“Cloud” is a common metaphor for an Internet accessible platform of shared hardware and software hidden from users for scalable service provision. The technical foundations of Cloud Computing include Service-Oriented Architecture (SOA) and Virtualizations of hardware and software. Under Cloud Computing, IT-related capabilities are provided as services, accessible anywhere anytime without requiring detailed knowledge of the underlying technology. Thus, many mature technologies are used as components in Cloud Computing, but still there are many unresolved and open problems. In particular, how traditional information systems can be (re-)engineered and migrate to new cloud platforms is a key issue of its adoption.

The creation, operation, and evolution of such research and practice raise concerns that range from high-level requirements and policy modeling through to the deployment of specific implementation technologies and paradigms, and involve a wide (and ever growing) range of methods, tools, and technologies. They also cover a broad spectrum of vertical domains, industry segments, and even government sectors.

This special issue also aims at helping in communicating and disseminating relevant recent research across disciplines, cultures, and communities in Cloud Systems and Services. We intentionally seek scientists, engineers, educators, solution developers, policy makers, management, analysts, and others who have insight, vision, and understanding of the big challenges in this emerging field. Prior to this special issue, we hold the International Workshop on Cloud Information System Engineering, co-located with the 11th International Conference on Web Information System Engineering (WISE 2010) in Hong Kong. We thank again the WISE organization committees in supporting our activities. Here, we introduce the four articles in this special issue as follows.

First, Mehta and Ahuja propose a trust management architecture that keeps track of past performance of resource provider and resource consumer considering a wide range of
information such as activeness, ratio of positive and negative feedback. Trust is an important factor in the exchange of services among multiple parties in the Cloud environment, so that every time the participating entity in a transaction has idea of behavior of other entities. Their approach also includes a declining weight to deal with the evaluation history to give chance of regret to previous poorly-evaluated providers upon their improvement.

Boumahdi and Chalal further propose a novel architecture to enrich the Service Oriented Architecture (SOA) with decisional aspects beyond traditional business and information levels. This is essential for utilizing the Cloud for enterprise computing. They demonstrate the feasibility of their approach with an inventory management application.

Next, Torres and Liu propose a performance-counter approach to adaptive virtual machine (VM) management in the Cloud. They suggest elevating the capability of the hypervisor to monitor and manage co-running VMs by capturing their dynamic behavior at runtime and adaptively schedule and migrate VMs across cores to minimize contention on system resources hence maximize the system throughput. This approach does not require any changes or adjustments to the VMs themselves, the applications running inside them, or existing hardware structures. Their experimental results show this approach has a great potential to improve the overall system throughput in the Cloud environment.

Last but not the least, Chana and Kaur present a survey on resources scheduling techniques in utility computing, focusing on extended Quality-of-Service (QoS) issues, including also load balancing and energy efficiency support. Proficient on-demand resource allocations and efficient scheduling helps in achieving optimal resource utilization and hence enhances the performance of systems and services in the current cloud computing arena.

The articles in this issue illustrate some of the current research areas pertinent to Cloud Systems and Services; while, in many ways, also amplifying the many challenges, which remain to be addressed. It is expected that new topics will emerge while existing research will shift concentration into these areas in the coming years, which are also inline with the journal’s objective towards the goal of achieving service excellence under the current globalized service-oriented economy.

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