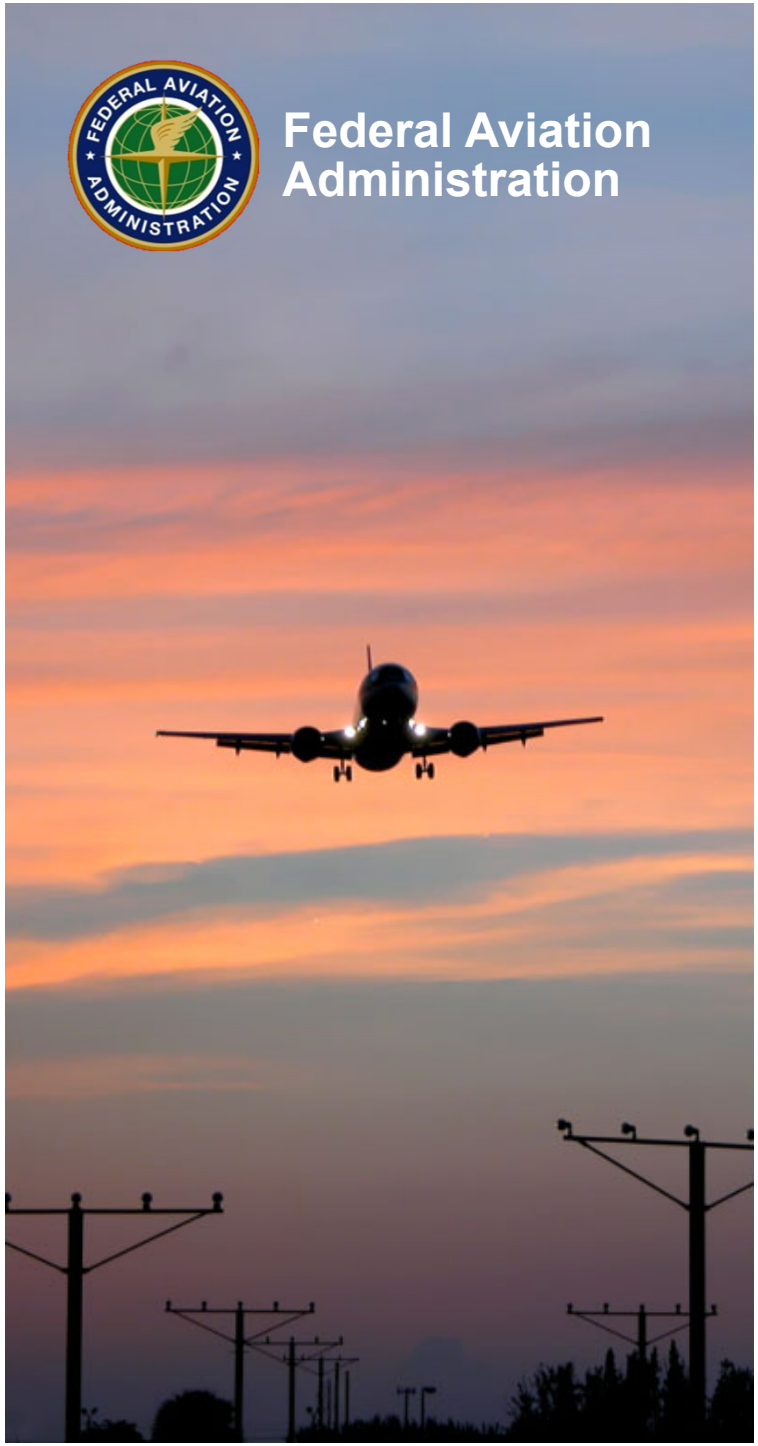
En Route and Oceanic Second Level Engineering

