

# Surveillance and Broadcast Services

## Industry Day

By: Surveillance and Broadcast Services  
Program Office

Date: June 19, 2006



Federal Aviation  
Administration



**“Rather than micromanaging the details of how contractors operate, the government must set the standards, set the results, and give the contractor the freedom to achieve it in the best way”**

*– George W. Bush – June 9, 2000*

# Agenda

- **Opening Remarks**
- **Role of ADS-B in Next Generation Air Transportation System (NGATS)**
- **Definition of Program**
- **Business Case Review**
- **Functional Architecture / Performance Requirements / Key Requirements**
- **Implementation Strategy**
- **Surveillance and Broadcast Services Coverage**
- **Acquisition Strategy**
- **Review**



# Link to the Role of ADS-B in Next Generation Air Transportation System (NGATS)

**John Scardina**  
**Joint Planning and Development Office**  
**(JPDO)**



# **Program Definition and Business Case Review**

**Vincent Capezzuto**  
**Surveillance and Broadcast Services**  
**Program Office**

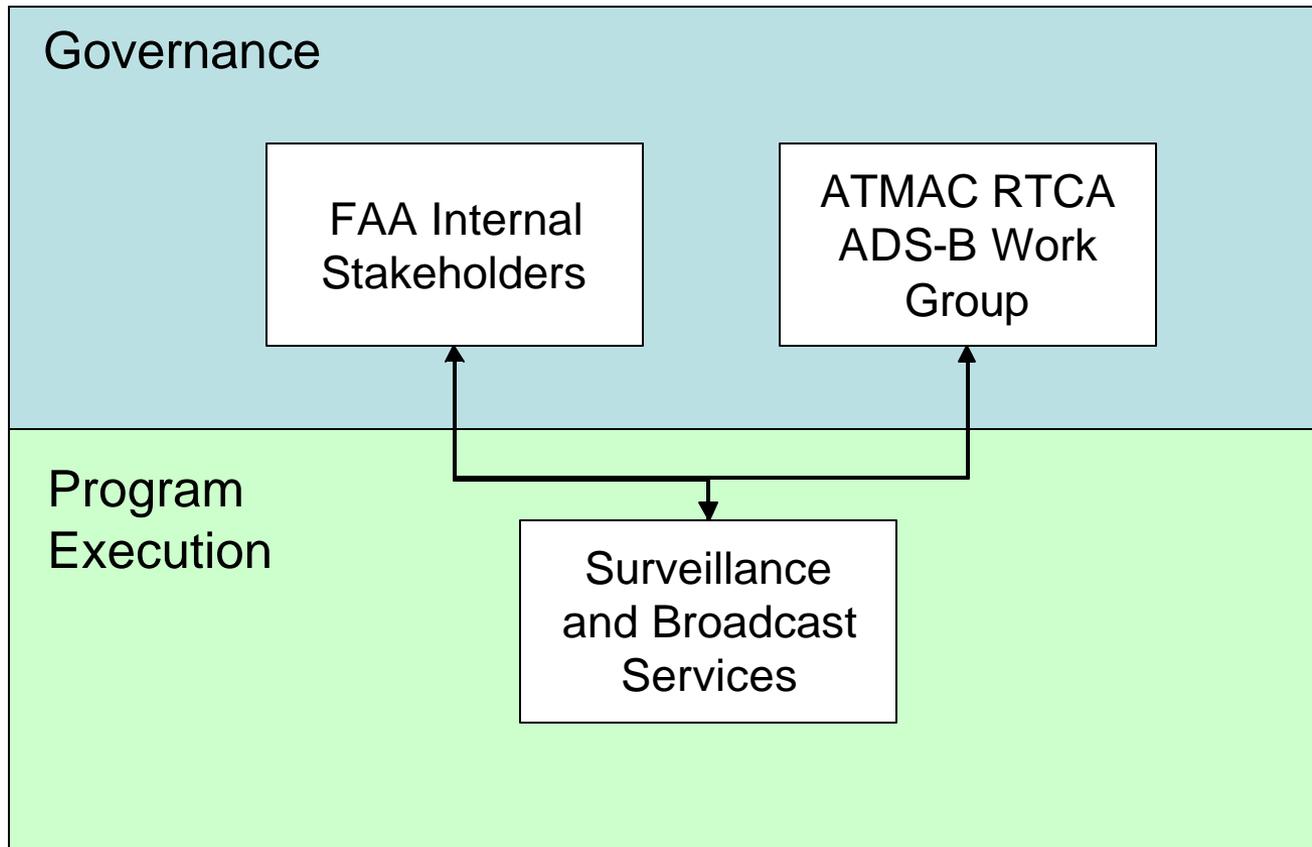


# Initial Investment Decision

- **On September 9, 2005 the JRC approved the initial investment decision for the Future Surveillance and directed the team to seek a final investment decision from the JRC by July 2006. The JRC also approved establishing an ATO-level Surveillance and Broadcast Services office that would be responsible for coordinating and obtaining funding to support the agency-wide resources required to develop, implement, and manage the ADS-B future surveillance services and systems.**



# Program Charter / Governance



# Final Investment Decision: Segment 1

- **The following recommendations were approved at the June 7, 2006 JRC:**
  - Baseline FY07 and FY08 Costs only
  - Return for Final Investment Decision for Balance of Program prior to Contract Award (July 2007 Timeframe)
  - ATO Chief Operating Officer (COO) and Associate Administrator for Aviation Safety (AVS) Designation for Co-ISD Authority
  - Approve Investment Decision with Preliminary Hazard Analysis (PHA) Action Item Tracked and Closed through the JRC / EC Secretariat



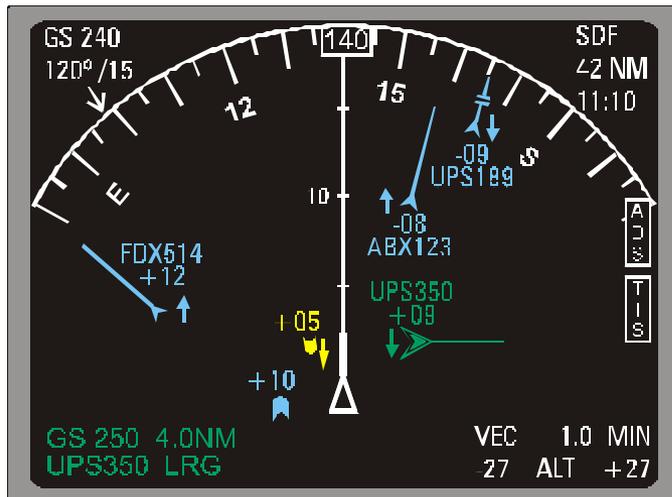
# Definition of Program: Automatic Dependant Surveillance - Broadcast (ADS-B)

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



# Definition of Program: 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.**



# Definition of Program: Initial ADS-B Services and Applications

<b>Services / Applications:</b>	<b>Segment:</b>
<b>Surveillance Broadcast Services (En Route, Terminal, Surface)</b>	<b>Segment 1 &amp; 2</b>
<b>Traffic / Flight Information Broadcast Services</b>	<b>Segment 1 &amp; 2</b>
<b>Enhanced Visual Acquisition</b>	<b>Segment 1 &amp; 2</b>
<b>Enhanced Visual Approaches <sup>(1)</sup></b>	<b>Segment 1 &amp; 2</b>
<b>Final Approach and Runway Occupancy Awareness</b>	<b>Segment 1, 2 &amp; 3</b>
<b>Airport Surface Situational Awareness</b>	<b>Segment 1, 2 &amp; 3</b>
<b>Conflict Detection</b>	<b>Segment 1, 2 &amp; 3</b>

