



The Sigma Seven Quarterly Newsletter Summer 2010

Right data, right place, right time



Effective mobilisation of field workers means giving them the data they need to complete their tasks when they need it



Increased efficiency, more accurate and timely information, improved safety – the potential benefits from providing mobilisation technology to the workforce are legion. Thanks to devices such as the iPhone, the mobilisation of many tasks and functions has become mainstream among the public. Business has yet to fully realise the potential benefits of mobilisation.

In the commercial environment, mobile infrastructure has been added to support a wide array of applications, ranging from environmental monitoring through to asset inspection and planning.

Not all of these need geography, but for many 'outdoor' jobs this can be very beneficial.

As a mobilisation specialist, Sigma Seven has a huge range of experience in delivering mobile solutions. According to Managing Director Paul Reid, 'Sigma Seven are thought of as mobile GIS solution providers but, in fact, we are a mobilisation specialist that can expertly and efficiently manage spatially related information'.

What does this mean? The power of information is enhanced by having the right data with the right



No paper equals better records

Paperless working becomes a reality for ScottishPower

Costly to produce and administer, wasteful and often inadequate, paper work orders really should be obsolete. So we're pleased to report that ScottishPower's maintenance and operations field staff will soon see all paper work orders replaced by a new work management system featuring the latest version of GeoField.



As part of ScottishPower's investment in streamlining their corporate systems, GeoField's highly effective map-based fieldwork suite is now fully integrated with SAP and ESRI.

'Integrating the electronic work orders with our new SAP deployment will bring us multiple benefits,' says Guy Jefferson, ScottishPower's Network Operations Director.

As well as the elimination of paper Guy anticipates 'savings generated by removal of double keying both at work order creation and deprogramming will cut costs.'

'But probably the most significant advance is that the system will allow us to allocate costs directly and accurately to the asset which is being repaired or replaced. This will improve our asset management and ensure accurate activity costing.'

Welcome...

Welcome to our summer edition of Field Views – the early summer sunshine has been a pleasant surprise and almost makes up for the disappointing preliminary rounds of the World Cup.

As expected, tablet PCs have been grabbing the headlines, mainly thanks to Apple's high-profile iPad. Tablet PCs have been around for years now and they deserve some serious attention, especially now that the key usability issues of battery life, outdoor screen visibility and portability have been resolved. It was great to receive a

recent email update from one of our tablet PC field users, which declared: 'Battery life is great – it's lasting a full day easily, even with GPS enabled the whole time.'

In this edition of Field Views, we focus on the areas of usability and workflow, two subjects crucial to the successful adoption of mobile solutions. Once you have invested in a mobile working infrastructure, significant benefits can be realised from having the ability to drive your field work processes from simple user interactions with your mapping and asset datasets. Productivity and data quality can



The iPad is making Tablet PCs mainstream

be significantly increased when work is delivered electronically to the right person, and that person has all the data they need to complete the task with them on their mobile device, regardless of the location or conditions they are working in.

Enjoy the summer, and remember that you can get involved and share your field working experiences on our Field Views blog at www.fieldviews.co.uk – we'd love to hear from you.

Best wishes,

Paul Reid | Managing Director

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▶ person at the right time in the right place. Joined up data that is fit for purpose and easy to use is critical. At Sigma Seven, we deliver the ability to source the right data from the plethora of office systems you have in place and maximise its benefit by delivering it to where it is of most use.

Again Paul Reid comments, 'For any given field task, GeoField can establish a workflow that will automatically link the required data from the office databases, present these to the user in a coherent, familiar and useful way, manage the job process itself, and then provide automated update back to the office systems'.

Bristol Water have already benefited from using GeoField to improve the mobilisation of their field force. Running on rugged industry standard Tablet PCs, and fully integrated with Bristol Water's own Smallworld Enterprise GIS and SAP work management system, the GeoField application places a complete



Effective mobilisation means workers have all the data needed to complete a task onsite



set of mapping, operational and infrastructure data directly into the hands of its field crews.