Test Function, AJM-256

SLE Test

Past – Present – Future

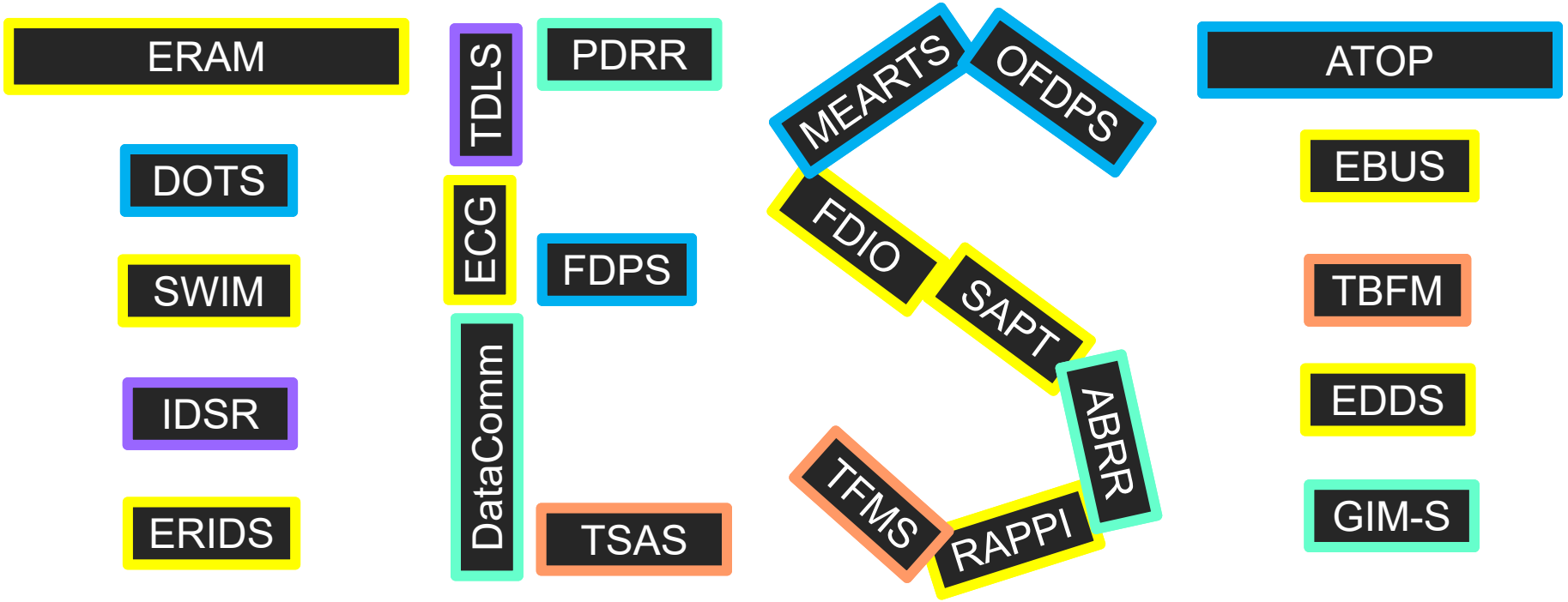
September 2018



En Route and Oceanic Second Level Engineering (SLE) - Test Team – AJM-256

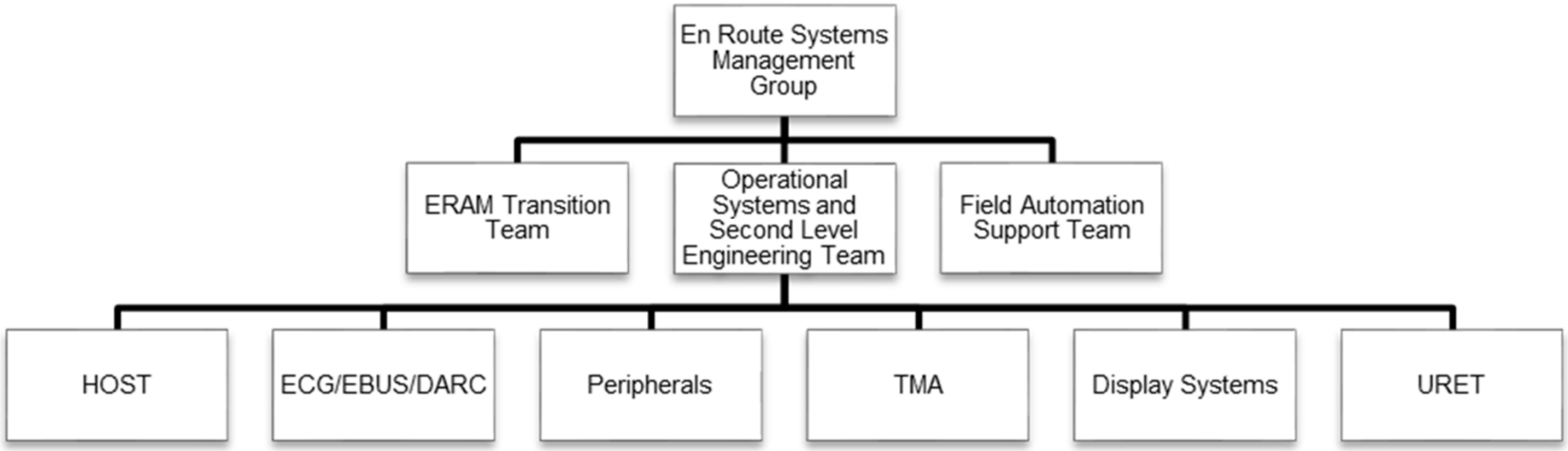
- **Who are we?**
  - We are a team of over 100 FAA and Contractor Test Engineers supporting over 30 systems & capabilities in the NAS.
- **Vision:**
  - To provide high quality and cost effective test services for the En Route and Oceanic Second Level Engineering (SLE) programs.
- **Mission:**
  - To function as the primary provider of system test services within En Route and Oceanic SLE.

