



IEEE 5G SUMMIT San Diego

April 19th, 2019

5G Tutorials, Demo, and Expo

Social with IEEE YPE/ WIE/ Consultants Networks/ NeXT, Social Networking

April 20th, 2019

Topics: RF, HW, SW, Photonics, Systems, Applications (Drones, EV),
Verticals (Enterprise/Private networks/Industrial), IPR, policy session

Keynote 1: Friday



Mansoor Hanif

CTO of Ofcom, UK

<https://www.linkedin.com/in/mansoor-hanif-490956/>

Title: *Ofcom Priorities for UK Regulation: Universality, Fairness, Reliability and the role of Innovation*

Mansoor has 25 years' experience of planning, building, optimising and operating mobile networks around the world. From 2011 Mansoor was Director of RAN at EE and a board member of MBNL (the joint venture of EE with H3G) until 2016. At BT Mansoor was Director of the Converged Networks Research Lab from 2016 to 2018, and led collaboration with UK

Universities, innovators, and government bodies.

From September 2018 Mansoor is the CTO of Ofcom, the UK telecoms and media regulator. As CTO he is head of the technology profession across the organisation, ensuring that the technology aspects of all Ofcom's policy work are informed and robust, and is a member of the Policy and Management Board (the decision-making body at executive level). He also leads Ofcom's activities in network security & resilience as well as engagement with CTOs at our stakeholders, industry bodies and with Government. Outside of Ofcom, Mansoor is also a member of the Advisory Boards of the UK5G Innovation Network, the Satellite Applications Catapult and UCL Electrical and Electronic Engineering Dept and is Patron of the Institute of Telecoms Professionals.

Keynote2: Saturday



Caroline Y. Chan

**Vice President, Data Center Group
Intel Corporation, General Manager,
Network Business Incubator Division**

<https://www.linkedin.com/in/caroline-chan-8773161/>

Title: 5G Accelerating Enterprise Digital Transformation

Caroline Y. Chan is vice president in the Data Center Group and general manager of the group's Network Business Incubator Division at Intel Corporation. She has overall responsibility for Intel's global network infrastructure strategy and solution development related to 5th-generation wireless technology. Chan and her team identify and develop use cases that incorporate the Internet of Things, innovation in wireless technologies and deployment models, such as mobile edge computing and alternative spectrums that will enable new service providers and enterprise networks.

Since joining Intel in 2009, Chan has worked closely with telecommunications vendors, operators and application developers to advance strategy and marketing in virtual RAN, mini Cloud-RAN and mobile edge computing technologies. Before leading the 5G infrastructure division, she spent six years as director of wireless technology and strategy. In that position, Chan oversaw server CPU extension into Intel's wireless infrastructure business, a role that encompassed investment strategy, CPU adoption and modification, marketing, and business development. Earlier in her Intel career, she led strategy and business development for the WiMAX program office.

Before joining Intel, Chan had a 15-year career at Nortel Networks Corp., culminating in her role as director of 4G wireless product management.

Chan holds bachelors and master's degrees in electrical engineering from the University of Texas at Austin and the University of Massachusetts Amherst, respectively. She serves on the board of the Telecom Infrastructure Project and the xRAN organization. Her contributions in the area of virtualized wireless radio access networks earned Chan an Intel Achievement Award in 2016.

Keynote3: Saturday



Durga Malladi
Senior Vice President, GM, 4G/5G
Qualcomm Technologies, Inc.

<https://www.linkedin.com/in/durga-malladi-46439a8/>

Title: 5G: From Concept to Commercialization, and What's Next

Durga Malladi is Senior Vice President and General Manager, 4G/5G in Qualcomm Technologies, Inc.

Durga joined Qualcomm in 1998 as a Senior Engineer. Over the past 20 years, he has worked on 3G and 4G technologies, and was the Project Engineer of 4G LTE-Advanced in Qualcomm Research from 2008-15, responsible for features such as mobile broadband, Carrier Aggregation, HetNets, Relays, Dual Connectivity, Licensed Assisted Access (LAA), Internet of Things (eMTC, NB-IoT) and Cellular V2X.

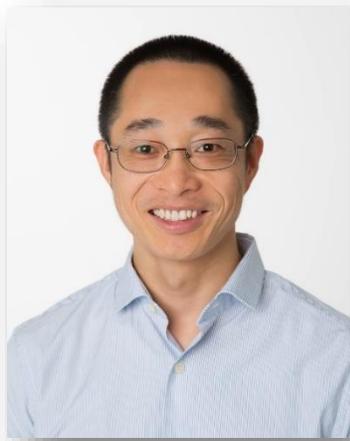
From 2015-18, he oversaw the 5G and Wi-Fi Wireless R&D projects, spanning Sub6 and Millimeter Wave bands, with applications in enhanced Mobile Broadband (eMBB), Integrated Access and Backhaul systems, Unlicensed / Shared Spectrum Access, Massive IoT (mIoT), Ultra Reliable Low Latency Communications (URLLC), Industrial IoT, 5G based Vehicular Communications (C-V2X) and evolution of Wi-Fi beyond 802.11ax. The responsibilities spanned system design, standardization, prototype testbeds, pre-commercial vendor inter-operability tests and trials.

