



FAA UAS SYMPOSIUM

Global Leadership

International Partnerships & Harmonization Efforts

Moderator: Tricia Stacey

Manager, UAS International Division,
FAA UAS Integration Office



Federal Aviation
Administration



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Breakout Session 3A: Global Leadership



- **Moderator: Tricia Stacey**, Manager, International Division, FAA UAS Integration Office
- **Randy Willis**, Manager, Emerging Technologies Team, Mission Support Services, FAA Air Traffic Organization
- **Karlin Toner**, Director Global Strategy, FAA Office for Policy, International Affairs and Environment
- **Thomas Mickler**, European Aviation Safety Agency, EASA Representative in Washington, DC
- **Pierre Ruel**, Chief of Flight Standards, Transport Canada Civil Aviation
- **Doug Davis**, Northrup Grumman, Director of Airworthiness & CANSO, Vice Chair Ops Steering Group
- **Brian Wynne**, AUVSI President & CEO, Drone Advisory Committee member

Consider these Questions.....



- **Global harmonization of standards/policy is usually considered a “good thing,” but why do we care about harmonization with regard to UAS?**
- **Why should the regulatory authorities care about harmonization of UAS regulations and standards? Why does industry care?**
- **If we agree that harmonization is a “good thing,” then what is the best way to accomplish this goal?**



Transport Canada

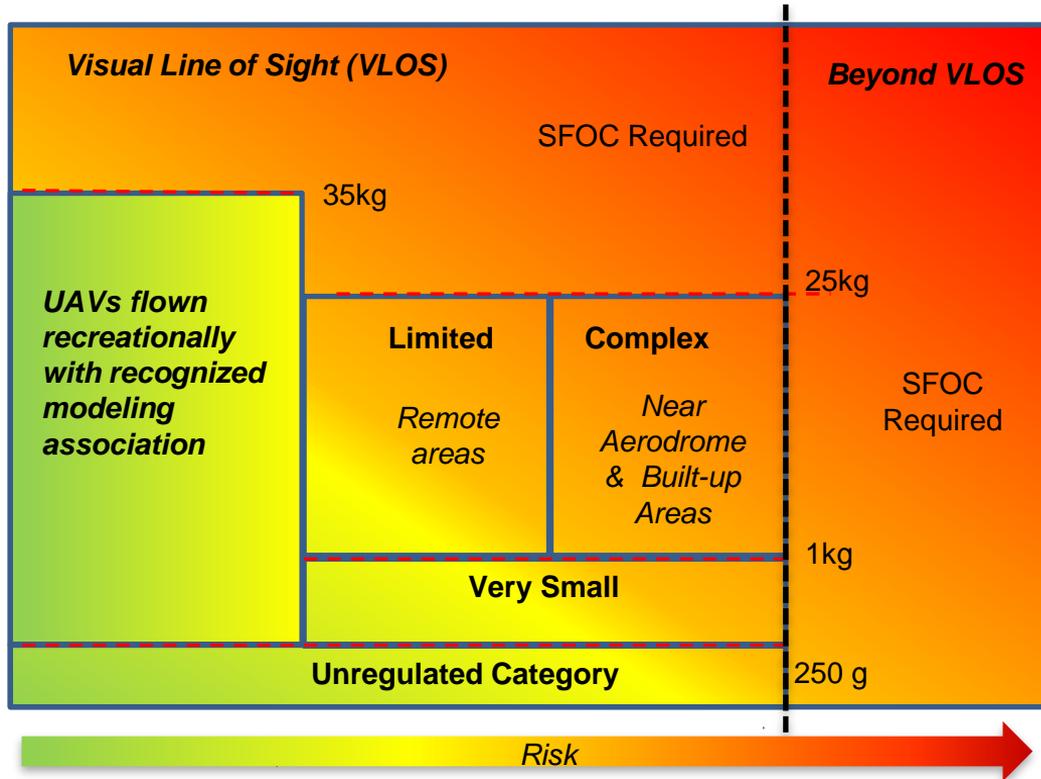


- **International UAS Activities:**
 - ICAO RPAS Panel
 - Canada-U.S. Regulatory Cooperation Council

