



Fire Pre-Plan Mobile Mapping

City of Alexandria
Department of Planning and Zoning
GIS Division

Project Scope

- AFD wanted a mobile app to collect on-site building feature data to update existing but outdated facility pre-plans.
- Updated pre-plans would then be available for use as pdfs for various programs including Computer Aided Dispatch



Sprinkler Control valves



Knox Boxes



Hazards



Access Points



Control Rooms



Tanks



Elevators



Fire Pump



Stairs



SCV

Needs Gathering

- GIS got to know the 5 W's about pre-plans
 - Who Uses?
 - Fire Fighters, Battalion Chiefs, Paramedics, Fire Marshalls and Code enforcement officers
 - What is Collected
 - Any aspect of a building or the surrounding areas than can hinder, impeded or assist in a response
 - When is it needed?
 - Before, during and after an incident



Needs Gathering

- Where are plans used?
 - In the field and at the station
- Why are they used?
 - So that all the personnel involved in an incident response have as much information as possible to do their job quickly and safely



GIS Requirements

- Simple database design for the front-end users
- Clear simple symbology
- Editable service allowing for multiple editors
- Flexible solution
 - Works on multiple mobile platforms (Ipad, Iphone, Windows Phone, Andriod, etc) and on desktop computers
- Cost could not exceed funds allocated for project
- Sustainable over a long time period



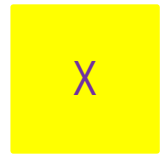
Solutions

- ArcGIS Online (AGOL)
 - Works across all platforms
 - Utilized existing licenses already covered under ESRI's standard license agreement.
 - Data could be stored in the cloud or locally hosted
 - Free Software Download onto any device
 - (Carto mobile costs per device)



Solutions

- Designed a file geodatabase and published to the DMZ to utilize domains
 - Domains allow quick record population
 - Reduce mistakes
 - Free text fields strongly discouraged and avoided
- Used simplified symbology
 - Mostly primary colors and shapes
 - Easier to identify across multiple mobile platforms



GIS Data Management

- Needed a “fence”
 - Requested that Fire Department use a bounding polygon
 - Pre-Plans are associated with the building and include the surrounding area
 - Easier on database back end to associate points spatially with pre-plans
 - Pre processed in the office
- Identified priority buildings based on existing GIS data
 - High rises
 - Schools
 - Areas of Mass Assembly



Example Screen Shot

HOME - Fire Pre-Plan Mobile Project 2A

Details Add Edit Basemap

Save Share Print Directions Measure Bookmarks

Add Features

Access Point

- Door
- Gate Guarded
- Gate Unguarded
- Building Entrance Guarded
- Building Entrance Unguarded

