



**Federal Communications Commission
Public Safety and Homeland Security Bureau**



Deployable Aerial Communications Architecture Workshop



**Monday, October 31, 2011
9:00 AM—12:30 PM
Commission Meeting Room
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554**

Deployable Aerial Communications Architecture Workshop

Agenda

- 9:00 a.m.** **Welcome Remarks**, Julius Genachowski, Chairman, Federal Communications Commission (FCC)
- 9:05 a.m.** **Keynote Speaker**, Glenn Cannon, Director, Pennsylvania Emergency Management Agency
- 9:15 a.m.** **Panel 1 – Benefits of the Use of Deployable Aerial Communications Architecture (DACA)** - This panel will focus on the role that DACA can play in emergency response within the first few hours after a catastrophic event to restore critical communications for a period of approximately 72 to 96 hours.
- Moderator:** Richard D. Lee, Associate Chief, Public Safety and Homeland Security Bureau (PSHSB), FCC
- Panelists:**
- **Vincent (Tex) Boyer**, Chief, Emergency Communications and Regional Emergency Communications Coordinator, Federal Emergency Management Agency (FEMA) Region IV
 - **Captain James Cash**, Chief, C4IT and Sensor Capability, U.S. Coast Guard
 - **Brian Steckler**, Director, Hastily Formed Networks (HFN) Center, Naval Postgraduate School
 - **Dr. Edwin (Ted) David**, Leader, Advanced System Concepts Group, MIT Lincoln Laboratory
- 10:10 a.m.** **Break**
- 10:15 a.m.** **Panel 2 – Potential DACA Technologies** – This panel will focus on the types of DAC technologies that are available today and will be available in the future. Discussion will focus on the advantages and disadvantages of each technology, including cost-effectiveness.
- Moderator:** Jennifer A. Manner, Deputy Chief, PSHSB, FCC
- Panelists:**
- **Robert (Bob) Buckle**, CEO, Intelcomm, Ltd
 - **Gerald Knoblach**, Co-founder, Chairman and Chief Executive Officer, Space Data Corporation
 - **Penny Rubow**, Director, Arkansas Wireless Information Network, State of Arkansas
 - **Ted Wierzbanski**, Director, UAS Airspace Integration AeroVironment
- 11:05 a.m.** **Break**
- 11:10 a.m.** **Panel 3 – Technical Issues Associated with the Deployment of DACA** – This panel will address the technical issues associated with deployment and operation of DACA technologies, including the potential for harmful interference, spectrum coordination, licensing and authorization issues and standard development.
- Moderator:** Pat Amodio, RF Engineering Chief, Emergency Response Interoperability Center (ERIC), PSHSB, FCC
- Panelists:**
- **David Buchanan**, Chair, National Public Safety Telecommunications Council (NPSTC) Spectrum Committee
 - **Jim Bugel**, Assistant Vice President, Public Safety and Homeland Security, AT&T
 - **Dr. Daniel M. Devasirvatham**, CTO, Applied Technology Division, Defense and Maritime Solutions, SAIC
 - **Al Johnson**, Director, Integrated Information and Communications Technology Support (IIS), Office of the Assistant Secretary of Defense Networks and Information Integration (NII), U.S. Department of Defense, Chief Information Officer
 - **Brian M. Josef**, Assistant Vice President, Regulatory Affairs, CTIA - The Wireless Association
 - **Michael Roberts**, Senior Systems Engineer, CoCo Communications Corp
- 12:25 p.m.** **Closing Remarks:** James Arden Barnett, Jr., Rear Admiral (Ret.), Chief, PSHSB, FCC

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Julius Genachowski, Chairman, FCC

