Bruce McNair

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bmcnair@novidesic.com
1-732-264-5244

Career Summary

- Fifty years engineering research, design, development, systems engineering experience in communications systems (including extensive background in wireless communications and system/network security)
- Twenty four years as a well-rated member of one of world's most highly respected R&D organizations, recognized for breadth, depth and practicality of expertise
- Extensive experience teaching technical short courses for premiere educational programs over a fourteen year period
- Full time university educator for fifteen years with experience teaching a broad set of courses focusing on practical engineering approach
- On-line university educator for eighteen years teaching well-attended graduate courses in wireless and security technologies

Research interests

- High speed wireless data networking
- System/network security
- Geolocation technology
- Real-time digital signal processing
- Software-Defined Radio technology
- Broadband Powerline (BPL) technology

Present Organizations

- Stevens Institute of Technology,
- Novidesic Communications, LLC

Job Titles

- Distinguished Service Professor of Electrical and Computer Engineering
- Founder, Chief Technology Officer

Education

- M.E., E.E., Stevens Institute of Technology, 1974
- B.E. (with Honor), Stevens Institute of Technology, 1971
- Completed qualifiers and course work for PhD in Computer Science at Stevens

Relevant Experience

January 2003 – present – on-line teaching professor – Electrical and Computer Engineering, Stevens Institute of Technology, Hoboken, NJ;
Teach several well-enrolled on-line graduate courses in wireless security, information systems security and physical design of wireless communications systems.

August 2002 – December 2017 (retired) – Distinguished Service Professor of Electrical and Computer Engineering, Program Director, Computer Engineering graduate program, Stevens Institute of Technology, Hoboken, NJ;
Design and manage the Senior Design Project, a two-semester program that forms a substantial portion of the senior year in the engineering program. This project comprises a large fraction of the seniors' efforts and serves to provide real-world engineering design experiences for the student. Teach a large number of well-enrolled graduate and undergraduate core and elective courses. Conduct research in wireless systems, geolocation services, and broadband powerline (BPL) systems, particularly security needs and solutions. Member of Stevens Intellectual Property Review Board, Stevens Honor Board Advisory Council, Stevens' Schaeffer School of Engineering and Science Promotion and Tenure Committee, and the Senior Design Coordinator Committee.

February 2002 – present – CTO, Novidesic Communications, LLC, Holmdel, NJ;
Founded a technical consulting company, providing expert witness support and testimony, telecommunications, wireless networking, security, software, computing, product evaluation, proof-of-concept prototyping, and web site design guidance to individuals and small businesses. Clients include health care facilities, patent attorneys, major telecommunications providers, venture capitalists, major component manufacturing company, start-up hardware and concept development companies. Supported technology needs of small local business leading to Phase I and Phase II SBIR funding in the area of RFID with patented technology. Provide IP portfolio evaluation. Expert witness in patent litigation with experience testifying at deposition and trial as well as preparing USPTO IPR declarations.

August 2011 – February 2012 – Part-time consultant, Lockheed-Martin, Moorestown, NJ;
Support development of advanced radar systems and interactions with other wireless systems.

2010 – 2015 (part-time, on an as-needed basis) – Senior Systems Engineer consultant, AT&T Government Solutions, Columbia, MD;
Support AT&T's projects with the US Government customers on defense and intelligence-related systems, drawing on previous knowledge and experience in signal processing, wireless systems, telephone and computer networks, and secure system design.

Relevant Experience (continued)

May 1994 to February 2002 (retired) -- Wireless Systems Research Department, AT&T Bell Labs/ AT&T Labs - Research, Holmdel/Red Bank/Middletown, NJ
Member of Technical Staff/Research Staff Member/Principal Technical Staff Member/Technology Consultant; Investigating high-speed, high-mobility wireless data communications systems for untethered access to high speed global networks. Proposed and investigated IEEE 802.11(a & b) physical and MAC layer extensions to outdoor, high mobility environment. Efforts involved system architecture, system control, real-time DSP programming in C, high-speed hardware design, RF design, analog, RF interfacing, Matlab/SIMULINK simulation and experimental investigations. Responsible for complete design, implementation and characterization of a multiple TMS320C40-based 384 kb/s OFDM transmission system and definition/design of advanced signal processing platforms. Recent research extended results to 5-40 Mb/s with TMS320C62/FPGA-based platform and incorporated 802.11a and DVB-T technology. Previous research involved speech quality/data rate enhancements to IS-136, the North American TDMA cellular standard.

November 1987 to April 1994 -- Security and System Reliability Architecture Group, AT&T Bell Labs, Holmdel, NJ
Technical Manager; Created, staffed, and led a group of security, systems reliability and fraud control experts to assess security/quality of products, services, operations systems, communications networks, operating systems, and work centers and to recommend, specify, and prototype cost effective improvements. Created corporate process to build security into the development process. Transformed small (2 person) corporate-funded activity into well-staffed (multi million dollar), successful business unit supported program. Served as security technologies subject matter expert for AT&T Corporate Security and other (AT&T and outside) organizations

May 1982 to October 1987 -- various AT&T Bell Labs organizations, MTS - Supervisor; System Design, Exploratory Development, Applied Research, and Final Product Development of secure voice terminals, modems, speech recognition and speaker verification systems, security chips, encryption devices, and network management systems

June 1978 to April 1982 -- various AT&T Bell Labs organizations, Member of Technical Staff, System design, digital hardware design and simulation of wide area (X.25) data communications networks and high-speed data transmission techniques for voiceband modems. Led $1M IR&D secure voice terminal initiative, ultimately resulting in promotion to MTS-Supervisor and laying groundwork for AT&T's breakthrough success in NSA's STU-3 program.

