

Surveillance and Broadcast Services

NAS Enterprise Architecture Conference

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Federal Aviation
Administration



Agenda

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- **Purpose and Scope**
- **Organization**
- **Process and Approval Authority**
- **Development and Approval Process**
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- **Discussion Points**
- **Summary**



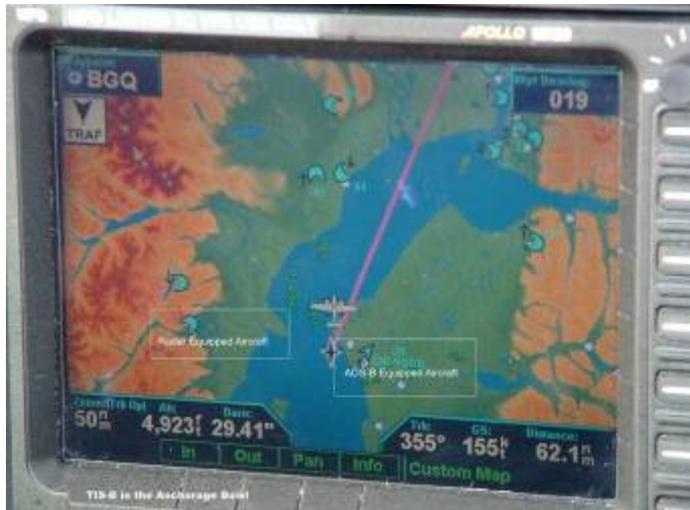
Critical Services: Automatic Dependent Surveillance - Broadcast (ADS-B)

- **Automatic**
 - Periodically transmits information with no pilot or operator input required
- **Dependent**
 - Position and velocity vector are derived from the Global Positioning System (GPS)
- **Surveillance -**
 - A method of determining position of aircraft, vehicles, or other asset
- **Broadcast**
 - Transmitted information available to anyone with the appropriate receiving equipment



Essential Services: Traffic Information Service - Broadcast / Flight Information Service - Broadcast

TIS-B is a service which provides ADS-B equipped aircraft with position reports from secondary surveillance radar on non-ADS-B equipped aircraft.



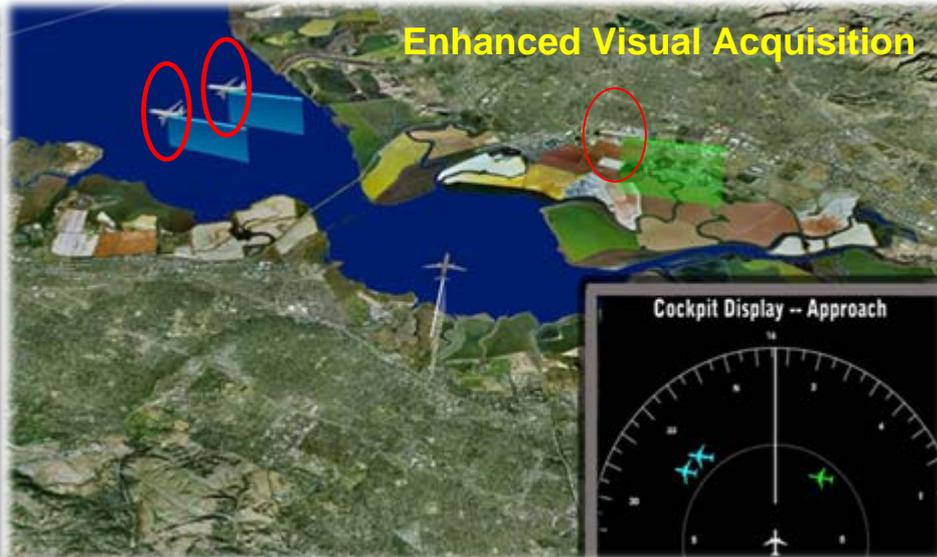
FIS-B transmits graphical National Weather Service products, temporary flight restrictions (TFRs), and special use airspace.