Since being sworn in as Chairman of the Federal Communications Commission in June 2009, Julius Genachowski has focused the agency on digital communications, particularly wired and wireless broadband -- pursuing policies to promote investment, unleash innovation, and empower consumers. Under his leadership, the FCC developed and is implementing the National Broadband Plan, an ambitious strategy to harness the opportunities of high-speed Internet, and promote U.S. global competitiveness. Prior to his FCC appointment, Genachowski spent more than a decade working in the technology and media industries as an executive, investor, and board member. He was Chief of Business Operations and, before that, General Counsel at IAC/InterActiveCorp; Special Advisor at the private equity firm General Atlantic; and co-founded the technology incubator LaunchBox Digital. Genachowski's confirmation returned him to the agency where, in the 1990s, he served as Chief Counsel to Chairman Reed Hundt, as well as Special Counsel to General Counsel William Kennard (later FCC Chairman.) He has served as a U.S. Supreme Court law clerk for two years, for Justice David Souter and Justice William J. Brennan, Jr. (Ret.), and as a clerk for Chief Judge Abner Mikva of the D.C. Circuit. Genachowski worked in Congress on the staff of the House select committee investigating the Iran-Contra affair, and for then-U.S. Representative (now Senator) Charles E. Schumer. Genachowski received a J.D. from Harvard Law School in 1991 (magna cum laude), and served as co-Notes Editor of the Harvard Law Review. In 1985, he received a B.A. from Columbia College (magna cum laude), where he was Editor of Columbia Spectator's Broadway Magazine, re-established Columbia's oldest newspaper (Acta Columbiana), and was a writer and researcher for Fred Friendly, former President of CBS News. He was also a certified Emergency Medical Technician, served on the Columbia Area Volunteer Ambulance, and taught cardiopulmonary resuscitation (CPR). President Obama nominated Chairman Genachowski in March 2009, and he was confirmed by the Senate on June 29, 2009. He was appointed to the Council of the Administrative Conference of the United States. He was named by President Obama to lead the United States delegation to Poland for the commemoration of the 65th anniversary of the liberation of Auschwitz. A son of immigrants, Genachowski is married to Rachel Goslins and has three children.

James Arden Barnett, Jr., Rear Admiral (Ret.), Chief, PSHSB, FCC

James Arden Barnett, Jr., Rear Admiral (Ret.), is the Chief of the Commission's Public Safety and Homeland Security Bureau. He is responsible for overseeing FCC activities pertaining to public safety, homeland security, emergency management and disaster preparedness. He has worked actively on a new nationwide, interoperable public safety broadband network for first responders and led the Bureau in taking action to improve 9-1-1 services and make Next Generation 911 a reality. His Bureau is also hard at work on network reliability and security. Chief Barnett served 32 years in the United States Navy and Navy Reserve, retiring in 2008. His last active duty assignments were Director, Naval Education and Training in the Pentagon and then Deputy Commander, Navy Expeditionary Combat Command in Little Creek, VA. Before coming to the FCC, Chief Barnett was a Senior Research Fellow at the Potomac Institute for Policy Studies, a policy think tank focusing on science and technology issues of importance to the Nation. From 1984 to 2001, Chief Barnett was a senior partner at Mitchell, McNutt and Sams, P.A. in Tupelo, Mississippi with a governmental law practice representing municipalities, counties, law enforcement agencies, schools and local government officials.

Pat Amodio, RF Engineering Chief, ERIC, PSHSB, FCC

Pat Amodio has over 30 years experience in the design, deployment and operational management of various radio frequency systems. His experience includes all aspects of commercial wireless and land mobile network design and deployment including radio planning & optimization; wireless switching; base station equipment design, operation and maintenance; data transmission; cell site design and construction; transport facilities planning and management. Pat earned a patent for a wireless security system including a test feature for locating emergency radio frequency transmissions and is a Senior Member of the Institute for Electrical and Electronics Engineers.

Vincent (Tex) Boyer, Chief, Emergency Communications and Regional Emergency Communications Coordinator, FEMA Region IV

Vincent L. (Tex) Boyer currently holds the position of Telecommunications Manager for DHS/FEMA Region 4, Atlanta, GA. In this position, he is responsible for wireline and RF Communications used in response operations as well as providing technical assistance on Public Safety Radio Systems (Land Mobile Radio, trunked systems, etc.), Public Safety Access Points (PSAPs), and interoperable radio communications in general

