

Service Science: Research and Innovations in the Service Economy

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 Springer

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Preface

This book is essentially a collection of the best papers of the International Conference on Cloud Computing and Services Science (CLOSER), which was held in Noordwijkerhout, The Netherlands on May 7–9, 2011. The conference addressed technology trends in the domain of cloud computing in relation to a broad scientific understanding of modern services emerging from services science, and stimulated dissemination of recent research results among professionals and scholars.

Emerging enterprise technologies are profoundly changing the way we think about IT—from economics and efficiency to process and usage models. Many organizations see “externalised” IT systems and services as a potential cost-savings advantage by moving internally hosted IT services to external providers. Other organisations view the “external” IT as potential disaster recovery systems or as on-demand capacity to boost business continuity and customer service levels. A closer look is necessary to discern what these emerging enterprise technologies are and how they can catalyse creativity and produce a competitive advantage. There is a new wave of interest in “Externalization of IT”, including anything as a service—such as Software as a Service, Infrastructure as a Service, Platform as a Service, On Demand delivery, Outsourcing, etc. This emerging facilitation and way of using services through IT is what we refer to as cloud computing.

In the last few years, cloud computing has expanded steadily both horizontally—across industries, and vertically—in organisations’ information technology stack for raw computing and storage, databases and system’s utilities, e-collaborative tools and enterprise applications. Only few years ago searching the terms “cloud computing,” “cloud services,” “cloud models” in digital libraries would return only limited hits, while now IEEE/Computer Society digital library displays 408,330 hits, ACM digital library shows over 1,700,000 hits, and Google over 84 million hits. Certainly cloud computing is a phenomenon grasping businesses and professional communities’ attentiveness in various important dimensions. Cloud computing development likewise creates exciting challenges and opportunities for scholars, developers, and IT experts. It is a thrilling journey driven by many agendas—cost cutting, designing, developing and delivering dynamic mobile and interactive computational services, utilising and leveraging integrated IT infrastructures and

systems. The immense economic demands in the last several years, in conjunction with the immediate reduction of upfront capital and operational costs when cloud-based services are employed, increase the speed and the scale of cloud computing creations and adoptions.

While information and communication technology (ICT) developments have enabled the shift from manufacturing to services industry, this did not coincide with the emerging of an academic discipline that provided training and conducted research into the management and engineering of services from an integrated perspective. Only several years ago the need for such a discipline was identified, and was Services Science established as a blending of, among others, computer science, engineering, management and social science. Today the services sector already accounts for up to 80% of the economic activity in many developed countries. Cloud computing being one of the latest important ICT innovations may provide a new boost to the services industry. In any case it has triggered high expectations on market share and market growth with applications for cost-effective, energy-efficient, flexible and scalable computing and storage in virtually every area. Services science can ground this development with a solid understanding of new cloud-based services, leading to knowledge on how they should be designed, deployed and managed, and how they affect economy and society. With this linking, problems of diverse nature can be identified and addressed in early stages, and opportunities can be more effectively exploited.

This all is changing the way information systems are developed and used. Software applications are no longer limited to interacting with internal components through customised integration middleware, but may access services and cloud resources over the Internet. This has both benefits and limitations: (i) it is obviously useful to have a variety of services and a pool of resources available that can make an information system more powerful and scalable; (ii) it is at the same time risky to have only limited control over the implementation of such systems, leading to trust, security and privacy issues. Still, it is our belief that in a longer run, benefits will outweigh limitations, and that cloud computing will become an integral resource of the infrastructure that information systems will need.

The CLOSER 2011 conference received 164 paper submissions from over 40 countries in all continents, and proves a global reach and success of the conference. These papers have been reviewed in a double-blind evaluation process. Each paper was reviewed by at least two experts from the International Program Committee, and most papers received three or even more reviews. The discourse that developed through the engagement of all participants is building logically a new intriguing and challenging field. Finally, 18 full papers were selected as being best balanced in terms of quality, originality, and relevance to the conference subjects. The papers are inspired by scholarly and practical work on the latest advances related to infrastructure, operations, security, services, and management through the global network. At the conference several renowned invited speakers presented outstanding keynote lectures and contributed significantly to the quality of the discussions, collaborations

and overall merit of this gathering. Two of the papers: From Service Innovation to Service Engineering and Object-oriented Service Clouds for Transdisciplinary Computing are based on these impressive keynote lectures.

