

# ICSE Cloud 09: First International Workshop on Software Engineering Challenges for Cloud Computing

Kamal Bhattacharya<sup>1</sup>, Martin Bichler<sup>2</sup>, Stefan Tai<sup>3</sup>

<sup>1</sup> IBM Research, USA

<sup>2</sup> TU München, Germany

<sup>3</sup> Universität Karlsruhe (TH), Germany

## 1 Introduction

Cloud Computing has emerged as a new paradigm for deploying, managing and offering services through a shared infrastructure. The projected benefits of cloud computing are very compelling both from a cloud consumer as well as a cloud services provider perspective: ease of deployment of services; low capital expenses and constant operational expenses leading to variable pricing schemes and reduced opportunity costs; leveraging the economies of scale for both services providers and users of the cloud. However, the actual realization of these perceived benefits are far from being well-achieved and pose a broad range of interesting questions.

## 2 Objective

The ICSE Cloud 09 workshop is the first international workshop intended to foster a conversation within the software engineering community around the research challenges for cloud computing. The goal is to bring together researchers and practitioners to explore the software engineering challenges that developers face when targeting the cloud as their production environment to offer services. This includes avoiding the pitfalls of heterogeneous programming paradigms, challenges around soaring service management costs, and understanding new business models for services that could optimally leverage cloud economies of scale.

Specifically, the workshops call for papers targeted submissions on topics spanning:

### Programming Models

- Novel software engineering approaches to develop cloud services

- Programming models for large scale shared environments
- Engineering approaches to facilitate compatibility between different clouds, including service deployment across diverse cloud providers
- Engineering migration and evolution of applications in cloud environments

### Service Management

- Virtualization strategies for the cloud, efficient image management & provisioning strategies
- Operational management of systems and images
- Service management (Problem, incident, change management, disaster recovery)
- Performance monitoring and prediction of cloud infrastructures
- Capacity planning and automated resource allocation

### Cloud Services

- Economics of Cloud services, new business models and emerging Cloud Services
- Cloud markets and marketplaces
- Service pricing and contracting
- Social networking services
- Quality of cloud services

### 3 Program Overview

The full-day workshop program featured one invited keynote speaker, a panel, and nine research paper presentations. The topics of the presentations are representative of the current state of research in the area. The accepted papers are:

- Autonomic virtual resource management for service hosting platforms, by Hien Nguyen Van, Frederic Dang Tran and Jean-Marc Menaud
- Virtualized Recomposition: Cloudy or Clear?, by Chris Matthews and Yvonne Coady
- What's Inside the Cloud? An Architectural Map of the Cloud Landscape, by Alexander Lenk, Thomas Sandholm, Markus Klems, Jens Nimis, and Stefan Tai
- Performance Model Driven QoS Guarantees and Optimization in Clouds, by Zhanwen (Jim) Li, John Chinneck, Murray Woodside, Marin Litoiu and Gabriel Iszlai
- Engineering the Cloud from Software Modules, by Jan Rellermeyer, Michael Duller and Gustavo Alonso
- Software Deployment in a Dynamic Cloud: From Device to Service Orientation in a Hospital Environment, by Sander van der Burg, Eelco Dolstra, Merijn de Jonge and Eelco Visser
- Network-aware migration control and scheduling of differentiated virtual machine workloads, by Alexander Stage and Thomas Setzer
- Taking Account of Privacy when Designing Cloud Computing Services, by Siani Pearson
- Experiencing with the Cloud over gLite, by Carmelo Ragusa, Francesco Longo and Antonio Puliafito

### 4 Program Committee Members

The workshop program committee included a number of experts from academia and industry.

- Gustavo Alonso (ETH Zurich)
- Claudio Bartolini (HP Labs)
- Kamal Bhattacharya (IBM Research)
- Martin Bichler (TU München)
- Yiling Chen (Harvard)
- Schahram Dustdar (TU Wien)
- Wolfgang Emmerich (UC London)
- Joseph Hellerstein (Google)
- Frank Leymann (Stuttgart University)
- Anna Li (Microsoft)
- Heiko Ludwig (IBM Research)
- Jens Nimis (FZI Karlsruhe)
- Thomas Sandholm (HP Labs)
- Thomas Setzer (TU München)
- Stefan Tai (Karlsruhe University)
- Wolfgang Theilmann (SAP)
- Maja Vukovic (IBM Research)
- Rich Wolski (UC Santa Barbara)

The organizers would like to thank all speakers and papers authors, the panelists, the participants, and the international program committee for their help in making the workshop a success. We are grateful to IBM for their financial support and to the ICSE conference organizers for supporting ICSE Cloud 09.