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Vincent (Tex) Boyer, Chief, Emergency Communications and Regional Emergency Communications Coordinator, FEMA Region IV (continued)

across the region. Boyer joined FEMA in 2003 and has held a variety of telecommunications, engineering and management positions for the agency. Prior to his appointment with FEMA, Boyer held executive management positions for a variety of Fortune-listed manufacturing firms involved in communications projects and contracts for the Federal Government and State, local and Tribal Governments. He has also previously held a variety of engineering positions, both in management and on large engineering teams and as an individual contributor. His engineering expertise spans communications systems in both the military and civilian satellite, aerospace and public safety sectors. Boyer also has experience in law enforcement and the military. Boyer is a published author with experience teaching math, engineering, science and business courses at the graduate and undergraduate level. His academic pedigree consists of graduate and undergraduate degrees in electrical and systems engineering, business administration, psychology and computer science. Mr. Boyer holds professional designation (certification by examination) as a Telecommunications Professional, Emergency Management Specialist, Systems Engineer, and Project Management Professional. He is a licensed Commercial Radio Operator and an Amateur Extra Class Radio Operator. Hobbies include SCUBA, competitive marksmanship, and motorcycling. Tex lives in Snellville, Georgia with his wife Vanessa and three dogs.

David Buchanan, Chair, National Public Safety Telecommunications Council (NPSTC) Spectrum Committee

David Buchanan Retired after over 32 years with the County of San Bernardino, California. In his role as Network Services Supervisor, Mr. Buchanan was responsible for management and upgrades of an 800 MHz integrated trunked/conventional radio system. This system supports over 15000 units, serving 150 different agencies and departments in the 20,000 square mile county. Mr. Buchanan is a life member of the Association of Public-Safety Communications Officials - International (APCO) and was Chair of APCO's Spectrum Management Committee. He also serves as the Southern California Local Frequency Advisor for APCO. Mr. Buchanan is the Chair of the Southern California Region 5, 700 MHz Planning Committee. Mr. Buchanan served as President of the California Public-Safety Radio Association for 2002.

Robert (Bob) Buckle, CEO, Intelcomm, Ltd

Robert (Bob) Buckle held the post of Principal Adviser to the London Stock Exchange for 14 years. During that time he was responsible for the design and development of the main communication network that provided the infrastructure for Big Bang. Later he designed and built the first satellite based European Inter-bourse financial distribution network. In 1984 Bob founded the Intelcomm group of companies whose first task was to design and build a satellite network for the Federation of Swiss Banks; Telekurs. In 1992 Bob established Intelcomm Inc in order to work together with TRW on the design of the global satellite dealer network P8000. In 1994 Bob designed a land/sea based terrestrial microwave network primarily for Stena Line's new fleet of high-speed (60+ knots) 20,000 tons HSS catamarans. The microwave network was further expanded to cover the whole of the North & Irish Sea fleet. Early in 2000 Bob set up SatinNet a company specializing in the distribution of internet services throughout Europe. SatinNet was subsequently bought by L3. Over the last 10 years Bob has focused on the development of stand-alone mobile phone systems. SpeedyCell and recently TacCell are 2G/3G based security systems which were designed by Bob for specialist applications and have been in 24/7 operation for the last 7 years. Bob holds a CAA fixed and rotary pilot license and is also a licensed radio ham (G6HGM).

Jim Bugel, Assistant Vice President, Public Safety and Homeland Security, AT&T

Jim Bugel, Assistant Vice President - Public Safety and Homeland Security for AT&T, is responsible for Federal policy and strategic planning on public safety, homeland security, cyber security matters and emergency preparedness. Jim is currently a member of the 911 Institute Board of Directors, is also serving on the International Disaster Response Sub-Committee to the U.S. Department of State's Advisory Committee on International Communications and Information Policy (ACICIP), has been actively involved in the President's National Security Telecommunications Advisory Committee (NSTAC) and the National Coordinating Center (NCC). Jim served as Chair of the Joint Advisory Committee on Communications Capabilities of Emergency, Medical and Public Health Care Facilities. Jim is also a former member of the NSTAC Industry Executive Subcommittee (IES), a past co-chair of the NSTAC Emergency Communications and Interoperability Task

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Jim Bugel, Assistant Vice President, Public Safety and Homeland Security, AT&T (continued)

