PLENARY PANEL DESCRIPTION

Challenges towards the Global Adoption of Cloud Computing

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THE NEW CLOUD COMPUTING PARADIGM

Cloud computing represents a fundamental shift in the delivery of information technology services that has been changing the computing landscape. Indeed, over the past several years, cloud computing has rapidly emerged as a widely accepted computing paradigm. The research and development community has quickly reached consensus on the core concepts such as on-demand computing resources, elastic scaling, elimination of up-front capital and operational expenses, as well as the new pay-per-use business model for computing and other information technology services provided by the cloud.

With the adoption of virtualization, service-oriented architectures, and utility computing, there is also consensus on the enabling technologies necessary to support this new consumption and delivery services model. Additionally, the customers’ demand to meet quality-of-service requirements and service-level agreements, including security, is well understood.

THE GLOBAL ADOPTION CHALLENGES

However, widespread adoption of cloud technologies is still hindered by several major research challenges that the professional community needs to address. These include trust and security, risk management, legal issues, interoperability, autonomy and standards for cloud computing which have been selected as sub-topics for the plenary panel.

One possible way to address the research challenges above is to investigate which application domains require solutions and to apply application-specific methodologies. In this case success could be achieved by targeting large scale application scenarios – including interactive and dynamic ones – which are becoming more and more important with their complex but specific requirements.

Another possible approach for tackling these issues is by investigating high level formalisms with which the user can specify non-functional requirements of cloud applications, followed by designing autonomic tools to deal efficiently with trust and security, interoperability, and risk management.

Thus, the future developments could rely upon two basic pillars:

1) an innovative co-design approach for autonomic computing techniques and tools which will support the user in the development of specific large/extreme scale applications on the cloud;

2) the design of novel software engineering techniques to support the correct, smart and elastic management of non-functional properties in challenging cloud applications.

Further research work could also focus on the integration with and the development of emerging cloud interoperability standards. This involves the adoption of meta-data-based decision-taking support via high flexibility and dynamic properties integrated within the future hybrid clouds.

THIS PANEL

This panel consists of four well-known experts in the field, who will identify several major challenges for the global adoption of cloud computing and future directions for research and development in order to meet these challenges.

At the beginning of the panel session, each of the panelists will present their position statement covering certain important aspects of this subject. Then, we should have time for discussions covering both the presented statements and new ideas in the subject area.