REDAC / NAS Ops

Review of FY 2022 Proposed Portfolio

Operations Concept Development and Infrastructure (ATDP)

BLI Number: 1A01C

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Operations Concept Development and Infrastructure (ATDP) 1A01C

What are the benefits to the FAA

This program supports the FAA's Strategic Initiatives by delivering benefits through technology and infrastructure; Supports the development, analysis, and simulation of new concepts to assess requirements and to evaluate the impact of the concept on system capacity, efficiency, safety and human performance. Evaluation criteria include the following:

- Impact/Improvement to Air Traffic Service Providers, airspace users, and automation that could increase capacity,
- Impact/Improvement on airspace structure which may increase productivity and hence capacity,
- Impact/Improvement on communication, navigation, and surveillance (CNS) requirements to support the FAA's efforts to reducing cost, increasing capacity and efficiency and,
- Impact/Improvement on automation, display, and facility configuration elements to increase productivity and hence capacity.

What determines program success

Success is measured by the completion of the goals identified in multi-year plans developed for each activity. Initiatives that successfully complete all the project goals identified are then presented as candidates for acquisition.

ATDP/ BLI# 1A01C
Overview Capabilities

People:

- Program Manager: Guillermo Sotelo, AJV-7
- Subject Matter Experts: Traffic Managers, ATC, Discipline Experts, Airspace User Community
- Research Partners: ANG, NASA, MITRE, Lincoln Labs, Volpe, Academia

Laboratories:

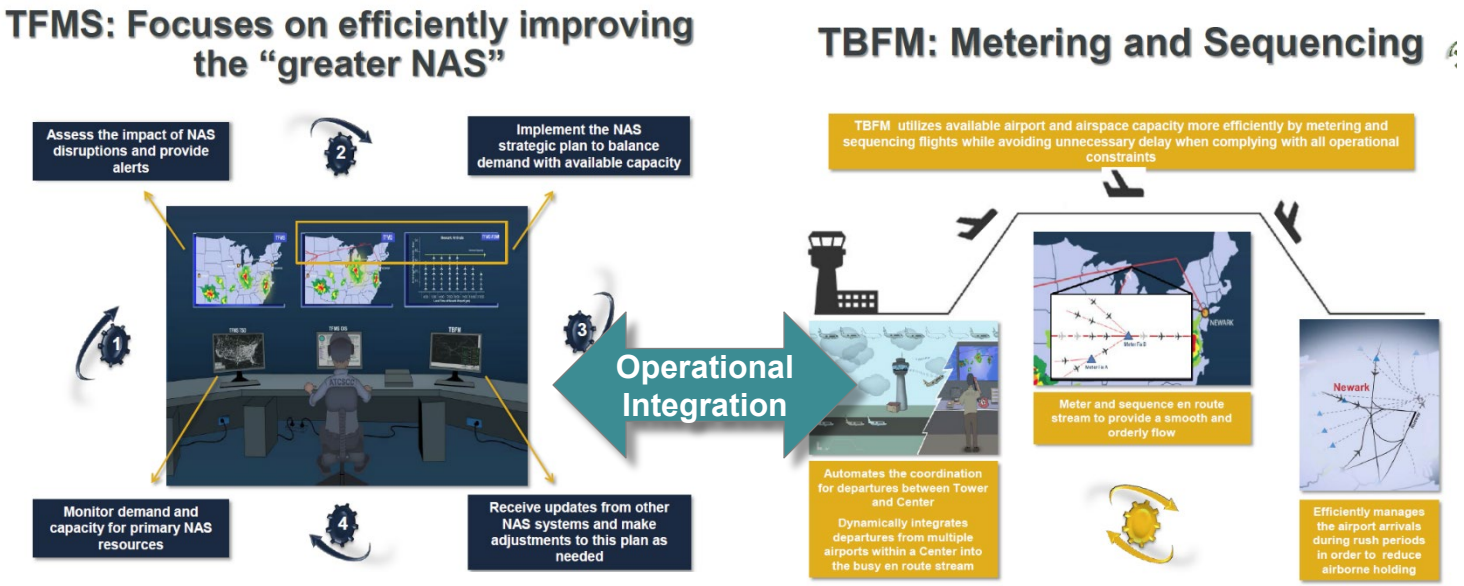
- MITRE
- Tech Center
- Florida Test Bed
- NASA
- Volpe

