learning resources and communication spaces through knowledge-on-demand learning services. It will include some level of coordination of the tasks in the learning process, when portions of learning material are delivered and followed by the learner through different channels (Internet, DVB, mobiles), e.g. by using mobile connectivity channel for DVB feedback and for immediate connectivity. The implementation will contain tools for realisation and coordination of the platform communication spaces and communication services: a/ for digital television communication channel; b/ for mobile devices communication channel (e.g DVB-H). The knowledge-on-demand learning services will include semantic-led access to the virtual repository, its multilingual support and flexibility in order to produce personalised re-usable learning materials.

4/ Extended experimentation of the appropriateness and usability of the platform implementation by authors/lecturers and learners in multiple national contexts. The feedback will enhance the functionality of the developed instruments for semantic-led access, flexible creation of e-learning materials from existing digital archives and their versatile delivery through different communication channels.

4. LEARNING SCENARIOS AND INFORMATION LAYERS

The design of the eLearning platform under consideration naturally has to begin with development of context-driven learning scenarios, modelling learning processes with levels of ubiquity and learning objects for multi-channel cross-media delivery. This task involves the specification of requirements for the learning platform from the learner perspective. The following steps are envisaged:

- Identifying a core set of scenarios to which the system development will be directed. It is expected that these will involve examples of home, classroom, work and on-the-move learning.
- Analysing the learning processes involved in the scenarios in order to build a flexible general model of ubiquitous learning on demand that can inform system design.
- On the basis of the learning model and from general human computer interaction guidelines, deriving design patterns for the user interaction process, i.e. how, at which points and for what purposes will a learner interact with the system and what will be their own model of its functionality?
- From the learner model and from general information design knowledge, deriving design patterns for information display, i.e. how best should material in multiple modes be combined for display to best effect across several platforms? This stage will involve the creation of design templates for PC, iTV, PDA and mobile phone screens.

In order to support the learning processes with rich content the eLearning platform distinguishes between three classes of objects. Starting from the data-layer, there are *digital objects* that represent audiovisual

objects in the digital archives. These objects are segmented (i.e. partitioned into logical units), annotated and semantically indexed so that metadata are attached to them that describe their content including semantic descriptions based on appropriate domain ontologies. These metadata should follow a standard description language (like MPEG7) and are stored in an appropriate metadata repository that provides management services including efficient retrieval based on Boolean and similarity queries so that it is possible to search for content satisfying various search parameters. An important feature that should be efficiently supported in order to ensure multilingual support and use of multiple semantic descriptions for the same digital objects capturing different semantic contexts is to provide complementary metadata descriptions as well as mappings between these descriptions (MPEG7 supports this kind of functionality). Moreover there is a need for a mechanism of ontology mappings in order to be able to use different domain ontologies during the semantic indexing process that then will be integrated in the same framework.

One layer above, the platform is able to manage *learning objects* that are based on *digital objects* enriched with educational metadata given in a suitable standard description language (e.g. SCORM). The digital object metadata description language and the learning object description language should be efficiently used and appropriate mappings should be defined in order to provide automatic translations, whenever possible, in order to facilitate the process of building learning objects out of the objects that reside in the digital repository after a session of successive searches in order to find the digital objects that should be packaged together (i.e. grouped and appropriately annotated with learning metadata) as learning objects. Moreover, this layer is also able to manage *editorial information* such as comments, assessments, property rights information and other necessary material. Multilinguality is also an issue for this class of objects as it is for digital objects. All learning objects will reside in a special repository that will provide the necessary services for the management of these objects and their efficient retrieval based on combined Boolean and similarity matching requests that may also use contextual information. The SCORM standard could be used for the design and implementation of this repository.

The topmost layer of the platform deals with tools to manage *courseware objects*, which are graphs of *learning activities* associated with learning objects. A learning activity is composed of extracted learning objects, state variables, preconditions, and post-conditions that determine when an object may be entered for presentation and what changes occur in the exit from their presentation. The state variables can be used to determine navigation control (automatic flow or allowed options at each point in time). Their value changes with user interaction. At the various states of presentation the learning objects are presented on different state dependent presentation forms. Courseware objects are stored in the learning objects repository and are searchable in the same manner as simple learning objects.

5.   CONCEPTUAL SCHEME OF THE PLATFORM ARCHITECTURE

The platform architecture integrates the learning resources in the platform and its communication spaces in order to provide services for ubiquitous e-learning according the learning scenarios. It is based on conceptual framework for coordination of web-, DVB and mobile communication spaces. This framework will support service provision for ubiquitous learning through IP-, DVB- and mobile technologies by exploiting the potential of their complementarity and integration. The framework will provide distribution channel between the repository of leaning materials and the end user. Beside facilitating the learning material delivery, it will receive and handle pieces of information returning from the users' side. The backward communication channel will be typically used for passing tracking information about the activities of the learner, back to the repositories.

In order to provide seamlessly delivery services for IP-based, DVB and mobile channels the conceptual framework will realize or leverage gateway services between the particular networks and the learning material repository.

The framework will feature the following characteristics:

- Depending on the specifics of the particular learning objects, automatically presents an optimal delivery plan for the end-user (e. g. it may advise to use the DVB channel for video objects, while for some textual type of learning object, the web-based interface could be the optimal distribution platform).
- Provides the end-user with the ability to manually determine which communication channel to use for content delivery.
- Maintains the parallelism between the different delivery platforms to facilitate a session-like learning experience allowing the end-user to feel that the

The development of the conceptual framework will be based on the learning scenarios and learning process model.

Conceptual scheme of the eLearning platform architecture, presenting the connections and information flows between the main actors and subsystems, is shown on Fig 1. The scheme reflects the interactions between the following groups of actors in the learning process:
- End-users: Authors of Learning Materials, Lecturers and/or Advanced Learners, (TEL Researchers, Educational Experts)
- e-Learning providers: Educational Institutions, Training Companies
- Technology Providers: Software and Multimedia Developers, Equipment Manufacturers, Providers of DVB and Mobile Communications
- Digital Content Providers: Digital Archive Owners and Providers

The development of an eLearning platform providing some level of ubiquitous learning with generation of multimedia learning materials from digital archives is a really complex task, and it may be successful only in case of integration of different teams with real competence and practical experience from sectors as: digital archives content providers and processors, eLearning technology providers, providers of communication solutions and services, learning providers, pedagogical partners.
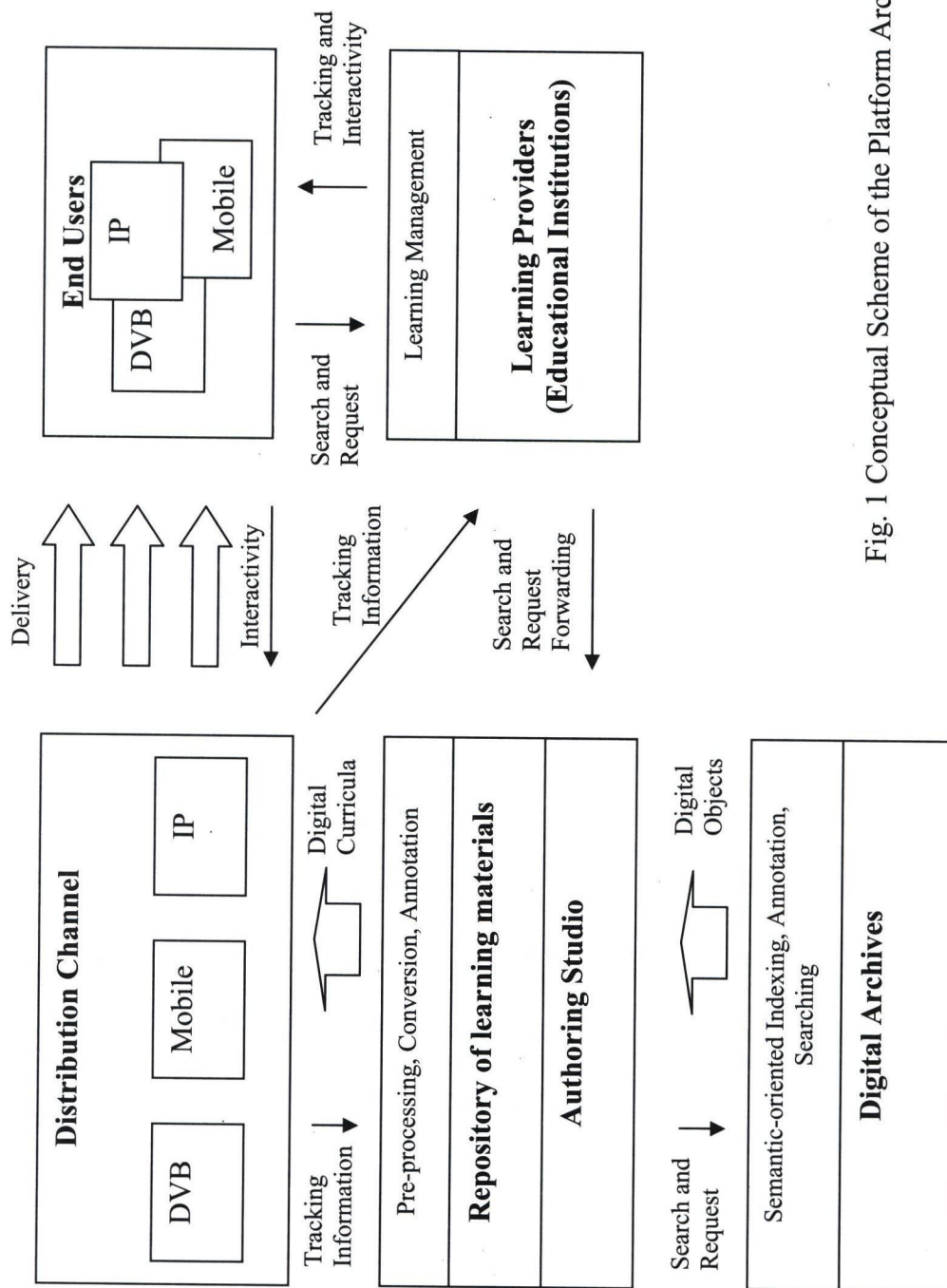
Fig. 1 Conceptual Scheme of the Platform Architecture

End Users

DVB

IP

Mobile

Learning Providers (Educational Institutions)

Learning Management

Tracking and Interactivity

Search and Request

Delivery

Interactivity

Tracking Information

Search and Request Forwarding

Distribution Channel

DVB

Mobile

IP

Digital Curricula

Tracking Information

Pre-processing, Conversion, Annotation

Repository of learning materials

Authoring Studio

Digital Objects

Search and Request

Semantic-oriented Indexing, Annotation, Searching

Digital Archives

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PRINCIPLES AND REALIZATION OF INTERACTIVE TV-BASED LEARNING PROCESS

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Abstract

The arrival of digital television (digital TV) has the potential to expand the power of the TV medium by providing viewers with new services not only for information delivery and entertainment, but also for modern learning at home and on the workplace. The extension of digital television with different forms of interactivity leads to so-called interactive digital TV (iTV). Interactive TV-based learning or t-learning is a new e-learning approach which assures interactive access to video-rich learning materials through iTV. This paper explores the current development state of the interactive TV-based learning. It describes some principles for realization of e-learning process by means of iTV technology as well as the realization of this process. There are several case studies included, which adhere to the realization without meaning to. Special attention has been drawn on the individualized language learning through interactive digital television. Finally, the paper includes a strategy for language learning, which is based upon the communication spaces' convergence of interactive digital television and the mobile communication technology.

Keywords

Interactive Digital Television (iTV), Interactive TV-based learning (t-learning), Principles of t-learning, Realization of t-learning process.

1. BACKGROUND

With the advent of digital networks, the world of TV as we know it -- *mass-media broadcast* -- is undergoing tremendous changes. The increase of the number of available channels, the convergence of TV and Internet and the proliferation of new interactive services transform the TV box function from a program watching device to a portal towards all kinds of content and services.

The next/current TV era revolves around the set-top-boxes integrating viewing, listening and recording functionalities, connections to several sources (Internet, cable, and satellite), games, as well as communications features. In order to cope with the complexity of such an environment and efficiently choose among the huge amount of available alternatives, the users are in need of an advanced user interface and services to provide them with an intelligent assistance.

Television plays a major role in society. It has an impact on nearly everyone – informing, entertaining and educating. However, most aspects of learning through a TV tend to be informal, or what is sometimes described as 'edutainment' (a mix of education and entertainment). With the exception of a few schools' and Open University-focused educational programmes there is very little specifically structured and engaged learning. [3][4]

Until recently, television was generally a passive medium, but digital TV is starting to enable new forms of interactivity with viewers. New technologies are starting to offer opportunities, within some learning contexts, for appropriate and sustainable enhanced learning opportunities in the home – moving from edutainment to more engaged learning. Digital TV also has the advantage of being easy to use and, unlike the Internet; it does not tie up the phone line for hours.

However, the early developments of interactive digital TV failed to live up to expectations in creating new learning opportunities. The UK leads the world in the uptake of digital TV but has also experienced the problems associated with being a 'first mover' – mistakes over certain aspects of the business that have not been sustainable; incompatible systems, fragmentation of services, etc. [5]

This has made it difficult for those in education and training areas to identify the best way forward. However, now is a good time to reconsider interactive TV for learning. Strategies, schemes and scenarios have been developed for implementation of personalised, adaptive learning experience for individuals and groups of

learners; case studies have been introduced and that have resulted in a higher interest in the potential of television for education. Different standards have been developed and we expect that they would serve as a regulatory framework for current and near-future iTV applications. There are also some proposed models for interactive TV-based learning, which are consistent with the modern e-learning strategies. Furthermore, different strategies have been explored for integration of iTV with other communication spaces like Internet and mobile communication technology for delivering different services including learning solutions. [1]

2. PRINCIPLES FOR REALIZATION OF AN E-LEARNING PROCESS BY MEANS OF ITV TECHNOLOGY

Interactive digital TV should serve all aspects of lifelong learning, meeting the educational needs of young and old people through pre-school programming, supplementary classroom materials, distance learning, vocational training, and other educational possibilities.

Defining common e-learning principles and observing them according to the current interactive TV-based learning strategies and decisions determine structural frameworks of that contemporary approach and make it more advanced and applicable in the real world.

The following main principles can be summarized:

- **Flexibility and efficiency of use**
- **Accessibility**
- **Interactivity** /"Turning passive viewers into active learners"/
- **Principles for development and presentation of the learning content**
- **Learner control and access**
- **Facilities for learner communication**
- **Adaptation and adherence to the standards**
- **Help and documentation**

Flexibility and efficiency of use

Flexibility of the interactive TV-based learning is based on service flexibility of digital interactive television and datacasting. Educational production can be offered in different program types: for example, only a picture, a picture with a prompt that provides the viewer with additional information, a picture with overlaid information, information with an inserted picture (still image or video), and lastly, information only. Once the relevant data is inserted into the transmission stream of the service provider (TV broadcaster, datacaster), it is subsequently extracted by a set-top-box (STB) or tuner/decoder within a personal computer and displayed on either a television screen or PC monitor.

That variety of visualization allows educational content to be conforming to different levels of learners (learners with basic knowledge, average learners, advanced learners, etc.) and their learning styles, preferences, background, aims, etc.

Accessibility

This principle can be considered in several aspects. On the one hand, there are a number of factors that are important for accessibility and ability for using iTV for e-learning strategy:

- Most people have access to a television in their homes. Some people even have TV access at their offices.
- The TV set is an easy-to-use device.
- People tend to trust the content that is on the TV.
- Television has the potential of reaching more people and offering more learning opportunities than traditional learning institutions can do.

On the other hand, interactive television could be of particular use to the physically disabled people (94% of visually impaired people watch television regularly), as it would allow them to access services from home. However, usability and accessibility currently cause serious problems for many potential viewers. Difficulties include the use of the remote control handset by people with impaired motor control, perception of text and icons on screen by visually impaired or dyslexic people and the limitations of subtitles designed to include people with hearing difficulties.

Interactivity /"Turning passive viewers into active learners"/

Interactivity in e-learning is considered "a necessary and fundamental mechanism for knowledge acquisition and the development of both cognitive and physical skills" and that interaction is intrinsic to successful, effective instructional practice as well as individual discovery. It is also argued that "making automated learning environments highly interactive is a multi-disciplinary art ...however, the level of interactivity as measured on anyone's scale does not approach the level of interactivity in a human tutoring situation". [10] Therefore, the challenge is to make best use of the iTV technology, not to replicate human behaviour and communication, but to enhance human-TV (or computer) communications through a better understanding of the use and implementation of interactive events.

The system also should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. It has to follow real-world conventions, making information appear in a natural and logical order.

Principles for development and presentation of the learning content
There is a wide belief in the Interactive TV industry that "content is the king" and that filling the bandwidth with "rich media" content is the way to produce a good service. The fact that the content is necessary is obvious and there are a number of principles that should be the focus of attention:

- *Principles for including media elements*
- *Principles for including proven practice examples*
- *Principles for creating online practice exercises*
- *Delivery of learning content in bit-size units*
- *Principles for building problem solving skills and curiosity-led learning*
- *Quality and diversity of learning content*
- *Search and provide information about sources of t-learning*
- *Learning content on demand*

Principles for including media elements
- Multimedia: use words and graphics rather than words alone.
- Contiguity: place corresponding words and graphics near each other.
- Modality: present words as audio narration rather than onscreen text.
- Redundancy: present words in both text and audio narration can hurt learning.
- Coherence: adding interesting material can hurt learning. (Avoid extraneous material and verbosity.)
- Personalization: use conversational style and virtual coaches.

Principles for including proven practice examples
- Replace some practice problems with worked examples.
- Use job-realistic or varied worked examples.
- Teach learners to self-explain examples.

Principles for creating online practice exercises
- Interactions should mirror the job.
- Critical tasks require more practice.
- Train learners to self-question during receptive t-lessons.

Delivery of learning content in bit-size units
It should be suitable to divide the learning content into very small didactic units relating to particular definitions, processes, activities, etc., and automatically generate the appropriate teaching materials according to the present situations of each particular user.

Principles for building problem-solving skills and curiosity-led learning
Principles for building problem-solving skills learning are important for the continuous professional development. They determine:
- Use job contexts to teach problem solving processes.
- Make learners aware of their problem-solving processes.
- Incorporate job-specific problem-solving processes.

The fundament of curiosity-led learning is the natural desire of humans to note everything that is interesting. It is proven that people learn many useful things without meaning to, without the intention to learn, just because of the inborn willingness to discover new phenomena and events.

Quality and diversity of learning content
Television viewers expect qualitative, compelling, visually rich content – using experts from all over the world, providing simulations and graphics far superior to those generally available in the traditional learning environments. Content packaging and the development of personalized TV services is starting to create new opportunities for bringing "visually rich, on-demand content" to the viewer. Valuable content should be handled with care and rendered in the highest quality possible. Diversity should be considered in the design and implementation of educational content. Elements to encourage diversity may address, among other aspects, gender, culture, nationality, ethnicity, learning capacity, learners with special education needs, and multi-level and multi-age instruction.

Search and provide information about sources of t-learning
An overlooked educational use of interactive TV is its potential to provide information about sources of learning and guidance on how to use them. An educational electronic program guide (educational EPG), to guide new learners to learning opportunities, is needed. It will be very powerful tool if we use efficiently its search function that is similar to the Internet search engine.

Learning content on demand
New developments around "personalized TV" could potentially offer new ways of enabling high-quality, interactive learning modules for engaging learning. At this stage, the services have key importance:
- video- or content-on-demand services from remote servers;
- home storage using personal video recorders (PVRs).

Both methods have similar functionality to a VCR. They allow users to browse, query linked text and video databases, author video modules and play back the selected video over the network or using PVRs. These technologies are likely to greatly enhance the availability of multimedia information to teachers and add substantial value to the educational process. The benefits include:
- Teaching material can be encoded and stored on media server (or downloaded on local PVR), allowing simultaneous real-time access to the same piece of information for teaching in various locations.
- Information can be retrieved instantly from the media server (or local PVR) at any time. No initial preparation such as moving the huge TV and VCR, pre-loading of the tape and connecting the audio/visual equipment is required.
- Seminars from other institutions, laboratory demonstration, training sessions and lectures etc. can be pre-recorded by the speaker or lecturer. These sources can be played back at any time during a class to supplement the classroom experience and open up the exposure of the students to a more diversified wealth of information.
- Forums or conferences held abroad could be recorded. Users can review them at a later time, thus saving travelling time and expenses.
- Video-on-demand (or PVR) allows users to rewind and play back as if they are watching from a videotape. This helps to better understand the taped material.
- Material used repetitively (e.g. orientation information) can be loaded on the server (or PVR). This helps to ease manpower limitation in arranging guest speakers.

Such activities deal with materialization of personalized life-long learning on demand for all, everywhere and anytime. [6] It provides engaging for the learner learning process and individually tailored and addressed courseware.

Learner control and access
The learner control and access should depend on different factors: for example, level of acquired knowledge of the learners, their cognitive skills and abilities to work with new technologies, technical and technological equipment, available services, etc, but their implementation makes the learning process flexible and user-desired. It should be suitable to use learner control for learners with high prior knowledge or high

metacognitive skills. It is recommended to add advisement to facilitate learner work. It would be good to make important instructional events the default navigation option.

Facilities for learner communication

Implementation of different types of communications is essential. If learners can interact with experts, teachers, or peers in the form of synchronous or asynchronous communication the learning process will be more useful and successful. Hence, the experts are more reachable and the knowledge is more available.

Adaptation and adherence to the standards

There are a number of initiatives afoot to standardize iTV technology. The development of common standards and their adherence is a guarantee for quality, duration, interoperability and accessibility of that new contemporary technology.

Help and documentation

Intuitive interface and easy navigation are sometimes insufficient for the user to cope with the working environment of an interactive learning system. This is why there is a need of providing help information, documentation, interactive help assistants and advising users in their work as mandatory components. Providing search functionality is an important aspect of the help system.

3. REALIZATION OF INTERACTIVE TV-BASED LEARNING PROCESS

The principles, which were described, should not be considered separately. They are important and relate to one or more of the main components of the realization of the t-learning process, which are: communication space, used services, users and learning content.

In short, the interactive TV-based learning process is performed in the following way: the communication space is the core component, in which services and learning content are situated. Besides, services are intermediate components, connecting the user and the communication space. The user sends a request for a specific learning content, in which s/he is interested, the services search for it in the learning content repository and deliver it to the user in a suitable form. Figure 1 shows how this process could be realized.
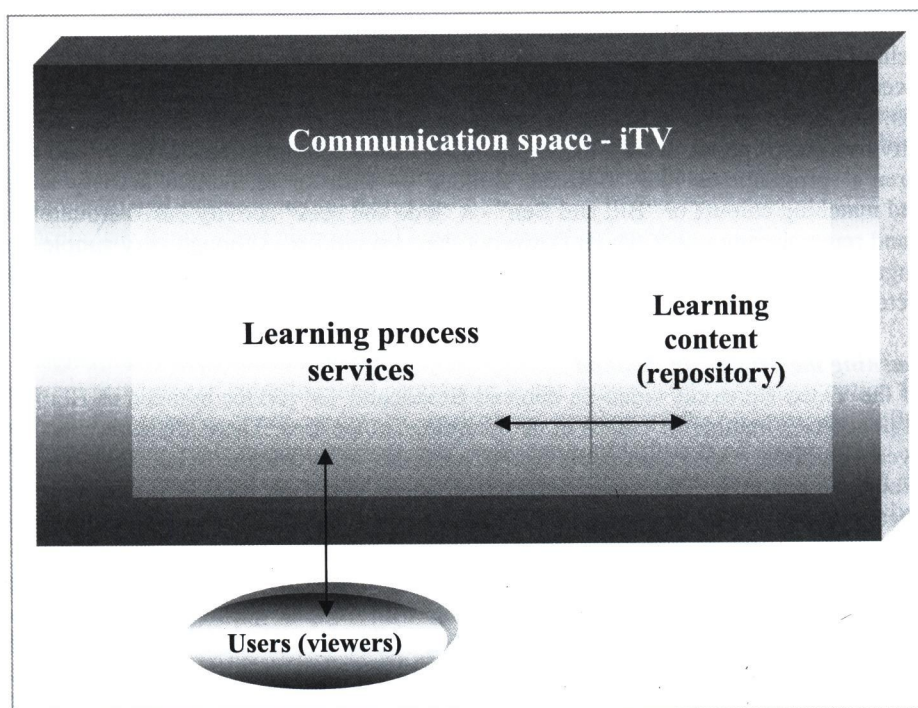

Figure 1: Realization of interactive TV-based learning

Considering the principles, described above, it is most appropriate to associate the following principles with the component communication space: Flexibility and efficiency of use, Accessibility, Facilities for learner communication, Adaptation and adherence to the standards.

Services could be fall into two types: communication space services and learning process services. Let us focus on the second type. The learning process services are software applications through which one can create, search and choose the learning content, structure the learning process according to strictly-defined criteria, evaluate the acquired knowledge and skills of the learners, establish the connection between the users (learners and instructors), etc. Services are a part of the set-top-box device software and usually the user uses remote control to manage them. Learning process services should keep up with the following principles: Interactivity, Accessibility, Adaptation and adherence to the standards, Help and Documentation, Learner control and access.

Users, in particular learners, are described with their educational background, age characteristics, motivation, requirement, professional curriculum, etc. They "dictate" the conditions, principles and the characteristics, to which the services should comply, and thus the communication space also, so that a successful t-learning process can be performed.

On the other hand, the last component (the learning content), should also be developed considering a target group, their profile and other features. The learning content should follow the principles, described above, namely: Principles for development and presentation of the learning content, Adaptation and adherence to the standards. Besides, the learning process and the learning material for it must conform to a proper methodology, for example, constructivist methodology, learning-by-doing, on-the-job training, etc. Both the content and the environment must keep a certain level of personalization.

4. CASE STUDIES

Below there are a number of examples or case studies, available on "pjb Associates" site, that describe the various ways in which interactive digital TV is currently being used for learning purposes across the world. [2][9] They "unwittingly" keep up to a higher or lower degree with the realization schema described above and with the principles for e-learning process through iTV.

Pre-school learning activities
In the UK the BBC's CBeebies digital channel is aimed at pre-school children and has been designed to develop pre-school learning skills. Whilst watching the channel, pressing the red button on the remote control takes the viewer to the interactive area. A number of different activities or stories tend to be available at different times and relate to the programmes being broadcast. At any one time there are usually three interactive activities out of about twenty that are available on a rotational basis. They tend to be based on popular children's' programmes like "Bob the Builder" – with an interactive activity aimed at colour recognition and matching colours or "Bill and Ben" - a "hide and seek" activity based around the recognition of characters and remembering under which flowerpot they are hidden. Although very simple activities, they can be very engaging for 3-5 year olds. The stories tend to have various options enabling the child to select a specific character or an event and the story then branches off using that character or event.

Early years learning materials - on demand
Subscribers of the Video-Networks video-on-demand Broadband TV service branded as HomeChoice in the London area can access a number of videos in the LearningChoice area. There are some videos on parenting and for early years children. Video clips could lead to a number of interactive 'what if' scenarios relating to a child's behaviour, for example. This same 'interactive space' could be used to inform parents of specific child-related healthcare issues and provide advice and information for encouraging a parent back into work through new learning opportunities.

In the UK, NTL's digital TV cable service has "NTL: Knowledge" as part of its interactive services. This includes a section from the BBC called BBC Learning with various question and answer activities and revision notes covering different aspects of the English, Maths and Science as required by the National Curriculum. The same type of information is also available of the BBC's web site. But on a TV it could be used as an individual activity or more likely as a group activity with parents or a group of students revising together.

SOS Teacher

In the Kingston upon Hull area of NE England on Kingston Interactive Television (KIT) broadband TV service has run a pilot project with BBCi – the BBC interactive service. During the run-up to the examination period for 16 year olds, BBCi ran an extension of their GCSE Bitesize revision service involving local teachers.

When students accessed the service on KIT they were given the option to ask a question to a real teacher via sending an e-mail through the set-top-box or a computer or telephoning in the question. Usually within thirty minutes the team of teachers was able to give the answer via TV. The answers were also saved so students could access them on-demand at a later time.

Education and Training Catalogue

Aston Media, part of the University of Aston in Birmingham, UK is currently using Telewest's digital cable interactive services to enable subscribers to access a catalogue of learning courses supplied by colleges and universities in the West Midlands area. This is an extension of Aston University's distance-learning programme that has been operating since the 1980's, where lectures have been recorded on video-tape and sent out to students by post.

Individualized language learning

In her publication "The Potential of Interactive Television for Delivering Individualised Language Learning", Lyn Pemberton from the University of Brighton describes a very simple model of language skills and maps it on the interactive TV services that are either currently possible or will be possible soon. This model contains four parts – reading, listening, writing and speaking. It is clear that some of these categories of language skills naturally lend themselves to television; while in other cases, it is hard to immediately see how the technology can be of help without the support of other technologies or facilities. [7]

	Written language	**Spoken Language**
comprehension	Reading	Listening
production	Writing	Speaking

Figure 2: Parts of Pamberton's language learning model

o **Listening**

Listening comprehension is a language skill already supported by conventional television. Sherington (1973), exploring the potential of conventional television for language teaching, notes that a number of listening skills can easily be practised via television, including recognising and understanding:

- segmental and suprasegmental features
- vocabulary items, short phrases and longer segments of speech
- syntactic structures
- varieties of speech, such as registers and dialects
- discourse patterns
- pragmatically determined features

Building on current provision of subtitling and captioning is one immediately attractive option for interactive learning, easily implementable if we assume a marked up version of the programme defining relevant segments. While watching mainstream programmes, learners could choose to view either an L1 (native language) or L2 (foreign language) accompanying text to support the speech component, and this text could be varied in completeness, complexity and so on, according to aspects of the learning situation. Some learners, particularly those with literacy problems, might benefit from abbreviated L1 spoken commentaries or explanations, supporting the original speech without obscuring it. This would need to be delivered via headphones in group viewing settings. Other scenarios for acquiring listening skills are not difficult to imagine. Specialised learner handsets might allow querying of the programme, allowing users to see/hear in their language of choice a repetition, explanation or translation of the previous speech. If programmes are viewed offline rather than live, a "back" function could skip back to a marked up point at which a meaningful chunk of speech began. Linguistic or cultural teaching points could also be included either on the screen or on an individualised handset: for instance, an actor's "Ta" could be accompanied by an audio or textual note

showing "Thanks," " Cheers," "Thank You" and so on as alternatives. Advanced learners could access explanatory notes, or better, example scenes where the phrases are used in conversation.

An alternative approach, of course, would be to design programmes specifically for language learners. Here the pace could be slower, pauses for user input incorporated into the design and the language and other content tailored for language learners. The interactive functions sketched above could also be used in this context. However this is a more costly alternative, which does not have the flexibility of the enhanced mainstream approach, and which also loses the valuable aspect of sharing a mainstream cultural experience, which some language learners might value. [7]

- o **Reading**

Acquiring skills in recognising and understanding written language is less straightforward. One important issue is that of writing system. Some speakers of minority languages will be used to a quite different writing system from the Latin alphabet, while still others will not even be literate in their own first language (with obvious implications for the design of the interface to these facilities). Sherington suggests that purpose made programmes might demonstrate the various forms of graphical representation, such as upper and lower case, punctuation marks, typescript and cursive script. We could imagine an interactive form of this teaching of reading involving perhaps the matching of keys on a keyboard to the signs on the screen.

Comprehension of more extensive textual elements, perhaps using a multiple choice format, seems a good option for more advanced learners. As working with text while watching a mainstream programme is likely to be cognitively very demanding for a learner, these activities might be best tackled in offline mode, using a personal video recorder or similar technology. [7]

- o **Writing**

Learners might also be supported in language production skills, whether of spoken or written language, though scope for learning writing skills does seem limited, and does not, perhaps, integrate as naturally with the technology as the learning of oral skills. For instance, supporting the learning of handwriting as the process of creating written symbols could be supported simply with a pen-based interface to a handset to create a symbol to match one shown on screen.

A more sophisticated approach would incorporate an assessment element, using character recognition technology to assess the learner's success in creating a recognisable symbol or string. However, if we extend the notion of interactivity to include sending emails from the television, the scope for writing activities becomes much wider, and issues such as the possibility of the development of a community of language learners, of the use of pen pals and the direct involvement of teachers and other facilitators are raised. [7]

- o **Speaking**

Encouraging spoken language via interactive television is also quite feasible. Simple audiotaped language lessons already ask for spoken learner contributions and there seems no reason to suppose that an individual TV viewer would find speaking to a TV screen any stranger than responding to a tape (though group viewing might well be an inhibitor). In future scenarios, on-screen dialogue agents and "karaoke" style programs, where the learner speaks a character's part, could be produced. It is in assessing the quality of the learner's speech that more complex language processing technologies would be needed, and the pedagogic aspects of any feedback from this would need to be carefully designed. [7]

5. STRATEGY FOR INTEGRATION OF COMMUNICATION SPACES FOR DELIVERING INTERACTIVE TV-BASED LANGUAGE LEARNING

The work on the integration of the different communication spaces (TV, Internet, Mobile technologies, etc.), has been going on for a long time now, aiming to optimize various business processes, education, advertisement, entertainment, science, etc. In [8] Sanaz Fallahkhair explores the potential of convergent media, in this case interactive TV and mobile communication phone, for delivering interactive language learning. He proposes an innovative and workable cross media solution architecture that uses the power of Digital Video Broadcasting (DVB) stream, Java programming environment and Bluetooth technology. Furthermore, this paper discuses the advantages that this architecture might have over current methods of delivering interactive content.

According to this publication there are two ways to use the mobile phone for interacting with television programme: as synchronous or an asynchronous interaction. Synchronous interaction happens while watching a programme. For example: being able to play along with a quiz program, which allows viewer who are registered to receive questions based on the show and to reply using their mobile handsets in real-time (e.g. "Who wants to be a millionaire"). Asynchronous interaction happens during a defined time window prior to or after the television show. Current examples include getting an SMS of the latest news headlines, receiving weather forecasts, receiving or revising for your exams[1]. Mobile phones offer a form of interactivity that is the equivalent of 'red-button' without the need for a return path to a broadcast server. Furthermore, using mobile phone guarantees the existence of the return channel two-way data services (SMS) and may ultimately provide an additional revenue stream. [8]

For language learning services, we can also imagine both synchronous and asynchronous scenarios. In the synchronous scenario, the learner would be sitting in front of the iTV set and watching news or something else. A graphical item (a "call to action") on the TV screen indicates that a language learning service is available via mobile phone or remote control device (i.e. 'press red button on your remote control', or 'press definite key combination on your mobile phone'). The user decides to use a mobile phone device as a means of interaction and keys in the required number. The client application running in the set-top-box detects a mobile interface and also checks the user authorisation. The mobile application should provide an easy to use graphical user interface enabling the user to interact with the service and request learning content. The learning content in this example is a vocabulary related to the TV programme, categorised by subjects, e.g. health, shopping, ordering food and so on. The learner uses the mobile keys to select a chosen category from the available options. The language learning service processes the request and generates the required vocabulary back to learner's mobile phone, where it is displayed on the screen and optionally integrated into the learner's own "vocabulary bag" or personal dictionary for later use. The scenario using the remote control device to interact with language learning services will be similar to the mobile phone. The only difference is that the user can use the remote control device to make their choices and the learning content will be displayed on the TV screen rather than on the mobile display. In the asynchronous scenario, a learner will be able to use the mobile phone to request learning content for a defined period around the broadcast slot. [8]

Whole description of Fallahkhair's architecture and its advantages will be included in the e-training course "Introduction to Interactive TV-based Learning and Standards" created for Leonardo da Vinci project - **KNOSOS** "New Media Knowledge Village for Innovative e-Learning Solutions".

