



A Conversation with Randy Babbitt Administrator, Federal Aviation Administration

The nation stands on the verge of a new era in aviation. The National Airspace System is one of the largest and safest in the world. It is also one of the busiest. In 2010, more than 700 million passengers flew on U.S. air carriers. With air traffic expected to increase by 50 percent by 2025 and flight delays already causing disruptions in service and a loss of productivity at current capacity, a revamped system is needed to accommodate future growth: a system that will let passengers fly safely with fewer delays and less congestion, while reducing aviation's environmental impact. What is FAA's next generation air transportation system, or NextGen? How will NextGen improve the airspace system? What is FAA doing to continue to be a global leader in aviation? Randy Babbitt, administrator of the Federal Aviation Administration, joined me on The Business of Government Hour to explore these questions and so much more.

On the Mission and History of the FAA

Our mission has been unchanged from day one—it is safety and that's our purpose in life: to make certain that we have the safest air transportation system.

The history of the FAA goes back to the 1920s with the Air Mail Act, followed by the Air Commerce Act. In 1958, Congress created an independent federal aviation agency and in 1966, the Department of Transportation was created, with the Federal Aviation Administration becoming one of the modes within DOT.

[The FAA has] almost 49,000 employees around the nation and world. We have four basic core functions. Clearly, aviation safety is one of them. We regulate airports. We have air traffic control. Today, we have commercial space—as the shuttle sets down we have taken over [the] responsibility to regulate safe operations into commercial space, licensing launches, and reentries. To illustrate the size of our operation, we have 15,000 air traffic controllers that handle about 100,000 operations a day. We transport about two and a half million passengers a day in our airspace ... Each operation entail[s] hundreds of different communications ... to ground control, to the tower, to departure control, and to the



centers en route while navigating. We also certify and inspect airplanes. We do all this with a budget request for 2012 totaling \$18.7 billion.

On the Managing and Leading of the FAA

My job is to, number one, fulfill the mission and make certain every employee has an opportunity to leverage their knowledge and have a sense of fulfillment. We're working very hard to improve the culture of the FAA employees, become more collaborative. We need to find better ways to engage them and leverage all that knowledge, and I think we're succeeding, and I think it is showing.

We never take our eye off safety; safety is our utmost challenge. [With] traffic increasing ... we have to find ways to expand the capacity of the national air traffic system. We're implementing the NextGen technology shift, moving from a radar-based, literally Eisenhower-era type of navigation

system to a satellite-based navigation system. We need to have personnel that are qualified to operate in this next generation system. Some say ... it's going to cost some money to make this shift. I tell them it's going to cost us more money not to make the shift.

On the Next Generation National Airspace System (NextGen)

With NextGen, we're going to transform our national airspace system from grounded, radar-based analog signals ... into a satellite-based navigation system. We're talking about 24 million square miles of airspace [carrying] 15 percent of the world's traffic. This transformation is going to take almost 10 years to fully implement. We're going to have a safer and more efficient system. Our capacity will be enhanced, both in the air and on the ground. Airports, remember, are valuable assets for communities. It's the factory for bringing them goods, services, and people. We want to maximize the value of that asset and NextGen brings us all of the components to do just that.

We're not going to turn off radar navigation one afternoon and then turn on satellite-only navigation. We have a number of areas in the country where satellite-type navigation is in use. For example, Automatic Dependent Surveillance Broadcast (ADS-B)—essentially the GPS in your car—enables air traffic controllers and pilots of equipped aircraft to see airborne traffic, weather conditions, and flight-restricted areas on their ground and cockpit displays. One benefit of this improvement in situational awareness is an increase in their individual and combined ability to avoid potential danger.

On the Benefits of NextGen in Transforming the National Airspace System

The transformation of the National Airspace System through NextGen is going to enhance safety, increase access and efficiency, and improve aviation's overall environmental footprint. If we follow the flight from ... the gate, we have better ground management now with surveillance radar available to us. We are targeting operations on the airport surface to improve efficiency. Service detection equipment allows us to better control ground traffic. When we get in the air, we're going to use more optimized profiles to take us to our destination. A ... sophisticated computer technology ... will separate the traffic for us with minor corrections. I could say [to] two aircraft going across the country, for example, headed to Los Angeles; one left from New York, and another from Boston: go the optimum route, but the one coming from Boston, would you just slow down two knots for me ... instead of going all the way to Los Angeles and then holding for five minutes wasting fuel.