(1) Merging and Spacing and Cockpit Display of Traffic Information (CDTI) Assisted Visual Separation (CAVS) are a part of the Enhanced Visual Approaches Application

**Additional Aircraft to Aircraft Requirements Definition – Segment 1, 2 & 3**

# Definition of Program: Proposed Segment 1 Schedule

Milestone	Projected Completion Date
Segment 1 JRC	June 2006
Screening Information Request (SIR) Issued	November 2006
Segment 2 JRC	February 2007
Request for Offer Released	March 2007
Contract Award	July 2007
NPRM Issued	September 2007
Preliminary Design Review (PDR)	October 2007
Critical Design Review (CDR)	January 2008
Key Site Initial Operating Capability (IOC) of Broadcast Services	July 2008
In-Service Decision (ISD) of Broadcast Services	November 2008
Final Rule Published	April 2009
Gulf of Mexico Comm. and Weather IOC	September 2009
Louisville IOC of Surveillance and Broadcast Services	October 2009
Gulf of Mexico IOC of Surveillance and Broadcast Services	December 2009
Philadelphia IOC of Surveillance and Broadcast Services	February 2010
Juneau IOC of Surveillance and Broadcast Services	April 2010
Surveillance and Broadcast Services ISD for ADS-B	September 2010



# Definition of Program: Proposed Schedule - Segments 2 - 4

- **Segment 2 (2009 – 2014):**
  - ADS-B “Out” Final Rule Published: FY 2009
  - Continue Initial Aircraft to Aircraft Application Deployment: FY 2010 – FY 2014
  - Additional Aircraft to Aircraft Application Deployment: FY 2010 – FY 2014
  - Additional Aircraft to Aircraft Requirements Definition: FY 2010 – FY 2014
  - Continue / Complete TIS-B / FIS-B Deployment: FY 2009 – FY 2012
  - Continue / Complete ADS-B NAS Wide Infrastructure Deployment: FY 2010 – FY 2013
  - Complete 40% Avionics: FY 2014
- **Segment 3 (2015 – 2020):**
  - Additional Aircraft to Aircraft Requirements Definition: FY 2015 – FY 2020
  - Additional Aircraft to Aircraft Application Deployment: FY 2015 – FY 2020
  - Targeted Removal of Legacy Surveillance: FY 2018 – FY 2020
  - Complete 100% Avionics: FY 2020
  - Complete Initial Aircraft to Aircraft Application Deployment: FY 2020
- **Segment 4 (2021 – 2025):**
  - Complete Removal of Targeted Legacy Surveillance: FY 2023
  - Complete Targeted Removal of TIS-B: FY 2025
  - Complete Additional Aircraft to Aircraft Application Deployment: FY 2025

# Definition of Program: Segment 1 Locations

- **ADS-B service locations include the following:**
  - Service Coverage Volume: Southeast Alaska Juneau Area
    - Service Delivery Point: Anchorage Center and Juneau Air Traffic Control Tower
    - Service: Surveillance, TIS-B, FIS-B
  - Service Coverage Volume: Gulf of Mexico Area
    - Service Delivery Point: Houston Center and Helicopter Operator Dispatch Center
    - Service: Communication, Weather, Surveillance
  - Service Coverage Volume: Louisville (KY), Kansas City (MO), Garden City (KS), and North Platte (NE) Areas
    - Service Delivery Point: Louisville TRACON and UPS Airline Operations Center
    - Service: Surveillance, TIS-B, FIS-B
  - Service Coverage Volume: Philadelphia, PA and Ontario, CA Areas
    - Service Delivery Point: Philadelphia TRACON and UPS Airline Operation Center
    - Service: Surveillance
- **TIS-B / FIS-B expansion**
  - Existing “east coast deployment” will be expanded westward into the Great Lakes Region
  - Phoenix/Prescott, AZ coverage will spread westward to Central and Southern California



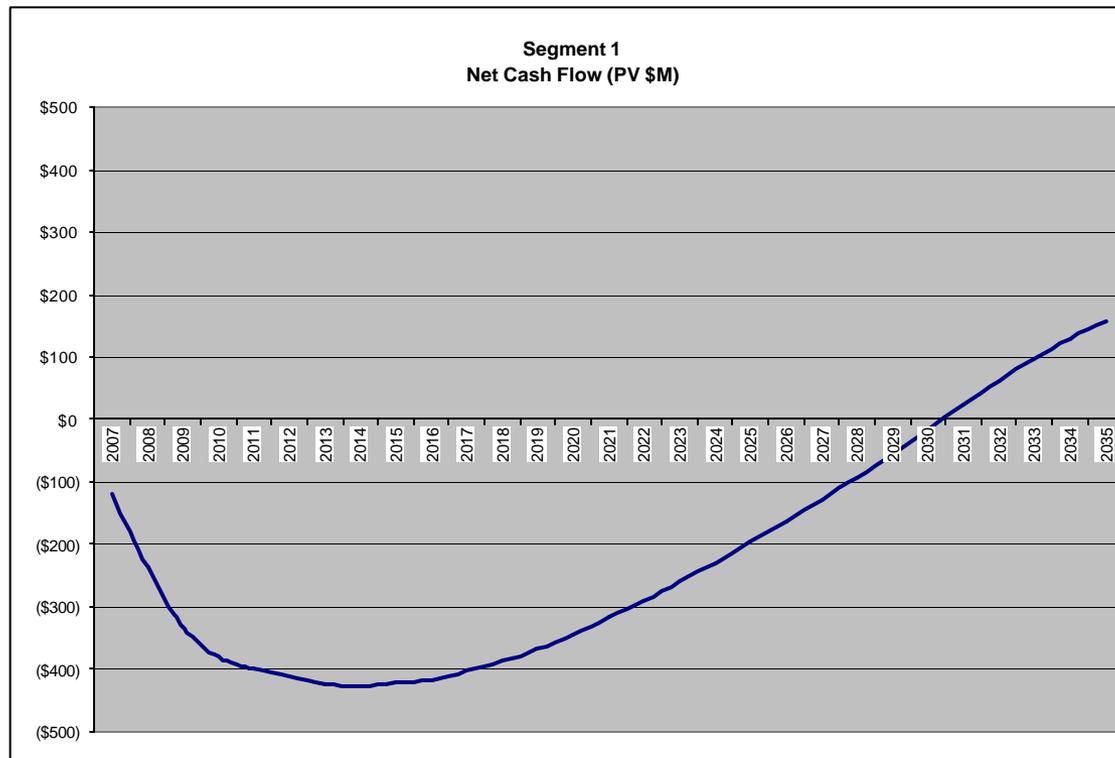
# Business Case Review: Justification – Economic Results

- Segment 1 Break-Down

Segment 1 Allocated Economic Results (Risk-Adjusted)					
Metric	TIS-B/FIS-B	Gulf of Mexico	Louisville, Philadelphia, and Ontario	Juneau	Segment 1 Total
FAA Costs (PV\$M)	\$123.1	\$122.2	\$44.4	\$41.6	\$331.3
User Costs (PV\$M)	\$199.9	\$13.6	\$60.5	\$0.0	\$274.0
<b>Total Costs (PV\$M)</b>	<b>\$323.0</b>	<b>\$135.7</b>	<b>\$104.9</b>	<b>\$41.6</b>	<b>\$605.3</b>
FAA Benefits (PV\$M)	\$0.0	\$8.5	\$0.0	\$0.0	\$8.5
User Benefits (PV\$M)	\$234.5	\$511.1	\$7.5	\$1.7	\$754.8
<b>Total Benefits (PV\$M)</b>	<b>\$234.5</b>	<b>\$519.6</b>	<b>\$7.5</b>	<b>\$1.7</b>	<b>\$763.3</b>
<b>Net Cash Flow (PV\$M)</b>	<b>(\$88.6)</b>	<b>\$383.9</b>	<b>(\$97.4)</b>	<b>(\$39.9)</b>	<b>\$158.0</b>
<b>B/C Ratio</b>	<b>0.73</b>	<b>3.83</b>	<b>0.07</b>	<b>0.04</b>	<b>1.26</b>