6. CONCLUSION

The included case studies strictly adhere to a part of the previously-described principles of realization of e-learning process by means of interactive digital TV technology. Regarding the implementation of the process, the last example - Strategy for language learning through iTV in combination with a mobile communication technology - shows that the scheme must be extended to allow integration of different communication spaces in the leaning process.

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FROM IN-COMPANY TRAINING AND KNOWLEDGE MANAGEMENT TO LEARNING MANAGEMENT SYSTEMS IN THE ORGANIZATION[2]

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Abstract

In the current paper we represent an approach to design, implementation, and deployment of the In-Company Training (iCT) system in the organization and its integration with the Knowledge Management (KM) system. We emphasize that in order to be effective the organization has to develop and deploy so called "total systems" – the systems that encompass every level in the organization and every stage of the business processes within it.

Keywords

e-Learning, m-Learning, In-Company Training, Knowledge Management, Learning Management Systems

1. INTRODUCTION

To stay ahead of their competition modern organizations must increase their flexibility, use advanced technologies, and increase their responsiveness to customers' needs. As the traditional learning methods are not flexible enough to cover the increasing gap between required and available knowledge and skills of the employees, organizations emphasize on web-based solutions to gain additional productivity and efficiency. These IT solutions become a foundation of the In-Company Training system deployed throughout the organization. An efficient in-company training system is critical for developing highly skilled employees that are foundation of organizational success in many areas, including: Business, Academic, Government, Non-profit organizations, etc. Using In-Company Training system the organization gains the following advantages:

- Building innovative and distributed learning environment;
- Collecting and saving the existing knowledge resources in more accessible, convenient, and learning oriented format;
- Quick distribution and efficient reuse of information and knowledge, which is helpful in time-pressed situations;
- Flexible learning process (opportunities about the different features of the learning process (time, mode, place, learning content, etc.) ;
- The organization is always in touch with the constant changes;
- Communication and information renewal;
- Obtaining sense of satisfaction through the achievement of personal and company goals.

In-Company Training (and on-the-job training that is part of it) is one of the best training methods [7], which is planned, organized, and conducted at the employee's work site and by which a person receives "hands-on" job training. It is used by different groups of people within the organization in order to become more productive and qualified. That is why a sound In-Company Training system in the organization introduces specific benefits for these groups of people:

- **Employers** receive specific benefits, including:
  - Increased productivity;
  - Reduced employee turnover; increased efficiency resulting in financial gains;
  - Instructors (supervisors) and managers are able to utilize available resources to train, qualify, and develop their employees' skills.
- **Employees** receive the following advantages:
  - Develop proficiency skills unique to their position (especially for skills that are relatively easy to learn and require locally-owned equipment and facilities);
  - The training in the workplace enables trainees to learn an occupational skill and earn a paycheck at the same time, and offers the chance to improve their skills in an environment with which they are familiar and feel secure;
  - The received dynamic information allows them to make better and timely decisions;
  - For self-motivated employees this is a possibility to improve their skills and to raise their opportunities for a higher position.
- **Lower skilled people**:
  - OJT is a good chance, because they tend to have a negative experience in formal learning situation.
  - There is a social and economic reason to raise people's skills - makes them more employable and more confident of their lives.

The underlying In-Company Training information system provides tools and utilities based on contemporary information technologies [1]. They give opportunities to the course authors, tutors, instructors, and trainees (learners) to be more efficient in authoring, maintenance, presentation and usage of the e-learning content. Some software systems that can be used to support (can be used in) in-company Training are the following: TATS [16], TrainingFolks [19], NetSpeed Leadership [21], Customer Training For-Profit Solution suite [20], Testcraft [18], Ariadne [13], TopClass [22], WebCT [23], TeleTop [17].

2. IMPROVING ORGANIZATION'S PERFORMANCE BY INTRODUCTION OF COMPANY-WIDE IN-COMPANY TRAINING SYSTEM

An organization's effectiveness depends on the knowledge and skills of the employees who develop and deliver its services. Organizational and employees performances are inter-dependent. That is why if the organization hires and retains good employees, it is a good policy to invest in the development of their skills (Fig.1). Thus they can increase organization's productivity.
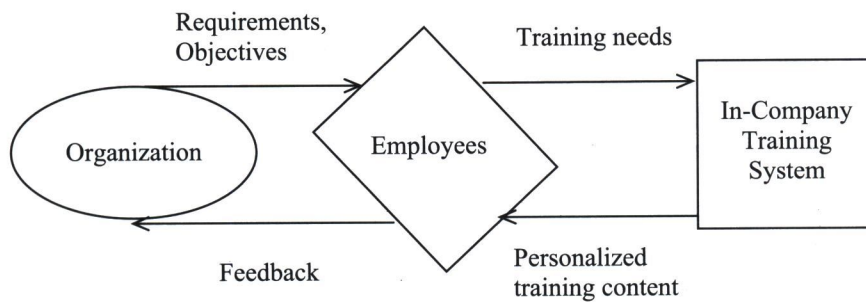
Figure 1: General Organization–Employee Development Process (chain).

The foundation of the In-Company Training system in the organization is a specifically crafted e-learning system [2] that has to implement the following subsystems:

- *Content objects:* The courseware content is usually modularized, split to multiple "learning objects" that are presented to the trainee according to her/his current performance on the test results. Thus the learning process is adaptive to trainee skills, abilities, and knowledge.
- *Groups of interests:* Online groups of learners, comprising people with similar interests, skills, needs, etc.
- *Online monitoring and advices:* Provide feedback to trainees, tutors, instructors, and authors, sharing ideas, comments, and collaborative activities.
- *Multimedia and Hypermedia:* Rich content of the presentation and "eye-candy" effects are significant incentive for the trainees to broaden they knowledge, skills, activities, participation.
- *Groupware and teamwork:* Software for online conferencing in the geographically distributed and heterogeneous environment.

Looking at the business, organizational and individual needs of all levels of staff in the organization a total approach to In-Company Training is needed. This approach begins with long-term needs analysis that examines business imperatives to determine work processes and jobs that are critical for sustaining competitiveness. Also a plan for developing, implementing, evaluating and monitoring in-company Training system has to be developed in advance. Organizations have to put in place four main stages [3] depicted on Fig. 2:
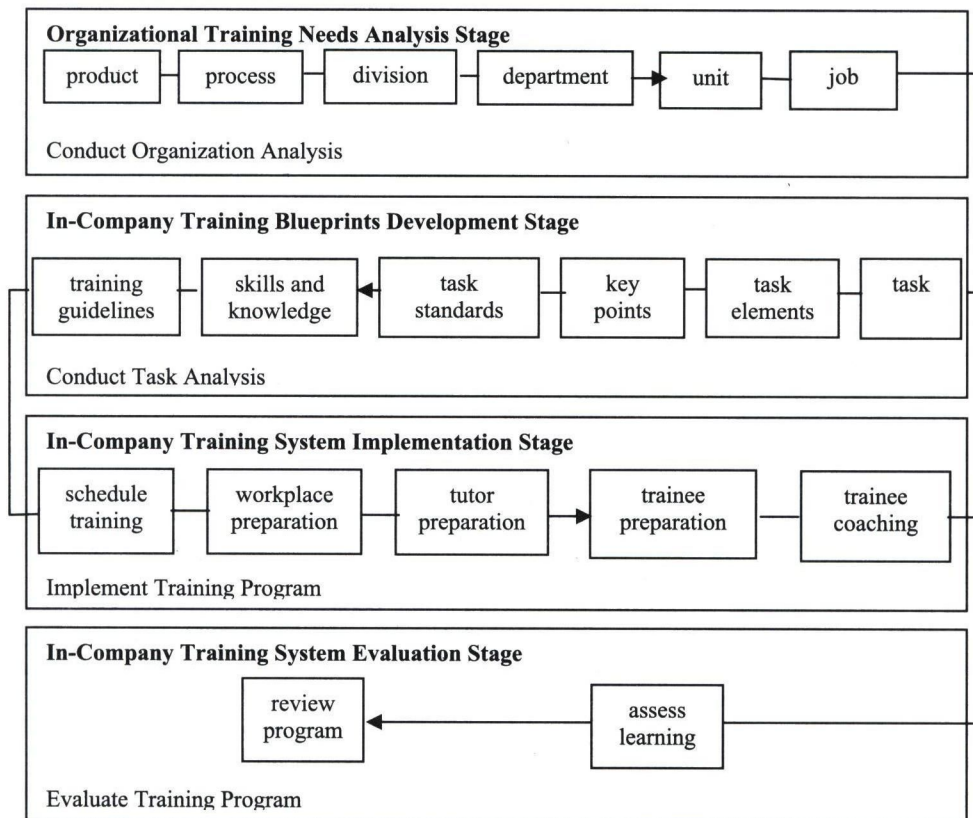
Figure 2: In-Company Training System - development and deployment stages in the organization

In the process of In-Company Training system deployment, the organization has to take into account the following best business practices:

- *Organizational Training Needs Analysis Stage:*

    - This stage is conducted organization-wide annually;
    - It identifies work processes and jobs critical for business success;
    - Needs analysis determines the training required as well as the on-the-job training component needed to support it;
    - It identifies staff that needs In-Company Training;
    - Instructors are involved immediate in identifying the training needs of their staff;
    - It provides a schedule for training staff in the critical work processes;
    - This stage establishes the learning blueprints that need to be developed;
    - It identifies staff responsible for developing specific blueprints;
    - It determines the financial resources and staff required for implementing an In-Company Training system;
    - Deployment of a controlling (monitoring) system for regularly reviewing the needs analysis to ensure responsiveness to changing business requirements.

- *In-Company Training Blueprints Development Stage:*

  - For all the critical work processes and jobs identified by the training needs analysis are developed learning blueprints;
  - Deployment of a system for monitoring and testing development of the training blueprints;
  - Training blueprints are organized by main tasks, which are self-contained components of the critical work processes identified;
  - Training blueprints contain task elements for stipulating detailed steps for performing the main tasks;
  - By all training blueprints are provided key points for ensuring error-free qualify work;
  - By all training blueprints are stipulated task standards specifying the performance required by staff;
  - Deployment of a system for continuously reviewing the training blueprints to ensure their relevance.

- *In-Company Training System Implementation Stage:*

  - Deployment of a system for allocating financial resources and staff for implementing the training system;
  - Deployment of a system for finalizing the training schedule;
  - In finalizing the training schedule are involved instructors, tutors and trainees;
  - Deployment of a system for preparing the workplace for conducting In-Company Training, including the provision of training equipment and materials;
  - Deployment of a system for preparing tutors for the conduct of In-Company Training (tutors are provided coaching skills for conducting In-Company Training);
  - Deployment of a system for preparing trainees for In-Company Training (tutors use five steps approach for coaching trainees – Demonstration, Guided Instruction, Skills Practice, Independent Learning and Follow-up);
  - Information technology is utilized in the conduct of In-Company Training;
  - Assessing the performance of trainees to establish the achievement of the task standards set by In-Company Training blueprints;
  - Deployment of a system for monitoring and reviewing the implementation of the In-Company Training system.

- *In-Company Training System Evaluation Stage:*

  - Deployment of a system for regularly evaluating the impact of In-Company Training on achieving business objectives;
  - The first stage (*Organizational Learning Needs Analysis*) has to be evaluated to assess its responsiveness to changing business requirements;
  - The second stage (*In-Company Training Blueprints Development*) has to be evaluated to assess its capability for the timely production of relevant learning blueprints;
  - The content of the blueprints has to be evaluated to assess its effectiveness in helping staff acquires the necessary critical skills and knowledge;
  - The scheduling of the In-Company Training has to be evaluated to assess the timely provision of critical skills and knowledge;
  - The preparation of the workplace for In-Company Training has to be evaluated to assess the adequacy of training facilities, equipment and materials;
  - The preparation of tutors has to be evaluated to assess the adequacy of their skills for delivering In-Company Training;
  - The preparation of trainees for In-Company Training has to be evaluated to assess their readiness for training;
  - The coaching of trainees has to be evaluated to assess the effectiveness of tutors in facilitating learning through In-Company Training system;

- The information obtained by the evaluation stage is used to review and continuously improve In-Company Training system of the organization.

Assessment of a learning process is critical for determining the effectiveness of the In-Company Training system. To determine whether workers are equipped with the requisite competencies, organizations have to evaluate the skills and knowledge of their employees acquired through In-Company Training. Thus In-Company Training system is an organization-wide learning system involving systematic coaching of workers by instructors or skilled staff using structured training documents known as In-Company Training blueprints.
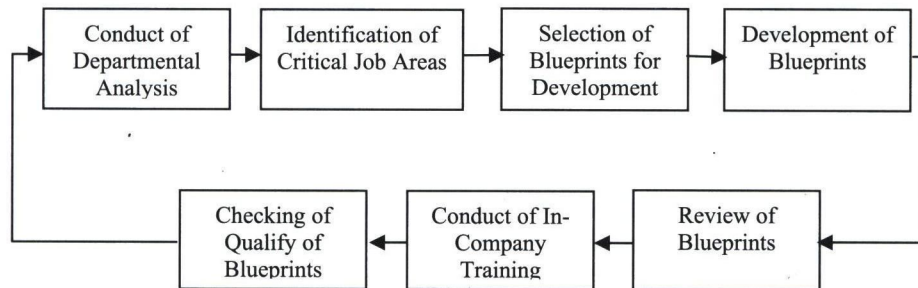
Figure 3: In-Company Training Blueprint – Development and Implementation Stages

3. GOING MOBILE

What is mobile eLearning (mLearning)? It's eLearning through mobile computational devices: PDAs, modern digital cell phone, and any other devices that that have presentation and network support built-in (for example web enabled TV sets). Such devices are usually called information appliances (IAs).

Recently more and more systems become mobile enabled. It allows them to extend their user base to people that do not use computers or at least do not use them on a daily basis. In fact modern IAs become more and more like computers. Their computational power is comparable to the desktop systems produced several years ago. The only big difference is the screen size (mainly on the cell phones). To support different presentation media the modern web systems use XML based formats for internal representation of displayed content. At the last step information is transformed according to capabilities of the client's rendering device. Another approach is by using technologies as Java Server Faces [15] or ASP.NET [14] that abstracts the business logic of the system from the concrete client's rendering device and allows the systems to support many different presentation media automatically. Another related standard that get recent vendor support (Opera 8, Mozilla Firefox 1.1, Adobe SVG viewer) is SVG Standard (Scalable Vector Graphics) [9]. It is a modularized language for describing two-dimensional vector and mixed vector/raster graphics in XML. SVG allows for three types of graphic objects: vector graphic shapes (e.g., paths consisting of straight lines and curves), images and text. Graphical objects can be grouped, styled, transformed and composed into previously rendered objects. The feature set includes nested transformations, clipping paths, alpha masks, filter effects and template objects. SVG drawings can be interactive and dynamic. Animations can be defined and triggered either declaratively (i.e., by embedding SVG animation elements in SVG content) or via scripting [9]. SVG is open standard (similar to Macromedia Flash) and intended to make the web content interactive and rendering device independent.

We believe that there is no essential distinction between m-learning and e-learning. When we have seamless wireless networking, the power of a present-day desktop computer in our IA, high resolution full color screens at

any size we prefer (or integrated into our visual field through special glasses), and flexible input from pen to keyboard, the distinction between desktop and mobile will disappear. And that day is not far off, so this is a relatively short-lived distinction.

4. KNOWLEDGE MANAGEMENT (KM)

KM is the process through which organizations generate value from their intellectual and knowledge-based assets. Most often, generating value from such assets involves sharing them among employees, departments and even with other companies in an effort to devise best practices. It's important to note that the definition says nothing about technology; while KM is often facilitated by IT, technology by itself is not KM.

Think of a golf caddie as a simplified example of a knowledge worker. Good caddies do more than carry clubs and track down wayward balls. When asked, a good caddie will give advice to golfers, such as, "The wind makes the ninth hole play 15 yards longer." Accurate advice may lead to a bigger tip at the end of the day. On the flip side, the golfer — having derived a benefit from the caddie's advice — may be more likely to play that course again. If a good caddie is willing to share what he knows with other caddies, then they all may eventually earn bigger tips. How would KM work to make this happen? The caddie master may decide to reward caddies for sharing their tips by offering them credits for pro shop merchandise. Once the best advice is collected, the course manager would publish the information in notebooks (or make it available on PDAs), and distribute them to all of the caddies. The end result of a well-designed KM program is that everyone wins. In this case, caddies get bigger tips and deals on merchandise, golfers play better because they benefit from the collective experience of caddies, and the course owners win because better scores lead to more repeat business.

Not all information is valuable. Therefore, it's up to individual companies to determine what information qualifies as intellectual and knowledge-based assets. In general, however, intellectual and knowledge-based assets fall into one of two categories: explicit or tacit. Included among the former are assets such as patents, trademarks, business plans, marketing research and customer lists. As a general rule of thumb, explicit knowledge consists of anything that can be documented, archived and codified, often with the help of IT. Much harder to grasp is the concept of tacit knowledge, or the know-how contained in people's heads. The challenge inherent with tacit knowledge is figuring out how to recognize, generate, share and manage it.

5. LEARNING MANAGEMENT SYSTEMS (LMS)

The abilities to learn and manage the learning process are key success factors for organizations. The classical knowledge management approach to learning in organizations which seeks to facilitate the sharing and integration of knowledge has achieved limited success, primarily because it has focused on "knowledge as a resource" rather than "learning as a people process". A strategic "people-oriented" approach to the management of learning is now emerging in many organizations and this has, in turn, led to the appearance of a new breed of Information Systems known as "Learning Management Systems" (LMS).

In essence, LMS replace isolated and fragmented learning programs with a systematic means of assessing and raising competency and performance levels throughout the organization, by offering a strategic IS solution for planning, delivering, and managing all learning events including both online and classroom-based learning [12]. Practitioners recognize the need for such systems, and this is reflected by the fact that many world-class organizations are employing learning management to foster and manage learning within their organizations. These include Amazon.com, Cisco Systems, Continental Airlines, Deloitte Consulting, EDS, Ford Motor Company, General Electric, and Procter and Gamble [11].

While KMS are specifically designed to facilitate the sharing and integration of 'knowledge', LMS, in contrast, are designed to maximize learning within the organization. This is achieved by helping employees to plan and gauge their own learning progress, while also helping administrators and management to target, deliver, track, analyses, and report on their employees' learning condition within the organization. More sophisticated LMS allow for competency mapping and even facilitate career development paths, by measuring an individual's competency level via skill-assessment tests and then guiding the user to the most appropriate course to fill any skill gap [5].

6. INTEGRATION OF IN-COMPANY TRAINING AND KNOWLEDGE MANAGEMENT SYSTEMS – LEARNING MANAGEMENT SYSTEMS

Our idea of integration of In-Company Training and KM systems stems from the fact that modern organizations are subject to constant change. Hence learning is a permanent process in the organization[3] and it affects not only the newcomers but also all of the employees, managers, collaborators, contractors, etc.

Form the theoretic point of view, in the scientific literature several schools of thought have contributed with philosophical debates on the nature of knowledge and learning. Moreover different disciplines have contributed to the continuous debate on knowledge and learning performance. From the organizational point of view knowledge and learning are considered as an integrated whole and any attempt of serious analysis have to take into account both of them.

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[3] It is well known among the management theorists and practitioners that success and survival in the long run of the organization depends on their ability to learn and adapt quickly to constantly changing business, political, and social environments.
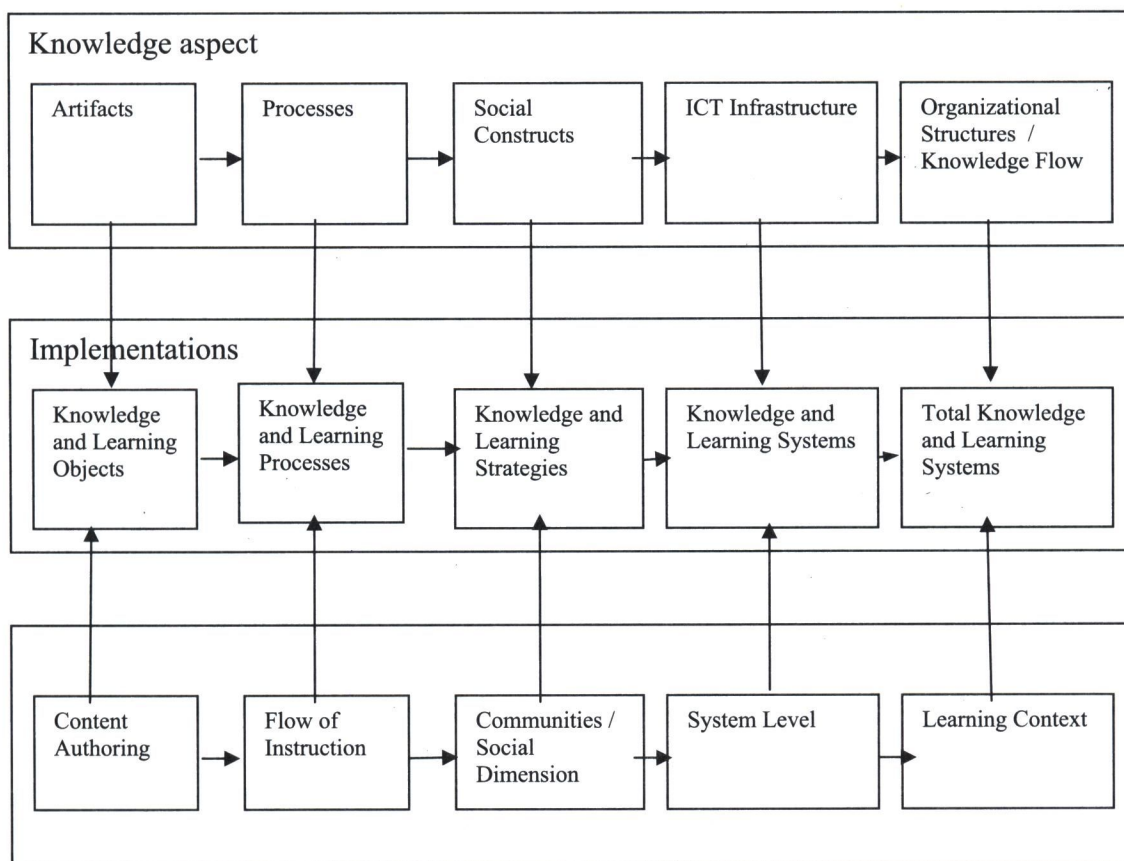
Figure 4: The 3 main aspects of the modern Learning Management System

Fig. 4 depicts our notion about the three main aspects of the modern Learning Management System. The figure is built based on the convergence between the notions of knowledge and learning. We use for our comparison the ontological classification of various research topics from the knowledge and learning fields. These topics are classified in five main groups. The figure also shows the corresponding research topics in the field of information technology. The figure also shows how the synergy between the corresponding knowledge and learning fields leads to research topics and practical implementations in the fields of Information Technologies and Knowledge Management.

The convergence of the knowledge and learning groups can be summarized in five implementation groups that are described as follows:

Knowledge and learning objects – this group refers to the artifact perception of knowledge and to the learning content dimension of learning. For example this group contains research activities that target various knowledge types, the semantic annotation of knowledge, knowledge downsizing to reusable learning "objects", metadata and semantic approaches promote new ways for knowledge and learning content packaging. The paradigm of learning objects is the basis for the development of value adding services for knowledge sharing and exploitation.

Knowledge and learning processes - development of infrastructures that support the supply and the demand side of knowledge – knowledge processes, frameworks and life cycle models of knowledge. From the other part this process-oriented approach is evident also in learning – the flow of instruction has to be based on well-defined learning activities embedded in the instructional design approach of every learning system.

Knowledge and learning strategies – this group is extremely important for knowledge and learning management. Knowledge and learning strategies define the objectives and set the priorities as well as the measures for the knowledge and learning implementation. The specification of the context at this level reveals strategies at the artifact, individual, team, organization, and inter-organizational network as well as at the virtual context, the web and the semantic web.

Knowledge and learning systems – knowledge and learning systems include sociologistic and technical aspects. Semantic Web, mobile and wireless applications, peer-to-peer networks, pervasive, and ubiquitous computing set a new stream of approaches towards more effective and dynamic knowledge and learning systems. A key factor for the success of every dynamic system is the performance measurement related directly to feedback, control mechanisms, standards and measures. Knowledge and learning performance measurement requires an extensive metrics capable of assessing behavioral and social oriented characteristics. This objective becomes extremely complex when the analysis of performance is taking place in the context of individuals, organization, or network

Total knowledge and learning systems – initially, the notion of "total systems" came from the field of Quality Management (Total Quality Management)[4] and later was introduced in all of the sub-fields of Management. The idea behind total systems is that they encompass every level in the organization and every stage of the business processes within it. The principles of TQM are directly applicable to every dynamic system that has to improve and develop over the time. Hence they are applicable to the Learning Management Systems as well.

We think that the integration between In-Company Training and Knowledge Management systems results in a concrete example of what is known in the management theory as "Learning Management System" (LMS). In literature usually the term is used to refer to special type of information systems. In this aspect we use this term with more general meaning comprising not only technological, but learning, social, organizational, etc. aspects of the process as well.

7. CONCLUSION

In practice the concept of learning within organizations has numerous dimensions, making it even more complicated than individual learning. Multiple levels of learning have been distinguished, including *Individual Learning, Group Learning* and *Organization Level Learning* [10, 26, 27] and several processes of learning within an organizational context have been differentiated. Among these are *Knowledge Acquisition, Information Distribution, Information Interpretation,* and *Organizational Memory* [24, 6]. Finally, the various influences of a range of social and cultural issues on learning within organizations has been delineated in the theory [4, 25].

All of the above leads to the conclusion that a separated In-company Training and Knowledge Management systems will not satisfy the needs of modern organizations. They have to be integrated because they complement each other as any of them attacks different facet of the same problem – organization to be adaptive and successful (competitive) in the long-run.

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[4] TQM is the concept that quality can be managed and that it is a process. TQM = A process for managing quality; it must be a continuous way of life; a philosophy of perpetual improvement in everything we do.

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DESIGN AND DEVELOPMENT OF INTENDED INSTRUCTIONAL FLOWS IN WEB-BASED LEARNING ENVIRONMENTS

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Abstract

This paper describes some approaches for learning customization. The e-Learning interoperability standards and some critical issues in regards to individualized adaptive learning in networked Web-based educational environment implementation are presented. Methodology for development and design of intended instructional flows is briefly described. Using sample packages, where imsmanifest.xml file of the package contains a description of content organization and the actual XML encoding of a concrete sequencing strategy, can reduce the complexity of the learning sequence development process. In the last section the description of two examples of sequencing strategies based on the learner's knowledge level evaluation are presented.

Keywords
Adaptive learning, e-Learning, Learning Management System, Simple Sequencing, Interoperability, Reusability.

1. INTRODUCTION

Society's transition to the information age is likely to impact learning and education in two ways. Firstly, rapidly improving technology will enable higher quality learning to be made available to an ever-growing audience through increasingly sophisticated modes of presentation. Secondly, the very nature of the information age may require a different kind of preparation (i.e. learning) than was the case in the industrial age. The European Union has put e-Learning on top of the agenda for several years. Now we can see many creative approaches in a wide variety of European projects [9-12].

Adaptive learning, presenting the right material to the learner on demand, can be described and implemented using data representations from learning technology standards such as learner profiles, competency definitions, sequencing rules, learning objects, etc. [8]. To operate LMSs successfully, interoperability and reusability of the learning materials have to be ensured as well as various facilities, services and options must be offered.

William Blackmon and Daniel Rehak [3] define the following ways for learning customization:

- *At random - repeat random selection of learning objects until the learning demonstrates mastery;*
- *By profile - chose the course/content based on the learning's profile (role, skills, mastery, learning style);*
- *By discovery - for a given learning objective, find a learning object that best meets the learning objective given the learning's current skill set, learning style, learning platform, language preference, etc.;*
- *By response - chose the next learning activity based on the learner's responses to questions.*

In this paper are proposed methodology and some solutions for the last approach realization. The adaptive learning by response presumes that a relevant sequence of learning objects to be designed and developed in advance. Each object is associated with learning activity that fulfill given learning objective. The branching or flow of learning activities through content have to be described by rules that specify the relative order in which learning objects have to be presented to the learner and the conditions under which a piece of content is selected, delivered or skipped during sequence presentation according to the outcomes of a learner's interactions with content.

2. E-LEARNING STANDARDS – SOME CRITICAL ISSUES

SCORM is a collection of guidelines that provide a foundation for how to build learning technologies for interoperability, accessibility and reusability. SCORM is widely accepted because it is designed to provide integration of existing popular learning resource specifications regarding learning resource metadata, aiming to fully describe a learning resource regardless of a specific learning context or educational purpose; learning content packaging, for moving whole instructional units; communication protocols between learning content and LMSs.

ADL SCORM [1] and IMS Learning Resource Metadata Specifications [6] both reference IEEE Learning Object Metadata or LOM [5]. The concept of the package as a standardized way to exchange collections of digital resources between different learning management systems (LMSs), authoring tools, and content repositories is firstly introduced by AICC [2]. The IMS Content Packaging (IMS CP) Specifications describe a whole package through a special file called manifest and SCORM references these specifications. Concerning the communication between LMS and learning content, AICC firstly presented Run Time Environment (RTE) functionality by means of an API and a Data Model. ADL, based on the experience of AICC, has presented its own API.

ADL has long recognized that SCORM v1.2 has serious limitations [3]. One of the most critical problems is that there is no mechanism to describe how a learner is to move through or is permitted to move through a learning experience. The only method for learning content selection and navigation is a rendering of a menu tree of content as a table of contents taken directly from the Content Package Organization element.

The IMS Simple Sequencing specification (IMS SS) [7] was conceived of as a solution to this major issue. IMS SS provides a means to represent information needed to sequence learning activities in a variety of ways according to Tracking Model, and Activity State Model. Tracking Model is used to record information about the learner's interactions with activities, and the learner's record for objectives (e.g. completion, measure) to control the selection and sequencing of other activities. Activity State Model is used to record information about the status of learner's interactions with an activity and set of global attributes for activities. Sequencing Definition Model is an information model used to describe the desired sequencing behaviours. IMS SS maps the concept of learning activity to an item element or a collection of item elements within an organization element, and to an organization element itself, as defined by the IMS CP. The IMS SS specification defines the possible sequencing operations and the informational elements required to describe the desired operations and their parameters, i.e. the desired sequencing behaviour. Any packaged collection of learning activities may contain sequencing descriptions (<sequencing> elements associated with the nodes of the package conceptual tree). ADL has adopted an extended version of AICC Data Model in order to integrate the IMS SS. This is the main reason why more and more learning technology products tend to be compliant with SCORM v1.3 Specification.

3. LEARNING CONTENT CATEGORIES

SCORM specifies a Content Aggregation Model (CAM) and a Run Time Environment (RTE) for learning objects. According to SCORM CAM several categories of learning content exist. Assets concern learning content in its most basic form that can be delivered in a Web client. Sharable Content Object (SCO) is a collection of one or more assets that can be launched by LMS. There are two kinds of sharable content objects – basic SCO and data enabled SCO. Basic SCO uses the API for minimal communication with the LMS. The system can track only the time between the launch and the termination of such an object. Data-enabled SCO can communicate with the LMS using the RTE. In this way LMS can track down the learners' interactions with the learning content. Content Aggregation concerns a content structure that can be used to aggregate learning resources into instructional units on the basis of structural and learning taxonomies [13].

The RTE has tree key components: a launch mechanism, an API adapter and a Data Model. The launch mechanism refers to the responsibility of LMS to determine the learning resource that will be next delivered to the learner. The API is a communication mechanism between the LMS and the content. It is provided by the LMS, but it is responsibility of the SCO to locate the API adapter and make the appropriate API calls in order to communicate and exchange information with the LMS according to the Data Model. Some of the Data Model elements relate to the Tracking Model for the respective activity. A Tracking Model captures information regarding the learners' interactions with the resource associated with an activity. In run time, each activity experienced by the learner is associated with tracking status data, which may affect the selection and sequencing of other activities. CAM specifies five types of metadata application profiles to describe assets, basic SCOs, data-enabled SCOs, activities and content aggregations. It concerns packaging of the manifest and related physical files into a zip file called Package Interchangeable File (PIF). With the integration of the IMS SS Specification, CAM supports the consistent sequencing of learning activities.

4. METHODOLOGY FOR DEVELOPMENT AND DESIGN OF ADAPTIVE LEARNING CONTENT

The possibility for adaptation of the learning content accordingly to the learner's performance and progress is a key issue. We refer the term "adaptive learning" to the capability to modify any individual student's learning experience as a function of information obtained through their performance on situated tasks or assessments. With the integration of the IMS SS Specification, SCORM allows the learning strategies to be translated into sequencing rules and actions, which are associated with the activities a learning experience consists of. The sequencing rules are based on learner's progress and performance and affect the availability of the learner is allowed to experience.

All learning activities can be associated with sequencing information defined by the content author. In run time, each activity experienced by the learner is associated with tracking status data, which may affect the overall sequencing process. This means that learners with difficulties in satisfying the learning objective should be able to experience additional activities (or repeat some of the activities) to improve their knowledge level and skills. Some restrictions concerning number of attempts and/or period of time for any activity could be set by the content author.

The process of defining a specific sequence of learning activities begins with the creation of a learning strategy for the achievement of the determined pedagogical aim/s. Learning strategy specifies types of learning activities and their logical organization (the activity tree) as well as the prerequisites and expected results for each activity. The rules for managing the instructional flow are the other important part of the strategy. Describing the rules by means of IMS SS elements and attributes the content author transforms the sequencing strategy into strategy for the activity tree traversal management. The author establishes an aggregation of learning objects associating leafs of the activity tree with appropriate SCOs. The outcome of this process is a content package. The imsmanifest.xml file of the package describes SCOs organization and their sequencing. The content package is saved in .zip format (in the form of a Package Interchange File).

The implementation of adaptive learning in an e-learning environment could be promoted and facilitated by providing of sequencing templates for the development and design of instructional flows.

5. SAMPLE PACKAGES – CONCEPTUAL SOLUTION

The sequencing template has to be considered as a sample package. The imsmanifest.xml file of the package contains a description of content organization and the actual XML encoding of a concrete sequencing strategy. The development of the content structure of the template is based on structure ontology with tree levels of abstraction – course, module, and lesson.

The course content is represented as a sequence of learning resources. The learning content may include simple static pages, MIME resources of any type (e.g. DOC, PDF files), services and dynamically created objects. The sequencing engine transforms the information from RTE Data Model into tracking model information and uses it together with the sequencing information elements from the imsmanifest.xml to control sequencing process. For passive content (static pages) certain values in the tracking model are set automatically. Active content is responsible for setting and updating the values of the tracking model and objectives (locally and globally scoped data items) associated with the corresponding activities. JavaScripts are used for storing and retrieving the definitions of sequencing objectives and information about sequencing activities and their relationships to sequencing objectives as well as for updating the learner's tracking information.

