Editorial Preface

Web Services in Data, Control, and Applications

Jia Zhang, Northern Illinois University, USA
Liang-Jie Zhang, IBM T.J. Watson Research Center, USA

This issue of the International Journal of Web Services Research (JWSR) collects five papers on the topics of Web services information confidentiality, transport protocol enhancements, dynamic service composition and configuration, services-oriented data access, and services-based application design and development.

Information flow control is a method of enforcing confidentiality by using labels and data structures for specifying security classifications. It promises potential for securing Web services by preventing information leakage and declassification. Zahir Tari, Peter Bertok, and Dusan Simic present a model of information flow control using semi-discretionary label structures. A dynamic label checking approach is tailored for information flow control specific in Web services. Their model extends the decentralized label model to support collective classification changes using nomination method. A rule system is also proposed to preserve inter owner trust in assisting the establishment of delicate object and label modification rules.

Tony Chao Shan and Winnie Wei Hua share a case study of real world application of services computing, illustrating how a service-oriented solution framework is applicable to Internet banking. An approach is developed to facilitate migrating from traditional n-tier architecture to a service-oriented computing paradigm. A hybrid methodology is designed to leverage the benefits of both top-down and bottom-up approaches. Experiences and lessons learned from the application are reported.

Christian Werner, Carsten Buschmann, Tobias Jäcker, and Stefan Fischer tackle the problem of Web services latencies and protocol overhead. They study the overhead of various known SOAP-compatible transport protocols by conducting detailed latency analyses. Then they propose a novel transport binding called PURE, which is an UDP-based transport protocol. It combines the advantages of SOAP-over-UDP with the ability to transport SOAP messages up to 4 GBytes. Preliminary experiments show that PURE significantly reduces the protocol overhead while featuring low latency.

Gang Li, Yanbo Han, Zhuofeng Zhao, Jing Wang, and Roland M. Wagner propose an adaptable service connector model associated with corresponding description language and tools. The model formalizes the presentation of service connection relationships so that service interactions can be reconfigurable and services can be dynamically chained to form a new composition on the fly. A real-life case study and evaluation are reported.

The last paper is an invited paper from Michael Carey’s keynote address at the 2005 IEEE International Conference on Web Services (ICWS). In the paper, the authors address this question: “In the brave new world of Web services and Service-Oriented Architectures (SOA), how does data fit in?” The authors propose an
approach in which enterprise data access is handled by the collection of interrelated data services. Based upon a foundation of XML standards, the approach provides a uniform and declarative framework for integrating enterprise data assets drawn from disparate underlying sources, including both queryable and non-queryable data sources as well as data encapsulated in Web services.