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or
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Prepared by the NextGen Mid-Term
Implementation Task Force

NextGen Mid-Term Implementation Task Force Report

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Task Force Chairman:

**Captain Stephen Dickson,
Delta Air Lines, Inc.**

Designated Federal Official:

Dr. Michael Romanowski, FAA

Working Group Co-Chairs:

Stephen Vail, FedEx Corporation

David Ford, Lockheed Martin Corporation

Ann Tedford, FAA

John Hennigan, FAA

RTCA Leadership:

Margaret Jenny, President

The RTCA Staff

Copies of this document may be obtained from:



RTCA, Inc.
1828 L St, NW, Suite 805
Washington, DC 20036
202-833-9339 (p)
202-833-9434 (f)
info@rtca.org

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www.rtca.org

***Task Force Recommendations
Chart a Course to the Successful
Implementation of NextGen***

It's not about Technology

*Each Step Designed to Improve the
Performance of the NAS*

*Is Specific about **What, Who,
Where, and When***

*Focuses on Major Airports in
Metropolitan Areas*

*Captures Commitments to Invest
From Operators*

*Priorities are Driven by Financial
and Operations Analysis and Data*

*Leverages Current Equipage to
Provide Early Benefits*

*Proposes Financial Incentives for
Technology only if Tied to Benefits*

*Addresses Institutional Challenges
to Enhance Confidence in Outcome*

*Establishes Institutional
Mechanism to Follow Up*

***This Approach Will Pave the
Way to a Government-Industry
Partnership Essential to
Improving the Nation's Air
Transportation System***

EXECUTIVE SUMMARY

On January 16, 2009, Hank Krakowski, the Chief Operating Officer of the FAA Air Traffic Organization (ATO), and Peggy Gilligan, FAA Associate Administrator for Aviation Safety (AVS), sent a letter to RTCA requesting that a government-industry Task Force be established to forge community-wide consensus on the recommended NextGen operational improvements to be implemented during the transition between now and 2018. The Task Force was also asked to focus on maximizing NextGen benefits and facilitating the development of the business case for industry investment. The Task Force did not attempt to re-write the NextGen Implementation Plan and assumed that the baseline programs and technologies would continue to be developed by the FAA during the transition. The Task Force did look for opportunities to accelerate the transition where existing technologies could provide a “bridge” to NextGen programs that are still in development. Over 300 people from nearly every segment of the aviation community signed up to work toward a consensus set of recommendations on NextGen presented in this report.

In response to the FAA request, the Task Force:

- **Documented commitments by the FAA and Operators.**
- **Prioritized the Operational Capability Sets.**
- **Defined “What,” “Where,” “Who,” and “When,” for each capability.**
- **Recommended strategies and means to accelerate NAS-wide operational benefits for NextGen (e.g., consensus on preferred means of accommodating mixed-equipage operations).**
- **Recommended business strategies to ensure delivery of benefits and encourage equipage.**

The Task Force followed a clearly defined set of guiding principles aimed at transparency and data-driven

prioritization. Members first considered candidate operational capabilities that take advantage of existing equipage that could evolve to capabilities using more sophisticated technologies over time. All capabilities considered had at least one operator committed to invest in its implementation, and all

capabilities identified the location and timeframe for delivery of benefit. To be clear, the Task Force completed the entire assessment process and financial analysis assuming that no government funding, loans or incentive programs would be available for the user community, and that the business case for equipage would have to stand on its own. Having said this, the Task Force also recognizes that in some cases funding or other incentive programs could accelerate the process of equipping with foundational NextGen technologies. The structuring of any incentive program is extremely important, however, in order for the system and users to realize tangible benefits within a reasonable timeframe. If possible, industry should have a role in designing any proposed incentive program to ensure that resources are efficiently directed and that intended benefits are achieved. This subject is addressed in greater detail in the section of the report on incentivizing equipage.

For each capability, the Task Force identified and documented all known challenges to implementation. These challenges included such things as changes in role of pilots, controllers, aircraft dispatchers, technology required, the requirement to establish new standards, lack of implementation bandwidth, the need for policy changes, requirements for certification and operational approvals, and other barriers to success.

