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**To be completed by Kathryn (IEEE)**

## PREFACE

This volume contains papers presented at the 8<sup>th</sup> International Conference on New Technologies, Mobility and Security (NTMS 2016) held in Larnaca, Cyprus during November 21 – 23, 2016. The conference was co-organized by CNRS, TELECOM ParisTECH and University of Cyprus.

In response to the call for papers, 107 papers were submitted to the NTMS conference and workshops. These papers were evaluated on the basis of their significance, novelty, and technical quality. Each paper was reviewed by at least two members of the program committee. From the papers submitted to the main conference, 38 were selected as regular papers for presentation at the conference, giving an acceptance rate of about 40%. An additional 18 papers which described potentially interesting work were accepted after a major revision was made or as invited papers.

Seven prior editions of NTMS were organized. The first edition, NTMS 2007, took place in Paris, France, the second edition, NTMS 2008, took place in Tangier, Morocco, the third edition took place in Cairo, Egypt, the fourth edition took place in Paris, France, the fifth edition took place in Istanbul, Turkey, the sixth edition took place in Dubai, while the last edition took place in Paris, France. The current edition of NTMS conference is organized through collaboration with many sponsors (IEEE, COMSOC, IFIP, Telecom ParisTech, CNRS and University of Cyprus). We are grateful for their support to the conference organisation.

We want to thank the authors for their diligence and hard work in ensuring high quality contributions. Also, we address our gratitude to the reviewers for their multiple reviews during the selection process. We give a special thanks to Giovanni Pau and Vasos Vassiliou for chairing the conference; Samuel Pierre, Haidar Safa, Hadi Otrok, Azzam Mourad, George Xylomenos and Gustavo Marfia to co-chair the technical program committee of the three NTMS tracks. We thank also Layth Sliman for serving on the workshop committee; Francine Krief and Badr Benmammar, for the tutorial/keynote organization; George Pallis and Petros Stratis for chairing the sponsorship committee; Ibrahim Hajjeh for chairing the finance committee; Petros Stratis and Chrysostomos Chrysostomou for chairing the local organization committee,

We would also like to thank the following persons for their great support: Kathryn Alcorn from IEEE eXpress Conference Publishing, Phyllis O'Neill from IEEE Communications Society, and Brianna Hunt from IEEE MCE.

There is a long list of people who volunteered their time and energy to put together the conference and who deserve acknowledgment. Thanks to all members of the Technical Program Committee, and the external reviewers, for their hard work in evaluating and discussing papers.

Last but not least, we wish to thank all the authors who submitted papers and all conference attendees. We welcome you to NTMS 2016 and hope that you will enjoy it.

Mohamad Badra

College of Technological Innovation, Zayed University, UAE

On behalf of the Steering Committee

## Message from the Conference Chairs

On behalf of the organizing and technical program committees of the seven International Conference on New Technologies, Mobility and Security – NTMS 2016, it is a great pleasure for us to welcome you in the heart of Larnaca to participate in this exciting technical program. This conference is technically co-sponsored by IEEE, IEEE COMSOC and IFIP TC6.5 working group.

NTMS'2016 aims at fostering advances in the areas of New Technologies, Wireless Networks, Mobile Computing, Ad hoc and Ambient Networks, QoS, Network Security and E-commerce, to mention a few, and provides a dynamic forum for researchers, students and professionals to present their state-of-the-art research and development in these interesting areas. The event will be combined with tutorial sessions and workshops. Tutorials will precede the main program, aiming at the dissemination of mature knowledge and technology advances in the field.

This event combined three main tracks (Mobility & Wireless Networks, Security, New Technologies & Services) and three workshops, Innovative Projects 2016, WSN 2016 (“Deployment, and Reliability of Networks and Network Applications, Wireless Sensor Networks: Architectures”) and CID 2016 (International Workshop on Cybercrime Investigation and Digital forensics (CID)).

The conference also welcome two tutorial preceding the main program from Dr. Nicolas Sklavos and Dr. I. D. Zaharakis (“Cryptography and Security in Internet of Things (IoT): Models, Schemes, and Implementations”), and from Dr. Vasos Vassiliou and Dr. Charalambos Sergiou (“Performance guarantees in Wireless Sensor Networks: Issues, challenges and solutions, from congestion control to mobility management approaches”), and a keynote given by Professor Andreas Pitsillides (“Adopting nature inspired techniques in solving communication problems”).

NTMS2016 received 91 submissions. The full papers were subjected to multiple independent peer review and 38 papers were recommended by the respective program committees under the guidance of the track chairs for presentation at this conference. The quality of accepted papers is reflected in the acceptance rate of 40%. We express our highest appreciation for all who contributed to the success of this conference; we duly recognize the work undertaken by the track chairs in helping to generate such program across broad range technologies.

