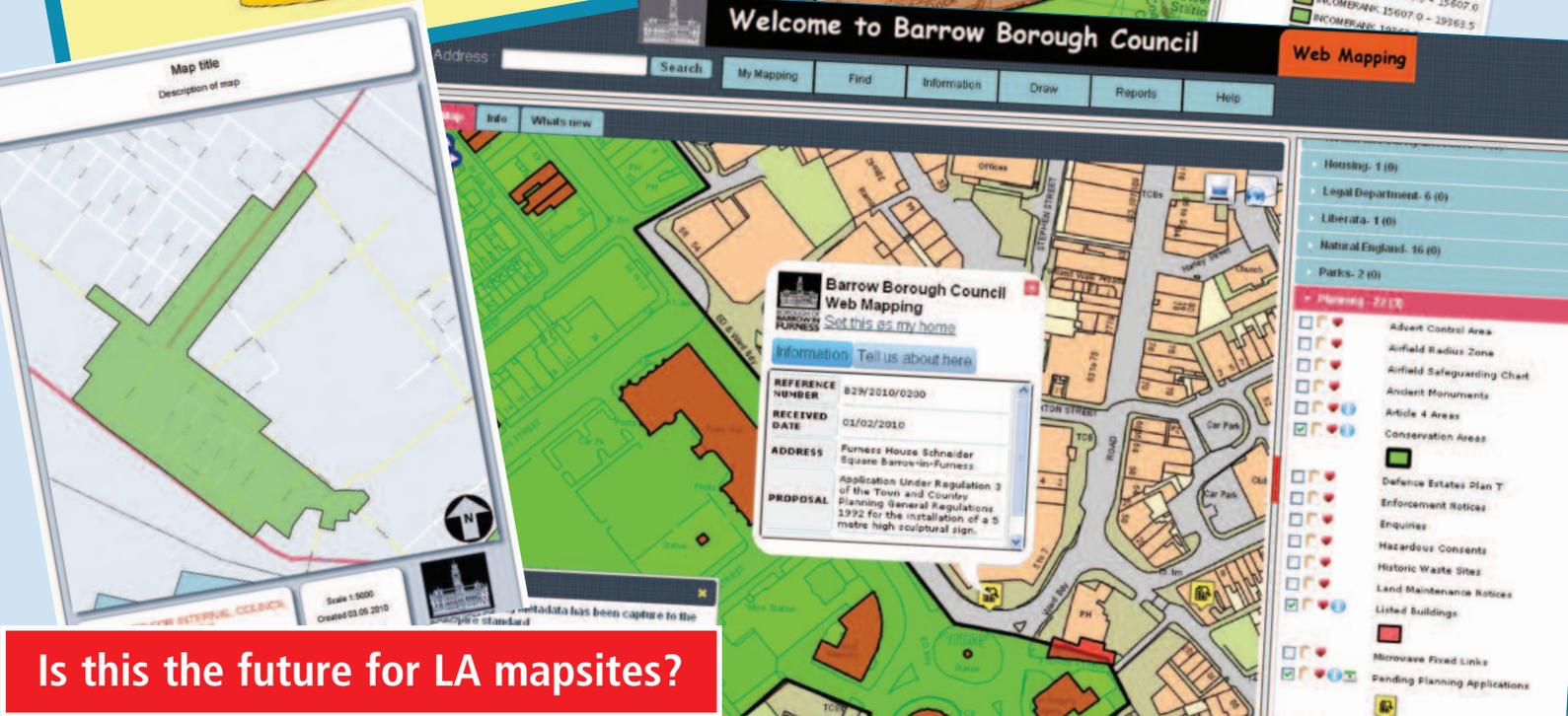
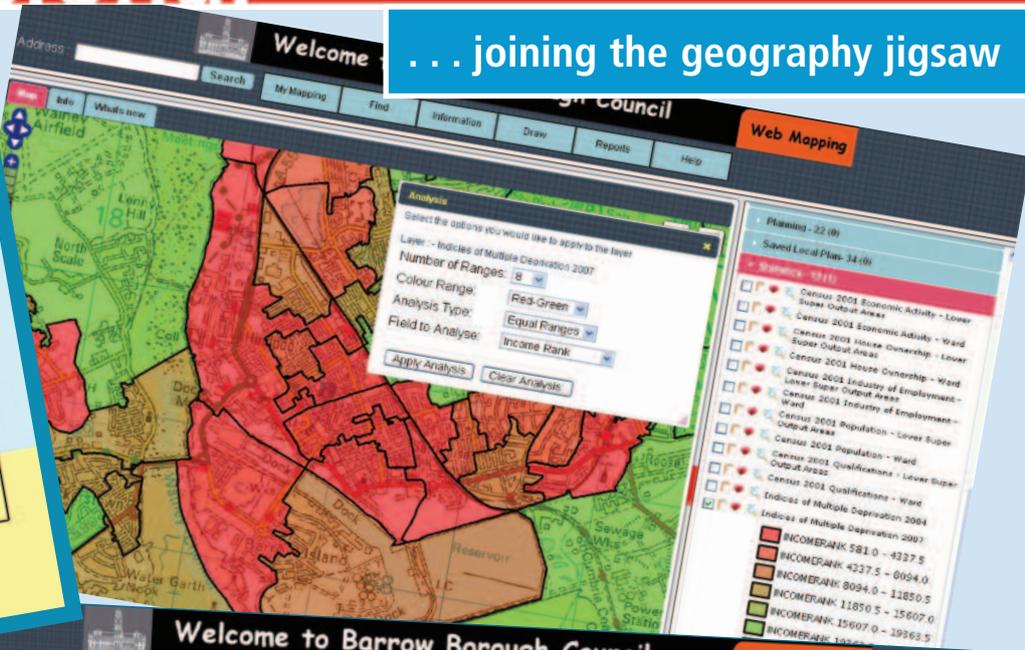
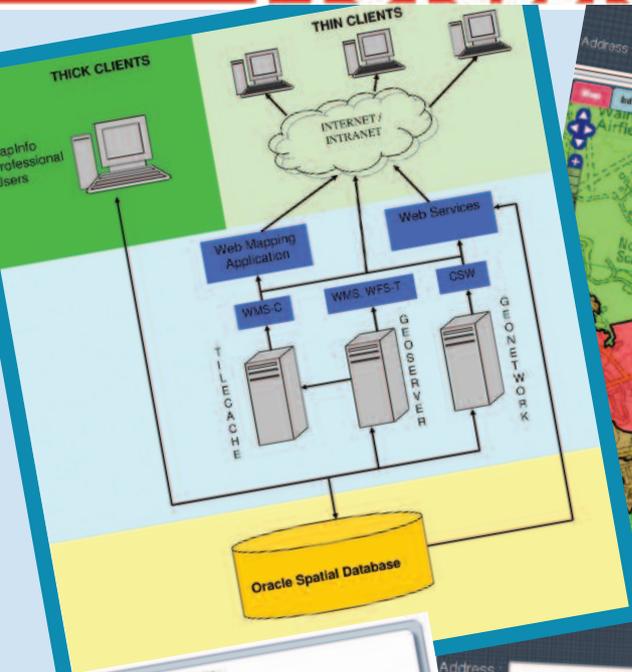


# GIS Professional

issue 33 : April 2010

... joining the geography jigsaw



Is this the future for LA mapsites?

OS OpenData: unfinished business?

Translating talk into action in Northern Ireland

Talking to the new man steering 1Spatial

wherecamp EU – an unconference

GIS and the Smart Grid

I will tell you this only once. . . .

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**Front cover:** Open source software together with free mapping and data could mean a new age for local authorities ready to grasp the opportunities. Barrow Borough Council is already ahead of the game.



**p. 11**

## OS Consultation: HMG responds

The reply we've all been waiting for. But was the right question posed? And who are the winners and losers?



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## Listen very carefully. . .

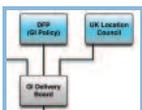
Robin Waters reports from The Guardian's conference on managing data amid a changed world where 3000 public datasets are now free.



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## GEO-10: busy two days

Richard Groom and Hayley Tear try to convey some of the flavour of the 22 seminar sessions at the annual two-day geo event.



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## Northern Ireland's GI vision

Iain Greenway and Suzanne McLaughlin show how GI pervades everyday decision making in the province and outline the challenges ahead.



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## BBC goes for OSS

Robin Gawlik explains how his local authority is implement an open source solution for its web mapping.



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## An unconference

Steve Feldman discovers spontaneity and improvisation amid the Post-its at Europe's first wherecamp event.



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## GiSPro interview: Nic Snape

1Spatial's new CEO talks to Robin Waters about location and its role in managing the transformation of information into knowledge and more.



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## GIS and the Smart Grid

Utility companies are realising the power of GIS in growing the next generation of management systems, explains Christine Easterfield.

### > GISPro's COLUMNS

- p.23 **Adena Schutzberg** – options abound but are we keeping our heads down?
- p.32 **AGI GeoCommunity'10** – Chris Holcroft introduces what's in store for us.

### > GISPro's STANDFASTS

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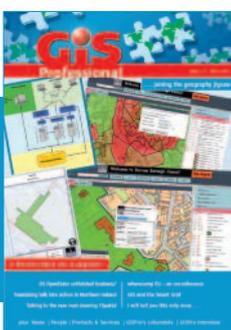
**Next Issue: June 2010**

Copy dates **Editorial:** 4 May 2010

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# read on...







welcome  
to the April issue of *GIS Professional* . . .

## Will a thousand flowers bloom amid the seismic shift?

EVER SINCE those awful events of September 11th 2001, the UK Government has had an unerring knack for choosing certain days to bury bad news. Just before Christmas, with little announcement, they released a consultation document on the Ordnance Survey. In the wind down for the holiday season few noticed it until 5th January. The Government's response to the consultation was released on 1st April just before the Easter break amid the usual flood of All Fool's Day teasers ('Step outside Poshboy'). Indeed, when I first began to read reports of the response I wondered if I'd stumbled into yet another April 1st spoof. The BBC's website reported that ramblers were disappointed that paper maps had been excluded. Surely the RAC would be next, I thought, demanding free satnavs for motorists.

The headline news is that a raft of OS products is now available for free under the brand (already trademarked) OS OpenData. How far this will go in encouraging 'a thousand flowers to blossom' remains to be seen. But linked to open source software, as even local authorities are now discovering (see page 20), I suspect that there is a seismic shift about to run through the industry. The derived data issue has been largely solved but there will be OS partners whose businesses will be hit by the licence change. To what extent remains to be seen.

//

**The reform of  
Britain's  
mapping agency  
remains  
unfinished  
business.**

Initial response from the GI industry seems to be a mixture of relief (OS is not to be sold off and neither are its large scale products to be available for free) and elation, with the laurels going to *The Guardian's* Free Our Data campaigners, Michael Cross and Charles Arthur. As Steve Feldman says in his blog (<http://knowwhereconsulting.co.uk/giscussions/>) they ". . . demonstrated how a persistent, incisive and occasionally humorous campaign. . . could stimulate change at the centre of government."

But the outcome will certainly not please everyone. There remains a lack of transparency over OS's accounts and the decision to make OS responsible for the "technical delivery" of Inspire is extraordinary. There was no mention of this topic in the consultation document and it undermines a stroke work done by software and consultancies in this area.

//

Whilst the bloggers and tweeters have been busy, ranging from sound-bite comments to the more considered views of people like Steve Feldman and Ed Parsons, we will have to wait for the more measured views of the AGI, RICS and Locus as well as those of OS's would-be competitors, UK Map and People's Map. The reform of Britain's mapping agency remains unfinished business.

Finally, I apologise for the lateness of this issue. But we had planned to delay publication so as to include some reporting and comment on the Government's response to the Ordnance Survey Consultation exercise. Turn to page 11 for more on our initial thoughts. Please feel free to respond by 4 May in time for the June issue when we will include a longer consideration of the changes to Ordnance Survey.

Stephen Booth, editor



## Imagery of damaged Concepción

RapidEye has imaged the area next to the epicentre of the 8.8-magnitude earthquake in Chile. Taken a few hours after the earthquake hit, the images cover a total area of 13,125 km<sup>2</sup> and show the most damaged area around the city of Concepción. In order to be able to run change detection analysis, images are also available of the same area taken a couple of days before the event. RapidEye is concentrating on delivering these and future images of the region at no cost to governmental and non-governmental help organisations and institutions. Additionally, the imagery is available for purchase on the Geodata Kiosk at [www.geodatakiosk.com](http://www.geodatakiosk.com).

Image: Copyright© 2010 RapidEye AG ([www.rapideye.de](http://www.rapideye.de)).

## Ever visited Chippy Alley?

Have you heard of "Athens of the North" or been asked to meet someone in "Chippy Alley"? *GISPro* has been alerted to an interesting research project led by a group of researchers at Cardiff University who are making it their business to collect people's local place names that often

do not show up on maps of Great Britain. The research aims to collect and represent informal names to improve information systems that are currently only based on administrative place names. The research group are inviting people to visit [www.yourplacenames.com](http://www.yourplacenames.com) and help the project by filling in a short

questionnaire on place names – you may even win a prize!

## LR revises office closure decisions

The Land Registry has published the outcome of its consultation over office closures announced last October. LR has made changes to its original proposals to try to mitigate the impact on staff, reducing the number of staff potentially compulsorily redundant by a third. The revised programme retains an LR presence in the south-east. It will mean only two offices will be closed completely in 2011. Land Registry will be keeping open the Croydon and Peterborough offices and intends to retain a reduced presence in Portsmouth until 31 March 2013. As a result of office closures and voluntary redundancy, staff numbers will reduce to just over 5,000 by the end of 2011 and to around 4,200 by the end of 2014. A new non-executive chairman and more non-executive directors will be appointed as a result of a recent review of the organisation's governance arrangements. For more information on decisions regarding LR offices and staff, visit [www.landreg.gov.uk](http://www.landreg.gov.uk).

Source: [www.landreg.gov.uk/about\\_us/pressoffice/notices/?article\\_id=20548](http://www.landreg.gov.uk/about_us/pressoffice/notices/?article_id=20548)

## People's Map wins silver award

The People's Map of London has received a silver award in the best digital product category at the recent International Map Trade Association gala awards dinner. The awards ceremony attracted entries from all over Europe, the Middle East and Africa.

The People's Map received the award for its 1:12,000 scale mapping of central London, which was launched in November 2009. Covering over 400 sq km stretching from Richmond Park in the south-west to Epping Forest in the north-east, the mapping was derived from high resolution aerial photography captured by Getmapping.