As SVP & GM 4G/5G, he is responsible for cellular modem and location businesses, baseband and transceiver modem technology roadmap, features, software products, and infrastructure and operator commercial engagements. He drives the overall 5G roadmap and solutions across business units, spanning Mobile, Industrial, Enterprise and Automotive segments.

He is the recipient of Qualcomm's IP Excellence Award, Qualcomm Distinguished Contributor Award for Project Leadership and Upendra Patel Achievement Awards for Outstanding Contributions to HSPA and LTE.

Durga holds a B.Tech from Indian Institute of Technology, Madras, and an M.S and Ph.D. from UCLA. His research interests include Signal Processing, Communication Theory and Artificial Intelligence. He is a member of IEEE and holds 440 U.S. patents.

Tutorial 1: Fundamentals of 5G NR



Speaker: Dr. Liangping Ma
Member of Technical Staff
InterDigital

Dr. Liangping Ma is a Member of Technical Staff with InterDigital, where he currently works on applied machine learning research, and previously was involved in 3GPP 5G NR standards activities and led the project on Quality of Experience (QoE) based video communication. Prior to joining InterDigital in 2009, he was with San Diego Research Center and Argon ST (acquired by Boeing), where he designed and prototyped the baseband module of a modem for wireless sensor networks, and policy-driven dynamic spectrum access protocols for cognitive radios. He is the co-inventor of 15 families of granted patents and the author/co-author of more than 10 journal papers. He has served as the IEEE Communication Society (ComSoc) San Diego Chapter Chair since 2015. He is an IEEE ComSoc Distinguished Lecturer (2017-2020), and has given talks on 5G and video communication. He was on the organizing committee of International Conference on Multimedia and Expo (ICME) 2018. He teaches “Fundamentals of 5G NR” at UC San Diego Extension. He received his B.S degree in physics from Wuhan University, China, 1998 and PhD in electrical engineering from University of Delaware in 2004.

Tutorial 2: 5G Next Generation Core (NGC)



Dr. Tom Tofigh,
Quanta Cloud Technologies

Tom was until recently few weeks ago, a Principal Member of Technical Staff in the AT&T’s Domain 2.0 architecture and planning Labs at AT&T. Tom has been responsible for planning and implementation of large-scale telecommunications equipment He has extensive experience that spans across many disciplines including 5G networks. Tom is currently representing AT&T at Open Networking Foundation working on Open Source CORD. He holds over 75 patents awarded and many more pending, and a Juris Doctor (JD) degree and will be on the Innovation IPR panel as well.

Abstract: This tutorial covers an industry perspective and a roadmap towards 5G with open and democratized interfaces. It covers examples of open reference platforms and how open source

communities can complement standard bodies such as 3GPP and IEEE. It characterizes RAN and user and control plane core micro services and discusses opportunities for embedded network telemetry for emerging machine learning applications.

Tutorial 3: Power challenges with 5G

Dr. Navid Ehsan Intel, Francesco Carobolante, IoTissimo, Dr. Reza Rofougaran, Movandi



**Dr. Navid Ehsan
Intel**

Dr. Navid Ehsan is currently with Intel where he is working on converged mobility and SoC power architecture. Prior to joining Intel in 2018, he was with Qualcomm for 8 years where he worked on protocol design and modem power. He led the LTE power optimization efforts over several generations of modems and was also the power lead for the first 5G chipset. Before joining Qualcomm, he was at Nextwave where he worked on WiMAX MAC layer design. He holds 16 granted patents and is author/co-author of about 20 journal and conference papers. He received his BS degree in electrical engineering from Sharif University of Technology, Tehran, Iran. He received his MS degrees in electrical engineering and in applied mathematics from the University of Michigan, Ann Arbor, in 2002 and 2004, respectively. He received his Ph.D. in electrical engineering and computer science from the University of Michigan, Ann Arbor, in 2005.

Tutorial 3: Power challenges with 5G, continued



**Dr. Reza Rofougaran
Founder,
Movandi**

Reza Rofougaran is a leading pioneer, engineering executive, inventor and entrepreneur in the wireless communications industry. He has pioneered research in RF CMOS technology and led the integration of the RF radio with digital processors to enable short range wireless connectivity, Bluetooth, and short-range wireless network, Wi-Fi, and millimeter RF. He was the founder of Innovent Systems in 1998 that merged with Broadcom in 2000, while at Broadcom he pioneered the integration of multiple wireless systems into single chip. Most recently, he founded Movandi Corporation with a mission to revolutionize

5G everywhere. He is one of the top ten patent holders in U.S. and top thirty patent holders in the world.