The sequencing template itself describes the conceptual organization of the learning content as a sequence of template pages and provides the learning strategy implementation translating it into sequencing strategy. Such sequencing template can be used in different knowledge domains from different instructors who want to follow the described in the package content organization and the implemented learning strategy. In this case, instructor is responsible only to identify (or create) and then to incorporate the relevant multimedia content in each of the template pages accordingly the subject matter of the course taking into consideration the concrete learning objectives and context. Another important task is the set of appropriate metadata elements to be added so that the package content to be more fully described. The final step of the adaptive learning content package development process is content of the package to be saved into a .zip file (PIF).

Examples

In this section are represented examples of sequencing templates for the implementation of the following learning strategies:
- *Obtained knowledge assessment and a remediation cycle;*
- *Prerequisite knowledge assessment and a remediation stage.*

Obtained knowledge assessment and a remediation cycle - sequencing template

According this strategy the order in which learning objects included in the sequence are presented to the learner is based on the learner's obtained knowledge level assessment. For the assessment of the knowledge level is used test object comprising multiple-choice questions. The test's score is normalized. The normalized score is a real number in [-1, 1] with precision of at least four significant decimal digits. The value of normalized score is equal to the result of the division of learner's test score and maximum test score (i.e. the test score in case that all test questions are given the correct answers).

The sample package contains tree template pages - for the general content, for the posttest, and for the summary content. Each page can be edited by the instructor through system's or external authoring tools. Posttest consists of multiple-choice questions. The evaluation is made automatically from the system. The instructor has to fill the question forms prepared in advance with appropriate content (e.g. text of the question/s and alternatives, weight/s, etc.) and to put the relevant multimedia content for the general content and summary into the other two template pages. There is no restriction of the number of questions, i.e. the instructor can delete or add questions in the posttest page if necessary. The number of the multimedia files that can be used to represent the basic and summary content in a better and more interactive way is not limited also. On Figure 1 is represented the activity tree (i.e. logical organization of the package learning content).
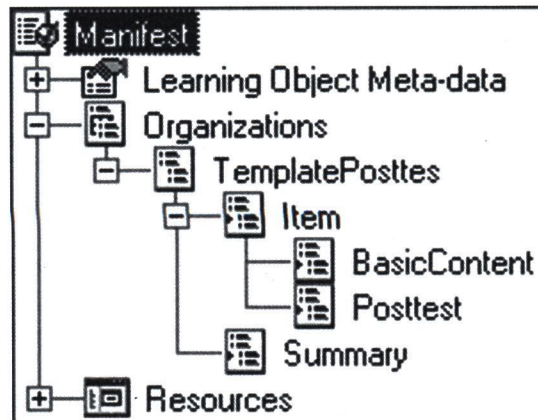
Figure 1 Organization of the content package (Activity tree)

The node "Item" has two children - leafs "BasicContent representing5 learning content the learner has to obtain and leaf "Posttest" comprises test questions for the obtained knowledge level assessment. The remediation cycle is realized by repetition of the activity associated with the node "Item". "Summary" is leaf of the activity tree associated with learning content which is delivered to the learner when the posttest is passed successfully. If content packaging organization element ("TemplatePosttest") and each item element within it have no defined sequencing information the learner is free to choose learning activities at will, in any order, without any restrictions on number of attempts. LMS shall provide some user interface devices that enable selection of learning activities such as table of contents and/or navigation buttons. Hence, the learner can progress through the content pieces ("BasicContent", "Posttest", and "Summary") in any order.

According to this strategy the learner have to see the basic learning content first. It is enough to be tracked if the object content has been viewed by the learner or not. The rules associated with the item "BasicContent" are:

<imsss:sequencing>

    <imsss:rollupRules rollupObjectiveSatisfied="false">

</imsss:sequencing>

Then the learner has to experience and complete the posttest. While experiencing a posttest, the learner cannot choose to exit before completing it (the learner must attempt each question). The learner can attempt to answer of the posttest questions in any order. The LMS reports on learner's progress and performance on assessment. The learner "satisfies" the posttest learning objective if he/she has answered correctly all the test questions. Description of the sequencing rules associated with the item "Posttest" follows:

<imsss:sequencing>

    <imsss:rollupRules>

        <imsss:rollupRule childActivitySet="all">

            <imsss:rollupConditions>

---

[5]Note: Only learning objects associated with leaf nodes of the hierarchical tree structure of the organization are launched and tracked as SCOs.

```
                    <imsss:rollupCondition condition="attempted"/>

                </imsss:rollupConditions>

                <imsss:rollupAction action="completed"/>

            </imsss:rollupRule>

        </imsss:rollupRules>

        <imsss:objectives>

            <imsss:primaryObjective ObjectiveID="posttest" satisfiedByMeasure="true">

                <imsss:mapInfo targetObjectiveID="content"

                    readSatisfiedStatus="false" writeSatisfiedStatus="true"/>

            </imsss:primaryObjective>

        </imsss:objectives>

    </imsss:sequencing>
```

The delivery of other course material is based on the learner score in the posttest. If learner does not satisfy the posttest objective the cycle of remediation starts. "BasicContent" object will be delivered again and then learner can experience the posttest. To be ensured this sequence of activities the following rules have to be associated to the "Item" description in the imsmanifest.xml:

```
    <imsss:sequencing>

        <imsss:controlMode choice="false" flow="true"/>

        <imsss:sequencingRules>

            <imsss:postConditionRule>

                <imsss:ruleConditions>

                    <imsss:ruleCondition operator="not" condition="satisfied"/>

                </imsss:ruleConditions>

                <imsss:ruleAction action="retry"/>

            </imsss:postConditionRule>

        </imsss:sequencingRules>
```

```
<imsss:rollupRules>

    <imsss:rollupRule childActivitySet="all">

        <imsss:rollupConditions>

            <imsss:rollupCondition condition="satisfied"/>

        </imsss:rollupConditions>

        <imsss:rollupAction action="satisfied"/>

    </imsss:rollupRule>

    <imsss:rollupRule childActivitySet="any">

        <imsss:rollupConditions>

            <imsss:rollupCondition operator="not" condition="satisfied"/>

        </imsss:rollupConditions>

        <imsss:rollupAction action="notSatisfied"/>

    </imsss:rollupRule>

</imsss:rollupRules>

</imsss:sequencing>
```

If learner satisfies the posttest objective the "Summary" content will be delivered. The rules are the same as these for the "BasicContent".
The root activity "TemplatePosttest" exits after the learner has experienced each piece of content at least once. The sequencing rules are:

```
<imsss:sequencing>

    <imsss:rollupRules>

        <imsss:rollupRule childActivitySet="all">

        <imsss:rollupConditions>

            <imsss:rollupCondition condition="satisfied"/>

        </imsss:rollupConditions>

        <imsss:rollupAction action="satisfied"/>
```

```
        </imsss:rollupRule>

        <imsss:rollupRule childActivitySet="any">

        <imsss:rollupConditions>

        <imsss:rollupCondition operator="not" condition="satisfied"/>

      </imsss:rollupConditions>

      <imsss:rollupAction action="notSatisfied"/>

        </imsss:rollupRule>

    </imsss:rollupRules>

  </imsss:sequencing>
```

Prerequisite knowledge assessment and a remediation stage - sequencing template

The activity associated with the node "TemplatePretest" comprises activities represented in the activity tree by the nodes "Pretest", "Remediation", and "Enhancement". Node "Pretest" is activity associated with test questions for evaluation of the learner's prerequisite knowledge. Node "Remediation" is associated with general learning content. Node "Enhancement" is associated with advanced learning content. On Figure 2 is represented the package learning content organization.
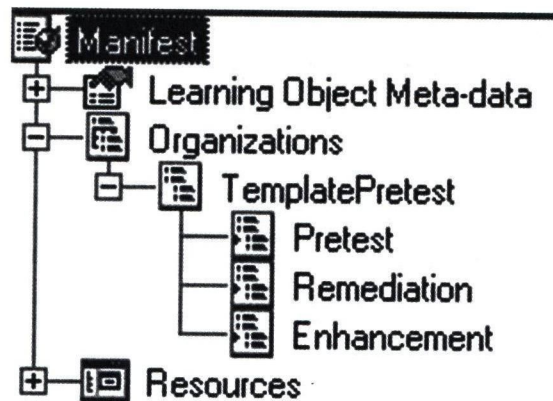
Figure 2 Organization of the content package (Activity tree)

According to the learning strategy the learner must experience and complete the pretest first. While experiencing a pretest, the learner cannot choose to exit before completing it (the learner must attempt each question). The learner can attempt to answer of the pretest questions in any order. The description of the sequencing rules associated with the "Pretest" follows:

```xml
<item identifier="Pretest" identifierref="Resource_Pretest">

    <title>Pretest</title>

    <imsss:sequencing>

        <imsss:sequencingRules>

                <imsss:preConditionRule>

                    <imsss:ruleConditions>

                    <imsss:ruleCondition operator="not" condition="attempted"/>

                    </imsss:ruleConditions>

                <imsss:ruleAction action="stopForwardTraversal"/>

                </imsss:preConditionRule>

        </imsss:sequencingRules>

        <imsss:objectives>

                <imsss:primaryObjective objectiveID="primaryobj" satisfiedByMeasure="true">

                    <imsss:mapInfo targetObjectiveID="content"

                        readNormalizedMeasure="false" writeSatisfiedStatus="true"/>

                </imsss:primaryObjective>

        </imsss:objectives>

    </imsss:sequencing>

</item>
```

The delivery of other course material is based on the learner score in the pretest. If learner does not satisfy the pretest objective the content of remediation will be delivered first and then learner can view the content for the knowledge enhancement.

```xml
    <item identifier="Remediation" identifierref="Resource_Rem">

    <title> Remediation</title>
```

```
<imsss:sequencing>

<imsss:controlMode flow="true"/>

<imsss:sequencingRules>

        <imsss:preConditionRule>

        <imsss:ruleConditions>

            <imsss:ruleCondition condition="satisfied"/>

            </imsss:ruleConditions>

            <imsss:ruleAction action="skip"/>

        </imsss:preConditionRule>

        </imsss:sequencingRules>

    <imsss:rollupRules rollupObjectiveSatisfied="false"/>

    <imsss:objectives>

        <imsss:primaryObjective objectiveID="primaryobj">

        <imsss:mapInfo targetObjectiveID="content"

            readNormalizedMeasure="false" readSatisfiedStatus="true"/>

            </imsss:primaryObjective>

        </imsss:objectives>

    </imsss:sequencing>

    </item>
```

If learner satisfies the pretest objective the content for remediation will be skipped and the content for knowledge enhancement (the learning resource associated with item "Enhancement") will be delivered directly to the learner. The learner decides when to progress through the remediation and enhancement content and in what direction. The sequencing informational elements are described below.

```
<imsss:sequencing>

        <imsss:rollupRules rollupObjectiveSatisfied="false"/>

</imsss:sequencing>
```

The root activity exits after the learner has experienced or skipped each piece of content at least once. The rules are the same as these associated with the root of the activity tree in the previous example.

6. CONCLUSIONS AND FUTURE WORK

The sequencing rules described in the imsmanifest.xml file of the template package assure the learning strategy implementation but the effectiveness of learning process considerably depends of the quality and pedagogical relevance of used learning content resources and test questions.

The main advantage of the Simple Sequencing approach is that the sequencing rules are described outside the learning objects' content. In this way, the instructional designer can change the rules (i.e. the learning strategy) without any changes in the content or its organization. Nesting manifests of the developed sample packages the content author can develop more complex strategies and content structures.

The described methodology has been used by the author in the development of sequencing templates according to the limited number of widely adopted learning strategies such as:

- *Obtained knowledge assessment and a remediation cycle;*
- *Prerequisite knowledge assessment and a remediation stage.*
- *Assessment of prerequisite and obtained knowledge and a cycle of remediation.*

Such templates help and facilitate the instructors/authors without big experience in programming to describe flows of learning activities through content according to the outcomes of a learner's interactions with the content. the future work is connected with development of sequencing templates for other learning strategies.

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OPPORTUNITIES OF USING THE MACROMEDIA FLASH© IN CREATION THE STUDY MATERIALS

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Abstract
Presented paper deals with the basic ideas and objectives of creating the study materials helping the innovation of the traditional learning process and creating the materials for "new" up-springing types of study as learning supported by ICT (e-learning, distance learning, etc). There is taken a look on possibilities of using one of the popular tool for easy multimedia design – Macromedia Flash© - during the creation of study materials and teaching and its comparison with well-known and widely used HTML.

1. INTRODUCTION

The informatization of all parts of human life arises the new requirements for the education and training processes. That's why the teachers and top managers try to find methods and techniques, which can help create more effective courses for new groups of students – distance-learning students, mixed mode students, etc. Nowadays, what is really needed by them: in-time learning, visualisation, customisation to their knowledge and possibilities [2],[3]. From these requirements results that we, as study materials designers, need to create richer and engaging interactive content.

The hardest task, during creation of the study material, is the adaptation of it to high variability of students. Nowadays we must be able teach very different students – by age, social, status, work, place of living, motivations, skills, etc. The results of studies and practical experiences indicate, that there is a basic need to change the focus from teaching to learning. It is more important to follow the interests of students and help them to get control of their learning, possibilities of using it in wider context and applying them in practice, and not to support them in passive waiting for the information from the teacher. Using ICT tools the teacher can help students to break the barriers between the learning and research.

Interactivity and wide possibilities of multimedia are the basic signs of well-created on-line course. One of accessible tools is tool providing many interesting opportunities, using its script language ActionScript, Macromedia Flash© [1],[6]. ActionScript can be used in order to control objects from Flash movies, to create many high interactive forms and visual demonstrations. Therefore Flash movies can be used as a learning material or as a testing tool for testing the efficiency of learning process. Another advantage for using flash in e-learning courses is its easy integration into web applications and having no problem with its initiation on student's computer during his study.

2. OPPORTUNITIES OF USING THE MACROMEDIA FLASH© IN PROCESS OF CREATION THE STUDY MATERIALS

The Macromedia Flash© and its programming language ActionScript is currently well known as a strong tool for creating great animations and various interactive components in web pages, nowadays. Possibility of creating animations using a user-friendly and intuitive environment is one of its advantages.

In practice, the Macromedia Flash© asserts because:

- has wide possibilities of animation

- the final file, created by Macromedia Flash© comparing with the classical animated gif file is about 6-times smaller – it depends on the complexity of the animation (we compare animation of analogue clock with no interactivity).

- its intuitivism in creation of basic animations without interactivity elements – we don't have need to know scripting and animation basics

- its possibility of working with both the vector and bitmap graphics

- its possibility of working with audio and video files

- the flash movies are represented proportionally, that means independently on the user screen area settings and they are able to adapt to actual screen area, every time

- the movies are saved into the memory, first. User can replay the movie again in a very short time, without necessity of reloading it from the Internet

- universality of the movies – the movie is presentation in all browsers is the same, independently on the type of browser – you can use Internet Explorer, Netscape Navigator, Opera or Mozilla

For creating interactive movie (with quizzes, active links to other object, navigation within a movie based on choice of student), we must use the ActionScript – the special object programming language [1],[4],[5] created by Macromedia, using which helps control object in the movie. ActionScript can be used to generate the event-managing scripts. The Flash movie can communicate with server using traditional server scripts (Flash sup-ports the known ASP, PHP, JavaScrips) created by ActionScript. It could require specific information from database and resend it back. This is widely used for design of interactive Internet sites or presentation CD, integrating multimedia and real time facilities, like chat, completion forms and reviews.

Using above-mentioned advantages mean that we have started to deal with the possibilities of usage the Macromedia Flash© in study materials creation process. The basic questions were: "When, How and How much is suitable to use the multimedia or Flash movies in learning process". Can they help us to create interesting and correct study materials? To answer these questions we create the following comparison table (Tab.1). The table contains a comparison between the classical HTML (and Dynamic HTML) and the Macromedia Flash© movie possibilities. The HTML was chosen because of its wide usage in creating on-line study materials. The plus sign means, that the mentioned part can be created or modified using the proposed method, minus sign, means that is not possible, only using some imports, etc.

	Flash movie	HTML
Text	+	+
Graphics	+	-
Video	+	-
Audio	+	-
Hypertext links	+	+
Visualisation	+	-
Simulation	+	-
Interactivity	+	+

Table 1: Comparison of basic possibilities of HTML and Macromedia Flash movies

The comparison results can be presented more widely, following:

- **Text** – Sometimes we have problem with visualising specific font on the user's screen, because he haven't installed it on his computer. The HTML document then looks different as we design it – because the user's browser can't represent it correctly, and substitutes the missing font with default. During creating the study materials using HTML, the problem can be avoided by choosing the font installed in every PC user, like Times New Roman and Arial, etc. But if we create material as flash movie, there will be no problem with visualising text on the user's screen, because the specific font is included in the movie.

- **Graphics** – Using Macromedia Flash$^©$ tool, designer can primarily create the vector graphics; create the objects by various drawing and painting tools, and adding them colour, opacity, rotation and other properties. If we want to change the attributes of objects in the movie, we can do it easily. The HTML obtains tags for importing or including the graphics into the web page, but there is no possibility to adjust it.

- **Video** (short films, …) – Creation of the simple video files is not allowed by both of the mentioned methods, they need to be imported. While the HTML can only replay the video file, in Macromedia Flash$^©$ it can be refilled with buttons to create the interactive video, or it can be used for creation of the own rotoscoped video (creation of motion by redrawing the outlines of the objects contained in video), etc.

- **Audio** – The situation working with audio is the same as with video. The HTML can replay the imported audio file, while Flash offers mixing of two sounds together, arrange its stereo channels, add sounds to buttons to make it more interactive.

- **Hypertext links** – Usage of hyperlinks is the same in both of compared tools. They can work with them without problems; they can use both: relative and absolute links, too.

- **Visualisation, simulation** - The simulations and visualisations play important role in helping the student to understand some processes. Also they can be very helpful in process of self-testing the knowledge of the student. Using HTML we have only one chance to visualize something – importing another video file. Using

Flash, the creator can animate objects to make them appear to move across the scene and change their properties. There are two basic ways of creation the animation:

- *Frame – by – frame animation*: in each frame a separate image for each time slot can be created
- *Motion Tween animation:* the objects must be spread in starting and ending frame. Using Flash animation possibilities the tweening animation can be created between the marginal frames – the Flash varies the object's properties (size, colour, rotation), automatically.

- **Interactivity** – To basic interactivities demonstration can be included chatting, mailing, testing, where there is a need for communication with the server and the other scripts like ASP, PHP or JavaScripts are needed. For this type of interactivity, the situation is same for both presented tools. For creating interactivity within the study material (video, visualisation, simulations, etc.), the Flash can be helpful, again. The possibility to create more alternatives of working with the object is there. The Macromedia Flash makes it possible to work with objects easier, as it is very easy to change properties of one or more objects, whole scene, or omit some of the frames from the movie using the hierarchy of the flash movie. For example for changing the text on dynamic buttons in HTML you need to create new modifications of both states of the all buttons. But in Flash you can do it easier, as you can change the desiderative property of the button – like the colour, text and shape. Using the ActionScript, the creator can follow all the steps of the student (by following the location of mouse or pushing the keys on the keyboard) and react on them. JPEG images and mp3 sound files can be loaded into flash movie as it plays. This allows updating an image or sound without having to republish the original Flash movie.

From the Table 1 and above text it follows that the Macromedia Flash© opens up more opportunities to designer of study materials than classical HTML. But is it necessary and suitable to use the Macromedia Flash© in every part of study material? This is the question that can be widely discussed. If we suppose, that there are two basic types of e-learning students: with and without Internet connection, we can separate the possibilities of creation study material. It is necessary to create materials, which are accessible faster, i.e. that are not very demanding for the transfer through the connection, for the first group of students. For the second group, we can create the CD, which has limited space for the material, but it can be more animated, visualised, because there is no demands on the Internet connection.

Today there is wide accessibility of connection to Internet. That's why try to discuss the validity of usage of the flash movies in single parts of the on-line study material. There are no defined standards, from which parts the e-learning study material must be created, so we decide to divide the study material into separate parts using our practices. The individual chapters (lessons) of course can be divided into following basic parts: definition of course goals, course theory, examples, exercises, activities: some practical exercises, summaries, questions and tests, glossary, key words and literature.

In view of the basic objectives of the good learning material as the possibility of self-studying without necessity to meet the teacher and capability to allow the student to study when he/she needs, with the speed which he/she likes, separate measure of his/her evaluation, the second comparison was realised and the results are presented in the Table 2. The signs used in table have the same meaning as in Table I. The new sign +/- is used, for labelling the opportunity of tool, but not it's favouring for creating the compared part of study material (we mean the e-learning using the internet connection, of course).

	Flash movie	HTML
Definition of course goals	+/-	+
Course theory	+/-	+/-
Examples, exercises	+	+/-
Activities	+	+/-
Summaries	+/-	+
Control questions and tests	+/-	+/-
Glossary	+/-	+
Key word	+/-	+
Literature	+/-	+

Table 2: Comparison of possibilities of HTML and flash movies in creation of individual parts of study material

Looking at the Table 2 we can see, that there is no unambiguous result when using Flash or HTML. From connection speed point of view, it is clear, that the classical HTML can be used every time, when the clear text, little static images, etc. are used. If we want to create some visualisation or simulations, it is preferable to use the flash movies. As object of the html pages, the flash movies can be easily presented in user browser.

Regardless to all advantages, the flash movie has one little disadvantage: the viewer needs the special plug-in – Macromedia Flash Player. But if somebody uses the Internet periodically, it is very likely, that he/she has the plug-in in his or her PC already. If not, it can be downloaded from the Macromedia web site: www.macromedia.com. The Flash Player resides in the local computer, where it plays back movies in browsers or as stand-alone applications.

3. CONCLUSIONS

Nowadays on-line courses are created by method of delivering information to students via text pages and few illustrations, sometimes tests. This method of creation of study material is the easiest and fastest way. But it is really effective and attractive for students? That's why we try to research how to create more effective and attractive courses for students, who study via Internet connection. The basic task is to create quality courses, freshened up by visualizations and simulations. The paper presented the possibilities of using Macromedia Flash© – a strong tool for creation of the interesting and interactive courses or study materials. It's clear that designing the mentioned course is not simple, but we would like to apply all presented ideas and results in study material creation process. The created courses will be put through the critical student usage in the future. And finally, we try to find new possibilities of applications of the flash movie in learning process.

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ANNOTATION AND PRESENTATION OF CONTENT-VARIATIONS IN A WEB-BASED SEARCH ENVIRONMENT FOR VIDEO

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Abstract
In recent years there has been a vast increase in the amount and usage of all different kinds of multimedia data. Ranging from digital video broadcasting over the Internet to sharing digital photos and videos from the last holidays with others, multimedia is around everywhere today. Multimedia metadata help us to manage and search for information in these data. They offer searching for keywords as well as semantic search for textual descriptions of complex activities in audio, video and image. Based upon the research and implementation of the DAHL project, we present an approach for the annotation and presentation of content-variations of videos. This work introduces MuViNo, a tool for creating MPEG-7 metadata descriptions of videos. Further, the presentation of search results, especially the variations of videos or video segments is highlighted.

1. INTRODUCTION

In recent years there has been a vast increase in the amount and usage of all different kinds of multimedia data. Ranging from digital video broadcasting over the Internet to sharing digital photos and videos from the last holidays with others, multimedia is around everywhere today. A reason for this circumstance is the evolution of multimedia compression technologies, that allow a drastical decrease of the data filesize. With these relatively high quality multimedia data at low filesizes it is easy to distribute them over various channels, like the Internet or other digital media like CD or DVD. Implementations of compression standards for multimedia, like MPEG-1,2,4, JPEG2000 or MPEG-1 Layer III became widely available to the public.

Nearly every computer user acts as a content producer for multimedia data. These huge amount of data is often difficult to handle and to manage. Especially searching for a particular piece of information in a big collection of multimedia data becomes a time-consuming task. To find a desired scene in a video, one has to find the right video first and then has to skip forward or backward in the video to find the right scene. This behaviour is unsatisfying for either commercial use as well as for home users because there is no way of quickly and efficiently finding the wanted multimedia data.

Standards for multimedia metadata like MPEG-7 provide the facilities to describe data from a very low level, like regions of an image, up to a very high level like the description of semantic content in video-scenes. Videos can get a description associated, like keywords, textual description of actions or timing-information for video scenes. So it is possible to search for selected videos, in which a certain person acts. Furthermore, it is possible to find the video scene for a special event by using the timing-information from the segmentation metadata.

An interesting and useful application area for this topic is the application in e-learning environments. Most common e-learning platforms include a section for videos of lectures and often these platforms are used as an accompanying tool to regular courses, like real lectures at university. During the semester, it is intended that students that are not able to be physically present in the lectures, are allowed to listen to the lecturer by the means of e-learning platforms. But in special cases, like the preparation for an exam, students wish to gain

fast and direct access to desired information units in videos or audio recordings. A possible scenario could be the search for the video scene of a lecture, in which a lecturer talks about a certain topic.

Although the application area for metadata-based multimedia search and retrieval is vast, we want to concentrate on a special application in the following work. We present recent research activities and implementation of a web-based semantic multimedia search application that makes use of content-variations. Content-Variations are different versions of the same multimedia content, like a greyscale version or a version with a reduced resolution. But also sound-only versions and series of pictures of a movie, like a slideshow, are content-variations.

2. RELATED WORK

This work is based upon the research and implementation that was done in the DAHL-project. For showing the possibilities of content-variations of videos or video segments, two parts of the DAHL-project were extended and modified. The annotation, the association of multimedia content with information, is done with the help of MuViNo, a graphical tool for segmentation and annotation with MPEG-7 metadata. These generated metadata is used by the proven web-based semantic search interface to retrieve the results of a search. Then the results are presented in an informative and usable manner to allow an easy interaction with them.

The DAHL Project

The DAHL project aimed at demonstrating some of the research achievements at ITEC by extending the Virtual Computer Science Exhibition web application [1] with content-based search mechanisms and an adaptive streaming environment for video data. The search is based on MPEG-7 descriptions of video data and uses the database and interfaces implemented in the CODAC project [2] at ITEC. Video retrieval is performed by the MPEG-4 conformant adaptive streaming server and player implementations developed in the ViTooKi (Video ToolKit) project [3], which also was developed at ITEC and allows to adapt the video stream dynamically to client capabilities, user preferences, and available network bandwidth.

The project's name DAHL is to be understood as an acronym for Delivery with Adaptation and High-Level Video Indexing, but was also chosen in memorial of the famous computer scientist Ole-Johan Dahl, who is one of the persons presented in the virtual exhibition. The project started in July 2003, and has been finished by September 2004 [4].
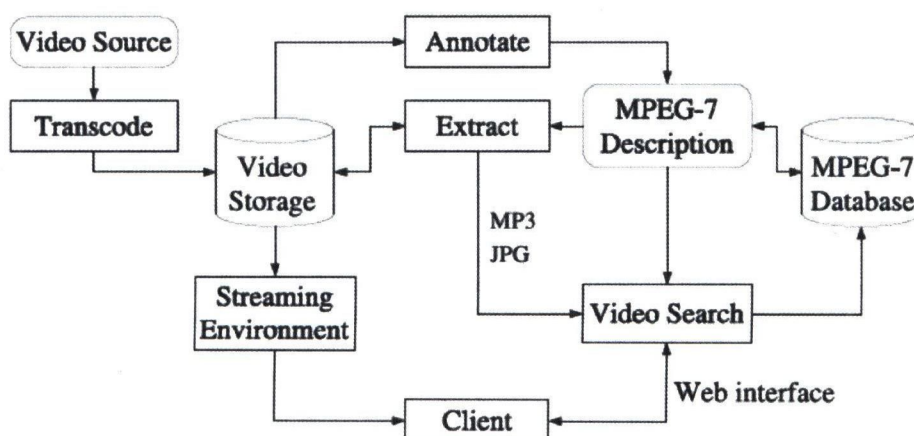

Figure 3: Overview of the DAHL-Project's architecture

As shown in figure 1, the DAHL-project consists of several components. The most important parts of it are the MPEG-7 Database of the CODAC project, the video streaming and presentation framework ViTooKi and the web-based video search application. First of all, the corresponding videos have to be produced and pre-

processed to be used with the components of the DAHL-project. This step includes the transcoding of the video source and the annotation with MPEG-7 metadata using MuViNo (multi video annotation). The annotation with MuViNo includes (1) the segmentation of the video into semantically meaningful scene, (2) the description of the whole video as well as (3) the description of the single video scenes with plain text that describes the scene. Then several pieces of data, like thumbnail images of video scenes and the soundtrack of the video are extracted and stored on the web server. The MPEG-7 database is used for the storage and management of the MPEG-7 descriptions and the main search in the metadata repository. With having all needed data available, the actual search process can begin. After a user-defined search, by entering certain search-criteria the video search application initiates the search in the database, gets the MPEG-7 documents, parses them for relevant information and presents the results. The results can either be full videos or video segments containing the wanted information. The video data can be transferred to the client by adaptive video streaming over RTSP with a special video player of the ViTooKi project, the MuViPlayer (multi video player).

3. MUVINO

MuViNo is a tool for creating MPEG-7 metadata of videos and part of the ViTooKi project. It consists of an embedded video player and an XML tree view allowing to navigate and edit an MPEG-7 document. It was designed to facilitate the creation and annotation of MPEG-7 VideoSegment descriptions, by which a video can be divided temporally into a hierarchy of semantic sections, like the chapters and sections of a printed book.

VideoSegment descriptors are created by splitting the current segment into subsegments at the current media time point shown in the video player. Special slider widgets facilitate quick navigation within the VideoSegment tree. The annotation data belonging to a VideoSegment can be edited in a user-friendly dialog, there is no need to manipulate the XML tree directly.[4]

The MuViNo main interface (as seen in Figure 2) consists of four important areas. The upper left side contains the MPEG-7 element view, where the XML representation of the metadata is shown as a logical tree. The leaves of the tree are the MPEG-7 element descriptors and for a better overview and navigation, subtrees can be collapsed and expanded. The lower left side of the main interface is a text field that shows the actual selected element values of the MPEG-7 tree-view. The existing values can be altered or deleted in this field. In the upper right area the video playback component is situated. It consists of a preview area and some controls for playback and navigation. Below the playback component, there is the segmentation area. With the buttons on the right, videos can be divided into video segments based on the preferences of the annotator and the preview. Segments can also be merged again. All these information about segmentation is immediately represented in the MPEG-7 element view as the corresponding MPEG-7 descriptors for segmentation.

The video, as well as the logically created video segments can be described with additional metadata information. The full video can get several pieces of information like creation-information or paths for the location of the media files. The user does not have to edit XML in plain text because he gets graphical user dialogs for entering the desired data. New information and edited data are also displayed at the according position in the MPEG-7 element-tree.

Creation information includes data like the creator of the video source, where and when the video was produced or a copyright note, whereas the URI dialog acts as a simple front-end for specifying the media paths.
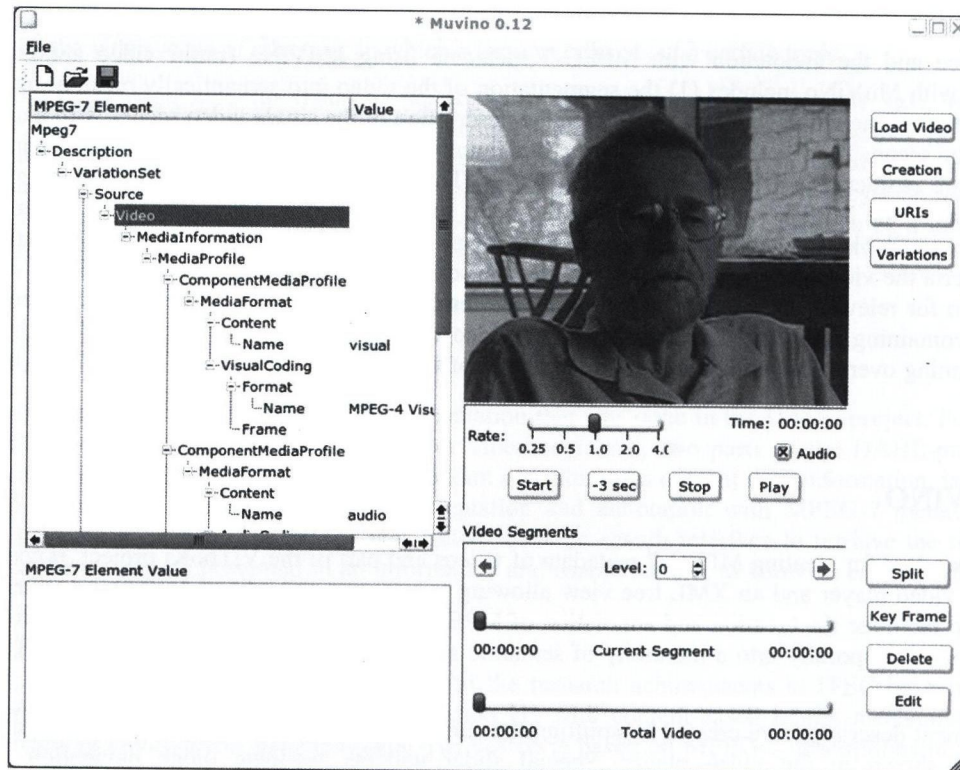
Figure 4: MuViNo main gui-dialog

The video and the video segments can get their metadata description through a separate dialog, where semantic information, like title, textual description of the plot, keywords, semantic time and date and a semantic location can be given. The textual description can act as an abstract for the full video. This part of the annotation process is the most complex and time consuming task in the metadata production procedure, because each video segment has to be described in plain text. Therefore it is necessary to watch and listen to the video source and extract information about it. Sometimes special domain knowledge is required to understand the topic of the video to extract the right kind of information.

