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Special Issue: The Engineering, Management, and Philosophy of Service-Oriented Information Systems

Guest Editorial Preface

Research Articles

The Engineering, Management, and Philosophy of Service-Oriented Information Systems

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In this special issue on **"The Engineering, Management, and Philosophy of Service-Oriented Information Systems"** for the *International Journal of Information Systems and the Service Sector (IJISSS)*, are presented five high-quality research articles.

The main objective of this special issue was to collect and disseminate high-quality and relevant scientific knowledge and professionals' experience for helping to underpin the engineering, management, and philosophy of Service-Oriented Information Systems (SOIS). The submitted articles should be based on rigorous theoretical or empirical research approaches that study the technical, behavioral, economical, managerial, and philosophical issues involved in the development, utilization, or evaluation of Information Systems and IT under the emergent paradigm of Service Science, Management, and Engineering (SSME) (Chesbrough & Spohrer, 2006).

Because of the interdisciplinary scope, high-quality research articles were expected from a variety of disciplines, including Information Systems, Software Engineering, and Systems Engineering, as well as from traditional business-oriented research. Thus, suggested topics were:

- Theoretical and empirical articles on engineering issues, including foundations of design and building information systems under the SOIS emergent paradigm; lifecycles, development methodologies, analysis & design methods, techniques and tools, requirements engineering for SOIS, standards and models of SOIS processes; comparisons with component-based, objected-oriented and functional-based paradigms for engineering information systems.

- Theoretical and empirical articles on management issues, including foundations of management of information systems under the SOIS paradigm; project management issues; frameworks and models for evaluation; economy of SOIS project;, standards and models of processes; comparison with component-based, objected-oriented and functional-based paradigms for management information systems.

- Theoretical articles on philosophical issues, including foundations of the SOIS paradigm, ontological, axiological, and/or epistemological frameworks and schemes.
- Case studies of real projects implemented under the SOIS emergent paradigm.

Such kind of research has been also identified as part of a potential new view for the information systems discipline (Demirkan & Goul, 2006, p. 12): *"[...] a trans-disciplinary education program needs to be developed by utilizing organizational sociology, law, services marketing, business strategy and operations, accounting and finance, information technology, and industrial and computer engineering to provide the knowledge necessary to equip new graduates to lead this culture change"*. Furthermore, given that the most large economies (e.g. USA economy) have been defined as a service-based economies because services businesses account for a large portion of the GNP (Quinn, 1992), such a new business trading model based on services, demands service-oriented business processes, management practices, -oriented engineering knowledge, and lately even a service-oriented philosophy (Rust & Kannan, 2003).

In this context, this special issue encouraged academicians and practitioners in the service science, especially those focused on the disciplines of Information Systems, Software Engineering, and Systems Engineering, to submit high-quality research articles that develop and strengthen the engineering and management of service-oriented information systems required to provide efficient and effective business processes and business services; and define the philosophical foundations for a better understanding of SOIS.

We are pleased to present high-quality research articles that contribute for such general aim. One part of these articles was collected from the original CFP, and these were accepted after a rigorous blind-mode review process. The another part was specially asked to senior scholars which are recognized leaders in SSME and ITSM. These articles were also critiqued for improvement purposes. After two or three review rounds, six high-quality research articles were finally accepted.

The first research article, titled "*A Survey of Development Methods for Semantic Web Service*

Systems" by Terje Wahl and Professor Guttorm Sindre, in the Department of Computer and Information Science, at Norwegian University of Science and Technology, Norway, investigate the suitability of several software development methods for engineering systems based on semantic web services (SWS). Authors argue that SWS shares engineering design properties with general service-oriented software systems, but that also have special features that will demand extensions to the current methodologies.

In the second research article, titled "*A Service Science Perspective on Human-Computer Interface Issues of Online Service Applications",* by Claudio Pinhanez at the T.J. Watson IBM Research Center, New York, USA, a framework for engineering the human-computer interfaces of online service applications based on Service Science is reported. Author elaborates such a framework on a previous reported definition of *customer-intensive systems* to online applications. 15 different issues are identified, and their rationale on how this co-produces a positive relationship between the service provider and the customer is discussed.

