WSRD Workshop VIII: Biographies

Ian Atkins is currently the Director Spectrum Engineering FAA Technical operations with 150 staff plus contractors at multiple US locations. FAA Spectrum Engineering is responsible for the daily resolution of Spectrum impacts and interference to the National airspace approximately (2700 incidents per year), engineering service volumes for Navigation, Communication and Surveillance systems and the development of policy at an international level including the successful negotiation of Global Flight Tracking.

Ian was trained by the Royal Navy (Britain) as a Professional Technology officer (weapons) and studied at the Royal Military College of Science. He spent 15 years in R&D in the telecommunications and power industries and has been awarded multiple worldwide patents in telecommunications and power protection. He was educated in England and holds undergraduate degrees in Electrical, Electronic and Control Engineering, a Master's degree in Electromagnetic Compatibility and a Postgraduate degree in Management.

Paige Atkins is the Associate Administrator, Office of Spectrum Management (OSM), within the U.S. Commerce Department's National Telecommunications and Information Administration (NTIA). Ms. Atkins leads spectrum management efforts for the executive branch agencies and manages engineering, frequency assignment and certification, national and international spectrum policy, and strategic planning functions. Her recent efforts have focused on President Obama's call to identify 500 megahertz for wireless broadband and to increase spectrum sharing and industry/government collaboration as tools for providing spectrum access. Ms. Atkins joined NTIA as the Deputy Associate Administrator for Spectrum Planning and Policy, leading OSM's efforts for international spectrum policy, strategic planning, and spectrum affairs and information programs.

Prior to joining NTIA, she was the Vice President of Cyber and Information Technology Research at the Virginia Tech Applied Research Corporation, where she led a broad portfolio of research, to include efforts to mature and demonstrate spectrum sharing approaches and technologies. As a member of the Senior Executive Service, Ms. Atkins served as Director for Strategic Planning and Information, Defense Information Systems Agency (DISA), leading the development and execution of resourcing strategies, business practices and strategic alliances to provide enhanced information and communications capabilities and services to our nation's warfighters and national leadership. She joined DISA in 2006 as the Director of the Defense Spectrum Organization. In that role, she provided executive leadership to DoD's center of excellence for electromagnetic spectrum engineering and management, policy development, information systems, modeling and simulation, and operations support. Prior to DISA, Ms. Atkins served in several industry and government leadership and engineering roles within Cisco Systems, Inc., Scitor Corporation, the DoD Joint Spectrum Center and Gould Ocean Systems Division. In 2011 Ms. Atkins was awarded the Office of the Secretary of Defense Medal for Exceptional Civilian Service, and has been hand selected to support multiple Defense Science and Business Boards addressing spectrum management challenges and opportunities. She holds a Bachelor of Science in electrical engineering from Virginia Tech and a Master of Science in engineering administration from George Washington University.

John Chapin is a Visiting Professor in the Department of Engineering and Public Policy at Carnegie Mellon University, and a Senior Consultant for Roberson and Associates. His work focuses on challenging problems at the boundary between technical and policy issues in utilization of the radio spectrum.

Dr. Chapin most recently served as Program Manager in the Defense Advanced Research Projects Agency (DARPA), where he initiated and led programs in spectrum access and spectrum sharing technology. Dr. Chapin previously served as Visiting Scientist at the Research Laboratory of Electronics of the Massachusetts Institute of Technology (MIT) and concurrently as Chief Scientist at TV Band Service, LLC. Earlier, he spent nine years in technical leadership roles at Vanu, Inc., a provider of software-designed radio (SDR) based cellular radio access networks. Prior to Vanu he was on the faculty of the Electric Engineering and Computer Science department of MIT.