Force, and is a former Vice Chair of the Communications Sector Coordinating (CSCC). As a leader in the field of public safety and emergency preparedness, Jim plays a key role in crafting AT&T public safety policy. Additionally, Jim uses his knowledge to advise several public private partnerships committed to enhancing public safety in the United States. In 2005, during a time of unprecedented crisis in the telecommunications industry following Hurricane Katrina, Jim was Cingular's principal representative to the White House, Department of Defense, Federal Communications Commission and the Department of Homeland Security/Federal Emergency Management Agency on preparedness survivability, restoration and recovery efforts. Jim has more than 20 years experience in the wireless and wired telecommunications industry, including leadership positions in operations, sales, marketing and finance. He brings to the Federal regulatory environment an understanding of how public policy influences business decisions. Jim joined AT&T from Cingular Wireless. Prior to the formation Cingular, Jim worked for the BellSouth and GTE. He received his Bachelors in Business Science from Miami University in Oxford, Ohio.

Glenn Cannon, Director, Pennsylvania Emergency Management Agency

Glenn Cannon was appointed by Governor Tom Corbett as the Director of Pennsylvania's Emergency Management Agency (PEMA) on January 18, 2011. PEMA coordinates state agency response, including the Office of the State Fire Commissioner and Office of Homeland Security, to support county and local governments in the areas of civil defense, disaster preparedness, planning, and response to and recovery from man-made or natural disasters. Cannon previously served as the Senior Vice President in the Pittsburgh office of Hillard Heintze LLC, Strategic Security Advisors, where he provided consulting related to homeland security and emergency and disaster management and communications. Before that, Cannon served as an Assistant Administrator in the Department of Homeland Security/Federal Emergency Management Agency, where he was in charge of Disaster Operations and was responsible for, among other things, the development and execution of interagency plans and procedures in response to Presidential disaster and emergency declarations. Cannon has also served as the County Manager and Chief Operating Officer of Allegheny County, where he was responsible for nearly 8,000 employees, a \$1 billion budget, and service for 1.4 million residents. While in this capacity Cannon streamlined forty-one departments into six, saved \$218 million to the operating budget in his first year and successfully negotiated the county's labor agreements with 18 unions. Before that, Cannon served as the Executive Director of Pittsburgh Water and Sewer Authority and Director of the Department of Public Safety for the city of Pittsburgh. Cannon received his bachelor's degree in education from the Indiana University of Pennsylvania, his master's degree in public management from Carnegie-Mellon University and his J.D. from the Duquesne University School of Law.

Captain James Cash, Office Chief, C4IT and Sensor Capability, U.S. Coast Guard

Captain James (Jim) Cash serves as the Office Chief for Command, Control, Communications, Computers, Information Technology (C4IT) and Sensor Capability (CG-761). He is the Deputy Commandant for Operations Chief Information Officer, responsible for identifying and providing C4IT and Sensor capabilities, competencies and capacity; for developing standards for the staffing, equipping, sustaining, maintaining and employing C4IT and Sensors within Coast Guard forces to meet mission requirements. Captain Cash previously served as the Deputy Director of the Logistics Transformation Program Integration Office (CG-44LT) and Chief of Logistics Information Systems (CG-442) where he led the analysis of the Coast Guard's Logistics Program, identified the aviation logistics program as the agency's best practice, documented its processes and supporting information system then established a change management program office that will move the entire logistics community into the new business processes and supporting IT system. His previous staff assignments have included: Information Systems Architect on the Chief Information Officer's (CIO's) staff at USCG HQ; Information Systems Branch Chief for the Coast Guard's Operations Directorate at USCG HQ; Command Duty Officer and Search and Rescue Coordinator for the Coast Guard's Pacific Area Commander in Alameda, CA. His shipboard assignments have included: Commanding Officer of the Coast Guard Cutters OAK (WLB-211), Charleston, SC; MADRONA (WLB-302), Charleston, SC; POINT BROWER (WPB-82372), San Francisco, CA. Additionally, he served as Executive Officer on BITTERSWEET (WLB-389), Woods Hole, MA; and as Operations Officer on SPAR (WLB-403), Portland, ME. Captain Cash graduated with a Bachelors of Science degree in Mathematics from the U.S. Coast Guard Academy in 1987. He received a Master of Science in Information Systems degree in 1997 and Master of Public Administration degree in 1999 from George Mason University. He is an e-Government Senior Fellow with the Council for Excellence in Government. His personal awards include the Meritorious Service Medal (three awards), Coast Guard Commendation Medal (two awards) and Coast Guard Achievement Medal.

