“GIS; what’s your emergency?”
Fire-Rescue didn’t dial 911 to get help

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Volusia County Fire Services staffs 21 stations and provides fire-rescue services throughout 965 square miles of unincorporated Volusia County and in three of our 16 cities.

In late 2013 a “Strike Team” of senior Fire Services staff and IT Applications people got together to determine how to improve efficiencies and integrate various enterprise systems for Fire Services.
The mission was to:

Expand the use of the ACS Firehouse records management system to include implementation of:

- Company Journal - station daily activity logs
- Company & Division Reports
- Fire Hydrant asset and maintenance management
- Fire Pre-Plans and Company Inspections.

Investigate opportunities to integrate and/or improve general integration with other enterprise systems in order to:

- Reduce redundant data entry
- Force standardization
- Improve data access and sharing
- Improve communications and collaboration.
This presentation will detail approaches employed and efficiencies gained by this effort to date.
The goal - improve efficiencies and more fully integrate enterprise systems for Fire Services.
What did we have in the way of existing paper, Excel & Access products (x 21 stations?)

21 Station Daily Log Books, hand written and then the pertinent information was transposed into an Excel table. These were then emailed and groups of station files were reviewed and then aggregated into Quadrant and Department reports.
The Station Daily Logs were by far the easiest of the workflows tackled. Using CAD integration and the Firehouse Department Journal capability the information was captured directly. The Firehouse reporting capability was constrained in what it could do, so SQL Reporting Services were used outside of Firehouse to generate a robust reporting functionality saving potentially hundreds of hours of staff time.
What’s available on demand now - daily, weekly, monthly, and by station, quadrant, and shift. No more paper handwritten log books after 4/15/14!
The fire hydrant asset and maintenance management initiative

Two “categories” – alternate water sources (AWS) and standard hydrants were reviewed, QA’d and automated.

Hydrants from Volusia County PW & from all our member municipalities were merged into a single GIS file – unique ID & location data was attached (Lat/Long & USNG), bulk attribute updates & standardization achieved. Hydrant attribute data was pushed into FH. The plan is for spatial data to be kept in GIS and displayed on the MDTs with a SQL data view shared by GIS, CAD & FH users for tabular data.
Fire Services has had a “hydrant locator” map available to the public online for some time. The updated hydrant information is reflected there as well.
Henceforth, map books, interactive map products, CAD screens and MDTs showing AWS and hydrants will all have identical symbology.
Fire Services maintained 21 Access databases to hold pre-plan information ... and to print out a report for the “pre-plan binder”. Each station had their own hard copy binder, replicated for each vehicle.
Pre-plans are (were) multiple page paper documents, including the Access generated pre-plan report and supporting maps and diagrams obtained from a variety of sources.
Each station scanned the contents of their pre-plan binders to the County Onbase document management system standards:

- minimum 300 dpi (state requirement);
- TIFF or PDF/A (state requirement - PDF only permitted when PDF/A isn't available, or as a stopgap);
- 1-bit (B/W) image; larger than 1-bit (grayscale or color) only when necessary for clarity or interpretation (county requirement)

These were then collected into a common directory available to all Fire Services staff via their MDTs. Additional tests were run to ensure the pre-plans would be visible and available on the MDTs should the pre-plans be pushed into Onbase (one of several options).
Existing fire pre-plans
The 21 Access databases each had 138 fields. Each table had been in use for about 10 years and were identical field wise, but with fairly loose rules regarding attribution. Some data was out of date. Each file was maintained by the individual station.

The files were merged, brought into GIS and the resulting table was geo-coded.

It was amazing to see just how many ways you could say no information is available or not applicable in a single database.
Each field was examined and where ever possible, standardized domains were agreed upon.
In quality assuring the geo-coding initiative, we had an epiphany ... we could identify commercial properties countywide that didn’t have a pre-plan. The graphic below is the same area shown at the left but in February, 2014.
The “cleaned up” GIS generated SQL database was used to provide as close to an exact duplicate as possible to the old Access report. This new report available “on the fly” includes a link to the online maps stored on the network.

Again this was (is) an iterative product – it is hoped that the newest release of the ACS Firehouse.net product will have similar report generation capability.

Of course the maps could use some improvement too....
A cross walk table between the GIS SQL pre-plan database elements and the ACS Firehouse Occupancy Module (pre-plans) was developed and the data was pushed into Firehouse. The spatial component (pre-plan point location) will continue to be maintained in GIS.
How can the maps be improved?

AutoCad files submitted as part of the development review and permitting process in our CSDC AMANDA Growth Management system are being leveraged where possible, as are PDF site plans.

Esri’s Local Government Data Model for pre-plans is also being employed to improve mapping.

We’re also working toward making this available via the AGOL Collector application.
That pre-plan template comes with a lot of symbology. With limited screen real estate and to keep it simple, we asked Fire Services to tell us what they typically mapped or cared about.
We took advantage of the improved security capability of ArcGIS Server v10.1 to create secure ArcGIS Server feature services:
- provides ability to edit a limited number of SDE geodatabase feature classes in a versioned geodatabase
- required setting up specific user accounts to constrain access, but those users have edit permission to the geodatabase.

A feature service was created to use with the Collector App and the resulting web map provides access from the Fire Department’s MDTs (Mobile Data Terminals) for field collection from the fire apparatus. These MDTs are WiFi, GPS enabled machines. Data collectors are Fire staff users of our AGOL corporate account.

This was hard to make work,
But it is pretty cool!
Currently being tested - the Collector App for field data verification for hydrants and alternate water sources using this secure feature service…
Working with Fire Services to improve efficiencies & integrate enterprise systems, reduce redundant data entry & force standardization, and most important, improve data access and sharing. Not done yet, but moving along!
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Questions?

With many thanks for all their efforts in this initiative:
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