Alpha Side Indicator

- Alpha Side Indicator

Annunciator Panel

- Annunciator Panel

Elevator

- Elevator

Important Information

- Important Information

Fire Pump

- Fire Pump

VOC

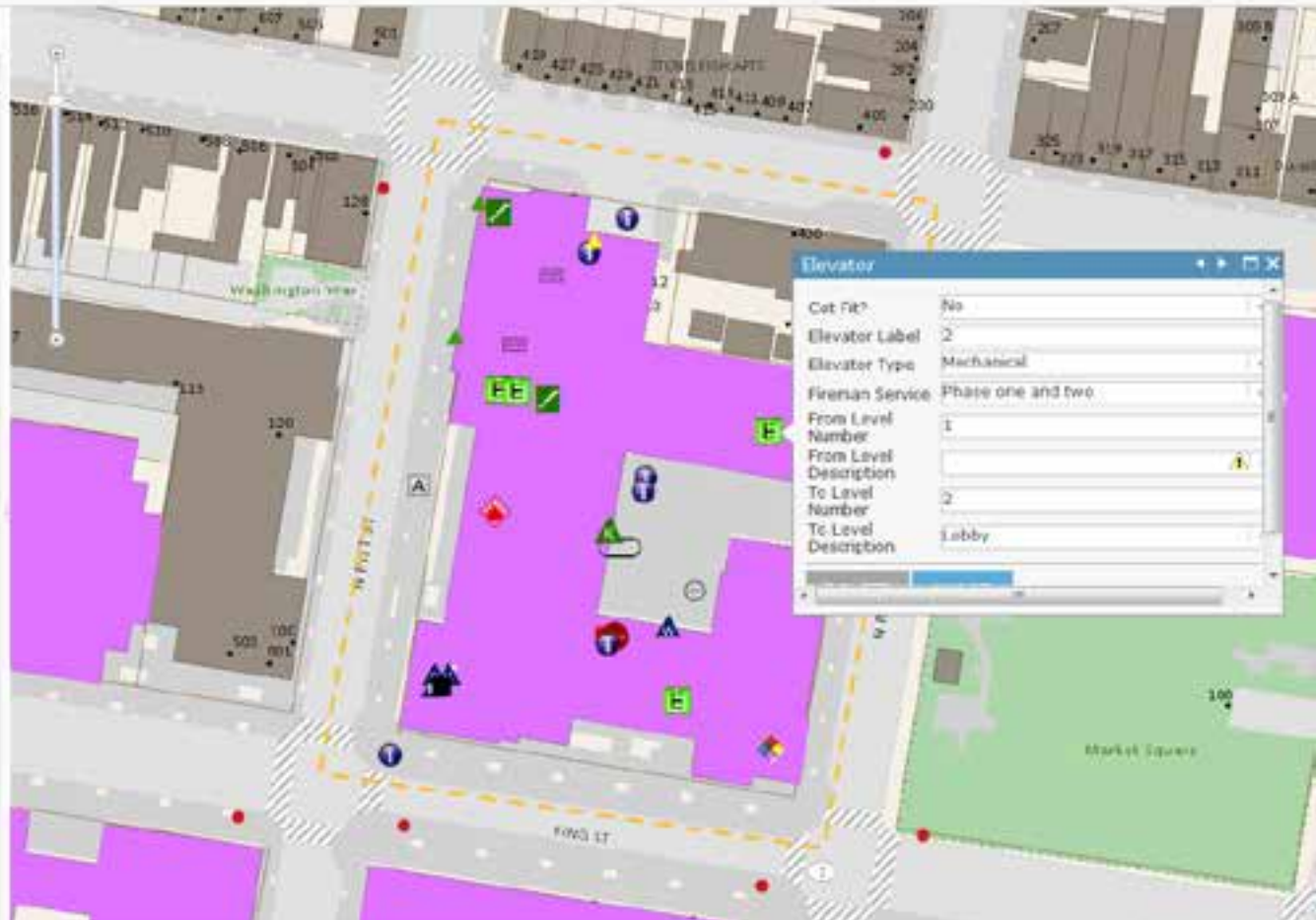
- VOC

Generator

- generator

Hazard

- Chemical
- Heavy Fire Load



Elevator

Cut Fit?	No
Elevator Label	2
Elevator Type	Mechanical
Fireman Service	Phase one and two
From Level Number	1
From Level Description	
To Level Number	2
To Level Description	Lobby



Interesting Issues

- Logins
 - Firefighters vs. Station Login?
 - Tracking activity through server
 - Editing permissions (read, delete, update)
 - Number of editors? (10-75+)
 - Supervisor Login?
 - Individual Supervisor account per station (10+ logins)?
 - Supervisor account as publisher?
 - Access to entire AGOL gallery
 - Login longevity
 - Can/Should users be indefinite users of AGOL?

Security

- Where is the best place to have security?
 - On AGOL?
 - User, Publisher or Administrator?
 - Login settings
 - Group Settings
 - On DMZ Server?
 - On service
 - Windows Authentication



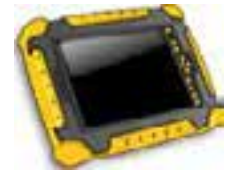


Interesting Issues

- Accuracy
 - How heavily is the GPS being utilized?
 - Exterior site features
 - Interior site features / knowing where you are located within a building
 - Accuracy of data collection?
 - Is dead reckoning needed?
 - Assists with interior collection
 - Accuracy based on satellite strength of point of origin
 - Simple movements within a structure

Interesting Issues

- Longevity & Sustainability
 - Today's solution vs tomorrow
 - Changes in mobile field collection technology
 - Changes in AGOL
 - Changes in business process
 - Maintenance and labor





Interesting Issues

- Platform screen resolution matters....
 - Directly influences zoom level and ability to zoom in but not easily set before map is created.
 - iPad, iPhone works great
 - Windows Phone- ok
 - Android- yuck
 - Older versions of anything – meh

Final Rollout

- Training Considerations
 - Crews of Firefighters to collect data
 - Firefighters have several shifts
 - Training postponed if EMS called to incident
 - Ipad training
 - Care and maintenance of the tablet
 - Mobile App Training with Supervisors
 - Collection Basics
 - Best practices





