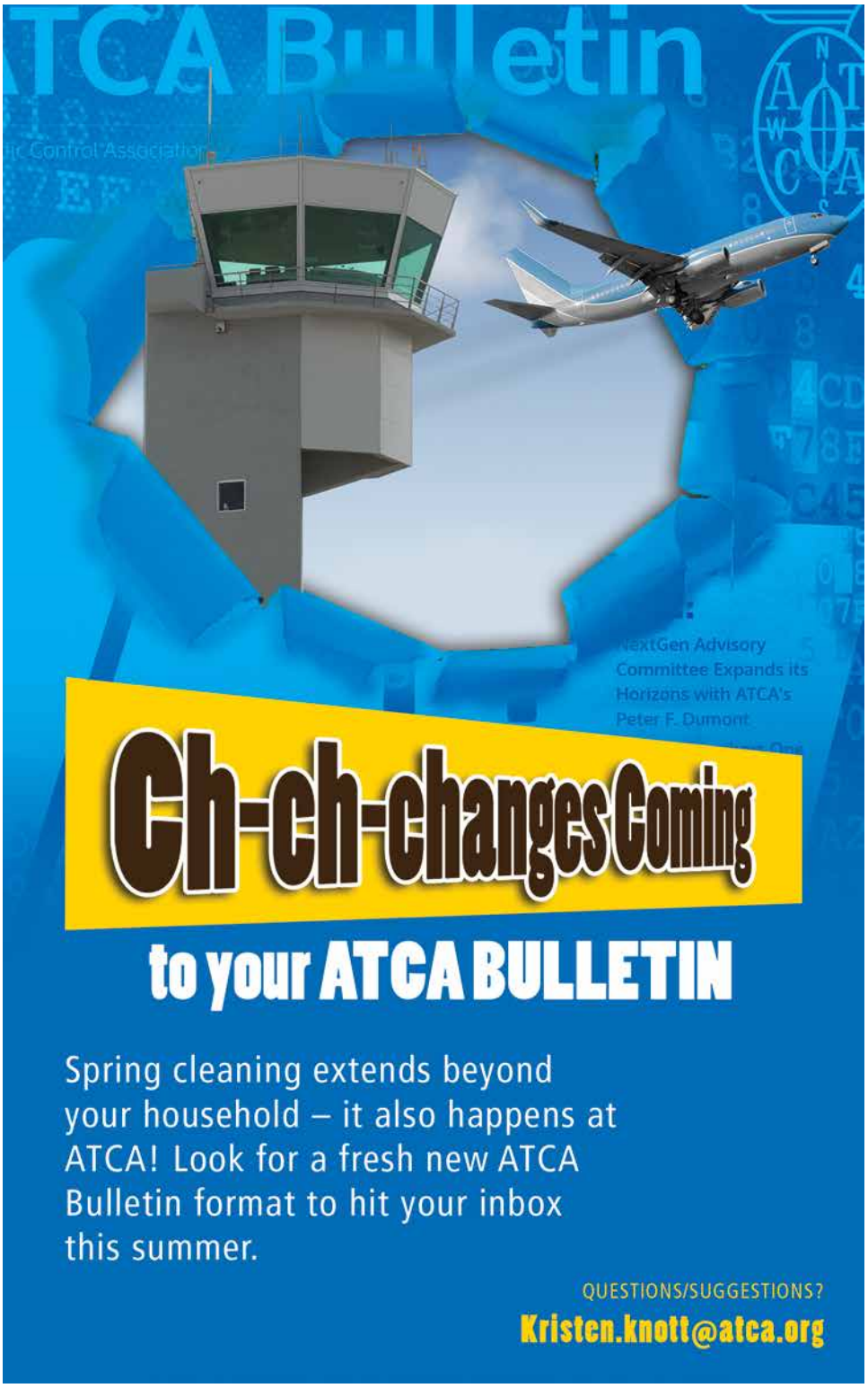
# ATCA Bulletin

Air Traffic Control Association No. 3, 2016 www.atca.org

## ATCA's Q&A with Sean Cassidy, Director of Strategic Partnerships for Amazon Prime Air

### IN THIS ISSUE:




## Upcoming Events

May 17–19, 2016

ATCA Technical Symposium
*Atlantic City, N.J.*

October 16-19, 2016

61st ATCA Annual Conference & Exposition
*National Harbor, Md.*


# ATCA Bulletin

No. 3, 2016

Published for

ATCA
Air Traffic Control Association

1101 King Street, Suite 300
Alexandria, VA 22314
Phone: 703-299-2430
Fax: 703-299-2437
info@atca.org
www.atca.org

President & CEO: Peter F. Dumont

Director, Communications: Abigail Glenn-Chase

Writer/Editor: Kristen Knott

Formed in 1956 as a non-profit, professional membership association, ATCA represents the interests of all professionals in the air traffic control industry. Dedicated to the advancement of professionalism and technology of air traffic control, ATCA has grown to represent several thousand individuals and organizations managing and providing ATC services and equipment around the world.

