

City of Alexandria, Virginia

Premise Data Integration for 911 CAD System

ESRI MUG Conference

December 2, 2014

Baltimore, MD



Topics to Discuss

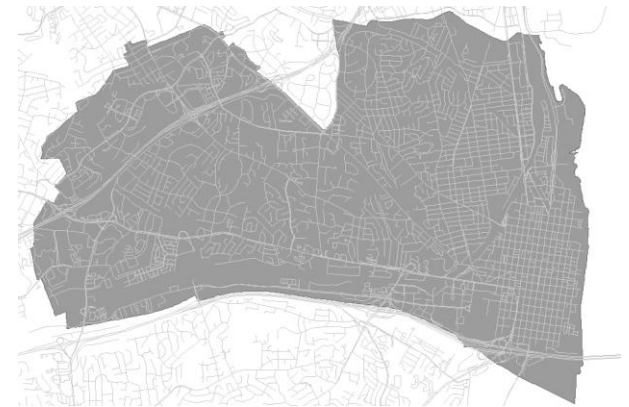


- Profile for Alexandria
- Introduction to Premises
- Data Sources and Integrations
- GIS Enhancements
- Workflows
- Lessons Learned

City of Alexandria, VA



- Estimated Population: 150,000
- Land Area of 15 Square Miles
- 10,000 people per square mile
- Low and high density areas with buildings up to 30 stories



CAD/RMS Replacement Project

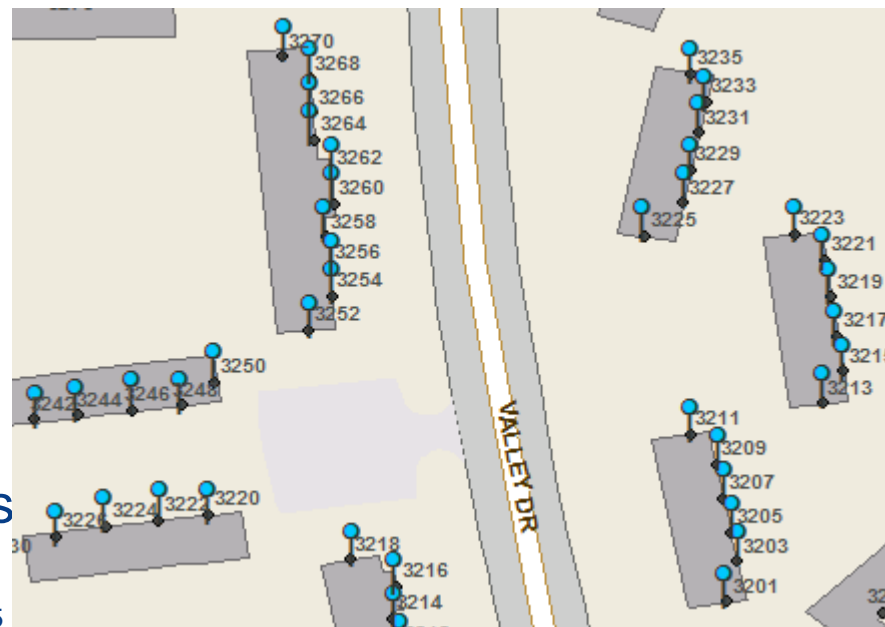


- New Features
 - AVL Dispatch Utilizing GIS Routing Technology
 - Highly Configurable
 - ESRI Compatible
- Annual CAD Call Volume:
 - APD: 52,600
 - AFD: 18,000
- Project Budget of 15 Million
- CAD Go Live: Q1 2015



What is a Premise?

