

Meeting Summary, June 3, 2014
NextGen Advisory Committee (NAC)

The twelfth meeting of the NextGen Advisory Committee (NAC) was held on June 3, 2014 at the Headquarters of RTCA, 1150 18th Street, Suite 910, Washington, D.C. The meeting discussions are summarized below.

List of attachments:

- Attachment 1 - Attendees
- Attachment 2 - Presentations for the Committee meeting - (containing much of the detail about the content of the material covered)
- Attachment 3 - Approved February 20, 2014 Meeting Summary
- Attachment 4 - NAC Chairman's Report
- Attachment 5 - FAA Report from The Honorable Michael Whitaker, FAA Deputy Administrator
- Attachment 6 – NextGen Works for America: CNO Update to Congress Report
- Attachment 7 - Recommendation Wake Recategorization

Welcome and Introductions

NAC Chairman, Bill Ayer (Airlines for America) called the meeting to order and welcomed the NAC members and others in attendance. All NAC members and attendees from the general public were asked to introduce themselves (attendees are identified in Attachment 1). Chairman Ayer recognized two new Committee members: Mark Baker, President and CEO of the Aircraft Owners and Pilots Association; and Jeff Martin, Senior Vice President, Operations of JetBlue. The Chairman also thanked outgoing NAC Member Arlene Mulder for her service to the NAC since 2011 as the representative for communities.

He also thanked Frank Brenner, Director General, Eurocontrol and Florian Guillermet, Executive Director, SESAR Joint Undertaking for the pre-meeting discussion with the Committee on the latest developments concerning Single European Sky and SESAR. This included an update on planning, research and operational implementation.

Designated Federal Official Statement

In his role as the DFO, The Honorable Michael Whitaker (FAA Deputy Administrator) read the Federal Advisory Committee Act notice governing the open meeting.

Approval of February 20, 2014 Meeting Summary

Chairman Ayer asked for consideration of the written Summary of the February 20, 2014 meeting. The Committee approved the Summary (Attachment 3) with no revisions or objections.

Chairman's Remarks

Summary of the remarks made by Chairman Ayer (Attachment 4 for complete report):

He stated that this is the twelfth meeting of the NAC, since its inception in 2010 and that he continues to be impressed with the commitment from the aviation industry and the engagement from the leadership at the FAA, Deputy Administrator Mike Whitaker; Assistant Administrator for NextGen Ed Bolton; Chief Operating Officer for the Air Traffic Organization Teri Bristol; and the Aviation Safety Organization headed by Peggy Gilligan, represented on the NAC by her Deputy, John Hickey.

He explained that these individuals and members of their staff, along with the industry leadership of Steve Dickson from Delta Air Lines and Melissa Rudinger from AOPA, and the more than 100 industry volunteers are engaged in the “herculean” effort to implement near-term NextGen capabilities.

Chairman Ayer emphasized the “landmark moment” in the life of the Committee at the fall meeting, when the NAC approved a comprehensive set of Tier 1 and Tier 2 priorities for NextGen investments that are intended to help shape the future of NextGen and ensure its long-term viability.

He summarized that since then, the industry and the FAA, under the NextGen Integration Working Group (NIWG), have been conducting deep dives of four top priority capabilities to identify prerequisites for successful deployment at specific sites.

NIWG Co-Chair Steve Dickson reviewed the Industry and FAA Team leadership, timeline and work plan for the following priority areas: Closely Spaced Parallel Runways, DataComm-enabled Controller-Pilot DataLink Communications (CPDLC) and pre-departure clearances, Performance Based Navigation (PBN) and Surface and Data Sharing. The final recommendation will be presented to the NAC for its approval in October. Congress also established reporting requirements of May 15, July 28 and October 18, 2014.

NIWG FAA Team Lead Ed Bolton commented that there is recognition of the need to transition from planning to implementation. He also explained that the FAA would be using the NAC, NACSC and Industry Team leads as a venue for coordination throughout the process for tracking the implementation of the recommendations. The NextGen Performance Snapshots would also track the effectiveness of new capabilities as they are being implemented. Mr. Dickson volunteered industry’s assistance in working with the FAA to ensure that metrics evaluate the areas of interest to the travelling public. Reduced taxi-times, for example, reflect the interdependencies of the four focus areas that can help increase predictability.

Mr. Bolton commented that there is a need for clear, definable, simple goals with understandable metrics. He suggested that a Red/Green/Yellow intuitive approach would help satisfy the need to illustrate the benefits of NextGen.

A Committee Member reiterated Mr. Bolton's points about the need for a better understanding of the goals for NextGen and what can be expected as outcomes. He emphasized the importance of having simple to understand, clearly defined goals. Another Committee Member described the integration of cockpit based technologies that the NAC saw demonstrated at its previous meeting in Phoenix as an example for the need to integrate NextGen capabilities. The Member then referenced the system used in Honeywell factories for tracking progress and identifying issues early and allowing for coordinated responses – explaining that the industry and the FAA need to have an open and transparent approach to implementation. Chairman Ayer emphasized that what we are attempting to accomplish is complicated, but we need to be honest about how things are progressing.

Ayer then explained that the purpose of this initiative is to deliver tangible benefits and increase the community's confidence in NextGen by deploying these four capabilities in the next 1-3 years. This may be our "last, best chance" for some near-term benefits from NextGen and the associated increase in support for NextGen. A big stumble here may jeopardize industry confidence. On the other hand, the best outcome is not only success in these four areas, but establishing a new way of joint industry/FAA functioning using new processes that become the standard.

The final integrated implementation plan along with recommendations for tracking implementation progress will be considered at the NAC October 8 meeting.

Chairman Ayer concluded by expressing his belief that it is important to recognize that October is really the beginning, and not the end, of this new process. He stated that we are working to determine appropriate follow-up mechanisms and formats to hold the industry and the FAA accountable for the commitments being made by tracking progress, identifying problems early and resolving them together.

FAA Report

Mr. Whitaker presented the FAA report (Attachment 5). He gave an update on staff changes including the new role of Teri Bristol as Chief Operating Officer for the Air Traffic Organization; Rich Swayze as the Assistant Administrator for Policy, International Affairs & Environment; and Eduardo Angeles as the Assistant Administrator for Airports.

In his role as Chief NextGen Officer, Mr. Whitaker presented the following highlights from the NextGen Works for America: CNO Update to Congress Report (Attachment 6):

Completing the foundational infrastructure of NextGen

- The ground installation of the baseline ADS-B infrastructure of more than 630 radio transceivers nationwide was completed last quarter.
- ERAM will be completed in the first quarter of the next calendar year, which means we will be able to decommission the Host system.
- TAMR will refresh the technology in our major TRACONS by 2016.

He reviewed the two-year budget framework passed by Congress in December 2013 that provides some degree of certainty and temporarily avoids the cuts under the sequester. Regardless of how the 2016 budget plays out, the levels of funding are still well below what was anticipated just a few years

ago. The FAA still needs to find ways to operate more efficiently and provide services within our budgetary limitations and to “right-size” the NAS.

With the expiration of the current FAA authorization expiring in September 2015, the FAA is turning to the Management Advisory Committee for input on the mission, structure and processes of the FAA, and potential changes to governance and funding going forward.

FAA-SESAR Report On Areas of Cooperation

Mr. Bolton and Florian Guillermet, Executive Director, SESAR JU, shared the areas of major collaboration between the FAA and SESAR.

- ICAO Global Air Navigation Plan (GANP) & Block Upgrades - SESAR & FAA were major contributors in writing of the Plan, Europe & US were instrumental in securing passage of GANP at ICAO Assembly. Written to allow flexibility of implementation based on each country’s needs, capabilities, & resources (i.e., not a one-size-fits-all approach,) and enabled by global standards and guidelines).
- NextGen & SESAR continue engagement through High-Level Committee, technical groups & other means under the Memorandum of Cooperation between the US and the EU.
- SESAR & FAA Commitment to Improved Global Information Management - Integration of Europe’s SESAR Global SWIM and FAA’s Mini Global II Programs during 2015-16, continued discussions to link these programs with the collaboration on FIXM, AIXM & WXXM models.
- Joint participation under consideration for the ICAO Block Upgrades Demonstration Symposium & Showcase (BUDSS) in 2015.
- DataComm - Agreement exists on how to reach a harmonized message set, additional initial material provided by the FAA to RTCA to move towards next release of the standard from 2015 and continue to work towards synchronization of implementation planning.

NextGen Highlights

Mr. Bolton and Ms. Bristol presented a briefing addressing the seven major NextGen infrastructure programs that the FAA is tracking closely to advance and enhance NextGen through 2016. They also reviewed the NAC’s Priorities and the NIWG process timeline.

Highlights covered:

- Data Communications (DataComm): Prototype trials continue at Memphis and Newark, and data is being collected. The FAA has made significant progress on the avionics equipage front. Harris Corporation has commitments from 6 airlines to equip 1,500+ aircraft with the needed avionics; the goal is 1,900.
- NAS Voice System: The FAA completed acceptance testing; installed equipment at Technical Center and FAA Academy; completed NextGen/Validation Demonstrations on January 9, 2014;
- SWIM: System Wide Information Management completed the first NextGen capabilities package in September 2013 with the completion of the On-Ramping of Corridor Integrated

Weather System (CIWS) and Weather Message Switching Center Replacement (WMSCR) using SWIM NAS Enterprise Messaging Service (NEMS) Services.

- Surveillance-ADS-B: NAS Wide Pilot Advisory Services- Traffic and Weather June 2014; The FAA completed NAS-wide traffic and weather (traffic and weather broadcast services (TIS and FIS) by June 2014.
- Automation:
 - Terminal Flight Data Manager: Completed Initial Investment Decision by March 2014.
 - Terminal Flight Data Manager: Surface Visualization Tool, “Surface Viewer”, prototype system developed at the Volpe Center had its Initial Operating Capability (IOC) at Southern California TRACON (SCT) in April 2014. This allows TRACON controllers to see aircraft movement on the surface to facilitate departures at Southern California airports.

Timeline for NextGen Integration Working Group

- May 28 Interim Report to Congress
- October 8 NAC Approval
- October 18 Final Report to Congress

NextGen Integration Working Group

NIWG Co-Chair Melissa Rudinger reviewed the Assumptions and Guiding Principles that were followed by each Team of the NIWG. The Industry Leads and the FAA Subject Matter Experts (SMEs) for each Team presented a report on the membership, status of the work product and emerging areas of consensus.

- **Closely Spaced Parallel Runways Multiple Runway Operations**
 - FAA SMEs: Tom Skiles (ATO), Paul Strande (NG)
 - Industry Leads: Glenn Morse (UAL), Jon Tree (The Boeing Company)

The Multiple Runway Operations Team presented the NAC with a recommendation (Attachment 7) related to Wake Recategorization (ReCat). This FAA initiative replaces the existing weight based wake turbulence separation categories with approved wake turbulence categories that more optimally group aircraft based on their wake turbulence characteristics. The recommendation approved by the NAC requests an increase in the number of ReCat locations in FY14 and FY15 to a minimum of eight.

- **DataComm-enabled Controller-Pilot DataLink Communications (CPDLC) and pre-departure clearances**
 - FAA SMEs: Jessie Wijntjes (ATO), Paul Fontaine (NG)
 - Industry Leads: Dan Allen (FedEx Express), John O’Sullivan (Harris Corporation)

Mr. Allen raised the issue of the FAA’s Data Recorder rule that may discourage airlines from signing MOUs to equip their aircraft with DataComm technology under the FAA’s incentive system. (The rule requires the installation of equipment to record DataComm information and responses by air crew.) It was recognized that additional work will be done with the FAA Office of Aviation Safety to

determine if an alternative to the rule could be developed to encourage participation in the DataComm program.

- **Performance Based Navigation (PBN)**

- FAA SMEs: Josh Gustin (ATO), Donna Creasap (NG)
- Industry Leads: Gary Beck (Alaska Airlines), Steve Fulton (GE Aviation)

The presenters discussed the PBN Team’s initial work that has identified both implementation opportunities as well as areas that can support future implementations but require safety assessments and/or business case analysis. The Team Leads emphasized the importance of having the flexibility for both types of recommendations to achieve industry consensus and develop a recommendation that will improve the implementation and use of PBN approaches. The Committee engaged in a discussion about the need for addressing different “flavors” of PBN to address the operating goals, as well as mixed equipage that affects the capability of aircraft to fly certain types of procedures.

- **Surface and Data Sharing**

- FAA SMEs: Lorne Cass (ATO), Nick Lento (NG)
- Industry Leads: Rob Goldman (Delta Air Lines), Steve Vail (Mosaic ATM, Inc.)

The Team Leads emphasized the role of metrics to evaluate the effectiveness of surface capabilities. They also stressed the importance of improved surface operations in the New York area that are under development in the recommendation.