# Business Case Review: Economic Analysis – Segment 1

High Confidence Results	Segment 1
Net Present Value (\$M)	\$158.0
B/C Ratio	1.3
Payback Year	2031
Internal Rate of Return	9%



# Business Case Review: Qualitative Benefits

- **Segment 1**

- Surface surveillance data to UPS Airline Operations Center (AOC)
- Company flight following for Gulf helicopter operators
- Risk reduction
  - Integration of ADS-B to automation platforms (HOST/ERAM, MEARTS, STARS, CARTS)
  - TIS-B on 1090 link
  - Government provided surveillance integrated with ADS-B service provider
  - Reduce general aviation opposition to airspace rule

- **Segments 2-4**

- Surface surveillance data to AOCs and Command Center
- Reduced separation standards
- DoD applications
- Future aircraft to aircraft applications

# Business Case Review: Total LCCE (Risk-Adjusted TY \$M) – Segment 1

## Requested Baseline Costs (Segment 1)

Estimated Cost	FY06 & Prior	Useful Segment:											Total Baseline	Total Non-Baseline	Grand Total (1)
		Baseline		Non-Baseline			Non-Baseline								
		FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17 - Beyond			
<b>F&amp;E Program Plan</b>	0.0	80.0	85.0	63.2	34.0	6.2	0.9	0.9	1.0	1.9	11.0	59.8	165.0	179.0	343.9
IOT&E		0.5	1.1	0.2	1.3								1.6	1.5	3.2
F&E Funded by Other Sources															
Total F&E Requirements		80.5	86.1	63.4	35.3	6.2	0.9	0.9	1.0	1.9	11.0	59.8	166.6	180.5	347.1
Delta: CIP less F&E Requirements <sup>(3)</sup>															
Activity 5 <sup>(2)</sup> FTE Cost		1.3	1.3	1.3	1.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	2.6	2.9	5.5
OPS		0.0	0.6	2.0	6.8	8.7	11.1	11.3	11.5	11.9	12.2	285.2	0.6	360.7	361.3
OPS Funded by Other Sources															
Total OPS Program Plan <sup>(4)</sup>		0.0	0.6	2.0	6.8	8.7	11.1	11.3	11.5	11.9	12.2	285.2	0.6	360.7	361.3
Total Life Cycle Costs		81.8	88.0	66.8	43.3	15.2	12.0	12.3	12.5	13.8	23.1	345.0	169.8	544.1	713.9
Activity 5 <sup>(2)</sup> Full Time Positions		10.6	10.3	10.5	9.7	2.8							20.9	23.0	43.9

Notes:

- Grand Total includes prior costs.
- Activity 5 costs include compensation, benefits and travel of FAA F&E program personnel. Activity 5 costs are not included in the program baseline. Program staff pro-rated as applicable.
- Provide Reasons for F&E Surplus / Shortfall:
- Includes OPS for new system, and the legacy system until it is phased out.

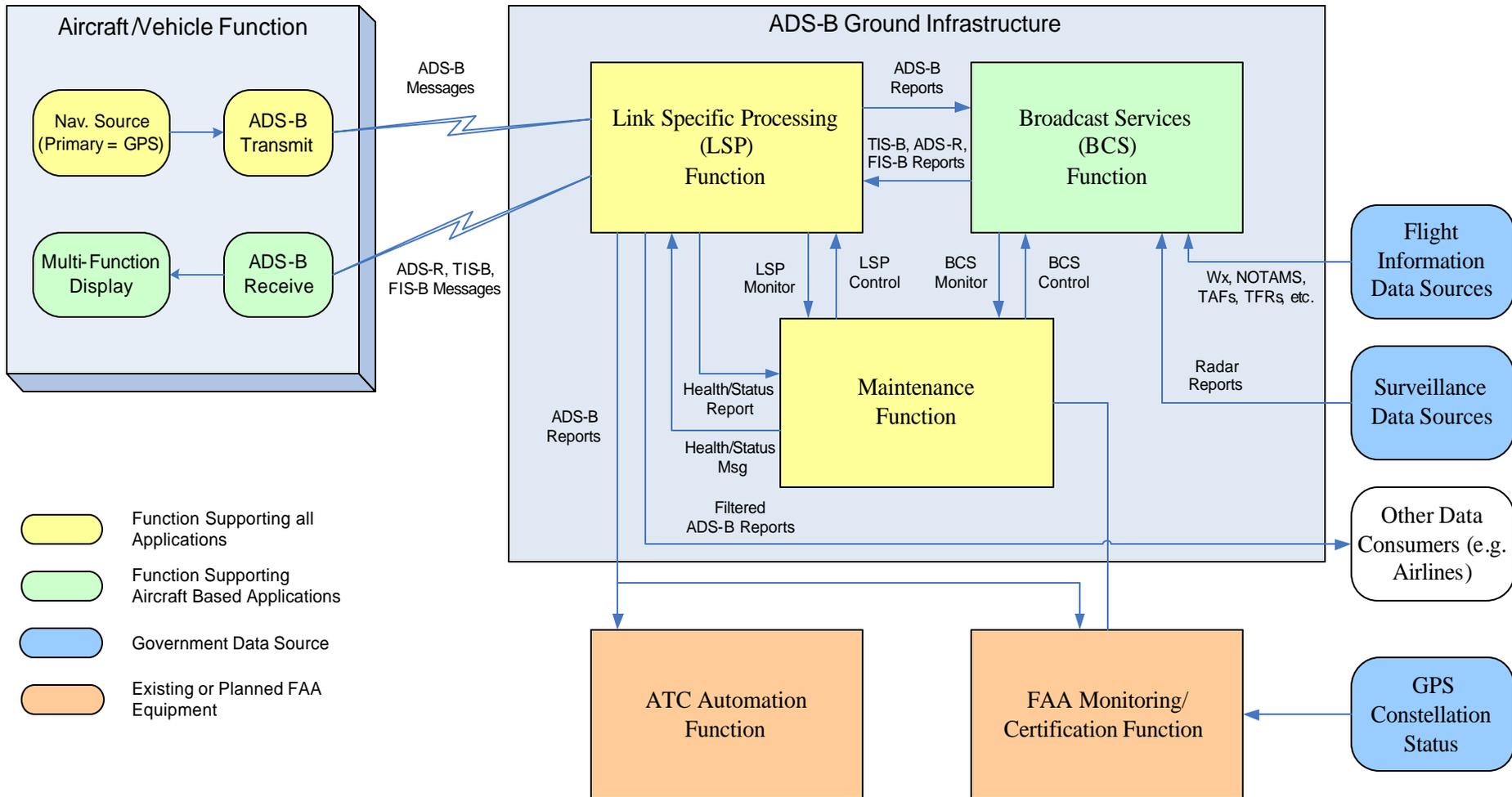
# **Functional Architecture / Performance Requirements / Key Requirements**