Relevant Experience (continued)

June 1971 to February 1973, January 1974 to June 1978 -- U.S Army Communications R&D Command, Fort Monmouth, NJ. GS-7, 9, 11 & 12 Electronic Engineer (GS-0855)
Development of tactical military radio communications equipment, specializing in modulation, data transmission, communications security and electronic warfare (frequency hopping and direct sequence spread spectrum) for the SINCGARS VHF-FM radio system.

March 1973 to December 1973 -- ITT Defense Communications Division, Nutley, NJ.
Junior Member of Technical Staff; Designed, developed and tested software and digital hardware for portable satellite terminals for use by White House and the world's first hardware implementation of a 2400 bps Linear Predictive Coder (LPC) secure speech transmission system.

Patents, Presentations and Publications

Twenty six U.S. patents and nineteen international patents granted (several pending) in areas such as data transmission, cryptographic techniques, speech processing, video processing, security systems, user authentication, fraud control, synchronization, dynamic channel assignment, localization techniques, hazardous voltage detection, RFID, biomedical applications, vibration energy harvesting, solar energy harvesting for portable devices, etc.

Presented numerous well-rated short courses in Digital Communications, Digital Telephony, Digital Signal Processing, and Wireless Communications, & Security. Course sponsors included: Bell Labs In-hours Continuing Education Program, George Washington University, University of Maryland, UCLA Extension, Johns Hopkins University – Organizational Effectiveness Institute, Berlin (Germany) Continuing Engineering Education Program, Monmouth University, and the Fort Monmouth Education Center.

Several papers presented at IEEE Vehicular Technology and other Conferences and published in AT&T Technical Journal, IEEE Transactions on Wireless Communications, and IEEE Communications Magazine on various topics in wireless systems and security.

Skills

System/network architecture, communications system design, digital hardware design, RF design, signal processing, real-time DSP programming, software design and coding, proof-of-concept prototyping, designing and conducting laboratory research experiments, OFDM, TDMA/IS-136, FPGA, encryption, computer network security, threat assessment, data communications protocols, computer architecture, digital and analog video systems, system & link-level simulation, UNIX/Linux, Windows, C/C++, Matlab/Simulink, MathCad, PASCAL, Algol, SNOBOL, Verilog, VHDL, FORTRAN. Recruitment, development and management of highly effective technical staff. Highly effective technical presentations and training sessions to any level audience. Well-developed technical writing skills. Preparation, deposition, and testifying regarding expert report for patent infringement/non-infringement/validity/invalidity and other litigation matters. Assist in claim construction and prior art research for patent litigation.

Other information

U.S Citizen. Held Top Secret - Sensitive Compartmented Information (TS/SCI) clearance with full scope polygraph until October 2015.

Selected as one of twenty-six finalists among 490 entrants in the 2014 Bell Labs Prize competition for proposal “High-precision, low-cost, low-power indoor geolocation techniques.”

Stevens Institute of Technology, Henry Morton Distinguished Teaching Professor, 2013-2014.

Named to New Jersey Inventors Hall of Fame, Inventor of the Year (2012) for “Patented/Innovative Research and Entrepreneurial Leadership Related to: Groundbreaking modem development and next generation wireless data communications systems”

Mentored two AT&T Labs Fellowship Program (ALFP) participants, three students in the MentorNet program, 5 Bell Labs Early Career Advisory Program (ECAP) participants, numerous summer students (graduate and undergraduate), several new employees, and all of the staff in groups I have managed.

Advised a significant fraction of ECE Senior Design groups, numerous graduate students; participation in thesis committees of several Stevens PhD students in various departments, including Physics, Computer Science, Mechanical Engineering, and ECE. Consult with non-ECE students on ECE aspects of their Senior Design projects

Mentor summer students at Stevens in NSF-funded Research Experience for Undergraduates (co-PI).

Stevens Institute of Technology, Schaefer School of Engineering, Undergraduate Teaching Award, December 2006.

Life Senior Member, Institute of Electrical and Electronic Engineers - Member of Communications, Signal Processing, Computer and Education Societies

Member, American Society for Engineering Education

Secretary, IEEE Communications Society Communications Security Committee

Identified by Rutberg & Co. Investment Bankers (San Francisco) as member of a group of 213 “Top Wireless Influencers: 2002”

Member of the Council of Communications Advisors

Amateur radio operator licensed since 1963, Amateur Extra Class since 1970

Contact Information

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US Patents

- “Liquid Crystal Display using the photovoltaic behavior of LED backlights as a source of electrical energy.” US Patent #10,310,326, June 4, 2019.
- “Method and apparatus for locating and distinguishing blood vessel.” US Patent #8,764,663, July 1, 2014.
- “Secure IP access protocol framework and supporting network architecture,” US Patent #8,046,577, October 25, 2011.
- “Method for Estimating Time and Frequency Offset in OFDM Systems,” US Patent #7,990,839, August 2, 2011.
- “Simulcasting OFDM system having mobile station location identification,” US Patent 7,962,162, June 14, 2011.
- “RFID Devices for Verification of Correctness, Reliability, Functionality and Security,” US Patent 7,712,674, May 11, 2010.
- ““Dynamic Channel Assignment,” US Patent 7,457,259, November 25, 2008.
- ““RFIDs Embedded into Semiconductors,” US Patent 7,348,887, March 25, 2008.
- “Method for Estimating Time and Frequency Offset in OFDM Systems,” US Patent #7,310,302, December 18, 2007.
- “Mobile Device Having Network Interface Selection,” US Patent #7,180,876, February 20, 2007.
- "Dynamic Channel Assignment," US Patent #6,954,465, October 11, 2005.
- “Method for Estimating Time and Frequency Offset in OFDM Systems,” US Patent #6,891,792, May 10, 2005.
- "Security System Providing Lockout for Invalid Access Attempts," US Patent #5,559,505, September 24, 1996.
- "Telecommunications Fraud Detection Scheme," US Patent #5,504,810, April 2, 1996.
- "Authenticator Card and System," US Patent #5,450,491, September 12, 1995.
- "Secure Telecommunications," US Patent #5,392,357, February 21, 1995.
- "Data Message Storage and Pickup Service,” US Patent #5,392,336, February 21, 1995.
- "System and Method for Granting Access to a Resource," US Patent #5,375,244, December 20, 1994.
- "Secure Teleconferencing," US Patent #5,353,351, October 4, 1994.
- "Method and Apparatus for Processor Based Encryption," US Patent #5,278,905, January 11, 1994.
- "Centralized Security Control System," US Patent # 5,276,444, January 4, 1994.
- "Technique for Voice Based Security System," US Patent #5,265,191, November 23, 1993.