A robust assessment process was established and used to assess the value of all candidate operational capabilities. Known benefits, costs and risks were captured and enabled the Task Force to look at the relative value of all capabilities. Expert opinion and operational experience supplemented the assessments where data was not readily available. All assessment information has been captured in the Task Force knowledge base, and will be delivered along with the recommendations. As new information is brought forward, the database will be updated. An evaluation matrix was used to capture the benefits, costs, risks, readiness and other assessments of each candidate operational capability. That evaluation matrix has been populated and was a key input into the final prioritization and recommendations of this Task Force.

Tiers: Subject to the rule that each operational capability considered for inclusion in the report had to contain a well-defined “What,” “Where,” “Who” and “When,” the Task Force created an initial list of operational capabilities to be considered for implementation by 2018. This candidate list was assessed on numerous dimensions in the process of getting it to a shorter list. The Task Force placed the capabilities in bins (Tiers) based on expected benefit and perceived risk, cost and readiness. Capabilities assessed to be of high benefits and relatively low risk were placed in Tier 1. Capabilities of relatively high benefit but some higher risk or cost were placed in Tier 2, and the rest of the capabilities were placed in Tier 3. This report recommends the implementation of all Tier 1 operational capabilities. The Tiers are discussed further in Section 3.

TASK FORCE OPERATIONAL CAPABILITY RECOMMENDATIONS ARE SUMMARIZED BELOW:

The specific recommendation number(s) in parentheses can be used for tracking further information in the Appendices E, F, G and H.

1. Surface

Improve surface traffic management to reduce tarmac delays and enhance safety, efficiency and situational awareness by defining, standardizing requirements, and implementing the capture and dissemination of surface operations data to pilots, controllers, ramp towers and user operations centers. These actions should be undertaken under the auspices of one consolidated point of responsibility, authority and accountability within the FAA, in accordance with a coordinated execution plan jointly established by industry and government.

To resolve Surface problems, the Task Force recommends that the following operational capabilities be implemented:

- **Surface Situational Awareness Phase 1: Deploy ground infrastructure to capture and integrate surface activities (40)**
- **TFM Common Operational Picture: Define consistent views of operational data for collaborative decision-making (43)**
- **Surface Connectivity & Surface Situational Awareness Phase 2 among FOCs, FAA, Airports (38, 41)**

2. Runway Access

Increase runway access, especially in low visibility, to converging, intersecting and closely-spaced parallel runways. Accomplish this by leveraging potential capacity gains achievable through accurate and predictable flight paths, as well as enhanced surveillance methods. Foundational activities are based on existing ground and aircraft capabilities leading to a determination of needed additional investment.

To resolve Runway Access problems, the Task Force recommends that the following operational capabilities be implemented:

- **Increase capacity and throughput to converging and intersecting runways (9)**
- **Improve parallel runway operations in a phased manner, where near-term commitment and implementation successes dictate the need for mid-term investments (37a, 12, 13, 14)**

3. Metroplex

Relieve congestion and tarmac delays at major metropolitan area airports, inefficiencies at satellite airports, and surrounding airspace by instituting tiger teams that focus on quality of implementation at each location and deconflicting of adjacent airports. Core capabilities to leverage are RNAV, with RNP where needed (e.g., when RF turns are called for); optimized vertical profiles using vertical navigation; use of 3 NM and terminal separation rules in more airspace; integrated approach to airspace design and classification; and ATC, flow and surface traffic management tools.

To resolve Metroplex problems, the Task Force recommends that the following operational capabilities be implemented:

- **Optimize RNAV and RNP operations, institute tiger teams that focus on quality at each location (29, 32a, 32b)**

- **Integrate procedure design to deconflict airports and expand use of terminal separation rules (4, 21a)**

4. Cruise

Improve efficiency of cruise operations by increasing the ability to disseminate real-time airspace status and schedules (particularly with respect to Special Activity Airspace); improving flow management to better utilize time-based metering and flight operator capabilities; and implementing data communications between ATC systems and aircraft to more effectively manage traffic and exchange routing and clearance information.

