2014 International Conference on Future Internet of Things and Cloud

(FiCloud 2014)

Barcelona, Spain
27-29 August 2014
Message from the FiCloud 2014 Program Chairs.................................................................xiv
FiCloud 2014 Organizing Committee.......................................................................................xv
FiCloud 2014 Program Committee..........................................................................................xvi
Message from ICI 2014 Symposium Chairs............................................................................xx
ICI 2014 Committees................................................................................................................xxi
Message from BigR&I 2014 Symposium Chair......................................................................xxii
BigR&I 2014 Committees...........................................................................................................xxiii
Message from MobiApps 2014 Workshop Chairs...................................................................xxiv
MobiApps 2014 Committees.....................................................................................................xxv
Message from AWMA 2014 Symposium Chairs.................................................................xxvi
AWMA 2014 Committees........................................................................................................xxvii
Message from EMSICC 2014 Workshop Chairs...............................................................xxviii
EMSICC 2014 Committees........................................................................................................xxix
Message from PMECT 2014 Symposium Chairs..............................................................xxx
PMECT 2014 Committees.......................................................................................................xxxi
Message from SNAMS 2014 Workshop Chairs.................................................................xxxii
SNAMS 2014 Committees........................................................................................................xxxiii
Keynote Abstracts....................................................................................................................xxxiv

Session 1A: IoT and Cloud Computing

Cielo: An Evolutionary Game Theoretic Framework for Virtual Machine Placement in Clouds .................................................................................................................................1

Yi Ren, Junichi Suzuki, Athanasios Vasilakos, Shingo Omura, and Katsuya Oba

Online Traffic Prediction in the Cloud: A Dynamic Window Approach ...........................................9

Bruno L. Dalmazo, João P. Vilela, and Marilia Curado

Dynamic Media Stream Mobility with TURN .............................................................................15

Álvaro Alonso, Pedro Rodríguez, Joaquín Salvachúa, and Javier Cerviño
On the Integration of Cloud Computing and Internet of Things ......................................................... 23

Alessio Botta, Walter de Donato, Valerio Persico, and Antonio Pescapè

Session 1B: Network Design and Architecture

Call Admission Control in Cloud Radio Access Networks ................................................................. 31

Tshiamo Sigwele, Prashant Pillai, and Yim Fun Hu

RPR over Ethernet ......................................................................................................................... 37

Ammar Hamad and Michel Kadoch

Distortion in Social Networks: Comparison of Various Types of Networks ...................................... 43

Ofir Ben-Assuli and Arie Jacobi

Video Streaming Considerations for Internet of Things ................................................................. 48

Rubem Pereira and E.G. Pereira

Session 2A: Software Architecture and Middleware

An On-Demand WebRTC and IoT Device Tunneling Service for Hospitals .................................. 53

Thomas Sandholm, Boris Magnusson, and Björn A. Johnsson

dOTM: A Mechanism for Distributing Centralized Multi-party Video Conferencing in the Cloud ...................................................................................................................... 61

Pedro Rodríguez, Álvaro Alonso, Joaquín Salvachúa, and Javier Cerviño

Media Abstraction Framework for the Pervasive Middleware PalCom ........................................ 68

Amr Ergawy and Boris Magnusson

DoLen: User-Side Multi-cloud Application Monitoring .................................................................... 76

Do Le Quoc, Lenar Yazdanov, and Christof Fetzer

Session 2B: Mobile Cloud and Network Services

Mobile Cloud Contextual Awareness with the Cloud Personal Assistant ........................................ 82

Michael Joseph O’Sullivan and Dan Grigoras

TCP Hole Punching Approach to Address Devices in Mobile Networks .................................... 90

Satish Narayana Srirama and Mohan Liyanage

Wireless Sensor Networks and Efficient Localisation ................................................................. 98

Pinar Kirici, Hakima Chaouchi, and Anis Laouiti

Joint Caching and Routing for Greening Computer Networks with Renewable Energy Sources .............................................................................................................................. 101

Abdalllah Khreishah, Issa Khalil, Ammar Gharabeh, Haythem Bany Salameh, and Rafe Alasem
Session 3A: IoT and Cloud Data Management

A Mobile Crowdsensing Ecosystem Enabled by a Cloud-Based Publish/Subscribe Middleware ................................................................. 107

Aleksandar Antonic, Kristijan Rožankovic, Martina Marjanovic, Krešimir Pripužić,
and Ivana Podnar Žarko

Comparative Analysis of Adaptive File Replication Algorithms for Cloud Data Storage ........................................................................................................................................................................ 115

