

Guest Editorial: Special Section on Service-Oriented Distributed Computing Systems

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THIS special section contains the two papers selected from FTDCS 2008, the 12th International Workshop on Future Trends of Distributed Computing Systems, which was held in Kunming, China, October 2008. The papers, selected after a careful review process, address important issues related to software adaptation and evolvability in the context of service systems.

Recent developments in service-oriented computing and grid computing have led to the rapid adoption of Service-Oriented Architecture (SOA) in distributed computing systems. One of the most important advantages of SOA is the capability of enabling a rapid composition of services provided by various providers through networks for distributed applications and integration of the systems. In their paper, Yau et al. propose a performance-model-oriented approach to developing adaptive service-based software systems (SBS). This approach is based on establishing performance models for SBS through controlled experiments, and then developing QOS monitoring and adaptation modules based on the performance models and validating the adaptive SBS design through simulations.

Service evolvability is essential for computer systems to adapt to the dynamic and changing requirements in response to instant or delayed feedback from service environments that are becoming more and more context aware. Current context-aware service-centric models typically lack the capability of continuously exploring human intentions that often drive system evolution. To support a service requirements analysis of real-world applications for services computing, in their paper, Chang et al. propose a situation-theoretic approach to human-intention-driven service evolution in context-aware service environments. In their paper, they introduce a definition of *situation* which is rich in semantics and useful for modeling and reasoning human intentions, and a definition of *intension* which is based on the observations of situations. A computational framework is also proposed to model and infer human intentions. An inference process based on the Hidden Markov Model makes an instant definition of individualized services at runtime possible and significantly shortens the service evolution cycle.

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