

Harmonic Convergence

The United States is collaborating with Europe on ATC modernization, but some industry skepticism remains.

BY RICK DARBY

REPORTS

Interoperability Is the Goal

Next Generation Air Transportation: Collaborative Efforts with European Union Generally Mirror Effective Practices, but Near-Term Challenges Could Delay Implementation

U.S. Government Accountability Office (GAO). GAO-12-48. Tables, figures, appendixes. November 2011. Available at <www.gao.gov/products/GAO-12-48>.

The United States and the European Union (EU) are working simultaneously on major overhauls of their air traffic control (ATC) systems, involving transition from radar-based surveillance and control to satellite-based systems. While the changes are similar, they are being carried out under separate programs: the Next Generation Air Transportation System (NextGen) in the United States and the Single European Sky Air Traffic Management Research (SESAR) program in Europe.

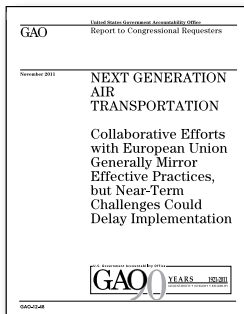
Hundreds of flights travel from the United States to Europe and vice versa every day, so it is important on operational — and safety — grounds that the two ATC systems be compatible for seamless transitions between U.S. and European airspace.

“FAA’s [the U.S. Federal Aviation Administration’s] efforts toward interoperability generally mirror effective collaborative practices, but mitigating stakeholder skepticism about NextGen/SESAR benefits will nevertheless be a challenge,” the report says.

In 2006, the FAA and the European Commission signed a memorandum of understanding that led to joint meetings and interactive research. In 2011, the FAA and the EU signed a memorandum of cooperation (MOC) that formalized a “collaborative structure” for NextGen and SESAR.

This report discusses “the efforts that FAA has taken to ensure the interoperability of NextGen with SESAR and how those efforts compare with effective interagency collaboration practices.” In its research, the GAO reviewed the agreements between the United States and the EU. The organization studied the academic literature about effective collaboration and “key practices that [the GAO has] previously identified in effective interagency collaborations.” The GAO interviewed FAA and EU officials involved in the ATC upgrades.

Differences in how NextGen and SESAR are implemented reflect political and cultural differences between the United States and the EU. “Whereas the United States manages aviation at the federal level, the EU, with its 27 sovereign member states, and their individual regulators and service providers, must consider interoperability among its member states, as well as with NextGen,” the report says. Further, NextGen and SESAR differ in management structure. NextGen is “government-centric, [with] input solicited from industry.” SESAR



is “a public-private partnership, where EU government agencies and private sector entities have management roles.”

“SJU [the SESAR Joint Undertaking], made up of Eurocontrol, the European Commission and 15 member organizations — including airport operators, air navigation service providers, manufacturers of ground and aerospace equipment, and aircraft manufacturers — is managing the development phase and following the master plan,” the report says.

The report says that the GAO has previously identified practices that can help enhance and sustain collaborative work among U.S. agencies, which can be reasonably expected to apply to international collaboration. Some of these practices are “defining and articulating a common outcome; establishing mutually reinforcing or joint strategies to achieve the outcome and establishing compatible procedures; agreeing upon respective roles and responsibilities; [and] reinforcing individual accountability for collaborative efforts through agency performance management systems.”

The trans-Atlantic connection appears to be following the proven practices, the GAO says.

“FAA and SJU officials we interviewed, as well as industry stakeholders representing organized labor, airlines, and airframe and aerospace equipment manufacturing companies, generally agreed that the 2011 MOC is a positive development toward ensuring the interoperability of NextGen and SESAR and establishes a means for FAA and SJU to operate across agency boundaries,” the report says. Another promising development is that “the 2011 MOC and related documents define FAA and SJU roles and responsibilities.”

In addition, “FAA’s performance management system is designed to incorporate all of the responsibilities and duties of each staff member, according to FAA officials we interviewed.”

