Enhancing Traffic Management Center Effectiveness Using GIS

August 4, 2022



The Situation

- Syracuse traffic management operations was migrating to a new space
- Syracuse was looking to enhance the capabilities and efficiency of the traffic management center (TMC) team (on-site JMT staff)
- TMC identified a need for a tool that could bring many pieces of information into one interface that could lead to better data-informed decision-making

XSyracuse

Better situational awareness









Phase 1

- Exploration
- Meetings with operators to discuss requirements/options
- Data is "dashboard-ready"

Phase 2

- (Start date TBD)
- Data requires additional processing
- Potential analytics



Phase 1 Data Characteristics

- Data that is available as a Geographic Information System (GIS) Web Service (ArcGIS REST Service endpoint) or (web services that follow the Open Geospatial Consortium (OGC) standards for web services)
- Ability to directly load into the ArcGIS Online web map/dashboard
- Certain elements of the dashboard's content was a result of operator interviews



Data Feed Name	Description	Notes	Direct connect from ArcGIS Online?
Waze Live Alerts Layer	Waze users who are reporting traffic jams, potholes, crashes, disabled vehicles and more (crowd-sourced)	Data feed is made available to the City of Syracuse through its partnership with Waze (Connected Citizens Program)	Yes – via ArcGIS Marketplace after credentials verified (ESRI/Waze)
World Traffic Service	This map service presents historical and near real-time traffic information for different regions in the world.	Data source is HERE, hosted by ESRI, and updated every 5 minutes.	Yes - requires an ArcGIS Online organizational subscription
SeeClickFix Layer	An issue reporting platform which allows people to report non-emergency neighborhood issues to local government bodies (crowd-sourced)	Only reports issues for the city of Syracuse. Service has moderate to significant latency	No - connection provided through an ArcGIS Connector. Feature service hosted by SeeClickFix
Emergency Snow Routes	Collection of all street segments that are listed as emergency snow routes by the City of Syracuse	When the mayor declares a snow emergency, it is unlawful to park any cars on these streets.	Yes – Feature service hosted by the City of Syracuse
Weather Data Hosted by ESRI	Storm reports, ice accumulation forecast, snowfall forecast, precipitation forecast, weather watches/warnings, and radar	Data source is NWS/NOAA	Yes









Sint Land



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Syracuse Traffic Management Center Application





Waze Live Alerts Dashboard





Phase 2 data characteristics:

- Data that is available as a data feed via the web (Example formats: JSON, GeoJSON, XML, RSS) - text-based, lightweight data interchange format
- Data that exists as a static text file (.txt) or comma-delimited file (.csv)
- Requires an Extract-Transform-Load (ETL) tool to process into a GIS web service (Examples: FME Workbench, ArcGIS Velocity)





Data Feed Name	Examples	Notes	Direct connect from ArcGIS Online?
511NY data	 event types accidentsAndIncidents roadwork specialEvents closures cameras Variable Message Signs traffic alerts 	(API exists)	No
TransSuite (ATMS software by TransCore) data	TBD	TransSuite software being upgraded	No
Central New York Regional Transportation Authority (Centro) transit data	Bus routesBus stops	(API exists)	No
Snowplow data (ArcGIS Velocity pilot)	TBD	City of Syracuse hosted	No
SeeClickFix data (via API)	 request_type is 'Street Lights' request_type is 'Potholes' request_type is 'Traffic Signals' 	(API exists)	No







Project Highlights

- Lots of exploration JMT proposed an initial set of data types that could be used in the pilot (soft requirements).
- Had to evaluate what data was dashboard-ready vs data that would need additional processing.
- Third party services (the city's data partners) were able to provide their crowd-sourced data as a GIS feature service.
- Syracuse uses Velocity to track their snowplows during winter operations. Opportunity to use Velocity as a means to integrate other data feeds into the dashboard.
- There are a lot of rich data services available that are not GIS-ready but can be with an additional ETL tool.





Questions?

