EUROCONTROL

Federal Aviation Administration

Air Transportation Information Exchange Conference - (featuring AIXM, WXXM and FIXM)

August 28, 2012 - August 30, 2012
NOAA Auditorium and Science Center
Silver Spring, Maryland

Global Harmonization Through Collaboration

PROGRAM

Colleagues:

On behalf of the FAA and EUROCONTROL, we would like to take this opportunity to welcome you to this year's Air Transportation Information Exchange Conference (ATIEC). In developing the program, we were challenged by the vision of achieving global harmonization through collaboration, while focusing on the emerging trends in support of global air transportation. We are excited to have such a wide range of topics, speakers, and vendors to encourage innovation in support of our goals to advance global collaboration and improve aviation safety and performance around the world.

Our objective is to discuss the latest advancements regarding globally harmonized information relevant for air traffic management in its widest sense. This will be achieved through presentations and working sessions on information management, information services, the definition of information domains and the related exchange mechanisms, and the delivery and discovery of information using semantics and semantic technology.

As in prior conferences, speakers from the international ATM community will be making major announcements regarding new versions and future evolution of the now well known exchange models:

- Aeronautical Information Exchange Model (AIXM)
- Weather Information Exchange Model (WXXM)
- Flight Information Exchange Model (FIXM)

We hope you will make the most of our conference by networking with your peers, discussing the critical issues that affect us today, and helping us find strategies to minimize these issues in the future.

Thank you and welcome!

Kind regards,

Deborah Cowell
Conference Chair and AIM Information Architect

Paul Bosman
SWIM/EA Unit Manager, EUROCONTROL

Colleagues,

On behalf of the AIXM community, I would like to welcome you to the second edition of the Air Transportation Information Exchange Conference. Started in 2007 as an Aeronautical Information Exchange Model (AIXM) User Group meeting, the Conference has grown year after year to become a reference event for the aviation information domain. This is due both to the dedication of the Federal Aviation Administration (FAA) Aeronautical Information Management (AIM) organizing team and to the quality of the presentations and speeches made in the past years, by all the participants. The Conference is a truly global event and an excellent opportunity to get a comprehensive view of the status and the trends in the aeronautical, meteorological and flight information areas.

From the AIXM side, we will make the point on the version 5 implementation, where key guidance documents have been published during the last year, in particular for metadata and geometry encoding aspects. The Conference is the occasion launch the work on the next AIXM version(s) using the newly established AIXM Change Control Board. On this point, we will need to keep in mind the need expressed by all AIXM stakeholders for stability and predictability in the evolution of the model.

We will also discuss about increased interoperability with the flight and meteorological information models. In Europe, we are working through SESAR for the development of an overall conceptual ATM information model, which shall ensure the logical coherence of the various ATM information domains. In addition, there is a need for coherence at physical data exchange level, through the use of similar data encoding technologies and concepts (XML Schema, GML, feature identification and reference, etc.)

I am looking forward to a successful Conference in the very welcoming facilities of the National Oceanic and Atmospheric Administration's Silver Spring Campus!

Eddy Porosnicu
Senior AIM Specialist, Eurocontrol

Air Transportation Community:

Welcome colleagues, industry leaders, and international partners. It is my pleasure to be part of the 2012 Air Transportation Information Exchange Conference again this year. Knowing how successful this conference has been in the past, the opportunity to announce the release of the Flight Information eXchange Model (FIXM) Version 1.0 and include discussions of FIXM's future versions in the topics to be covered is a testament to the conference's breadth of interests.

Since our debut at last year's conference, much hard work has been completed leading up to the first version of FIXM. While the exchange of flight information is not a new concept, FIXM is, in fact, in its infancy. It is our hope that everyone here takes this opportunity to learn about FIXM's development and its place in the information exchange realm, specifically its relationship to AIXM and WXXM. Furthermore, we invite you to work with us and actively engage in advancing this new community standard and its planned use in the future. I encourage everyone to join in these discussions as the week progresses.

We can learn a great deal from each other and the relationships we build this week will have a positive impact advancing the use of FIXM version 1.0 and the development of future versions. I look forward to our discussions.

Regards,

Richard Jehlen
Director
Operational Concepts, Validation and Requirements
Mission Support Services
Air Traffic Organization, FAA

Colleagues:

On behalf of the National Oceanic and Atmospheric Administration (NOAA) and the WXXM community, I would like to welcome you once again to NOAA's Silver Spring campus and to the 2012 Air Transportation Information Exchange Conference. It is our pleasure to host and participate in this year's conference. The development of WXXM is an important step in modernizing the exchange of weather information. We welcome the opportunity to exchange information with our industry, FAA, and EUROCONTROL partners and with the AIXM and FIXM communities. We are looking forward to and informative and productive week.

Regards,

Mark B. Miller
NOAA NextGen Weather Program Manager
NWS Integrated Dissemination Program Manager

Steve Bradford

Steve Bradford is the Chief Scientist for Architecture and NextGen Development in the FAA's Air Traffic Organization NextGen and Operations Planning Service Unit. In this role he has participated in the development of the Joint Planning and Development Office's (JPDO) NextGen Concept, the RTCA NAS Operational Concept and the ICAO ATMCP Global Concept. He is Chairmen of the Technical Review Board of the Air Traffic Operations which monitors technical decisions related investments and the Enterprise Architecture. He also works with elements of the FAA and the JPDO to develop midterm plans and five year budget requests to implement NEXTGEN. He has a leading role in several new activities with SESAR Joint Undertaking, and has led several co-operative international efforts via action plans with Eurocontrol. Previous activities include leading efforts to validate future concepts and developing the FAA's NAS Enterprise Architecture. Prior to his current position, Mr. Bradford was the Manager of the NAS Concept Development Branch and conducted early analysis of Free Flight Concepts.

Paul Bosman

SWIM/Enterprise Architecture (EA) Unit Manager, EUROCONTROL

Master degree in Information Management, Technical University Delft

Mr. Paul Bosman has worked for EUROCONTROL over 20 years in many different roles and functions. He is now the SWIM/EA Unit Manager responsable for a team of 30 people contributing to the SESAR Architecture & Information Management activities. Further he is co-chairman of the European AIM/SWIM-Team and chairman of the ICAO AIS-AIM Study Group.
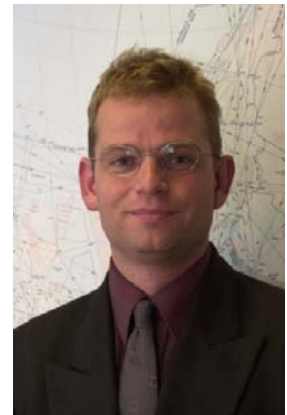
Agenda

Day 1 – August 28, 2012	
08:00 – 09:00	**Registration and Exhibits**
09:00 – 9:15	**Welcome and Introduction** • Joshua Gustin
09:15 – 10:15	**KEYNOTE Speaker –** • Keynote: FAA –NextGen – Steve Bradford • Keynote: Eurocontrol – Paul Bosman
10:15 – 10:30	**Themes and Logistics** • Deborah Cowell
10:30 – 11:00	**Coffee Break / Exhibits**
11:00 – 12:30	**International Developments & FIXM 1.0** • Importance of AI Management and the Conops – Michael Hohm • Emerging Trends - Barry C. Davis • Flight Information Exchange Model – Launch of Release 1.0 – Rich Jehlen
12:30 – 2:00	**Lunch/Exhibits**
2:00 – 3:40	**Information Structures** • WXXM Updates –Dennis Hart • AIXM Updates – Eddy Porosnicu • AIDX & Unique Flight Identification – Jim Miller and Chris Dodson
03:40 – 03:45	**Break - Exhibits**
03:45 – 05:00	**Lightening Round – Vendors & Others** *These 5 minute sessions will be presentations on products/services or other hot topics – a MUST SEE.*

**AIR TRANSPORTATION INFORMATION EXCHANGE CONFERENCE -
(FEATURING AIXM, WXXM AND FIXM)**
GLOBAL HARMONIZATION THROUGH COLLABORATION

EUROCONTROL
Federal Aviation
Administration

KEYNOTE SPEAKER BIOGRAPHIES

Dave McComb

Dave McComb is the President and founder of Semantic Arts, Inc. His focus is on project management and business applications, as well as bringing an overall enterprise architecture approach to the firm's engagements.

