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Vodafone uses Autodesk MapGuide® to improve quality.

Vodafone Ireland uses Autodesk MapGuide® solution to improve quality of service and staff productivity.

Who would have thought it?

Just 25 years ago, who would have thought it possible to make telephone calls from more or less anywhere in the world, to more or less anywhere else in the world, even though there was no telephone line nearby? Yet today, almost one in six of the world's population has a mobile phone. This global phenomenon has been driven not only by the utility of the product but also by unprecedented levels of investment by mobile phone companies. One such company is Vodafone Ireland, which is investing almost 4 million euros every week in network enhancements and upgrades to ensure it delivers on customer expectations for coverage, services, quality and customer support. One result of this investment is NetGIS, a customised spatial information management system developed for Vodafone Ireland by Proteus Solutions Ltd and based on Autodesk MapGuide®. NetGIS eliminates the time-consuming process of accessing multiple databases or hard copy files and interpreting traditional flat tables of data. It gives Vodafone Ireland staff instant access via maps to the latest location-based data including radio network sites, cell coverage and customer information. According to Pat McKeown, Estates and Property Manager for Vodafone Ireland, "NetGIS is an integral part of our operation. The whole of Vodafone Ireland now makes even better use of the extensive information already held in our systems allowing us to further improve the quality of our customer service and the productivity of our staff."

The search for a more effective way

Vodafone is Ireland's leading mobile phone operator with a customer base of over 1,800,000 people and a workforce of 1,500 employees. Almost half of the company's staff works in the area of customer care, providing 24 hour, seven-days a week customer support. Vodafone Ireland has 54% of the mobile market in Ireland and is part of Vodafone Group plc, the world's largest mobile communications company. Voice and data traffic is set to grow as the company rolls out its General Packet Radio Service (GPRS or insert 2.5G) and its Universal Mobile Telecommunications System (UMTS or 3G) services. To maintain the existing network of base stations, to bring new base stations on line as the network rollout proceeds and to service customer enquiries, Vodafone Ireland staff need access to an almost bewildering range of information. This includes simulated cell coverage, site plans, property details, ownership records, way leaves, site visit records and equipment status; in fact anything that planners, engineers and customer-facing staff might need to do their jobs. This information is provided through a number

of discrete departmental database-based application programs as well as CAD systems, spreadsheets, internal bulletin boards and e-mails, augmented where needed by phone calls, paper documents, photographs and plans. These Information Systems were in place and working, but an increasing workload stimulated the search for a more effective way of coordinating and presenting the information to all users.

Initial trigger for action

According to Pat McKeown, there was an initial trigger for action. He says, "We have a lot of properties and base station sites and we were getting a large number of rate bills from County Councils. We had to pin down the exact location so that we could certify each bill for payment." In discussion with Ordnance Survey Ireland (OSi), it became clear that a solution might be found by representing the required information spatially. Pat McKeown says, "I had the concept in my mind, but I needed an organisation with the skills and experience to put it into practice. That is why I contacted Proteus."

Proof-of-concept demonstrator

Proteus Solutions Limited (Proteus) has been based in Cork since 1995. The company designs and develops Spatial Information Management (SIM) systems for a wide range of public and private organisations including local government, utilities and the telecoms industry. The company has extensive experience in a wide range of Geographical Information Systems (GIS) and CAD consultancy and application development projects. According to Pat McKeown, "In 2002, I described my requirements in a scoping document and Proteus responded by creating a proof-of-concept demonstrator. I rolled the demonstrator out to the principal potential users and they were very pleased with it."

MapGuide, an incremental solution

Proteus chose to base their solution on Autodesk MapGuide. Seamus Gilroy, Managing Director of Proteus, says, "It can be difficult for users to validate the geographical context of data when it is presented in tabular form. To overcome this, we created a system that allowed authorised staff to see the information they needed on a map, through a browser interface over the Vodafone Ireland intranet. By accessing OSi mapping and data sets through MapGuide, Vodafone Ireland could correlate the rate demands with the appropriate sites." He continues, "Of all the technologies we've seen, MapGuide is the one that is best at unlocking the full potential value of data in existing applications by

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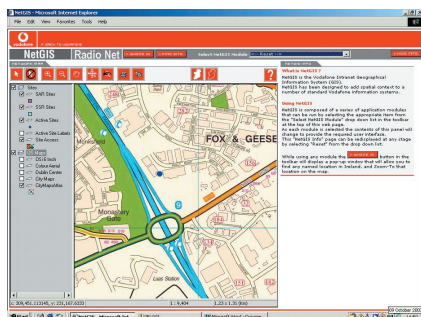
MapGuide-based NetGIS enables authorised staff to see the geographical context of information through a browser interface over the Vodafone Ireland intranet.

allowing us to add that vital spatial dimension. In that respect, it is much more open than other technologies that require you to keep everything within their proprietary data formats." He adds, "We do have experience of other web-based and desktop systems, but it's the flexibility and ease with which MapGuide can sit on top of existing, tried and tested operational systems that makes it so special. For most clients this is critical as it means they are implementing an incremental solution rather than a replacement for existing systems."