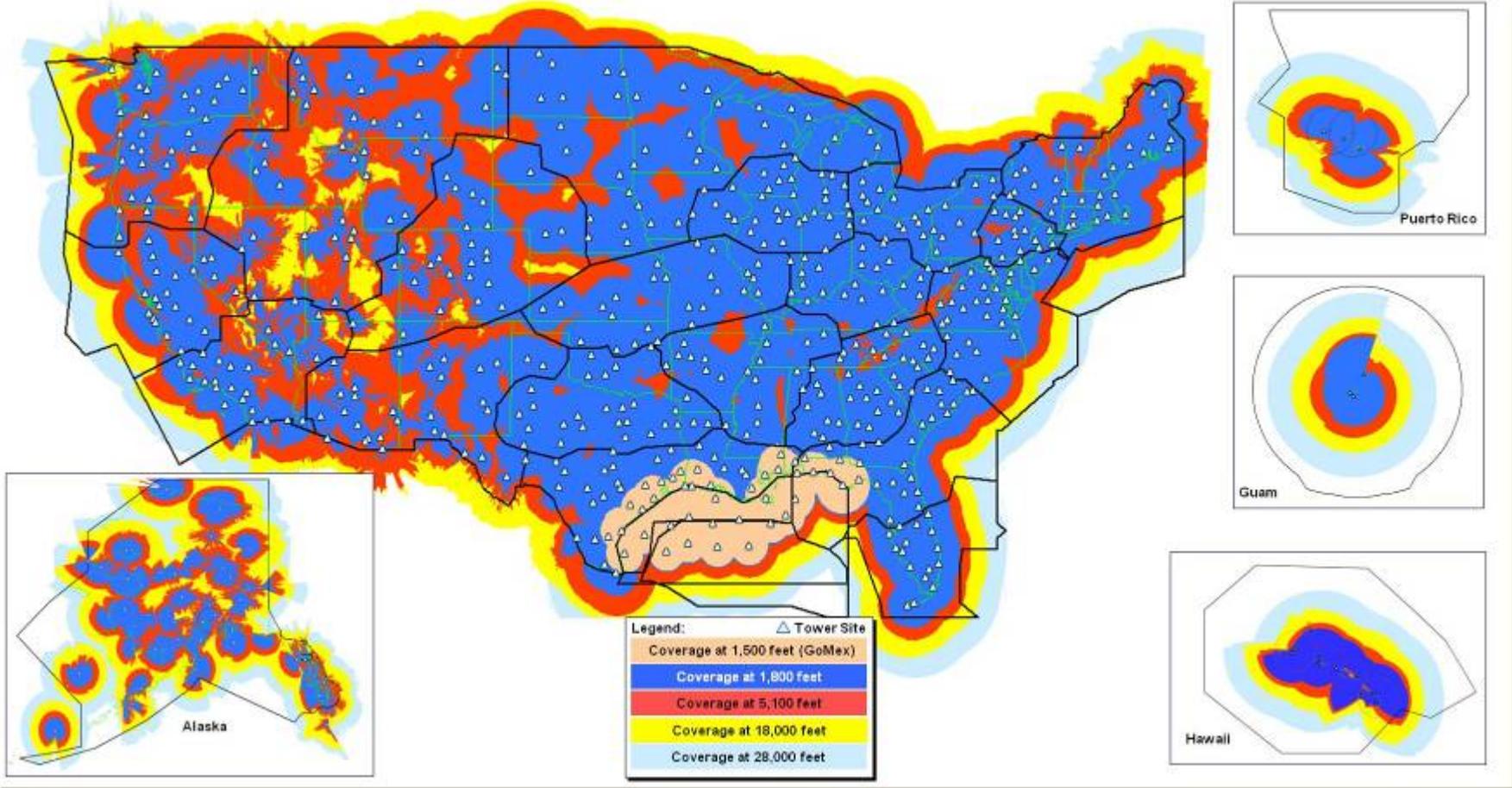
Key Site Deployment



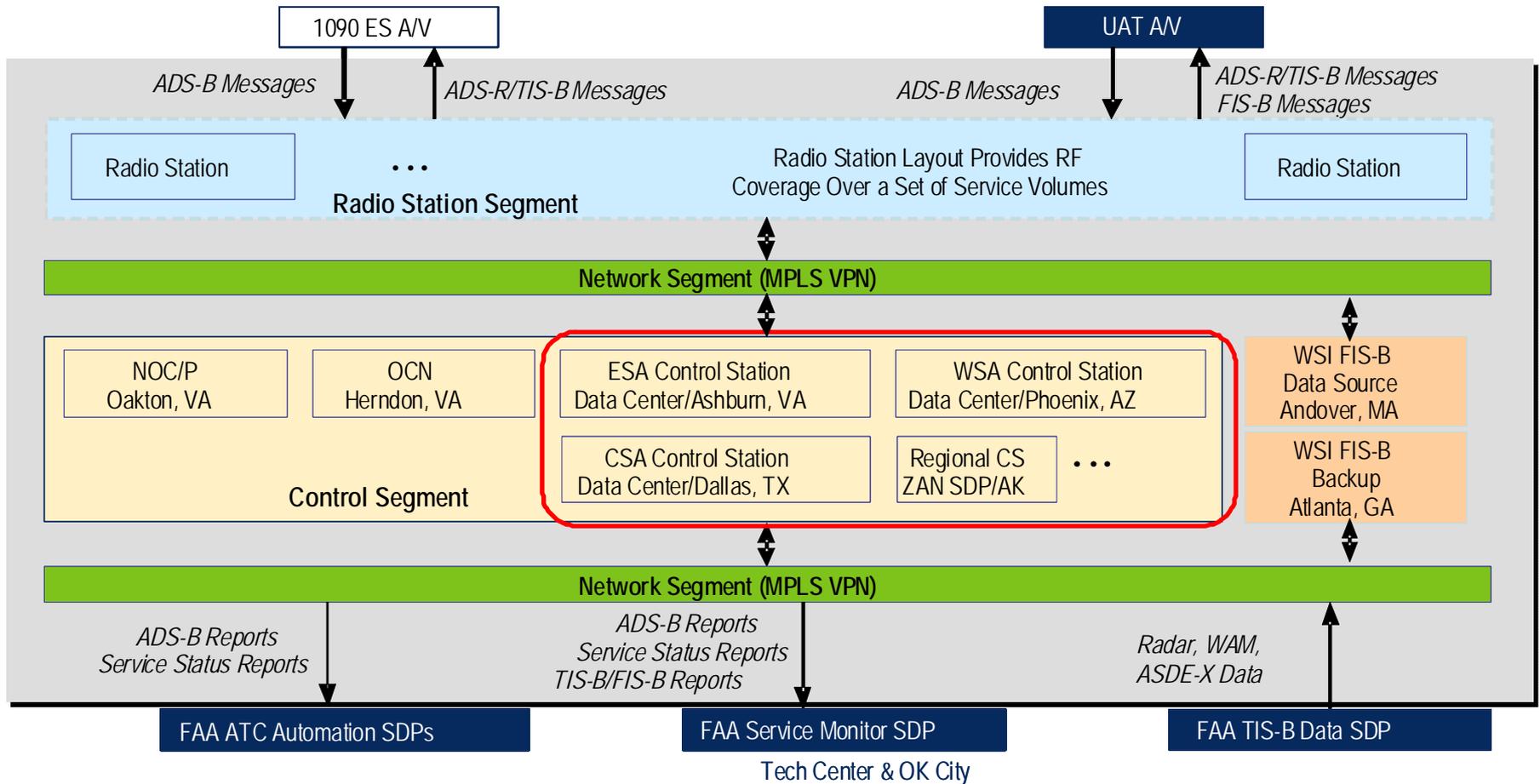
ADS-B Applications



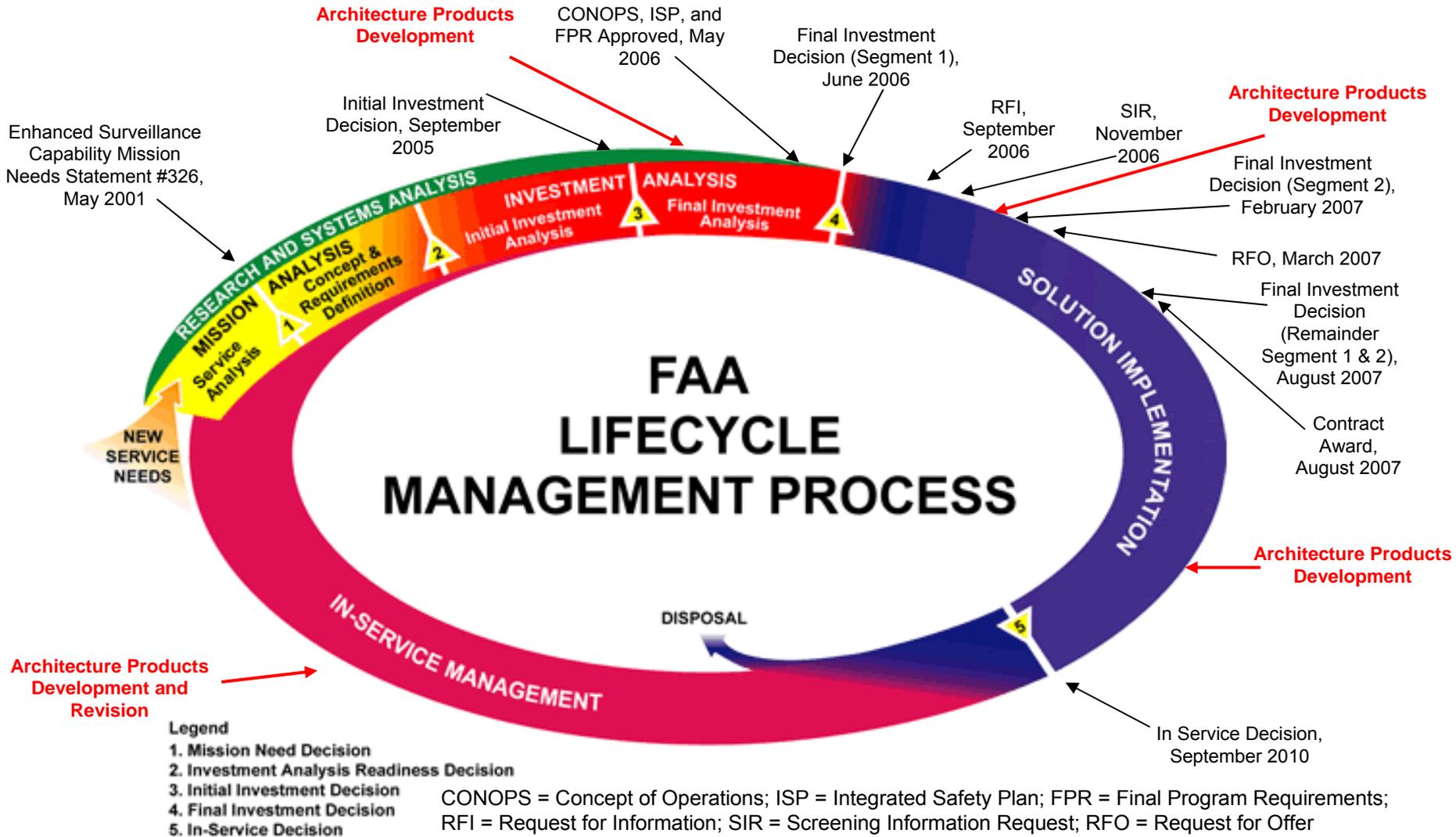
Ground Infrastructure: 794 Ground Station Solution Provides National Coverage



System Architecture



Acquisition: FAA Life Cycle Management Process



Purpose and Scope

- **To develop an integrated architecture to establish the foundation from which evolution of the SBS System can be explicitly understood and modeled**
- **The architecture products will be used**
 - Program-level decision making and tradeoffs
 - Development of new future applications
 - Requirements change analysis
- **Integrate the SBS System Architecture into the FAA National Airspace System Enterprise Architecture (NASEA)**
- **This architecture establishes the SBS System Architecture baseline for the Essential Services and Critical Services In-Service Decision (ISD)**

Organization

- **Steering Committee members include:**
 - ATO-E SBS Program Office (PO)
 - Program Management (PM) – Vincent Capezzuto
 - System Engineering (SE) – Bob Pomrink
 - Future Applications Lead under Operational Support (OS) – Doug Arbuckle
 - Air Traffic Organization Operations Planning (ATO-P) – Jim Baird
 - Joint Planning and Development Office (JPDO) – Doug Arbuckle
- **Working group members include various SBS program functional areas:**
 - Program Management, Systems Engineering (including the Requirements Management Workgroup), and Operational Support.