PBN Blueprint Task Group

Task Group leaders Mr. Jim Crites from Dallas/Fort Worth International Airport and Mr. Brian Townsend from US Airways/American provided an interim report on the Blueprint for Performance-Based Navigation Procedures Implementation Tasking from the FAA. The PBN Blueprint Task Group is developing a report identifying and capturing the lessons learned from PBN implementations across the country and building on those lessons. This work will include a “checklist” that is an important compliment to various PBN efforts across the country. The Task Group will present the final recommendation at the next NAC meeting.

PBN Implementation Experiences

The meeting concluded with briefings highlighting two successful PBN initiatives. Dennis Roberts from the FAA and Ron Renk from United Airlines presented details on the FAA’s late May launch of the Houston Metroplex. This was followed by Mike McKee of Denver International Airport who reviewed the Denver PBN experience. The presentation provided the Committee with the opportunity to hear about real-world PBN implementation from an airport perspective.

Recap of Meeting and Anticipated Issues for NAC consideration and action at the next meeting

Chairman Ayer concluded the meeting by reviewing the following actions from the meeting:

- 1.) NIWG Final Recommendation – presented to the Committee on October 8
- 2.) PBN Blueprint Final Recommendation – presented to the Committee on October 8
- 3.) Tracking System/Future NAC Engagement on NIWG – Chairman Ayer, Industry Leads and Mr. Whitaker and the FAA Leadership will develop a plan that will be presented to the Committee in conjunction with the NIWG Final Recommendation

Other business

None was offered.

Adjourn

Chairman Ayer ended the meeting of the Committee at 3 p.m.

Next Meeting

The next meeting of the NAC is October 8, 2014 in Washington, D.C.

Attendees:
June 3, 2014 Meeting of the NextGen Advisory Committee
Washington, DC

Name¹	Company
Allen, Dan	FedEx Express
<i>Ayer, Bill</i>	<i>Alaska Airlines</i>
<i>Baker, Mark</i>	<i>Aircraft Owners and Pilots Association</i>
Barthel, Rebecca	Federal Aviation Administration
Batchelor, David	SESAR Joint Undertaking
Baum, Chris	ALPA
Beck, Gary	Alaska Airlines
Belger, Monte	Metron Aviation
Bertapelle, Joe	JetBlue Airways
<i>Bolen, Ed</i>	<i>National Business Aviation Association</i>
<i>Bolton, Ed</i>	<i>Federal Aviation Administration</i>
Bousquet, Sophie	RTCA, Inc.
<i>Brenner, Frank</i>	<i>EUROCONTROL</i>
<i>Bristol, Teri</i>	<i>Federal Aviation Administration</i>
Carruthers, Ginny	Alaska Airlines
Cass, Lorne	Federal Aviation Administration
Cebula, Andy	RTCA, Inc.
Challan, Peter	Harris
Cirillo, Mike	Airlines for America
Crites, Jim	DFW Airport
Croft, John	Aviation Week
Davis, Mel	NATCA
<i>De Leon, Ben</i>	<i>Federal Aviation Administration</i>
Denning, Jana	Lockheed Martin
<i>Diaz, Mario</i>	<i>Houston Airport System</i>
Dickson, Steve	Delta Air Lines
Engola, Paul	Lockheed Martin
<i>Esposito, Carl</i>	<i>Honeywell International, Inc.</i>
Fernandez, William	PASS
Findlay, Douglas	PASS
Fontaine, Paul	Federal Aviation Administration
Frazier, Geoffrey	Federal Aviation Administration
Fritz, Trish	Federal Aviation Administration
Fulton, Steve	GE Aviation
Gibson, Marke	Mexican Institute
Gilbert, Trish	NATCA
Gomez, Pamela	Federal Aviation Administration

¹ Committee members names appear in italics.

<i>Gray, Bob</i>	<i>ABX Air</i>
<i>Guillemet, Florian</i>	<i>SESAR Joint Undertaking</i>
<i>Hamiel, Jeff</i>	<i>Metropolitan Airports Commission</i>
Hamy, Marc	Airbus
Hanlon, Dan	Raytheon
<i>Harris, John</i>	<i>Raytheon Systems Company</i>
Hennon, Simon	Raytheon
<i>Hickey, John</i>	<i>Federal Aviation Administration</i>
<i>Hill, Stephanie</i>	<i>Lockheed Martin Corporation</i>
Hyde, Shaunta	Boeing
Ireland, Robert	Airlines for America
Iversen, Jennifer	RTCA, Inc.
<i>Jenny, Margaret</i>	<i>RTCA, Inc.</i>
Joly, Pascal	Airbus
Kasey, Richard	PASS
Kearns, Kathleen	SITA
Kenagy, Randy	Raytheon
Klein, Matthew	Federal Aviation Administration
Lento, Nick	Federal Aviation Administration
Li, Bryon	ATAC
Lou, Mary	Federal Aviation Administration
<i>Martin, Jeff</i>	<i>JetBlue Airways</i>
<i>Moak, Lee</i>	<i>Air Line Pilots Association</i>
Mohler, Gisele	Federal Aviation Administration
Morse, Glenn	UAL
<i>Mulder, Arlene</i>	<i>O'Hare Noise Compatibility Commission</i>
Narvid, Colonel Juan	DoD Policy Board on Federal Aviation
<i>Rankin, Jim</i>	<i>Air Wisconsin</i>
Ray, Lynn	Federal Aviation Administration
<i>Rinaldi, Paul</i>	<i>National Air Traffic Controllers Association</i>
Roberts, Dennis	Federal Aviation Administration
Robinson, Courtney	AIA
Roller, Kirk	Boeing
Ross, Ian	Federal Aviation Administration
<i>Ryals, Lillian</i>	<i>The MITRE Corporation</i>
Scott, Michael	OIG
Shellebarger, Nan	Federal Aviation Administration
Skiles, Tom	Federal Aviation Administration
Smith, Stephen	ATAC
Spurio, Kip	Federal Aviation Administration
<i>Swayze, Rich</i>	<i>Federal Aviation Administration</i>
Townsend, Brian	American Airlines
Wei, Victoria	Federal Aviation Administration

¹ Committee members names appear in italics.

Whitaker, Mike
White, Beth
Wijntjes, Jesse
Zimmer, Dawn

Federal Aviation Administration
Federal Aviation Administration
Federal Aviation Administration
Federal Aviation Administration




**Welcome to the Meeting of the
NextGen Advisory Committee**

June 3, 2014
RTCA Headquarters
Washington, DC



Welcome & Introductions

Bill Ayer, NAC Chairman



PUBLIC MEETING ANNOUNCEMENT
Read by: Designated Federal Official Michael Whitaker
NextGen Advisory Committee
June 3, 2014

In accordance with the Federal Advisory Committee Act, this Advisory Committee meeting is OPEN TO THE PUBLIC.

Notice of the meeting was published in the Federal Register on:

May 12, 2014

Members of the public may address the committee with PRIOR APPROVAL of the chairman. This should be arranged in advance.

Only appointed members of the Advisory Committee may vote on any matter brought to a vote by the Chairman.

The public may present written material to the Advisory Committee at any time.

3



Review and Approval of:

February 20, 2014 Meeting Summary



Chairman's Report

Bill Ayer, NAC Chair



FAA Prioritization Task *Approved September 2013*

- Response to FAA Request to understand industry priorities
- Review current FAA NextGen plans and activities
- Landmark Moment!
- Develop prioritized list of:
 - Tier 1 - what should continue no matter what (11)
 - Tier 2 - what should continue, resources permitting (8)
 - All Other (17 capabilities not ranked as priority)

NAC February Meeting

- Agreement - Follow-on NextGen Capabilities Prioritization
- Established NextGen Integration Working Group
- Subset Tier 1 – Deep Dive to Implement by dates certain
- Develop Plans
- Track Progress



7

Focus Capabilities

- Performance Based Navigation (PBN)
- Surface
- Closely Spaced Parallel Runways
- DataComm-enabled Controller-Pilot DataLink Communications (CPDLC) and pre-departure clearances

8

“Performance Outcomes” Versus “Program Milestones” “Last Best Chance”

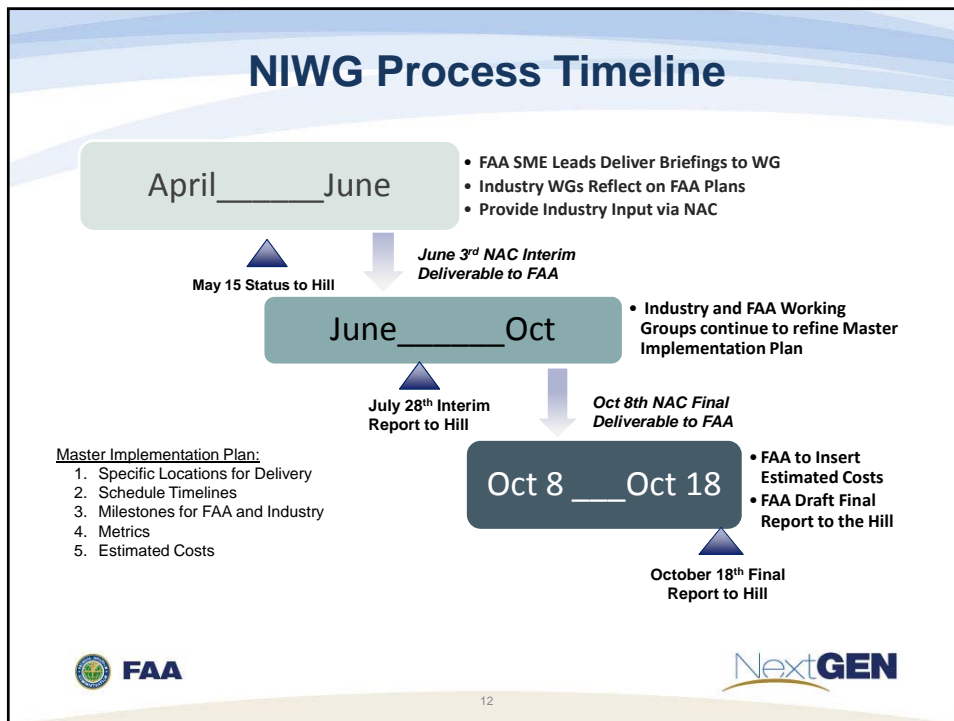
NIWG Leadership




NIWG Participation

- 100+ Representatives
 - Air Carriers
 - Airline Pilots
 - Airports
 - Controllers
 - General Aviation
 - MITRE
 - OEMs
 - Suppliers

11






Work Plan Guided all-Inclusive

- Dates and Locations
- Change in Roles of Pilots/Controllers
- Technology/Equipage Required
- ATC/TFM Decision Support Tools Required
- Policy Changes Required
- Procedures Required
- Airspace Changes Required
- Standards Required
- Operations Approvals Required
- Certifications Required
- Training Required
- Risks to Overcome
- Other Challenges, Requirements to Achieve FOC/Benefits

Dates and Locations driven by other components

13

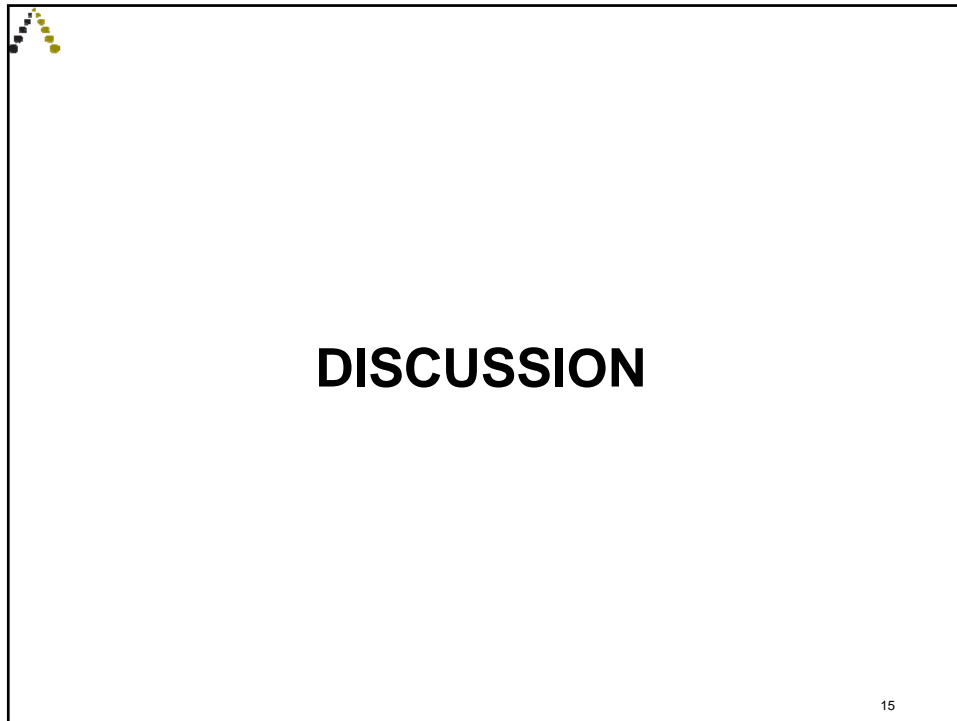


New Way of Functioning

- Joint FAA-Industry Teams
- Post October

?

