
Editorial

Istvan Molnar

Bloomsburg University of Pennsylvania,
Pennsylvania, 17815, USA
E-mail: imolnar@bloomu.edu

Biographical note: Istvan Molnar received his MS and Dr. Oec. (PhD) from Corvinus University Budapest, Hungary. After completing his post-doctoral studies in Germany, he took part in different research projects as a Guest Scientist in the 1980s and 1990s in Europe. In 1996, he received his CSc (PhD) from the Hungarian Academy of Sciences. His main field of interests are software technology, IT/IS education, simulation and simulation optimisation. He is a Member of different Scientific Organisations and the Editorial Board of SCS-European Publishing House.

1 Introduction

It has been my honour to be the invited guest editor of the special issue of the *Int. J. Mobile Learning and Organisation (IJMLO)*. The special issue is entirely devoted to accelerated content delivery and use of modern mobile teaching/learning and authoring tools, which will play a significant role in increasing the efficiency of application development and delivery.

Rapid technology changes and fast development of information and communication technologies provide new opportunities to develop and use new learning environments. Mobile learning (m-learning) establishes a new learning paradigm which goes far beyond the traditional learning paradigms, i.e. face-to-face classroom and e-learning. Unfortunately, application development and content delivery show significant backlog and several hardware products lack applications that can run on mobile devices. There are a series of application fields which are promising others are not exploited yet. Governments and private businesses alike realise that global efforts and international cooperation should be initiated and supported. The advantages of m-learning environments in providing personalised content via intelligent mobile communication devices are obvious (e.g. environmental management and energy efficiency, independent living and inclusion). Highly efficient platform-independent content delivery, use and reuse of standardised and open source software are possible ways to accelerate the application development process and further increase the quality and usability of applications.

The special issue is intended to discuss the latest m-learning technologies and applications developed using advanced technologies, and to present and disseminate studies about how technology helps to meet the challenges, how the current development of m-learning can be applied to efficient design and implementation of m-learning environments in either academia or industry. The economic and social context of m-learning applications intended also to be discussed along with questions related to empirical research of contemporary m-learning environment developments.

This special issue aimed to present papers addressing the topics, including but not limited to those listed below.

- 1 Technologies and standards that directly support mobile learning systems and content delivery development (hardware devices and software tools).
- 2 Software architecture for m-learning applications, interoperability, platform independency (e.g. open systems reference architectures, service-oriented architecture (SOA)).
- 3 Tools for
 - learning content management system (e.g. dynamic location-specific information delivery)
 - learning management system (e.g. learning activity management system)
 - student management system.
- 4 Development and use of frameworks for learning objects based on context, time-line or map (e.g. concept mapping tool).
- 5 Development and use of tools for accelerating content delivery for m-learning systems.
- 6 Agent-based technology and tools (e.g. agent-based personalised m-learning).
- 7 Ontology-based frameworks and tools for m-learning (e.g. ontology-based tests).
- 8 Tools of active and collaborative m-learning.
- 9 Specialised tools for development of professional learning environments (e.g. mobile health, mobile commerce).
- 10 Open source m-learning content development.
- 11 Tools for quality of service improvement in m-learning environments.
- 12 Tools and solutions for privacy and security issues in m-learning.
- 13 Tools for content delivery for disabled learners (e.g. blind users).

2 Inside this issue

Now, that the special issue is released, I can proudly present it to the readers, because a lion's share of the goals has been achieved. The special issue represents a broad international selection of research results, closely related to the original aims of the Call for Papers. Most of the papers were submitted by researchers of different European Union member states. This fact clearly reflects recent European Union policies (e.g. Seventh Research Framework Programme) which emphasise, among others, digital content delivery, contribution to standard-setting and strategic international cooperation with the USA and Japan.

The first paper, 'E-snakes and ladders: A hypermedia educational environment for portable devices' by Petros Lalos, Fotis Lazarinis and Dimitris Kanellopoulos presents a game-based educational environment for portable devices. Authors enriched the classic table game with various types of activities, such as questions and answers and web-quests, providing a pleasant e-learning environment with an easy to use authoring

tool for the instructor. The application is based on context-aware technologies and on communication services and protocols, moreover, supports learning standards. A learning scenario demonstrates characteristics of the e-snakes and ladders, offering many attractive insights into the complex problems of the use of mobile gaming for learning and the related challenges for organisations.