---

Published by

LESTER PUBLICATIONS, LLC

140 Broadway, 46th Floor
New York, NY 10005
Toll-free: 866-953-2189
Toll-free Fax: 877-565-8557

www.lesterpublications.com

President: Jeff Lester

Vice President & Publisher: Sean Davis

Editorial Director: Jill Harris

Editorial Assistant: Andrew Harris

Art Director: Myles O'Reilly

Senior Graphic Designer: John Lyttle

Graphic Designers:
Crystal Carrette, Jessica Landry, Gayl Punzalan

Advertising Sales:
Book Leader: Quinn Bogusky
Louise Peterson

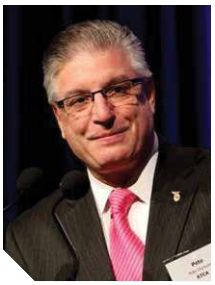
Distribution: Nikki Manalo





Printed in Canada.
Please recycle where facilities exist.

Cover photo:
Tashatuvango/Shutterstock.com
Stock photography provided by Shutterstock.com



By Peter F. Dumont,
President & CEO, Air Traffic Control Association

# Is FAA Funding Stability a Pipe Dream?

With a Republican controlled Congress, a Democrat in the White House, and a lively, controversial Presidential election, Capitol Hill hasn't exactly been a constructive or productive place. Last month, Supreme Court Justice Scalia passed away, and fights over his replacement filled headlines before we had a second to absorb the news. And don't get me started on the Presidential debates for party candidates because much of it hasn't been very, ahem, presidential.

Sometimes when there is complete chaos, things can be accomplished because no one is paying attention. That was my thought a month ago. Maybe FAA reauthorization can be fully debated because everyone else will be distracted. Well, not so much.

Chairman Shuster of the House Transportation and Infrastructure Committee spent the last year asking the aviation industry to articulate their ideal FAA structure. The end result was a bill that had been artfully crafted to take into account many industry objectives. The process had all the hallmarks of a compromise bill – something Congress needs more of. But the Chairman's effort simply wasn't enough. The bill passed the House only 34 to 25, and the liability was the FAA reform section.

The bill is dying a slow death, and Congress passed an extension to the current FAA authorization through July 15. But even after the bill is dead, the push for reform won't be. No one expected such a massive overhaul to fly through the House and Senate in the short timeframe available, and even if it were afforded more time, it would still be a commotion.

The entire industry agrees that FAA funding stability needs to be achieved. To me, it's not just that the funding has to be stable; I think the fees should match the spending. The Airport and Airway Trust Fund, which holds all the taxes collected directly from aviation users, has a balance above a billion dollars. It seems to me that the balance reflects a broken system. Users are paying taxes, but obviously a higher tax than the budget appropriated by Congress. The balance is held in the Aviation Trust Fund and part of the unified budget, and therefore, makes our annual deficit look smaller. That just seems wrong.

But is asking for budget stability simply too much? If you say no, let me ask you a couple questions: Do companies have budget stability? Is FAA's budget facing significant funding swings? FAA's budget in 2014 was $15.866 billion, in 2015 it was $15.734 billion, and in 2016 it was $16.281 billion. That doesn't seem unstable. Maybe the swings of instability are in each account? The capital account, Facilities and Equipment, was funded at $2.6 billion in 2014 and 2015, and $2.855 billion in 2016.

The instability is not in the total numbers, it's in the drama that

is played out in front of the cameras, lecterns, and sometimes when the money actually runs out for a few days. It's the roller coaster of uncertainty that is played out every year and during the reauthorization season, and it's often controllers and other FAA employees who are held hostage by it.

Some of that uncertainty was the focus of World ATM Congress this month in Spain. The Congress, which enjoyed record-breaking attendance, drew officials from nearly 80 air navigation service providers, who came together to discuss air traffic advancements and the challenges facing worldwide aviation. As you can imagine, most conversations with our international counterparts began with comments about our heavily televised presidential election before we were able to turn to air traffic management issues.

World ATM Congress is always a boost. It is such a great conference, and I am able to connect with aviation experts and stakeholders from around the world. Raising our awareness beyond what is happening within our borders (and on our debate stages) and thinking of the larger aviation picture is an invaluable take-away from our March event. If you haven't joined us yet, please consider coming next year. You won't regret it.

I'll conclude my letter with some questions that we should all be asking. Would a restructured FAA be void of funding instability – whether real or perceived? Would a different management structure and funding stream improve air traffic services? Would a board full of people representing our industry partners create a level of funding stability that results in a better operating air traffic management system (and is the board as the bill stands even representative of our industry partners)? Would the drama and funding uncertainty be different with a board instead of Congress?

We are on the precipice of a new era in aviation. Across the board, a lot of questions have been raised without a lot of answers. The questions themselves may be simple, but how simple their answers are has yet to be seen. Stay tuned.

