HeightAware: Deploying a 3D Airspace & Planning Tool at PHL

PHL PHILADELPHIA INTERNATIONAL AIRPORT



Overview

- How Did We Get Here
 - Project Background
 - Airspace 101
- Where Are We Now
 - Redeployment Highlights
 - Demo
- Where Are We Going
 - Next Steps







ARORA

Airspace Basics

- In administering Title 14 of the Code of Federal Regulations (14 CFR) Part 77, the prime objectives of the FAA are to promote air safety and the efficient use of the navigable airspace. <u>To accomplish this mission, aeronautical studies are conducted based on information provided by proponents on an FAA Form 7460-1, Notice of Proposed Construction or Alteration.</u>
- Obstruction Evaluation
 - Evaluates the effect of the construction or alteration on operating procedures
 - Determines the potential hazardous effect of the proposed construction or alterations on air navigation
 - Identifies mitigating measures to enhance safe air navigation
 - Charts new man-made or natural objects. FAR Part 77 allows the "FAA to identify potential aeronautical hazards in advance thus preventing or minimizing the adverse impacts to the safe and efficient use of navigable airspace"

PART 77 Surfaces









PART 77 Surfaces





Background

- 2013- Original HeightAware App (1.0) developed to support:
 - Conceptual Planning
 - FAA 7460 review process
- 2017- Mothballed due to outdated data & architecture
- 2018- Initiation of HeightAware 2.0





Original Application (2014)







Stakeholder Engagement

- Airport Planning
- Capital Development Group
- Environmental Planning
- IT
- Legal
- OPS







Redeployment Ideation Process

Short Term Objectives:

- Fulfill "What If" scenarios
- Leverage AGIS project & AAA
- Develop robust metadata
- Enhance interface and functionality

Long Term Objectives:

- Platform for broader access & use cases
 - Public facing?
 - Real time data?





Where are we now?

Current Status of Project





Redeployment Highlights

- Incorporated 2016 FAA AAA/AGIS data
- Leveraged ESRI 4.x API and 4.x widget framework to create 3D interface
- Developed a coordinate conversion tool with ability to place object using any coordinate system
- Added user acceptance conditions/splash page
- Extended imagery and DEM to include all FAA Part 77 surfaces



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Map/Feature Services

A. Group Layer – Context Features

- Feature Layer Tank Site
- Feature Layer Building
- Feature Layer Tree

B. Group Layer – 2D Critical Surfaces

- Feature Layer Air Operations Area
- Runway Object Free Area
- Airport Operations Area
- Building Restriction Line

C. Group Layer – 3D Critical Surfaces

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- Departure
- One Engine Inoperable (OEI)
- Terminal Instrument Procedures (TERPS)
- Threshold Siting Surface

D. Group Layer – Part 77 3D Surfaces

- Feature Layer Approach
- Feature Layer Transitional
- Feature Layer Horizontal
- Feature Layer Conical

E. Basemap

- Tile Layer PHL Imagery 1ft.
- Elevation Layer DEM Merged 2011



Demonstration

HeightAware a PHL GIS Obstruction Analysis Tool







Where are we going?





Next Steps

- Enable Active Directory Authentication for end users
- Complete roll out/training for PHL staff
- Develop and deploy a counterpart for PNE
- Incorporate additional services:
 - Obstructions
 - 7460 inventory/status
 - FAA UAS (Drone) permitted elevations
 - Additional conceptual planning features such as: wetlands, floodplains, storage tanks, et al.
 - Real time data (IE: Geoevent Integration)





Utilities Viewer







Questions?

Andre Lennertz, AICP, PP

GIS Manager International Plaza One, Suite 100 Philadelphia, PA 19113 O- 215-937-6728 C- 215-718-6760 alennertz@aroraengineers.com



