CREATING THE FUTURE OF AVIATION
TECHNICAL & PROFESSIONAL ACTIVITIES · 2015
Creating the Future of Aviation

Technical and Professional Activities 2015
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Introduction

I am pleased to introduce our sixteenth annual compendium of CAASD’s technical and professional accomplishments. Although this booklet may seem relatively small, it summarizes in a concise form the many significant outreach and collaboration actions taken by MITRE staff in support of our mission: advancing the safety, security, effectiveness, and efficiency of global aviation.

Many exciting developments are occurring in the aviation and aerospace arenas. NextGen capabilities, which bring enhanced safety, security, and efficiency to the National Airspace System, are now being widely deployed. New entrants, such as unmanned aircraft and commercial space vehicles, are inspiring innovative new capabilities and business opportunities. And new technologies, such as mobile computing and advanced data analytics, are enabling new paths for system improvements.

Our staff thrive on intellectual challenges and opportunities to innovate. Through analytic and human-in-the-loop simulation, they bring future concepts and capabilities “alive” in our laboratories to explore the opportunities offered by these advancements and also to understand their associated risks. Such advancement requires significant research, analysis, and understanding. We strive to share our work with the global community, as is evidenced here.

Creating the highest quality technical products has always been MITRE’s hallmark. We publish and present extensively in order to share our ideas, obtain community feedback, and understand new perspectives. The papers, patents, awards, and other technical contributions documented here are testaments to the innovative and collaborative spirit of our staff.
Also captured in these pages is our diversity. Our work requires a broad range of operational experience and technical depth. Our staff include engineers, scientists, pilots, controllers, traffic managers, former airline and military personnel, and more. They provide operational expertise in air traffic control, traffic flow management, and space operations, and technical expertise in systems engineering, computer science, operations research, human factors, economics, communications, navigation, surveillance, and other related disciplines. We could not accomplish what we do without this rich diversity of experience and thought.

We understand that successful advancement of aviation and aerospace requires that new concepts and technologies meet technical and operational needs and have viable implementation and operational transition paths. To this end, we actively manage the transition of our research and technology to government, industry, and other community stakeholders to help ensure that expected user benefits are realized.

Our staff inspire us by envisioning innovative ideas for future capabilities and by applying technical and operational rigor to ensure the viability of those ideas. The contributions and achievements documented here highlight the critical role MITRE staff are playing in making new ideas a reality.

Lillian Z. Ryals
Senior Vice President, The MITRE Corporation
General Manager, Center for Advanced Aviation System Development
“Agile Engineering for Development of the Next Generation Air Transportation System,”


PERIODICALS


Conferences are an important part of CAASD’s outreach to the global aviation community. CAASD staff participate in numerous ways: as presenters, moderators, panelists, chairs, and attendees in order to share their work, learn from other experts, make connections, and inform the aviation community about our unique FFRDC role.

CAASD has Conference Coordinators whose role is to champion and manage staff participation. The conferences for which CAASD has designated Conference Coordinators are listed below, along with the assigned Conference Coordinators.

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<td>American Association of Airport Executives (AAAE)</td>
<td>Douglas L. Molin</td>
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<td>• Aviation Security Summit</td>
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<td>American Institute of Aeronautics and Astronautics (AIAA) Aviation</td>
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<td>American Institute of Aeronautics and Astronautics (AIAA) SciTech</td>
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<td>American Meteorological Society (AMS) Annual Meeting</td>
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<td>Association for Unmanned Vehicle Systems International (AUVSI) Unmanned</td>
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<td>Systems Conference</td>
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<td>Avionics for NextGen</td>
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<td>Black Hat &amp; DEF CON</td>
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<td>Civil Air Navigation Services Organization (CANSO)</td>
<td>Miyoun L. (Mimi) Dobbs</td>
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<td>• Asia-Pacific Conference</td>
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<td>• Global ATM Operations Conference</td>
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<td>• World ATM Congress</td>
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<td>Congress of the International Ergonomics Association</td>
<td>Valerie Gawron</td>
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<td>Digital Avionics Systems Conference (DASC)</td>
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<td>Embry-Riddle Aeronautical University’s Space Traffic Management Conference</td>
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<td>FAA Aviation Forecast Conference</td>
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<td>FAA Commercial Space Transportation Conference</td>
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<td>FAA Managers Association (FAAMA) Annual Gathering of Eagles Conference</td>
<td>Michael L. Klinker</td>
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<td>Human Factors and Ergonomics Society Annual Meeting</td>
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<td>Institute of Electrical and Electronics Engineers (IEEE) Conference on Intelligent Data Understanding</td>
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<td>Institute of Electrical and Electronics Engineers (IEEE) International Systems Conference</td>
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<td>Institute of Navigation (ION):</td>
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<td>• GNSS+ 2016</td>
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<td>• International Technical Meeting</td>
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<td>• Joint Navigation Conference</td>
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<td>• Pacific PNT Conference</td>
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<td>• ION/IEEE Position, Location, and Navigation Symposium (PLANS)</td>
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<td>International Civil Aviation Organization (ICAO) Global Aviation Cooperation Symposium (GACS)</td>
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<td>International Conference on Applied Human Factors and Ergonomics</td>
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<td>International Conference on Research in Air Transportation (ICRAT)</td>
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<td>International Forum for Aviation Research (IFAR) Summit</td>
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<td>International Symposium on Aviation Psychology</td>
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<td>MIT Lincoln Laboratory Air Traffic Control Workshop</td>
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<td>Munich Satellite Navigation Summit</td>
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<td>National Air Traffic Controllers Association (NATCA) Communicating for Safety Conference</td>
<td>Wallace N. Feerrar</td>
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<td>National Business Aviation Association (NBAA) Friends and Partners of Aviation Weather</td>
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<td>Red River Valley Research Corridor UAS Action Summit</td>
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<td>RTCA Annual Symposium</td>
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<td>Space Foundation’s Space Symposium</td>
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<td>Transportation Research Board (TRB) Annual Meeting</td>
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<td>University of New Mexico’s UAS Technical Analysis and Applications Center (TAAC) Conference</td>
<td>Andrew R. Lacher</td>
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<td>U.S. Chamber of Commerce’s Annual Aviation Summit</td>
<td>Lillian Z. Ryals</td>
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<td>USA/Europe ATM R&amp;D Seminar</td>
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<td>Women in Aviation International (WAI) Conference</td>
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**CONFERENCE PAPERS AND PRESENTATIONS**