Nevertheless, some stakeholders remain partially in the dark. The report says, “FAA has not externally reported its collaborative efforts with EU entities in public documents, such as its strategic plan or performance and

accountability reports. ... Stakeholders representing U.S. airlines, the U.S. aviation industry and European avionics manufacturers told us that they were aware that work was progressing to ensure the interoperability of systems, but they were not aware of specific details. For example, stakeholders in the aerospace equipment industry expressed concerns about the differences in NextGen and SESAR’s data comm [data communications] implementation timelines but could not say whether the collaborative structure of the 2011 MOC could help resolve these differences, because they were not familiar with the details of the MOC’s structure and governance.”

The lack of complete transparency about particulars of the collaboration has reinforced latent doubts about NextGen and SESAR benefits, the report says: “Some stakeholders we interviewed on both sides of the Atlantic expressed skepticism about whether or when the future benefits of NextGen and SESAR will be realized, echoing concerns that have been raised in the past. We have reported on stakeholder concerns about FAA’s not following through with its NextGen efforts, which made some airlines hesitant to invest in new equipment.

“This hesitancy arose after an airline equipped some of its aircraft with a then-new data comm system, but because of funding cuts, among other things, FAA canceled the program, and the airline could not use the system. ... In Europe, an air navigation service provider representative said that experiences such as FAA’s canceling the earlier data comm program have led airlines to take a cynical view of promised benefits.”

The airlines’ “show me” attitude results in their hesitancy to equip their airplanes with NextGen/SESAR technologies because “some of the key benefits, such as increased capacity and more direct, fuel-saving routing, will not be realized until a critical mass of equipped aircraft exists,” the report says. There will be no first-mover advantage. “It is difficult for an airline to make a business case showing that the

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near-term benefits of equipping [their airplanes] will outweigh the cost,” the report says.

Influencing the unpredictability of NextGen/SESAR harmonization are possible FAA budget cuts, according to the report, which cites already-existing restrictions on travel for meetings. “To reduce travel costs, action plan teams have endeavored to schedule their meetings to coincide with other meetings, and officials are making use of technological substitutes for travel,” the report says. “However, a Eurocontrol official said that he does not consider these virtual meetings to be as effective as face-to-face interactions, and an official representing European air navigation service providers told us that overuse of this technology could impede harmonization and result in higher costs over the long run.”

The 2011 MOC is still in the early stages of implementation. “Because the components of the MOC have not yet been put into action, we were unable to judge its effectiveness in facilitating collaboration toward interoperability,” the report says. “The real test of the MOC’s effectiveness will come when NextGen and SESAR move toward final decisions about implementing solutions and system components. In the past, FAA and Europe jointly developed systems that were either not implemented or were implemented differently by each side The structure of the 2011 MOC is designed to prevent such results in the future. However, the absence of effective collaborative practices does not guarantee failure, nor does their presence ensure success.”

In its conclusion, the report recommends that the FAA provide the industry with more specific information about its efforts and the provisions of the MOC. “These details could allow stakeholders to judge for themselves whether interoperability efforts are moving ahead deliberately, as planned, and provide assurance that FAA is serious about collaborating on interoperability and implementing NextGen.” It reiterated an earlier recommendation that FAA provide current information about how budget decisions will affect the progress of NextGen.

FOQA Writ Small

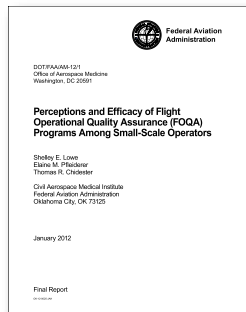
Perceptions and Efficacy of Flight Operational Quality Assurance (FOQA) Programs Among Small-Scale Operators

Lowe, Shelley E.; Pfleiderer, Elaine M.; Chidester, Thomas R. U.S. Federal Aviation Administration (FAA) Civil Aerospace Medical Institute. DOT/FAA/AM-12/1. January 2012. 22 pp. Tables, figures, references.

“Despite safety and economic advantages, as well as endorsements by the International Civil Aviation Organization, the FAA, the National Transportation Safety Board and Congress, not all U.S. operators have chosen to participate in FOQA programs,” the report says. “Participation in FOQA is particularly low among small operators.” A recent report by the U.S. Government Accountability Office (GAO) said that the majority of U.S. Federal Aviation Regulations Part 121 flights are currently operated by airlines with FAA-approved FOQA programs, but only 17 percent of smaller carriers have them.

