All times listed are in Coordinated Universal Time (UTC).

Thursday, May 14 4:00 - 4:15

Welcome Part 1

Thursday, May 14 4:15 - 5:20

Paper Session #1 - Network Architecture and Design

Chair: Chikara Ohta (Kobe University, Japan)

A New DCQCN Rate Increase Algorithm with Adaptive Byte Counter
Daisuke Sugahara (Kansai University, Japan); Osamu Shiraki and Eiji Yoshida (Fujitsu Laboratories Ltd., Japan); Miki Yamamoto (Kansai University, Japan)

Real-World Implementation of Function Chaining in Named Data Networking for IoT Environments
Yohei Kumamoto (Waseda University); Hiroki Yoshii and Hidenori Nakazato (Waseda University, Japan)

Performance Analysis of Periodic Cellular-IoT Communication with Immediate Release of Radio Resources
Shuya Abe (Osaka University, Japan); Go Hasegawa (Tohoku University, Japan); Masayuki Murata (Osaka University, Japan)

Thursday, May 14 5:50 - 7:30

Panel #1 - Anticipating Security Challenges in 5G

Panelists: Arnaud Taddei (Symantec), Antony Martin (Orange), John Kimmins (Palindrome Technologies), and Leonid Burakovsky (Palo Alto Networks)

Chair: Francois Cosquer (Nokia, France)

With initial trials and commercial roll outs in progress, 5G brings a drastic change in the industry in terms of architecture, services and usage. This is no surprise that 5G security has become a key area of interest as it raises new challenges and brings disruption to traditional security approaches. This Panel will begin by addressing the new risk factors followed by a number of identified critical issues such as new deployment models and operations, End to End security as well as research and standardization challenges:

- Risks from previous generations (architecture / technologies / use cases Slices BtB / supply chain incl open source / SP, Enterprise, Subscriber)
- New Deployment models / New mode of Operations (incl 3rd party) - role and responsibilities / automation
- End 2 End security model - how to integrate security vendors? how to manage security orchestration?
- Research / Standardization / open challenges - (encryption vs interception - quantum resistance ; security testing & certification)

Finally, in light of the unprecedented measures taken during the COVID 19 pandemic, the panelists will attempt to provide an answer to the big question: Could security concerns become the show stopper for 5G?

Thursday, May 14 7:30 - 7:45

Part 1 - Concluding Remarks

Thursday, May 14 14:00 - 14:10

Part 2 Welcome

Thursday, May 14 14:10 - 15:00

Keynote #1 - Voting & Election Security

Harri Hursti (Nordic Innovation Labs)

Chair: Yvon Rouault (EXFO Inc., France)

With the oncoming 2020 election, the election system of the US faces once again numerous threats - foreign and domestic. And still, the system lags behind the very basic industry standards of cybersecurity. In this talk on "Voting 5G? How new networking technologies affect our democratic institutions" Harri Hursti will shed light on the unique security challenges that are faced in elections in the US and abroad. He will also discuss if the deployment of 5G will have an additional negative effect. He will demonstrate to the audience how easy the systems manipulation is and what could be done to eliminate threats.

Thursday, May 14 15:05 - 15:50

Paper Session #2 - Network Survivability

Chair: Ana E Goulart (Texas A&M University, USA)

A Hierarchical, Scalable Approach for Availability Analysis of Software Defined Networks
Swapna S. Gokhale (University of Connecticut, USA); Veena B. Mendiratta (NOKIA Bell Labs, USA); Lalita J Jagadeesan (Nokia Bell Labs, USA)

Leontief-Based Data Cleaning Workload Distribution Strategy for EH-MWSN
Concepcion Sanchez Aleman, Niki Pissinou and Sheila Alemany (Florida International University, USA)

Thursday, May 14 15:55 - 16:40

Panel #2 - Unlocking the Potential of "What's Next"

Panelists: Ian Hood (RedHat), Jude Munn (Verizon), and Paul Challoner (Ericsson North America)