- Nearly any physical location that emergency services can respond too (displayed as a point).
- Examples:
 - Buildings
 - Businesses
 - Interior units
 - Mile markers / way points
 - “100” blocks
 - Parks, vacant parcels,
 - Landing zones, monuments



Premise Statistics



- 35,000 Front Door Addresses
- 55,000 Interior Units
 - Condo units, apartments, retail business bays
- 5,000 “100” Blocks
- 500 “Alternative” Premises
 - Non-addressed points of interests
 - Waypoints
 - Trail Heads

- 95,500 Total Premises

Premise Data Sources



- GIS Databases
 - Addresses
 - Units
 - Buildings/Uses
 - Height/Stories
 - Businesses
 - Lat/Long
- Real Estate
 - Ownership
 - Size (Sq Ft)
 - Year Built
- Business License
 - Business Names
 - Business Type



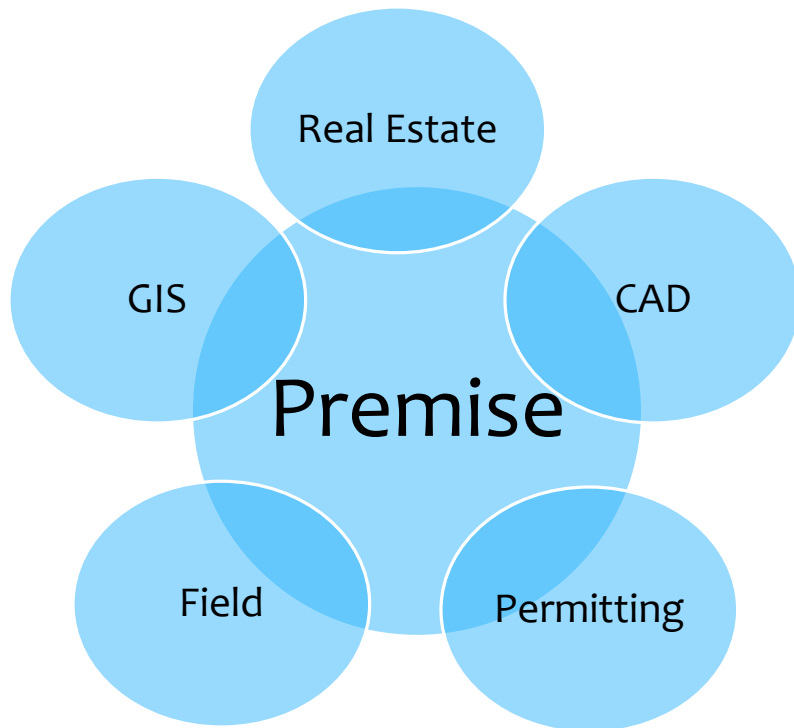
Premise Data Sources



- Permitting
 - Size (Sq Ft)
 - Fire Alarm Systems
 - Fire Protection Systems
 - Elevators
 - Max Occupancy Load
 - Storage Tanks
 - HazMat
- Field Verification
 - Error Reporting
 - Contact Information