We also express our gratitude to all workshop chairs as well as technical program committee members and the reviewers who gave their valuable time in providing critical reviews. The conference would not have been possible without the help of the organizing committee and the volunteers and we thank them most sincerely.

Finally, we would like to welcome you all to NTMS 2016, we hope you will enjoy the Impressionists city and its famous Iron Lady. Our greatest reward and pleasure is meeting each of you, reconnecting with old friends and making new ones, exchanging new ideas, and to present you all with a high technical value.

NTMS 2016 General Co-chairs.  
Giovanni Pau, LIP6, France  
Vasos Vassiliou, University of Cyprus

## **NEW TECHNOLOGIES TRACK CHAIRS Welcome Message**

On behalf of the Organizing Committee, we are delighted to welcome you to Larnaca, for the 8<sup>th</sup> IFIP International Conference on New Technologies, Mobility and Security – Track: New Technologies & services, which take place from November 21 to 23, 2016.

As the Co-Chairs of this Track, we have done our best to provide you with a solid technical program. The aim of this Track is to provide participants a platform to exchange ideas, discover novel opportunities, meet new friends, and broaden their knowledge.

This year, we have received a large number of submissions. Every paper has been peer-reviewed by at least three reviewers. We are very grateful to the Technical Program Committee of our Track and all the reviewers for their careful evaluation of submissions, which enabled us to put together an excellent technical program, covering cutting edge topics such as applying intelligent techniques to network management, information-centric networking, the Internet of things and mobile, wireless and sensor networking.

We would like to deeply thank the organizing committee of the 8<sup>th</sup> IFIP International Conference on New Technologies for their great help and guidance at all stages. We wish to thank our main sponsors.

Finally, we would like to thank all of you for your participation in the New Technologies and Services Track. We sincerely hope that you enjoy the Conference.

New Technologies & services Program co–chairs

Gustavo Marfia, University of Bologna, Italy

George Xylomenos, Athens University of Economics and Business, Greece

## **MOBILITY TRACK CHAIRS Welcome Message**

It is a great pleasure to welcome everyone to the Mobility and Wireless Networks Track within the eighth edition of the NTMS 2016 conference held in Larnaca, Cyprus November 21st – 23rd 2016 following the great success of the previous editions.

The Mobility and Wireless Networks Track is particularly interested on the new approaches, technologies, architectures and applications in the areas of mobile computing and wireless networking and addresses topics related to their performance, configuration, cross-layer approaches, scalability, resilience and survivability; offering the opportunity for a more focused exchange of ideas and presentation of on-going research relevant to these areas.

This year, we have received a 41 submissions among which 17 papers were selected after a thorough peer review process. We would like to thank all researchers who submitted their papers, and the Technical Program Committee members for their valuable time and careful evaluation of submissions.

We also express our gratitude to for the steering committee who devoted an enormous amount of time in assembling a great technical program committee and following the papers review process. A special thanks also to Dr. Mohamad Badra who was extremely available in following and supporting the track organisation.

Finally, we would like to thank all of you for your participation in the Mobility and Wireless Networks Track. We sincerely hope that you enjoy the eighth edition of NTMS 2016 and wish you a fruitful and nice Conference.

Mobility and Wireless Networks Track, NTMS 2016, Track Chairs,  
Professor Haidar Safa - American University of Beirut, Lebanon  
Professor Samuel Pierre, École Polytechnique de Montréal, Canada  
Professor Panayiotis Kolios, University of Cyprus

## **SECURITY TRACK CHAIRS Welcome Message**

The security track of the NTMS 2016 international conference was conceived with the intention of dealing with the security aspects of modelling, designing and implementing heterogeneous wired and wireless communications networks, services and applications.

The track received 34 international submissions that were all initially revised by the track co-chairs to determine that a minimum quality level was reached. Only 12 papers were selected for presentation in the track. Moreover, 9 papers were accepted as short papers where authors will present them during the short papers sessions.

It would be impossible to organize this track without the hard work and dedication of many people. In particular, we would like to thank all researchers and practitioners who submitted their papers, and thank the program committee members for reviewing the papers. We also appreciate the help from General co-chairs, and the Steering committee.

We see this track as an opportunity for all researchers coming from different institutes working on different security problems to interact with each other and brainstorm on new open challenges. Wish you all a pleasant stay in Cyprus and looking forward to hear your feedback about the track and the conference.

Security Program co-chairs

Hadi Otrok, Khalifa University, Abu Dhabi, UAE

Azzam Mourad, LAU, Beirut, Lebanon

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