US Patents (continued)

- "Video Scrambling System", US Patent # 5,206,906, April 27, 1993.
- "Cryptographic Transmission System," US Patent #4,642,424, February 10, 1987.
- "Processing of Encrypted Voice Signals," US Patent #4,608,455, August 26, 1986.
- "Control of Coefficient Drift for Fractionally Spaced Equalizers," US Patent #4,376,308, March 8, 1983

Several other published and unpublished US patents pending

International Patents

- “Voltage-controlled apparatus for battery-powered electronic devices,” EP Patent #0568237 B1, January 23, 2002.
- “A Dynamic Channel Assignment,” EP Patent #1,137,299, September 26, 2001.
- “Data Message Storage and Pickup Service,” EP Patent #0626776 B1, April 7, 1999.
- “Data Message Storage and Pickup,” Canadian Patent #CA-2119227A1, February 24, 1998.
- “Centralized Security Control System,” Canadian Patent #CA-2078077, January 27, 1998.
- “Improved centralized security control system and method,” EP Patent #0534679. August 12, 1997.
- “Authenticator Card with Changing Bar Code Pattern,” EP Patent #0,715,789, June 12, 1996.
- “Technique for voice-based security systems,” Canadian Patent #CA-2072172, April 30, 1996.
- “Method and apparatus for user identification and verification of data packets in a wireless communications network,” EP Patent #0,689,316, December 27, 1995.
- “Central Difference Control System,” Japanese Patent #1995-131526, May 19, 1995.
- “Authenticator Card with Changing Bar Code Pattern,” WO Patent #1995/006371, March 2, 1995.
- “Method for safety system of voice base and device therefore,” Japanese Patent #1995-049696, February 21, 1995.
- “Data message storage and pick up service, EP Patent #0,626,776, November 30, 1994.
- “Method for safety system of voice base and device therefore,” Japanese Patent #1995-049696, February 21, 1995.
- “Data message storage and pick up service, EP Patent #0,626,776, November 30, 1994.
- “Apparatus for battery type electronic device,” Japanese Patent #1994-138983, May 20, 1994.
- “Method and system for making communication via exchange network available, method for providing,” Japanese Patent #1994-085811, March 25, 1994.

International Patent (continued)

- Voltage-controlled apparatus for battery-powered electronic devices," EP Patent #0,568,237, November 3, 1993
- "Security node in switched telecommunication network", EP Patent #0,553,553, August 4,1993.
- "Improved centralized security control system and method," EP Patent 0,534,679, March 31, 1993.
- "An improved technique for voice-based security systems," EP Patent #0,533,396, March 24, 1993.
- "Cryptographic Transmission System," Canadian Patent #CA-1223932, July 7, 1987.

Several other published and non-published applications pending.

Journal Publications

- Leung,K., Clark,M.V., McNair,B., Kostic,Z., Cimini,L.J., Winters,J.H., "Outdoor IEEE 802.11 Cellular Networks: Radio and MAC Design and Their Performance", *IEEE Transactions on Vehicular Technology*, Vol. 56, No. 5, pp. 2673-2684, September 2007.
- Chuang, J., Cimini, L., Li, G., Lin, L., McNair, B., Sollenberger, N., Suzuki, M., Zhao, H., "High Speed wireless data access based on combining EDGE with wideband OFDM," *IEEE Communication Magazine*, November, 1999.
- D'Angelo, D.M., McNair, B., Wilkes, J.E., "Security in Electronic Messaging Systems," *AT&T Technical Journal*, Volume 73, Number 3, 1994.

Research awards

- "Standalone/Networked Compact, Low Power, Image-fused Multi-Spectrum Sensor System for Target Acquisition, Tracking and Fire Control," ARDEC, $2365000, co-PI with Victor Lawrence, Hong Man. AY2008-2009
- NSF: "REU Site: Integrated Software Radio and Radio Frequency Test Bed for Wireless Research in Dynamic Spectrum Access"; $296,754; NSF; Co-PI with Yu-Dong Yao. AY2004-2005
- AT&T Labs-Research Equipment donation of $900k DSP systems and wireless test equipment. AY2003-2004
- AT&T Labs-Research - $60k grant for "Investigation of Broadband Powerline technology" AY2003-2004

Masters theses supervised

- Xiongwei Xu, "The synchronization of IEEE 802.11A System", May 2014.
- Abdurazak Fathalla, "Security of Cloud Computing," May 2011.
- Tejas Marathe, "Comprehensive Performance Criteria for Wi-Fi Location Systems," December 2008.

Masters theses supervised (continued)

- Milin Patel, “Network Performance Enhancement using QoS, TCP Optimization, Application Acceleration and Dynamic Resource Allocation Techniques,” January 2008.
- Leo Gerard Raj, “Security in 4G Wireless Systems,” May 2005.

