ATM Seminar USA & Europe
AIR TRAFFIC MANAGEMENT
RESEARCH AND DEVELOPMENT

Twelfth USA/Europe Air Traffic Management Research and Development Seminar
June 26th – 30th 2017, Seattle, WA, USA
ATM2017 CALL FOR PAPERS

The United States Federal Aviation Administration and EUROCONTROL are jointly organising the Twelfth USA/Europe ATM R&D Seminar. This continues a series started in 1997 hosted alternately in Europe and the USA. These seminars allow the ATM community to share and discuss R&D results and to build consensus on major issues. They have a strong record of creating and reinforcing working and personal relationships amongst leading experts and researchers in the industry.

ATM2017 will provide a platform for researchers to share results that can contribute to current European and US ATM initiatives, SESAR and NextGen, as well as addressing issues outside and beyond these programmes.

The Programme Committee invites research papers that present new concepts, analyses and methodologies in one of the themes set out below. Papers may address any part of the lifecycle from early concept through to implementation. The Committee will furthermore consider papers that describe research resulting in a negative outcome, positive deployment experiences where the R&D community may learn valuable lessons as well as papers that describe and analyse relevant innovative concepts and emerging technologies.

Papers should clearly explain their objectives, approach, methodology and results, and draw conclusions that demonstrate the scientific value of the work. Absence of clear results will often constitute grounds for rejection. Authors should take care to reference previously published work - the ATM Seminar repository contains more than 750 past papers at **www.atmseminar.org**. Papers already presented at other conferences or like forums will not be accepted. Submissions are welcome from organisations engaged in ATM R&D worldwide. Papers arising from collaboration between different organisations, in particular joint international efforts, will be viewed positively.

Seminar themes are described on the following pages.

Full papers are to be submitted through EasyChair – instructions and templates are provided on the Seminar web site.

Closing date for submission: **Sunday 29th January 2017 - no extensions will be granted to this date**.

Papers will be peer-reviewed by at least three committee members according to criteria indicated above and further detailed on the web site.

Notification of acceptance or rejection: **29th March 2017**.

Authors presenting their papers are expected to attend the entire seminar. This is critical to achieving the key goal of creating and reinforcing professional and personal relationships for the benefit of the ATM industry. Best paper awards will be presented during final plenary sessions.

The ATM Seminar series is included in international research publication indexes. Accepted papers will thus be indexed in SCOPUS and assigned a DOI reference.

All seminar attendees will pay a registration fee to cover the costs of conference facilities and meals. No special financial support is foreseen.

www.atmseminar.org

Conference co-chairs: **Eric Neiderman**, FAA (**eric.neiderman@faa.gov**)
Colin Meckiff, EUROCONTROL (**colin.meckiff@eurocontrol.int**)

ATM 2017 Theme Descriptions

These descriptions outline the scope of each theme as envisaged by the Programme Committee. They are not exhaustive, so related subject matter not explicitly mentioned below may be submitted for consideration.

Network and strategic flow optimisation

NextGen and SESAR promote efficient use of airport and airspace resources through strategic flow management and optimization from the perspectives of both carrier and service provider. This theme includes concepts of collaborative decision making (CDM) for solving congestion problems.

Trajectory and queue management

A key paradigm change in NextGen and SESAR is the shift of control by tactical clearance to management by reference to a trajectory. Topics in this theme include all aspects of trajectory planning, optimization, and coordination including real time updates and traffic synchronization. Also included are tools and procedures for queue management such as arrival manager, departure manager and surface manager.

Separation

This theme encompasses concepts, algorithms, analysis and systems that address tactical separation in the air and on the airport surface. Topics include methods and models for assessing separation requirements, ground-based, airborne, and combined approaches for safety alerting and conflict resolution, and wake turbulence management.

Enhanced surveillance and navigation

This theme includes concepts for advanced surveillance, navigation and associated procedures to increase throughput in en route and terminal airspace. Topics may include use of ADS-B surveillance information, cockpit display of traffic information, performance-based navigation procedures, 4D information and the impact of trajectory-based operations.

