Opinion

NextGen Reality Check:

Two Critical Questions Confronting Airlines and Airports

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After reading Mike Boyd's article discussing the impact of NextGen on air carriers and airports – "Who Controls the Blue?" – which appeared in the May/June 2014 issue of *Managing the Skies*; to paraphrase the guy in a popular commercial, "I don't always agree with Mike, but when I do…"

In essence, airlines and airports pursuing operational improvement plans in a NextGen environment are at an historic operational crossroads, facing two critical questions:

1. Who should control aircraft? The parties with vested cost, revenue, and quality interests – the airlines and airport operators – or the ATC system?

2. How can airlines and airports adopt and control factors influencing operational excellence and quality destiny in a NextGen environment?

If NextGen and Single European Sky ATM Research (SESAR) move forward as planned, the new systems will force airlines to abdicate essentially all control over the movement of their aircraft to air traffic control (ATC) systems having no vested interest in their airline customers' outcomes. However, they also are remote from their airline customers' profit motives.

Unfortunately, this will negate significant operational advantages, discounting results to those of the lowest common denominator. Airport throughput (such as revenue and quality) likewise will be impacted.

In my opinion, FAA's NextGen plan is "our way or the highway," offering little or no room for airline or airport input. At recent meetings within FAA, when asked about using an airline-driven Required Time of Arrival (RTA) process, the answer is: "it is not in the plan."

A Controller-Centric Solution Designed by Controllers, for Controllers

This is the answer despite Radio Technical Commission for Aeronautics (RTCA) Task Force 5's explicit direction to implement RTA by 2015 (4.4.3.2 Expand Use of Time Based Metering and Leverage Operator Capabilities), "expand current practices at Atlanta" e.g. airline-driven RTA processes). Airport operators likewise would be locked out of hosting and offering RTA issuance services.

Despite the technology requirements, it is readily apparent NextGen is a controller-centric solution designed by controllers, for controllers. At the same time, airlines are mandated to pay to equip and to use, and then to pay over and over again (by the flight segment) for built-in operational inefficiencies.

Airport operators are faced with the results of these up-line operational inefficiencies: suboptimal utilization of both medium-to-long-term fixed arrival capacity and airport resources.

Visualize a Conga Line in the Sky

Consider FAA's time-based metering system. FAA plans a time-based system that has controllers manually metering to a metering fix, using speed control, which then manually meters to the next metering fix, which manually meters to the next metering fix, and so on.

Visualize a conga line in the sky, expanding and contracting accordion-style (which is the result en route) and then expanding and contracting like a trombone slide on the downwind and final, in the terminal area.

Why Purchase New Avionics?

Assuming that FAA's metering plan could be implemented (the mathematics and network scaling factors suggest it is doubtful), it destroys any incentive for airlines to spend $300,000 to $400,000 to equip domestic fleets with Automatic Dependent Surveillance-Broadcast (ADS-B), a Global Positioning System (GPS), and an enhanced Flight Management System (FMS).

Why incur capital expenses to install, certify, and train on new avionics when controllers and the ATC system are going to tell the aircraft what to do most of the time?

Also, scaling up the manual metering process requires a large number of additional controllers. For example, FAA's simulation of metering to a single arrival fix into Philadelphia requires a process involving more than 60 control sectors. Additionally, the metering process would require a minimum of 60 new controllers at FAA's Air Traffic Control System Command Center in Warrenton, VA.

Now imagine the Philadelphia example scaled up in Atlanta, Dallas-Fort Worth, Chicago, or the New York Terminal Radar Control Approach Facility (TRACON). As stated, NextGen is "a controller-centric solution designed by controllers, for controllers."

Of equal concern is FAA's long history of delivery. From Microwave Landing System (MLS) to the Advanced Automation System (AAS) to the Global Positioning System (GPS) to NextGen (and from programs long before these), FAA has repeatedly failed to successfully implement large scale air traffic control (ATC) system upgrades on time or within budget.

Aircraft Sequencing is a Logistics and Supply Chain Process

The aircraft sequencing process is a logistics and supply chain process that can only be optimized and solved efficiently by the owner-airlines and owner-airports – that is, those with the vested interest in asset utilization, costs, and quality (revenue). As many have proven, abdicating logistics and supply chain to an outside entity (in this case the ATC system) simply doesn't produce good outcomes.

The ATC system knows nothing about airline (or airport) -specific business rules, gate availability, block time reliability, crew legality, maintenance issues, high value connections, etc. – and, to be fair, the ATC system has no need, arguably should not, and without a doubt never will.

ATC Is Responsible for Basic Separation

The ATC system should continue to be responsible for the basic separation

processes. With the exception of acting as an honest broker for coordination of assigned RTAs, the ATC system isn't able to and cannot be relied upon to efficiently optimize, devise, or provide an ideal arrival sequencing process – which defines the randomness of the ground handling and departure processes.

The solution for many airline problems can be found in two areas: quality and block time. Root cause analysis leading to operational excellence reinforces the former (*quality = revenue and retention*) and sheds the latter (*block = expense and turnover*).

The airport analogs – inter-arrival time, throughput, and facilities utilization – lead to greater revenue and reduced costs and requirements for future capital expenses. It also could lead to development of a preferred tier of airport charges applicable to high-reliability/quality airlines whose managed arrivals and ground processes consume less of an airport's fixed resources per arrival/departure pair.

Successful Airline-Driven Systems

Airlines including Delta at Atlanta, Detroit, and Minneapolis-St. Paul successfully utilize airline-driven systems and their own business rules to monitor and sequence arriving flights. This accelerates and enhances the achievement of revenue, expense, reliability, and quality objectives.

Time to Apply Needed Mid-Course Corrections to NextGen

It would be ironic if FAA's NextGen mandate inadvertently foreclosed airlines' and airports' ability to manage their own assets, revenue, expense, and quality outcomes.

In that light, let FAA continue to separate, but it's time to re-evaluate NextGen in light of RTCA recommendations and apply needed mid-course corrections to allow customers the flexibility to manage their own logistics, supply chain, revenue, cost, and quality outcomes. ⊙