Editorial

Guest Editors:

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Biographical notes: Binshan Lin is Professor of MIS at LSU-Shreveport. He received his PhD from the Louisiana State University in 1988. He is a six-time recipient of the Outstanding Faculty Award at LSUS. Dr. Lin also received Ben Bauman Award for Excellence in IACIS 2003, Outstanding Educator Award in SWDSI 2004, and Emerald Literati Club Awards for Excellence 2003. He has published over 120 papers in refereed journals and currently serves as Editor-in-Chief of the seven academic journals.

Special issue on 'Modelling mobile information systems: Conceptual and methodology issues'

The rapid development of information technology (IT), particularly communication and collaboration technologies, are substantially changing the landscape of organisational computing. Workers in many business areas are becoming increasingly mobile. At the same time, workers in more and more areas will be required to act more flexibly within the constraints of the business processes of the company (or companies) they are currently doing work for. In parallel, they will often want to use the same IT to support their private life. During the last few years, a new breed of information system has emerged to address this situation being referred to as m-commerce systems or mobile information systems.

As mobile information systems evolve from techno-centric to business-centric systems, better systems development approaches, including conceptual modelling approaches, are needed to address the growing complexity of such systems. Mobile information systems come with new challenges for their developers and users. They will have to supply and to adopt services that go beyond traditional web-based systems and e-commerce systems. From the enterprise (user) point of view, three levels of such services can be identified:

- services that an enterprise offers to their professional and private customers

- services that help different enterprises to effectively combine their business processes

- services an enterprise provides to its employees to support internal business processes.

Conceptual modelling techniques can be used for the development of a large range of information systems. In the case of mobile information systems, we have identified the following areas for increased utility of the techniques developed as part of model-driven development:

- model driven integration of middleware solutions

- dependability of mobile information systems

- adaptability of systems to context

- development of systems to run on a wide range of client platforms

- process support for mobile workers.

In this special issue, we have collected contributions in the area of conceptual modelling approaches to mobile information systems addressing aspects ranging across the above areas.

In 'Research areas and challenges for mobile information systems' by John Krogstie, Kalle Lyytinen, Andreas Lothe Opdahl, Barbara Pernici, Keng Siau and Kari Smolander, an overview discussion on new challenges and possible approaches for developing and evolving mobile information systems is provided, with focus on model-based approaches on the conceptual and logical level. Their paper summarises the main challenges on how model-based approaches can support the development of mobile information systems that are to be used together with other types of systems in a primarily professional setting and indicate upcoming research issues comparing and contrasting these with the research issues of traditional information systems and web information systems.

In 'An architectural pattern catalogue for mobile web information systems' by Walter A. Risi and Gustavo Rossi, work towards categorising and analysing conceptual architectures for mobile web information systems is presented. They have defined the basis of a domain-specific architectural pattern catalogue for this domain, and mined several patterns from existing, well-known systems. The approach does not concentrate on the technical issues, but rather on identifying those architectures that better fit business goals regarding mobility to build a catalogue of architectural solutions proven successful in industrial practice and to define a high-level, common-language to describe mobile architectural solutions.

In 'The Compass Acceptance Model for the analysis and evaluation of mobile information systems' by Michael Amberg, Markus Hirschmeier and Jens Wehrmann, the focus is on user acceptance which is more and more regarded as a critical factor for the analysis and evaluation of mobile information systems. Their paper introduces the Compass Acceptance Model (CAM) for the analysis and evaluation of these kinds of systems. This instrument adapts the objectives and the main structure of the Balanced Scorecard to categorise and quantify the relevant influencing factors. The CAM can help service providers to monitor the critical success factors in detail and get suggestions for the further development of their services. The usability of the CAM is demonstrated by two examples.

In 'Content adaptivity in wireless web access' by Klaus-Dieter Schewe, Kinshuk and Tiong Goh, adaptability of system to the technical context of end-user device is addressed. While the demand for wireless access to web-based systems increases, the design of most systems does not support the use of small screen end-devices such as PDAs and mobile phones. However, enabling wireless access should not lead to a duplication of services.

Systems should ideally be adaptive, i.e. be able to adapt themselves to different technical contexts of the client. This includes coping with bandwidth, memory and power limitations, restricted presentation capabilities and different user problems. In this paper, several state-of-the-art content adaptation techniques are reviewed. Most of these techniques are based on changes to webpages. As an alternative, the authors present a new approach based on conceptual abstractions using media types.

In 'Hypermedia design for the mobile era' by Dionysios G. Synodinos and Paris Avgeriou, the same problem area is addressed using a different approach. In their paper, they present an attempt for designing a conceptual model for hypermedia applications that allows for easy update and alteration of its content as well as its presentation and also allows for deployment in various mobile platforms. Specifically, this model separates the hypermedia content from its presentation to the user, by employing XML content storage and XSL transformations. Their work is based upon the empirical results of designing, developing and deploying hypermedia applications for mobile platforms, and on the practices of well-established hypermedia engineering techniques.

In 'Mobile devices as distributed database components for relocating applications' by Ralf Mühlberger, the problem area is looked upon from a more technical, database point of view. In his paper, he concentrates on a specific class of applications intended to run on fixed network computers as well as mobile, potentially disconnected, devices that he terms relocating applications. The aim is to support their data requirements such that no modification to the application code is needed for data management or disconnection management. His approach to this challenge is through the use of an application manager, such as a workflow management system, that has a richer awareness of applications through an application schema that describes sufficient data requirement information for the execution of application instances.

Finally, in 'Accounting and billing of wireless internet services' in 3G Networks by Päivi Kallio, Alessandro Zorer and Roberto Tiella, an accounting and billing model for wireless services is presented. The third-generation wireless service providers have difficulties in billing their customers due to their inability to associate customer transactions with network usage, correlate data from multiple sources and flexibly support the emerging billing models. The evaluation of the service provided in their paper proved that the number of roles and partners in the wireless services is huge and that an architectural framework including components like accounting agents and billing mediation servers is needed for tracking customer transactions and directing the accounting and billing between the partners.

This special issue would not have been possible without the help of many colleagues who were willing to review papers submitted to the special issue on a tight schedule.