

# Geospatial Data Collection for the FAA

## Airports GIS Program

*A Change in Direction*

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# What is the FAA Airports GIS Program

- About 544 airports have commercial service in US
- About 3,330 receive federal funding and are included in the National Plan of Integrated Airport System (NPIAS)

Full Feature Geospatial Data Collection

- There are about 13,188 Airports and 5,581 Heliports
- Of those about 8,310 Airports and 5,513 Heliports are private use landing facilities.
- About 19, 440 landing facilities in the FAA database including seaplane bases, gliderports, ballonports and ultralight Flightparks

Limited geospatial features and attributes 2014/2015

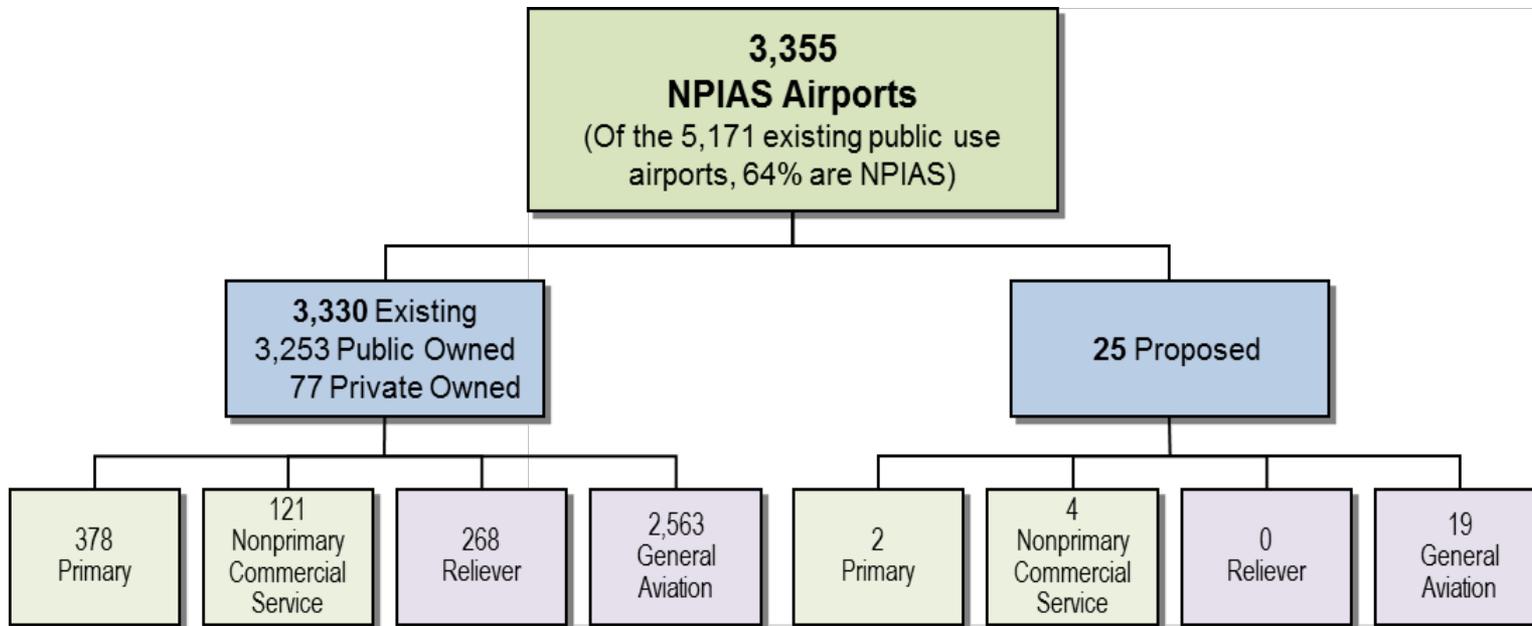
# January 1, 2013 US Landing Facilities

| Total         | Airport       | Heliport     | Seaplane   | Glider    | Balloon   | Ultralight |
|---------------|---------------|--------------|------------|-----------|-----------|------------|
| Public Use    |               |              |            |           |           |            |
| 5,171         | 4,878         | 68           | 217        | 4         | 1         | 3          |
| Private Use   |               |              |            |           |           |            |
| 14,269        | 8,310         | 5,513        | 277        | 31        | 12        | 126        |
| <b>TOTALS</b> |               |              |            |           |           |            |
| <b>19,440</b> | <b>13,188</b> | <b>5,581</b> | <b>494</b> | <b>35</b> | <b>13</b> | <b>129</b> |

| 2012   | Airport | Heliport | Seaplane | Glider | Balloon | Ultralight |
|--------|---------|----------|----------|--------|---------|------------|
| Closed | 84      | 34       | 5        | 0      | 0       | 1          |
| Opened | 58      | 66       | 4        | 0      | 0       | 1          |
| Change | -26     | +32      | -1       | NC     | NC      | NC         |



