
Editorial

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Biographical notes: Wei Dai is a member of Faculty Staff with the College of Business, Information Systems Discipline, at Victoria University, Melbourne, Australia. Before joining Victoria University in 2003, he worked with Australian Government research organisations including Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Telecom Australia (now Telstra) Research Laboratories (TRL) as a Research Scientist and project leader. He also worked in the private IT industry managing software products development. He received his PhD in Computer Science from Murdoch University, Western Australia in 1996. His current research interests include services computing, e-supply chains and logistics systems integration, and knowledge management. He is a member of IBM Academic Initiative Programme and TIBCO University Relationship Programme, allowing him to collaborate with industry extensively.

Fatos Xhafa received his PhD in Computer Science from the Department of Languages and Informatic Systems (LSI) of the Technical University of Catalonia (UPC), Barcelona, Spain, where he holds a permanent position of Professor Titular. He was a Visiting Professor at Birkbeck College, University of London (UK) during academic year 2009–2010 and Research Associate at Drexel University, Philadelphia (USA) during academic term 2004/2005. He has widely published in peer-reviewed international journals, conferences/workshops, book chapters and edited books and proceedings in the field. He has an extensive editorial and reviewing service and is participating in the organisation of several international conferences. His research interests include parallel and distributed algorithms, security, optimisation, networking and distributed computing.

The modern e-business application environment involves heterogeneous technologies ranging from low level networks (e.g., web, wireless technologies) and devices, to higher level of software architectures, processes and domain applications. For heterogeneous technology to improve operational efficiency and to drive innovation, the potential impact of the heterogeneous technologies on the community of consumers and suppliers needs to be properly understood.

In this special issue, we have included seven articles. The paper ‘An integrated communications platform incorporating SMS and e-mail to support mobile applications’ by Elton and Chung, describes the development of a novel communications platform that interacts with users of mobile communication devices, using different communication methods, in order to distribute tasks across a mobile environment. The platform manages these users to resolve a range of different application

problems, where each problem is a separate and distinct scenario type with unique objectives. The platform is composed of a generic framework that provides a process for the rapid development and implementation of new scenario types, whereby functionality is tailored to the requirements of new scenarios as they arise.

The emergence of a broad variety of effective approaches under the umbrella term ‘crowdsourcing’, which involves the engagement of potentially large and open crowds of participants for the undertaking of a task, has become a phenomenon that businesses have increasingly taken interest in lately. Given the significant increase in mobile phone penetration and the expansion of existing mobile network capacity, e.g., based on heterogeneous networks (HetNets), new forms of crowdsourcing can be conceived that leverage the mobile and ubiquitous user base. The paper ‘Opportunities and challenges for

mobile crowdsourcing – conceptualisation of a platform architecture’ by Korthaus and Dai, aims to explore some of the opportunities and challenges of new approaches to mobile and ubiquitous crowdsourcing solutions. The paper presents the conceptual architecture of a context-aware mobile crowdsourcing platform that brings together ‘crowdsourcers’ as service requesters and ‘mobile workers’ as service providers.

HetNets are part of the communication landscape these days, so when services plan to use networks to get their work done they must expect certain challenges and opportunities. Any help to ease the burden will increase productivity. In the paper, ‘A rule-based service framework for supply chain management’ by Moynihan and Dai, introduces a service framework for supply chain management, which runs on a HetNet and leverages the power of an inference engine to manage networks and supply chain entities. The technology presented in this paper also has applicability for managing the common problems of operating over diverse networking infrastructure. Details of the design and implementation of the framework are given, along with the discussions on the preliminary experimental results and impacts for industries.

Cargo tracking system plays an important role in logistics and supply chain management especially in HetNet environments. The paper ‘Multi-agent-based smart cargo tracking system’ by Zhou et al., presented an agent-based intelligent cargo tracking system based on the internet of things. The paper investigated a cargo information model application in the tracking of a product lifecycle for logistic chain management. Furthermore, the implementation of the proposed intelligent cargo tracking system and its application is illustrated in details. The intelligent cargo tracking system is designed to give the user real time information about the vehicles and cargos. Effective monitoring and controlling of the entire cargo conveyance process with anytime-anywhere features of the real-time cargo tracking system allows people to track and trace shipments from the time of placement of an order to the delivery at destination places.

Mobile web integration technologies and wireless sensor networks provide many more opportunities for human beings to interact with a HetNet environment, including the communication network, the internet and sensor networks. The paper ‘Socially aware mobile application integrations in

heterogeneous environments’ by Chen et al., investigates the integrated use of socially aware computing and data mining techniques through a mobile web application. It emphasises the study of the regularity of human social activities through mobile applications in order to provide mobile users with intelligent assistance and support in the real world. The research investigates the effectiveness of single-layer and multi-layer evolutionary models of socially aware computing in order for these mobile web applications to be better integrated with the human social activities. Experimental analysis of the self-developed mobile platform as proposed in this research showed the superiority of socially aware computing when applied in the mobile field.

Under HetNet environments, developments in supply chain management have dramatically increased within the past few years to cover a wide range of cross-disciplinary topics using a number of heuristic analyses and quantitative modelling tools. With significant developments combining technologies and business marketing in heterogeneous environments, a service system is proposed in a paper ‘Optimal and stable supply chain services system: integrating management services with robust optimisation modelling’ by Lou and Dai. The paper investigates a novel robust enterprise supply chain services framework (RESCSF) approach and considers risk and financial management to help small and medium enterprises (SMEs) run global businesses dynamically and economically.

Finally, addressing the application impact of heterogeneous technology solutions, a paper ‘Developing an integrated supply chain system for small businesses consortium in Australia: a service-oriented PHOENIX solution’ by Li et al., confronts a real world challenge of offering a supply chain solution to a small business consortium. The authors propose an integrated supply chain system for small businesses in Australia – a service-oriented PHOENIX solution, and outline the mechanisms of the supply chain system. The paper contributes to knowledge by conceptualising the means of access and integration of supply chain management systems. The paper adopts scenario analysis in order to exemplify the potential benefits of the proposed system. Giving consideration to the cost issue, the paper proposes that the PHOENIX system can be offered to small business consortiums.