

# **SaSeIoT 2015**

## **Preface**

The Second EAI International Conference on Safety and Security in Internet of Things (SaSeIoT' 2015) was held in Rome, Italy, during October 26–27, 2015, as a collocated event of the IoT 360° Summit 2015.

This international conference attracted submissions from various countries. Each paper went through a rigorous peer-review process, with each submission receiving multiple reviews from the members of the Technical Program Committee. We could only select a few of the highest-quality papers for inclusion in the final program.

The accepted papers, which focus on security and privacy issues, provide great insight into the latest research findings in the area of the Internet of Things. In addition to the technical papers, the workshop program also included two keynote speeches. The first keynote entitled “Contract-Based Design Tailored to Safety Issues for Cyber-physical Systems” was delivered by Dr. Daniela Cancila. The second keynote entitled “Security and Privacy in IoT” was delivered by Dr. Hakima Chaouchi.

We would like to thank all the people who worked hard to make this conference a real success. First and foremost, we thank all authors who submitted their papers for consideration for this conference as well as all Technical Program Committee members for providing rigorous, timely reviews. We would also like to thank the European Alliance for Innovation (EAI) for its sponsorship. Finally, we express our gratitude to Kristina Lukáčová for her continuous administrative support throughout the preparation of this conference.

Hakima Chaouchi  
Sherali Zeadally

# **CYCLONE 2015**

## **Preface**

The First EAI International Conference on Cyber Physical Systems, IoT and Sensors Networks (CYCLONE 2015) was held in Rome, Italy, on October 26, 2015, as a collocated event of the IoT 360° Summit 2015.

The conference was an incredible first step on the way to becoming a benchmark in the multidisciplinary fields of CPS, IoT, and sensor networks. The technologies originating from the areas of sensing, networking, control, and processing are enablers for exciting new opportunities for researchers, engineers, and business people to innovate in meaningful ways. And that is who CYCLONE 2015 was created for – the goal was to bring all of these different parties together to share ideas and visions.

It was our great pleasure to host prominent keynote speakers, and authors of all the excellent accepted papers, courtesy of the passionate and dedicated Program Committee members, to whom we would like to extend our warmest thanks. Lastly, this event could not happen without the support of EAI and Kristina Lukáčová, the event manager, who organized CYCLONE 2015 with great effort and expertise; and we wish to extend our sincere gratitude to both.

# **GOODTECHS 2015**

## **Preface**

The GOODTECHS 2015 Conference was the first edition of a conference that aims to become a point of attraction for researchers in the area and it was held in the beautiful city of Rome, a worldwide renowned historical, academic and cultural center. In GOODTECHS we were interested in experiences with the design, implementation, deployment, operation, and evaluation of smart objects and technologies for social good. Clearly, we were not considering only the so-called first world as the scenario for this evolution; we also referred to those areas where ICT is currently less widespread, hoping that it may represent a societal development opportunity rather than a source for further divide.

It was our honor to have prominent international scholars as speakers. The conference program included technical papers selected through peer reviews by the Technical Program Committee members and keynote speakers who provided even more insight into this area. We would like to thank the EAI for the support and all the members of the conference committees and the reviewers for their dedicated and passionate work. None of this would happen without the support and curiosity of the authors who sent their papers to this first event. Finally, we would like to encourage current and future authors to continue working in this direction and to participate in forums like this conference so as to exchange knowledge and experiences and to make ICT actually helpful to society.

Ombretta Gaggi  
Pietro Manzoni  
Claudio Palazzi

# **CN4IoT 2015**

## **Preface**

The First International Conference on Cloud, Networking for IoT systems (CN4IoT) was held in Rome, Italy, during October 26–27, 2015, as a collocated event of the IoT 360° Summit 2015.

CN4IoT 2015 was conceived to analyze limits and/or advantages in the exploitation of existing solutions developed for cloud, networking, and IoT, and to foster new, original, and innovative contributions. We strongly believe that it is time to link cloud, networking, and IoTs. Nowadays, ICT researchers are looking to improve networking, for example, to effectively improve the quality of life of citizens in smart city scenarios using IoT devices, and to put everything in place trying to improve the experience of common users. There are masses of users who like to use the cloud but it has to be easy to use and it must have a positive impact on their lives. Before, the cloud was an issue only ICT researchers were concerned with. Today, many people are trying to involve professionals in their activities, such as lawyers, doctors, engineers, and so on. They use services like cloud services, small things, and say, “It’s amazing, that we can interact with each other, write in the same document, we can make progress in our work and make the workflow better.” The workflow has changed. We realize this, and we try to move forward. It is a challenge but it is also time to change how we think, and we are first in the row.

