Special Issue: 
Services Engineering

Editorial Preface
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Services engineering covers how to use engineering principles to establish reliable, distributed, and autonomous services based on Web services and Service-Oriented Architecture (SOA). This issue of the International Journal of Web Services research (JWSR) highlights the theme of a special issue “Services Engineering.” Guest Editors S.C. Cheung and Jun Han organized four articles in this special issue focusing primarily on various approaches on services engineering.

The fifth article, Pricing Utility Computing Services, by Mark Denne, examines several pricing models for utility computing services.

Guest Editorial Preface
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This issue of the International Journal of Web Services Research (JWSR) collects four articles addressing interesting key problems in services engineering, which concerns the use of sound engineering principles to establish reliable, distributed and autonomous services collaborating using standard network protocols within and across organizational boundaries.

SERVICES ENGINEERING
Recent advances in network technologies and infrastructure result in ever increasing demands for ubiquitous access to distributed services over the Internet. New challenges arise in the study of services engineering, an emerging research area devoted to the use of sound engineering principles to establish reliable, distributed and autonomous services collaborating using standard network protocols within and across organizational boundaries. Services engineering is an important area of the services computing discipline, as promoted by the IEEE Computer Society. The first international workshop on services engineering was held in October, 2005, in
Melbourne, Australia in conjunction with the Fifth International Conference on Quality Software. This special issue is a post event of the workshop reporting the state-of-the-art research results in services engineering.

**ABOUT THIS ISSUE**

This issue of the *International Journal of Web Services Research (JWSR)* collected four articles on services engineering that spans service portfolio measurement, methodologies for QoS-based Web services design, online testing of service-oriented software applications, and architecture-driven service discovery for service-centric systems.

In the first article, Brocke reports new findings on the evaluation of economic aspects of service-oriented business processes. The findings give interesting insights into new management tasks arisen in the adoption of service-oriented computing and offer a new perspective to the measurement of business processes. A set of general principles of a measurement system are proposed and structured in a comprehensive framework. Applicability of the proposed measurement system is demonstrated via a case study in the financial industry.

In the second article, Comerio et al., address the complexity problems of specifying the requirements of Web services. A methodology is presented to help designers in expressing service requirements in terms of design artifacts. The methodology suggests an interesting way to exploit the knowledge of service ontology that describes services, their qualities and the context of use. The ontology can also be used to check the consistency of the service constraints defined by providers and customers.

In the third article, Chan et al., address the online testing problem of service-oriented applications. The fact that services supporting the same interface could behave differently makes test oracle difficult to define. The problem can be alleviated by exploiting the environments of the service under test. An approach is proposed to construct follow-up test cases for online testing based on the successful test cases selected in offline testing. The effectiveness of the approach is evaluated by an empirical experiment.

In the fourth article, Kozlenkov et al., address the important service discovery problem for service-centric systems. Assuming an iterative software design process, the article proposes an interesting framework supporting architecture-driven discovery of services that fulfill the functionalities and system constraints specified in system design models. The framework, supported by a prototype tool, comprises a query extractor and a query execution engine. The framework was evaluated by a set of experiments.

Liang-Jie Zhang (zhanglj@us.ibm.com), PhD, is a chief architect of Industrial Standards of IBM Software, the founding chair of the Services Computing Professional Interest Community (PIC), and a research staff member at the IBM T.J. Watson Research Center. He is part of the business informatics research team with a focus on SOA and Web services for industry solutions and business performance management services. He has filed more than 30 patent applications in the areas of e-commerce, Web services, rich media, data management, and information appliances, and he has published more than 80 technical papers in journals, book chapters and conference proceedings. Dr. Zhang is the chair of the IEEE Computer Society’s Technical Committee on Services Computing and the editor-in-chief of the International Journal of Web Services Research (JWSR). In 2005, he served as the general co-chair of the IEEE International Conference on Web Services (ICWS 2005) and the general co-chair of the IEEE Conference on Services Computing (SCC 2005). Liang-Jie received a BS in electrical engineering at Xidian University in 1990, an MS in electrical engineering at Xi’an Jiaotong University in 1992, and a PhD in computer engineering at Tsinghua University in 1996.
Dr. S.C. Cheung is currently an associate professor of the Department of Computer Science and Engineering, The Hong Kong University of Science and Technology. Cheung is an associate editor of the IEEE Transactions on Software Engineering. He serves actively on the program and organizing committees of major international conferences on software engineering, distributed systems and web technologies, such as ICSE, FSE, ISSTA, ASE, ER, COMPSAC, APSEC, QSIC, EDOC, SCC and CEC. His research interests include software engineering, services computing, ubiquitous computing, and embedded software engineering. His work has been reported by over 100 publications at major international journals and conferences on software engineering, which includes TOSEM, TSE, ICSE, FSE, ESEC, ASE and DSS. He is the associate director of CyberSpace Center at the Hong Kong University of Science and Technology. He is a chartered fellow of the British Computer Society and a senior member of the IEEE. He co-founded the first International Workshop on Services Engineering in 2005 and was the tutorial chair of ICSE 2006.

Dr. Jun Han is professor of software engineering and deputy dean (research) in the Faculty of Information and Communication Technologies at Swinburne University of Technology, Melbourne, Australia. His current research interests include component-based software, service-oriented systems, adaptive software architecture, software security engineering, software performance engineering, systems interoperability, and software architecture design. He has edited five books and published over 100 articles in international journals, conferences and books in the broad area of software systems engineering. Han is a member of the steering committee for the Asia-Pacific Software Engineering Conference, has been a program co-chair for the 2006 and 2007 Australian Software Engineering Conferences, and was a co-organizer of the 2006 International Workshop on Service Oriented Software Engineering at ICSE. He is co-founder of the International Workshop series on Services Engineering, and founder of the Australasian Workshop series on Software and System Architectures. He has also served on the program committees of numerous international conferences.

IGI regrets that the JWSR 3(4) article “Metadata, Ontologies, and Information Models for Grid PSE Toolkits Based on Web Services,” listed the authors names and affiliations incorrectly. The correct names and affiliations are: Carmela Comito, University of Calabria, Italy, Carlo Mastroianni, ICAR-CNR, Italy and Domenico Talia, University of Calabria, Italy.