

# THE FUTURE OF GIS?



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IMPROVEMENTS IN THE TIMELINESS, EASE AND ACCURACY OF SURVEYING TECHNIQUES, AS WELL AS IN COMPUTING POWER, MEAN IT'S NOW POSSIBLE TO RECREATE REAL WORLD OBJECTS ALMOST PERFECTLY AS 'DIGITAL TWINS' INSIDE A COMPUTER



How static is your GIS? By that, I mean how often do you update the data? Have you ever updated the data, in fact?

It's an important question, since the real world is always in flux. Sure, a new building will undoubtedly have been built to a set of plans. But how closely were they followed during its construction and what external factors have affected it since then? Some organisations will send out surveying teams periodically to see what's new, but that can be pricey and done right, with modern technology, updating the GIS with gigabytes of centimetre-accurate data might be more trouble than it's worth. And that's before we get started on dealing with older buildings whose plans might bear no resemblance to what actually exist.

Without up-to-date data, a GIS will only partially reflect what's going on in the real world and any decisions made on that data could be flawed – perhaps badly. More importantly, having tired, old data makes it impossible to ask “what if?” questions and get accurate answers. What if the wind blows harder than we thought or at different frequencies? What if the water level rises beyond a certain point? What if we send traffic through that part of town?

Of course, there's no guarantee your old GIS can even answer “What if?” questions (see page 45).

Which is a shame, because we now have at least the beginnings of the

geospatial technologies needed for “Digital Twins” – our focus this issue.

A Digital Twin (see page 42) is a virtual version of a real-world object or objects. LiDAR equipment, perhaps mounted on a UAV (page 36), perhaps with the assistance of Internet of Things sensors, enables surveyors to capture information about a building or infrastructure regularly and at high accuracy.

Then, perhaps with the assistance of the powerful capabilities of graphics processing units (page 34), that data can be cleaned up and used within a modern GIS to create a model that behaves to all intents and purposes like the real thing, enabling those “What If?” questions to be answered.

The real object can then be modified – albeit with considerably more difficulty and financial outlay – with confidence, perhaps taking advantage of new design techniques (page 30), that it will behave as its Digital Twin did.

Digital Twins are already being used around the world, with a twin of an entire town in Germany (page 38) developed to help plan road use during a major festival. What would happen to traffic flow if we closed this road? What would happen if we run buses along this road? It's all very well to assume a bus could fit because the original plans said so, but what if building lean has increased...

I hope you enjoy this issue and find it useful in your work.

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### GeoConnexion International

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