Airport GIS Program Update

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Agenda

- **Airports GIS Program Update**
  - Implementation Plan Update
  - Airports GIS Tool Developments
  - Implementation and Pilot Projects
  - Benefit Cost Analysis

What is the FAA Airports GIS Program

- About 547 airports have commercial service in US
- About 3,331 receive federal funding and are included in the National Plan of Integrated Airport System (NPIAS)

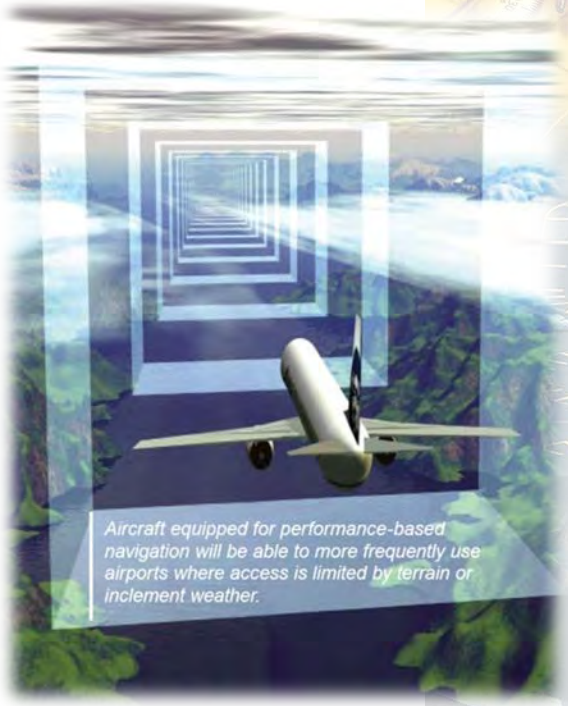
Full Feature Geospatial Data Collection

- There are about 13,450 Airports and 5,856 Heliports
- Of those about 8,377 Airports and 5,508 Heliports are private use landing facilities.
- About 19, 782 landing facilities in the FAA database including seaplane bases, gliderports, ballonports and ultralight Flightparks

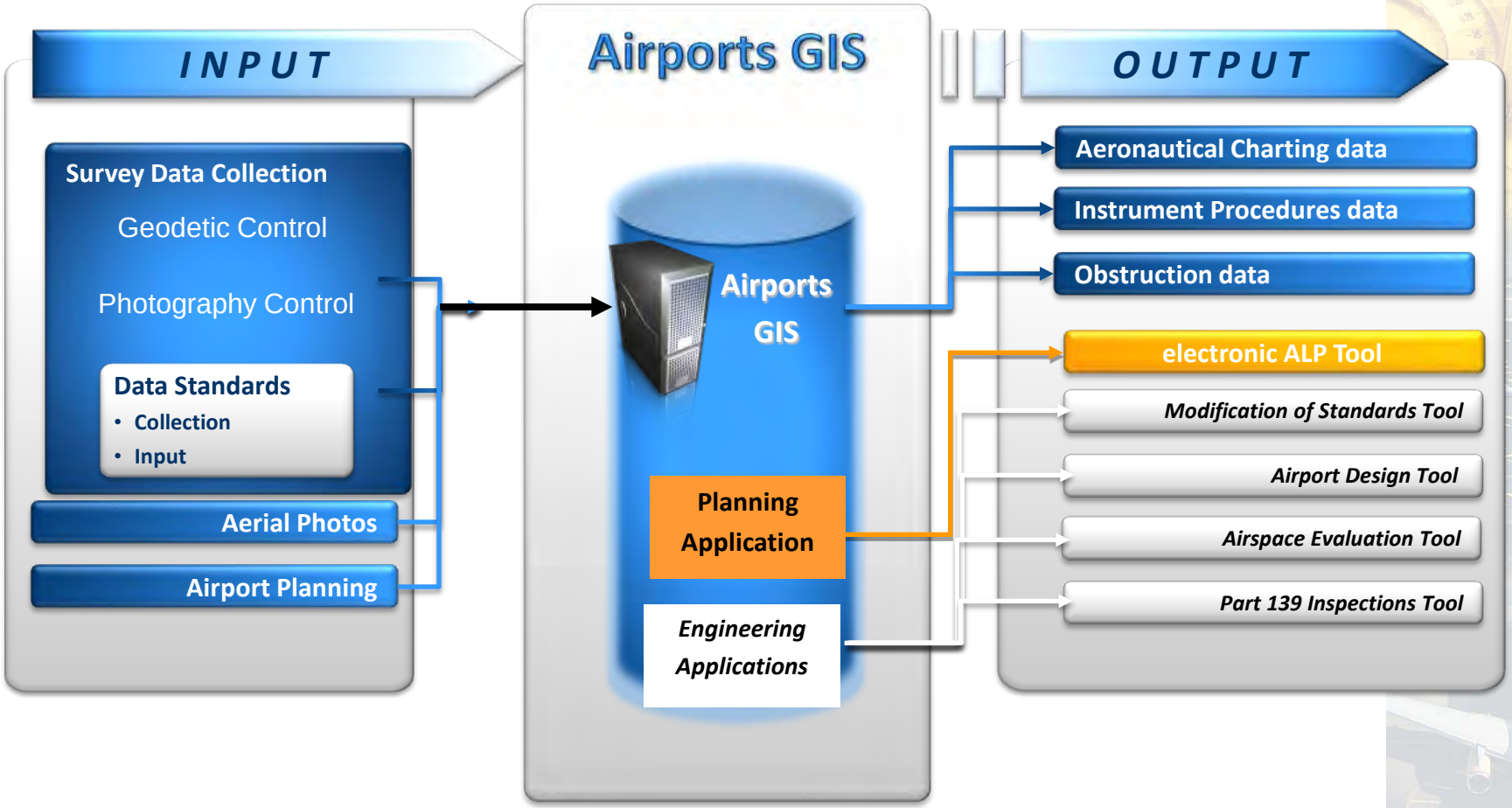
Airport point location and attributes only -2013