“Advanced RAIM and Autonomous Integrity,”
Young C. Lee, Chair, the Institute of Navigation
International Technical Meeting 2015, January
26–28, 2015, Dana Point, CA.

“Aeronautical Studies: Process and Methodology,”
John E. Lebron and Neal Westlund, presented at
the Symposium on Obstacle Limitation Surfaces
and Aeronautical Studies, July 17, 2015,
Seoul, Korea.

“Applications of a Prioritization Methodology for
Complex Operational Problems and Solutions,”
Zheng Tao, Proceedings of the 12th International
Naturalistic Decision Making Conference,
June 9–12, 2015, McLean, VA.

“ASIAS ASAP Best Practices,”
Michelle L. Harper and Jessica R. Lascara,
presented at Aviation Safety InfoShare 2015,
September 17, 2015, Dallas, TX.

“ASIAS Collaboration with CAST: Measuring
Safety Enhancement Effectiveness,”
Jessica R. Lascara, presented at Aviation Safety
InfoShare 2015, September 17, 2015, Dallas, TX.


“Aviation Data: Planning for Capacity,”

“Aviation Safety Analysis–State of the Practice,”

“Aviation Safety Information Analysis & Sharing (ASIAS),” Jeffrey P. Mittelman and Corey Stephens, presented at the National Business Aviation Association (NBAA) Convention and Exhibition, November 17–19, 2015, Las Vegas, NV.

“The Challenge of Determining Weather Requirements for ATM Decisions,”
Matthew J. Fronzak and Claudia V. McKnight, presented at the American Meteorological Society 95th Annual Meeting, January 4–8, 2015, Phoenix, AZ.


“Effects of RECAT Phase I at I90,” Marshall E. Koch and David L. Rabinowitz, presented at WakeNet USA, April 16–17, 2015, Chicago, IL.
“Emerging GNSS and Modernization,”
Christopher J. Hegarty, Chair, the Institute of Navigation International Technical Meeting 2015, January 26–28, 2015, Dana Point, CA.


“Estimated Time of Arrival (ETA) Performance System Comparative Evaluation,”
Michael R. Cramer, Albert A. Herndon Jr., William A. Miller, and Laura Rodriguez, presented at the 34th Digital Avionics Systems Conference (DASC), September 13–17, 2015, Prague, Czech Republic.


“From Dispatch to Air Traffic Control Operations Innovation in Wind Data Uplink,”

“The Future of Drone Technology,”
**Lillian Z. Ryals**, Session Speaker, the National Association of Corporate Directors (NACD) Global Board Leaders’ Summit, September 17–20, 2015, Washington, DC.

“Getting to ‘Yes’: Managing ATM Planning Through an Open Collaboration App,”

“Global Interoperability,” **Alfred H. Anderegg**, Panelist, the Air Traffic Control Association (ATCA) 60th Annual Conference and Exposition, November 2–4, 2015, National Harbor, MD.


“Industry Use of SWIM Today and Plans for the Future,” Anuja Verma, Panelist, the Air Traffic Control Association (ATCA) 60th Annual Conference and Exposition, November 2–4, 2015, National Harbor, MD.

“International Data Standardization—A Multidimensional Challenge,” Stephane L. Mondoloni, presented at the 34th Digital Avionics Systems Conference (DASC), September 13–17, 2015, Prague, Czech Republic.


“Performance Based Navigation 2,”


“Performance-Based Operations,” **Ralf H. Mayer**, Chair, the 34th Digital Avionics Systems Conference (DASC), September 13–17, 2015, Prague, Czech Republic.


“Quantifying Multi-agency Mission Effectiveness,” Valerie Gawron, presented at the Institute of Electrical and Electronic Engineers (IEEE) Conference on Cognitive Methods in Situation Awareness and Decision Support (CogSIMA 2015), March 9–12, 2015, Orlando, FL.