14





FAA Tracks Video

<https://www.youtube.com/watch?v=Zc4k2-jldKU&list=UURjoWtWg9BPyZK8YxMrH2Zw>

17



DISCUSSION

18



Areas of Major Collaboration

- Shared leadership and commitment to harmonization and interoperability at global level
- ICAO Global Air Navigation Plan (GANP) & Block Upgrades
 - SESAR & FAA were major contributors in writing of the Plan
 - Europe & US were instrumental in securing passage of GANP at ICAO Assembly
 - Written to allow flexibility of implementation based on each country's needs, capabilities, & resources (i.e., not a one-size-fits-all approach, but underpinned by global standards and guidelines).
- NextGen & SESAR continue engagement through High-Level Committee, technical groups & other means under the Memorandum of Cooperation between the US and the EU



Information Management & Communication

- SESAR & FAA Commitment to Improved Global Information Management
 - Integration of Europe's SESAR Global SWIM and FAA's Mini Global II Programs during 2015-16.
 - Continued discussions to link these programs with the collaboration on FIXM, AIXM & WXXM models.
 - Joint participation under consideration for the ICAO Block Upgrades Demonstration Symposium & Showcase (BUDSS) in 2015.
- DataComm
 - Agreement exists on how to reach a harmonized message set.
 - Additional initial material provided by the FAA to RTCA to move towards next release of the standard from 2015.
 - Continue to work towards synchronization of implementation planning.



Harmonization Report

- Report to High-Level Committee under preparation on the current status of NextGen/SESAR cooperation highlighting areas of progress towards harmonization
- To be updated and reported annually to High-Level Committee
 - + First release planned for Fall 2014 (subject to HLC decision)



23

Next Steps

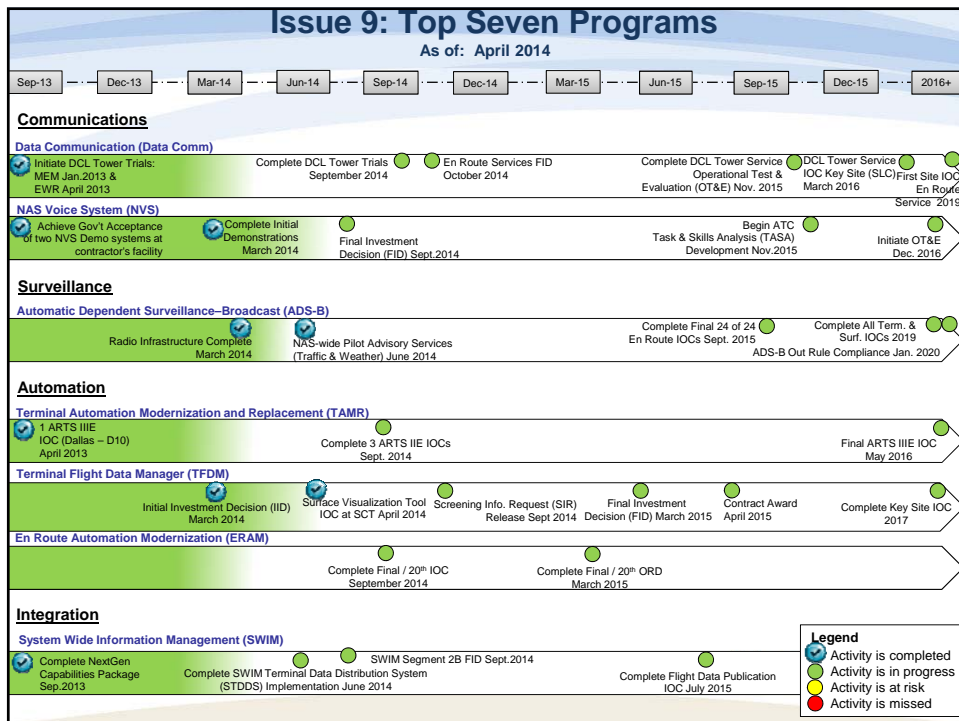
SESAR Deployment Manager being established

- + In progress by the European Commission for the management of the SESAR Deployment Program
- + Commitment to engage with FAA on deployment strategies

Additional Areas for Future Engagement



- + Explore new demo opportunities
- + Sharing of information on remote tower services
- + Continued and closer/joint interaction at senior and technical levels
- + Scoping of the harmonization and interoperability work on cyber-security, RPAS/UAS ATM integration, etc.

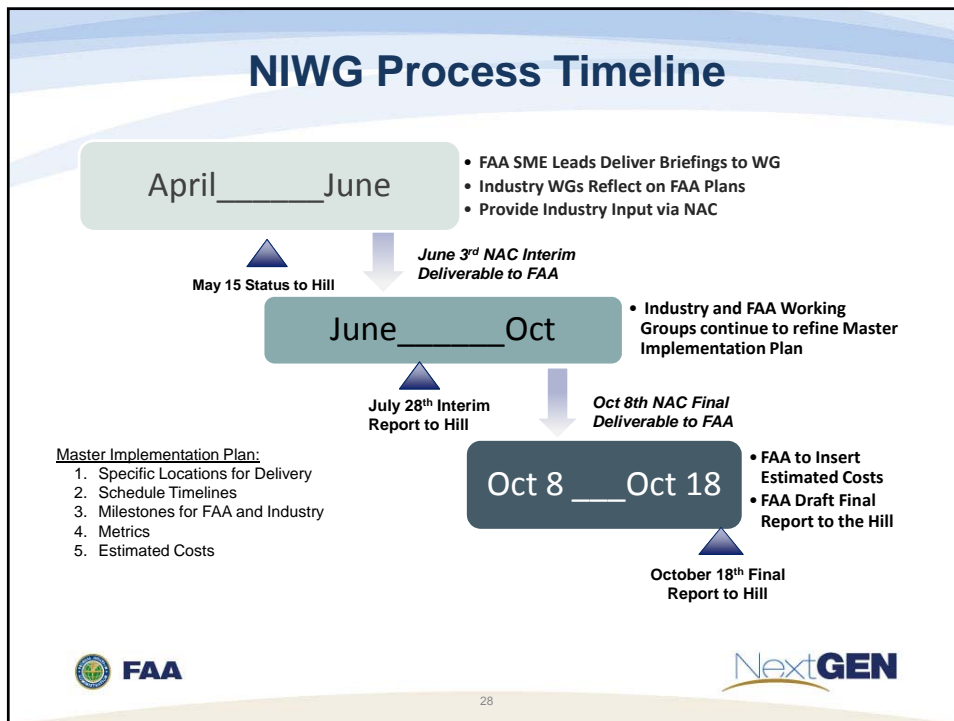




NextGen Advisory Council (NAC) Priorities

<h3 style="text-align: center;">Multiple Runway Operations</h3> <p>Provide relief from current separation standard constraints</p> <ul style="list-style-type: none"> • Concurrent operations on runways that are more closely spaced • Change wake separation standards • Provide decision support to ATC towers <p>Focus for the next one to three years</p> <ul style="list-style-type: none"> • Reduce required separation standards for multiple runway operations 	<h3 style="text-align: center;">Performance-Based Navigation</h3> <p>Shift from adding large numbers of new procedures to improve use policies and the usability of procedures</p> <p>Focus for the next one to three years:</p> <ul style="list-style-type: none"> • Enhanced use policies and operational procedures for systems and decision support tools that are available today • Review, Revise, Remove Instrument Flight Procedures • OAPM and Single Site Implementations • Equivalent Lateral Spacing Operations (ELSO) and Advanced and Efficient RNP Planning (EoR)
<h3 style="text-align: center;">Surface</h3> <p>Past Environment</p> <ul style="list-style-type: none"> • Focused on runway incursion prevention • Lacked ability to monitor movement area or departure queue • Decision Support Tools did not have access nor leverage improved surface surveillance data • Lack of shared situational awareness resulted in poor collaborative decision making by both FAA and airlines <p>Focus for the next one to three years:</p> <ul style="list-style-type: none"> • Surface Surveillance • Data distribution to Users and within the FAA • Two way information sharing to improve Surface Management 	<h3 style="text-align: center;">Data Communications</h3> <p>Provides direct digital communications between the cockpit and controllers</p> <ul style="list-style-type: none"> • Safety-of-flight air traffic control (ATC) clearances, instructions, traffic flow management, flight crew requests and reports <p>Transformational program critical to the success of NextGen operations</p> <ul style="list-style-type: none"> • Provides infrastructure supporting other NextGen programs and operational improvements • Enables efficiencies not possible using current voice system <p>Focus for the next one to three years:</p> <ul style="list-style-type: none"> • Tower Departure Clearance (DCL) and En Route Services • FANS 1/A+



27





BREAK



NextGen Integration Working Group




Assumptions and Guiding Principles

NIWG Co-chairs:
Steve Dickson, Delta Air Lines
Melissa Rudinger, AOPA



Assumptions


- Near term delivery of capabilities will maximize the use of existing aircraft equipment, with no broad-based fleet upgrades required.
- The business case justification for NextGen equipment will be strengthened by the near-term delivery of capabilities.
- Mixed equipment will remain for many capabilities.
- Most implementation timelines are deliverables in the 1-3 year time frame.
- Builds onto TF5, NAC & other implementation recommendations.



Assumptions (cont'd)

- Recommendations are for the delivery of operational capabilities spanning multiple programs and will require an integrated set of solutions.
- Elements of solutions:
 - Locations and Timelines
 - Industry Commitments
 - Metrics
 - Technology in the cockpit
 - ATM/TFM Automation
 - ATC/TFM Decision Support tools
 - Training
 - Airspace changes
 - Procedures
 - Policies
 - Technical Standards
 - Certification
 - Ops Approvals
 - Political risks
 - Environmental & noise risks


33



Guiding Principles

- Not a planning exercise, but will identify operational implementation dates, linked to specific milestones at identified locations.
- Dates for deliverables matter.
- The FAA and the industry will make commitments necessary to the successful implementation and delivery of capabilities. Success will build trust and confidence in NextGen.
- Projects should be carefully scoped to balance complexity and benefits with near-term completion dates acceptable to the teams. "Scope creep" should be minimized.


34



Guiding Principles (cont'd)

- A policy to escalate and quickly solve team disagreements should be established.
- Leverage the purchase of new generation aircraft and the equipage modernization underway by aircraft operators.
- Delivering tangible, measurable benefits in a defined time-frame is crucial to encouraging NextGen investments.
- The successful delivery of capabilities requires appropriate Responsibility, Accountability and Authority (RAA), as well as the investment of financial and personnel resources from FAA ATO/ ANG/AVS.


35



Guiding Principles (cont'd)


- The resulting set of recommendations will be as transparent and as objective as possible.
- The rationale for the recommendations will be delivered along with the recommendations.
- There are FAA programs (enablers) currently underway that are fundamental to NextGen, i.e. ERAM and ADS-B.
- Follow-up, post the release of the recommendations, is critical and should include the tracking and reporting of progress on the specific integrated plan developed by the Working Group, identification of issues and barriers, and working together (including engagement by the Teams) to overcome those barriers. User community stakeholders must be active participants in this after the recommendations are delivered in September 2014.

36




Data Comm Team

Industry and FAA Leaders:
Dan Allen/John O’Sullivan
Paul Fontaine/Jesse Wijntjes



DataComm Team Members


• Dan Allen	FedEx Express	• Stephen Smothers	Cessna Aircraft
• Philip Basso	DoD Policy Board on Federal Aviation	• Tom Staigle	Delta Air Lines, Inc.
• Joe Bertapelle	JetBlue Airways	• Wade Stanfield	Thales
• Perry Clausen	Southwest Airlines	• Chuck Stewart	United Airlines, Inc.
• Paul Fontaine	FAA-SME	• Kevin Swiatek	United Parcel Service
• Chad Geyer	NATCA	• Stephen Van Trees	FAA-SME
• Fran Hill	Lockheed Martin	• Robert Wenier	Semper Fortis Solutions, LLC
• Keith Mangino	The MITRE Corporation	• Jessee Wijntjes	FAA-SME
• Rob Mead	The Boeing Company		
• Kieran O’Carroll	IATA		
• John O’Sullivan	Harris Corporation		
• Mark Patterson	FAA-SME		
• Anthony Rios	Avionica, LLC		
• Andrew Roy	Aviation Spectrum Resources, Inc.		
• Gus Skalkos	Sennheiser Electronic GmbH & Co.		