# National Plan of Integrated Airports Systems 2013 - 2017



[http://www.faa.gov/airports/planning\\_capacity/npias/](http://www.faa.gov/airports/planning_capacity/npias/)

# Justification for Airports GIS

## Improve Efficiencies

- Single, authoritative, accessible data source

## Reduce Costs

- Airports, FAA, consultants

## Improve Safety

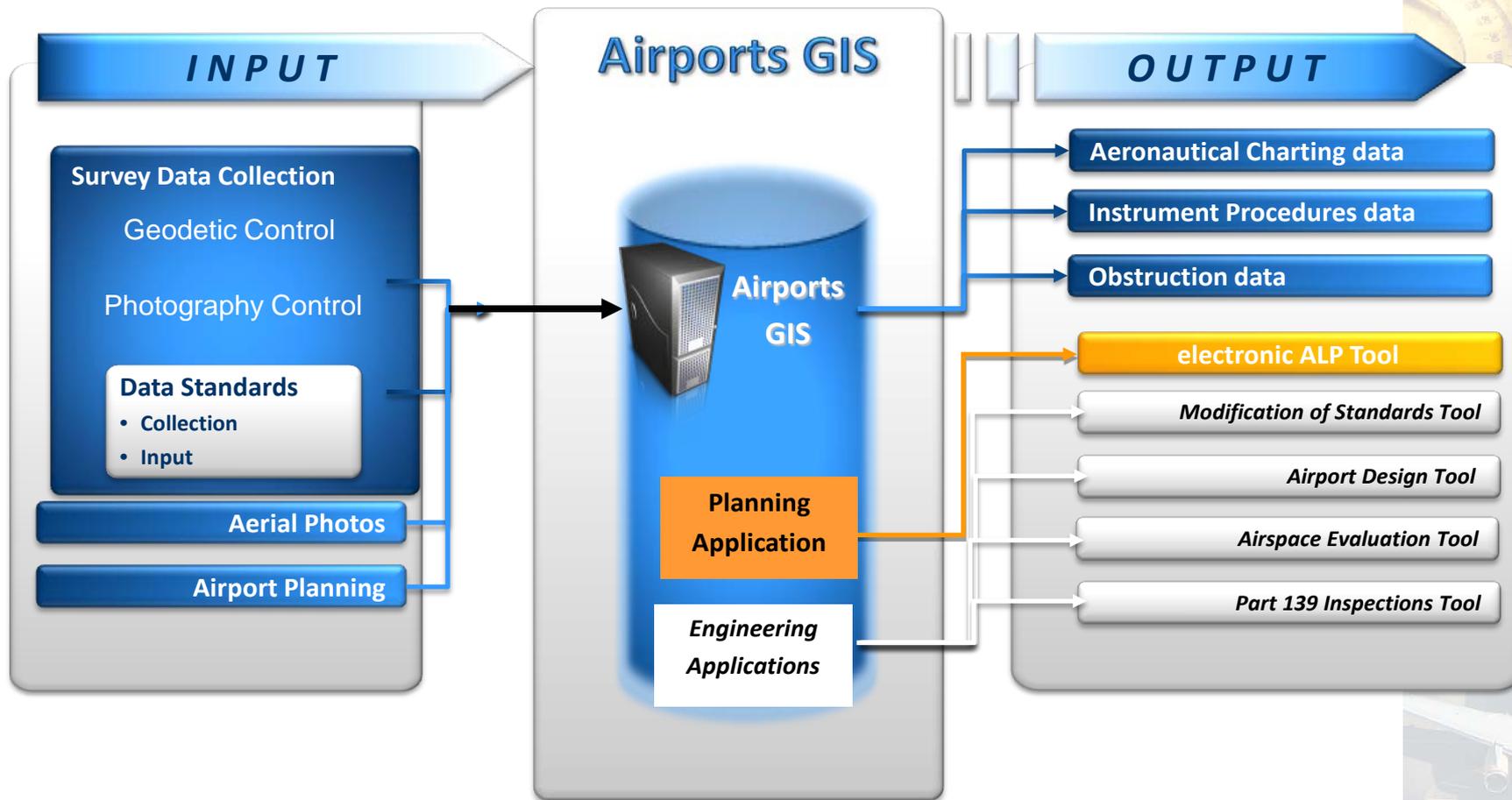
- Increased need for real-time data accuracy