The report cites the Flight Safety Foundation (FSF) FOQA task force’s efforts to identify issues that might discourage FOQA adoption among operators. “Recognizing that data security was critical, a special working group was created from within the FOQA task force to concentrate on these issues,” the report says. “The working group identified two main areas of concern: that data in the possession of the federal government could be released in response to Freedom of Information Act requests or through civil litigation, and that information from FOQA data could be used in enforcement or disciplinary actions against pilots.”

Since FOQA’s early days, “the combined efforts of the FAA and the airline industry have produced procedural guidelines for protecting FOQA data and engendering trust in the program,” the report says. Nevertheless, “according to [the GAO] report, pilots’ concern about data misuse continues to be one of the primary factors that prevent their participation in voluntary safety programs. . . . Considered in conjunction with pilots’ attitudes and pressure from pilot unions, airlines might find it difficult to justify the cost of implementing and maintaining a FOQA program if they are dubious about its



benefits or concerned about its risks. Increased FOQA participation among small-scale air carriers might depend on demonstrating that significant safety benefits can be gained, and positive perceptions of the program sustained, with minimal cost to the operator.”

The report describes two experiments about FOQA in connection with small-scale flight operations:

- “Experiment 1 evaluates pilots’ perceptions of a FOQA program maintained by a small-scale government operator. The [FAA] Office of Aviation System Standards (AJW) employs approximately 180 pilots and operates within strict budgetary constraints. As such, this organization faces many of the same challenges as comparable small-scale commercial operators. The FOQA program at AJW has been fully operational since 2006, and so pilots’ experience and attitudes about FOQA should be well developed in this group.”
- “Experiment 2 examines operational efficacy using time series analysis. Trends suggesting improved pilot performance may simply be a function of monitoring alone, or might represent a natural progression over the course of time. Time series analysis removes systematic trends so the actual effects of interventions may be evaluated. Time series analysis of FOQA event rates should determine whether quarterly reports providing feedback to pilots (a cost-effective intervention method) can produce significant safety benefits.”

In experiment 1, the researchers used a previously validated survey instrument called the Perceptions of Flight Operations Quality Assurance Questionnaire (PFOQA). “Questionnaire items were based on the concerns and recommendations proposed by the FSF FOQA task force created to identify issues that might hinder or prevent the implementation of FOQA programs in this country,” the report

says. Included in the PFOQA were 16 items in which the respondent chose a number on a scale representing agreement or disagreement with a statement. In this experiment, statements of both positive and negative attitudes toward FOQA were included — for example, “I expect FOQA data to be used to take action to correct safety problems” and “I worry that FOQA data will be used for disciplinary actions.”

“Disappointingly, approximately 83 percent of the pilots with high negative perceptions scale scores (45 percent of the total sample) worried that FOQA data will be used for enforcement actions,” the report says. “This is an area where the FAA has perhaps taken its strongest stand and for which an industry history of honoring those protections has been clearly demonstrated. This signals that the issue is so important that organizations should strive to consistently remind pilots of regulatory protections and make sure that every demonstration of compliance is communicated to them.”

Experiment 2 involved feedback reports to AJW pilots based on FOQA data. Analysis found that these “interventions” were correlated with reductions in the rate of exceedances — in which aircraft are operated beyond established normal parameters.

“The overwhelming reduction trend in exceedance rates of these events over the course of the time series was impressive,” the report says. “Simply by measuring selected flight parameters, informing pilots what had been observed, explaining why exceedances represented an unacceptable risk, and recommending strategies for avoiding these circumstances, AJW pilots were able to profoundly and quickly reduce the frequency of these events. This is remarkable because it only required measurement and feedback (i.e., issues endorsed by pilots in the positive perceptions scale). It did *not* require identification of individual pilots, disciplinary action or public disclosure of findings (i.e., concerns reported by pilots on the negative perceptions scale) to bring about this change. This accomplishment should motivate other small operators to consider FOQA programs.” ➔

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