

# ICN 2017

## Forward

The Sixteenth International Conference on Networks (ICN 2017), held between April 23-27, 2017 in Venice, Italy, continued a series of events targeting general networking and services aspects in multi-technologies environments. The conference covered fundamentals on networking and services, and highlighted new challenging industrial and research topics. Network control and management, multi-technology service deployment and assurance, next generation networks and ubiquitous services, emergency services and disaster recovery and emerging network communications and technologies were considered.

IPv6, the Next Generation of the Internet Protocol, has seen over the past three years tremendous activity related to its development, implementation and deployment. Its importance is unequivocally recognized by research organizations, businesses and governments worldwide. To maintain global competitiveness, governments are mandating, encouraging or actively supporting the adoption of IPv6 to prepare their respective economies for the future communication infrastructures. In the United States, government's plans to migrate to IPv6 has stimulated significant interest in the technology and accelerated the adoption process. Business organizations are also increasingly mindful of the IPv4 address space depletion and see within IPv6 a way to solve pressing technical problems. At the same time IPv6 technology continues to evolve beyond IPv4 capabilities. Communications equipment manufacturers and applications developers are actively integrating IPv6 in their products based on market demands.

IPv6 creates opportunities for new and more scalable IP based services while representing a fertile and growing area of research and technology innovation. The efforts of successful research projects, progressive service providers deploying IPv6 services and enterprises led to a significant body of knowledge and expertise. It is the goal of this workshop to facilitate the dissemination and exchange of technology and deployment related information, to provide a forum where academia and industry can share ideas and experiences in this field that could accelerate the adoption of IPv6. The workshop brings together IPv6 research and deployment experts that will share their work. The audience will hear the latest technological updates and will be provided with examples of successful IPv6 deployments; it will be offered an opportunity to learn what to expect from IPv6 and how to prepare for it.

Packet Dynamics refers broadly to measurements, theory and/or models that describe the time evolution and the associated attributes of packets, flows or streams of packets in a network. Factors impacting packet dynamics include cross traffic, architectures of intermediate nodes (e.g., routers, gateways, and firewalls), complex interaction of hardware resources and protocols at various levels, as well as implementations that often involve competing and conflicting requirements.

Parameters such as packet reordering, delay, jitter and loss that characterize the delivery of packet streams are at times highly correlated. Load-balancing at an intermediate node may, for example, result in out-of-order arrivals and excessive jitter, and network congestion may

manifest as packet losses or large jitter. Out-of-order arrivals, losses, and jitter in turn may lead to unnecessary retransmissions in TCP or loss of voice quality in VoIP.

With the growth of the Internet in size, speed and traffic volume, understanding the impact of underlying network resources and protocols on packet delivery and application performance has assumed a critical importance. Measurements and models explaining the variation and interdependence of delivery characteristics are crucial not only for efficient operation of networks and network diagnosis, but also for developing solutions for future networks.

Local and global scheduling and heavy resource sharing are main features carried by Grid networks. Grids offer a uniform interface to a distributed collection of heterogeneous computational, storage and network resources. Most current operational Grids are dedicated to a limited set of computationally and/or data intensive scientific problems.

Optical burst switching enables these features while offering the necessary network flexibility demanded by future Grid applications. Currently ongoing research and achievements refers to high performance and computability in Grid networks. However, the communication and computation mechanisms for Grid applications require further development, deployment and validation.

The conference had the following tracks:

- Networking
- Computation and Networking
- Communication
- Next generation networks (NGN) and network management
- Advances in Adaptive Filtering for Acoustic Applications
- DMM: Distributed Mobility Management - Towards Efficient and Scalable Mobile Networks

The conference also featured the following symposium:

- **SOFTNETWORKING 2017, The International Symposium on Advances in Software Defined Networking and Network Functions Virtualization**

We take here the opportunity to warmly thank all the members of the ICN 2017 technical program committee, as well as all the reviewers. The creation of such a high quality conference program would not have been possible without their involvement. We also kindly thank all the authors that dedicated much of their time and effort to contribute to ICN 2017. We truly believe that, thanks to all these efforts, the final conference program consisted of top quality contributions.

We also gratefully thank the members of the ICN 2017 organizing committee for their help in handling the logistics and for their work that made this professional meeting a success.

We hope that ICN 2017 was a successful international forum for the exchange of ideas and results between academia and industry and to promote further progress in the area of networks. We also hope that Venice, Italy provided a pleasant environment during the conference and everyone saved some time to enjoy the unique charm of the city.

## **ICN 2017 Committee**

### **ICN Steering Committee**

Pascal Lorenz, University of Haute Alsace, France

Carlos Becker Westphall, University of Santa Catarina, Brazil

Tibor Gyires, Illinois State University, USA

Iwona Pozniak-Koszalka, Wroclaw University of Technology, Poland

Carlos T. Calafate, Technical University of Valencia, Spain

Calin Vladeanu, University Politehnica of Bucharest, Romania

Gary Weckman, Ohio University, USA

Yenumula B. Reddy, Grambling State University, USA

Eric Renault, Institut Mines-Télécom - Télécom SudParis, France

Sherali Zeadally, University of Kentucky, USA

### **ICN Industry/Research Advisory Committee**

Marc Cheboldaeff, T-Systems International GmbH, Germany

Megumi Shibuya, KDDI Research, Inc., Japan

Arslan Brömme, Vattenfall GmbH, Berlin, Germany

Abdelmajid Khelil, Landshut University of Applied Sciences, Germany