There is also a small front-end for defining content-variations of the video source (see Figure 3). In this dialog one can choose from a given set of pre-defined content variations. These pre-defined variations are an example for some common used versions of video. The variations can be used to offer bitrate-reduced, resolution-reduced, colorspace-reduced (greyscale) and sound-only versions of the video for different playback environments. So even users with limited internet-connectivity, mobile equipment or hardware with reduced functionality have the ability to consume multimedia content.
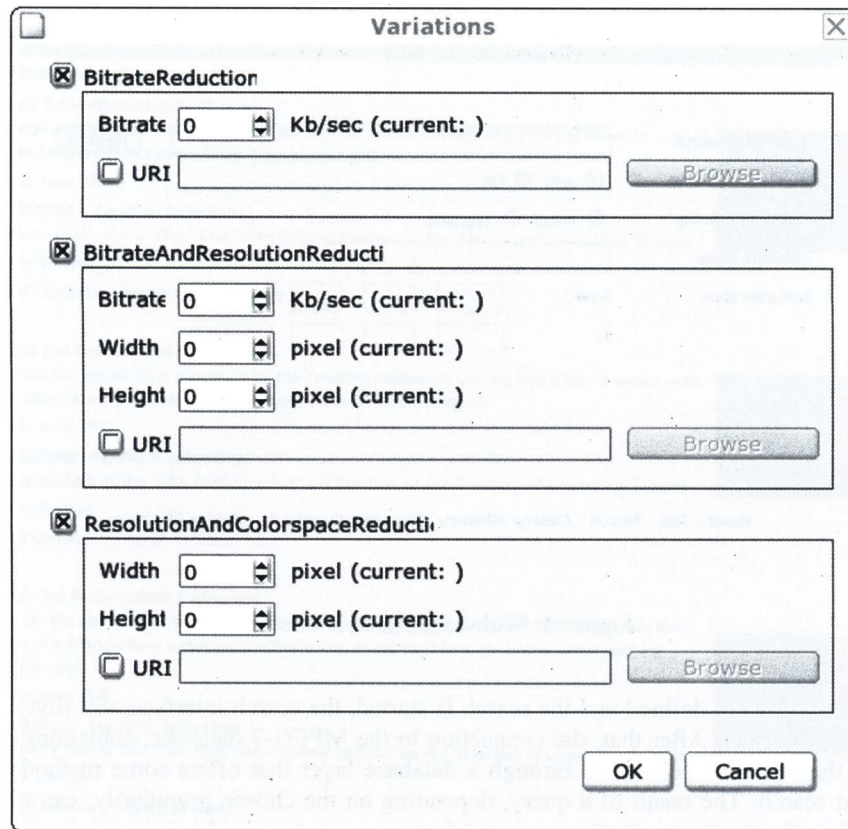
Figure 5: MuViNo gui-dialog for specifying content-variations

4. WEB-BASED VIDEO-SEARCH

The DAHL-project includes a web-based video-search application for accessing the multimedia repository. With this front-end one can specify some search criteria for finding the corresponding metadata of the videos in the repository. The front-end (see Figure 4) allows the user to give criteria for search for textual descriptions (title, keywords, free-text annotation), semantic place or semantic time of the desired information in the videos. For semantic time there can be defined a lower and/or an upper boundary. Further, features like Boolean connectivity search for phrases or wildcards are supported.

<- **People behind Informatics**

Annotation search		Search Clear
Word-connectivity	⦿ AND ○ OR	
Result granularity	⦿ Video ○ Segment	
Semantic place		
Semantic time	from - - YYYY-MM-DD	
	to - -	

<- **People behind Informatics**

Home ⁞ Top ⁞ Search ⁞ Gallery ⁞Glossary ⁞Sitemap ⁞ Guestbook ⁞ Making Of ⁞ Help

Figure 6: Web-based search-interface

When the search criteria are defined and the search is started, the search interface will first validate, if input data is syntactically correct. After that, the connection to the MPEG-7 database, containing the metadata, is established and the search is performed through a database layer that offers some methods for connection management and search. The result of a query, depending on the chosen granularity, can either be a list of full videos or a list of video segments that represent the scenes containing the desired information.

A possible list of search results is shown in Figure 5. Each element in the result list presents some information about this item. These information are the title of the video segment, a textual description of the plot, semantic time and semantic location, duration of the segment, and the title and duration of the corresponding full video. Also a thumbnail representing the scene is given to assist in identifying the wanted video segment. To start the playback of the video segment, the title of the video segment also contains a hyperlink to initiate the video-streaming. By clicking on it, a dynamically generated SDP (Session Description Protocol) file is transferred to the client that contains timing information to start the playback exactly at the beginning of a scene. The actual streaming is done over RTSP. If the user has installed an adaptation aware video player (like our MuViPlayer), he can use the capability of the streaming server to get on-the-fly video adaptation. It is also possible to view the full video instead of only the actual scene by choosing the name of the full video, which is also a hyperlink to a SDP file.

If someone is interested in information about the full video, he can click the TOC link (table of contents) and he gets a list of all video segments of this certain video, just like the table of contents of a book. The search can be refined, when for example there are many results from one particular video. Then it is possible to choose the "search in video" hyperlink that reloads the search form. The search can be performed as usual, with only constraint that the search is done within the chosen video.

Dijkstra's 1st Mathematical Excitement
The 8 year old Dijkstra cannot determine the ratio by which one side of a sheet of paper is decreased when folded symmetrically (square root of 2).

Semantic time: 1938

Start: 00:00:00 - Duration: 2min-56sec
In: Dijkstra's Talk at the 25th Joint International Seminar on the Teaching of Computing Science

Duration: 1h-3sec

Table of Contents - Search in video

Dijkstra's 2nd Mathematical Excitement
Dijkstra (at the age of 13) is impressed by the counting arguments proving that a 8-by-8 square with missing diagonal corner fields cannot be covered by 31 2-by-1 dominos.

Semantic time: 1943

Start: 00:02:56 - Duration: 1min-37sec
In: Dijkstra's Talk at the 25th Joint International Seminar on the Teaching of Computing Science

Duration: 1h-3sec

Table of Contents - Search in video

Dijkstra's 3rd Mathematical Excitement
Dijkstra (at the age of 18) is impressed by the elegance of an algebraic proof of the fact that the altitudes of a triangle have a common section point, as opposed by a geometric proof involving similar triangles.

Semantic time: 1948

Start: 00:04:34 - Duration: 5min-51sec
In: Dijkstra's Talk at the 25th Joint International Seminar on the Teaching of Computing Science

Duration: 1h-3sec

Table of Contents - Search in video

Figure 7: Results of a video search

If a user does not have an adaptation aware video player, he can choose among several predefined adaptations, the so-called content-variations (see Figure 6). There is a sound-only version e.g. for devices with limited display capabilities or variations for mobile devices or low bandwidth internet connections, like a bitrate reduced version, a resolution and bitrate reduced version and a greyscale version with low resolution and low bitrate. With the ability to either do the adaptation automatically with a capable video player or to manually choose the appropriate version for a standard video player, most users are able to consume the information they were looking for on their personal device.

Dijkstra's 2nd Mathematical Excitement
Dijkstra (at the age of 13) is impressed by the counting arguments proving that a 8-by-8 square with missing diagonal corner fields cannot be covered by 31 2-by-1 dominos.

Semantic time: 1943

Start: **00:02:56** - Duration: 1min-37sec
In: **Dijkstra's Talk at the 25th Joint International Seminar on the Teaching of Computing Science**
Duration: 1h-3sec

Table of Contents - Search in video

Variations: **sound only - less bandwidth - smaller resolution - grayscale**

Figure 8: Results extended with content-variations

5. CONCLUSION

With our research and demo implementation we have shown that it is possible to make use of state-of-the-art metadata indexing and retrieval technology, preformed in a usable and performant way. The implementation of an annotation tool, MuViNo, showed that the effort for video segmentation and semantic annotation could be drastically lowered in comparison to pure manual annotation, when guided by a graphical tool. MuViNo offers a better overview for annotation and reduces the complexity of taking care to get a valid MPEG-7 document that is based on XML. We have also shown that the application of a metadata search in a productive environment can be easy to use and has no negative impact on the user's experience. With the spreading and extensive use of the MPEG-7 metadata standard there will be some interesting and useful new application scenarios in the near future.

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ELEARNING IMPACTS FROM NEXT-GENERATION MOBILE MULTIMEDIA MUSEUM GUIDES

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Abstract

Carinthias largest outdoor themepark MiniMundus exhibits over hundred miniature models of famous real-world historical and technological sights. Right now, most museums are offering standard audio-guides and printed maps and folders to enrich the audience's learning experience with a broader range of information.
In cooperation with MiniMundus, our Department of Information Technology,
located at the University of Klagenfurt, develops a new mobile multimedia guide. Video, audio and text based information provides enhanced and modern
means for knowledge transfer. The presented information is adapted to various needs, interests and languages of diverse target groups like adults, pupils, or even handicapped persons. User behaviour, usage intensity or special interests can be tracked with our included statistics module, which allows immediate content adjustments to adhere the customer's needs.
The developed server/client environment for this mobile guide is easily reusable in various fields of e-learning like virtual exhibitions or distance learning, simply by adding different multimedia contents with our CMS (Content Management System).
Our first prototype runs on HP iPAQs, using WLAN IEEE 802.11b, web-based
technologies and MPEG-4 video. Future goals are to include device-independent presentations with adaptive streaming support, location based services and UMTS/Bluetooth.

1. INTRODUCTION

Carinthia's largest outdoor theme park called "MiniMundus", is a principal magnet of tourism in the area of the most southern provincial capital, Klagenfurt. Aiming at new visitors and more user satisfaction, the outdoor Museum MiniMundus started a co-operation with the Department of Information Technology, located at the University of Klagenfurt, to develop a new mobile multimedia guide. In contrast to conventional cassette audio tape exhibition tours, the presented museum guide system is implemented on Personal Digital Assistants (PDAs) and in our case the first prototype runs on HP iPAQs. Right now, standard audio-guides and printed maps and folders are available to enrich the audience's learning experience with a broader range of information. Basically, the presented multimedia museum guide plays the role of a personal guide assistant, so as to provide a multimedia touring experience for visitors in the mobile learning environment of the outdoor museum.

The paper is organized as follows: chapter 2 shows the e-learning context of museums in general, where chapter 3 analyzes the role of MiniMundus as a tourism factor in Carinthia. Chapter 4 gives in detail information on our mobile multimedia museum guide, where chapters 5 and 6 illuminate the learning experience and user behaviour.

2. THE MUSEUM IN THE LEARNING CONTEXT

Museums face serious challenges in their educational role. Educating, relative to collecting, conserving, and exhibiting, is becoming more important for institutions that have a fairly comprehensive collection, want to attract new target groups or have children and families as their main target group, or want to undergo new technical developments. Yet, there is little evidence that museums are having much educational impact, at least beyond the affective level. "A potpourri of research has occurred in museums over the years which has provided a welter of facts about visitor movement through museums... These studies suggest that, unless the casual observer either has prerequisite knowledge, as directed to specific learning outcomes, or has specific learning intents of his own, it is likely that little learning will result from the casual perusal of exhibits [1]."

But Museums do play a significant role in the learning context especially when interactive experiences, which may or may not be technologically enhanced, are provided. The best learning effects are gained when people are engaged cognitively, physically and emotionally [2], which is even more the case when it comes to children. In order to make any visit an involving and enjoyable experience, it should stimulate curiosity, creativity and fun [3]. Fortunately, many museums realize they are nowhere near achieving their educational potential and are looking for ways to increase their educational effectiveness. Children have to be able to explore concepts with physically interactive experiences, adaptive and reactive information, as well as to play roles of explorers, scientists and artists, and manipulate images, sounds and objects [4].

3. THE SITUATION OF MINIMUNDUS

In recent years the financial situation of museums all over the world became more and more difficult: public administration is undergoing a severe budget crisis as well as museums and exhibitions are facing a decline in visitors. To attract new visitors and enter new markets concerning target groups, museums evaluate different and new ways in communicating with visitors. Therefore MiniMundus in cooperation with a Research Institution presents a new interactive learning technology.

MiniMundus exhibits 150 models of the most beautiful buildings from all five continents. Very close attention is paid to the smallest details, which requires comprehensive planning and preparation. The models look realistic because primarily original materials are used, like marble, sandstone, basalt, or tuff. MiniMundus has already become an Austrian "institution" - more than 15 million visitors have already enjoyed the theme park. Every year new models are being added, or old ones are replaced by new, thematic landscaping is being developed and a wealth of new ideas will be introduced in the near future. With a total of 300.000 visitors in the summer season of 2003, MiniMundus is among Carinthia's most popular tourist attractions.

4. MULTIMUNDUS: MULTIMEDIA-AUGMENTED MINIMUNDUS

The MultiMundus project represents the pilot project of the M³-Systems Research Lab [5]. Its primary goal is the development of a multimedia-augmented presentation of selected exhibited models of the MiniMundus area on different mobile devices like Pocket-PCs, Smartphones, Tablet-PCs and Notebooks (see Figure 1). Thereby, different contents like texts, graphics, maps, audio and video sequences to exhibited models are adapted to the terminal capabilities of the device (like display size and colour depth) as well as to the preferences of the consumer (like language, age and interests).
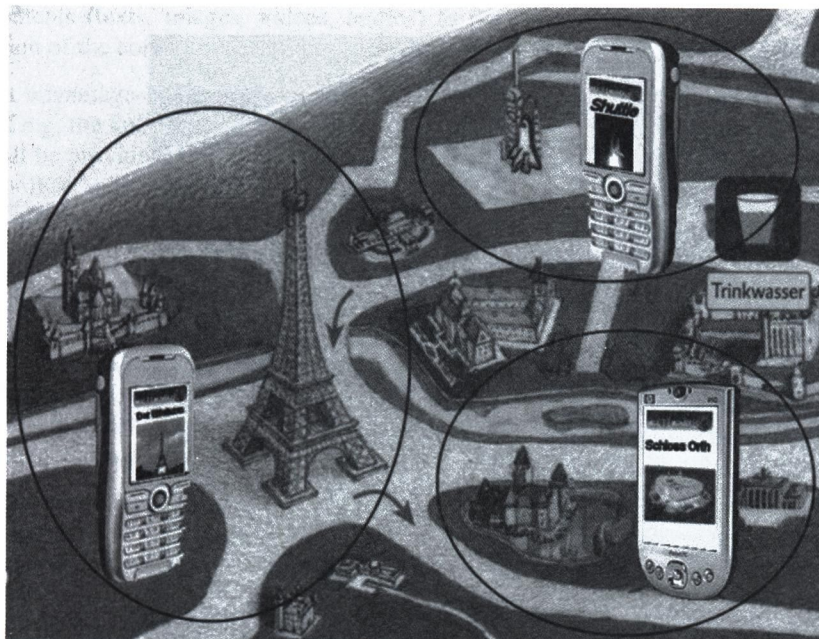

Figure 1: the MultiMundus scenario

In the first stage of expansion, the consumer should be able to navigate through a MiniMundus map interactively to get additional information (i.e. multimedia content) to selected models on a prepared mobile device, which can be borrowed at the MiniMundus entrance (see Figure 2). Thereby, the additional information is transferred selectively from a central server to the consumer device over a wireless network (IEEE 802.11g) by using standardized protocols. The multimedia-augmented presentations of the diverse models are easily creatable by a Presentation Designer, as well as publishable and maintainable on the server. The server-side part of the system enables the MiniMundus operator to query the latest statistics about visited models and duration of stay of each visitor. The presented information is adapted to various needs, interests and languages of diverse target groups like adults, pupils, or even handicapped persons. User behaviour, usage intensity or special interests can be tracked with the included statistics module, which allows immediate content adjustments to adhere the customer's needs.
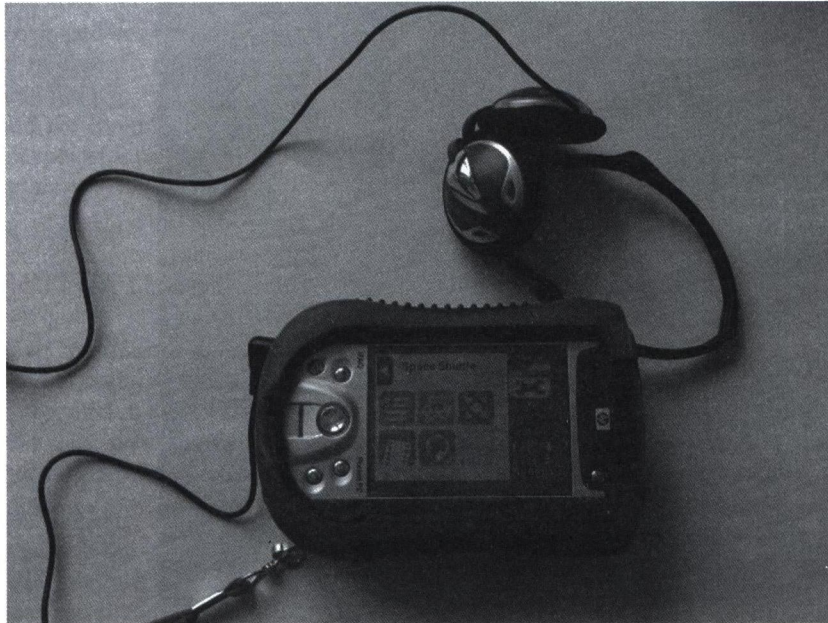
Figure 2: the MultiMundus museum guide

At the end of the second stage of expansion, the consumer can get the multimedia-augmented presentations on her/his personal mobile device. Thereby, the content will be distributed over different wireless networks like Wireless LAN, Bluetooth and/or UMTS/GPRS, selectively. In this context, an implementation of moderated audio guides for travel groups is also planned. Moreover, various technologies for location-based services (eg. GPS, RFID) will also be evaluated in this phase. The consumer will get a multimedia-augmented presentation automatically to that exhibited model, which is closest to her/him and fits his personal needs and interests.

4.1. LOCAL GUIDE
The local exhibition guide works without wireless network. The presented content of exhibited objects is adapted in advance to the capabilities of the consumer's device and provided on a storage card.

The local guide is dedicated to situations where the environmental conditions do not allow a reasonable coverage with a wireless network (e.g. in caves), or when the consumer's device is not equipped with a WLAN adapter. In contrary to the networked guide, the local guide does not allow any real-time content or statistics about the usage of the guide in the exhibition area.

4.2. NETWORKED GUIDE

The networked guide connects to a central server through a wireless network. In this scenario, the server adapts the presented contents to the exhibited objects dynamically to the capabilities of the consumer's device (screen, computing power) and to the preferences of the consumer (language, age, interests).

The main advantages of the networked guide are the possibility to dynamically show real-time data from live-servers (e.g. content updates or even advertisement), and to query real-time statistics about usage of the system. The latter enables the operator to dynamically adapt presentations according to statistical results.

4.3. CONTENT MANAGEMENT SYSTEM

The Content Managemet System is a web-based application that facilitates the management of profiles, languages and object presentations on the server. This enables the presentation designer to upload various media contents (texts, images, videos, audios) to the server and to assign these contents to objects. The composition of the contents to an object presentation is possible with an integrated presentation editor.

The main advantage of the CMS lies in the single provision of media contents in a high resolution and quality. If e.g. the known maximum screen resolution of a supported consumer device is 640x480 pixels, the video shall be provided in that resolution. When the presentation server (based our universities' open-source Video ToolKit ViTooKi [6]) needs to serve a consumer device with a much smaller resolution, then it automatically adapts the video to a size appropriate for the requesting device. The same holds for all other kinds of visual content like images, texts or audio.

4.4. SERVER MODULE FOR REAL-TIME STATISTICS

The server module for real-time statistics is an optional component for the networked variant of the mobile exhibition guide. The module enables for an analysis of session-related information about the usage of a mobile exhibition guide, like consumed objects, visiting path in the area, or the selected profile. Due to the real-time characteristic of this module, the system can take care about the needs and interests of the consumer and offer her/him appropriate adapted content, dynamically.

The statistics module is also available for the local and rentable variant of the mobile guide. However, real-time queries and analysis are not possible with this variant. Instead, the session-related data and the statistical results are available to the operator, when the consumer returns the guide at the end of the visit.

5. LEARNING EXPERIENCE

Museums and exhibitions create an environment conducive to exploring not only the exhibited objects, but also new ideas and experiences. Visitors are free to move around and learn concepts, inquire and even apply what is leaned to their own worldview. A museum visit is thus a very personal experience encompassing both cognitive aspects, such as the elaboration of background and new knowledge, and emotional aspects that may include the satisfaction of interests or the fascination with the exhibit itself. Despite the inherently stimulating environment created by cultural heritage institutions, on their own they often fall short of successfully supporting conceptual learning, inquiry-skill-building, analytic experiences or follow-up activities at home or the school [7].

The optimal multimedia guide should support strong personalization of all the information provided in a museum in an effort to ensure that each visitor be allowed to accommodate and interpret the visit according to his own pace and interests. Simultaneously, a museum guide should also provide the appropriate amount of impetus to foster learning and self-development so as to create a richer and more meaningful experience. Digital augmentation offers a promising way to extend and enhance the process of learning for children, especially supporting the exploration and reflection when outside the classroom [8]. The use of mobile devices is particularly effective when applied to a context related activity, equipping learners with reliable tools that enable to learn anytime and anywhere using different types of perception. In addition, mobile technology can support social interaction, which is of primary importance for sharing information, ideas, constructing understanding and shaping knowledge [9].

A multimedia guide should not only satisfy visitors' interests, but also take into consideration what they have to learn: orienting visitors, providing opportunities for reflection and allowing to explore related ideas, thereby greatly enhancing the visit's educational value. In essence, the guide can stimulate – especially for children - new interests and suggest new paths for exploring the museum. A system that supports visitors in their visit should take into account their agenda, expectations and interests as well as the peculiarities of a cultural experience in a physical environment.

The developed server/client environment for this mobile guide is easily reusable in various fields of e-learning like virtual exhibitions or distance learning, simply by adding different multimedia contents with our CMS (Content Management System).

6. USER BEHAVIOUR

To extend the educational reach to potential visitors of MiniMundus, gauging visitor behaviour becomes more and more important. Consistent interpretation of user behaviour usage intensity or special interests can be tracked with an included statistics module, which allows immediate content adjustments to adhere the customer's needs. It allows the museum to react to customers' preferences while the visitor's privacy has to be respected. MiniMundus does not collect information that personally identifies individuals except when individuals provide such specific information on a voluntary basis. For example, registration may be required for borrowing a PDA at the main entrance to assign the person to a certain target group. In all such cases, all information that is voluntarily provided by the user will be kept strictly confidential. Statistical analyses of user behaviour and characteristics, in order to measure interest and use of various sections of the exhibition, so as to improve focuses and navigation to gather marketing information can be of an advantage in the market. Only aggregated data from these analyses, not individual data, will be used for this purpose.

7. CONCLUSION

Museums play a significant role in learning contexts especially when providing interactive experiences. As the power of storage, computation and display technologies grew, handheld devices became more and more functional and suitable to play the role of mobile platforms for multimedia applications. Best learning results are achieved when people are engaged cognitively, physically and emotionally, especially when it comes to children. In behalf of providing a new experience for visitors in museums, exhibitions, theme parks or on sport events, our work brings up a PDA to be a professional multimedia tour guide.

Besides from new and very individual learning experiences, one major benefit for museums or exhibition halls is to track user behaviour: duration in front of objects, usage intensity or special interests can be tracked with an included statistics module, which allows immediate content adjustments to adhere the customer's needs and to react to visitors' needs.

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COMPREHENSIVE APPLICATION OF ELEARNING

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Abstract

Nowadays there are plenty of electronic training materials used for eLeraning – eL – via web or applying CD ROMs. The quality and the content are different, there are fairly well qualified developers' group, but in several cases the eL product can't be reachable by the users. What kind of lacks provide these constrains? There are different LMS systems which don't support the portability. International bodies agreed upon standards for eLearning materials. Do experts and developers know about these standards? It is interesting to know how the eL market exists, is there any preferences in application by the users. The author decided to find the answers to these questions. The paper presents the part of results of Research of Comprehensive application of eLearning.

Keywords

ICT, eLearning, portability, knowledge of eLearning standards, web based training, Comprehensive application of eLearning.

1. BACKGROUND

On 17th of November 2004 organized MTA SZTAKI[6]. the 5th eLearning Forum together with MATISZ[7], Műszaki Könyvkiadó[8] and SZÁMALK[9]. The Forum gives the possibility for the experts dealing with electronic learning – eLearning, eL –, to give and listen to presentations about up-to-date information of researches, results of development and experience of applications.

Author applied the questionnaire edited by himself on research of Comprehensive application of eLearning at that Forum. The aim of research is to study

- general data and the daily use of ICT – Info-Communication Technology
- knowledge about eLearning
- knowledge of standards and portability

There were 10 questions per topics.

The research is based on a three phase process according to the Target groups:

- eLearning experts Phase1 November 2004
- engineer teacher student Phase2 March 2005
- teachers from secondary vocational schools   Phase3 June 2005

Author expected 80-100 questionnaires in every phase. In Phase1 91 experts answered, this paper presents an overview about the results of analyses.

Selecting the core elements of the analyses the average expert

- is a man in age 31-50, with higher education diploma,
- works in educational institute as an employee,
- has more than 15 years experience in ICT,
- switches his computer at home every days,
- has used eLearning materials,
- prefers Internet versus CD ROM,
- prefers blended learning,

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[6] COMPUTER AND AUTOMATION RESEARCH INSITUTE HUNGARIAN ACADEMY OF SCIENCES
[7] Hungarian Association of Content Industry
[8] Technical Publisher Ltd.
[9] SZÁMALK Education and Information Technology Ltd.

- would like to try exams via web,
- knows eL standards but does not use,
- knows eL web sites,
- and theoretically supports the broad application of eL.

2. GENERAL DATA AND ICT APPLICATION

The gender was 30.8% women and 69.2% men of answering experts. The age ratio is shown on Figure 1.

Age
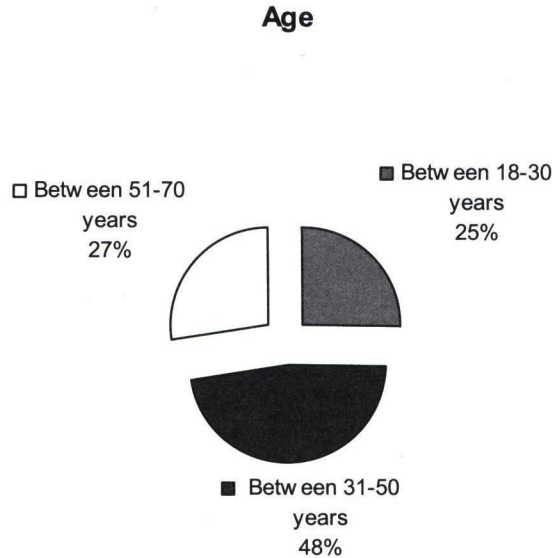
Figure 1: Age of answering experts

The 3,3% of answerers had secondary vocational degree, and 96,7% had higher education diploma either BsC or Ms level. From the second group 12,1% had PhD certificate as well. and 1 academician also filled the questionnaire.

The 44% of people work in educational institution, 24% in small and medium enterprises – SME –, 13% in state own big companies.

Type of workplace
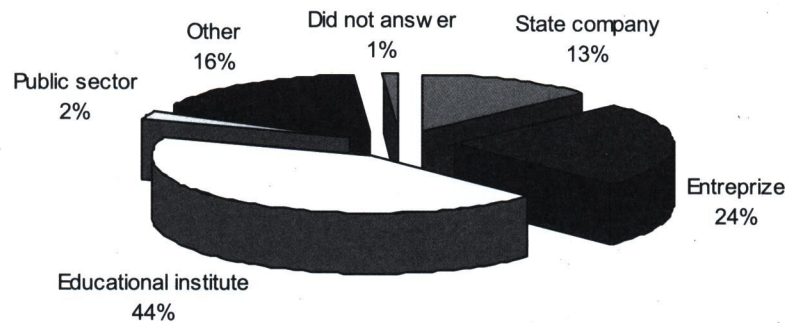
Figure 2: Type of workplace

There were high the ratio of bosses: 34%. It can explain because of the strategic questions and practical experiences are discussed at the eLearning Forum, and bosses take the importance of personal participation. The participation of educators was 22%. Similarly – 23% – took part the experts. The 16% of answerers works as developer.
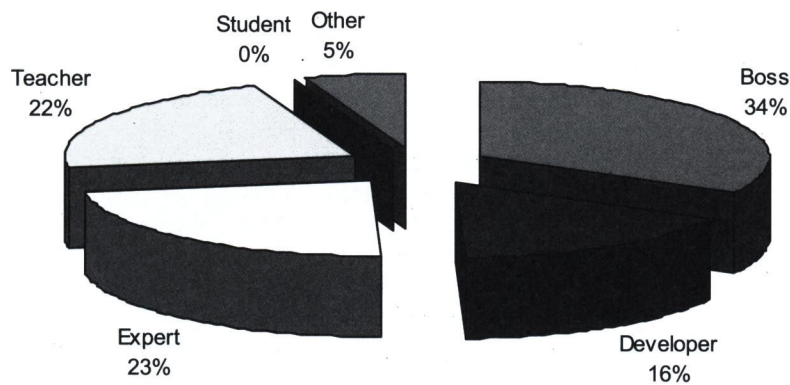
Figure 3: Occupation

3. KNOWLEDGE AND APPLICATION OF ELEARNING

The majority of experts, 84% have used eL material. I was interested in which information carrier is preferred in the applications.

Almost half of experts – 48% –, prefer the Internet. Only one fourth – 24% –, selected the CD ROMs. 12% of answerers did not know and here appeared in higher ratio – 16% –, the people who did not answer. Most of the answerers selected Internet emphasized the updated learning material. People selected CD ROMs told the security as the reason.
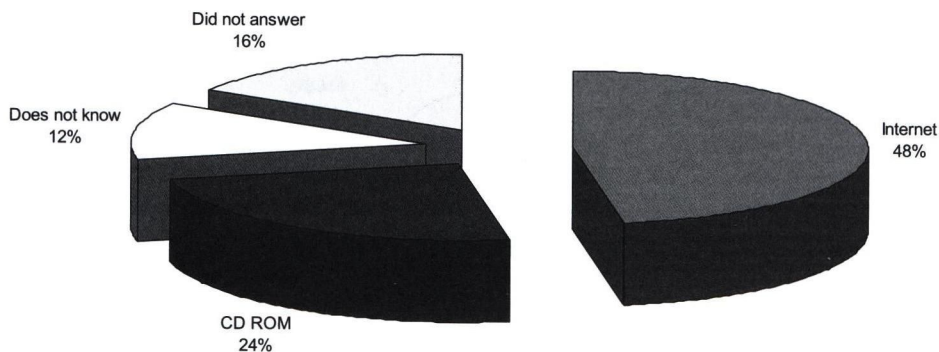
Figure 4: Preference of Internet versus CD ROMs

There are several Learning Management System – LMS –, exists at the eLearning market. Sometimes there is the biggest problem for user, that developed learning material can not be applied in the LMS system they own. In this case the dissemination is so difficult.

It was interesting to examine the knowledge of LMSs. The answerer could select any of the listed LMSs, proving of any kind of level of knowledge.

Most catch was for Eduweb, which is a Hungarian Learning Management System, developed especially for schools. 26 people named another LMS which was not listed. 23 people selected Coedu – also Hungarian LMS – and IBM Lotus LearningSpace. 23 experts know the ORACLE iLearning system. There were less than 20 catch for the multinational ICT companies: 18 for SAP Learning Solution, 16 for WebCT and 15 for Cisco. Sabedu Knowledge Linker Enterprise and Lapoda also Hungarian developed systems were on the same level. There were two interesting results. Moodle is an open source LMS is known by 12experts. But Microsoft Learning Gateway is the least known system in Hungary, only 11 experts named that system.

Most than the half of the experts use any of LMS from the list. Two third of them were involved into training material development.

I examined the opinion about the future of eL in the coming 5 years. 57% stated the importance of eL application and 85% selected the blended learning technology. 84% of expert supported the possibilities of examination via Internet.
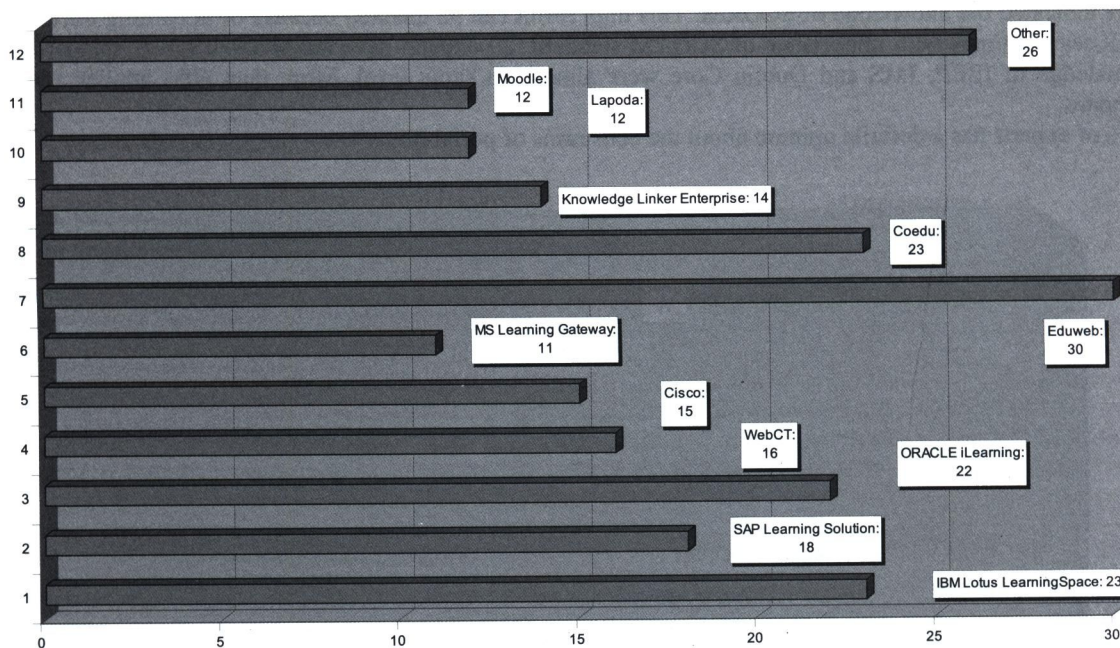
Figure 5: Well known LMSs

4. KNOWLEDGE OF STANDARDS AND PORTABILITY

In this chapter the author presents the analyses of possibilities of broader dissemination of eL training materials.

85 % of experts have positive opinion. They think the portability of training materials is important.

Similarly to the previous chapter I examined the knowledge of standards developed for eLearning systems.
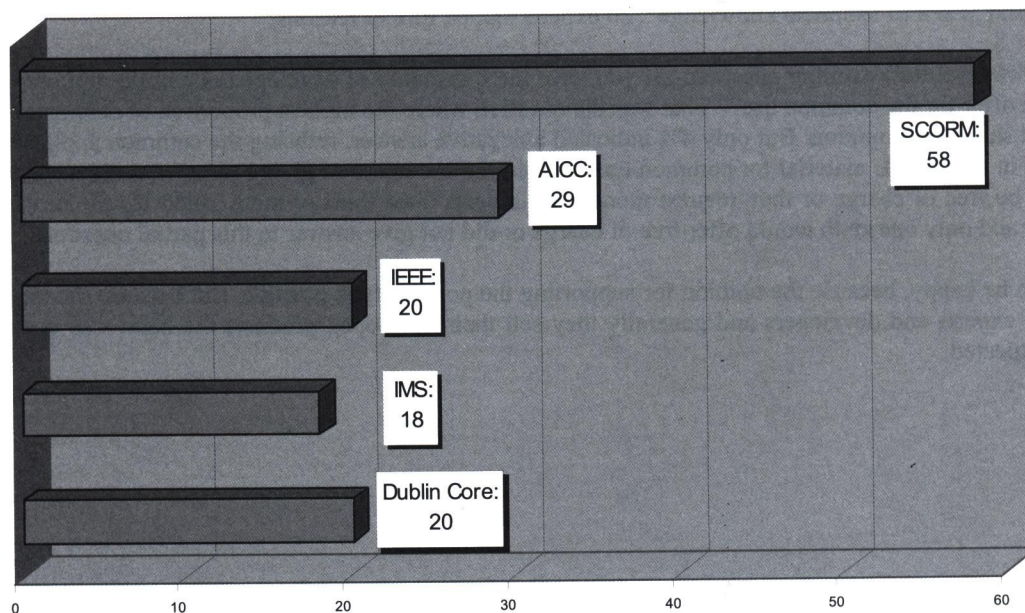
Figure 6: Knowledge of eL standards

58% indicated the knowledge of SCORM. This high result can be thanked because of eLearning Forum. We dealt several times with importance of SCORM standard. 29 experts have heard about AICC standard. The knowledge of IEEE, IMS and Dublin Core were almost on same level. More than 40% applies some of standard.