PhD committees

- Chao Tian, “Realization of Pure AM/FM Modulation via Combined Optical and Electrical Injection of Carriers in DFB Laser,” Stevens Institute of Technology, Physics Department, March 2015.
- Tao Yang, “All-optical frequency modulation of quantum cascade laser and its application on infrared spectroscopy,” Stevens Institute of Technology, Physics Department, May 2014.
- Fangming He, “Physical Security in Wireless Communications,” Stevens Institute of Technology, Electrical and Computer Engineering Department, May, 2012.
- Vinod Challa, “Vibration Energy Harvesting for Low Power and Wireless Applications,” Stevens Institute of Technology, Mechanical Engineering Department, May, 2011.
- Brian Borowski, “Application of Channel Estimation to Underwater Acoustic Communication,” Stevens Institute of Technology, Computer Science Department, June, 2010.
- Gang Chen, "All-Optical Modulation of Quantum Structure/Devices," Stevens Institute of Technology, Physics Department, May 2010.

Conference Papers

- He, F., Man, H., Kivanc, D., McNair, B., “EPSON: Enhanced Physical Security in OFDM Networks,” Proc. ICC 2009, Dresden, Germany, June 2009.
- Patel, S.; Cimini Jr, L.J.; McNair, B., “Comparison of frequency offset estimation techniques for burst OFDM,” *Proc. IEEE Vehicular Technology Conference VTC2002*, Birmingham, AL, May, 2002.
- Cimini, L., Leung, K., McNair, B., Winters, J. "Outdoor IEEE 802.11b Cellular Networks: MAC Protocol Design and Performance," *Proc. ICC 2002*, New York, NY, April 2002
- Clark, M., Leung, K., McNair, B., Kostic, Z., "Outdoor IEEE 802.11b Cellular Networks: Radio Link Performance", *Proc. ICC 2002*, New York, NY, April 2002.
- McNair, B., “Software Radio – the Commercial Perspective,” *Proc. IEEE Sarnoff Symposium*, Princeton, NJ, March 2002.
- Zou, H., Daneshard, B., McNair, B., "An Integrated OFDM Receiver for High-Speed Mobile Data Communications," *Proc. IEEE Globecom 2001*, San Antonio, TX, Oct. 2001.
- McNair, B., "Future Directions for Wireless Communications," *Supercomm2001*, Atlanta, GA, June, 2001

Conference Papers (continued)

- Cimini, L., McNair, B, "OFDM for High Data Rate, High-Mobility, Wide-Area Wireless Communications," *Proc. IEEE Sarnoff Symposium*, Princeton, NJ, March, 2001.
- Cimini, L., McNair, B, Sollenberger, N., "Implementation of an Experimental 384 kb/s Radio Link for High-Speed Internet Access," *Proc. IEEE Vehicular Technology Conference VTC2000*, Boston, MA, September, 2000.
- Cimini, L., McNair, B, Sollenberger, N., "Performance of an Experimental 384 kb/s 1900 MHz Radio Link In a Wide-Area High-Mobility Environment," *Proc. IEEE Vehicular Technology Conference VTC2000*, Boston, MA, September, 2000.
- Takamura, K.; Kunihiro, T.; Yamaura, T.; Fujita, E.; Anderson, G.; Chibane, C.; Feinberg, P.; Sollenberger, N.; McNair, B.; Mielcarek, E., "Field trial results of a band hopping OFDM system,' *Proc. IEEE Vehicular Technology Conference VTC99-Fall*, 1999. Amsterdam, the Netherlands, September 1999.
- McNair, B., Cimini, L., Sollenberger, N., "A Robust Timing and Frequency Offset Estimation Scheme for Orthogonal Frequency Division Multiplexing (OFDM) Systems," *Proc. IEEE Vehicular Technology Conference, VTC99*, Houston, TX, May 1999.
- McNair, B., Gupta, S., Kostic, Z., Sollenberger, N., "Experimental Results for Extensions to the IS-136 TDM Standard Based on Higher Level Modulation, Coherent Detection, and Equal Gain Antenna Combining," *Proc. IEEE Vehicular Technology Conference, VTC99*, Houston, TX, May 1999.
- Kostic, Z., McNair, B., Sollenberger N., "Experimental Performance Results of an Indoor Wireless Extension of IS-136 Based on pi/8 D8PSK, Coded Modulation, and Antenna Diversity," *Proc. IEEE Vehicular Technology Conference, VTC98*, Ottawa, Canada, May 1998.
- McNair, B., "The Effectiveness of Preselection Diversity for Indoor Wireless Systems," Proc. Int. Conf. on Universal Personal Communications, San Diego, CA, Oct. 1997.

Invited talks

- "Adventures in On-Line Education," Tsinghua University Webinar: Showcasing Online Course Designs, Online Teaching Guidance Expert Group, International Center for Engineering Educations (ICEE) – The United Nations Educational, Scientific and Cultural Organization (UNESCO), April 27, 2020.
- "Providing Structure, Motivation and Process in Security Education," Stevens/NIKSUN Workshop on Innovations in Cyber Security Research, Education and Training, Hoboken, NJ, March 2015
- "Wireless Security Panel," IEEE/AFCEA Fort Monmouth Annual Information Technology Forum and Expo, April 2005.

Invited talks (continued)

- "Of What Use is Wireless Multimedia Without Security," "What's Next in Multimedia Panel," 14th Annual Wireless and Optical Communications Conference, April 2005.
- "Is Wireless Security an Oxymoron?" IEEE Princeton/Central NJ Communications and Consumer Electronics and Computer Science Chapters, December, 2003.

