

# Panel: The Evolution of Wireless Video - Technology and Applications

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## ABSTRACT

As wireless technology has progressed from the simple GPRS-based cellular radio modems to the highly complex LTE and 802.11ac networks, users have increasingly sought a satisfactory user experience from video applications running over such networks. This panel discussion aims to look back at the progress made in this aspect, and provide guidance to researchers as to what trends to expect in improving user experience of video consumption over wireless networks.

## Categories and Subject Descriptors

C.2.m [Computer-Communication Networks]: Miscellaneous

## General Terms

Performance, Design, Human Factors, Standardization

## Keywords

Wireless Video; Broadcast; Multicast; Video Applications

## Panelists

This panel brings together some of the leading experts in the development and practice of wireless video technology. These experts have a wide array of expertise between them and come from academia, industry, government and the defense sector. The biographies of the panelists are given below.

### 1.1 Jill Boyce, Vidyo Inc.

Jill Boyce is Director of Algorithms at Vidyo, Inc., in Hackensack, NJ, USA, where she leads video and audio algorithm development. She represents Vidyo at the Joint Coding Team of ISO MPEG and ITU-T VCEG for the development of the HEVC video coding standard, where she is an editor of SHVC scalable coding and MV-HEVC multi-view extensions of HEVC. She was formerly VP of Research and Innovation for Technicolor in Princeton, NJ, and Associate Editor of IEEE Transactions on Circuits and Systems for Video Technology. She was an active contributor to the H.264/MPEG-4 AVC and SVC standards. She is the inventor of over 100 granted US patents, and has published more than 40 papers in peer-reviewed conferences and journals.

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ACM 978-1-4503-1999-7/13/09.

### 1.2 Dina Katabi, MIT

Dina Katabi is a Professor in the Department of Electrical Engineering and Computer Science, a member of the Computer Science and Artificial Intelligence Laboratory (CSAIL) at MIT, and the director of MIT's new wireless research center, Wireless@MIT. Katabi's work focuses on wireless networks, mobile applications, network security, and distributed resource management. She received her PhD and MS from MIT in 2003 and 1999, and her Bachelor of Science from Damascus University in 1995. She has received best paper awards from ACM SIGCOMM and Usenix NSDI. She has been awarded the ACM Murray Grace Hopper award in 2012, a Faculty Research Innovation Fellowship in 2011, the IEEE William R. Bennett prize in 2009, a Sloan Fellowship in 2006, the NBX Career Development chair in 2006, and an NSF CAREER award in 2005. Her doctoral dissertation won an ACM Honorable Mention award and a Sprowls award for academic excellence. In 2012, Prof. Katabi's and Prof. Indyk's sparse Fourier transform was selected as one of Tech Review's Top 10 Most Important Emerging Technologies.

### 1.3 Mark Rich, DARPA

Mark Rich joined DARPA in 2010, as a Program Manager for the Strategic Technology Office. Mr. Rich's program thrusts involve distributed sensor and communication systems for ISR systems and heterogeneous communication technology. Incorporation of commercial technology and development processes is a focus.

Prior to joining DARPA, Mr. Rich worked at Atheros Communications where he managed reference design and development teams for high volume commercial 802.11n semiconductor radios. Prior to Atheros, Mr. Rich developed distributed and heterogeneous communications system and protocols for military communications and sensing applications. He was cofounder and CTO of SkyPilot Networks where he developed the mesh architecture for commercial broadband wireless infrastructure services. Mr. Rich was also the laboratory director for SRI International's Communication and Signals Technology Laboratory where he contributed to satellite communications, software defined radio, terrestrial cellular communications, digital audio broadcast systems, meteor burst communications and acoustic signal processing programs.

Mr. Rich holds patents in digital audio broadcasting, polyvector modulation, mesh communications protocols and architectures and antenna systems. Mr. Rich has served on the Defense Science Board panel for tactical battlefield communications. Mr. Rich received a Bachelor of Science in electrical engineering, from Michigan Technological University, and a Master of Science in electrical engineering from Stanford University.

#### **1.4 Jeffrey Foerster, Intel Inc.**

Jeff Foerster is currently a Principal Engineer and manager in the Wireless Communications Lab within Intel Labs. He has led research and standards in short- and medium-range wireless technologies, which has included Ultra-wideband (UWB) technology and related regulations, 60 GHz system design, and wireless displays, and he is currently leading research in wireless mobile video services. Jeff is a Senior Member of the IEEE, has published over 15 IEEE papers including journals, magazine, and conferences, has been an invited panelist at several conferences, was lead author of a book chapter on UWB, and has contributed to several international regulatory bodies including CEPT TG3 and ITU TG1/8. He received his B.S., M.S., and Ph.D. degrees from the University of California, San Diego, where his thesis focused on adaptive interference suppression and coding techniques for CDMA systems. He is also chair of the Intel PHY Communications Research Council which reviews and approves

grants to universities in the optical, RF circuits, and communications systems areas.

#### **1.5 Thyaga Nandagopal, NSF**

Thyaga Nandagopal is the moderator of the panel, and serves in the Directorate of Computer & Information Science and Engineering (CISE) of the National Science Foundation. He manages wireless networking and mobile computing research within the Networking Technologies and Systems (NeTS) program at NSF. He has been with the Foundation since February 2012. Dr. Nandagopal received his Ph.D. in Electrical Engineering in 2002 from the University of Illinois at Urbana-Champaign. He was at Bell Labs from 2002 to 2012. His research interests have spanned several areas over these years: wireless ad hoc/mesh networks, RFID/sensor networks, internet routing architectures and protocols, cloud computing, and energy-efficient networks.