## Automating quality assurance

EuroGeographics, as the co-ordinator of the European Spatial Data Infrastructure Network (ESDIN) project, has announced what it believes to be an innovative step for achieving geospatial data quality evaluation through semi-automated web services. At the second ESDIN stakeholders and reference groups' meeting in February, **Antti Jakobsson**, leader of the work package associated with metadata and quality, delivered a workshop on "Automation of Quality Assurance Processes". The workshop provided an overview showing where and how quality terms apply in relation to quality assurance activities, stating that quality evaluation can be carried out at any point in a production flowline. 'The objective of this work package is to define data quality reporting and metadata guidelines for large, medium and small scale topographic and administrative reference information', says Jakobsson. 'Web services can now be used in an automated and semi-automated manner for quality control during production and quality evaluation post production. This approach will greatly help data users to evaluate usability and fitness for purpose using metadata information'.

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## Promoting shared space

The official opening of a shared data centre took place on 3 March with IT directors from Ordnance Survey and Land Registry cutting the ribbon. The opening reflects the organisations' support for the Government Information and Communication Technology (ICT) strategy, which aims to reduce IT infrastructure costs by up to £300 million a year and support the achievement of environmental and sustainability targets. The agreement for Land Registry to lease 0.219 square metres of serviced and managed space meets industry best practice for the mapping agency. Bob Goodrich, director of information systems at OS, says: 'In the current economic climate, it is essential that we realise cost-savings throughout our organisation, and sharing space with Land Registry enables us to do this and to support the government's ICT strategy. Now that we have completed fitting out the area we will begin migrating our infrastructure and aim to have completed this by late summer 2010.' Image: Bob Goodrich (left), Ordnance Survey director of IS, and John Wright (right), Land Registry director of IS.

## CONTRACTS & PROJECTS

### Revealing CO<sub>2</sub> emissions

The GeoInformation Group has announced that Surrey Heath Borough Council and Peerless Housing Group have jointly procured Cities Revealed's Carbon Energy Mapping to help reveal CO<sub>2</sub> emissions across the area. The aim is to establish energy loss at the property level and to develop an active energy efficiency campaign. The mapping is a low cost, authority-wide baseline model for highlighting energy and CO<sub>2</sub> emissions from residential properties. The model is also enhanced with heat loss information gathered from a thermal aerial survey.

**Interactive mapping for Southwark** Southwark Council in London is using Stratus Connect web mapping technology to enhance the

mapping services provided to citizens via its website. Known as Southwark Interactive Mapping, the citizen services provided via Pitney Bowes Business Insight's technology provides a one-stop-shop interactive mapping service that enables citizens to activate overlays on top of a detailed map of the borough e.g. clicking on "controlled parking zones" highlights the relevant areas on the map. Users are also able to: search for locations; browse mapping, aerial photography and historical mapping; and display nearby services. The council also plans to make location and mapping functionality widely available throughout the website.

**Reducing risk for fire fighters** Firefighter risk analysis modelling in London has been enhanced by mapping from The

GeoInformation Group. The London Fire and Emergency Planning Authority (LFEPA) has selected UKMap so that the authority can identify buildings across London that may pose high risk to firefighters and target tall buildings to ensure correct water pressures are applied and aerial appliances are effectively directed. Additional information, such as building use to model occupancy numbers and risk profiles, will further enhance strategic and risk planning capabilities. Another benefit for LFEPA is the opportunity to capture and retain its own mapping information derived from UKMap.

**Envirocheck gains Bluesky collection** Bluesky has signed a reseller agreement with Landmark, which will see the company's collection of commercial aerial photographs being made available

through the Envirocheck website. The photographs from the Old Aerial Photos archive date back as far as 1917 and include some of the earliest commercial survey images and military photography. The images will be offered on the website as a value added service and registered users can select images from detailed search results, including the age and ground coverage of every image that matches the search criteria, with the file supplied as a digital image.

**Securing votes** Tandridge Council is using software from GGP Systems in a project that aims to transform the electoral process as part of a government initiative to improve voting control and prevent fraud. The new UK government directive controls the way electors' details are stored to help ensure a consistent standard with

## ProximiTREE Detailed 3D tree maps



Bluesky has launched a brand new digital map layer accurately modelling the location and canopy extent of trees and their proximity to buildings. Designed as a tool to aid local authority planners, insurance assessors and property developers.

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## NSG leads pothole assault

Following the worst winter for 30 years, tablet PCs, GPS location and mobile network cards have all been deployed to locate and manage the repair of Britain's ever growing potholes. The National Street Gazetteer (NSG) has been supporting embattled highway authorities across England and Wales by using information held within the NSG to assist with the scheduling and communication of necessary repairs. In Devon, teams equipped with the mobile technology have been sent to identify potholes in the county's 8,000 mile long road network. The NSG provides the background information on all of the routes identifying every road, its class and its maintenance category. Further north, Jason Jenkins, highways network manager for the South Wales Highways Authority, says: 'Our maintenance package for inspections, works orders and noticing regime now relies on the NSG for categorising the streets and identifying the work locations on works tickets throughout the authority, so it has become indispensable'.

prescribed formatting of names, dates of birth and addresses. Using the GGP NGz gazetteer management software, the council has obtained a 100 percent adoption of the new standards maintaining compatibility between its National Land and Property Gazetteer (NLPG) and the electoral register.

### Introducing GIS to schools

ESRI UK has become a corporate member and strategic partner of the Geographical Association (GA), the

geography subject association for teachers. With GIS now a compulsory part of the national curriculum, the organisations will combine forces with the aim to help teachers respond to the curriculum changes and introduce GIS into geography lessons. With funding in place for the next three years, the GA can plan ahead, working with the GIS software provider, to introduce GIS technology to schools as part of its mission of furthering the study, learning and teaching of geography.

### Plotting plants with GPS

Ormston Technology is supplying the National Trust with more mapping technology to help with a plant recording project covering more than 80 of the trust's gardens. Currently 60% of the way through a three-year survey, the trust has been able to record details of over 120,000 plants covering some 13,000 different species. The equipment allows staff to accurately plot and record each plant using an Ashtech handheld data

collector with GPS receiver and mapping software. Franklyn Tancock, plants collection curator, says: 'We have recently purchased more Ashtech MMCX GPS receivers since our initial order of two years ago as they have proven to be highly suitable to our requirements – ease of use and reliability being a very important factor. We have also purchased the Half License Dongle, which allows our surveyors to continue to use the GPS software whilst the unit is elsewhere'.

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**Intelligent Addressing has signed up two additional companies, Bartec Systems and Postcode Anywhere, to act as resellers of the National Land and Property Gazetteer (NLPG).**

With local partners MecSpatial and Digital Leader, 1Spatial has delivered a new thematic map publishing system to the Department of Survey and Mapping Malaysia (JUPEM), which introduces the benefits of automation. The contract replaced an existing system with a new production flowline based on the company's Radius Studio and Clarity technologies.

**Southampton City Council has chosen Symphony iManage from Aligned Assets for the management of its local street gazetteer and associated street data. The council required a new system that was capable of exporting data in a DTF 7.1 format and that was also fully compliant**

**with the Traffic Management Act ETOn 5 technical specifications.**

Up-to-date street works information provided via Mayrise's Street Works system is improving traffic control in Oxfordshire. 'By feeding data directly from our Mayrise Street Works software into the heart of our traffic control room, once an event has been flagged by the UTMC [urban traffic management control system], operators can identify the cause of the problem and take the appropriate action,' says Patrick Mulvihill, street works manager at Oxfordshire County Council.

**SeaZone is to develop marine and coastal base reference information, or digital base mapping, for the North Sea for the BLAST (bringing land and sea together) work package 3 – the marine and coastal reference base working group. This working group addresses the needs of marine spatial planning,**

**environmental protection, socio-economic development, risk management and mitigation.**

**BRIEFS**

The GSDI 12 World Conference will take place in Singapore from 19-22 October 2010 with the theme "Realising Spatially Enabled Societies". For more information, visit [www.gsdi.org/gsdiconf/gsdi12](http://www.gsdi.org/gsdiconf/gsdi12).

**Smart Utility 2010 will take place on 14-16 June 2010 at Chelsea FC, London. The conference will cover the latest developments, investments, business models and pilots, with topics including: smart grids, smart metering deployments, adoption paths and business models; next generation communications networks; and smart operations, IT and intelligent software systems.**

Digby Lord Jones, former CBI

director general and business ambassador for UK Trade and Investment, will be a keynote speaker at ESRI UK's user conference in London starting on 10 May 2010.

**The European LiDAR Mapping Forum will be held in The Hague, Netherlands from 30 November to 1 December 2010. More at <http://www.lidarmap.org/ELMF/>**

The PSI Alliance annual conference on 16 June 2010, Brussels will feature Professor **Nigel Shadbolt**, UK government information adviser; **Javier Hernandez-Ros**, head of unit, access to information, European Commission; **Gustaf Johnssén**, senior advisor, Swedish ministry of finance; **Ignacio Durán Boo**, deputy general director cadastre, Spanish ministry economy and finance; Michael Fanning, Online Consultants International GmbH; and **Rolf Nordqvist**, PSI Alliance chair.

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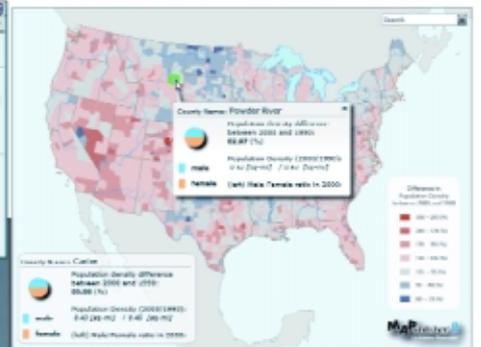
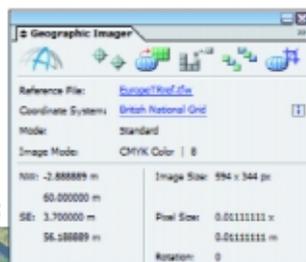


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## Location chair announced



The UK Location Council has announced **Mick Cory** as the chair of the location user group. The appointment is for two years but may be renewed. Cory is currently the director of sports, museums and recreation division at the Department of Culture, Arts and Leisure in Northern Ireland but was formerly the chief executive of Ordnance Survey Northern Ireland until 2005.

## New CEO announced

Dr **Jürgen Dold** has assumed the position of president and CEO of Leica Geosystems AG. Dold has been with the company since 1995,

*Jürgen Dold,  
Leica's new  
CEO.*



beginning as a product manager and general manager for several business areas of the metrology and surveying divisions, and was previously president of the geospatial solutions division. Before he joined the company, Dold acted as an academic council and a lecturer at the Technical University of Braunschweig, Germany. He holds a university degree in surveying from the University of Bonn, Germany and received his doctor's degree from the University of Munich.

## Honorary degree for Parsons

Kingston graduate and former lecturer, **Ed Parsons**, recently returned to the

*Ed Parsons  
sports his  
award  
winning  
costume.*



university to be awarded with an Honorary Doctor of Science degree. He has spent over 20 years working in the GIS industry, both in universities and with companies such as Autodesk and Ordnance Survey, and was part of the Kingston team that helped to establish the world's first undergraduate degree in GIS. Since 2007 he has been Google's geospatial technologist.

Acknowledging that students faced a tough time launching their careers in the current economic climate, Ed says: 'Scarcity breeds creativity and it is that creativity which will lead to the next big developments in GIS. Today's graduates have an innate curiosity and my advice to them

is to carry on asking questions and have the confidence to go out there and really challenge what happens in the world around them'.

## Directing business operations

Pitney Bowes Business Insight (PBBI) has appointed a new business operations director for northern Europe. Based out of the company's EMEA headquarters in Windsor, **Simon Kent** will be responsible for extending the role of PBBI's business operations team.

## Changing structure

A change in 1Spatial's senior management team sees Dr **Michael Sanderson**, former chief executive, become executive chairman and **Nic Snape** takes over day-to-day running of the group as chief executive. For more on 1Spatial's strategy see our interview with Nic Snape on page 26.

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LET US JUST REFRESH ourselves on how this all began. It was back last November that the prime minister held a seminar (some might say 'love-in') with his new best friends Sir Tim Berners Lee, Martha Lane Fox and Professor Nigel Shadbolt. They announced, as though the thought had not occurred to any of us before, that it would be a very good idea if lots of publicly-funded datasets could be released for private interest as well as for commercial gain. Amongst the datasets proposed for release was Ordnance Survey mapping. (As an aside, I can't help thinking that OS may have got itself to blame for calling its mapping "datasets" all these years; my dictionary defines a dataset as "facts and statistics used for reference or analysis" – that is not a map. But we must move on.)

The consultation set out three possible options for the future of OS: stay with the current business

agreement with OS for the licence for OS OpenData and for its ongoing maintenance. That this was done so quickly only adds to the view of many industry commentators that the deal was done well before the last consultation response came in.

In another little tease at 3.15 it states "Ordnance Survey will develop a service to enable Ordnance Survey TOIDs (unique identifiers for geographical objects) to be referenced and located. This service will be free, subject to limits on excessive use, and the TOIDs from it will be free to re-use. Okay. . . what criteria will be used to set the limits and just how useful is this without any attributes? Perhaps the intention is to provide a 'lite' version of MasterMap.

The Government's intention is to enter into a commercial relationship with Ordnance Survey to provide products and services to government, and

## OS Consultation response

The Government's response to the OS consultation that closed on 17 March was slipped out just before the Easter break. *GiSPro* has not had time to fully absorb the document but discretely contacted a number of industry players for views.

strategy; release licensing constraints on large-scale mapping (i.e MasterMap) or a "staged transition". According to the Government there was no clear consensus on which option was favoured by the 441 respondents. Only 3% indicated they preferred Option 1; 13% Option 2; and 8% Option 3. 17% suggested or preferred an alternative option and 59% did not express a clear view on which option they preferred. Surely these statistics are totally unweighted between major and minor players and reflect the contradictory way in which the options were drafted.

The package that forms OS OpenData is essentially that included in the original consultation's "Ordnance Survey Free" option with some modifications and additions:

- replacement of 1:25 000 and 1:50 000 ScaleColour Raster products with OS VectorMap™ District
- addition of OS Locator™ and Land-Form PANORAMA to the product list
- replacement of Code-Point@ by Code-Point@ Open, which provides accurate locations for 1.7 million postcodes in England, Scotland and Wales.

There are several points to note. Under 3.10 of the response, OS will retain the right to supply the data underlying OS OpenData products under alternative licences.

Another intriguing point arises under 3.14. The Government has apparently already negotiated a commercial

potentially the whole public sector, under a centrally-funded Public Sector Mapping Agreement. To take effect from 1 April 2011, a more detailed report is expected in June, presumably similar to the One Scotland agreement. The private sector may well regard this outcome as anti-competitive and possibly in breach of EU procurement law. It also seems likely that, far from making OS pricing of public and private sector data more transparent, it will become more opaque.

