Editorial: Internetware in Motion

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The Internet provides a global open infrastructure for exchanging and sharing of various resource all over the world. The rapid development and wide application of the Internet makes it a new mainstream platform to use, develop, deploy and execute software systems and applications. With the vision of “Internet as a computer”, many technical initiatives such as pervasive computing, grid computing, service computing and cloud computing emerges on this open and dynamic environment. In order to support the various new application styles and accommodate the fundamental change of the underlying infrastructure, many specific software technologies such as service-oriented architecture are proposed for current practices. While these technologies are useful and widely accepted, they have not formed a systematic solution as matured as the object-oriented technology, as a uniformed software methodology and technology system is yet to be developed.

The Fourth Asia-Pacific Symposium on Internetware (Internetware 2012) provided an interactive forum where researchers and professionals from multiple disciplines and domains meet and exchange ideas to explore and address the challenges brought by Internetware. The symposium was held in Qingdao, China, October 30-31, 2012. This special issue contains extended versions of 4 invited papers selected from 8 regular papers accepted by Internetware 2012.

In “Development of Situation-Aware Applications in Services and Cloud Computing Environments”, Stephen S. Yan and Dazhi Huang reviewed the concepts and characteristics of SCC and situation awareness (SAW), and the challenges and current state of the art in developing SA applications in SCC environments, and then presented their research work on Adaptable Situation-aware Secure Service-based (AS3) systems and Adaptive Service-Based Systems (ASBS) with QoS Monitoring and Adaptation (M/A).

In “Software Evolution for Moving into and Moving within Internetware Paradigm”, Hongji Yang and Shang Zheng claimed that evolving software into Internetware paradigm can be viewed mainly as changing the qualities of existing software and

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Received 2013-02-05.
evolving software within Internetware paradigm can be viewed mainly as changing functions. They also proposed a framework which is based on a three-dimensional structure, namely, system functions, system qualities, and system models.

In “Scalable SaaS Indexing Algorithms with Automated Redundancy and Recovery Management”, Wei-Tek Tsai, Guanqiu Qi, and Zhiqin Zhu proposed a scalable index management algorithm based on B+ tree but with automated redundancy and recovery management as the tree maintains two copies of data. The redundancy and recovery management is done at the SaaS level as data are duplicated with tenant information rather than at the PaaS level where data are duplicated in chunks. Using this approach, an SaaS system can scale out or in based on the dynamic workload.

In “Detecting Faults in Context-aware Adaptation”, Chang Xu, S.C. Cheung, Xiaoxing Ma, Chun Cao, and Jian Lu proposed a dynamic adaptation model (AM) approach which offers increased expressive power to model complex environmental contexts and adaptation rules, and guarantees the soundness in its fault detection. In addition, AM deploys an incremental rule evaluation (IRE) technique to cater for context-aware applications, such that it can efficiently handle environmental changes in its fault detection.

We would like to thank all the reviewers of Internetware 2012 for their valuable comments to improve the quality of the papers. We would also thanks the editor-in-chief of International Journal of Software Informatics, Professor Ruqian Lu, for hosting Internetware 2012 best papers in this special issue.

Guest Editors:
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