In 1998, at Innovent Systems he pioneered the research in RF CMOS, RF radio, and digital processing to enable short range wireless connectivity, that intimately led to Broadcom's purchase and merge of Innovent in 2000. In 2005, at Broadcom he integrated multiple wireless systems into single chip CMOS, enabling smart phones and mobiles devices with Wi-Fi in coexistence with Bluetooth and other wireless systems. This had a major impact on mobile devices and over 90% of today's internet traffic and daily wireless connections are through these integrated chips that Reza developed. In 2006, he became a Broadcom fellow for his contribution to RF CMOS and radio technology that was critical in building the wireless business at Broadcom that shipped in excess of 1.5 billion radios per year. In 2010, he became an IEEE Fellow for his contribution to integration of RF radios into single chip CMOS technology. In 2016, he founded Movandi Corporation developing 5G wireless network systems. In 2018, he received IEEE Industrial Pioneer award, for research in RF CMOS followed by a leading role in industrialization of single-chip CMOS radio-on-chip that enable today's smartphones. He was also recognized by UCLA as a pioneering figure in the wireless communications industry and a prolific inventor, awarded the UCLA 2018 Alumnus of the Year. With more than 850 issued patents, he is one of the top patent holders in the world, appearing in 77 publications and receiving 20 awards. Ahmadreza (Reza) Rofougaran received his BS in 1986, MS in 1988, PhD in 1988 from UCLA.

Tutorial 3: Power challenges with 5G, continued



Francesco Carobolante

**Principal
IoTissimo**

Francesco Carobolante is Principal at IoTissimo, where he helps global organizations and young companies develop technology and business strategies to compete in the fast-changing high-tech world. Previously, he was Vice President Engineering at Qualcomm and held senior positions in other major Semiconductor firms and start-ups, developing leading edge products for Mobile, Computer Peripherals, Digital Audio, Wireless and Wireline Communication.

Creator of many industry "firsts", including resonant wireless charging, which was Best of Innovation Award Honoree at 2015 Consumer Electronic Show, Carobolante is a renowned innovator and market development leader with extensive track record in establishing technology partnerships.

He authored over 70 US patents and has been invited keynote speaker at several premier international engineering conferences. He received MSEE degrees from both University of Padova and UCLA.

Panel Session 1: SDN/vRAN/Edge Compute

Technical Program Co-Chair, Session Chair:



Dr. Poornima Lalwaney
Senior Director
Intel

Poornima Lalwaney is a Senior Director of Engineering at Intel where she leads the 5G Converged Mobility Systems team. She joined Intel in April 2018. Prior to Intel, Poornima has held technical leadership roles in the mobile wireless industry at Qualcomm, Motorola and Nokia all at San Diego. Poornima has 24 years of experience in broadband wireless systems, software and products. She has worked on early technology commercialization, has led systems, software and product teams delivering

products to Mobile Operators around the world. Poornima holds 10 U.S patents in data networking protocols and mobility system architectures and has contributed to the IETF and 3GPP2/3GPP standards.

Poornima Lalwaney holds a Ph.D. in Electrical and Computer Engineering from the University of Massachusetts, Amherst and a Master's degree in Electrical Communications Engineering from The Indian Institute of Science, Bangalore, India. Poornima has served on technical program committees and chaired sessions at IEEE Conferences. Poornima is a past chair of the San Diego chapter of the IEEE Communications Society. Poornima is involved with San Diego startups mentorship programs and has served on the Evonexus incubator Committee.

Speakers:



Rajesh Mishra
Founder, President, and CTO
Parallel Wireless

Rajesh Mishra is a visionary who, together with the other Parallel Wireless, Inc.'s founders, accurately identified the need for easy to deploy, resilient and cost effective network architectures that would overcome many of the legacy technical challenges associated with wireless communications — the foundation upon which Parallel Wireless was born. Rajesh co-founded the company after 22+ years of reimagining the wireless, wireline, and cable industry and he leads the technology behind the Parallel

Wireless' solutions. As one of the industry's pioneers in convergence technologies, he led the development of next-gen VoLTE and 3G/4G Femtocell convergence servers at Tata, led transformation of first commercial softswitch into a Wireless MSC product at Bell Labs/Lucent, reimagined cable industry leading IMS servers at Cedarpoint, and led a commercial mobile ad hoc networks (MANETS) development at Powerwave Cognition.