Coupled with the move to make OS responsible for "technical delivery" of the INSPIRE directive, thereby giving it a huge advantage over several years of investment by software and service businesses, it is in the words of one observer, 'akin to handing the burglar the key of the house'. The Government is silent on how this work will be funded. The view of Defra and those charged with delivering the UK Location Strategy on this move, unheralded in the original consultation, would be interesting.

There are a number of omissions. The Local Government Association (LGA) and others highlighted that the original options did not adequately contribute to the delivery of the UK Location Strategy, and in particular the "Core Reference Geographies". In fact there is no proposed change to the currently unsatisfactory position with regard to a National Address Register – which was specifically requested in the consultation.

The document will pay further study. In the words of one seasoned player, 'If the question had been "how do we ensure UK has excellence, choice, innovation and low cost geographic information" instead of "What shall we do with OS" we might all have got a more sensible answer'.

### HEADLINES

A suite of OS products, under the brand name OS OpenData™, are to be released immediately with others to follow. They will be free including for commercial re-use. They include:

- OS Street View®
- 1:50 000 Gazetteer
- 1:250 000 Scale Colour Raster
- OS Locator™
- Boundary-Line™
- Code-Point@ Open
- Meridian™ 2
- Strategi@
- MiniScale@
- OS VectorMap™ District (available 1.5. 2010)
- Land-Form PANORAMA@

There will be a new "centrally funded Public Sector Mapping Agreement" for the use of OS from 2011.

OS "will take on the technical delivery role of the services that are required to meet Britain's obligations under INSPIRE. . ."

OS OpenData products will be available in hard media and as an on-line service at [www.ordnancesurvey.co.uk/opendata](http://www.ordnancesurvey.co.uk/opendata)

- *Policy options for geographic information from Ordnance Survey – Consultation Government Response. ISBN: 978-1-4098-2416-9 can be downloaded from <http://www.communities.gov.uk/publications/corporate/ordnancesurveyconresponse>*

## conference report



I HEARD A RATHER APOCRYPHAL STORY the other day. When prime minister Gordon Brown called in Sir Tim Berners Lee to tell the cabinet all about the benefits of linked data Justice Minister Jack Straw was heard to say: 'This is like having the inventor of the wheel to talk to us'. Foreign Secretary David Milliband was heard to say 'and what was that like Jack?'

While Sir Tim did not invent the wheel he certainly made it run an awful lot more efficiently. Capturing spatial data and linking it to information about land, property, roads and many other things (even people) is what those of us in GI have been banging on about for years. To paraphrase Churchill, 'Give us the datasets and we'll finish the job'. So how are the custodians of all that public sector information responding?

Director General of the Ordnance Survey), chaired this excellent one-day event, which was co-sponsored by nine commercial organisations including the National Land and Property Gazetteer (NLPG). About 150 attendees were split equally between central government, local government, and the sponsors, with a smattering of academics.

**Why should we release it?** Professor Rhind set the scene by observing that government was minded to manage its data resources to enable greater democratic accountability, improved services, and more value added products and services, which would provide increased tax revenue. He noted that progress was patchy despite a plethora of reports and recommendations over the last two years and the

## Listen very carefully, I will tell you this only once. But can you trust me?

The *Guardian* newspaper's conference on managing data heard from a raft of public sector leaders about how they are facing up to a changing world where 3000 government datasets are now in the public domain. What governance is needed? Do the public sector holders really need to know what we the people might use it for? And are we now in the age of the archivist, wonders **Robin Waters**, who reports for *GISPro*.

**Tell us once** The catch phrase from 'allo, 'allo might be the motto of the Department of Work and Pensions' *Tell Us Once* initiative. **Lyn MacDonald**, director of the programme – which enables a birth, death or change of address to be notified only once for all relevant central and local government requirements – is a passionate advocate of this simplification of citizen's interaction with government. Worries about "big brother" were dismissed and when it was suggested that a single definitive address database might be needed to make it work, she simply suggested that a 90% (or even lower) success rate would still save enormous amounts of money and aggravation to the bereaved or new mothers. Macdonald pointed out that, at worst, births, deaths and addresses would have to be registered with the existing individual agencies and how could one justify waiting for the perfect address database. Good point. With a sound business case and 'rave' ratings from the customers, the programme is now being rolled out nationwide.

Tell Us Once was the 2009 winner of the *Guardian's* Public Service Award for partnership working and Macdonald's presentation was at the *Managing valuable data in a changing landscape* conference organised by Guardian Professional and Kable on St David's Day at the Inmarsat centre in London. Professor **David Rhind** CBE, chair of the Advisory Panel on Public Sector Information (and ex

recent recruitment of Sir Tim Berners Lee and Professor Nigel Shadbolt.

**Andrew Stott**, Director of Digital Engagement, Cabinet Office (and a member of the Location Council), suggested that part of the problem was still a culture that asked 'why should we release it?' Many attempts were being made to change this culture, including the proposition that it was better – and more cost effective – to publish data as soon as possible rather than wait for the increasing number of Freedom of Information requests and the inevitable costs of dealing with them. [Direct.gov.uk](http://Direct.gov.uk) now has some 3000 datasets available and although most are still in the form of documents or spreadsheets, it is the intention that all new information should be release in a "linked data" format using the Resource Description Framework (RDF) language. Andrew recognised some of the issues – particularly that of quality. An unlikely answer to one query on a national travel database was information about bacon and ham – and nothing to do with sandwiches either! Just a single mistaken hyperlink?

Many readers will have noticed how archivists have now moved from behind the library shelves into the forefront of information technology. Given that their raison d'être was always information – its preservation and access – perhaps this is not surprising. Dr **Ian Wilson**, Librarian and Archivist of Canada Emeritus and President, International Council on Archives, showed us why this is happening and

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**...at worst, births, deaths and addresses would have to be registered with the existing individual agencies and how could one justify waiting for the perfect address database.**

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why it is so often difficult to overcome the irrationality of human nature! Quite apart from privacy and intellectual property rights, we also have to deal with the nature of decision and deal-making, which is often not explicitly recorded. The potential openness of organisational files – including emails and other records – means that some decision-making is moving “off the record”. Decisions on non-dom status for certain politicians comes to mind! Trust in government and transparency of “evidence-based” decisions is at stake. At the same time “bottom-up” social media are changing the information environment and removing the political and legal boundaries, which have bound the print and broadcast media in the past.

**Managing information** I attended the Use and Re-use stream as an alternative to the Sotrage: retention and retrieval presentations. We were treated to presentations from Newcastle Business School, the London Borough of Harrow and the Office of National Statistics. The first dealt with a ‘regional improvement and efficiency partnership’ entitled “Information Governance in the Wild!” Coming from the north east region, it was not surprising that a major driver for better management of information – across all of the public sector bodies – has been the recent revelations about data loss from HMRC computer systems and equivalent events in local authorities. These very public failures concentrate minds and encourage investment in data security. Mystery shopping also has a role to play in exposing inefficiencies and downright awful attitudes to the tax-paying “customers” trying to use local services.

From Harrow we learnt that (at last!) local authorities are beginning to use the population segmentation tools beloved of marketers since the 70s and more recently popularised by politicians seeking the votes of Motorway Man or Worcester Woman. Given names such as these (and many that were even more suspect) it is perhaps not surprising that politically correct and cash-strapped town halls didn't take to them. But moving front office services to within walking distance of non-car owners can save money and improve service delivery – and so it proves.

**Alan Smith** from ONS started with the storming of the Bastille – apparently attended by one, William Playfair, who also invented bar charts and was a pioneer of statistical presentation. Alan was making a plea for better presentation and reminded us that only 47% of adults in UK have reached ‘level 1 numeracy’ – the rest will not even understand percentages or proportions. However, it is now relatively easy to produce bespoke, interactive maps that can convey both spatial and temporal information in a way that Playfair would envy. These can be placed on “dashboards” that present the “must know” information for any manager – or citizen/consumer. Have you customised your iGoogle dashboard yet?

After lunch I heard **Steve Brandwood** talk about the

realities of creating and managing the National Land and Property Gazetteer that has driven the standardisation of addresses for daily use in public service delivery. His video of hard-bitten (literally!) cowboys being frustrated by a herd of cats did not have to be explicit to get the message across. The NLPG continues to improve as it is used more. One member of the audience asked how to get it in her local authority – only to be told that if she was using the UPRN then she was actually using the local LPG – even without knowing it! We learnt that some 30% of local authorities have “fully integrated” LPGs and another 50% have at least one core service using it often with one or two others. Only 20% are just maintaining the LPG without getting much benefit themselves.

**A question of trust** The final session was a panel discussion on information governance with **John Kirkpatrick**, Audit Commission; **Carol Tullo**, National Archives; **Neil Ackroyd**, Ordnance Survey; and **John Skipper** from the Dept for Children, Schools and Families. There were some very un-governmental provocative statements about taking risks, not needing belts and braces and the need for government to withdraw from providing certain services – as long as the raw data could be made available. Issues about data quality, data sharing, authority and responsibility were aired with a key issue being the need for the public to regain trust in government information. Was there ever a golden age?

Professor Rhind summed up the day with the bad news that, paradoxically, UK citizens probably enjoy some of the best government information in the world (as judged by international statisticians) and yet have the least trust in them. Could this be something to do with the messengers? He believes that there are several sets of questions that all public sector bodies need to keep asking – what do they exist to do, i.e. what is their public task?; what data do we need to collect for that task? How much do we really need to know about what other people use it for – and in particular what they derive from it? What data and information processing can we outsource without further eroding the public trust in the information and therefore the efficacy of government decisions and service delivery?

Give us your data once and trust us to store it, use it and pass it on for more efficient services and lower taxes. But what if it is accidentally or deliberately corrupted? What if fallible human operators access – or are blackmailed to access – your information that was collected for a particular purpose but could be combined with other records to your detriment? Who carries the can? Who – and how – do you correct a supposedly definitive dataset? Crown-source or Crowd-source – it doesn't look like we have much choice. Using broadband means broadcasting everything we put on the web. If we live by the web we may die by the web! Listen very carefully – you may only hear this once!

“

*... UK citizens probably enjoy some of the best government information in the world (as judged by international statisticians) and yet have the least trust in them.*

”

# seminar reports **GEO-10**



*The GEO event is ideal to discover the latest technology, talk business and network with old friends and colleagues.*

PHOTOS BY FAITH CLARK

NAVIGATING THE day-to-day world of work is arguably an exercise in dead reckoning. We seek out work to determine the path forward, concentrate on the current job to keep the ship stable and try to avoid leaving anything unpleasant in our wake. The trouble with dead reckoning is that, however accurate the navigation system, it will cause you to drift off course gradually. Resetting position and course requires absolute position fixing and for that we have GEO-10.

As well as staging the familiar show-floor seminars and unmissable Gala Evening, it was the organisers' intention to hold a formal **m3** conference with keynote

give ground surveyors something to do!

Dave Capstick explained Ordnance Survey's interest in CityGML. Customer research within his department has shown a definite need for 3D and a growing interest in some kind of internationally recognised standard for 3D data. CityGML is a topographic information model for virtual 3D city models and is application independent. Capstick explained that the standard covers the four most important aspects for 3D city models – geometry, topology, semantics and appearance – and, importantly, it has been accepted as an official Open Geospatial Consortium (OGC) standard.

**Derived data trap** Both Horgan and Capstick managed to avoid the controversial issue of derived data but **Tristram Cary** (Getmapping Ltd) eagerly plunged in for his presentation on the People's Map, an online mapping service. One of two speakers in the "New Mapping Sources" seminar, Cary argues that the current British mapping model has Ordnance Survey in a dominant position that doesn't leave room for true competition and that major OS users in government and utilities are locked in by the "derived data trap". He is



**GEO-10: busy two days** This year's GEO event – GEO-10 – was again held at Ricoh Arena, Coventry. Supported by 35 exhibitors and attended by nearly 600 people over the two days, the following is a brief report on the highlights from two seminar streams. **Richard Groom** and **Hayley Tear** report.

speakers and a modest price tag attached. However, two weeks before the event it was clear that there would not be sufficient delegates to make this viable and it was transformed into a free-of-charge seminar stream with many of the original speakers but without the keynotes. Here is a quick roundup of the GIS and mapping related topics covered by the two seminar streams. For details of the exhibitors please go to [www.pvpubs.com](http://www.pvpubs.com) where you can download a copy of the *Showguide & Catalogue*.

**New world for OS** **Jon Horgan** is a research scientist with Ordnance Survey. Together with colleague, **Dave Capstick**, he introduced delegates to a new world for the mapping agency – the 3rd dimension. Horgan's talk concentrated on data capture techniques and current research into moving from 2D to 3D. Combining both aerial and terrestrial platforms is tricky. He showed a combined point cloud of aerial data and terrestrial with 'a pretty good disclosure of between 4-6cm' but dark areas of no data meant that use was limited. Digital imagery is 'extremely usable and easy to interpret if flight parameters are met'. Aerial imagery has 'a high level of automation' but you can't always see everything – though 'this does

also concerned that the OS Consultation may change the future of the People's Map, believing that if mapping is free it will ruin the chance for competition. People's Map aims to work with local government to produce definitive mapping that is updated directly from the source of change, giving local authorities free use in return. Cary argues that the market for maps is now much bigger than the cost of maintaining them. A better model would be to remove derived data and open the market to serious competition.

**Alun Jones** (The Geoinformation Group) says that the primary aim of The UK Map is to deliver choice, flexibility and freedom. The modern database of aerial photography is free of third person copyright. Published at 1:1000 scale, it contains nine separate data layers following an "everything in one" product concept. On the issue of derived data, Jones explained that they want people to have freedom but also need to protect commercial interest – 'if you create something you own it' but you can't go off and make another product. Asked if customers have to buy the whole package, Jones replied that it is possible to buy a licence for just one layer.

**Why we need it** Readers will be familiar with the

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**... Ordnance Survey in a dominant position that doesn't leave room for true competition...**

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reasons presented by **Stefan Carlyle**, programme director for the UKLP, in his presentation "The UL Location Strategy: what is it and why we need it" – covering the need to remove barriers to data sharing. Carlyle presented some interesting examples of how spatial information has supported Defra's responsibilities. The utility of GI 'really came home' during the foot & mouth crisis, helping to find burial sites for carcasses. The ability to use data faster and more effectively is important for saving lives, Carlyle argued, and will be less expensive if we are organised.