Justification for Airports GIS

Improve Efficiencies	• Single, authoritative, accessible data source
Reduce Costs	• Airports, FAA, consultants
Improve Safety	• Increased need for real-time data accuracy
NextGen	• A repository of airport information (not just survey data)



Airports GIS



AC 150/5300-18, Chapter 5 | Feature Groups

- Airfield
- Airspace
- Cadastral
- Environmental
- Geospatial
- Man Made
- Navigational Aides
- Seaplane
- Security
- Surface Transportation
- Utilities

5.3.1. Paragraph Number and FeatureClassName

Definition: *Definition of feature.*				
Feature Group	*The Feature Group of the element.*			
Feature Class Name	*The proper name of the Feature Class.*			
Feature Type	*The compliant geometry of element.*			
CADD Standard Requirements				
Layer/Level	**Description**			
Compliant layer name.	*Compliant layer description. [Siting]*			
	Color	**Line type**	**Line Weight**	**Symbol**
AutoDesk Standards	*Color code AutoCAD*	*Line type required*	*Line weight AutoCAD*	*Symbol type is user defined*
MicroStation Standards	*Color code MicroStation*		*Line weight MicroStation*	
Information Assurance Level	*Security level credential*			
Equivalent Standards	**AIXM**	*AIXM equivalent of feature.*		
	FGDC	*FGDC equivalent of feature.*		
	SDSFIE	*SDSFIE equivalent of feature.*		
Documentation and Submission Requirements	The required documentation for feature class elements. Minimum requirements are defined in paragraphs 1.5.2 and 1.5.3. Additional or expanded documentation requirements are located here.			
Related Features				
Data Capture Rules: *Description of proper collection limits and requirements for feature class element.*				
Monumentation	*Monumentation requirements.*			
Survey Point Location	**Horizontal**		**Vertical**	
	Description of specific HSP location.		*Description of specific VSP location.*	

