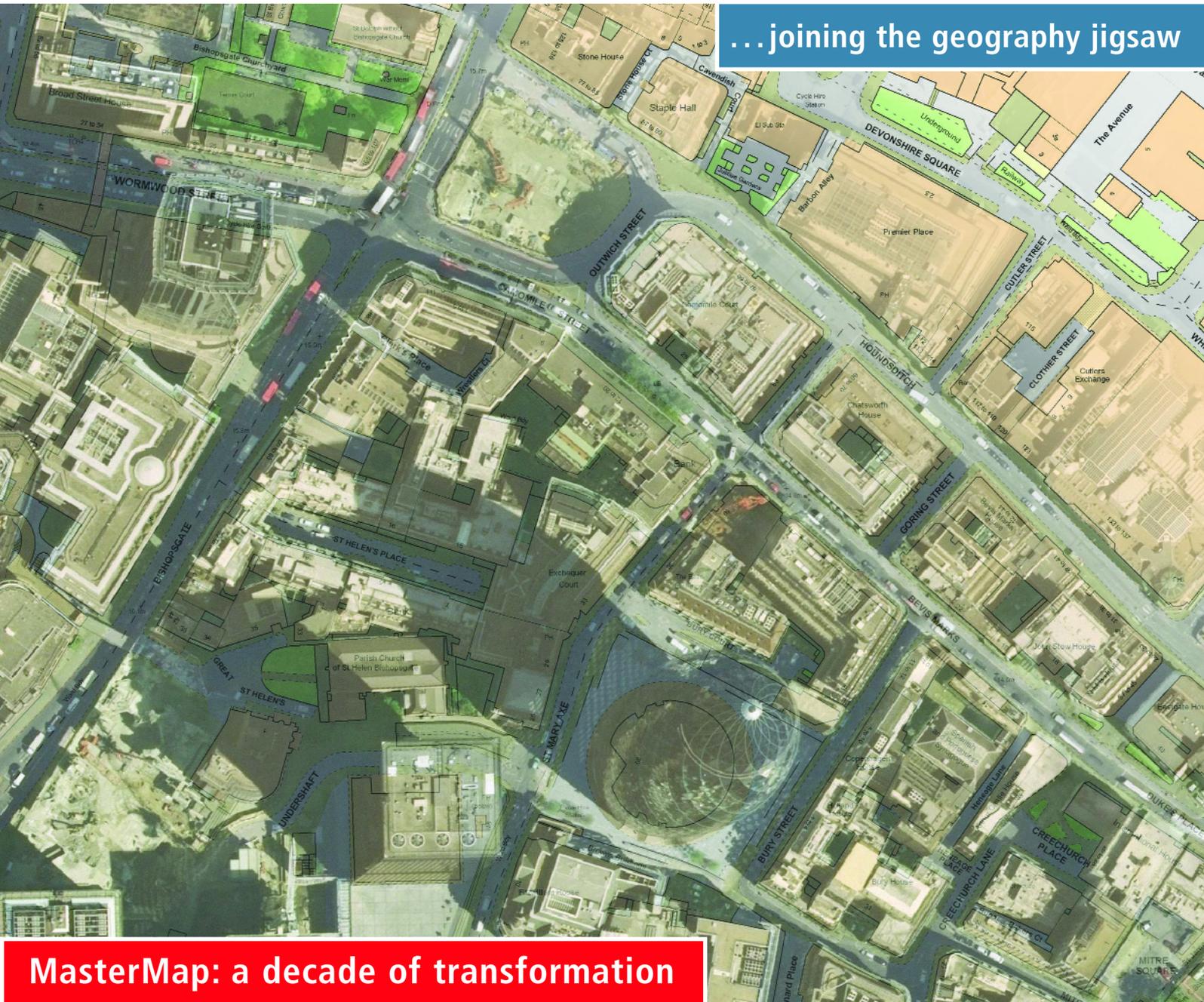


# GIS

## Professional

issue 42 : October 2011

...joining the geography jigsaw



### MasterMap: a decade of transformation

AGI places itself in the new economy

Mapping the lay of the land

ArcGIS Online steals the show!

Why is INSPIRE important for fish migration?

Not pdc or plc – just PDC plc . . .

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Stephen Booth and Hayley Tear give the low-down on the excellent keynote speakers at this year's AGI annual conference.



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## ArcGIS Online steals the spotlight!

New features, product releases and "true user" speakers made for a successful Esri international user conference reports Adena Schutzberg.



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## GiSPro Interview: objectives for UK location data

Robin Waters talks to Ray Boguslawski, programme director for UK Location, about progress and anticipated developments.



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## Fish migration, INSPIRE and the LNS Web-GIS project

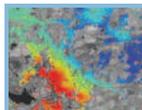
The authors explain why INSPIRE and a web-GIS have proved to be so important for The Living North Sea project.



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## Not pdc or plc – just PDC plc!

Robin Waters reports on government consultations on open data and a meeting of The British Computer Society's Location Intelligence group.



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## Bringing geohazards information to a town near you!

Fugro NPA is coordinating the new PanGeo Project that will provide a free, Inspire-compliant online geohazard service for EU countries.



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## Mapping the lay of the land

The 2011 UK Land Cover Map was published in July and will provide information on the land surface for many different applications.



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## A decade of transformation

Ten years ago, Ordnance Survey launched MasterMap with its sights firmly set on the GIS marketplace. But what awaits for the future?

### > GISPro's COLUMNS

- p.14 **Eurofile** – Political tensions raise interesting questions for travellers. . .
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**Next Issue: DECEMBER 2011**

Copy dates **Editorial:** 1 November

**Advertising:** 18 November



**Front cover:** It was ten years ago that Great Britain's national mapping agency launched MasterMap – and what a decade of transformation!

*Our thanks to Ordnance Survey for the main image, a montage demonstrating the multi-layers of MasterMap (turn to page 26).*

## For details of how to subscribe to GiSPro, turn to page 34.

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

## A timely reminder of Britain's mapping heritage

Several topics are explored in this issue from tracking fish stocks, Esri's mega annual users' conference in San Diego, talking to the man who heads up the UK's Location Programme to the state of OS MasterMap and prospects for a public data corporation; the latter, aired in some detail at the recent AGI GeoCommunity conference (upon which we deliver an initial report on page 09), as well as at a meeting of the British Computer Society from which we also report (page 22).

But first MasterMap: we mark the tenth anniversary of its launch in 2001 at the predecessor event to AGI's GeoCommunity. A decade ago, MasterMap was the first large scale digital mapping of a whole country. Britain has been well mapped compared to just about anywhere else in the world for a century or more. Large scale mapping has its origins in Ireland and taxation whilst the more friendly and usable 1" series (now Landranger) began to come into its own after the First World War when a newly enfranchised generation with growing prosperity began to explore the country by bike, on foot and the richest, by motor car.

Today, MasterMap underpins virtually all of Ordnance Survey's datasets and products. It is the visible manifestation of the National Topographical Database. Through the recently negotiated Public Service Mapping Agreement (PSMA) local authorities, the emergency services, the NHS, the military and more public sector organisations (over 1700 in total) enjoy large scale detailed mapping that is as geodetically correct as far as possible in the age of the satnav and GPS positioning. We have much to be thankful for. Great Britain is probably the most well mapped country in the world.

There was a timely reminder recently of just how valuable our mapping and addressing data is compared to what life is like without it in a big city without maps; indeed without street names or house numbers. A BBC correspondent travelled with a postman in Kabul during his deliveries. A city of 4 million has few named streets let alone house numbers. Letters are addressed by name and an approximation of location, after that the delivery man has to start asking. It's all very sociable as the postman will chat to many people before he reaches his destination but it is very costly in human energy and time. On the day in question, it took two hours to deliver one letter! Now one or two Afghan entrepreneurs are offering citizens a street-naming service!

Turning to the Public Data Corporation, there's been a belief around for sometime that all that is required to unlock the power of location data is for government to release the datasets and a thousand flowers will bloom (to misquote or paraphrase the late Chairman Mao). And now that map data has been released by OS, several siren voices have emerged doubting whether much will come of it.

“

**It's all very sociable as the postman will chat to many people but. . . it took two hours to deliver one letter!**

”

Whilst the release of data paid for by the taxpayer is to be welcomed, subject to care where it becomes personal (and remember that the more you drill down with data about human activity, the more it gets personal), most of the potentially really useful datasets – 'the fuel of analysis' as one speaker observed at GeoCommunity – will require a lot of analysing before they are likely to be of such interest that someone will pay for it. As our wise columnist, Adena Schutzberg, observes (page 21), 'Do we want data or analysis?'

There are some interesting and unforeseen side effects of making public data freely available. There are reports of estate agents discouraging house sellers from reporting minor crime lest property values are depressed. Another is the ease with which civil servants will be able to grab statistics for their reports to ministers and elected representatives. 'Thank you *The Guardian* and BBC' was Welsh Assembly Government officer, Bill Oates', verdict during the "Open data: what could possibly go wrong?" debate at GeoCommunity. For more on this sparky session, including Andrew Trigg's comments and Professor Bob Barr's feisty response, turn to page 09.

Enjoy this issue of *GiSPRO*. Let us know what you think of it. Next issue we'll bring you detailed reporting on many of the GeoCommunity sessions.

*Stephen Booth, editor*

## Modelling railway redesigns



Pozzoni LLP is using computer-generated 3D models to help re-design railway stations in the south east of England. Working for Solum Regeneration, a partnership between Network Rail and Kier Property, the architectural company has completed the design of a mixed use scheme at Haywards Heath including supermarket, hotel and improvements to the station facilities and a project near Tufnell Park tube station for Network Rail. The 3D models, created by Bluesky, provide context for the regeneration designs and are delivered ready to use in the architect's building design software.

## Public property goes public – open data goes live

The Royal Institution of Chartered Surveyors (RICS) has welcomed the release of public sector data and the impending launch of a public data corporation. 'They say that a picture tells a thousand words but a good map (or online spatial representation of data in this case) can tell millions' says James Kavanagh, director of the RICS' Land Group. 'Indeed the latest efforts by the coalition government to open public access to data highlights the extensive nature of publicly

owned property and resources in England & Wales and is a first view of what might be on offer when other HM Gov open data initiatives come online over the next couple of years.'

Consultations on Open Data and the Public Data Corporation (PDC) policy are also now live and explore questions on key aspects of data policy: charging, licensing and regulation of public sector information as produced by a nascent PDC.

The new online public assets 'map' locates over 180,000 diverse assets worth an estimated £385bn

owned by almost 600 public sector bodies, including central government and 87 councils.

Public sector asset wealth can be a two-edged sword but the production of an open online register should help local councils rationalise on management, maintenance and sharing of resources. It is also hoped that this will raise local community group awareness of what might be available for use in their vicinity.

Results from eleven council-led pilot projects, known as capital and assets pathfinders, found that on average 20% savings could be made by rationalising public assets or co-locating local services based on customer needs. And a recent independent report found local government and the public sector could save up to £7bn a year in operational costs through better property management. Annual running costs top £25bn and the backlog of maintenance repairs has been estimated to be around £40bn.

'GI people love data, lots of it, the more the better, and RICS will reflect this view during its responses to these ongoing consultations' says Kavanagh. 'Issues of consistency, currency and licensing are foremost in our initial thoughts. This is one area where geo-technology and political policy really operate in tandem and Open Data, in this instance, cannot be dissembled from the 'Localism' and planning agendas. In many ways, open data and its geo-visualisation, through the provision of easy-to-use online mapping applications, will be a major driver behind several important

government policy initiatives.

It is important to remember that there is a difference between 'transparency' and open access, and our rights as citizens to access all manner of official data, argues Kavanagh. It should not be confused with the commercial exploitation of that data by third parties. Consistency and reliability remain central to the success of any open data initiative. RICS has been particularly involved in recent discussions on Land Registry data and maintains a stance, along with other stakeholders, that the integrity of Land Registry information must be maintained.

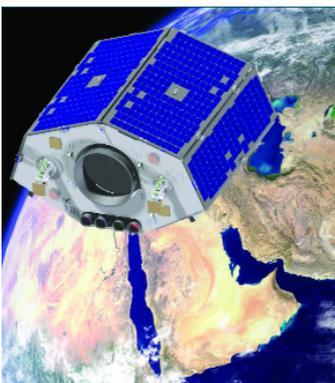
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**James Kavanagh MRICS C.Geog**

## Mapping Scotland's greenspace

A map has been published that shows all of the greenspace in urban Scotland. The Greenspace Map brings together data from all 32 Scottish local authorities to show the location and type of urban green spaces such as parks, playing fields, allotments, play areas and gardens. It is available as a public view interactive map and future updates will mean that changes in the amount and type of green space will be tracked. The development of the map was led by Greenspace Scotland with funding support from Scottish Government, Scottish Natural Heritage (SNH) and Forestry Commission Scotland. So, with this information now available in one place, how much green space does urban Scotland have? Answer – 1,112 sq km! More information at [www.greenspacescotland.org.uk](http://www.greenspacescotland.org.uk).