# ATCA's Q&A with SEAN CASSIDY, Director of Strategic Partnerships for Amazon Prime Air

By Kristen Knott, ATCA Writer and Editor

*ATCA: Can you define Amazon Prime Air's vision?*

***Sean Cassidy:*** I'll just give you a practical example – I was out heading to a dinner that was put on by a certain conference in Madrid, and the person accompanying me suddenly realized that she needed a dress or shoes or something along those lines. Wouldn't it be nice to be able to go online and order something and then have it basically delivered in 30 minutes or less? That's in its very essence the Amazon Prime Air concept of operations. It's a future delivery system. It's another innovation that gives a different option for customers to order something on Amazon and get it. The beauty of it is it gives [the customer] choice. So, we innovate and provide choices and [the customer] decides which to select. That's Amazon Prime. It's very intuitive. We have a very talented team of innovators.

*ATCA: What are you doing with NASA and FAA to safely integrate UAS into the current National Airspace System (NAS)?*

***SC:*** We innovate; we embrace technology and one of the things that I know well is that the folks involved in aviation know that *access is defined by capabilities.* And so the first thing we did was apply that towards our vision for a safe model of segregated operations in which we say, look, let's do this first – Let's create an operational model that has us flying small unmanned aircraft systems at altitudes below which virtually all of commercial manned, civil, and ulterior aviation exists – below 500 feet or 150 meters. And then, let's take that a step further – let's not only avoid flying in this integrated airspace where the airliners and everybody else live; let's introduce an additional layer of safety by creating a buffer zone between 400 and 500 feet. And then let's introduce an additional layer of safety by basically creating operating zones which are dependent on the concept of operations.

So, in the case of Amazon where you have our vehicles traveling beyond line of sight at moderate distances, 15 km or more, then we would basically be operating in a zone which is a little bit higher, between 200 to 400 feet, and would avoid more localized low-speed traffic, which would be more analogous to somebody taking a photo of a house for real estate photography, somebody inspecting a bridge, etc.

Now, the second part of this is that, you know, we talk a little bit about focusing on the airspace; now let's focus on the vehicles. As with manned aviation, you have certain levels of access, certain abilities to fly to certain airports and certain airspace depending on the type of equipment you have on board. Again, as with the airspace model – no different with the equipage model for our vehicles – we believe there are different classes of operations that would require different equipage depending on the complexity of the operation and the type of airspace that they want to operate in.

We believe that everybody should have some ability to make sure we're identifying where the users are, making sure the vehicles are basically broadcast in some manner where they're located, but if you

**"I think the more we have these kind of conversations, the more we have really data-driven discussion about the whole thing, I think people will start to get the fact that we're actually one of the proponents to make things safer and more efficient. We're here to help."**

– Sean Cassidy

HadrianShutterstock.com

## It's a future delivery system. It's another innovation that gives us a different option for customers to order something on Amazon and get it.

– Sean Cassidy

have a fairly localized low speed operation which is confined to maybe a small area around a house, maybe that's enough to say "Hey, this is me, I'm doing this thing, this is where I am." That information gets put into some kind of network system of information where all the other users flying in that area can be aware of that operation. In our case, we believe that, especially for visual line-of-sight operations, we have to not only incorporate that type of equipage, but we're also absolutely insistent that we have to incorporate two additional things. One is something called "collaborate, sense, and avoid," which is basically having – lets talk about it in terms that everybody can understand – smart interconnected vehicles. So, there are standards that are coming out right now that are going to be deployed for cars where they'll basically have some kind of mechanism where cars can talk to each other. They're basically traveling hot spots, right? That would be an example of "collaborate, sense, and avoid," where you have equipage of vehicles that are talking to each other. If you are at a corner and you have one vehicle here and one vehicle here actually talking via WiFi (or some other mechanism), they can actually anticipate where they're going to be and collaboratively separate their trajectories, their flight paths, and everything else.

There's also something else called "non-collaborate, sense, and avoid." And for us to be able to perform, again, visual line of sight operations that extend to distances, and to make sure that the airspace is safe for everybody, we have to make sure that our vehicles are independently safe. And by that I mean, we're not required to rely on the equipage of another vehicle. We're just depending on the equipage on [our vehicles] to independently sense and avoid other objects – airborne objects, objects on the ground, etc. So, those are the two concepts that we're going to provide for safe, scalable, and deployable operations that encompass any number of these cases for small and mid [size] vehicles.

***ATCA: How does that differ from what you're doing abroad, or does it?***

***SC:*** We're testing in a number of locations internationally, and we are basically developing and evaluating all these technologies in a number of locations.

***ATCA: What are the locations?***

***SC:*** Sorry, we don't disclose locations where we're testing.

***ATCA: If you could recreate the NAS from scratch, how would that look with UAS integration?***

***SC:*** Here's what I think: first of all, we would have clearly defined safety and performance standards that would work irrespective of the type of technology that was made and deployed. So, right now in the United States, you roughly have 11,000 pieces of equipment that are mostly ground-based – they have to be maintained and they have to perform up to a certain level. You could, actually, not only use that type of equipment to be required for safety standards, but you could also use other innovative deployable technologies that use new and innovative equipment.

