

TSC Cloud: Community-Driven Innovation Platform

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The *IEEE Transactions on Services Computing (TSC)* is a quarterly publication that provides an international forum for community members to exchange research results and explore new directions in the field of services computing. Bridging the divide between business operations and IT infrastructures, *TSC* sparks the creation of new service-oriented solutions and the enhancement of existing services and solutions using services computing technologies. By establishing itself both as a resource and as a springboard for researchers and practitioners in services computing, *TSC* further enhances IEEE's reputation as a leader at the forefront of emerging technologies. *TSC* is evolving as a platform for fostering innovations in the services science and technology community. As an enabling technology in the field of services computing, cloud computing is being used as a scalable service delivery platform to enable resource sharing, which covers IT infrastructure sharing, software application sharing, and business process sharing. In this editorial preface, I would like to share with you *TSC* Cloud, which is envisioned as a strategic direction of *TSC* to support knowledge sharing and encourage community members to innovate based on voluntary services and ecosystem enablement.

1 ORCHESTRATION OF A KNOWLEDGE SHARING ECOSYSTEM

In the context of *TSC*, the first phase of knowledge sharing is preproduction, which includes paper preparation, review, and revision. In this phase, some ideas introduced in the call for papers of special issues and new topics are triggering points for potential authors to create further innovations. From a scope perspective, *TSC* covers the whole innovation lifecycle of services computing. *TSC* takes an integrative view and covers foundational and practical research innovations in the field, while other journals focus on the details of specific aspects of services computing. In the call for papers, we clearly articulate that *TSC* continues to emphasize the algorithmic, mathematical, statistical, and computational methods that are central to services computing. The practical aspects include service-oriented architecture and cloud computing, Web services, business process integration, solution performance management, services operation and management. The comprehensive review process ensures that *TSC* only publishes peer-reviewed research papers about science and technologies of transforming or modernizing services industries based on the latest information and computing technologies.

The second phase of knowledge sharing is paper production, which involves authors providing production materials to the publisher and going through typesetting and proofreading. This phase involves authors, production staff, editors, and outsourcing producers to collaborate to make sure the quality of the production of accepted papers conforms to IEEE publication standards. At the same time, *TSC* uses a cost-effective publishing model that relies on outsourcing, volunteers, and staff for rapid posting to digital libraries.

The third phase of knowledge sharing is postproduction. Because of *TSC*'s integrative focus, *TSC* serves as a focal point for a community of researchers and practitioners who create and implement business solutions through technology. In the future, we hope to provide a number of exciting resources for this community to more actively engage with each other on the Internet.

In the ecosystem of knowledge sharing, *TSC* will continue to streamline the processes through the latest software systems and applications, continued presence at key conferences (e.g., the IEEE International Conference on Web Services, the IEEE International Conference on Services Computing, and the Congress on Services), and through community leadership activities to attract more high-quality submissions. Additionally, *TSC* will participate in the education of new generations of researchers, engineers, and business leaders, using its online presence and contents to facilitate interactions between students and established professionals. *TSC* will use this momentum to gather new papers from diverse sources, ranging from researchers in academia to industry leaders who implement services computing on a large scale as well as strengthen communications among community members.

2 VIRTUALIZATION OF VOLUNTEER SERVICES

Effectively leveraging the skills and knowledge of community members is the most important virtualization strategy of *TSC* Cloud. The organization values of *TSC* Cloud include a commitment to innovation, community, education, and excellence. *TSC* Cloud's knowledge sharing creates a living "community laboratory" and bring together researchers, engineers, and business leaders with diverse interests in services computing. *TSC* facilitates and encourages this

community laboratory, both as a publication and through leadership roles taken by the editor-in-chief, associate editors, reviewers, and other volunteers of *TSC*. With an editorial board of preeminent scientists from diverse countries, *TSC* establishes itself as a go-to journal for information about cutting-edge research in services computing. *TSC* editors and active community members perform outreach by leading seminars and sponsoring courses, presentations, and meetings, using technology to enhance the effectiveness of this outreach. Through active partnerships with the technical committees within the IEEE Computer Society, *TSC* will solicit high profile papers and gain a reputation for scientific excellence and publishing integrity. This kind of virtualization strategy will be used to foster collaborations among members on an international scale.