## Nigerian satellites add to DMC

Two satellites launched on 17 August in sun-synchronous orbit will significantly boost Africa's capabilities for natural resource management, as well as aid disaster relief through the DMC (Disaster Monitoring Constellation). NigeriaSat-2 and NigeriaSat-X satellites are advanced Earth observation satellites that will provide Nigeria with high-resolution (2.5 metres) images and the ability to enhance food security through monthly crop monitoring, assist with burgeoning urban planning demands and, through the development of engineering skills, advance the growth of new technologies in Nigeria. The satellites were launched by Surrey Satellite Technologies Ltd (SSTL) on behalf of the Nigerian National Space Research and Development Agency (NASRDA). Image Source: [www.sstl.co.uk/news-and-events?story=1871](http://www.sstl.co.uk/news-and-events?story=1871)

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## CONTRACTS & PROJECTS

### Crossing hemispheres with digital geographies

Edge Hill University from Lancashire has been awarded a grant from the Daiwa Anglo-Japanese Foundation – a charity that supports closer links between Britain and Japan – to help improve learning around GIS. The partnership aims to enhance the development of curricula and delivery models, promote a diffusion of ideas, share datasets and enable intercontinental staff and student collaboration. Throughout the Crossing Hemispheres with Digital Geographies project, students will use their knowledge to address real life issues of national and international significance, such as the aftermath of the earthquakes in Japan and the redevelopment of the area associated with the London Olympics.

**Roman site gets GNSS** The ancient harbour of Ostia, a Roman archaeological site, has been chosen by the Superintendent of the Archeological Heritage of Rome to receive a complete verification of all its former control points and a new GNSS-based coordinate system. The update, using the Ashtech ProMark 500 GNSS receiver, will aid efforts to manage and plan future archaeological studies at the site.

### GIS and geography backed by supplier

Esri UK has renewed an agreement to make GIS software available to colleges and universities in the UK and Ireland, at a reduced price, through an Eduserv (a not-for-



profit organisation and registered charity) Chest agreement.

The company is also working with the Geographical Association (GA) to help stimulate a nationwide debate about the core geography knowledge that children should be taught at school. Esri has created an interactive presentation covering different geography topics that is available to teachers and other members of the GA as part of a public consultation about the UK's geography curriculum.

## BRIEFS

**A "Web Services Accreditation Scheme" has been launched to help improve the web services geological survey organisations provide to users through OneGeology, an international initiative of geological survey members ([www.onegeology.org](http://www.onegeology.org)).**

Bluesky is urging property owners to get independent assessments of their potential for solar power following press

reports of rogue traders and mis-selling. The consumer watchdog *Which?* invited certified companies to quote for a domestic solar panel installation and found three quarters overestimated how much energy the panels would produce while most underestimated the time it would take for the installation costs to be recouped.

**Defence Geospatial Intelligence (DGI 2012) will take place on 23-26 January, 2012 at QEII Conference Centre, Westminster, London. More information at: [www.dgieurope.com](http://www.dgieurope.com).**

Ordnance Survey GB has announced the 100th One Scotland Mapping Agreement member, NHS Shetland. The OSMA launched in 2009 and represents cooperation between Scottish Government and OS, offering a range of mapping data to its members.

**Aligned Assets has scheduled two more training courses in the 'Law of Street Naming and Numbering' to be held in Bristol on 29 November and in Bolton on 6 December.**

HomeSun is using the GeoXploit mapping and geographical analysis tools from MapMechanics to identify households across Britain suitable for solar energy and to promote the concept to them.

**RapidEye USA has been awarded an indefinite delivery / indefinite quantity (IDIQ) contract with the National Geospatial-Intelligence Agency (NGA). The 18-month contract is valid through December 2012 and will see the company providing its imagery to NGA.**

At AGI GeoCommunity 2011, Océ were demonstrating how ultra-fast printing from GIS data can add value and improve productivity in a modern working environment. Richard Turner, Océ UK's wide-format printing systems marketing manager, says: 'We want to show people that many of the historical barriers in printing have been removed. Short run and print on demand maps are now available in a fraction of the time people expect and at a quality they would believe only

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## Birmingham's city life

Aerial photography is being used to create a new map of Birmingham. Supplied by Bluesky, the digital imagery will be used to create a royalty free base map to support Interconnect Birmingham, a project to raise the profile, image and identity of the city. It is hoped that the interactive map, which will feature visitor attractions, hotels, green spaces and other features of interest, will help improve the experience of visitors and support a multi-channel, multi-modal movement and information system.

possible through a traditional lithographic process'.

**Web-based application supplier, Software Europe, recently pitched its expenses claims software at Downing Street. The online tool includes features from Postcode Anywhere's web-based Distances and Directions service and was short-listed from over 350 proposals in the Cabinet Office's Innovation Launch Pad initiative.**

StreetMapper, the vehicle-based laser mapping system, is being used to assess

the damage caused by the Japanese earthquake in March 2011. The system, purchased from Mirukuru and operated by Asia Air Survey, captures 3D survey data that will be used to assess structural damage and the effects of soil liquefaction.

**Urban Policy and the Census by Heather MacDonald and Alan Peters, from Esri Press (ISBN: 978-1-58948-222-7, \$49.95 USD), helps researchers and policy analysts gain a comprehensive understanding of census data and how it can be most effectively used for population research and policy planning.**

## PEOPLE

### Change of director at CGS

Professor **Mike Jackson**, the founder and director of the Centre for Geospatial Sciences (CGS) at the University of Nottingham, retired at the end of July. Jackson joined the university in 2005 from QinetiQ where he had been director of the space division. He returned on a part-time basis from September and will continue in his role as chair of AGILE and a board member and director of the Open Geospatial Consortium.

**Jeremy Morley** has succeeded him as director of CGS. Morley started as

deputy director in September 2009 following a move to Nottingham from University College London. He is the UK academic representative to EuroSDR, a member of the UK Location Programme's user group and was also chair of this year's AGI GeoCommunity conference.

**New associates** ConsultingWhere, an IT consultancy specialising in services to the location-based information market, has recruited two associates. **Robin McLaren** is a world expert in Land Information Management and has worked with the United Nations, EU and World Bank on land policy / land reform programmes. He will strengthen services in geospatial strategy development, INSPIRE compliance, NSDI strategy formulation, business change, procurement support and international land reform programmes. **Nick Chapallaz** is a widely published and forward thinking marketing strategist with experience in start-up organisations through to global corporate environments. He will strengthen services in market and business strategy, proposition, value realisation and innovation development.

## Letters

The Editor welcomes letters from readers on relevant topics. Please endeavour to keep them brief and to the point. We reserve the right to edit for clarity and brevity. email: [editor@pvpubs.demon.co.uk](mailto:editor@pvpubs.demon.co.uk)

Dear Sir,  
Ordnance Survey, as Great Britain's national mapping agency, is proud to have been close to the development of the INSPIRE Directive from its very beginning, and are delighted that now implementation has started, we are starting to see results.

GIS Professional's editorial in the August issue implied that we are having some problems meeting our INSPIRE obligations. Nothing could be further from the truth.

In December last year we published GEMINI 2.1 metadata for all our products, not just those within the scope of INSPIRE. That metadata is now available on data.gov.uk, and also forms the source of product metadata for PSMA customers. Our next success has been to publish what INSPIRE calls 'View Services' in May this year. We have also upgraded Our OS OnDemand web map service to run on INSPIRE-compliant GeoServer software and added in an extra 13 products to meet this commitment.

Now we are focusing on the requirements for Download Services and thinking about how we produce our data to the INSPIRE specifications.

All this has been going on in parallel with the work we are doing with UK Location Programme to develop the UK Location Information Infrastructure. Ordnance Survey, along with Cabinet Office, are technical delivery partners to the programme.

Specifically, we are developing the metadata editor and catalogue publishing service (INSPIRE Discovery Service) based on GeoNetwork, and spatial functions for data.gov.uk. This will allow users to add a spatial search box into their search criteria, and to see an evaluation view of any datasets which are returned that have an associated web map service.

The metadata editor is live and a new version was released at the end of August incorporating several improvements.

The catalogue publishing service is also now live and the European Commission has harvested data from it. A further release of that is planned for later in the year. Our developers have been working hard, using GeoServer and OpenLayers to produce background mapping for both the search and evaluation view functions or 'map widget' as the editorial referred to it. This functionality will be integrated into data.gov.uk and released progressively with the first release due in September.

It is an exciting time to be involved in INSPIRE and the UK Location Programme and we are confident that we are well placed to continue to deliver better interoperability for our customers along with meeting our INSPIRE obligations over the next few years.

**Yours sincerely,**  
**Clare Hadley,**  
Manager - INSPIRE and UKLP, Ordnance Survey



There was plenty of buzz and sparkle among delegates and exhibitors at this year's GeoCommunity conference.



CONFERENCES ARE ABOUT LEARNING new aspects of your work, meeting your peers and swapping practice stories and just taking time out for a bit of quality thinking away from the day-to-day pressures that most of us struggle under. The AGI's annual conference did not fail in these aims.

Held at a new venue (Nottingham University's East Midland Conference Centre), there seemed a bit more sparkle and buzz than last year's event, driven perhaps

She hailed the PSMA (a crown-to-crown agreement, note) as empowering the public sector and a spur to innovation. She highlighted its breadth of application to the NHS, military, police, emergency services as well as to local authorities. Turning to the freeing up of public data, she argued that access to information will change the nature of democracy but cautioned, 'We have a data-rich society but do we have the wisdom to apply it?'

## Placing ourselves in the new economy

A new venue, a new chair, rousing debates and excellent speakers – the AGI conference team excelled themselves once again! **Stephen Booth** and **Hayley Tear** were there, pen at the ready, to hear from this year's keynote speakers. And don't miss our December issue, for *GiSPro's* report on the individual stream sessions!

by one or two good debates and spats between presenters plus professor **Danny Dorling's** novel way of mapping the human world. But whether it was just the new venue or that people have given up caring about the state of the economy (even if we have to place ourselves in it), the event was a pleasant couple of days of keynotes, individual presentations (half an hour each so not enough time to fall asleep or get bored), social events, exhibition and the all-comers AGI Soapbox (this year there was an entrant from California, the trouble was he stayed in that sunny state. . .).

Conference chair this year was **Jeremy Morley**, now director of the Centre for Geospatial Science and located on the Nottingham University campus. Now this campus is pretty vast, as anyone arriving by car, especially at night, soon discovers. There's plenty of signage: the problem is it's in rather small serif lettering against a dark green. Obtrusive it isn't and you can easily get very lost. Has Jeremy's centre developed an app yet for navigating the campus?

**The changing nature of democracy** Replacing an ill-disposed Sir Ian Magee, **Cheryl Miller** CBE, is a former local authority CEO and more importantly for us, a geographer and early geo-evangelist for GIS.

A little studied aspect of the agreement that launched Britain's experiment in coalition government, was the re-drawing of all parliamentary constituencies to reduce their number by 50 and equalise their size; a serious challenge for both human and boundary geographers. **Jamie Justham**, MD of Dotted Eyes, has studied the Boundary Commission's proposals. He dryly observed that there is a belief that 'most political issues in the UK can be solved by changing boundaries'.

Justham traced the history of parliamentary boundaries from the Chartist movement of the 1830s that resulted in the Great Reform Bill and full manhood suffrage (but not equal boundaries despite that being on the Chartist agenda). Today's proposals affect 85% of existing constituencies and allow only for ±5% variance in electorates, with exceptions for only four places including the Isle of Wight, Western Isles and Orkney & Shetland. No one can accurately predict the political make up of the new constituencies, and there are a lot of worried MPs who will doubtless be making representations to their local boundary enquiries.