- **Canada's UAS Regulatory Approach:**
 - VLOS as the foundation
 - Integration
 - Risk-based
 - Timeline



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FAA Int'l Partnerships & Harmonization Efforts



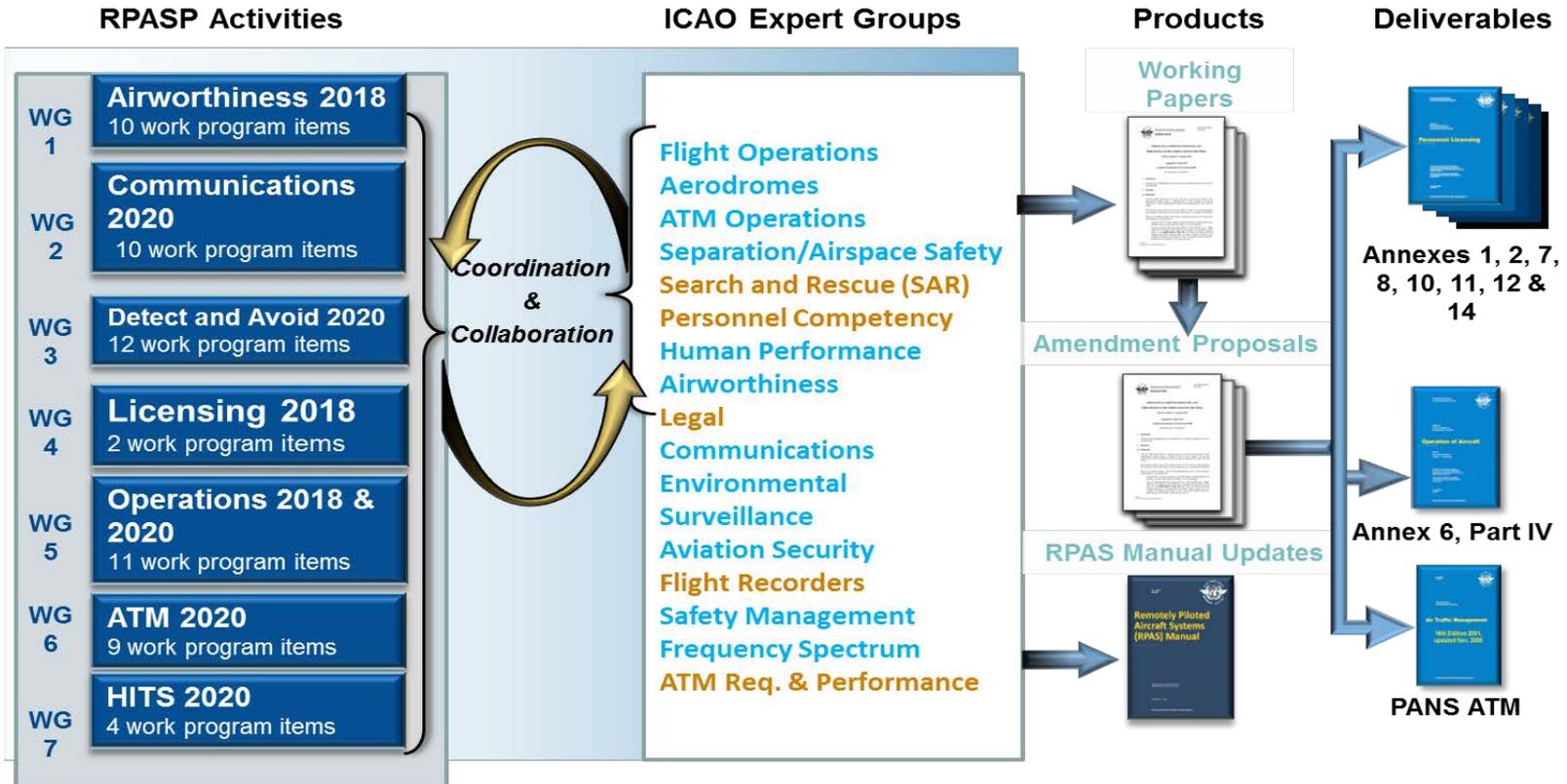
- **ICAO Remotely Piloted Aircraft Systems (RPAS) Panel**
 - U.S. Member / Vice Chairman

