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# Service Science, Management, Engineering and Technology

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## Editorial note

by Miguel-Angel Sicilia, Peter Geczy, Haluk Demirkan

Service science, management and engineering (SSME) has recently become a popular label for a newly proposed discipline—advocated by an increasing number of academic and commercial organizations<sup>1</sup>. As related works and reports continue to emerge in literature, the foundations of SSME as a discipline take shape. Contributions arrive from a range of individual disciplines as well as from an inter-disciplinary research. They address a number of pertinent issues.

The “service management” part of SSME is relatively established. It is an integral part of several branches of managerial sciences. The concepts in service management beneficially extend also to service marketing. There are notable distinctions between managing and marketing services as opposed to goods—thus requiring different approaches and solutions. The differences in approaches originate from the characteristics that underline services and are generally absent in goods, namely: intangibility, inseparability of production and consumption, heterogeneity and perishability. These characteristics pose novel problems for managers and marketers that cannot be solved simply by transferring existing solutions from one domain to the other. However, they open up new opportunities and challenges.

The “service engineering” part of SSME has roots that are more recent. The service engineering significantly overlaps with the service design, as the latter is often considered a stage of the former. In many cases, they are used interchangeably. It is understood that service design and innovation presents a new and different problem space than product design and innovation. This understanding has emerged from extensive studies of design concerns in manufacturing and production of goods. Information technology (IT) advances have exposed several new dimensions in service engineering, design, and innovation. IT has become an integral part of service support, and in many instances has become the medium for service encounters. Advanced IT deployment is critical in the design and adaptation of services especially in turbulent and changing competitive environments.

Arguably, the most demanding part of SSME is the “service science”. It attempts to encompass findings from a number of disciplines and provide a workable framework for scientific study of services. Contemporary service studies exhibit diverging lines of inquiry. Divergent trends and expanding number of reported results contribute to the fragmentation of the service research. The service science should provide an enveloping perspective on the study of services and contribute to convergence of different streams. This ambitious endeavour requires reaching across several disciplines. Emergence of service science as an independent scientific discipline

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<sup>1</sup> This may be considered an oversimplification of the recent evolution of SSME not accounting for all the relevant actors, but reflects the main course through which the SSME idea has developed.

requires consolidation of theoretical, practical and research frameworks that are unique to services. However, the appearance of research journals and conferences together with the increasing activity of groups especially devoted to service sciences offer a promising perspective.

The International Journal of Service Science, Management, Engineering, and Technology (IJSSMET) aims at reporting and advancing the service-related studies in both theoretical and practical domains. It shall serve as a vehicle for the development of service science, management and engineering (SSME) as a broad, multi-disciplinary research area including disciplines such as computer science, software engineering, operations research, management sciences, marketing, and psychology, to mention a few.

The papers comprising the inaugural issue have been authored by respected researchers and professionals providing complementary views on several aspects of Service Science. In what follows we provide a short overview of the contents.

The paper by Géczy, Izumi and Hasida, titled 'Service Science, Quo Vadis?' offers an encompassing perspective on evolving service science. It starts with arguments demanding rigorous scientific inquiry of services and follows with historical perspective highlighting the development. Expanding diversity of services, coupled with social and economic trends, are among the main reasons attributed to slow progress in exploration of services. The authors provide an organized exposition of approaches to service studies. The approaches are elegantly categorized into four groups: excluding approaches, segmenting approaches, commonality-based approaches, and symbiotic approaches. Excluding and segmenting approaches are primarily macro-level approaches. They supply macro-level perspective and insights pertinent for effective policy-making on national and international stages. Commonality-based and symbiotic approaches allow micro-level elucidation of services. They are more detail-oriented and suitable for studying individual services together with service business models and processes. Géczy et al. advocate the necessity of further multidisciplinary effort in shaping of service science. Synthesis of partial knowledge from individual disciplines is vital for future advances.

The second article of the special issue continues the theme involving service oriented systems, with a focus on "Model-Driven Engineering of Service-Oriented Systems". Dragan Gašević and Marek Hatala are the contributors. The authors present a research agenda that looks at the use of a novel software engineering discipline, model-driven engineering. By switching the focus from the low-level technical details to high-level problem-specific details, model-driven engineering offers an approach to addressing the emerging challenges in the development of service-oriented systems. They discuss the approach to the development of service-oriented systems based on business process modeling that integrate business vocabularies and rules in different stages of the development lifecycle.

The authors of the third article of this special issue, Stephan Aier and Robert Winter, contribute new ideas and findings on the importance that integration services promise to constitute a suitable "middle layer". The article, "Fundamental Patterns for Enterprise Integration Services," is primarily a work of design science research. The authors identified integration services as integration tasks that are associated with the base patterns. Such

integration services are clustered into enterprise integration patterns which serve as fragments for composing a context and project type specific enterprise integration project method.

The fourth article, titled “Information Stewardship in Cloud Computing,” by David Pym and Martin Sadler, defines a mathematical model-based framework for the analysis and management of information stewardship that makes explicit both the expectations and responsibilities of cloud stakeholders and the design assumptions of systems. Such a framework supports integrated economic, technology, and behavioral analyses, so providing a basis for a better understanding of the interplay between preferences, policies, system design, regulations, and Service Level Agreements.

The final article of the special issue provides a research agenda and an education plan that presents a science-based approach to the effective, scalable, secure, and knowledge-driven design and development of servitized enterprises. It is entitled “Servitized Enterprises for Distributed Collaborative Commerce,” and written by Haluk Demirkan and James C. Spohrer. The author intends to build on the core foundation of an integrated service culture characterized by a cross-disciplinary attitude that fulfilling customers’ needs is the primary objective. A secondary attitude within that culture is an awareness of the complexities associated with what we refer to as *service tradeoff decision-making*, requiring a careful balance of value, risk, cost, and quality of service.

We would like to extend our thanks to IGI Global for providing a publishing base for this new journal, as well as to the academics and practitioners for joining this endeavour as members of our scientific board. The IJSSMET journal has also started collaboration with several service science-related events.