The search for equality of electorate will throw up some oddities. Boundaries must follow those for the large multi-member constituencies used for the EU



**He dryly observed that there is a belief that 'most political issues in the UK can be solved by changing boundaries'.**



# report AGI GeoCommunity'11



**Above: Professor Robert Barr – nearly always controversial, always quotable! Our favourite this year – ‘Well, it’s hardly going to be a centre of incompetence is it?’**

elections beyond that, well you can chop up local authority areas at will. There will be serious challenges in avoiding constituencies that don’t transcend local authority or natural geographical boundaries – move a ward and the constituency is too small; move it back and it’s still too big! Names of the new constituencies may cause problems too. The Ribble Valley is currently a constituency and a local authority: the new constituency of the same name will step beyond its eponymous authority’s boundaries.

The end result of this sophisticated gerrymandering, which will be regularly reviewed along with the five-yearly elections to parliament introduced by the coalition, will be much human geographical confusion as electors wonder just where they are living.

Unlike MPs, CEOs like short words. Like, Yes! No! and cash. Their longest word seems to be ‘opportunities’. **Amanda Turner**, who is general manager of commercial markets for Esri UK, observes that language can be a barrier the higher up you go in business. There needs to be ease of access to non-specialists. Turner’s clarion call is make GIS accessible to all. She cited Nottingham County Council’s website which enables citizens to calculate their home’s potential energy savings, including solar.

**Government transparency** Professor **Robert Barr** is nearly always controversial, combative and always quotable, provided you can stay up with his rapid fire delivery. This year’s AGI was treated to his views on that impending experiment in government transparency, the Public Data Corporation. Originally planned to be up and running by April 2011, the venture is currently out for consultation. Its aims are, according to the consultation, ‘to drive further efficiency’ with ‘more data free at the point of use where appropriate and consistent for taxpayers’ money’ as well as ‘a vehicle that can attract private investment’. It must also be ‘a centre of excellence’. ‘Well, it’s hardly going to be a centre of incompetence is it?’ observes Barr.

So what should the putative PDC’s mission statement be? ‘Look no further than of the AGI,’ says Barr, “. . . to maximise the use of geographic

information (GI) for the benefit of the citizen, good governance and commerce.” Barr went on to enumerate a series of guiding principles he thought necessary for the corporation:

- *Government should only collect and maintain data where it is required to deliver a specific policy objective;*
- *The data should be definitive and maintained in a single place with only one correct version – not conflicting as it currently does through different address databases.*
- *Wherever possible data should be used for multiple purposes across government (in the UK, observes Barr, there are at least four mutually inconsistent property registers).*
- *Unless there is a privacy issue all data should be available in raw form.*
- *The corporation should be not for profit.*

Lastly, there needs to a regulatory office of government information as well as a data registry, data factory and a speculative publishing house.

Barr believes that most issues around government data have already been encountered through various GI initiatives; and we know most have failed like the costly fire control system set up by the previous government. Nevertheless, Barr thinks that it’s an important opportunity for the UK as long as it concentrates on the public interest with data that is definitive for government. He teasingly suggested there might be room for several PDCs with some of them taking on some of the trading activities of existing trading departments. Now I wonder which he was thinking of there?

The all-too-brief discussion focused around what is definitive data and what is personal data? You can’t have definitive mapping because two surveyors working to the same specification will still get different results. So should the data be cleaned up first, asked Dr **Gesche Schmid**? No, says Barr, but it should come with a health warning. On personal data, he believes that as it shifts with time, the data Commissioner must adjudicate.

**The soapbox challenge** Before the AGI’s party, the AGI Soapbox was given its annual airing. This is an opportunity for various self-publicists and over-excited folks to get something off their chests. Often difficult to follow, they have just four minutes and have to talk to 12 slides, which pop up automatically at frightening rapidity and cause some participants to hurl their notes to the floor. Fortunately by this time in the day the audience has access to alcohol as well as to social media via mobile devices so performances can be instantly commented via twitter with tweets



**He teasingly suggested there might be room for several PDCs with some of them taking on some of the trading activities of existing trading departments. Now I wonder which he was thinking of there?**



streamed to a screen for the amusement of the audience. Great fun and our thanks to the brave contestants, which included **Ken Field** in California (well, he does get around, round, round. . .).

**Twisting maps – a good thing?!** The party over and bleary light of dawn beckoning, the majority of us were ready for something a little different, even exciting. Professor **Danny Dorling** rose to the occasion. “Twisting maps – how to see what’s real” was this human geographer’s theme. He has spent two decades annoying the hell out of topographical geographers by taking the accepted shapes of geographical entities and turning them into cartograms (or hexagrams) using, for instance, conformal projections where all lats and longs are at right angles or just adjusting the size of entities based, for instance, population, travel distances from London or wealth. His latest published work, by the way, is “An atlas of bankrupt Britain”. His thesis is ‘most maps produced by government are useless!’ His many different ways of looking at maps and statistics have to be seen (try a trip to his PhD student Ben Hennig’s website at [www.viewsoftheworld.net/](http://www.viewsoftheworld.net/)) Meanwhile Dorling looks forward gleefully to ‘new ways you can twist maps’.

The director general of the Ordnance Survey is well known to AGI audiences. Dr **Vanessa Lawrence** CB is a regular keynoter. She travels around the world a lot these days but believes Britain has the most developed geospatial community in the world. But others will be catching us before long. China is spending £1.5bn developing its own silicone valley and someone told me recently that country has 30,000 students taking geomatics courses (bet the RICS would like 1% of them!). Meanwhile India, long starved of properly funded mapping, has a Geospatial Bill before its parliament.

Dr Lawrence has been to Australia too where she’s been advising on ‘geospatial in the regions’ but found a novel aerial image map published on line, following the devastating floods earlier this year. The map enables people to very quickly check the flood line (a mark evidenced by debris) so they can rapidly get a claim processed.

**Marvellous maps and app fatigue** The final plenary was jointly given by **Kimberly Kowal** and **Gary Gale**, who between them neatly split the theme of ancient and modern mapping.

Kowal is the lead curator of digital mapping at the British Library where historic map collections are being merged with geospatial technologies. She asked us to remember why maps were created in antiquity: to find out how to get somewhere, to record features of the landscape and to display data. Indeed, she needed few words to capture delegates’ attention as her marvellous maps spoke for themselves as one after another they flashed past on



*Once again the soap box was there for over-excited folks who wanted to get something off their chests. Steven Feldman (top), Andy Coote (top left) and James Cutler (bottom left) were only too happy to oblige!*

the screen. The British Library is piloting an online tool with the aim to allow scanned mapping to be geo-referenced by crowd sourcing.

Gary Gale is the director of the Ovi Places Registry for Nokia, which aims to put human impact on the map. He argued that our industry is eminently positioned to make a difference to our users and made a number of points to ponder. Firstly, there is only so much information that can be displayed on a static map – put too much on and you reach overload and lose meaning. Next, maps used to be released ‘in publishing time (a week, a month etc), now it’s internet time’ – “we want it and we want it now!” If something is built on my street last week, it should be mapped.

He talked the audience through two of his regular travel journeys, and the different apps he switches between on his mobile to get information – result, “app fatigue”. Better way? All services we use rely on a never ending feed of data. He imagined his journey with smart phones/computers predicting his needs based on previous or most common routines, reminding us that people often use personal landmarks to give directions/instructions. He’d been puzzled by people in San Francisco saying, ‘I’ll meet you at Yoda; until he discovered the cool statue of the Star Wars character.

This was the 5th year of AGI’s GeoCommunity conference and **Chris Holcroft** and his small team again excelled themselves with barely a glitch from start to finish. Whether it was **Alan Weeke**’s horrendously teasing quiz questions, the surfing machine in the party or the end-of-term prize giving, it all swam along efficiently making time seem to pass with neutrino like speed.

• In the next issue of *GiSPro*, amongst other things: accuracy in crime location; linear referencing on the London Underground; what is BIM and why is it geospatial?; why did someone include a drawing of The Queen with their census return?; and Open data: what could possibly go wrong?

“  
**His latest published work, by the way, is “An atlas of bankrupt Britain”. His thesis is ‘most maps produced by government are useless!’**  
”

# conference report



... which is good as the International User Conference included visitors from more than 100 countries! Courtesy Esri.

**Above: Esri founder and president Jack Dangermond is never happier than when he's meeting with his users. . .**

Photo by Kris Krüg, courtesy of Esri.

IT'S HARD TO IMAGINE that after three decades of Esri user conferences, this latest one topping out at 15,000 attendees, something called ArcGIS Online could steal the spotlight. It's not as though the platform was new; it was introduced last year. But this year it had matured, gained functionality, supported updated clients and become a tool users could in fact, "use". That prompted a huge proportion of the attendees to ponder this question during the weeklong event in San Diego, California: "How can I take advantage of this?"

means an organisation (with subscription) can have Esri host its services with no requirement for local hardware or an implementation of ArcGIS Server. It also allows the organisation to set up accounts for users with different permissions to access maps or services. The full details on pricing and features for the subscription service are expected later this year.

The second feature allows users to drag and drop csv, txt or GPX (GPS exchange format) files from their desktop onto the ArcGIS Online Map Viewer and have them be automatically mapped on a variety of

## ArcGIS Online Steals the Show

New features, product releases and "true-user" plenaries proved an exciting mix at the 2011 Esri International User Conference, reports **Adena Schutzberg**.

One reason ArcGIS Online had everyone's attention is that now in 2011 users could grasp what it is. It's not a website, nor an online GIS tool, nor a data library. It's a geospatial data and tools repository that lives in the cloud. Users, depending on what sort of tasks are required (make maps, define services, etc.) select a client (a Web-based viewer accessible via ArcGIS.com or ArcGIS Explorer Online, ArcGIS Explorer Desktop or ArcGIS Desktop) to tap into that repository. There, by mixing and matching local data, hosted data, hosted geoprocessing tools, mapping templates and other goodies, users can make and share data, apps, models and more. Moreover, they can share these products openly or restrict them to selected individuals. There is also a solution (Portal for ArcGIS) that installs ArcGIS Online locally, within an organisation's internal network. That way, an enterprise (business or county or large government agency like the United State Department of Agriculture) can host "it's own" ArcGIS Online.

The two most exciting features in the summer 2011 iteration of ArcGIS Online discussed in the plenary relate to managed services and "drag and drop" data. The first refers to the ability to publish map services (Esri map services, OGC Web Map Services or KML) through ArcGIS Online directly from ArcGIS Desktop. That

basemaps. Using ArcGIS Explorer Online users can import shapefiles and CSV files onto those basemaps. Educators were very excited about this capability but government and industry users could also see the benefits, as evidenced by the applause during the demonstration.

**ArcGIS 10.1** Desktop users were very excited to hear about the release of ArcGIS 10.1, with a beta in late summer and full release expected a few months later. Among the highlights are support for:

- exploratory regression, a tool that explains spatial patterns and tests correlations of variables
- a geoprocessing tool to compile the analytical smarts of a project into a package that can be shared on ArcGIS Online for use by others on their own data
- image processing including on-the-fly pan sharpening, automatic rotation, and geometric measurement
- extensive LiDAR (LAS) support
- new 3D features

The ArcGIS Runtime, part of the 10.1 release, is the successor to MapObjects, Esri's embeddable component technology which dates back a few years. The new Runtime boasts a small footprint,



**It's a geospatial data and tools repository that lives in the cloud.**



quick display, and easy deployment. It supports native 32- and 64-bit Windows and Linux platforms as well as the latest mobile platforms. And, it offers access to the latest file formats and services including geodatabases and ArcGIS Web services.

**Users Sharing Stories** This year's featured plenary participants were true users, just like the people in the seats who were listening. For example, the City of Boston showed off three citizen engagement focused apps. During the closing session, Clint Brown, Esri Director of Product Engineering, commented: 'Every one of us would like to be like the City of Boston, and to make GIS pervasive.'

Timothy T. Schilling and Michéle Adesir-Schilling, described the Green Living Project, which addressed the challenging economic conditions in Rwanda to change people's lives. GIS was in their toolkit in their work with Rwandan coffee farmers as they helped develop a quality coffee that could be sold worldwide.

European Environment Agency director Jacqueline McGlade explained how just one degree of temperature change impacts the earth considerably. She challenged attendees to use GIS and other tools to monitor these changes and to help the world's population adjust our behaviour to mitigate what might be ahead.

**Awards** Jack Dangermond presented Esri's Enterprise GIS Award to Singapore's GeoSpatial Collaborative Environment. That implementation put GIS at the core of local government for the small nation. The President's Award to the Federal Service of State Registration Cadastre and Mapping of Russia recognised the successful development of a national cadastral system. One Making a Difference award was given to Research Center for Disaster Reduction Systems at Kyoto University for providing support maps that surrounded Japan's earthquake, tsunami, and nuclear disasters. A second Making a Difference award was given to the Geneva International Centre for Humanitarian Demining.

