2013 IEEE World Congress on Services

(SERVICES 2013)

Santa Clara, California, USA
28 June – 3 July 2013
Table of Contents

Message from the General Chairs..............................................................xii
Message from the Workshop Chairs.........................................................xiii
SERVICES 2013 Organizing Committee......................................................xiv
Message from the PWT 2013 Organizers..................................................xvii
PWT 2013 Program Committee.................................................................xviii
IEEE Computer Society Technical Committee on Services
Computing....................................................................................................xix
External Reviewers....................................................................................xx
Keynote Abstracts.......................................................................................xxi
Plenary Panel Abstracts...............................................................................xxiii
Tutorials.......................................................................................................xxxi

SWF—IEEE 2013 International Workshop on Scientific Workflows

SWF Session 1
Storing, Indexing and Querying Large Provenance Data Sets as RDF Graphs in Apache HBase .........................................................1
  Artem Chebotko, John Abraham, Pearl Brazier, Anthony Piazza, Andrey Kashlev, and Shiyong Lu
Towards a Collaborative Simulation Platform for Renewable Energy Systems .........................................................................................9
  Shuai Lu, Yan Liu, and Da Meng
A Dataflow Language for Decentralised Orchestration of Web Service Workflows .........................................................................................13
  Ward Jaradat, Alan Dearle, and Adam Barker

SWF Session 2
A Workflow Framework for Big Data Analytics: Event Recognition in a Building .........................................................................................21
  Changbing Chen, Xia Yang, Bong Zoebir, Sivadon Chaisiri, and Bu-Sung Lee
Bridging VisTrails Scientific Workflow Management System to High Performance Computing .................................................................29
  Jia Zhang, Petr Votava, Tsengdar J. Lee, Owen Chu, Clyde Li, David Liu, Kate Liu, Norman Xin, and Ramakrishna Nemani
FOSEC—IEEE 2013 International Workshop on the Future of Software Engineering for/in the Cloud

Exploring Cloud Computing for Large-Scale Scientific Applications ...........................................................................................................37
Guang Lin, Binh Han, Jian Yin, and Ian Gorton

CEEM: A Practical Methodology for Cloud Services Evaluation ..................................................................................................................44
Zheng Li, Liam O’Brien, and He Zhang

A Framework for Multi-cloud Cooperation with Hardware Reconfiguration Support ..................................................................................52
Khaleel Mershad, Abdul Rahman Kaitoua, Hassan Artail, Mazen A.R. Saghir, and Hazem Hajj

Cloud Based Architecture for Enabling Intuitive Decision Making ............................................................................................................60
Brian Xu, Sathish Alampalayam Kumar, and Manonmani Kumar

SPEAC—IEEE 2013 International Workshop on Security and Privacy Engineering Assurance

SPEAC Session 1

SOBA: A Services-Oriented Browser Architecture with Distributed URL-Filtering Mechanisms for Teenagers ...........................................................................................................................................................................67
Aili Wang, Chao Wang, Xi Li, and Xuehai Zhou

Towards a Forensic-Based Service Oriented Architecture Framework for Auditing of Cloud Logs ...................................................................................................................................................................................................75
Sean Thorpe, Tyrone Grandison, Arnett Campbell, Janet Williams, Khalilah Burrell, and Indrajit Ray

SPEAC Session 2

Workflow Operational Assurance Platform for Security-by-Design Certified Service-Based Coalitions ........................................................................................................................................................................84
Javier Espinar, Antonio Maña, and Hristo Koshutanski

Towards the Certification of Cloud Services ........................................................................................................................................................................92
Stelvio Cimato, Ernesto Damiani, Francesco Zavatarelli, and Renato Menicocci

Bringing Common Criteria Certification to Web Services .................................................................................................................................................................98
Samuel Paul Kaluvuri, Michele Bezzi, and Yves Roudier

SPEAC Session 3

Bridging the GAP between Software Certification and Trusted Computing for Securing Cloud Computing ........................................................................................................................................................................103
Antonio Muñoz and Antonio Maña

Managing End-to-End Security Risks with Fuzzy Logic in Service-Oriented Architectures ...............................................................................111
Youakim Badr and Soumya Banerjee

Building a Compliance Vocabulary to Embed Security Controls in Cloud SLAs .............................................................................................118
Matthew L. Hale and Rose Gamble
PWT—IEEE 2013 International Workshop on Personalized Web Tasking

PWT Session 1
Going Beyond Web Browsing to Web Tasking: Transforming Web Users from Web Operators to Web Supervisors .................................................................126
Joanna W. Ng and Diana H. Lau

Social Ontology and Semantic Actions: Enabling Social Networking Services for Distributed Web Tasking ..................................................................................131
Joanna W. Ng and Diana H. Lau

PWT Session 2
Recommendation-Assisted Personal Web ........................................................................136
Haiming Wang and Kenny Wong

