Introduction to the Proceedings of the 1st EDOC 2009 Workshop on Service-Oriented Business Networks and Ecosystems (SOBNE '09)

Axel Korthaus  
Queensland University of Technology  
Faculty of Science and Technology  
Brisbane, Australia  
e-mail: axel.korthaus@qut.edu.au

Alistair Barros  
SAP Research Centre  
Lvl 7, 52 Merivale St  
South Brisbane, Australia  
e-mail: alistair.barros@sap.com

Abstract—The first Workshop on Service-Oriented Business Networks and Ecosystems (SOBNE '09) is held in conjunction with the 13th IEEE International EDOC Conference on 2 September 2009 in Auckland, New Zealand. The SOBNE '09 program includes 9 peer-reviewed papers (7 full and 2 short papers) and an open discussion session. This introduction to the Proceedings of SOBNE '09 starts with a brief background of the motivation for the workshop. Next, it contains a short description of the peer-reviewed papers, and finally, after some concluding statements and the announcement of the winners of the Best Reviewer Award and the Most Promising Research Award, it lists the members of the SOBNE '09 Program Committee and external reviewers of the workshop submissions.

Keywords—service-oriented business networks; service ecosystems; workshop proceedings; editorial

I. MOTIVATION

The continuing trends towards an accelerated speed of change and the need to differentiate through innovation force organizations to optimize collaboration within their business networks of employees, suppliers, customers, partners and distributors to maximize both competitive advantage and the productivity of non-differentiating tasks.

Key enablers for meeting these challenges include approaches such as Software-as-a-Service, business process outsourcing and the service-oriented paradigm, which has been successfully applied on the technical level to design and implement very flexible and adaptable IT infrastructures and architectures. Increasingly, the service-oriented paradigm also extends towards the business level and provides new perspectives to organize a company’s capabilities and to allow for the easy combination of services to create new business opportunities.

Future business value networks will need to quickly react to changes in service demands. New opportunities for innovative service-oriented business models will arise and new roles of players, such as those of service brokers and service aggregators in service marketplaces, will emerge to address the deployment, publishing, discovery, recombination, repurposing, re-branding, delivery to different business channels and monitoring of services in service ecosystems. Service ecosystems can be seen as service-oriented systems that grow up from independent initiatives, yet interact in seamless ways to support complex business processes.

Large research programs revolving around new approaches to service orientation, such as the Smart Services CRC in Australia and the Theseus/TEXO lighthouse project in Germany, underline the significance of current service ecosystems research. Related research streams that are of relevance for service ecosystems research include, among others, business value networks, Internet of Services, networked organizations and inter-organizational information systems.

II. PROGRAM OVERVIEW

This workshop aims to explore the principles, challenges and enablers of service-oriented approaches to support and establish service ecosystems of collaborating organizations. It addresses the technical and business-related aspects revolving around the design, deployment and management of service ecosystems to create or transform business operations or processes by reusing and connecting services from different providers.

The workshop intends to complement the main scientific program of EDOC 2009 with presentations and discussions of both mature and preliminary project results, ideas, experiences, and knowledge in a way that is more interactive and more focused than paper sessions in the main conference program.

The idea is to facilitate useful exchanges of ideas, the improvement of understanding of topics and issues, and the clearer identification of important open research issues and possible approaches towards their solution. Moreover, the workshop should serve as an opportunity for participants to coordinate efforts and establish collaborations.

We believe that we succeeded in composing a very interesting and diverse program, containing presentations of selected full and short peer-reviewed papers. By examining the proceedings of the EDOC 2009 conference, it becomes evident that SOBNE ’09 and the main program of EDOC 2009 complement and strengthen each other smoothly. Research papers were selected for SOBNE ’09 after a thorough peer-review by workshop Program Committee members and external reviewers. Each paper received at least three reviews by international experts whose identity was not revealed to
the authors. The authors of the accepted workshop submissions are from Australia, Finland, Germany, Malaysia, New Zealand and the USA and thus represent four different continents, making the workshop a very international event. In these proceedings, you will find for each of the nine papers a version that is revised according to the comments that the reviewers provided.