**Robert Pomrink**

**Surveillance and Broadcast Services  
Program Office, Systems Engineering**



# Functional Architecture



# Functional Architecture

- **Aircraft / Vehicle Function**

- Derives state vector information, from Global Navigation Satellite System (GNSS) or another position source
- Determines the associated integrity and accuracy indicators from the source inputs
- Ascertains altitude information from a qualified barometric altitude source
- Encodes and broadcasts ADS-B messages
- Receives and decodes ADS-B messages from other Aircraft / Vehicles
- Receives and decodes TIS-B and ADS-R Messages transmitted by the ADS-B Link Specific Processing (LSP) Function
- UAT capable aircraft / vehicles receive and decode FIS-B Messages transmitted by the LSP Function
- Processes and displays the information conveyed in received messages

# Functional Architecture

- **Link Specific Processing (LSP) Function**
  - Provides the ground-based ADS-B System transmit/receive functionality
  - Receives ADS-B Messages from equipped aircraft and surface vehicles
  - Formats messages into their associated ADS-B Reports
  - Distributes ADS-B Reports to Air Traffic Control (ATC) Automation, the Broadcast Services (BCS) Function, and other authorized users
  - Transmits TIS-B, ADS-R, and FIS-B Messages as directed by the BCS Function

# Functional Architecture

- **Broadcast Services (BCS) Function**
  - Processes, including tracking, filtering, and applying quality indicators, surveillance reports from external radar sources and ADS-B Messages
  - Generates TIS-B and ADS-R Reports for transmission as TIS-B and ADS-R Messages by LSP
  - Processes weather and NAS status data from external sources
  - Generates applicable FIS-B Reports for transmission as FIS-B Messages by LSP

# Functional Architecture

- **ATC Automation Function**

- Uses ADS-B surveillance data similar to its use of radar system surveillance information
- Supports environments with only ADS-B Surveillance as well as those having both ADS-B and radar surveillance
- Validates the position information provided in ADS-B Reports by comparing it with reports from other surveillance sources
- Associates the ADS-B Report data with filed flight plans, creates and updates tracks, and displays target and emergency information to Air Traffic Specialists
- ATC Automation performs safety function processing, using ADS-B and radar data, and displays any associated alerts

# Functional Architecture

- **Maintenance Function**

- Controls and monitors the ADS-B ground infrastructure
  - Permits the setting of configuration items and configuration of software
  - Generates and reports alerts and alarms when hardware or software faults occur in the system
  - Injects Health Status Messages (test targets) to test end-to-end operation.
  - Measures key performance parameters to evaluate system operation
- Provides an interface to FAA Monitoring / Certification function

- **FAA Monitoring / Certification Function**

- Monitors ADS-B service performance
- Allows Airways Facilities to certify the ADS-B Service
- Determines GNSS status to identify potential surveillance data quality issues

# Performance Requirements

- **Final Program Requirements Document**
  - Defines the operational performance requirements for the Surveillance and Broadcast Services (SBS) system
  - Focused on functional and end-to-end performance requirements
  - Approved requirements baseline for the FAA’s investment decision
  - Document is not a specification for procuring services or equipment
- **Ground System Performance Specifications**
  - SBS requirements are being defined in a specification that supports an acquisition
  - Requirements are performance based
  - Constraints such as spectrum and operating environment will be defined in the performance specifications
  - Detailed design requirements will not be levied
  - Two specifications are planned for ground infrastructure – “SBS Critical Service Specification” and “SBS Essential Service Specification”
- **Aircraft / Vehicle requirements will also be performance based in Technical Standard Orders (TSOs), Advisory Circulars (ACs), and FAA policy (potential rulemaking)**
- **Automation Requirements and Computer Human Interface (CHI) being defined in separate specifications and / or Engineering Change Proposals (ECPs)**

# Key Requirements

- **Update Rate** <sup>3</sup> 1 update per second (95%)
- **Horizontal Position Accuracy**
  - Position Error = 0.3 NM (95%) for en route surveillance
  - Position Error = 0.1 NM (95%) for terminal surveillance
  - Position Error = 20 feet (1-sigma) for surface surveillance
- **Velocity Accuracy of less than or equal to 9.8 ft/sec (95%)**
- **Position Integrity**
  - Containment bound of = 2.0 NM for en route surveillance
  - Containment bound of = 0.6 NM for terminal surveillance
  - Containment bound of = 0.04 NM for surface applications
- **Integrity Containment Risk =  $10^{-5}$  per flight hour**
- **End to end latency**
  - Less than 2.7 seconds for terminal surveillance
  - Less than 3.3 seconds for en route surveillance

# Key Requirements

- **Coverage comprises a defined volume of airspace**
  - Bounded by a 3D volume in Latitude, Longitude, and Altitude
  - ADS-B provides coverage in non-radar areas within which traditional Primary Surveillance Radars (PSRs) / Secondary Surveillance Radars (SSRs) can't effectively operate
- **Availability**
  - ADS-B critical service Availability of at least 0.99999
  - TIS-B and FIS-B essential services Availability of at least 0.999

# **Implementation Strategy**

**Robert Nichols**

**Surveillance and Broadcast Services  
Program Office, Implementation**



# Implementation Strategy: Segment 1 Locations

- **ADS-B service locations include the following:**
  - Service Coverage Volume: Southeast Alaska Juneau Area
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    - Service: Surveillance, TIS-B, FIS-B
  - Service Coverage Volume: Gulf of Mexico Area
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  - Service Coverage Volume: Philadelphia, PA and Ontario, CA Areas
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- **TIS-B / FIS-B expansion**
  - Existing “east coast deployment” will be expanded westward into the Great Lakes Region
  - Phoenix/Prescott, AZ coverage will spread westward to Central and Southern California



# Implementation Strategy

- **Service Coverage Volume**
  - To be discussed by MITRE
- **Service Delivery Point**
  - Demarcation where vendor information is provided to FAA and other users
  - Point of Delivery Concept
    - FAA Monitoring function will perform:
      - Certification
      - Monitoring / Contract compliance
      - Remote maintenance
      - Translation for automation

# Implementation Strategy: Notional Schedule

Service Volumes	States	# Ground Stations (est.)	Proposed Sites	Start Date	End Date
Key Site	FL	1	Ft. Myers	Feb-08	Jul-08
South FL	FL	2	Key West Miami	May-08	Nov-08
GA & SC	SC	2	Greenville Myrtle Beach	Jul-08	Jan-09
	GA (Area 1), TN	3	Moody AFB (GA) Knoxville (TN) Signal Mountain (TN)	Sep-08	Mar-09
	GA (Area 2)	4	Augusta Columbus Lawrenceville Savannah	Oct-08	Feb-09
CA & AZ	AZ	4	Ajo Tucson Phoenix Yuma	Nov-08	Mar-09
	CA (Area 1)	4	Stockton San Jose Santa Barbara Monterey	Dec-08	Apr-09
	CA (Area 2)	4	Palm Springs Point Mugu NAS Kern County Raisin City	Jan-09	May-09
	CA (Area 3)	4	Los Angeles Mount Laguna Oceanside Ontario	Feb-09	Jun-09