Major PMO Programs Supported by AJM-25 SLE Test Function



En Route	
Oceanic	
Terminal	
Decision Support Tools	
Capabilities	

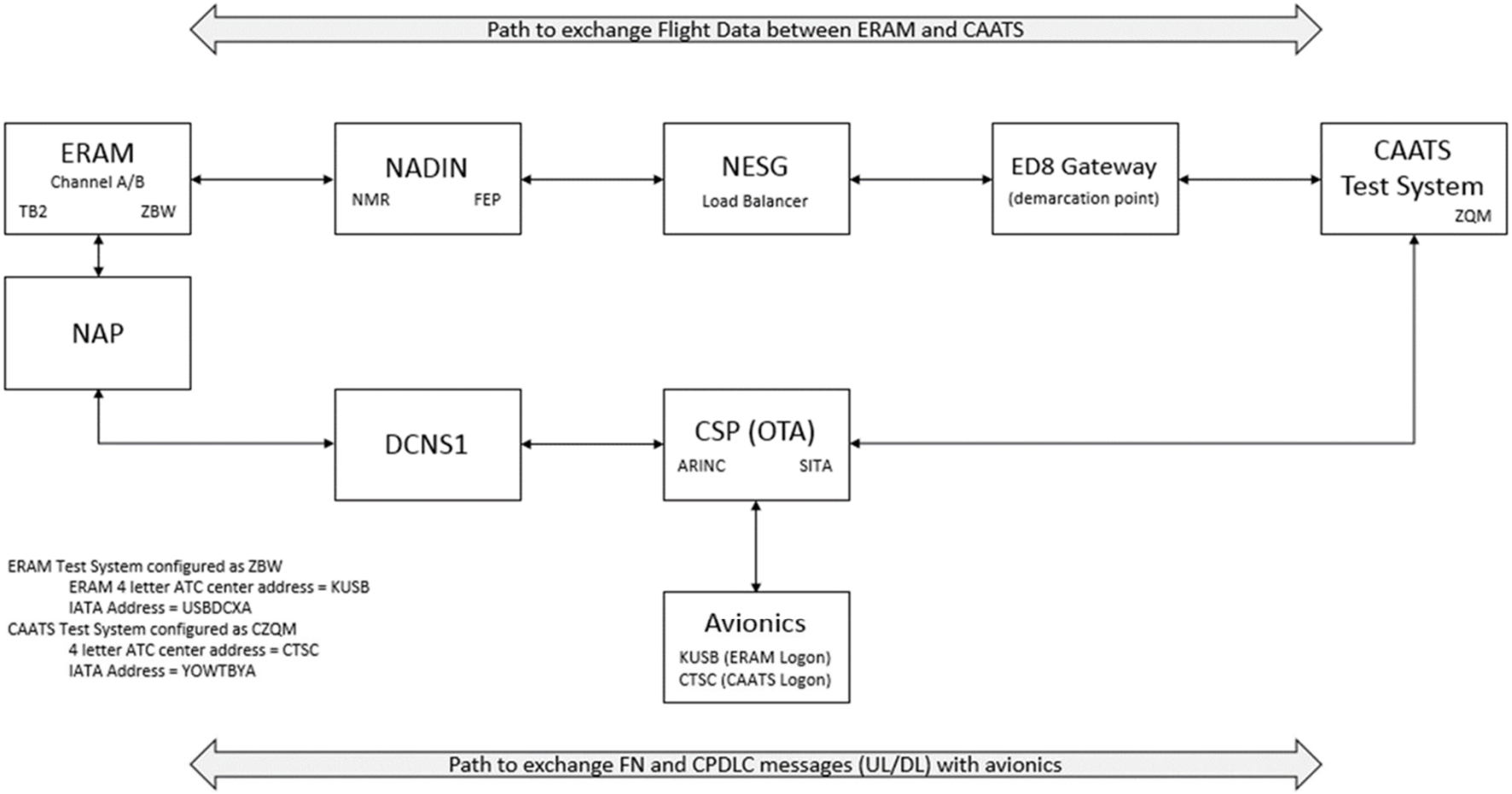
SLE Test Team - Past



SLE Test Team - Current

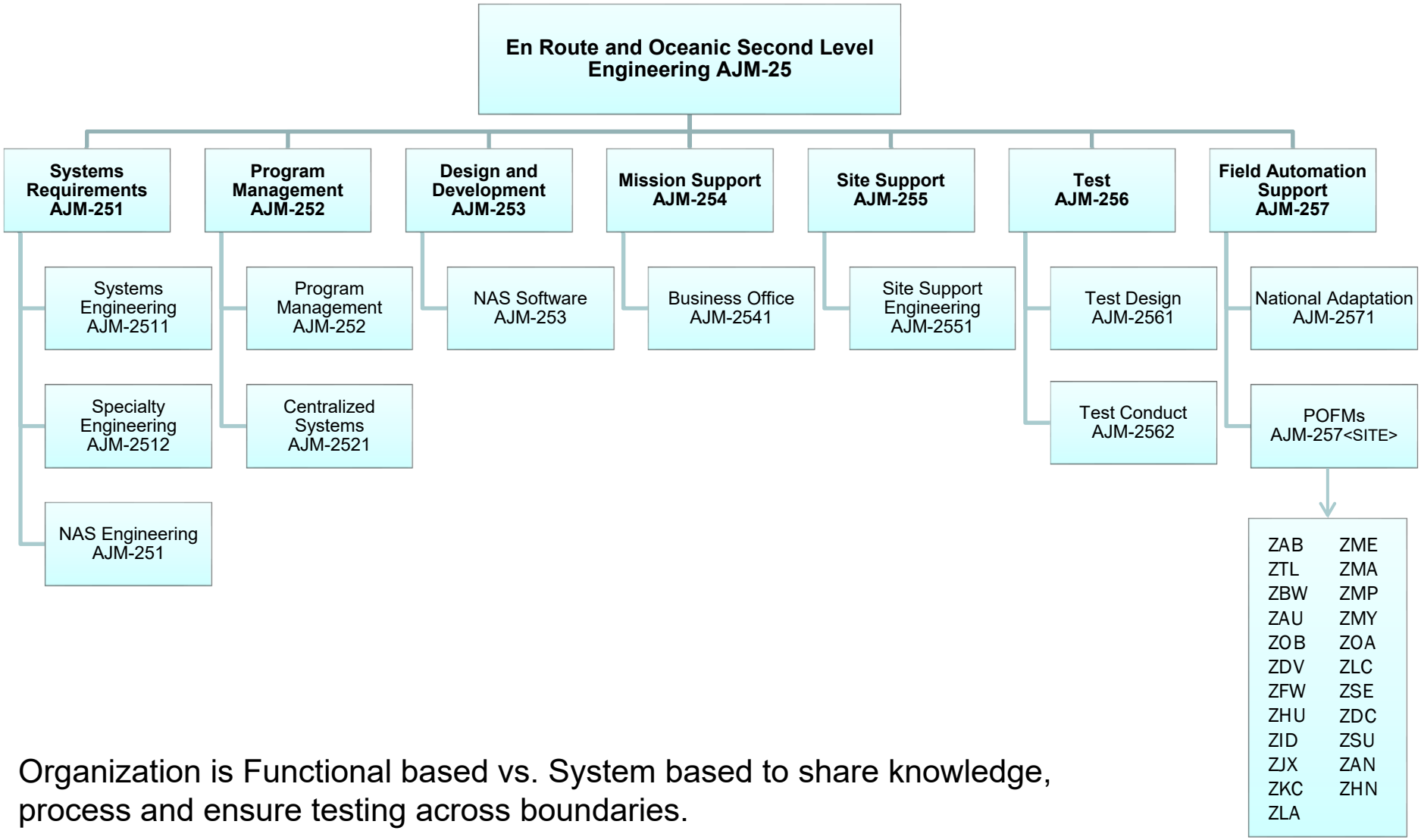
- **Enterprise Based Testing**
  - Distributed Systems
  - 2-Way communication paths
  - Test beyond individual system demarcation
  - Real adaptation current with site chart dates (no more ZCY)
  - Requirement AND User Based Testing (Operational Evaluations) – NATCA and PASS part of our test teams
  - Test with external stakeholders (e.g. Avionics, AOCs, NavCanada)
    - Including live interfaces and external testbeds
  - System of Systems testing (Enterprise) across program lines:
    - Airborne Reroute (ABRR) – ERAM, TFMS, and Avionics
    - Ground Interval Management – Spacing (GIM-S) – ERAM, TBFM
    - Data Comm – ERAM, TDLS, DCNS, Avionics, NavCanada, ATOP