Data Integration



GIS Enhancements

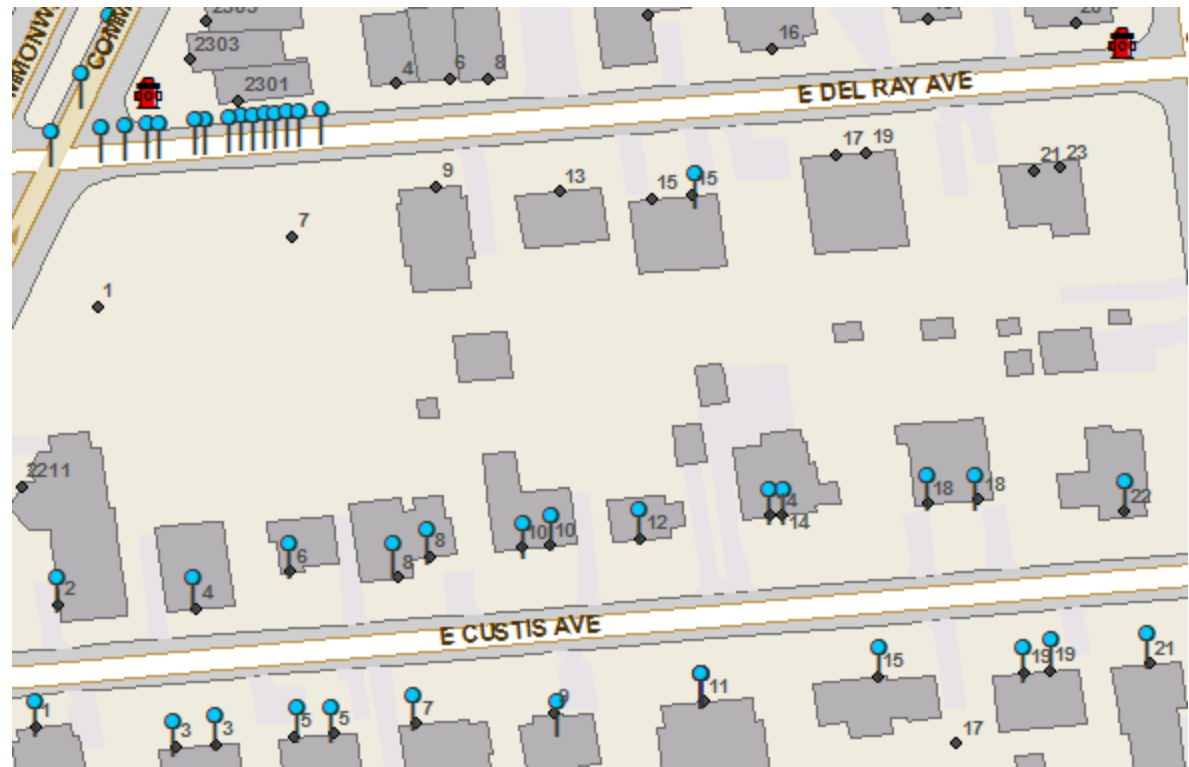


- AVL Dispatch Utilizing GIS Street Routing
 - Nearest unit instead of nearest station
 - Calculates time & distance based on GIS centerlines
 - Directly consumes GIS feature classes & shapefiles
- GIS to CAD Premise Interface
 - All data preparation conducted outside of CAD
 - Interface utilizes XML packages to transfer data
 - GIS provides premise updates
- Next Generation 911 compliancy