81% of experts has a definite opinion about the constrains of portability.
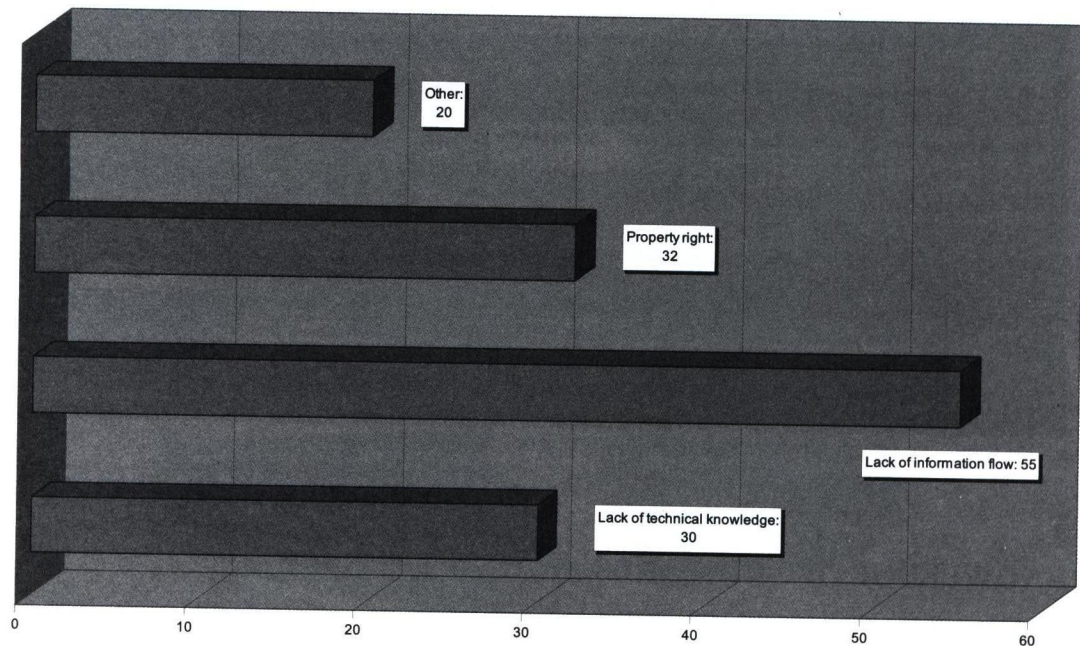
Figure 7: Constrains of spread of standard eL materials

55 experts told about „Lack of information flow". Almost the same number: 32-30 indicated the „Property right" and „Lack of technical knowledge". 20 experts named further reasons.

There was the most exciting question: „If you have the ownership of developed eLearning training material, do you offer for the common use?" That was the question where the highest proportion of answerers – 25% – did not share their opinion. But only 4% indicated a negative answer, refusing the common application. 71% agreed in sharing eL material for common use. I asked the statement of giving „Yes" answer about the share would be free of charge or they request money for the use. Two third of them asked for the property right paying and only one sixth would offer free of charge or did not give answer to this partial question.

We can be happy, because the opinion for supporting the portability is positive. But because the target group was of experts and developers and generally they sell their developed products the habit was contradictive than expected.
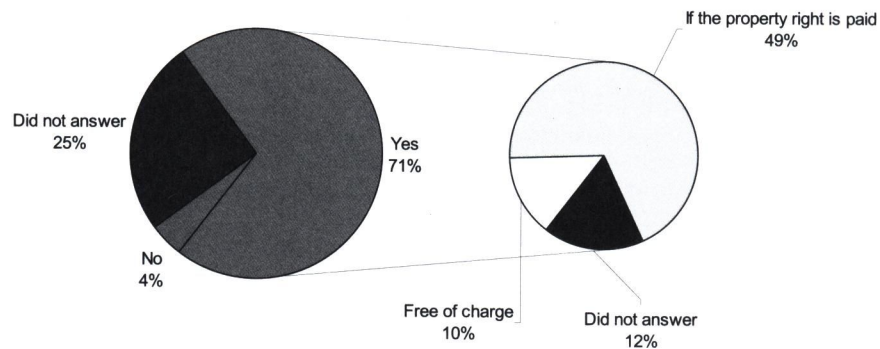
Figure 8: eL offer for common use

5. CONCLUSION

I think there were several lessons we can learn from this survey. Generally the expert group was relatively well informed, enthusiastic for supporting the eLearning application, but they were careful in the real solutions.

The total picture can be evaluated after the processing all the target groups' survey, comparing the situation of experts, students and teachers.

APPENDIX

Technology Supported Learning - Glossary of Terms

English – Bulgarian - Hungarian

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24/7
24/7
24/7

Twenty-four hours a day, seven days a week. In e-Learning, used to describe the hours of operation of a virtual classroom or how often technical support should be available for online students and instructors.

Двадесет и четири часа на ден, седем дена в седмицата. При електронното обучение се използва, за да описва времето за достъп до виртуалната класна стая или кога учениците/студентите или преподавателите могат да получат техническа помощ.

Napi huszonnégy órában, heti hét napon. Az eLearningben a virtuális tanterem működési időszakát vagy az online tanulók és tanárok számára nyújtandó műszaki segítségnyújtás elvárt elérhetőségét jellemzik így.

A

Accessibility
Достъпност
Hozzáférhetőség

A characteristic of technology that enables people with disabilities to use it. For example, accessible Websites can be navigated by people with visual, hearing, motor, or cognitive impairments. Accessible design also benefits people with older or slower software and hardware.

Характеристика на информационна технология, позволяваща достъп до компютърни системи на хора с увреждания. Пример: достъпен web-site може да бъде разглеждан/навигиран от хора с увреждания на зрението, слуха или когнитивните умения. Достъпен дизайн също улеснява хора с по-бавни или остарели хардуер и/или софтуер.

A technológia egy olyan jellemzője, ami lehetővé teszi annak használatát a fogyatékosok számára is. Például a hozzáférhető webhelyeken a csökkent látású, hallású, mozgássérült vagy értelmi fogyatékosok is el tudnak igazodni. A hozzáférhető tervezés a régebbi vagy lassabb hardverrel rendelkezők számára is előnyös.

Adaptive
Адаптивност (Приспособимост)
Adaptív

Adaptive training programs adapt themselves to the skill level or preferences of the learner.

Адаптивните системи за подготовка притежават свойството да се самоприспособяват към нуждите или нивото на подготовка на ученика.

Az adaptív képzési programok alkalmazkodnak a tanuló tudásszintjéhez vagy igényeihez.

ADL (Advanced Distributed Learning)
Усъвършенствано Разпределено Обучение
ADL (Advanced Distributed Learning, Fejlett Elosztott Tanulás)

Initiative by the U.S. Department of Defense to achieve interoperability across computer and Internet-based learning courseware through the development of a common technical framework, which contains content in the form of reusable learning objects.

Инициатива на Американското Министерство на Отбраната (Department of Defense) за разработване на стандартизиран начин на употреба на материали за обучение, намиращи се на различни компютри, чрез създаване на единен технически шаблон, съдържащ материали във формата на „обекти за обучение" които могат да бъдат използвани многократно.

Az USA Védelmi Minisztériumának kezdeményezése arra, hogy együttműködést alakítsanak ki a számítógép- és Internetalapú tananyagok között egy olyan közös műszaki keretrendszer kifejlesztése révén, amely újrafelhasználható tananyagobjektumok formájában tartalmazza a tartalmat.

Adult Learning Theory
Теория за обучение на възрастни
Felnőttképzési elmélet

Principles and practices of providing instruction to the adult learner. Primarily concerned with an adult's well-defined learning goals, wealth of experience and ability/desire to direct his or her own learning. See andragogy.

Теорията се занимава с принципите и практиките за преподаване на възрастни. От особен интерес са способностите на възрастните да си поставят ясни цели, възможностите и желанието да управляват посоката на обучението си, както и използването на натрупания опит. (виж „педагогика за възрастни")

A felnőtt tanuló részére nyújtandó útmutatás elvei és gyakorlata. Elsődlegesen a felnőtt jól meghatározott tanulási céljaival, tapasztalati anyagával és saját tanulásának irányítására való képességével/kívánságával foglalkozik. Ld. andragógia.

Andragogy
Педагогика за възрастни (андрагогика)
Andragógia – Felnőttképzés

The opposite of pedagogy. A European term introduced into the English vocabulary by Malcom Knowles, it is the art and science of helping adults learn. A prime contributor to most theories of adult learning, andragogy as set out by Knowles emphasizes an adults' capabilities to direct and motivate themselves, utilize past knowledge to assist learning and evaluate the contents of training for relevance and quality.

Обратното на педагогика. Европейски термин, въведен в английския език от Малкъм Ноуелс, представляващ изкуството (и науката) да се помага на възрастни индивиди да учат. Специално внимание се обръща на способността на възрастните за само-мотивация, само-насочване и използване на минал опит и знания за научаване, използване и оценка на нов материал.

A felnőttképzés pedagógiája. Egy európai szakkifejezés, - amelynek angol szóhasználatát Malcolm Knowles vezette be -, a felnőttek tanulási segítségének művészete és tudománya. A felnőttképzés legtöbb elméletének alapja - Knowles szerint -, a felnőtt önmagát irányító és motiváló, a múltbeli tudásnak a tanulás segítéséhez való felhasználására irányuló, és az oktatás tartalmának tárgyhoz tartozás és minőség szempontjából történő kiértékelésére szolgáló képességeit hangsúlyozza.

Applet
Аплет
Kis alkalmazás

A small program, that runs on the Internet or an Intranet, written in the programming language known as Java.

Малка програма, написана на езика за програмиране Java, която се изпълнява през Интернет/Интранет.

Egy kis program, ami az Interneten vagy Intraneten fut, és amelyet a Java néven ismert programozási nyelven írtak.

ASF (Active Streaming Format)
ASF (формат за пренасяне на видеосигнал)
ASF (Active Streaming Format) – Aktív videófolyam szabvány

A Microsoft file format for digital video playback over the Internet, or on a standalone computer. Acts as a "wrapper" around any of a number of compression types, including MPEG. Part of Netshow, a proprietary streaming media solution from Microsoft. Biggest competitor is Real Networks. While this "wrapper" support many standard formats, ASF files are themselves proprietary.

Формат на Майкрософт за цифрово пренасяне/показване на видеосигнал (през Интернет или на отделен компютър). Служи като „обвивка" за редица видове компресиране, включително MPEG. Основен конкурент е Real Networks.

Egy Microsoft fájl formátum az Interneten keresztül vagy önálló számítógépen történő digitális videólejátszásra. A videó fájlok becsomagolásaként működik, mint egy fajta tömörítési típus, amelyek közt megtalálható az MPEG is. A Netshow, a Microsoft által szabadalmaztatott streaming – folyamatosan áramló -, média megoldásának része. Legnagyobb vetélytársa a Real Networks. Bár ez a "csomagolás" sok

Assessment
Оценяване
Értékelés

Evaluating a learner's actual skill or knowledge level based on the expected skill or knowledge for a person in the same job, position, or assignment.

Количествена оценка на практическата подготовка или нивото на знания, основана на очакваните знания и умения за заемане на определена позиция или за изпълнение на определена задача.

Egy tanuló valóságos képzettségének vagy tudásszintjének kiértékelése az azonos állásban, pozícióban vagy beosztásban levő személytől elvárt képzettség vagy tudásszint alapján.

Assessment Item
Оценяван елемент/задача
Értékelési tétel

A question or exercise on a test, quiz, or other evaluation.

Въпрос или упражнение задаван на изпит/тест.

Egy kérdés vagy feladat egy tesztben, kérdőívben vagy más értékelésben.

Asynchronous activities
Асинхронни действия
Aszinkron tevékenységek

Activities that take place in a different period of time frame, e.g. e-mail, forum and testing. Typical for asynchronous activities is that the response is delayed.

Действия които се случват в различни интервали/периоди от време. Пр: е-маил, форум, тест. Типично при асинхронните действия/дейности е че времето за отговор не е фиксирано (забавен/отложен отговор).

Olyan tevékenységek, amelyek különböző időben történnek, pl. e-mail, fórum és tesztelés. Jellemző az aszinkron tevékenységekre, hogy a válasz késleltetve érkezik.

Asynchronous Threaded Discussion Tools
Асинхронни средства за комуникация, използващи разклонения на дискусията (тредове)
Aszinkron tárgyalási eszközök

Software that supports text-based conversations between two or more users who are not necessarily online at the same time. Threading the responses helps users follow and respond to contributions.

Софтуер, който позволява текстова комуникация между двама или повече потребители, които не са непременно едновременно свързани в мрежата. Разклоняването на дискусията по тематика позволява на потребителите да следят дискусията и да отговарят на интересните за тях съобщения.

Olyan szoftver, amely a szövegalapú beszélgetéseket támogatja, két vagy több felhasználó között, akik nem egyszerre jelentkeznek be a rendszerbe. A válaszok csomagokba történő felfűzése, segít a felhasználóknak követni és megválaszolni a felszólalásokat.

Asynchronous Training/Learning
Асинхронно обучение
Aszinkron képzés/tanulás

A learning program that does not require the student and instructor to participate at the same time. Typically self-paced, online tutorials.

Програма за обучение, която не изисква ученика и инструктора да участват в процеса по едно и също време. Обикновено прогреса на обучението се определя от учащия и се извършва във формата на електронни ръководства с инструкции и задачи.

Olyan oktatási program, ami nem igényli a hallgató és a tanár egyidejű közreműködését. Jellemzően önütemezett, online konzultációk.

Audience
Аудитория
Hallgatóság

The intended end user population of a training product. Careful consideration of audience factors such as learning styles, level of education, preferences, background, and job responsibilities helps create more successful e-Learning.

Крайните потребители на определен продукт за обучение. Внимателната преценка на специфични фактори за публиката за която е предназначен даден продукт за обучение като стил на учене, ниво на обучение, предпочитания, основа, отговорности в работата, създават условия за по-ефективно обучение.

A megcélzott végfelhasználói az oktatási termékeknek. Jellemzőinek - tanulási stílus, oktatási szint, igények, háttér és munkaköri felelősség -, alapos fegyelembe vétele segíti a hatékonyabb elektronikus tanulást.

Audio-conferencing
Аудио-конференция
Audió konferencia

Voice-only connection of at least two sites using standard telephone lines.

Гласова връзка между поне двама участници, използващи обикновени телефонни линии.

Hangalapú kapcsolat legalább két helyszín között szabványos telefonvonalak segítségével.

Augmented Reality (AR)
Обогатена реалност
Megerősített valóság (AR)

An environment in which virtual information is superimposed onto the real world to produce an enhanced reality.

Среда, в която реалността е допълнена с виртуална информация.

Egy olyan környezet, amelyben a virtuális információt a valós világra helyezve, egy fokozott valóságot hoznak létre.

Avatar
Аватар

Avatar

In online environments, a virtual digital image representing a person. In e-Learning avatars usually represent the learners. The term comes from a Sanskrit word meaning an incarnation in human form.

Виртуално изображение представляващо човек в онлайн среда. При дистанционно обучение, аватари се използват за да представляват учениците. Този термин произлиза от санскритска дума, означаваща „прераждане в човешка форма".

Online környezetekben egy virtuális, digitális kép, ami egy személyt képvisel. Az eLearningben általában a tanulókat képviselik az avatarok. A kifejezés egy emberi formában történő megtestesülést jelentő szanszkrit szóból származik.

AVI (Audio Video Interleaved)
AVI (смесен аудио-видео сигнал)
AVI (Audio Video Interleaved)

A Microsoft format for digital audio and video playback from Windows 3.1. Somewhat cross-platform, but mostly a Windows format. Has been replaced by the ASF format, but still used by some multimedia developers.

Формат на Microsoft за възпроизвеждане на цифров аудио или видео сигнал в Windows 3.1. Този формат е заместен от ASF формат, но все още се използва от някои разработчици на мултимедийни системи.

Egy digitális audió és videó visszajátszására szolgáló Microsoft formátum a Windows 3.1-ből. Többé-kevésbé platform független, de elsősorban Windows formátum. Helyét az ASF formátum vette át, de ma is használják a multimédia fejlesztők.

B

Bandwidth
Максимален дебит на предаване на информация
Sávszélesség

A measure of the amount of data that can travel through a network. Usually measured in kilobits per second (Kbps). For example, a modem line often has a bandwidth of 56.6 Kbps.

Единица за измерване на количеството данни, които могат да бъдат предадени по мрежата. Измерва се в Килобита за секунда (Kbps). Например, модемите обикновено позволяват прехвърляне на 56.6 Kbps.

A hálózaton átvihető adat mennyiségének mértéke. Általában kilobit/másodpercben (Kbps) mérik. Például egy modemes vonalnak gyakran 56.6 Kbps a sávszélessége.

Barcode Reader
Устройство за четене на бар-кодове
Vonalkód olvasó

A card slot extension that allows handhelds to read barcode labels.

Разширение/куплунг за четене на карти, позволяващ на различни джобни устройства да четат бар-кодове на етикети.

Egy kiegészítő kártya, amely lehetővé teszi a vonalkódolvasást kézi eszközökkel.

Blended Learning
Смесено обучение
Vegyes tanulás

A training curriculum that combines multiple types of media. Typically, blended learning refers to a combination of classroom-based training with self-paced e-Learning.

Програма за обучение, която включва различни видове медии. Обикновено представлява комбинация от присъствен курс, допълнен с възможност за дистанционно обучение.

Egy többféle médiát alkalmazó oktatási forma. Jellemzően a tanterem alapú oktatás és az önütemezett eLearning kombinációját nevezik így.

Blog / Weblog
Блог/Уеблог
Blog / Weblog

"Blog" is short for "Web Log" and refers to short messages that are posted onto a web site by an author. Blogs are typically informal and personal messages, almost like daily diary entries. Blogging has caught on as a cheap form of knowledge sharing and expert communication. See www.blogger.com for more information.

Блог е съкращение от Уеб Лог. Електронен дневник. Това е евтина форма за самопубликация. Обикновено, блоговете имат един автор, който публикува съобщения, статии, или собствени размисли с определена тематика. Виж www.blogger.com

A "blog" a "web log" (webnapló) rövidítése és a szerző által egy webhelyre beküldött rövid üzenetekre utal. A blogok jellemzően informális és személyes üzenetek, amelyek nagyon hasonlítanak a naplóbejegyzésekre. A blogolás a tudásmegosztás és a szakértői kommunikáció olcsó módjaként terjedt el. Lásd a www.blogger.com-ot további információért.

Broadband
Ширококанална връзка
Széles sáv

Transmission over a network in which more than one signal is carried at the same time. Broadband technology can transmit data, audio, and video all at once over long distances.

Пренасяне на повече от един сигнал през компютърна мрежа. Тази технология позволява едновременното пренасяне на данни, аудио и видео на големи разстояния.

Adatátvitel egy olyan hálózaton, amin egyszerre egynél több jel vihető át. A szélessávú technológia képes adat, audio és videó egyidejű átvitelére nagy távolságokon át.

Broadcast
Изпращане до всички
Közvetítés

Transferring learning content to many learners simultaneously, as in a satellite broadcast or an IP multicast. In an IP multicast, numerous learners can participate in a learning event that is broadcast over the network using the Internet Protocol from a single source.

Едновременно изпращане на учебни материали до множество ученици. Това може да стане чрез излъчване от спътник или IP multicast. При използване на IP multicast, множество ученици могат да участват в мрежова сесия на обучение използвайки Интернет-протокол от един източник.

A tananyag egyszerre több tanuló részére történő átvitele, például műholdas adással vagy IP multicasttal. Egy IP multicastban számos tanuló részt vehet egy oktatási eseményben, amit az Internet Protokoll segítségével egy forrásból közvetítenek a hálózaton.

Buffering
Буфериране
Bufferelés – adatok tárolása

A process used as a part of streaming media technologies whereby a certain amount of data is fed into the player (such as the RealPlayer) to allow it to begin playing before fully downloading the file.

Процес на предварително зареждане на части от медиа-файл (аудио или видео) от софтуера който ще го възпроизведе (например Real Player), които да са достъпни докато останалата част от файла се зарежда.

A média folyam technológiák részeként használt folyamat, ahol egy bizonyos adatmennyiséget közölnek a lejátszóval, hogy a lejátszás a fájl teljes letöltődése előtt elkezdődhessen.

Bulletin Board System
Електронен Форум
Bulletin Board System

Also known as BBS. The computer equivalent of a public note board, messages can be posted to a BBS for viewing by other users and other computers. A BBS is often called a threaded discussion.

Компютърен еквивалент на дъска за обяви. Съобщенията могат да се записват във форума и да бъдат виждани от всички потребители от различни компютри. Дискусиите често се поддържат в йерархична структура, улесняваща достъпа.

BBS-ként is ismert. A faliújság számítógépes megfelelője. Az üzeneteket el lehet küldeni a BBS-re, hogy a többi felhasználó és számítógép hozzájuk férhessen. A BBS-t gyakran nevezik aszinkron megbeszélésnek.

C

Card Slot
Позиция (куплунг) за разширение
Kártyahely

A component that allows handhelds to connect to various peripherals, including extended memory cards, digital cameras, and other devices.

Компонент, позволяващ на разнообразни преносими устройства да използват разширения като външна памет, цифрови фотоапарати и др.

Egy komponens, ami a kézi eszözök részére lehetővé teszi a csatlakozást különféle perifériákhoz, beleértve a memóriakiegészítő kártyákat, digitális kamerákat és más eszözöket.

Case study
Изследване на конкретен случай
Esettanulmány

A scenario used to illustrate the application of a learning concept. May be either factual or hypothetical.

Сценарий, използван за да илюстрира приложението на конкретно изучавано понятие. Може да бъде хипотетичен или фактически пример.

Egy forgatókönyv, amivel egy oktatási koncepció alkalmazását illusztrálják. Lehet tényszerű vagy feltételezett.

Certification
Издаване на сертификат
Hitelesítés

A formal evaluation process conducted by a neutral third party on a fee-basis, typically using a rigorous, accurate, reliable, validated software test suite and evaluation methodology. Certification is for a specific version only of the product being tested. Certification may lapse after a specific duration. Certification can be lost or revoked. Certifying body stands behind its evaluation of the product or service.

Формален процес на оценка на софтуерен продукт/услуга от неутрална организация с прилагане на изчерпващи, точни, надеждни и утвърдени последователности от тестови примери и методология за оценка. Сертификат се издава за конкретен продукт за определен период от време. Издаден сертификат може да бъде анулиран или продължен. Организацията, издала сертификата, гарантира качеството/надеждността на продукта.

Egy formális kiértékelési folyamat, amit egy semleges harmadik fél folytat díjazásos alapon, jellemzően egy szigorú, pontos, megbízható, jóváhagyott szoftver tesztágy és kiértékelési módszertan felhasználásával. A hitelesítés csak a tesztelt termék egy bizonyos változatára vonatkozik. A hitelesítés elévülhet egy bizonyos időkorlát leteltével. A hitelesítés elveszthető vagy visszavonható. A hitelesítő testület a termékről vagy szolgáltatásról adott kiértékelése mögött áll.

Chat or **Chat Room**
Чат
Csevegés vagy csevegőszoba

Text-based group communication on the Internet. Multiple users can type their questions and answers for everyone to see. This form of group communication occurs in real-time. Synchronous web-casts or threaded discussions are considered as a better tool.

Групова комуникация в Интернет чрез използване на текст. Множество от потребители могат да въвеждат своите въпроси и отговори така, че да са достъпни за всички останали. При тази форма на комуникация, всички потребители участват едновременно. Нарича се още синхронна дискусия.

Szövegalapú csoportos kommunikáció az Interneten. Több felhasználó gépelheti be a kérdéseit és válaszait, amiket mindenki láthat. A csoportos kommunikációnak ez a formája valós időben történik.

Chunking
Разбиване на порции/части
Darabolás

The process of separating learning materials into brief sections in order to improve learner comprehension and retention.

Процесът на организиране на материалите за обучение в кратки лекции за по-лесно усвояване и запаметяване от учениците.

Az a folyamat, amely során a tananyagokat rövid szakaszokra bontják a tanulói megértés és a hosszútávú megőrzés érdekében.

Class
Курс
Tanóra

Scheduled learning event that can take place at a centralized location or in a virtual environment.

Планиран процес на обучение, който може да се провежда на предварително уговорено място в конкретно време (изискващ физическо присъствие както на учениците така и на инструктора/ите) или виртуално.

Ütemezett oktatási esemény, ami egy központi helyszínen vagy virtuális környezetben tartható meg.

Classroom Training
Обучение в класна стая
Tantermi képzés

Any training conducted where the students and facilitator interact in a real, physical classroom. Unlike "Instructor-led Training (ILT)" which, although there is an instructor, could still take place over an Internet connection.

Обучение, при което учениците и инструктора се намират в реална класна стая. Това е различно от понятието „обучение с инструктор", където обучението може да се извършва през Интернет, въпреки наличието на преподавател.

Bármilyen oktatás, ahol a hallgatók és az oktató valós, fizikai osztályteremben lépnek kapcsolatba egymással. Ehhez hasonló az "Oktatóvezérelt oktatás (Instructor-Led Training (ILT))", amely, bár jelen van az oktató, Internetes kapcsolaton keresztül is történhet.

Clip Media
Медиен клип
Média klip

Pre-existing pictures, audio files, videos clips that can be "clipped" out and pasted directly into a computer program. Also known as "stock media".

Изображения, аудио и видео клипове, които могат да се приложат директно в дадена компютърна програма.

Kész képek, audio fájlok, videó klipek, amiket ki lehet "vágni" és beilleszteni egy számítógépes programba. "Stock media" néven is ismert.

CMS (content management system)
Система за поддръжка и управление на учебно съдържание
Tartalomkezelő rendszer (CMS)

A centralized software application or set of applications that facilitates and streamlines the process of designing, testing, approving, and posting e-Learning content, usually on Webpages.

Софтуерен продукт, позволяващ подреждането, зареждането, тестването и поддръжката на материали за обучение, обикновено на уеб-страници.

Egy központosított szoftver alkalmazás vagy alkalmazások halmaza, általában weboldalakon, ami segíti és korszerűsíti az eLearning tartalom tervezésének, tesztelésének, jóváhagyásának és közzétételének folyamatát.

CODEC (Coder/Decoder)
Система за компресиране/декомпресиране на файлове (CODEC)
Kódoló-dekódoló (CODEC)

A mathematical system for compressing (encoding) and decompressing (playing back) a video or audio file. CODECs can be hardware or software-based, or both. Hardware CODECS are often more efficient, but the trade-off is that not all users will have the special hardware needed to play back the file.

Система за компресиране и декомпресиране на видео и/или аудио файлове. Това може да бъде осъществено на хардуерно или софтуерно ниво (или смесено). Кодирането е по-ефективно, когато се осъществява на хардуерно ниво, но това поставя изисквания за специфичен хардуер и може да затрудни потребителите при опит за декодиране на даден файл.

Egy matematikai rendszer videó vagy audio fájlok tömörítésére – kódolás - és visszajátszására - dekódolás. A CODEC-ek lehetnek hardver vagy szoftver alapúak, vagy vegyesek. A hardver CODEC-ek gyakran hatékonyabbak, de hátrányuk, hogy nem minden felhasználó részére áll rendelkezésre az a speciális hardver, ami a visszajátszáshoz szükséges.

Cognitive level
Ниво на усвояване на учебен материал
Tudásszint

A designation that identifies the knowledge and skills (mental or physical) a learner must display to prove mastery of a given reusable information object (RIO).

Знание или умение което ученикът трябва да демонстрира, за да докаже нивото на което е усвоил/a конкретен урок.

Egy meghatározás, ami azonosítja azt a tudást és a mentális vagy fizikai képzettséget, amivel a tanulónak rendelkeznie kell ahhoz, hogy egy adott újrafelhasználható információ objektum – reusable information object (RIO)–, elsajátítását bizonyíthassa.

Cognitive Loading
„Когнитивно зареждане"
Tudás betöltés

The process of placing elements into a person's short-term memory.

Процесът на „зареждане" на знания в кратковременната памет на учащия.

Az a folyamat, aminek során az elemeket a személy rövidtávú emlékezetében elhelyezik.

Collaboration technology
Технология за съвместна работа (дистанционно)
Együttműködési technológia

Software, platforms, or services that enable people at different locations to communicate and work with each other in a secure, self-contained environment. It can include document management, application sharing, presentation development and delivery, whiteboard, chat, and more.

Софтуерен продукт или услуга, позволяваща на хора, намиращи се на различни места, да комуникират и работят заедно. Такава система може да включва средства за редактиране/записване/разглеждане на документи, използване на едни и същи програми, разработване и представяне/ показване на доклади, чат, форуми и др.

Szoftver platformok vagy szolgáltatások, amik lehetővé teszik a különböző helyeken levő emberek számára a kommunikációt és a közös munkát egy biztonságos, önálló környezetben. Tartalmazhat dokumentumkezelést, alkalmazásmegosztást, bemutató fejlesztést és kézbesítést, tábla alkalmazást, csevegést és egyéb funkciókat.

Collaborative Learning
Обучение чрез обмен на информация
Együttműködő tanulás

Learning through the exchange and sharing of information and opinions among a peer group. Computers excel in mediating collaborative learning for geographically dispersed groups.

Обучение базирано на размяна/обмен на информация и мнения между равноправни членове на дадена група (съученици/колеги). Използването на компютри позволява този процес на обмен да се извършва дори в групи, в които членовете са разпръснати на различни физически места.

Egyenrangúak csoportja közti információ- és véleménycsere és megosztás révén történő tanulás. A számítógépek kiválóan teljesítenek az együttműködő tanulás földrajzilag szétszórt csoportok közti közvetítése terén.

Compliance
Преотстъпване (на тестове)
Megfelelőség

A "self-test" software test suite is available to both implementer and user. Software test suite usually designed to rigorously test inputs, processes, and outputs of a guideline, recommendation, specification, or standard: Know the source. Provider of test suite may or may not allow users of test suite to claim more than conformance (no formal Endorsement).

"Самопроверяваща" полредователност от софтуерни тестове, преотстъпена за ползване от разработчика на потребителите. Тя се проектира за изчерпателно тестване на входовете, процесите и изходите на инструкции, спецификации или стандарти. Преотстъпващата организация може да позволи на потребителите да изискват само проверка за съответствие или и допълнителни изисквания (без формално споразумение).

Egy 'öntesztelő' szoftver tesztágy elérhető mind a kivitelező, mind a felhasználó számára. A szoftver tesztágy általában a bemenetek, folyamatok és kimenetek szigorú, irányelvek, ajánlások, specifikációk vagy szabványok szempontjából tesztel. A tesztágyat szolgáltató megengedhet a felhasználóinak a megfelelésnél többet állítani, de ez nem szükségszerű, nincs formális hozzájárulás.

Compression
Компресиране
Tömörítés

A technique used to encode information so that it fits in a smaller package for easy storage or transmission.

Технология за кодиране на информация и намаляване на физическия и обем за по-лесно предаване или съхранение.

Egy, az információ kódolására szolgáló technika, aminek célja, hogy az kisebb csomagban elférjen a könnyű tárolás vagy átvitel érdekében.

Computer Based Education (CBE)
Компютърно обучение
Számítógép-alapú oktatás

A generic term for a computer program used by a learner to acquire knowledge or skills. See e-Learning.

Обобщен термин за използване на компютърни програми от учащия за придобиване/обогатяване на специфични знания и умения. *Вж. Електронно обучение.*

Általános meghatározás, egy tanuló által tudás vagy képzettség megszerzésére használt számítógépprogramra. Lásd: eLearning.

Computer Based Learning (CBL)
Компютърно обучение
Számítógép-alapú tanulás

A generic term for a computer program used by a learner to acquire knowledge or skills. See e-Learning.

Обобщен термин за използване на компютърни програми от учащия за придобиване/обогатяване на специфични знания и умения. *Вж. Електронно обучение.*

Általános meghatározás, egy tanuló által tudás vagy képzettség megszerzésére használt számítógépprogramra. Lásd: eLearning.

Computer Based Training (CBT)
Компютърно обучение
Számítógép-alapú képzés

A generic term for a computer program used by a learner to acquire knowledge or skills. See e-Learning.

Обобщен термин за използване на компютърни програми от учащия за придобиване/обогатяване на специфични знания и умения.

Általános meghatározás, egy tanuló által tudás vagy képzettség megszerzésére használt számítógépprogramra. Lásd: eLearning.

Computer Managed Instruction
Компютърно управлявано преподаване
Számítógéppel irányított oktatás

The components of e-Learning that provide assessment, student tracking and personalized lesson plans.

Компоненти за оценяване, изготвяне на индивидуални планове за обучение и наблюдение на обучаемия в процеса на дистанционно/електронно обучение.

Az eLearning felmérést, hallgató követést és személyre szabott leckéterveket biztosító komponensei.

Computer Supported Learning Resources (CSLR)
Поддържащи ресурси при компютърно обучение
Számítógéppel támogatott oktatási erőforrások

The parts of a e-Learning product other than those that instruct, test, or track progress. These include glossaries, bulletin boards and chats, bibliographies, databases, etc.

Компоненти включващи речници на термините, форуми, чат, библиографии, бази данни и др., използвани в процеса на дистанционно/електронно обучение. Тези компоненти са различни от компонентите за оценяване, наблюдение и инструктиране.

Egy eLearning termék azon részei, amelyek célja nem az oktatás, tesztelés vagy a haladás követése. Ide tartoznak a szójegyzékek, hírdetőtáblák, csevegők, irodalomjegyzékek, adatbázisok, stb.

Content on demand (CoD)
Съдържание по поръчка
Igény szerinti tartalom

Immediate availability via the network of an offering packaged in a media format such as audio on demand (AOD) and video on demand (VOD).

Възможност за поръчка и получаване на медиа-файлове (аудио и/или видео) по мрежата.

Egy média formátumban - például audio on demand (AOD, igény szerinti audio) vagy video on demand (VOD, igény szerinti videó) -, csomagolt ajánlat hálózat útján megoldott azonnali elérhetősége.

Course
Курс
Tanfolyam

Term used to describe the collection of elements that make up training on a given subject. Usually a course is broken up into lessons, sections, or modules but course is sometimes used interchangeably with these terms.

Курс на обучение. Свързана съвкупност от отделни лекции и модули за обучение на дадена тема.

Ez a kifejezés olyan elemek gyűjteményét írja le, amely egy adott tárgyról szóló képzést alkotnak. Egy tanfolyamot általában leckékre, szakaszokra vagy modulokra bontanak, de néha ezeknek a kifejezéseknek a megfelelőjeként is használatos.