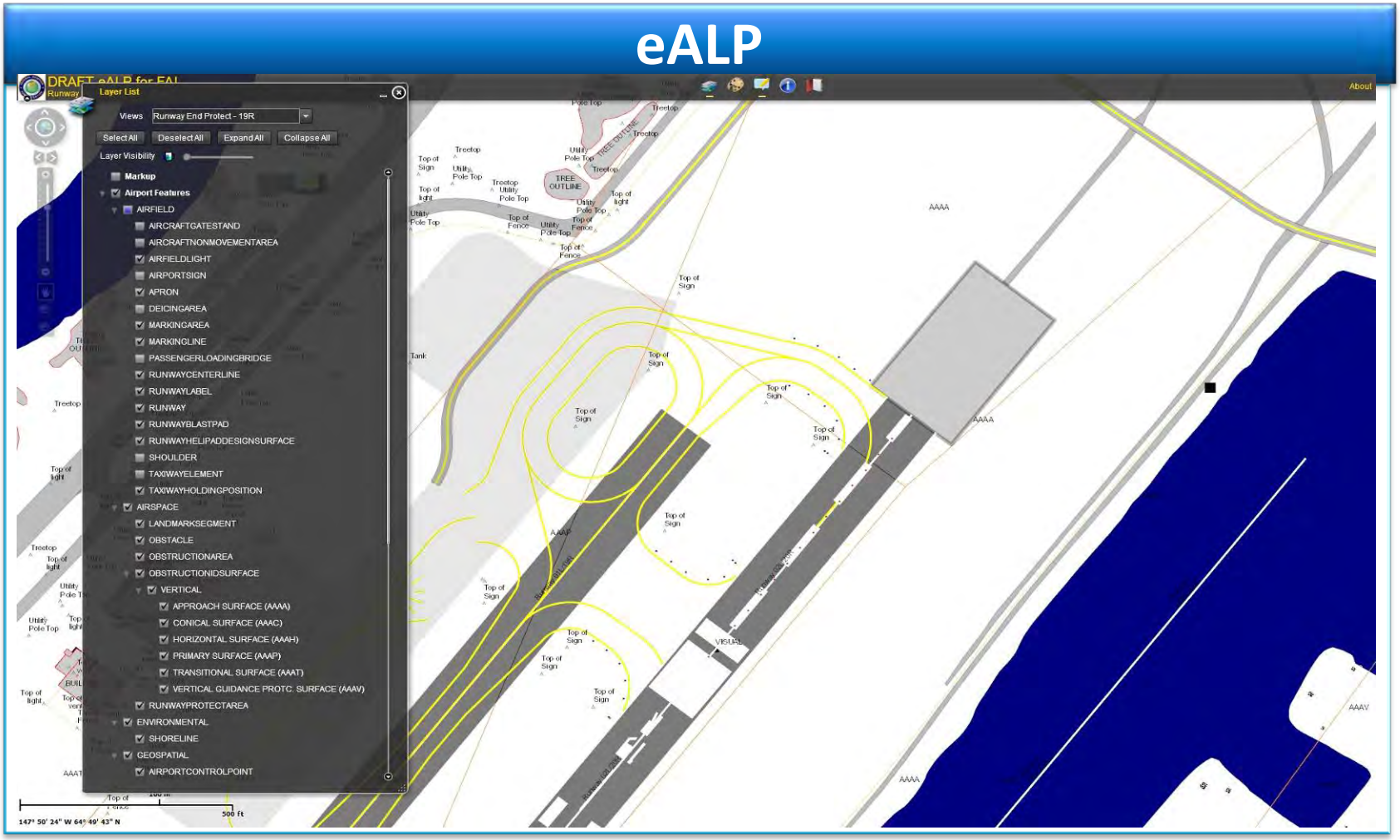
Accuracy Requirements (in feet)	**Horizontal**	**Vertical**	
		Orthometric	**Ellipsoidal**
	Accuracy requirement	*Accuracy requirement*	*Accuracy requirement*
Resolution	**Geographic Coordinates**	**Distances and Elevations**	
	Coordinate resolution requirement	*Coordinate resolution requirement*	
Feature Attributes			
Attribute (Datatype)	**Description**		
Name of attribute field	*Description of attribute specifications*		

Airports GIS Tool Development

FAA Planned and Conceptual Tools ("Apps")

• Electronic Airport Layout tool (eALP)	2012
• Modification to Standards tool	2013
• Airport Design tool	2014
• Airspace Analysis tool	2015
• Runway Safety Area (RSA) tool	2016