A. Full Papers

The first full paper is titled “Towards an Operationalization of Governance and Strategy for Service Identification and Design” and was authored by René Börner, Stefanie Looso and Matthias Goeken (Frankfurt School of Finance & Management, Germany). While acknowledging the promises and benefits of service orientation, the authors point out the inherent complexities and challenges of Service-Oriented Architectures (SOA) and therefore advocate a comprehensive SOA management approach comprising tasks related to topics such as strategy, governance, processes and infrastructure at different levels of granularity. Their article focuses on a topic of central importance to service-oriented business networks and ecosystems – how to operationalize the analysis and design of services, with special consideration of strategy and governance issues. While related publications mainly examined SOA governance for complete infrastructures, Börner et al. analyze governance of individual services, particularly by operationalizing five key areas of IT governance and highlighting their relevance already during the phases of service analysis and design. Moreover, considering strategy they propose an approach to operationalizing high level goals for single services. And last but not least, by drawing from method engineering, roles and techniques are introduced to support the incorporation of strategy and governance into the service identification and design process.

Governments all over the world are increasingly moving towards e-government solutions and start to establish service ecosystems within their conglomerations of agencies and departments, but also with suppliers of products and services and other stakeholders. The second full paper presents the findings from a case study in Malaysia that examined organizational context in terms of the suppliers’ involvement and perception towards the adoption of a public e-procurement system called “e-Perolehan”. The paper is titled “E-Procurement Adoption in the Malaysian Public Sector: Organizational Perspectives” and was authored by Maniam Kalianam, Murali Raman and Magiswary Dorasamy (Universiti Teknologi MARA and Multimedia University Malaysia). The adoption of e-procurement systems often causes difficulties and challenges for the end-users, which seems to be backed up by the fact that the authors report on a less than satisfactory uptake of the e-procurement system among the vendor community. On the other hand, the efficient use of e-government services is an important issue in order to save tax payer’s money. After analyzing constructs such as organizational leadership, organizational perceived usefulness, organizational perceived ease of use and organizational facilitators involving more than 500 registered suppliers of goods and services to the Malaysian government, they conclude that these organizational factors tested in the study contribute to the adoption and usage of the e-procurement system among the registered suppliers and finally recommend a dual policy of coercion and persuasion to the government in order to achieve greater levels of adoption and usage.

With the emergence of new business networks, business webs, and service ecosystems of service providers and consumers with dedicated service marketplaces, new business opportunities arise and additional roles of players, such as service brokers and service aggregators, will become more important. The third full paper, which is titled “Service Aggregators in Business Networks” and was authored by Thomas Kohlborn, Axel Korthaus, Christoph Riedl and Helmut Kremar (Queensland University of Technology, Australia, and Technische Universität München, Germany), focuses on analyzing these developments and puts particular emphasis on the role of service aggregators that can be seen as value-adding intermediaries between service providers and consumers and/or brokers. Based on their extensive domain knowledge, they create service bundles and new service offerings by combining existing services from different sources and offering them under new business models. Service aggregators may also repurpose and rebrand services as well as refactor service interfaces, playing the role of value-added resellers or merchant service providers.

Toni Ruokolainen and Lea Kuvtonen (University of Helsinki, Finland), the authors of the fourth full paper titled “Managing Interoperability Knowledge in Open Service Ecosystems”, address challenges that arise in open and agile service ecosystems with regard to the correctness of available meta-information and its usage. To this end, the authors describe the Pilarcos framework for inter-enterprise collaboration management that provides an operational collaborative computing environment and concepts for managing loosely-coupled B2B collaborations as business networks consisting of independently developed business services. The paper presents a model/meta-model approach for managing interoperability knowledge relevant in such ecosystems in model repositories. Thus, a core contribution of the paper lies in the characterization of service ecosystems by a set of four meta-models: a domain ontology (fundamental concepts), a methodology meta-model (service-oriented engineering), a domain reference meta-model (describes infrastructure services) and a knowledge management meta-model (conceptual integration between ontological and linguistic modeling).

