



Fifteenth USA/Europe Air Traffic Management Research and Development Seminar

ATM2023 call for papers

5 - 9 June 2023, Savannah, GA, United States of America



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The United States Federal Aviation Administration and EUROCONTROL are jointly organising the Fifteenth USA/Europe ATM R&D Seminar. This continues a series started in 1997, hosted alternately in Europe and the USA. The ATM R&D 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.

The 2023 edition of the seminar will take place in Savannah, Georgia, United States of America, between 5th and 9th June 2023; it will provide a platform for researchers to share results that can contribute to current European and US ATM initiatives. All technical sessions of the seminar will be video-recorded and the recordings will subsequently be made available to the community. The seminar itself, however, will be in-person and attendance throughout the event is strongly encouraged.

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 to implementation. The Committee also considers papers that demonstrate the infeasibility of certain concepts (negative results), deployment experiences with valuable lessons as well as papers that describe and analyse relevant innovative concepts and emerging technologies. Papers describing research and concepts that apply globally rather than in one part of the world alone will be looked upon favourably, as will contributions arising from collaboration between different organisations, especially joint international efforts.

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 is grounds for rejection. Authors should take care to reference previously published work – including that in the ATM Seminar repository which contains more than 900 past papers at www.atmseminar.org. Papers with a similar content already presented at other conferences or like forums will be rejected.

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

Closing date for submission: **Sunday 5 February 2023**

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: **Friday 31 March 2023**

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 the 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. Best conference papers may be included in a special issue in a recognized scientific journal.

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

www.atmseminar.org

Conference co-chairs: Eric Neiderman, FAA (eric.neiderman@faa.gov)
Dirk Schaefer, EUROCONTROL (dirk.schaefer@eurocontrol.int)

Programme Committee	
Europe	US
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Miquel Àngel Piera Eroles , UA Barcelona	Mark Weber , MIT Lincoln Laboratory
Anthony Smoker , Lund University /IFATCA	Shannon Zelinski , NASA
Georg Trausmuth , Frequentis	

ATM 2023 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. The committee reserves the right to shift submitted papers to a different theme than that specified by the submitting author.

Air traffic flow management and optimization

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 enhancing efficiency and solving congestion problems.

4-D Trajectory planning, prediction, and management

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

Separation assurance and safety nets

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.

Advanced communication, surveillance and navigation

This theme includes concepts for advanced communication, surveillance, navigation and associated procedures to increase throughput in en route and terminal airspace. Topics may include use of ADS-B surveillance information, controller-pilot data-link, cockpit display of traffic information and performance-based navigation procedures.

Integrated airport/airside operations

This theme includes models and analysis of airport surface operations and the coordination of local airport management decisions (for e.g., gate allocation) with the surrounding airspace constraints. Goals can include mitigating delays on scheduled airport operations; optimization of runways/taxiways; managing airspace delays and congestion; and reducing environmental impact. Topics include airport performance assessment and dynamic scheduling of airport and airspace resources including the use of Airport CDM (A-CDM).

Economics, finance and policy

This theme includes air transport policy and strategy analysis; economic incentives to change the behaviour of air transport actors; the finance of air traffic services and modernization initiatives; and investment analysis of ATM improvements. Also relevant are airport access control policy, equipage issues and adaptation to climate change. The appropriate roles of government, air navigation service providers (ANSPs), and industry can be discussed as well as trade-offs between competing policy goals. Case studies in air transportation with policy implications, including regulation are also welcomed.

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 safety, capacity and delays, cost and flight efficiency, punctuality, predictability and environmental impact. Empirical, analytical, and 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 current and future approaches for risk mitigation; contributions from future technology and automation to safety management; and the assessment of system and human response to unexpected operating conditions. This theme also includes contributions that specifically address the assessment and mitigation of events that take place on a local or global scale and pose a threat to the aviation ecosystem such as pandemics, geo-political conflicts and climate-related disruptions such as floods and extreme weather. 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

This theme addresses the assessment and measurement of aviation's environmental impacts and energy efficiency as well as interdependencies among these and other parameters. Topics include 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 programs to encourage or accommodate sustainable aviation fuel.

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 face of forecast uncertainty, and general considerations of the role of weather and weather forecasting in the practice of ATM.

Human factors

Human factors issues include human-system integration, AI assistant tools and human-AI teaming, decision making, training, controller selection and performance monitoring, organizational dynamics, change management, individual and team performance and adaptive automation. Topics also include tools, techniques and metrics to enhance the performance of humans in ATM. Research related to human factor analysis of remote tower operations are welcome.

Autonomous, unmanned and remotely piloted aircraft systems

This theme focuses on the safe and efficient integration of UAS/RPAS and autonomous systems into ATM operations. Topics of interest include separation requirements; trajectory-based operations; dynamic network analysis of the decision loop changes from separation through traffic synchronization; design and analysis for increased autonomy to ensure safety, resilience and trust in the system; and human/automation interaction with UAS.

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 the 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. The theme also includes applications of machine learning in ATM.