They have instant access to everything they need wherever they are – even if called to an emergency. Field staff access all the company's maps quickly and easily at their work location through a user interface specially designed for mobile workers. Maps are directly linked to work orders sent from the central office system and the powerful GeoField Redline features extend capabilities into rich map mark-up, sketch and photograph capture.

All the data captured on location is synchronised with office data when needed. Mark-ups can be sent back to base immediately over a mobile network so important new information is rapidly made available to all. New assignments are also sent wirelessly to engineers so that workers can be deployed rapidly to new jobs without wasting time and fuel returning to the office.

The system has delivered proven benefits to Bristol Water in terms of significantly improved productivity, reduced operational costs, better data quality and reduced environmental impact through more efficient task planning.

In the first year of the project, Bristol Water estimate they saved 1.5 million sheets of paper, achieving one of the project's key aims. That is 7.5 tonnes of paper which, as well as the savings on printing costs, reduces the engineering team's carbon footprint by around 30 tonnes of CO₂ every year. More carbon savings are likely as the team analyses its journey times and mileage.

At Sigma Seven, we have seen the tremendous benefits that mobile work management brings to our clients. It gives an advantage that could be used by many more businesses including yours.



Usability? Who cares?

Paul Reid explains the importance of usability

The terms 'user-friendly' and 'usable' appear frequently in software requirements workshops and functional specifications, but what does usability actually mean in practice? Commonly used definitions of usability are: 'The ease with which people can employ a particular tool in order to achieve a particular goal' and 'The degree to which a software application can be used with no specific training.'

We could also add the Five Es of usability characteristics: solutions must be Effective, Efficient, Engaging, Error Tolerant and Easy to Learn.

So who cares about usability? For your business to realise significant efficiency and data quality benefits from a field solution, usability from the field worker's perspective is absolutely crucial. The field

workers themselves have to enjoy the benefits of the solution, not just the business. Usability is vital to this.

At Sigma Seven, usability is one of the key areas of focus throughout the delivery of a GeoField solution. Because it is essential for the solution to meet both the functional and usability requirements of your field crews' daily work and specific operating environments, we recommend that customers involve their field workers at the earliest possible stage of a mobile evaluation right through to the final product selection process. To aid usability, our engineers get out in the field with our customers and experience their field working constraints and conditions first hand.

Once the usability requirements are understood, there are a number of areas for usability focus, not just



Will the new dual-screen Libretto W100 take usability to a new level?

the software solution. In software terms, the presentation of a clear and simple set of tools, and the speed with which these functions deliver results to the user, regardless of internet access, are all key.

In hardware terms, the size of the screen, its visibility in direct sunlight, and the capability to be battery-powered for a full working day are fundamental. Having a device that is light and comfortable to use, and integrates well with the other tools that field workers rely on, also matters in terms of usability.

So when it comes to the delivery of a field solution, it is essential to focus on the usability of the entire solution from the field worker's view. Otherwise the device is likely to remain in the back of a van.

Meet the team: Manos Korakakis

A senior software developer, Manos was the seventh member of staff to join Sigma Seven. Having worked previously in Athens, in his native Greece, he will have been with the company for five years in November.

'I work with client projects to ensure that our product meets their requirements. When a new project comes along, I go out with the Project Manager and we liaise with the customer to find out about their needs and specifications. We put the planning in place and then I lead through the development process for the customer. It's an interesting challenge because each project is different.

'An important part of what I do is improving usability. We try to make our products as easy to use

Manos Korakakis



and intuitive as possible. Over the years, we have built up a lot of experience in meeting specific client needs and that means we can anticipate a lot of potential requirements. Of course, we are also very aware that we have to be responsive to specifications that we haven't come across before.

'Recently, one of our customers needed us to ensure that the map was readable by an employee who was colour blind. We configured the mapping so that rather than using conventional colours to represent different types of mapping data, we used colours and shading which were colour blind compatible. That way, the employee who was colour blind could differentiate between the different data just as clearly and

easily as his colleagues could. We always work very closely with our customers to make sure that the end users have a say throughout project implementation.'