Mr. McComb has nearly 30 years of experience, 13 with Andersen Consulting/Accenture and over 16 independently and through various joint ventures. Over that period of time he has managed over a dozen multi-million dollar development projects and worked with a number of major clients including: Georgia Pacific, Boise Cascade, Norton Abrasives, Wildish Construction, US Geological Survey, Trus Joist, Far West Federal Savings and Loan, Haw Par Trading (Singapore), Bougainville Copper, US West Materiel Resources, Colorado Department of Transportation, Martin Marietta, Johns Mansville, Micro Planning International, BSW Architects, Dean Medical Center, Velocity.com, World Minerals, CommerceOne and Washington State Department of Labor and Industries.

Dennis Wisnosky

As the Chief Architect and Chief Technical Officer (CTO) of the Department of Defense (DoD) Business Mission Area (BMA) within the Office of the Deputy Chief Management Officer (DCMO) Dennis E. Wisnosky was responsible for providing expert guidance and oversight in the design, development, and modification of the federated architectures supporting the Department's Business Mission Area. This role incorporated oversight of the DoD Business Enterprise Architecture (BEA), Business Process Reengineering (BPR) and the corporate level systems, processes, and data standards common across the DoD. Mr. Wisnosky led the transformation of architecture-driven business systems and services development, and deployment. Key principles in DoD business transformation are its focus on data ontology - semantic web methods, Services Oriented Architecture and Cloud Computing. Among others, he received a Fed100 Award (2006) and an "Excellence in Government Leadership Award (2011) in recognition of his accomplishments.

As a visionary and entrepreneur in the private sector, for more than 25 years, Mr. Wisnosky consulted to the Government and private industry in the development of strategic and operational plans, methods and processes. As the head of his own companies, he led the development and marketing of products ranging from industrial robots and factory controls to software for Project Management, Business Process Modeling/Analysis/Optimization. He is the author of 7 books on these topics, and an internationally acclaimed writer and speaker.   He has received many awards and honors for his work in the private sector including being named a "Hero of US Manufacturing" by Fortune Magazine in 1997.

Mr. Wisnosky has Degrees from California University (PA), the University of Pittsburgh and the University of Dayton. He is a Certified Enterprise Architect, a Certified Manufacturing Engineer (Robotics), a PADI Certified Rescue Diver and an Instrument Rated Private Pilot in Multiengine Aircraft. He and his wife, live in Naperville, Illinois. They have three daughters and nine grandchildren.

Agenda

Day 2 – August 29, 2012		
08:00 – 09:00	**Registration & Exhibits**	
09:00 – 9:05	**Welcome and Daily Logistics** • *Deborah Cowell*	
09:05 – 10:30	**Semantics** • *Keynote: Semantic World – Dave McComb* • *Keynote: DOD's Implementation of Semantic Technologies – Dennis E. Wisnosky* • *Information Models and their relationship to Semantics – Deborah Cowell & Dr. Candice Buchanan*	
10:30 – 11:00	**Coffee Break – Exhibits**	
11:00 – 12:30	**Emerging Concepts** • *OGC – OWS-9 –Dr. Nadine Alameh* • *An Enterprise Architecture Approach – Hubert Lepori* • *FAA Common Services – Kajal Claypool*	
12:30 – 2:00	**Lunch/Exhibits**	

Breakout Sessions for the Afternoon 2:00 – 5:15		
AIXM Breakout Session (Room 4527 – Bldg. 3)	**FIXM Breakout Session (Room 2358 – Bldg. 2)**	**WXXM Breakout Session (Room 1W611- Bldg. 4)**
AIXM – CCB – *Eddy Porosnicu* - **Charter** - **AIXM Roadmap and Governance** - **Technical Discussion on next version**	**FIXM Introduction –** *Midori Tanino, Hubert Lepori, Paul Chisholm, Paul Losee*	**WXXM Release Strategy** – *Dennis Hart*
	FIXM Engineering Considerations - *Ken Howard*	**ICAO LDM & WXXM v2 Outlook –** *Aaron Braeckel*
		WMO METCE, the WMO Logical Data Model – *Jeremy Tandy*
Break – (3:30 – 3:45)	**Break (3:30 – 3:45)**	**Break (3:30 – 3:45)**
Aeronautical Common Service (ACS) –*Allen Proper*	**FIXM Technical Overview - General Philosophy** – *Bruce Taylor*	**Efficient XML (NCAR)** – *Aaron Braeckel*
	FIXM Technical Overview - Developer Session– *Bruce Taylor*	**NextGen on a Tablet (NWS)** – *Thomas Day*
	Wrap-up- Q&A – *Midori Tanino*	**Web Grid Documentation Service (NWS)** – *Paul Hershberg*

Agenda

Day 3 – August 30, 2012	
08:00 – 9:00	**Registration & Exhibits**
09:00 – 9:05	**Welcome and Daily Logistics** • *Deborah Cowell*
09:05 – 10:40	**SWIM & Related Topics** • *Progress of Delivery of Services – Ahmed Usmani* • *Aircraft Access to Swim (AAtS) – Paul Jackson* • *Aircraft Access to SWIM (AAtS) Implementation - Luciad* • *RTCA – SC206 – Datalink – Rick Heuwinkel/Allan Hart*
10:40 – 11:00	**Coffee Break – Exhibits**
11:00 – 12:20	**Implementation Updates** • *Federal NOTAM System – Diana Young, Shaelynn Hales & Vinod Vallikat* • *Eurocontrol NM – Eddy Porosnicu* • *DOD Extensions to AIXM – Monique Yates*
12:20 –1:30	**Lunch/Exhibits** **Special FIXM Session – Room 1W-611(Building 4) – may take lunch with you**
1:30 – 3:05	• **R&D for Digital NOTAMS – IDS** • **Semantic Search – SAS** • **Geospatial Information Systems – Google Federal Systems** • **Power of a Unified Approach - SNOWFLAKE**
3:05 – 3:30	**Break - Exhibits**
3:30 – 5:00	• **Review of Breakout Sessions from Day 2 (from each Community – AIXM, WXXM & FIXM)** • **Relationship between the XM Models to include brief presentation of global standardization** *(Jan-Philipp Lauer)*

Importance of AI Management and the Conops
Michael Hohm

Setting the Foundation for Future Information Services Provisions
Barry C. Davis

As complexity increases in our environment, we are having to or being driven to make changes. Some of the things currently trending include: (a) managing the ever-increasing amount of data and information; (b) economic pressures demanding us to do more with less; (c) movement from AIS to AIM to IM; (d) influence of emerging technologies; and (e) a framework of information management principles and concept of operations. This presentation takes these trends and puts them in the context of Aeronautical Information Service Provision.

Flight Information Exchange Model – Launch of Release 1.0
Rich Jehlen

WXXM Updates
Dennis Hart

The WXXM community always strived for the highest level of global interoperability when it comes to the exchange of aeronautical meteorological information. After the release of WXXM version 1.1.2 the effort of the community was focused on establishing this global interoperability with developments underway by ICAO and WMO and encompassing recent OGC developments. These coordination and harmonisation efforts were very successful.

This will be demonstrated in the WXXM break-out session on Day 2, by presentation on these efforts in full detail by various stakeholders involved. This presentation will provide the general context on the future WXXM and the associated ICAO MET information exchange model and core elements provided by the WMO data models under development.

SESSION ABSTRACTS - LISTED IN SESSION ORDER
AUGUST 28, 2012

AIXM Updates

Eddy Porosnicu

Aeronautical Information Exchange Model – Update

After the release of AIXM version 5.1 in February 2010, the effort of the AIXM community was focused on the development of data encoding guidelines. These ensure the harmonisation of the AIXM systems in areas where the model relies on external standards, such as GML and XLink.

The need for stability in specifications was repeatedly emphasized by the AIXM stakeholders. While the migration to AIXM 5.1 is progressing worldwide, many AIM systems are still using the previous 4.5 version. The presentation will provide further details about these aspects and will sketch the AIXM 5 maintenance plan. This will be further discussed in the AIXM CCB break-out session on Day 2.