Towards Smarter Task Applications ..................................................................................141
Przemek Lach and Hausi A. Müller

Towards Personalized Web-Tasking: Task Simplification Challenges ................................147
Lorena Castañeda, Hausi A. Müller, and Norha M. Villegas

PWT Session 3
PALTask Chat: A Personalized Automated Context Aware Web Resources Listing Tool .................................................................154
Pratik Jain, Andreas Bergen, Lorena Castañeda, and Hausi A. Müller

Using Rules for Web Service Client Side Testing ................................................................158
Nabil El Ioini, Alberto Sillitti, and Giancarlo Succi

Towards Families of Personalized Mobile Applications ........................................................................166
Eleni Stroulia, Dylan Gibbs, and Blerina Bazelli

PWT Session 4
Personalized Mobile Web Service Discovery ......................................................................170
Khalid Elgazzar, Patrick Martin, and Hossam S. Hassanein

An Intelligent Framework for Auto-filling Web Forms from Different Web Applications .................................................................175
Shaohua Wang, Ying Zou, Bipin Upadhyaya, and Joanna Ng

Towards a Goal Driven Task Personalization Specification Framework ................................180
George Chatzikonstantinou, Michael Athanasopoulos, and Kostas Kontogiannis
SDC—IEEE 2013 International Workshop on Services Discovery and Composition

SDC Session 1

Improving Interoperability of Digital Certificates for Software & Services ................................................................. 185
Marioli Montenegro and Antonio Maña

Parallel Matrix Multiplication Algorithm Based on Vector Linear Combination Using MapReduce ......................................................... 193
Jian-Hua Zheng, Liang-Jie Zhang, Rong Zhu, Ke Ning, and Dong Liu

Adoption of Cloud Computing Services by Public Sector Organisations ........................................................................ 201
Martin Bellamy

SDC Session 2

Service Discovery Using Ontology Encoding Enhanced by Similarity of Information Content ........................................ 209
Jiuyun Xu, Ruru Zhang, Kunming Xing, and Stephan Reiff-Marganiec

HRPaaS: A Handwriting Recognition Platform as a Service Based on Middleware and the HTTP API ........................................... 215
Desheng Li, Lianwen Jin, and Yin Zhang

ORBI: An Internet Service for Self-Employed Professionals ......................................................................................... 221
Stamatia Rizou and George Angouras

SDC Session 3

Enhanced Ant Colony Algorithm for Cost-Aware Data-Intensive Service Provision .............................................................. 227
Lijuan Wang, Jun Shen, and Ghassan Beydoun

The New Cloud on the Horizon—Cloud Brokers ........................................................................................................ 235
Melvin B. Greer Jr.

CSAW—IEEE 2013 International Workshop on Cloud Security Auditing

CSAW Session 1

Cloud Verifier: Verifiable Auditing Service for IaaS Clouds ...................................................................................... 239
Joshua Schiffman, Yuqiong Sun, Hayawardh Vijayakumar, and Trent Jaeger

QoS Auditing for Evaluation of SLA in Cloud-based Distributed Services ........................................................................ 247
Kaliappa Ravindran

Toward a Real-Time Cloud Auditing Paradigm ........................................................................................................ 255
Robert Nix, Murat Kantarcıoğlu, and Sachin Shetty
CSAW Session 2
Auditing and Analysis of Network Traffic in Cloud Environment ................................................................. 260
   Sachin Shetty
Cloud Security Auditing Based on Behavioral Modeling .................................................................................. 268
   Zachary Birnbaum, Bingwei Liu, Andrey Dolgikh, Yu Chen, and Victor Skormin
Control Theoretic Adaptive Monitoring Tools ............................................................................................... 274
   David Reynolds and Mina Guirguis

CSAW Session 3
Data Integrity Evaluation in Cloud Database-as-a-Service ................................................................................ 280
   Puya Ghazizadeh, Ravi Mukkamala, and Stephan Olariu
Auditing CPU Performance in Public Cloud ...................................................................................................... 286
   Qiang Huang, Lin Ye, Xinran Liu, and Xiaojiang Du
Simultaneously Supporting Privacy and Auditing in Cloud Computing Systems ............................................ 290
   Tyrone Grandison, Sean Thorpe, and Leon Stenneth
Auditing Requirements for Implementing the Chinese Wall Model in the Service Cloud ................................ 298
   Sarra M. Alqahtani, Rose Gamble, and Indrakshi Ray


FM-S&C Session 1
Towards Formal Modeling and Verification of Cloud Architectures: A Case Study on Hadoop ...................... 306
   G. Satya Reddy, Yuzhang Feng, Yang Liu, Jin Song Dong, Sun Jun, and Rajaraman Kanagasabai
Research of Intrusion Detection System on Android ......................................................................................... 312
   Fangfang Yuan, Lidong Zhai, Yanan Cao, and Li Guo
A Design and Verification Framework for Service Composition in the Cloud .............................................. 317
   Matthew L. Hale, Michael T. Gamble, and Rose F. Gamble

