

# **IOT360 2014 - IoT Infrastructures**

## **Preface**

This publication collects the proceedings of three conferences dedicated to infrastructure-based solutions that will support the deployment of Internet of Things (IoT) services and applications in the future. The 30 revised full papers in this volume were carefully reviewed and selected from a total of 51 submissions. The conferences also featured 16 special contributions from recognized experts in the field.

The first one, the International Conference on Mobility and Smart Cities 2014, was to provide a platform for the cross-fertilization of ideas and to present cutting-edge innovation and technologies for sustainable solutions to the mobility and smart cities agenda. The focus of the conference reflected the EU thematic priorities for research and innovation to improve the quality of life of citizens and make cities more sustainable with less impact on the environment.

The second conference, SDWN, focused on software-defined techniques for supporting more flexible use of wireless and wireless sensor networks. As we approach the 5G space, it is envisaged that the merge between software-defined techniques and the IoT will indeed bring new value in the networking infrastructure to support the challenges of accommodating exponentially growing M2M traffic.

Finally the proceedings of the last conference, SaSeIoT, provide an outlook on the safety and security in the IoT domain, highlighting both opportunities and risks. The risks stem from the integration of numerous distributed devices that belong to a plethora of (sometimes unknown) owners, have limited computational power, and are located in unsecured environments without any access controls. The opportunities come from the ability to add resilience to our IoT systems, detecting threats to public safety and security at an earlier stage so that the impact of such threats can be mitigated more easily, and by providing additional support during disaster management and recovery.

April 2015

Raffaele Giaffreda

# **International Conference on Mobility and Smart Cities, Mobility IoT 2014 Rome – October 27–28, 2014**

## **Preface**

In this dedicated mobility and smart cities section of the publication, it is our pleasure to introduce to you a wide selection of cutting-edge and insightful research papers that were presented at the First International Conference on Mobility and Smart Cities 2014.

The 2014 conference was an IoT co-located event that took place in Rome, Italy, during October 27–29, 2014, forming one of the main conferences in the IoT360 Summit. The conference was organized by the Faculty of Materials Science and Technology (MTF STU) in Trnava, Institute of Industrial Engineering and Management in collaboration with the European Alliance for Innovation in Slovakia, and its partner, the European Alliance for Innovation, in Trento, Italy.

As co-chairs of the conference and members of the Organizing Committee, it was with great satisfaction that we had the opportunity to welcome and meet individuals from around the world, all of whom share a common interest in the area of mobility and smart cities. In particular, we would like to thank the presenters who showcased their latest research and also the audience members who added to active discussions and debate regarding the recent developments and the outlook for the future of the field.

The goal of the International Conference on Mobility and Smart Cities 2014 was to provide a platform for the cross-fertilization of ideas and to present cutting-edge innovation and technologies for sustainable solutions to the mobility and smart cities agenda. The focus of the conference reflected the EU thematic priorities for research and innovation to improve the quality of life of citizens and make cities more sustainable with less impact on the environment. The conference presented participants with a unique opportunity to engage with different stakeholders from across Europe and around the world. In doing so, the conference offered an ideal platform to empower the triple helix of university research, industry, and government, while also providing innovative opportunities focusing on the growth and development of mobility and smart cities.

A total of 32 research papers are featured in this publication, with contributions by researchers from across Europe and around the world. The publication includes articles written and presented by authors from 17 countries, including China, Croatia, the Czech Republic, Germany, Greece, Italy, Japan, Norway, Poland, Portugal, Romania, Singapore, Slovakia, South Africa, South Korea, Sweden, and the UK.

Among the papers featured in the publication are those written by the conference keynote speakers, Prof. MSc. Milan Dado, PhD., the Dean of the Faculty of Electronics, TU Zilina, Slovakia, and a coordinator of the project ERA Chair H2020, who discusses the “Challenges and Unwanted Features of the Smarter Cities Development”

and Prof. George Teodorescu PhD, from the International Institute for Integral Innovation, Köln, Germany, who discusses the topic of “Parking Zero.”

As co-chairs of the conference, we were particularly impressed by the wide range of innovative research solutions presented during the conference. The conference was divided into six sessions covering the areas of smart mobility and security, social innovation and infrastructural research, smart cities, the SUPERHUB Project, urban mobility and e-mobility, innovation in transport methods and services, and creative cities. As a result, the papers included, in our opinion, accurately reflect the diversity of content and rapidly developing nature of the mobility and smart cities agenda. The research not only illustrates the current state of the art in the field but it also helps to contribute to defining the future thematic areas of debate.