Another take on the question of how to address challenges in service ecosystems arising from the fact that various stakeholders employ their own vocabularies and formats is presented in the fifth full paper, which is titled “StraS: A Framework for Semantic Traceability in Enterprise-wide SOA Life-cycle Management” and was authored by Stefan Seedorf, Khrystyna Nordheimer and Simone Krug (University of Mannheim, Germany). The authors put forward that semantic traceability between business processes and services can provide a missing link and promote an integrated view on the various entities in the SOA lifecycle. To this end, the paper presents three conceptual proposals in the context of SOA and services: a SOA lifecycle model, a SOA information model and a traceability framework based on the former.
two concepts. Thus, the paper presents an interesting and novel approach to a very relevant topic that addresses one of the main issues in IS: the much bemoaned conceptual gap between business and IT.

The increasing level of collaboration between firms in emerging business networks also necessitates new decision support tools that span company boundaries to help decision makers within and across organizations make more accurate, effective and timely decisions. This is an issue addressed by the sixth full paper of the workshop, which is titled “Implementing a Multi-Enterprise Collaborative DSS” and was authored by Farzad Shafiei, David Sundaram and Selwyn Piramuthu (University of Auckland, New Zealand, and University of Florida, USA). The paper describes what an architecture of a Multi-Enterprise Collaborative Decision Support System (MЕCDSS) could look like and how such a system could be implemented using Web services in a SOA approach. To illustrate their MЕCDSS framework and architecture and show how it supports the decision making process, the authors used an implementation based on Oracle’s BPEL Process Manager as a proof of concept.

The authors of the last full paper (Anja Strunk, Sandro Reichert and Alexander Schill from Dresden University of Technology, Germany), which is titled “An Infrastructure for Supporting Rebinding in BPEL Processes”, are concerned with the issue of service quality in service ecosystems, particularly the envisioned “Internet of Services”, where, for example, service aggregators combine numerous services from different sources in new value-added services or applications. In such an environment, an approach or infrastructure would be desirable that can ensure a guaranteed quality of service (QoS) for the composed service by replacing component services that fail or do not reach the required QoS with alternative ones, e.g. from other providers. Taking up a technical viewpoint, the authors describe an approach for an infrastructure that achieves this goal by supporting rebinding in BPEL processes. Services substitutability is given by means of WSMO descriptions of services, while implementation details of particular services are captured in WSDL documents. All services are identified by their unique service key, which is defined in the services’ semantic description represented as the WMSO file. An important advantage of the approach is that it does not require any modifications to WS-BPEL or BPEL engines and is thus compatible with classical BPEL processes and standard-compliant BPEL engines.

B. Short Papers

In addition to its full papers, the workshop program also includes two short papers that present stimulating work in progress.

The first short paper is titled “Towards Formalizing Virtual Enterprise Architecture” and was authored by Amit Goel, Heinz Schmidt and David Gilbert (RMIT University, Melbourne, Australia). By focusing on virtual enterprises, the authors provide another complementary perspective on the topic of business networks and ecosystems. They regard SOA as a style of enterprise architecture that is particularly suited as an enabler of virtual enterprises at both business and technology levels. The paper discusses Virtual Enterprise Architecture as a solution to the major challenges of virtual enterprises in ensuring their flexibility, adaptability and agility. The authors also review research into formal models of Virtual Enterprise Architecture and identify current gaps in this research. These include the findings of recent surveys about the top concerns of CxO level stakeholders, who require cost, quality and change concerns to be addressed by models of Virtual Enterprise Architecture. Moreover, the authors point out the need to conduct research into analysis, simulation and visualization of formal enterprise architecture models accessible to CxO level stakeholders.