**The way ahead** The AGI recently asked over 30 industry experts to look ahead to 2015 to help plan for the future including **Robin McClaren** of the Know Edge Consortium (A Virtual Company of Independent Consultants). McClaren's first observation in his presentation on the AGI Foresight Study is that prediction is very difficult! He showed a video with "did you know?" facts that included 'if Myspace was a country, it would be the 5th largest in the world' and 'the top ten 'in demand' jobs in 2010, didn't exist in 2004' – the point being that things are always changing and geospatial information is particularly pervasive. McClaren's observes that people tend to think of location as a small sector – we need to 'discard this baggage and go mainstream' and learn to 'present information in the right way or we will just keep confusing people'.

**Thierry Gregorius** (Landmark) argued that geodata flows naturally in to current global challenges like climate change, water security, food security, land degradation and particularly flooding. Height data, real-time data, remote sensing – the industry can use 'the same skills for a new purpose'. For the future, Gregorius predicts that we will see more mobile technology, augmented reality and 3D – 'there have been many false dawns but 3D is really coming this time'. This will bring greater user participation, more competition and more choice. There is 'a shed load of data out there' and plenty of opportunities to harness it. He concludes that user participation is changing the way that we work with and look at data but that this results in greater use for expertise to interpret data and legal issues, not less.

Dr **Tim Rideout** (XYZ Digital Map Company) demonstrated how MAPublisher and LabelPro plugins transform Adobe Illustrator graphic design software into a GIS that can import and export the most used GI formats, accept live feeds from a GPS, do complex database manipulations and joins between tables, and manage coordinate systems. Users can import various types of data to build up their maps and the LabelPro automated system allows labels to be generated on a map according to rules the user sets up, e.g. prevent labels overlapping and decrease text size if there are too many words.

**Cartography matters** **Mary Spence**, MBE, past president of the British Cartographic Society, told us that

cartography matters even more in the era of the geoweb and free mapping. People are being brainwashed into seeing online mapping as the norm but it's still not good enough, she argues. For example, sometimes the public don't realise that the date on a map is not necessarily the date the map was drawn – it is just the date of the licence for that map. A map is 'a symbolised image of geographic reality' but it also needs to be user friendly – every map has a purpose of use that should define its content rather than complicating it with unnecessary information. Many maps may look good, argues Spence, but are actually bad due to the quality of data.

ESRI UK's **Robin Appleby** showed how ArcGIS technology enables more powerful spatial analysis to better understand situations and inform decision-making. Using crime data including "tweets" from twitter, Appleby showed how data can be brought into a map and then classified according to the user's interest – e.g. types of crime in an area, crimes happening at a particular time of day – but 'this could just as easily be a list of all the products a company sells' etc. He also demonstrated hot-spot mapping, proximity and seasonal analysis functions that can present data in different ways to aid investigations.

**Dysfunctional addressing** **Michael Nicholson** (Intelligent Addressing) asked: What's it worth to know where you are going? 'The address is our most recognisable basic unit of geographic information' and 'is used in the delivery of virtually all public and private sector services'. Where addresses are missing, services are not delivered and where they are erroneous, the cost of delivery increases. EURADIN's (European Address Infrastructure) research on addressing in the EU, for which IA were selected as a UK partner, revealed: 97% confirmed their use of addresses; all respondents, both public and private, had addressing problems; 80% said if the quality of addressing improved it would improve their business operations; 83% felt that if the quality got worse it would damage their business operations; and asked if inadequate addressing costs their business or organisation money, 72% answered yes. GI has no value without addressing, argues Nicholson, but UK addressing is dysfunctional yet it is not a problem the UK government recognises as being in need of fixing. He concurs with EURADIN's recommendation: there should be a single comprehensive and up-to-date national "official" address reference database sponsored, controlled and owned by the public sector.

• For more on GEO-10 read *Geomatics World* May/June issue, out 4 May.



**Stefan Carlyle: The ability to use data faster and more effectively is important for saving lives.**

PHOTO BY FAITH CLARK

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**The address is our most recognisable basic unit of geographic information...**

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# the GI vision for northern ireland



**Above: The current Minister for Finance and Personnel, Sammy Wilson, is shown the use of GI in the NI Fire & Rescue Service.**

NORTHERN IRELAND HAS, over the last few years, gained a reputation of being at the forefront in promoting the effective use of Geographic Information. The power of spatial analysis has been seen in fields as diverse as the location of ambulances, the provision of school transport, the devising of new local government boundaries, and improving accessibility of library services. A significant amount of work has taken place in recent years. This article provides an update of our progress to colleagues across the UK – and beyond.

**It doesn't happen over night. . .** Developing the components of a fully working SDI is a process that needs to be built on over time. Northern Ireland was the first UK region to devise a Geographic Information Strategy – in 2003 – and our work has been evolving ever since. A

authorities access to 18 Ordnance Survey Northern Ireland (OSNI) datasets including Pointer (the national address database), large scale topographic data, and orthophotography.

**A new 10-year strategy. . .** In June 2008 we held a review of the progress of implementation and began the process of creating a new strategy for the next ten years. A wide range of stakeholders from across Northern Ireland government, the private sector and academia were invited to participate through online questionnaires, a stakeholder consultation day and a blog. Input was also invited from the wider community including Great Britain, the Republic of Ireland and Europe. The new strategy set out to set a clear vision for the use of GI in NI in ten years time, and to identify strategic action areas to enable us to get there – building on the strength and success of the previous strategy.

The vision of the new strategy is:

*We will improve services and thereby develop the economy, the environment, and the society of Northern Ireland by placing information about location at everyone's fingertips and supporting the development of sufficient skills and knowledge to exploit this information.*

## Translating talk into action in Northern Ireland

Location based information as an integral part of everyday decision-making is the vision for Northern Ireland. Already the province has been identified as an exemplar. But what are the benefits and challenges ahead? **Iain Greenway**, Chief Survey Officer, Land & Property Services and **Suzanne McLaughlin**, GI Strategy & INSPIRE co-ordinator, Land & Property Services explain.

comment made at the Association for Geographic Information Northern Ireland regional conference last year gave us heart that we are doing the right things:

*"Northern Ireland has the best developed GI Strategy in the UK and is unique in the fact that they are translating it into action"*

– Dr Robert Barr OBE, AGI NI Regional Conference, Belfast  
October 2009

The new NI GI Strategy 2009-2019 "Effectively using information on location"<sup>1</sup> was approved by the then Northern Ireland Minister for Finance, Nigel Dodds OBE MP MLA, and endorsed by the Northern Ireland Ministerial Executive on 5th March 2009. The willingness of the Executive to review the document was in itself testament to the profile that GI has gained in NI in recent years. There were also very positive comments received from a number of NI Ministers reflecting how they thought about the Strategy:

*"I welcome the new Strategy as a means of creating a better evidence base to inform future policy development, both in the Department for Social Development and across the Northern Ireland Civil Service."*

- Minister for Social Development

*"I strongly endorse the value of the proposed GI Strategy for regional planning. The application of this strategy will contribute greatly to a much better understanding of places and the impact of our spatial policies over time."*

- Minister for Regional Development

The implementation of the 2003 Strategy brought real benefits in highlighting geographical information's crucial role in the effective use of funds and improved customer service. It was successful in raising the profile of geographic information in Northern Ireland, through a broad network of engagement between suppliers and users; through the use of case studies and pilot projects; and through the implementation of a GeoPortal: GeoHub NI®. One of the powerful drivers in increasing the potential of GI use in NI during this time has been the Northern Ireland Mapping Agreement (NIMA), a centrally funded corporate supply agreement. This gives all government departments, their agencies, non-departmental public bodies and all local



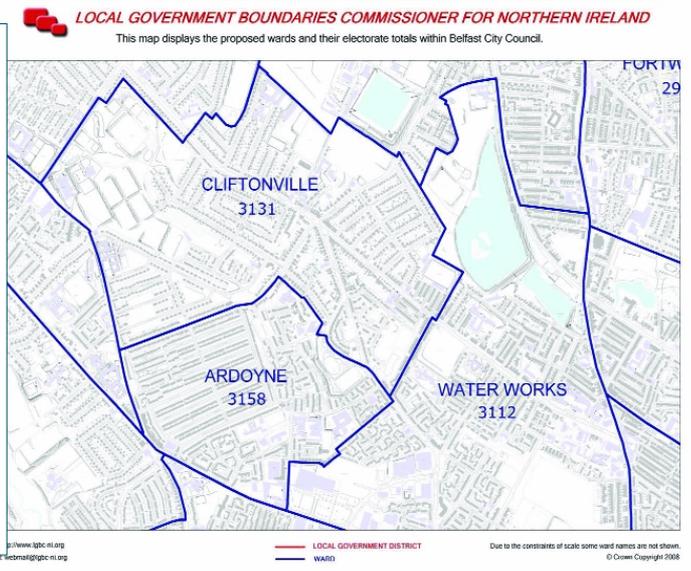
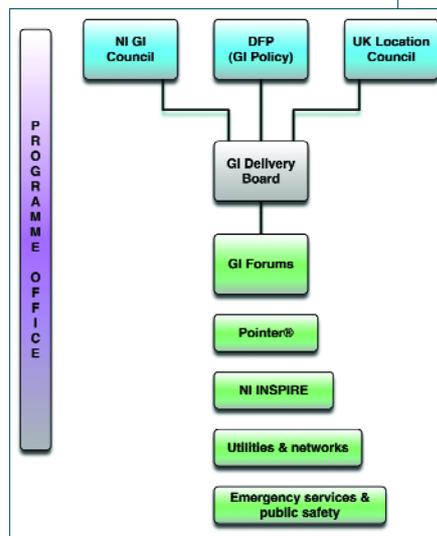
**The willingness of the Executive to review the document was in itself testament to the profile that GI has gained in NI in recent years.**



# the GI vision for northern ireland

Right: Figure 2 shows the NI GI Strategy Governance Diagram.

Far Right: Figure 3 shows new proposed Ward boundaries with electorate totals overlaid on 1:1250 mapping. (Crown copyright 2010).



The previous strategy concentrated on operational efficiencies that could be derived through the use of GI; the new strategy aims to influence senior personnel to embed GI at a strategic level within their organisations to drive efficiencies. Hence it was important to get 'buy-in' at ministerial level for the strategy document as a whole. Embedding a location element into policy will assist in devising more effective and efficient public services in Northern Ireland to the benefit of all citizens.

**Implementing the Strategy. . .** Land & Property Services (LPS), the NI government organisation responsible for mapping, land registration, valuation and rate collection, has lead operational responsibility for implementing the strategy. LPS has found that its broader remit, beyond mapping, has placed it more centrally in government and has significantly assisted it in taking on this role.

The governance structures for the strategy have been designed to continue the success of broad engagement during the first Strategy. They have also been deliberately extended to include a GI Council of very senior people, who have a non-executive role to broaden the awareness of GI and its benefits. The Council is chaired by a permanent secretary; its membership includes the chief executives of the Planning Service and the Roads Service, the Chair of CBI NI, the chief executive of the largest Health Trust and of the Education & Skills Authority, and the Director of NI Environment Link.

The overall governance structure is shown below. The Delivery Board, chaired by Iain Greenway, the Chief Survey Officer, also includes broad representation, including the Statistics and Research Agency, the Department for Social Development, the Further Education Sector, AGI NI, the Assembly Secretariat and Northern Ireland Electricity. (see figure 2).

The links with the UK Location Council are crucial, and a DEFRA representative sits on the Delivery Board. Informal links have also been built

with the other Devolved Administrations in Scotland and Wales; and with the Republic of Ireland – recognising the shared land border.

**Key work streams. . .** The new strategy has identified four strategic action areas:

- **Realising the business benefits** – ensuring that senior managers understand the benefits that flow from using geographic information effectively, so that it becomes a standard part of decision making;
- **Education, skills and staffing** – ensuring that a sustainable, skilled workforce is in place to drive the development of GI and the subsequent increased efficiencies;
- **Data sharing** – improving data sharing to remove barriers to improving services;
- **Data collection and project collaboration** – developing a standardised approach to these key areas.

Some of the key work underway at the moment is summarised in the following paragraphs.

One work-stream concerns the definition of a GI profession within government. This will be twofold, with a dedicated career structure in place for GI specialists, linked into broader professional structures to ensure a sustainable spread of skills within and across organisations. A second element will be that effective understanding and use of GI is seen as a necessary element in all public servants' skill sets.

Another work-stream covers the embedding of Pointer®, the Northern Ireland address database, within government. Pointer is a key dataset providing an address, unique ID, and grid reference for every property in Northern Ireland. The dataset is kept current through a partnership between Land & Property Services, local councils and Royal Mail, guided by a broadly-drawn Pointer Stakeholder Forum. Pointer will play a key part in the 2011 census; its currency and accuracy will be crucial in ensuring the correct delivery of census forms in the

“ . . . the new strategy aims to influence senior personnel to embed GI at a strategic level within their organisations to drive efficiencies. ”





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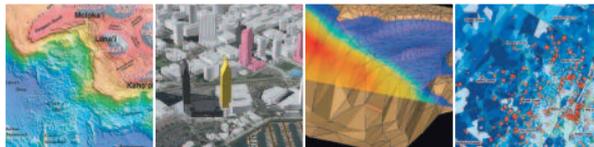
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# open source software



**Above: Figure 2 shows the internal web mapping service in action.**

WHAT – NEVER HEARD OF THE BBC? Don't worry – you are forgiven! The Barrow Borough Council doesn't have the highest profile of the 400 plus second tier local authorities in the country. As the council's website proclaims, it is 'One of the best kept secrets in Britain, Barrow is a Victorian built town with a proud heritage of innovation, surrounded by beautiful beaches and inspiring scenery. It is a destination of surprises.'

It does have a proud history of shipbuilding and particularly for submarines. Vickers built the first Royal Navy submarine in Barrow in 1901 and its

Firstly, the dreaded derived data issue! Any information created over base mapping provided under the Mapping Services Agreement could not, under the terms of that agreement, be displayed on Google Maps. This meant, at best, that we had to duplicate datasets by re-digitising on the Google Map background – a huge waste of resources and a data reconciliation nightmare. Secondly, we needed an Ordnance Survey MasterMap background for some information, which is not available through Google Maps. In addition, Google's API is only free for public facing sites and would have required the purchase of a licence from them for internal use. Finally we decided that we could not rely on a third party service – there is no guarantee that Google's service will continue as required or that they would not start charging or placing adverts. Neither internal nor external services would be within the council's own control.

**Which technology and why?** We drew up a shopping list for our solution:

- OGC Web Mapping Service (WMS) and Web Feature Service (WFS-T) compliance
- 'Slippy' map interface for a better user experience
- Metadata creation and maintenance facilities (ready for INSPIRE)

## BBC goes for OSS

Following our series of articles on the capabilities of Open Source Software by John Fannon, we are publishing this article from **Robin Gawlik** at Barrow Borough Council which has implemented an OSS GIS solution to save money and increase capabilities in the face of the very challenging economic climate facing all local authorities.

successor, BAe Systems, is building the Astute class submarines today. Geographically, Barrow-in-Furness is at the southern tip of Cumbria – beyond the Lake District and on the western side of Morecambe Bay.