We'll also have the ability to use tailored arrivals—what we call optimized profile descents. Everyone who flies ... is ... familiar [with ... starting] down, level[ing] off, hear[ing] the power come up. Each one of those steps burn[s] a lot of fuel, and the lower you get, the more fuel the airplane burns. When you make an optimized profile descent you go to a point where you can literally close the throttles and the airplane will glide all the way to the airport and burn no fuel. It's the difference between walking down the steps and sliding down the banister. We're doing this in a number of airports. In Seattle, Alaska Airlines is using the optimized profile descents and saving 60-70 gallons of fuel per arrival ... which results in a lower carbon footprint and less noise.

By the way, UPS is using optimized profile descents for all its westbound arrivals into Louisville. When you look at the noise footprints historically, they have shrunk dramatically, about a 50-percent reduction—that's huge. The benefits are being tallied in ways that consumers and the rest of the aviation community value—dollars saved, gallons of fuel usage cut, emissions reduced, and time saved.

On Transitioning from Radar-Based to Satellite-Based Navigation

The radar in use today goes back to World War II; it's very old technology and it has a lot of drawbacks. For example, given the limitations of current radar systems, airplanes going across the Atlantic Ocean must be staggered 50 miles apart. Across the United States, they need to be 20 miles apart. That's the equivalent of permitting a new car on I-95 every three minutes. With the new satellite-based technology—Automatic Dependent Surveillance-Broadcast (ADS-B)—that

is more precise, we can move a lot more traffic. On the ground, we have airport surface detection equipment that enables us to better track airplanes and more precisely see ground traffic. Where this technology is employed it has improved the flow of air traffic. For arrivals and departures today ... vertical and horizontal guidance to a runway [are] straight lines. With the satellite-based system, we can put a series of points in space and create an approach that curves. If we want to know where we're actually using this today, Alaska Airlines goes in and out of Juneau airport with 5,000-foot mountain ranges on either side. They come down a river and make a 90-degree turn, and they land at the Juneau airport. I've done it myself. It's a precision approach. Last year, Alaska Airlines estimated that 729 times using conventional procedures, those flights would have diverted somewhere else.

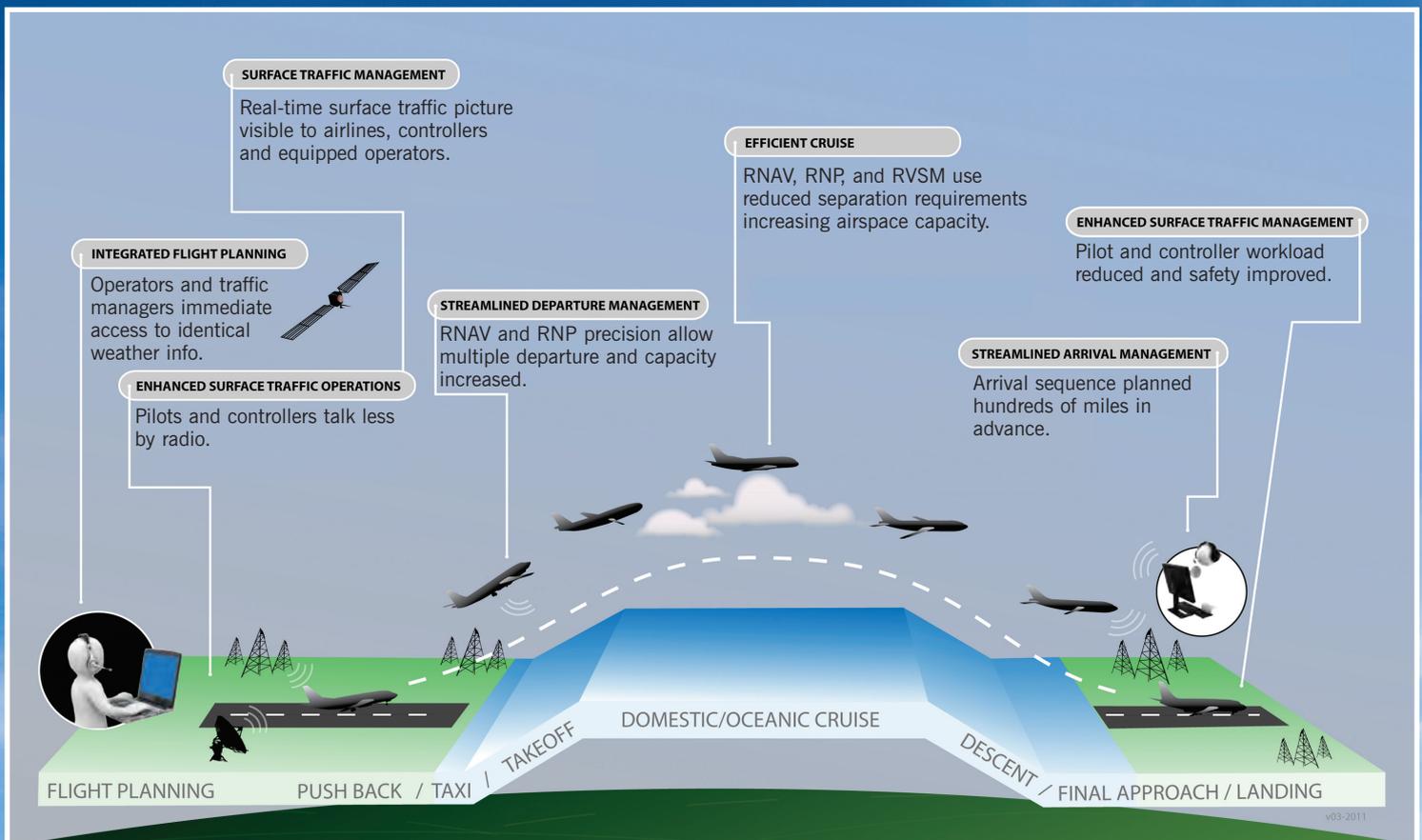
On the NextGen Integration and Evaluation Capability Platform