In conclusion, we would like to once again express our sincere thanks to all the authors and audience members who attended the conference in Rome, Italy, and also the authors who contributed to the creation of this mobility and smart cities publication.

Dagmar Cagánová  
Jana Šujanová  
Paul Woolliscroft

# **International Conference on Software-Defined and Virtualized Future Wireless Networks SDWN 2014 Rome – October 28, 2014**

## **Preface**

We are very pleased to introduce the papers that were presented at the First International Conference on Software-Defined and Virtualized Future Wireless Networks (SDWN) 2014. While the past few decades have witnessed a rapid growth in mobile and wireless networks, numerous problems and challenges become increasingly serious, such as heterogeneous wireless networks, spectrum scarcity, smooth evolving and fast deployment, technologies innovations, QoS and QoE support, etc. Traditional mobile and wireless network technologies can hardly overcome these challenges. Against this background, Software-Defined and Virtualized Future Wireless Network is a new conference that aims to explore the new design space, the new challenges and solutions, as well as new applications and services of software-defined virtualized future mobile and wireless networks. The goal of this workshop is to solicit original and inspiring research contributions from technology experts, designers, researchers, and architects in academia and industry. Bringing together practitioners and researchers to share knowledge, experiences, and best practices.

The event is endorsed by the European Alliance for Innovation, a leading community-based organization devoted to the advancement of innovation in the field of ICT and was co-located with the IoT360 Summit. At the same time, participation in this event gave attendees the unique opportunity to be exposed to all technical scientific aspects of IoT-related topic areas at co-located conferences, as well as be able to have full access to the IoT marketplace and business aspects in practice at the IoT360 Summit. This was the first such workshop in Italy, and we were extremely pleased and proud that it attracted such a large number of submissions. We are hopeful that its outstanding technical content contributed by leading international researchers in the field will ensure its continued success for the future.

The main themes addressed by the paper presented at this conference are:

- New end-to-end mobile and wireless network architecture based on SDWN, cloud computing, and virtualization technologies
- Cloud computing and network virtualization technologies for RAN, backhaul, and core networks
- Software defining and abstracting strategies for network function and air interface technologies in future wireless networks
- Convergence of heterogeneous wireless networks in SDWN
- Network devices programmability and customizability

- QoS/E and traffic-awareness in SDWN
- Data center technologies for future wireless networks
- Fast deployment and smooth network evolving
- Future wireless network management
- Dynamic resource allocation in future wireless networks
- Immersive collaborative future wireless media
- Network evaluations and testbeds
- New applications and use cases

For this workshop, all accepted papers were published by Springer and made available through SpringerLink Digital Library, one of the world's largest scientific libraries. Several best papers were included in the MONET special issue on Software-Defined and Virtualized Future Wireless Networks. We had two invited talks and several invited papers. All these features contributed a successful workshop. We express our sincere thanks to the invited speakers, authors, session chairs, Technical Program Committee members, and additional reviewers who made this conference a success.

Yong Li  
Roberto Riggio  
V. Vasilakos Athanasios

**First International Conference Safety and Security  
in Internet of Things  
SaSeIoT 2014  
Rome, Italy, October 28, 2014**

**Preface**

If we look at the Internet of Things (IoT) from a safety and security perspective, we can see both opportunities and risks.

The risks stem from the integration of numerous distributed devices that belong to a plethora of (sometimes unknown) owners, have limited computational power, and are located in unsecured environments without any access controls. All these properties make the “things” in the IoT vulnerable. Therefore, concepts and solutions are needed to detect and contain malicious or corrupted things, to secure communication between things, and to ensure compliance of the IoT infrastructure with legal requirements, in particular on the protection and management of personal data.

The first set of papers presented here address these issues by discussing self-identification mechanisms of IoT devices, secure peer-to-peer services using NFC, and security aspects of the collaborative data acquisition on which many IoT services rely.

However, the IoT can also create substantial benefits in terms of citizens’ safety: by providing local communication infrastructures that make our societies more resilient, by detecting threats to public safety and security at an earlier stage so that the impact of such threats can be mitigated more easily, and by providing additional support during disaster management and recovery. These positive aspects of the IoT are also reflected in the proceedings with papers on crowd sourcing applications for emergency response, on the use of the IoT for earthquake management, and on the importance of the IoT for network resilience.

Finally, privacy and technology acceptance issues are addressed by a contribution on the use of things for home security applications in gated communities.

We would like to thank all authors, reviewers, and organizers for their support and hope that these proceedings will provide input for fruitful discussions and for future research related to safety and security in the IoT.

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Ulrich Meissen  
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