One of Barrow's innovations is now the use of open source software for spreading the use of its geographical information across the council's intranet and out to many more potential users on the web. In the summer of 2009, the council decided to explore the possibility of using open source software as an alternative to the use of several proprietary solutions. The reasons included absolute annual cost; affordability of internal web applications; and an improved web experience for external users (who were already emailing their comments!). At the same time the council had purchased an Oracle site licence that included a spatial database capability at no extra cost, and installed open source contact centre software with which mapping integration would be desirable.

**Just use Google I hear you say** We did look at using Google Maps and the API to provide a web mapping solution and actually placed some simple maps with point data on our website for public consumption. This experiment worked adequately for that purpose but revealed issues that stopped further development.

- A stable, reliable and expandable solution that could work with an Oracle Spatial database
- An API for creating internal and external corporate web-mapping solutions.
- Watermarking of all public facing mapping displays

Based on this list the following technologies were selected with their reasons:

- **GeoServer (<http://geoserver.org>)**  
Java based; good 'plug-in' communication with Oracle; ease of set up.
- **GeoNetwork (<http://geonetwork-opensource.org/>)**  
For metadata and future compliance with INSPIRE
- **OpenLayers API (<http://openlayers.org/>)**  
A large range of functionality and similar to Google Maps API
- **TileCache (<http://tilecache.org/>)**  
Watermarking that was not then supported by GeoServer and its GeoWebCache.
- **jQuery and jQuery UI (<http://jquery.com/>)**  
Powerful web page customising and a modern interactive user experience. Ext JS (<http://www.extjs.com/>) was used successfully at first but raised speed and loading time issues with MS IE 6, which was vital and is explained below.



**Google's API is only free for public facing sites and would have required the purchase of a licence from them for internal use.**



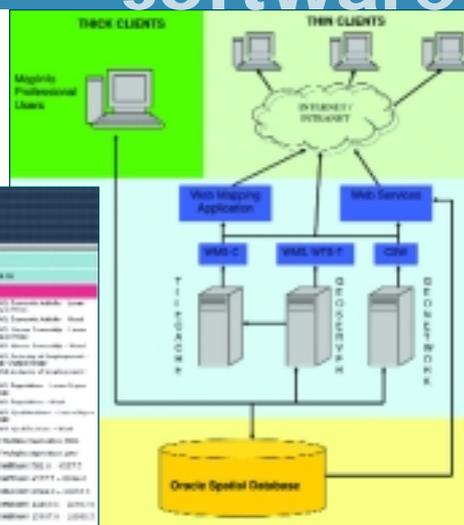
- **Apache Tomcat and HTTP server** ([www.apache.org](http://www.apache.org))  
Do we need a reason?!

We have also used the Google Map Icons project: <http://code.google.com/p/google-maps-icons/> for a set of icons released under the GNU GPL and Creative Commons licence and have actually contributed some new icons back to this worthwhile project.

**Implementation** Implementation of this open source 'stack' has been ongoing since July 2009 and has required climbing a fairly steep learning curve. Familiarity with JavaScript from the Google Maps API experience was very useful.



Right: Figure 1 shows the Barrow Council GI Infrastructure.



Left: Figure 3 shows a simple thematic analysis.

**Stage 1 – Loading base maps (July 2009).** Geoserver was installed with Ordnance Survey raster mapping and viewed using the layer preview option. Conversion of existing raster images into Geo Tiffs required the use of GDAL/OGR library part of FWTools:

<http://fwtools.maptools.org/>.

**Stage 2 – Connecting to the spatial database (July 2009)** Geoserver was tested with the Oracle database by displaying live vector data. This OGC Style Layer Descriptor (SLD) specification was used for formatting the displayed data, though it can be complex for those not familiar with XML.

**Stage 3 – Basic web mapping (August 2009)** Openlayers API was used to show 1 base layer and 2 or 3 other layers. It enables WFS point queries to retrieve data and enables map movement. Further IT support was then required due to the need for extra IT infrastructure.

**Stage 4 – Web mapping front end and tile caching (August -November 2009).** This is where the hard work started! Tile caches were created in two versions – with or without watermarks for external or internal use respectively.

**Stage 5 – Internal and External Roll Out (November-December 2009).** After a successful presentation to management the web mapping was rolled out to the first department with all of their own information being moved into the spatial database for access by this solution or by MapInfo. Simultaneously there was a public facing roll out, though this was not advertised until it had been tested by volunteers.

**Stage 6 – Maintenance/improvement/loading new data. (January 2010 -).** We are now moving the rest of our data from flat files into the spatial database, checking it en route, and making it available on the web-mapping service. We have however decided not to put our large raster imagery holding into the database as that would have required an upgrade to Oracle Spatial just for a few MapInfo Professional users.

**Council Infrastructure** Figure1 shows the infrastructure

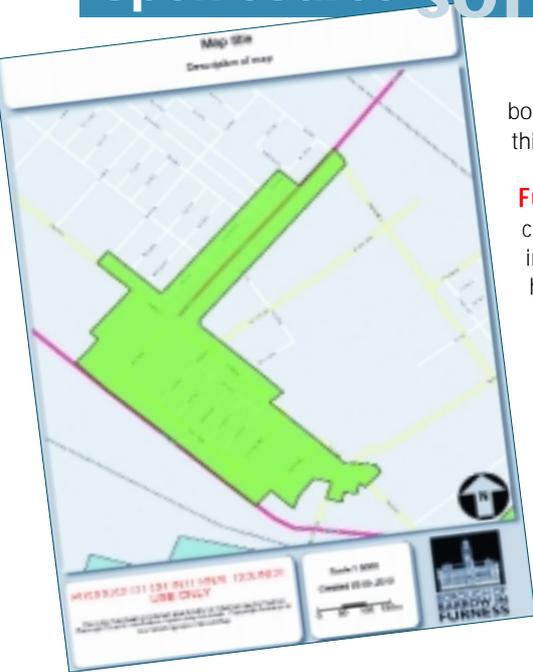
now adopted at Barrow. This is very similar to the diagram in John Fannon's article of June 2009 showing a more open enterprise GIS architecture. Two servers were made available by IT Services – a reused Windows 2003 public-facing server and a Linux based virtual server for internal use.

**Where we are now** Web mapping services have now been in place for a few months and one-hour training sessions are in progress for internal users. In February 2010 we had over 200 datasets available internally with more than half also public facing. Internally we have tried to ensure that all council data is available to all employees. There have so far only been two minor exceptions requiring a separate login. Functionality available includes:

- Display of all council's raster base maps and vector data holding
- Point or area searches and gazetteer search for properties
- Overlay sketching tools
- Printing of maps with/without user's own sketches (internal only)
- Simple thematic analysis using dynamic Style Layer Descriptions
- Pre-defined reports on selected areas, e.g. mailshot address list (internal only)
- Customised home location and favourite layer
- Find my nearest
- Measuring areas and distance from underlying base map
- Emailing of links to enable re-creation of a specific map and sketch outline
- Displaying of images, PDF documents, and You Tube movies inline.
- Date filters on selected datasets and login for secure datasets.

Internally it has been very well received and one delighted internal user said " this is brilliant – I don't even

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*...the infrastructure now adopted at Barrow. This is very similar to the diagram in John Fannon's article of June 2009 showing a more open enterprise GIS architecture.*  
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Above: Figure 4 shows a sample PDF map created using Mapfish on the Barrow web-mapping service.

bother looking at Google Maps anymore – this is much better”. (See Fig 2 & 3)

**Future** Development continues! We are currently integrating editing capabilities into the web mapping using WFS-T. We have also had interest from local secondary schools wanting to make use of the mapping for geography and other subjects and also suggesting that they create data for us, such as tourist information in other languages and promotional videos that we could host for them.

**Lessons learnt** What have we learnt from this experience? There are the good things, the bad things and the downright ugly things!

#### The Good

- Substantial savings compared to paying for licences and implementation.
- Ease of integration with other internal systems.
- A single reliable authoritative source for spatial data.
- Easier management – two minutes to install a Chrome browser – all other changes for web mapping and data are done centrally.
- Really good IT Section Support – without this the project could not have happened!
- Active senior management support – essential before acceptance and roll out.
- Open source community support – a fantastic free resource that is much more responsive than any proprietary equivalent.
- User feedback – positive without exception with lots of volunteers and pleasant surprise at the capability achieved with such limited resources.
- Control and freedom! We can do what we want – integrate – improve – innovate. No proprietary lock-ins. New functionality can be added with ease. For example the Mapfish printing module was added to our internal web-mapping service with only two days work, giving every user a simple PDF creation facility – see Fig 4.
- A learning experience – we have had a great opportunity to learn and been able to take real pride in what we have achieved.

#### The Bad

- Internal Browser – the council's default browser is Microsoft's Internet Explorer 6 which does not perform well with modern web 2.0 software and detracts from the user experience. Google's Chrome browser was therefore installed on any machine requiring access to the web mapping. It is not set as the default browser; can be installed without administrator privileges; and has a fast JavaScript engine.
- Browser Compatibility – we still have to support

IE6 because it is still used by at least 10% of the on-line population. We had little or no problem with Firefox, IE8, Chrome, Safari and Opera. Our main issues were with the abilities of JavaScript engines – or lack of them!

- Control and freedom! This is a double edged sword – no rest for the wicked and there is a certain amount of pressure on internal resources. More onus is placed on internal resources to integrate/improve/innovate.
- No formal support – this has always been an excuse for not wanting to go to open source. “What if I come across a problem I cannot solve?” In fact this is more often a ‘good’ – see community support above – provided that we choose products with large communities of users. The more users the better the support!

#### The Ugly

- JavaScript coding can be ugly at first – more experience is needed to ensure that it is more easily maintainable and expandable – more elegant even?
- Styling of web pages also needs practice. Earlier versions were very ugly!

**Conclusions** After only a few months of effort we have a service that meets most of our immediate requirements; is totally within our control and can be developed to meet new challenges very quickly. We are well placed to comply with INSPIRE and know that proprietary systems can be ‘plugged’ in to our spatial database if necessary. We have achieved this without paying any new licence fees and without incurring any extra expense. As John Fannon's articles indicated, this is a perfectly valid choice for any organisation that needs to deliver GIS functionality to internal or external web users. The BBC can be proud of this latest innovation, which provides better services for less cost.

#### Credits

Thanks go to our Senior Management and the IT Department for all their help and support to date. Thanks also to Barrow Borough Council for the use of the images from their system and for permission to publish this article.

#### About the author

Robin Gawlik is the GIS and Information Officer at Barrow Borough Council and was responsible for these developments. He is in charge of GIS and the Local Land & Property Gazetteer, does NOT have an IT background but has worked in the council for over 20 years and with GIS for 15 of those.



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**No formal support. . . this is more often a ‘good’. . . provided that we choose products with large communities of users. The more users the better the support!**

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# columnist adena schutzberg



Adena Schutzberg is  
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A FEW YEARS AGO I proposed and was later asked to teach a course called Comparative GIS in a Masters in GIS programme here in the states. The goal was not to make students experts in GIS software packages, but to get them to think about how to compare the different options available. I had students look at topics such as the user interface, adherence to standards, data storage formats, customisation, analytical and cartographic capabilities and more. They touched at least four different desktop GIS packages; used two different standards to connect clients and servers; evaluated several web clients; and explored "new to them" analytical and cartographic techniques during the ten-week course. The course was difficult, but the consensus was that it was valuable.

**Riding the waves** When I began putting the course together, the big question related to

up to this point. GIS rode, and rides, the waves of Visual Basic, Java, Java Script, AJAX, Flash, Flex, SilverLight, Blackberries, iPhones, Android, Amazon Web Services, Google Earth, Bing Maps, open source offerings, Google's App Engine and several dozen other technical advancements launched each year.

**Weaving in new technologies** So, would a course simply ensure that students are familiar with these topics (or the list appropriate for that year's situation) and how geospatial technology relates to them? I don't think so. My original course provided a framework with which to compare GIS offerings. And, I think the updated version should do the same thing, just somehow weave in this new set of underlying technologies and making clear that at any point in time, the student would need to make his or her own list of tech trends that would be relevant, and evaluate the relationship of GIS to those trends.

## The new Comparative GIS

Are there too many keeping their heads too far down in the GIS world? **Adena Schutzberg** thinks so. The once monolithic world of GIS now needs to be able to plug in to new hardware, software and human infrastructure.

beginning a GIS implementation revolved around the desktop software. There was some sense that an enterprise and/or web implementation might be included, but that was often a second step after settling the desktop question. Now, just a few years later, more organisations are jumping straight from nothing to an enterprise/web/handheld/thin client solution. I equate this change with the choice some countries made to skip the "wired" communications infrastructure and jump directly to wireless.

That new reality, which places the desktop as a second or third level player in an implementation, began to throw a wrench in my course. It made less and less sense to base the course on desktop GIS. Still, I believe the core topics were and are still relevant. Now, I suggest, the big question for GIS, many other IT implementations, revolves around architecture, by which I mean both hardware and software structures. With the growth of and lessening expense of handheld devices, the near ubiquity of software development kits for all kinds of platforms and functions and the maturity of cloud facilities, the options have exploded.

What then would a Comparative GIS course look like in 2010? One part of the answer, I feel confident, is that whatever the syllabus may be, it'll be a moving target. GIS has and will continue to follow whatever technology waves appear in the coming months and years. That's what's happened

So, for example, if I were considering an implementation to be up and running in a year or two, I'd want to at least consider the role HTML 5 might play. That's one of those technologies that's "coming soon" but is not on too many GIS practitioners' minds just now.

A second part of my response to the question revolves around ensuring students keep their eyes open regarding technology. I feel and have felt for some time that once involved in GIS far too many practitioners, for whatever reason, keep their heads too far down in GIS. They attend only GIS conferences, talk only to GIS people and don't explore technology beyond their selected vendor. That is not, I think, the recipe for selecting the best solution for the job.