Examples of Current SLE Enterprise Tests



ERAM – CAATS – Avionics

AJM-25 En Route and Oceanic Second Level Engineering Functional Services Chart



Organization is Functional based vs. System based to share knowledge, process and ensure testing across boundaries.

SLE Test Team - Future

- **Multiple Capabilities Tested End-to-End in One Enterprise Test**
  - Initial Trajectory Based Operations
  - Impacts of multiple capabilities on end-user
  - Multiple-User team participation

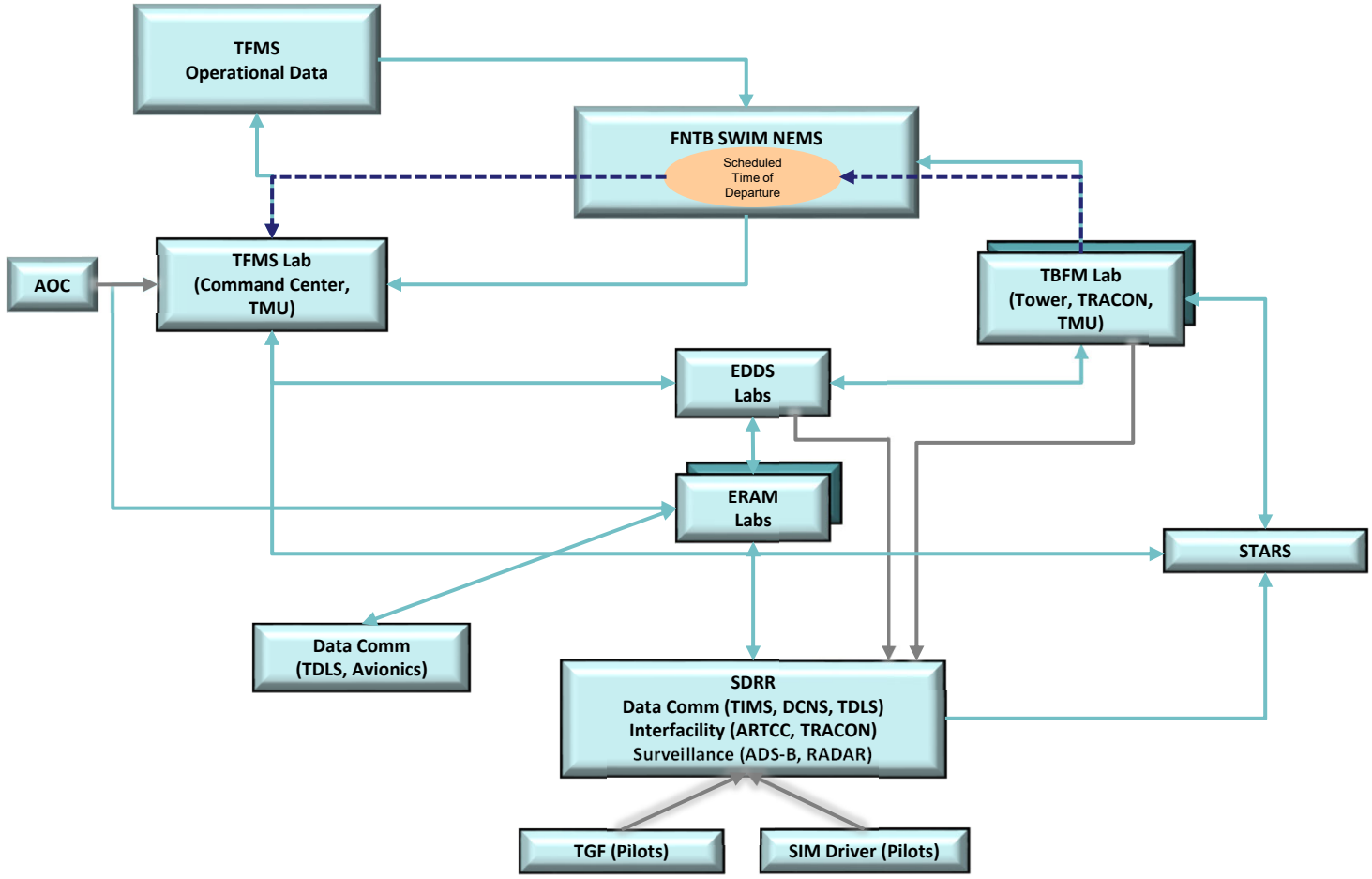
- **Expansion of Existing Enterprise Testing**
  - Connectivity of more labs and systems

Adaptation
ZAB TBFM
ZDV TBFM
ZAB ERAM
ZDV ERAM

iTBO Test Storyboard

iTBO Capabilities

- PDRR
- ABRR
- Automated Routes (conformant)
- Data Comm
- CTOP
- GDP, AFP, GS
- Arrival Metering
- Coupled Scheduling/ Extended Metering (GIM-S)
- Departure Metering – Scheduling into Arrival stream (EDC)
- Collaborative Air Traffic Management (IDAC/T2T)
- Departure Metering – Scheduling into Arrival stream (EDC, IDAC)
- Departure Metering – Scheduling into En Route stream (TSAS)



SLE Test Team - Our Systems Thinking Future

- **Evolving Bigger and More Systems Thinking**
  - Systems Thinking provides a holistic way to understand systems and their interrelationships
  - We gain a greater understanding of our systems through the context of their relationships within the entirety of the NAS
  - AJM-25 structured our testing paradigm to focus on the interactions among the many elements that comprise our integrated environment
  - Those elements include:
    - the systems
    - their capabilities and interfaces
    - the people who support and use the systems
  - AJM-25 established a functional organization to create a Systems Thinking setting in which to support our systems better, as well as to foster stronger communication paths among all affected entities


Leadership
Cross-Organizational
Change
One Team!
VRTM
SLE Supported Systems & Capabilities
Collaboration with NATCA
Pride in Our Work
Process Standardization
Innovation
Questions?
Repeatability
Operational Use Cases
Systems Thinking
Collaboration with PASS
Functional Organization
Moving the Needle
Metrics & Accomplishments

Backup

En Route and Oceanic SLE Test Process