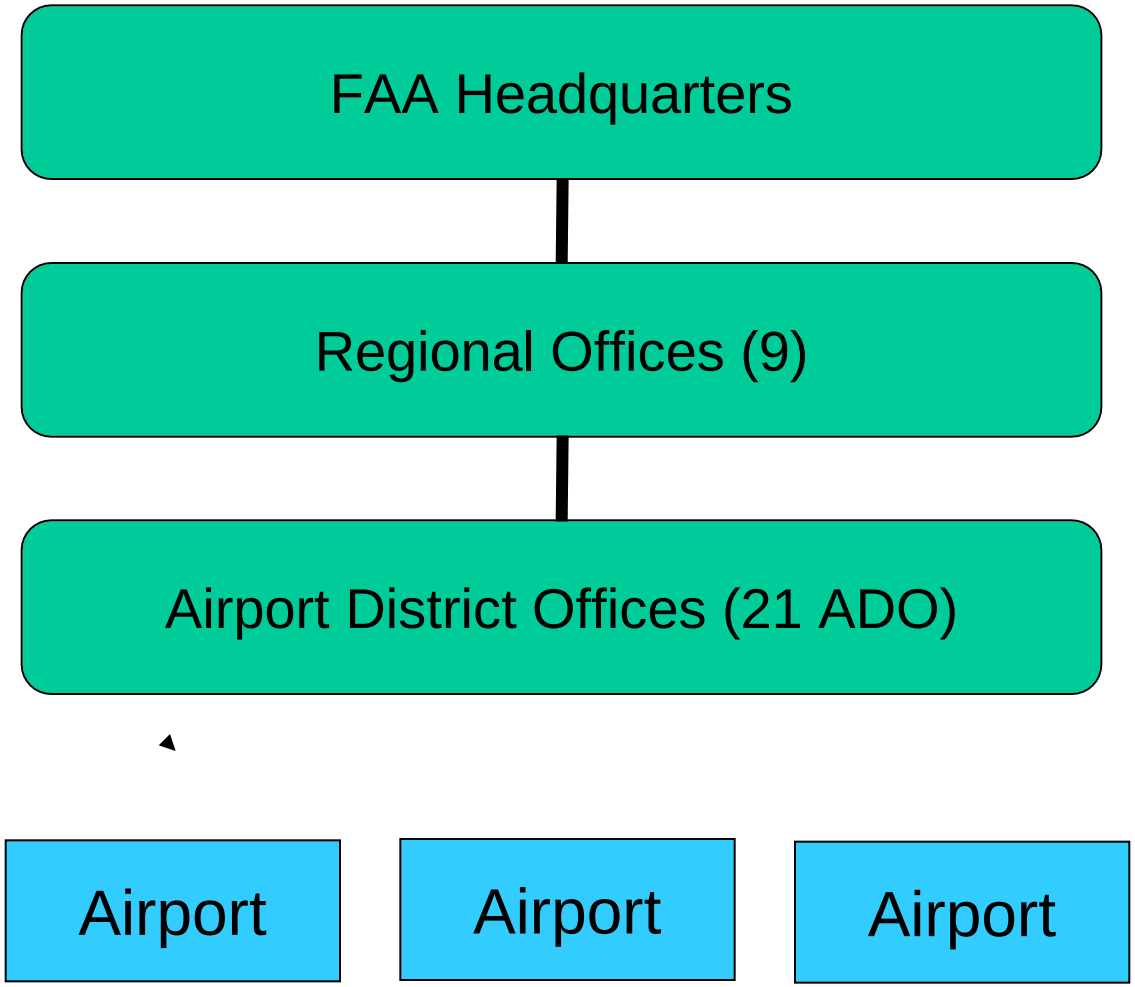
eALP | On-line Viewer



eALP | Background Imagery

eALP

FAA Airports Organization



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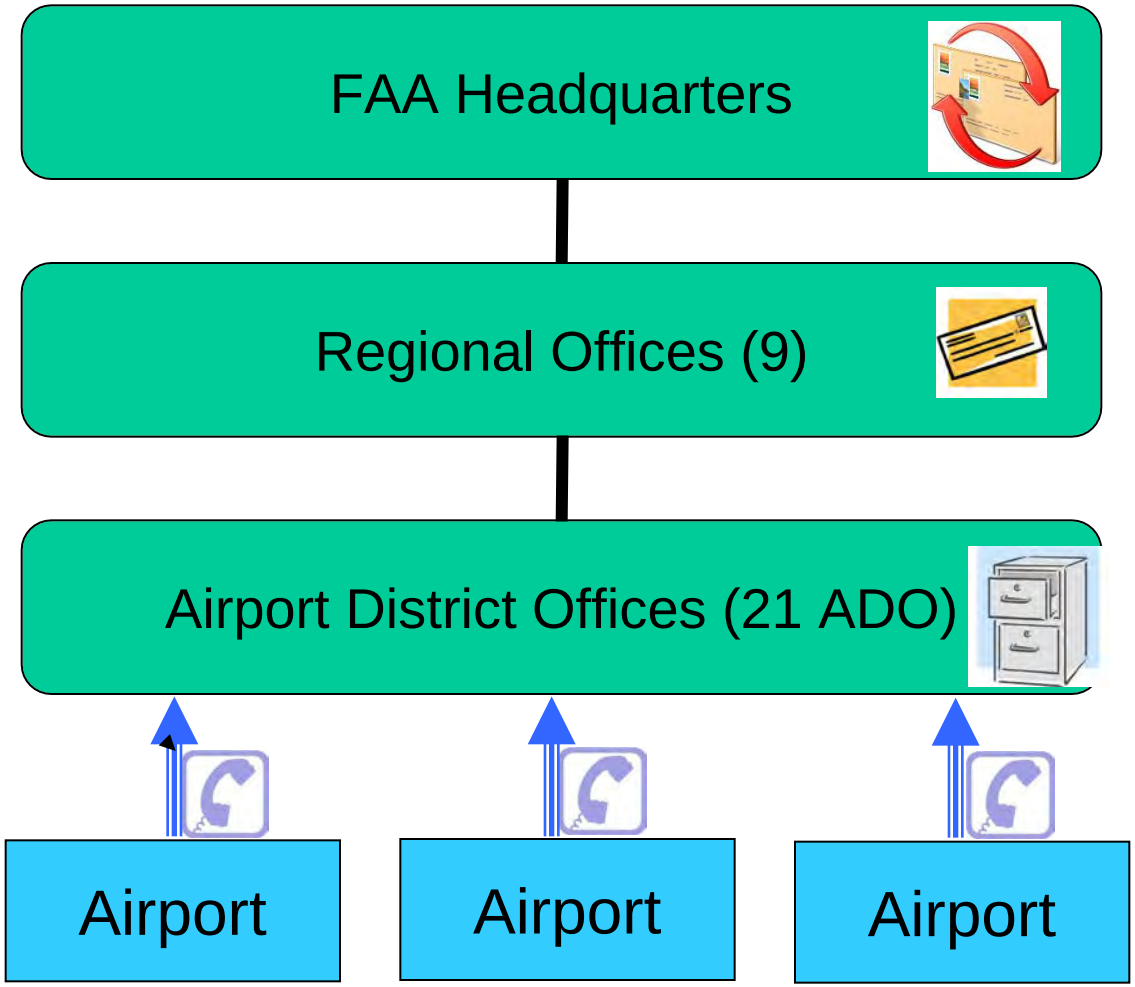

Data Distribution Before Airports GIS

- Aerial photography not available
- Airport Layout Plan @ ADO
  - Paper
  - PDF
- Modification of Standards @ ADO
- Obstruction Surveys to National Geodetic Survey (NGS)

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Data Distribution After Airports GIS

- **Aerial Photography stored on Cloud Server**
- **Digital Data in Airports GIS**
  - eALP derived from photography
- **Modification of Standards in Airports GIS**
- **Obstruction Surveys in Airports GIS verified by NGS**

Airports GIS Implementation

FAA Implementation Priority

- Large and Medium Hub Airports
- Small Hub and Non Primary Airports
- Tower Airports
- Instrument Approach Airports
- All FAA Funded Airports