In recognition of his work in the Department of Defense, Dr. Chapin was awarded the Office of the Secretary of Defense Medal for Exceptional Public Service and the Wireless Innovation Forum International Achievement Award. In recognition of his earlier technical work, Dr. Chapin received the Institute of Electrical and Electronic Engineers (IEEE) Dynamic Spectrum Access Networks (DYSPAN) conference best paper award, Software Defined Radio (SDR) Forum best paper award, SDR Forum Industry Achievement Award, and the Presidential Early Career Award for Scientists and Engineers (PECASE). Dr. Chapin holds two patents. Dr. Chapin earned a Bachelor of Arts in Japanese History, a Master of Science in Computer Science, and a Ph.D. in Computer Science, all from Stanford University.

Andrew Clegg is the Spectrum Engineering Lead for Google. He is presently focused primarily on identifying spectrum sharing opportunities for commercial wireless networks. Prior to joining Google, he served as the spectrum manager for the U.S. National Science Foundation for 11 years. At NSF, he founded the Enhancing Access to the Radio Spectrum (EARS) program, a $50 million program dedicated to funding academic and small business research focused on improving spectrum efficiency and access. Prior to NSF, he was a Lead Member of Technical Staff at what is now AT&T Mobility. He has over 20 years' experience in national and international spectrum management for both government and commercial applications, and was a member of the U.S. delegation to two World Radiocommunication Conferences.

Andy holds a PhD in radio astronomy (major) and electrical engineering (minor) from Cornell University, and a BA in physics and astronomy, with highest distinction, from the University of Virginia. He is also an extra class amateur radio operator (call sign W4JE).

Joseph B. Evans joined DARPA in June 2015 as a program manager in the Strategic Technology Office. His interests include advanced networking and communications technologies with an emphasis on large-scale wireless, dynamic and cross-domain systems. Dr. Evans is currently on leave from the University of Kansas (KU) in Lawrence, Kansas, where he is the Deane E. Ackers Distinguished Professor of Electrical Engineering & Computer Science. At KU, he led funded research programs in the areas of adaptive networking and communications systems, high speed network testbeds, rapidly deployable broadband wireless systems and spectrum sharing technologies.

Previously, Dr. Evans served as a program director in the Division of Computer and Network Systems, Directorate of Computer & Information Science & Engineering (CISE) at the National Science Foundation (NSF) from 2003 to 2005. At NSF, he was responsible for multi-organizational networking research efforts in wireless networking, cybersecurity, optical networking and scientific applications. He was a co-founder and member of the Board of Directors of NetGames USA, Inc., a network gaming company

acquired by Microsoft in 2000. He was also a partner and chief scientist at Ascend Intelligence, LLC, which developed the Tactical Ground Reporting System (TIGR) for DARPA and the US Army, with large deployments in the Iraq and Afghanistan theatres of operation. Ascend Intelligence was acquired by General Dynamics in 2010. Among other service activities, Dr. Evans served as a council member for the Computing Community Consortium Council from 2012 to 2015, and as a member-at-large on the IEEE Communications Society Board of Governors from 2009 to 2011. Dr. Evans received a B.S.E.E. degree from Lafayette College in 1983, and M.S.E., M.A. and Ph. D. degrees from Princeton University in 1984, 1986 and 1989, respectively.

Mark Gibson: With over 30 years of spectrum management experience, Mark is responsible for developing domestic and international business opportunities for Comsearch. In addition to leading Comsearch's technical and business development efforts numerous wireless and spectrum-related products and services, he has led efforts to address spectrum sharing between Federal government and commercial users. He is a co-chair of the Commerce Spectrum Management Advisory Committee, where he has also co-chaired working groups related to spectrum sharing and data exchange issues. He has led Comsearch's spectrum management efforts including the development of spectrum sharing analysis protocols and sharing criteria, as well as development of Comsearch's engineering services and software products. He has led Comsearch's efforts in working with the American Society for Healthcare Engineering as their technical partner for WMTS frequency coordination. He has authored several papers on spectrum sharing and relocation and has advised numerous wireless participants in their system design. He received his BSEE from the University of Maryland. With over 30 years of spectrum management experience, Mark is responsible for developing domestic and international business opportunities for Comsearch. In addition to leading Comsearch's technical and business development efforts numerous wireless and spectrum-related products and services, he has led efforts to address spectrum sharing between Federal government and commercial users. He is a co-chair of the Commerce Spectrum Management Advisory Committee, where he has also co-chaired working groups related to spectrum sharing and data exchange issues. He has led Comsearch's spectrum management efforts including the development of spectrum sharing analysis protocols and sharing criteria, as well as development of Comsearch's engineering services and software products. He has led Comsearch's efforts in working with the American Society for Healthcare Engineering as their technical partner for WMTS frequency coordination. He has authored several papers on spectrum sharing and relocation and has advised numerous wireless participants in their system design. He received his BSEE from the University of Maryland.