The second short paper and last contribution in the workshop proceedings is titled “Idea to Derive Security Policies from Collaborative Business Processes” and was authored by Ji Hu (SAP Research CEC Karlsruhe, Germany). In his paper, the author focuses on the field of security requirements and policies in B2B service ecosystems, which are an ongoing and challenging research area. Security concepts and models in collaborative business environments are crucial to provide trust for consumers and providers and need well-defined methodologies to be evaluated. The paper describes a model for deriving security policies to enable trustworthy and secure communication between chained business process services. The model proposes that the security policies are automatically derived and defined from formally described cross-organizational business processes and their interactions specified with BPMN models. The author claims that his proposal can effectively support the security policy design and authoring process and help security managers create consistent, verified, and error-free security policies which satisfy the requirements for secure and trustworthy business collaboration executions.

III. CONCLUDING REMARKS, BEST REVIEWER AWARD AND MOST PROMISING RESEARCH AWARD

We hope and are very confident that the interesting papers, presentations, and discussions at SOBNE ’09 will inspire further research and development in the important and exciting area of service-oriented business networks and ecosystems and are also suitable for further fanning the flames of growth of the academic and industrial community engaged and interested in these topics.

We would like to thank the international Program Committee for their hard work in publicizing the workshop call for papers and reviewing the workshop submissions. The list of Program Committee members and additional external reviewers is given below. We would also like to thank the main EDOC conference organizers (in particular the EDOC Workshops Chair Dr Vladimir Tomic) for their invaluable support without which this event would not have been possible. Last, but not least, we are very grateful to the efforts of all authors related to writing and revising their papers and thank the workshop participants for their active involvement by presenting their work and engaging in the subsequent discussions at the workshop.

In order to present an incentive to our valued reviewers, we asked the authors of the workshop submissions to suggest reviewers for the Best Reviewer Award based on the quality
of the anonymous reviews they received. As a result of this feedback, we are very pleased to announce that we have two winners of the Best Reviewer Award (due to a tie). We like to congratulate both

- Prof Dr Colin Atkinson, University of Mannheim, Germany, and
- Dr Ralf Gitzel, ABB Corporate Research, Germany

for having provided high-quality and helpful feedback through their reviews, which was particularly acknowledged by the authors of the workshop contributions.

Finally, it is also an honor to be able to announce the winners of the Most Promising Research Award, which were determined based on the suggestions of the reviewers. In this case, the vote was unequivocal, and the winners are

- Stefan Seedorf, University of Mannheim, Germany,
- Khrystyna Nordheimer, University of Mannheim, Germany, and
- Simone Krug, University of Mannheim, Germany,

who have authored the best contribution to the SOBNE '09 workshop with their paper titled “StraS: A Framework for Semantic Traceability in Enterprise-wide SOA Life-cycle Management”. Congratulations!

IV. Members of the Program Committee

- Markus Aleksy, ABB Corporate Research, Germany
- Colin Atkinson, University of Mannheim, Germany
- Tilo Boehmann, ISS Hamburg, Germany
- Peter Bruza, Queensland University of Technology, Australia
- Remco Dijkman, Eindhoven University of Technology, The Netherlands
- Erwin Fielt, Telematica Institute, The Netherlands
- Ralf Gitzel, ABB Corporate Research, Germany
- Peep Küngas, University of Tartu, Estonia
- Zoran Milosevic, Deontik, Australia
- Christoph Riedl, Technische Universitaet Muenchen, Germany
- Stefan Tai, Karlsruhe Institute of Technology, Germany
- Christof Weinhardt, Karlsruhe Institute of Technology, Germany

Additional Reviewers

- Lukas Wiewiorra, Karlsruhe Institute of Technology, Germany