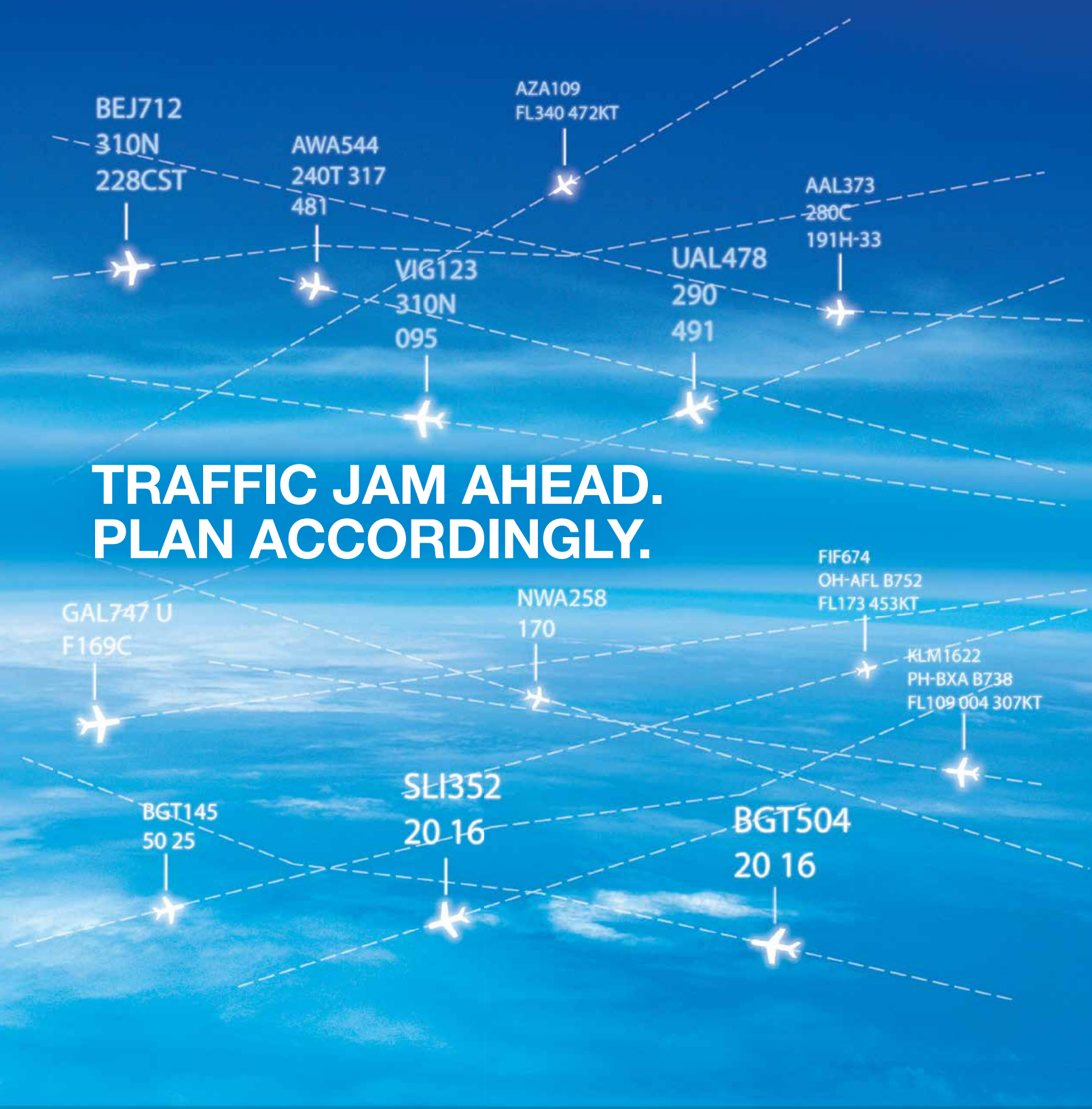
One of the best examples is staring us right in the face and that's a cell phone. I have two boys who live in Washington, D.C. I can pull out my iPhone and I can figure out if they're actually in school or if they're playing hookey around the corner at Shake Shack. So, I have location. Each one of these phones has a unique identification feature. They can all identify each other; they can all talk to each other. My phone is interoperable with your phone. That sounds an awful lot like something that can be applied to air traffic control. So, let's not take the mindset that you have to use legacy technology. Let's be very agnostic as to the rest of technology and let's just define the outcomes. And basically, that would be my solution to kind of building up an air traffic control (ATC) and management system.

Now, the other thing is that when you look at current ATC, most of that focus is applied above 500 feet, in what's going to be controlled airspace. Under the current ATC system, there's no requirement for vehicle separation and it's segregated in uncontrolled airspace. That is not a responsibility of the current ATC system. So, what we're actually doing is creating a value added proposition and actually driving up safety by introducing a model that is something that we call a federated and interoperable model of service providers, where you can have a number of companies, a number of entities – and Amazon would be one of them.