The second paper, 'Ontology-based mobile learning and knowledge testing' by Réka Vas, Barna Kovács and Gábor Kismihók, reviews a comprehensive learning management system, emphasising the mobile learning aspects and potentials of the solution. The presented learning management system is based on two major pillars; one is a repository layer that plays a key role in content development and management, the other is an ontology layer that supports the creation of transparent curricula content and the promotion of reliable knowledge testing. After self-training, users can access the adaptive knowledge testing environment that provides instant evaluation of their current knowledge and suggestions related to subjects which need to be studied again. Mobile learning provides flexibility to this system; availability anywhere, any time. Elements and functions of the platform-independent mobile learning management system are discussed in detail in the paper.

The third paper 'Evaluating performance of a Bluetooth-based classroom tool' by Reggie Davidrajuh, focuses on the performance evaluation of a Bluetooth wireless technology-based classroom tool which help lecturers to automate their assignment tests. The author presents a testing prototype of the tool, which uses one master device and two slave devices on Pico-net. Because of the high costs of building a prototype for a large class, a simulation study was conducted to evaluate the performance of the tool for large classes. The simulation results show that the proposed tool performs well also for large class size, if multiple sub-master devices are utilised in Scatter-net environment.

The fourth paper 'Methodology and system design for implementing context-adaptive service-oriented web-based learning' by Simon B.Y. Lau and Chien-Sing Lee are devoted to establishing a methodological framework for context-adaptive web-based e-learning implementation. The authors address three research problems:

- 1 The lack of a comprehensive rigorous framework to define and represent 'context' for context-aware mobile learning applications, and propose a context reference model to synergise the diverse interpretations.
- 2 The need to include pedagogy in mobile e-learning and propose a workable pedagogy design to fulfil the requirements of different learning styles, which is based on standard instructional design principles and frameworks.
- 3 The dynamic adaptation of loosely coupled, distributed learning content to changing context requirements, and propose a solution, which uses a software implementation strategy based on a model-driven, web service architecture in contrast to the current implementations using conventional software technology.

The fifth paper, 'Atlantis University: learn your own way' by Oliver Schneider, Udo Bleimann and Ingo Stengel, overviews the components of a new type of university, the Atlantis University and discusses how lecturers as well as students are involved in the design and development of educational materials, while transforming the university in to a learning organisation. The Atlantis University Portal technically supports the new pedagogical concepts, by providing tools for learning content, content presentation, manipulation and adaptation. Atlantis University encourages the mobility of humans and

the mobility of content; the concept as well as the platform provides access from any place and any time by setting the content and the information channels not only to devices, but also to humans.

The sixth paper, 'Security and privacy issues in m-learning' by Zsolt Ugray, reviews the current trends of security and privacy issues emerging in mobile learning environments. The rapid spread of mobile devices in educational content delivery poses unique vulnerabilities, most of which originate in the wireless nature of information dissemination. Information stored in electronic format on any networked device and infrastructure are potentially vulnerable to different forms of attacks, but wireless security and privacy concerns are not in focus of current research and development efforts. Security and privacy concerns and the efforts to mitigate them in mobile learning environments need to be addressed also in application development at an early stage of the design and implementation of m-learning materials.

Acknowledgements

Finally, I would like to express my sincere gratitude to the contributing authors and to all of the distinguished professionals, who served as reviewers. Each paper submitted was subject to a thorough review; it has been reviewed first by the guest editor for general suitability for the special issue, then at least by two selected reviewers within the framework of a double-blind, two phase review process.

The list of reviewers and their affiliation are as follows.

Graham Attwell, Pontydysgu, Wales, United Kingdom.

Professor Dr Peter Baumgartner, Donau-Universität Krems, Austria.

Dr Tom H Brown, Midrand Graduate Institute, Johannesburg, Republic of South Africa.

Kuan C. Chen, PhD, Purdue University Calumet, Hammond, Indiana, USA.

Professor Dr Dragan Ciscic, University of Rijeka, Croatia.

Professor Dr Andras Gabor, Corvinus University Budapest, Hungary.

Professor Dr Mary Granger, George Washington University, Washington, DC, USA.

Dr Rory McGreal, Athabasca University, Canada.

Professor Dr A. Rao Korukonda, Bloomsburg University of Pennsylvania, USA.

Emanuel Maxl, Karl-Franzens-Universität, Graz, Austria.

Professor Dr Rolf Schulmeister, Universität Hamburg, Germany.

Professor Dr Gerhard Schwabe, University of Zurich, Switzerland.

Michael Simonson, PhD, Nova Southeastern University, North Miami Beach, Florida, USA.

Professor Mark Stiles, University of Staffordshire, United Kingdom.

Gearóid Ó Súilleabháin, Cork Institute of Technology, Ireland.

Dr Maria Elena Valdes-Corbeil, University of Texas at Brownsville, Texas, USA.

Ruidong Zhang, PhD, University of Wisconsin Eau Claire, Wisconsin, USA.