Dale N. Hatfield is currently a Senior Fellow at the Silicon Flatirons Center for Law, Technology, and Entrepreneurship and an Adjunct Professor in the Interdisciplinary Telecommunications Program – both at the University of Colorado at Boulder. Prior to joining the University of Colorado, Hatfield was the Chief of the Office of Engineering and Technology at the Federal Communications Commission (FCC) and, immediately before that, he was Chief Technologist at the Agency. He retired from the FCC and government service in December 2000. Before joining the FCC in December 1997, he was Chief Executive Officer of Hatfield Associates, Inc., a Boulder, Colorado based multidisciplinary telecommunications consulting firm. Before founding the consulting firm in 1982, Hatfield was Acting Assistant Secretary of Commerce for Communications and Information and Acting Administrator of the National Telecommunications and Information Administration (NTIA). Before moving to NTIA, Hatfield was Chief of the Office of Plans and Policy at the FCC. Hatfield has nearly fifty years of experience in telecommunications policy and regulation, spectrum management and related areas. He holds a BS in electrical engineering from Case Institute of Technology and an MS in Industrial Management from Purdue University. In May, 2008, Hatfield was awarded an Honorary Doctor of Science degree by the

University of Colorado for his commitment to the development of interdisciplinary telecommunications studies. Until recently, Hatfield was the Executive Director of the Broadband Internet Technical Advisory Group (BITAG). He is currently serving on the FCC's Technology Advisory Council (TAC) and on the Commerce Department's Spectrum Management Advisory Committee (CSMAC). He has served as an independent Director of Crown Castle International Corp. since July 2001.

William D. Horne is a senior spectrum technology advisor and communication systems engineer in NASA's Spectrum Management Program at NASA Headquarters where he is involved in enhanced spectrum access technologies, techniques, and policy for future science and space exploration concepts, small satellites, and space mission science operations and communications. During his career, Mr. Horne has prepared system designs and conducted research and development concerning wireless and satellite systems including broadband (Ka-Band) satellite and adaptive spectrum systems. In addition, he has extensive experience conducting system and wireless analyses for both communication standards and spectrum policy development. Mr. Horne has a BSEE from Lehigh University and an MSEE from Princeton University.

Thomas Kalil is Deputy Director for Technology and Innovation for the White House Office of Science and Technology Policy and Senior Advisor for Science, Technology and Innovation for the National Economic Council. From 2001 to 2008, Kalil was Special Assistant to the Chancellor for Science and Technology at UC Berkeley. He was responsible for developing major new multi-disciplinary research and education initiatives at the intersection of information technology, nanotechnology, microsystems, and biology. He also conceived and launched a program called "Big Ideas @ Berkeley," which provides support for multidisciplinary teams of Berkeley students that are interested in addressing economic and societal challenges such as clean energy, safe drinking water, and poverty alleviation.

