Smart Inspection at Esri's International User Conference

The power company that I used to work for had 16,157 electric manholes. For those that don't know, an electric manhole is a little room buried in the street or sidewalk. You can enter the manhole through a round hole that is covered with a manhole cover. Manholes are the places where utility workers access electric cables, switches and other dangerous stuff. In the old days, the vast majority of utilities workers were men, so the term manhole stuck. They should probably be called utility worker holes. Anyway, when a cable fails, workers splice together new sections with the old sections right inside these manholes. They are hot, dangerous and creepy. To keep things operating well, they should be inspected and cleaned of all debris. If a cable does fail, it generates a lot of heat and sometimes fire. Debris will only make the fire worse.

Since there are so many other things to do, manhole inspections and cleaning get a back seat. Plus, frankly, no one likes to do this. At the power company each manhole was numbered from 1 to you guessed it 16,157.

At one point after a number of manhole incidents, we decided to go gangbusters and get aggressive in inspecting and cleaning up the manholes. Where to begin? The logical choice was of course to inspect the manholes in numerical order, starting with naturally manhole number 1. After a year of this process and not getting much beyond manhole 200, we decided to abandon the aggressive project and inspect and clean manholes on an as needed basis. If someone went into a manhole and it needed cleaning, we created a work order for that manhole.

Not exactly smart inspection.

What smart utilities are doing is looking toward technology to do things smarter. It was clear that in my old company, we were never going to be able to inspect all 16, 157 manholes in any reasonable amount of time, given the limited resources. Plus, many of the manholes were just fine. The trick is to figure out which manhole (or any device that needs to be inspected) is more likely than not to be the most vulnerable to having something go wrong. This is where GIS and spatial analysis can help a lot. Which manholes are near sources of debris. Which manholes are most likely to be flooded. Which manholes carry very critical cables? Which manholes have not been entered for years. Is there a spatial pattern of manholes having higher incidents of fires?

Using technology, utilities can develop smart inspection schedules by leveraging lots of available data from inside the company and other data sources through web services that can help them figure out which of the 16, 157 manholes need to be inspected and cleaned the most. Then they can cluster them and sequence the inspection for minimum crew travel time or they can combine the inspection if they know that work is going on in close proximity. Smart inspection is taking what you know, organizing it by location and making good decisions.

Come to the Esri International User Conference to see how our customers have put smart inspection into practice to save money, improve performance and keep things running smoothly for their customers. Hear Spoon River Electric Cooperative use smart inspection of Vegetation Management, PG&E automate their regulatory inspections with GIS. The City of Riverside believes that street lighting is critical for its customers. Learn about their GIS street lighting app. Fairmont Municipal Corporation figured out which cables to reinforce with silicon injection using GIS. Marathon Oil used aerial

surveillance integrated into their GIS for real smart inspection of their pipelines. Vilnious energia used thermal photo maps on their district heating system. All great stories.

So if back in the old days, when I was worried about manhole inspections, we could inspected the right manholes at the right time using the right device with ArcGIS.

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