ATDP– Accomplishments in FY19

- **TBFM – TFMS Operational Integration**
  - Completed assessment of the proposed extended metering design at PHL as the new baseline condition
- **Emerging Use of Dashboards for Operations**
  - Completed the draft shortfall analysis report

TBFM-TFMS Operational Integration

- **Description**
  - Identify capabilities and/or data exchange between TBFM and TFMS to operationally integrate strategic and tactical flow management initiatives



Graphic source: FAA

Potential Benefits

- ✓ Reduced double delay experienced by operators
- ✓ Informs expectations for improved operator fleet management decision-making
- ✓ Reduced airborne delay

TBFM-TFMS Operational Integration (cont.)

- **Status:**
  - Updated PHL's operational baseline view for nominal days, taking into consideration the proposed extended metering design
- **Next Steps:**
  - Complete analysis to identify opportunity space for preconditioning of traffic for arrival metering operations at PHL
  - Develop recommendations for next steps to include a potential field trial
  - Continue collaboration with NASA to define knowledge transfer package associated with the Integrated Demand Management (IDM) research

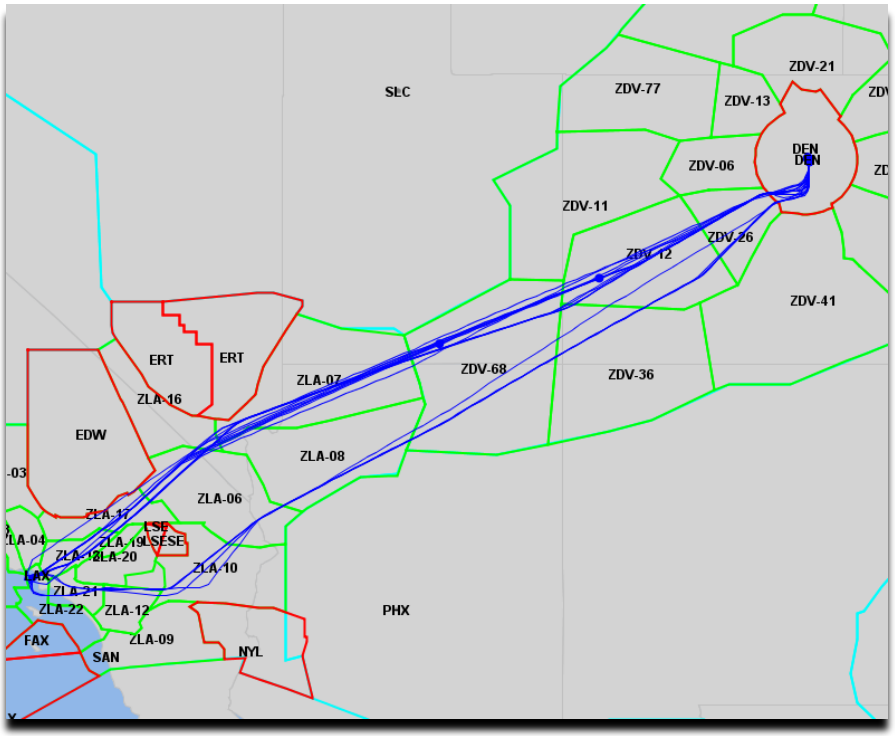
Use of Required Time of Arrival (RTA)

