GIS for Mapping Buried Utilities - Interview with Neil Brammall

Niall Conway, editor of GIS Professional, spoke to Neil Brammall of Utility Information Services Ltd., a UK-based consultancy and services business which focuses on mapping buried utilities. In the following interview, Neil shares his thoughts on the potential of geospatial solutions and services for the purposes of keeping these valuable assets (and the people around them) safe and secure.

GIS Professional: Welcome to GIS Professional, Neil. How did you get into the world of GIS?

Neil Brammall: My background is in academia where I specialised in cognitive computing (Natural Language specifically), and the start of my career outside academia was in applying this knowledge in the medical sector. In 2001, I joined Advantica, which was previously the British Gas Research Centre. That's when I started working on geospatial software - both developing mapping software and using off-the-shelf products (ArcView 3.1 back then!)

Since then, I've worked almost exclusively in the geospatial sector, specialising in buried utility mapping and particularly applied to safety and damage prevention.

GIS Pro: What excites you most about the geospatial industry?

NB: I think the "democratisation" of the industry via cloud delivery and open data is very exciting. As a "specialist", it can be easy to become defensive about the opening up of an industry, but it pays to get over that and embrace the opportunities arising from the broader uptake.

As the tools get easier to use and more widely adopted, the focus is less on "making things work" and more on innovation and applications of the technology. This carries dangers as well, and it is important that the "specialists" ensure that good practice and fundamental principles are still applied.

GIS Pro: The subsurface utility sector is gaining more and more attention nowadays. Could you tell us about the type of work you do?

NB: As above, I specialise in the field of underground asset mapping, particularly in the service of safe working and damage prevention. I am heavily involved in inter-utility records exchange, curating and processing asset location data from various sources, at various frequencies in various formats, and making that available in a consistent and easily-accessible way to those who need it to remain safe (particularly in emergency situations).

Via Utility Survey Exchange, I'm also very much concerned with data quality, and how to make the transition from relative positions to high-accuracy absolute coordinates in the world of underground assets. There is a focus currently on greater sharing of data. This is a good thing, but we mustn't lose sight of the fact that the data that is shared needs to be complete and accurate (or at least of known completeness and accuracy). We are trying to start this journey from relative to absolute, and to known accuracy by making the best quality survey data available to asset owners.

GIS Pro: In terms of professional development and training in the industry, do you think that newcomers are learning the right skills?

NB: I don't have great personal insight on this, but I come back to my statements above about the democratisation of geospatial. We need to make sure that the simplicity of geospatial tools and systems do not obscure the fact that some fundamental understanding of geospatial principles is still required if we're going to represent geospatial data in an accurate manner.

GIS Pro: Is GIS a tool or a mindset?

NB: What starts as a tool becomes a mindset over time, as you realise that location is central to pretty much every aspect of our lives. The transition from "user" to "practitioner" is difficult to formalise, but it is a critical pre-requisite to becoming an innovator in the world of geospatial - seeing beyond the tools to get to the possibilities they open up.

GIS Pro: The geospatial industry is abound with lots of new buzzwords, and the UK is no exception. Could you tell us a little bit about what is happening in your part of the world at the moment?

NB: This is a very exciting time in the UK in our sector, and the Geospatial Commission announced in the budget, plus the report released by the National Infrastructure Commission ("Data for the Public Good") create great possibilities for innovation.

Ordnance Survey has implemented some great innovations in terms of data services, virtually under the radar of most people, and I think their position as a quasi-governmental body is important. This allows them to "do the right thing" (which may not be the most commercially viable thing), and I see them as a "trusted broker" in the short to medium term where we are likely to see increased openness and sharing of data.

I think the development of 5G will be critical to geospatial in the field - where safety-critical data is involved, there can be no risk of losing access because of dead spots etc.

As for Digital Twins and Smart Cities - these are very exciting areas, but I keep coming back to data quality. Incomplete and low-quality data will still be incomplete and low quality regardless of how it is presented and visualised. My focus is on getting this right so that the "sexier" projects can deliver their full potential!

GIS Pro: Mapping and surveying are being revolutionised by technology. What are your own thoughts on the fields of AI and machine learning?

NB: There is huge potential for innovation in this area. The areas of image recognition and machine learning could be very powerful in the damage prevention context for identifying risks.

I also see a role for AI in rule-based risk analysis of excavations with adaptive learning based on incorporation of incident data and root cause analyses.

Automated excavation is an exciting area, again with elements of machine learning incorporated in order to avoid accidental damages.

GIS Pro: Finally, since no geospatial interview is complete without a techie question, what is your favourite GIS software?

NB: Primarily Esri (from ArcView 3.1 through to ArcGIS Online) and also FME. I also write many of my own tools and utilities on top of the Esri stack to carry out specialised activities in data processing and transformation, which keeps things interesting!

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