Chair: Jason Boswell (Ericsson, USA)

The "one size fits all" service era is about to come to an end, as technology will seek to capture the value created by 5G networks in the future. Virtualization and software defined networking will be key drivers in this technology shift, and infrastructure and technology providers have shifted their strategies, R&D and delivery models accordingly. In this panel, we will dive into the topic of cloud technology, distributed architectures and what it means for deploying and securing current and future networks. As we transition from 4G to 5G, Service Based Architecture (SBA) will allow for flexible and dynamic configurations - what does this mean for our approach in planning and design? Networks could take many divergent paths over the next few years, with decisions on hybrid vs standalone, centralized vs distributed, open vs proprietary - Can we still achieve the security, reliability and performance we have come to expect from our communications networks? Where could we see the largest benefits and/or greatest risk as the network becomes virtualized and what role will automation, orchestration and zero-touch implementation have in next-gen deployments? We will answer these questions, and, of course, many more as we explore "what's next" in communications.

Thursday, May 14 16:45 - 17:30

Panel #3 - Transitions in 5G

Panelists: David Debrecht (Nokia), Art King (Corning), Art Maria (AT&T)

Chair: Bob Lesnewich (Perspecta Labs, USA)

This past year has seen 5G commercially deployed in many different ways - or has it really? There is certainly a debate as to what is and is not 'true' 5G.

This past year has seen 5G being commercially deployed in many different ways, in various architectures and technologies, for a number of different purposes - from FWA to targeted pockets of 5GNSA and in both indoor (i.e., enterprises and arenas) and outdoor applications (i.e., providing residential services and additional capacity/coverage). In this Panel, we will be looking at topics such as:

- What can be learned in transitioning from 4G to 5G - Why, where and how to deploy 5G NSA within LTE coverage or ... move directly to 5G SA
- why, when, where and how to transition / incorporate from an LTE or 5G NSA network to 5G SA
- how do you maintain high quality and resiliency when having both 4G and 5G deployed [i.e., transitioning of calls, clean handovers]

Thursday, May 14 17:30 - 18:15

Paper Session #3 - Internet of Things

Chair: Vijay K Gurbani (Vail Systems, Inc. & Illinois Institute of Technology, USA)

Thursday, May 14 18:45 - 19:35

Keynote #2 - Wireless Network Insights during COVID-19

Miguel Carames (Verizon)

Chair: Yvon Rouault (EXFO Inc., France)

COVID-19 has dramatically altered how our society works, learns and communicates. User behavior changes have impacted how operators engineer and operate the wireless networks. At the same time, service providers have diverse tools available to adjust in a flexible and agile fashion. After highlighting some key network insights, this talk will focus on 4G and 5G networks as well as the underlying architectures underpinning the evolution of wireless networks such as Network Function Virtualization and analytics.

Thursday, May 14 19:35 - 20:20

Paper Session #4 - Network Security

Chair: Carol Davids (Illinois Institute of Technology & School of Applied Technology, USA)

Firewall Configuration and Path Analysis for SmartGrid Networks
   Nastassja Gaudet, Abhijeet Sahu and Ana E Goulart (Texas A&M University, USA); Edmond Rogers (IT TECHNICAL ASSOCIATE, USA); Katherine Davis (Texas A&M University, USA)

Data Processing and Model Selection for Machine Learning-based Network Intrusion Detection
   Abhijeet Sahu, Zeyu Mao, Katherine Davis and Ana E Goulart (Texas A&M University, USA)

Thursday, May 14 20:25 - 21:15

Keynote #3 - Network Data Science

Brian Connelly (Ookla)

Chair: Yvon Rouault (EXFO Inc., France)

The COVID-19 pandemic has challenged networks like never before and has magnified the importance of understanding performance and reliability at a fine level of detail. Using data provided by millions of Speedtest users from around the globe, this talk will highlight some of the unique ways in which users have changed their behavior, and how fixed and wireless networks have responded.

Thursday, May 14 21:15 - 21:30

Part 2 - Concluding Remarks