Julia Myint and Axel Hunger

Standardized Framework for Integrating Domain-Specific Applications into the IoT .............................................. 124

Neela Shrestha, Sylvain Kubler, and Kary Främling

Cost Based Approach to Block Placement for Distributed File Systems ................................................................. 132

Lakshminarayanan Srinivasan and Vasudeva Varma

Session 3B: Context Awareness in Cloud and IoT

Empowering End-Users to Develop Context-Aware Mobile Applications Using a Web Platform ............................................................................................................................. 139

David Martín, Carlos Lamsfus, Aurkene Alzua-Sorzabal, and Emilio Torres-Manzanera

Ontology Model to Support Multi-tenancy in Software as a Service Environment ................................................................. 146

Taewoo Nam and Keunhyuk Yeom

Scalable Semantic Aware Context Storage .................................................................................................................. 152

Mário Luís Pinto Antunes, Diogo Nuno Pereira Gomes, and Rui Luis Andrade Aguiar

Social Network-Based Framework for Web Services Discovery ............................................................................. 159

Hiba Fallatah, Jamal Bentahar, and Ehsan Khosrowshahi Asl

Session 4A: Security and Privacy

Improving Detection Accuracy in Group Testing-Based Identification of Misbehaving Data Sources ................................................................. 167

Mai Ali, Sherif Khattab, and Reem Bahgat

Towards Continuous Cloud Service Assurance for Critical Infrastructure IT ................................................................. 175

Aleksandar Hudic, Thomas Hecht, Markus Tauber, Andreas Mauthe,
and Santiago Cáceres Elvira

On the Risk Exposure of Smart Home Automation Systems ................................................................. 183

Andreas Jacobsson, Martin Boldt, and Bengt Carlsson

User-Driven Privacy Enforcement for Cloud-Based Services in the Internet of Things ......................................................... 191

Martin Henze, Lars Hermerschmidt, Daniel Kerpen, Roger Häußling, Bernhard Rumpe,
and Klaus Wehrle

E-Commerce Security Issues ................................................................................................................................. 197

Mohamad Ibrahim Ladan
Session 4B: Performance Evaluation and Modelling

Low Cost Quality Aware Multi-tier Application Hosting on the Amazon Cloud .................................................. 202
Waheed Iqbal, Matthew N. Dailey, and David Carrera

On the Impact of Layer-Splitting for Cloud-Based SVC Streaming ....................................................................... 210
Seonghoon Moon, Chanhyuk Jung, Jong-Seok Lee, and Songkuk Kim

Live Migration Impact on Virtual Datacenter Performance: VMware vMotion Based Study ........................................... 216
Mohamed Esam Elsaid and Christoph Meinel

Cloud Technology and Performance Improvement with Intserv over Diffserv for Cloud Computing .................................. 222
Abdullah Sinan Yildirim and Tolga Girici

Session 5A: Networking and Communication Protocols

Kais Mekki, William Derigent, Ahmed Zouinkhi, Eric Rondeau, and Mohamed Naceur Abdelkrim

Cascading Permissions Policy Model for Token-Based Access Control in the Web of Things .............................................. 238
Mohammad Amir, Prashant Pillai, and Yim-Fun Hu

Courteous Priority Access to the Shared Commercial Radio for Public Safety in LTE Heterogeneous Networks ......................... 246
Chafika Tata and Michel Kadoch

Large Scale Environmental Monitoring and Maintaining Sensing Coverage in Sensor Networks ........................................ 253
Fuad Bajaber

Session 5B: Machine to Machine and IoT

Interconnecting Standard M2M Platforms to Delay Tolerant Networks ........................................................................ 258
Asma Elmangoush, Andreea Corici, Marisa Catalan, Ronald Steinke, Thomas Magedanz, and Joaquim Oller

The Moving IoT ...................................................................................................................................................... 264
Julio Aráuz

Enhanced Routing over Sleeping Nodes in 6LoWPAN Network .................................................................................. 272
N. Hari Kumar, P. Karthikeyan, Deeksha B., and Tarun Mohandas

Friendship Based Trust Model to Secure Routing Protocols in Mobile Ad Hoc Networks .............................................. 280
Antesar M. Shabut, Keshav Dahal, and Irfan Awan
Session 6A: IoT and Cloud: Industrial and Business Applications

Provisioning Software-Defined IoT Cloud Systems ................................................................. 288
   Stefan Nastic, Sanjin Sehic, Duc-Hung Le, Hong-Linh Truong, and Schahram Dustdar

Software Defined Networking: Redefining the Future of Internet in IoT and Cloud Era ......................... 296
   Vishwapathi Rao Tadinada

