

ISF special issue on enterprise services computing: Evolution and challenges

Guest editors' introduction

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Enterprise services computing encapsulates a broad perspective on meeting many of the systems challenges of the *new* enterprise—an environment which demands ubiquitous and just-in-time capabilities (or services) which can be discovered and used transparently among dynamic communities of providers and consumers who may or may not have had previous interaction. It is clearly a vision that has only begun to realize its potential and one which depends upon many of the same underlying concerns addressed in distributed computing including architecting, managing and evolving capabilities. However, the enterprise services computing paradigm is specifically tailored for today's increasingly cross-organizational, cross-jurisdictional and cross-domain enterprise. Moreover, the services computing environment depends upon the enterprise network as the platform. The many recent advances in services computing technologies and infrastructure have opened the enterprise to increasing demands for interoperable ubiquitous access to networked services that can support an endless array of enterprise business processes. Architecting and deploying

services-based systems for such an enterprise necessitate full understanding of the business processes and explicit modelling of the internal and external environment, so that the constraints can be incorporated in the overall architecture of the enterprise. The enterprise constraints are determined by the way internal and cross-organisational business processes need to be structured and adapted to change in response to new requirements. They are also dictated by the policies within the enterprise or those originating from external business, legal or social environments, as these policies effect the structure and behaviour of the enterprise. Finally, the constraints are ultimately determined by the way service-based systems are used, which spawn improvements and define new patterns of use.

This special issue of the ISF, *Enterprise Services Computing: Evolution and Challenges*, contains extended versions of the best papers from the 10th IEEE Enterprise Distributed Object Computing (EDOC 2006) conference, hosted by City University of Hong Kong and the Hong Kong Polytechnic University. We are pleased to serve as guest editors for this special issue celebrating the tenth year of EDOC which, since 1997, has brought together researchers, practitioners and users interested in the full spectrum of enterprise computing. This issue reflects the breadth of enterprise services computing topics. There are seven papers, each of which is concerned with a specific aspect of enterprise distributed computing and discussed in the following paragraphs.

Referring to the first paper “Specifying and Controlling Multi-Channel Web Interfaces for Enterprise Applications,” Book and Gruhn present an approach for specifying the dialog flows in multi-channel Web interfaces and introduce a framework that controls Web interfaces' device-specific dialog flows according to those specifications, while keeping the enterprise application logic

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completely device-independent. The next paper “Reducing Verification Effort in Component-Based Software Engineering through Built-In Testing” by Brenner et al presents an approach to verify the correctness and reliability of component-based systems, and a resource-aware infrastructure that arranges for tests to be executed with a minimal impact on the delivery of system services.

Referring to the third paper “Enterprise Architecture Analysis with Extended Influence Diagrams,” Johnson et al. present the use of a formal language to support the analysis of enterprise-wide information system issues, and discuss the syntax and semantics of the extended influence diagrams in order to represent causal relations between definitions and concepts of the issues. The 4th paper by Kutvonen et al presents “From trading to eCommunity management: Responding to social and contractual challenges” that describes a B2B middleware to address the requirements of a clear mapping between business-level concepts and the automation support for them. This paper also discusses how trust-based decisions are supported and positioned in the B2B middleware. The 5th paper by Palpanas et al presents “Integrated Model-Driven Dashboard Development” that describes a model-driven business performance framework in order to capture the reporting aspect of the business operation. The authors also discuss a case study to demonstrate the framework in a real-world scenario that delivers signif-

icant benefits in terms of both development time and flexibility.

Referring to the sixth paper “QoS-Aware Model Driven Architecture through the UML and CIM,” Poernomo and Chan present an implementation of a Model Driven Architecture (MDA) based framework for the run-time monitoring of QoS properties. This paper also discusses the transformations from the UML2 models to the Distributed Management Taskforce (DMTF) Common Information Model (CIM). Finally Quartel et al present the paper “COSMO: a conceptual framework for service modelling and refinement” on a conceptual framework for service modelling and refinement, called the COSMO (CONceptual Service MODelling) framework. This framework provides concepts to model and reason about services, and to support operations at design and run-time.

The papers in this issue illustrate some of the current research areas pertinent to enterprise services computing which, in many ways, also amplify the many challenges remaining to be addressed. New topics will emerge, and shift to concentration on business, organisational, regulatory and policy levels will occur. As this happens it becomes increasingly important to understand the issues associated with processes, policies and people involved in cross-organisational service-based systems and consequently architect fit-for-purpose, adaptable and evolvable systems.