AIDX & Unique Flight Identification

Jim Miller & Chris Dodson

Following development of a commercial scheduling and dispatch system for general aviation in the US, Chris developed a message broker hub for flight information at British Airways. The hub was converted to support XML messaging in 2005, and has been used to integrate a portfolio of operational systems from multiple industry vendors. Chris is currently been working on the use of flight data in providing operational state and alerts to enhance management of the operation. Chris has been involved with the development of AIDX from an early stage and is currently technical chair.

Semantic World
Dave McComb

As the world becomes more complex, semantic technology offers us the promise of simplicity. Big data, cloud computing, mobile delivery offer us bright opportunities to dramatically improve IT services if only we could connect them to our legacy applications and data warehouses. Semantics offers us a break-through approach to integrating the old and new computing paradigms efficiently, effectively and with elegance.

In this presentation Dave McComb, President of Semantic Arts, will introduce key semantic concepts, such as ontologies, inference and dynamic modeling, and explain how they will revolutionize traditional IT and lay the foundation for Web 3.0. By providing examples of the rapid adoption of Semantic Technology, such as the growth of the Linked Open Data Cloud, faceted search and the ability to link structured and unstructured data, Dave will discuss the readiness of Semantic Technology for 'prime-time' applications. He will also provide a methodology and criteria for creating semantic enabled 'Killer Aps.'

DoD's Implementation of Semantic Technologies
Dennis E. Wisnosky

The U.S. Department of Defense has four Missions Areas, but none is larger than its business operations. Responsible for a half-trillion dollar enterprise, bigger than any commercial worldwide equivalent, management of the DoD comes with a lot of responsibility and a lot of planning. The challenges for a large-scale organization come in many forms, but as an organization grows and technologies change, new strategies and roadmaps must be created to meet the business' ever-changing needs and overall objectives. In this presentation Mr. Wisnosky, Recently retired DoD BMA CTO & Chief Architect, will be using DoD's business operations transformation needs as a means to illustrate how harnessing service-orientation (heading), cloud computing (altitude) and semantic technologies (airspeed) must all be used in concert to produce new solutions for current problems across the pubic and private sectors.

Information Models and their Relationship to Semantics
Deborah Cowell & Dr. Candice Buchanan

Semantics – schmantics! Who cares? The business cares!

Our business changes every day. The people we support are running as fast as they can to achieve their mission and meet their objectives. Their budgets are being squeezed tighter and tighter and they are being told: *"Do more with less!"*

Meanwhile, their patience with IT is growing thin because:
- Solutions being delivered are too late, too expensive, and no longer meet business needs and took years and a gazillion dollars to develop;
- Delivery of information services is non-existent or inefficient, ineffective, and not synchronized to meet business needs;
- We are drowning them in data, but they are starving for information.

Come to our presentation to get a glimpse of what semantics has to offer.

OGC - OWS - 9
Dr. Nadine Alameh

This talk highlights the current success and continued potential of leveraging the Open Geospatial Consortium (OGC)'s Interoperability Program (IP) process towards advancement and harmonization of Aviation-related information exchange models and related standards.

The OGC IP is a global, hands-on collaborative prototyping program designed to rapidly develop, test, and deliver proven candidate standards into the OGC specification program (and later on to the ISO process), where they are formalized for public release. The program follows a proven documented process (applied successfully to more than 40 initiatives) and has repeatedly demonstrated a high level of industry participation and collaboration towards quickly and efficiently advancing and harmonizing relevant standards to communities of interest.

Since 2006, FAA and EUROCONTROL have jointly sponsored a series of OGC Web Service Testbeds (OWS), designed to validate, advance, and demonstrate the use of AIXM and WXXM in an OGC Web Services Environment. The results of these testbeds continue to contribute to the System Wide Information Management (SWIM)-related components of the US NextGen and the European Union (EU)'s SESAR programs with a focus on recommended OGC and ISO standards that can be applied in the definition and implementation of both SWIM environments.

Session Abstracts - Listed In Session Order
August 29, 2012

The latest phase of the testbeds OWS-9 investigates a variety of areas including advancing modeling and harmonization of aviation-related information exchange models, advancing interoperable data retrieval, discovery, styling and processing, maturing metadata use with AIXM/WXXM, developing interoperable data transmission to aircraft management, as well as advancing system stability, performance, endurance and

compliance. OWS-9 concludes with a demonstration event in January 2013 at the OGC Technical Committee meeting in Redlands, CA. Technical results will be captured in Engineering Reports that will later be available on the OGC public site.

An Enterprise Architecture Apporach
Hubert Lepori

The SESAR Programme drives European ATM development based on the European ATM Enterprise Architecture (EAEA).

The EAEA brings together the standards used to achieve interoperable exchange of ATM Information, thus enabling ATM Information Management as a whole in Europe. The EAEA includes the ATM Information Reference Model (AIRM) used as a reference for the semantic alignment of ATM information, and integrates both existing and new "fit for purpose" standards including the AIXM, WXXM and FIXM Exchange Models. These models define the information exchanged over SWIM enabling providers and consumers to interoperate seamlessly using shared syntaxes and a common semantic.

The presentation introduces the EAEA framework and explains how the AIRM reference model, and the AIXM, WXXM and FIXM exchange models are integrated in the SESAR SWIM big picture, following the "one logic – many solutions" approach.

FAA Common Services
Dr. Kajal Claypool

The past few years have seen the development and maturity of AIXM - the aeronautical information exchange model, WXXM – the Weather exchange model, and more recently FIXM – the Flight information exchange model. With the rising maturity of these models and the availability of data in the various exchange models, there has been a concerted effort within each domain to standardize the interfaces that are used to access the domain specific services. The FAA Common Support Services program has been stood up to explicitly investigate the different touch points between these domains such as the common model layers, common services to disseminate AIXM, WXXM and FIXM data as well as the need for a messaging framework that can bundle messages from these domains in a common format. This talk discusses these touch points, and provides a highlight of the work done to date.

AIXM – CCB
Eddy Porosnicu

This break-out session will be mainly dedicated to AIXM Change Control Board (CCB) activities, with discussions on the following topics:

- Adoption of the AIXM CCB Terms of Reference
- Access to the AIXM CCB Web based tool (JIRA Hosted project)
- AIXM – minor update version (5.1.1) proposed changes
- AIXM – next regular version (5.2) planning
- Harmonisation with WXXM/FIXM
- Any other AIXM related topic raised by the participants

Aeronautical Common Service (ACS)
Allen Proper

The presentation will discuss the status & planning for AIM Modernization. The Aeronautical Common Service (ACS) will be the single authoritative information source for aeronautical information. In order to develop the ACS, we must apply the appropriate web standards, data standards, and information management techniques to create a cohesive, useful service which can supply not just data, but information to decision support tools and human users. This talk will discuss what the capabilities of the ACS are and how it will be implemented.

FIXM Breakout Session Abstracts - Listed In Session Order

FIXM Introduction
Midori Tanino, Hubert Lepori, Paul Chisholm & Paul Losee

The Flight Object is an extensible and dynamic collection of data elements that describes an individual flight, and is the single common regional reference for all system information about that flight. FIXM (Flight Information Exchange Model) is the UML model of that flight information, and drives the definition of the XML schema of that flight information. This session is a general introduction to FIXM, and will discuss the following topics:

- FIXM overview
- Composition of FIXM Team
- International collaboration / Guidance for stakeholders / Relationship with ED-133
- An Enterprise Architecture Approach
- FIXM Roadmap - current status and future development
- FIXM demonstrations
- Future uses of FIXM - FDPS and Airservices Australia

FIXM information - FIXM website www.fixm.aero and FIXM repository

FIXM Engineering
Ken Howard

Building a standard method for exchanging flight information (the flight object) between all the systems that contribute and use that flight data presents many engineering challenges. This talk will describe the FAA's efforts to define these challenges and to propose solutions. Some of the topics covered include:

- What are the responsibilities of individual data processing systems and what general services must be provided to support those systems?
- What should the common implementation infrastructure look like?
- How can a truly unique flight identifier be created and shared across all contributors and processors of flight data?

How can disparate and conflicting data be reconciled into an authoritative set of data?

FIXM Breakout Session Abstracts - Listed In Session Order

FIXM Technical Overview - General Philosophy

Bruce Taylor

Data modeling for the FIXM Flight Object presented several unique challenges that required unique solutions. The FIXM data model covers a well-developed set of data that already supports many legacy systems, but it cannot be constrained by the existing format of system messages. It must provide a core capability that supports generic flight plan and flight state information, but it must be extensible to other flight information. Finally, it must provide for controlled extension and customization without losing the integrity of the overall data model. This session describes the over-arching techniques use to achieve these ambitious, and sometimes contradictory goals.