Previously, Thomas Kalil served as the Deputy Assistant to President Clinton for Technology and Economic Policy, and the Deputy Director of the White House National Economic Council. He was the NEC's "point person" on a wide range of technology and telecommunications issues, such as the liberalization of Cold War export controls, the allocation of spectrum for new wireless services, and investments in upgrading America's high-tech workforce. He led a number of White House technology initiatives, such as the National Nanotechnology Initiative, the Next Generation Internet, bridging the digital divide, e-learning, increasing funding for long-term information technology research, making IT more accessible to people with disabilities, and addressing the growing imbalance between support for biomedical research and for the physical sciences and engineering. Prior to joining the White House, Tom was a trade specialist at the Washington offices of Dewey Ballantine, where he represented the Semiconductor Industry Association on U.S.-Japan trade issues and technology policy. He also served as the principal staffer to Gordon Moore in his capacity as Chair of the SIA Technology Committee.

Ira Keltz is Deputy Chief of the FCC's Office of Engineering and Technology. In this role, he assists in managing several divisions of engineers, attorneys and economists in the development of telecommunications policies for spectrum use in the United States. Mr. Keltz is responsible for balancing complex engineering, policy, economic and public interest issues to implement national spectrum policy for non-Federal spectrum users. This includes allocating spectrum for licensed services, setting technical rules for unlicensed devices, and implementing procedures for equipment certification. Mr. Keltz previously served as Chief of the Office of Engineering and Technology's Electrical Compatibility Division and Deputy Chief of its Policy and Rules Division. In addition, he has been a Senior Technical Advisor in the Wireless Bureau's Public Safety and Private Wireless Division, where he managed the implementation of the Commission's Universal Licensing System. Mr. Keltz has been with the FCC since

1994. Prior to the FCC, Mr. Keltz held positions with Loral Advanced Projects and LSA, Inc. Mr. Keltz holds a Master's Degree in Electrical Engineering from the George Washington University and a Bachelor's Degree in Electrical Engineering from the University of Michigan.

Julius Knapp is Chief of the FCC's Office of Engineering and Technology (OET). OET is the Commission's primary resource for engineering expertise and provides technical support to the Chairman, Commissioners and FCC Bureaus and Offices. Mr. Knapp has been with the FCC for 41 years. He became Chief of OET in 2006. Mr. Knapp previously served as a Deputy Chief of OET from 2002 - 2006. Prior to that he was the Chief of the Policy & Rules Division where he was responsible for FCC frequency allocation proceedings and for proceedings amending the FCC rules for radio frequency devices. Mr. Knapp was Chief of the FCC Laboratory from 1994 – 1997 where he was responsible for the FCC's equipment authorization program and technical analyses.

Mr. Knapp received a Bachelor's degree in electrical engineering from the City College of New York in 1974. He has received the FCC's Silver and Gold medal awards for distinguished service at the Commission. He was the 2001 recipient of the Eugene C. Bowler award for exceptional professionalism and dedication to public service. He was the 2010 recipient of the Federal Communications Bar Association Excellence in Government Service Award and the recipient of the WCAI 2010 government Leadership award. In 2013 he received the Presidential Distinguished Rank Award for exceptional achievement in the career Senior Executive Service of the United States of America. He received the 2014 Fellow Award from the National Spectrum Management Association.

Jennifer A. Manner is Senior Vice President of Regulatory Affairs at EchoStar Corporation where she is responsible for the company's domestic and international regulatory and policy issues. Prior to this, Ms. Manner was Deputy Chief of the Office and Engineering and Technology and before that Deputy Chief of the FCC's Public Safety and Homeland Security Bureau where she has had a focus on broadband and other related issues. Ms. Manner previously worked as a Principal at ZComm Strategies LLC.

Before that, Ms. Manner was Vice President of Regulatory Affairs at SkyTerra Communications, LLC, where she handled the company's domestic and international regulatory and policy issues. Before joining SkyTerra, Ms. Manner served as Senior Counsel to FCC Commissioner Kathleen Abernathy with responsibility for wireless, international and new technology issues. Ms. Manner joined the Commissioner's office after working at MCI Communications Corporation, later WorldCom, Inc., as Associate Counsel for Foreign Market Access and then as International Wireless Services and Director of International Alliances. Prior to this position, Ms. Manner was an associate in the Communications Group at Akin, Gump, Strauss, Hauer and Feld, L.P. Before joining Akin, Gump, Ms. Manner was an Attorney-Advisor at the FCC.