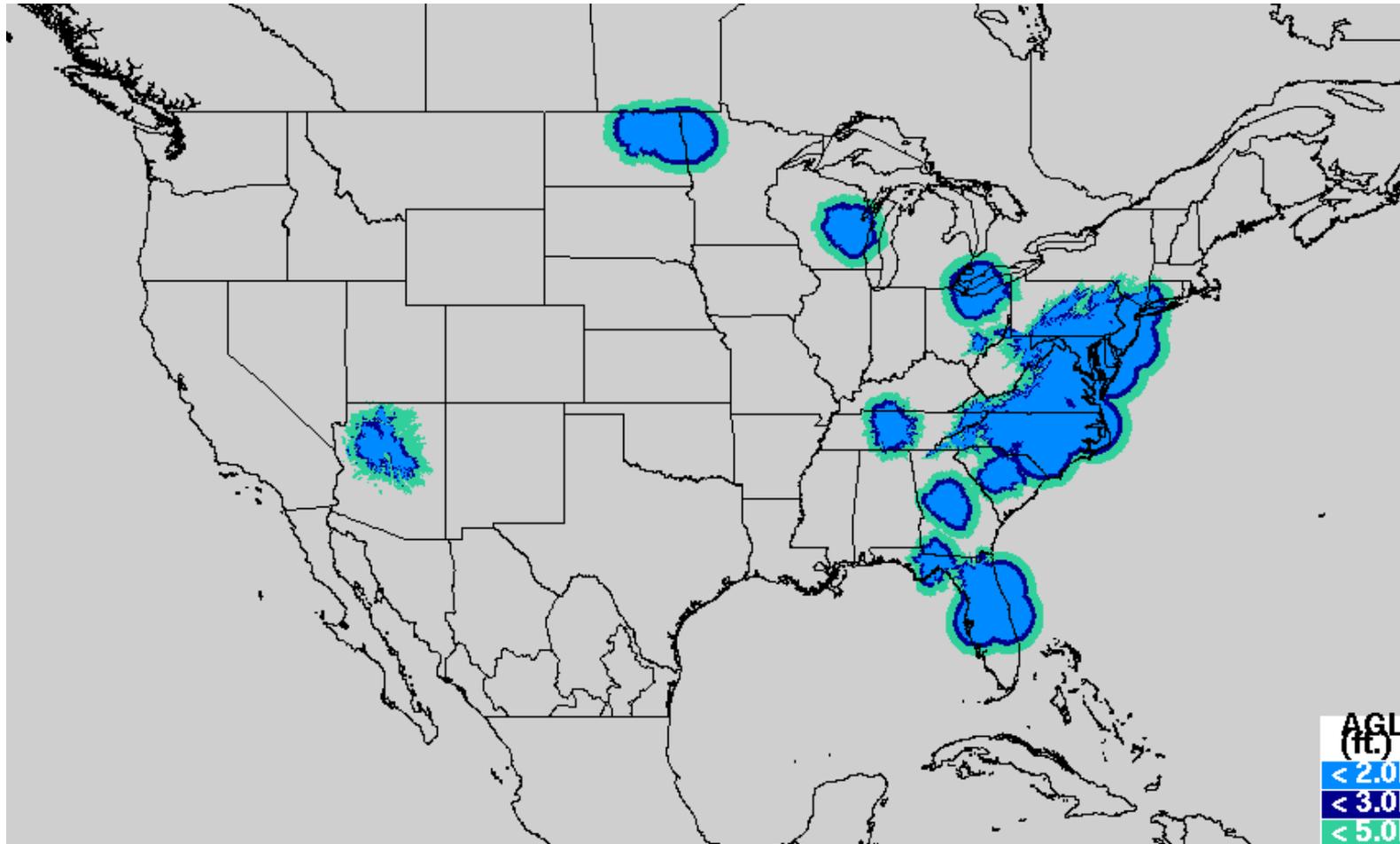
# Implementation Strategy: Notional Schedule

Service Volumes	States	# Ground Stations (est.)	Proposed Sites	Start Date	End Date
<b>Great Lakes</b>	PA, OH, IN	4	Franklin (PA) Shelby (OH) Dayton (OH) Ft. Wayne (IN)	Mar-09	Jul-09
	IL, MI (Area 1)	4	Chicago (IL) Kalamazoo (MI) Muskegon (MI) Pontiac (MI)	Apr-09	Aug-09
	MI (Area 2) WI, MN	4-5	Freeland (MI) Madison (WI) Duluth (MN) Minneapolis (MN) Rochester (MN)	May-09	Sep-09
	ND	4-5	Alexander Bismark Fargo Minot TBD	Jun-09	Oct-09
<b>NE</b>	ME, NH, VT	4	Portland (ME) Manchester (NH) Killington (VT) Mt. Mansfield (VT)	Jul-09	Nov-09
	RI, CT NY (Area 1)	4	Warwick (RI) Ashford (CT) Albany (NY) Rome (NY)	Aug-09	Dec-09
	NY (Area 2)	4	Tioga County Buffalo Islip Stewart	Sep-09	Jan-10

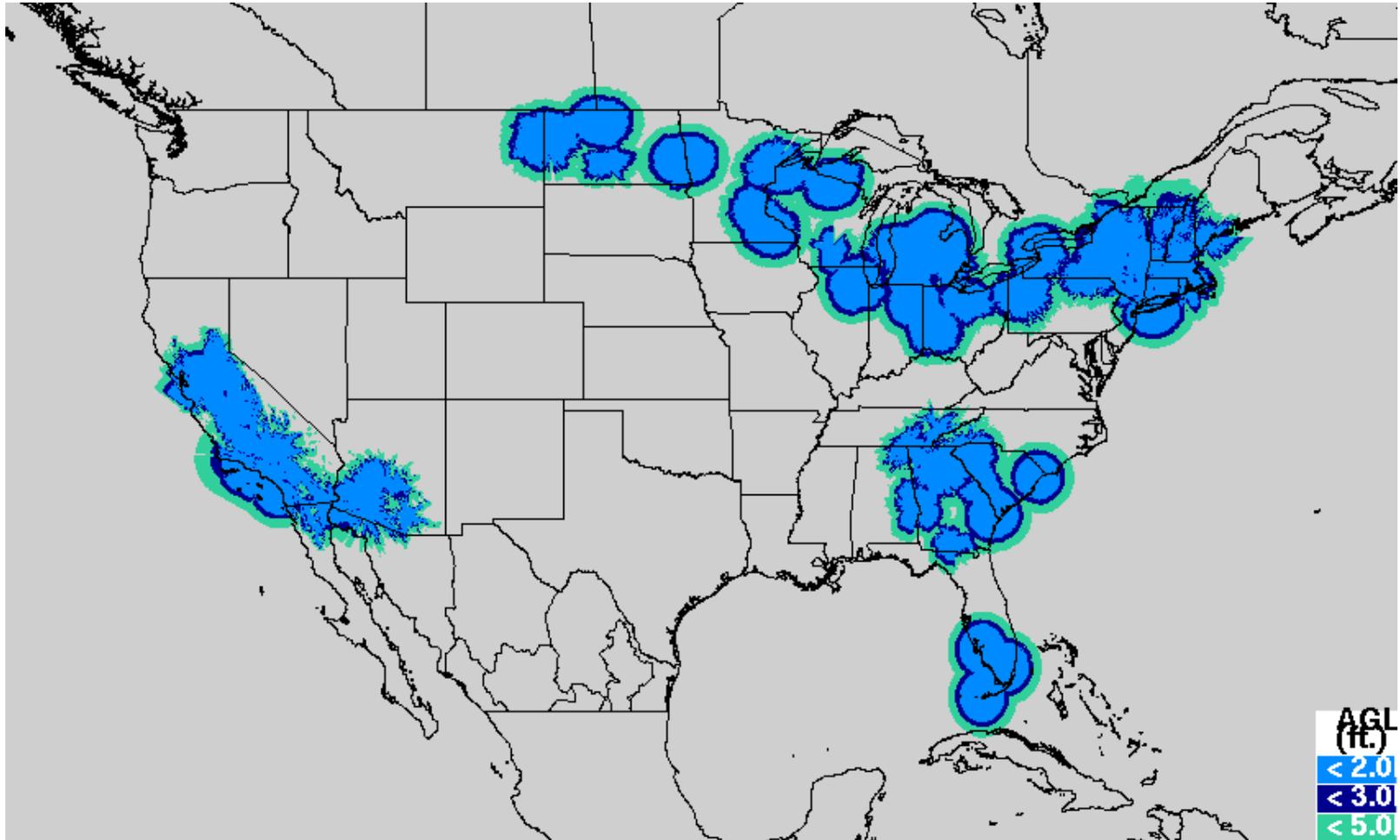
# Implementation Strategy: Notional Schedule