The Storytelling with Maps competition challenged users "to show how maps can visually communicate meaningful and interesting information about the world, people, and places". Chih Cheng Chang, director of the application system division at RiChi in New Taipei City, Taiwan, won first place for Best Web Map. Dr. Thanos Doganis, director of R&D at Terra Ltd. in Athens, Greece, won first place for Best Mobile App. Next year, the applicants may have some new tools to work with: a GeoStory player is under development.

Esri acknowledged the successful GIS implementations of more than 140 organisations from all over the world with the Special Achievement in GIS Awards. The award winners used the technology in surveying, local government, education, climate change research, urban and regional planning, environmental management, transportation, economic development, mining electric and gas and many other areas.

**Partners** Esri announced the acquisition of former partner Procedural. The Zurich-based company showed the potential of integrating its CityEngine platform used for 3D city modelling and design into ArcGIS at last year's plenary. This year the company was on many people's radar screens as it enabled the 3D look of the film Cars 2.

Also, earthmine, which produces 3D panoramic imagery, announced a widget for the ArcGIS Viewer for Flex, "providing a simple way for earthmine and ArcGIS users to publish their geospatial data and earthmine 3D street level imagery to the web."

Other partners announced new datasets and new delivery options. DigitalGlobe announced its Global Basemap subscription service, a service aimed at getting the latest imagery into users hands in the shortest time. GeoEye announced GeoEye Image Packs for Esri customers with a programmatic Enterprise License Agreement. The offering allows organisations to acquire high-resolution data from GeoEye's extensive imagery archive. Intermap announced that Esri selected its NEXTMap database to serve as a core component of its soon to be released World Elevation Service and that users can now acquire terrain data from its Web-based store.

**Co-Located Events** This year Esri's Survey Summit was paired with the annual American Congress on Surveying and Mapping (ACSM) event. While there were many technical sessions on the convergence of surveying and GIS, one timely topic spanned several sessions: the planned LightSquared implementation of new wireless network which has been determined to interfere with GPS signals. Speakers from the coalition fighting on behalf of GPS (the Save our GPS Coalition) and representatives from LightSquared were on hand to share their views. Attendance was reported to be light at the panel discussion prompting concerns whether surveyors and/or the GIS community appreciate the importance of the issue.

The Esri Education User Conference hosted the passing of the baton from former education lead Micheal Gould (who is returning to his home of Spain to continue to work on the Esri Education team) to newly appointed David Dibiase, who joins the company from Penn State. (I should disclose that I served as an advisor for and faculty in the program Dibiase led.) Educators and students seemed most interested in the latest tools that would enable them to be "doing GIS" far more quickly than ever. Instructors grappled with how to use ArcGIS Online in the classroom even as 4-H students used some of the latest mobile phone tools from Esri partner SeeClickFix to capture data in a service project the day before the official start of the conference.

Esri also hosted a Homeland Security Summit, Business Summit (with speakers from Starbucks, Cisco, Edward Jones, WillisRe and MacKenzie Commercial Real Estate Services), a GIS Managers' Open Summit and an Executive Summit (with speakers from the United State Dept. of Housing and Urban Development and Recovery Accountability and Transparency Board).



*Above: An ice sculpture of a polar bear, melting during the opening of the Map Gallery, helped drive home the impact of even small changes in the earth's temperature.*

*Courtesy Esri.*



**Attendance was reported to be light. . . prompting concerns whether. . . the GIS community appreciate the importance of the issue.**

**• Next year's International User Conference will be July 23-27 in San Diego, California.**



*Robin Waters is an independent consultant who has worked extensively in several European countries and who has a keen interest in the EU's INSPIRE Directive and its implementation.*

I RECENTLY MADE A SHORT TRIP to Macedonia. That is the Former Yugoslav Republic of Macedonia aka FYROM. The capital, Skopje, is now dominated by a giant bronze statue of a horseman that everybody knows is meant to represent Alexander the Great. But there is no official plaque and the opening ceremony was Alexander free. Is this yet another case of history getting in the way of the future?

**WB = YUG + ALB - SVN** Officially, the Republic of Macedonia – as it calls itself – is a member of the UN (where it is known as FYROM) and is also a candidate member of the EU. However, Greece has a veto over the latter and also blocks its application to NATO. Greece has a northern province called Macedonia which, with a part of present day Bulgaria, was also a part of the ancient Kingdom of Macedon. Both Macedonia and Greece feel the need to claim exclusivity for Alexander. Nevertheless over half of UN members now recognise the Republic of

"Balkan Peninsular" has less well defined boundaries even than "Europe". The landward boundary has usually been the Danube and Sava rivers but with no certainty about how the western end of this line connects to the Adriatic. Such a boundary certainly includes Greece, Bulgaria, Macedonia, Bosnia-Herzegovina, Montenegro, Albania and Kosovo. It also includes European Turkey but splits Romania, Serbia and Croatia, and leaves out Slovenia. For political purposes we have to aggregate whole countries into such regions. So, typically, we would include Serbia and Croatia - and possibly Slovenia - but exclude Romania and Turkey. Then there are the ethnic, linguistic and religious dimensions. Not to mention the Hapsburgs and Ottomans – only two of the empires that have historically rolled forwards and backwards over this region.

For the time being the EU has created an interesting area called the "Western Balkans", which might be defined algebraically as WB = YUG + ALB - SVN. This neatly (?) describes the south east

## Where am I going? Political tensions over place names and a bronze horseman in Skopje raise interesting questions for geographers and travellers to ponder. . . and you can still get lost even with a satnav in Arnhem, confesses our columnist.

Macedonia - just as they recognise the Grand Duchy of Luxembourg despite there also being a Belgian province of the same name.

We often refer to Macedonia as being in the Balkans. That raises another interesting question. How do we define the Balkans? Geographically, the

European (Balkan) countries that are not in the European Union but which are actual or potential "candidate" countries - except Turkey.

Which brings me back to why I am interested in the first place! The Western Balkans are recognised by various international agencies as being worthy of assistance for economic and political reasons. The World Bank and the EU are both supporting projects that require the better collection, maintenance and use of geographical information of various types. This initially concentrated on land administration including the cadastres and land registers, which are very different in each of the countries concerned. There is now more emphasis on some of the wider uses of GI, not least in the context of INSPIRE. As an existing EU Directive this will have to be implemented by any aspiring member state. We have seen projects looking at most of the INSPIRE themes – especially the reference datasets in Annex I. There are also some that address general awareness as well as the use of standards. These projects are all subject to procurement processes designed to balance technically viable responses with "best value

*This "horseman", widely seen as representing Alexander the Great, has brought history charging into the present day for Macedonia and Greece.*



for money". Technical responses are always separated from financial bids, are marked separately and then combined with a formula - typically 20% weighting for technical and 80% for financial. There will often be a large variation in the financial bids - although where large elements of "off the shelf" hardware and software are involved there are obvious constraints. However, if the project is essentially for "experts" there is more scope for variation. Bidders have to balance international experience with local contributors who will be less expensive (per day) and will likely require less expenditure on travel, translators and interpreters.

**Get me to the station on time!** My other trip last month was to the Netherlands for a meeting in Arnhem - home of the "bridge too far" in 1944. I confess to not having realised that the north bank of the Rhine in these parts is actually quite elevated and wooded as compared to most of the country and I guess the airborne attack was much more difficult than we might suppose from our assumptions of Dutch topography. I only made a day visit - overnight ferry to the Hook of Holland, trains with changes in Rotterdam and Utrecht, and a lift at the far end. Very impressive improvements under construction all along the railway, though

apparently they are progressing very slowly. However, the most interesting part of the journey was the lift back to the station in Arnhem (about three miles I would guess). Despite having a local guide and a satnav we managed to take three wrong turnings before crossing the bridge and getting to the station just in time!

My experience of being driven in Skopje was actually quite similar - except that the mistake was the mixing up of two offices by the hotel receptionist rather than lack of knowledge on the part of the driver.

So the moral of the story this month is to know enough about where you are going - geographically and politically - to be able to find your own way. Next month - Cyprus!

For more information, refer to "Macedonia's monument to discord", *The Guardian* at <http://www.guardian.co.uk/commentisfree/2011/jun/27/macedonia-alexander-great-greece-discord>.



Above: Cross and minaret in Skopje.



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# the *GiSPro* interview



Ray Boguslawski, from Defra, is the Programme Director for the UK Location Programme which is implementing the EU INSPIRE Directive and the UK Location Strategy, publishing more accessible and interoperable spatial data. The Programme uses data.gov.uk as its central access point and has published over 900 datasets and services to date. Ray was previously responsible for Defra's Data Sharing Programme, which included managing publication under the Transparency initiative and running the SPIRE spatial information service, with 450 datasets from 35 organisations

and over 2000 users. He has been with Defra for 8 years, working initially in IT strategy and design assurance. Prior to Defra, he worked in consultancy and aircraft manufacture. Ray has 37 years IT and data experience in both the public and private sectors, including 20 years in GI.

**May 2010 was the INSPIRE deadline for providing metadata discovery and view services for all existing Annex I & II datasets. The Discovery Metadata Registration Service was launched on data.gov.uk in March. Is this being fully utilised? Will all the relevant metadata be ready for November and do you expect to total compliance by that time?**

The UK made a good start in setting up our Initial Operating Capability for May. UK Location data

**We note that the UK Location Strategy will be reviewed during 2011/12, including governance arrangements. Which other government policy initiatives and which technical developments do you see as likely to have most influence on this review?**

Clearly the continuing drive to open up government datasets is a major factor though we know that this will not necessarily deal with all charging and licensing issues for geospatial information. Continued alignment with developments on Transparency will be essential. The UK Location Programme is a major contributor of quality-assured data that is capable of being combined with other data in many ways.

The recently announced consultation on the Transparency strategy also points to a widening of ambition and responsiveness to user demand that will encourage the publication of more location data beyond the requirements of INSPIRE. The machinery of government changes (Ordnance Survey, the Met Office and HM Land Registry being moved under the Department of Business, Industry & Skills) and consultation on the Public Data Corporation will also have important impacts. This is taking some time but the licensing and charging landscape is complex and it is important that these changes are handled carefully.

## Objectives for UK location data

The UK Location Council's annual report for 2010/11 was published just in time for the INSPIRE conference in Edinburgh.

Already, four months into the next period, some of the plans for 2011/12 are coming to fruition. **Robin Waters** talks to **Ray Boguslawski**, programme director for UK Location, on progress to date and on some of the developments anticipated for the rest of the year.



**The recently announced consultation on the Transparency strategy also points to a widening of ambition and responsiveness to user demand. . .**



providers increased the number of datasets on data.gov.uk by 10% in the space of three days. By mid July, there were around 800 entries on data.gov.uk, over 200 of which relate to INSPIRE themes. Around 30 organisations from across the UK have contributed data so far. We certainly expect to have compliant metadata available for all identified INSPIRE datasets by November, as well as compliant view services for the majority of these datasets. The Commission's performance criteria are relatively stringent and, with such a large and new endeavour, we can expect some issues to sort out. The important point is that the UK community is committed to this and we have arrangements to test the services and deal with issues when they arise.

In addition, we have developed geographic search and visualisation capabilities for accessing the data in data.gov.uk. These are being tested by the Location User Group and an initial version is likely to go live in October. INSPIRE is, in part, a moving target. There is a maintenance process in place to update the Implementing Rules as the experience of stakeholders grows and as technological developments continue to progress.

UK Location users will look forward to any additional free data, more consistent (and simpler) licensing and charging, and potential innovations from a more collaborative approach. UK Location are also in contact with the Chair of the new GI Group that will have strategic management responsibility for the Public Sector Mapping Agreement (with Ordnance Survey) to establish links with the Location Council.

**A major objective for this year is to 'establish the necessary IT capabilities'. Some of this is quite daunting but some is already available. How will you achieve this?**

You are right. We already have the full metadata capabilities available through data.gov.uk and development of the discovery and view services is well advanced. Cabinet Office and Ordnance Survey are responsible for the central technical developments, which include a metadata editor, metadata harvesting, geospatial search on data.gov.uk, a WMS tool for data

publishers, and visualisation capabilities for users on data.gov.uk. Much of this uses open source software.

The technical challenge has also included establishing links with the spatial data infrastructures in the Devolved Administrations to create a UK-wide picture also accessible to the European Commission. However, we also need to ensure that download, feature and transformation services are available by June 2012. In particular we need to define an approach which enables data providers and/or publishers to deliver compliant data and services while minimising the impact on their internal data management processes. There are also continuing issues with ensuring that INSPIRE performance targets can be met.