Ms. Manner currently serves as an adjunct professor at Georgetown University Law Center and previously served as an adjunct professor of the Washington College of Law at American University. Ms. Manner has published several books on telecommunications issues and has written numerous law review articles. Ms. Manner received her B.A. from the State University of New York at Albany, from which she was recently awarded the Distinguished Alumni Award for Political Science and where she serves as Co-Chair of the Alumni Board of the Rockefeller College of Public Affairs and was awarded the Outstanding Alumni in Political Science Award. She received her J.D. cum laude from New York Law School and LL.M. with distinction from Georgetown University Law Center. Ms. Manner is admitted to practice in Washington, D.C., New York and Connecticut.

Thyaga Nandagopal 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. He serves as the co-chair of the Wireless Spectrum Research & Development (WSRD) Senior Steering Group, effective January 2015. 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, cellular network protocols and algorithms, RFID/sensor networks, internet routing architectures and protocols, cloud computing, and energy-efficient network design.

Dennis A. Roberson is the Vice Provost for Research and a Research Professor in Computer Science at Illinois Institute of Technology where he has over-all responsibility for IIT's research efforts and the university's relationships with its various corporate partners. He also serves as the focus for the implementation of IIT's Strategic Plan and the placement of IIT's graduates. Through these roles and his responsibility for the Jules F Knapp Entrepreneurship Center, he supports the successful initiation and growth of IIT related business ventures. Professor Roberson is a co-founder of IIT's Wireless Network and Communications Research Center (WiNCom) and an educator in the wireless networking arena. He is also the President and CEO of Roberson and Associates, LLC, an IIT spinout consulting firm primarily focused on wireless technology and technology management serving government and commercial customers. He serves on the governing and/or advisory boards of several technology-based companies, Chairs the FCC's Technological Advisory Council and serves on the U.S. Commerce Spectrum Management Advisory Committee. He served as an Invited Expert on the President's Council of Advisors on Science and Technology Working Group on Spectrum Policy. Prior to IIT, he was EVP and CTO at Motorola. He had an extensive corporate career including major business / technology responsibilities at IBM, DEC (now part of HP), AT&T, and NCR. He is involved with a wide variety of technology, educational and youth organizations and serves as a frequent speaker at universities, companies, technical workshops, and conferences around the globe.

Rangam Subramanian is a technology strategy, spectrum policy, business development and general management professional, with over 25 years of experience in Telecommunications. He is currently serving the National Telecommunications Information Administration (NTIA) within the United States Department of Commerce, as a Lead Technology and spectrum policy strategist. Dr. Subramanian is focused on Spectrum strategy for the nation and the related rulemaking to enable collaborative next generation wireless communications technology development and implementation, that is critical to the national economic development and security. Prior to joining the NTIA, Dr. Subramanian served the Idaho National Laboratory, as a Chief of Technology and Business strategy. In his previous work with the industry, including at the Alcatel-Lucent and Nokia Telecommunications, he has made significant contributions to technology innovation, business strategy, R&D, operations management, mergers & acquisitions, telecom network services and international customer management. In 2012, Dr. Subramanian delivered a United States Congressional testimony on, "Avoiding the Spectrum Crunch: Growing the Wireless Economy through Innovation". He is a co-chair for the White House, Office of Science and Technology Policy (OSTP)/ National
Information Technology R&D (NITRD) initiated Wireless Spectrum Sharing R&D (WSRD), Inter Agency Group (IAG). Dr. Subramanian has a MBA from the Kellogg School of Management, Northwestern University, Evanston, IL and a PhD in Computer Science & Systems Engineering from the Oakland University, Rochester, MI, USA.