The NextGen Integration and Evaluation Capability is a fascinating platform—FAA's research platform to explore, to

integrate, and to evaluate NextGen concepts through simulation activities. We have laboratories where we take controllers using the new technology and simulate conditions to load traffic and then see what the NextGen technology will do. We can, then, measure and gauge the performance—that's one stage. The second stage enables us to actually go out and test it in a limited way in the field. Then you can take it system-wide, but we start with rigorous lab testing. Today, I can take you to a laboratory and can show you what air traffic looks like using all the technology that we believe will be deployed in 2014. I can take you two doors down to a laboratory where it's 2018 and we have data link communications.

Today, if you were a pilot going into the New York area [who] encounters a thunderstorm, as your controller I have to pick a route for you to avoid this weather. [I would] offer you a couple of new airways to take you around [the storm]. I read you a clearance. You read it back to me, but you don't like it. This exchange takes time, but with data link communications you can see where the weather is moving and design a route that's optimum for you. The controller can

NextGen PHASES OF FLIGHT Mid-Term



Source: FAA's NextGen Implementation Plan, March 2011

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push a button and it sends its data link to the pilot, which goes right into the flight management computer. The pilot is asked to accept or decline a route. There’s no data entry, no voice communication problems, and no misunderstanding. If you don’t like it, you can reject it. This is going to be a huge improvement in safety and efficiency.

On the Call to Action in Developing New Safety Strategies

I think safety is one of those areas where you never stop. You just have to keep trying to raise the bar at all times. Complacency has no place in aviation and one accident is one too many. We have certainly changed the strategies. We had a serious accident a few years ago [which] showed us areas [where] we had room to improve. We needed to make technological changes in how we do training. It also indicated that we could certainly do a better job of teaching our pilots. We clearly needed to understand fatigue and the management of fatigue better. Most of this has fallen on the carriers, so we had a call to action. Secretary LaHood and I went out to ... ten cities and ... brought pilots together from all over the country. Our message: it’s our business and we need to fix it. We need to do a number of things in data collection, professionalism, how pilots mentor, and transfer experience from experienced pilots to junior pilots. We’ve a new rule on flight and duty rest requirements in development. Every regional carrier now participates in these voluntary reporting programs. Overall, we’ve had a great reaction from the industry.

Thankfully, we have not had a [fatal] accident in this country in two years. We can’t just be happy and complacent. We need to keep focused. I remind people that the miracle on the Hudson was not a miracle. The airplane landed in the Hudson because it had highly qualified air traffic controllers and a highly qualified crew. The airplane was built to withstand that landing. It had equipment that got everybody out of it. There was no miracle involved. It was the process and the product of a lot of safety enhancements that have taken place over a decade so that’s where the safety paid off.