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Dr. Edwin (Ted) David, Leader, Advanced System Concepts Group, MIT Lincoln Laboratory

Dr. Edwin David leads the Advanced System Concepts Group within the Homeland Protection and Air Traffic Control Division at MIT Lincoln Laboratory. His group informs acquisition decisions and technology investment strategies for entities within Department of Homeland Security and Department of Defense, as well as state and local authorities. In this role, Dr. David leads a variety of activities involving mission needs definition, architectural requirements development, risk-reduction prototyping, and performance assessments. Recent areas of emphasis include critical infrastructure protection, disaster response, and border and maritime security. Dr. David also supported the U. S. Coast Guard during the response to the Deepwater Horizon oil spill, leading a team in the rapid assessment of deployed and proposed aerial sensor capabilities. Dr. David's earlier work at MIT Lincoln Laboratory has included assessments of countermeasures to U.S. Air Force systems, pre-acquisition risk reduction for electronic warfare systems, and the rapid development and integration of novel airborne sensor payloads for urgent operational needs. Dr. David received a B.S. in Chemistry from University of Rhode Island in 1990, a Ph.D. in Physical Chemistry from University of Illinois at Urbana Champaign in 1995, and from 1995-1998 was a postdoctoral researcher and visiting assistant professor at Brown University.

Dr. Daniel M. Devasirvatham, Applied Technology Division, Defense and Maritime Solutions

Daniel Devasirvatham works for SAIC, in San Diego, California. He obtained his PhD in Satellite Communications as a Fulbright Scholar. He is a Senior Member of the IEEE. Daniel is CTO of the Advanced Technology Division at SAIC and has been working on Public Safety Communications for the past 10 years. He is the lead technical consultant on Public Safety Broadband communications for a Waiver state. He has published on Disaster Recovery Communications, and chairs the WInnForum joint Satcom Sig/Public Safety Sig effort on Developing a Hybrid Airborne, Terrestrial and Satcom Architecture for Disaster Recovery. Daniel was the Chief Technologist of the DHS/OEC Interoperable Communications Technical Assistance Program ICTAP, for SPAWAR. His work with several states included technical assistance for wireless interoperability, VOIP/ROIP, narrowbanding and P25 Migration. He participated actively in Project 25 Standards and led the development of the acclaimed P25 Features Matrix resource. Earlier, he was Director of Advanced Wireless Technologies Research at Telcordia Technologies/ Bellcore. He led research in Radio wave Propagation, 2G/3G deployment, smart antennas for high capacity communications, and spectrum sharing. He has published several journal and conference papers and obtained patents on his research. Daniel is an invited member of the Association of Public Safety Communications Officials (APCO) Standards Development Committee and, earlier, in its Homeland Security Committee. He participated in post 9/11 and Katrina review panels. He has co-authored APCO and SDR Forum white papers on Public Safety Communications.

Al Johnson, Director, Integrated Information and Communications Technology Support (IIS), Office of the Assistant Secretary of Defense Networks and Information Integration (NII), U.S. Department of Defense, Chief Information Officer