We are publishing links to suppliers who state that they have INSPIRE compliant metadata software or view service capabilities (<http://location.defra.gov.uk/resources/third-party-suppliers/>). This is not an endorsement of these services and it only covers those suppliers who have put themselves forward for inclusion.

#### How will a data provider/publisher know that their datasets and services are actually INSPIRE compliant?

UK data providers will need to ensure that the services for which they are directly responsible are INSPIRE compliant. We aim to make this largely a self certifying process but will include some central assurance and testing (e.g. sample checks) to validate this approach and issue guidance on how they can be checked by other organisations. The Commission will also undertake testing of services and we will look at their testing approach to see what we can re-use to pre-empt any issues being unearthed following publication of data. Finally, and very importantly, we will encourage users to give feedback on data that is published and encourage data providers to be responsive in handling questions and dealing with problems. We have already published several guides on how to achieve certain requirements and also on how users can complain and appeal if non-compliance is suspected.

#### You will review the need for action on GI skills development, and Northern Ireland is mentioned as a leader in this respect. What ideas do you have in this context?

Land & Property Services in Northern Ireland identified the potential for having a pool of expert users that could easily be deployed in different departments where GI tools and techniques could make a difference. This appears to have worked well, although scaling up to the UK level is non-trivial given the numbers and distances involved. An example in GB was the deployment of resources to Defra during the foot and mouth epidemic a few years ago. Northern Ireland, and also Ordnance

Survey in GB, have been responsible for various schools initiatives, which sow the seeds for future awareness and recruitment to the industry. In higher education – between schoolchildren and those already trained – we are now sponsoring a 'Students for GI' competition, which will be launched in the New Year. This would promote the use of datasets sourced through data.gov.uk and would cover any discipline – not just geography or IT.

#### There is currently a consultation on the INSPIRE Implementing Rules for Annex II and III themes. How is this progressing from a UK perspective?

Engagement across the UK is good but there's a lot to sort out. The consultation is with Legally Mandated Organisations (LMOs) and Spatial Data Interest Communities (SDICs) rather than member states. The UK Location Programme are helping to co-ordinate and encouraging active participation, and are supporting the process by providing access to both experts and the wider data publishing community. We have established a consultation working group, which is led by Carsten Roensdorf from Ordnance Survey and we have publicised this through many channels including our website, AGI and all of our existing partners. There is a very tight timescale for comments to be returned to the EC by the middle of October. It is essential that any organisation likely to be affected gets in touch with UK Location as soon as possible.

#### Will you be continuing with an awareness programme for UK Location in general and INSPIRE in particular?

We certainly will! We have had a major presence at the recent AGI conference in Nottingham and at other events throughout the year. We will be sponsoring the award for the best technical implementation of address based solutions at the GeoPlace conference in November (this event will replace the NLPG/NSG awards previously organised by Intelligent Addressing). We aim to have a UK Location 'hack day' during the winter to engage with innovative developers wherever they come from! With UK Location being closely aligned with the developments on Transparency and data.gov.uk, we will also look to participate in any awareness raising in the context of this agenda.

*Thank you very much Ray – I think that we had better let you get back to your team and we look forward to seeing more results during the autumn. With INSPIRE Directive deadlines and the UK government inspired Public Data Corporation about to take off it looks as if everyone in our industry is going to have plenty to digest during the year!*



*Above: The UK Location Council's latest annual report was published in June – but what progress has been made so far?*

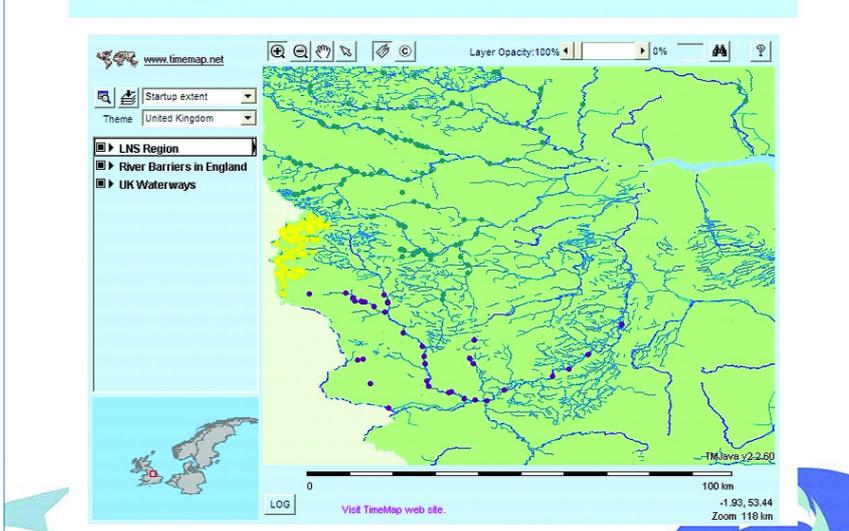


**... we need to define an approach which enables data providers and/or publishers to deliver compliant data and services while minimising the impact on their internal data management processes.**



# fish migration data & information

River Barriers in England and Netherlands



Above: Figure 1 – LNS WebGIS in TimeMap.

HEALTHY FISHERIES ARE CRITICAL to sustainable development and good ecological status of the rivers upon which we all depend. But how many of us who use our streams and rivers everyday for recreational purposes such as fishing and canoeing actually know very much about the fish species, let alone their

such as dams and sluices, which prevent access to fish spawning grounds. Some attempts to help fish migration have been made – such as fish lifts and fish ladders – but these are not always entirely successful.

There is now growing support for the removal of barriers to migration where possible. The LNS project focuses on raising awareness about better and more innovative migration measures, such as passages or sluice management, to help reduce barriers and the loss of fish en-route. A number of local demonstration projects – where species like the eel, salmon, and sea trout cannot reach their spawning and breeding grounds – are highlighted as possible better solutions. Work on migratory routes focuses on these three fish but the findings will be applicable to many other species.

**Communication is vital** Dissemination and communication of the findings of this project to policy-makers, local decision-makers, and the public are also important outcomes. The LNS project places considerable emphasis on promotion and publicity

## INSPIRE and the LNS Web-GIS project

The Living North Sea (LNS) project seeks to improve fish migration and remove man-made barriers blocking connecting rivers to the North Sea. The authors explain why the INSPIRE directive and a web-GIS have proved so important to fulfilling and communicating this project's goals.

By **David R. Green, Margaret Carlisle, Shirisha Karnam and Lukasz D. Langowski.**

lifecycle, migratory routes from sea to source, and their role in the environment?

In 2009, a €5m Interreg IVB funded North Sea Region project with fifteen European partners began to investigate. The Living North Sea (LNS) ([www.livingnorthsea.eu](http://www.livingnorthsea.eu)) project is identifying key issues concerning fish migration, barriers and the different solutions that can be used to re-connect the rivers and deltas around the North Sea Region.

In particular, it addresses knowledge-gaps about fish populations that depend on free movement between the North Sea and freshwater systems; considers innovative fish migration measures; collaborates with local water management authorities and policy makers; and creates greater public awareness about the North Sea.

Four essential aspects of the management of migratory fish are covered: migration routes; threats such as man-made barriers; how to influence future environmental policy at all levels; and informing, educating and engaging the general public.

**Fish migration barriers** Many deltas and estuaries are often inaccessible to migratory fish species and there are then barriers along the river,

because fish populations are often neglected when dealing with other environmental issues such as flooding, drainage, or renewable power generation. Creating new partnerships, sharing knowledge and achieving greater awareness and involvement are also being encouraged. The LNS partners are analysing and visualising migratory routes, populations and the consequences of management actions. New communication and mapping tools for working and sharing data between partners will also be explored.

**The LNS Web-GIS** The University of Aberdeen's main role in the LNS project is to source and collect data and information on fish migration and related topics to provide a resource for the project and to make this information available as maps for the public and other stakeholders. Together with our responsibility for the LNS website, this provides an easily accessible educational resource.

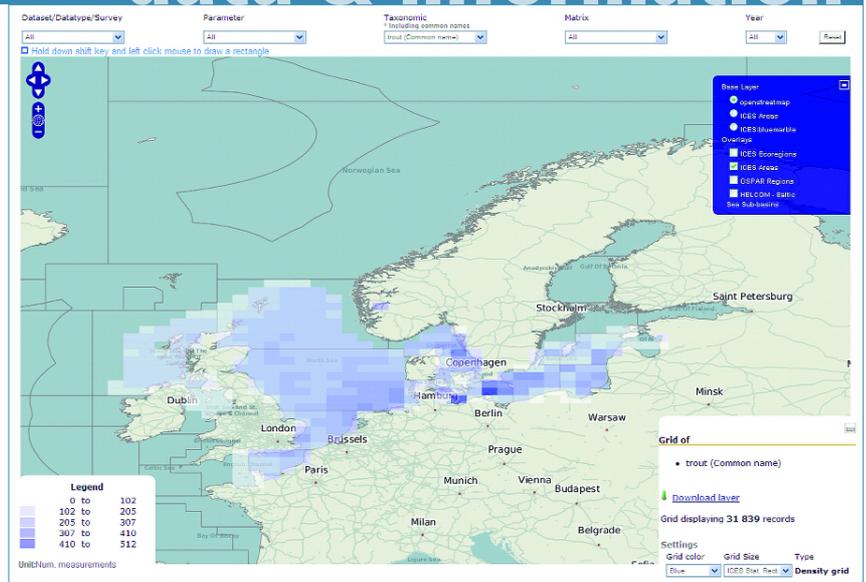
A Web-GIS has been developed for end-users to access both scientific data and information presented in the form of interactive maps. The end-user can interact with the maps and retrieve information. An overlay capability enables the

**A Web-GIS has been developed for end-users to access both scientific data and information presented in the form of interactive maps.**

establishment of relationships between different layers of data and information and datasets from many partners are being prepared for input. The map information is being developed using software such as TimeMap and Mapserver while a Google Earth version will also be made available. Figure 1 shows a screenshot from the TimeMap Web-GIS, which is publicly accessible at [www.livingnorthsea.eu](http://www.livingnorthsea.eu).

We are now collating user-requirements for spatial data and information for the LNS project, gathering information/data to create more maps, and checking the availability of additional data.

The LNS WebGIS is also building on work already done by the International Council for the Exploration of the Sea (ICES) on fish species within the North Sea, see Figure 2.



**Above: Figure 2 – ICES Trout distribution data within the North Sea**

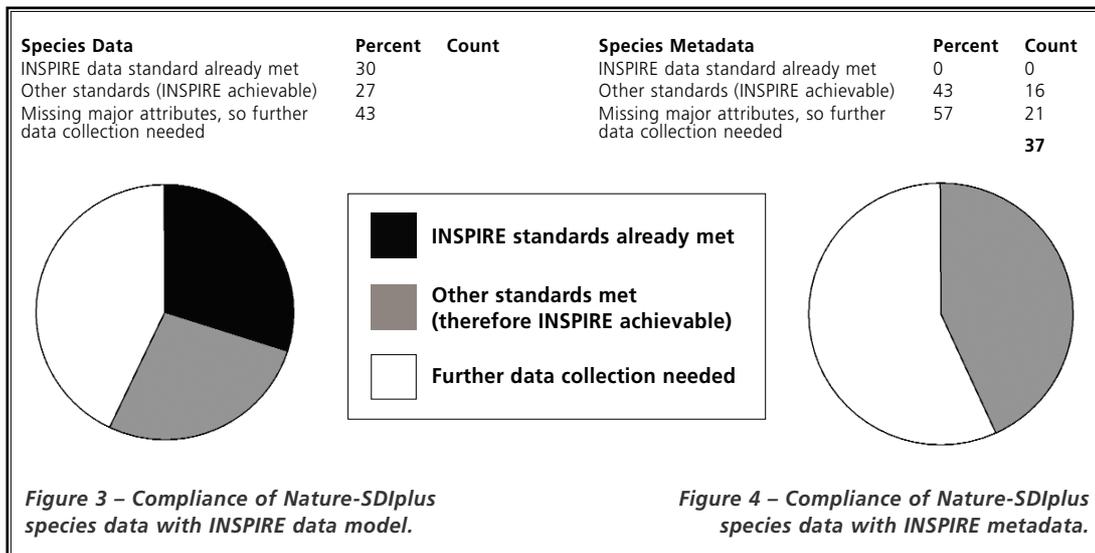
**INSPIRE** The 2007 INSPIRE Directive (<http://inspire.jrc.ec.europa.eu/>) is an important influence on the project. The Directive is designed to make spatial datasets from public bodies interoperable across the EU and accessible to all stakeholders including the public through the development of a Spatial Data Infrastructure (SDI). The EU experience is similar to developments elsewhere in dealing with disparate sources of data, scales of working, and standards, but with the added difficulty of dealing with many languages. Achieving INSPIRE compliance will be costly, but it should bring valuable benefits such as data-sharing, identifying and addressing data gaps, reducing duplication, and facilitating cross-boundary management (Tuchyna, 2006).