FIXM Technical Overview - Developer Session

Bruce Taylor

The FIXM data model is represented at three levels: both conceptual and design-level UML models and XML schemas expressed in XSD notation. Optimally representing flight data at all three levels is a challenge and requires a set of well formed patterns, development procedures, and analysis tools. This session is intended for software developers and data modelers facing similarly large, complex tasks, and describes the important design patterns of the FIXM models and schemas, the tools used to create, compare, and validate the data models and schemas, and the software development processes that permit efficient model and schema development.

WXXM Release Strategy

Dennis Hart

This presentation will provide the general context on the future WXXM and the associated ICAO MET information exchange model and core elements provided by the WMO data models under development.

ICAO LDM & WXXM v2 Outlook

Aaron Braeckel

Work for moving the concepts and representations for the ICAO Annex 3 products (METAR, SPECI, TAF, SIGMET) from WXXM to ICAO ownership are underway and are slated to be completed in 2013. ICAO and WMO will be responsible for their respective concepts in ICAO Annex 3 as well as some of the fundamental building blocks used in the weather (wx) and aviation weather (avwx) portions of WXXM. WXXM will include and extend the ICAO core constructs with additional products and concepts. This talk will discuss a number of significant implications on WXXM v2, including timelines, ownership, and design approaches.

WMO METCE, the WMO Logical Data Model

Efficent XML

Aaron Braeckel

XML is well known for several traits: expressiveness, validatability, human-readability, and extensibility. These traits can come at the cost of compactness and efficiency, which can have non-trivial impacts upon bandwidth, latency, memory usage, and processing. This is particularly relevant with the data volumes encountered in the weather domain. This talk repeats some portions discussed in ATIEC 2011, but has been updated with a newer study of compactness, processing, and overall efficiency using commercial libraries

NextGen on a Tablet

Thomas Day

NOAA's NextGen weather data services are designed to meet the needs of the FAA, initially and the Weather Ready Nation overall. They are open, secure, and standards-based providing cost effective and efficient methods of receiving complex data sets for weather prediction and forecasting in WXXM formats.

Collaborations are underway with other civilian and DoD agencies to ensure their weather data needs are also metusing WXXM based forms of open, secure and standards-based protocols. In this way, NOAA/NWS can readily and efficiently provide modern weather data management services to a wide range of Government

users in the most cost-effective manner while meeting the NextGen commitment using WXXM formats. Firmly rooted in international weather data and U.S. security standards, NOAA's weather data services will provide weather when needed, where needed, and in the needed WXXM formats, with maximum assurance to the missions of the consumer agencies.

Web Grid Documentation
Paul Hershberg

In 2004, the NOAA's National Weather Service (NWS) created its Digital Services Program to meet our customers' ever increasing need for digital weather, water, and climate services. The foundation of this program is the National Digital Forecast Database (NDFD). NDFD is a set of gridded forecasts of sensible weather elements. It contains a seamless mosaic of digital forecasts from NWS field offices working in collaboration with the National Centers for Environmental Prediction (NCEP). A companion to NDFD is the National Digital Guidance Database (NDGD) which contains guidance forecasts in gridded formats that are interoperable with NDFD.

NDFD and NDGD have offered an unprecedented opportunity for the NWS to automate, modernize, and improve products and services to meet the evolving needs of our customers and partners. Users can download forecast grids that are encoded in the WMO's FM-92 GRIB Edition 2 (GRIB2). Customers and partners can also access NDFD/NDGD data that have been formatted in Digital Weather Markup Language (DWML), an NWS-specific dialect of XML, via a web service that supports Simple Object Access Protocol (SOAP).

This NDFD SOAP service is very popular with users and partners across the weather enterprise, servicing millions of hits each day. Unfortunately, this service and dialect of XML are not OGC compliant. Moreover, the service doesn't fit within any of the established service models (feature, coverage, mapping).

The NWS is prototyping a new OGC compliant service named the Web Gridded Document Service (WGDS). The WGDS will conform to the basic service model of a Web Coverage Service (WCS). I.e., the WGDS will respond to WCS operations similar to getCapabilities, describeCoverage, and getCoverage. Notably, responses to the getCoverage operation will be XML documents either encoded in WXXM or DWML, marking the first time NOAA gridded data will be encoded in WXXM.   This presentation describes the proposed new standard for Web Gridded Document Services showing the current gap in the accepted OGC services and how this new proposed service best serves the WXXM community and its standards. This standard will be proposed to the OGC Standards group in the next study cycle.

SWIM: Progress of Delivery Services

Ahmed Usmani

System-Wide Information Management (SWIM) is a National Airspace System (NAS)-wide information system that supports the Federal Aviation Administration's (FAA's) Next Generation Air Transportation System (NextGen). SWIM is developing the infrastructure that will facilitate information management and data sharing for NextGen and will improve the way the FAA creates and leverages new and existing systems in the NAS.

SWIM also provides the standards, infrastructure, and governance that enable open, transparent, and secure interchange of Air Traffic Management related information between qualified parties via the new infrastructure. SWIM enables increased common situational awareness and improved NAS agility by supporting delivery of the right information to the right people at the right time.

The SWIM Program Manager, Ahmad Usmani, will provide a program overview and will discuss SWIM services, governance, standards, international coordination and cloud computing.

Aircraft Access to SWIM (AAtS)

Paul Jackson

The exchange of aeronautical information is in increasing demand and is key to the concepts and technologies being promoted under the Aircraft Access to SWIM (AAtS) initiative. The AAtS initiative is intended to facilitate a common situational awareness so flight crews can be involved in the collaborative decision making process. AAtS will provide a global extension of the NAS Service Oriented Architecture (SOA) to aircraft and will use aircraft operator selected and funded air/ground network services to exchange data between aircraft and the NAS. This connection will provide System Wide Information Management (SWIM) enabled NAS operational data to support efficient use of traffic management operations up to, but not including, uses that directly affect aircraft trajectories.

Establishing a shared aviation information environment and creating a common decision-making framework between aircraft and the NAS is a complex paradigm shift from the manner in which air traffic control is performed today. Extensive research to identify and resolve technical issues and risks is necessary to validate the AAtS concepts, confirm its viability in operation within the NAS, and to ensure global interoperability.

Areas of technical research, demonstration, testing, and validation include but are not limited to:
- Security
- Data priority and preemption of cockpit data over in-flight entertainment data
- Efficient air to ground data exchange transmission methods to maximize bandwidth use
- Data filtering, validation, quality, schemas, and provenance
- Load balancing impacts and recommendations

In addition, the FAA has developed an Operational Demonstration Partnership Plan to conduct live airborne operational flight trials in 2013 - 2014 to demonstrate AAtS connectivity and data flows to the aviation community. These operational flight trials will initially focus on one-way communications (i.e., ground to air) with subsequent activities to evaluate two-way communications (i.e., ground to air and air to ground) capability in addition to incorporating lessons from the technical research. The Operational Demonstrations will lead to greater knowledge of the information exchange requirements for AAtS and create a safer NAS environment.

Aircraft Access to SWIM (AAtS) Implementation
Luciad

The Flight Information Exchange Model (FIXM) is a data interchange format for sharing information about flights throughout their lifecycle.

The FAA invited Luciad to join the development for a FIXM Demonstrator whereby a user can enter flight plan details using a tablet PC. The flight plan details are then converted into a FIXM message and made available to other applications.

Luciad developed the Luciad FIXM Demonstrator Application, which imports FIXM messages and displays the flight plan, embedded in the FIXM message, on a map. The flight plan is visualized in both 2D and 3D and the user is able to query the flight info by selecting the flight plan on the map.

FIXM provides many benefits to the Aviation domain as it increases interoperability among all air traffic stakeholders by mediating interactions between Air Traffic Management systems, airspace users, transportation authorities, security and defense authorities, logistics and transportation providers, and many more.

During the speaking slot Luciad will highlight the challenges and the technology used to develop the Luciad FIXM Demonstrator Application.