Al Johnson is the Director for Integrated Information and Communications Technology Support (IIS) in the Office of the Assistant Secretary of Defense Networks and Information Integration (NII) and the Department of Defense Chief Information Officer (DoD CIO). He is responsible for oversight of information and communication technology policy to enable effective information and situational awareness sharing during stability operations, humanitarian assistance and disaster relief mission, and contingency operations. Before joining the ASD/NII and DoD CIO team, Mr. Johnson served as the Chief of Readiness, Contingency and Exercise Support, Global Information Grid Operations Directorate, Defense Information Systems Agency (DISA). While at DISA, he was responsible for leading, integrating, and synchronizing agency-wide development of support concepts and service delivery plans to enable COCOM operational plans for contingency missions, disaster relief, humanitarian assistance, emergency response missions, and exercises. He led synchronization of DISA support for Operation Iraqi Freedom and support for the Coalition Provisional Authority (CPA). Mr. Johnson laid the ground work to create the DISA Crisis Action Team and lead that team to manage DISA's overall response to Operation Unified Assistance (Indonesian Tsunami support) and Hurricane Katrina. Prior to entering government civilian service, Mr. Johnson's experience included a year as a Division Manager and two years as a program manager with Science Applications International Corporation. He completed twenty years of active duty service in the U.S. Army (Signal Corps) in various staff and leadership positions across the full spectrum of operations from tactical to strategic. Mr. Johnson is a native of North Carolina and graduate of North Carolina State University with a B.S. in Zoology. He holds a Masters of Arts in Management from Webster University in 1989 and is a graduate of the U. S. Army Command and General Staff College. He completed the Federal Executive Institute Leadership for a Democratic Society program in September 2009.

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Brian M. Josef, Assistant Vice President, Regulatory Affairs, CTIA – The Wireless Association®

Brian M. Josef is Assistant Vice President of Regulatory Affairs at CTIA – The Wireless Association®, the international organization of the wireless communications industry for both wireless carriers and manufacturers. Membership in the association covers Commercial Mobile Radio Service (“CMRS”) providers and manufacturers, including cellular, broadband PCS, ESMR, Advanced Wireless Services and 700 MHz, as well as providers and manufacturers of wireless data services and products. Since joining CTIA in 2006, Mr. Josef has worked on a wide range of issues involving spectrum, regulatory mandates, infrastructure deployment, public safety and homeland security. Since 2009, Mr. Josef has served on the Maryland Emergency Number Systems Board. Prior to joining CTIA, Mr. Josef worked as an attorney for Cole, Raywid & Braverman, LLP, now Davis Wright & Tremaine, LLP, where he advised clients on cable, wireless and common carrier issues, including licensing, compliance, and policy matters. Mr. Josef received his B.A. degree in International Relations from the University of Pennsylvania and his J.D. from the Catholic University of America with a certificate from the Institute for Communications Law Studies. He is a member of the District of Columbia and Maryland Bars and the Federal Communications Bar Association.

Gerald Knoblach, Co-founder, Chairman and Chief Executive Officer of Space Data Corporation

Gerald Knoblach has served as Chairman and CEO since Space Data's incorporation in 1997. From 1996 to 1998, Mr. Knoblach was a program manager at CrossLink, Inc., a wireless communications equipment company. From 1992 to 1997, Mr. Knoblach was a business development and program manager for Orbital Sciences Corporation (NYSE:ORB), where he led the effort to develop the first hand-held, personal communicator for use with the Orbcomm® satellite network. Mr. Knoblach earned an MBA from Harvard University in 1992, an M.S.E.E. from the University of Minnesota in 1990, and a B.S.M.E. from M.I.T. in 1985. He is a licensed professional engineer and has been awarded two patents.

Richard D. Lee, Associate Chief, PSHSB, FCC

Richard D. Lee currently serves as Associate Bureau Chief in the Commission's Public Safety and Homeland Security Bureau. He joined the Commission in 1994, serving as the agency's Deputy Managing Director and later as the Chief of the Compliance and Information Bureau. He has been active in disaster response activities since September 11, 2001, having led disaster response teams for Non-profit Governmental Organizations (NGOs) and Christian Mission Groups to Nicaragua, Mexico, and several U.S. States. Mr. Lee also led a disaster recovery team to Banda Aceh, Indonesia in response to the 2004 Indian Ocean Tsunami. During the Hurricane Katrina and Rita recovery effort, Mr. Lee was the FCC's liaison officer on the ground, helping with communications restoration in Texas and Louisiana. He assisted numerous FCC licensees in both States obtain generators, fuel, and access to their facilities. Mr. Lee is a disabled Vietnam veteran, Purple Heart recipient, and retired United States Marine. He holds several degrees including a bachelor's degree in Personnel Management and a MBA in Leadership, Management, and Organizational Development from Southeastern University.

