



# Trajectory Based Operations Mobilizing Facilities and Implementing Change

## Trajectory Based Operations (TBO)

is an air traffic management method that...

- Plans
- Manages

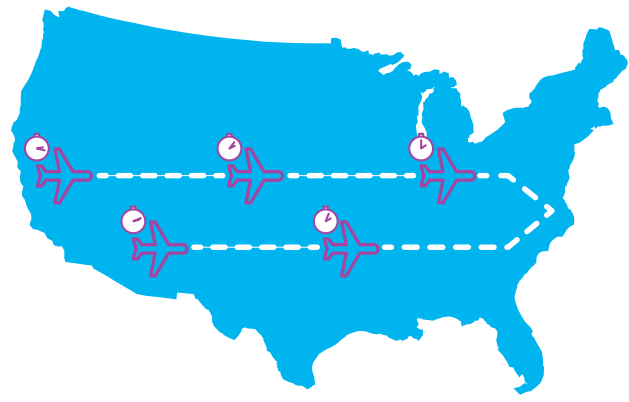
### flights through the NAS



TBO delivers tighter adherence to precise flight trajectories and meters traffic flows using time instead of distance

## The Best Path Forward...

TBO has moved from planning to implementation and integration in the NAS. It is being implemented incrementally and is already demonstrating benefits.

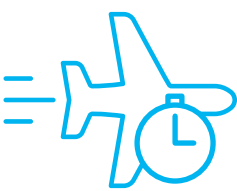
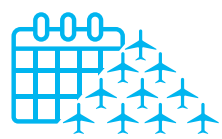


## TBO Benefit



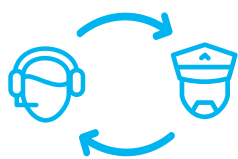
**Increased throughput** with more precise trajectories and better decision support tools

**Increased predictability** with advanced planning, and time-based management



**Improved Flight Efficiency** due to delay redistribution, reduced departure wait times, more effective route management, and smooth descent profiles

**Increased Operator Flexibility** through enhanced collaboration



## ...Together

As the primary users of TBO, traffic management personnel, controllers, and pilots have been crucial to the development of technology and implementation strategy. Their participation continues to help design a robust tool set that will enable the execution of the TBO vision.



# TBO PROVIDES THE RIGHT TOOL AT THE RIGHT TIME

# What is the Scope of TBO?

TBO is a collection of systems, capabilities, processes, and people working together to achieve operational objectives



## Time-Based Management (TBM)

Manages Trajectories by Scheduling and Metering Aircraft through Constraint Points



## Performance Based Navigation (PBN)

Enables Aircraft to Accurately Navigate along their Trajectories



## Enterprise Enablers

Expands and Automates Sharing of Common Information about Aircraft Trajectories

# Key TBO Implementation Milestones

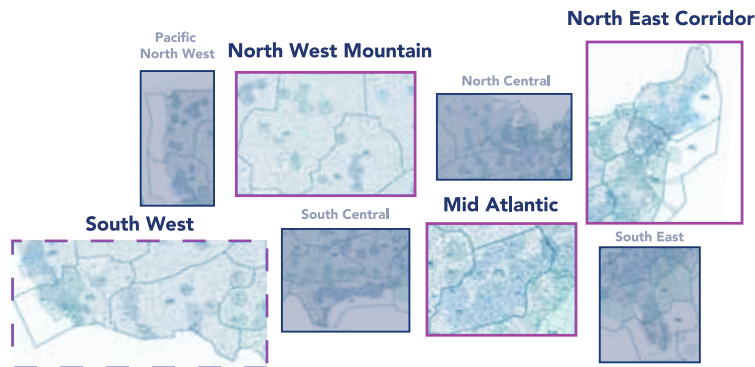
### North West Mountain

- ✓ DEN Metroplex
- ✓ Extended Metering to DEN
  - ✓ Infrastructure
  - ✓ Dep Scheduling
  - ✓ Arrival Metering
- Integrated Departure Arrival Capability (IDAC)
- DEN Terminal Sequencing and Spacing (TSAS)
- Terminal Flight Data Manager (TFDM)

### South West

- LAS Metroplex
- Update airspace/procedures infrastructure
- Extended Metering for LAX
  - Infrastructure
  - Dep Scheduling
  - Arrival Metering
- LAX TSAS
- TFDM

## Operating Areas



Deconfliction across all operating areas and FAA projects

### North East Corridor

- Extended Metering to PHL, EWR
  - ✓ Infrastructure (PHL)
  - Dep Scheduling
  - Arrival Metering
- Atlantic Coast Routes
- TFDM

### Mid Atlantic

- Airspace/procedures infrastructure update
- Evaluate extended metering for ATL
- Extended Metering for ATL
  - ✓ Infrastructure
  - ✓ Dep Scheduling
  - Arrival Metering
- ✓ IDAC
- TFDM

# TBO Maintains Basic Operational Roles, But Their Execution is Evolving

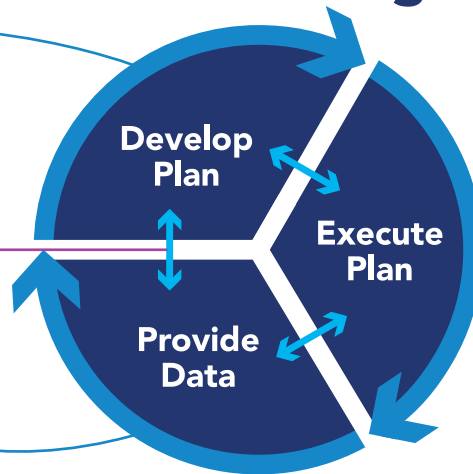
## ATCSCC

Monitor and manage a safe, orderly, and efficient flow of air traffic

Multi-directional communications is critical

## Operators

Collectively convey needs and allow the FAA to derive solutions

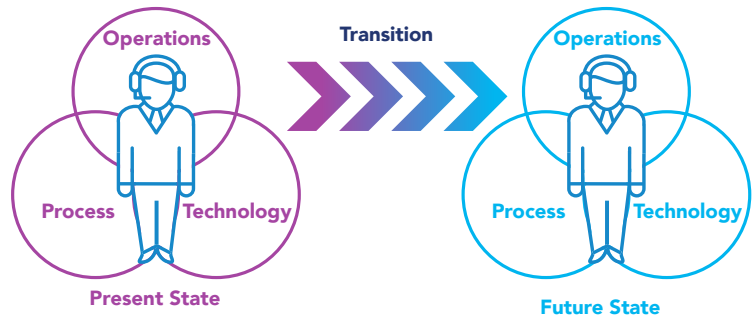


## Facilities

Ensure safe, orderly and expeditious flow of air traffic

# Change Strategy

Addressing the people component to achieve implementation success

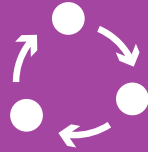


## Leads

**Air Traffic Services POC**

**Command Center POC**

**NATCA POC**



## Processes

Conducts change strategy activities

Identifies key operational change obstacles, develops mitigation strategies, and applies these strategies

Works closely with the FIT, is a key resource, and supports them to develop/implement their change strategy plans



## Coordinating Mechanisms

Meets bi-weekly or as needed with the TBO Support Team to exchange info, status activities, etc.

Meets with FITs on a regular basis to ensure support and communication is in place for change strategy

**Bridging gaps** in training and strengthening orders and procedures related to TBO

- **Coming Soon** – TBFM Fundamentals Briefing and DCP for 7210.3 to address needs identified by field facilities
- **Renewed focus** on creating national standards for TMC and controller training
- **Building the foundation** for TBO integration success