“Risk-Based Alternatives to the DO-178C Software Design Assurance Process,” Edward A. Lester, presented at the 34th Digital Avionics Systems Conference (DASC), September 13–17, 2015, Prague, Czech Republic.


“SWIM Optimization Methodology,”
Alexe E. Leu, Leone C. Monticone, and

“SWIM Performance Visualization Capability,”

“A Systemic Look at Energy Management and Implications for ATC and Flight Crew,”


“Trust and Validation & Verification Panel,” **Andrew R. Lacher,** Panelist, the American Institute of Aeronautics and Astronautics (AIAA) Intelligent Systems Technical Committee Workshop, August 5–7, 2015, Mountain View, CA.


“Unmanned Aircraft Systems Overview,” Andrew R. Lacher, Guest Lecturer in Air Transportation Systems (AE590) at Purdue University, September 3, 2015, West Lafayette, IN.


“Weather–Track 3,” Craig R. Wanke, Session Chair, the 11th USA/Europe Air Traffic Management R&D Seminar, June 23–26, 2015, Lisbon, Portugal.


“WTMA-S Evolution,” Marshall E. Koch, presented at WakeNet USA, April 16-17, 2015, Chicago, IL.
TECHNICAL EXCHANGE MEETINGS

Technical Exchange Meetings (TEM) are organized primarily for MITRE employees but also for our sponsors and stakeholders. A TEM can be a forum for exchanging ideas, starting a new initiative, learning about a new technology, sharing resources, or collaborating across programs and organizational boundaries. CAASD sponsored or co-sponsored two major TEMs in 2015:

- Annual Space TEM (co-sponsored with MITRE’s Center for National Security), June 2015
- Cyber-Resiliency in Transportation, August 2015
SPECIAL HONORS AND RECOGNITION

The Most Promising Scientist award was presented to Marco Enriquez during the 29th Annual Black Engineer of the Year Science, Technology, Engineering and Math (STEM) Global Competitiveness Conference, February 2015.

The Airports Authority of India (AAI), in conjunction with the Indian Government, awarded MITRE a trophy for MITRE’s role in the development of the GAGAN Satellite-Based Augmentation System (SBAS). The trophy was presented during the ceremony where GAGAN was presented to the Nation by AAI. Sebastian V. Massimini accepted the trophy for MITRE at the ceremony in Delhi, India, July 2015.

The Federal Aviation Administration’s NextGen New Entrants Division presented a Certificate of Excellence to Jeffrey L. Breunig in recognition of his leadership and outstanding dedication to the success of the UAS Pathfinder Focus Area One Program, August 2015.
The Federal Aviation Administration expressed its appreciation of the MITRE/CAASD Data Comm team’s contributions in helping the Salt Lake City Tower declare Data Comm as IOC (initial operational capability), August 2015.


The Indian Space Research Organization and the Airports Authority of India (AAI) presented Sebastian V. Massimini with a trophy for his presentation, “An SBAS User Testimonial,” during the GNSS User Meet 2015 in Bangalore, India, October 2015.

A Certificate of Appreciation was presented to Anuja Verma for her contributions to the SWIM Connect 2015 Showcase Spotlight Series during the 60th ATCA Annual Conference and Exposition, November 2015.

RTCA presented its Outstanding Leader Award to John W. Carson for his leadership on Special Committee 206: Aeronautical Information Services Data Link in producing DO-349: “Architecture Recommendations for Aeronautical Information (AI) and Meteorological (MET) Data Link Services” at the 2015 Annual Aviation Symposium, June 2015.
RTCA presented its Outstanding Leader Award to Dongsong Zeng for his leadership on Special Committee 214: Standards for Air Traffic Data Communication Services in producing DO-224C, Change 1: “Signal-in-Space Minimum Aviation System Performance Standards (MASPS) for Advanced VHF Digital Data Communications Including Compatibility with Digital Voice Techniques” at the 2015 Annual Aviation Symposium, June 2015.

RTCA presented its Outstanding Leader Award to Dongsong Zeng for his leadership on Special Committee 214: Standards for Air Traffic Data Communication Services in producing DO-281B, Change 1: “Minimum Operational Performance Standards (MOPS) for Aircraft VDL Mode 2 Physical, Link, and Network Layer” at the 2015 Annual Aviation Symposium, June 2015.

RTCA presented its Significant Contributors Award to David J. Elliott and Kara J. MacWilliams for their contributions on Special Committee 186: Automatic Dependent Surveillance-Broadcast in producing DO-317B: “Minimum Operational Performance Standards (MOPS) for Aircraft Surveillance Applications (ASA) System” at the 2015 Annual Aviation Symposium, June 2015.


RTCA presented its Significant Contributors Award to **Izabela L. Gheorghisor** and **Vinay Lakshminarayan** for their contributions on Special Committee 206: Aeronautical Information Services Data Link in producing DO-349: “Architecture Recommendations for Aeronautical Information (AI) and Meteorological (MET) Data Link Services” at the 2015 Annual Aviation Symposium, June 2015.

RTCA presented its Significant Contributors Award to **Francis Box** for his leadership on Special Committee 228: Minimum Operational Performance Standards for Unmanned Aircraft Systems in producing WP-2: “Command and Control (C2) Data Link White Paper” at the 2015 Annual Aviation Symposium, June 2015.