RTCA - SC206 - Datalink
Rick Heuwinkel & Allan Hart

This presentation will cover the history, scope, accomplishments, and future work of RTCA SC-206, Aeronautical Information Services (AIS) and Meteorological Service Data Link Services. The various standards that have been developed, are in development and will be developed are setting requirements for AIXM, WXXM, and FIXM related systems. This committee is also dealing with the issue of trying to achieve global harmonization through collaboration with various other organizations that deal with data link requirements and standards.

Federal NOTAM System
Diana Young, Shaelynn Hayes & Vinod Vallikat

The Federal NOTAM System (FNS) is standardizing, digitizing and modernizing the collection, management, and distribution of temporary changes to aeronautical information within the National Airspace System. FNS leverages AIXM and OGC standards to enable the exchange of digital NOTAMs globally.

EUROCONTROL NM
Eddy Porosnicu

Presented on behalf of NM/NTS

One of the first operational implementations of AIXM 5.1 in Europe is in the Network Manager (NM) area. The airspace, route, airport, navaids and points data used for NM operations (such as verification of Flight Plan data) are available through a "B2B" interface, using AIXM 5.1 as data encoding format. This presentation will provide details about this service and will also provide feedback from the NM developers on the use of AIXM, including the schema extensions that were considered necessary.

DoD Extensions to AIXM
Monique Yates

Ms. Yates, the Senior Aeronautical Technical Advisor for the National Geospatial-Intelligence Agency (NGA), will discuss AIXM extensions. Civilian and military agencies create extensions when supplementary data is not available in core AIXM. The US DoD has chosen to extend AIXM when the core extensions did not contain sufficient values and/or attribution for military missions. Ms. Yates will address generic examples of information that would be captured in a DoD extension and the vital need for the aeronautical community to form a body to standardize applicable AIXM extensions across the international arena.

R& D for Digital NOTAMS
IDS

Semantic Search
SAS

The Luminary system is a prototype system that performs textual analysis on both structured and unstructured data. It fuses the information from multiple sources, extracting complex semantic concepts, and augmenting these concepts with additional information from external data sources. Luminary stores the results in a semantic wiki, which provides a convenient means for users to collaboratively review or edit the information. The

semantic wiki also enables complex queries and visualizations, so a user could easily view complex information such as timelines, maps, or social networks. An OWL ontology, coupled with ontology-based extraction rules, guides the entire Luminary process.

For high-speed messaging, Luminary can accept feeds from the SAS Event Stream Processor (ESP), filtering relevant messages into different paths for processing. Within the Air Transportation domain, an ontology for each of the information exchange models (AIXM, FIXM, WXXM) enables Luminary to transform the information from XML to more complex semantic objects, extract information from unstructured text, fuse information from other documents, and provide the user with a fused representation of the data.

Geospatial Information Systems
Google Federal Systems

Google Maps and Earth Enterprise solutions are fast and easy to deploy, as well as intuitive and familiar. Users do not need specific geographic information systems training, making sharing of geographical and mapping information easy, and promoting a common operating picture for personnel involved in a mission. The FAA can share information freely on a common technological platform allowing personnel to get maps wherever a mission takes you and on any device, even when disconnected or in low-bandwidth environments. Save time, money and data center space by taking advantage of Google's infrastructure for geospatial data processing and storage. Get accurate, current maps into the hands of people who need them – fast, and let the FAA focus resources on core missions.

Power of a Unified Approach
SNOWFLAKE

In the past the ATM industry has generated many standards for exchanging data, however, whilst making every effort to standardise a particular domain, these standards often do not follow the same modelling process or reuse common types across models. This lack of reuse is a major contributing factor to the fragmented technology and high cost of implementation in today's ATM industry. This is further amplified when software is required to demonstrate some form of conformance for safety critical applications, rather than reusing components that are already safety assured - a new component needs to be certified for each system. When developing new exchange models a lot of data modellers do not realise that decisions made at the modelling stage can add huge complexities and millions of dollars onto to the implementation cost. In fact, the cost of implementation directly relates to the quality of the standard. The more bespoke a standard is, the higher the implementation and the longer the delay is in adoption of that standard.

AIXM, WXXM and FIXM take a different approach. Firstly they are all encoded in the ubiquitous eXtensible Markup Language (XML) from W3C and secondly, they make extensive use of the ISO 19136 / Geography Markup Language (GML) from the Open Geospatial Consortium (OGC). One of the major complexities of ATM data is the spatial type. By reusing the same types across all models the benefit is three fold:
1) Reuse of software components for all models,

2) Adoption of mature and well tested spatial data modelling certified by ISO and used across many domains, and
3) Global community support wider than the ATM industry.
All these benefits add up to a dramatic reduction in implementation cost and open up the ATM market to more suppliers and solutions that are off-the-shelf in nature.

This talk will cover the development of standards and the importance of following a repeatable process when developing new exchange models. Covering the Model Driven Architecture (MDA) process developed under ISO TC 211, it will discuss in detail a best practice and automated process for developing exchange standards in adherence to ISO 19109 - 'Rules for application schema' and ISO 19118 - 'Encoding'. The talk will also discuss the work Snowflake is currently performing under the FAA/Eurocontrol sponsored OWS-9 programme where it is developing an automated MDA process for developing the WXXM model from the Aeronautical Information Reference Model (AIRM) currently being developed within SESAR.

Relationship between the XM Models

Jan-Philipp Lauer

SPEAKER BIOGRAPHIES
(in alphabetical order)

Dr. Nadine Alameh

Dr. Alameh is Director of Interoperability Programs at OGC, planning and managing multi-vendor software prototyping and pilot initiatives to advance geoinformatics-related requirements and specifications. Dr. Alameh is a leader in the field of geospatial interoperability with a proven track record in architecting and implementing geospatial technologies, standards and web services. Her current engagements include leading diverse international teams of participants and sponsors in applying OGC and other web standards for providing up-to-date aeronautical and weather information to pilots, aircrafts and other users of such on-demand real-time information. Dr. Alameh is also leading Global Earth Observing System of Systems (GEOSS) Architecture Implementation Pilots (AIP) activities, focusing on supporting the earth observation community in developing and deploying new process and infrastructure components for the GEOSS Common Infrastructure. Dr. Alameh holds two MS. degrees and a Ph.D. from MIT in the field of Information Systems Engineering.

Aaron Braeckel

Aaron Braeckel is a software engineer with the National Center for Atmospheric Research. Aaron has worked over ten years within the aviation meteorology field, and his areas of expertise include data visualization, data dissemination, and spatial data infrastructure (SDI). Aaron began his work at NCAR on the Aviation Digital Data Service (ADDS), a pilot service for aviation weather visualization and data services. Recent work has included weather data dissemination systems and WXXM development as part of the FAA NextGen modernization effort.

Dr. Candice Buchanan

Dr. Candice Buchanan is founder and President of Nexa Corporation. Dr. Buchanan has over twenty five years of experience advising and providing technical expertise to medium and large-sized federal agencies and commercial organizations in the planning, analysis and design of financial, administrative, and management information system solutions, in all phases of the system life cycle (SLC). She is a subject matter expert in the definition of requirements and enterprise architecture. She has PMP, ITIL Expert, and Scrum Master certifications. Dr. Buchanan earned a M.S. in Technology of Management from American University and a PhD in Information Systems from Nova Southeastern University. Her current research interests are in information architecture, cognitive science, linguistics, and semantic technologies.

Paul Chisholm

Paul Chisholm is a Senior Architect in Airservices Australia Strategy and Architecture group. Paul is the Technical Lead on Airservices project to introduce a SOA based service delivery platform, in which FIXM will play a key role. Previously Paul has been the technical lead on Airservices NAIPS system (flight planning, briefing, NOTAM office), Airservices Air Traffic Flow Management system, and was part of the design team for the Norwegian Civil Aviation Administration NAIS system (flight planning, briefing, NOTAM office). Paul holds a BSc in Computer Science and a PhD in Computational Logic from Heriot-Watt University, Edinburgh.