Rajesh's background also includes designing an enterprise Unified Communications System (Whaleback); developing a next-generation soft switch (Excel Switching). At the beginning of his career, Rajesh was involved in early development of analog and digital wireless base stations at Steinbrecher/Tellabs and Hughes Network Systems.

Mr. Mishra has been awarded many industry awards, among them: Lucent Technologies/Bell Lab Distinguished member award, IEEE paper presentation awards. He also has experience as a spokesperson with industry and business press, analysts and as a presenter at industry conferences.

He has a portfolio of 65+ US and international patents pending and issued. Rajesh holds a BS in Computer Science from IIT.



Joseph F. Thome
Vice President, Business Development
AirHop Communications

Joseph F. Thome is vice president of business development at AirHop Communications, a pioneer in real-time network intelligence software. He has responsibility for AirHop's go-to-market strategy, product marketing and global partnerships related to the eSON and eSON360 Analytics product lines.

Since joining AirHop in 2015, Thome has driven product strategy and customer acquisition from innovative prototypes to having hardened commercial systems deployed at scale. He has worked closely with network operators, RAN vendor and industry consortia to advanced AirHop's products, thought leadership and business for network intelligence solutions.

Prior to AirHop Communications, Thome led business development and marketing of digital RF transceiver ICs at Orca Systems and an array of cellular handset modem businesses at Texas Instruments, spanning CDMA2000, WiMAX, TD-SCDMA and UMTS. He was a co-founder of Dot Wireless, a CDMA2000 modem IC company, serving as CFO from inception through its acquisition by TI. Thome also held various marketing and engineering roles at Protomatics, NextWave Telecom and Motorola.

Thome holds a bachelor of electrical engineering from the University of Iowa, a master of electrical engineering from National Technological University and a master of business administration from the University of California Los Angeles.



Masood Amin
Vice President,
Aricent

Masood Amin is VP and head of Product management for Altran software frameworks business which provide cutting edge technology for Wireless, Networking, Cloud & Edge and Automotive. Masood is responsible for product strategy, incubation engine and roadmap execution. He has represented Aricent in many forums and conferences on wide areas of technology e.g. SDN/NFV, Cloud Architecture, 5G transport, Access Networks and Data Center networks. Masood has 20+ year of experience on Carrier Ethernet, Transport Networks. He worked as chief architect and system engineer for various wireline technologies on various embedded computing platforms, with emphasis on platform engineering, protocol design, stacks and frameworks. Masood brings rich experience from leading technology companies - Hughes, BEL, Flextronics and Aricent. He holds Bachelor of Technology from Jamia Millia University, Delhi.



Dr. Sridhar Rajagopal
Vice President
Mavenir

Sridhar Rajagopal is a Vice-President at Mavenir Systems, where he heads the system design for Mavenir's cloud RAN products for LTE and 5G. Prior to this, he was one of the initial employees at Ranzure Networks, a cloud RAN start-up. He also had R&D roles in design, prototyping and standardization of 5G cellular and Wi-Fi systems at Samsung, in UWB technology at WiQuest communications and 3G/4G research at Nokia. He was an associate editor for the Journal of Signal Processing Systems (Springer) and has leadership experience in standardization bodies such as IEEE and WiMedia. He was a co-recipient of the IEEE 2017 Marconi Prize Paper award for his research on mmWave systems. He has co-invented around 40 issued US patents. He received his M.S. and Ph.D. degrees from Rice University and is a senior member of IEEE.

Panel Session 2: 5G Standards and Deployment

Technical Program Co-Chair, Session Chair

Dr. Liangping Ma

Member of Technical Staff

InterDigital

See Above Info In Tutorials



Speakers:

Dr. Juan Montojo

VP of Engineering

Qualcomm Technologies, Inc

Juan Montojo is VP of Engineering at Qualcomm's Corporate Standards group. He has Telecommunications Engineering degrees from the Technical University of Catalonia, Barcelona, Spain, and Institut Eurecom, Sophia Antipolis, France, as well as, MS and Ph.D. degrees in Electrical Engineering from the University of Southern California and UC San Diego, respectively.

Dr. Montojo joined Qualcomm in San Diego in January 1997 and has worked in the system design and standardization of various communication systems including Globalstar, 3G, 4G, 5G, and WiFi as part of the corporate R&D and Standards groups. He led the 3GPP PHY layer standardization of WCDMA Rel-7 and of LTE Rel-8, 9, 10, and part of 11. He led the Qualcomm Research Germany group from Nov '11 to July '15 working on Gbps cable modem design and IEEE standardization, as well as, 802.11ah modem design and implementation. Upon his return to San Diego, Dr. Montojo led the system design of 5G NR unlicensed and spectrum sharing until he moved back to the 3GPP team in January '17 where he helped with the execution of the 5G NR acceleration. Currently, Dr. Montojo works in the design and standardization of 5G NR Phase 2.