**BEST PAPER AWARDS**

Second Place Professional Paper, and Best Simulation and Analysis Paper awards presented to **Krishnan Balakrishnan, Steven R. Bodie,** and **Duncan Thomson** for their paper “SWIM Performance Visualization Capability” at the 2015 Integrated Communications, Navigation, and Surveillance Conference, April 2015.


LETTERS OF COMMENDATION

From the Federal Aviation Administration in appreciation for the MITRE team’s efforts and support on The Future Airport Capacity Task (FACT3) report, January 2015.
From the International Air Transport Association in appreciation for Christopher J. Hegarty’s invaluable input and good counsel throughout the Aircraft Tracking Task Force deliberations, January 2015.

From the Federal Aviation Administration in appreciation of Dean E. Fulmer, Thomas J. St. Clair, and Amal Srivastava for their support in commercial space efforts, February 2015.

Fairfax County Public Schools recognized John A. Kuchenbrod for his service as Chairperson during the Fairfax County Regional Science and Engineering Fair, March 2015.

From the Federal Aviation Administration recognizing the MITRE team’s support of the Wildlife Surveillance Concept (WiSC) Human-in-the-Loop Guidance product, March 2015.

From the Federal Aviation Administration in appreciation of Cherlynn M. Jones’ contributions to the Phoenix Metroplex project, April 2015.

From the Federal Aviation Administration in appreciation of Thomas B. Hudak II and Adam Pusateri’s support for the DCA Public Meeting hosted by Congresswoman Eleanor Holmes Norton, May 2015.
From the Federal Aviation Administration in appreciation of Amanda M. Staley’s contributions to the work on 3T Operations Transition Story Board Exercise, May 2015.

From the Federal Aviation Administration in appreciation of Ralf H. Mayer’s assistance in helping the Atlanta TRACON get ready for the Atlanta Channel 2 Action News interview on ELSO, May 2015.

From the Federal Aviation Administration in appreciation of Matthew T. DeGarmo and Susan S. M. Hanson’s contributions to the management tracking tool that was well received by the International Civil Aviation Organization’s Air Navigation Commission President, June 2015.

From the Federal Aviation Administration in appreciation of Dennis J. Zondervan’s assistance with the Metroplex Team during the transitional months of the Atlanta and Charlotte projects, June 2015.

From the Federal Aviation Administration in appreciation of Thomas M. Schafer and his team’s outstanding job of scrubbing and running numerous HITLs that directly aided Houston in implementation success, June 2015.
From the Federal Aviation Administration in appreciation of **R. Michael Guterres’** participation on a panel at the Google X Seminar where Dave Vos, Google’s executive on Project Wing, noted how well Michael represented both MITRE and the FAA, June 2015.

From the Federal Aviation Administration in appreciation of the MITRE CAASD team’s contributions made to the FY15 TBFM-TFMS-TFDM (3T) Operational Transition and Integration work, July 2015.

From the Federal Aviation Administration in appreciation of **Richard Bolczak** and **Maria V. Geffard’s** contributions with Sector Enhancement Requirements Document, September 2015.

From the Federal Aviation Administration in appreciation of **Dennis J. Zondervan’s** contributions to the Charlotte Metroplex project, November 2015.

From RTCA in appreciation of the RTCA NOTAM Improvement Task Group’s (**Ezra D. Jalleta**, MITRE representative) contributions to a review of Phases 3 and 4 of NOTAM Search final report, November 2015.
From the Federal Aviation Administration in appreciation for Adam Pusateri’s support for the PBN Programs and Policy Group in their efforts to review the DA RNAV SID, November 2015.

From the Federal Aviation Administration in appreciation of Stanley J. Roessner and Jason A. Reinhart’s contributions to the Aircraft State Awareness (ASA) SE210 Working Group project, November 2015.

From the Federal Aviation Administration in appreciation of Dennis J. Zondervan’s support with the Metroplex Projects in the Eastern Service Area, December 2015.

From the Federal Aviation Administration in appreciation of the MITRE CAASD team’s contributions to the success of the JFK Construction project, December 2015.

From the Federal Aviation Administration in appreciation of the MITRE team’s contributions to the NAS effects assessment predictions for upcoming space launches, December 2015.

From the Virginia State Police in appreciation of the MITRE staff for the collaborative research efforts targeting potential cyber threats as they relate to first responder vehicles, December 2015.
PATENTS AWARDED


PATENT APPLICATIONS FILED


PATENT APPLICATIONS ALLOWED

Professional Societies

FELLOWS

■ Human Factors and Ergonomics Society
  Valerie Gawron

■ The Institute of Electrical and Electronics Engineers
  Christopher J. Hegarty

■ The Institute of Navigation
  Ronald Braff
  Christopher J. Hegarty

■ International Ergonomics Association
  Valerie Gawron

■ Royal Aeronautical Society
  Stephane L. Mondoloni

ASSOCIATE FELLOWS

■ American Institute of Aeronautics and Astronautics (AIAA)
  Thomas A. Becher
  Stephen P. Cook
  Valerie Gawron
  John C. Gonda III
  Christopher J. Hegarty
  Andrew R. Lacher
  Wesley B. Link
  David R. Maroney
  Sebastian V. Massimini
  Ralf H. Mayer
Stephane L. Mondoloni
Glenn F. Roberts
Craig R. Wanke
Andrew D. Zeitlin