SPEAKER BIOGRAPHIES
(in alphabetical order)

Dr. Kajal T. Claypool

Kajal Claypool is an assistant group leader in the Weather Sensing group. She received her B.Tech. degree in Computer Engineering from Manipal Institute of Technology, Karnataka India, and her Ph.D. degree in Computer Science from Worcester Polytechnic Institute, Worcester. Prior to joining MIT Lincoln Laboratory in 2007, she worked as a member of technical staff at Oracle Corporation, and served as an Assistant Professor of the Department of Computer Science at University of Massachusetts, Lowell. Kajal has been a member of the WXXM and FIXM teams during her tenure at Lincoln. She has been active in the database research community for over 15 years and her interests include information integration, transformation, and dissemination. She has numerous publications in these and other related areas.

Deborah Cowell

Deborah Cowell is a Computer Specialist in FAA's Aeronautical Information Management Organization (AJV) within ATO. Deborah's current role is the lead AIM Information Architect with responsibility for the Aeronautical Information Exchange Model (AIXM), coordination of the AIXM Conference and development of AIM Information Architecture artifacts. Prior to serving in AIM, she also served as the FAA Enterprise Information Architect and was the Information and Data Management team lead within the CIO's office where her primary responsibilities included strategic planning, development of the Information layer of the Enterprise Architecture, and socialization of concepts around stewardship and the differences between information and data. Deborah came to the FAA in 2006 from the Department of State Enterprise Architecture office. Prior government service was for the FDIC, where she served for almost 17 years. Other areas of expertise and interests include Information Management, Data Administration, data modeling, information and data governance, system and software development and she has experience across the system life cycle. Deborah holds a BA degree from the George Washington University and two (Architect and Enterprise Architect) Certifications from the National Defense University.

Barry C. Davis

Mr. Barry C. Davis presently serves as the Manager of the Federal Aviation Administration's Safety Policy Group within the Air Traffic Safety Oversight organization.

Mr. Davis was formally the Manager and Acting Director of the FAA's Aeronautical Information Management group responsible at various times for the operation of the FAA's National Flight Data Center, Obstacle Evaluation Service, Alaska Weather Cameras, and NOTAM Operations office.

Mr. Davis has more than 30 years of automation experience in industry and government. He holds a Bachelor of Arts (BA) in Economics from the University of Maryland (UMBC), a Masters of Engineering Science (MES) in Digital Systems from Loyola College (Maryland), and a Chief Information Officer certificate from the National Defense University (NDU).

In addition, Mr. Davis was a member of the planning committee for the 2006, 2007, 2008, 2009, and 2010 Global AIS Congresses. He has also been on the CANSO AIS to AIM work group since its beginning and its chairman since September of 2010.

![Air Transportation Information Exchange Conference logo - EUROCONTROL, Federal Aviation Administration]

AIR TRANSPORTATION INFORMATION EXCHANGE CONFERENCE -
(FEATURING AIXM, WXXM AND FIXM)
GLOBAL HARMONIZATION THROUGH COLLABORATION

SPEAKER BIOGRAPHIES

(in alphabetical order)

Dr. Thomas J. Day

Dr. Thomas J. Day is Chief Engineer for the NOAA NextGen Program and Chief of the Analysis Branch of the Systems Engineering Center at the National Weather Service. He holds an undergraduate degree in Marketing Management, BS in Electrical Engineering, MS in Computer and Software Engineering and PhD in Engineering Management. He is an International Award Winner and the author of over 50 technical papers and presentations, along with authoring two textbooks on applied systems engineering.

Chris Dodson

Following development of a commercial scheduling and dispatch system for general aviation in the US, Chris developed a message broker hub for flight information at British Airways. The hub was converted to support XML messaging in 2005, and has been used to integrate a portfolio of operational systems from multiple industry vendors. Chris is currently been working on the use of flight data in providing operational state and alerts to enhance management of the operation. Chris has been involved with the development of AIDX from an early stage and is currently technical chair.

Joshua Gustin

Joshua Gustin is the Director of Aeronautical Information Management. Joshua comes to Mission Support from Sys Ops where he has been the Director of Data Management working on providing discipline, policy, and structure around NAS Data Release. He is certified as a PMP. He also has over 20 years experience in TFM and SWIM, and he has a highly collaborative approach which makes him ideally suited to lead AIM into the future.

Shaelynn Hales

Shaelynn Hales, an Associate Director with the Air Traffic Management Division of CNA, has supported the FAA Aeronautical Information Management Group since 2003. Most recently, she has supported the Federal NOTAM System project as the Technical Lead, leading to the development of capabilities to support the Digital NOTAM concept.

SPEAKER BIOGRAPHIES
(in alphabetical order)

Allan Hart

32 years with Honeywell that involved:
1.   Managing for the last 15 years the engineering advance technology and center of excellence groups that developed the ground based software tools / systems for processing (a) avionics' navigation, terrain, obstacle, airport mapping / information and geopolitical database; and (b) flight support services' flight planning / following, weather, and datalink systems.
2.   Managing for 12 years the engineering service group that produced the FMS Navigational databases and database access manager (3 years).

27 years working various industry committees:

- SESAR WP11.1: Flight and Wing Operations Centers
- RTCA SC-217 / EUROCAE WG 44 (sub-group leader), RTCA SC-206 / EUROCAE WG 76 (co-chair), and RTCA SC-181 / EUROCAE WG 13
- ARINC 424
- FAA Converging Approaches
- FMS Task Force WG

    Education and relevant training
- Commercial Pilot Certificate with Instrument Rating
- Bachelor of Science: Double Major Physics / Math

Dennis Hart

Dennis Hart is the EUROCONTROL Senior Aviation Meteorology Expert. He has experience in Aeronautical Meteorology (MET) from various operational, regulatory and policy perspectives. He represented the Dutch Government and the Royal Netherlands Meteorological Institute (KNMI) at ICAO and at World Meteorological Organization (WMO) level and represented the European Aeronautical Meteorological Providers at European Community level. In summer 2007, Dennis joined EUROCONTROL with the clear task to facilitate the needed interaction between the MET and ATM community to support improved integration of meteorological information into ATM decision making. He is one of the principal sponsors of the WXXM development and of the envisaged evolution of MET service provision towards the concept of System-wide Information Management. He is member of several ICAO and WMO groups to establish new standards for MET provision and use. In his current position he is also the Technical Contract Manager for the MET related activities in the SESAR Programme.

Paul Hershberg

Paul Hershberg works with the Meteorological Development Lab in the NWS's Office of Science and Technology. He holds an M.A. in Meteorology from Florida State University and a B.A. in Environmental Science from Virginia Tech. Paul began his NWS career in 1999 and currently works in Silver Spring, Maryland. Paul now lives in Columbia, Maryland.
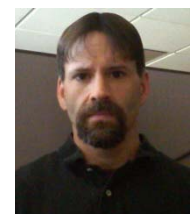
SPEAKER BIOGRAPHIES
(in alphabetical order)

Mr. Michael Hohm

Michael Hohm has been involved in Aviation for over 35 years. First licensed as a pilot in 1973, he has worked as a civil pilot in various roles accumulating approximately 6000 hours. In 1988 he joined Transport Canada as a Civil Aviation Inspector doing flight procedure and airspace design work. In 1991 he assumed the position as Supervisor of Aerodrome Policy and Standards developing the design and certification standards for Canadian Airports as well as participating in the development of the Canadian Aviation Regulations. He joined NAV CANADA at its inception in 1996 taking on the responsibility for airspace design and later becoming the Manager of the branch responsible for AIS, NOTAM and Airspace/Flight Procedures. Eventually focusing on airspace design, his familiarity with operational requirements and infrastructure development in the ANS was employed to develop the NAV CANADA AIS Strategic Plan outlining the move from a publication centered AIS to an information management focus. He participated on the ICAO ATMCP/ATRRPP since its beginning as the Canadian member and has previously participated on the ICAO Visual Aids Panel, the All-Weather Operations Panel, and the Obstacle Clearance panel. Michael Hohm joined ICAO in September 2009 as the Technical office responsible for AIS issues with particular emphasis on the transition from AIS to AIM.

Ken Howard

Mr. Howard has engineered and developed FAA systems for over 30 years. As an on-site contractor at the Volpe Center, Mr. Howard was the lead architect of the Enhanced Traffic Management System, the FAA's first national, distributed operational air traffic management system and was an original member of the FAA's Collaborative Decision Making project. In these roles, he has developed many applications requiring the integration and fusing of data from disparate sources. Mr. Howard has led the NextGen Flight Object Engineering Analysis effort since 2009.