Dr. Montojo has been a recipient of QCT's Upendra Patel Achievement Awards for Outstanding Contributions to LTE, CRD's Excellence award for Management of Qualcomm Research Germany, and IP Excellence award for his contributions to 5G. Dr. Montojo has over 400 granted US patents and over 4,000 granted patents world-wide.



Dr. Mingxi Fan
Distinguished member of technical staff
XCOM Labs, Inc.,

Dr. Mingxi Fan is currently a distinguished member of technical staff at XCOM Labs, Inc., a startup with mission in driving innovation in wireless technology and edge computing founded in June 2018. His present focus is on the development of technology roadmap and associated innovation and ecosystem strategy. Prior to this he worked at Qualcomm for 16 years, mostly in R&D, where he drove key technology initiatives on 3G, LTE TDD, LTE unlicensed, and 5G spectrum sharing from concept to realization, and from standardization to commercialization. His responsibilities over the years spanning across system design, prototype, standardization, technology evangelization, and commercial product development and verification. He established Qualcomm Research China operation in 2008 in Beijing as the first overseas research division for the company, where the division now is an advanced technology power house in China for Qualcomm on 5G, robotics IoT, and machine learning. He was also vice president of engineering at Qualcomm Technology Licensing division driving advanced technology investment strategy and eco-system technical partnership projects in areas of wireless, multimedia and mobile artificial intelligence. He holds over 40 granted US patents and received top contributor awards in Qualcomm R&D in 2004 and 2011.

Mingxi received his Bachelor & Master and Ph.D degrees in Electrical Engineering in 1999 and 2002, respectively, from the Massachusetts Institute of Technology, Cambridge, MA, where he also received the Ernst A. Guillemin EE Master's thesis award from MIT in June, 1999.

Talk title: 5G Mobile Edge Computing: Applications and Challenges

Abstract:

The 5G NR air interface released as a part of 3GPP rel-15 has laid an important foundation to enable low-latency mobile-edge computing where significant on-device for a given application can be offloaded to the edge of network where the RAN resides. On the other hand, even with the specification in place, for a given application, significant end-to-end optimization and feature implementation is required based on the nature and requirement of the application. In this session we discuss the technical challenges for a few key vertical applications and potential areas of development ahead.



Dr. Jungwon Lee
Vice President
Samsung

Dr. Jungwon Lee (M'05–SM'12–F'18) is a Vice President at Samsung SoC Lab in San Diego, CA, in charge of cellular modem and multimedia. He received his PhD degree in Electrical Engineering from Stanford University in 2005. From 2003 to 2010, he was with Marvell Semiconductor, Inc., where he developed HD Radio, Bluetooth, Wi-Fi, WiMAX, and LTE chips. Since 2010, he has been with Samsung USA, developing communication chips such as cellular modems, Wi-Fi, Bluetooth, ZigBee, and GNSS and multimedia solutions. He is currently conducting research on 5G NR modem and AI. He has co-authored more than 100 papers and holds over 400 patents. Dr. Lee is an IEEE Fellow.

Abstract: In this talk, I will describe the current status of 5G standards and deployment, Samsung's efforts in making the 5G a reality, and the future of 5G.



Dr. Byung K. Yi
Executive in Residence, EvoNexus
Visiting Scholar, UC San Diego

Dr. Byung K. Yi is an executive in residence, EvoNexus, and a visiting scholar at UC San Diego. He was InterDigital's Executive Vice President, Chief Technology Officer from 2014 to 2018. As CTO of InterDigital,

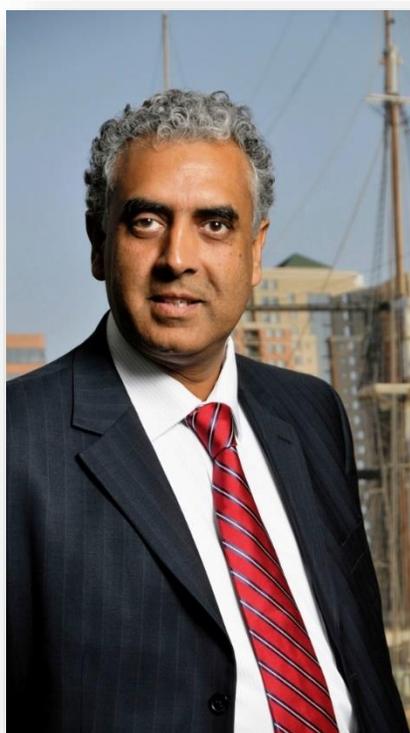
Dr. Yi was responsible for directing the development of advanced wireless and network technologies, and the advanced researches related to Robotics, advanced cyber security systems for the IoT systems, and the platform for advanced wireless communications. Dr. Yi joined InterDigital in April 2014 from the Federal Communications Commission (FCC), where he had served as assistant division chief of engineering since 2012. Prior to his appointment at the FCC, Dr. Yi was at LG Electronics from 2000 to 2012, whereas Senior Executive Vice President he headed the company's North American R&D center. A former member of InterDigital's Technology Advisory Council, Dr. Yi contributes more than 30 years of advanced wireless development experience, satellite system designs, and aerospace communication and computer designs. Dr. Yi also contributes a strong history of industry leadership.