Other Publications

- McNair, B., "Automatic Repeater Offsets," *73 Magazine,* November 1978, pp. 82-86.
- McNair, B, Williman, G., "Digital Keyboard Entry System," *Ham Radio,* Volume 11, Number 9, September, 1978, pp. 92-97.
- McNair, B., "A Digital Display for Amateur Radio Communications Equipment," *Ham Radio,* Volume 9, Number 9, September 1976, pp. 16-25.
- MIL-STD-188-114, "Electrical Characteristics of Digital Interface Circuits," Department of Defense Interface Standard, 24 March 1976

- Graduate:
  - EE/CpE-517 - Digital and Computer Systems Architecture (on-campus)
  - EE/TM/NIS-584 – Wireless System Security (on-campus and on-line)
  - EE-585/PEP-685/MT-685 – Physical Design of Wireless Communications (on-campus and on-line)
  - NiS/CpE-691 – Information Systems Security (on-campus and on-line)
  - EE/CpE-810A - Special Topics in EE/CpE - Digital and Computer Systems Architecture (on-campus)

- Undergraduate (on-campus):
  - E-232 – Design IV
  - BME-322 – Biomedical Design VI
  - EE/CpE-322 – ECE Design VI
  - EE/CpE-345 – Modeling and Simulation
  - CpE-358/CS-381 –Switching Theory and Logical Design
  - EE-359 – Electronic Circuits
  - EE/CpE-423; EE/CpE-424 – Senior Design
  - CpE-450 – Real-time Embedded Systems

Short Courses

- "Electronics and Computers," preparation course for Fundamentals of Engineering/Professional Engineering license
  Stevens Institute of Technology
- "Digital Signal Processing - Principles, Architecture, and System Applications"
  - *Organizational Effectiveness Institute (originally Johns Hopkins University's continuing education program)*,
- "Wireless Digital Communications Systems: Components, Specifications, Test and Evaluation"
  - *Organizational Effectiveness Institute*
- "Security in Digital Communications Networks"
  - *Bell Labs Architecture Area Adopt a University Program: Grambling State University*
  - *Monmouth University*
- "Digital Telephony"
  - *Monmouth University*
  - *Fort Monmouth Education Center*
  - *Berlin (F.R.G.) Continuing Engineering Education Program*
- "Digital Communications & Applications"
  - *University of Maryland*
  - *Fort Monmouth Education Center*
  - *UCLA Extension University*
- "Digital Communications," presented with Allen Gersho, N.S. Jayant and David Falconer.
  - *George Washington University*
- "Data Communications for the System Designer"
  - *Bell Labs In-Hours Continuing Education Program*

Expert witness, patent consulting experience

- Authentication technology
- Bluetooth, WiFi, ZigBee, and other local/personal area wireless networking
- Cellular systems
- Communications networking
- Digital clock control for power management in SoCs
- Digital Rights Management
- Digital Subscriber Loop (DSL) technology
- Electronic technology
- Embedded systems
- Geolocation technology
- Industrial process control software
- Localization services
- Messaging systems
- Multifactor Authentication
- Peer-to-peer and client-server networks
- Secure voice communications
- Signal processing
- Smart cards and magnetic stripe cards for payment systems
- Software/firmware code analysis (C, VHDL)
- Software trade secrets
- Television and television tuner technology
- Trusted systems
- User and system authentication technology
- Video messaging
- Video scrambling and pay-per-view systems
- Voice processing and voice response systems
- Wireless communications and networking – particularly PHY and MAC layers

Law firms supported

- Avant Law, Overland Park, KS (Hissan Anis)
- Baker & McKenzie, Dallas, TX (William McSpadden)
- Bradley, Birmingham, AL (Paul Sykes, Benn Wilson, Jake Gipson)
- Bragalone-Conroy, Dallas, TX (Nick Kliewer, Daniel Olejko, Stephanie Wood)
- Cantor-Colburn, Hartford, CT (Steve Coyle)
- Carella-Byrne (Donald Ecklund)
- Clark-Hill, Pittsburgh, PA, (J. Alexander Hershey)
- Desmarias, New York, NY (Kerri-Ann Leembeck)
- DLA Piper, Austin, TX, San Francisco, CA and San Diego, CA (Brian Erickson, Gerald Sekimura, Kevin Hamilton)
- Fox Rothschild, Lawrenceville, NJ (Gerard Norton)
- Gibbons-Deldeo, Newark, NJ (Michael Cukor, Sheila McShane, Vin McGeary, Erich Falke, Chris Strate)
- Greenberg-Traurig, McLean, VA (Andrew Sommer)
- Hogan-Lovells, Denver, CO (Matt Rozier, Aaron Oakley, Lucky Vidmar)
- Jones-Day, New York, NY (Tom Gianetti)
- Latimer, LLP, Oakhurst, NJ (Brian Latimer)
- Merchant-Gould, Atlanta, GA (George Jenson)
- Morrison-Foerster, San Diego, CA (Christian Andreau-von Eaw)
- Oblon Spivak, Arlington, VA (Robert Mattson, Scott McKeown)
- Orrick, Herrington and Sutcliffe, Silicon Valley (Jason Angell)
- Quattlebaum, Grooms, Tull & Burrow, Little Rock, AR (Steve Quattlebaum)
- Quinn-Emanuel, New York, NY (Marc Kaplan)
- Ropes & Gray, Washington, DC, (Scott McKeown, Victor Cheung)
- Sabety & Associates (Ted Sabety)
- Sidley Austin, Chicago, IL, Washington, D.C. (Doug Lewis, Rick Cederoth, Mike Franzinger)
- Steptoe & Johnson, Washington, D.C. (Kate Cappaert, Brian Johnson)
- Carr & Waddoups, Salt Lake City, UT (Trent Waddoups)
- Unified Patents, Washington, DC (Michelle Callaghan, Ashraf Fawzy, Jung Hahm, Roshan Mansinghani, Jessica Marks, Jordan Rossen, David Seastrunck)
- Wilson, Sonsini, Goodrich & Rosati, Palo Alto, CA, Seattle, WA (Matthew Argenti, Quincy Lu)
- White Case, Washington, DC, New York, NY (David Tennant, Grace Wang)
- Wisser and Weinstein, West Hartford, CT (Kerry Wisser)
- Woodcock and Washburn, Philadelphia, PA (Michael Bonella)