Service Volumes	States	# Ground Stations (est.)	Proposed Sites	Start Date	End Date
Legacy		6		Oct-09	Feb-10
		6		Nov-09	Mar-10
		6		Dec-09	Apr-10
		6		Jan-10	May-10
		6		Feb-10	Jun-10
		6		Mar-10	Jul-10
		6		Apr-10	Aug-10
		6		May-10	Sep-10

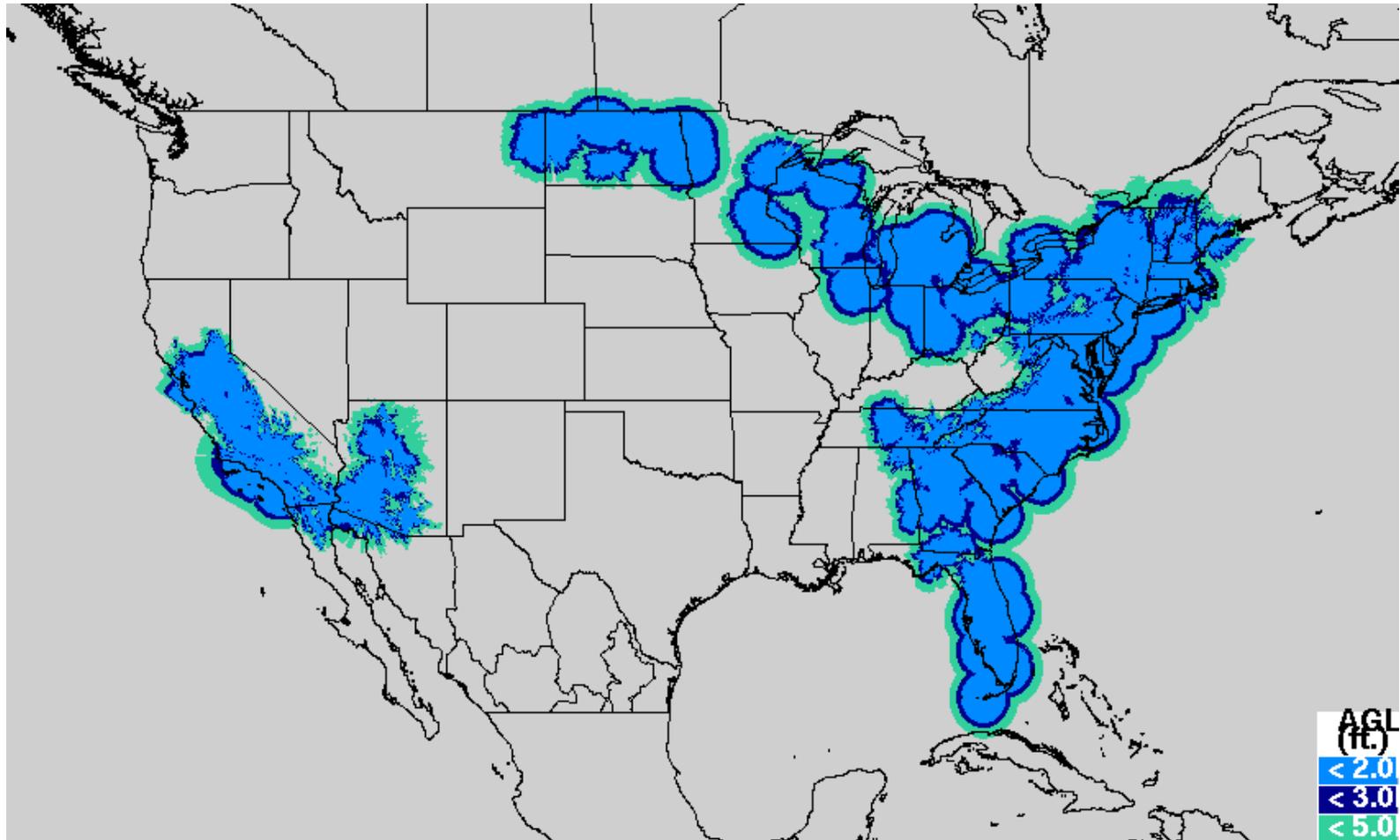
# Implementation Strategy: Legacy TIS-B / FIS-B



# Implementation Strategy: Expansion TIS-B / FIS-B



# Implementation Strategy: Legacy and Expansion TIS-B / FIS-B Combined



# Implementation Strategy

- **Implementation will be tied to selected acquisition alternative**
  - Traditional (FAA owns, maintains, and operates)
    - Gulf of Mexico Communications / Weather
    - Potential Demarcation Point
  - Performance-based services (service is designed, developed, and deployed by the vendor(s) according to best commercial practices and with FAA monitoring)
- **Surveillance and Broadcast Services will follow Acquisition Management System (AMS) Policy for service implementation**
- **Government Furnished Equipment / Information**
  - Radar feeds will be provided for TIS-B service

# Link to Surveillance and Broadcast Services Coverage

**Rob Strain**  
**The Mitre Corporation**



# **Acquisition Strategy**

**Steve Manley**

**Surveillance and Broadcast Services**

**Contracting Officer**



# Acquisition Strategy

**“Performance based Service Acquisitions involve acquisition strategies, methods, and techniques that describe and communicate measurable outcomes rather than direct performance processes. It is structured around defining a service requirement in terms of performance objectives and providing contractors the latitude to determine how to meet those objectives**

- *Guidebook for use of Performance Based Acquisition in DoD, December 2000*

**“Industry Days and one-on-one meetings can expand the range of potential solutions, change the nature of the acquisition, establish the performance-based approach, and represent the agency’s first step on the way to an “incentivized” partnership with a contractor.”**