3 ABOUT THIS ISSUE

After the introduction of the *TSC* Cloud strategy, I would like to introduce the following six research papers in the first issue of *TSC* in 2009.

In the body of knowledge areas of solution-level quality of service (M.12.1) and QoS management modeling (M.12.3), the first paper is entitled “A QoS Control Mechanism to Provide Service Differentiation and Overload Protection to Internet Scalable Servers” by Daniel F. García, Javier García, Joaquín Entrialgo, Manuel García, Pablo Valledor, Rodrigo García, and Antonio M. Campos. This paper presents the analysis and definition of the main requirements of building Internet scalable servers. In order to fulfill requirements, a control mechanism is proposed to leverage the differentiation between various kinds of service consumers and avoid overload.

The second paper’s title is “A Distributed System for Consuming Web Services and Caching Their Responses in MANETs” by Hassan Artail and Salem Saab. In the knowledge area of services invocation (M.4.1), the authors present a distributed system to cache proxies of the method signature of Web services invocation in the MANET environments. This paper also analyzes the performance of the system from analytical and experimental perspectives. Its implementation demonstrates the advantage of cost savings.

In the body of knowledge areas of multidimensional services modeling (M.3.1.c) and service value chain collaboration (M.6.2), the third paper in this issue addresses adaptive services composition and provisioning. The paper’s title is “Configurable Composition and Adaptive Provisioning of Web Services” by Quan Z. Sheng, Boualem Benatallah, Zakaria Maamar, and Anne H.H. Ngu. This paper provides a formalization approach and some utilities for adaptive service composition and provisioning.

The fourth paper analyzes the existing models of business services and software-based services in the areas of methodologies for enterprise modeling (M.9.1) and service-oriented business consulting (M.10.1). The paper’s title is “Identification and Analysis of Business and Software Services—A Consolidated Approach” by Thomas Kohlborn, Axel Korthaus, Taizan Chan, and Michael Rosemann. Based on the analysis of some existing approaches for SOA-based solution design and services, the authors present an integrated approach and methodology to analyze business and software service in a systematic manner.

The fifth paper is entitled “Service Mining on the Web” by George Zheng and Athman Bouguettaya. In the body of knowledge areas of Web service discovery (M.3.3) and bottom-up process management (M.7.1.b), this paper proposes a Web service mining framework that automatically handles unexpected and interesting service compositions using a bottom-up analysis approach. The authors also present several mining techniques to support the discovery scenario in the context of service compositions.

The sixth paper is in the knowledge areas of service-oriented business process management (M.7.1) and solution reference architectures (M.4.4). The paper’s title is “A Reference Architecture for Scientific Workflow Management Systems and the VIEW SOA Solution” by Cui Lin, Shiyong Lu, Xubo Fei, Artem Chebotko, Darshan Pai, Zhaoqiang Lai, Farshad Fotouhi, and Jing Hua. Based on a survey of the literature and identification of key requirements in the field, this paper presents a reference architecture for a scientific workflow management system. In the context of a visual scientific workflow management system, the authors further propose a service-oriented reference architecture and its example realization.

4 CONCLUSION

After the successful launch of *TSC* last year, I am very confident that we can manage all unexpected issues with the commitment of a strong editorial board, the Computer Society (CS) leadership team, and CS staff. *TSC* will play a leadership role in promoting the services computing discipline to become one of the most significant disciplines for services innovations in the new century. By establishing it as a respected source of information on foundational research and trends in services computing, *TSC* will become the go-to journal for researchers and practitioners in this field.

I hope you support the strategic directions of *TSC* and enjoy this issue. Once again, I look forward to your continuous contributions as an author, reviewer, reader, or volunteer. In the virtualization aspect of *TSC* Cloud, community members as a service are the key to maximizing the value of community-driven innovation. By providing a model for community-driven innovation, *TSC* will create new standards for excellence in the professional community of services computing.

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