- **ICAO Small UAS Study Group**
 - UAS Toolkit is now available online

- **ICAO UAS Regional Activities**
 - Asia/Pacific UAS Task Force
 - ICAO RPAS Workshops (Lima, Stockholm, Mexico City)

- **Civil Air Navigation Services Organization (CANSO)**
 - RPAS and Emerging Technologies Working Group

RPAS Panel Work Program



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FAA Int'l Partnerships & Harmonization Efforts



- The FAA's Global Leadership Initiative emphasizes international collaboration and harmonization

- Working through International Organizations:
 - JARUS (Joint Authorities for Rulemaking on Unmanned Systems)
 - Delivering mature UAS guidance for authorities to use in rulemaking efforts

 - RTCA
 - Developing industry standards for authorities' rulemaking programs with emphasis on Detect and Avoid and Command & Control (C2) performance standards

 - ASTM International
 - Developing standards and guidance material with focus on airworthiness systems

 - American National Standards Institute (ANSI)/International Organization for Standardization (ISO)
 - Promoting standardization with 2 dedicated workgroups on product manufacturing and maintenance, and operations and procedures

FAA Int'l Partnerships & Harmonization Efforts



➤ Working bilaterally:

- U.S.- EU MoC for R&D → NextGen & SESAR cooperation on UAS
- FAA's Center of Excellence (COE) for UAS Research
 - University of Southampton, UK - Affiliate Member
 - Technion - Israel Institute of Technology - Affiliate Member
- Rulemaking Cooperation Council with Canada (RCC)
- UAS Detection
 - Evaluating technology solutions for detecting small UAS near airports include partnering abroad, such as testing of detection technology at the Helsinki Airport
- Continued Dialogue with bilateral partners such as EASA

FAA Int'l Partnerships & Harmonization Efforts



➤ Engagement at International Events:

- FAA/AUVSI UAS Symposium
- FAA - TCCA Annual Bilateral Meeting
- FAA - Asia-Pacific Flight Standards Meeting
- FAA - Western Hemisphere FAA Flight Standards Meeting
- FAA - International Rotorcraft Safety Conference
- FAA - Asia-Pacific Bilateral Partners Dialogue
- FAA - EASA International Aviation Safety Conference
- RTCA Global Aviation Symposium
- AUVSI XPONENTIAL – All Things Unmanned
- International Drone Expo (IDE)

CANSO Partnering on Behalf of ANSPs



- **Member ICAO RPAS Panel**
 - Leading discussions on standardized RPAS Lost Link Procedures
 - Advocating secondary surveillance beacon code 7400 for RPAS Lost Link
- **Co-Chair/Chaired ICAO Small UAS Advisory Group**
 - Produced web accessible material for all to use (precedent setting)
 - State regulations
 - Educational flyers
- **Member → EASA Expert Group for RMT.0230 'Unmanned aircraft systems'**
 - Contributing to the DRAFT COMMISSION REGULATION (EU) laying down rules regarding unmanned aircraft operations
- **Contributing to the Master Plan update on Drones**
 - CANSO is involved in the ad hoc Working Group on controlled airspace

RPAS/ET Workgroup Activities



➤ Current/Recent activities

- **Assessing airspace structure and operations above FL600**
 - Assessment to identify gaps and baseline the need/requirements
 - Harmonization
- **Creating ANSP Considerations for Small UAS Operations document**
 - Operational approvals
 - Unmanned Traffic Management Concept
 - Checklists
- **Updating CANSO ANSP Considerations for RPAS Operations document**
- **Produced a training module to provide ANSPs with a high-level overview of RPAS operations from an ANSP perspective**
 - Includes information on the operation of RPAS, unique terminology, contingency operations, and much more