- *Seven Steps of Performance Based Acquisitions*

# Acquisition Strategy

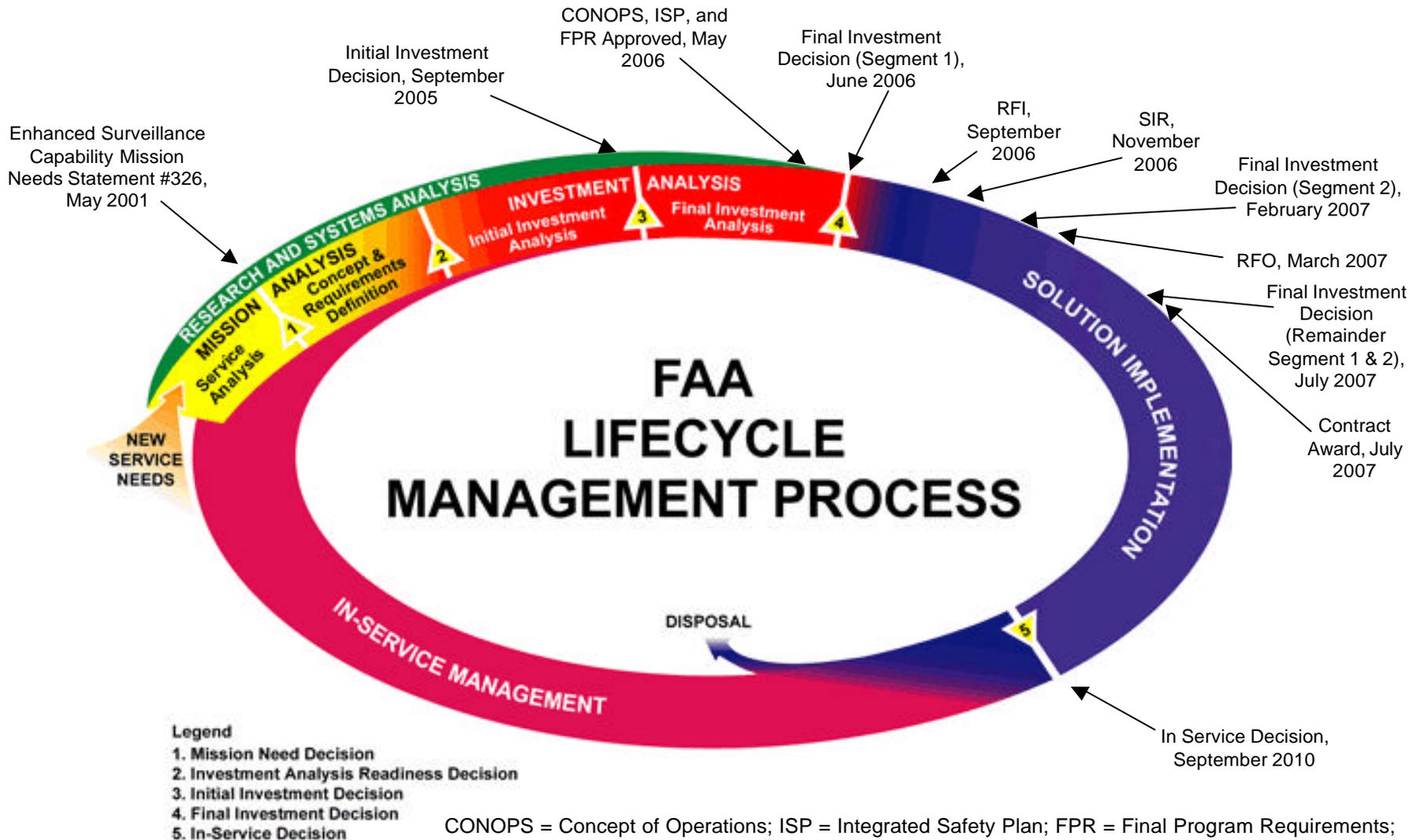
- **Public announcements facilitate market research**
  - Engage industry in an early dialogue
  - Communicate FAA plans
  - Give industry time for teaming or subcontracting
  - Obtain industry feedback

# Acquisition Strategy

- **Technology Transfer**

- Sharing of existing government studies and databases is encouraged
- Program office will establish a website for sharing of ADS-B knowledge
- Program office will consider participation in demonstrations of prototype equipment and site visits where appropriate

# Acquisition: FAA Life Cycle Management Process



# Acquisition Strategy: Acquisition Management System (AMS) Research and Systems Analysis

- **The ADS-B program has transitioned from Research and Development (R&D) to a Facilities and Equipment (F&E) Acquisition**
- **R&D allows more flexibility than F&E funded acquisitions**
- **R&D frequently not installed per FAA guidelines**
- **R&D configuration tracking and documentation not rigid**
- **R&D programs do not progress to stage of In-Service Decision**
  - R&D efforts must inhibit creation of a sole source vendor by continual development of a product to meet agency needs

# Acquisition Strategy: AMS Solution Implementation

- **F&E programs require formal program baselines which are closely managed**
- **Acquisition strategies are developed and approved as appropriate**



# Acquisition Strategy: Government Contracting Process

- **Government Contracting is based on presenting needs to industry and industry responding with an offer**
  - Requirements are converted to specifications
    - Specifications may take the form of:
      - Performance
        - » Must see 5 miles out
        - » Cover all airport surface areas
        - » Fly 3 people to the moon
        - » Fly 400 MPH and carry 6,000 pounds
        - » Described the requirements in terms of results rather than process
      - Build to Print
        - » Build or perform in accordance with a detailed specification
    - FAA specifications are presented to industry through a formal solicitation process
    - Industry submits offer
    - Government acceptance of offer creates a binding contract

# Acquisition Strategy: Government Contracting Process

- **A legally enforceable contract consists of:**
  - Offer
  - Acceptance
  - Consideration – Usually Dollars
  - Meeting of the Minds
- **A contract is a package framed around:**
  - Specification (Statement of Work)
  - Negotiated Cost
  - Schedule

# Acquisition Strategy

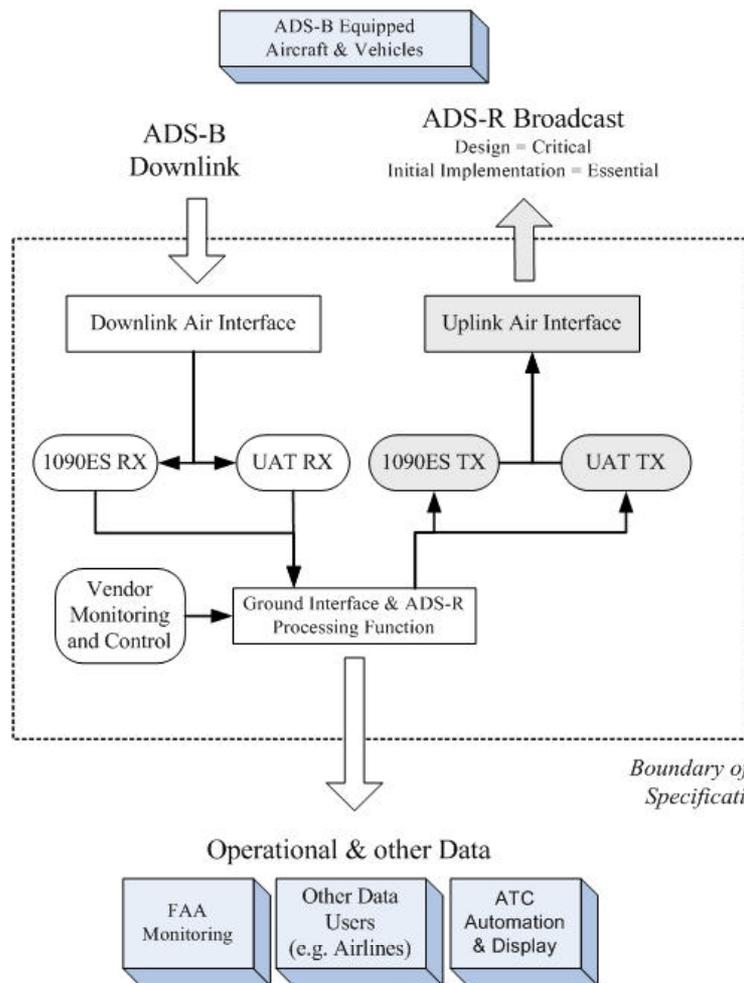
- **Initial Services / Applications (Segment 1):**

<b>Broadcast Services Contract:</b>
<b>Surveillance Broadcast Services (En-Route, Terminal, Surface) (ADS-B)</b>
<b>Traffic / Flight Information Broadcast Services (TIS-B / FIS-B)</b>
<b>Applications:</b>
<b>Enhanced Visual Acquisition</b>
<b>Enhanced Visual Approaches</b>
<b>Final Approach and Runway Occupancy Awareness</b>
<b>Airport Surface Situational Awareness</b>
<b>Conflict Detection</b>

