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Editorial Message

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Editorial Message: Special Track on Engineering e-Learning Systems

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1 NATURE OF THE TRACK

E-Learning Systems are exponentially increasing in number and applied in virtually all aspects of Information Society. The term ‘e-Learning’ signifies the systematic use of networked multimedia technologies to empower learners, improve learning, connect learners to people and resources supportive of their needs, and to integrate learning with performance as well as individual with organizational goals.

Developing E-Learning Systems is not an easy task, since they are complex systems that incorporate a variety of organizational, administrative, instructional and technological components. Therefore systematic, disciplined approaches must be devised in order to leverage the complexity and assortment of e-Learning Systems and achieve overall product quality within specific time and budget limits. A new research and development area, an amalgam of instructional and technological design has just emerged: **engineering e-Learning Systems**. It can be defined as the systematic development of e-Learning Systems following sound scientific, engineering and management principles. It is an area that gathers specialists from many disciplines like: Software Engineering, Instructional Design, Hypermedia and Web Engineering, Learning Technology Systems, Human-Computer Interaction etc. Engineering e-Learning Systems is considered today one of the ‘hottest’ subjects of Applied Computing. The aim of this track is twofold: to bring together researchers and practitioners who work on this new discipline of engineering e-Learning Systems, and to promote the discipline to industry and academia.

The discipline of engineering e-Learning Systems extends over the following subjects:

- Architectures for e-Learning Systems
- Learning Technology Standards (e.g. IEEE LTSC, ISO/IEC JTC1 SC36, CEN/ISSS LTWS, IMS Project etc.)
- Analysis, Design or Architectural Patterns for e-Learning Systems
- Implementation Platforms and Environments, Open Source Systems
- Evaluation of e-Learning Systems
- Interoperability Issues
- Collaborative e-Learning Systems
- Usability issues
- Methods, Methodologies and Processes
- Adaptive e-Learning Systems
- Instructional Design of e-Learning Systems
- Authoring of e-Learning Content

2 THE REVIEW PROCESS

We received a total of 24 paper submissions of high quality from 16 different countries all over the world. The submitted papers concerned topics that span a broad spectrum of the aforementioned subjects of the *Engineering e-Learning Systems* discipline. 42 experts were invited to act as reviewers since our aim was to provide a wide gamut of experts in the field from as many different perspectives as possible. We therefore involved three reviewers per paper, with each reviewer being an expert in the specific topic of each paper. At the end, ten full papers and one poster were selected for inclusion in the proceedings and presentation at the Symposium. The acceptance rate for full papers was 41%.

3 CONTENTS OF THE TRACK

The papers selected, cover different topics of the track, both in theory and practice, from an original perspective. First of all, two papers deal with new ideas about the instructional design of e-Learning Systems: **Vrassidas** in “Issues of Pedagogy and Design in e-Learning Systems” makes constructive critique of Learning Management Systems and provides guidelines for their future development based on the needs of the online teacher. **Derntl** and **Motschnig-Pitrik** in “Patterns for Blended, Person-Centered Learning: Strategy, Concepts, Experiences, and Evaluation” focus on conceptual modeling of successful blended learning processes, their semi-formal description as patterns, and on the use of patterns as sources for the derivation of web-based learning material templates.

The topic of adaptive learning has been covered by two papers: The work of **Binemann-Zdanowicz**, “SiteLang::Edu - Towards a Context-Driven E-Learning Content Utilization Model” presents a formal approach for specifying the learning process according to Piaget's constructivistic theory. This approach allows instructional designers to specify the learning process for learners with different learning styles. On a more practical approach, **Cristea** in her paper “Evaluating Adaptive Hypermedia Authoring while Teaching Adaptive Systems” describes real-class experimental results for the MOT system, an adaptive hypermedia authoring system which is applied in education. MOT is based on the LAOS framework, and the feedback given from students can be used to extend the adaptation language.

