

An FAAMA Interview:

Dr. Karlin Toner

Director, JPDO

In 2003, Congress established the Joint Planning and Development Office (JPDO) to plan and coordinate the development of the Next Generation Air Transportation System (NextGen), creating a multiagency public/private initiative that includes: the Department of Transportation (DOT), Department of Defense (DOD), Department of Commerce (DOC), Department of Homeland Security (DHS), Federal Aviation Administration (FAA), National Aeronautics and Space Administration (NASA), and the White House Office of Science and Technology Policy (OSTP).

The JPDO brings together all of these partners to work collaboratively in planning, designing, and implementing the NextGen initiative. However, working with so many different organizations is a challenge, and managing this task requires an extensive level of outreach, information sharing, collaboration, and negotiation.

In rebuilding America's aviation infrastructure, some consider the JPDO a new paradigm in government management because the scope of the mission is demanding new ways of planning, making decisions, allocating resources, and generally reacting to myriad new opportunities and challenges.

In February 2010, Dr. Karlin Toner was named Director of the JPDO, and charged with facilitating and coordinating NextGen development. Dr. Toner also serves as the Senior Staff Advisor to the Secretary of Transportation for NextGen, a role she has held since January 2009.

In spring 2011, Dr. Toner graciously agreed to be interviewed by Managing the Skies. Rich Baker, Front Line Manager, ZDC Air Route Traffic Control Center (ARTCC | Washington Center), and Eastern Regional Director of the FAA Managers Association, conducted the interview.

The JPDO's mission is to ensure that NextGen is realized by the year 2025. As the JPDO executes the NextGen Integrated Plan, described in the Vision 100—Century of Aviation Reauthorization Act, the office identifies, facilitates, and integrates activities, commitments, and contributions of government partners, industry, and other key stakeholders. The JPDO's mission is one of change management and is performed collaboratively and with transparency.

Q: *You've been Director of the JPDO for about a year and a half. Have you discovered any new challenges?*

Toner: The JPDO is particularly challenging because everything is handled from

an interagency perspective. While the DOT and FAA are central to NextGen – charged with implementing and operating the new air traffic system – we also bring in NASA, DOC, DOD, and DHS. Part of my job is to bring in the various pieces from all of the partners that will ultimately contribute to the success of NextGen. In this office, you manage a lot of sometimes conflicting influences. In total, we have seven agencies to represent, even though the FAA is core. One of the questions I have to ask when I decide how to prioritize is “does it involve two agencies?”

That said, we were able to engage our Senior Policy Committee, chaired by Secretary of Transportation Ray LaHood and populated by cabinet members from other agencies, to work with them earlier this year on Integrated Surveillance. With Integrated Surveillance, you are trying to get a common operating picture so that DHS, FAA, and DOD can see the same data at the same time.

If we are successful with NextGen, we may be spacing air traffic more closely, which means we may have less time to respond. I say “may” because I don't know for sure yet – but we want to be very clear in those situations. We are trying to achieve a common operating picture, fusing the data and giving everybody access to the same data.



I think the toughest challenge at the JPDO is working in the multiagency arena. Our role is facilitation and coordination. I don't do the research, I don't operate the system, and I don't deploy anything. So, some people would say "what do you do?" My job is to make sure I get all of our partners to the table.

One example of this is weather. The FAA has a huge investment in weather, and NOAA does advanced weather prediction. The FAA may have specific requirements for weather prediction – accuracy, speed, how often it needs to be refreshed. You want to see these products coming out of NOAA's aviation weather forecasting to the FAA air traffic controllers, but you also want them to be at the same time – you want them synchronized. This is where the JPDO can play a role.

Q: How do you think your NASA background contributes to the leadership of the JPDO?

T: I have a technical background which is useful, but since I have a PhD in aerospace engineering, I am more of an engineer than a scientist. I ask questions and want to understand what the problem is from a technical standpoint. Without that background, I might not ask some of those questions.

Back in 2004, I was a NASA researcher, supporting the JPDO and the integrated product teams, and part of my job was to put every piece of research I could possibly imagine and put it into the JPDO plan. We were working on the plan from the bottom up. After this, I went

to NASA Headquarters and managed their research program where I also had people staffing the JPDO activity – so I've been working with JPDO for a long time.