We would be operating a fleet of vehicles; we would be working with a service provider that would be helping to manage trajectories and introduce constraints and say, "Hey, you can fly here, but you can't fly here because there's an airport." You've got to stay away from an airport; you've got to stay away from a sporting event, etc. And they would be overlapping and interoperable. So, actually, in a lot of respects, it would be an even safer model because it would be redundant, it would be interoperable, and regardless of the technology and equipage, it would be fully conversant. So, if I were king for a day, that is what I would do.

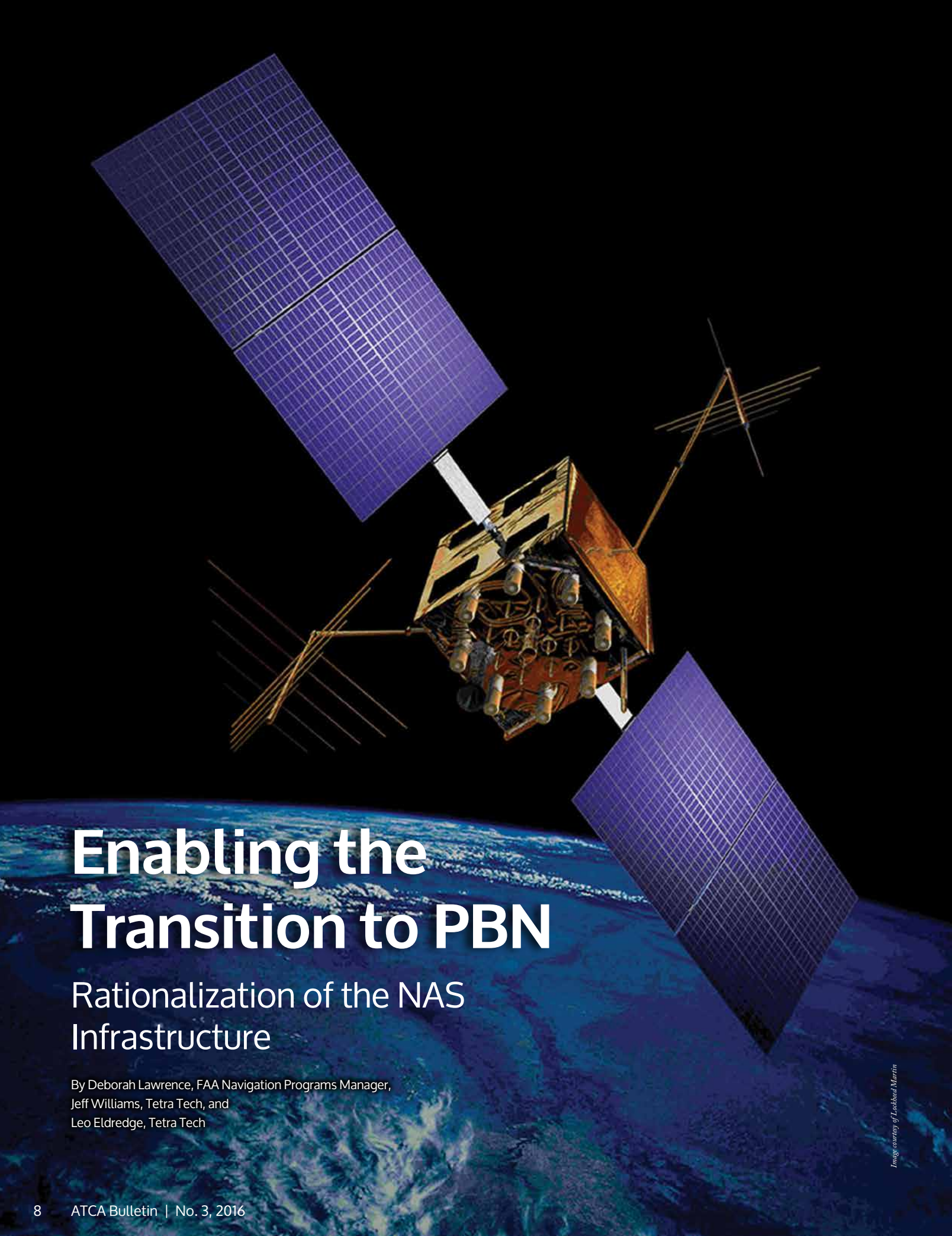
***ATCA: I can tell you've thought about this before.***

***SC:*** Once or twice.




Transforming the air traffic management (ATM) system is essential for improving safety, efficiency and the environment around the globe. Boeing is fully committed and uniquely qualified to help make ATM transformation a reality. It's the right time and Boeing is the right partner.