Bruce McNair's declarations, expert reports, depositions and testimony

Case	Technology	Supporting	Law firm	Attorney	Expert report/ declaration	Deposed	Testified
Avocent Redmond Corp., formerly known as Apex, Inc. v. **Raritan Computer, Inc**.; Case 1:01-cv-04435-PKC, United States District Court, Southern District of New York.	Keyboard-video-monitor (KVM) switching systems - patent dispute	Defendant	Gibbons-Deldeo, Newark, NJ	Sheila McShane Vincent McGeary	Apr 3, 2005	Apr 5, 2005	No
Marvell International, Ltd. v. Agere Systems, Arbitration No. 50 133 T 00392 06, American Arbitration Association, International Centre for Dispute Resolution, NY, NY	Physical level of WiFi network implementation - licensing issue	Plaintiff	Orrick-Herrington, Silicon Valley, CA	Jason Angell Jan Ellard	Mar 16, 2007	Mar 24, 2007	Mar 27, 2007
Cellularvision Technology & Telecommunications, L.P. v. **Alltel Corporation**, et. al., Case no. 07-CV-00444-JMM, United States District Court, Eastern District of Arkansas, Western Division.	video messaging in cellular/wireless networks - patent dispute	Defendant	Baker-McKenzie, Dallas, TX; Quattlebaum-Grooms, Little Rock, AR	Bill McSpadden Steve Quattlebaum	June 6, 2008	June 19, 2008	No
American Patent Development Corporation, LLC v. Movielink, LLC, Civil Action 07-605-JJF, United States District Court, District of Delaware.	Network distribution of movies and video content; digital rights management - patent dispute	Plaintiff	Sabety & Associates, New York, NY	Ted Sabety	Dec 12, 2008 Apr 17, 2009	Feb 13, 2009 May 1, 2009	No
Yangaroo, Inc. v. **Destiny Media Technologies, Inc.**, et. al., Case 1 :09-cv-00462-WCG, United States District Court, Eastern Division of Wisconsin, Green Bay Division	Network distribution of music; digital rights management - patent dispute	Defendant	Sabety & Associates, New York, NY	Ted Sabety	Jan 15, 2010	Jan 29, 2010	No
Inncom International, Inc. v. Control4 Corporation, Case 3:09-cv-00649, United States District Court, District of Connecticut	Intelligent HVAC and room security system - patent dispute	Plaintiff	Cantor-Colburn, Hartford, CT	Bill Cass, Steve Coyle	Mar 10, 2010	No	No
Wes-Garde Components Group, Inc. v. Carling Technologies, Inc, Case HHDCV09 5028121S	Electrical power switching and control systems – licensing issue	Plantiff	Weinstein & Wisser, West Hartford, CT	Kerry Wisser	Jan 28, 2011	Sept 16, 2011	No

Case	Technology	Supporting	Law firm	Attorney	Expert report/ declaration	Deposed	Testified
Motorola vs. **Microsoft**, ITC Investigation 337-TA-752 – "Regarding Certain Gaming and Entertainment Systems"	Wireless networks - patent dispute	Respondent	Sidley Austin, Chicago, IL	Douglas Lewis Richard Cederoth Michael Franzinger	July 1, 2011 July 15, 2011	July 29, 2011	Jan 12, 2012
Avocent Redmond Corp. v. **Raritan Americas, Inc.**, Case 10-CV-6100, United States District Court, Southern District of New York.	Keyboard-video-monitor (KVM) switching systems - patent dispute	Defendant	Gibbons-Deldeo, Newark, NJ	Vincent McGeary Erich Falke Michael Cukor Christopher Strate	Nov 28, 2011 Jan 4, 2012	Jan 27, 2012	Sept 25, 2012
Eastman Kodak Company vs, **Kyocera Corporation**, Civil Action No. 10-cv-6334-CJS, Western District of New York	Digital camera and cellular handset technology – licensing issue	Defendant	Morrison & Foerster San Diego, CA	Christian Andreau-von Eaw	May 11, 2012	June 28, 2012	No
USPTO IPR Lone Star WiFi LLC vs. **Starwood Hotels, Inc**. Case # 612CV957, Eastern District of Texas	Wireless networks with prioritized access - IPR	Petitioner	Oblon-Spivak Arlington, VA	Scott McKeown	Oct 31, 2013	No	No
USPTO IPR: **Cisco** vs. Rockstar Technologies IPR2014-01220	Multimedia distribution system with user and network controls - IPR	Petitioner	Oblon-Spivak Arlington, VA	Chris Ricciuti	July 30, 2014	No	No
Cresta Technology Corp. vs. **Silicon Labs**: ITC Investigation 337-TA-910 – "Regarding Certain Television Sets"	Digital TV tuner technology - patent dispute	Respondent	DLA Piper Austin, TX; San Francisco, CA; San Diego, CA	Brian Erickson Gerry Sekimura Kevin Hamilton	Aug 25, 2014 Sep 16. 2014	Sep 29, 2014	Dec 3, 2014
USPTO IPR: Oticon vs. **GN ReSound** IPR2015-00103 and IPR2015-00104	Hearing assistance devices with wireless access via shared earpiece cord - IPR	Petitioner	Oblon-Spivak Arlington, VA	Victor Cheung Scott McKeown	Sept 9, 2014	July 21, 2015	No
Ericsson vs. **Apple**, 2:15-cv-290, Eastern District of Texas, Marshall Division.	Location services - patent dispute	Defendant	Hogan-Lovells Denver, CO	Matt Rozier	Nov 11, 2015	No	No
USPTO IPR: **Sony** vs. Cellular Communications Equipment IPR2016-00367	Emergency wireless alerting system - IPR	Petitioner	Oblon Arlington, VA	Victor Cheung Scott McKeown	Dec 18, 2015	No	No
USPTO IPR: **Alcatel-Lucent** vs. Adaptix IPR2016-01030	Multi-carrier (OFDM) wireless communications - IPR	Petitioner	Quinn Emanuel New York	Marc Kaplan	May 11, 2016	No	No
USPTO IPR: **Securus Technologies** vs. Global Tel*Link IPR2016-01115	User authentication in	Petitioner	Bragalone Conroy	Daniel Olejko Nick Kliewer	May 31, 2016	No	No