Now I'm inside the JPDO, and we are living in a very different time. In 2004 there was no NextGen in FAA per se. The NextGen moniker came about two years later. In the early years, the JPDO was doing a totally new thing and working to get the ideas out there. By the time 2010 arrived, we were already in implementation. A lot of our initial ideas were visionary. Now we need to take steps to make implementation tangible and real.

Look at the aviation world we have today. We've had volcanic ash. We've had an economic downturn. We've had airline bankruptcies. We have to say what we need today. Now I have to ask, "How do I step through that broad vision and roll it out?" It's a very different time now.

Q: With all of the talk about cutting back on government spending, have any decisions been made regarding the budget for NextGen and its financing?

T: In 2009, I spent the year over at DOT supporting Secretary LaHood on NextGen. I sat directly next to the Chief Financial Officer at DOT, so I had a lot of active participation in the 2010 budget cycle for FAA, and for NextGen in particular.

In 2011, I've had a lot of interaction working with the different interagency pieces. Our country has fallen on tough economic times and some very hard choices have to be made. But I also think that you will see a White

House that says that NextGen is a presidential initiative.

Now is the time to make tough prioritization decisions – it is vital that our government invests in our nation's air transportation system.

Q: DOT Secretary LaHood's Future of Aviation Advisory Committee (FAAC) suggested that the Federal government assist in funding the installation of NextGen equipment on aircraft.

T: I worked with the FAAC off and on, both through the development of its charter and during the work of its five committees – environment, safety, workforce, financial incentives, and competition. Ultimately, I think all of the FAAC recommendations are right on target and Secretary LaHood is committed to addressing them.

In terms of financial incentives and equipage, we are working with the White House, DOT, and FAA in looking at what is possible. We know that the airlines absolutely have to be equipped to take advantage of the advanced capabilities of NextGen, so we are looking at a range of options.

Q: MITRE Corporation and MIT/Lincoln Laboratory issued an "Independent Assessment of the ERAM Program," stating that En Route Automation Modernization (ERAM) will be \$330 million over budget and won't reach operational readiness until August 2014. Can the JPDO help mitigate the problems?



T: The good news with ERAM is that we are conducting field tests at two sites right now.

One of the things I learned at NASA is that when you are looking at new capabilities, it is critical to field test—really test software and new capabilities in an operational setting. There is no way to bring out all of the potential issues in a laboratory environment.

But in regards to NextGen, I believe people are confident that they can roll out this initiative on a new, but slightly delayed schedule. The JPDO is monitoring the implementation because it definitely impacts what you can add down the road. It has to be realistic and deployable. We've got to make the platform stable.

However, the JPDO is not in a position to mitigate the ERAM deployment problems – that's not our mission. That would be an FAA implementation role. Where we have to be smart is in understanding what a realistic deployment schedule is, so that we can make recommendations on options for next steps as we advance NextGen. And I say recommendations because we still have to consider the details with the various partner agencies.

Q: In Europe, the single common reference for the future of air traffic management (ATM) is the European ATM Master Plan. Is the JPDO working with EUROCONTROL with respect to compatibility?

T: It's interesting. GAO is starting a study on global harmonization. In fact, I'm briefing GAO this afternoon to kick off their study.

Essentially, NextGen is the US version of advancing air traffic transportation, while SESAR is our counterpart in Europe. SESAR is an activity under the European commission and EUROCONTROL. We are actively working to harmonize NextGen and SESAR.

One of the things we did last year at the JPDO was to initiate a study of the operational improvements that are in the US architecture against the operational improvements in the SESAR architecture. I think you'll begin to see us initiating more activities toward global harmonization.

We do have a Global Harmonization Working Group that focuses on trying to make certain that the concepts work together. They don't have to match – they just have to be interoperable. We can't be a global leader in aviation if we are not interoperable with Europe and with the rest of the world.

Q: Congress is calling for closer cooperation between the FAA and Congress on NextGen implementation. Is the JPDO involved?

T: Since I have been on board at the JPDO, I've made it a point – to the extent to which it is appropriate – to make certain that I keep the Congress informed of our activities and concerns from a multiagency point of view.

When NextGen was first talked about, it was a vision for 2025. But now we are making incremental progress along the way.