Data Comm Team

- Identified 2 relevant OIs
 - Evaluated TF5 against prerequisites
- Relevant Briefings
 - FAA Data Comm Level Set Briefing
- Met 6 times
 - Weekly Calls – next on June 6
 - Next Face to Face –July 1

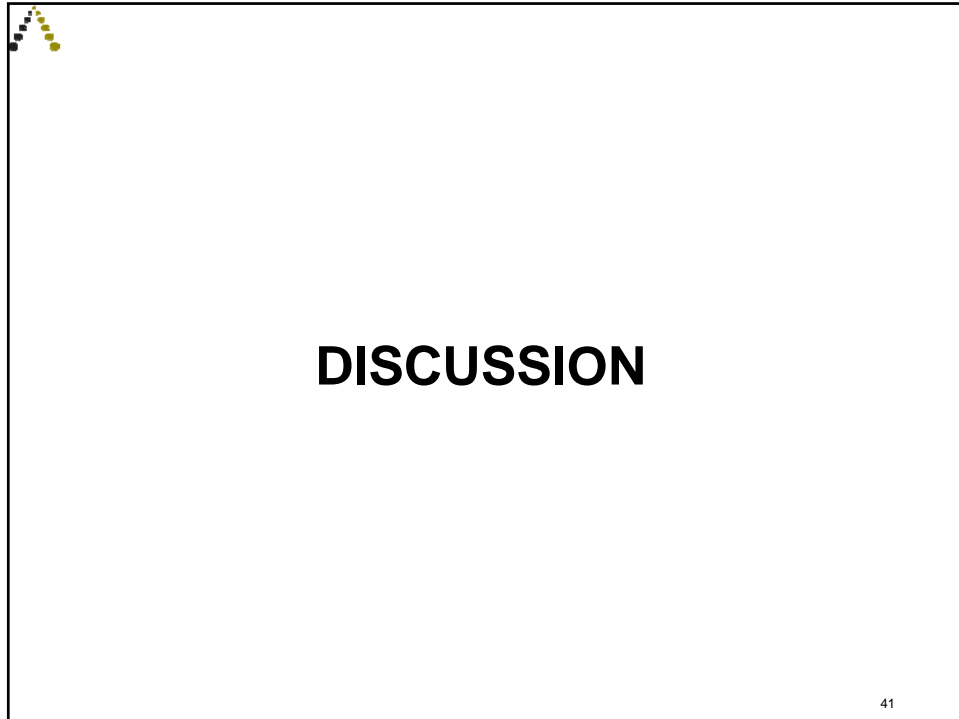
39



DataComm Team

- Initial Observations
 - Identifying candidate locations /dates...
 - Surface Capability for 56 airports scheduled
 - En Route
 - DCIS commitments
 - Recorder Rule for Retrofit
 - Ops Spec and Advisory Circular
 - En Route Services
 - Acceleration
 - Trials
 - Baseline Recommendation
 - VDL Mode 0 for En Route
 - Metrics

40





Scope

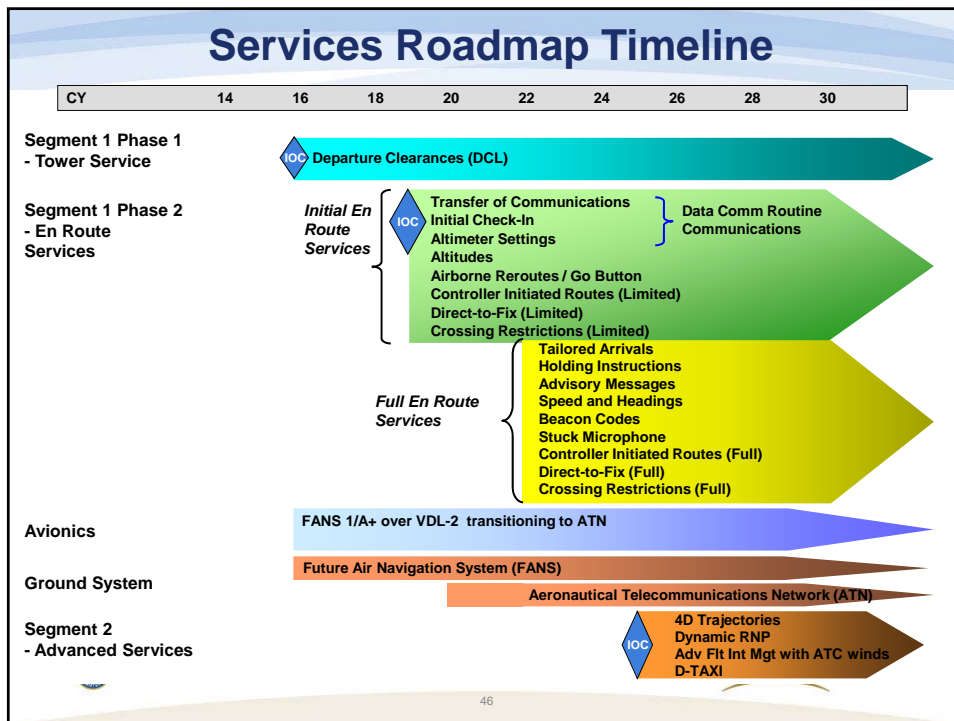
Tower DCL and En Route Services

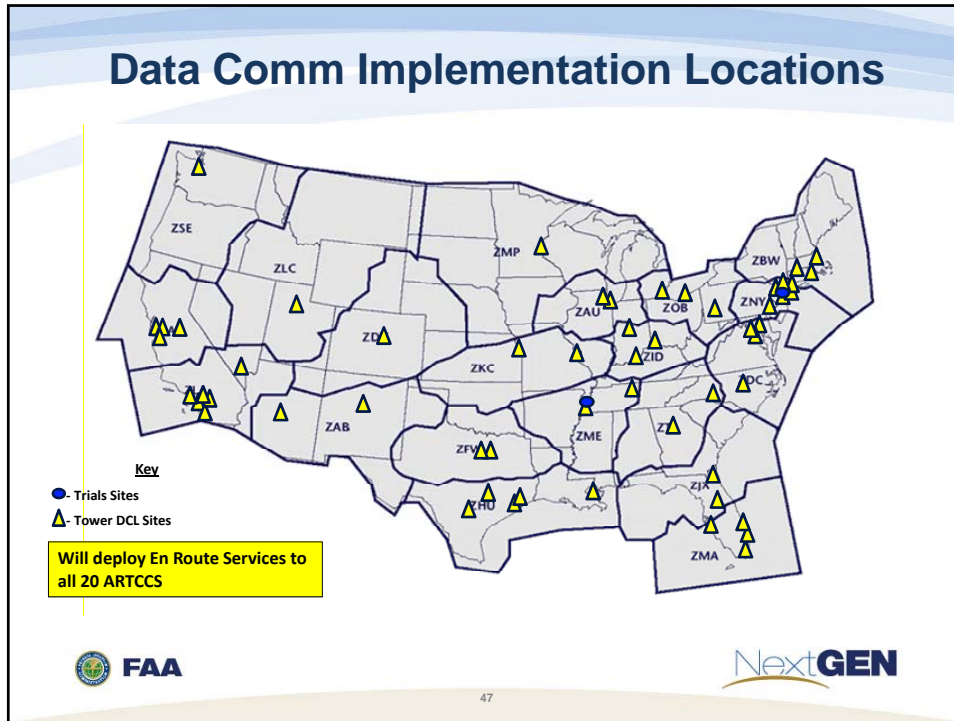
- FANS 1/A+
- En Route services rollout plan based on stakeholder input and ground automation enhancements (i.e., ERAM & TDLS release plans, bandwidth, and associated costs)
- ATN B2 out of Scope

From RCTA Slide Deck May 1, 2014 Kickoff Mtg

45





Implementation Locations – Timing

- Tower waterfall reflects **challenge** schedule dates (calendar year)
 - Baseline schedule Tower deployment dates are 2016-2019

Key Sites (3 Towers)				Group A (19 Towers)				Group B (17 Towers)				Group C (18 Towers)			
Site Name	Site ID	ARTCC ID	IOC	Site Name	Site ID	ARTCC ID	IOC	Site Name	Site ID	ARTCC ID	IOC	Site Name	Site ID	ARTCC ID	IOC
KS 1: Salt Lake City	SLC	ZLC	Q3 2015	New Orleans	MSY	ZHU	Q1 2016	Louisville	SDF	ZID	Q1 2016	Boston	BOS	ZBW	Q1 2016
KS 2: Houston Intcl	IAH	ZHU	Q3 2015	Austin	AUS	ZHU	Q1 2016	Indianapolis	IND	ZID	Q1 2016	Providence	PVD	ZBW	Q1 2016
KS 3: Houston Hbby	HOU	ZHU	Q3 2015	San Antonio	SAT	ZHU	Q1 2016	Cincinnati	CVG	ZID	Q1 2016	Bradley	BDL	ZBW	Q1 2016
NAP – NAP Compl	NA	ZLC/ZTL	Q4 2015	Los Angeles	LAX	ZLA	Q1 2016	Memphis	MEM	ZME	Q2 2016	Newark	EWR	ZNY	Q2 2016
IDA Compl			Q4 2015	Las Vegas	LAS	ZLA	Q1 2016	Nashville	BNA	ZME	Q2 2016	JFK Kennedy	JFK	ZNY	Q2 2016
In-Service Decision			Q4 2015	San Diego	SAN	ZLA	Q2 2016	Denver	DEN	ZDV	Q2 2016	La Guardia	LAGA	ZNY	Q2 2016
				John Wayne	SNA	ZLA	Q2 2016	Atlanta	ATL	ZTL	Q2 2016	Philadelphia	PHL	ZNY	Q2 2016
				Bob Hope	BUR	ZLA	Q2 2016	Charlotte	CLT	ZTL	Q2 2016	Teterboro	TEB	ZNY	Q2 2016
				Ontario	ONT	ZLA	Q2 2016	Jacksonville	JAX	ZJX	Q2 2016	Westchester	HPN	ZNY	Q2 2016
				San Francisco	SFO	ZOA	Q2 2016	Orlando	MCO	ZJX	Q3 2016	Detroit	DTW	ZOB	Q3 2016
				Oakland	OAK	ZOA	Q2 2016	Miami	MIA	ZMA	Q3 2016	Cleveland	CLE	ZOB	Q3 2016
				San Jose	SJC	ZOA	Q3 2016	Fort Lauderdale	FLL	ZMA	Q3 2016	Pittsburgh	PIT	ZOB	Q3 2016
				Sacramento	SMF	ZOA	Q3 2016	Tampa	TPA	ZMA	Q3 2016	Balt/Wash	BWI	ZDC	Q3 2016
				Phoenix	PHX	ZAB	Q3 2016	Palm Beach	PBI	ZMA	Q3 2016	Dulles	IAD	ZDC	Q3 2016
				Albuquerque	ABQ	ZAB	Q3 2016	St Louis	STL	ZKC	Q4 2016	Reagan	DCA	ZDC	Q3 2016
				Seattle	SEA	ZSE	Q3 2016	Kansas City	MCI	ZKC	Q4 2016	Raleigh/Durham	RDU	ZDC	Q4 2016
				Dallas Love	DAL	ZFW	Q4 2016	Minn-St Paul	MSP	ZMP	Q4 2016	Chicago Midway	MDW	ZAU	Q4 2016
				Dallas FTW (x2)	DFW	ZFW	Q4 2016					Chicago O'Hare	ORD	ZAU	Q4 2016

- En Route services will be deployed to all 20 ARTCCs to provide CONUS-wide En Route Data Comm service
- Planned En Route deployment from 2019-2023

48

Air Carrier Equipage

- Initial service will be deployed with Future Air Navigation System (FANS) 1/A(+) communications avionics
 - Integrated avionics functionality supports all Segment 1 Tower and En Route services
 - In operation in the NAS and Ocean today
- Air-ground network will be VHF Data Link (VDL) Mode 2
 - Program investigating accommodating VDL Mode 0 radios for Tower Revised Departure Clearance (DCL) service
 - Part of Tower trials is to determine if VDL Mode 0 can meet operational requirements for DCL
- Equipage Incentives
 - DCIS contract includes operator outreach and the financial incentives to equip 1,900 aircraft
 - Enthusiastic response from air carriers – Eight MOAs signed – total aircraft count exceeds 1900 target
- No rulemaking required for Segment 1 services
- Adding ground system to support Baseline 2 supporting Aeronautical Telecommunications Network (ATN) in the 2020s



Opportunity Discussion

- Operator plans to equip with FANS1/A+ and VDL-2
 - Benefit to the NAS directly related to meeting minimum amount of equipage for pilots and controllers to maximize benefits
 - Deliver against MOA's
- Support/input regarding multiple FANS 1/A+ legacy installations
 - Variety across FANS 1/A+ avionics installations / avionics issues that arise will need to be addressed in a timely manner with Boeing/Airbus to support the program
- Operator support of keystone testing and the waterfall
- Metrics data gathering / support operational benefits analysis for the program
- Aircraft Certification
 - Work with the FAA for aircraft/avionics certification





RTCA, Inc.
1150 18th Street, NW, Suite 910
Washington, DC 20036
Phone: (202) 833-9339
Fax: (202) 833-9434
www.rtca.org

RTCA Paper No. 037-14/NAC-27

February 28, 2014

Meeting Summary, February 20, 2014
NextGen Advisory Committee (NAC)

The eleventh meeting of the NextGen Advisory Committee (NAC) was held on February 20, 2014 at Honeywell Deer Valley, 21111 N. 19th Ave, Phoenix, AZ 85027. The meeting discussions are summarized below.