The European Harmonisation Challenge

- **Amendment to Basic Regulation:** EU competence to regulate all unmanned aircraft
- **EASA Technical Opinion (12/2015):**
 - operation centric concept
 - performance based, risk based, proportionate
 - 3 categories (open, specific and certified)
- **Prototype Regulation (08/2016):**
 - Provides clarity on how the “open” and “specific” categories could be implemented
 - Integrates in a single IR both Aviation legislation and Product legislation
 - Clarifies the role of and the flexibility for Member States (e.g. Zone system)
- **NPA out by end of April, 3 months comment period, workshop in July, Opinion end of 2017**
- **U-Space concept coordinated through SESAR Joint Undertaking (SJU)**
 - Concept will be part of drone addendum to ATM Masterplan; U-Space to become reality in 2019

The International Harmonisation Challenge

- **Active participation in ICAO**
 - supporting several WGs: CONOPS for international IFR operation of certified UAS,
 - Detect & Avoid; AIR, LIC (Rapporteur: Henry Rodenburg)
- **Active participation in JARUS** (Joint Authorities for the Regulation of Unmanned Systems)
 - good progress; produced valuable concepts and deliverables
- **Close cooperation with FAA and other International Partners**
 - Regular telephone calls, and updates (e.g. XOPS); participation in ARCs; Conferences
 - Cooperation through ICAO and JARUS
 - Discussing future cooperation on TC projects (applying the BASA)
- **Opportunities for standardisation bodies** (e.g. EUROCAE, SAE, ASTM, RTCA, others)
 - identification of areas where industry consensus standards may serve as AMCs
 - encourage development of globally accepted industry consensus standards

AUVSI's International Stakeholder Engagement



➤ International Civil Aviation Organization (ICAO)

- The International Civil Aviation Organization's (ICAO) Remotely Piloted Aircraft Systems (RPAS) Panel replaced the Unmanned Aircraft Systems Study Group that ICAO formed in 2007. The panel kicked off activities with its inaugural meeting in November 2014.
- AUVSI is recognized as an official observer of this panel and continues to monitor the developments of this panel's activity.

➤ Joint Authorities for Rulemaking on Unmanned Systems (JARUS)

- JARUS is a group of experts from the National Aviation Authorities and regional aviation safety organizations. Its purpose is to recommend a single set of technical, safety and operational requirements for the certification and safe integration of Unmanned Aircraft Systems (UAS) into airspace.
- AUVSI participates with JARUS via its Stakeholder Consultation Board (SCB) to JARUS. The SCB is an advisory body designed to be nimble in gathering expert input and producing policy recommendations.

AUVSI's International Stakeholder Engagement



➤ Single European Sky ATM Research Joint Undertaking (SESAR JU)

- In 2016 SESAR JU launched a SESAR Drones Outlook Study to further demonstrate the need to act at all levels in order to boost and integrate Research & Innovation forces in Europe to leverage the broad range of industrial opportunities linked to drones integration in the aviation industry.
- AUVSI put together a delegation of companies to follow and participate in this activity.

➤ AUVSI Chapters

- Israel, Singapore, Spain, United Kingdom

Challenges/Issues for UAS Int'l Work



Technical?

Global Challenges

Cultural?

Regional Challenges

Political?

Regulatory?

Financial / Admin?

Domestic Challenges

Return to the Opening Questions.....



- **Global harmonization of standards/policy is usually considered a “good thing,” but why do we care about harmonization with regard to UAS?**
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Questions?



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Tricia Stacey, Manager, International Division, FAA UAS Integration Office



Ms. Stacey is the Manager of the UAS International Division in the FAA's UAS Integration Office. She is responsible for the strategic direction, project management, coordination, and integration of all UAS international activities – both within the FAA and with other civil aviation authorities and international organizations. Ms. Stacey provides the overall priorities for the FAA to address the full range of international UAS technical and policy areas, ensuring a coordinated global engagement strategy for UAS activities.