In fact, we are rolling out NextGen all the time. As soon as we get a foundational step in place, we will go to the next step, and as that matures, we will go to the next step. It really is a dynamic system. And we will keep improving it until we have the best possible system in place.

Q: Is the JPDO researching how the Unmanned Aerial systems (UAS) program will fit into the National Airspace System (NAS)?

T: Our charter says that we will enable planning that ensures access for all types of users, including UAS.

It is an interesting question with UAS. Ultimately, we'd like them to perform like an aircraft. If they perform like an aircraft

in the system, then they are not different. We know that they have some different characteristics though. We know that UAS may not behave in predictable ways. If they are not predictable, what should an air traffic controller do?

Regarding UAS, we looked across government and found a large new research program starting at NASA. Also, the Air Force has a solid investment in UAS research, while the FAA has investments both in UAS operations research and integration research.

The JPDO's role is not in management by exception. Our job is really in determining if we have the underpinnings in NextGen planning for 2025 to ensure that as UAS vehicles mature, the NextGen system can integrate them seamlessly.

Ultimately, the JPDO is staying out of operations – out of today's integration problems. That's not our job. However, the JPDO is developing a strategic plan that will guide research, development, and demonstrations.

Q: Is the JPDO involved with SWIM?

T: The SWIM piece – System-wide Information Management – that's where the Air Force is very involved at the JPDO. The Air Force brings their expertise, what they call a net-centric operation, which really links right into SWIM.

SWIM is the IT backbone, it is the infrastructure that we need in place if we are going to do integrated surveillance, if we are going to do UAS integration across government. If we are going to have all of the pieces talk to each other, the key is SWIM.

I've challenged the JPDO team to think about the air traffic problems that net-centricity solves rather than focus on improving IT techniques. In fact, accelerating net-enabled aviation system operations to achieve greater data-sharing efficiencies is one of the JPDO's priorities right now.

Q: With the tough road ahead, are there some signs of success or progress you can share with the readers of Managing the Skies?

T: A great example of this is the NextGen Institute, which is part of the JPDO. We are charged with involving and engaging industry in the planning of NextGen, and the Institute provides me with a number of positive capabilities.

As a non-profit, the Institute provides a way for aviation industry stakeholders to meet and debate their various opinions without the possibility of conflict of interest. It enables them to get to work finding solutions, which is what the industry really wants to do.

The NextGen Institute was created in March 2005 to: enable partnerships

between the government and private sector on goals and priorities and definition, development, and implementation of NextGen; establish a mechanism for gathering and applying the best expertise in support of NextGen; encourage development of transformational ideas; and sustain a long-term undertaking by jointly supporting solutions and coordinated investments.

For more information or to get involved, check out the Institute's website at www.ncat.com/ngats/index.html. ■

ABOUT DR. KARLIN TONER

Dr. Toner has 20 years of experience with the National Aeronautics and Space Administration (NASA). From August 2006 to December 2008, she served as Director of the Airspace Systems Program at NASA Headquarters in Washington, DC. Prior to this, Dr. Toner held several key positions in aerospace and aeronautical planning and research while working at the NASA Ames Research Center in Moffett Field, California.

From July 2005 to August 2006, Dr. Toner was the Associate Director for Aeronautics, charged with developing long-range technical and resource plans for aeronautical projects. Prior to that assignment, she established and managed the Aerospace Operations Modeling Branch. This organization provided a focal point for the modeling and simulation of air traffic operations within NASA.

Dr. Toner was a lecturer in the Aerospace Engineering Department at San Jose State University from 1991 to 1994. Her technical publications include papers on aircraft aerodynamics and design, computational physics, and the analysis of air traffic systems.

Dr. Toner earned a NASA Exceptional Achievement Medal and is an Associate Fellow of the American Institute of Aeronautics and Astronautics. In 2011, Dr. Toner received the University of Florida's Department of Mechanical & Aerospace Engineering Outstanding Alumnus Award and the Distinguished Alumni Award from Indiana University of Pennsylvania.

Dr. Karlin Toner holds doctoral and master's degrees in Aerospace Engineering from the University of Florida, along with an honorary doctoral degree in Science and a bachelor's degree in Applied Mathematics from Indiana University of Pennsylvania.

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