Why NextGen Matters

NextGen is a comprehensive overhaul of our National Airspace System to make air travel more convenient and dependable, while ensuring your flight is as safe, secure, and hassle-free as possible.

- NextGen will be a better way of doing business. Travel will be more predictable because there will be fewer delays, less time sitting on the ground and holding in the air, with more flexibility to get around weather problems.
- NextGen will reduce aviation’s impact on the environment. Flying will be quieter, cleaner, and more fuel-efficient.
- NextGen will help us be even more proactive about preventing accidents with advanced safety management to enable us, with other government agencies and aviation partners, to better predict risks and then identify and resolve hazards.
- NextGen boils down to getting the right information to the right person at the right time. It will help controllers and operators make better decisions.
- NextGen lays a foundation that will continually improve and accommodate future needs of air travel while strengthening the economy with one seamless global sky.
- NextGen will help communities make better use of their airports. More robust airports can help communities attract new jobs, and help current employers expand their businesses.
- NextGen will allow us to meet our increasing national security needs and ensure that travelers benefit from the highest levels of safety.

The safety enhancements that we're making are a result of cooperation with industry and reliance on data. [Given such a solid safety record,] we have to rely more today on data that streams from the aircraft electronically. There was some reluctance by everyone in the early days. This is inviting Big Brother to watch everything I do, isn't it? Pilots learned that the information ... could show operational trends. It's all information, and if properly analyzed, we can make adjustments because this data is showing us that there's a trend we don't like. We need to maybe instruct pilots better about this or show mechanics this data so they can do something operationally different. This was the first level.

The second level is now that we have all this data, why shouldn't we share it among all carriers that operate the same equipment? Clearly, there are some business concerns, but we can redact specific data and put it into a database for everyone to see. The more information and analytics we have, the better off we are to bring safety changes and to provide information to people. It's been a long trek, but we have more to do. We also have programs where one can voluntarily report, without fear of reprisal, when something happens. Don't just be silent about it. I'll give you immunity. That's a huge change in our culture, but it's one worth pursuing.

On Regulating the Next Frontier of Commercial Space

This transformation is well underway. FAA is now responsible for licensing both the launches and the reentries for commercial space flight. Our cooperation and our collaborative arrangement with NASA has been a huge benefit. I think we actually have a little bit of a tail wind advantage, if you would, as I am personal friends with Charlie Bolden, the NASA administrator. He's a terrific guy. They made a wonderful choice there. For example, when NASA began to shut down some of their facilities, we transferred them very simply and efficiently. We wanted a positive outcome and worked together and cooperated on this transfer. FAA also needed new expertise, people with space-based experience. We arranged a job fair. We brought these NASA employees and made them FAA employees.

We've been given authority by Congress to promote commercial space. We're encouraging people to develop low-cost, low-earth orbit reusable vehicles. We're exploring the use of innovation prizes. It's a very exciting time for us—a new frontier with great opportunity.

On Being a Global Leader in the Aviation Community

I began to get calls from people from other countries always asking me: how does the FAA do it? I realized the great



Virgin Galactic will establish its headquarters and operate its space flights from Spaceport America, the world's first purpose-built commercial spaceport which is now under construction.

esteem and respect the FAA has around the world. Though I don't want to sound like I'm bragging, we run the biggest system in the world with the lowest accident rate. I mean, clearly, it's not the gold standard. It's the platinum standard. To that end ... it's a great opportunity for us to share our expertise and enhance air travel and safety around the world. We should be striving to make sure everybody has the same standards and the same level of safety that we have.

On the Future

I think one of the biggest opportunities is embracing the array of technology that is available to us. If we can leverage it into our system, then it can help to make the system safer, more efficient, and increase its capacity. I think the other opportunity we have is the challenge for employees. I have a great deal of respect for the people that work at the FAA. We have a wonderful team of employees. I want to make sure that they're technically challenged and rewarded for success. You know, at the end of the day, I don't want people saying, well, thank goodness it's five o'clock. I want people to say, gee, this day ended. We had a great day. I'm happy with what I did today. I made a contribution. ■

To learn more about the FAA, go to www.faa.gov



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