Rip Up Those Old Paper Maps

Pop quiz! What's the difference between a GIS plot and a GIS display? I bet the most common answer is, "You can fold the plot, but you can't fold the display." See, that's the problem. Many people still think of the GIS display as simply a less convenient way to see the plot. When I worked for the power company, we built special cabinets in the dispatch center to hold the medium-voltage operating map sheets. That's because we plotted these map sheets on nonstandard sizes. Standard file cabinets didn't work. When we converted from the old, hand-drawn operating maps to GIS maps, we simply plotted out the map sheets to look exactly like the old ones. If we could have created coffee stains on the GIS plots, we would have, I suppose. The symbols, the annotation, the line weights, and naturally the plot sizes were all the same as the old map sheets.

The underlying basemap grid was also a throwback to some arbitrary system from early in the last century. Change it? Forget about it.

Why are we so in love with old map sheets? Utility operation is a dangerous business. We are afraid that if we change, something bad will happen. Then someone will blame whoever made the decision to change. However, we rarely reflect on the negative impact of keeping old legacy processes and systems in place.

The entire process of maintaining map plots, whether computer generated or manually drawn, is fraught with problems. A plot is a snapshot of a small part of the utility system at one point in time. Yet we know that during each hour of each day, someone is changing something. A streetlight repair person is changing out a lamp. A gas technician is replacing a valve. The construction crew is setting a new pole. The meter technician is installing a new smart meter. The completion of each of these tasks requires an update to the map sheet. The gas, water, or electric worker marks up the map sheet and sends it to the mapping department so someone there can make the change. The poor mapper might get hundreds of these map change requests in a day.

When the mappers are done, they plot a new map sheet. The problem is that it takes days—sometimes weeks—to make the change, plot the new map sheet, and send it back to the hands of the workers. In the meantime, everyone who relies on the map is using old information.

When I worked for the power company, I used to like to drive around with the troubleshooters. One troubleshooter, whom I will call Paul, told me he never trusted the maps produced by the mapping department (even though they plotted them from the GIS). He told me that the maps were always wrong or out of date. To avert this problem, Paul kept a set of medium-voltage prints of his territory under the seat of his truck. He showed them to me one day. They had all kinds of notes and neatly drawn redlines all over them. Paul proudly told me that these were the most accurate maps in the company. I asked him if we could give them to the mapping department. He freaked out and told me he wished he had never shown me his stash. I wondered how many other workers had hidden marked-up prints between seats or in lockers or stuffed under mattresses.

Just the other day, a consultant for a utility asked me about mobile GIS. I asked him what the utility wanted to do. He looked at me a bit puzzled. He repeated that the company wanted to take

the GIS into the field—that is, they wanted a mobile GIS. I repeated my question, "What do you want to do with mobile GIS?" He didn't understand.

I believe the answer to my question was really that they wanted to create plots of their GIS on mobile devices, like laptops or maybe tablets. Plots—get it? I restated my question, "What work will the people using mobile GIS be doing?"

Still puzzled at my stupid question, he answered, "Fieldwork."

I persisted. "What kind of fieldwork?"

He answered, "All kinds of fieldwork, I suppose."

Then, in frustration, he finally admitted that he really didn't know for sure what to do with mobile GIS. But, he said, they simply needed to give field-workers all the information that is in the GIS. Field-workers wanted access to the GIS plots on mobile devices instead of the paper plots they have now. The consultant, however, was looking for a one-size-fits-all mobile GIS.

The question we (and the consultants) should be asking of the GIS is this:

"What information do I need for the work I need done?"

Simply having a display of a familiar map sheet on a tablet doesn't answer that question. If the work I am doing is inspecting wood poles in this area, then the information I need is about wood poles, not about underground transformers. In the old days before GIS, there were only so many mappers to go around. So the mapping department had to be smart about how many maps it could maintain. To be efficient, it jammed as much information into as few map products as possible. It didn't have the staff to produce different map products at different scales for every different kind of worker. GIS lifts that burden completely.

A utility's GIS can produce an infinite number of information products at an infinite number of scales. In other words, the GIS can produce a different information product for each different worker and each different task. Of course it can. GIS is not a plotting machine, it's an information system.

Rip up those old paper maps!

Your GIS isn't restrained by the physical limits of paper. Yet we treat it that way sometimes. We labor over the angle and font of annotation. Who needs annotation anyway? Just hover over the symbol and get all the information you need. Change an information pop-up window? No problem. Change the scale? Easy. Just because we need information on a map display doesn't mean that all the data has to be stored in the GIS. As long as the GIS is part of an overall information technology strategy, the map information (even real-time data) displayed on our smartphones or tablets or on the web can come from anywhere inside the company or from outside.

So let's rip up the old plots and begin to use GIS to produce targeted, focused, and up-to-date information. Let's improve the actual work at hand instead of focusing on the process of making map plots.