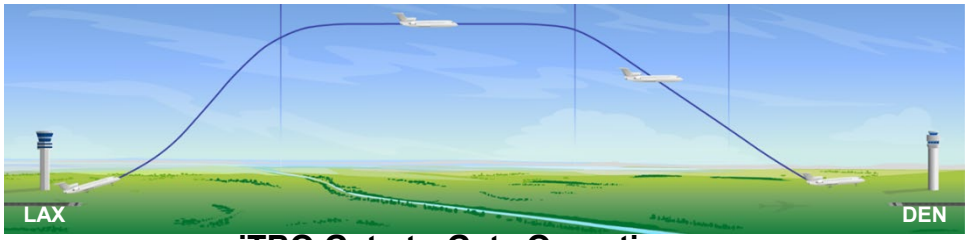
- **Description:**
  - Assess the use of RTA in the cruise phase of flight, for extended metering operations, before top of descend
- **Status:**
  - Results indicate that using RTA to manage extended metering operations in the cruise phase of flight is feasible (Leveraging the Flight Management System (FMS) RTA capabilities available today to meet a TBFM generated schedule)
- **Next Steps:**
  - Requirements under consideration as part of the next TBFM enhancement investment,
  - On-going collaboration with AJT to address potential operational concerns.

Emerging Use of Dashboards for Operations

- **Description:**
  - Analyze shortfalls within the context of situational awareness at the ATCSCC
  - Develop path forward to mitigate shortfalls and enhance situational awareness
    - Includes NAS performance monitor and alert capabilities for Traffic Managers at the ATCSCC
    - Provides a view of NAS status using a set of performance metrics and data sources with configurable alert thresholds
  - Leverages existing NAS Operations Dashboard (NOD) prototype, and the TBFM Dashboard concept
- **Status:**
  - Completed initial shortfall analysis
- **Next Steps:**
  - Develop recommendations for mitigating the shortfall space

iTBO Gate-to-Gate Strategy





iTBO Gate-to-Gate Operation

Scope: Gate-to-Gate Operations Between Select Origin-Destinations

Context: Multi-Year Incremental Transition Towards iTBO

iTBO Gate-to-Gate Strategy

- **Description:**
  - Describes the envisioned integrated operations, detailed on a position-by-position basis, accounting for the collective use of iTBO capabilities, in key operational situations by key ATM roles
  - Accounts for current procedures and expectations/key assumptions about forthcoming new procedures
  - Informs field training development and provides site-agnostic assumptions for developing SOPs and LOAs
- **Status:**
  - New start

Technical Analysis for the Integrated Traffic Flow Management Evolution

- **Description:**
  - Supports a cross-LOB FAA team to initiate technical analyses toward defining a strategy for a future flow management operational state
  - Take stock of key TFM research and analyses completed, on-going field activities, and forthcoming plans that impact TFM operations
- **Status:**
  - New start

Anticipated Research in FY20 and FY21

Planned Research Activities

- Operational Integration Analysis: Conduct analysis of possible operational integration issues as emerging concepts evolve,
- Advanced Rerouting and Time-Based Management (TBM) Operations: In collaboration with NASA, conduct concept validation activities, support technical transfer activities, and artifact development for the integration of advanced rerouting and TBM,
- Trajectory-Based Operations (TBO): Leveraging previous trajectory-related elements/activities (e.g., PBN, T/S/S Tools), and international activities, mature TBO concepts through scenario development and simulation activities.

Expected Research Products

- Identification of operational opportunities and challenges as emerging concepts evolve,
- Simulation activities, mature Concept of Operations, and risk mitigation recommendations,
- Tech transfer packages.

Emerging FY22 Focal Areas

- **Operational Integration Analysis as emerging concepts evolve**
- **Enhanced synchronization of strategic and tactical capabilities to optimize Time-Based Management**

Operations Concept Development and Infrastructure (ATDP)

Research Requirement

Enhanced synchronization of strategic and tactical capabilities to optimize Time-Based Management (TBM) operations

Other areas may surface as plans mature

Outputs/Outcomes

Concept validation supports development, analysis, and simulation of new concepts to assess requirements and to evaluate the impact of the concept on system capacity, efficiency, safety and human performance potentially leading to investment decision.

FY 2022 Planned Research

Analysis and refined concepts leading to enhanced synchronization of strategic and tactical capabilities to optimize TBM operations

Analysis and concept generation on operational issues as they arise

Out Year Funding Requirements

FY19	FY20	FY21	FY22	FY23
$ 5M	$ 5M	$ 6M	$ 6M	$ 6M