It was our honor to have invited prominent and valuable ICT worldwide experts as keynote speakers. The conference program comprised technical papers selected through peer reviews by the Technical Program Committee members and invited talks. SDWN 2015 would not have been realized without the help and dedication of our conference manager, Kristina Lukáčová, from the European Alliance for Innovation (EAI). We would like to thank the conference committees and the reviewers for their dedicated and passionate work. None of this would have happened without the support and curiosity of the authors who sent their papers to this first edition of CN4IoT.

# HealthyIoT 2015

## Preface

The Second EAI International Conference on IoT Technologies for Health Care (HealthyIoT 2015) was held in Rome, Italy, during October 26–27, 2015, as a collocated event of the IoT 360° Summit 2015.

Internet of Things (IoT) devices are becoming more powerful every year, and there is an immense amount of information flowing between them in the cloud. By applying the concept of IoT to the health-care sector, it is possible to collect, store, and analyze physiological data and to provide new medical services for citizens based on a constant monitoring and early detection of dangerous situations. IoT offers greater opportunities in the field of health care, allowing for a wider access, a better quality, and a lower cost of health care.

When combining the power of IoT devices and physiological sensors, as well as cloud technology that enables us to work with data in new exciting ways, we can introduce the concept of pervasive health-care systems that provide new health services for chronically ill patients, for people with specific diseases or disorders, and for individuals switching to a healthier lifestyle. The HealthyIoT 2015 workshop produced valuable insights on how the IoT systems, together with new cloud computing and big data capabilities, can help patients, caregivers, and medical personnel to envisage new, value-added health-care solutions for the future.

We wish to extend our great thanks to all the members of the Program Committee for their rigorous effort, dedication, and critical eye. We would also like to thank all of the contributing authors, whose great passion and expertise have produced deep insight into the applications of IoT for health care. Finally, we would like to thank EAI for their support, and Kristina Lukáčová for managing HealthyIoT 2015 with great skill and enthusiasm.

# **IoTaaS 2015**

## **Preface**

It gives us a great pleasure to welcome you to the proceedings of the Second EAI International Conference on IoT as a Service (IoTaaS 2015) held in the beautiful city of Rome, as a part of IoT360, the international summit on Internet of Things. We plan this event as a melting point for researchers, engineers, and business people to meet and exchange ideas and information. IoTaaS is an international venue for publishing innovative and cutting-edge results on the convergence of next-generation technologies and methodologies reshaping our way of living. This conference focuses on the Internet of Things (IoT) in general and in particular on providing innovative and enabling capabilities “as a service.” The cloud serves as the central focal point for consumption and delivery of such technologies and applications.

As we are striding into the era of IoT, a key question is how we make the most of IoT for all stakeholders, including platform providers, IoT application developers, end-users, large and small organizations (such as city councils, enterprises) that wish to provide better service, and manufacturers of smart devices. The amount of smart devices immersed in everyday life, from manufacturing to clothing, is growing every day in terms of power, processing, and network connectivity. The sheer size and variety of contextual data that they produce, along with the actions they can take on their environment, is enormous. It remains to be answered how all this potential will come to bear; the Second International Conference on IoT as a Service (IoTaaS 2015) aimed to contribute to the discussion on the challenges posed by these trends.

The conference program comprised technical papers selected through peer reviews by the Technical Program Committee members, invited talks, industrial presentations, and a demo session. We received many good papers. These papers went through a rigorous review process for the selection of papers for the program. The selected papers cover a wide spectrum of topics related to IoTaaS. We had papers on architectures for the IoT, security and privacy, semantics, and testing. Additionally, we were honored to have two prominent keynote speakers: Gabi Zodik from IBM Research discussing “Future Directions in Mobile, IoT and Wearable Enterprise Computing”; and Alfeo Pareschi from Axiros, discussing “IoT Platforms: Security, Identity Management, Ontologies and Interoperability.” Finally we were honored to have an invited talk by Afonso Ferreira from the European Commission, who provided the commission’s point of view on IoT research and innovation in the European Commission. We believe that this strong program laid a concrete foundation for this conference for years to come.