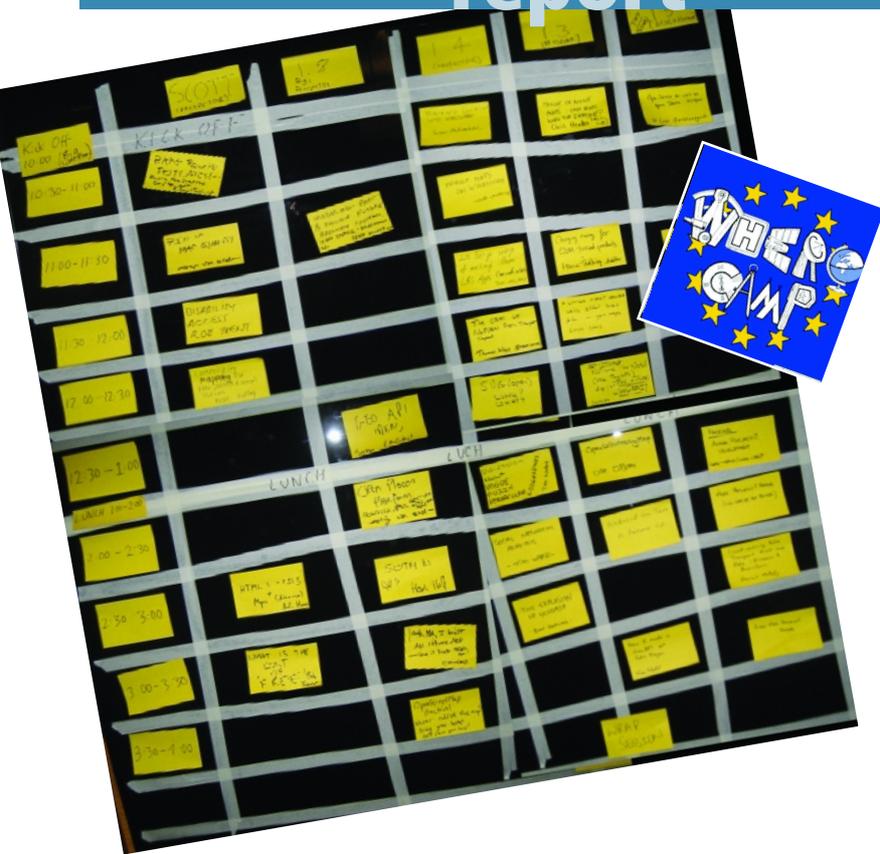
The final big idea of a Comparative GIS course in 2010 relates to finding a balance. As more and more products and services offer up a basic set of functions, the decision to select one over another will be based more and more on other factors such as the user interface or the solutions customisability or its ability to integrate with other packages. While in the past GIS was a monolithic part of a solution, now more than ever it needs to be able plug into (in all possible meanings of that term) an existing hardware, software and human infrastructure. I'm hopeful students completing a course like this will be better suited to step into a leadership role in any organisation using GIS.

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**GIS has and will continue to follow whatever technology waves appear in the coming months and years.**

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# unconference report



*No risk of "death by powerpoint" – an unconference is all about spontaneity! Speakers just turn up, put their name and topic on a Post-it note and stick it on the wall to show they have something to say.*

There were about 180 people there from across Europe (although to be honest it was largely Brits) enjoying two days of discussions about geo. **Gary Gale** of Yahoo opened the event talking about his 'theory of stuff', which was a quick run through ubiquity, location based social networks and some future possibilities for mobile location. In many respects, Gary's intro gave an insight into the whole day's agenda.

**Walking with Dinosaurs** There was a big choice of sessions (with up to 5 or 6 streams) attracting audiences from a few to 50+. I sat in on sessions about Open Street Map, location based games strategies, some pretty philosophical stuff about sense of place and capital, map visualisation as art and inevitably a heated discussion about the value in Making Public Data Public led by **Eddie Curtis** of Snowflake entitled "Walking with Dinosaurs". Perhaps the best title of the day was for a presentation called "why metadata is shit" from **Charles Kennelly** of ESRI (the room was packed and the discussion was serious and thought provoking).

**Do we need business models?** I talked about business models (no slides because screen wouldn't connect to my Mac): "Without a business model we are all FCUK'd" The basic premise was that to turn

**An unconference** The Californian Where2.0 style conference came to London last month. **Steve Feldman** sampled what was on offer at the eclectic wherecampEU event to which speakers just turn up and set their stall out in the hope someone will listen to them!

ON THE 12TH OF MARCH, I was fortunate to have a ticket for wherecamp eu. I say fortunate because this was a free "unconference" and tickets, which were released in blocks over a few weeks, were grabbed within a couple of hours of release. Hardly surprising really, if you knew what to expect, but I didn't. This was my first unconference and I was a bit puzzled as to how this loosely structured event would work.

After three years of chairing GeoCommunity, I thought I knew a bit about organising a geoconference. But at an unconference there is no programme, you just turn up and stick your name and topic on the wall to show that you have something to say or to talk about and people turn up and join in. Some slides, but way less than in the "death by PowerPoint" or drowning in keynote days that we have all suffered silently. Spontaneity, improvisation and participation seemed to characterise the day.

your idea into a successful business you need to know who your customers are; what they are buying from you; how much they will pay (and how much it costs you); and why they will buy from you rather than someone else. It was a lively session with people standing up and giving elevator pitches to feedback from the audience. One guy from Google did not see the need for giving thought to a business model; he said 'Why do you need money?' – turned out that he had a successful bedroom business that he was running outside of his day job (a mobile browser for iPhones and Androids that didn't store your browsing history so your girlfriend wouldn't know you had been watching porn) so maybe I had it all wrong. To be honest I didn't know there was that much demand for mobile porn.

**Starting to understand** wherecampEU was run by a group of volunteers who persuaded sponsors



**Spontaneity, improvisation and participation seemed to characterise the day.**



to fund the event, found the venues (Wallace Space on the 12th and *The Guardian* on the 13th) and caterers and beer suppliers. wherecamp.eu was free to the delegates encouraging a more diverse audience than at most conferences. With no predetermined agenda, different venues for the two days, no delegate fees and no supporting exhibition you may be starting to understand why it is described as an unconference. But it wasn't that different despite the different organisational and funding model – there were a crowd of people who were passionate about geo and open data talking geo, networking and having fun, that seems pretty like another geo-conference that I have been involved with in the past.

**Geo-whating?** Stephen Booth asked me if wherecamp wasn't just something that rhymed with "geobanking"? To the extent that geo people talking to each other might be described in this way then all geo conferences are open to that description but if anything this event attracted a

broader audience than many more staid conferences and it was definitely not the "same old same old". Everybody who works within geo or is interested in it benefits from the occasional opportunity to meet other people with similar interests, learn from each other and share our love of maps and stuff.

**Batteries recharged** It was a great day and thanks and admiration go to **Christopher Osborne**, Gary Gale and a load of other people who put the event together. My geobatteries were recharged at the end of the day and it prompted several thoughts about the conventional approach to running a conference. GeoCommunity could borrow a bit from this unconference.

You can look at the agenda, some of the slide decks and some video from wherecamp eu at:

<http://www.socialtext.net/wherecamp/index.cgi?wherecampeu>



*...people who were passionate about geo and open data, talking geo, networking... that seems pretty like another geo-conference...*



Skyline image courtesy of CASA, UCL

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# the GISPro interview



## The Snape File

A geographer by nature, Nic joined 1Spatial, then Laser-Scan, in January 2001 as New Business Sales Manager. After working on the early early commercial exploitation of the Radius Topology programme, he was part of the successful management buy out. Since then he has implemented 1Spatial's Operations processes and led the successful pursuit of a number of strategic contracts.

Prior to joining Laser-Scan, Nic spent 13 years working for the Canadian System Engineering company, MDA in various roles in Business Development, Project Management and Sales, based in Vancouver, Malaysia and Farnham in Surrey. Before emigrating to Canada in 1987, Nic spent 18 months working on behalf of the UK National Remote Sensing Centre.

**1Spatial has just moved to new offices in Cambridge and you have just taken over from Mike Sanderson as CEO. Does this represent a new era for the company?**

I think the changes represent a strong signal that we are feeling very confident about our future and so we can change the hand on the tiller. Although Mike and I are different people and the company has entered a new era operationally, there will be no change in direction or goal – maybe just how we get there. Mike and I have worked very closely together over the last nine years. For most of that time he has been focused on setting our strategic direction, establishing our

sustainable environment and economy.

**The company has reinvented itself since Mike took over just before 9/11. How would you categorise that change of direction and how successful has it been?**

I joined a couple of months before Mike when the company had a limited number of core customers and highly complex technology. While it was the Rolls Royce of mapping and charting, it did not lend itself to market expansion. As soon as Mike took over, he worked out that the only way forward was to stop calling ourselves a GIS company and to stop calling Gothic (our object oriented technology) a database. He demanded that we find a way to work with the market-leading database, Oracle. He repositioned the mindset so that we focused on building strengths in mainstream technology underpinned by geospatial data. The 'Laser-Scan' role was to focus on the spatial data itself and start building components that automated processing, transformation and maintenance of data.

Once we freed ourselves from Yeoman in 2003 (through a management buy out – MBO) and we re-sized the company based on realistic revenue expectations, we experienced year-on-year growth in turnover and profitability. This had never happened

## Nic Snape: managing the transformation of information into knowledge

A change in 1Spatial's senior management sees Nic Snape take over as chief executive. GISPro's **Robin Waters** talked to him at the company's Cambridge headquarters.

position in the marketplace, our profile and our external image. I have been focused on winning and delivering the key contracts that we identified as being critical and positioning us for growth.

We believe we have now reached a position where our value proposition in the marketplace is very clear and the benefits of a systematic approach to measuring data quality are recognised. We are leveraging this success with a focused, operational approach, which will realise this potential. Mike's strengths and his motivation are thinking about new ways of doing things and as Executive Chairman he will focus on the next phase of our strategic development. He's already started to identify other key areas where we should be investing, leaving me to manage the day-to-day business.

Our office move was timely in enabling this change in management. One of the main reasons for moving was that the old building was becoming increasingly unfriendly, both to the environment and to the employees. Our new building is consistent with our position as a company that works to provide information, which can be used to create a more

continuously in the very long history of the company. We are now in our ninth year of trading since the MBO and as well as profitability, we have made several self-financed acquisitions and significantly widened our customer base.

**We have seen a revolution of expectations for 'geospatial' since Google map appeared in 2005. Where do you think we are on the Gartner hype curve?**

There is no doubt that Google Maps did more for the profile of the location sector in six months than the industry had managed in the previous 30 years. From our perspective, the most important aspect is that it shifted the focus away from the technology and the difficulties of being an owner/manager towards the data itself. It also made it ubiquitous because of Google's reach. All of the technical complexity is hidden behind the simple and effective browser and the user's attention is focused on the data. This reinforced our position as being an IT company that understands spatial data not a GIS company. More importantly it focused people's attention on the

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**... the only way forward was to stop calling ourselves a GIS company. . .**

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condition of the spatial data itself, as the more widespread its use, the more focused people become on its provenance and fitness for purpose.

In terms of the five stages of the hype cycle we are possibly somewhere between the trough of disillusionment and the slope of enlightenment. Location has certainly become fashionable with the massive increase in use of satnav, online mapping and directions, even using GPS to track your walking routes when on holiday. However, we have now reached the point where the public are questioning their privacy with services like Google Street View. Once these issues, including the re-use of Public Sector Information, are resolved then the industry will be closer to the plateau of productivity, where the advantages of location become even more widely accepted.

**1Spatial has been a major sub-contractor on the Ordnance Survey Phoenix database development project. Can you tell us something about what Phoenix sets out to achieve and what part the company has played?**

Ordnance Survey Great Britain (OSGB) provides a seamless digital representation of the real world, containing more than 450 million uniquely identified geographic features. The data is updated daily and is a consistent framework for the referencing of geographic information. In order to consolidate and build on existing data, they need a full set of production tools to manage the seamless capture and update of an integrated large-scale geospatial database. The implementation of these tools is the Phoenix project, which started in 2002. It was well publicised in the 2006-07 OS accounts that the original project hit some difficulties in trying to process the amount of real world change. Phoenix was therefore restarted to shift the architectural solution away from a GIS approach. The new project takes advantage of the inherent scalability provided by adopting mainstream enterprise technologies in a service-oriented architecture.

As part of the Intergraph and Snowflake Consortium, 1Spatial is responsible for delivering the core database design, the transaction management infrastructure, the data validation and lifecycle maintenance services and the overall workflow orchestration. The key to the success is the integration of specialised geospatial processing components from 1Spatial within an Oracle technology stack. This combination of technologies provided the necessary infrastructure to implement the scalable solution that OS requires.

The resulting Enterprise Information Architecture is exactly the vision that our chief technology officer, Dr Paul Watson, had been articulating since 2004. Phoenix has enabled 1Spatial to demonstrate that spatial data management is not about GIS and a layered view of the world. It is about treating spatial data as real-world objects and using scalable, intelligent, geo-processing services within a service oriented architecture.

**In the 1980s and 1990s Laser Scan, as the company was called, was a major provider of mapping software for UK and other national mapping agencies – both civil and military. Can you tell us how you have developed from this base and whether you are still involved with these agencies?**

National mapping and charting agencies are still the foundation of our business. Internally, we call this market the Data Providers, which fits with our data centric view of the community. We are actively engaged with OSGB, Ordnance Survey Ireland, Land and Property Services Northern Ireland, No. 1 AIDU of the Royal Air Force, IGN France, IGN Belgium, KMS Denmark, Swedish Maritime Administration, 11 of the 16 German States (Adv), JUPEM (Department of Surveying and Mapping Malaysia), Land Information New Zealand and PSMA Australia as our core customer base. All of these customers are working through the evolution from cartography to the delivery of geospatial data and information on demand. This change means that this community needs to look at new tools that support data management and on-demand delivery, not simply map production.

We are particularly engaged in the migration of our customers' core data models away from the points, lines and layers of maps to real-world, feature-based, object databases. We expect to grow our core market as a result of this change. These new data models require our core object processing capability to maintain the required levels of intelligence and quality environment, while maximising automation to meet the increasing demand for operational efficiency.

With customers such as the Adv in Germany and IGN in France the focus is on providing infrastructures for automated generalisation of the large scale data to produce smaller scale products with minimal manual editing. Automated generalisation is becoming more important as the data provider community responds to the demands of the market place for more current, consistent and accurate digital geospatial data.

**Can you give us an idea of the range of other customers that you have?**

The other markets that we serve are the government departments and utility companies that use the data products created by the data provider community. Internally we call this the Knowledge Sector. Typically, these users take base reference data and integrate other data on top of it to create the knowledge bases they need to run their operations.

Our primary offering in this marketplace is Radius Studio, which provides the necessary toolset to manage the transformation of data to knowledge. Typically, this means applying complex business rules for managing the relationships between the different data types and the varied levels and quality of data attribution.



**...Google Maps did more for the profile of the location sector in six months than the industry had managed in the previous 30 years.**



# the GiSPro interview



## 1Spatial's vision of the supply chain.

A prime example of this approach is demonstrated by our work with Transport for London (TfL). We supported TfL in the creation of the knowledge base that will support their Information Access Portal (IAP). IAP will be an online application for Customer Services, in Surface Transport Communications at TfL. The application will enable the customer services team to be the single point of contact for public enquiries regarding all Surface Transport's assets and networks including bus routes, bus stops, bus locations, Transport for London Road Network (TLRN), street assets, congestion, accidents, and much more.