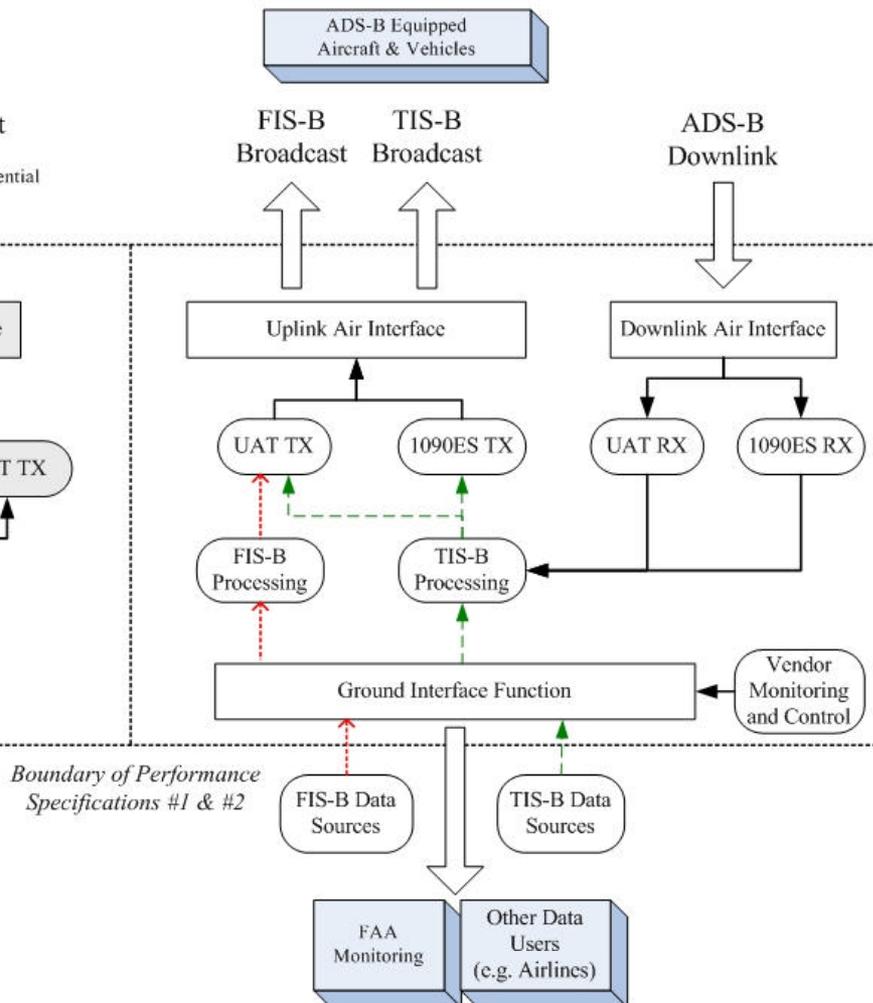
ADS-B and TIS-B/FIS-B function are “partitioned” into two separate specifications

# Acquisition Strategy

## ADS-B Critical Service + ADS-R Service



## TIS-B & FIS-B Essential Service



# Acquisition Strategy

- **Potential to award one contract or combination of contracts**
- **Period of Performance is planned to be 15 years**
- **If one contract is awarded, contractor not bound by partitioned specifications**



# Acquisition Strategy

- **Contract (s) will provide for maximum flexibility in ordering coverage and services**
  - Basic contract award will consist of:
    - Targeted ADS-B infrastructure deployment
    - Expanding and replacing TIS-B / FIS-B infrastructure
    - Contract Line Item (CLIN) option for NAS deployment will be in same contract
  - ADS-B options for defined coverage areas and service delivery points (ATC)
  - TIS-B / FIS-B options to be exercised as needed
  - Potential to consolidate service delivery points in the future

# Acquisition Strategy

- **ADS-B solicitation will utilize a performance-based specification**
  - Contractors provide services in lieu of equipment
  - Eliminate FAA equipment requirements (2100, electrical, leases, etc.)
  - Contractor responsible for equipment installation and operation
  - Contractor may have existing infrastructure to utilize
  - Contractor may decide to build additional resources to support FAA and contractor requirements

# Acquisition Strategy

- Proposed Contract Line Item (CLIN) Structure

CLIN	Title	Pricing
0001	Segment 1	Cost Plus Fixed Fee (Incentives?)
0002 - Option	Target Area 1 ADS-B / TIS-B / FIS-B	Fixed Price •Period of Performance – 15 years? •Redetermination of prices •Appropriate option exercise dates
0003 - Option	Target Area 1 ADS-B	Fixed Price
0004 - Option	Target Area 1 TIS-B / FIS-B	Fixed Price
0005 - Option	Discretionary Pop-ups •Olympics / Post-War / Disasters	Fixed Price for infrastructure Time and Materials (T&M) for installation

# Acquisition Strategy: Pricing

- **Contractor incurs non-recurring / recurring costs**
  - Need to account for one time implementation costs versus year to year operating costs
  - Propose fixed price per year for delivery of services
  - Price per unit of delivery considered too cumbersome
    - Similar to other contracts to operate facilities for a period of time
  - Penalty clause for breaks in delivery of services
  - Structured incentives
  - Price differentials for added services

# Acquisition Strategy: Contract Considerations / Constraints

- **Considerations**

- Government Furnished Equipment (GFE) – Radar feeds for TIS-B
- Government Furnished Information (GFI) – Broadcast Services Ground Station Specification for information only
- Interface Control
  - Automation input
- Performance Requirements
  - Accuracy
  - Integrity
  - Availability

- **Constraints**

- Spectrum (Interoperability)
  - Frequency
  - Occupancy
  - Duty Cycle

# Acquisition Strategy: Contract Award Process

- **Technical team will determine technical evaluation factors for solicitation**
  - Discriminators between proposals
  - Evaluation plan established
  - Technical team will score offerors with raw scores
  - Business team will score business proposals with raw scores
  - Predetermined weight will be applied
  - Source selection recommendation will be made to a Source Selection Official
- **ADS-B evaluators required to sign non-disclosure agreements to indicate that no bias toward any offer exists and that team members will not disclose any information to other than those with a need to know**

# Next Steps

- **Performance Specification Request for Information (RFI) – Planned September 2006**
- **Performance Specification Response Due – Planned October 2006**
- **Screening Information Request (SIR) – Planned November 2006**

# Next Steps

- **Request for Offer (RFO) – Planned March 2007**
  - Will consider utilizing a performance-based services acquisition strategy
  - Government develops Statement of Objectives (SOO)
    - Competing contractors develop a statement of work, performance metrics and measurement plan, and a quality assurance plan
    - Contractor proposals based on proposed solutions and existing commercial practices
    - Contractors propose penalties and incentives they are willing to embrace
  - Benefits of performance-based services acquisition
    - Increased likelihood of meeting mission needs
    - Focus on intended results, not process
    - No detailed specification or process description needed
    - Contractor flexibility in proposing solution
    - Shared incentives permit innovation and cost effectiveness
    - Variety of solutions from which to choose

# Review Items

- **Additional Performance-Based Services Information**

- FAA website contains seven steps to performance-based services acquisition

- <http://www.faa.gov>

- About FAA (at top of page)

- Business Opportunities

- Contract Opportunities

- FAST

- Specialty Functions, Process, and Guidance

- » Procurement Toolbox

- » Performance Based Services Acquisition

# Review Items

- **Service coverage volume ideas welcomed**
- **Incentives / Penalty Clauses**
- **Additional business models**
  - Leveraged assets
- **Faster value generation desired**
  - User incentives
    - New services in non-radar airspace
      - Access to airports or airspace (local business economy)
    - New services for general aviation
      - TIS-B / FIS-B (safety, owner / operator value of time)
    - Better services in non-radar airspace
      - Preferred Routes (airline direct operating costs, passenger value of time)
      - Airport Surface (operational efficiencies)
    - Avionics costs
      - Subsidize targeted population
      - Competition to lower price