Cloud Computing: Adoption Considerations for Business and Education ............................................. 302
   Adam Smith, Jagdev Bhogal, and Mak Sharma

An Expert Consultant for Cloudifying E-Learning Environments .................................................... 308
   Shehab Gamalel-Din, Reda Salama, and Mashael Al-Sowaiel

Symposia and Workshops

The International Symposium on Intercloud and IoT (ICI)

The Impact of Cyber Security Issues on Businesses and Governments: A Framework
for Implementing a Cyber Security Plan ............................................................................................ 316
   Hajar Iguer, Hicham Medromi, Adil Sayouti, Soukaina Elhasnaoui, and Sophia Faris

Policy Based Security Middleware as a Service ................................................................................. 322
   Mhammed Chraibi, Mehdia Ajana El Khaddar, Hamid Harroud, Abdelilah Maach,
   and Mohammed Elkountbi

Service Composition Framework for Big Data Service ........................................................................ 328
   Taewoo Nam, Kyungsuk Choi, Cheolmin Ok, and Keunhyuk Yeom

A Virtual Channel-Based Framework for the Integration of Wireless Sensor Networks
in the Cloud ........................................................................................................................................ 334
   Javier Barbarán, Manuel Diaz, and Bartolomé Rubio

Virtual Private Network over Wireless Mesh Networks ........................................................................ 340
   Djedjiga Benzid and Michel Kadoch

Device Description Language: Factorizing the Control of Arbitrary Networked
Devices .............................................................................................................................................. 346
   Philip Nye

Stationary Transformation of Video Traffic in LTE Networks .................................................................. 351
   Suliman Albasheir and Michel Kadoch
The International Symposium on Big Data Research and Innovation (BigR&I)

Stratified Multi-ring Distributed Search Model for Big Data ................................................................. 356
   Weiqing Cheng, Geng Yang, Shanshan Zhang, and Shaobai Zhang

Information Security Maintenance Issues for Big Security-Related Data ................................................ 361
   Natalia Miloslavskaya, Mikhail Senatorov, Alexander Tolstoy, and Sergey Zapechnikov

Simulation and Big Data: A Way to Discover Unusual Knowledge in Emergency Departments: Work-in-Progress Paper ................................................................. 367
   Eva Bruballa, Manel Taboada, Eduardo Cabrera, Dolores Rexachs, and Emilio Luque

From Big Data to Big Projects: A Step-by-Step Roadmap ........................................................................ 373
   Hajar Mousannif, Hasna Sabah, Yasmina Douiji, and Younes Oulad Sayad

MRTree: Functional Testing Based on MapReduce's Execution Behaviour .................................................. 379
   Jesús Morán, Claudio de la Riva, and Javier Tuya

A Big Data Financial Information Management Architecture for Global Banking ......................................... 385
   Antoni Munar, Esteban Chiner, and Ignacio Sales

Big Data Issues in Computational Chemistry ............................................................................................. 389
   Violeta Yeguas and Rubén Casado

The International Workshop on Mobile Applications (MobiApps) and The International Symposium on Advanced Web and Mobile Applications (AWMA)

Session 1: Smart Systems

Smart Tablet Monitoring by a Real-Time Head Movement and Eye Gestures Recognition System ................ 393
   Hanene Elleuch, Ali Wali, and Adel M. Alimi

Improving I/O Performance in Smart TVs ................................................................................................ 399
   Cheolhee Lee, Taeho Hwang, and Youjip Won

SlowDroid: Turning a Smartphone into a Mobile Attack Vector ................................................................. 405
   Enrico Cambiaso, Gianluca Papaleo, and Maurizio Aiello

Android Executable Modeling: Beyond Android Programming ..................................................................... 411
   Olivier Le Goaer, Franck Barbier, Eric Cariou, and Samson Pierre

Smart Walker .................................................................................................................................................. 415
   Gabyabou Haidar, Roger Achkar, Richard Maalouf, Batoul Mchike, Houssein Allam, and Abdul Rahim Moussa
Session 2: Mobile Applications and Mobile Web

A Framework for Cross-Platform Mobile Web Applications Using HTML5  .................................................................420
Christos Bouras, Andreas Papazois, and Nikolaos Stasinos

RemindMe: An Enhanced Mobile Location-Based Reminder Application ...............................................................425
Ali Mert Ertugrul and Itir Onal

Comparative Analysis of Freemium Policies and Procedure between Major Mobile Platforms .........................................................431
Muhamad Idaham Umar Ong, Imran Edzereiq Kamarudin, and Mohamed Ariff Ameedeen