Case	Technology	Supporting	Law firm	Attorney	Expert report/ declaration	Deposed	Testified
	telecommunicatio ns management system - IPR		Dallas, TX	Stephaine Wood			
Process Control Corporation vs. **Conair Group, Inc., and Alan Landers,** Civil Action No. 1:13-cv-04274-ELR (N.D. Ga.)	Industrial process control software - trade secrets dispute	Defendant	ClarkHill Pittsburgh, PA	J. Alexander Hershey	May 31, 2016 June 30, 2016	Aug 18, 2016	No
USPTO IPR: Arris International vs. **Sony** IPR2016-00827	Device authentication in video control system - IPR	Respondent	Oblon Arlington, VA	Victor Cheung Scott McKeown	July 8, 2016	No	No
USPTO Ex Parte reexam: **Cornell Technical Licensing**	CSMA and multipacket reception wireless systems	Petitioner	Oblon Arlington, VA	Victor Cheung Scott McKeown	Feb 24, 2017	No	No
Straight Path IP Group, Inc v. **Apple, Inc**. Case No. 3:16-cv-03582 Northern District of CA	VoIP networking - patent dispute	Defendant	Hogan-Lovells Denver, CO	Matt Rozier Aaron Oakley Lucky Vidmar	April 7, 2017 Aug 31, 2017 Sep 21, 2017 Oct 19, 2017	Apr 12, 2017 Sep 28, 2017	No
USPTO PGR: Supercell OY v. **Gree, Inc.** PGR2018-00064	Digital and microprocessor devices - IPR	Respondent	Ropes-Gray, Washington, DC	Victor Cheung Scott McKeown	August 16, 2018	No	No
USPTO IPR: **Unified Patents** vs. Ambush Interactive IPR2019-00495	Speech processing, embedded systems, remote control - IPR	Petitioner	Ropes-Gray, Washington, DC	Victor Cheung Scott McKeown	December 27, 2018	No	No
USPTO IPR: **Unified Patents** vs. Universal Cipher IPR2019-00498	Encryption techniques for password authentication - IPR	Petitioner	Ropes-Gray, Washington, DC	Victor Cheung Scott McKeown	December 30, 2018	No	No
USPTO IPR: **Unified Patents** vs. Portal Communications IPR2019-00513	Web-enabled speech processing and location services - IPR	Petitioner	Ropes-Gray, Washington, DC	Victor Cheung Scott McKeown	December 31, 2018	No	No
Broadcom vs. Renesas, et. al., ITC Investigation 337-TA-1119 – "Regarding Certain Infotainment Systems"	Clock control in SoCs - patent dispute	Petitioner	Steptoe & Johnson, Washington, DC	Kate Cappaert Brian Johnson	March 4, 2019 March 19, 2019	March 27, 2019	June 3, 2019 June 6, 2019
USPTO IPR: **Square Inc.** vs. Anywhere Commerce/4361423 Canada, Inc. IPR2019-01625, IPR2019-01626, IPR2019-01627,	Smart card and magnetic stripe reader and	Petitioner	Ropes-Gray, Washington, DC	Victor Cheung Scott McKeown	September 30, 2019 September 30, 2019 September 30 2019	No	No

Case	Technology	Supporting	Law firm	Attorney	Expert report/ declaration	Deposed	Testified
IPR2019-01628, IPR2019-01629, IPR2019-01630 IPR2019-01649, IPR2019-01650	processing for financial payment systems - IPR		White-Case, New York, NY	David Tennant Grace Wang	September 30, 2019 September 30 2019 September 30 2019 October 14, 2020 October 14, 2020 October 14, 2020 September 30, 2019 September 30, 2019 October 14, 2020 October 14, 2020		
USPTO IPR **Unified Patents** vs. Honeyman Cipher Solutions. IPR2020-00213	Software tamper prevention and detection via encryption - IPR	Petitioner	Unified Patents, Washington, DC	Ashraf Fawzy David Seastrunck	December 13, 2019	No	No
Michalski vs. **Michalski**, Monmouth County Court (NJ), FM-13-1543-16-C	Cell phone usage, geolocation, propagation and characteristics – civil litigation	Defendant	Latimer, LLP Oakhurst, NJ	Brian Latimer	December 15, 2019	No	No
USPTO IPR: **Unified Patents** vs. Universal Cipher IPR2019-00498	Encryption techniques for password authentication - IPR	Petitioner	Unified Patents	Jung Hahm Roshan Mansinghani	January 20, 2020	No	No
USPTO IPR Renesas vs. **Broadcom**, IPR2019-01039	Clock control in SoCs - IPR	Respondant	Steptoe & Johnson, Washington DC	Brian Johnson	February 7, 2020	May 28, 2020 (virtual)	No
TQ Delta vs. **ADTRAN**, Case 14-cv-954-RGA & 15-cv-121-RGA, District of Delaware	DSL signaling and control - patent dispute	Defendant	Bradley Birmingham, AL	Benn Wilson	February 28, 2020 April 10, 2020 April 24, 2020 Sep 23, 2020 October 23, 2020 Nov 6. 2020 February 26, 2021 October 14, 2022	May 22, 2020 (virtual) Dec 22, 2020 (virtual)	No
USPTO IPR: **Unified Patents** vs. Portal Communications IPR2019-00513	Web-enabled speech processing and location services - IPR	Petitioner	Unified Patents, Washington, DC	Jessica Marks Roshan Mansinghani	April 8, 2020	No	No
USPTO IPR: **Unified Patents** vs. Optima Direct IPR2020-00784	Multifactor authentication -	Petitioner	Greenberg-Traurig	Andrew Sommer	April 10, 2020	No	No