Course Map
Карта на курс за обучение
Tanfolyamtérkép

Usually a flow-chart or other illustration, a course map details all of the component elements of a course. Course maps often illustrate the recommended order that students should complete the training.

Диаграма/блок-схема или друг вид илюстрация на отделните компоненти на курса на обучение. Обикновено задава препоръчителната последователност на стъпките на обучение, необходими за успешно завършване на курса.

Általában folyamatábra vagy más ábra, ami egy tanfolyam összes építőelemét részletezi. A tanfolyamtérképek gyakran ábrázolják a képzés teljesítésének ajánlott sorrendjét is.

Course Manager
Мениджър на курс
Tanfolyamkezelő

The course manager is the person who is in charge of the entire course program. He is the one who is responsible for the course curriculum as well as for the organisational aspects of the course (opening users access to specific courses, advertising, administrative issues etc.).

Човек, който отговаря за цялостна програма за обучение, включително и за организацията й (даване права за достъп на учащите, рекламиране, администриране на процеса и т.н.)

A tanfolyamkezelő az a személy, aki a teljes tanfolyamprogramért felelős. Ő éppúgy felelős a tanfolyam tantervéért, mint a tanfolyam szervezési szempontjaiért: megnyitja a felhasználók számára a hozzáférést az adott tanfolyamokhoz, reklámokat készít, adminisztrál, stb.

Course Subscriber
Регистриран за курс
Tanfolyam előfizető

An individual that has enrolled for a specific course. As such it is a synonym for trainee.

Човек, който се е записал за обучение в конкретен курс. Синоним на учащ.

Egy egyén, aki beiratkozott egy adott tanfolyamra. Ebben a minőségében a tanuló szinonímája.

Curriculum
Програма на обучение
Tanterv

A series of related courses.

Последователност от свързани курсове.

Összetartozó tanfolyamok egy sorozata.

Cyberspace
Кибер-пространство
Kibernetikus tér

Jargon referring to the Internet, or the World Wide Web.

Интернет, уеб, електронно пространство.

Az Internetre vagy a World Wide Webre vonatkozó szakkifejezés.

D

Delivery
Доставка
Átadás

Any method of providing education. Methods include instructor-led training, Web-based distance learning, online laboratories, CD-ROMs, interactive TV, videos, and books.

Възможни методи за предоставяне на учебни материали. Методите могат да бъдат: обучение с инструктор, дистанционно обучение чрез Интернет, виртуални лаборатории, разпространение чрез на CD-ROM, интерактивна телевизия, видео-лекции, електронни книги и др.

Az oktatási szolgáltatás bármely módja. Módszerei közé tartozik az oktatóvezérelt oktatás (Instructor-Led Training (ILT)), a webalapú távoktatás, az online laboratóriumok, a CD-ROM-ok, az interaktív TV, a videók és a könyvek alkalmazása.

Delivery Method
Метод за доставка
Átadási mód

Term describing the way in which training is distributed to learners. Print-based workbooks, classroom, video, audio tapes, CD-ROM, and Internet are all sample delivery methods.

Термин, описващ начина за доставка на учебни материали до учащите. Печатни материали, класна стая, видео и аудио касети, CD-ROM, Интернет и т.н. са конкретни примери за различни методи на доставка.

A képzés tanulók közti elosztásának módját leíró kifejezés. Többek között a nyomtatott munkafüzetek, az osztálytermek, a videó és audio szalagok, a CD-ROM és az Internet tartozik ide.

Digital
Цифров
Digitális

Opposite of analog. Computer signals, the information manipulated by a computer and transferred on the Internet, are digital. A digital signal varies by discrete values only; that is any point defined within a digital signal will have the value of either 1 or 0.

Обратното на аналогов сигнал. Цифровите сигнали се характеризират с дискретни стойности (1 или 0) за всяка конкретна точка от сигнала. Информацията, която е представяна, обработвана и предавана чрез/между компютри, е в цифров вид.

Az analóg ellentéte. A számítógép jelei, a számítógép által kezelt és az Interneten továbbított információ digitális. Egy digitális jel csak diszkrét értékekkel változik, tehát egy digitális jel tetszőleges meghatározott pontja egy digitális jelben 1 vagy 0 értékkel rendelkezik.

Digital Subscriber Line (DSL)
DSL
Nagysebességű Internet-kapcsolat (DSL)

Refers to high speed Internet connections obtained through a special service of the phone company, using their standard telephone line.

Високо-скоростна Интернет връзка, използваща стандартна телефонна линия.

Nagysebességű Internet-kapcsolat, amelyet a telefontársaság speciális szolgáltatásként nyújt a szabványos telefonvonalukat használva.

Distance Education
Дистанционно обучение
Távoktatás

The formal process of distance learning. This term has traditionally implied the higher education level.

Процес, при който обучението се извършва от разстояние (не във физическа класна стая). Този термин традиционно се свързва със след гимназиално ниво на обучение.

A távtanulás formális folyamata. Ez a kifejezés hagyományosan magába foglalja, hogy magasabb oktatási szintről van szó.

Distance Learning
Обучение от разстояние
Távtanulás

Situation in which the instructor and students are separated by time, location, or both. Courses are delivered to remote locations via synchronous or asynchronous means.

Ситуация, при която инструкторът и учащите са разделени по място и време. Курсовете се провеждат дистанционно - синхронно или асинхронно.

Olyan helyzet, ahol az oktató és a hallgatók térben és/vagy időben távol vannak egymástól. A tanfolyamokat szinkron vagy aszinkron módon juttatják el a távoli helyszínekre.

Distributed Learning
Разпределено обучение
Elosztott tanulás

Distance learning that makes use of information technology. Includes most types of distance learning but not plain correspondence (very similar to e-Learning).

Обучение от разстояние, използващо информационни технологии. Включва множество видове дистанционно обучение, но не кореспонденция в чист вид. Подобно е на *електронното обучение*.

Olyan távoktatás, amely információ-technológiát használ. A távoktatás legtöbb módját tartalmazza, de nem levelező oktatás, nagyon hasonló az eLearning-hez.

Domains of Learning
Типове обучение
A tanulás tartományai

Three divisions used to classify types of learning: psychomotor (physical), cognitive (mental), and affective (emotional).

Обучението се разделя на три основни типа: физическо, когнитивно и емоционално.

Hármas felosztás a tanulás típusaira: pszichomotoros (fizikai), tudás alapú (mentális) és affektív (érzelmi).

Download
Изтегляне на файл
Letöltés

1) A file that's transferred or copied to a user's computer from another connected individual computer, a computer network, a commercial online service, or the Internet. 2) To transfer or copy a file to a user's computer from another connected individual computer, a computer network, a commercial online service, or the Internet.

1) Файл, намиращ се на отдалечен компютър, се прехвърля на компютъра на потребителя през компютърна мрежа, Интернет или платена онлайн услуга. 2) Процес, при който файл, намиращ се на отдалечен компютър, се прехвърля на компютъра на потребителя през компютърна мрежа, Интернет или платена онлайн услуга.

1) Egy fájl, amit egy felhasználó számítógépére visznek át egy másik csatlakozott egyén számítógépéről, egy számítógép-hálózatról, egy kereskedelmi online szolgáltatásról, vagy az Internetről. 2) Fájl átvitele vagy másolása egy felhasználó számítógépére egy másik csatlakozott egyén számítógépéről, egy számítógép-hálózatról, egy kereskedelmi online szolgáltatásról, vagy az Internetről.

DPI (Dots Per Inch)
DPI
DPI (Dots Per Inch)

A measure of image resolution.

Начин за измерване на разделителната способност на изображение. Измерва се с брой точки на инч.

A képfelbontás egyik mértékegysége (hüvelykenkénti képpontok száma).

DVD-RAM
DVD-RAM
DVD-RAM

Refers to writable DVD disks. Analogous to CD-R and CD-RW, but with several times the storage capacity of these older formats. Special drives are required for writing onto blank DVD-RAM disks.

DVD дискове, позволяващи запис на данни. Подобни на CD-R и CD-RW, но позволяващи записването на няколко пъти повече информация. За записване върху празен DVD диск е необходимо специално записващо устройство.

Írható DVD lemezek. A CD-R és CD-RW megfelelője, de ezeknek a régebbi formátumoknak a kapacitásának a sokszorosával rendelkezik. Az üres DVD-RAM lemezek írásához különleges hardver szükséges.

DVD-ROM
DVD-RAM
DVD-RAM

A drive capable of reading DVD disks. DVD-ROM drives are usually backward-compatible, which means that they are also capable of reading CD-ROMs and audio CDs.

Устройство за четене на DVD дискове. Тези устройства могат да четат и компакт-дискове (CD-ROM) с данни и/или музика.

Egy DVD lemezek olvasására képes meghajtó. A DVD-ROM meghajtók rendszerint visszafelé kompatibilisek, ami azt jelenti, hogy CD-ROM-okat és audio CD-ket is képesek olvasni.

DVD-Video
DVD-видео
DVD-Videó

A standard that combines DVD disks, MPEG-2 video compression, and any of a number of high-quality audio formats to create a movie that is stored and played back on computers and on DVD players designed for home entertainment centers.

Стандарт за създаване и разпространение на филми на DVD дискове. Този стандарт включва хардуерен стандарт за самите дискове и устройствата, които ги четат и пишат, MPEG-2 формат за компресиране на видео, както и редица аудио формати.

Egy szabvány, ami egyesíti a DVD lemezeket, az MPEG-2 videotömörítést és számos jó minőségű audio formátumot a filmek számítógépeken és DVD lejátszókon történő tárolására és lejátszására.

E

Educational Material
Учебен Материал
Oktatóanyag

Electronic didactics in any electronic format like text or spreadsheet files, video, audio file etc. Multimedia Didactics are broadcast to trainees before or after a lesson.

Материали за обучение в електронен формат, включващи текст, таблици, видео, аудио и др. Мултимедийни материали могат да се показват на учащите преди или след даден урок.

Oktatásra használatos anyag tetszőleges elektronikus formátumban, mint szöveg, táblázat, videó vagy audio file. A multimédia oktatóanyagokat az óra előtt vagy után közvetítik a hallgatók részére.

E-Learning
Електронно обучение
eLearning

Broad definition of the field of using technology to deliver learning and training programs. Typically used to describe media such as CD-ROM, Internet, Intranet, wireless and mobile learning. Some include Knowledge Management as a form of e-Learning.

Широкообхватна дефиниция за използване на технологии при обучение и подготовка в различни области и програми. Обикновено се отнася за използване на средства като компакт-дискове, интернет, интранет, безжични и мобилни средства за предоставяне на учебни материали.

Elektronikus tanulás. Jellemzően olyan médiumokat ír le, mint a CD-ROM, Internet, Intranet, a vezeték nélküli és mobil oktatás. Néhányan a tudáskezelést (Knowledge Management) is az eLearning egy formájának tekintik.

E-mail
Електронна поща (Имейл)
Elektronikus levél

Short for electronic mail. The process of one user employing a computer to send a text message to an electronic mailbox to be retrieved and viewed by another user. Also, the message itself.

Съкратено от електронна поща. Процес при който потребител, използвайки компютър, изпраща текстово съобщение до електронен адрес (пощенска кутия) на друг потребител. Същият термин се използва и за самото съобщение.

Az elektronikus levél rövidítése. Az a folyamat, amelynek során egy felhasználó számítógépet használ arra, hogy elküldjön egy szöveges üzenetet egy elektronikus levelesládába, hogy egy másik felhasználó letöltse és megnézze. Magát a levelet is így nevezik.

Email list
Електронен списък
Levelezőlista

A form of one-to-many communication using email; a software program for automating mailing lists and discussion groups on a computer network. (See listserv).

Форма на един-към-много комуникация посредством електронна поща. Софтуерна програма за автоматизирано разпространение на електронни съобщения до участниците в дадена дискусионна група в компютърна мрежа.

Az elektronikus levélben történő egy-több kommunikáció egyik formája; egy szoftver program a levelezőlisták és vitacsoportok automatizálására egy számítógéphálózaton. (ld. listserv)

Emoticon
Средство за изразяване на емоция в електронна среда
Érzelem ikon

Also known as *smiles*, they are keyboard characters used in combination to produce whimsical symbols representing a range of emotions. Examples are happy :-) and sad :-(. Emoticons are used in electronic communication to show humor and express emotions that are difficult to communicate in a text-based environment.

Последователности от клавиатурни символи, използвани в комбинация с цел изразяване на различни емоции. Пример: щастие/радост/усмивка: :-) или тъга: :-(. Тези комбинации от символи се използват при електронна комуникация да показват хумор и/или да изразят емоции, които са трудни за предаване при текстова комуникация.

Smiley néven is ismert billentyűzetkarakterek, amiket együtt használnak az érzelmek széles skáláját tükröző szeszélyes szimbólumok alkotásához. Példák rá a vidám :-) és a szomorú :-(. Az érzelem ikonpkat elektronikus kommunikációban használják olyan érzelmek kifejezésére, amiket nehéz szöveges környezetben leírni.

End-to-end Solution
Цялостно решение (от начало до край)
Végpont-végpont megoldás

A complete set of products and services, typically including learning management systems, off-the-shelf content, and custom services.

Пълен набор от продукти и услуги, свързани с процеса на обучение.

Termékek és szolgáltatások teljes készlete, jellemzően oktatáskezelő rendszerekkel (LMS), boltban megvehető tartalommal és igény szerinti szolgáltatásokkal.

Entry Behavior
Начално поведение
Belépési viselkedés

The prior knowledge, skill or attitude that is a pre-requisite to a given course, or that is assumed to be present by course designers.

Нивото на предварителни знания, умения и поведение, изисквани или препоръчвани преди опита да се вземе определен курс.

Az az előzetes tudás, képzettség vagy magatartás, ami egy adott tanfolyam előfeltétele, vagy aminek a meglétét a tanfolyam tervezői feltételezik.

Evaluation
Оценка
Kiértékelés

Any method used to gather information about the impact or effectiveness of a learning event. Measurements might be used to improve the offering, determine if the learning objectives were achieved, or determine if the offering has been of value to the organization.

Метод за събиране на информация за влиянието или ефективното усвояване на даден елемент от процеса на обучение. Оценяването служи за измерване на ефективността/нивото на постигане на предварително поставените цели или за да определи дали даден курс на обучение е бил от полза за организацията/учащите.

Bármely módszer, amivel egy oktatási esemény hatásáról vagy hatékonyságáról gyűjtenek adatot. A mérési eredményeket felhasználhatják az ajánlat javítására, annak megállapítására, hogy az oktatási célokat elérték-e, vagy annak megállapítására, hogy az ajánlat értékes volt-e a szervezet számára.

F

F2F
F2F (лице-в-лице)
F2F

Face-to-Face. Example: We're going to do some initial training F2F and then distribute CD-ROMs for post-work.

Лице-в-лице. Процес при който обучението изисква едновременното физическо присъствие на едно и също място както на учащите, така и на инструктора.

Szemtől szemben (face-to-face).

Facilitator
Инструктор
Oktató, aki támogatja a felnőttek tanulását

The politically correct term for "instructor", "trainer", "teacher" or "class leader". Assuming adult learners actually obtain knowledge from their peers, in a classroom the instructor "facilitates" the learning experience.

Синоними: учител, треньор, ръководител. Смята се, че възрастните хора се учат на практика от колегите си. За тази цел инструкторът предимно насочва процеса на обучение, вместо да „инструктира".

Az "oktató", "képző", "tanár" vagy "osztályfőnök" szerepét egyszemélyben ellátó oktató, aki elősegíti és támogatja a felnőtt tanulók tanulási folyamatát.

Fade
Избледняване
Áttűnés

A smooth, gradual transition from a normal image to complete blackness (fade out), or vice versa (fade in).

Постепенно избледняване на нормално изображение.

Egy finom, fokozatos átmenet egy normális képből teljes feketeségbe – eltűnés -, vagy fordítva - előtűnés.

FAQ (Frequently Asked Questions)
Често задавани въпроси
Gyakran Ismételt Kérdések (GYIK)

A web document made up of questions commonly asked about a particular subject or in a particular forum and the associated answers.

Документ съдържащ често задавани въпроси и техните отговори по специфична тема. Обикновено се поставя на уеб-страница за да е достъпен по всяко време за всички потребители.

Egy webdokumentum, amit egy bizonyos tárgyról vagy egy bizonyos fórumon gyakran feltett kérdések és a hozzájuk tartozó válaszok alkotnak.

Fast Motion
Ускорена прожекция
Gyorsított felvétel

A shot in which time appears to move faster than normal, usually achieved by deleting frames (called "skip frames").

Динамично изображение при което времето изглежда че тече по-бързо от нормално. Обикновено този ефект се постига чрез изтриване на кадри (пропуснати кадри).

Olyan filmfelvétel, amiben az idő gyorsabban mozgónak tűnik, amit általában képkockák törlésével érnek el. Ezeket a képkockákat "átugrott képkockáknak" - skip frame -, hívják.

Feedback
Обратна връзка
Visszacsatolás

Interaction between the learner and the instructor or system. Feedback increases the quality of the learning experience, and it should closely follow an action for maximum result.

Вид комуникация между инструктор и учащ, целяща да повиши качеството на обучение.

Kölcsönhatás a tanuló és az oktató vagy a rendszer között. A visszacsatolás javítja az tanulási élmény minőségét és szorosan követnie kell a cselekedetet a legnagyobb eredmény érdekében.

File Transfer Protocol (FTP)
FTP (Протокол за трансфер на файлове)
Fájl átviteli rendszer (FTP)

Generally called FTP. One method of transferring files over intranets or the Internet.

Един от протоколите за прехвърляне на файлове между компютри в мрежа.

Általában FTP-nek nevezik. A fájlok intraneteken vagy az Interneten való átvitelének egy módja.

Formal learning
Формално обучение

Hierarchically structured school system that runs from primary school through the university and organized school-like programs created in business for technical and professional training.

Йерархично структурирана учебна система, обединяваща принципите на обучение от основното училище до институциите за висше образование, както и различните програми за бизнес и техническа подготовка.

Formative Evaluation
Оценка на ефективността на програма
Formális értékelés

An evaluation performed at a late development stage, used to revise and improve an training program before launch.

Оценяване на качествата на дадена учебна програма в завършващ стадий на разработка, използвано за подобряване и настройка преди началото й.

Egy késői fejlesztési stádiumban végrehajtott felmérés, amit egy program indítása előtti átdolgozásának és javításának céljából tesznek.

Forum
Форум
Fórum

A forum is an off-lesson asynchronous activity. This means that it is not part of a lesson and that there is a delayed response. It is based on a WEB interface.

Форумите са форма на асинхронна комуникация. Те не са част от урока и отговорите не се изискват веднага.

A fórum egy órán kívüli aszinkron tevékenység. Ez azt jelenti, hogy nem része az órának és késleltetett válasz van, általában web alapú.

Flash

Flash

Flash

Software by Macromedia that enables designers to use simple vector graphics to create computer animations, which can be viewed by any browser with the correct plug-in.

Софтуерна програма на Macromedia, позволяваща използването на векторна графика за създаване на компютърна анимация, която може да бъде възпроизведена от всички браузъри.

A Macromedia szoftver terméke, ami lehetővé teszi a tervezők számára a megfelelő plug-innel rendelkező böngészővel megtekinthető számítógépes animációk megalkotását egyszerű vektorgrafikával.

Full-motion video

Видео

Teljes mozgású videó

A signal that allows the transmission of the complete action taking place at the origination site.

Запис, позволяващ да се предаде по мрежата достоверно всяко движение от мястото на събитието.

Olyan jel, ami lehetővé teszi a származási helyen történő teljes cselekmény átvitelét.

Fully interactive video (two-way interactive video)

Двупосочна видео-връзка

Teljesen interaktív videó (kétirányú interaktív videó)

Two sites interacting with audio and video as if they were co-located.

Два отдалечени потребителя, взаимодействащи чрез аудио и видео връзка.

Két helyszín olyan kölcsönhatásának biztosítása audio és videó révén, mintha egyazon helyszín lennének.

G

Generic (off-the-shelf) Courseware
Широкоспектърни материали за обучение
Általános - boltban megvehető - tananyag

e-Learning products developed for a broad audience, not for a specific organization.

Продукти за електронно обучение предназначени за нуждите на широк кръг потребители, не за специфична организация.

Széles közönség, és nem egy bizonyos szervezet számára fejlesztett eLearning termékek.

GIF (Graphics Interchange Format)
GIF (графичен формат)
Grafikus csereformátum GIF

A file format commonly used for images on the Web. GIFs are especially suitable for images composed of relatively few colors, such as logos or vector graphics.

Файлов формат, широкоизползван за показване на изображения на уеб-страници. Изображения със сравнително маък брой цветове са особено подходящи за съхранение в GIF формат. Пример за такива изображения са различни видове лого-знаци или векторни графики.

A weben elhelyezett képekhez gyakran használt fájl formátum. A GIF-ek kifejezetten alkalmazhatók viszonylag kevés színnel ábrázolt képekhez, mint a logók vagy vektorgrafika.

General Packet Radio Service (GPRS)
GPRS
Általános csomagkapcsolt rádiószolgáltatás (GPRS)

GPRS refers to the next generation cellular wireless services. GPRS enables networks to offer "always-on", higher capacity Internet-based content and packet based data services. This enables services such as color Internet browsing, e- mail on the move, powerful visual communications, multimedia messages and location-based services.

Нова поколение мобилни безжични услуги. GPRS позволява предлагането на високоскоростен обмен на данни между мобилни устройства. Информацията се предава на пакети. Тази технология позволява предлагането на услуги като сканиране на интернет, електронна поща в движение, визуална комуникация, мултимедийни съобщения и др., предназначени за мобилни устройства – телефони, мобилни и джобни компютри и др.

A GPRS a következő generációs celluláris drótnélküli szolgáltatás neve. A GPRS lehetővé teszi a hálózatoknak a 'mindig bekapcsolt', nagyobb kapacitású Internet-alapú tartalmat és a csomagalapú adatszolgáltatásokat. Ez olyan szolgáltatásokat tesz elérhetővé, mint a színes Internet-böngészés, mozgás közbeni e-mail, erőteljes vizuális kommunikáció, multimédia üzenetek és helyalapú szolgáltatások.

Global Positioning System (GPS)
GPS
Globális helymeghatározó rendszer (GPS)

GPS is based on triangulation from a constellation of 24 satellites orbiting the earth. A GPS receiver pinpoints its position on earth by measuring its distance from the satellites. It does so by calculating the time it takes for a coded radio message to pass from the satellite to the GPS unit. A GPS unit needs at least three measurements to determine its exact position.

GPS е сателитна система (използваща 24 спътника) за триангулация. Един GPS приемник определя собствената си позиция, измервайки разстоянието от себе си до спътника. Това става чрез засичане на времето, нужно на кодиран радио-сигнал да достигне от спътника до GPS приемника. За определяне на точната позиция на уреда е необходимо измерване от три различни точки (спътници).

112

A GPS 24 Föld körül keringő műhold együttállásából képzett háromszögelésen alapszik. Egy GPS vevő a földi helyzetét a műholdaktól számított távolságának megmérésével határozza meg. Ezt úgy éri el, hogy kiszámítja azt az időt, ami alatt egy kódolt rádióüzenet eljut a műholdtól a GPS egységig. Egy GPS egységnek legalább három mérésre van szüksége a pontos helyzetének meghatározásához.

Graphical User Interface (GUI)
Графичен потребителски интерфейс (ГПИ)
Grafikus felhasználói felület (GUI)

A way of representing the functions, features and contents of a program to a user by way of visual elements, such as icons, as opposed to textual elements, such as words and character strings. The Microsoft Windows operating system is the classic example of a program with a GUI.

Представяне на функциите, средствата и съдържанието на дадена програма на потребителите чрез използването на визуални елементи вместо чист текст. Операционната система на Майкрософт – Windows – е класически пример за програма използваща графичен интерфейс за комуникация с потребителя.

Egy program fukcióinak, jellemzőinek és tartalmának a felhasználó felé való ábrázolásának vizuális elemek, pl. ikonok, és nem szöveges elemek, pl. szavak és karaktersorozatok általi módja. A Microsoft Windows a GUI-s program egy klasszikus példája.

Groupware
Софтуер за работа в група
Groupware

Software that integrates the collaborative efforts of multiple users on a single document over distance and time (e.g., Groove Networks and Tapped In). Typically, groupware applications bundle synchronous and asynchronous discussion tools, a calendar, and file-sharing space.

Софтуер, позволяващ на група от потребители да работи с един и същ документ, без да се налага отделните членове на групата да се намират на едно и също място и по едно и също време. Обикновено такива приложения включват средства за синхронна и асинхронна комуникация, както и календар и място за общ достъп до файлове.

Olyan szoftver, ami egységbe rendezi több felhasználó együttműködésre irányuló erőfeszítéseit egy dokumentumra nézve, távolságot és időt áthidalva (pl. Groove Networks és Tapped In). Jellemzően a groupware alkalmazások szinkron és aszinkron kommunikációs eszközöket, egy naptárat és fájl megosztó helyet foglalnak magukba.

H

Hard Skills
„Твърди" умения
A számítógép eszközök ismeretére vonatkozó szakképzettség

As opposed to "soft skills", this term relates to technical or IT related skills.

Термин, отнасящ се до техническите умения на даден човек.

A szoftver ismeretekkel ellentétben, ez a kifejezés a műszaki, a berendezésekkel és az információ technológiával kapcsolatos képzettségekre utal.

HCI
Човеко-машинно взаимодействие
Ember-gép kölcsönhatás (HCI)

HCI (Human-Computer Interaction) is the study of how people interact with computers and to what extent computers are or are not developed for successful interaction with human beings. A significant number of major corporations and academic institutions now study HCI.

Занимава се с изучаване на това как хората комуникират с компютрите и до колко компютрите са създадени за успешна комуникация с хора. Това е модерна област за изследване в редица големи корпорации и академични институции.

Az HCI (Human-Computer Interaction, ember-gép kölcsönhatás) annak tanulmányozása, hogy az emberek hogyan lépnek kapcsolatba a számítógépekkel és mennyire sikeres a számítógépek együttműködése az emberi lényekkel. Jelentős számú nagyobb cégek és kutató intézetek tanulmányozzák az HCI-t.

HTML (Hypertext Markup Language)
HTML
HTML (Hypertext Markup Language)

More commonly referred to as HTML. The standard programming language for web documents meant to be accessed by browsers.

Програмен език за създаване на документи за уеб-страници, предназначени за разглеждане с интернет браузър.

Általában HTML-ként hivatkoznak rá. A böngészők általi elérésre szánt webdokumentumok szabványos programozási nyelve.

HTTP (HyperText Transfer Protocol)
HTTP
HTTP (HyperText Transfer Protocol)

The system through which web pages are transmitted over the Internet.

Протокол за предаване на уеб-страници през Интернет.

Az a rendszer, amin keresztül a weboldalakat átviszik az Interneten.

HTTP Streaming
Поточно пренасяне по HTTP
HTTP Streaming

A form of streaming (popularized by QuickTime) in which media files begin to play before they are downloaded entirely. This means that they can be sent via HTTP and don't require specialized server software such as RealMedia files do. (RealMedia files use a specialized protocol called RTSP and require content providers to have a special server application installed.) Also called Progressive Download.

Форма на поточно пренасяне (популяризирана от Quick Time), при която файловете могат да започнат да се визуализират преди да са напълно прехвърлени на машината на потребителя. Това означава, че файлът може да започне да се прехвърля посредством HTTP протокол и не изисква специализиран софтуер какъвто е необходим например за файловете на RealMedia. (Файловете на RealMeadia използват специализиран протокол -RTSP и изискват доставчикът на файла да има инсталиран специален сървърен софтуер.)

A streamingnek egy (QuickTime által népszerűsített) formája, amelyben a média lejátszása a teljes letöltődés előtt elkezdődik. Ez azt jelenti, hogy HTTP-n elküldhetők és nem igényelnek specializált szerver szoftvert, mint a RealMedia fájlok. (A RealMedia fájlok egy RTSP nevű specializált protokollt használnak és megkövetelik a tartalomszolgáltatóktól egy különleges szerver alkalmazás telepítését.) Progresszív letöltés (Progressive Download) néven is ismert.

Hyperlink
Препратка
Hiper hivatkozás

Keywords or phrases within a document, which allows access to other sections of the same document or of a different one. It's the mechanism that can be used to design a hypertext.

Ключови думи или фрази в рамките на даден документ, позволяващи достъп до други части от същия или напълно различен документ. Това е механизмът за създаване на хипер-текст.

Szavak vagy kifejezések egy dokumentumban, amelyek ugyanazon vagy más dokumentum más szakaszaihoz engednek hozzáférést. Ezzel a mechanizmussal tervezhetünk hypertextet.

Hypermedia
Хипер-медия
Hipermédia

Hypermedia links text, graphics, video, audio, and animation and leaves the control of navigation through its elements in the hands of the user.

Хипер-медията включва текст, графика, видео, аудио и анимация. Навигацията между различните елементи е оставена изцяло на потребителя.

A hipermédia szöveget, grafikát, videót, audiot és animációt kapcsol össze és a navigálás irányítását az elemein keresztül a felhasználó kezében hagyja.

Hypertext
Хипер-текст
Hipertext

Text elements within multimedia documents, classically underlined and in colored font, that can be clicked on by the user to follow a path to a new location in a document, supplemental material like a graphic or another page on the net.

Текст, който съдържа препратки към различни части от даден мутимедиен документ, върху които потребителят може да щракне с мишката за моментален достъп до съответната част от документа. Класическият начин за визуализиране на препратките се състои в показване на оцветен и подчертан текст, който може да бъде посочен с мишката за преминаване към съответната част от документа.

Multimédia dokumentumokban elhelyezett szöveges elemek, általában aláhúzva és színes betűtípussal írva, amire a felhasználó rákattinthat, hogy kövesse az utat egy új helyre egy dokumentumban, egy kiegészítő anyagra, például grafikára vagy egy másik oldalra a hálózaton.

I

Icon
Иконка
Ikon

A simple symbol representing a complex object, process, or function. Icon-based user interfaces have the user click on onscreen buttons instead of typing commands.

Картинка или символ изобразяващ обект, процес или функция. При потребителски интерфейс, базиран на използването на иконки, потребителят използва иконките като бутони вместо да въвежда текстови команди.

Egy egyszerű szimbólum, ami egy bonyolult objektumot, folyamatot vagy funkciót képvisel. Az ikonalapú felhasználói felületeket használva a felhasználó képernyőn megjelenő gombokra kattint parancsok begépelése helyett.

IEEE (The Institute of Electrical and Electronics Engineers)
IEEE
IEEE (The Institute of Electrical and Electronics Engineers)

An organization whose Learning Technology Standards Committee is working to develop technical standards, recommended practices, and guides for computer implementations of education and training systems.

Организация на Електро и Електронните Инженери. Комисията за стандартизиране на технологиите за обучение към тази организация разработва технически стандарти, препоръчителни насоки и практики за разработване на програмни приложения за обучение.

Egy nemzetküözi szervezet, amelynek az Oktatási Technológiai Szabványosító Bizottsága (Learning Technology Standars Committee) műszaki szabványokat, ajánlott gyakorlatot és oktató és kiképző rendszerek számítógépes megvalósításához útmutatókat dolgoz ki.

ILS (integrated learning system)
Интегрирани системи за обучение
Integrált oktatórendszer (ILS)

A complete software, hardware, and network system used for instruction. In addition to providing curriculum and lessons organized by level, an ILS usually includes a number of tools such as assessments, record keeping, report writing, and user information files that help to identify learning needs, monitor progress, and maintain student records.

Пълен пакет, съдържащ всички необходими за провеждането на успешен процес на обучение софтуерни продукти, хардуер и мрежови ресурси.

Egy teljes, oktatásra használt szoftver, hardver és hálózati rendszer. A tanterven és a szint szerint szervezett órákon kívül egy ILS általában számos eszközt tartalmaz, például felméréseket, eredménykövetést, jelentéskészítést és felhasználói aktákat, amik segítenek az oktatási szükségletek azonosításában, a haladás figyelésében és az eredmény nyilvántartásában.

ILT (Instructor Led Training)
Обучение с инструктор
Oktatóvezérelt képzés (ILT)

Training mediated by a live instructor, such as classroom training or live classes delivered over an web-based conference system.

Процес на обучение, ръководен от човек (инструктор). Този процес може да бъде провеждан в нормална класна стая или дистанционно (използвайки мрежови ресурси).

Élő oktató által közvetített képzés, például tantermi képzés vagy webalapú konferenciarendszereken közvetített élő órák.

Immediacy
Мигновен достъп
Azonnaliság

Wherever learners are, they can get any information immediately. Therefore learners can solve problems quickly. Otherwise, the learner may record the questions and look for the answer later.

Независимо от местоположението си, учащите имат мигновен достъп до необходимата им информация.

Bárhol legyenek a tanulók, bármilyen információhoz azonnal hozzájuthatnak. Ezért a tanulók gyorsan meg tudják oldani a problémákat. Egyéb esetben a tanuló feljegyezheti a kérdéseket és később utánanézhet a válaszoknak.

Implementation
Приложение
Megvalósítás

The fourth step in the classic A-D-D-I-E model of Instructional System Design. The implementation phase involves the delivery of the training to the intended audience and the use by that audience.

Четвъртата стъпка от класическия модел (A-D-D-I-E – Analysis / Анализ, Design / Дизайн, Development / Разработка, Implementation / Приложение, и Evaluation / Оценка) за разработка на системи за обучение.

Az Oktatórendszer-tervezés - Instructional System Design - klasszikus A-D-D-I-E modelljének negyedik lépése. A megvalósítási fázis magába foglalja a képzés átadását a célzott hallgatóságnak és a hallgatóság általi felhasználását.

Informal learning
Неофициално обучение

Lifelong process whereby individuals acquire attitudes, values, skills and knowledge from daily experience and the educative influences and resources in their environment, from family and neighbors, from work and play, from the market place, the library and the mass media.

Процес, при който човек придобива нови становища, ценности, умения и знания от ежедневния си опит и влиянието на различни източници и среди, като семейство, приятели и познати, работното място, площадката за игра, библиотеката, магазина, или медиите.

Information Architecture
Архитектура на информацията
Információ szerkezet

The organization and categorization of online content. The rules and structure of where and how to store content. Especially relevant for knowledge management programs and corporate intranets where users must be able to quickly find desired information.

Организацията и категоризацията на съдържание, предназначено за публикуване в мрежа. Правилата и структурите, определящи как и къде да се съхранява информацията. Особено полезна при поддръжка на приложения за организация на знания и корпоративни локални мрежи, където потребителите трябва да имат бърз и ефективен достъп до нужната информация.

Az online tartalom szervezése és kategorizálása. Annak a szabályai és szerkezete, hogy hol és hogyan tárolják a tartalmat. Különösen lényeges a tudáskezelő programok és a vállalati intranetek részére, ahol a felhasználóknak gyorsan meg kell találniuk a kívánt információt.

Instructional Designer
Дизайнер на програма за обучение
Oktatástervező

The person who applies instructional learning theory to the organization and design of learning programs.

Човекът, който прилага теорията за обучение към организацията и дизайна на конкретни програми за обучение.

Az a személy, aki az oktatásalapú tanulás elméletét az oktatóprogramok szervezésére és tervezésére alkalmazza.