List of attachments:

- Attachment 1 - Attendees
- Attachment 2 - Presentations for the Committee meeting - (containing much of the detail about the content of the material covered)
- Attachment 3 - Approved September 19, 2013 Meeting Summary
- Attachment 4 - NAC Chairman's Report
- Attachment 5 - FAA Report from The Honorable Michael Whitaker, FAA Deputy Administrator
- Attachment 6 - Recommendation "Industry Barriers to NextGen Utilization"

Welcome and Introductions

NAC Chairman, Bill Ayer (Airlines for America) called the meeting to order and welcomed the NAC members and others in attendance. He thanked Carl Esposito of Honeywell Aerospace for hosting the meeting and the tours of Honeywell's avionics integration and test facilities of air transport and business jet cockpits that demonstrated both in-service and future implementations of NextGen capabilities.

All NAC members and attendees from the general public were asked to introduce themselves (attendees are identified in Attachment 1). Chairman Ayer recognized five new Committee members: Ed Bolton, Assistant Administrator, NextGen, FAA; Teri Bristol, Acting Chief Operating Officer¹, Air Traffic Organization, FAA; Carl Burlison, Acting Director, Aviation Policy, Planning & Environment, FAA; Ben De Leon, Acting Associate Administrator for Airports, FAA; and Major General Steven Shepro of the United States Air Force.

Designated Federal Official Statement

In his role as the DFO, The Honorable Michael Whitaker (FAA Deputy Administrator) read the Federal Advisory Committee Act notice governing the open meeting.

¹ After the February 20 Meeting, Teri Bristol was made Chief Operating Officer.

Approval of September 19, 2013 Meeting Summary

Chairman Ayer asked for consideration of the written Summary of the September 19, 2013 meeting. The Committee approved the Summary (Attachment 3) with no revisions or objections.

Chairman's Remarks

In his remarks, Chairman Ayer (Attachment 4) stated that the industry has influenced NextGen beginning in the early 2000s with the Joint Program Development Office defining NextGen through a 2025 technology-driven concept. This led to a refocus on the business case in 2009 with RTCA's Task Force 5 moving from defining the "what" to defining the "how" for a successful NextGen program.

The NAC took up the mantle of NextGen implementation through an evolutionary, benefits-driven approach and the Committee is committed to help the FAA achieve the promise of NextGen. He emphasized that the Committee is a supportive and positive force in the implementation of NextGen, highlighting the recent work on Prioritizing NextGen capabilities as a prime example.

Mr. Ayer explained that the NAC is in a unique position of providing a single voice of consensus among all the key organizations that have a stake in the performance of the air transportation system. The Committee is intent on ensuring a continuing constructive partnership with the FAA. To achieve success in any endeavor, it is imperative to set bold, yet reasonable targets, and not falter in achieving those targets.

He highlighted the FAA's latest move to publish on their website, up-to-date performance snapshots and metrics related to deployments of early NextGen capabilities.

He concluded his remarks by showing an FAA video on DataComm, one of the NAC's Tier 1 capabilities. The video highlights the benefits that will accrue to operators and controllers once it is fully deployed. He suggested that the FAA and industry work jointly to establish a plan with clearly defined milestones and dates. The goal would be to achieve those milestones through to a nationwide deployment. Such a deployment of the DataComm capability would increase confidence in NextGen, enhance US global leadership, and provide much needed benefits to the FAA, operators and industry.

At the conclusion of his report several Committee members commented favorably about the industry and the FAA working together to identify a couple of capabilities from the prioritization recommendation and develop milestones for implementation.

FAA Report

Mr. Whitaker presented the FAA report (Attachment 5). He reviewed the budget framework passed by Congress in December 2013 that lends stability for the next two years. The compromise leaves the FAA at historically low funding levels and an extremely tight fiscal environment. While anticipating that the FAA will have adequate funding to remain on track with NextGen and provide focus to the priorities identified by the NAC, the agency needs to find ways to operate more efficiently.

He outlined the FAA's strategic initiatives announced by Administrator Huerta the previous day:

- Deliver benefits through technology and infrastructure
- Make aviation safer and smarter
- Enhance FAA's global leadership
- Empower and innovate with FAA's people

Mr. Whitaker concluded his remarks by highlighting recent meetings with European counterparts explaining that many of the joint modernization programs are working well under the existing agreement between the FAA and Europe and there is a commitment to conduct further cooperative efforts. He then introduced the next agenda item for additional details on the meetings.

FAA/SESAR Presentation and Update and Status Report on DataComm

In addition to providing more detail on Mr. Whitaker's comments, Ed Bolton (Assistant Administrator NextGen, FAA), Teri Bristol (Acting Chief Operating Officer, Air Traffic Organization, FAA) and David Batchelor (SJU Liaison Officer, SESAR JU) provided an overview of the "Key Take Away Items":

- SESAR Deployment Manager to be named - New entity will be established in 2014 to manage and implement the SESAR Deployment Program. Engagement with FAA on deployment strategies will be important.
- DataComm – an agreement exists on how to reach a harmonized message set, as well as a commitment to increase efforts on the links and architecture.

NextGen Capabilities Prioritization

Mr. Bolton and Paul Fontaine (FAA NextGen) presented a briefing addressing the NAC's NextGen Capabilities Prioritization report approved at the September 2013 meeting. In response to the eleven Tier 1 interdependent capabilities contained in the Report, the FAA indicated that the recommendations are extremely valuable, have influenced the budget formulation process, and helped identify and/or clarify some systemic challenges. Mr. Bolton reported that there are no significant budget impacts presented by implementing all Tier 1 capabilities and is following the recommendation by shifting focus to Surface, PBN and Multiple Runway Operations areas.

He also explained that the review has assisted the FAA in identifying and/or clarifying some systemic challenges and they are using the priorities to help sharpen focus in the deployment phase in many areas. The FAA has already begun to take action with the inception of a Deployment Implementation Group (DIG).

Mr. Fontaine provided a summary review of the FAA's response, including how the priorities are being applied to deliver capabilities in the near-term.

Following the presentation, a Committee member started the discussion by asking how the industry could provide help to the FAA in the implementation process. Several FAA staff members commented that this is under discussion within the agency, including determining the focus areas and ensuring that these areas are effectively delivering capabilities. In response to a question on what drives the

priority for Closely Spaced Parallel Runways, Mr. Fontaine explained that this includes airport configurations and how the changes can improve capacity.

Another Committee member emphasized the importance of both Tier 1A and 1B, stating that they are equally important, both tiers of high benefit, and Tier 1B being ranked lower in implementation readiness.

A Committee member offered positive comments about the value of surface detection specifically those provided by ASDE-X and also encouraged the FAA to consider airport ramp vehicle surveillance.

Several Committee members stressed the importance of a near-term focus in delivering capabilities, in addition to being able to show a “win” with a successful implementation that is “done”, i.e., deployed and delivering promised benefits, thus a return on investment.

At the conclusion of the discussion, the Committee agreed that the next step on the Prioritization of NextGen Capabilities is to identify 1-3 of the Tier 1 capabilities to apply a laser focus, develop a comprehensive joint implementation plan, and commit to achieving all the milestones in the plan. The purpose of this initiative is to increase the confidence in the community's ability to deliver the full benefits of NextGen by dates certain. The areas discussed were PBN, Surface, Closely Spaced Parallel Runways and DataComm-enabled Controller-Pilot DataLink Communications (CPDLC) and pre-departure clearances.

Performance-Based Navigation Implementation

The FAA's Dennis Roberts outlined how the agency is incorporating into its policy guidance the NAC recommendations for determining the prioritization of new, or the revision or elimination of, existing PBN procedures. This includes quantifying projected benefits (i.e. objectives and goals) for procedures, establishing milestones and providing opportunities for collaboration between aircraft operators, airport officials and controllers.

Several members of the Committee engaged Mr. Roberts in a discussion about the importance of increasing utilization of procedures and identifying the actions that can make this occur.

CatEx 2

Mr. Carl Burluson from the FAA Aviation Policy, Planning & Environment Office provided the response to the NAC recommendation on the Categorical Exclusion contained in the FAA Modernization Act of 2012. The Committee had provided the FAA with a process for noise analysis titled “Net Noise Reduction Method” as the means for identifying measurable reductions in noise on a per-flight basis as required by the law. Mr. Burluson reported that the FAA plans to issue a Federal Register notice soliciting comments on the NAC recommendations provided last June, for implementing Congressional authority fostering the implementation PBN approaches using a Categorical Exclusion under the National Environmental Policy Act requirements.

In response to a question, Mr. Burluson explained that the FAA's decision was based on a desire to provide a forum for the larger public to comment and based on the Congressional interest in the topic.

Fuel Data Sharing for Measuring NextGen Performance

Ms. Nancy Kalinowski, FAA Air Traffic Organization System Operation Services, thanked the NAC for its recommendation for obtaining fuel use data to measure NextGen implementation in specific areas (key city pairs). She explained that the FAA is working with Airlines for America and specific aircraft operators who are willing to share aircraft weight and fuel consumption data. The data collection should begin in the summer of 2014 and will support NextGen metrics and modeling needs, as well as FAA authorization metrics. The FAA is working to address carrier concerns about data confidentiality.

Industry Barriers to PBN Utilization

NAC Subcommittee (NACSC) Co-Chairs Steve Dickson (Delta Air Lines) and Melissa Rudinger (AOPA) provided a summary of the recommendation contained in a report that identifies and provides mitigations to industry barriers to implementing PBN. The report was developed by the Operational Capabilities Work Group (OCWG), Co-Chaired by Bill Murphy (IATA) and Tom Bock (PANYNJ). The recommendation builds on the NAC's previous report that focused on FAA barriers.

The list of identified industry barriers and mitigation actions include:

- Tech pilot participants and planners need shared view on how PBN procedures fit and operate in a system of Timed Based Flow Management (TBFM).
- Need to collaborate with the FAA on investment decisions, timelines and priorities related to PBN initiatives, including TBFM tools and related automation capabilities.
- Industry will make SME's available to facilitate this collaboration.
- Industry would like to play an active and constant role in the design of PBN procedures.
- Industry and FAA should emphasize simplicity in design, with identical key segments/fixes on the procedures where allowable by criteria, and with transparency to the controller.
- Industry to be given access to lessons learned, improved simulation capabilities and test databases. Industry can provide SME's to support updates and improvements to flight evaluation and simulation capabilities (e.g. – TARGETS).
- Industry and the FAA should incorporate system level modeling and analysis of PBN procedures as part of the design phase.
- Industry should use available resources to develop training materials that can be used in a variety of industry forums and also in partnership with the FAA for joint training.
- Training on the differences among RNAV approach procedures, minimums, aircraft capability, required for VNAV, LNAV, LPV, etc., and local user community capabilities at an airport or in a Metroplex are a necessity.
- The newly established PBN Blueprint Task Group should consider the recommendations from this report, previous NAC recommendations addressing PBN along with the work of the PARC

to inform its deliberations and development of mitigation strategies for known barriers to PBN implementation.

Following the briefing, Committee members offered comments including the need to coordinate between pilots and controllers when designing and implementing procedures, the need for an appropriate set of metrics to evaluate use, and the critical link between the procedures and traffic flow management systems.

Responding to a Committee member, Mr. Dickson explained that issues of individual air carrier operational preferences and operational priorities is an area that he believes the PBN Blue Print Task Group can provide valuable recommendations.

Committee Action: The Committee agreed by consensus to approve the recommendation for **Industry Barriers to NextGen Utilization** (Attachment 6) for submission to the FAA. This report, along with others previously approved by the NAC, will be used as a resource for the work of the PBN Blueprint Task Group.

NextGen Performance Snapshots

Ms. Victoria Wei (Director of NextGen Performance and Outreach, FAA) provided an overview of the FAA NextGen Performance Snapshots webpage. She expressed appreciation for the NAC and the work of the Business Case and Performance Metrics Work Group, for the recommendations and feedback that assisted the FAA in developing the NextGen performance resource tool.