Case	Technology	Supporting	Law firm	Attorney	Expert report/ declaration	Deposed	Testified
	IPR		McLean, VA				
USPTO IPR **Unified Patents** vs. Voice Tech, IPR2020-01018	Mobile voice control of computer application - IPR	Petitioner	Unified Patents Washington, DC	Jordan Rossen Michelle Callaghan	June 5, 2020 June 28, 2021	No	No
Call vs. Chakra Lounge, **RMB, Inc**., Wasted Space, LLC, Shaman, Inc., C.H.U. Holdings, and Corbin Celotto, Case 190900552, Third Judicial District Court for Salt Lake City County, Utah	Geolocation – civil litigation	Defendant	Carr & Waddoups Salt Lake City, UT	Trent Waddoups	August 17, 2020	No	No
USPTO IPR **Mycroft** vs. Voice Tech, IPR2020-01739	Mobile voice control of computer application - IPR	Petitioner	Avant Law, Overland Park, KS	Hissan Anis	October 1, 2020 October 20, 2021	No	No
USPTO IPR **Unified Patents** vs. Karetek, IPR2020-01550	Multifactor authentication - IPR	Petitioner	Wilson, Sonsini, Goodrich, Rosati Palo Alto, CA Seattle, WA	Matthew Argenti Quincy Lu	October 1, 2020	No	No
Cellcast vs. **USDoJ/IBM**, Case 15-1307, US Court of Federal Claims	Emergency Alerting Systems-patent dispute	Defendant	Goodwin, NY, NY US DoJ, Washington, DC	Mark Abate Alexandra Valenti Calvin Wingfield Jaqueline Genovese Bova Philip Sternhell	September 14, 2021	Nov 12, 2021 (virtual)	No
USPTO IPR **Unified Patents** vs. Liberty Peak Ventures, IPR2022-0024	Financial transaction security/RFID	Petitioner	Unified Patents, Washington, DC	Michelle Aspen	October 21, 2021 October 7, 2022	No	No
TQ Delta vs. **Nokia**, Case 2:21-CV-309-JRG, Eastern District of Texas, Marshall Division TQ Delta vs. **CommScope,** Arris, Broadcom & Avago, Case 2:21-CV-310-JRG, Eastern District of Texas, Marshall Division	DSL signaling and control - patent dispute	Defendant	Alston Bird New York, NY Charlotte, NC Goodwin Proctor Redwood City, CA	Darlena Subashi Karlee Wroblewski Andrew Ong	March 14, 2022	No	No
USPTO IPR **CommScope** vs. TQ Delta, IPR2022-00833	Data packet acknowledgement /retransmission protocols	Petitioner	Goodwin Proctor Washington, DC Boston, MA	Amadou Diaw Craig Lytle Kathleen McGuinness	April 21, 2022	No	No

Case	Technology	Supporting	Law firm	Attorney	Expert report/ declaration	Deposed	Testified
USPTO IPR **Roku** vs. Universal Electronics, IPR2022- 00943	Environmentally sensitive device volume control	Petitioner	Ropes-Gray Washington, DC Boston, MA	Brendan McLaughlin Rebecca Gentilli	April 29, 2022	No	No
USPTO IPR **CommScope** vs. TQ Delta, IPR2022-00809	Data packet acknowledgement /retransmission protocols	Petitioner	Goodwin Proctor Washington, DC Redwood City, CA	Amadou Diaw Abdul Abdullahi	May 5, 2022	No	No
USPTO IPR **CommScope** vs. TQ Delta, IPR2022-01012	Data packet acknowledgement /retransmission protocols	Petitioner	Goodwin Proctor Washington, DC	Amadou Diaw Craig Lytle	May 19, 2022	No	No
USPTO IPR **Roku** vs. Universal Electronics, IPR2022-01289	Programmable, voice operated remote controllers	Petitioner	Ropes-Gray Washington, DC Boston, MA	Brendan McLaughlin Nicholas Bortz	July 19, 2022	No	No
TQ Delta vs. **Nokia**, Case 2:21-CV-309-JRG, Eastern District of Texas, Marshall Division TQ Delta vs. **CommScope,** Arris, Broadcom & Avago, Case 2:21-CV-310-JRG, Eastern District of Texas, Marshall Division	DSL signaling and control - patent dispute	Defendant	Alston Bird New York, NY Charlotte, NC Goodwin Proctor Washington, DC Redwood City, CA	Darlena Subashi Karlee Wroblewski Craig Lytle Andrew Ong	August 29, 2022 November 18, 2022 August 29, 2022	No Dec 6, 2022	No No
Mercedes-Benz USA, LLC vs. Neo Wireless, LLC, IPR2023-00079	OFDM channel estimation and synchronization	Petitioner	Hogan-Lovells Washington, DC San Francisco, CA	Nicholas Rotz Helen Trac	October 10, 2022	No	No
USPTO IPR: **Unified Patents** vs. MEL NavIP, IPR 2023-00083	Speech recognition systems	Petitioner	Arnold Porter Denver, CO Washington, DC	Jessica Kaiser Lindsey Staubach	October 24, 2022	No	No

As 12/6/2022	Total	On behalf of Plaintiff/Complainant/Petitioner	On behalf of Defendant/Respondant
Expert reports/declarations	83	47	36
IPR/USPTO declarations	45	42	3
Depositions	21	6	15
Testimony	6	3	3