MEMBERSHIPS

Advanced Computing Systems Association (System Administration) (USENIX)
Air Force Association (AFA)
Air Line Pilots Association, International (ALPA)
Air Traffic Control Association (ATCA)
Aircraft Owners and Pilots Association (AOPA)
American Association of Airport Executives (AAAE)
American Association of University Women (AAUW)
American Economic Association (AEA)
American Institute of Aeronautics and Astronautics (AIAA)
American Mathematical Society (AMS)
American Meteorological Society (AMS)
American Physical Society (APS)
American Planning Association (APA)
American Production and Inventory Control Society (APICS)
American Society of Civil Engineers (ASCE)
American Society for Quality (ASQ)
American Society of Safety Engineers (ASSE)
American Statistical Association (ASA)
Armed Forces Communications and Electronics Association (AFCEA)
Association for Aviation Psychology (AAP)
Association for Computing Machinery (ACM)
Association for Enterprise Information (AFEI)
Association for Unmanned Vehicle Systems International (AUVSI)
Federal Aviation Administration Managers Association (FAAMA)
Guild of Air Traffic Control Officers (GATCO)
Human Factors and Ergonomics Society (HFES)
Information Systems Audit and Control Association (ISACA)
Institute for Operations Research and the Management Sciences (INFORMS)
Institute of Electrical and Electronics Engineers (IEEE)
  • Communications Society (COMSOC)
  • Computer Society (CS)
  • Control Systems Society (CSS)
  • Industrial Electronics Society (IES)
  • Industry Applications Society (IAS)
  • Women in Engineering (IEEE WIE)
Institute of Navigation (ION)
International Air Transport Association (IATA)
International Council on Systems Engineering (INCOSE)
International Federation of Automatic Control (IFAC)
International Institute of Forecasters (IIF)
International Society of Air Safety Investigators (ISASI)
International Union of Radio Science (URSI)
Mathematical Association of America (MAA)
National Air Traffic Controllers Association (NATCA)
National Association of Flight Instructors (NAFI)
National Black MBA Association (NBMBAA)
National Safety Council (NSC)
National Society of Black Engineers (NSBE)
Project Management Institute (PMI)
Royal Aeronautical Society (RAeS)
Royal Institute of Navigation (RIN)
SAE International
Society for the Advancement of Material and Process Engineering (SAMPE)
Society for Industrial and Applied Mathematics (SIAM)
Society of Women Engineers (SWE)
TBM Owners and Pilots Association, Inc. (TBMOPA)
Threaded Track for Analysts by Analysts (TTAA)
Transportation Research Board (TRB)
Transportation Research Forum (TRF)
U.S. Coast Guard Aviation Association (CGAA)
Virginia Helicopter Association (VHA)
Women in Aerospace (WIA)
Women in Aviation, International (WAI)
Women Military Aviators (WMA)
Young Aviation Professionals (YAP)

HONOR SOCIETIES
Beta Gamma Sigma (Business)
Delta Mu Delta (International Business)
Eta Kappa Nu (Electrical and Computer Engineers)
Omega Rho (International Operations Research)
Phi Beta Kappa (Liberal Arts and Sciences)
Sigma Pi Sigma (Physics)
Sigma Xi (Scientific Research)
Tau Beta Pi (Engineering)

USERS GROUPS
Airline Group of the International Federation of Operational Research Societies (AGIFORS)
AirTOp User Group (AUG)
 Americas & Pacific Rim TAAM Users Group (APTUG)
 BADA User Group (BUG)
 Large Installation System Administration Special Interest Group (LISA)
 Special Interest Group on Computer-Human Interaction (SIGCHI)—ACM / SIGCHI
 Worldwide TAAM Users Group (WWTUG)
Committee Participation

TECHNICAL COMMITTEE MEMBERSHIPS

Aerospace Systems Design Lab of Georgia Tech School of Aerospace Engineering

- Civil Aviation Research Division (CARD) Technical Advisory Board
  Katherine T. Harback

Air Traffic Control Association

- Aviation Cyber Security Day Planning Committee
  Joseph M. Veoni

American Institute of Aeronautics and Astronautics (AIAA)

- Integrated Communications, Navigation, and Surveillance Conference (ICNS) Executive Committee
  John C. Gonda III

Program Committees

- Transformational Flight
  David R. Maroney

- Unmanned Systems
  David R. Maroney
Standing Committees

- **Emerging Technologies Committee**
  David R. Maroney
  Glenn F. Roberts

- **Corporate Member Committee**
  Lillian Z. Ryals

Technical Activities Committees

- **Aircraft and Atmospheric Systems Group**
  David R. Maroney, Deputy Director

- **Air Transportation Systems (ATS)**
  Stephane L. Mondoloni
  David R. Maroney, Emeritus Member