The TfL spatial data is stored and managed in an Oracle Database. 1Spatial was responsible for conflating the major networks (bus routes and TLRN) to Ordnance Survey Integrated Transport Network (ITN) data. This reference to the ITN data enables the customer services team to answer questions such as 'which bus routes travel along road x?' The common referencing of the data enables joined-up analysis with data originating from the disparate source systems. An example would be the impact of a traffic accident on a bus route.

This sector of the spatial market is where we expect to see our biggest growth over the next few years. As the country evolves towards a knowledge based economy, we expect to see an increasing demand for our tools and services as customers strive to engineer more intelligent knowledge bases to increase efficiency in decision making. We believe our object-oriented approach to transformation and data integration is the key to this transition. If we look out of the window, we can't see any layers, just features in the landscape. We need to treat the data and information that describes these features in an object-oriented, intelligent way.

1Spatial is a participant in several European projects that started with something called AGENT back in the 1990s. How have these evolved and how does the INSPIRE Directive fit into the company's future strategy?

AGENT is a great example of European co-operation delivering real results. Automated generalisation is becoming increasingly important in the evolution of data providers from production of maps based on

cartographic editing to the delivery of geospatial information products on demand. AGENT stands for Automated GEneralisation New Technology and is an approach to processing spatial data based on artificial intelligence. Active mathematical 'Agents' process data against a set of goals and constraints, constantly checking with each other that they are happy with the results. This adaptive processing automates the manual decision-making employed by cartographers, with the benefit of significant improvements in productivity and data consistency.

This strength in generalisation and experience in successful European partnerships led to an invitation to be a technology partner in a key eContentplus project coordinated by EuroGeographics. The European Spatial Data Infrastructure best practice Network (ESDIN) is primarily a bridge between the theory and the practice as defined by the INSPIRE Directive towards implementation and usage of interoperable geographical data by spatially enabled societies. Within ESDIN, we have been working to define best practices for data quality management and data transformation, notably schema transformation of geospatial datasets. This has resulted in a service and solution we call Tried and TestedTM, which provides a cost-effective and proven infrastructure for transforming data from departmental structures to be compliant with the INSPIRE specifications without changing the underlying data or business processes.

This experience and knowledge put us in a position to win the project to develop the Technical Guidance for the INSPIRE Transformation Service, specifically schema transformation of geospatial datasets. In partnership with RSW Geomatics and Rob Walker Consultancy, we believe that the award of this contract is a great testament to the leadership that British companies can take in European projects.

**Several years ago I listened to a talk at your annual conference about the 'supply chain'. This has become a major theme for much of your software. Can you explain why this is so important?**

The supply chain is a key approach for us, because we believe it reflects the reality of how successful industries work. This is especially true if you focus on how the raw materials – in this case geospatial data – are transformed from one state to another as they move through the supply chain. The ultimate goal must be to have a knowledge base against which effective decisions are made. The goal is to support economic development by continually adding value throughout the supply chain. The diagram above represents this supply chain.

For 1Spatial, our key added value is the underpinning of the provenance of the data as it is transformed from one state to another. Raw data captured by the data providers must be current. We market our offerings in this area under the umbrella

**It is our belief that location will become the key index into knowledge bases and therefore it must be engineered in an efficient and interoperable way.**

term Mapping the Now – the key attribute of this data is that it must be current. Secondly we turn this raw data into consistent information products and make these available in a timely fashion, pulled by users not pushed by suppliers. This we term Information on Demand and it is where our automated generalisation technology is key for cost-effectiveness and flexibility.

The next step is to start to transform this information into knowledge. Knowledge is required by institutions and citizens who make decisions about allocating resources; it is vital for an effective process. It is our belief that location will become the key index into knowledge bases and therefore it must be engineered in an efficient and interoperable way. Radius Studio has been proved to significantly improve the quality of this process.

With Radius Studio, a user is able to define rules by which knowledge can be understood and interpreted. The mathematical base means that results are consistent. Additionally, the inherent object structures used ensure that real-world relationships can be modelled and maintained. This is important. There are no 'layers' in the real world. There are features in a landscape, which are all interrelated and connected to each other.

Finally, we provide tools for Knowledge Access. These are web-based solutions and services that enable spatial query of knowledge bases. The result of the query might be a map, or it might be a document related to a particular spatial location.

**One of the buzzwords of 2010 will be 'trust' – trust in politicians; trust in public sector organisations; trust in data and information. How can 1Spatial contribute to the last of these and might it not even help with the first two?**

Our strapline is unlocking data, empowering business. By unlocking data, we mean that we will address two of the key issues identified in the UK Location Strategy that restrict the benefits that are gained from spatial data applications:

*"Current users of geographic information spend 80% of their time collecting and managing the information and only 20% analysing it to solve problems and generate benefits. We need to address this imbalance."*

*"Too few government-owned datasets that incorporate location can be easily assembled and analysed with reliability from across local and central government bodies. There remains too much duplication, too little reuse and too few linkages across datasets, which are required to support policy implementation".*

The empowerment comes from ensuring that the data is accessible, easily shared and, above all, that it can be

trusted. At 1Spatial trust comes from being sure about both the quality of the data and the integrity of the data across the supply chain. Quality is at the heart of everything we do. Quality means the 'degree to which a set of inherent characteristics fulfils requirements'. This is the ISO definition and we think it fits well with the need to repurpose and reuse data. This data may have originally been collected for one purpose and is now required for another.

We think that the objective should be to make the supply of spatial data as trusted as the supply of cash to an ATM. To me it makes sense that if we can trust the data, information and knowledge because we can audit it at any stage in the supply chain, then we are more likely to trust the government departments and politicians who either supply it or interpret it.

**With the global perspective that you gain from your customers, are there any particular business models or other types of experience that should be noted and exploited by others?**

We think this is a very exciting time. There is a consistency in approach and architecture across the globe. Data models are becoming more sophisticated, and closer to real-world relationships. Mainstream technologies are being enhanced to manage spatial data. Spatial query is a generic device for locating information and using knowledge. Maps are key, but are not the end goal. They are becoming views into dynamic, spatially structured, knowledge bases.

PSMA Australia in particular is approaching the spatial data supply chain in a very constructive and efficient way. Data capture is localised, undertaken by those people that know their environment best, and to specifications that are fit for their purpose, and clearly documented. By capturing those specifications as a set of mathematical rules, then data can be transformed to other specifications, or can be more easily understood and shared. PSMA Australia then acts as a national aggregator of local datasets, ensuring unified data quality and consistency, and using automation to reduce costs. The provenance of the new data products is known, can be measured, and the data is therefore more readily trusted. This award-winning approach is noteworthy and we recommend that other organisations learn more about it.

A close working relationship is developing between PSMA Australia and EuroGeographics, which should then benefit us all in Europe via initiatives, such as INSPIRE. There will be a joint presentation from these organisations at the INSPIRE Conference in Krakow, Poland in June this year.

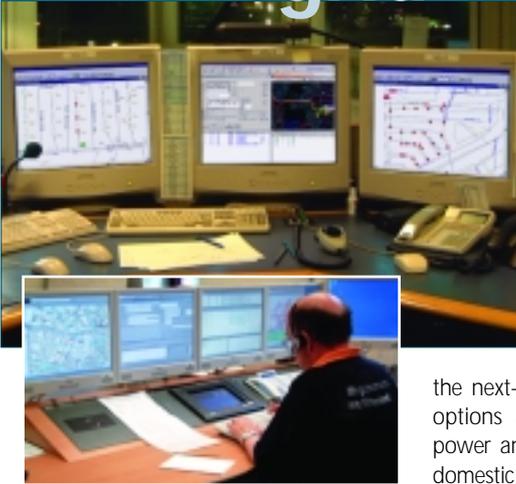
The main thing we see from our customers is a shift to a more scalable, IT environment rather than a GIS approach. This maybe a contentious way of phrasing it, but we are not making the investments, our customers are...



**Maps are key, but are not the end goal. They are becoming views into dynamic, spatially structured, knowledge bases.**



# the smart grid



*Above: Examples of Smart Grid command and control centres. Courtesy of Intergraph.*

GOVERNMENTS AROUND THE GLOBE acted quickly to initiate recovery programmes when the global economy took a dive at the end of 2008. Large sums of public money were committed to kick start economies, with a share aimed at infrastructure projects under the heading of 'Smart Grid'. The Smart Grid describes

the next-generation networks that offer new options and efficiencies in distribution of power and other utilities to consumers, both domestic and commercial. In practice there is a heavy focus on the power network. Investment

in Smart Grid initiatives also ticks other important boxes for governments – making sure that energy is not wasted and working towards a more sustainable future.

As well as the political will, there is big money available to support these projects. In the US, one of the first major acts of President Obama's new administration was the American Recovery and Reinvestment Act 2009. This authorised US\$4.5 billion for Smart Grid projects, of which

businesses may find themselves making minute-by-minute decisions on switching on their generators, either to power their factory, or sell to the grid. This closer connection to the consumer and greater involvement with the user of the grid has implications for the records maintained by infrastructure companies. What we used to call mapping the last mile is now crucial to understanding the connection of each consumer. Network managers need to know where occasional, distributed generation is entering the grid, whether from industrial sites or roof top solar panels, and the impact it has on the overall flow. It is clear that this new communications network creates demand for new technology, devices, software and services throughout the system – from the generation plant to the consumer's meter.

The advanced/intelligent/smart meter provides in many cases the first step in a Smart Grid implementation, and there are dozens of meter related projects already in progress. They can be seen across the US from San Diego Gas and Electric to Florida Power and Light, in Europe with Italy's ENEL and France's ERDF. Projects in Russia, India, China and Australia are all dealing with the challenge of installing and connecting a new meter in every supplied premise. Once in place,

## GIS and the Smart Grid

The evolving next generation of power distribution networks will provide fertile ground for GIS argues **Christine Easterfield** of Cambashi Ltd, an industry analyst, market research and consulting company focused on the use of technology and particularly information technology.

US\$2.9bn had already been allocated by January 2010. A further US\$32bn was authorised for energy efficiency and renewable energy projects, of which US\$25.4bn has been allocated. In 2009, the UK government announced its plans to have every home in the UK supplied with a smart meter and, at the beginning of 2010, announced support of up to £100 billion for off-shore wind generation projects. There are similar patterns around Europe and the Asia Pacific region – power generation projects must have 'sustainability' qualifications and are expected to fit into a Smart Grid. Smart meters are the first stepping stone towards a Smart Grid, and that is what many early implementations are focused on.

these new meters can communicate with the supplier to enable variable tariffs for the consumer, monitor interruptions in supply (planned or otherwise), get an accurate picture of energy usage and ultimately deliver a more satisfying service. It also means that details of what power has been used at which rate is easily available to the consumer and the supplier's billing department, bringing an end to the estimated bill.

**Where GIS can contribute** Where does this leave GIS? Given that everything is somewhere, GIS should surely fit into endless niches relating to the implementation of Smart Grid projects.

There are a wealth of standard GIS applications used by the logistics and contracting companies engaged in, for example, the efficient deployment of smart meters. From straightforward routing for deliveries of the meters in the shortest time or distance, to mobile workforce tools that record where and what is installed, there is much for GIS to contribute. Just consider the capital projects that need to use GIS-based planning and design tools to build new network extensions and connect into the existing grid. Between energy generation and consumption is the transmission, distribution – and now communication – network. Upgrading the transmission and distribution infrastructure is a major part of improving efficiency in the network, as is managing capacity in the new

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**What we used to call mapping the last mile is now crucial to understanding the connection of each consumer.**

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**Key technology shift** Managing the energy grid in its traditional sense, as a one-way channel from source to sink, from generation to consumption, is all very well but a key technology shift with Smart Grid initiatives is enabling two-way communications that create the possibility of a dialogue between the consumer and the supplier. This results in a consumer who knows how much power they are using, and at what cost, and a utility that has better management and forecasting tools for its network. It enables prices to change in real-time, and blurs the distinction between supplier and consumer, enabling the consumer to become an occasional supplier as local generation facilities become a reality. Manufacturing

communications networks, but there is now a wider range of energy sources to be considered that will lead to re-engineering of the network to manage that supply. Distributed generation, micro generation, new renewable sources and the cleaning up of existing plant all have implications for network design, additional control equipment and new working practices. New investment in intrinsically clean generation technologies such as wind farms, hydroelectric and nuclear will be needed, with Carbon Capture and Storage, though largely unproven, providing a technique for making the plentiful coal stocks meet strict carbon limits.

The recent Smart Utility Conference, held in London in December 2009, provided a great forum for utilities to exchange ideas and it was perhaps surprising that the major GIS suppliers were not there.

Not that these suppliers are inactive. ESRI decided that it needed more information and, last year, they commissioned a survey that asked utility companies "Is your GIS Smart Grid ready?" Though completed in September, the survey results are still being collated to provide a detailed response to each of the two hundred and twenty six participants before being published more widely. The results are perhaps not too surprising – most ranked 'smart grid readiness' as strategic to their plans, though none has achieved readiness in all areas. The majority have issues keeping their data up-to-date, with around 25% having data over six months out-of-date, only 30% managing to update data within ten days of work completion and just 10% updating their GIS data within one day of work completion. Perhaps most telling is that less than 70% have a complete model of their primary network. "The survey results show that utilities see GIS as strategic to smart grid in terms of their data management and analysis, their field work, and of course situational awareness," says **Bill Meehan**, utility solutions manager for ESRI. "However, these same utilities acknowledge that the data in their GIS is not ready. Without accurate data, and GIS for monitoring things like demand response and consumer behaviour, smart grid could end up being a very expensive meter-reading system."

**Geospatially oriented databases** **Tony DiMarco**, Director of Utilities and Telecomms at Intergraph, explained their focus on infrastructure. According to DiMarco: "The data bases that contain the model of the energy delivery and telecommunications infrastructures are vital for the Smart Grid. The model happens to be geospatially oriented, which makes it important for locating facilities, deploying field resources to the right location, and geospatially enabling corporate information systems. However, the real value is the fact that it is a connected network model, maintained graphically, that supports various forms of engineering and operating analysis and is the basis for Smart Grid operations. It's all about the network. So, yes, I think there is a very strong tie between "GIS" and Smart Grid. But Smart Grid is not limited just to electricity. Telecommunications networks have always been "smarter". Now the wave of

automation is going to make electric, then gas, then water networks all smarter." Progress Energy in the US is a good example. They serve 3.1 million customers in the Carolinas and Florida, where the Intergraph GIS provides a foundation for the Intergraph OMS (outage management system) and their mobile workforce management system – connecting with circuit analysis programs to give a truly integrated picture of the utility's network.