The Directive is mandatory for all EU Member States (MS) and implementation is delegated to legally mandated organisations (LMOs) - usually government departments or agencies. Two of the INSPIRE themes – Species Distribution, and Species

Observations & Measurements – encompass the LNS fish migration data.

**Linking LNS and nature SDI Plus** The Nature-SDIplus project network (with thirty partners in nineteen European countries) began in October 2008 and was completed in July 2011. The project's aim was to build capacity for the implementation of four INSPIRE themes: Protected Sites, Biogeographical Regions, Habitats & Biotopes and Species Distribution.

In 2009 Nature-SDIplus partners from 17 countries supplied 222 datasets or samples for analysis. Thirty seven were species datasets, which were compared against draft data specifications for Species Distribution. The results are shown in Figures 3 and 4. Only 30% of these species datasets met the INSPIRE data model standards, and none met the metadata standards. This is because INSPIRE requirements are more complex than other international standards. Some of the species data already meets other standards and can be



**Achieving INSPIRE compliance will be costly, but it should bring valuable benefits such as data-sharing, identifying and addressing data gaps, reducing duplication. . .**



transformed to INSPIRE compliance relatively easily. But there are many others requiring further research/data collection to achieve INSPIRE compliance. Follow-up research identified that the major cost of compliance for species data would be in capacity-building - the time needed for staff to learn, understand and apply INSPIRE specifications. The project developed tools and training modules for such capacity-building, and all the data items were successfully transformed to INSPIRE compliance and can be viewed at <http://www.nature-sdi.eu/>.

Initial assessment of the LNS data identified similar issues – in particular the need for substantially more metadata collection. Working towards INSPIRE compliance has been an important part of the LNS WebGIS and the projects are therefore synergistic.

**Summary and Conclusions** The plight of fish in our rivers is very important and requires greater public awareness and education. The LNS project will bring the experience and the expertise of fish migration specialists from the North Sea Region to help provide the link between science and policy-makers as well as providing educational tools and resources for improving our knowledge and understanding. A key component is communication with scientists and policy makers as well as educators. Adherence to INSPIRE principles will be extremely important for the Living North Sea project because they have the authority of an EU Directive; they address issues of longevity and legacy, and they facilitate cross-boundary information management. The development of a WebGIS embedded within the LNS website provides access to information for a wide range of people. Much of the fish migration information is spatial and the WebGIS therefore

provides an ideal platform for developing accessible mapping tools for better communication of that information.

## Acknowledgements

Interreg IVB North Sea Region Programme and partners of the LNS project who have provided datasets for the WebGIS, and the work of the NATURE SDIPlus project. More information on the Web-GIS can be found at [www.livingnorthsea.eu/webgis/](http://www.livingnorthsea.eu/webgis/).

## References

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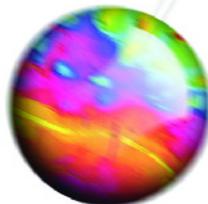


**The development of a WebGIS embedded within the LNS website provides access to information for a wide range of people.**



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THOSE OF US WHO DEAL in maps day to day probably don't think much about whether the map is a means to an end or an end in itself. We lump the two together. Perhaps in our minds there's a definition of maps that's something like this: "maps are tools for decisions". And yet, in many situations, a map (static, interactive or animated) is not the best tool for the job.

**A simple question?** This was driven home to me as I planned for a trip to a multiple hour running race 250 miles (400 km) from my home. I live outside Boston, and the event was in central New York state, near Syracuse. The race was planned for the same weekend hurricane/tropical storm Irene was expected to hit various places along the east coast.

I'm the first to admit I have a very weak understanding of hurricanes and their behaviour. My knowledge of the geography of New York state is

room, I was keeping an eye on the discussions of the storm on social and mainstream media via the Web. Both included regular addition of links to maps: maps of the latest storm path projections, maps of evacuation zones, maps of shelters, crowd-sourced maps of damage. . . And I wondered if and how those maps were being used. Were they just a curiosity or did individuals in those areas likely to be impacted actually use them for decision making?

**The easy answer** I have some anecdotal information that suggests that, at least where I was, the maps were not being used for decision making. As I ate breakfast the day after the race and storm, I listened as guests at the hotel checked out. One couple explained that they got a call from their town about evacuation, so they found a pet-friendly hotel and evacuated with their rather "yippy" dog. Only later did the husband learn the evacuation was optional. He didn't do any

**A hurricane is heading this way!** So do you need a map or an answer? When the organisers of a road race made no comment on an impending hurricane heading their way, **Adena Schutzberg** reached first for the local paper before studying her maps. Others went to the desk clerk. . .

only slightly better. My only question was this: would the storm impact the race? Other runners had the exact same question as evidenced by posts on the race's Facebook group. There was no response from the race director three days before race day, so I set out to find an answer.

Was the answer a map? No. It was a headline in the local paper made available via the Web: "Hurricane Irene is expected to mostly bypass Syracuse." The story explained the area should expect rain and wind, but nothing more. I posted the link on the Facebook group and loaded up the car to head west.

During the two days before the race and storm, I used the same weather tools I always do. I examined the radar maps and the hour-by-hour weather predictions. I know the hourly weather is far from perfect, but it's a good guide for the "gist of things". I find it far easier to digest the string of times and icons of sun and clouds than the animated maps of the expected rainfall or temperature. Why? I find it difficult to look at the animations and the moving time stamp at the same time! I find the static listing far more valuable for making key race decisions like "When will I need my headlamp?" and "When will I need a jacket and hat?"

Even as I was preparing for the race in my hotel

research, map-based or otherwise, after the phone call beyond finding a hotel. Other guests were planning their routes home; they were not looking at their cell phones or laptops for traffic information or road closures (the hotel had free wi-fi). Instead, they were asking the harried front desk attendant who patiently and repeatedly explained which exits on the New York State Thruway were closed.

I suspect these individuals were looking for what I was looking for earlier in the week: the answer. They and I did not want the raw data with which to do an analysis – we wanted the results of that analysis, aka "the answer". Why do some people want the raw data (or even the data on maps) and others want just "the answer". I suggest two main reasons, reasons that may be related.

First off, I point to the principle of least effort. People are lazy. So, why not skip the data and interpretation and use the results of someone else's work? Second, and this is more important, I cite a lack of spatial literacy. In short, many of us worldwide do not know where to go to find the data or maps and, if we do, we do not feel comfortable interpreting those maps to make a decision. Geospatial professionals and educators can't do much about the first reason, but perhaps we can do something about the second.

“

***I have some anecdotal information that suggests that, at least where I was, the maps were not being used for decision making.***

”

# consultation report



**With issues over public data still up in the air, there is also still a lot of confusion over open data.**

Image courtesy of Dreamstime, [www.dreamstime.com](http://www.dreamstime.com)

IN JULY, THE ORDNANCE SURVEY, the Met Office and HM Land Registry were brought under the Department for Business, Innovation & Skills. A Transition Board has been formed to 'oversee the establishment of a PDC by the end of 2011'. The consultation clearly implies that a PDC will be set up and that as well as 'providing a more consistent approach towards access to and accessibility of

members of the AGI were also invited. The two speakers are well known to us – **Jonathan Raper** (aka @MadProf) founder of Placr, and **Steven Feldman** of Knowwhere. They were asking the question 'Open Data and a Public Data Corporation: Whose data is it anyway and who pays for it?' Although both are in the business of exploiting GI and innovation, they came at the question from somewhat different angles. Steven, arguably the more cynical, summarised the consultation questions and the supposed benefits of both Open Data and the PDC. He is very sceptical about the size of the new economy likely to be generated by more open data – whether provided free of charge or not – and suggested that there is very little evidence to show that potentially taxable businesses are flourishing since, for example, OS OpenData was launched over a year ago.

Jonathan on the other hand is a very passionate

**Not pdc or plc – just PDC plc** In our June issue we asked 'OS plc or OS pdc? That may be the question!' Right now – until 27th October – the government is consulting on at least a part of this question. A Consultation on Data Policy for a Public Data Corporation was launched on 4th August and can be completed on-line or with a downloaded form. **Robin Waters reports.**

public sector information' and 'driving further efficiencies in the public sector' it will also be 'creating a vehicle that can attract private investment'. Note also that Royal Mail and Companies House (two other organisations charging for vital public sector information) already report to BIS.

At the same time, the Government has published 'Making Open Data Real: a public consultation', which sets out their approach to Transparency – which has the ambitious and simultaneous aims of: 'increasing accountability, building public confidence in government bodies, stimulating efficiency gains within the public sector, promoting greater citizen engagement and stimulating economic growth'. Wow!

The British Computer Society's new Location Intelligence specialist group held a meeting on 6th September to discuss these consultations. All

advocate of these businesses and indeed runs his own with a 'low six figure turnover' primarily working in transport and location information. The Open Data Consultation states that 'in relation to public services, Open Data means data available under the terms of the Open Government Licence. The presumption is that data about public services will be Open Data. It may be that some data held in relation to public services is made 'available' but is charged for'. Jonathan believes that all '#opendata has to be free'. The government should fund data collected as part of the public task (though the primary user(s)) – including registers – while leaving any further exploitation to the market.

Everyone wins through lower costs, more tax revenues, a 21st century digital infrastructure, transparency and accountability become embedded and we have a liberalised home market for new industries. The only losers would be some extra tax



**The government should fund data collected as part of the public task. . . including registers – while leaving any further exploitation to the market.**



## PDC Pricing Options

- 1) Data utility model (JR's preferred model) ruled out as 'unaffordable'
- 2) Status quo reorganised within the PDC
- 3) Harmonised charging across the PDC
- 4) Freemium with PDC operating in the market (this clearly the government's preferred option)
- 5) Profit maximisation model

costs for regulation and (perhaps) for distribution, the management of the existing state monopolies and there would be no PDC to privatise for large corporations to milk the public purse! His vision is for a National Digital Infrastructure Agency.

However, he is particularly worried that the PDC consultation implies a reduction in the already rather limited amount of free data coming from public bodies with bus and rail timetables being his prime target. He also wants to disentangle the mixed public-private IPR now endemic in many public sector organisations using 'systems integrators' that he believes can prevent access to publicly funded datasets. Steven effectively agreed – to him 'attracting private investment' is simply a euphemism for 'full or partial privatisation' – which takes us back to PDC plc!

There was not much time for questions but some showed that there was still a lot of confusion about both Open Data & the PDC. Clearly some members of the audience – even some from the private sector – have a vested interest in the status quo. But it is pretty clear from both consultations that it will take a lot of effort to shift the government from what is clearly a preferred course of making much administrative data freely available for transparency and accountability while wrapping up the more

lucrative data in the PDC and selling it off as a going concern with nice long-term contracts from government to deliver essential services. The sale of Qinetiq for a knock-down price comes to mind!

Steven wound up the meeting by answering the question 'Is there a role for government to stimulate innovation in the use of Open Data?' His answer 'NO, NO, NO!' Although he didn't get the chance to come back on this, Jonathan's answer would certainly have been 'Yes' if only by ensuring that more raw data is made available free of charge.

It is understood that the BCS will be holding a workshop on these consultations on 17th October. The Open Data consultation documents can be found at <http://data.gov.uk/opendataconsultation> while the PDC documents are at <http://discuss.bis.gov.uk/pdc/consultation-document/>.

- Steven's Knowwhere blog is at <http://knowwhereconsulting.co.uk> while Jonathan can be found at [www.placr.co.uk](http://www.placr.co.uk) and @madprof.