He currently serves on the board of directors of the Telecommunications Industry Association and has served on the board of directors or steering committees of a number of professional

organizations, including the Center for Wireless Communications, the 3rd Generation Partnership Project 2 Technical Specification Group, and a number of others. He was awarded the prestigious CDG (CDMA Development Group) Industry Leadership award, been recognized by the National Engineer Week (NEW) Foundation, and inducted to the Hall of Fame by the School of Engineering and Applied Science of George Washington University. Dr. Yi received his bachelor's degree in electrical engineering from Yonsei University (Korea), his master's degree in electrical engineering from the University of Michigan, and his doctoral degree in electrical engineering from George Washington University.

Panel Session 3: 5G for Smarter and Safer Cities

5G Summit General Chair, Session Chair,



Upkar Dhaliwal

Future Wireless Technologies

<https://www.linkedin.com/in/upkar/>

Upkar Dhaliwal C.Eng. MIET, SMIEEE, MSc UCL, General Chair 5G Summit San Diego 2019, [IEEE TTM 2018](#) Local Arrangements, [IEEE San Diego Section](#) Senior Past. Chair, [IEEE COM-SOC Region 6 NA Board Past](#) Member, [IEEE IOT-J](#) Steering ExCOM, [SDN-I](#), [5G-I](#), CEO [Future Wireless Technologies](#), Biz Dev: [Cognition Systems](#), [Phluido](#), [AgShift](#), [Big Data Federation](#), [Assured Wireless](#)

Upkar Dhaliwal is a Parallel Entrepreneur and Wireless Technology subject matter expert on Mobility, He has hands on wireless and internet experience undertaking Application, Intellectual Property, Business Development and Technical advisor support on Present and Future Wireless Technologies and its product development for startups, OEMs, private equity and with most of Market Leaders.

A Professional Chartered Engineer of [Engineering Council UK](#), He is a Senior Wireless & RF System Architect Executive, an industry expert serving on numerous industrial/technical/policy bodies with US National Policy influences and technical societies with specialized knowledge and technical leadership for many Start up, Internet Giants and the investment community. He has worked at BBC, Marconi, Thorn-EMI Electronics, Samsung, Qualcomm, STMicroelectronics until taking up more innovative roles.

At present, working on beyond 4G charting towards 5G in terms of UxV, Cognitive Radios, Distributed Mesh Sensor Radios and beyond LTE-Advance into the World of Big Data and Internet of Things IoT that will drive next generation of Internet. Volunteering in many IEEE roles.

He grew up in West London England and studied for Bachelors & Masters Degrees in Engineering, Leeds and University College London Universities respectively, leading to early career experiences & contributions in device modeling, circuit design and subsystem developments where he led worldwide engineering teams in some World Class Firsts. Some new Firsts are still being implemented in MANET connected devices, Hybrid Cloud Services and Predictive Insight Big Data.

Speakers:



Erik Vlugt,
Vice President, Global Product Management
Cubic Transport Systems

Erik has responsibility for the company's product strategy, including formulating product and technology outlooks, defining and executing existing customer technology roadmaps, and oversight of the CTS research and development portfolio. Under his leadership, CTS is building out team development, product vision, execution and product culture.

He has over 20 years in senior product management leadership roles within the payment and electronics industries and has a track record of building global teams, running multi-million-dollar product portfolios, and driving new growth and profitability.

In his former role, Erik was vice president, global product management for Verifone, where he led product management for a wide variety of payment solutions and emerging technologies.

Erik speaks regularly on payment related topics, including mobile, EMV, and NFC, at industry events, and in 2012, addressed the Congressional Financial Services Committee on the topic of emerging payment technologies. In 2014, Erik was appointed to the Smart Card Alliance's EMV Migration Forum Steering Committee.