GIS Enhancements



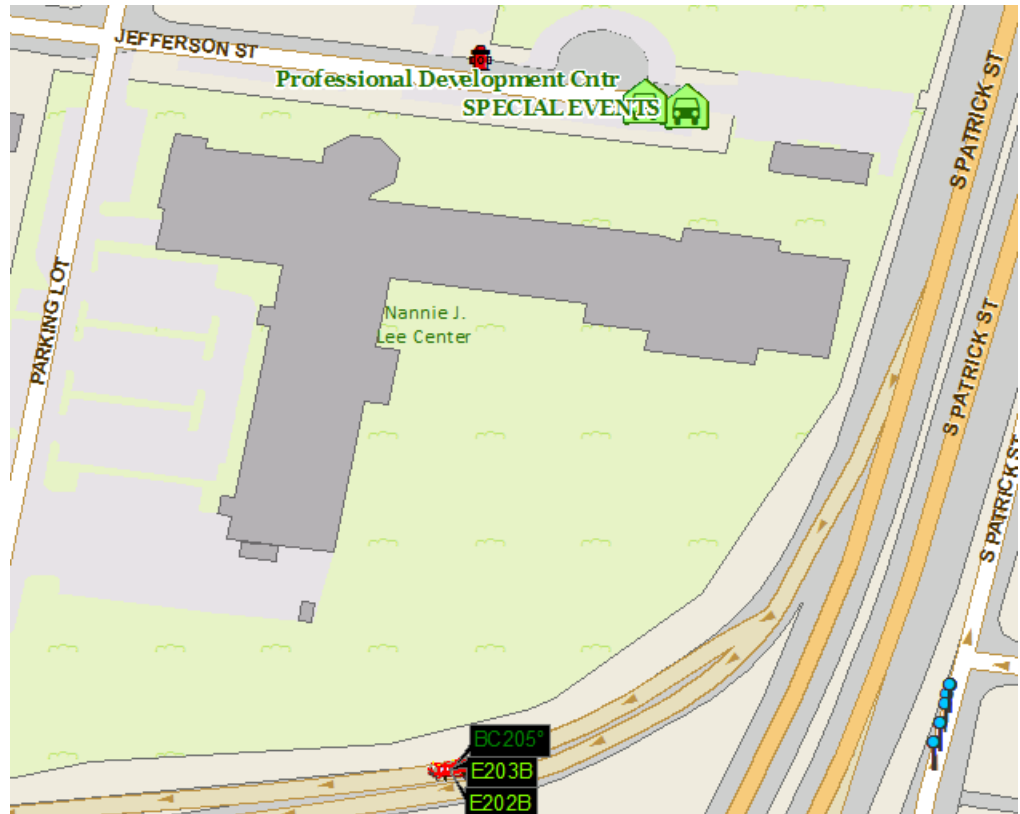
- Latitude / Longitude



GIS Enhancements



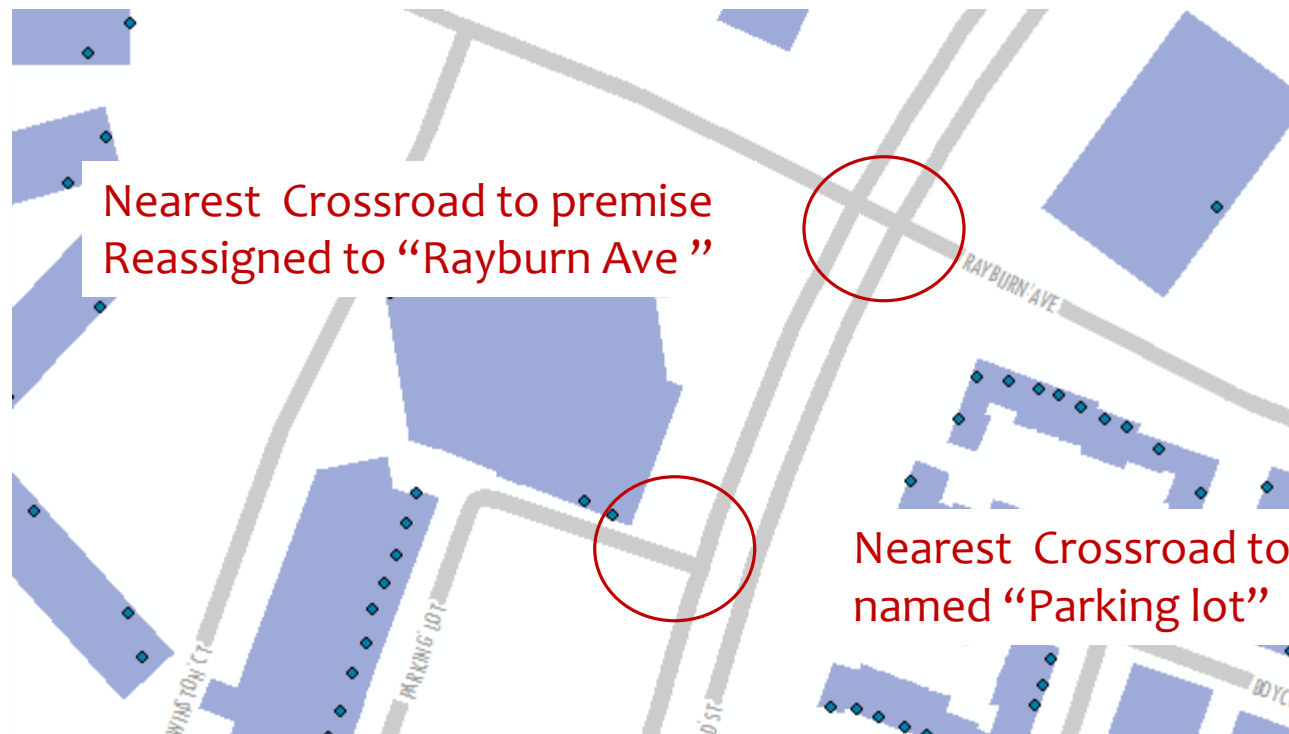
- CAD Street ID



GIS Enhancements



- Cross Street




Nearest Crossroad to premise
Reassigned to "Rayburn Ave"