The following outlines the website statistics:

During calendar year 2013, with no promotion of the site, there were:

- Approximately 1,200 visits to this web page containing FAA operational metrics
- More than 1,800 individual page views
- Approximately 45% of the visits resulted in a download of a pdf from this site with Commercial Fatality and Cost effectiveness metrics downloaded most frequently

In Jan 2014 the FAA reported:

- Over 370 visits to this web page containing operational metrics – compared to a high monthly visit of 284 in July 2013
- Almost 466 page views, compared to about 400 in July 2013, the highest month for 2013

Chairman Ayer encouraged members of the NAC to visit the site: www.faa.gov/nextgen/snapshots

Ms. Beth White of the FAA's NextGen Office also demonstrated to the Committee a smart phone app containing various resources for NextGen information.

PBN Implementation Blueprint for Success

Ms. Margaret Jenny from RTCA provided a background briefing on the Blueprint for Performance-Based Navigation Procedures Implementation Tasking from the FAA on lessons learned from prior PBN implementations that will be used for developing a blueprint or checklist for future success.

The areas being addressed by the PBN Blueprint Task Group Co-Chaired by Jim Crites, DFW International Airport and Brian Townsend, American Airlines/US Airways are:

- Identify all stakeholders needed and define their roles
- Describe specific outreach strategies associated with each stakeholder to include development of a process/method to ensure stakeholder buy-in of project goals
- Describe specific possible outcomes and identify metrics for success
- Review existing processes and incorporate lessons learned from previous ongoing PBN initiatives, both domestic and international
- Develop a methodology to ensure lessons learned and expertise are captured and incorporated into future efforts

The Committee concluded with breakout discussions of the “outcomes and metrics for success” associated with PBN implementation. The purpose of this exercise was to provide a perspective from the NAC of the top 3-4 performance metrics as input to the the Task Group being formed to address the Tasking.

Highlights from the discussion included the agreement of several key performance metrics, including: (1) predictability is crucial to the travelling public; (2) safety should be enhanced and must be continually evaluated; (3) usage of procedures should be tracked and documented; and (4) capacity and efficiency as measured by reduced fuel burn and block time are key metrics that should be continually measured.

Breakout Group Report Outs to NAC

- Safety is vital, CAST is leading these efforts, change management at the core of issues related to pilot errors/altitude busts and other transition/implementation issues. Also important to track the use of vertical guidance in visual situations.
- Predictability is critical to the traveling public (also to the air carriers) – most likely way to measure is with scheduled block times.
- Successful PBN implementation requires the need to balance capacity and efficiency and correlate this to fuel burn and block time.
- Need to track usage of PBN procedures as transition occurs including whether PBN procedures are offered and if so, the frequency of acceptance by pilots.
- Critical to retain access for general aviation at airports in proximity of air carrier airports where PBN is being implemented.

Recap of Meeting and Anticipated Issues for NAC consideration and action at the next meeting

Chairman Ayer concluded the meeting by reviewing the following actions from the meeting:

- 1.) Next step on prioritization: the Committee agreed that the next step on the Prioritization of NextGen Capabilities is to identify 1-3 of the Tier 1 capabilities to apply a laser focus, develop a comprehensive joint implementation plan, and commit to achieving all the milestones in

the plan. The purpose of this initiative is to increase the confidence in the community's ability to deliver the full benefits of NextGen by dates certain. To launch this effort, in early March, the NAC Chairman and RTCA leadership will meet with the FAA (Ed Bolton, Assistant Administrator for NextGen and his team) to select the capabilities and develop the plan for the work of the FAA-Industry Team.

Following that meeting, the NAC and RTCA leadership will meet with Ed Bolton and his team to conduct a "Deep Dive" of selected Tier 1 capabilities. The purpose of the Deep Dive would be for an FAA-Industry Team to identify all the elements of the plan to implement the identified capabilities.

The candidate capabilities for the Deep Dive include (1) DataComm (CPDLC and pre-departure clearance), (2) Surface, and (3) Performance Based Navigation (PBN). The Team will include members of the NAC Subcommittee and Work Groups, as well as related FAA Subject Matter Experts. An interim report on the progress will be provided to the NAC at the June 3rd meeting.

- 2.) Approved recommendation on Industry Barriers to PBN Utilization
- 3.) Provided feedback to PBN Blueprint Task Group on outcomes and metrics
- 4.) Provided web address for performance snapshots and NextGen application in meeting minutes

Other business

None was offered.

Adjourn

Chairman Ayer ended the meeting of the Committee at 3 p.m.

Next Meeting

The next meeting of the NAC is June 3, 2014, in Washington, DC.

Bill Ayer, NAC Chairman's Report June 3, 2014

Title Slide

June 3, 2014

This is the twelfth meeting of the NAC, since its inception in 2010. I continue to be impressed with the commitment from the aviation industry and the engagement from the leadership at the FAA, Deputy Administrator, Mike Whitaker, Assistant Administrator for NextGen, Ed Bolton, Chief Operating Officer for the Air Traffic Organization, Teri Bristol and the Aviation Safety Organization headed by Peggy Gilligan, represented on the NAC by her Deputy John Hickey.

These individuals and members of their staff, along with the industry leadership of Steve Dickson from Delta Air Lines and Melissa Rudinger, AOPA and the more than 100 industry volunteers are engaged in the "herculean" effort to implement near-term NextGen capabilities.

NextGen Prioritization Recommendation Slide

This process started last July with a request from FAA Deputy Administrator Mike Whitaker for the RTCA NextGen Advisory Committee (NAC) to develop a set of recommendations on the top priorities for NextGen. These were delivered last September.

This was a "landmark moment" in the life of the Committee, the NAC approved a comprehensive set of Tier 1 and Tier 2 priorities for NextGen investments that are intended to help shape the future of NextGen and ensure its long term viability.

It also underscores the partnership between industry and the FAA necessary for the success of NextGen and demonstrates the value of the NAC and its ability to bring the aviation community together to develop consensus based recommendations for the FAA.

NAC February Meeting Slide

At our meeting in February we set in motion the creation of the NextGen Integration Working Group to conduct deep dives of four capabilities to identify what it takes to deploy them at

specific sites over the next three years. The purpose of this initiative is to deliver measurable benefits by dates certain, and, thereby, increase the community's confidence in NextGen.

Four Capabilities Slide

The capabilities to be deployed are in the areas of Performance Based Navigation (PBN), Surface, Closely Spaced Parallel Runways and DataComm-enabled Controller-Pilot DataLink Communications (CPDLC) and pre-departure clearances.

We were purposeful in selecting only 4 areas. We know there will be ample budget to complete everything necessary to deliver the benefits for these top priorities capabilities. And it will allow us to focus our energies and resources on the most important things.

This historical effort is drawing the participation from all segments of the aviation community. The best and the brightest have showed up to work together on this important initiative.

The stakes are high and the goal clearly defined: NextGen implementation through an evolutionary, benefits-driven approach that produces near term outcomes.

Performance Outcomes Slide

The emphasis is on performance outcomes, not programmatic milestones.

While the new team at the FAA doesn't need to rehash battles from the past, we need to learn the lessons from our experiences.

Click to fade - Performance Outcomes-Last Best Chance Slide

This may be our "last, best chance" for some near-term benefit from NextGen. A big stumble here may jeopardize industry confidence. On the other hand, the best outcome is not only success in these four areas, but a new way of joint industry/FAA functioning using new processes that become the standard.

Based on what I have observed about the work of the NextGen Integration Working Group Teams, I am optimistic. It is important that we produce outcomes that allow the industry and the FAA to nail the implementations at the selected locations.

At this point I ask that Steve Dickson and Melissa Rudinger who serve as the co-chairs for the NextGen Integration Working Group to review the make-up and participation, the key dates and deliverables.

NIWG Leadership Slide

NIWG Participation Slide

NIWG Process Timeline Slide

Thank you Steve and Melissa.

Our goal is to provide the NAC with an integrated implementation plan in the fall 2014 at our meeting on October 8.

New Way of Functioning Slide

Of course October is a beginning not the end – and we are working to determine appropriate follow-up mechanism/format to hold the industry and the FAA accountable for the commitments being made, track progress and identify problems early and resolve them together.

The operators are encouraged by the FAA's leadership and openness to engage with industry to work toward some high-priority victories for NextGen. Their acknowledging that this will take a relentless commitment to address all the technical, political, operational and integration challenges gives us all confidence that this effort will go further than previous efforts, leading to tangible, measurable benefits, and return on all of our investments.

Congress is watching the process closely. Shortly after the February 20th Committee meeting, Steve Dickson represented the NAC at a House Aviation Subcommittee "Roundtable" on the

Prioritization recommendation. Chairman Frank LoBiondo and Ranking Member Rick Larsen followed up by establishing specific milestones for the FAA to report back to Congress on the work of the NIWG.

In late May, Chairman LoBiondo and Ranking Member Larsen met with the FAA leadership, Steve Dickson and Margaret Jenny to discuss the progress thus far. The overarching theme was that there is a partnership and strong collaboration between the Industry and the FAA and there is cautious optimism that we can nail this if we agree on what we are going to do and then do what we say.

NAC Agenda Topics slide

This partnership will be on display when the Industry Team Leads, along with the FAA Subject Matter Experts provide an interim report on their work through briefings and discussions with the Committee. This will give you an opportunity to hear first about the scope of industry participation, the commitment they have made to thoroughly evaluate the capabilities and the initial findings in identifying the targets for the deep dive.

I am looking forward to receiving these reports.

After lunch, we will receive an interim report on the PBN Blueprint Task Group established by the Committee in response to the need for capturing the lessons learned from PBN implementations across the country and build on those lessons. This work is an important compliment to various PBN efforts across the country.

Good progress is being made by the Task Group under the skilled leadership of Co-Chairs Jim Crites, Dallas Ft. Worth International Airport and Brian Townsend, American Airlines.

They will be followed by a report on the FAA's recent launch of the Houston Metroplex. Dennis Roberts from the FAA will be joined by Ron Renk from United Airlines to share some background and initial observations on the initiative that was implemented just last week.

Next we will learn about the Denver PBN experience from Mike McKee of Denver International Airport. He has met with the PBN Blueprint Task Group and serves on the PBN NextGen Integration Working Group. This will provide the Committee with the opportunity to hear about a PBN implementation from an airport perspective.

I want to conclude by reiterating that RTCA provides a unique resource for the FAA by bringing the aviation community together to develop consensus recommendations. The Prioritization effort is an important initiative to help achieve meaningful benefits for the aviation operators by implementing NextGen capabilities.

Before concluding, I would also like to show a video produced by the FAA entitled, "Tracks" that illustrates a comparison of traditional flight paths versus NextGen paths.

[Play Tracks Video](#)

Any questions or comments?

[Discussion slide](#)

DRAFT – NOT FOR RELEASE**05/30/2014 6:30 PM**

Michael Whitaker
NextGen Advisory Committee
Washington, D.C.
June 3, 2014

Good morning. Thank you for joining us today, and welcome to NAC members, guests, and members of the public.

Before I begin the FAA Report, I would like to introduce some new names and faces at the FAA and elsewhere . . .

- But first, I want to welcome Florian Guillermet, the newly appointed Executive Director of SESAR. Many of us have had a chance to work with Florian in his previous role, so we congratulate him on being selected as Executive Director and welcome him to the NAC.
- From the FAA, I want to officially introduce and congratulate Teri Bristol in her new role as the Chief Operating Officer of the Air Traffic Organization. Many of you worked with Teri in her role as Deputy COO, and before that in Tech Ops. We are thrilled to have Teri officially in her new role. Teri and Ed Bolton are working together closely on NextGen

implementation and harmonization, and she is already having a positive impact in this role. Congratulations Teri.

- I am also pleased to introduce Rich Swayze, our new Assistant Administrator for Policy, International Affairs & Environment. Rich comes to us from the U.S. Senate Commerce Committee, where he was a senior staffer covering aviation and transportation issues. Before joining the Senate staff Rich worked at the GAO. Welcome, Rich.
- In early July, we will have a new Assistant Administrator for Airports, Eduardo Angeles. Eduardo previously served as General Counsel to Los Angeles World Airports, and before that he worked at the San Francisco City Attorney's Office, which acts as counsel to San Francisco International Airport.
 - I want to thank Ben DeLeon, our current Deputy Assistant Administrator for Airports, for his terrific work over the last several months.
- That leaves only the chief counsel and deputy chief counsel as key leadership positions to be filled, and searches are underway to fill those roles.

With all these new people and new roles, that means Ed is not the “new guy” any more. And I am definitely not the new guy since today marks my one year anniversary with the FAA.

As part of my role as Chief NextGen Officer, I am required under the 2012 reauthorization act to submit an annual report to Congress with respect to the status of NextGen – what we refer to internally as the CNO Report.

- So it seemed fitting that I would submit the CNO Report after being in my position for a year . . . and that’s what we did – that report was submitted today.
- The report highlights progress we’ve made in the last year, and also previews the work we are doing with the NAC around the priorities.

Today, our **agenda** closely follows the contents of the CNO Report.