## NextGen

- A repository of airport information (not just survey data)



# Airports GIS



# Data Collection Requirements

- **AC 150/5300-16 Geodetic Control**
  - National Geodetic Survey (NGS) reviews
- **AC 150/5300-17C Imagery Requirements**
  - Submit Plan in Advance, equipment, ground control
  - Imagery Reviewed and checked for accuracy
  - Imagery used for feature extraction
- **AC 150/5300-18B Feature and schema standards**
  - About 34 safety critical features –
    - Runways, taxiways and safety features - Reviewed
  - About 135 features with attributes
    - 1 foot elevation contours, buildings, proposed features
    - Electronic Airport Layout Plan (eALP)



# Data Distribution Before Airports GIS

- No aerial photography
- Airport Layout Plan @ ADO
  - Paper
  - PDF
  - CAD
- Obstruction Surveys to National Geodetic Survey (NGS)
- No airport Data @ HQ
- 5010 Data to NFDC



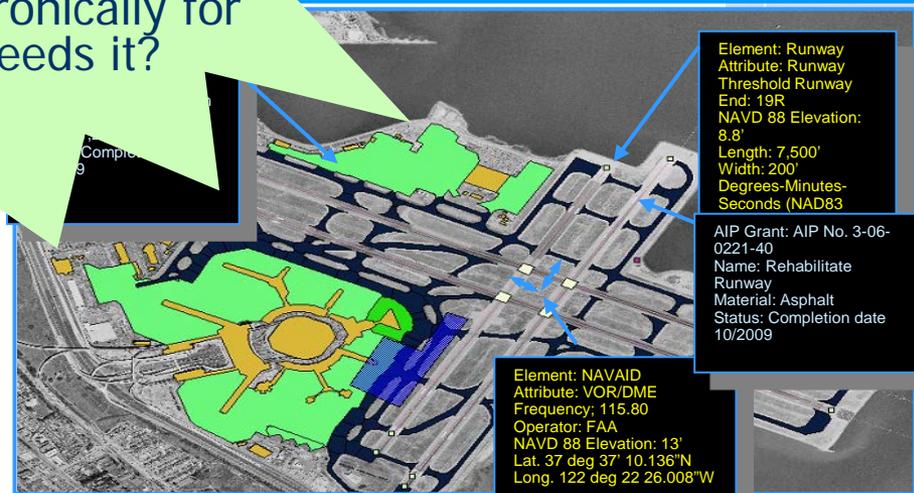
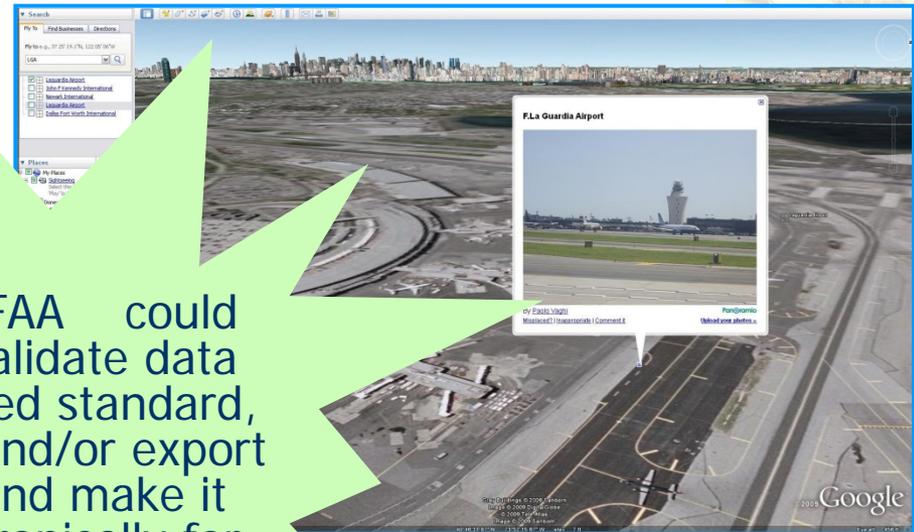
# Data Distribution After Airports GIS