Instructional Systems Design
Дизайн на системи за обучение
Oktatórendszer-tervezés

Term describing the systematic use of principles of instruction to ensure that learners acquire the skills and knowledge essential for successful completion of overtly specified performance goals.

Този термин включва систематичното използване на принципите за преподаване с цел да се гарантира, че учащите ще могат да получат необходимите знания и умения за успешното постигане на ясно и експлицитно поставените цели.

Leírja az oktatás elveinek rendszeres használatát annak biztosítására, hogy a tanulók hozzájussanak a nyíltan meghatározott teljesítménybeli célok eléréséhez elengedhetetlen képzettséghez és tudáshoz.

Interactive TV (interactive television -- ITV)
Интерактивна телевизия
Interaktív TV (ITV)

Interactive television itself is variously defined but can include any form of television that involves user interaction with the service. This may include <u>VOD</u> or Video On Demand and similar services, the use of <u>PVR</u> or Personal Video Recorder and related devices, <u>EPG</u> or Electronic Programme Guides and other information services and applications.

Понятието „интерактивна телевизия" е дефинирано по различни начини и може да включва всякаква форма на телевизия включваща взаимодействие на потребителя и предлаганата услуга. Това може да включва „Видео по поръчка", използване на лично устройство за видео-запис, електронен съветник за ТВ програми и други услуги и приложения.

Az interaktív televízió fogalmát többféle képpen határozzák meg, de bármilyen televízió ide tartozhat, ami a szolgáltatással történő felhasználói kölcsönhatással jár. Ide tartozhat a VOD (Video On Demand, igény szerinti videó) és hasonló szolgáltatások, a PVR (Personal Video Recorder, személyi videófelvevő) és a hozzá tartozó szolgáltatások, az EPG (Elecronic Programme Guides, elektronikus műsorújság) és más információszolgáltatások és alkalmazások.

Interactivity
Интереактивност
Interaktivitás

An program feature that requires the learner to do something. Should help to maintain learner interest, provide a means of practice and reinforcement.
Свойство на програмата, което изисква действия от учащия. Служи за повишаване на интереса на учащия и осигурява среда за упражнение и по-добро усвояване.

Egy programjellemző, ami elvárja a tanulótól, hogy csináljon valamit. Segítenie kell a tanulói érdeklődés fenntartását és módot kell adnia a gyakorlásra és megerősítésre.

Internet-based Training
Обучение по Интернет
Internet-alapú képzés

The term most commonly used in the mid 1990's to describe web-based learning programs.

Термин използван най-често през 90-те години при използването на уеб-сайтове с програми за обучение.

Az 1990-as évek közepén leggyakrabban használt kifejezés a webalapú oktatóprogramokra.

J

JPEG
JPEG
JPEG

A popular file format for photographs intended for display on web pages. The file extension is JPG.

Популярен файлов формат за показване и съхранение на снимки и изображения. Използва се за показване на изображения на уеб-страници. Използваното разширение на файловете за този формат е JPG.

Egy népszerű fájl formátum a weboldalakon történő megjelenítésre szánt fényképek számára. A fájlok kiterjesztése JPG.

K

Knowledge base
База знания
Tudásbázis

1) The set of rules, cases, or information the knowledge-based system uses to extract inferences and suggest solutions. 2) In the context of technology supported learning - a kind of an archive where the trainee or the participant can find all kinds of information on the course, conference or meeting. This is one of the tools supporting in-formal learning activities.

1) Множество от правила, прецеденти и информация, използвано от една система за обработка на знания при автоматично извеждане на заключения и предлагане на решения. 2) В контекста на електронното обучение – архив, съдържащ информация за даден курс, конференция или семинар. Това е средство за поддръжка на дейностите при неформално обучение.

1) A tudásalapú rendszer által a következtetések meghozatalára és a megoldások javaslatára használt szabályok, esetek és információk halmaza. 2) A tudásbázis (a technológiával támogatott oktatással kapcsolatban használva) egy olyan archívum, ahol a tanuló vagy résztvevő mindenféle információt találhat a tanfolyamról, konferenciáról vagy találkozóról. Ez az egyik informális tanulási tevékenységeket támogató eszköz.

L

Laptop PC
Преносим компютър (лаптоп)
Hordozható számítógép

A laptop (also called notebook PC, or a mobile PC) is a portable computer that is small enough to be easily transported so users have the freedom and versatility to work, learn, share, and create anywhere, at anytime. Laptops are powered by a rechargeable battery and/or a power line that can be plugged into an electrical wall outlet. Laptops also come with a built- in flat screen monitor, a keyboard and a modem so users can access the Internet and other networks.

Лаптоп е компютър, който е достатъчно малък и компактен за да бъде удобен и лесен за пренасяне, така че потребителят може да работи, учи, обменя и създава файлове практически навсякъде и по всяко време. Преносимите компютри използват батерии, които могат да се презареждат и/или захранване от електрическата мрежа. Мониторът, клавиатурата, модемът и посочващото устройство на тези компютри са част от самия компютър. Това дава възможност за работа в мрежа и достъп до Интернет.

A laptop (notebook PC vagy mobil PC néven is ismert) egy hordozható számítógép, ami elég kicsi ahhoz, hogy könnyedén szállíthassák, és ezáltal a felhasználók megkapják a szabadságot és sokoldalúságot ahhoz, hogy bárhol, bármikor dolgozhassanak, tanulhassanak, és alkothassanak. A hordozható számítógép egy újratölthető akkumulátor és/vagy konnektorba csatlakoztatható tápkábel látja el energiával. A hordozható számítógéphez tartozik egy beépített laposképernyős monitor, egy billentyűzet és egy modem, amivel a felhasználók el tudják érni az Internetet és más hálózatokat.

Learner
Учащ
Tanuló

Anyone who accesses information to increase his or her skills and knowledge.

Всеки, който използва информация за да увеличава своите способности, умения и знания.

Bárki, aki információhoz fér hozzá képzettségeinek és ismereteinek gyarapítása érdekében.

Learning Content Management System (LCMS)
Система за поддръжка и управление на учебно съдържание
Oktatási tartalomkezelő rendszer (LCMS)

A web-based administration program that facilitates the creation, storage and delivery of unique learning objects, as well the management of students, rosters, and assessments.

Уеб-базирана програма, служеща за лесно създаване, съхранение и доставка на уникални курсове за обучение, както и за улесняване на административните дейности по оценяването и управлението на учащите (съхранение на разнообразна информация – списъци, оценки, текущи задачи и др.).

Egy webalapú adminisztrációs program, ami megkönnyíti az egyedi oktatási objektumok készítését, tárolását és átadását, valamint a hallgatók, névsorok és felmérések kezelését.

Learning Event
Учебно занимание
Oktatási esemény

An activity in which a learner increases his or her skills and knowledge.

Занимание, при което знанията и уменията на учащите се увеличават.

Egy tevékenység, amely során a tanuló fejleszti a képzettségét és tudását.

Learning Management System
Система за управление на учебния процес
Oktatáskezelő rendszer (LMS)

A program that manages the administration of training. Typically includes functionality for course catalogs, launching courses, registering students, tracking student progress and assessments.

Програма, служеща за управление на административните страни на учебния процес. Обикновено включва средства и функции като каталог на предлаганите курсове, добавяне на нов курс, регистриране на учащи, информация за прогреса на учащите и др.

Egy program, ami a képzés ügyintézését kezeli. Jellemzően a tanfolyamkatalógusokhoz, tanfolyamindításhoz, hallgató regisztrációhoz, a hallgatók haladásának követéséhez és a felmérésekhez tartalmaz funkcionalitást.

Learning Object
Учебен елемент
Oktatási egység

A reusable, media-independent collection of information used as a modular building block for e-Learning content. Learning objects are most effective when organized by a meta data classification system and stored in a data repository such as an LCMS.

Колекция от информация (независима от носителя), която може да бъде използвана многократно като отделен елемент за създаване на електронен курс. Удобен начин за съхранение и използване на такива учебни елементи, е организацията им в класификационна състема за мета-данни като система за поддръжка и управление на учебно съдържание (LCMS).

Egy újrafelhasználható, médiafüggetlen információgyűjtemény, amit eLearning tartalom építőkockájaként használnak fel. Az oktatási egységek metaadat-alapú osztályozási rendszer szerint szervezve és egy adattárházban, például LCMS-ben tárolva a leghatékonyabbak.

Learning Objective
Цел на обучението
Oktatási célkitűzés

The clear and measurable statement of the behavior that must be observed after training is concluded in order to consider the training a success. According to Robert Mager's work, a learning objective contains a condition statement, a performance statement, and a criterion statement.

Ясно и подлежащо на оценка/измерване описание на наблюдаваното поведение след приключване на процеса на подготовка, за да може да се смята проведеното обучение за успешно. Според Robert Mager, дефинирането на целите на обучение се състои от три стъпки: дефиниране на състояние, дефиниране на това, какво се очаква да се постигне и дефиниране на критериите за оценка.

A képzés sikerességének megfigyelésekor, a viselkedés tiszta és mérhető megállapítása. Robert Mager munkája szerint egy oktatási célkitűzés egy feltételmegállapítást (condition statement), egy teljesítmény megállapítást (performance statement) és egy kritérium megállapítást (criterion statement) tartalmaz.

Learning portal
Учебен портал
Oktatási portál

Access point to an homogenous set of resources, services, and contents like courses catalogues, news, registration systems, announcements, certifications, and other applications related to study.

Място на достъп до еднотипна информация, ресурси и услуги, като каталози, новини, системи за регистрация, съобщения, сертификати и други приложения свързани с учебния процес.

Erőforrások, szolgáltatások és olyan tartalmak, mint például tanfolyamkatalógusok, hírek, regisztrációs rendszerek, bejelentések, hitelesítések és más, tanulmányokhoz kapcsolódó alkalmazások homogén készletéhez tartozó hozzáférési pont.

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Learning Style
Стил на учене
Tanulási stílus

An individual's unique approach to learning based on strengths, weaknesses, and preferences. Though experts do not agree how to categorize learning styles, an example of a categorization system is one that separates learners into auditory learners, visual learners, and kinesthetic learners.

Уникалният за всеки учащ начин на учене, в зависимост от личните му качества, умения, предпочитания и нагласи. Въпреки, че няма единство в мненията за начините на класификация на учебните стилове, един начин за класификация е разделянето на учащите на слухово, визуално или двигателно ориентирани.

Az egyénnek az erősségein, gyengeségein és igényein alapuló, tanulást érintő egyedi megközelítése. Bár a szakértők nem egyeznek meg a tanulási stílusok kategorizálásában, a kategorizáló rendszer egy példája az, amely a tanulókat hallásközpontú, vizuális és gyakorlatias tanulókra osztja.

Lesson
Урок
Lecke

A unit of learning concerned with a specific skill. This term is sometimes interchanged with the terms section or module.

Учебен модул, занимаващ се с обяснението/тренирането на конкретно знание/умение.

Egy oktatási egység, ami egy adott képzettséget érint. Ez a kifejezés néha a szekció vagy modul kifejezésekkel egyenértékű.

Listserv
Listserv – група за кореспонденция
Listserv

A software that automatically distributes email to subscribed members of a mailing group.

Софтуер, автоматично разпращащ електронни съобщения до участниците в списъка (група за кореспонденция).

Egy szoftver, ami automatikusan elküldi a leveleket egy levelezőcsoport feliratkozott tagjainak.

Live Video
Видео връзка „на живо"
Élő videó

Live video is an on-lesson synchronous activity. This means that it is part of a lesson and that there is an immediate response possible.

Синхронна връзка по видео канал. Това означава, че във всеки един момент от урока, е възможно да се получи мигновен отговор/реакция.

Az élő videó órai szinkron tevékenység. Ez azt jelenti, hogy egy óra része, és azonnali válasz lehetséges.

Localization
Локализация
Lokalizáció, adaptálás

The process in which a program is converted for delivery in a different country. Unlike "translation" which connotes a simple re-writing of words, localization includes re-writing for cultural and social differences as well.

Процес на адаптиране на дадена програма за използване в друга страна. За разлика от обикновен превод, който включва проста замяна на думите, локализацията взима под внимание културните особености и социални различия в различните страни.

Az a folyamat, amelynek során egy programot átalakítanak egy másik országban történő terjesztés céljára. A fordítással ellentétben, ami a szavak egyszerő átírását jelenti, a lokalizáció magában foglalja az átalakítást a kulturális és szociális különbségek figyelembevételét, a helyi igényeknek megfelelő adaptálást is.

Log-in /on
Включване/идентификация
Bejelentkezés

Procedure performed by a user to declare that a specific system or application is going to be used. Log-in information is used by the computer to mark and track information specific to the user. It can also be used to declare to other users that an individual is presently active on a network.

Процедура на идентификация на потребител при използването на дадена програма. Данните, въвеждани от потребителя, може да се използват за да се следи и предлагат специфични за неговите/нейните нужди услуги и информация. Може още да служи за да се показва на останалите участници, че даден потребител е активен в даден момент.

Az a folyamat, amit egy felhasználó annak kinyilatkoztatására tesz, hogy egy adott rendszert vagy alkalmazást használni fog. A számítógép a bejelentkezési információval jelöli meg és követi a felhasználóhoz tartozó információt. Arra is használható, hogy a hálózaton éppen aktív többi felhasználó részére kinyilatkoztassák, hogy egy egyén éppen aktív a hálózaton.

Log Off
Изключване
Kijelentkezés

To terminate a connection to a computer or network.

Прекратяване на сесия (с компютър или мрежа) от даден потребител.

Egy számítógéphez vagy hálózathoz való kapcsolat megszakítása.

Lurking
Пасивно участие в дискусия
Leskelődés

Reading the postings in a discussion forum or on a listserv but not contributing to the discussion.

Четене на съобщенията в даден дискусионен форум без да се допринася към дискусията.

Egy vitafórumon vagy listserven közzétett írásokat olvasni a vitához való hozzájárulás nélkül.

M

m-Learning
mLearning - Мобилно обучение
Mobil tanulás (mLearning)

Stands for "mobile learning" and refers to the usage of training programs on wireless devices like cell phones, PDAs, or other such devices.

Този термин се отнася до използването за учебни цели на безжични преносими устройства като мобилни телефони, джобни компютри и други.

Mobil tanulást jelent, a képzőprogramok drótnélküli eszközökön: pl. mobiltelefonokon, PDA-kon és más hasonló eszközökön való használatát tartalmazza.

Meta Data
Мета-данни
Metaadat

Information that provides macro-level details about a course object, such as author, title, subject, date created, etc. Typically meta data is recorded in XML files and are read by LMS and LCMS systems.

Информация, описваща учебния елемент на по-високо ниво (например данни като: автор, заглавие, предмет, дата на създаване, т.н.). Обикновено, мета-данните се записват в XML формат и са достъпни за четене от системи за управление на учебния процес (LMS) и системи за поддръжка и управление на учебно съдържание (LCMS).

Információ, ami makroszintű részleteket ír le egy tanfolyam objektumról, mint pl. szerző, cím, téma, készítés dátuma, stb. Jellemzően XML fájlokba írják és LMS és LCMS rendszerek olvassák.

MIDI (Musical Instrument Digital Interface)
MIDI
MIDI (Musical Instrument Digital Interface)

A standard for connecting electronic musical instruments and computers. MIDI files can be thought of as digital sheet music, where the computer acts as the musician playing back the file. MIDI files are much smaller than digital audio files, but the quality of playback will vary from computer to computer.

Стандарт за свързване на цифрови музикални инструменти с компютър. MIDI файловете могат да се разглеждат като цифров еквивалент на нотни листове, където компютърът е в ролята на музикант, изпълняващ музиката записана във файла. MIDI файловете са значително по-малки от цифрови аудио-файлове, но качеството на възпроизведената музика варира в зависимост от техническите параметри на различните компютри.

Elektronikus hangszerek és számítógépek összekapcsolására szolgáló szabvány. A MIDI fájlokra digitális kottaként gondolhatunk, ahol a számítógép játssza a fájlt visszajátszó zenész szerepét. A MIDI fájlok sokkal kisebbek a digitális audió fájloknál, de a lejátszás minősége számítógépről számítógépre változik.

Mixed-media
Комбинирани носители
Kevert média

The combination of different delivery media like books, audiotapes, videotapes and computer programs in one curriculum. Not to be confused with multimedia, where different media are integrated into one product. See blended learning.

Комбинацията от използването на различни носители/среди за доставка на информация – като книги, аудио-касети, видео-касети и компютърни програми – използвани в рамките на една и съща учебна програма. Това не бива да се бърка с мултимедия, където различните видове информация са интегрирани в единен продукт.

Különböző átadási médiumok, mint a könyvek, audio szalagok, videó szalagok és számítógépes programok kombinációja egy tananyagban. Nem összetévesztendő a multimédiával, ahol különböző médiumokat ágyazunk egy termékbe. Ld. vegyes oktatás.

Model
Модел
Modell

A representation of an object, process, behavior or attitude used by a learner for comparison/contrast and duplication/avoidance. Both positive and negative examples can serve as models.

Представянето на даден обект, процес, поведение или подход, използван от учащия за съпоставка/контраст и копиране/избягване. Като модели могат да се използват както положителни, така и отрицателни примери.

Egy objektum, folyamat, viselkedés vagy magatartás tanuló által összehasonlításra/szembeállításra és kettőzésre/elkerülésre használt ábrázolása. A pozitív és negatív példák egyaránt szolgálhatnak modellként.

MPEG
MPEG
MPEG

A file format digitized video. Largely being replaced "RealVideo" and the Microsoft Media Player.

Файлов формат за записване на видео в цифрова форма. Изместен от RealVideo и Microsoft Media Player.

Fájl formátumú digitalizált videó. Nagyrészt átveszi a helyét a "RealVideo" és a Microsoft Media Player.

MPEG (Moving Picture Experts Group)
MPEG (Експертна Група за Движещи се Изображения)
Mozgóképszakértői Csoport (MPEG)

MPEG is a series of International Organization for Standardization (ISO) standards for digital video and audio, designed for different uses and data rates.

MPEG е поредица от стандарти на Международната организация за стандартизация (ISO), за цифрово представяне на видео и аудио файлове, предназначени за различни начини на употреба и различна скорост на пренасяне на информация.

Az MPEG az ISO (International Organization for Standardization, Nemzetközi Szabványosítási Szervezet) szabványok digitális videót és audiót érintő szabványok egy sorozata, amit különböző felhasználásokra és adatátviteli sebességekre terveztek.

Multicasting
Многоканално излъчване/предаване на информация
Multicasting

The transmission of the same information to multiple recipients in parallel (e.g., streaming video, or transmit same file or message to more users simultaneously).

Паралелното пренасяне на една и съща информация до множество потребители (например: едновременно предаване на видео-файл или пренасяне на един и същ файл или съобщение до повече от един потребител).

Ugyanannak az információnak a párhuzamos közvetítése több címzettnek pl. streaming videó v ugyanazon fájl v üzenet eljuttatása egyszerre több felhasználónak.

Multimedia
Мултимедия
Multimédia

The integration of different media, including text, graphics, audio, video and animation, in one program. Also referred to as *new media*.

Интегрирането на различни видове информация: текст, графика, аудио, видео и анимация, в една програма. Още се използва понятието „нова медия".

Különböző médiumok, beleértve a szöveget, grafikát, audiót, videót és animációt egy programon belüli egyesítése. Új médiának is nevezik.

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N

Narrowband
Тесен „канал" за информация
Keskeny sáv

A network in which data transmission speeds range from 50 Bps to 64 Kbps.

Мрежа, в която пренасянето на данни се извършва със скорост от 50Bps (бита/сек.) до 64Kbps (килобита/сек).

Olyan hálózat, amiben az adatátviteli sebesség az 50 bpstől 64 kbps-ig terjedő tartományban van.

Navigation
Навигация
Navigáció

1) Moving from Webpage to Webpage on the World Wide Web. 2) Moving through the pages of an online site that may not be part of the WWW, including an intranet site or an online course.

1) Преминаването от една уеб-страница към друга, използвайки интернет. 2) Преминаването от страница на страница в даден документ, който може да е достъпен само в дадена локална мрежа и да не е достъпен от произволен компютър свързан с интернет.

1) Közlekedés az oldalak között a World Wide Web-en. 2) Egy olyan online hely oldalai közötti mozgás, ami nem feltétlenül része a WWW-nek, például egy intranet hely vagy egy online tanfolyam.

Negative Reinforcement
Отрицателно стимулиарне
Negatív megerősítés

Encouraging a correct behavior by punishing any behaviors other than it. An example is putting a child into "time out" after she throws a tantrum. According to most adult learning research negative reinforcement is not recommended for most adult learning situations.

Правилното поведение се поощрява, чрез наказване на всичко което не съвпада с него. Пример за такъв вид възпитание/обучение е наказването на дете с отстраняване от играта ако то се държи неподобаващо за ситуацията. Според редица изследвания, отрицателното стимулиране не е подходящо в повечето ситуации при обучение на възрастни.

Helyes viselkedésre ösztönzés minden más viselkedés megtorlása által. Példája a gyermek "büntetésbe" helyezése egy dühroham után. A legtöbb felnőttképzési kutatás szerint a negatív megerősítés nem ajánlott a legtöbb felnőttképzési helyzetben.

Nesting
„Вграждане" на документи
Beágyazás

Placing documents within other documents. Allows a user to access material in a nonlinear fashion, the primary requirement for developing hypertext.

Поставяне на документи в рамките на друг документ. Поволява нелинеен достъп до информацията, което е основно изискване при създаването на хипер-текст.

Dokumentumok elhelyezése más dokumentumokon belül. Lehetővé teszi a felhasználó számára, hogy nemlineáris módon férjen hozzá az anyaghoz, ami a hipertext kifejlesztésének elsődleges feltétele.

Netiquette
Нетикет
Netikett

Stands for "Internet etiquette". Refers to the commonly accepted rules of behavior and communication in e-mails, chat rooms, bulletin boards, etc. For example, proper netiquette is to not use ALL CAPITAL LETTERS in messages because this is the equivalent of shouting. *GOT IT?!*

Название на правилата (етикета) за прието поведение в интернет. Това са правила за комуникация чрез електронна поща, в чат сесии, форуми и др. Едно от най-широко известните правила, например, е че не е прието да се пише само с ГЛАВНИ БУКВИ (което в контекста на текстова комуникация е прието да означава повишаване на тона – викане – на говорещия).

Az "Internet etikett" rövid alakja. Az e-mailben, csevegőszobákban, hírdetőtáblákon stb. történő kommunikáció általánosan elfogadott szabályait jelenti. Például ellentmond a netikettnek a CSUPA NAGYBETŰ használata az üzenetekben, mert ez a kiabálás megfelelője' ÉRTED?!

Newsgroup
Нюз-група
Hírcsoport

An electronic bulletin board reserved for discussion of a specific topic.

Електронен форум за обсъждане на специфична тема.

Egy elektronikus hírdetőtábla, amit egy meghatározott téma tárgyalására tartanak fenn.

Non-formal learning
Неформално обучение

Any organized educational activity outside the established formal system whether operating separately or as an important feature of some broader activity intended to serve identifiable learning objectives.

Организирана учебна дейност, извън установената формална система, изпълнявана отделно или като важна съставна част от занятие с конкретна учебна цел.

O

Offline
„Офлайн" – работа без мрежа
Offline

Operation of a computer while not connected to a network.

Работа с компютър, който не е свързан с компютърна мрежа.

Egy számítógép hálózathoz való csatlakozás nélküli üzemelése.

Online
„Онлайн" – работа в мрежа
Online

Operation of a computer while connected to a network.

Работа с комютър, който е свързан с компютърна мрежа.

Egy számítógép hálózathoz csatlakoztatott üzemelése.

Online Learning
„Онлайн" обучение
Online tanulás

Synonym for e-Learning.

Синоним на електронно обучение.

Az eLearning szinonímája.

P

PDA (Personal Digital Assistant)
PDA (Персонален Цифров Асистент – джобен компютър)
Személyi digitális segéd (PDA)

Small handheld computer with practical applications, such as address books, calendars, schedulers, and electronic notepads. Often PDAs are identified by their operating systems (e.g, Palm or Pocket PC). Since their introduction, PDAs have grown to become powerful wireless handheld devices capable of connecting to the Internet, playing music and video, and accepting diverse peripheral extensions.

Малък преносим компютър с практически приложения като: списък с адреси, календар, лично рапсание и електронен бележник. Често, PDA са различавани по опрационната система с която работят (Palm или Pocket PC). Тези компютри представляват удобни и мощни безжични средства даващи възможност за връзка с интернет, гледане на видео, прослушване на аудио-файлове и даващи възможност за включване на редица външни разширения.

Kisméretű kézi számítógép olyan praktikus alkalmazásokkal, mint a címjegyzékek, naptárak, ütemezők és elektronikus jegyzettömbök. Más PDA-kat az operációs rendszerük alapján azonosítanak (pl. Palm vagy Pocket PC). A bevezetésük óta a PDA-k az Internethez való kapcsolódásra, zene és videó lejátszására és sokféle periferiális kiterjesztés fogadására alkalmas, erőteljes kézi eszközökké váltak.

PDA-Phone Hybrids
Хибридни PDA-телефони
PDA-telefon hibridek

Devices that are primarily PDAs, with mobile telephone capabilities.

Джобни устройства, изглеждащи и служещи като PDA и работещи и като мобилни телефони.

Elsődlegesen PDA eszközök, mobil telefónikus képességekkel.

PDF
PDF
PDF

Refers to the Adobe Acrobat file format for online documents.

Файлов формат на Adobe Acrobat за публикуване на документи в интернет.

Az online dokumentumokhoz használatos Adobe Acrobat fájl formátumot jelöli.

Pedagogy
Педагогика
Pedagógia

Opposite of andragogy. The art and science of how children learn.

Изкуството и умението да се обучават деца.

Az ifjúsági képzés, a gyermeki tanulás művészete és tudománya.

Permanency
Постоянност на информацията
Maradandóság

Learners can never lose their work unless it is purposefully deleted. In addition, all the learning processes are recorded continuously.

Всички процеси свързани с обучението постоянно се записват. Учащите се не могат да загубят никаква информация, освен ако не изтрият нещо целенасочено.

A tanulók sosem veszíthetik el a munkájukat, amíg nem törlik szándékosan. Ezen felül az összes tanulási folyamatot minden nap folyamatosan feljegyzik.

Performance
Достижение
Teljesítmény

One of the three required parts of a properly composed learning objective. Observable and measurable actions that should be demonstrated by the learner after the completion of training are detailed in the performance statement.

Една от трите съставни части (условие, очакван резултат - достижение и оценка) на правилно поставена учебна цел.

Egy helyesen felépített oktatási célkitűzés három része közül az egyik. A teljesítmény megállapítás a tanuló által a képzés elvégeztével bemutatandó, megfigyelhető és mérhető cselekedeteket ír le.

Performance Objective
Целево достижение
Teljesítmény-célkitűzés

The performance capability the learner should acquire by completing a given training course. Synonymous with learning objective.

Синоним на „цел на обучение" (learning objective). Нивото на изява, която се очаква учащите да демонстрират при успешно завършване на курса на обучение.

Az a teljesítménybeli képesség, amelyet a tanulónak meg kell szereznie egy adott tanfolyam teljesítésével. Az oktatási célkitűzés szinonímája.

Performance-based Instruction
Обучение, насочено към достижения
Teljesítmény-alapú oktatás

Learning activities centered on the acquisition of skills more fundamentally than knowledge. Performance-based instruction, also called criterion-referenced instruction, relies on learning objectives to communicate what is expected to be achieved and evaluation of task completion to determine success.

Този вид обучение се базира на усвояването на умения повече отколкото на знания. При него се разчита поставените учебни цели да представят какво се очаква от курса на обучение, а оценката при завършване на дадена задача да определи степента на успех.

A tudás megszerzésénél alapvetőbben a képzettség megszerzésére összpontosító tanulási tevékenységek. A teljesítmény-alapú oktatás, más néven kritériumokon alapuló (criterion-referenced) oktatás, az oktatási célkitűzésekkel mutatja be, hogy mit akarunk elérni és hogyan értékeljük ki a feladatmegoldást a sikeresség megállapításához.

Point-to-multipoint
От точка до няколко точки
Pont-többpont

Transmission between multiple locations.

Пренасяне на информация от една точка до повече от едно място.

Több helyszín közötti átvitel.

Point-to-point
От точка до точка
Pont-pont

Transmission between two locations.

Пренасяне на информация между две точки.

Két helyszín közötti közvetlen átvitel.

Portal
Портал
Portál

A specific view into a Web site. The view identifies available offerings that match a person's request.

Персонализирано представяне на даден уеб-сайт в зависимост от заявката на потребителя.

Egy webhely egy bizonyos nézete. A nézet azonosítja egy személy kérésének megfelelő ajánlatokat.

Positive Reinforcement
Положително стимулиране
Pozitív megerősítés

Encouraging a behavior by rewarding that behavior after it is exhibited. An example is buying a child a toy after they do well on a test. An example in adult education is congratulating a learner after a question is answered correctly, or providing a completion diploma upon course completion.

Поощряване на дадено поведение чрез награда. Пример: На дете се дава играчка, ако то се справи добре с даден тест. При обучение на възрастни – учащият се поздравява всеки път, когато отговори правилно на даден въпрос или чрез издаване на сертификат за успешно завършване при приключване на курса.

Egy viselkedésre ösztönzés annak bemutatása utáni jutalmazása által. Példája a gyermeknek játékot venni, miután jól teljesített egy teszten. A felnőttképzésben példa rá, ha gratulálunk a tanulónak, ha helyes választ adott egy kérdésre, vagy ha a tanfolyam teljesítésekor azt igazoló diplomát adunk.

Post
Постинг
Közzétenni

To place a message in a public message forum. Also, to place an HTML page on the World Wide Web.

Писане на съобщение във форум. Също, поставянето на нова уеб-страница.

Egy üzenetet egy nyilvános üzenetfórumon elhelyezni, vagy egy HTML oldalt elhelyezni a World Wide Weben.

Prerequisite
Предварителни изисквания
Előfeltétel

A basic requirement or step in a process that must be fulfilled before moving on to an advanced step. Being able to stand is a prerequisite to being able to walk. In computer training, using the mouse is a prerequisite to using a graphical user interface.

Основни изисквания или стъпки от процес, които трябва да са изпълнени преди преминаването към следваща стъпка. Например – за да се научи дете да ходи, то първо трябва да може да стои изправено; за да може човек да работи с графичен интерфейс, той първо трябва да знае как се използва мишка (или друго посочващо устройство) и т.н.

Alapvető feltétel vagy lépés egy folyamatban, amit teljesíteni kell egy haladóbb lépés előtt. Az állni tudás a járás előfeltétele. A számítógépkezelési képzésben az egér használata a grafikus felhasználói felület használatának előfeltétele.

Prescriptive learning
„Конкретно" обучение
Előíró oktatás

A process in which only coursework that matches a learner's identified skill and knowledge gaps is offered to him or her, with the goal of making the learning experience more meaningful, efficient, and cost-effective.

Процес, при който на учащия се предоставят само задачи и информация, непосредствено свързани с конкретно умение, с цел да се направи учебният процес по-ефикасен и ефективен.

Egy olyan folyamat, ahol csak a tanuló azonosított képzettségének és tudáshézagainak megfelelő tanfolyami munkát ajánlanak fel neki, azzal a céllal, hogy a tanulási élmény értelmesebb, hatékonyabb és költséghatékonyabb legyen.

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R

RealMedia
RealMedia
RealMedia

One of the first CODECs for delivering streaming video over the Internet. Like other CODECs, RealMedia (comprised of RealVideo, RealAudio, and other file formats created by Real) use compression algorithms for eliminating data that can be considered as extraneous or not as important as other information. RealMedia and Windows Media are the two most widely used technologies for streaming video today.

Един от първите стандарти за кодиране/декодиране на видео сигнал за доставка през интернет. RealMedia включва файлови формати като RealVideo, RealAudio и др. Това е продукт на Real и използва алгоритми за компресиране с цел намаляване на обема на предаваната информация, чрез изключване на части, които не са свързани или не са достатъчно важни колкото друга информация. RealMedia и Windows Media са двата най-широко рапространени стандарта за предаване на видео чрез интернет.

Az Interneten a video folyam szolgáltatására használt első CODEC-ek egyike. Más CODEC-ekhez hasonlóan a RealMedia (amit a RealVideo, RealAudio és más Real által alkotott formátumok alkotnak) tömörítési algoritmusokat használ a feleslegesnek vagy kevésbé fontosnak ítélt adatok elhagyására. A RealMedia és a Windows Media ma a két legszélesebb körben használt streaming videó technológia.

Real-time
Реално време
Valós idejű

Instantaneous response to external events. A real time simulation, like a driving simulator, follows the pace of events in reality.

Мигновена реакция на външен стимул. Реалната симулация (например симулатор за каране на кола) следва скоростта и последователността на събитията както те биха се случвали наистина.

Azonnali válasz a külső eseményekre. Egy valós idejű szimuláció, például egy autószimulátor, a valóság eseményeinek ütemét követi.

Remediation
Усилване/наблягане на конкретна област на обучение
Megtisztítás

Using feedback to increase a learner's knowledge and skills relative to a specific learning objective.

Използване на обратна връзка за повишаването на нивото на знания и умения на учащия, отнасящи се до конкретна цел.

A visszajelzés felhasználása egy tanuló egy meghatározott oktatási célkitűzéséhez viszonyított tudásának és képzettségének növelésére.

Repurpose
Промяна на формата на доставка на предварително съществуващ учебен материал
Formaváltás

To revise pre-existing training material for a different delivery format. For example, instructor guides and student manuals are often repurposed into web-based training.

Преработване на съществуващ учебен материал за преподаване в друг формат. Пример: инструкциите за преподавателите и наръчниците за ученика често се прехвърлят във формат за самообучение в уеб-среда.

Létező képzési anyagot más átadási formára átdolgozni. Például az oktatói útmutatókat és a hallgatói kézikönyveket gyakran átdolgozzák webalapú képzésre.

Reusable Learning Object (RLO)
RLO – „рециклиране" на учебен елемент
Újrafelhasználható oktatási egység (RLO)

A specific chunk of content and code that represents an assessment, exercise, instructional content, etc. In theory, RLO's can be used in many different courses.

Конкретен сегмент от информация (съдържание и код), представляващ елемент за оценка, упражнение, урок и др. Теоретично, RLO могат да бъдат използвани многократно в рамките на различни курсове.

Egy bizonyos, felmérést, feladatot, oktatói tartalmat, stb. képviselő tartalom- és kóddarab. Elméletileg az RLO-kat sok különböző tanfolyamban fel lehet használni.

S

Satellite TV
Сателитна телевизия
Műholdas TV

Sets of video and audio signals that are transferred through a geostationary communication device.

Видео и аудио сигнали пренасяни чрез гео-стационарни спътници.

Videó és audió jelek halmaza, amiket egy geostacionárius kommunikációs eszközön keresztül közvetítenek.

SCORM (Sharable Content Object Reference Model)
SCORM
Megosztható tartalom egység referencia model (SCORM szabványcsomag)

A set of specifications that, when applied to course content, produces small, reusable learning objects. A result of the Department of Defense's Advance Distributed Learning (ADL) initiative, SCORM-compliant courseware elements can be easily merged with other compliant elements to produce a highly modular repository of training materials.