Anticipate the Transition to eALP

Today	Near Term	End State
2012	2013-2016	2016 +
• Airports GIS data collection and submittal • Sponsor/FAA access to data through Airports GIS • Legacy ALP (paper or PDF) • Legacy ALP coordination and approval process	• Airports GIS data collection and submittal • Sponsor/FAA access to data through Airports GIS • Electronic Signatures (submittal and approval) • eALP (geo-referenced PDF) with legacy ALP review and approval process	• Airports GIS data collection and submittal • Sponsor/FAA access to data through Airports GIS • Electronic eALP submittal • Electronic eALP review and approval through Airports GIS • Geo-referenced PDF (for use outside Airports GIS)
Limited e-Capability	Increasing Efficiency	Optimized Efficiency

Airports GIS Pilot Program | Phases

- **Phase I**
  - FY 2009 funding: 2 regions; 7 airports
  - Focus: data collection/migration
  - Multiple interim reports (include lessons learned)
  - Data input target: end of FY 2011
- **Phase II**
  - FY 2010 funding: 9 regions; 26 airports
  - Focus: data collection/migration; incorporate planning
  - 1 interim report (include lessons learned)
  - Data input target: 18-24 months from NTP

Airports GIS Pilot Program | Lessons Learned

- Scoping is Critical to Project Success
- Training/Outreach Must be On-going
- Two Fronts to Data Management
- Two Fronts to Acceptance and Use

FAA LOBs

Airport Sponsors

- Data Verification Needs Refinement
- -18 Guidance Needs Refinement
- Presents More Challenges with Timing

Pilot Program | Recommendations

- Consider Careful Examination of Resources
- Manage the Transition on all Fronts

What are the Incremental Benefits of FAA Airports GIS?

The primary benefits we expect Airports GIS to provide include:

1. Increased labor productivity due to improved coordination
2. Earlier completion of projects due to improved coordination
3. Better information for more efficient planning and preliminary design
4. Broader use of GIS at airports due to FAA standards and funds for data collection
5. Elimination of redundant airport mapping and survey costs

These benefits closely correspond to other major IT investments in other venues. They were identified by interviewing a broad range of stakeholders—including both supporters and opponents of the program—from the FAA, airports, consultants, and GIS vendors.

What are the Incremental Costs of FAA Airports GIS?

Incremental Costs of FAA Airports GIS	Range of unit Costs by Airport	
	Large Hub	Small GA
1. Full data collection including eALP and Airspace Analysis (one time cost)	$252-432k per airport	$50-75k per airport
2. Future Vertically Guided Obstruction Survey and Airport Airspace Analysis assuming eALP data collection was completed	$30-45k per survey	$7.5-11.5k per survey
3. Future Construction Projects (Final Design Plans and As-Builts)	$5-10k per project	$5-10k per project
4. Future ALP Updates (planned features and attributes only)	$45-352k per update	$11.5-27k per update
5. Data Verification Costs	$4k per verification	$2-3k per verification
6. Program Overhead & Training	$5.6m per year for entire program	
Costs shown are incremental costs between the Base Case and Airports GIS Case		

- We anticipate the first four cost categories will be funded through the normal Airport Improvement Program (AIP) process (i.e. as projects are normally justified, programmed, and approved for AIP funding).
- Costs associated with the remaining two categories will likely be funded through other FAA sources.
- We expect the additional costs necessary to meet the Airports GIS requirements will decrease over time as implementation is completed and stakeholders gain experience with the program.

BCA Non-Quantifiable Benefits

- Improved Safety
- Improved Funding Allocation
- Operational Efficiency
- Longer asset life due to improved maintenance
- Better Use of Land Surrounding an Airport
- Reduced Chance of Change Orders
- Better Design and Compliance Decisions

BCA Conclusions

- The FAA Airports GIS program is likely to produce benefits that outweigh costs.
- Benefits estimates have been confirmed using two independent methodologies.
- The program remains viable even if there are no reductions in the cost of producing GIS inputs or outputs and assuming the lowest range of benefits in all categories.
- Results are consistent with the Preliminary Business Case Analysis (June 2010)

Questions?

- **Any questions about the overall Airports GIS Program?**

- **Please use the Airports GIS Help Desk for Technical Questions or status of submissions.**