Thomas J. Taylor is the Deputy Director for Policy, Technology and Operations for the Spectrum Policy and Programs Directorate within the Department of Defense (DoD)/Chief Information Officer (CIO). In this position, he is responsible for transforming DoD's capabilities in electromagnetic spectrum (EMS) use in order to ensure technology development can meet the Department's ever increasing demand for spectrum and improve DoD EMS operations. His responsibilities include oversight of the DoD EMS Strategy, development of the Strategy's Roadmap and Action Plan, the development of a DoD EMS Technology Roadmap, directing the activities for DoD in the National Advanced Spectrum and Communications Test Network (NASCTN) inter-agency partnership, and overseeing the Spectrum Access R&D Program in coordination with the National Spectrum Consortium, as well as many other innovative programs.

Mr. Taylor has worked electromagnetic spectrum (EMS) policy and management for over 17 years including 10 years at the DoD/CIO. Mr. Taylor's EMS experience includes an assignment to NATO Headquarters Command, Control and Communications (C3) Staff, Belgium, where he helped develop policy for Spectrum Pricing, developed Combined Joint Task Force (CJTF) EMS requirements, managed NATO Satellite Communications (SATCOM) IV and V international coordination. Mr. Taylor was a Division Chief, J6 Directorate at United States European Command (USEUCOM), Stuttgart, GE, with responsibility for EMS management, international coordination and oversight of numerous operations, and development of the initial requirements for the Global Electromagnetic Spectrum Information System (GEMSIS) Initial Capabilities Document (ICD). He also developed the prototype for the Coalition Joint Spectrum Management Planning Tool. In 2011 to 2012, as a civilian, he served in the NATO Training Mission – Afghanistan as the Deputy CIO (CJ6) and the Senior Advisor to the Afghanistan Ministry of Interior (Police) for Communications. Prior to his EMS work, Mr. Taylor served 22 years in the United States Navy in various leadership positions flying S-3B Vikings. His awards include the Defense Superior Service Medal, Defense Meritorious Service Medal and several other personal and unit awards.

Peter Tenhula is the Deputy Associate Administrator for Spectrum Management in the Office of Spectrum Management (OSM) at the National Telecommunications and Information Administration (NTIA). In that role, Mr. Tenhula develops and implements initiatives in the highly complex technical area of radio communications and management of the Federal Government's use of the radio frequency spectrum. He also serves as the Chair of the Interdepartmental Radio Advisory Committee, which advises NTIA on frequency assignments for U.S. Government radio stations and other policies, programs, procedures, and technical criteria pertaining to spectrum management.

Prior to joining OSM in October 2014, he was a Senior Advisor in NTIA's Office of the Assistant Secretary where he advised the Assistant Secretary of Commerce for Communications and Information, OSM, and the Institute for Telecommunication Sciences (ITS) on spectrum policy matters. Before joining NTIA in 2012, Mr. Tenhula worked at Shared Spectrum Company in Vienna, Virginia, for six years, serving as the company's Vice President and General Counsel. He was also a member of the Board of Directors of the Wireless Innovation Forum (formerly the SDR Forum) and chaired the forum's Regulatory Committee. From 1990 to 2006, Mr. Tenhula served at the Federal Communications Commission, where he held several positions including Acting Deputy Chief of the Wireless Telecommunications Bureau, Director of the Spectrum Policy Task Force, Senior Legal Advisor to Chairman Michael Powell, Special Counsel to General Counsel William Kennard, and staff attorney in the Office of General Counsel and the Mass Media Bureau.

Mr. Tenhula received his undergraduate degree in telecommunications from Indiana University, Bloomington, and earned a law degree from Washington University in St. Louis, Missouri.

Bryan Tramont is the managing partner of Wilkinson Barker Knauer, LLC, where he offers strategic counsel to Fortune 100 companies and trade associations, as well as small and mid-sized telecommunications and media companies, on all aspects of communications law and regulation. He is regularly called on to advise companies as they develop and evaluate new business opportunities in the technology, media, and telecommunications sectors. Mr. Tramont also designs and leads the execution of the firm's strategic plan and directs client management and development.