BOEING



# Enabling the Transition to PBN

## Rationalization of the NAS Infrastructure

By Deborah Lawrence, FAA Navigation Programs Manager,
Jeff Williams, Tetra Tech, and
Leo Eldredge, Tetra Tech

*Image courtesy of Lockheed Martin*

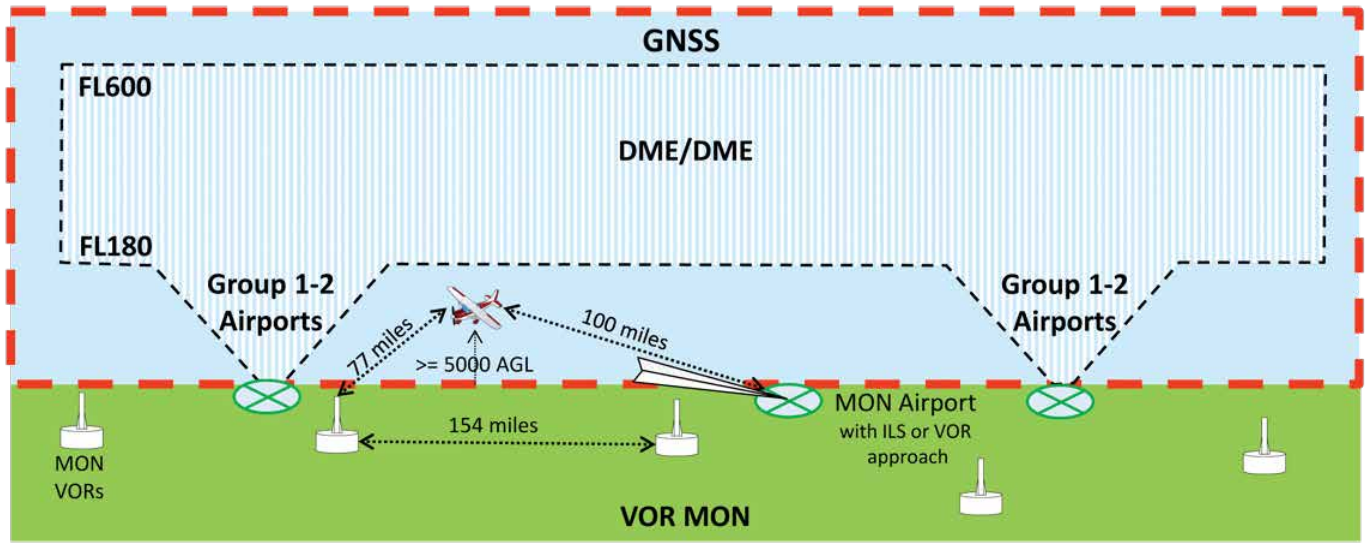



Figure 1. Layered backup strategy

Over the years, we have experienced several milestones that have contributed to a new way of effectively and efficiently navigating in the NAS. A key enabler was the FAA's approval for U.S. civil operators to use GPS equipment for oceanic, domestic en route, and terminal instrument flight rules (IFR) operations on June 9, 1993. Prior to this approval, the NAS has primarily operated on fixed routes and procedures supported by legacy ground-based navigation aids dating back to the 1940s. These systems have performed well over the years in moving aircraft through the NAS; however, many frequent fliers have probably noticed system-wide delays.

It's widely recognized that traffic is predicted to increase in the future. Unless something changes, we can expect delays and potential gridlock in our system to increase. To meet this challenge, the FAA is transitioning the NAS to Performance Based Navigation (PBN), comprised of Area Navigation (RNAV) and Required Navigation Performance (RNP). A primary enabling technology of this transition is the Global Navigation Satellite System (GNSS), which encompasses GPS and its augmentations such as the U.S. Wide Area Augmentation System (WAAS) and Aircraft Based Augmentation System (ABAS). Aircraft use GNSS to fly RNAV and RNP routes and procedures virtually anywhere in the NAS, in all phases of flight.

GNSS is an excellent navigation service; however, we all know it's also susceptible to interference (intentional and unintentional). To mitigate GNSS vulnerabilities, FAA must provide for a robust and resilient navigation infrastructure consisting of a layered backup navigation capability. A significant population of commercial operations, approximately 95 percent, are capable of PBN operations using GNSS. When GNSS is not available, approximately 30 percent of the commercial operations will not be capable of flying RNAV procedures, resulting in reduced efficiencies in a given airspace. Therefore, FAA plans a layered approach (see figure 1) to enable aircraft to continue RNAV operations during GNSS disruptions using Distance Measuring Equipment (DME) and Very High Frequency Omni-directional Range (VOR) to provide a basic conventional capability for aircraft that are not equipped for DME RNAV.

DME is used by commercial aircraft to fly RNAV procedures. As it stands, the current network of DME does not provide sufficient coverage to enable aircraft to fly RNAV procedures without Inertial Reference Units (IRU). Since 30 percent of the commercial fleet operating in the NAS today do not have IRU, the NextGen DME project will fill the coverage gaps to enable non-IRU commercial aircraft to fly RNAV procedures. Through the NextGen DME project, the FAA will eliminate critical facilities to enable unrestricted RNAV for Class A airspace and terminal operations at the busiest airports to provide a resilient RNAV backup. Class A coverage may be limited to 24,000 MSL and above over the Western U.S. Mountainous Area. If a GPS outage occurs, DME RNAV aircraft will continue flying with PBN to its destination where an instrument landing system (ILS) or VOR approach can then be used to land.

