



INTERSECT

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How do you make a GIS person understand the importance of data accuracy?

■ SURVEYOR RANDY says ...

Surveyors have a tough time sleeping at night if we know data aren't as accurate as they can possibly be.

And because of this, we would like for the fire hydrant, the water valve, the water line, the catch basin, the junction box or the manhole to at least be on the same side of the street or in the intersection somewhere close to the location shown on the appropriate GIS layer. Too often, that's not the case. I've seen utilities that are, in reality, a block away from where they're located on a GIS. This can cause significant problems for the Public Works employee who needs to make emergency repairs on a utility, or the property owner who wants to know if his neighbor's drive encroaches on his property.

With more accurate data, GIS professionals wouldn't have such a hard time making the data pieces fit into the GIS. The information would fit to a reasonable accuracy because the data would be accurate. It wouldn't necessarily have to be centimeter accuracy, but at least sub-meter so features can actually be found quickly and with certainty in the field using the GIS database. With more reliance on current, accurate "surveyed data," your job would be a piece of cake and the end product more valuable to a greater number of end users.

Obviously, there is not an overnight or five dollar fix to saturate a city or county GIS with survey-grade data for every single feature, but now is the time to begin this saturation. As new infrastructure is built and land parcels subdivided, let's be sure we get all the new features incorporated into the GIS with the appropriate accuracy and include existing features whenever possible. You should start with the most critical data needed by the most users and expand the root system to include new and additional features as infrastructure is added and development occurs. The cost/benefit ratio justifies the investment made in more accurate data.

Improved base mapping should be part of creating a GIS as well. The GIS professional should have base mapping that ❶ drastically reduces the need to adjust georeferenced parcel data, and ❷ is "survey accurate" to fit inaccurate aerial base mapping or incorrectly placed data sets. A picture is not a map if it's not scaleable, so let's be sure the picture fits the accurate data, not the other way around.

■ GIS JANET says ...

Randy, what makes you and the entire survey community think GIS professionals don't understand the importance of data accuracy? We live and die by the data we compile, display, and analyze. Every day we process hundreds, even thousands, of pieces of data. Very little of that data probably qualify as "survey quality," yet GIS professionals are challenged to make all the data pieces "fit" so it all makes sense. And in order to make it all work, the GIS professional has to understand much more than the basics of data accuracy such as raster versus vector precision, how and when to use second-generation data, smallest scale rule, and data edge matching. We also have to understand map projections and data transfer protocols.

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Are you suggesting, Randy, that if the data haven't been surveyed then the GIS professional should not use it? Even surveyed data aren't always accurate and complete enough for everyone's needs. We would LOVE to use highly-accurate data in all our projects, but right now that level of data is not always available for all the functions that we need, and it isn't always necessary! For example, if I am compiling a map that shows utility features and the water valves have been surveyed (x/y) but the meter boxes have not, does the map become invalid or useless for the utility companies? I don't think so, and I'm sure the utility director would rather spend the money on exact locations of the valves, so the valves can be quickly found in emergency situations, than on exact locations of their meter boxes, which don't matter at all during an emergency.

GIS professionals not only understand different levels of data accuracy, we also know how to make those levels work together. Here's an example: I'm using parcel (cadastral) data and overlaying point features such as telephone poles. When the parcel lines don't line up correctly with the telephone point features, should I refuse to use any of the data at all? NO. GIS professionals understand how to represent different scales of accuracy into one map, and we are often challenged to "adjust" one of the features, most likely the feature with the least spatial accuracy, to tell the story correctly.

Randy *continued*

The general public has access to and uses a lot of parcel data through city or county websites, and citizens deserve the most accurate GIS information possible to limit their misunderstanding and misuse of the data provided on these sites. Professional surveyors use disclaimers to protect the public from unforeseen circumstances, whereas GIS uses disclaimers to mask the integrity and inaccuracy of the data sets. End users should be continually reminded of the prudent uses of GIS data, and understand data are not legal property surveys nor will they depict changes that have occurred after the base mapping is completed or the new utility line is installed.

A picture is not a map if it's not scaleable, so let's be sure the picture fits the accurate data; not the other way around.

There are many appropriate uses for GIS and it's ridiculous to think GIS should wait until the data are "the most accurate" to use it. The technology in both our fields is advancing rapidly, making it easier and more feasible to greatly improve the accuracy of data. So, surveyors and GIS professionals need to focus on utilizing available resources—people, technology, money—to continually increase the accuracy of more and more data, for everyone's benefit.

Janet *continued*

And despite the frustration of having incomplete data, or inaccurate data at different scales, that doesn't stop us from using the only data we have available to us at the time. Surely the survey community understands that different projects call for different levels of accuracy; otherwise, there wouldn't be survey versus mapping grade quality.

My question to the survey community is "What do YOU not understand about the difference between project-specific data accuracy versus professional accuracy?" I believe there is a difference and that difference is one of the areas where the two professions conflict. Data accuracy is important, but I think the data ONLY need to be accurate enough to meet the needs of the project/client, at that time. How can the GIS profession demand more accurate data if they don't exist? Should we wait until it's all been surveyed before we compile and analyze it? We all realize that the level of data accuracy is improving every day and that new and easy-to-use data collectors are improving the data's accuracy. But . . . ↓

. . . if we waited until all the data in our hands were "the most accurate" before we used it, we would still be waiting!

Meet Randy and Janet

Randy Rambeau, PLS, a survey manager, and Janet Jackson, GISP, a GIS professional, work together at McKim & Creed, a 300+ person engineering and surveying firm with offices throughout the Southeast.



Randy grew up on a family farm in eastern North Carolina. He was drawn to the surveying profession by his love of the outdoors. He's been "in the field" for more than 30 years, starting as a survey crew member using a theodolite, chain, plumb bob, auto level, level rod, and bush axe. He obtained his North Carolina PLS license in 1978 and today, he manages the surveying operations in McKim & Creed's Cary, North Carolina, office, overseeing land surveying, photogrammetry, GPS, SUE and laser scanning activities.

Janet became enthralled with GIS after seeing the possibilities of its problem-solving abilities. While developing a GIS system for a municipal water authority, Janet earned a degree from UNC-Chapel Hill in geography with a GIS focus. She has 10 years' experience, is certified as a GIS Professional and heads McKim & Creed's GIS activities in North Carolina and Virginia. Hearing Janet talk about GIS is like hearing a grandparent talking about a new grandbaby: her eyes sparkle, her smile lights up her face, and her enthusiasm is contagious.

While Janet and Randy may not see eye-to-eye on all surveying and GIS issues, they do work together on a daily basis, respect other's perspective and point of view, and attempt to "intersect" their professions whenever possible.



Randy and Janet invite you to submit your questions to "Intersect." Contact them via email at intersect@mckimcreed.com or at 919.233.8091.