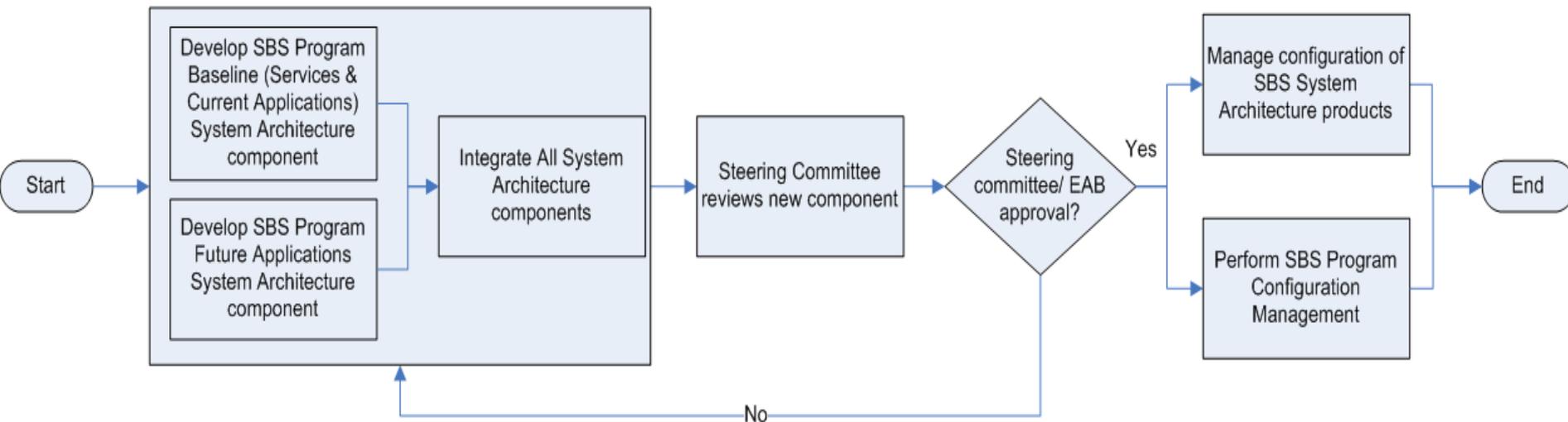
Communication with ATO organizations through the EAB and established agreements with the SBS Program office

Process and Approval Authority

- **NAS Enterprise Architecture Framework (NASEAF)**
- **Regularly submit framework documentation and process, product, and operating rules documentation to the Steering Committee and the Enterprise Architecture Board (EAB) for approval and integration into the NASEA**
- **The Steering Committee and the Enterprise Architecture Board (EAB) are the final approval authority of the SBS System Architecture**