An expansive network of VORs still remains in the NAS supporting en route, terminal, and approach operations. However, VORs are not capable of meeting PBN specifications for any phase of flight, reducing flexibility and efficiency. Therefore, the VOR network will be reduced to a Minimum Operational Network (MON) to provide a basic conventional navigation service to aircraft that are not equipped for DME RNAV. The current VOR infrastructure will be reduced approximately 30 percent, and coverage will be provided at and above 5,000 feet above ground level to allow affected aircraft to fly through the outage area or to a MON airport, no more than 100 miles away, where they can fly an ILS or VOR approach without DME. Maintenance cost savings achieved by reducing the number of VOR facilities and associated instrument flight procedures will free critical resources to sustain the PBN system.

Over the long term, if RNP is implemented on a large scale in en route and terminal airspace, an Alternate Positioning Navigation and Timing (APNT) solution may be needed. This would provide an opportunity to reduce VORs below the MON by providing backup navigation for PBN. Transitioning the NAS from conventional navigation to PBN has been a long journey with significantly more work ahead. The FAA is well on its way to ensuring a robust and resilient infrastructure to support a PBN-centric NAS.

*Image courtesy of FAA and Terra Tech.*

ATCA Member Spotlight

# Kearney & Company

Kearney & Company, a professional audit and advisory firm headquartered in Alexandria, Va., provides strategic, financial, and technological expertise to improve the success and safety of their customers' federal missions. Kearney consults with FAA customers on a broad range of financial, business, and information technology challenges. Consistent with FAA initiatives, Kearney's advisory services integrate risk management, modernize the technology and infrastructure, and support training and skill development to empower the FAA workforce.

Kearney supports a broad range of program management efforts, safely managing the roadmap of activities from the current environment to phased-in operations to full operating capability. They support good program governance with strategies and priorities, structure and membership, collaboration, communication, and compliance. Kearney's Enterprise Risk Management (ERM) practice integrates best practices in internal control, enterprise-wide automated measures and monitoring, and a risk-based approach to ERM strategy and oversight. We emphasize ongoing tracking and quality performance in recommendations and current project roadmaps.

Training and workforce development is paramount to charting the course toward new initiatives or improved performance. Kearney's Workforce Development approach assesses needs, performs competency assessments, analyzes workforce knowledge gaps, maps training gaps to courses, and creates and communicates career paths. Our program management customers include geographically dispersed and government-wide program implementations, service providers with growing impact across government, and federal grant programs, safeguarding billions in taxpayer dollars for vital public interests.

*Want to know more about Kearney's team members on the FAA Financial Integrated Support Services Contract? Contact John Argodale at 703 931 5600.*

KEARNEY& COMPANY
www.kearneyco.com


*Image courtesy of Kearney & Company*

# ATC Reform is Major Theme of 15th Annual Aviation Summit

By Kristen Knott, ATCA Writer and Editor

Collaboration has been the aviation buzzword of this decade, which was made clear by the many aviation government officials and industry leaders who took the stage on March 22 at the U.S. Chamber of Commerce Foundation's 15th Annual Aviation Summit in Washington, D.C. The event provided a comprehensive overview of key issues facing the industry today and a forecast for the future of aviation. Of the many common threads covered throughout the one-day event, ATC reform was at the top of the list. Over the course of the day, many panelists didn't hesitate to voice their support for reforming the ATC system.

## Event takeaways

"What we liked about that bill was the plan to move ATC out of the 1950s and into the 21st century … This reduction of capacity will have ripple effects … The Senate, in our opinion, took the easy way out … We don't need another plain vanilla FAA reauthorization … We're in the golden age of flying. We're doing everything in our power to keep it that way. We'd like Congress to do the same."

– Nick Calio, President and CEO, Airlines for America (A4A)

"[The proposed solution has] taken on the tone of the [U.S.] Presidential race … We must work together for the greater good … We must set aside turf wars … There's nothing radical or unusual about this reform … It is coming at the right time. Saying we can't do it because it's too hard is selling ourselves short … The U.S. is falling behind the rest of the world … Our ability to lead will be increasingly superseded. We'll be treading water at best."