Nearest Crossroad to premise
named "Parking lot"

GIS Enhancements

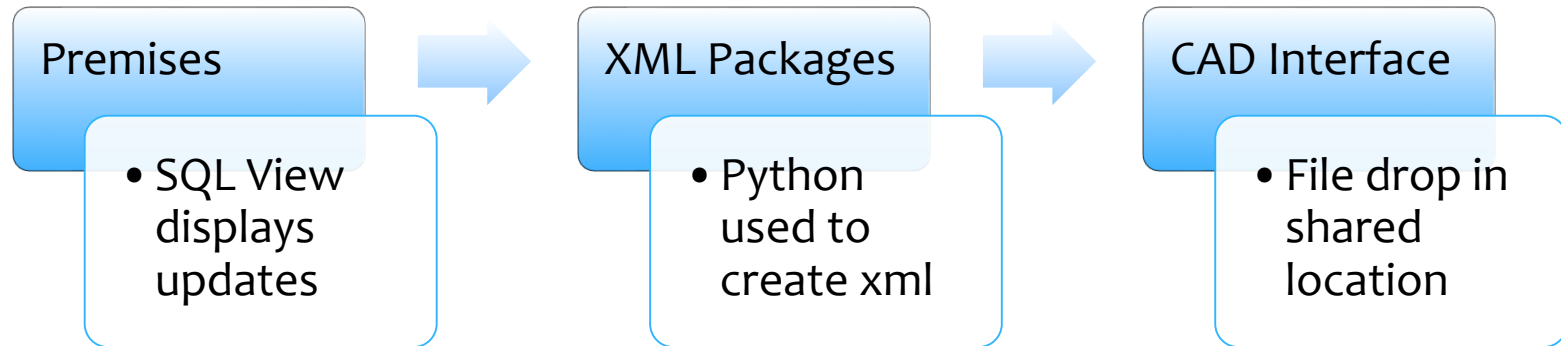


Call Taking- Incident ID [Pending]

Address	3600 DUKE ST			Cross Streets:	NORMANDY HILL DR/CARRIAGE HOUSE CI
Apt #	<input type="text"/>	Bldg #	<input type="text"/>	City:	CITY OF ALEXANDRIA <input type="text"/>
Location Name:	<input type="text"/>			Caller Name:	<input type="text"/>
Phone:	<input type="text"/>	Ext:	<input type="text"/>	Called From:	<input type="text"/>