Ms. Stacey has been with the FAA for over 25 years, all in international activities with both the Office of Aviation Safety and the Office of International Affairs. Among her many positions, Ms. Stacey was the FAA's Senior Representative in Europe, where she was responsible for coordinating and managing aviation-related activities both with U.S. Government agencies, the European Union and its Agencies, the International Civil Aviation Organization's (ICAO) Regional Office, the European Civil Aviation Conference (ECAC), as well as other civil aviation authorities and international aviation organizations.

Ms. Stacey has a Master of Business Administration from Dartmouth College with a concentration in international affairs, and a Bachelor of Science with Honors from the University of Montana. Whenever possible, Ms. Stacey and her husband retreat to their ranch in the mountains of south-west Colorado for plenty of outdoor activities.

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Randy Willis, Manager, Emerging Technologies Team, Mission Support Services, FAA Air Traffic Organization



Randy Willis is the Emerging Technologies Team Manager working in the FAA's Air Traffic Organization. He has primary responsibility for the safe integration of UAS into the National Airspace System. In addition to his regular duties, Mr. Willis is the United States Member and also Vice Chairman of the International Civil Aviation Organization Remotely Piloted Aircraft Systems Panel. Additionally, he is Co-Chair of the Civil Air Navigation Services Organization (CANSO) RPAS Working Group and participates on several other domestic and international working groups dedicated to the safe integration of UAS.

Previously, Mr. Willis served as a Federal Contractor supporting the FAA UAS Office and also served in the United States Navy as an Air Traffic Controller.

Mr. Willis has a Bachelor of Science in business administration from the University of Maryland University College and Project Management certificate from St. Mary's College of Maryland.

Karlin Toner, Director Global Strategy, FAA Office for Policy, International Affairs and Environment



Dr. Karlin Toner is the Federal Aviation Administration's (FAA) Director of Global Strategy in the Office for Policy, International Affairs and Environment (APL). Dr. Toner provides executive leadership in the development, implementation, and evaluation of program policies, goals, and objectives for United States international aviation. In particular, she oversees the development of a data-informed process to enable the FAA to effectively prioritize future international engagement.

Dr. Toner previously served as the Director of the Joint Planning and Development Office from February 2010 to April 2014. There, she managed an interagency initiative charged with coordinating aerospace planning and policies for the Next Generation Air Transportation System (NextGen). She served concurrently as an advisor to the Secretary of Transportation for NextGen coordination, a role held since January 2009.



Dr. Toner has 20 years of experience with the National Aeronautics and Space Administration (NASA). She holds doctoral and master's degree in aerospace engineering from the University of Florida, along with an honorary doctoral of science and a bachelor's degree in applied mathematics from Indiana University of Pennsylvania. She earned a NASA Exceptional Achievement Medal, is a recipient of the Robert J. Collier Trophy, and is an Associate Fellow of the American Institute of Aeronautics and Astronautics.

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Thomas Mickler,

European Aviation Safety Agency, EASA Representative in Washington, DC



Mr. Thomas Mickler took office as the EASA Representative in Washington, DC, in August 2014. In his previous position as Head of Standardization at the European Aviation Safety Agency, Mr. Mickler worked closely with the European Commission and European States on the implementation of European Aviation Safety Regulations to ensure a high and uniform level of aviation safety across Europe.

Before joining the EASA team in November 2009, Mr. Mickler served as Director Air Operations, Personnel Licensing, Accident Investigation, and Aviation Safety Programmes at the German Ministry of Transportation, where he was responsible for the governmental oversight of the German Luftfahrt-Bundesamt (LBA) in the fields of Air Operations and Personnel Licensing, as well as the German Accident Investigation Body (BFU).

From January 1998 to March 2004, Mr. Mickler served as a member of the Air Navigation Commission and Alternate Representative of Germany to the Council of the International Civil Aviation Organization (ICAO). In this capacity, he contributed to several strategic aviation safety initiatives, such as the Global Aviation Safety Plan and the Global Air Navigation Plan for CNS/ATM systems, and to several amendments of ICAO Annexes. Mr. Mickler holds a Master of Science in Aerospace Engineering from the Technical University of Braunschweig, Germany.