*Speaking at a meeting of The British Computer Society's new Location Intelligence specialist group, Steven Feldman was sceptical about the size of the new economy likely to be generated by more open data.*

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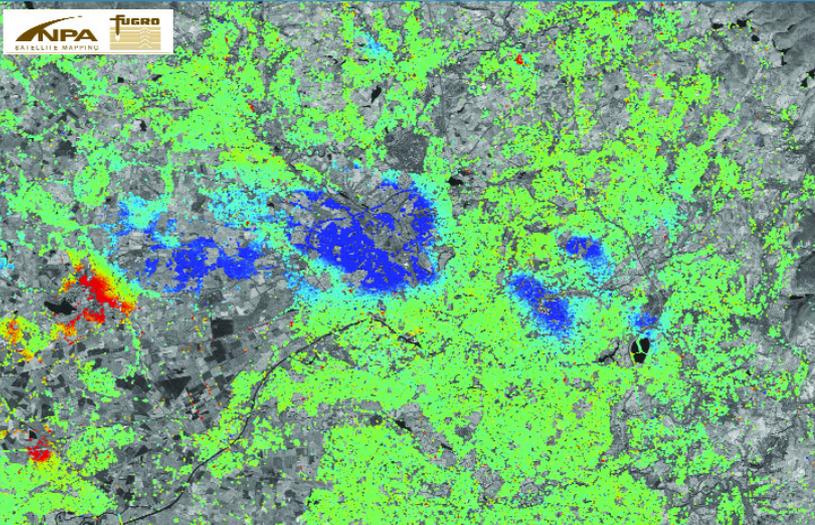
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# project PanGeo



Satellite SAR interferometry result for Manchester UK. Colours represent different rates of terrain-motion, i.e. geohazard. PanGeo is based upon the interpretation of such data by geological surveys to facilitate a free, online service providing new information on geohazards within 52 of the largest towns in the EU.

FUGRO NPA LTD OF Edenbridge in Kent is coordinating a new, EC project entitled **'PanGeo – Enabling Access to Geological Information in Support of Global Monitoring for Environment & Security'**. The project, worth approximately €3.5m with an EU contribution of

- The land-cover and land-use data from GMES Land Theme's Urban Atlas.

For each enquiry, a PanGeo web-portal will automatically integrate the geohazard data with the Urban Atlas to highlight the land-cover polygons influenced. Mousing over polygons will hyperlink to interpretative text. User input for the project will be facilitated by each survey and by the formation of a 'Local Authority Feedback Group'. The main users of PanGeo are anticipated to be:

- Local Authority planners and regulators who are concerned with managing development risk;
- National geological surveys and geoscience institutes who collect and disseminate geohazard data for public benefit;
- Policy-makers concerned with assessing and comparing European geological risk, much as the Urban Atlas data is used to compare the land-cover/use status of European towns.
- Citizens who will be empowered with information on geohazards that might affect them and to which they currently have little or no access.

The provision of an open-access, standardised information service on geohazards will enable policy-

## Bringing (information on) geohazards to a town near you!

Fugro NPA is coordinating the new PanGeo Project, involving all the national Geological Surveys of the EU. The project will provide an INSPIRE-compliant, free online geohazard service available, in most cases, in the two largest towns of each EU country.

approximately €2.5m, involves all 27 national Geological Surveys of the EU. In addition, a number of other organisations are participating with expertise in satellite InSAR processing, novel visualisations, INSPIRE-compliant web-map serving, GIS, and data validation. The team's work is overseen by several pan-European geological groups including EuroGeoSurveys and the European Federation of Geologists.

The three-year project started in February 2011 and will provide an INSPIRE-compliant, free, online geohazard information service for the two largest towns in each EU country, except Cyprus and Luxembourg, which will have one only. These 52 towns comprise about 13% of the EU's population. The geohazard information will be served in a standard format by the national Geological Surveys via a modified version of the "shared access" infrastructure as devised for One-Geology Europe. The information being made available (a new Ground Stability Data Layer and accompanying interpretation) will come from each Geological Survey and will be compiled from:

- Satellite Persistent Scatterer InSAR processing, providing measurements of terrain-motion.
- Geological and geohazard information already held by national Geological Surveys.

makers and regulators to:

- Systematically assess geohazards in each of the 52 towns involved.
- Gain understanding of the geohazards themselves.
- Find out where to go for more information.
- Analyse and cross-compare geohazard phenomena across EU countries.
- Gain a better understanding of the socio-economic costs involved.
- Make more informed decisions.
- Have confidence that the information provided is robust and reliable

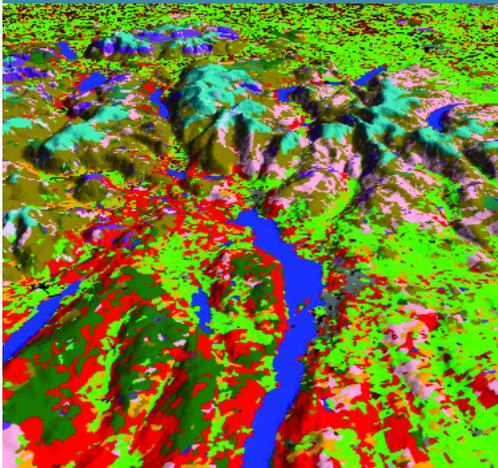
PanGeo has 37 partners in total including all 27 EU national Geological Surveys. The PanGeo 'Core Team' comprises: Fugro NPA Ltd (UK - Project Coordinator), British Geological Survey (UK), Landmark Information Group (UK), TNO (Netherlands), SIRS (France), Institute of Geomatics (Spain), BRGM (France), EuroGeoSurveys and the European Federation of Geologists (pan European), AB Consulting Ltd (UK), Tele-Rilevamento Europa (Italy), Altamira Information (Spain), Gamma Remote Sensing (Sweden).

- For more information contact the project coordinator: Ren Capes of Fugro NPA Ltd ([r.capes@fugro-mpa.com](mailto:r.capes@fugro-mpa.com)).



... a PanGeo web-portal will automatically integrate the geohazard data with the Urban Atlas to highlight the land-cover polygons influenced.





**Above: The 2011 Land Cover Map laid over a Digital Terrain Model – showing the Lake District.**

THE UK'S NEW LAND COVER MAP provides a continuous coverage of habitat distributions across the countryside at a 25m resolution. The map is the third in its series, with previous Land Cover Maps produced in 1990 and 2000.

This version was derived from over 70 satellite images collected between 2005 and 2008, which contain spectral information corresponding to different ground surfaces and

vegetation types in both summer and winter. An automated classification process assigned a land cover type to approximately 10 million land parcels based on existing Biodiversity Action Plan (BAP) Broad Habitats. This classification is widely used for monitoring and reporting our countryside.

Dr **Dan Morton** from the Centre for Ecology & Hydrology led the Land Cover Map project. He says: 'At a time when our land surface is under increasing pressure, reliable information on land cover is essential. The demands that we place on our land are often conflicting and need to be balanced to maintain and enhance our quality of life. To address these issues and plan for the future we need to know what we have on our land surface and where it is. The new map provides this information and will find many new applications.'

The Land Cover Map is available in a range of data formats and spatial resolutions to suit different user requirements. The most detailed data is supplied as a vector product with a 'minimum mappable unit' of half a hectare. Each polygon, representing a parcel of land, has attributes describing its land cover classification and metadata detailing how this information was derived. Five raster (gridded) products simplify the information with a 25 x 25m version using the most likely habitat for each polygon. In addition, four freely available products

## New UK land cover map launched

The 2011 UK Land Cover Map was published in July and was developed using a combination of satellite images and digital map data. The map is produced by the Centre for Ecology & Hydrology (CEH) on behalf of the long running Countryside Survey partnership.

Land parcels – real world objects such as fields, lakes and settlements – were derived from existing national mapping such as the Ordnance Survey's MasterMap Topography Layer in combination with several other sources of spatial data. This makes it easy to integrate the new land cover map with other datasets and hence 'opens the door' for many new applications, as well as providing an improved capability to monitor future changes.

The 2011 map shows that UK is covered mainly by 'Arable and Horticulture' or 'Improved Grassland' habitats (25% each), followed by 'Mountain, Heath and Bog' (16%), 'Semi-natural Grassland' (13%). 'Urban areas', 'Coniferous Woodland' and 'Broadleaved Woodland' each make up 6% of the UK. 'Coastal' and 'Freshwater' habitats contribute to the remaining 3%.

summarise the 25 x 25m raster down to the 1 x 1km level.

Land Cover Map data can be obtained from the Centre for Ecology & Hydrology (CEH) under licence for academic, non-commercial and commercial use. Some products, including the 1km data, are available free of charge for non-commercial use via the CEH Information Gateway (CIG) (<https://gateway.ceh.ac.uk/>).

- *CEH is the UK's centre of excellence for integrated research in land and freshwater ecosystems and their interaction with the atmosphere. CEH is part of the Natural Environment Research Council and employs more than 450 people and hosts over 150 PhD students, with a budget of about £35m. CEH tackles complex environmental challenges to deliver practicable solutions so that future generations can benefit from a rich and healthy environment. [www.ceh.ac.uk](http://www.ceh.ac.uk)*

### The Countryside Survey Partnership

Defra and the Natural Environment Research Council (NERC) commissioned the 2007 survey Countryside Survey, which was carried out by CEH. Other funders include Natural England, Welsh Assembly Government, Scottish Government, Northern Ireland Environment Agency, the Forestry Commission, Countryside Council for Wales and Scottish Natural Heritage.

A Field Survey involved an in-depth study of a sample of nearly 600 1km squares in the countryside, which can then be used to calibrate satellite information for the Land Cover Map. Countryside Survey produced a UK report on its fifth field survey in late 2008 and has subsequently produced reports for England, Scotland and Wales, and on special topics such as freshwaters, soils and overall integrated assessment of ecosystems services. [www.countrysidesurvey.org.uk](http://www.countrysidesurvey.org.uk)

The first Land Cover Map of Great Britain, produced in 1990, identified and showed the distribution of habitat types as 25 x 25m square. The second version, in 2000, used the same type of satellite images as before, but also incorporated information from other datasets. Northern Ireland was included for the first time in 2000, providing a UK wide coverage.

# 10 years of MasterMap



*Above: a montage, with the iconic Gherkin in the City of London, demonstrates the multi-layers of MasterMap, from topographical mapping to imagery.*

precise area of interest. The product also introduced a unique topographic identifier (TOID) for every geographic feature in the database. The TOID provides a common reference system, which can be used to support the sharing of information related to any feature and its location.

Every one of the half billion features within MasterMap is assigned its own unique TOID. These facilitate cross referencing between individual addresses, roads and buildings and enable end users to link MasterMap features to their business data for detailed analysis. TOIDs are persistent and each one remains attached to a feature throughout its lifecycle regardless of any minor changes and modifications to the feature.

The launch of MasterMap marked a seismic shift in the way geographic information was produced. Users were no longer restricted by simple points and lines clipped to tiles inherited from the old map sheets. They were able to create interoperable data with change management focused on very specific areas of interest and every user could set their own update schedules to receive just those features that had changed since their previous data delivery.

In addition to the seamless large scale Topography Layer with TOIDs – launched in 2001 – MasterMap introduced several new layers – a crucial feature for GIS users. The Integrated Transport Network (ITN), Address Layer, Address Layer 2, and

## OS MasterMap – a decade of transformation

A decade ago Ordnance Survey launched MasterMap with its sights firmly on the GIS marketplace. Comprising a suite of interoperable products, MasterMap gave users the ability to reference business information to a highly detailed, consistent and continually maintained geographic data framework.

HERALDED AS THE FIRST of its kind across the world from a national mapping agency, MasterMap enables users to accurately link precise location information to critical business data – customers, assets, communities, buildings, roads and other facilities. Within four months of its launch MasterMap was being used by over 100 customers. For local authorities, emergency service providers and utility companies its widespread take-up has contributed to gains in efficiency as well as more effective service provision. Its adoption has led to reductions in costs throughout the public sector and also in commercial markets, including the energy, infrastructure and the land and property sectors.

Three features are the keys to understanding Master Map: a seamless database, several layers of information, and the TOID. With a seamless database, users were no longer constrained by the need to purchase the individual map tiles of its Land-Line predecessor, so customers could order a very

an Imagery layer have subsequently been added.

The ITN provides topologically consistent routable networks of roads and paths at the same resolution as the Topography layer, while the Address layers give postal and non-postal addresses. The high quality ortho-rectified Imagery Layer now also covers the whole of Great Britain.