Before working with Sigma Seven, Manos spent four years in sports software and web development in Athens. He came to Scotland to do a Masters degree in computing at Edinburgh University. Recently married to Evi, who he met in Edinburgh, Manos is coming to appreciate the strange beauty of Scottish League football.

'I follow the Greek league and the Scottish league,' he says. 'I've been to four Hibs games and they have never lost once. The first one I went to, they won 7-1. I must be lucky for them.'

GPS: Hope, hype and reality

GPS is often sold as offering pinpoint accuracy. In the first of a series of articles, Andrew Coleman examines if this is genuinely the case and asks if companies really even need it

It wasn't that long ago that GPS was an optional extra on a few field projects. Now it seems that integrated high-accuracy positioning is a requirement from nearly all our customers. Owned by the US Government and originally designed for military navigation, the Global Positioning System is a remarkable scientific achievement that has become a consumer commodity – in our PCs, cars, phones and even watches.

Yet despite its apparent robust simplicity, satellite positioning remains a sensitive and complex system vulnerable to many factors. It's a technology that relies on extremely high precision where billionths of a second really do matter. The tiniest errors can lead to discrepancies on the ground of hundreds of metres.

Positioning equipment is now big business. And that means the usual competitive marketing claims, hype and confusion. The hardware alone can be the biggest part of a field project budget. And if you're going to invest that much money, you really need to understand for yourself the technology, its language, limitations and how to get the best from it.

This is the first of a series of articles aimed at helping our customers sort the hype from the reality, understand the real potential of GPS, see through the sales jargon and hopefully make the right investment decisions.

And the core messages are these: be very wary of 'accuracy' promises on GPS adverts; products may be getting cheaper but you still (usually) get what you pay for; and be very clear on your usage requirements



or your shiny new GPS may never be any use to you at all.

We'll explain each of these in turn, but to do that we need to start at the beginning.

So how does GPS actually work? Put simply, there's a network 24 satellites covering the Earth with a web of roughly 12 hour orbits. Each has a synchronised atomic clock and constantly broadcasts that time down to the surface. Your GPS receiver also has a very accurate clock. If your receiver can 'see' three or more satellites, it can measure the time delays from each satellite, and knowing the speed of light, can calculate the distance and thus triangulate its position. In practice, at least four satellites are used and generally the more the better.

In part two we'll explain why that is, why GPS fails and what you can do about it.

Expert designs or designs for experts?

The convergence of Computer Aided Design (CAD) and GIS is not a new idea. In the last few years we've seen great advances in bringing these related but disparate disciplines together to ensure effective planning and management of location information.

These days, CAD and GIS data stores are often combined and accessed via new software which has enhanced the viewing and analysis of these important data types. Using them together leads to more efficient and accurate planning which in turn means fewer potential legal complications and a reduced risk of potentially costly errors on site.



The merging of CAD and GIS makes mapping assets easier

However, the encouraging developments in CAD/GIS convergence are just the first steps in unlocking the power of this data. In general, the current software offerings still place this data in the hands of a few experts: CAD Engineers/Operators, GIS Officers, Analysts and Managers. There is no disputing that it takes an expert hand to create a complex, accurate, and high quality CAD drawing. But we live in a highly educated and technological age. These designs and the subsequent data they produce can be interpreted and utilised by many more users than is the case at present.

When dealing with any asset or estate management, health and

safety concern or planning issue, it would be hugely useful to have the design of any building or location integrated into the data management software being used. This is a key feature of Sigma Seven's GeoField where a field user can pin a CAD drawing to a location, or, alternatively have the original CAD designs available for viewing as a referable layer or even combined as a viewing layer over the backdrop mapping.

Through good practice and legal necessity, businesses produce expensive and high quality CAD drawings which are in turn invaluable location data sources. Make sure your business is exploiting and utilising this resource to its full potential.