We would like to thank the EAI for their initiative and support and all the members of the conference committees and the reviewers for their dedicated and passionate work. None of this could happen without the support and curiosity of the authors who sent their papers to this event.

Benny Mandler  
Kostas Magoutis

# MobilityIoT 2015

## Preface

A wide selection of cutting-edge and insightful research papers were presented at the Second EAI International Conference on Mobility in IoT 2015.

The 2015 conference was an IoT co-located event that took place in Rome, Italy, during October 26–27 2015, forming one of the main conferences within the IoT 360 Summit organized by the European Alliance for Innovation, in Trento, Italy, and the European Alliance for Innovation in Slovakia.

The Mobility in IoT 2015 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.

It was a great satisfaction to have the opportunity to welcome and meet individuals from around the world, all of whom share a common interest in the area of mobility in IoT. In particular, the organizers would like to thank the presenters, who showcased their latest research, and the audience members, who added to active discussions and debate regarding the recent developments and the outlook for the future for the field.

The goal of the EAI International Conference on Mobility in IoT 2015 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 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 in IoT.

A total of 13 research papers are featured in this publication, with contributions by researchers from across Europe and around the world. The publication includes articles that were written and presented by authors from nine countries, including Poland, the Czech Republic, Serbia, Italy, South Korea, Germany, Colombia, India, and Slovakia.

Among the papers presented at the conference were these presented by the conference keynote speakers, Prof. Milan Dado, the Dean of the Faculty of Electronics, TU Zilina, Slovakia, and a coordinator of the project ERA Chair H2020, who discussed the “Internet of Things as Advanced Technology to Support Mobility and Intelligent



Transport,” Jaroslav Holeček, vice-president of the Slovak Automotive Industry Association (ZAP), who discussed the topic of “Innovation as Basic Prerequisite of Competitiveness of Automotive Industry in Slovakia,” Prof. George Teodorescu, from the International Institute for Integral Innovation, Köln, Germany who presented the topic of “i-WALK, a Different Approach to Urban Mobility,” Prof. Dušan Petráš, of the Slovak University of Technology in Bratislava, Slovakia, former vice-rector of STU and former dean of the Faculty of Civil Engineering, who gave a talk on the topic “Smart Cities — Energy-Efficient and Environmentally Friendly Housing,” and Dr. Predrag K. Nikolic, Associate Professor at the Faculty of Digital Production, EDUCONS University, Serbia, and visiting professor at the Bergen Academy of Art and Design, Norway, as well as Shenzhen School of Industrial Design, China, who presented the topic of “Multimodal Interactions: Embedding New Meanings to Known Forms and Objects.”

The participants were particularly impressed by the wide range of innovative research solutions presented during the conference. As a result, the papers included here, in our opinion, accurately reflect the diversity of content and rapidly developing nature of the IoT 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, the Scientific Committee members and organizers would like to express their 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 in IoT publication.

Dagmar Cagánová  
Jana Šujanová

# **S-Cube 2015**

## **Preface**

This volume contains the proceedings of S-Cube 2015, the 6th International Conference on Sensor Systems and Software. The conference took place in Rome, Italy, during October 26–27, 2015. The aim of the conference was to provide a forum in which researchers and practitioners from academia and industry, as well as the “makers,” may work together in order to present and debate the different innovative solutions and applications in sensing systems and associated software.

This year the conference was organized in conjunction with the IoT360 Summit and was focused on the Internet of Things (IoT) paradigm. The reason for choosing this topic is that the IoT has slowly but steadily and increasingly permitted what researchers and engineers study and build. “Sensing systems” and “software” play a crucial role for the emerging world of the IoT.

S-Cube received a total of 28 paper submissions of which ten were selected for full publication and presentation. Apart from full papers, six short papers and four invited contributions are published and were presented during the conference. Paper submissions were received from 14 different countries from all over the world. The selection process involved over 90 reviews with all papers being evaluated by at least three independent reviewers. In addition, the reviews were discussed off-line by the chairs and the Technical Program Committee, prior to making final decisions. The final program covered a wide range of topics, which were grouped into six sessions: Sensors, Experimentation and Prototyping, IoT and Cyber Physical Systems, Software, Self-x and Smart Methods, and Evaluation and Analysis.