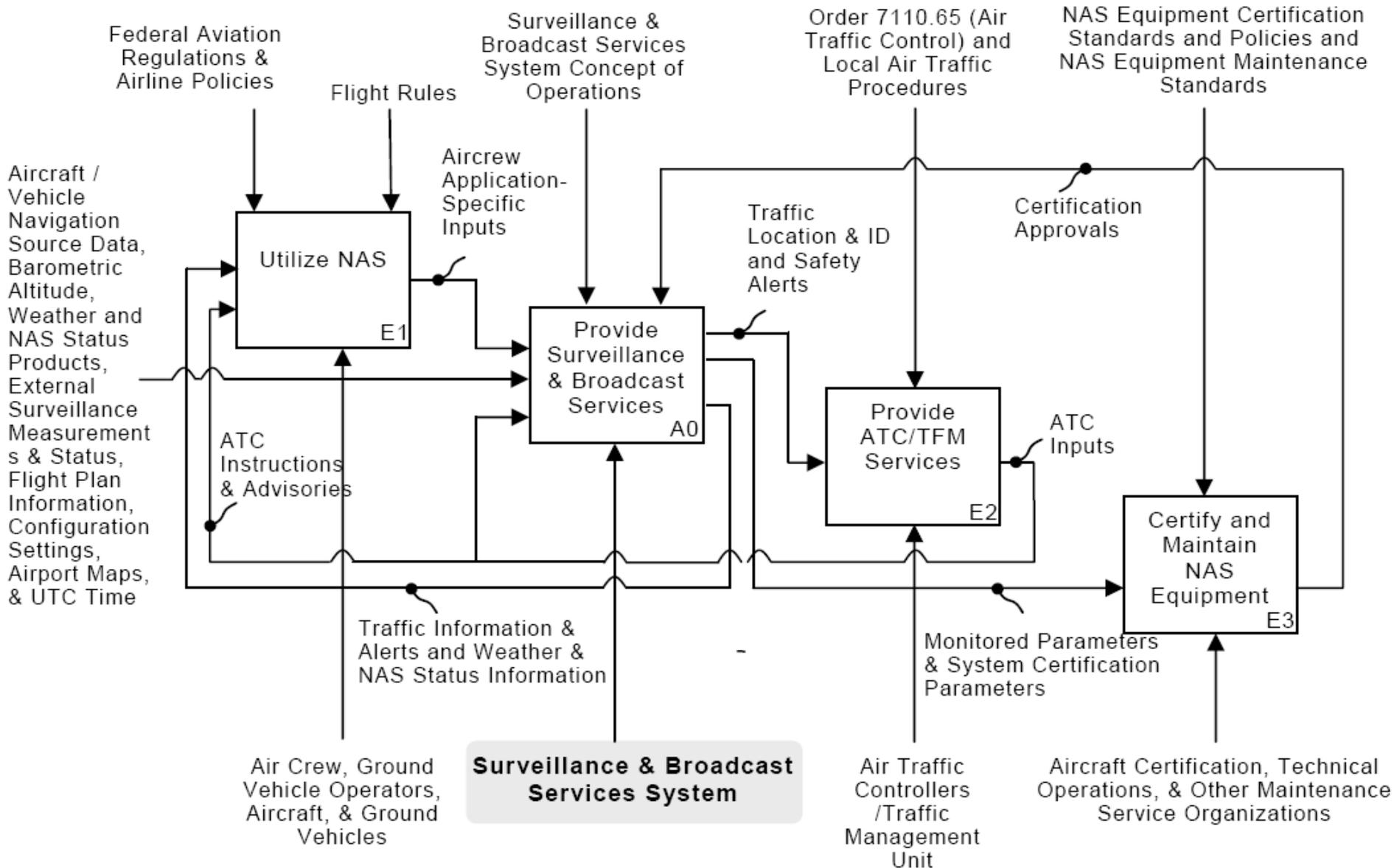
Development and Approval Process



Enterprise Architecture Products

| ID | Title | Nature | |
|-------|--|---|---|
| AV-1 | Overview and Summary | Text | √ |
| AV-2 | Integrated Dictionary | IDEF1X w/metadata & architecture data, glossary, and taxonomies | √ |
| OV-1 | High-Level Operational Concept Graphic | Structured graphic | √ |
| OV-2 | Operational Node Connectivity Description | Node diagram | √ |
| OV-4 | Organizational Relationships Chart | Hierarchical chart | √ |
| OV-5 | Operational Activity Model | IDEF0 diagram | √ |
| OV-6c | Operational Event-Trace Description | Sequence diagram | |
| SV-1 | Systems Interface Description | Node diagram | |
| SV-1n | Systems Interface Description - Node | Node diagram | √ |
| SV-2 | Systems Communications Description | Node diagram | |
| SV-4 | Systems Functionality Description | IDEF0 diagram | √ |
| SV-5 | Operational Activity to Systems Function Traceability Matrix | Matrix | √ |
| SV-6 | Systems Data Exchange Matrix | Matrix | |
| SV-7 | Systems Performance Parameters Matrix | Matrix | |

SBS System Integrated Definition



Trade Studies

- **Multi-Sensor Fusion**
- **FAA Service Monitor**
- **Merging and Spacing Controller Tool**
- **Surveillance Gap Fillers**
- **RAIM Tool**
- **Air-to-Air Applications**
 - In Trail Procedures (ITP)
 - Surface Indications and Alerts (SURF-IA)



Discussion Points

- **Tool compatibility/integration issues between CORE and System Architect**
- **EA framework/products evolution**



Summary

- **NAS Enterprise Architecture Benefits:**
 - Aligns SBS with other systems and FAA business needs
 - Provides a common language to establish service architecture
 - Framework to manage change

Backup



Assumptions and Constraints

- **Assumptions:**

- The SBS System Architecture represents all the components of the SBS System and all of the NAS components that directly interact, both internally and externally, with the SBS System.
- Development responsibility for the SBS System Architecture primarily is the appropriate functional areas within ATO-E SBS Program Office under the guidance and approval of the SBS System Architecture Steering Committee and the FAA Enterprise Architecture Board (EAB).

- **Constraints:**

- SBS System Architecture developers will release the architecture processes, products, and operating rules iteratively. An effect of this constraint is that released iterations may not always represent a completely integrated SBS System Architecture documentation set.
- SBS System Architecture shall be aligned with the current version of the FAA NASEA and its later versions.