Workflows - XML

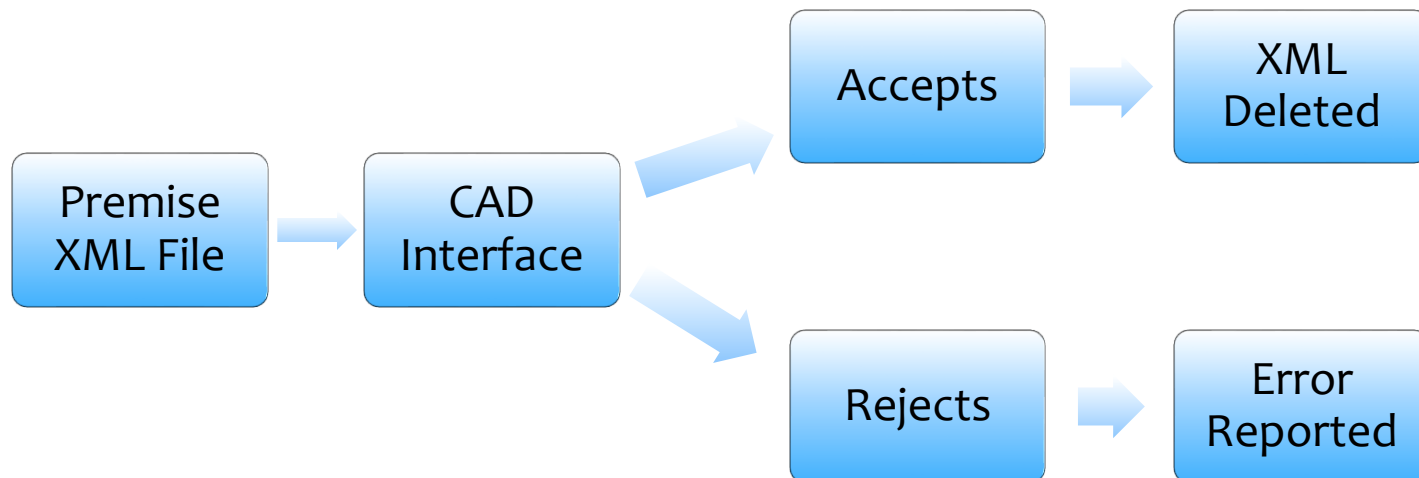




XML Example

```
<HEADER>
  <MESSAGETYPEID>2001</MESSAGETYPEID>
  <MESSAGEQUEUEID/>
  <DESTINATIONNAME>INFORM CAD</DESTINATIONNAME>
  <MESSAGEQUEUEUETIME>20140306110735160000</MESSAGEQUEUEUETIME>
</HEADER>
<ROW>
  <FLAG>INSERT</FLAG>
  <ROWID>1713052100</ROWID>
  <COLUMN>
    <CODE>1713052100</CODE>
    <NAME>CAD TEST MINYA</NAME>
    <STRNO>521</STRNO>
    <PREFIX>E</PREFIX>
    <STRNAME>HOWELL</STRNAME>
    <STREETTYPE>AV</STREETTYPE>
    <SUFFIX/>
    <CITY>ALEXANDRIA</CITY>
    <STATE>VA</STATE>
    <ZIP>22301</ZIP>
    <LATITUDE>388244515</LATITUDE>
    <LONGITUDE>770506555</LONGITUDE>
    <STREETID>4182</STREETID>
    <UNIT>15A </UNIT>
    <BUILDING_USE>INSTITUTIONAL</BUILDING_USE>
    <BLDPHONE>999-999-9999 </BLDPHONE>
    <CROSSSTREET>KING</CROSSSTREET>
    <PREPLANNUMBER>1086</PREPLANNUMBER>
  </COLUMN>
</ROW>
```


Workflows - XML



Quality Control



- Quality control is essential to maintain CAD.
- Mobile builder and data reviewer utilized to run QC procedures.
- Premise & Routing error reporting via Sharepoint site
- Heads up CAD display

Dynamic Updates



- Utilization of model builder and python to build update processes including:
 - New or Retired Premises
 - Changes in ownership
 - Changes in business and/or building use
 - Changes in centerline network – new segment ID
 - Changes in permit related data
- Updates occur on a nightly or weekly schedule

Integration - Challenges



- Data issues
 - Non-matching schema
 - Ownership in Real-estate DB one field with 256 char
 - Ownership in CAD two Fields 50 char
 - Data authority conflicts
 - Sqft in permitting db for occupancy
 - Sqft in Real-estate db for Tax purposes
 - Data formatting
 - Lat/Long truncation
 - No NULLS

Lessons Learned



Technical-Based:

- XML records cannot be created & consumed in same shared location.
- Created 1 second delay on XML file generation to ensure xml record name is unique.
- CAD Street ID is not GIS segment ID / reassigned with every routing update
- CAD Interface must be started following patches

Lessons Learned – cont.



Non-Technical:

- Communication with public safety staff is essential.
- CAD Premise Name must be unique & consistent
- One size fits all – Police, Fire, Emergency Communications

Conclusion



- GIS technology and CAD are deeply integrated
- Premise data for CAD
 - Dynamic
 - Data Rich
 - Consistent
 - True Enterprise data integration

Questions or Comments



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