The FAA is committed to achieving global harmonisation of air traffic management systems. This effort includes working with our international partners to develop standards to achieve a more efficient global exchange of air traffic information.

Communication between ANSPs is done one-to-one and therefore is less efficient and more expensive. The data is sometimes not formatted in the same way, requiring labour-intensive re-entry that introduces greater potential for error. Time and money spent adapting to each other’s rules, definitions and formats results in a less-than-optimal global air navigation system.

A more globalized, dedicated ATM messaging network is in everyone’s interests. This network will enable all air navigation service providers to access air traffic information according to a common set of publishing standards. We will be able to exchange ever-increasing, relevant information in a more timely and less costly way than with the current nation-to-nation legacy systems. When implemented, this global ATM system will finally join banking, finance, and healthcare industries, among others, in fully embracing the Internet.

Over the past several years, we have made great progress towards this goal by creating standard models for the exchange of aeronautical, weather and flight information. Using the Aeronautical Information Exchange Model (AIXM), the FAA implemented a Digital NOTAMs system last year.

Under the legacy system, when a NOTAM was issued, there were numerous instances of manual intervention before a pilot could make use of it. Under the digital system, authorized persons can submit NOTAMs directly into the system in a format that allows for easy computer search. This capability enables airspace users to easily view the most up-to-date status and prioritise the NOTAMs, which enables better flight planning and greater situational awareness. With the legacy system, it took an average of 15 minutes to originate a NOTAM. Through the digital system, it takes five seconds.

Assisting with flight planning
Beyond NOTAMs, the FAA recently approved a final investment decision for Aeronautical Information Management Modernization, Segment 2 (AIMM S2). AIMM S2 will provide a real-time view of special activity airspace in a format that can be used by flight planning tools, instead of relying on paper charts. This will enable airspace users to acquire the information more efficiently and accurately to assist with their flight planning.

When it comes to weather, we’ve released Weather Information Exchange Model (WXXM) 1.1, and soon we’ll release version 2.0. The FAA and the US National Weather Service, along with EUROCONTROL, have taken the lead to move all weather information products into the standard WXXM format. ICAO and the World Meteorological Organization are releasing standards – known as ICAO’s WXXM (IWXXM) – for a subset of these weather products.

For flight data, we recently released the Flight Information Exchange Model (FIXM) 3.0. FIXM 3.0 includes data for 4D trajectory and surface operations. FIXM 3.0 builds on previous versions which included standardised information about boundary crossings between air navigation service providers, carriage of dangerous goods, fleet prioritisation and airport collaborative decision making.

Showcase
To support more efficient data exchange across the globe, the FAA hosted the Mini Global demonstration this past September at our NextGen test bed in Daytona Beach, Florida. Using the FIXM, AIXM and WXXM standards, Mini Global showed how the world’s ANSPs and flight operators are able to share common information to improve collaborative decision making and air traffic management.
The event included more than 100 participants, including the FAA, along with ANSPs for Australia, Canada, Japan, Portugal, South Korea, Singapore, and Thailand, and with observers from Brazil, Columbia, the United Arab Emirates and SESAR in Europe. The Mini Global team included staff from the FAA, Embry-Riddle Aeronautical University, Harris Corporation, Mosaic ATM, CSSI, Metron Aviation, Solentus, and Lockheed Martin.

Specifically, the demonstration provided simulated and live flight data to showcase the benefits and feasibility of automated information sharing, such as flight plan submission, international boundary coordination, carriage of dangerous goods, volcanic ash avoidance, airport configuration changes, fleet prioritisation, and weather forecasts, among others. Through the demonstration, participants were able to assess their current formats and levels of compatibility with each other.

In 2015, we will begin plans to conduct Mini Global II, which will expand the number of participants, and incorporate additional enterprise messaging services (EMS) so we can demonstrate more robust data exchange and give partners a choice of EMS providers.

**Making progress**

We have made a lot of progress by laying the groundwork for standard information exchange models. And with progress comes a new set of questions. What are the next steps? What challenges lie ahead?

First, we have to continue to develop the standards for a global ATM messaging structure. We have to move this effort up to the ICAO Standards And Recommended Practices (SARP) level, to enable greater adoption of common standards by air navigation service providers.

Second, we must do all that we can to help all nations have access to this global ATM network. As part of this effort, we need to encourage regional solutions through CANSO and ICAO regional planning groups. A good example is the common regional Virtual Private Network, an ICAO initiative to enhance information exchange in the Asia Pacific region. We need to ensure these regional solutions are building blocks for the global ATM network.

Third, with technology evolving at an ever faster rate, what can we accomplish beyond the three exchange models? What would be the next step technologically?

Fourth, what is the appropriate pace that we, as a global community, are committed to moving at? With the technology rapidly evolving, we do not want to move our systems at a faster rate than the humans in the system can handle. There is always a delicate balance in air traffic control which is, and remains, a human-centred endeavour.

As we address these and other questions, we will support a global harmonisation of air traffic systems. In doing so, we will contribute to a more seamless, efficient, green airspace system to the benefit of all airspace users.