- No aerial photography
- Airport Layout Plan @ ADO
  - Paper
  - PDF
  - CAD
- Modification of Standards @ ADO
- Obstruction Surveys to National Geodetic Survey (NGS)
- No airport Data @ HQ
- 5010 safety data to National Flight Data Center (NFDC)
- Aerial Photography to Cloud Server
- Digital data eALP derived from feature extraction from photography
- Modification of Standards digital tracking in Airports GIS
- Obstruction Surveys in Airports GIS
- All airport data in Airports GIS including the 5010 data (starting 2014/2015)



# What is driving Airports eALP?

What if... the FAA could capture and validate data against a defined standard, import it from and/or export it to an ALP, and make it available electronically for whoever needs it?



# Draw and Measure tool in eALP

The screenshot displays the eALP software interface for Drafting eALP for FAI Runway End Protect - 19R View. The main map area shows a runway layout with various markings and labels. A blue line is drawn across the map, with a length of 325.06 ft. The Draw and Measure tool panel is open, showing options for Line Color (blue), Width (5), Style (Solid), Alpha (1), and Font (Arial, Size 12). The panel also includes a checkbox for Show Measurements and a dropdown for Distance Units (Feet). The map shows runways 01L/19R and 02L/20R, along with AAAT and AAAP markings. A scale bar at the bottom left indicates 80m and 300 ft. The coordinates 147° 50' 33" W 64° 40' 33" N are shown at the bottom left.



# Full Feature Airport GIS Implementation

## Immediate Steps

**Safety Critical Data:** if a survey is required for a project involving safety-critical data submit into Airports GIS

### Initial Data Collection Projection - Short Term

| NUMBER OF AIRPORTS    | FY10     | FY11      | FY12      | FY13       | FY14       | FY15       | FY16       | TOTAL      |
|-----------------------|----------|-----------|-----------|------------|------------|------------|------------|------------|
| Large and Medium Hubs | 4        | 5         | 35        | 15         | 5          | 2          |            | 66         |
| Small and Non Hubs    | 3        | 15        | 12        | 100        | 100        | 34         |            | 264        |
| Non Primary Certified | 0        | 10        | 10        | 20         | 100        | 45         | 36         | 221        |
| Towered not Certified | 0        | 0         | 0         | 0          | 20         | 150        | 104        | 274        |
| <b>TOTAL</b>          | <b>7</b> | <b>30</b> | <b>57</b> | <b>135</b> | <b>225</b> | <b>231</b> | <b>140</b> | <b>825</b> |

Most requested data – 1 foot elevation contours for planning and preliminary design



# AC 150/5300-17C, Standards for Using Remote Sensing Technologies in Airport Surveys

- **Mandatory for all Federally Funded Airports**
- **Survey required for Safety Critical Projects**
  - Master Plans, Airport Layout Plan updates
  - Instrument Procedures Updates
  - Major Construction Projects
  - Maybe required for off airport FAA installed Navaids
- **Aerial Photography Required**
- **LIDAR permitted but must be cost effective**



# Data Required

- **3,330 NPIAS Airports**
- **Major airports require updates 3-5 years**
- **2000 projects per year ( 60%-70% require survey)**
  - Peak Data collection time
- **15 years to collect all airports**
- **Unless we find ways to reduce future costs it will cost over \$1,000,000,000.**
- **Can we leverage LIDAR (aerial or ground based) with other airport or FAA data needs?**



# Exceptions to AC 150/5300-17C

- **Provided a Modification of Standards to allow Satellite imagery for 5300-18B**
  - Five Airports in the Marshall Islands
  - Digital Globe providing imagery
- **For the top 1,000 airports we want our current 5300-18B standard of data collection**
- **What ways can we leverage technology for the remaining 2,300 airports to collect data faster and cheaper?**



# Aeronautical Data Management (ADM)

- **Aeronautical Data Management (ADM)**
  - NavLean initiative under ATO
  - 1 Year of planning and Executive buy in
  - NavLean Office to Manage
  - Schedule April 2013 to Sept 2015
    - Includes changing 5010 data to Airports GIS Web Interface
    - Includes change of Airport Data 5010.4 Order and AC 5300-19
- **AIM Agreement to Cooperate with ARP**
  - Airports GIS is Authoritative Source
  - All Surveys enter into Airports GIS
  - AIM will use Airports GIS for
    - Airport Diagrams, Digital NOTAMs, LVO/SMGCS Charting



# Thank You: Questions Welcome!



Federal Aviation  
Administration