Editorial

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Biographical notes: Youakim Badr is an Associate Professor of Computer Science at France's National Institute for Applied Sciences in Lyon (INSA of Lyon). He teaches in both the Department of Computer Engineering and the Department of Industrial Engineering. He is an expert in fields such as interoperability, modelling, system architectures, and networking, and their application to various domains such as business processes, supply chains, productions systems, virtual enterprises, and e-commerce. His current academic research interests include systems in both the service sector and ICT. In particular, he studies the digital ecosystem of services and the multidisciplinary modelling approach to design services through the integration of ICT, strategy, and processes. He leads the Service-Oriented Enterprise research team, which combines industrial and computer engineering approaches. He is actively involved in a series of international conferences and also serves as a reviewer for various conferences and journals.

1 Introduction

Productivity in firms depends on their ability to design innovative services taking into account advances in Information and Communication Technologies (ICTs). In this context, digital ecosystems offer a new paradigm to build holistic, sustainable and self-organised environments of distributed software integrating technologies, business and social collaboration to achieve specific goals and create added-value services. Digital service ecosystems are open and complex systems driven by customer needs and their satisfaction, and on-demand collaboration among service providers and service consumers. Due to their human-centric and socio-technical characteristics, digital ecosystems are difficult to understand, design and implement.

This special issue attempts to addresses these issues and includes extended and revised papers from the International Conference on Management of Emergent Digital EcoSystems (MEDES) held in the city of Lyon, France in 2009. After a very tight review process, we have selected six out of 26 papers to include in this special issue and shed the light on the latest advances in the field of digital ecosystems.

2 Synopsis of the contributions

In 'Integrated Service Engineering workbench: service engineering for digital ecosystems', Gregor Scheithauer, Konrad Voigt, Matthias Winkler, Veli Bicer and Anja Strunk discuss the evolution of service-oriented architectures towards digital ecosystems and comprehends a number of challenges concerning the development of services in dynamic environments with high uncertainties, and in collaboration with other companies. Another challenge lies in how to describe services sufficiently for trading them in digital ecosystems. In response to these challenges, they introduce the Integrated Service Engineering (ISE) framework to reduce the overall complexity of service engineering. They extend their framework with a workbench that implements a model-driven approach and tools for describing services and composing new services. In addition, they briefly explore requirements of service engineering and digital ecosystems. Furthermore, they introduce a novel language for describing business services along with SLA management and discuss lessons learned during the development of their Workbench.

In 'An ecosystem for user centric learning: revolution or evolution?', Tom Kirkham, Stuart Wood, Sandra Winfield, Kirstie Coolin and Angela Smallwood introduce the SAMSON project that uses technology as a catalyst to support and aid future developments in a regional learning community. In contrast to many ecosystem approaches that attempt a systems overhaul, the SAMSON project seeks to develop services to encourage the use of emerging standards-based technology in existing processes. In addition, these developments are forming the community and developing the ecosystem at a natural pace that aims to enhance existing processes and encourage innovation in a sustainable manner.

In 'A pervasive environment for systemising innovative services in knowledge-intensive firms', Yong Peng, Youakim Badr and Frédérique Biennier, study the Knowledge-Intensive Service (KIBS) firms which are currently experiencing dynamic growth. Such firms compete by the skills and knowledge of their employees to deliver business services. They argue that ICTs offers KIBS new business opportunities by delivering customised services through the Internet. They propose an approach to model KIBS firm activities as digital ecosystem of services. In particularly, they present a generic service system architecture with respect to the 'everything as a service' (*asS) architectural style and design knowledge-intensive services in pervasive environments. They introduce a service-based middleware infrastructure taking into account service characteristics and their life-cycles. An important aspect of their service systems engineering approach is the ontological description of various components and management activities. Finally, they present a case study to demonstrate how to integrate functional and management services and how to produce value-added services within the context of digital service ecosystem.

In 'Evaluating success factors of selling practices in electronic marketplaces', Adriano C.M. Pereira, Diego Duarte, Wagner Meira Jr. and Paulo Goes focus on the online commercial activity enabled by the World Wide Web. Electronic markets have early emerged as an important topic inside e-commerce research. They consider the e-market as a digital ecosystem intended to provide users with online services that facilitate information exchange and business transactions. From a business perspective, they present a characterisation and analysis of fixed-price online negotiations. Using actual data from a Brazilian marketplace, they analyse selling practices, considering

seller profiles and selling strategies taking into account important factors such as the seller's reputation and experience, offer's price, duration, among others. Moreover, they evaluate which factors impact on the success of selling practices in e-markets, which can be used to support seller's decision and recommend selling practices and investigate some important questions about selling practices in online marketplaces. They demonstrate how their results can be applied to provide decision support tools to e-market users.

In 'Towards a RESTful infrastructure for Digital Ecosystems', Alexandros Marinos, Sotiris Moschoyiannis and Paul Krause describe key design aspects of digital ecosystems and how these can be realised in a web-like environment. In their previous work they discussed digital ecosystems in terms of digital infrastructures and the socio-economic context in which these are called to operate. In fact, they have framed the concept of a digital ecosystem around complex interactions between interdependent agents and have focused the discussion on important properties such as loose-coupling, no central point of control or failure, sustainability, resilience, and history. In this work, they describe an integrated set of design solutions for operationalising the key principles of digital ecosystems into a software infrastructure. Their proposed reference architecture drives the construction of RESTful ecosystems that can support future Internet applications, and do this in a way that is backwards compatible with the current web.

In 'A performance comparison of four WSRF implementations', Roland Kübert and Hai-Lang Thai investigate the SOAP protocol which is used most often in web services communications and the Web Services Resource Framework (WSRF). Form a technological perspective they evaluate the performance analyses for various SOAP toolkits in different cases and toolkits. They focus on the WSRF implementations to compare the SOAP performance of four WSRF implementations, namely Apache Muse, the Globus Toolkit, WSRF Lite and UNICORE 6's WSRF Lite, followed by an examination of the performance of WSRF operations. They show benchmark results and give an indication on how implementations fare performance-wise and can be used to decide which implementation is to be used, especially if performance is an issue.

Finally, we hope this special issue inspires researchers to design and implement e-services within the context of digital ecosystems and take advantages of recent advances in exciting and challenging research area; digital ecosystems. We also would like to gratefully thank the reviewers for their valuable time and constructive comments. Last but not least, we would like to express our deepest appreciations to the authors for their excellent contribution and assiduous work.

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