- **Digital Avionics**
  John C. Gonda III, Emeritus Member

- **Guidance, Navigation, and Control**
  Lesley A. Weitz, Secretary and Vice Chair

- **Intelligent Systems**
  Stephen P. Cook

- **Modeling and Simulation**
  Christine P. Taylor

American Association of Airport Executives (AAAE)

- **Operations, Safety, and Planning Committee**
  Cheryl R. Andrews

American Meteorological Society

- **Aviation, Range, and Aerospace Meteorology (ARAM)**
  Matthew J. Fronzak
Civil Air Navigation Services Organization (CANSO)

- Environmental Working Group
  Katherine T. Harback

- Operations Standing Committee
  Bruce E. Killian, ASBU Chair

Federal Aviation Administration

- 1090 MHz Spectrum Risk Assessment Team
  Stanley R. Jones

- Advanced Interval Management and Dynamic Required Navigation Focus Groups
  John C. Gonda III

- Air Carrier Training Aviation Rulemaking Committee (ACT ARC) Flight Path Management Working Group
  William A. Miller, Action Team Chair

- ASCENT Center of Excellence for Alternative Jet Fuels and Environment Advisory Committee
  Katherine T. Harback

- Center of Excellence for Commercial Space Transportation Executive Committee
  Zheng Tao
Flight Standards: CNS Task Force
(Joint with Airlines for America)
Michael R. Cramer
Sean F. McCourt
William A. Miller

General Aviation Issues Analysis Team
(GA-IAT)
Jeffrey P. Mittelman, Tri-chair

Performance Based Operations Aviation
Rulemaking Committee (PARC)
Michael R. Cramer
J. Jeffrey Formosa
- Communications Working Group
  Dongsong Zeng
- VNAV Action Team
  William A. Miller, RNP Established Action
  Team Chair

Research, Engineering and Development
Advisory Committee (REDAC)
- REDAC Human Factors Subcommittee
  Christopher T. DeSenti
- REDAC NAS Operations Subcommittee
  Deborah A. Kirkman
- REDAC Subcommittee for Aircraft Safety
  Andrew R. Lacher
Space Based ADS-B Support Team
Stanley R. Jones

Unmanned Aircraft Systems (UAS) Aviation Rulemaking Committee (ARC)
David G. Hamrick

Unmanned Aircraft Systems Executive Committee (DHS, DoD, FAA, NASA)
- Science and Research Panel
  Stephen P. Cook
  Andrew R. Lacher
  Brian C. Patterson

USA/Europe ATM R&D Seminar
Craig R. Wanke, Conference Committee Member

Human Factors and Ergonomics Society

A. R. Lauer Safety Award Committee
Valerie Gawron, Chair

Aerospace Systems Technical Group
Valerie Gawron, Chair
David A. Domino
Kathleen A. McGarry Peterson
Scott H. Mills

International Society of Air Safety Investigators (ISASI)

Human Factors Working Group
Mitchell L. Serber, Chair
International Telecommunication Union—Radiocommunication Sector (ITU-R)

- Efficient Orbit/Spectrum Utilization for FSS and BSS (WP 4A)
  Michael Tran

- Efficient Orbit/Spectrum Utilization for MSS and RDSS (WP 4C)
  Michael Tran

- MMS/GMDSS: Aeronautical Mobile Service and Radiodetermination (WP 5B)
  Michael Tran

- Remote Sensing Systems (WP 7C)
  Michael Tran

National Aviation Authorities

- Joint Authorities for Rulemaking on Unmanned Systems (JARUS)
  Brian C. Patterson

Regional Airline Association

- Flight Technology Committee
  Sean F. McCourt

RTCA, Inc.

- Integration and Coordination Committee (ICC)
  Robert A. Hekl
- **NAC Advisory Subcommittee**
  Urmila C. Hiremath
  Dennis A. Sawyer

- **NAC Metrics Working Group**
  Jacqueline Kee

- **NextGen Advisory Committee (NAC)**
  Lillian Z. Ryals

- **Policy Board**
  Lillian Z. Ryals

- **Program Management Committee (PMC)**
  Christopher J. Hegarty, Chair

- **Tactical Operations Committee (TOC)**
  Douglas L. Molin
  - *GPS Adjacent Band Compatibility Task Group*
    Kelly R. Markin
  - *NOTAM Subgroup*
    Ezra D. Jalleta

- **Wake Vortex Tiger Team**
  Clark R. Lunsford

(See also RTCA, Inc. Standards Committee Memberships)

**SAE International**

- **Air Traffic Management Steering Committee**
  Christopher J. Hegarty
Transportation Research Board (TRB)

- Airfield and Airspace Capacity and Delay (AV060)
  Laurence F. Audenaerd
  Marcus Smith

- Aviation Economics and Forecasting (AV040)
  Katherine T. Harback

- Aviation Security and Emergency Management (AV090)
  Seli J. Agbolosu-Amison

- Aviation System Planning (AV020)
  Ehsan Esmaeilzadeh

- Committee on Intergovernmental Relations in Aviation (AV010)
  - Commercial Space Transportation Subcommittee
    Marcus Smith
  - Committee on Light Commercial and General Aviation (AV080)
    Neal Westlund