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Pierre Ruel, Chief of Flight Standards, Transport Canada Civil Aviation

Pierre Ruel is the Chief of Flight Standards for Transport Canada's Civil Aviation (TCCA). Prior to joining TCCA, he served as an officer and pilot with the Canadian Forces (CF) and also performed the role of the Ottawa base manager for Ornge (Ontario's air ambulance service). He has over 3000 flying hours, of which 2500 hours were flown on the CF-18. He obtained his Fighter Weapons Instructor qualification (FWIC) and he holds a Transport Canada Airline Transport Pilot License (Aeroplane). His operational experience includes missions flown from the Aviano airbase in Italy: DELIBERATE FORGE (Bosnia – 1998) and ALLIED FORCE (Kosovo – 1999). He also took part in operation NOBLE EAGLE with NORAD.



He has performed staff officer functions for Fighter Group, the 1 Canadian Air Division headquarters in Winnipeg, the North American Aerospace Command and US Northern Command headquarters in Colorado Springs, as well as the Canadian Forces Health Services Headquarters. He served as Operations Officer at 5 Wing Goose Bay and had the privilege to command 425 Tactical Fighter Squadron and 3 Wing Bagotville.

His academic background includes an aviation diploma from the Chicoutimi College, the Command and Staff Course in Toronto and a Bachelor of Military Arts and Science with the Royal Military College. While serving in the United States, he became a graduate of the Air War College of the United States Air Force Air University.

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Doug Davis, Northrup Grumman, Director of Airworthiness & CANSO, Vice Chair Ops Steering Group



Doug Davis is Director, Office of Independent Airworthiness, Engineering and Global Product Development at Northrup Grumman Aerospace Systems, a premier provider of manned and unmanned aircraft, space systems and advanced technologies critical to our nation's security. In this role, Mr. Davis leads all aspects of airworthiness support across all divisions of the company's Aerospace Systems sector. He is responsible for flight certification for all manned and unmanned aircraft programs. Mr. Davis is an established global influencer with broad industry expertise, technical breadth and strong leadership skills in driving airworthiness policies, balancing risks with cost, auditing airworthiness requirements during the capture/proposal phase and conducting independent reviews.



Mr. Davis began his aviation career as an air traffic controller with the Federal Aviation Administration (FAA) and spent almost 25 years with that agency. He was named to stand up and lead the FAA's Unmanned Aircraft Program Office as first manager. Mr. Davis crafted the initial certification and operational guidance that is primarily still in use by the FAA.

Mr. Davis holds a bachelor's degree in business administration from California Pacific University and completed coursework at the Harvard School of Government.

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Brian Wynne, AUVSI President & CEO, Drone Advisory Committee member



Brian Wynne is president and CEO of the Association for Unmanned Vehicle Systems International (AUVSI), the world's largest nonprofit organization dedicated to the advancement of unmanned systems and robotics. Wynne brings in-depth experience in transportation and technology applications gained through leadership roles with industry associations and public-private partnerships. Prior to joining AUVSI in January 2015, he was president and CEO of the Electric Drive Transportation Association (EDTA), the trade association promoting battery, hybrid, plug-in hybrid, and fuel cell electric drive technologies and infrastructure.

Wynne is a member of the Drone Advisory Committee (DAC), a group of key decision-makers formed by the Federal Aviation Administration (FAA) to support the safe introduction of Unmanned Aircraft Systems (UAS) into the nation's airspace. He is also a member of the FAA's Unmanned Aircraft Safety Team (UAST), which is comprised of stakeholders from government and the aviation industry that gather and analyze data to enhance UAS safety and operations. He also served on the FAA's UAS Registration and Micro UAS task forces.

Wynne earned a bachelor's degree from the University of Scranton, and a master's degree from the School of Advanced International Studies at Johns Hopkins University. He was also a Fulbright Scholar at the University of Cologne in Germany. For more than 20 years, Wynne has been an instrument-rated, general aviation pilot, and recently received a commercial pilot certificate. He flies a Socata Trinidad.



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