Previously, Erik also held consumer electronics product management and technical marketing positions at TDK Corporation and ShareWave, which was later acquired by Cirrus Logic. He has a bachelor's degree in computer science and business from the Amsterdam University of Applied Sciences



Amit Bhaduri
CTO
Agshift,

Dr. Amit Bhaduri is the Chief Technology Officer at AgShift, an Agri-tech startup in the midst of bringing disruption to the quality inspection of fresh food using Artificial Intelligence. Prior to joining AgShift, he was a tech lead at Intel leading the development of simulation-based virtual platforms for all of Intel's silicon engineering teams in order to shorten the product lifecycle and reduce the time to market. He was also one of the main developers for Intel's on-chip noise simulator and the prime lead for building the virtual platform for the new product initiative in Intel's Platform Architecture group. He has over 20 years of enterprise and academic software development experience along with organic in-depth expertise in AI and embedded systems. Recently, he filed a patent for an IOT based apparatus in the food quality inspection space and has several academic EDA publications in VLSI engineering. Amit finished his Ph.D. in Computer Engineering from the University of Cincinnati in 2005 and worked at Motorola and TCS back in India between 1997 and 2000.



Thomas Bilotta
CEO Founder
Assured Wireless Corp

Principal, founder, consultant, you name it and Tom Bilotta's done it. Tom clings to his serial entrepreneurial roots, bridging the gap between business strategy and technology. Tom received his start in the aerospace industry, performing advanced signal and image analysis for the detection and recognition of critical threats in the harshest of signal environments. He then applied these techniques to develop advanced digital communications techniques and rapidly took theoretical techniques to commercial products. Advancing this at Linkabit, the world's pioneer in digital communications, he then entered the entrepreneurial domain.

Tom served in high-level positions at eight high-tech startups and coordinated three successful exits, a cumulative raise of \$170 million. As a key player in multiple tech organizations – Nextivity, TurboNet Communications, Rainbow Network Systems, and Malibu Networks – Tom upped the value of new companies 15-30 times their initial worth in one to three years. All of these companies have a proven track record of rapid commercialization of advanced technologies. These companies have developed the best of breed commercial products while creating significant value. Their

successes were enabled through the advanced intellectual property developed by Tom, thus keeping these organizations far ahead of any competitive threats.

Tom has always been fascinated by connectivity solutions, from the product and business development side as evidenced by the seven communications and network-related patents he wrote. He is now advancing the technologies of mission critical communications and 5G technologies with a powerful team at Assured Wireless.

Tom has established himself as an expert in the field, having publications in multiple wireless and entrepreneurship journals. He holds an MBA in entrepreneurship from San Diego State University, post-graduate electrical engineering studies from Carnegie Mellon University and the University of California, Irvine, and a bachelor's degree in electrical engineering from Carnegie Mellon University.



Rajesh Mishra
Founder, President, and CTO
Parallel Wireless
See bio above In Session 1

Panel Session 4: Power Efficiency in 5G Front Ends: Are We Keeping Cool?



Session Chair
Francesco Carobolante
Principal
IoTissimo
See bio above In Tutorials

Speakers:



Dr. Navid Ehsan
Intel
See bio above In Tutorials



Mike Kappes
CEO
IQ-Analog

Mike Kappes is an entrepreneur, engineer, and inventor in the semiconductor industry. His career began as an engineer at Brooktree where he developed CMOS transceiver technology for wireline communications. He led the analog front end development of a single-chip solution that ignited the DSL business. Later he joined Innovent Systems and contributed to the development of monolithic CMOS Bluetooth modems. Innovent was later acquired by Broadcom where Mike continued development of data converter technology for 802.11 wireless transceivers. In 2004 Mike left Broadcom to start IQ-Analog and focus on the research and development of high speed data converter technology. For over a decade, IQ-Analog licensed data converter intellectual property cores to support operations and in 2015 with the assistance of DARPA IQ-Analog developed a new class of high speed data converter technology based on temporal-domain signal processing. This new architecture led to an investment in IQ-Analog by Lockheed Martin and the development of a wide-band antenna processing ASIC in FinFET CMOS that is serving military markets ahead of 5G.



Reza Rofougaran
Founder,
Movandi
See bio above In Tutorials



Aristotele Hadjichristos,
GlobalFoundries

Aristotele Hadjichristos is an RFIC hands-on leader with 25-year experience in all aspects of RFIC and RF Front-End mobile product R&D. He is currently a Sr. Director of Design with Global Foundries, responsible for RF and mmWave reference designs. Before joining GF, he worked for 2.5 years at NXP as Senior Director of R&D leading an international team of 50 engineers and developing mobile power and mixed signal products for top tier mobile OEMs. Prior to NXP, he worked at

Qualcomm (QCT) for 12 years as a Senior Director where he led a 55 engineer RFIC design team and delivered two generations of CMOS 3G and 4G cellular transceiver products that shipped more than 2B units. He also led the first generation of QCT's RF Front-End products co-driving the creation of Qualcomm's RF Front End business. Before Qualcomm, he was with Ericsson Mobile Platforms for over 8 years where he designed IP for GSM products and led the development of the E150 Edge RF platform, which was the first product in the industry to enable the use of polar modulation in handsets. Aristotele started his career in the aerospace industry in Italy as an RF and microwave designer. He currently holds more than 150 US and international patents and has authored several IEEE papers.



