



RTCA Special Committee 203

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Update on UAS Standards Development by RTCA Special Committee 203

Based in Washington DC, RTCA, Inc. is a private, not-for-profit corporation that develops consensus-based recommendations regarding communications, navigation, surveillance, and air traffic management (CNS/ATM) system issues. RTCA functions as a Federal Advisory Committee. Its recommendations are used by the Federal Aviation Administration (FAA) as the basis for policy, program, and regulatory decisions and by the private sector as the basis for development, investment, and other business decisions.

Organized in 1935, as the Radio Technical Commission for Aeronautics, RTCA today includes roughly 335 government, industry, and academic organizations from the United States and around the world. Member organizations represent all facets of the aviation community, including government organizations, airlines, airspace users and airport associations, labor unions, plus aviation service and equipment suppliers. A sampling of its domestic membership includes the FAA, Air Line Pilots Association (ALPA), Air Transport Association of America, Aircraft Owners and Pilots Association (AOPA), ARINC Incorporated, Avwrite, The Boeing Company, Department of Defense (DOD), GARMIN International, Rockwell International, Stanford University, Lockheed Martin, MIT Lincoln Laboratory, MITRE/CAASD, Harris Corporation, NASA, National Business Aviation Association (NBAA), and Raytheon.

Because RTCA interests are international in scope, many non-U.S. government and business organizations also belong to RTCA, including 100+ International Associates such as Airservices Australia, Airways Corporation of New Zealand, Airbus, the Chinese Aeronautical Radio Electronics Research Institute (CARERI), EUROCONTROL, NAV Canada, Bombardier Aerospace, Society of Japanese Aerospace Companies, Thales Avionics Limited, Centre for Airborne Systems-Bangalore, the United Kingdom Civil Aviation Authority, and many more.

Issue-oriented Special Committees, formed and staffed by government/industry volunteers to accomplish specific tasks, constitute the working committees of RTCA. As with all Federal Advisory Committees, meetings are publicly announced in the U.S. Federal Register, and participation is open to all parties with an interest in topics under consideration. During special committee meetings, participants explore the operational and technical ramifications of selected topics. Resulting consensus recommendations are presented to the RTCA Program Management Committee (PMC) for approval with direction provided for further consideration. All interested parties with a need for aviation CNS/ATM issue resolution can petition the PMC to organize a Special Committee.

In October 2004, with the rise in use of Unmanned Aircraft Systems (UAS) and acknowledgment of the growing demand and growth for UAS operations by public organizations, RTCA Special Committee 203 (SC-203) was established. Its charter is to develop recommended UAS Minimum Aviation System

Performance Standards (MASPS) necessary to mitigate the technical and operational challenges of integrating UAS into the U.S. National Airspace System (NAS). The SC-203 Terms of Reference (TOR) include delivery of a UAS System-Level MASPS, a UAS Control and Communications MASPS, and a UAS Sense and Avoid MASPS.

With over 600 registered members, SC-203 has broad representation from within the aviation stakeholder community, including U.S. Government Agencies (FAA, DOD, the Department of Homeland Security etc.), airspace user associations (ALPA, AOPA, NBAA, etc.), trade associations (Aerospace Industries Association, UNITE, etc.), manufacturers and equipment suppliers (AAI, Boeing, General Atomics, Honeywell, Lockheed Martin, Northrop Grumman, Rockwell Collins, etc.), and international representatives (EUROCONTROL, EUROCAE, ICAO, etc.).

At the first SC-203 Plenary, Mr. Nick Sabatini, FAA's Associate Administrator for Safety, at the time, stated that «In introducing unmanned aircraft systems to civil airspace, we must first do no harm — have no adverse impact to those thousands of aircraft already operating in the NAS,» and «when it comes to operating unmanned aircraft systems in the NAS, I'll commit today that the FAA is going to be prudent, pragmatic, and progressive». These early statements from the FAA made it clear that SC-203 would need to be thorough in developing its products. As work plans for the MASPS began, it became evident that the data required to develop these products would require time and commitment from the membership pool. Therefore, in the near term, the Plenary agreed that it would be useful to release initial guidance material and qualitative considerations in advance of the detailed quantitative performance standards necessary for the MASPS. The document entitled *Guidance Material and Considerations for Unmanned Aircraft Systems (RTCA Document # DO-304)* was published in March 2007, and provides a comprehensive set of UAS definitions and assumptions, representing harmonized views from both the piloted and unmanned aircraft communities, as well as small UAS best practices guidance.

Currently, as specified in its TOR, SC-203 is conducting its data collection and analysis based on a tailored DO-264 (Guidelines for Approval of the Provision and Use of Air Traffic Services Supported by Data Communications) systems engineering process. This process provides a basis from which to conduct comprehensive operational safety, performance, and interoperability assessments, which are requisite precursors to developing recommended MASPS with a higher probability of acceptance by safety regulators. In order to ensure horizontal integration across product areas and vertical integration among its technical contents, SC-203 is organized as a Systems Engineering and Integration Team (SEIT).

Current SC-203 efforts are focused on the development of the technical baseline, which includes concurrent development of UAS operational scenarios, operational and functional requirements, and architectural products necessary to capture and describe UAS operational and system behaviors within

classes E-G-A airspace. Corresponding UAS technical assessments will be presented in the form of an Operational Services and Environment Description (OSED) scheduled for release in early 2010, an Operational Safety Assessment (OSA) scheduled for release in early 2011, an Operational Performance Assessment (OPA) scheduled for release in early 2012, and an Interoperability Assessment (IA), scheduled for release in early 2011. Initial recommendations will be published as an Operational Safety, Performance, and Interoperability Requirements (OSPIR) Standard with accompanying UAS system-level MASPS scheduled for delivery in late 2012. And finally the Control and Communication and Sense and Avoid MASPS are scheduled for delivery in late 2013.

To support the development of its technical baseline, SC-203 is leveraging work and data from other organizations, such as the DOD, which provided extensive assistance in the development of SC-203 requirements and on-going architecture work. Also, work conducted by the NASA Access 5 Project and industry is under review for possible support.

In an ongoing spirit of cooperation, SC-203 and EUROCAE Working Group 73 (WG-73) have agreed to collaborate on a pilot project for initial UAS safety assessments. The leadership teams from both committees met in February 2009, to discuss how to harmonize their task plans and product development cycles to potentially expedite the standards development being undertaken by each committee. In addition, WG-73 adopted to apply the SC-203 tailored DO-264 process as a method of conducting its UAS technical baseline assessments. There was also consensus among the leadership teams to begin the mapping of SC-203 and WG-73 activities, so the committees can leverage common

processes, methods, tools, and resources and technical data and findings from organizations, such as the FAA and EuroControl. The safety assessment pilot project will test this approach by sharing data from each committee's technical baseline, which includes SC-203 scenarios from IFR operations in U.S. airspace classes E-G-A and WG-73 scenarios from IFR operations in European airspace classes A-B-C, shared requirements, shared uses cases, shared architectures, and shared operational services and environmental definitions.

For more information or to join SC-203, please visit www.rtca.org or contact SC-203 via email at info@rtca.org.

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