The conference program included other elements in addition to the presentation of research papers. Two keynotes were given by Andrew Markham, Lecturer in Software Engineering at the University of Oxford, UK, and Fahim Kawsar, Head of IoT Research at Alcatel Lucent Bell Laboratories, Belgium. Dr. Markham and Dr. Kawsar spoke about “Structural Monitoring” and “Innovative Human Centered IoT Systems,” respectively.

We would like to thank all authors for their contributions to this volume and in particular the reviewers for their hard work that significantly helped to improve the initial submissions and made our work easier when selecting the papers. We would like to also thank all the volunteers who shared their talent, dedication, and time for the workshop arrangements and for preparing these proceedings.

Andrey Somov  
David Boyle

# InterIoT 2015

## Preface

It is our real pleasure to welcome you to the proceedings of the First EAI International Conference on Interoperability in IoT held in the amazing city of Rome, Italy. Colocated with the IoT360 summit and taking advantage of its attractiveness, InterIoT 2015 offered an exciting technical program consisting of a keynote speech, invited talks, and technical sessions that presented original and fundamental research advances in all aspects of interoperability of these heterogeneous IoT platforms. Indeed, IoT products are now hitting the market across a large variety of segments. Often driven by the fear of “falling behind”, small and large companies push their engineering teams to produce solutions quickly. The result is that the market is highly fragmented: A large number of non-interoperable solutions are being installed, eventually leading to increased costs, inefficiencies, customer frustration, and a rate of adoption of the IoT that is much slower than that touted by analysts. The market is now at a state where we ought to think about interoperability. Interoperability appears to a major and new challenge.

The goal of InterIoT is to bring together practicing engineers and advanced researchers to share information on the state of the art around interoperability in the IoT, analyze what is needed, and identify the work that lies ahead to increase the number of interoperable IoT products.

We received high-quality submissions from all parts of the world. After a rigorous review process, eight regular and invited papers were included in the technical program. The program also featured a keynote addressed by Prof. Carsten Bormann from Universität Bremen, Germany.

We would like to thank the Technical Program Committee chair Dr. Thomas Watteyne, who did a remarkable job in the establishment of the technical program. The conference would not have been possible without his help or that of all the TPC members, publicity chair, and external reviewers, who volunteered their time and professional expertise. We would like to take this opportunity to thank all of them for their help. We would also like to thank all the authors for contributing their quality work, and our sponsors and partners for their support, including CREATE-NET and EAI. We received excellent and support from our sponsors, especially from Kristina Lukáčová who managed the conference organization. Sincere and dedicated thanks to her.

Finally, we hope you enjoy the proceedings.

Nathalie Mitton  
Thomas Noel

# **SDWNCT 2015**

## **Preface**

The Second EAI International Conference on Software Defined and Virtualized Future Wireless Networks and Cognitive Technologies (SDWNCT 2015) was held in Rome, Italy, on October 26, 2015, as a collocated event of the IoT 360° Summit 2015. SDWNCT aims to explore new design spaces, new challenges and solutions, as well as new applications and services of software-defined virtualized future mobile and wireless networks. At the same time, it targets enthusiastic researchers and practitioners from AI and IoT-related areas sharing the common goal of addressing the challenges posed by the Cognitive aspect of IoT by using new or leveraging existing Artificial Intelligence techniques. All this to bring to the community original and inspiring research contributions from technology experts, designers, researchers, and architects in academia and industry.

It was our honor to have invited prominent scholars as keynote speakers. The conference program comprised technical papers selected through peer reviews by the Technical Program Committee members, invited talks, special sessions, and a demo session. Putting together a workshop of the scope and caliber of SDWN was a challenging and exciting undertaking. We are very grateful for the contributions of each of the members of the Technical Program Committee in selecting the best out of all outstanding work submitted. SDWNCT 2015 would not have been a reality without the help and dedication of our conference manager, Kristina Lukáčová, from the European Alliance for Innovation (EAI), who worked with us and the Technical Program Committee chairs. As Organizing Committee, we hope you enjoy the proceedings of SDWNCT 2015 and the IoT 360° Summit 2015, which includes high-quality and exciting research work in SDN and Cognitive Technologies applied to future services in IoT.

Bruno Astuto  
Athanasios V. Vasilakos  
Frederik Santens  
Radu-Laurențiu Vieriu

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