The topic of e-Learning content authoring is being tackled by three papers. **O'Brien** and **Hall** in the paper: “Training Needs Analysis - The first step in authoring e-Learning content” present a method and a tool for training needs analysis (TNA) which allows SME companies to identify areas where their employees require training and produce a set of guidelines to author their own e-Learning content. In order to facilitate e-Learning content authoring, **Cesarini et al.**, in their paper “Carrying on the e-Learning process with a Workflow Management Engine”, describe how one can exploit powerful procedural rules in order to describe precise while flexible learning paths, as well as publishing them as workflows. They also describe the environment that enacts the workflows and guides learners through the appropriate learning paths. “Improving Courseware Quality through LifeCycle Encompassing Quality Assurance” by **Grutzner et al.** presents a life-cycle encompassing quality assurance methodology that is an integral part of the courseware engineering methodology IntView.

Another topic of interest concerns collaborative e-Learning Systems. **López et al.** in their paper “Encouraging Knowledge Exchange in Discussion Forums by Market-Oriented Mechanisms”, discuss a market-oriented mechanism to promote the knowledge exchange activity in discussion forums, in order to overcome current systems' lack of appropriate incentives to encourage users' participation.

Finally, two papers deal with the hot research topic of interoperability between e-Learning Systems. **Hatala et al.**, in their paper “The EduSource Communication Language: Implementing Open Network for Learning Repositories and Services”, discuss about the eduSource project, a holistic approach to building an open network of learning object repositories in Canada supported by the eduSource Communication Protocol, which implements the IMS Digital Repository Interoperability. **Neely et al.** present “An Architecture for Supporting Vicarious Learning in a Distributed Environment”, which is based on the OASIS framework and supports teaching and learning in a multi-university consortium and allows the management and reuse of learning materials.

The single poster of this track, authored by **Lischka** and **Karagiannis**, is entitled “Modeling and Execution of E-Learning Resources” and attempts to apply Business Engineering in order to model e-Learning at a holistic level. A modeling method for describing learning resources and workflows is presented, as well as the implementation of the method into a visual modeling tool.

4 THE TRACK CHAIRS

Dr. Symeon Retalis is an Assistant Professor at the Department of Technology Education & Digital Systems, University of Piraeus, Greece. He holds a diploma in Electrical and Computer Engineering from the Department of Electrical and Computer Engineering studies, National Technical University of Athens, Greece, an MSc degree in Information Technology-Knowledge Based Systems from the Department of Artificial Intelligence, University of Edinburgh, Scotland, and a PhD diploma from the Department of Electrical and Computer Engineering, National Technical University of Athens, Greece. His research interests lie on the development of web-based e-Learning Systems, design of adaptive hypermedia systems, web engineering, and human computer interaction. He has participated in various European R & D projects such as ELEN, MENU, UNIVERSAL, etc. He serves in the editorial board of international journals such as Computers in Human Behavior, IEEE Journal of Educational Technology and Society, ACM Computing Reviews, Journal of Information Technology Education. He participates to the ACM Web Engineering special interest group, to the CEN/ISSS learning technologies workshop. His publication list contains more than 70 items.

Dr. Paris Avgeriou is a Visiting Lecturer at the Department of Computer Science, University of Cyprus, Cyprus. He received a diploma (MSc) in Electrical and Computer Engineering (1999), as well as a Ph.D. in Software Engineering (2003) from the National Technical University of Athens (NTUA), Greece. He has worked as a research and teaching assistant at NTUA, has participated in a number of European Union R & D projects and has published several papers in international journals and conferences. He acts as a reviewer in journals, standards and conferences and takes part in the international standardization activities of CEN/ISSS Learning Technology Workshop. He is a founding member of the World-Wide Institute of Software Architects and the president of its Greek chapter. His research interests concern the area of software engineering and particularly software and business modeling, with emphasis on software architecture. He also conducts research in patterns, quality assurance, web engineering and mobile clients. His research is mainly applied in the domain of e-Learning.