GUEST EDITORIAL by Iman Poernomo, and Guijun Wang

Dear Readers

This special issue collects the best papers from the Advances in Quality of Service Management (AQuSerM) workshops held at the 10th and 11th IEEE International EDOC Conference (EDOC 2006 and 2007), held during October at Hong Kong and Maryland respectively. The AQuSerM workshop series was established as a forum for presenting advances in QoS-oriented techniques and tools for managing enterprise architectures, encompassing approaches to monitoring, diagnostics, runtime analysis and prediction and adaptation. Model-driven approaches are a special focus of the workshop.

Service Level Management (SLM) is the process of managing the Quality of Service (QoS) demanded by clients and offered by providers. In the past, SLM approaches have focused on service contract definition, monitoring and reporting and have typically been handled by enterprise system management tools such as Microsofts SMS, CAs Unicenter and Empirixs OneSight. However, traditional approaches are inadequate when dealing with complex service-oriented architectures.

Service-oriented architectures (SOAs) are compositional, dynamic and often distributed over the internet. For such architectures, SLM becomes a difficult problem that can no longer be handled by traditional management and monitoring strategies.

The four papers presented here were selected from 16 submissions and address issues that are important to solve the problem of SLM for SOAs: the monitoring of widely distributed components, dynamic adaptation strategies and the necessity for more sophisticated prediction and diagnostic analysis techniques.

The papers might be grouped according to two interrelated themes:

- *Contract-based management*. It is now understood that QoS contracts are an important aid to effective service level management. Services and service consumers are assembled so that their interaction is constrained according to mutally agreed QoS contracts. Sophisticated contract-based approaches can then facilitate automated assembly-time and runtime definition of communication architectures, as described in the Hamann and Zschaler article on scheduling real-time components. Also, in general, they can be used to ensure a predictable and trustworthy management framework, such as that described in the paper by C. Wang, G. Wang, H. Wang, Chen and Santiago.
- *Model-driven management*. The development of standards such as the ISO/IEC QoS Framework, the RM- ODP and the UML Profile for QoS are intended to form the

basis for the design and implementation of QoS management in networked enterprise architectures. A current open question is how best to use these standards within the Model Driven Architecture (MDA) refinement strategy for software development. An interesting approach is the use of MDA to generate platform-specific monitored implementations from QoS requirements specified in a platform-independent metamodel. This approach is investigated by Saudrais, Barais, Plouzeau and Duchien, in the generation of monitoring code for Giotto based systems from abstract specifications on timing behaviour. A different, but potentially complementary approach is proposed by Akzhalova, Altayeva and Duzbayev, where MDA is utilized to generate prediction and self-adaptation strategies for queued systems.

The four papers illustrate that progress is being made to address the key challenges to modern SLM. A further, largely unexplored challenge is to explore how these various solutions might be incorporated to form a unified framework for SLM. With this ultimate goal in mind, it is hoped that this special issue and future related events will serve as a means of furthering discussion in this area.

Best regards

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