Jennifer A. Manner, Deputy Chief, PSHSB, FCC

Jennifer A. Manner is Deputy Bureau Chief and has a focus on broadband and other related issues. Ms. Manner previously worked as a Principal at ZComm Strategies LLC, where she was a consultant on telecommunications regulatory policy issues. 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 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. 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.

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Michael Roberts, Senior Systems Engineer, CoCo Communications Corp.

Michael Roberts, Senior Systems Engineer with CoCo Communications Corp., has 25 years experience in the field of digital network communications. He specializes in the use of advanced network architectures to create resilient, secure, deployable solutions for public safety and defense applications. Over the span of his career, Mr. Roberts has been involved in performance engineering a wide variety of communications technologies including space, aerial, and terrestrial wireless networking, geosynchronous and non-geosynchronous satellite systems, sensor networks, and mobile mesh infrastructures. Mr. Roberts holds a bachelor's degree in Electrical Engineering from the Massachusetts Institute of Technology.

Penny Rubow, Director, Arkansas Wireless Information Network

Penny Rubow is the Director of the Arkansas Wireless Information Network (AWIN) Program and serves as the Arkansas Statewide Interoperability Coordinator. AWIN is the State's first responder radio communication system. It supports more than 18,000 users in their emergency response efforts. AWIN was awarded the 2008 Recognition Award for Outstanding Achievement in the Field of Information Technology in State Government by the National Association of State Chief Information Officers (NASCIO). NASCIO named AWIN the award recipient in the category of Information Communications Technology Innovations. Penny holds a B.A. in Management from the University of Arkansas at Little Rock and holds certifications in project management from the Project Management Institute and continuity of operations planning from the Disaster Recovery Institute. She is a member of the SAFECOM ERC, the Arkansas Homeland Security Advisory Group and actively supports the State's ESF#2 needs. As the Arkansas Statewide Interoperability Coordinator Penny is responsible for providing strategic planning and facilitation of interoperability efforts with first responders across the state.

Brian Steckler, Director, Hastily Formed Networks (HFN) Center, Naval Postgraduate School

Mr. Brian Steckler has over 20 years of experience in Navy communications and over 5 years of experience in managing the interoperability of communications at the inter-agency level. He is a U.S. Department of Defense recognized expert in mobile wireless network deployment and vulnerability assessment technologies, information technology applications for complex humanitarian disasters, computer network vulnerability assessments, web based information operations, mobile network operation centers, voice verification and recognition technologies, and various broadband internet access device technologies including fixed broadband wireless, ultra wideband, free space optics broadband, and broadband over power lines. Mr. Steckler is the Executive Director of the Hastily Formed Networks (HFN) Center at the Naval Postgraduate School in Monterey California, and also serves as the Associate Chair for Special Programs. His areas of teaching and research include: basic networking (LAN/WAN), Information Operations to include Computer Network Operations (Computer Network Defense, Attack, and Exploitation), Psychological Operations, Military Deception, Electronic Warfare, Operations Security, and Information Warfare. Mr. Steckler brings significant operational experience with rapidly deployed wireless communications to the team, focusing on hastily formed networks (HFNs) with both wireless equipment solutions and interoperability at the civil-military boundary. In the past few years, he has led teams of NPS faculty/students and industry partners deploying wireless communications to the Andaman Coast of Thailand a few days after the Dec '04 SE Asia tsunami, and led a much larger team of NPS faculty/students and industry partners to wirelessly enable Bay St Louis and Waveland Mississippi for 5 weeks during the Hurricane Katrina aftermath. Brian has also facilitated and deployed NPS faculty/students and communications equipment to SE Asia and South/Central America on the US Navy's two hospital ships (USNS Mercy and USNS Comfort). These two humanitarian outreach missions used the flyway kit equipment suite (WiFi, WiMAX, VSAT, VoIP, LMRoIP) that Mr. Steckler and the NPS HFN Center has prototyped and refined the past 3 years. He was also the overall Communications Director for Strong Angel III, a large scale inter-agency/industry/academia exercise conducted in Summer 2005 that entailed an H5N1 avian flu pandemic in the San Diego CA region, and was sponsored by DHS Office of Science and Technology to both deploy and collect/analyze voice and data traffic during Operation Golden Phoenix, a 7.9 magnitude earthquake scenario training event in Summer 2007 in the Los Angeles Basin. Operation Golden Phoenix was the first combined DHS/DOD training exercise that featured data/voice interoperability challenges between city/local/county/state and federal (DOD/DHS) early responders. Brian plays a critical role in the planning and execution of similar real-world missions and exercises/training events that are being planned for FY08/09. His last full-time experience in the corporate world was as the founder and CEO of a California business-class Internet Service Provider (ISP) and software engineering firm. He operated that business for 7 years until selling it in the Summer of 2001. Prior to that Brian had a successful 20-year