Prior to joining Wilkinson Barker Knauer, Mr. Tramont served as Chief of Staff of the Federal Communications Commission under Chairman Michael Powell. As Chief of Staff, Mr. Tramont managed all aspects of the agency's operations and directed FCC staff in implementing all components of the agency's policy portfolio including media, broadband, mobility, and traditional telephone services. Before being elevated to Chief of Staff, Mr. Tramont was Chairman Powell's Senior Legal Advisor, advising him on strategic policy matters and on wireless, international, technology, satellite, and consumer issues. Mr. Tramont also served as Senior Legal Advisor to Commissioner Kathleen Abernathy and, before that, to Commissioner Harold Furchtgott-Roth. He also served as a law clerk for the Honorable Duane Benton. Mr. Tramont serves on the Commercial Spectrum Management Advisory Committee (CSMAC), advising the Assistant Secretary of Commerce for Communications and Information at NTIA. Appointed under the Bush and Obama Administrations, he also served as the committee's Co-Chairman from 2008-2010. In addition, Mr. Tramont is active in the Federal Communications Bar Association, where he served in a variety of leadership roles, including as President from 2010-11 and has been awarded the organization's Distinguished Service Award. Mr. Tramont chairs the Federalist Society's Telecommunications Practice Group Executive Committee and served on the Governing Committee of the ABA Forum on Communications Law. Mr. Tramont currently is an adjunct law professor at The Catholic University of America as part of the Communications Law Institute, is a senior adjunct fellow at the University of Colorado, Boulder, and served as the Syracuse University Law School's Practitioner in Residence. Mr. Tramont is the author of numerous articles on communications policy and is a frequent speaker and lecturer at academic and industry events.

Mr. Tramont has been recognized by leading publications like Legal 500, Chambers USA, and Washingtonian as one of the nation's top communications lawyers. The Best Lawyers in America® named Bryan Tramont 2016 "Lawyer of the Year" in Communications Law. In 2015, he was named one of the Top 100 Washington, DC Super Lawyers. In addition, Mr. Tramont has served as an expert witness in a number of communications-related litigation matters. Bryan Tramont graduated summa cum laude from The George Washington University with a degree in political science. He earned his law degree from Yale Law School, where he served as editor of the Yale Law & Policy Review.

Martin B.H. Weiss is Professor of Telecommunications and Associate Dean for Academic Affairs and Research at the School of Information Sciences at the University of Pittsburgh, where he also holds a faculty appointment in telecommunications. He earned his PhD. in Engineering and Public Policy from Carnegie Mellon University where he studied the standards development process under Professor Marvin A. Sirbu. He also earned an MSE in Computer, Control, and Information Engineering from the University of Michigan and a BSE in Electrical Engineering from Northeastern University. His overall research theme is the analysis of situations where competing firms must cooperate technically; this has expressed itself in studying the standardization process, internet interconnection, and, most recently, radio spectrum sharing.

His industrial experience includes technical and professional work at several R&D and consulting firms in the United States. From 1978 to 1981, he was a Member of the Technical Staff at Bell Laboratories; from 1983 to 1985, he was a Member of the Technical Staff at the MITRE Corp; and from 1985 to 1987 he was a Senior Consultant with Deloitte, Haskins, and Sells. He continues to consult with national and international firms, serving as an advisor, analyst and expert witness.

His current research focus is on dynamic spectrum access and intelligent wireless systems. He is currently studying spectrum sharing and spectrum trading with a focus on understanding the system-level factors supporting and constraining the adoption of these technologies. Recent aspects of this have involved studying enforcement in cooperative spectrum sharing approaches, secondary users' constraints and decisions using decision analysis and real options analysis. Past projects include technical and cost studies of IP and ATM telephony, bandwidth markets, interconnection of packet networks that support quality of service (QoS), and economics of new technologies in telecommunications. He is the co-author of two books and has written numerous book chapters, major conference papers and refereed journal papers in the area of standards setting, internet interconnection, and dynamic spectrum access. He has been invited to serve on numerous expert panels for industry, government and academia.