- Environmental Impacts of Aviation (AV030)
  Anuja A. Mahashabde

- NextGen—Understanding the Airport’s Role in Performance-Based Navigation (ACRP 03-34)
  Laurence F. Audenaerd, Review Panel Member
- Safety Risk Management for Airports (ACRP 04-16)
  Kent V. Hollinger

- Standing Committee on Aircraft/Airport Compatibility (AV070)
  Neal Westlund

- Standing Committee on Airfield and Airspace Capacity and Delay (AV060)
  Neal Westlund

*Transportation Research Forum (TRF)*

- Chicago Chapter
  Laurence F. Audenaerd

*Women in Aerospace (WIA)*

  Elida C. Smith, Board Member
STANDARDS COMMITTEE MEMBERSHIPS

ARINC Engineering Services, LLC
(Rockwell Collins, Inc.)

- Airlines Electronic Engineering Committee (AEEC)
  - Data Link (DLK) Systems Subcommittee
    Dongsong Zeng
  - Systems Architecture and Interfaces (SAI) Subcommittee
    John C. Gonda III
    William A. Miller

ASTM International

- F38 Unmanned Aircraft Systems
  Francis Box
  Stephen P. Cook, Chair, Software Standards Group
  R. Michael Guterres

European Organisation for Civil Aviation Equipment (EUROCAE)

- WG-62 Galileo
  Christopher J. Hegarty

International Civil Aviation Organization (ICAO)

- Aeronautical Communications Panel Working Group F
  Francis Box

- Air Traffic Management Requirements and Performance Panel
  Stephane L. Mondoloni
■ Flight Operations Panel
  William A. Miller

■ Instrument Flight Procedures Panel (IFPP) Integration Working Group
  William A. Miller

■ Navigation Systems Panel
  Roland O. Lejeune

Leesburg Executive Airport Committee
  Caiolinn C. Ertel

RTCA, Inc.

■ RTCA/EUROCAE Forum on Aeronautical Software (FAS)
  John C. Angermayer

■ SC-147 Traffic Alert & Collision Avoidance System (TCAS)
  Joseph M. Boyd
  David J. Elliott
  Edward A. Lester
  Andrew D. Zeitlin

■ SC-159 Global Positioning System (GPS)
  Christopher J. Hegarty, Co-Chair
  Kevin W. Bean
  M. Bakry El-Arini
  Roland O. Lejeune
  Michael Tran
■ SC-186 Automatic Dependent Surveillance-Broadcast (ADS-B)
  Randall S. Bone, WG-1 Co-Chair
  D. Stuart Bowman
  David A. Domino
  David J. Elliott
  Stanley R. Jones
  Raphael D. Katkin
  Brock J. Lascara
  Edward A. Lester
  Kara J. MacWilliams
  Anand D. Mundra
  Hans P. Stassen
  Robert C. Strain
  Lesley A. Weitz

■ SC-206 Aeronautical Information Services (AIS) and Meteorological Data Link Services
  Laurence F. Audenaerd
  John W. Carson
  Izabela L. Gheorghisor
  Douglas Havens
  Brock J. Lascara
  Clark R. Lunsford
  Dongsong Zeng

  David A. Domino, WG-1 Chair
  Mitchell L. Serber
■ SC-214 Standards for Air Traffic Data Communication Services
  Randall S. Bone, Tiger Team Co-Chair
  Stephen L. Giles
  John C. Gonda III
  Dongsong Zeng

■ SC-216 Aeronautical Systems Security
  John C. Angermayer

■ SC-223 Aeronautical Mobile Airport Communication System (AeroMACS)
  Francis Box
  Izabela L. Gheorghisor

■ SC-227 Standards of Navigation Performance
  Michael R. Cramer
  William A. Miller, WG-3 Chair

■ SC-228 Minimum Operational Performance Standards for Unmanned Aircraft Systems
  Donald S. Arnstein
  Francis Box
  Stephen P. Cook
  Izabela L. Gheorghisor
  Leonid Globus
  R. Michael Guterres
  Edward A. Lester
  Kara J. MacWilliams
  David R. Maroney
  Kyle R. Noth
  Brian C. Patterson
  Erin M. Sunshine
SC-233 Addressing Human Factors/Pilot Interface Issues for Avionics

Valerie Gawron
Academic and Special Appointments

DePaul University
- Visiting Scholar
  Laurence F. Audenaerd

George Washington University School of Engineering and Applied Science
- National Advisory Council
  Andrew R. Lacher

Northwestern University
- Adjunct Faculty
  Laurence F. Audenaerd

Queens University, Belfast, Northern Ireland
- Visiting Professor in Remotely Piloted Aircraft Systems
  David R. Maroney

State University of New York at Buffalo
- Department of Mechanical and Aerospace Engineering, Faculty Advisory Board
  Lesley A. Weitz, Board Member
COURSES TAUGHT (THROUGH MITRE)


“Safety Risk Management and Safety Assurance,” October 12–16, 2015, Cincinnati, OH.


“SMS Principles I and II,” January 26–30, 2015, Kona, HI.

“SMS Principles I and II,” February 2–6, 2015, Kahului, HI.

“SMS Principles, SMS II, and SMS Audit,” June 1–10, 2015, Mexico City, Mexico.

