



From broad thinking to precision delivery

Peter Large, general manager of Trimble's Mapping and GIS Division, talks to GEOconnexion about the complex issues surrounding infrastructure management here in the UK within an interesting matrix of technology, obligations and responsibilities. The full interview is available online (www.geoconnexion.com/geouk_articles.php)

'Road Network and Infrastructure Management' is one of the topics we will analyse in the first issue of GeoUK 2010. So perhaps we can talk about the solutions available from Trimble technology and also how and if these solutions have been implemented in the UK.

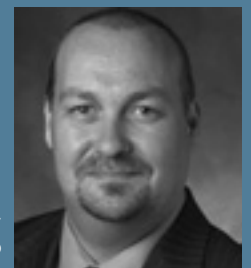
I am sure you are aware that there have been some changes of legislation in the UK. The New Roads and Street Works Act was passed in 1991 but just recently the Traffic Management Act [TMA] made some changes to it. One of the significant changes in the Act is reinstatement. If any organization does work in the highway, they are required by law to provide advanced planning of the works and report any reinstatement work to the relevant Highway Authority. As part of the reporting process they have to capture the exact location using a 12 figure OS Grid reference, which implies an accuracy of one metre. Similarly, if the work involves a trench, two OS Grid references must be captured, one at either end. This is very new and is now part of UK regulations. The problem is that highway authorities, utilities, and contractors who do this type of work are often not used to using GPS technology for accurate positioning and data capture; therefore, our main focus is to provide GPS hardware and software that really makes it easy to be used by somebody who is not a GPS or GIS specialist. What we deliver is a solution aimed at these types of users - simple, easy to use software that follows their workflows, meets their requirements, and is able to submit the data in the right format and to the required accuracy.

Who among your customers are required to comply and so make use of your technology?

The utilities and local authorities are responsible, but they often make use of contractors to do the actual work. This means there are a large number of diverse companies who need this technology, but we try to avoid applying the formula 'here is the software and here is the way to do it'. In fact in the UK the Mapping & GIS division of Trimble has deployed a professional services group to work with these types of customers to deliver exactly what software solution is required in the field. In a typical engagement, the customer can use 80% of our standard GPS hardware and processing tools, mapping software, and data integration components, but needs to customise the remaining 20% according to particular requirements. Our professional services group delivers the customisation work according to the customer needs, and this approach is working so well in the UK that we are looking at bringing this type of offering to other markets throughout the world.

Can you tell us about new products?

In our portfolio today we have a broad range of mapping and GIS products. One example is the Juno™ series, an entry level GPS handheld, which has been very popular. We launched it at the beginning of 2009 and have already sold more than double the number we expected to! The Juno



handheld is low cost and has an integrated GPS receiver that is good enough for users with requirements for 1 to 3 metre level of accuracy. Furthermore, it has an integrated 3G cellular modem, providing the capability to connect people, bring map data directly from the back office, and send data updates in real time. But maybe the most important feature is an integrated camera that allows the user easily to take a picture of an asset or reinstatement, geotag it, and make it part of the data updates to the back office.

Another example is the new Trimble® Yuma® rugged tablet computer. This product was launched earlier this year and is almost indestructible - you can drop it onto concrete, submerge it in water, it meets all military specifications for ruggedness. It is a very good platform for a variety of mobile GIS applications, with a 2 to 5 meter integrated GPS capability and two cameras, and the ability to be combined with a modular submetre accuracy receiver.

Even the GeoExplorer® 2008 series is only a year old and has been very well received by the market and has the ability to accurately position to 10 cm, so it is excellent for utilities customers and their contractor workforce for buried services data capture and highway reinstatement works.

These are just a few examples, but we have a strong product portfolio with a good range of hardware and a lot of flexibility in the software to address the needs in the UK market.

What do you think are the trends for 2010 and what do you think Trimble will provide?

In terms of trends, more and more people want to be able to get an accurate position in real time in the field, and we have all the pieces today to provide a very good robust, high accuracy solution in real time. I think there will be more and more adoption of this technology in 2010 because of the regulations we've been discussing. In general there is a trend in infrastructure and in asset management towards [higher] precision. Making it possible to accurately locate buried services using GPS which minimises the excavation required in the road to expose the services for repair or replacement, and therefore is less disruptive to the traffic and to the environment by being more precise! We are working to provide tools that address these trends and allow our customers to be more precise and access assets and report precisely where they are.