- We will be talking today about the progress we have made in completing the **foundational infrastructure** of NextGen. I

will give an overview of that progress, and Ed will talk about how we are measuring that progress.

- The CNO Report also discusses the **NAC priorities** – which we will be talking about at some length today.
 - Congress has taken a keen interest in these NextGen priorities. We are providing periodic status reports to the House Aviation Subcommittee, and they have held several formal meetings, roundtables, and listening sessions concerning the collaboration between FAA and the NAC, with more to come.
- The CNO Report discusses **ADS-B** in some detail, keying off the fact that we completed the installation of the ground transceivers the first quarter of this calendar year. I will talk a bit more about ADS-B in my report this morning.
- The CNO Report provides an update on Performance Based Navigation, which will be the focus of several discussions today. We will be hearing from the NAC on the **PBN Blueprint for Success**; and we will have briefings from the FAA and industry representatives on implementation experiences, including the **Houston Metroplex**, which went

live last week, and Denver, which was implemented earlier this year.

- So the CNO Report tracks most of our agenda items today, but there are a few other items I will touch on briefly, including:

- FAA's Budget and Reauthorization
- UAS Test Sites
- And Ed and Florian will give a brief update on NextGen SESAR cooperation – as a standing item for these meetings.

Let me begin by talking a bit about where we are in NextGen – reflecting back on the past year and where we are in that 20-year-long endeavor known as NextGen.

The fact that NextGen was planned as such a long-term undertaking presents a significant communications challenge for us.

- It is difficult to convey the scale of the undertaking – changing out the hardware, software and procedures in the entire NAS . . . all while keeping it running safely.

- NextGen involves a large number of programs – “systems-of-systems” is often the term used – and it can be mind-numbing to keep track of them all . . . and to understand how they interrelate.
- Adding to the communications challenge is the fact that NextGen is front-loaded with infrastructure replacement, which doesn’t in itself deliver significant benefits to industry, but which is essential in enabling and providing the platform for those future capabilities that we think of when we think of NextGen – things like DataComm, SWIM, advanced metering, reduced separation and increased surface and runway efficiency.

We have tried to make some improvements in how we communicate about NextGen in a couple key ways:

- First and foremost, we have tried to emphasize that we are nearing the completion of the foundational phase, the replacement of the basic operating equipment in the NAS – that alphabet soup of programs we all know:
 - The ground installation of the baseline ADS-B infrastructure was completed last quarter.

- ERAM will be completed in the first quarter of next calendar year, which means we will be able to decommission the Host system.
- And TAMR, will refresh the technology in our major TRACONs by 2016.
- These are important milestones, and we are working hard both to keep these programs on track, and to communicate the fact that we are reaching an important inflection point with NextGen.
 - One way we communicate this is that Teri, Ed and I, together or in various combinations, now provide detailed quarterly briefings on the progress of these programs to key stakeholders like you, as well as the DOT, OMB, the Hill, the GAO, the airlines and others.
 - We are tracking, quarter-by-quarter, our progress over the next 24-36 months toward the completion of these milestones.
 - Those briefings create accountability, include set milestones, and track key programs toward

completion. You will be getting a view of that briefing here today.

Another part of our communication challenge is that we at the FAA tend to talk in terms of programs, when what the users of the system really care about is capabilities. You want to know how these programs will deliver benefits.

ADS-B is a good example of this. We completed the installation of more than 630 radio transceivers nationwide. This is an extremely important milestone in our implementation of NextGen, and I'm proud of the work that has brought us to this point, but what does that *mean*? What can those funny looking towers actually *do*?

- You may think that many of the benefits of ADS-B won't be realized until 2020, when aircraft in the U.S. are equipped with ADS-B Out, but we are seeing benefits today.

So let me talk a little about what capabilities ADS-B is delivering now, and what it will deliver going forward.

- We now have ADS-B coverage nearly everywhere there is radar coverage. And in some places where there isn't radar coverage, such as the Gulf of Mexico, mountainous regions of Colorado and low altitude airspace in Alaska.
- With ADS-B, controllers get an update of the aircraft position almost continuously, compared to every five seconds or longer with radar. This improves the precision of our tracking and leads to enhanced safety and greater efficiency.
 - Transmitting data every second may not sound like a big deal, but it *is* when you're talking about knowing the exact location of more than 30,000 commercial flights a day.
- ADS-B Out is more accurate and improves our tools to create more efficiency, and ultimately results in a smoother flow of air traffic.
- We are using ADS-B data in a new NextGen capability that will help conduct metering operations more efficiently and at more facilities.
- More precise and efficient spacing of aircraft means you are in better position to take advantage of fuel-saving NextGen

procedures, such as optimized profile descents, which also reduce flight time and noise.

- We need that ADS-B precision in order to bring you this capability.

What makes ADS-B capabilities possible is the upgrades to our air traffic control software system – ERAM and TAMR.

Our legacy air traffic management system has been limited by its processing speed, and by the number of radar inputs it could accept.

- In the terminal environment, some facilities only receive input from the one radar that sits at that airport.

With ERAM and TAMR, we can process more data, more efficiently, from more sensors.

- All of this leads to a greater capacity for air traffic controllers to more effectively handle their aircraft in their sectors. It leads to improved efficiency for the entire airspace.

Surface Surveillance

ADS-B also facilitates better sharing of surface data.

- We're improving the ability to see the surface of the movement area by using ADS-B and multilateration at nine additional airports in the next three years.
- This new system replaces the legacy surface surveillance system at these nine sites.
- This will bring better situational awareness to controllers and to airline dispatch offices, and will improve safety by giving users a common picture of surface movements.

Oceanic

And finally, ADS-B **In** is also providing better capabilities in oceanic airspace.

- We're partnering with United Airlines to document the fuel saving benefits of ADS-B In over the Pacific Ocean. This capability enables pilots to see traffic information in the cockpit. The trial is taking place in oceanic airspace controlled by Oakland en route center.
- By 2017, we plan to expand the ADS-B In Trail Procedure capability to oceanic airspace controlled by New York and Anchorage Centers. Flights over the Pacific and the Atlantic in U.S. controlled airspace, that are equipped with ADS-B In

will be able to take advantage of these fuel saving procedures. This year, we expect that ICAO will officially approve this procedure, which should encourage greater interest in using this technology.

ADS-B is also having an impact with General Aviation.

- This spring we launched a general aviation weather safety campaign.
- Nearly 75 percent of weather-related GA accidents are fatal.
- General aviation pilots with proper equipment have taken advantage of ADS-B to receive free traffic and weather information in the cockpit. These services are available nationwide.

This technology provides significant capabilities:

- Flight Information (FIS-B): This service broadcasts graphical weather to the cockpit based on what ground-based weather radar is detecting. In addition, it broadcasts graphical and text-based advisories including NOTAMs,

temporary flight restrictions, and reports on significant weather and thunderstorm activity. Equipped general aviation aircraft can receive this information at altitudes up to 24,000 feet.

- Traffic Information (TIS-B): This air traffic advisory service provides the altitude, ground track, speed and heading of aircraft flying in contact with controllers and within a 15-nautical-mile radius, up to 3,500 feet above or below the receiving aircraft's position. TIS-B transmits traffic data based on radar detections and will provide more situational awareness to pilots everywhere.

- I wanted to spend just a little time on the immediate benefits from ADS-B – in advance of the 2020 ADS-B Out equipage compliance date, which will deliver many more benefits . . . And longer-term, when ADS-B In and DataComm fundamentally change the way we operate in aviation.

* * *

Then, if I may, I'd like to cover just a few non-NextGen—related items from the FAA . . .

Budget Recap/Reauthorization

- In December, Congress passed a two-year budget, which provides us with some degree of certainty and temporarily avoids the cuts we would have had to make under the sequester. But unless there's another fix, the sequester will be with us again in 2016.
- Regardless of how the 2016 budget plays out, the levels of funding are still well below what was anticipated just a few years ago.
- We still need to find ways to operate more efficiently and provide services within our budgetary limitations. We still have to right-size the NAS.
- The current FAA authorization is set to expire in September 2015. As we gear up for reauthorization next year, we need to ask ourselves some basic questions about the mission of the FAA.

- The budget uncertainty of the last year has prompted a lot of discussion about how best to provide funding certainty for the FAA in the future.
- Many of those discussions surround whether or not there should be changes to the structure of the Air Traffic Organization. Many have asked whether it makes sense to privatize that function and support it with a funding structure that is more stable.
- Regardless of how that very interesting debate is resolved, our mission is the same – to continue to deliver the highest level of safety and services we can given the actual budgets appropriated.
- We have to prioritize our work, knowing that we cannot continue to provide all of the services we have in the past. We're having a robust discussion with our stakeholders about what we might be able to consider to stop doing, or do differently, through innovative business methods and technologies.
- The aviation community is diverse ... and its members do not always see eye-to-eye. Nevertheless, we have to build

a consensus on the direction we're going. I believe that consensus around the future direction of the FAA is absolutely critical if we are going to resolve our long term funding challenges.

- To that end, the Administrator has asked the agency's Management Advisory Council to help us answer these questions and provide us with recommendations. The MAC, as we call it, is made up of 13 members from industry, labor and government. They have spent a lot of time gathering the input of our stakeholders and bringing their views to the table. I know many of you have been interviewed.
- The FAA is committed to supporting our aviation system's infrastructure needs and ensuring that our system remains the safest and most efficient in the world.
- As we grapple with the future of what the FAA looks like, how it is funded, and how we provide services- we look forward to working with the NextGen community and getting your valuable ideas and input.

UAS Test Sites

I would also like to briefly mention where we are with respect to the UAS test sites.

As part of the current reauthorization, Congress mandated that the FAA would work to integrate unmanned aircraft systems into our nation's airspace.

- This spring we launched the first two test sites for unmanned vehicle research – two months ahead of the Congressional deadline.
- UAS are cleared to fly at the test sites in North Dakota and Alaska. In each case they are using a type of quad copter.
- In North Dakota, the unmanned Draganflyer will check soil quality and the status of crops. And then during the summer it will collect data to help develop an automated count of certain wildlife populations.
- The University of Alaska will conduct flights of the unmanned Aeryon Scout – a 2.5 pound helicopter with cameras. It will test the ability to locate, recognize and count wildlife populations.

- These test sites will help us identify operational goals as well as safety issues that we must consider when planning to expand the use of unmanned aircraft into our airspace.

International Highlights – (Bolton/Guillermet)

Finally, we intend to have as a standing agenda item at the NAC an update on our cooperation with international partners.

- I'd like to introduce Ed Bolton FAA Assistant Administrator for NextGen and Florian Guillermet, Executive Director, SESAR Joint Undertaking, who will be sharing with you the areas of cooperation between NextGen and SESAR.

- *Joint Presentation with SESAR – Ed Bolton/Florian Guillermet*

NextGen Highlights – (Bolton)

I mentioned earlier that we are updating on a quarterly basis our progress in key programs.

- Ed Bolton will share with you a look at our seven major NextGen programs we are tracking closely to advance and enhance NextGen through 2016. He'll also share with you

the progress we've made on NextGen priorities since we last met in Phoenix.

- *Presentation by Ed Bolton on seven major programs and NextGen priorities.*

Finally, let me close by thanking the participants of the subcommittee and the working groups – from industry and from FAA – who have been working diligently on the NextGen prioritization work.

- We've made a lot of progress since February.
- I'm pleased to see the energy and enthusiasm from both within the FAA and industry on developing a plan for our four focus areas.

I know we will have much more on each of these areas after the break, but I just want to acknowledge all of your good work, and the leadership that Bill and Steve and Margaret have provided.

Thank you again for your attention this morning, and that concludes the FAA Report.



**Federal Aviation
Administration**

Next**GEN**

NextGen Works for America: Chief NextGen Officer Update to Congress

Pursuant to Section 204 of the FAA Modernization and Reform Act of 2012 (P.L. 112-95)

June 3, 2014

Michael G. Whitaker
Deputy Administrator

The FAA with NextGen is taking the next quantum leap in air traffic control. Just over 100 years after the Wright brothers' first flight — a span that has seen airplanes guided by bonfires, flags, radios and radars — the agency is ushering in a new era of state-of-the-art, satellite-based technology that is making the world's safest aviation system even safer, delivering passengers to their destinations faster and with greater efficiency, while reducing aviation's impact on the environment.

Since I became Chief NextGen Officer in June 2013, the FAA has made clear and measurable progress toward completing the technological foundation that allows us to operate the NAS with greater efficiency and predictability and reduced environmental impact. We have strengthened our partnerships with key stakeholders, coming to an agreement on a set of near-term capabilities that both the FAA and industry will concentrate on over the next three years. And we have concrete evidence that demonstrates how NextGen works for aviation and for America as a whole.