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career in the U.S. Navy, ten years as an enlisted Cryptologic Technician and ten years as a Commissioned Officer. During his Navy career he qualified as a Surface Warfare Officer, Supply Officer, Communications Officer, Operations Officer, Weapons Officer, CMS Custodian, Mine Countermeasures Officer and Officer of the Deck (underway). He received his undergraduate degree from the University of Washington in 1987 in Business Administration. He received a Masters of Science in Information Technology Management from the Naval Postgraduate School in 1994. Brian serves on several boards including a foundation that provides resources to mentally retarded children and adults.

Ted Wierzbowski, Director of UAS Airspace Integration AeroVironment (AV)

Ted Wierzbowski is a retired USAF Colonel and an experimental test pilot. He has been deeply involved in advanced aircraft development since the early 80s when he was the first Air Force test pilot/project manager for the X-29 program. During that time he also was the fighter branch chief at the Air Force Flight Test Center and helped create and then manage a new organization responsible for all one-of-a-kind and research Air Force Flight Test Center aircraft programs. After leaving the X-29 program Ted moved on to the X-30/NASP program where he served in many senior level positions over a period of seven years. Ted retired from the Air Force in 1994 and went to work at AV where he has since managed many advanced technology electric vehicle, distributed energy, and unmanned aircraft systems (UAS) programs. He is now AV's Director of UAS Airspace Integration and is responsible for AV's interaction with the FAA and other government agencies on UAS issues. Over the past decade he has been AV's primary representative on the UAV National Industry Team (UNITE) including two years serving as President. He was a key contributor to joint NASA/UNITE planning efforts for the NASA Access 5 program (first National program focused on integrating unmanned aircraft into the NAS) and then led/managed all AV efforts on the Access 5 Program. After the Access 5 program was canceled he became AV's primary representative to RTCA SC-203 that was tasked by the FAA to develop specific UAS standards for UAS. He has not only participated heavily in these efforts but also on the special subcommittee under SC-203 which developed the best practices document for small UAS (sUAS). Because of his work on this sUAS effort, he was invited by the FAA to be the Industry Co-Chair of a sUAS Aviation Rulemaking Committee (ARC). From May 08 to Apr 09 he co-led this sUAS ARC. This ARC delivered recommendations to the FAA that is currently finalizing a new rule on sUAS based on these recommendations. Since then he has worked with ASTM's F-38 UAS committee to develop all the consensus standards that will be required for this new rule on sUAS to be implemented. He is currently the ASTM F-38 UAS Operations Sub-Committee Chair, on the ASTM F-38 UAS Executive Committee, and, as the F-38 Director of Government Relations provides a single point of contact for the FAA on ASTM UAS standards. In addition he serves as ASTM's and AV's representative on EUROCAE's WG-73 Expert Group on sUASs and is an invited member of the new UAS ARC recently chartered by the FAA. Ted graduated from the Air Force Academy in 1968 and also has a M.S. in Systems Management from USC. He is a graduate of the USAF Test Pilot School and the Defense Systems Management College as well as a member of SETP and a senior member of AIAA.

**Federal Communications Commission
Public Safety and Homeland Security Bureau**

Ensuring public safety and homeland security by advancing state-of-the-art communications that are accessible, reliable, resilient and secure, in coordination with public and private partners.

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