In the third research article, "*Toward an Integrated Conceptualization of the Service and Service System Concepts: a Systems Approach* ", Manuel Mora, at Autonomous University of Aguascalientes, México, Mahesh S. Raisinghani, at TWU School of Management, USA, Rory V O'Connor, at Dublin City University, Ireland, and Professor Ovsei Gelman, CCADET, at Universidad Nacional Autónoma de México, México, develop a conceptual design research to formulate two integrated definitions for the concepts of service and service system. Authors argue that both concepts are fundamental to build on the theoretical basis of Service Science Management and Engineering (SSME), Information Technology Service Management (ITSM), and Service Oriented Software (SOS) knowledge streams. However, due to a diversified literature, the richness of findings ate the same time has caused a lack of standardized conceptualizations. Authors elaborate on conceptualizations by using Theory of Systems.

In the fourth research article, entitled "*Information Technology Service Management and Opportunities for Information Systems Curricula*", Professor Sue Conger at University of

Dallas, USA, develops the thesis of a limited IT curriculum focused on two knowledge streams: strategy and management, and applications development. Consequently, other real activities on IT areas, as IT operations have been relegated to be learned during the professional exercise. Given the raised complexity and relevance of IT operations for business organizations, and the need to perform them on standards of managerial and engineering/technical process oriented to services (e.g. based on ITIL), such a knowledge is missing in current IT curriculums. Author, thus, presents theoretical arguments on such situation and an updated IT curriculum proposal.

In the last research article, entitled "IT Service Departments Struggle to Adopt a Service-Oriented Philosophy", by Aillen Cater-Steel at University of Southern Queensland, Australia, it is reported a collection of recent empirical surveys and case studies of organizations involved in the implementation of IT service management approaches. Author identifies six factors to be critical in achieving an effective service-oriented philosophy. The relevance of them is also discussed as well its relation with emergent IT service frameworks such as ISO/IEC 20000, and the CMMI® for Service Delivery.

Hence, we believe that this special issue has achieved its academic aim, and invite researchers and practitioners interested in SSME and ITSM to submit high-quality articles for subsequent CFPs of this journal, with the purpose to help to develop these knowledge streams from an Information Systems perspective.

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Manuel Mora-Tavarez is an associate professor of information systems in the Autonomous University of Aguascalientes (UAA), Mexico, since 1994. Mora holds a BS in computer systems engineering (1984) and a MSc in artificial intelligence (1989) from Monterrey Tech (ITESM), and an EngD in systems engineering (2003) from the National Autonomous University of Mexico (UNAM). He has published around 35 research papers in international top conferences, books and/or journals. His main research interest is the development of a common management and engineering body of knowledge for software engineering, systems engineering and information systems underpinned in the systems approach.

Claudio Pinhanez is a computer scientist, a service scientist, and a media artist. He has been a research scientist at the IBM Thomas J. Watson Research Center since 1999, where he currently conducts research on service science (theory, tools, methodology, and applications); and in ubiquitous computing and advanced computer interfaces. Pinhanez was born in Brazil, where he received a bachelor's degree in mathematics and a MSc in computer science from the University of São Paulo. He obtained his PhD in media arts and sciences in 1999 from the MIT Media Laboratory. Claudio has more than 90 international publications, including 3 best paper awards, and several patents in the U.S., Japan, and EU.

Rory V. O'Connor is a senior lecturer in software engineering at Dublin City University and a senior researcher with Lero, The Irish Software Engineering Research Centre. He is also chairperson of the Irish Software Testing Board and an Irish representative to ISO/IEC JTC1/SC7. He has published more that 60 referred articles in journals and conference, and has edited 8 books. His research interests are centered on the processes whereby software intensive systems are designed, implemented and managed, in particular the methods and techniques for supporting the work of software project managers and software developers in relation to software process improvement and management of software development projects.

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