Набор от спецификации за създаване на малък, многоакратно използваем учебен обект от конкретно учебно съдържание. SCORM е резултат от инициативата за усъвършенствано рапределено обучение (ADL) на Американското министерство на отбраната. Създадените в този стандарт елементи могат да бъдат комбинирани с други за създаването на силно модулизирано хранилище за учебни материали.

Specifikációk halmaza, amiket tanfolyam tartalomra alkalmazva kicsi, újrafelhasználható tananyag egységeket kapunk. A USA Védelmi Minisztériumának ADL (Advanced Distributed Learning) kezdeményezésének eredménye, elemei könnyen egybeolvaszthatók más megfelelő elemekkel képzési anyagok erősen moduláris tárházát létrehozva.

Seamless Technology
„Интуитивна" технология
Problémamentes technológia

In an online course, technology is said to be seamless (or transparent) when it is easy to use, intuitive in nature, and is NOT the focus of the learning experience. If programs are difficult to use and the system has frequent breakdowns, the technology is not seamless and hinders the learning process. Technology should merely be a means to deliver course content, facilitating the learning process.

В контекста на електронното обучение, казваме че дадена технология е „интуитивна" или „прозрачна", когато тя е лесна за използване, интуитивна по природа и НЕ отвлича вниманието от процеса на обучение. Трудните за използване системи за електронно обучение не са "интуитивни" и затрудняват процеса на обучение. Технологията трябва да се използва просто като средство за доставка на учебния материал и да улеснява обучението.

Egy online tanfolyamon a technológiát akkor nevezzük problémamentesnek vagy átlátszónak, ha könnyű használni, intuitív természetű és NEM áll a tanulási élmény középpontjában. Ha a programokat nehéz használni és a rendszer gyakran meghibásodik, a technológia nem problémamentes és hátráltatja a tanulási folyamatot. A technológia csupán a tanfolyam tartalmának puszta átadási módjaként segítheti elő tanulási folyamatot.

Search Engine
Машина за търсене
Keresőmotor

The two types of search engines, the catalog and the crawler, both locate requested information on a web site or on the whole of the World Wide Web. A catalog engine compares the user request with a collection of data that it contains concerning web sites. A crawler engine scours the contents of sites themselves to find a match to a word or string of words.

Съществуват два основни вида на машини за търсене – каталог и „пълзач". И двата вида могат да се използват локално, в рамките на даден уеб-сайт, или глобално в цялата мрежа. Машините от тип „каталог" сравняват заявката на потребителя със съдържанието на уеб-сайтовете от интерес за

потребителя (обикновено представляват система от менюта). Машините от тип „пълзач" претърсват съдържанието на уеб-сайтове съдържащи ключови думи или фрази зададени от потребителя (съдържат поле за въвеждане на думите от специален интерес за потребителя).

A keresőmotorok két fajtája, a katalógus és a mászó (crawler) felkutatják a kért információt egy webhelyen vagy a World Wide Web egészén. A katalógusmotor összehasonlítja a felhasználó kérését egy webhelyekről szóló adatgyűjteménnyel. A mászó motor magát a webhelyek tartalmát nézi át, hogy egyezést találjon egy szóval vagy szavak sorozatával.

Section
Сегмент
Szakasz

A division of training concerned with one topic. Several sections commonly make up a lesson, but the term is sometimes used interchangeably with the term lesson or module.

Няколко сегмента биха могли да бъдат част от един урок, но често този термин се използва като еквивалент на „урок" или „модул".

Egy témával foglalkozó képzési egység. Számos szakasz általában leckét alkot, de a kifejezést néha a lecke vagy modul kifejezés megfelelőjeként is használják.

Self Assessment
Самооценка
Önértékelés

Process in which the learner determines his or her level of knowledge and skills.

Процес, при който учащият се определя собственото си ниво на знания и умения.

Egy folyamat, aminek során a tanuló határozza meg a saját tudás- és képzettségszintjét.

Self-paced instruction/learning
Обучение със собствено темпо
Önütemezett oktatás/tanulás

Training the enables learners to complete instructional segments on their own, without the guidance of an instructor.

Обучение, при което учащите се работят по учебните сегменти със скорост определяна от самите тях, без направлението на инструктор.

Olyan képzés, ami lehetővé teszi a tanulók részére az oktatási szakaszok önálló teljesítését, oktató segítsége nélkül a saját feldolgozási sebességüknek megfelelően.

Simulation
Симулация
Szimuláció

A mode of instruction that relies on a representation in realistic form of the relevant aspects of a device, process, or situation.

Модел на преподаване, разчитащ на пресъздаването в реалистична форма на съответните аспекти на устройство, процес или ситуация.

Olyan oktatási mód, ami egy eszköz, folyamat vagy helyzet tárgyhoz tartozó megvilágításainak valószerű ábrázolására hagyatkozik.

Skill gap analysis
Анализ на пропуските в обучението
Tudáshézag-elemzés

Compares a person's skills to the skills required for the job to which they have been, or will be, assigned. A simple skill gap analysis consists of a list of skills required along with a rating of the employee's level for each skill. Ratings below a predetermined level identify a skill gap.

Сравнява персоналните умения и на учащия с уменията, изисквани за работата за която той е/ще бъде назначен. Обикновеният анализ на различията включва списък на изискваните умения и рейтинга на

служителя за всяко от тези умения. Оценка под някакво предварително определено ниво, определя разминаване в очакванията.

Összehasonlítja egy személy képzettségét annak az állásnak a képzettségszintjéhez, amit betöltöttek vagy be fognak tölteni. Egy egyszerű tudáshézag-elemzés a megkövetelt képzettségek listájából, és az alkalmazott egyes képzettségben elért szintjét tartalmazó listából áll. Egy előre meghatározott szint alatti értékek tudáshézagot azonosítanak.

Skills inventory
Набор от умения
Képzettségleltár

A list of skills or competencies that an individual possess, usually created by self-evaluation.

Списък от умения или сфери на компетентност на даден индивид. Обикновено този списък е резултат на самооценка.

Egy egyén birtokában levő képzettségek vagy jártasságook listája, amit rendszerint önértékelés során állítanak össze.

Smart Phones
„Умни" телефони
Okostelefonok

A category of mobile device that provides advanced capabilities beyond a typical mobile phone. Smart-phones run complete operating system software that provides a standardized interface and platform for application developers. By the strict definition, smart-phones are distinct from PDA-based devices running operating systems such as Palm OS or Windows Mobile for Pocket PCs. While PDA-based devices usually have a touch-screen for pen input, smart phones usually have a standard phone keypad for input. Compared to standard phones, smart-phones usually have larger displays and more powerful processors. Applications written for a given smart-phone platform can usually run on any smart-phone with that platform, regardless of manufacturer. Compared to Java or BREW applications, native smart-phone applications usually run faster and integrate more tightly with phone hardware.

Категория от мобилни устройства, притежаващи свойства надминаващи рамките на обикновен мобилен телефон. Тези телефони имат опрационна система, която осигурява стандартизиран интерфейс и платформа за програмистите. Разликата между „умен" телефон и джобен компютър е в начина на вкарване на данните – докато джобните компютри обикновено разполагат с електронна писалка като основно входно устройство, телефоните имат стандартна телефонна клавиатура. В сравнение с обикновените мобилни телефони, „умните" телефони обикновено разполагат с по-голям екран и по-мощен процесор. Програми, писани за даден вид „умен" телефон, могат да работят на всеки друг такъв телефон (използващ същата платформа/операционна система), независимо от производителя.

Egy mobil eszközkategória, ami a tipikus mobiltelefon képességein túlmutató fejlett képességeket biztosít. Az okostelefonok teljes operációs rendszerszoftvert futtatnak, ami szabványosított kezelőfelületet és platformot ad az alkalmazásfejlesztők részére. A szigorú definició szerint az okostelefonok külön állnak az olyan operációs rendszereket, mint a Palm OS vagy a Windows Mobile for Pocket PCs-t futtató PDA-alapú eszközöktől. Míg a PDA-alapú eszközök általában tollas adatbevitelre szolgáló érintőképernyővel rendelkeznek, az okostelefonoknak általában szabványos telefonbillentyűzetük van bevitel céljára. A hagyományos telefonokénál az okostelefonok rendszerint nagyobb billentyűzetet és erősebb processzort tartalmaznak. Egy adott okostelefonra írt alkalmazások általában tetszőleges azonos platformot futtató okostelefonon működőképesek, gyártótól függetlenül. A Java és BREW alkalmazásoknál a natív okostelefon-alkalmazások gyorsabban futnak és szorosabban kapcsolódnak a telefon hardveréhez.

Soft Skills
„Меки" умения
"Soft"képességek

The informal term for non-IT related business skills. Examples include leadership, listening, negotiation, conflict management, etc.

Неформален термин за бизнес умения, които не са свързани с информационните технологии. Примери за такива умения са способностите за ръководене, слушане, договаряне, разрешаване на конфликти и др.

A nem IT-vel kapcsolatos üzleti képességekre utaló informális kifejezés: pl. vezetői képesség, a szövegértés, a tárgyalóképesség, a konfliktuskezelés, stb.

Spam
Спам
Spam

Junk email that is sent, unsolicited and in bulk, to advertise products or services or publicize a message. The term may have originated from a Monty Python song. (verb) To send unsolicited bulk email to advertise products or services or publicize a message.

Нежелани електронни съобщения, изпращани с цел рекламиране на продукти и услуги. Като глагол: Да изпращам рекламни съобщения до голяма група потребители без тяхно знание и желание.

Főnévként, hulladék e-mail, amit kéretlenül és tömegesen küldenek termékek vagy szolgáltatások reklámozása vagy egy üzenet nyilvánosságra hozatalának céljából. A kifejezés egy Monty Python dalból származhat. Igeként, kéretlen tömeg-e-mail-t küldeni termékek vagy szolgáltatások reklámozása vagy egy üzenet nyilvánosságra hozatalának céljából.

Storyboard
Сценарий
Vizuális forgatókönyv

A collection of frames created by a developer that detail the sequence of scenes that will be represented to the user; a visual script.

Набор от кадри, детайлно описващ последователността на изображенията, които ще бъдат показани на потребителя – визуална последователност от стъпки (визуален сценарий).

Képkockák egy fejlesztő által készített sorozata, ami a felhasználó számára ábrázolandó jelenetek sorozatát részletezik; vizuális forgatókönyv.

Streaming media
Изпълнение на медиен файл преди пълното му зареждане
Médiafolyam

Audio or video files played at the same time as they are being downloaded over the Internet, instead of waiting to be downloaded entirely. Requires an appropriate media player program.

Прослушването/визуализирането на аудио или видео файлове по време на зареждането им от интернет вместо изчакването на пълното зареждане на файла. Изисква се специална програма, която да може да прави това.

Audió vagy videó fájlok, amiket az Interneten keresztüli letöltésükkel egyidejűleg lejátszanak, ahelyett, hogy megvárnák, amig teljesen letöltődnek. Megfelelő médialejátszó programot igényelnek.

Subject Matter Expert (SME)
Експерт по съдържанието
Tantárgyi szakértő (SME)

The member of a project team who is most knowledgeable about the content being instructed upon. Frequently, the SME is an expert contracted or assigned by an organization to consult on the training being created.

Член на групата за разработка на даден продукт, който притежава експертни знания в областта за която се подготвя учебният материал.

A fejlesztő csapatnak az a tagja, aki az oktatott tartalomról a legnagyobb tudással bír. A tantárgyi szakértő gyakran egy szervezet által a megalkotandó képzéssel kapcsolatos konzultációra szerződtetett vagy kirendelt szakértő.

Subordinate Objective
Междинна цел
Alárendelt cél

An task or objective that must first be mastered in order to complete a terminal objective.

Задача или цел, която трябва да бъде усвоена/постигната за да стане възможно постигането на крайната цел на обучение.

Egy feladat vagy cél, amit először el kell érni egy végcél teljesítésének érdekében.

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Summative Evaluation
Сумарна оценка
Összegző értékelés

An evaluation performed after development used to measure the efficacy and return-on-investment of a training program.

Оценка на ефективността и възвращаемостта на инвестициите на дадена програма за обучение.

A fejlesztés után végrehajtott kiértékelés, amivel lemérik egy képzési program hatásfokát és megtérülését.

Synchronous activities
Синхронни дейности
Szinkron tevékenységek

Activities that take place in the same period of time, e.g. video-conferencing and chatting. Typical for synchronous activities is that the response is immediate.

Дейности, извършвани по едно и също време. Например: видео-конференция или видео-разговор. Най-важната характеристика на синхронните дейности е, че отговора/реакцията е непосредствен.

Egyidejűleg történő tevékenységek, pl. videókonferencia és csevegés. A szinkron tevékenységekre jellemző, hogy a válasz azonnali.

Synchronous Discussion Tools
Синхронни средства за комуникация
Szinkron vitaeszközök

Software that supports text-based conversations between two or more users who are online at the same time (e.g., America Online's Instant Messenger and Microsoft Network's Messenger).

Софтуер, позволяващ текстови дискусии между двама или повече потребители, които са включени в мрежа по едно и също време. Примери: America Online's Instant Messenger, Microsoft Network's Messenger и др.

Két vagy több, egyszerre online felhasználó közti beszélgetéseket támogató szoftver (pl. America Online Instant Messenger és Microsoft Network Messenger).

Synchronous Training/Learning
Синхронно обучение
Szinkron oktatás/tanulás

A training program in which the student and instructor participate at the same time. For example, an instructor-led chat session is a form of synchronous training. Common examples today include the use of products from Centra, Interwise, or others that enable web-casts of live events.

Процес на обучение, в който учащите и инструктора участват едновременно. Пример: чат-сесия, в която дискусията се води от инструктор. Често срещани продукти са тези на Centra Interwise, както и други, които позволяват използването на „събития на живо" през интернет.

Egy képzési program, amiben a hallgató és az oktató egyszerre vesznek részt. Például egy oktató-vezérelt csevegőgyűlés a szinkron oktatás egy formája. Mai gyakori példák a Centra, Interwise vagy mások, élő események webes közvetítését (webcast) lehetővé tevő termékei.

Synergy
Синергетика
Szinergia, összhang

The dynamic energetic atmosphere created in an online class when participants interact and productively communicate with each other.

Динамичната и енергична атмосфера, която се създава в дистанционно провеждан курс на обучение, когато участниците комуникират продуктивно един с друг.

Egy online órán megteremtett dinamikus, energikus légkör, amikor a résztvevők kölcsönhatásba lépnek és hatékonyan kommunikálnak egymással.

T

Target Population
Целева аудитория
Célcsoport

The audience defined in age, background, ability, and preferences, among other things, for which a given course of instruction is intended.

Аудиторията, за която даден учебен продукт е преднаначен, дефинирана по възраст, подготовка, възможности и предпочитания.

Az a hallgatóság - életkorral, háttérrel, képességgel és igényekkel jellemezve - akiknek egy adott tanfolyamot szánunk.

Task Analysis
Анализ на целите
Feladatelemzés

A process of examining a given job to define the discrete steps (tasks) that insure effective and efficient performance of the job's requirements.

Процесът на преценка на дадена задача, с цел да се определят конкретни стъпки (под-задачи), които да осигурят ефективно (от гледна тоцчка на време и ресурси) изпълнение на изискванията поставени от задачата.

Egy adott állás vizsgálata annak céljából, hogy azonosítsák azokat a különböző lépéseket (feladatokat), amik biztosítják az állás követelményeinek hathatós és hatékony teljesítését.

Technology-based Training (TBT)
Обучение базирано на използването на технологии
Technológia-alapú képzés (TBT)

The term encompassing all uses of a computer in support of learning, including but not limited to tutorials, simulations, collaborative learning environments, and performance support tools. Synonyms include CBL (computer-based learning), TBL (technology-based learning), CBE (computer-based education), CBT (computer-based training), e-Learning, and any number of other variations.

Това включва всички възможни начини за приложение на компютър в учебния процес, включително (но не ограничаващо се до) използване на компютъризирано представяне на урока, симулации, средства за комуникация и взаимодействие между учащите и поддържащи средства. Синоними: CBL (computer-based learning), TBL (technology-based learning), CBE (computer-based education), CBT (computer-based training), e-Learning.

A számítógép összes tanulás támogatására való használatát, beleértve a konzultációt, szimulációt, együttműködő oktatókörnyezeteket és a teljesítménytámogató eszközöket összefoglaló fogalom. Szinonímái a CBL (computer-based learning, számítógép-alapú tanulás), TBL (technology-based learning, technológia-alapú tanulás), CBE (computer-based education, számítógép-alapú oktatás), CBT (computer-based training, számítógép-alapú képzés), eLearning, és tetszőleges mennyiségű más variáció.

Terminal Objective
Крайна цел
Végcél

A learning objective the student should be able to master after completing a specific lesson or part of a lesson.

Цел, която се очаква да бъде усвоена от учащите до завършването на урока (или част от него).

Egy oktatási célkitűzés, amit a hallgatónak el kell sajátítania egy bizonyos lecke vagy leckerész befejezésével.

Thread
Тред
Sorozat

A series of messages on a particular topic posted in a discussion forum.

Последователност от съобщения (в дискусионен форум) по конкретна тема.

Egy vitafórumon közzétett, bizonyos témájú üzenetek sorozata.

Trainee
Учащ
Tanuló

A trainee is a person who wants to acquire knowledge on a specific topic by means of taking part in organised training or conference.

Човек, който желае да получи знания в конкретна област и за тази цел взема участие в организиран процес на обучение или конференция/семинар.

A tanuló olyan személy, aki egy adott témáról szóló tudáshoz szeretne jutni egy szervezett képzésben vagy konferencián való részvétel által.

Trainer
Инструктор
Oktató

A trainer can best be described as a kind of teacher. He is the person who transfers information on a specific topic to other people by means of the different tools. He is responsible for the actual training and the training syllabus.

Инструктор е човекът, който предава информация по конкретна тема на учащите се с помощта на ралични средства. Учител.

Egy oktatót legjobban egyfajta tanárként lehet leírni. Ő az a személy, aki egy bizonyos témában különböző eszközökkel információt ad át más embereknek. Az ő felelőssége a tényleges képzés és a tanmenet.

Training session
Учебна сесия
Képzési találkozás

A lesson is a part of a course. It refers to the contact time where all the people involved in the course virtually meet in real time through satellite video-conferencing. As in contact teaching a lesson is the period in time where a teacher and his students meet each other at the same time.

Всеки урок е част от даден курс на обучение. Това е времето през което всички участници в процеса се срещат (реално или виртуално) в реално време (в класна стая или използвайки сателитна видео-връзка).

Az órák a tanfolyam részeit képezik. Arra a kapcsolatfelvételi időre utalnak, ahol a tanfolyam összes résztvevője virtuálisan, valós időben találkozik műholdas videokonferencia révén. Az óra az az időszak, amikor a tanár és a hallgatói egyszerre találkoznak.

Transparent Technology
„Прозрачна" технология
Áttekinthető technológia

See Seamless Technology.

Виж *„Интуитивна" технология*

В контекста на електронното обучение, казваме че дадена технология е „интуитивна" или „прозрачна", когато тя е лесна за използване, интуитивна по природа и НЕ отвлича вниманието от процеса на обучение. Трудните за използване системи за електронно обучение не са "интуитивни" и затрудняват процеса на обучение. Технологията трябва да се използва просто като средство за доставка на учебния материал и да улеснява обучението.

Ld. Problémamentes technológia (Seamless Technology).

Tutorial
Урок (обикновено без инструктор)
Kozultáció

A mode of instruction that presents content, checks understanding or performance, and continues on to the next relevant selection of content. Tutorials may be linear or branched.

Режим на обучение, при който на учащия се предоставя информация, примери, проверява се нивото на разбиране и се продължава със следващия елемент. Този вид обучение може да бъде линейно (следва конкретна последователност без възможност за прескачане на елементи) или разклонено (елементите за обучение могат да се избират по желание от списък със съдържанието).

Egy oktatási mód, amely tartalmat mutat be, ellenőrzi a megértést vagy teljesítményt, majd továbblép a következő tárgyhoz tartozó tartalomra. A konzultáció lehet lineáris vagy elágazó.

U

Ubiquitous Computing
Повсеместно наличие на компютърни услуги
Mindenütt jelenlevő számítástechnika (Ubiquitous Computing)

The practice of making computers so common and accessible that users are not even aware of their physical presence. The ideal of ubiquitous computing could be defined as a high-speed network that covers any kind of geography and is easily installed and automatically maintained.

Превръщането на работата с компютри в толкова естествен и лесно достъпен процес, че потребителите да загубят усещането за физическото им присъствие. Идеалната цел на този процес е покриването на всяка географска област с високоскоростна компютърна мрежа, която е лесна за инсталиране и се поддържа автоматично.

A számítógépek oly mértékű elterjesztésének és elérhetővé tételének gyakorlata, hogy a felhasználók ne is legyenek tudatában a fizikai jelenlétüknek. A mindenütt jelenlevő számítástechnika eszményképe egy nagysebességű hálózatként definiálható, ami bármilyen területet lefed, könnyen telepíthető és automatikusan fenntartott.

Universal mobile telephony system (UMTS)
Универсална мобилна телефонна система (UMTS)
Univerzális mobiltelefónia-rendszer (UMTS)

Refers to the next generation of cellular technology that is also being standardized by European Telecommunications Standard Institute (ETSI).

Нова технология за мобилни телефони, в процес на стандартизация от Европейския Телекомуникационен Институт за Стандартизация (ETSI).

A celluláris technológia következő generációja, amit az ETSI (European Telecommunications Standard Institute) szabványosít.

Uplink
Сателитна връзка
Uplink

The communication channel, which connects a transmitting earth station with a receiving satellite.

Комуникационен канал, свързващ наземна препращателна станция с приемателен спътник.

Az átvitelt végző földi állomást egy fogadó műholddal összekötő kommunikációs csatorna.

Upload
Записване на файл на сървър
Feltöltés

To send a file from one computer or server to another.

Изпращане на даден файл от един компютър или сървър на друг.

Egy fájl elküldése egy számítógépről vagy szerverről egy másikra.

(URL) Uniform Resource Locator
URL
(URL) Uniform Resource Locator

More commonly referred to as URL. The standard address for a web page on the Internet or on an intranet.

Стандартен адрес на дадена уеб-страница в Интернет (или Интранет).

Általában URL-nek nevezik az Interneten vagy intraneten elhelyezett weboldal szabványos címét.

Usability
Използваемост
Használhatóság

An evaluation and measurement of a computer program's overall ease-of-use.

Оценяване и измерване на усилията и уменията, необходими за използването на дадена компютърна програма.

Egy számítógépes program általános használatának egyszerűségének kiértékelése és mérése.

USDLA
USDLA
USDLA

US Distance Learning Association.

Асоциацията за дистанционно обучение на САЩ.

USA Távoktatási Szövetsége.

User Interface
Потребителски интерфейс
Felhasználói felület

The components of a computer system employed by a user to communicate with the computer. These include the equipment, such as a keyboard or mouse, and the software environment, such as the desktop of Windows or the program lines of DOS.

Компоненти от дадена компютърна система, предназначени за комуникация на потребителите с компютъра. Те включват хардуерни компоненти като клавиатура, мишка и др., както и софтуерни – потребителска среда като Windows, командните линии в DOS и т.н.

Egy felhasználó által használt számítógépes rendszer azon részei, amelyek révén a felhasználó kommunikál a számítógéppel. Ide tartoznak az olyan berendezések, mint a billentyűzet, az egér és a szoftver környezet, mint a Windows asztala és a DOS programsorai.

V

Value-added services
Допълнителни услуги
Értéknövelt szolgáltatások

Within an e-Learning context, this term can be used to include custom training needs assessment and skill-gap analysis, curriculum design and development, pre- and post-training mentoring and support, training effectiveness analysis, reporting and tracking tools, advisor services and implementation consulting, hosting and management of Internet- or Intranet-based learning systems, integration of enterprise training delivery systems, and other services that enhance the learning or training process.

В контекста на електронното обучение терминът обозначава анализ на нуждите от обучение, на оценяването и на пропуските в знанията; проектиране и развитие на учебни програми; предварително и следващо обучението консултиране и поддръжка; анализ на ефективността на обучението; средства за отчитане на резултатите и съхранение на данните; насочване и консултантски услуги; съхранение и поддръжка на Интернет и Интранет базирани системи за обучение; и други услуги стимулиращи и спомагащи учебния процес.

Az eLearning összefüggésében ez a kifejezés magába foglalhatja az egyedi képzési igények felmérését, a képzettséghézag-elemzést, a tanterv-tervezést és -fejlesztést, az elő- és utóképzési tanácsadást és támogatást, a képzéshatékonysági elemzést, a jelentéskészítő és követő eszközöket, a tanácsadói szolgáltatásokat, a megvalósítási tanácsadást, az Internet- vagy intranetalapú oktatórendszerek hostingját és kezelését, a vállalati képzésátadó rendszerek beillesztését és más szolgáltatásokat, amik erősítik az oktatási vagy képzési folyamatot.

Videoconferencing
Видеоконференция
Videókonferencia

Using video and audio signals to link participants at different and remote locations.

Използване на видео и аудио сигнали за свързване на участници с различни местоположения.

Videó és audió jelek használata a különböző és távoli helyeken levő résztvevők összekapcsolására.

Video On Demand
Видео по поръчка
Igény szerinti videó

Being able to view any of a number of videos when you want. Used on the Internet and at hotels, cable systems, etc.

Възможност за гледане на редица видео материали в удобно за потребителя време.

Számos videó bármelyikének megtekintési lehetősége igény szerinti időben. Az Interneten, szállodákban, kábeles rendszerekben, stb. használatos.

Virtual community
Виртуална общност
Virtuális közösség

A meeting place on the Internet designed to facilitate interaction and collaboration among people who share common interests and needs.

Място в Интернет за среща на хора със сходни интереси и нужди. Сайтът е разработен с цел да поддържа удобна комуникация между участниците.

Egy, közös érdekekkel és szükségletekkel rendelkező emberek közös munkáját segítő találkozóhely az Interneten.

Virtual Classroom (VC)
Виртуална класна стая
Virtuális osztályterem

A scheduled offering that is available at multiple locations (either desktop or classroom) via a network.

Лекции, предавани по интернет в предварително определено време. Изисква едновременното присъствие на инструктор и учащи, които макар и физически разделени в пространството се „събират" на определено място в мрежата за да проведат урока. „Присъствие" означава, че даден участник е свързан в мрежата в уговореното време и активно участва в процеса на обучение.

Egy hálózat által több helyen - otthon vagy tanteremben - elérhető, ütemezett képzési lehetőség.

Virtual Professor (VP)
Виртуален професор

The facilitator or instructor of an online course.

Инструктор на електронен курс.

W

W3C (World Wide Web Consortium)
W3C
W3C (World Wide Web Consortium, World Wide Web konzorcium)

The organization that develops standards for technologies used on the World Wide Web.

Организация, отговорна за разработването на уеб стандарти и технологии.

A World Wide Web-en használt technológiákhoz szabványokat fejlesztő szervezet.

WBT (Web-based training)
Обучение базирано на уеб-технологии
Webalapú képzés (WBT (Web-based training))

Delivery of educational content via a Web browser over Internet, a private intranet, or an extranet. WBT often provides links to other learning resources such as references, email, bulletin boards, and discussion groups, and may include a facilitator or coach who can provide course guidelines, manage discussion boards, deliver lectures, and so forth.

Доставка на материали за обучение по интернет с помощта на уеб-браузър. . Този вид обучение често включва препратки към допълнителни учебни ресурси като библиографии, форуми, дискусионни групи, електронна поща, и др. Може да включва инструктор, който насочва процеса на обучение, води дискусиите, предоставялекционни материали и т.н.

Az oktatási tartalom átadása egy webböngésző segítségével az Interneten, egy intraneten vagy extraneten. A WBT gyakran szolgáltat hivatkozásokat más oktatási erőforrásokhoz, mint a referenciák, e-mail, hírdetőtáblák és vitacsoportok, és tartozhat hozzá egy előadó vagy oktató, aki tanfolyamirányelveket adhat, kezelheti a vitafórumokat, órákat tarthat, stb.

Web conference
Уеб конференция
Webkonferencia (Web conference)

A meeting of participants from disparate geographic locations that's held in a virtual environment on the World Wide Web, with communication taking place via text, audio, video, or a combination of those methods.

Среща на участници от различни географски местоположения, която се провежда във виртуална среда и при която комуникацията се осъществява посредством текст, аудио и видео.

Szétszórt földrajzi helyekről származó résztvevőknek a World Wide Web-en létező virtuális környezetben tartott találkozója, ahol a kommunikáció szöveg, audio, videó vagy ezek kombinációja által folyik.

Webcast (Web + broadcast)
Уебкаст (Уеб + броадкаст (излъчване))
Webközvetítés (Webcast (Web+broadcast, Web+közvetítés))

1) A broadcast of video signals that's digitized and streamed on the World Wide Web, and which may also be made available for download. 2) To digitize and stream a broadcast on the World Wide Web.

1) Излъчване на пакети от цифрови видео сигнали използвайки Интернет. Тези пакети могат да бъдат предоставени за записване директно на компютъра на потребителя за гледане офлайн. 2) Превръщането в цифрови пакети и излъчването на видео сигнал чрез Интернет.

1) Digitalizált és media folyam videójelek közvetítése a World Wide Web-en, amit letöltésre is elérhetővé tehetnek.

Webinar (Web + seminar)
Уебинар (Уеб + семинар)
Webinárium (Webinar (Web+seminar, Web+szeminárium))

A small synchronous online learning event in which a presenter and audience members communicate via text chat or audio about concepts often illustrated via online slides and/or an electronic whiteboard. Webinars are often archived as well for asynchronous, on-demand access.

Малък уеб семинар, който се извършва синхронно. Комуникацията може да бъде в текстов вид (чат) или аудио връзка по мрежата. Включва показване на слайдове и/или електронна черна дъска. Тези семинари често се архивират за асинхронен (по-късен) достъп.

Kis szinkron online oktatási esemény, ahol az előadó és a hallgatóság szöveges csevegővel vagy audioval kommunikálnak gyakran online diákkal és/vagy elektronikus táblával szemléltetett fogalmakról. A webináriumokat gyakran archiválják is, aszinkron, igény szerinti hozzáférés céljára.

Weblog / Blog
Уеблог/Блог
Weblog / Blog

"Blog" is short for "Web Log" and refers to short messages that are posted onto a web site by an author. Blogs are typically informal and personal messages, almost like daily diary entries.

Блог е съкращение от Уеб Лог. Електронен дневник. Това е евтина форма за самопубликация. Обикновено, блоговете имат един автор, който публикува съобщения, статии, или собствени размисли с определена тематика.

A "blog" a "web log" rövidítése és a szerző által egy webhelyre beküldött rövid üzenetekre utal. A blogok jellemzően informális és személyes üzenetek, amelyek nagyon hasonlítanak a naplóbejegyzésekre.

Whiteboard
Черна дъска
Elektronikus tábla

An electronic version of a dry-erase board that enables learners in a virtual classroom to view what an instructor, presenter, or fellow learner writes or draws. Also called a smartboard or electronic whiteboard.

Електронен вариант на черна дъска, позволяваща на учащите във виртуална класна стая да пишат, рисуват, или чертаят по начин подобен на използването на нормална черна дъска.

A szárazon törölhető tábla elektronikus változata, ami lehetővé teszi a tanulók számára, hogy lássák, amit egy oktató, előadó vagy tanulótársuk ír vagy rajzol. Okostábla (smartboard) vagy elektronikus táblaként is ismert.

Wireless Fidelity (WiFi)
WiFi
Vezeték nélküli műszaki szabványok (WiFi)

A set of wireless technical standards that enable handheld computers to send and receive data over wireless networks in a wide variety of settings (home, school, office).

Набор от стандарти за изграждане на безжични мрежи, позволяващи изпращане и получаване на данни с достатъчна надеждност.

Vezeték nélküli műszaki szabványok halmaza, amelyek képessé teszik a kézi számítógépeket vezeték nélküli hálózatokon történő adatküldésre és -fogadásra helyszínek széles skáláján (otthon, iskolában, irodában).

Wireless Handheld Device (WHD)
Безжични джобни устройства
Vezeték nélküli kézigép (WHD)

A generic term for any of a growing suite of handheld computers capable of connecting to the Internet.

Обобщено понятие за разнообразните преносими устройства и компютри, които имат възможност за връзка с Интернет.

Általános kifejezés az Internetre kapcsolódni képes kézigépek növekvő sorozatára.

Wizard
Електронен помощник
Varázsló

A mini-application that prompts a user through the steps of a particular computer-based action. The user provides necessary information as he or she proceeds through the wizard's screens, while the wizard completes the actual steps behind the scenes.

Диалогов прозорец, превеждащ потребителя през последователност от стъпки, изискващи въвеждане на информация.

Egy mini alkalmazás, ami kérdésekkel vezeti végig a felhasználót egy bizonyos számítógép-alapú művelet lépésein. A felhasználó megadja a szükséges adatokat, ahogy a varázsló képernyőin halad, miközben a varázsló elvégzi a háttérben a valóságos lépéseket.

WYSIWYG (what you see is what you get)
„Каквото виждаш, това получаваш"
Azt kapod, amit látsz (WYSIWYG)

Pronounced "wizzy wig," a WYSIWYG program allows designers to see text and graphics on screen exactly as they will appear when printed out or published online, rather than in programming code.

Вид програма, която позволява на дизайнера да вижда текст и графика на екрана точно по начина, по който те ще се визуализират на уеб-страница (вместо програмен код).

"Vizivig"-nek ejtik. Egy WYSIWYG program lehetővé teszi a tervezőknek, hogy pontosan úgy lássák a szöveget és grafikát a képernyőn, ahogy nyomtatott vagy online publikált formában látszani fognak, ellentétben a programkóddal.

X

XML (eXtensible Markup Language)
XML
Bővíthető jelölőnyelv XML

An emerging standard for describing, or marking up, documents and data distributed on the Web. XML allows authors to create customized tags that can help them efficiently achieve their goals.

Развиващ се стандарт за електронни документи, предназначен за удобно представяне на структурирана информация. XML позволява създаването на специфични маркери, позволяващи на програмиста ефективно да постигне поставените цели.

Egy terjedő szabvány Weben terjesztendő dokumentumok és adatok leírására vagy megjelölésére. Az XML lehetővé teszi a szerzők számára, hogy testre szabott tageket (címkéket) készítsenek, ami segíti őket céljuk hatékony elérésében.

XSL (eXtensible Stylesheet Language or eXtensible Style Language)
XSL
Bővíthető stílus(lap) nyelv)XSL

A Webpage design language that creates style sheets for XML pages, which separate style from content so that developers can specify how and where information is displayed on the page.

Език за създаване на стилове за уеб-страници, създадени в XML формат. Разделянето на стиловете (фонтове, цветове, размери и т.н.) от текста, помага за лесна промяна на визуализацията на съдържанието на страницата.

Egy weboldaltervező nyelv, ami stíluslapokat készít XML oldalakhoz, ami elválasztja a stílust a tartalomtól, ezáltal lehetővé téve a fejlesztőknek, hogy megadják, hogy hogyan és hol jelenjen meg az információ az oldalon.

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