You mentioned before the issue of coordination of work within utilities when they dig up roads...any products available or in the pipeline?

Yes, this is a big problem, and a significant part of the TMA is to provide provision for cross work activities in the road enabling synchronisation of road works between several parties, and although we provide pieces of the puzzle on the field side, we look for opportunities to integrate with geospatial and specialist software providers such as ESRI, Symology, MapInfo Confirm Exor etc, which are better suited to provide the back office solutions for this issue.

Back to the buried assets, what technology is available and what do you think is the best approach to tackle the issue?

Yes there are some interesting technologies today that enable the location of buried assets, such as ground penetrating radar. But the big unsolved problem in utilities is that there are a lot of buried assets of which nobody really knows the precise location. Some you can detect with new technology, but some can't be located without digging them up. For example, Victorian cast-iron pipes can be easily detected with a metal detector, but plastic pipes are harder, particularly in the UK because of the clay soils which can be a challenge even for ground penetrating radar.

This uncertainty about where buried assets are in the UK results in about 150 million pounds per year in unnecessary damage to buried assets, and taking this to global scale adds up to a big problem. But this is the tip of the iceberg; in the UK alone, the government estimates that the damage to the economy is perhaps 50 times the damage to the assets. Globally every year someone gets killed because they dig through a gas main or an oil pipeline, ultimately due to the fact the workforce did not know what was below their backhoe.

Solving this gap in data collection is not going to be easy. There should be huge incentives to avoid regulatory fines and bad press, but collecting the data will be expensive. As a result, the real solution is likely to be legislative, and there are EU directives becoming law to try to solve this dilemma. In fact,



we recently worked with a customer in the Netherlands to meet a law that requires a contractor to locate any asset they encounter which has not previously been digitised. This is an expensive addition to a typical job, and the asset owners would never have made the investment if it were not for the legislation. In the UK this is currently done on a voluntary basis but there are moves afoot to provide a cross industry framework to capture, record, and share utility asset data, and the owners of the assets will see more and more value in having accurate data about their new and old buried services, and the technology will develop to meet their needs.

GeoUK proposed a question for the Nov/Dec issue: "Will data be the enabler or the barrier for the next generation Utility?" What is your view?

I think it will be hard to find anyone in the geospatial industry that is going to tell you that the data will be a barrier! The real challenge with data is how to create intelligence out of the data, useful information from which organizations can make decisions. Bad data, missing data, and inconsistent records are preventing organizations from being confident in their asset inventory and only when they can make decisions will the barriers fall away. Our role in the geospatial industry is presenting real world case studies that promote the value of collecting the data and what organizations can achieve when their asset inventory is complete and accurate, and conversely the hidden costs associated with not having data.

One other barrier perhaps is data sharing within the utilities...what do you think?

Yes, in the UK this is another big issue. In the Netherlands, there is an organisation called the Dutch Kadaster that is responsible for bringing together data from different utility companies. The result is that they have standards because there is an organisation responsible for it, and this allows the introduction of laws to further improve the assets across the entire country. Until there is a viable plan to share data, which includes knowledge about the relative accuracy, there will continue to be a barrier to effective decision-making.

There is a lot of talk about smart utilities, smart grids and so on, but it looks like so far this just means smart meters...

Yes you are right. The smart grid is a broad topic, but the first concrete initiative was smart metering. There tens of millions of smart meters today in the world, installed primarily to automate meter reading and to improve safety. But these meters also provide real time information back to the utilities, allowing them to systematically monitor the network so if the power goes off they can immediately identify the point of failure. I am sure that over the time we will see more and more initiatives in this space. At Trimble, we have developed products for the U.S. market focused on utility network operations, and continue to work with partners to deliver utility solutions designed to leverage the smart grid. So we are certainly in this business, which indirectly benefits our UK customers, because we are learning a lot about a smart utility industry and how it works, and over time we will be able to bring great solutions to the UK, and global, market.

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