NetGIS protects investment in existing systems

The proof-of-concept demonstrator led directly to the development of NetGIS. Vodafone Ireland did consider other technologies, but chose a MapGuide-based solution because it could add the spatial dimension to the existing databases for a relatively small additional investment. Seamus Gilroy again, "What we did with Vodafone Ireland was to add the 'G' to their existing Information Systems to produce a GIS, and we were able to do this without interfering with the existing databases in any way, other than by defining some extra views." NetGIS has now been implemented in full across the Vodafone Ireland operation and is in use by Radio Planners, Property Agents and Customer Care staff amongst others. Seamus adds, "A major strength of MapGuide is that it uses open technology based on OLEDB at the lowest data level, but more importantly, the mechanism used to access the spatial data from the different data sources is based on the Spatial Data Provider specification from The Open GIS Consortium, Inc. In fact NetGIS uses ProSDP© for SQL Server, a spatial data provider specially developed by Proteus for use with MapGuide where the spatial data is stored in a SQL Server database." Through MapGuide, NetGIS provides Vodafone Ireland with a unified interface to existing Oracle and SQL Server databases, protecting Vodafone Ireland's existing investment in data and databases.

Faster, easier and more consistent

NetGIS has allowed Vodafone Ireland to improve the complex and time consuming process of identifying and commissioning new base stations. NetGIS displays the information each person needs for their particular part of the process on a map in the browser interface. With NetGIS, Radio Planning Group now create Search Area Requests (SAR) through the browser. They point to the required area on the map, input the key data through the browser interface and the SAR is saved back to the existing Oracle database. It is just as if they had done it through the standard database interface, only faster, easier, and more consistent. The SAR details are immediately visible on the map and are available to the Property Agents who can see there is a request outstanding in a particular area. Before NetGIS, they would use scissors and adhesive tape to patch different maps together, and then mark them up with felt tips. With NetGIS, staff are able to go to site, capture the information they need, then input into the appropriate applications and databases through the browser from the nearest terminal on the intranet. Customer Services now have real-time access to this information so they can inform and reassure customers who may be experiencing service difficulties. Additional site-related documents such as AutoCAD® and AutoCAD Map® plans and drawings, planning documents, site reports, and photographs can be viewed from the browser and can be printed if required.

Numerous benefits

According to Pat, "We get numerous benefits from NetGIS. It has improved our ability to meet project timescales. At all times, people know where to get the information they need. They know it will be there and that

it will be up-to-date. NetGIS is a key part of the 3G network roll out workflow and we now have paperless handover of sites." Pat continues, "The impact on our operations has been major. We were averaging 20 calls a day from the Customer Services Help Desk to each Area Radio Planner. These calls included coverage enquiries, bad signal enquiries, station off-air enquiries and requests for updates. Each of these calls triggered other calls from the Area Radio Planner in search of answers. These calls have reduced to an average of fewer than one a month now that Customer Services have instant access to all this information through NetGIS." Pat adds, "Our staff rely on NetGIS very much. Last Friday, for example, we had to change servers in a hurry, with the result that NetGIS was down for almost an hour. By the time it was back on line, I'd had almost 60 e-mails from users asking what had happened to it and when would it be back."

Justified expenditure

How did Pat justify the expenditure for the software, implementation and ongoing development? He says, "The requirement was driven by our 'Coverage, Care and Choice' philosophy. Our Customer Services staff needed better information, more quickly. We needed productivity improvements in Property Management. We had to find smarter ways of working with the huge amounts of data involved. However, in terms of many of our IT projects, it was quite a small and incremental investment and we were going to have to pay to licence the OSi maps and data sets at some time anyway." He adds, "I had to submit a business case, of course, but the success of the proof-of-concept demonstrator easily did that for me." Pat notes, "There are now 250 NetGIS users on shift in Customer Services, although we only needed to licence 110 concurrent MapGuide users. We are also on the Autodesk Subscription Programme so that we can keep the software up-to-date whilst keeping costs under control."

Not just for mobile phone companies

According to Seamus, "The technology underlying NetGIS has many applications. Vodafone Ireland happens to be a mobile telecommunications company. If you are in, say, rail, road, logistics, utilities or central or local government and you want to unlock the potential of your existing information systems by adding the spatial dimension, then choose MapGuide." He continues, "It is ideally suited to the transaction-oriented mature professional database where the data is dynamic. It fits perfectly where people need access to the latest spatially related information in order to make quality decisions."

Very pleased

Pat sums up, "Over the years, Vodafone Ireland has been a front-runner in technology and the system is continuing to develop. Consideration is already being given to the use of mobile computing, with some preliminary work being done to link Compaq IPAQs to GPRS phones so that staff can view signal coverage mapping when they are on site. But that is for the future." As for the present, Pat says, "NetGIS has worked really well for us. The users are very pleased with it, too. I'm just sorry MapGuide wasn't around ten years ago when I started off in this business."

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