Paul Jackson

Paul Jackson began his FAA career in 1983 as a Radar Associate Controller. He subsequently was certified as a Pilot Weather Briefer and continued as a Flight Service Automation Specialist. Building on his engineering degree, he was awarded an M.S. in Computer Science in 1995 from Johns Hopkins University. Mr. Jackson left the FAA in 1996 to serve as a Software Engineer and Project Manager in private industry. He returned to the FAA in 2003 as a Computer Scientist with the Weather and Radar Processor (WARP) Program Office. Since 2009, he served in the System-Wide Information Management (SWIM) Program Office as the Governance Lead, establishing policies and processes to help ensure NAS service interoperability. Beginning in Summer 2012 he has taken on the role of NAS Information Architect.
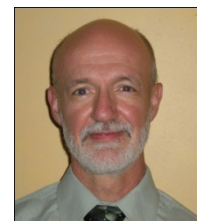
SPEAKER BIOGRAPHIES
*(in alphabetical order)*

Richard Jehlen

Mr. Jehlen is currently the Director of the Operational Concepts, Validation & Requirements Office in the Air Traffic Organization's Mission Support Services. He holds a Bachelor of Science degree from Excelsior College and has over 30 years Air Traffic Management experience. His operational experience, both FAA and Department of Defense, includes postings in the Tower, Approach Control and Air Route Traffic Control Center.
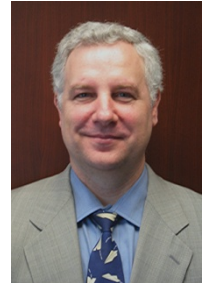
During his career, his responsibilities have included: Automation, Airspace & Procedures, Traffic Flow Management, Future Concepts, Validation and Integration, Operational Planning and Requirements. Mr. Jehlen has also served as the Air Traffic Procedures Advisory Committee (ATPAC) Executive Director, the United States' representative to ICAO and currently serves as the U.S. Panel Member to the ICAO Air Traffic Management Requirements and Performance Panel (ATMRPP).

Hubert Lepori

Mr Hubert Lepori graduated from the French Civil Aviation Academy (ENAC Toulouse) as an ATM engineer with a master degree in human-machine interactions. He was involved in several developments relating to Airbus Flight Management Systems and on-board navigation databases (Arinc424A). He joined the EUROCONTROL IM unit in August 2009 as a specialist in ATM data modelling, and has been working on the evolution of AIXM, WXXM and the SESAR AIRM models. He is also the co-chairman of the OGC Aviation Domain Working Group which fosters improvements to the OGC & ISO 19100 standards in order to satisfy the requirements for SWIM. In February 2012, Hubert Lepori became the new manager of the SESAR project dealing with the development of FIXM jointly with the US FAA.
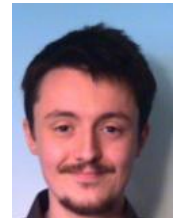
Paul Losee

Paul Losee, an engineer in the FAA's ATO Mission Support Services organization, joined the Flight Object program in 2010. The team's primary focus to date has been on high level engineering and development of the very first release of FIXM (Flight Information Exchange Model), namely FIXM v1.0. (For more information on FIXM, please visit www.FIXM.aero) Prior to this, Paul worked in NextGen TFM (Traffic Flow Management) Engineering, performing high level Concept Engineering for several CATM (Collaborative Air Traffic Management) programs. Paul holds a MS in Computer Science from Johns Hopkins University and a BS in Electrical Engineering from the State University of New York. In his spare time, Paul likes to encourage his wife to let him buy an airplane.

Eddy Porosnicu

Eddy Porosnicu works for Eurocontrol, in the Aeronautical Information Management area. Eddy's responsibilities are focused on the development of automation specifications, in particular the Aeronautical Information Exchange Model (AIXM), Electronic AIP (eAIP) and Digital NOTAM. He also plays a role in the development of means of compliance for the Aeronautical Data Quality Regulation and in the evolution of the European AIS Database (EAD). In the frame of SESAR, Eddy is leading the Eurocontrol contribution to the "AIM Sub-system" work package, which includes the Digital Integrated Briefing project.

SPEAKER BIOGRAPHIES
(in alphabetical order)

Midori Tanino

Midori Tanino joined the FAA's Flight Object (FO) team as a manager in 2009. She leads the development and establishment of Flight Information Exchange Model (FIXM). She also leads FO demonstration and engineering analysis activities. She is an expert in the field of Traffic Flow Management (TFM) and has successfully developed and deployed multiple TFM decision support tools and algorithms. Midori has BS/MS in CS/Mathematics/EE from University of Maryland, Collage Park.

Bruce Taylor

Bruce Taylor is an independent software consultant, currently working under subcontract to MIT Lincoln Laboratory. Mr Taylor is active in the fields of advanced data modeling, high performance system design, and software development tools and methodologies. He received a Master of Science in Computer Science from Duke University, and a Masters of Arts in Psychology from the University of Massachusetts.

Ahmad Usmani

Ahmad Usmani has been the program manager for System-Wide Information Management (SWIM) at the Federal Aviation Administration (FAA) since the fall of 2007. SWIM is a National Airspace System (NAS)-wide information system that supports Next Generation Air Transportation System (NextGen). SWIM is a technology enabler that provides the Information Technology (IT) infrastructure necessary for NAS systems to share information, increase interoperability, and encourage reusability of information and services.

Prior to joining FAA, Ahmad wrote code for the Global Positioning System (GPS) and worked on the Advanced Automation System (AAS) for IBM. After a brief leave of absence to attend graduate school and a return to IBM for a couple of years, Ahmad joined Computer Technology Associates as an operations engineer overseeing the Computer-Human Interface (CHI) of FAA's Voice Switching and Control System (VSCS). He supported VSCS through Operational Test and Evaluation (OT&E) at the William J. Hughes Technical Center (WJHTC) and Initial Operating Capability (IOC) deployment. Ahmad then worked with the CHI team on the Display System Replacement (DSR). He supported other government agencies before becoming an FAA employee in 2002, as a Systems Engineer and Investment Analyst for the Traffic Flow Management (TFM) Program Office. He then led the successful investment analysis effort for Segment 1 of the SWIM Program and was subsequently promoted to the position of SWIM Program Manager, which he has held since fall 2007.

Ahmad holds Bachelor's degrees in Computer Science and Applied Math from Northwestern University and a Master's degree in Industrial Engineering from the University of California at Berkeley.

![EUROCONTROL logo] ![Federal Aviation Administration logo]

AIR TRANSPORTATION INFORMATION EXCHANGE CONFERENCE – (FEATURING AIXM, WXXM AND FIXM)
GLOBAL HARMONIZATION THROUGH COLLABORATION

SPEAKER BIOGRAPHIES
(in alphabetical order)

Vinod Vallikat

Vinod Vallikat is the Chief Technical Officer (CTO) with CGH Technologies Inc. CGH Technologies provides technology and management consulting to numerous federal government agencies and specializes in developing enterprise software solutions and is also considered a leader in geospatial analyses and solutions. Vinod has more than 18 years' experience in all aspects of software engineering and management within a diverse range of industries including but not limited to aeronautical systems, telecommunications, e-commerce and business intelligence in various domains.

Vinod leads the technical design and development of the Federal NOTAM System (FNS) software platform. FNS was one of the early adopters of AIXM and the uses AIXM as the main data exchange mechanism for interfacing with external systems.

Monique Yates

Ms. Monique "Q" Yates is a retired USAF Instructor Pilot with over 3500 flight hours consisting of heavy airdrop, air-refueling, formation and low level profiles, to include primary and graduate flight instruction. As a technical lead for Terminal Instrument Procedure Design and flight management system data coding; Ms. Yates serves as the Chairman of the Digital Aeronautical Transformation Working Group and the DoD Media Generation Assessment Team-Aeronautical Subgroup. She is employed by the National Geospatial-Intelligence Agency as Senior Aeronautical Technical Advisor for the Washington DC region.