Finishing the Foundation

We are on the cusp of finishing several key programs that underpin NextGen. In March 2014, we completed installation of the ground infrastructure for Automatic Dependent Surveillance – Broadcast (ADS-B), the new surveillance system that uses GPS signals to determine an aircraft's location. We will deliver traffic, weather and flight information directly to the cockpits of properly equipped aircraft across the country. These services have already proven to increase safety by enhancing a pilot's awareness of surrounding aircraft in flight, while also keeping them apprised of nearby weather activity and the availability of airspace and airport resources.

We are on track by the middle of 2015 to have all 20 en route centers operating with En Route Automation Modernization (ERAM), which will replace HOST, the computer system the FAA has been using to control traffic in high-altitude airspace since the 1970s. ERAM enables many new NextGen capabilities that could not be accommodated by HOST. By the end of 2016, we expect to have made substantial progress deploying Terminal Automation Modernization and Replacement (TAMR), a program that upgrades the automation platform used in FAA facilities that control low-altitude traffic approaching and departing from our nation's airports.

These accomplishments represent significant progress, and will generate benefits to the aviation community. They do not, however, represent a conclusion to NextGen.

Rather, these programs form the foundation for the next wave of capabilities. Going forward, ERAM and TAMR will be coupled with ADS-B and other NextGen programs still in development — such as Data Communications and a suite of traffic management and decision support tools — that will provide new ways to move aircraft safely and efficiently through the NAS.

Delivering Benefits Today

While NextGen changes are nearly invisible to the flying public, passengers today are, however, already enjoying the benefits of NextGen through shorter flights, better on-time performance and fewer missed connections. Air carriers are saving precious minutes and fuel and reducing aircraft exhaust emissions by taking advantage of more precise routing. General aviation pilots and other small aircraft operators are enjoying greater access to more airports across the country, particularly during poor weather. And air traffic controllers have access to new tools to help them make the critical decisions necessary to keep the world's busiest airspace system working as safely and efficiently as possible. NextGen is already working for America.

Automatic Dependent Surveillance–Broadcast

The initial benefits of ADS-B are being realized by pilots of properly equipped aircraft who are enjoying unprecedented levels of situational awareness through traffic and weather information being sent directly to the cockpit. This information alerts them to in-flight hazards and helps prevent accidents. The three types of ADS-B broadcast services now deployed are:

- **Traffic Information Service–Broadcast (TIS-B):** This air traffic advisory service provides the altitude, ground track, speed and distance of aircraft flying in radar contact with controllers and within a 15-nautical-mile (nm) radius, up to 3,500 feet above or below the receiving aircraft's position. A general aviation aircraft equipped with ADS-B In can also receive position data directly from other aircraft broadcasting on the same ADS-B Out frequency. In addition, TIS-B enables pilots to see aircraft equipped with transponders flying nearby even if those aircraft are not equipped with ADS-B Out.
- **Automatic Dependent Surveillance–Rebroadcast (ADS-R):** ADS-R takes position information received on the ground from universal access transceiver (UAT)-equipped aircraft and

rebroadcasts it on the 1090 MHz frequency. Likewise, ADS-R rebroadcasts 1090 MHz data to UAT users. In concert with TIS-B, ADS-R provides all ADS-B In-equipped aircraft with a comprehensive airspace and airport surface traffic picture. ADS-R delivers traffic data within a 15-nm radius 5,000 feet above or below relative to the receiving aircraft's position.

- **Flight Information Service–Broadcast (FIS-B):** This service broadcasts graphical weather to the cockpit based on what ground-based weather radar is detecting. In addition, FIS-B broadcasts text-based advisories including Notice to Airmen messages and reports on everything from significant weather to thunderstorm activity. UAT-equipped general aviation aircraft can receive this information at altitudes up to 24,000 feet.

We initially demonstrated the value of these services in Alaska, where many residents rely on general aviation for travel and supplies. National Transportation Safety Board data show that the accident rate for ADS-B-equipped aircraft there is 30 percent lower than that of non-equipped aircraft, and more and more reports of accidents avoided are coming in as more pilots take advantage of this technology.

ADS-B has capabilities for commercial aviation as well. For example, in 2015 the agency will implement ADS-B-enabled In-Trail Procedures in oceanic airspace that will help airlines save fuel. Consider that a single oceanic flight can consume 300,000 pounds of fuel. When an aircraft deviates from an optimum altitude by as little as 1,000 feet, it can consume an additional 1 percent of fuel, according to research conducted by the Massachusetts Institute of Technology. Multiply that by 10 or more hours and it adds up.

Because there is no radar surveillance over the ocean, aircraft flying at the same altitude previously had to be separated by 10 minutes, or about 80-100 nautical miles. The old separation distance between flights made it difficult for aircraft to get cleared to change to more fuel-efficient altitudes as moving up or down puts the planes too close to one another.

But this is a better way. Pilots of properly equipped aircraft will have a display showing the location of other ADS-B-equipped aircraft nearby. After coordinating with controllers, the pilot will receive clearance to climb or descend safely through one or more flight levels even when other aircraft are as close as 15 nautical miles or no more than 2,000 feet above or below.

The FAA plans to deliver more ADS-B-based capabilities over the coming years. Ground-based Interval Management-Spacing capitalizes on ADS-B to streamline traffic flows into terminal airspace while Flight Interval Management-Spacing uses ADS-B Out to enable more precise spacing between aircraft. We expect to have these capabilities ready to use before the 2020 mandate to equip takes effect.

Performance Based Navigation

Performance Based Navigation (PBN) is a blanket term for more precise GPS-based navigation methods that allow optimal routing in all phases of flight. The FAA has been working with stakeholders for many years on PBN implementation, and today there are more PBN procedures and routes than there are conventional ones.

The agency is now employing a more systematic approach to PBN deployment through our Metroplex initiative. A metroplex is a geographic area with several airports and lots of air traffic that interact in the same airspace. The FAA is actively working to improve how air traffic flies into, out of and through 13 targeted metroplexes rather than dealing with airports one at a time.

The success of this approach can be seen in the Denver Metroplex project. This year Denver realized the culmination of a three-year effort during which the FAA worked with aircraft operators and nine area airports to create one of the most comprehensive operational networks of NextGen satellite-based arrivals and departures in the nation. This network enables more flexibility and better access to the airports, which the FAA estimates will save operators \$9.8 million annually by using 3.2 million fewer gallons of fuel. Overall, approximately 80 percent of all aircraft that fly in and out of Denver International are equipped to take advantage of the new procedures.

Specifically, the Denver Metroplex project introduced a network of 51 satellite-based procedures designed to provide more direct routes, deconflict the airspace, save fuel and reduce emissions. This includes 21 arrivals with optimized profile descents, which allow aircraft to reduce thrust and glide down to the runway using less fuel and creating less noise. The project also introduced 16 departures procedures and two GPS approaches, which were published in January 2013. Twelve additional sophisticated approach procedures, known as Required Navigation Performance Authorization Required (RNP AR), went into operations in late June 2013. These RNP AR

procedures provide a more stable but curved approach, equaling a shorter flying distance. Flying these approaches requires specific aircraft instruments that contain the aircraft in a very narrow and precise corridor of airspace. The FAA has seen an approximate 35 percent decrease in the number of go-arounds caused by aircraft coming in too high or too fast. Aircraft on the new arrival procedures are more stabilized on their final approach as they usually arrive on a more predictable course and speed.

United Airlines was the lead carrier working with the FAA on this project. All of United's aircraft are equipped to fly satellite-based procedures and the airline estimates saving 100-200 pounds of fuel on each arrival. With an average of 120 flights per day, that equates to an estimated annual reduction of 4.35-8.7 million pounds of fuel and 13.8-27.6 million pounds of carbon dioxide emissions. That figure could triple when an arrival procedure connects to an RNP procedure and eliminates about 10 miles of flying for aircraft equipped to fly the more sophisticated routes.

In addition to the Metroplex projects, the FAA continues to implement PBN at other airports across the country, including Wide Area Augmentation System Localizer Performance with Vertical guidance procedures that increase access to airports in lower visibility conditions and are especially helpful to general aviation pilots.

System Wide Information Management

System Wide Information Management (SWIM) is the digital data delivery backbone of NextGen, ensuring the right people have the right information at the right time. Since 2010, NAS users — particularly airline operations centers — have been accessing weather and other flight planning information via SWIM, enabling airline dispatchers and traffic managers to collaborate on the routing and rerouting of traffic based on real-time information. Users benefit by having access to a single, comprehensive data feed that contains management initiatives, airport runway configurations and which airports are in deicing.

In August 2013, Miami Terminal Radar Approach Control (TRACON) became the first facility to begin distributing data from the towers included in its coverage area to an airline via the SWIM Terminal Data Distribution System (STDDS). STDDS takes raw surface data and converts it into easily accessible information. The system sends surface information from airport towers to the corresponding TRACON, which makes the information available via SWIM messaging services. Airlines and airports can use this information to streamline surface

operations and increase efficiency. Ultimately, 136 airports will provide surface information via STDDS at 39 TRACONs to users via SWIM services.

The FAA is planning to unveil several new SWIM capabilities next year, including Flow Information Publication, which provides subscribers with access to traffic flow information.

NextGen Ahead

A complex, long-term undertaking such as NextGen requires a constant dialogue with our stakeholders to ensure we are on track. We recognize that while meeting programmatic milestones is one measure of success, ultimately industry cares most about the operational improvements enabled by these programs, and the tangible benefits they provide. Having laid the foundation with ADS-B, ERAM and TAMR, we are now focused on deploying new capabilities over the next three years.

The FAA works closely with stakeholders each and every day through Metroplex working groups, concept validation projects, and equipage incentive partnerships. Last year we asked industry, through the NextGen Advisory Committee, to identify their top priorities among all of our planned capabilities. The resulting list falls into four categories: PBN, multiple runway operations, surface operations, and data communications. Because some capabilities require operators to make changes to their aircraft and flight operations centers, as well as to provide additional pilot training, we are working to develop a master implementation plan for this set of capabilities that will include commitments from both FAA and the industry.

It is important to remember that NextGen does not end after this near-term work is completed. The foundation we've laid will support additional capabilities that we plan to deploy through the end of the decade. It is also important to remember that delivering NextGen to the traveling public is not a foregone conclusion. Some of the foundational capabilities we described above have already been delayed due to the disruption of the sequester. For others, we have had to delay implementation schedules as projected funding has not materialized.

Next year will be pivotal for the next stage of NextGen, as we make investment decisions for a series of future programs. These decisions are dependent on stable funding. With the continuing support of Congress and our stakeholders, we will deliver NextGen and its benefits to aviation, the economy, and the American people.

Wake Recategorization Recommendation

Summary

Wake recategorization (ReCat) replaces the existing weight based wake turbulence separation categories with approved wake turbulence categories that more optimally group aircraft based on their wake turbulence characteristics. This provides capacity benefits with the current fleet mix at many of the Core 30 and other large airports. ReCat is a high benefit, low cost program that is ready for implementation.

Incremental early benefits can be realized by increasing the number of ReCat locations in FY14 and FY15. Industry consensus is that ReCat is a high benefit program, and provides near term tangible, measurable benefits to encourage NextGen investments, as well as increase aviation community confidence in NextGen. This capability is available and the benefits are realizable today. The NAC recommendations to the FAA in September emphasized that timing matters. In this case, deploying more ReCat locations sooner rather than later where measurable benefits can be achieved, will continue to solidify the operator's commitment to NextGen.

Since the NAC Master Implementation Plan will not be delivered until October, it is unlikely a recommendation would be timely to support FY15 implementations. Therefore the Multiple Runway Ops Team, through the NAC SC, is recommending that the NAC provide this recommendation to FAA to increase the number of ReCat locations in FY14 and FY15 to a minimum of 8.

Recommendation

The NAC recommends a minimum of 8 ReCat locations in FY14 and FY15.

Background

At the February 2014 NAC meeting, the NextGen Integration Working Group (NIWG) was formed to perform a "deep dive" on four of the Tier 1 priorities. For the purpose of the deep dive, ReCat was combined with the Closely Spaced Parallel Runway Operations (CSPO) capability, which is being assessed by the Multiple Runway Ops Team. ReCat is an individual stand alone Tier 1A priority identified by the NAC in its NextGen Prioritization Report submitted to FAA in September 2013. A Tier 1A priority is deemed to be "high in benefit and readiness."

ReCat replaces the existing weight based wake turbulence separation categories with approved wake turbulence categories that more optimally group aircraft based on their wake turbulence characteristics, thereby providing capacity benefits with the current fleet mix at many of the Core 30 and other large airports. ReCat was implemented in Memphis in November 2012, Louisville in September 2013, and Cincinnati in March 2014 and has generated significant capacity and efficiency benefits. Consequently, in early 2014, and prior to the initiation of the NIWG activity, industry asked FAA for the ReCat Phase I waterfall. The waterfall identified seven locations for implementation in 2014 with the balance of the Phase I locations due to be completed in the first half of 2015.