Dr Naveen Yanduru
VP Engineering,
IDT

Title of talk: Beamformer Frontends and Up-Down Converter ICs for mmWave 5G Infrastructure

Dr. Naveen Yanduru started the San Diego site for IDT and currently leads the RF Engineering department. He has over 20 years of experience of managing product design and research in the field of RF, Microwave and mmWave RF front ends and transceivers. Prior to joining IDT, Naveen has held various technical and management

positions at Texas Instruments, Samsung, Peregrine Semiconductor and Qualcomm. Naveen authored 15 US Patents, 25 IEEE publications and served as Distinguished Lecturer for IEEE.

Panel Section 5: Patents, Policy and Innovation



Chair Ron D Katznelson

Co-Chair & Moderator

**Dr. Ron D. Katznelson,
Bi-Level Technologies**

Dr. Ron D. Katznelson is the Founder and President of Bi-Level Technologies, an image and signal-processing technology startup company in Encinitas, CA. He is a technology entrepreneur, named inventor on 24 U.S. patents and applications and an independent scholar of the patent system. From 1990 to 2005, he was at Broadband Innovations, a San Diego digital RF technology company he founded, where he served as Chairman, Chief Technology Officer and a contributor to the DOCSIS® cable modem specifications. Prior to 1990, Dr. Katznelson was the Director, New Technology Development at the VideoCipher Division of Linkabit Corp., later acquired by General Instrument Corp. (GIC). At GIC, he directed the R&D in Advanced Television Systems that led to the MPEG standard and managed the Division's intellectual property portfolio, patent litigation matters, and representation in industry groups and standards organizations. From 1982 to 1985, he was a professor of electrical engineering at the University of California, San Diego.

Dr. Katznelson also advises high technology startups. He is the Vice Chair for Patents, IEEE-USA Intellectual Property Committee, a member of the Federalist Society, and serves on the San Diego CONNECT Public Policy Committee.

He received his doctoral degree in Electrical Engineering from the University of California, San Diego, CA; his Masters in Applied Semiconductor Physics, and a dual BSc. degree in Mathematics and Physics, both from the Hebrew University in Jerusalem, Israel. He is a licensed private pilot and a licensed ham radio operator.

Speakers:

Mike Kappes

CEO

IQ-Analog, See info in Session 4



**Keith D. Grzelak, Wells
St. John PS**

Keith D. Grzelak is a director with Wells St. John PS, a Spokane, Washington Intellectual Property firm. Keith represents a broad range of technology clients and has taken clients from startup through funding, acquisition, and integration in several areas of technology. Keith is currently a member and past repeat chair of the IEEE-USA Intellectual Property Policy Committee where he has participated for over 24 years. He is also a past Vice President for Government Relations at IEEE-USA, chair of IEEE-USA Government Relations Council, and a prior candidate for IEEE-USA President. He has been active in teaching at numerous technology law legal education courses to both lawyers and engineers/scientists across the nation. He has represented both large and small companies, as well as individuals that have pioneered technology in a number of fields. Keith provides counsel on IP portfolio development, patent and trademark portfolio procurement and development, due diligence and board patent advisement. Keith has represented clients in a broad range of technical areas covering computers (hardware/software), internet and electronic commerce, communications and wireless technology, semiconductor devices, control systems, medical devices and processes, and various complex electromechanical systems.

Keith received a BS in Mechanical Engineering, an MS in Engineering Mechanics with a thesis in biomechanics, an MS in Electrical Engineering, and a JD in Law. Prior to law school, Keith worked as a vehicle safety and crashworthiness engineer for two of the Big Three automakers where they funded his way through law school.



**Jonathan T. Kaplan,
Patent Attorney
Panelist & Co-Chair**

Based in the Portland, OR area, Jonathan Kaplan runs a boutique intellectual property law firm. Prior to starting his own firm, Mr. Kaplan was a partner in a “Big Law” practice. His law degree is from New York University (1992), and his technical background includes a Master’s in electrical engineering and computer science from the Massachusetts Institute of Technology (1989). At MIT, his research included work at the AI Lab (now called CSAIL) and the Research Laboratory of Electronics. He has been a member of the IEEE since 1989. In his 26+ year career as an IP attorney, Mr. Kaplan has gained experience with a broad range of technologies, including: 5G, Wi Fi, optical networks, mixed-signal integrated circuits, EDA software for integrated circuit design or manufacture, computer networks, robotics, artificial intelligence, neural networks, neuron-level person-machine interfaces, and natural language processing.