One organisation that has a finger on many of the Smart Grid buttons is GE Energy. There the goal is to provide for every need along the supply chain from wellhead to toaster – covering each step from oil and gas exploration, extraction, power generation, transmission and distribution networks, meters, software, all the way to consumer appliances. Smart consumer appliances, of course! GE's initial focus is on making the existing grid smarter through a variety of different solutions, including: smart meters to monitor usage and empower consumers with the ability to control their consumption in response to changing energy prices, distribution volt/VAr control to improve power quality and reduce losses, predictive control algorithms to minimise the impact of intermittent power output from renewable generation sources and cutting-edge equipment prognostics to increase reliability and prolong asset life. These are embodied in four initiatives to support smart grid introduction that cover distribution operations, demand management, transmission, and asset optimisation. More recently they have added the 'Workforce and Engineering Design Optimisation' initiative, which draws on GE Energy's existing geospatial technologies of Smallworld and MapFrame and their workforce management solutions to become one of the pillars of their Smart Grid strategy. This initiative will focus on the planning and engineering of tomorrow's enhanced Smart Grid as well as the workforce that will build and maintain it.

**John Eason**, Director of Smart Grid Alignment for the GE Energy T&D business, proposes that "while much of today's emphasis is on increasing operational efficiency of the current system, utilities will soon begin to design their network around emerging Smart Grid standards and technology. As such, this ability to 'design for Smart Grid' will rely heavily on integrated planning and design applications including the GIS". Emerging technologies that promise to change the design of the Grid include large and small scale renewable energy sources, smarter meters, the rise of PHEV (plug-in hybrid electric vehicles), network battery storage and others not yet imagined.

The business challenges to be met in realising the many aspects of the Smart Grid provide scope for the whole sector to get involved. There are outstanding questions around standard protocols needed for network interoperability and communication – but with governments and utilities driving these projects on, the answers will emerge. For the resulting complex rollout projects – upgrading of back office systems, installing and improving communications networks and the logistics of installing a new meter in every property – planning and coordination tools and skills will be at a premium. It's a challenge I am sure we would all like the opportunity to take up.



*Christine Easterfield is a principal consultant with analyst and research firm, Cambashi. She has over over 20 years experience in the software business, with roles in training, consultancy and, latterly, product marketing management. Her experience has been in asset management for the utility industry, assessing market needs and opportunities.*  
[www.cambashi.com](http://www.cambashi.com)

# AGI GeoCommunity'10



AGI Director and CEO  
Chris Holcroft takes the  
stand at GeoCommunity09.

**What?** AGI GeoCommunity is the largest and most comprehensive independent conference in the UK digital mapping and data calendar. It provides tangible insight and leadership in current geographic information and location based issues via a range of keynote addresses and conference papers as well as by hands-on training, meeting with leading industry suppliers and face-to-face delegate networking.

The AGI GeoCommunity series has a proven reputation as a "must-attend" event for a range of service delivery managers and information management and technology professionals. Previous delegates and speakers have been drawn from central and local government, utilities, health, emergency services, infrastructure, insurance, marketing, business intelligence, finance and technology sectors.

This year's event will focus across our industry settings on the use of location to deliver operational efficiency savings, identifying and delivering excellence through the use of geographic

will offer our sponsors an unrivalled opportunity to meet and network with the key practitioners and influencers across government and the commercial sectors.

**When?** 29 - 30 September PLUS an "icebreaker" event the evening before the conference on 28 September.

**Where?** The Holiday Inn, Stratford-upon-Avon, UK. The first 200 bookings will qualify for hotel rooms in the conference venue. The rest will be accommodated in the close vicinity until all residential packages are sold out, as has been the case since 2007.

**Why?** In the 21st year of the AGI this year's theme "Realising the Value of Place" will address the role of the GeoCommunity at a time of challenge and great opportunity during global economic change. Location is increasingly recognised as important. GI and GIS is ever more pervasive, its use ranging through central

## AGI GeoCommunity '10 – Opportunities in a Changing World Innovate - Connect – Succeed Early bird registrations have opened and all is set for another great AGI GeoCommunity, reports AGI Director and CEO **Chris Holcroft**.

information and measuring the positive affect spatial technology, data and insight can bring.

Attendance at AGI GeoCommunity '09 increased 5% against 2008, attracting 625 people. The residential format, introduced in 2007, is now well established and the event has proven its growth and sustainability.

Feedback from last year's polled delegates and sponsors at a glance:

97% said the conference fulfilled their expectations  
81% rated the venue as "good" or "excellent"  
89% attended the conference for professional networking  
86% attended for the conference paper programme  
71% attended for training and hands-on sessions  
74% came for access to new ideas, methods and technology

and local government to utilities, infrastructure, marketing, insurance, retail, business intelligence and consumer applications. As the use of GI grows, its relevance and contribution to addressing the challenges in the modern world becomes ever more important and complex. As a community we need to identify our opportunities and articulate the successful outcomes we can achieve.

Delegates will have access to the conference streams and exhibition, accommodation, food and refreshments, the AGI Party and entertainment, plus a range of competitions and other events throughout the event.

**Call for Paper Abstracts?** Submission deadline is 7th May. AGI positively welcomes abstracts for consideration. Full details and online form for uploading is on the AGI website.

**Delegate Prices?** See table opposite. All prices exclude VAT.

**How do I book?** Online at the conference website. AGI uses the internationally popular booking engine RegOnline. Please note that Early Bird places are limited.

**Sponsors to date** Ordnance Survey, ESRI (UK), Cadcorp, Getmapping, Oracle, Postcode Anywhere, Snowflake Software.

Follow GeoCommunity at:  
<http://twitter.com/GeoCommunity> and  
<http://agigeocommunity.blogspot.com/>  
Conference website is [www.agigeocommunity.com](http://www.agigeocommunity.com)

Member Type	Delegate Type	Early Bird	Standard
AGI Member	Full Conference (Including Icebreaker)	£399	£499
Non Member	Full Conference (Including Icebreaker)	£525	£625
Speaker	Full Conference (Including Icebreaker)	£330	£330
AGI Member	Full Conference (Excluding Icebreaker)	£275	£329
Non Member	Full Conference (Excluding Icebreaker)	£365	£439
Speaker	Full Conference (Excluding Icebreaker)	£200	£200
AGI Member	1 Day Pass	£100	£135
Non Member	1 Day Pass	£150	£175
AGI Student Member	1 Day Pass	£39	£50
Student Non Member	1 Day Pass	£59	£70

AGI GeoCommunity '10 will offer a select number of sponsorship spaces to showcase new products and services and network with delegates both at sponsors' exhibition pods and in the conference sessions and social events. The conference format

\*All prices exclude VAT.

## New tool for OpenSpace



Ordnance Survey has introduced a tool for its online mapping application, OS OpenSpace. The tool aims to make it easier to create map mash-ups without needing technical know-how. The Web Map Builder allows users to add markers, routes and search functionality to their web map without having to write a single line of code. The mapping agency aims to take users step by step through the mash-up process with code all written and stored automatically, so it can be re-edited at any time without re-starting the process.

Peter ter Haar, director of products at Ordnance Survey, says: 'For many people, particularly smaller clubs, societies and charities, a lack of technical knowledge is locking them out of the benefits available from using mapping online. Through the introduction of Web Map Builder we want to give those people the chance to see how OS OpenSpace can help them engage with their community and organise their information'.

### Targeting data collection

Last autumn, Leica Geosystems launched the Viva range of survey and data collection products, including the Zeno GIS series. The new Zeno Field software is an OEM (original equipment manufacturer) version of ESRI ArcPad 8 and provides functions to control the integrated GNSS receiver and to manage data collection such as GNSS raw data logging, easy handling of GNSS real-time configurations, feature accuracy management and an automated workflow between the field and office.

aims to reduce the need for dedicated specialist users or complex training. The system allows the user to establish the location of an incident using an inbuilt gazetteer. The precise locations of emergency services staff and resources can quickly be placed on a plan of the incident site to enable better decision-making. The system also provides access to large-scale mapping and addressing information together with the capability to integrate other data overlays.

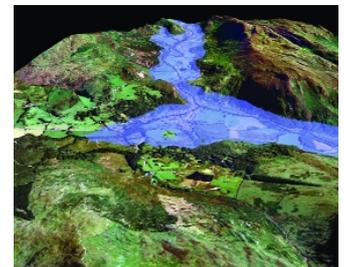
### New application for fire services

The Cadcorp Incident Support Mapping System (ISMS) extends the range of applications available to fire services that are based on the company's SIS – spatial information system product suite. The ISMS provides fire services with a stand-alone application to enable management of resources at incidents through a simple user interface that

TatukGIS has released its GIS Developer Kernel 9.0 upgrade as managed .NET and native VCL (visual component library) editions. The product is a comprehensive spatial data kernel for the custom development of stand-alone, embeddable and client-server GIS applications using object-oriented languages.

## BRIEFS

Innogistic's GIS software, Cartology, OpenWINGS and the new Community Map web-mapping products for local authorities now all provide full support for Ordnance Survey's new vector dataset, OS VectorMap Local. This includes pre-defined style sets representing all of the mapping agency's example themes. The software implements all aspects of the themes, which also allow the user to create their own customised cartographic styles for the vector data.



Getmapping has released a number of new datasets including LiDAR elevation data captured by the Environment Agency. In addition, there is the company's own digital terrain model, People's Map GB 100m contours, 1:1m vector data, national administration boundaries and a place name gazetteer made up of over 39,000 different names. The EA lidar data has a vertical accuracy in the range of 5-15cm with postings ranging from 1-2m.

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STAR-APIC

www.star-apic.co.uk

\*AGI annual awards 2009

**seminars | conferences | exhibitions | courses | events | workshops | symposiums**

We welcome advance details of conferences, seminars, exhibitions and other events which are likely to be of interest to the GIS community. Please mention the name of the event, venue, date and point of contact for further information and send to Hayley Tear, *GISPro*, 2B North Road, Stevenage, Herts SG1 4AT Fax: +44 (0)1438 351989, e-mail: [hayley@pvpubs.demon.co.uk](mailto:hayley@pvpubs.demon.co.uk)

**APRIL 2010**

**XXIV FIG International Congress 2010**  
**11-16 April, Sydney Convention & Exhibition Centre,**  
**Sydney, Australia.**

More information: [www.fig2010.com](http://www.fig2010.com)

**GeoDATA 2010 Seminar**

**21 April 2010, Dublin.**

More information: [www.training4gis.com](http://www.training4gis.com)

**The Geospatial Information & Technology Association's (GITA) 2010 Geospatial Infrastructure Solutions Conference**

**25-29 April, Phoenix Convention Center, Phoenix, Arizona, USA.**

More information: Email, [info@gita.org](mailto:info@gita.org) or [www.gita.org](http://www.gita.org)

**MAY 2010**

**INTERGEO East**

**6-7 May, Istanbul, Turkey.**

More information:

[www.intergeo-east.com/](http://www.intergeo-east.com/)

**History of Navigation Symposium**

**6-7 May, National Maritime Museum, Greenwich, London SE10.**

More information:

Email, [Kathryn Hossain, conference@rin.org.uk](mailto:Kathryn.Hossain@rin.org.uk)

**ESRI UK Annual Conference 2010**

**10-11 May, Hilton London Metropole, London.**

More information:

[www.shapingyourvision.co.uk](http://www.shapingyourvision.co.uk)

**GeoDATA 2010 Seminar**

**11 May 2010, Cardiff.**

More information: [www.training4gis.com](http://www.training4gis.com)

**GeoDATA 2010 Seminar**

**13 May 2010, Liverpool.**

More information: [www.training4gis.com](http://www.training4gis.com)

**GeoCAD'2010 Geodesy, Topography, Cadastre and Land Registry**

**14-15 May, Alba Iulia, Romania.**

More information: [www.fig.net](http://www.fig.net)

**Positionale – International Trade Fair for Satellite Positioning, Navigation and Telematics.**

**18-20 May, Stuttgart Trade Fair Centre, Stuttgart, Germany.**

More information:

[www.positionale.de](http://www.positionale.de)

**GeoDATA 2010 Seminar**

**20 May 2010, London.**

More information: [www.training4gis.com](http://www.training4gis.com)

**JUNE 2010**

**58th German Cartographer's Day 2010**

**8-10 June, Berlin and Potsdam, Germany.**

More information: <http://dkt2010.dgfk.net>

**The British Cartographic Society Annual Symposium**

**– Talking with Maps**

**9-11 June, VILLAGE Nottingham, Brailsford Way, Nottingham, UK.**

More information: [www.cartography.org.uk](http://www.cartography.org.uk)

**Smart Utility 2010**

**14-16 June, Chelsea FC, London, UK.**

More information:

Email, [enquire@iqpc.co.uk](mailto:enquire@iqpc.co.uk) or [www.smartutilityevent.com](http://www.smartutilityevent.com)

**3rd International Conference on Cartography and GIS**

**15-20 June, Nessebar, Black Sea, Bulgaria.**

More information:

Email, [cartography@abv.bg](mailto:cartography@abv.bg) or [www.cartography-gis.com](http://www.cartography-gis.com)

**The Second Open Source GIS UK Conference**

**21-22 June, University of Nottingham, UK.**

More information: [www.opensourcegis.org.uk](http://www.opensourcegis.org.uk)

**The International Society for Photogrammetry and Remote Sensing (ISPRS) Commission V Symposium – Close range image measurement techniques**

**22-24 June, Newcastle upon Tyne, UK.**

More information:

Email, [isprs\\_sec@hotmail.com](mailto:isprs_sec@hotmail.com) or [www.isprs-newcastle2010.org](http://www.isprs-newcastle2010.org)

**JULY 2010**

**The Geoinformatics Forum Salzburg (GI\_Forum)**

**6-9 July, Salzburg, Austria.**

More information: [www.gi-forum.org](http://www.gi-forum.org)

**ESRI Survey & Engineering GIS Summit**

**10-13 July, San Diego, CA, USA.**

More information: [www.esri.com/events/survey/index.html](http://www.esri.com/events/survey/index.html)

**ESRI International User Conference**

**12-16 July, San Diego, CA, USA.**

More information:

[www.esri.com/events/uc/index.html](http://www.esri.com/events/uc/index.html)

**SEPTEMBER 2010**

**AGI GeoCommunity'10**

**– Opportunities in a Changing World**

**28-30 September, Stratford-Upon-Avon, UK.**

More information:

[www.agigeocommunity.com](http://www.agigeocommunity.com)

## EDUCATION

### UNIGIS

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