Workflow

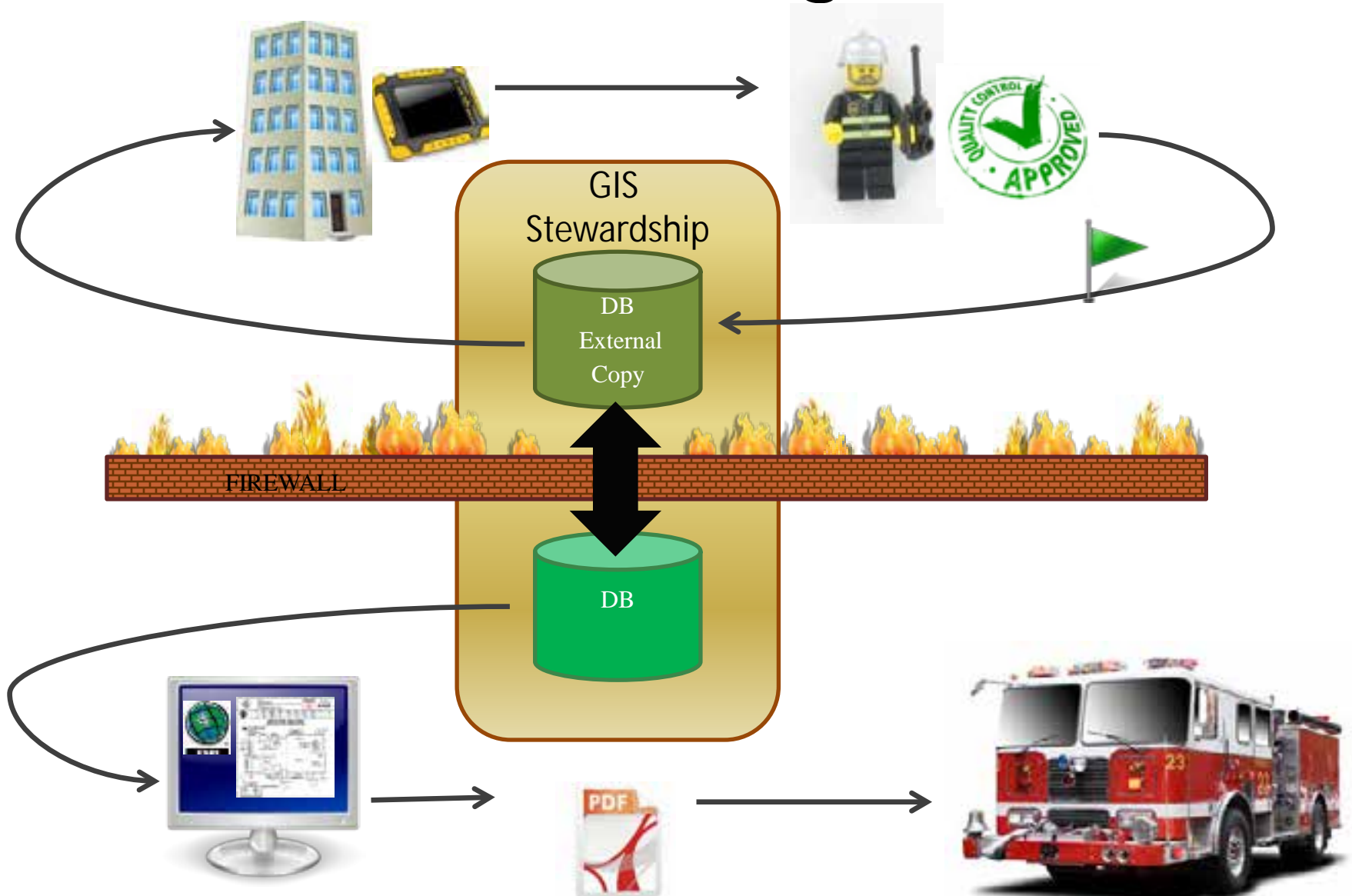
- Many questions remained after initial design
 - After Collection how is the data QC'ed by AFD?
 - After QC how is GIS informed?
 - How does GIS get back final DB to AFD?
 - What is final?
 - GIS Stewardship and responsibilities
- Designed Workflow for AFD with communication checks points



Workflow

- Integration & Accessibility
 - Attributes into High Planes
 - PDFs workflows into High Planes premises
 - Data Driven Pages
 - High Planes – CAD premise integration
 - CAD and CAD Mobile
 - ArcMap Documents
 - PDFs

Workflow Diagram





Big Picture

- The Mobile Collection App
 - Fast Assembly using AGOL
 - Core structure set up in about 1 months time
 - Economical in our enterprise structure
 - Overhead was minimum as we had licensing and workforce in place
 - Purchase of Ipad relatively low cost
 - Improved Pre-plans
 - Allowed in situ field collection directly uploaded to geodatabase with regulated domain values
 - No more paper or misspelled text
- Emphasizes coordination between multiple agencies
 - Mostly the Fire Departments Data used exclusively by them and for their operations
 - GIS staff are the data stewards



Questions?