Human-Computer Interaction Patterns within the Mobile Nutrition Landscape: A Review of Literature ...........................................437
Stefan Scerri, Lalit Garg, Christian Scerri, and Ramandeep Garg

A Two-Stage Resolution Search-Based Heuristic for the Team Orienteering Problem ......................................................442
Mhand Hifi, Moussa Ibrahim, and Toufik Saadi

The International Workshop on Energy Management for Sustainable Internet-of-Things and Cloud Computing (EMSICC)

Towards an Energy-Efficient Tool for Processing the Big Data .....................................................................................448
Éric Renault and Selma Boumerdassi

Sustainable Quality of Service for Real-Time Jobs in Autonomous Computing Devices ....................................................453
Rola El Osta and Maryline Chetto

A Real-Time Feedback Scheduler for Environmental Energy with Discrete Voltage/Frequency Modes ...........................................458
Akli Abbas, Emmanuel Grolleau, Driss Mehdi, Malik Loudini, and Walid-Khaled Hidouci

Fog Computing and Smart Gateway Based Communication for Cloud of Things ................................................................464
Mohammad Aazam and Eui-Nam Huh

In-Transit Data Analysis and Distribution in a Multi-cloud Environment Using CometCloud .............................................471
Ioan Petri, Javier Diaz-Montes, Mingsong Zou, Omer F. Rana, Tom Beach, Haijiang Li, and Yacine Rezgui

To Build or Not to Build? Addressing the Expansion Strategies of Cloud Providers .............................................................477
Mohammad Wardat, Mahmoud Al-Ayyoub, Yaser Jararweh, and Abdallah A. Khreishah
The Eighth International Symposium on Performance Modeling and Evaluation of Computer and Telecommunication Networks (PMECT)

Dynamic Arrival Process for TCP Using a Novel Time-Dependant Statistical Calculation Approach ................................................................. 483

Zhenyu Chen, Lin Guan, and Peter Bull

Stochastic Modeling and Performance Evaluation of an Event Based System ................................................................................................. 491

Nitin Shukla and Mayank Pandey

Scalar: Systematic Scalability Analysis with the Universal Scalability Law ............................................................................................... 497

Thomas Heyman, Davy Preuveneers, and Wouter Joosen

Scalability Analysis of the OpenAM Access Control System with the Universal Scalability Law ................................................................. 505

Thomas Heyman, Davy Preuveneers, and Wouter Joosen

Accompanying Component Based Systems Dynamic Reconfiguration with Formal Modelling and Analysis ................................................ 513

Hamza Zerguine, Nabila Salmi, and Malika Boukala

Maximum Entropy Formalism of Multi-traffic Censored Priority Queue ................................................................................................. 521

Taimur Karamat and Tehmina Karamat

The First International Workshop on Social Networks Analysis, Management, and Security (SNAMS)

Session 1: Social Networking

Prospects for Detecting Deception on Twitter .......................................................................................................................... 528

Ulrik Franke and Magnus Rosell

Social Recommender System for Predicting the Needs of Students/Instructors: Review and Proposed Framework .................................................. 534

Hadeel Alharbi, Ashoka Jayawardena, and Paul Kwan

A Cloud-Based Tool for Brand Monitoring in Social Networks ........................................................................................................ 541

Antonio Tedeschi and Francesco Benedetto

Automatic Lexicon Construction for Arabic Sentiment Analysis ........................................................................................................ 547

Nawaf Abdulla, Roa’a Majdalawi, Salwa Mohammed, Mahmoud Al-Ayyoub, and Mohammed Al-Kabi

Impact of Change in Weekend Days on Social Networking Culture in Saudi Arabia ............................................................. 553

Basit Shahzad, Esam Alwagait, and Sophia Alim
Session 2: Classification Methods

Rough Set Theory for Arabic Sentiment Classification ................................................................. 559
  Qasem A. Al-Radaideh and Laila M. Twaiq

Exploiting Social Networks for the Prediction of Social and Civil Unrest: A Cloud
Based Framework .......................................................................................................................... 565
  Elhadj Benkhelifa, Elliott Rowe, Robert Kinmond, Oluwasegun A. Adedugbe,
  and Thomas Welsh

Cross-Lingual Short-Text Document Classification for Facebook Comments .......................... 573
  Mosab Faqeeh, Nawaf Abdulla, Mahmoud Al-Ayyoub, Yaser Jararweh,
  and Muhammad Quwaider

Arabic Sentiment Analysis Using Supervised Classification ....................................................... 579
  Rehab M. Duwairi and Islam Qarqaz

Author Index .................................................................................................................................. 584