– W. Douglas Parker, Chairman and CEO, American Airlines Group

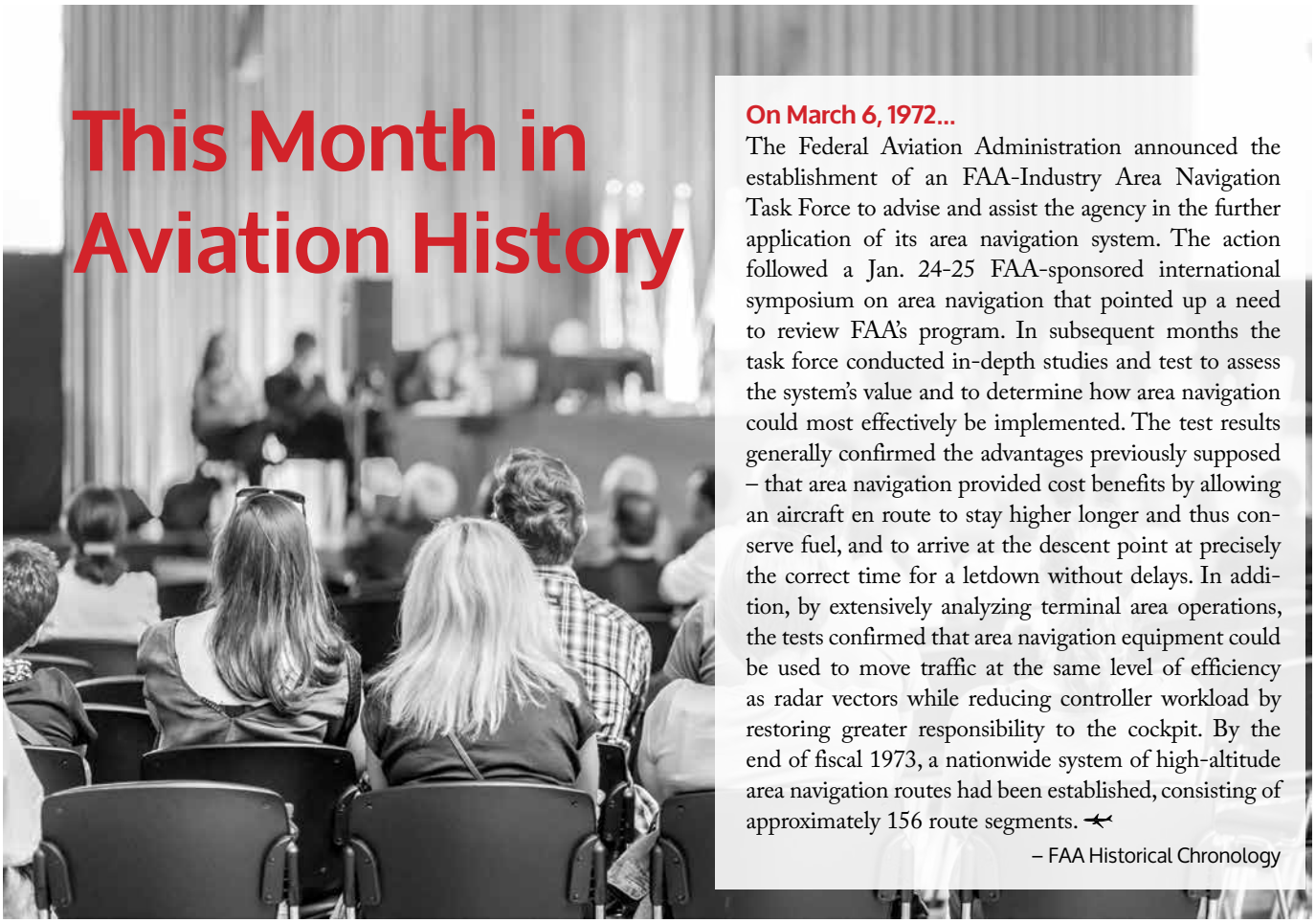
"Deregulation has been the greatest thing for air travelers … We should be the world leaders with a different system – we'll move more quickly … Competition has been extraordinarily good for the American economy."

– Brad Tilden, CEO and President, Alaska Air Group

"It's about corporatizing, not privatizing. [Congressman Bill] Shuster's bill makes a lot of sense … Controllers and pilots are advocating for this change."

– William J. Flynn, President and CEO, Atlas Air Worldwide Holdings, Inc.

# This Month in Aviation History



**On March 6, 1972...**

The Federal Aviation Administration announced the establishment of an FAA-Industry Area Navigation Task Force to advise and assist the agency in the further application of its area navigation system. The action followed a Jan. 24-25 FAA-sponsored international symposium on area navigation that pointed up a need to review FAA's program. In subsequent months the task force conducted in-depth studies and test to assess the system's value and to determine how area navigation could most effectively be implemented. The test results generally confirmed the advantages previously supposed – that area navigation provided cost benefits by allowing an aircraft en route to stay higher longer and thus conserve fuel, and to arrive at the descent point at precisely the correct time for a letdown without delays. In addition, by extensively analyzing terminal area operations, the tests confirmed that area navigation equipment could be used to move traffic at the same level of efficiency as radar vectors while reducing controller workload by restoring greater responsibility to the cockpit. By the end of fiscal 1973, a nationwide system of high-altitude area navigation routes had been established, consisting of approximately 156 route segments.

– FAA Historical Chronology

Matej Kastelic/Shutterstock.com

ATCA
Air Traffic Control Association

The ATCA Bulletin (ISSN 0402-1977) is published monthly by the Air Traffic Control Association.
Periodical postage paid at Alexandria, VA. $5.00 of annual dues are allocated for the publication of the ATCA Bulletin.
POSTMASTER: Send address changes to ATCA BULLETIN, 1101 King Street, Suite 300, Alexandria, VA 22314.



ATCA
Air Traffic Control Association
1101 King Street
Suite 300
Alexandria, VA 22314