Integrated airport/airside operations

This theme includes models and analysis of airport surface operations and the coordination of local airport management decisions with the surrounding airspace decisions. Goals can include mitigating delays on scheduled airport operations, airspace delays and congestion and negative environmental impact. Topics include airport performance assessment and dynamic scheduling of airport and airspace resources, models that include the use of CDM are welcome.

Finance and policy

This theme includes finance of air traffic services and modernization initiatives, investment analysis of ATM improvements, airport access control policy, equipage issues, adaptation to climate change, appropriate roles of government, air navigation service providers (ANSPs), and industry, and trade-offs between competing policy goals.

Globally interoperable systems and data

This theme encompasses research and development of concepts, standards and systems that support the harmonization of aviation technologies and capabilities. It addresses the integration and coupling of related, but physically or logically distributed aviation systems and data to improve communication, collaboration and operational decision making. Topics of interest include aviation information reference and exchange models, data standardization, data networking and sharing, information management, and tools to support collaboration of stakeholders using diverse systems.

ATM performance measurement and management

Topics of interest include prediction, measurement, control and optimization of one or more dimensions of air transportation system performance including cost efficiency, flight efficiency, capacity, productivity, punctuality, and predictability. Empirical and analytical (e.g. model-based) studies for individual programs and the system as a whole, both within and across ANSPs, are welcome. Note that research on human performance should be submitted under the human factors theme.

Safety, resilience and security

Safety and resilience topics of interest include the application of models and methods to assess system and human response to unexpected operating conditions in the socio-technical ATM system, to compare current and future approaches for risk mitigation and to validate contributions from future technology and automation to safety management. Safety and security management have commonalities but often require different approaches due to the nature of the risk/threat. Security topics of interest include cybersecurity, the protection of airports and other critical ATM infrastructure with physical vulnerabilities, and unwanted UAS activity.

Environment and energy efficiency

Of particular interest are: assessment and measurement of aviation's environmental impacts and energy efficiency as well as interdependencies among these and other parameters; approaches to improve ATM and operational procedures from an environmental and energy efficiency perspective; analyses of impacts of new aircraft and other new technologies on the environmental performance of ATM and operational procedures; and results from ATM and operational procedure demonstrations.

Weather in ATM

This theme includes the integration of weather information into ATM decision making to understand and mitigate its impact on operations. Topics include quantifying the impact of weather on air traffic operations, decision making in the presence of weather forecast uncertainty, and generally all consideration of the role of weather and weather forecasting in the practice of ATM.

Human factors

NextGen and SESAR concepts will change the roles and responsibilities of human operators in the air traffic control system. Human factors issues include: human-system integration, decision making, training, selection and performance monitoring, organizational dynamics, change management, individual and team performance and adaptive automation. Topics include tools, techniques and metrics to enhance the performance of humans in ATM.

Unmanned and remotely piloted aircraft systems

This theme focuses on the safe and efficient integration of UAS/RPAS into ATM operations, especially in managed airspace. Topics of interest include separation requirements, trajectory-based operations, dynamic network analysis of the decision loop changes from separation through traffic synchronization and demand/capacity balancing.

Complexity science, analytics and big data for ATM

Papers should address the application of complexity science and related disciplines to air transportation when seen as a complex socio-technical system. Analysis of large volumes of structured or unstructured ATM data that can bring fresh insight is also included in this theme. Topics may include understanding of air transport system complexity and behaviour, emergent behaviour with appropriate modelling and simulation techniques, forensic investigation/data mining and analysis and complexity metrics.

Autonomous systems and operations

Many parts of the aviation system are becoming increasingly autonomous. Research topics of interest include design and analysis for increased autonomy, the respective roles of people and machines in increasingly autonomous systems (human-machine teams and human interaction with autonomous systems), design to ensure safety, resilience and trust in the system, and human/automation interaction with UAS.