In netting papers from the conference, researchers and experts from all over the world explore a wide-ranging variety of the emerging cloud computing platforms, models, applications and enabling technologies. Further, in several papers the authors exemplify essential links to services science as service development abstraction, service innovation, and service engineering, acknowledging the service-orientation in most current IT-driven structures in the cloud.

This book comprises a collection of the best papers presented at CLOSER 2011, and we hope we have been successful in selecting features that will be helpful, interesting, and inspirational to students, researchers as well as practitioners.

Ivan Ivanov
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Contents

Part I Invited Speakers

Object-Oriented Service Clouds for Transdisciplinary Computing 3
Michael Sobolewski

From Service Innovation to Service Engineering 33
Wil Janssen, Marc Lankhorst, Timber Haaker, and Henny de Vos

Part II Cloud Computing Fundamentals

Adaptive Overlay Approach on the Inter-Cloud Environment 55
Sumeth Lerthirunwong, Hitoshi Sato, and Satoshi Matsuoka

Securing Virtual and Cloud Environments 73
Mariana Carroll, Paula Kotzé, and Alta van der Merwe

**Achieving Market Liquidity Through Autonomic Cloud
Market Management** 91
Ivan Breskovic, Michael Maurer, Vincent C. Emeakaroha,
Ivona Brandic, and Jörn Altmann

Part III Services Science Foundation for Cloud Computing

**Cost-Performance Driven Resource Configuration
for Database Applications in IaaS Cloud Environments** 111
Shoubin Kong, Yuanping Li, and Ling Feng

Partitioning Workflows for Decentralized Execution 131
Adam Barker

An Integrated Monitoring Infrastructure for Cloud Environments 149
Gregory Katsaros, Georgina Gallizo, Roland Kübert,
Tinghe Wang, J. Oriol Fitó, and Daniel Espling

Service Development Abstraction: A Design Methodology and Development Toolset for Abstractive and Flexible Service-Based Software 165
 Per-Olov Östberg and Erik Elmroth

Cloud Computing Costs and Benefits 185
 Nane Kratzke

Part IV Cloud Computing Platforms and Applications

A Cloud Computing Medical Image Analysis and Collaboration Platform 207
 Louis Parsonson, Soeren Grimm, Atif Bajwa, Laurence Bourn, and Li Bai

Applicability of NoSQL Databases to Mobile Networks: Case Home Location Register 225
 Rasmus Paivarinta and Yrjo Raivio

SLA-Based Planning for Multi-Domain Infrastructure as a Service 243
 Kuan Lu, Thomas Röblitz, Peter Chronz, and Constantinos Kotsokalis

Scheduling On-demand SaaS Services on a Shared Virtual Cluster 259
 Rodrigue Chakode, Jean-François Méhaut, and Blaise-Omer Yenke

Assessing Cloud Infrastructure Costs in Communications-Intensive Applications 277
 Oleksiy Mazhelis, Pasi Tyrväinen, Kuan Eeik Tan, and Jari Hiltunen

Are Clouds Ready for Geoprocessing? 295
 Hassan A. Karimi and Duangduen Roongpiboonsopit

Part V Cloud Computing Enabling Technology

A Performance Evaluation of Block I/O Paravirtualization and Virtual Machine Images 315
 Django Armstrong and Karim Djemame

Dynamic Resource Allocation for Multi-Tiered, Cluster-Based Web Hosting Environments 333
 M. Al Ghamdi, A.P. Chester, L. He, and S.A. Jarvis

A Method for Experimental Analysis and Modeling of Virtualization Performance Overhead 353
 Nikolaus Huber, Marcel von Quast, Fabian Brosig, Michael Hauck, and Samuel Kounev

The Partition Cost Model for Load Balancing in MapReduce 371
Benjamin Gufler, Nikolaus Augsten, Angelika Reiser,
and Alfons Kemper

Author Index 389