“SMS Executive Overview and SMS Awareness,” August 10–14, 2015, Renton, WA.

“SMS II and SMS Audit,” Hawaii Department of Transportation:
   • July 7–10, 2015, Lihue Island
   • July 13–16, 2015, Kona Island
   • July 20–23, 2015, Kahului Island

“SMS II,” April 14–16, 2015 and October 20–22, 2015, McLean, VA.

“SMS Audit,” April 17, 2015 and October 23, 2015, McLean, VA.
OTHER COURSES TAUGHT

“When DO-178C: Software Considerations in Airborne Systems and Equipment Certification,”
John C. Angermayer and Kent V. Hollinger.

“When Simulation Applications in Training,”
Valerie Gawron, presented for the Flight and Ground Vehicle Simulation Course, January 19–23, 2015, Binghamton University, Binghamton, NY.

SPECIAL APPOINTMENTS

Virginia Unmanned Systems Commission, David G. Hamrick, appointed by Governor Terry McAuliffe.

The American Institute of Aeronautics and Astronautics (AIAA) appointed Glenn F. Roberts and Lesley A. Weitz as members of the ad hoc ATCQ Transition Committee to effect the transition of ATC Quarterly to an AIAA Journal on Air Traffic Management, March 2015.
ACTA Press Communications Journal
Leone C. Monticone, Co-Editor-in-Chief

Air Traffic Control Association: Air Traffic Control Quarterly
R. Michael Guterres, Reviewer
Glenn F. Roberts, Editorial Board
Craig R. Wanke, Reviewer

American Institute of Aeronautics & Astronautics, Inc.

• Journal of Aerospace Information Systems
  Shin-Lai Tien, Reviewer
  Craig R. Wanke, Reviewer

• Journal of Aircraft
  Craig R. Wanke, Reviewer

• Journal of Guidance, Control, and Dynamics
  Craig R. Wanke, Reviewer
  Lesley A. Weitz, Reviewer

Canadian Journal of Civil Engineering
Panta Lucic, Reviewer

Ergonomics in Design: The Quarterly of Human Factors Applications
Valerie Gawron, Editorial Board

European Journal of Operations Research
Panta Lucic, Reviewer
Craig R. Wanke, Reviewer
Christopher J. Hegarty, Co-series Editor

Institute of Electrical and Electronics Engineers

- *Aerospace and Electronics Systems*
  R. Michael Guterres, Reviewer

- *Transactions on Aerospace and Electronic Systems*
  Young C. Lee, Associate Editor

- *Transactions on Communications*
  Donald S. Arnstein, Reviewer

- *Transactions on Intelligent Transportation Systems*
  Craig R. Wanke, Reviewer

International Journal of Aviation Psychology
Valerie Gawron, Domain Editor

Journal of Navigation (Royal Institute of Navigation)
Christopher J. Hegarty, Editorial Advisory Board

Journal of the Transportation Research Board
Laurence F. Audenaerd, Reviewer

Journal of the Transportation Research Forum
Laurence F. Audenaerd, Reviewer
NAVIGATION: Journal of the Institute of Navigation
Christopher J. Hegarty, Associate Editor
MITRE’s Technology Transfer Office works with staff members to ensure that the benefits of their innovations reach the largest possible user base. We share our innovations with sponsoring as well as non-sponsoring agencies. In many situations, it benefits our sponsors to make our knowledge and intellectual property more readily available to a broader audience. We do this through publications, open source contributions, and relationships with industry and other research partners.

We also transfer our technologies to commercial organizations when appropriate so that they can undertake the technical, business, and manufacturing activities necessary to bring products and services incorporating our intellectual property to market. As product development is not part of our mission, commercialization may be the only viable transfer mechanism to bring commercial products that are accessible, affordable, and supported to our sponsors.

Technology transfer provides government organizations with new capabilities. It also helps MITRE achieve its mission to advance technology and return value to the nation’s economy. Furthermore, it enhances U.S. competitiveness in the world market.
Here is a list of recent technologies and capabilities developed in CAASD that were transferred in 2014-2015 or are in the process of currently being transitioned:

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PHOTO LEGEND
(clockwise from top left)

• Mike Klinker, Doug Molin, and Roberta Zimmerman at the FAA Managers Association (FAAMA) Gathering of Eagles conference.
• Vince Massimini holds GAGAN award.
• A large number of CAASD staff were recognized at RTCA in 2015.
• Emily Stelzer discusses Low Cost Surface Awareness with FAA Administrator Michael Huerta and Deputy Administrator Mike Whittaker at the ATCA Annual Conference and Exposition.
• CAASD staff with other participants at aviation safety conference.
• Anuja Verma (far right) participates on a SWIM panel at the ATCA Annual Conference and Exposition.
• Steve Bodie, Krishnan Balakrishnan, Kymber Weese, Herb Tax, Leila Ribeiro, Alexe Leu, and Omar Atia at ICNS 2015.
• Mark Huberdeau and Ed Bolton (FAA, Assistant Administrator for NextGen).
• Jim Williams (Manager, FAA UAS Integration Office), Michelle Duquette, and Tony Militello at the AUVSI Conference.