To resolve Cruise problems, the Task Force recommends that the following operational capabilities be implemented:

- **Special Activity Airspace: Efficient management and use of SAA through real-time data exchange of status and schedules (35)**
- **Improve time-based metering and leverage operator capabilities (24, 25)**
- **Develop Area Navigation-Based En Route System (30)**

5. Access to the NAS:

Improve access to and services provided at non-OEP airports and to low altitude, non-radar airspace by implementing more precision-based approaches and departures, along with the expansion of surveillance services to areas not currently under radar surveillance.

To resolve Access problems, the Task Force recommends that the following operational capabilities be implemented:

- **Low Altitude Non-Radar: Extend radar-like services to low altitude airspace without radar surveillance (28)**
- **Implement LPV procedures for airports without precision approaches (22)**

Cross Cutting Recommendations

In addition, the Task Force submits recommendations in two capability areas that cut across the five domains outlined above:

1. Data Communications

Improve cruise and transition operations by using data communications to enable more efficient use of available or forecast capacity in the NAS. Increase the ability to better adapt to changing conditions through improved dissemination of tactical reroutes around weather forecast and congestion.

To resolve problems due to lack of digital data communications and associated applications, the Task Force recommends that the following operational capabilities be implemented:

- **Digital ATC-Aircraft Communications for Revised Departure Clearances, Weather Reroutes, and Routine Communications (16, 17, 39, 42a, 44)**

2. Integrated Air Traffic Management (I-ATM)

Create an Integrated Air Traffic Management System that leverages new technologies and collaboration with the users, and implements solutions to traffic flow problems that are effectively integrated across time and air traffic control domains, to achieve the efficiency goals of the service provider and the users.

To resolve problems due to lack of an Integrated ATM approach, the Task Force recommends that the following operational capabilities be implemented:

- **Integrated CDM/TFM/ATC Solution to traffic flow problems (47)**
- **Improved Collaborative ATM (C-ATM) Automation: C-ATM automation to negotiate user-preferred routes and alternative trajectories (7b, 8, 46)**

Overarching Recommendations

In addition to the five operational capability recommendations and the two cross-cutting recommendations, the Task Force recommends that the FAA consider the following Overarching Recommendations deemed critical to the success of implementing the recommended operational capabilities:

1. Achieving Existing 3 and 5 Mile Separation Standards

Implement a more collaborative approach to change management and build on relationships by increasing transparency, including robust use of the controller Air Traffic Safety Action Program (ATSAP), creating a program using incentives for operations that perform at most efficient levels and, finally, building metrics that best evaluate the highest performing locations by measuring efficiency and safety in each location's operation.

2. Incentivizing Equipage

Incentivize investments in NextGen capabilities by: 1) providing financial incentives either in the form of low-interest loans, direct subsidies of equipage, or other innovative mechanisms such as other user fees, fuel/excise taxes or income tax credits; 2) providing a timely, unambiguous set of processes (regulations, avionics certifications, operational procedures and approvals, engineering support, etc.) to assure the realization and timelines by NAS users of a sufficient level of operational benefits that justify investments in new avionics or new Flight Operations Centers technologies, i.e., to enable them to make the business case for those investments; and 3) establishing a National Airspace System (NAS) where system users who have aircraft with higher aircraft performance/capability levels get higher levels of service. This is referred to in the FAA's Next Generation Implementation Plan as the Best-Equipped, Best-Served (BEBS) concept.

3. Streamlining

Identify the operational approval and certification issues that may impede adoption and acceleration of NextGen capabilities and implement timely solutions to these challenges.

4. Post Task Force Follow-Up

To maintain the momentum created over the past seven months and to facilitate holding the community consensus intact through the implementation of NextGen, establish institutional mechanisms to facilitate continued transparency and collaboration in the planning, implementation, and post-execution assessment of future activities as well as updating NextGen priorities as research and development progresses on key capabilities.

All supporting data for the recommendations are contained in the appendices.