FM-S&C Session 2
Efficient Formal Verification in Banking Processes ........................................................................................... 325
   Antonella Santone, Valentina Intilangelo, and Domenico Raucci
A User Requirements Oriented Semantic Web Services Composition Framework ........................................... 333
   Sana Baccar, Mohsen Rouached, and Mohamed Abid
An End-to-End QoS Mapping Approach for Cloud Service Selection ........................................................ 341
   Raed Karim, Chen Ding, and Ali Miri
FM-S&C Session 3
Towards Daas 2.0: Enriching Data Models ................................................................. 349
Jonathan Marti, Daniel Gasull, Anna Queralt, and Toni Cortes

CloudPerf—IEEE 2013 International Workshop on Performance Aspects
of Cloud and Service Virtualization

CloudPerf Session 1
Unitizing Performance of IaaS Cloud Deployments .................................................... 356
Philipp Berndt and Johannes Watzl
BIGSIR: A Bipartite Graph Based Service Recommendation Method ........................ 363
Bo Jiang, Xiao-xiao Zhang, Wei-feng Pan, and Bo Hu

CloudPerf Session 2
Analysing Virtual Machine Usage in Cloud Computing ............................................. 370
Yi Han, Jeffrey Chan, and Christopher Leckie
Impacts of Scheduling Algorithms in Services on Collective End-to-End Execution Time
Characteristics of Web Service Workflows .................................................................. 378
Xiang Li, Yushun Fan, Le Xin, Keman Huang, Yihang Luo, and Yi Liu
Introducing a Distributed Cloud Architecture with Efficient Resource Discovery and Optimal
Resource Allocation ...................................................................................................... 386
Praveen Khethavath, Johnson Thomas, Eric Chan-Tin, and Hong Liu

CHIS—IEEE 2013 International Workshop on Computational and Hybrid
Intelligence for Service Computing

CHIS Session 1
Adaptive Web Services Composition Using Q-Learning in Cloud ............................... 393
Lei Yu, Wang Zhili, Meng Lingli, Wang Jiang, Luoming Meng, and Qiu Xue-song
An Energy-Efficient Online Parallel Scheduling Algorithm for Cloud Data Centers ........................................... 397
Wenhong Tian, Ruini Xue, Jun Cao, Qin Xiong, and Yunjun Hu
A Hierarchical Cloud Pricing System ......................................................................... 403
Zhijie Li and Ming Li

CP—IEEE 2013 International Workshop on Cloud Provisioning

CP Session 1
Research on Pricing Model of Cloud Storage ............................................................ 412
Ning Li, Liang-Jie Zhang, Ping Xu, Li Wang, Jianhua Zheng, and Yifu Guo
Viral Marketing and Its Application in Enterprise Drive Operation ............................ 420
Li Wang, Liang-Jie Zhang, Ning Li, Dong Liu, Yi-Fu Guo, Jian-Hua Zheng, Bo Hu, and Ning Ke
Towards Real-Time Analytics in the Cloud .................................................................................................................................428
  Amr Osman, Mohamed El-Refaey, and Ayman Elnaggar

CP Session 2

A Game Theory of Cloud Service Deployment ..........................................................................................................................436
  Zexiang Mao, Jingqi Yang, Yanlei Shang, Chuanchang Liu, and Junliang Chen

Is Your Cloud-Hosted Database Truly Elastic? ..........................................................................................................................444
  Sherif Sakr and Anna Liu

SaaS Authentication Middleware for Mobile Consumers of IaaS Cloud .........................................................................................448
  Richard K. Lomotey and Ralph Deters

CloudCup Workshop

CloudAdvisor: A Recommendation-as-a-Service Platform for Cloud Configuration and Pricing .................................................456
  Gueyoung Jung, Tridib Mukherjee, Shruti Kunde, Hyunjoo Kim, Naveen Sharma, and Frank Goetz

Pattern-Based Deployment Service for Next Generation Clouds ..................................................................................................464
  Hongbin Lu, Mark Shtern, Bradley Simmons, Michael Smit, and Marin Litoiu

Enabling an Enhanced Data-as-a-Service Ecosystem ..................................................................................................................472
  Michael Smit, Mark Shtern, Bradley Simmons, and Marin Litoiu

EC2BargainHunter: It’s Easy to Hunt for Cost Savings on Amazon EC2! ......................................................................................480
  Rajaraman Kanagasabai, Le Duy Nguyen, Yuzhang Feng, Anitha Veeramani, Joel Koo Chong En, Chan Chee Keong, Flora S. Tsai, and Artur Andrzejak

RMORM: A framework of Multi-objective Optimization Resource Management in Clouds .........................................................488
  Wenyun Dai, Haopeng Chen, Wenting Wang, and Xi Chen

Author Index ..................................................................................................................................................................................495