Diana Young

Ms. Young is one of the leading proponents of sound information management principles and practices, and enterprise-wide information solutions and stewardship. Her professional objective is to provide leadership in improving, safeguarding, and effectively leveraging information resources within the global aerospace community. As Chief Engineer, in the FAA Aeronautical Information Management office, she is responsible for guiding modernization of critical air traffic management safety systems such as the Federal NOTAM system. As former Program Director, of the FAA Office of Information Services and Chief Information Officer, she was responsible for the implementation of the FAA's Information/Data Management programs, Enterprise IT Solutions and Standard programs, and FAA's IT Legislative and Regulatory Compliance Programs. She has led and continues to provide guidance and support for international efforts in information harmonization, data exchange and quality improvement of aviation safety information. Ms. Young was cofounder and leader of the interagency organization: Federal Metadata Management Consortium (FMMC). The FMMC is focused on implementing sound metadata management practices across the federal government. Ms. Young's professional experience spans over thirty years of progressively increasing technical and theoretical challenges within the information service industry. During the course of her career, she has provided a wide variety of information resource management services both in the private and public sectors. She has specialized in the areas of information /data management program and policy definition, information stewardship, standards and quality management program development, and information quality assessment and improvement practices.

Vendor Listing

AvePoint Public Sector, Inc
Jill Klingler
2010 Corporate Ridge
Suite 700
McLean, VA 22102
(703) 883-9314
Jill.Klingler@avepoint.com
http://www.avepoint.com
AvePoint Public Sector, Inc. is an independent subsidiary of AvePoint, the leader in enterprise-class governance and infrastructure management solutions for Microsoftr SharePointr. AvePoint Public Sector works extensively with the U.S. Armed Forces, Federal Civilian and Intelligence agencies, and State and Local Governments to meet their mission-critical business objectives utilizing SharePoint.

Carroll Publishing
Shirley Paris
4701 Sangamore Road
Suite S-155
Bethesda, MD 20816
(301) 263-9800
smparis@carrollpub.com
http://www.carrollpub.com
Carroll Publishing maintains the most robust database of decision-maker contact information for ALL government levels, including Federal contractors. Exclusive organization charts provide detailed reporting structure within government. Products include Online Services, Print Directories & Charts and CRM-friendly custom Data Sets.

CGH Technologies, Inc.
Audrey Hinton
600 Maryland Avenue, SW
Suite 800 W
Washington, DC 20024
(202) 580-7427
ahinton@cghtech.com
http://www.cghtech.com
CGH is a forward-thinking company with extensive expertise in the migration of legacy data to centralized knowledge repositories, the engineering, re-engineering, security and automation of critical business processes, and the development of custom and web-based applications, including solutions using GIS & spatial technologies.

DRS Tactical Systems, Inc.
Wayne Grimes
1110 W. Hibiscus Boulevard
Melbourne, FL 32901
(321) 543-3488
wgrimes@drs-ts.com
http://www.drsarmor.com
DRS has fielded more computing systems in extreme, rugged, military environments than any other company. ARMOR Rugged Mobile Computers benefit directly from these lessons learned on the battlefield. Like the ability to withstand the dust of Afghanistan, or the intense heat of Iraq, or the moisture aboard ship, or the shock and vibration of a HMMVV on maneuvers.

Esri
Steve Snow
380 New York Street
Redlands, CA 92373
(909) 793-2853
ssnow@esri.com
http://www.esri.com
Esri, the leader in geographic information systems (GIS), provides the technology advantage for civilian and military organizations worldwide. Esri's solutions and its technology platform provide the business advantage and exploitation capabilities that defense agencies and aviation authorities require for modernizing their system architectures.

FAA - FIXM
Young Lee
800 Independence Avenue, SW
Washington, DC, DC 20591
(202) 267-7116
young.j.lee@faa.gov
FAA AJV-7 Flight Object Group will be presenting the Flight Information Exchange Model (FIXM). FIXM is an international data standard for exchanging flight information between systems across multiple domains.

FAA CSS-Wx/NNEW
Alfred Moosakhanian
800 Independence Avenue
Washington, DC 20591
(202) 385-8411
alfred.moosakanian@faa.gov
The Common Support Services for Weather (CSS-Wx) System will be the single provider of aviation weather information for the Federal Aviation Administration (FAA) and will publish the weather information in standardized formats to consumers via the FAA's System Wide Information Management (SWIM) system. The CSS-Wx System will also publish weather information for NAS users external to the FAA.

Frequentis USA, Inc.
Dieter Eier
9017 Red Branch Road
Columbia, MD 21045
(301) 657-8001
dieter.eier@frequentis.com
http://www.frequentis.com/usa
The core business of Frequentis are highly-available communication and information solutions for the civil air traffic management market. smartAIM, the smart aeronautical information management solution, is used by CAAs, ANSPs and military organizations around the world to manage aeronautical static and dynamic information.

Vendor Listing

Google, Inc.
Louis Simonen
1818 Library Street
Suite 400
Reston, VA 20190
(202) 630-4245
lsimonen@google.com
http://www.dlt.com/google
DLT Solutions has partnered with Google to bring Government agencies Google's enterprise solutions - Google Apps, Google Earth & Maps, or the Google Search Appliance. Google helps take the hassle out of managing IT solutions, letting you focus resources on your core mission.

IDS Ingegneria Dei Sistemi S.p.A.
Cristiana Contino
Via Flaminia 1068
Roma, XX 00189
+390633217452 x452
c.contino@idscorporation.com
http://www.idscompany.it
IDS Ingegneria Dei Sistemi S.p.A. is an independent engineering and systems technologies company, providing research, innovation and products in the electromagnetic and air navigation fields, for both civilian and defense applications

L-3 STRATIS
Alyssa Lancaster
11955 Freedom Drive
Reston, VA 20190
(703) 434-4000
alyssa.lancaster@l-3com.com
http://www.L-3com.com/STRATIS
L-3 STRATIS provides cybersecurity, intelligence, and enterprise IT solutions for the Department of Defense; the Intelligence Community; U.S. federal civilian, state and local government agencies; and international customers. We take pride in our application of industry best practices - reflected in our motto, Powered by Excellence.

Luciad Inc.
11400 Commerce Park Drive
Suite 110
Reston, VA 20191
(703) 390-9360
info@luciad.com
http://www.luciad.com
Luciad is the supplier of choice selected by leading Systems Integrators to develop Situational Awareness applications in ATC/ATM systems. Luciad's International customer base includes Boeing, Cassidian, DFS, EADS, ENAV, EUROCONTROL, FAA, Lockheed Martin, LVNL, NATO, NATS, NavCanada, NLR, Saab, SAIC, Sagem, STNA, Thales and Thales Raytheon Systems.

Mission Support Services/Aeronautical Information Management/Geographic Services Group (AJV-22)
Christopher Criswell
800 Independence Ave.
Washington, DC 20591
(202) 267-9032
christopher.criswell@faa.gov
Airport Mapping Data in support of Digital Notams

Open Geospatial Consortium, Inc.® (OGC)
Nadine Alameh, Ph.D.
8070 Georgia Ave #304
Silver Spring, MD 20910
(240) 669-8788
nalameh@opengeospatial.org
http://www.opengeospatial.org
The Open Geospatial Consortium (OGC) is a non-profit, international, voluntary consensus standards organization leading the development, promotion and harmonization of standards for geographic content and services, sensor webs, and location services. The OGC has been assisting in the evaluation, advancement and adoption of AIXM and WXXM by leading a series of rapid prototyping initiatives focused on these emerging standards.

SAS Federal, LLC
Matthew Campbell
1530 Wilson Boulevard
Suite 800
Arlington, VA 22209
(571) 274-6060
matt.campbell@sas.com
http://www.sas.com
SAS helps government transportation agencies through advanced analytics that turn data about safety and efficiency into meaningful information. The result? Fact-based decisions for undeniable safety and operational efficiency impact. SAS analytics is the lifeblood of major transportation agencies world-wide.

Snowflake Software
Ian Painter
Alleyn House
23 - 27 Carlton Crescent
Southampton, United Kingdom SO15 2EU
0044 (0) 23 8023 8232
ian.painter@snowflakesoftware.com
http://www.snowflakesoftware.com
Snowflake Software, the Data Exchange Company, is a leading provider of solutions and expertise to enable interoperable data exchange based on open standards. Active in the Air Traffic Management (ATM) market since 2008, Snowflake has built its reputation through playing a lead role in the FAA / EUROCONTROL sponsored Open Geospatial Consortium (OGC) Open Web Services (OWS) testbeds.

EUROCONTROL

**Federal Aviation
Administration**