**Change happens...** All significant changes in Great Britain's topography are recorded in OS's National Geographic Database, which underpins MasterMap. The database is continually being updated with around 5000 changes reported every day. Ordnance Survey aims to measure and record any significant change within six months of its occurrence, e.g from completion of buildings, roads or other features. OS has over 300 dedicated surveyors spread across Great Britain who update the database. They are further supported by an extensive remote sensing capability using the latest generation of airborne

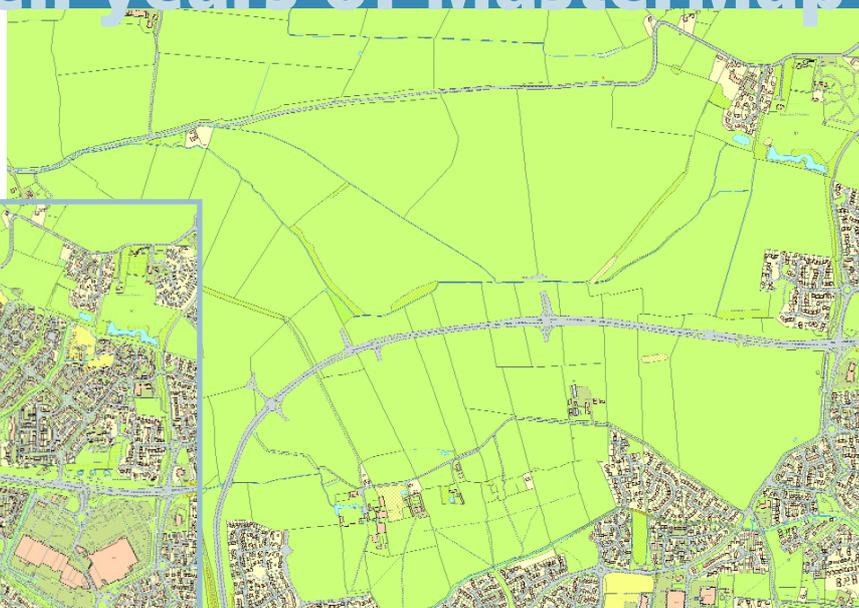


**With a seamless database, users were no longer constrained by the need to purchase the individual map tiles. . .**



# 10 years of MasterMap

*Not only does the topography of Britain change over ten years but the way it is mapped has changed too.*



digital cameras. Investment in positional accuracy improvement of the original mapping between 2002 and 2006 has also ensured MasterMap's compatibility with the most accurate GPS surveying.

Perhaps one of the most transformational aspects of MasterMap has been in the way that updated information is delivered. A decade ago, with Land-Line, change-management was very different, with customers having to manually identify changes on tile-based systems to update their own maps with tools developed specifically for this purpose. Today, customers only receive information about features that have changed and many have built change-management systems into their database and developed workflows to interpret how changes to MasterMap features affect their own business.

Updates to MasterMap are published every six weeks with users being offered a full supply of revised data in their area of interest or simply a publication of just those features that have been added, deleted and/or modified since they last had an update.

**MasterMap layers** MasterMap's interoperable layers of geographic information are worth exploring in a little more detail.

The Topography Layer provides the backbone to MasterMap and is a highly detailed and continuously maintained view of Great Britain's landscape, down to individual buildings and road level detail. The layer delivers intelligence within the dataset. Buildings, for example, are no longer a simple set of accurate lines, but complete individual closed features with additional descriptive attributes to help understand both form and function.

The layer is widely used across local authorities to underpin services and decision making. A typical

local authority, Renfrewshire Council reports that, 'OS MasterMap Topography Layer has changed the way people work with mapping... people can identify and work with features they understand in the real world, such as buildings or roads, and they can build new databases using these real-world features much more quickly and accurately than they could before.'

The Integrated Transport Network (ITN) Layer is a detailed road network that includes all routes from motorways and main roads down to lanes and pedestrianised streets. The layer is a logical network representation rather than a traditional 'map', and so it can be used for applications like positioning and routing of emergency vehicles through to underpinning the management of highway assets. In March 2010 an Urban Path theme was introduced, extending the ITN layer's content into footpaths.

The Department for Transport's Transport Direct portal ([www.transportdirect.info](http://www.transportdirect.info)) uses ITN as the basis for all door-to-door journey planning. They use the layer's road geometry and driver routing information to make sure that routes are optimised and take account of restrictions that are in place. Nick Illsley, chief executive of Transport Direct, comments, 'OS MasterMap was the right choice, being comprehensive as well as compatible with other supplier's products.'

Address Layer 2, launched in 2006, provides a link between every property address and its location on the topography layer with precise coordinates for more than 27 million residential and commercial properties in Great Britain, as well as multi-occupancy properties and a wide range of landscape objects that do not have postal addresses. Combined with the ITN layer, it provides a comprehensive tool for a wide range of users who can cross-reference objects such



**A decade ago... change-management was very different, with customers having to manually identify changes...**



# 10 years of MasterMap



*MasterMap has made a massive difference to the operation of emergency services, enabling them to quickly pinpoint and respond to incidents.*

*Photo courtesy of West Midlands Fire and Rescue Service.*

as buildings and streets. Used in conjunction with customer relationship management software, for example, Address Layer 2 has transformed the way many organisations use geographic information, enabling rapid identification of a customer's location and/or the source of a complaint.

Anglian Water uses Address Layer 2 to meet statutory requirements to provide either bottled water or mobile bowlers in the event of an interruption to normal supply. An automated process has removed dependence on a paper-map procedure, resulting in time, resource and cost savings and improved implementation times, enabling Anglian to improve their deployment of emergency water supplies.

The MasterMap Imagery Layer provides a seamless aerial picture of Great Britain and was completed in June 2009. The layer is now maintained as part of OS's integrated revision programme, which ensures that all of the MasterMap layers are maintained in parallel to ensure interoperability and consistent content.

From 2010 Leicestershire Fire and Rescue Service (FRS) have been using the imagery layer in their command support vehicles to deal with major county incidents. The county's two command support vehicles have the data available on their systems, enabling the FRS team to have access to imagery at their fingertips in emergency situations.

Jenny Kirby, ICT project coordinator at Leicestershire FRS, was excited about the addition of imagery data: 'We had considered other ways of accessing imagery for the county, but it is more reliable for the emergency services to have the data stored on board our command support vehicles. The

currency and the coverage of the Leicestershire area were the key factors for us choosing Ordnance Survey, and OS MasterMap Imagery Layer will play a key role in supporting our activities.'

**The future...** Ordnance Survey is committed to ensuring that OS MasterMap suite remains the thoroughbred within its stable of geographic information products. Following significant investment in both the National Geographic Database and its supporting infrastructure, MasterMap will be more responsive to specific customer needs as they evolve over the next ten years. These could include better identification of specific 'functional sites', where a number of real-world features can be referenced together to create super features such as hospitals or airports; extension of the ITN layer's network geometry to include other modes of transport and further extension of driver routing information; and many of the core elements of OS MasterMap will continue to underpin the new AddressBase products released on 30 September 2011.

OS MasterMap has come a long way since its launch in autumn 2001. The content has expanded, changes are available more frequently and the service and delivery has changed almost beyond recognition. However, customers have continued to show all their initial enthusiasm and ingenuity in finding innovative ways to realise the benefits of seamless layered digital mapping.

• **Watch out in the next issue of GiSPRO for an interview with David Henderson, MasterMap's senior product manager, on future directions for OS's flagship product.**



**An automated process has removed dependence on a paper-map procedure, resulting in time, resource and cost savings...**



## Harrow Council delivers £3.2 million savings over ten years

The London Borough of Harrow wanted to reduce the cost and environmental impact of waste collection. Harrow had recently identified a need to move away from paper-based records and create an end-to-end information flow to provide residents with up-to-date information on bin collections.

Harrow's 'Waste Collector Project' revolutionised the way the council collected rubbish. The project used a number of datasets, the main two being MasterMap's Integrated Transport Network Layer (ITN) and the Local Land and Property Gazetteer. A combination of technologies including GPS, in-cab computers, route optimisation and a real-time back-office system helped provide the final solution.

Real-time updates on collected and missed bins are sent via wireless signal from in-cab devices, so that customer queries can be answered in seconds, rather than waiting a full working day. The OS MasterMap ITN Layer

*Route optimisation using MasterMap and GPS has helped Harrow's waste collection save money and reduce waste.*

*Photo courtesy of Harrow Council.*



is also used to aid Harrow in continuously reviewing and optimising routes.

As well as a predicted £3.2 million in savings over ten years, Harrow has seen an 18.8% reduction in waste going to landfill. Putting more efficient routes in place has reduced fuel consumption by 15%, lowered CO2 emissions and released one waste vehicle for other duties.

Jonathan Milbourn, Head of Customer Services, said: 'My Team love the fact they can

answer questions quickly. Customers can get quite annoyed if their bin isn't collected. Having up-to-date and accurate information to hand helps keep things calm and enables us time to offer recycling advice where required.'

• To read more about how Harrow has implemented GI across its activities refer to *GiSPro* April issue 2011 – 'Where there's muck... there's happy residents!' By Matt Pennell and Luke Studden.

## South Yorkshire Police deliver £1m annual saving



*Photo courtesy of South Yorkshire Police.*

Operating across the boroughs of Rotherham, Barnsley, Sheffield and Doncaster, South Yorkshire Police (SYP) recognised that geographical information systems (GIS) could help its community police officers to work more effectively. SYP wanted to provide more intelligence about local communities to the people that need it, for less money.

Using a range of data products, including Address Layer 2 and MasterMap Topography Layer, SYP developed an intuitive web-based mapping solution. Called Intranet Mapping Solution (IMS) and based on ERSI's ArcGIS solution and Crime Analyst Extension, IMS allows officers to view information on different categories of crime; they can see recorded crimes, offenders living in the area, locations of CCTV cameras and to identify flashpoints of trouble in relation to key premises, such as

pubs and clubs, enabling more efficient resource planning and deployment.

SYP can now make full use of the GI supplied by Ordnance Survey and through the system can provide an accurate geographic context to crime data. Ad hoc mapping queries are dealt with in two minutes, compared to 40 minutes beforehand, reducing average query costs from £13 to under £2. They can also quickly pull together demographic and ethnicity data on specific communities or areas. What once took four hours is reduced to two minutes with associated cost reductions; SYP estimate annual savings in excess of £1,000,000.

Mark Hamilton, GIS Manager at South Yorkshire Police, said, 'GIS is such a powerful tool we wanted to make it available to everyone, not just our specialist analysts.'

## West Midlands Fire Service transform IT assets

West Midlands Fire and Rescue Service (WMFRS) needed a solution to transform its IT assets to save money and improve the quality of service delivery. The solution needed to be tailored to the emergency services and allow the efficient capture, analysis and dissemination of operational information across the organisation.

The system developed uses a single piece of hardware and an innovative workbook



*Photo courtesy of West Midlands Fire and Rescue Service.*

design that allows data to be captured by users across the organisation to document incidents, complete home fire safety checks and much more. Workbooks can be placed on a map and linked to a gazetteer to build a more complete picture of activity at any property. Giving users access to a range of OS products, including MasterMap Topography Layer, the system enables them to accurately pinpoint the location of incidents.

The system delivered £470 000 of annual cost avoidance for WMFRS alongside operational efficiencies. A pilot scheme is trialling the system with other fire and rescue services to explore the same efficiencies and savings and shared access to GIS for operational staff.

The WMFRS solution proved an award-winner and has been promoted by the Department for Communities and Local Government with the result that Staffordshire Fire and Rescue Service are also now using the technology.



*Chris Holcroft is Director and CEO of the AGI.*

AT THE TIME OF WRITING a week has passed since the close of AGI GeoCommunity '11.

From a personal perspective the conference completely exceeded my expectations. In the current tough economic climate and as 'senior responsible officer' for the event, I'd heard plenty of views during the run-up to the event about the difficulties, hardships and the potential calamities that we the organisers would face running AGI GeoCommunity in 2011.

So to end the conference with a wonderful turnout, great sponsorship support, excellent content and an enthused diverse set of delegates made it all very worthwhile. It allowed the conclusion to be drawn that the AGI GeoCommunity platform remains fresh, evolving and still has lots to offer. I wish to thank all of you who played a part in the conference, whatever that

### Land and property information

On October 25th AGI Northern Ireland, in partnership with Belfast City Council, will be looking at 'Land and Property Information: More than just Asset Management'. This will not only highlight the extensive usage of GIS in land/asset management across the NI Economy, but to illustrate the need for a more structured and joined-up approach. Owing to the wide-ranging scope of the NI GI Strategy, this event should equally be of interest to many delegates from both the public and private sectors. This event will be held at Belfast City Hall, BT1 5BS.

### Apps, INSPIRE and the New Economy

On November 21st AGI Scotland, in conjunction with BGS and CEN/TC 287 Geographic Information (European GI standards Committee) will address

## AGI GeoCommunity exceeds expectations

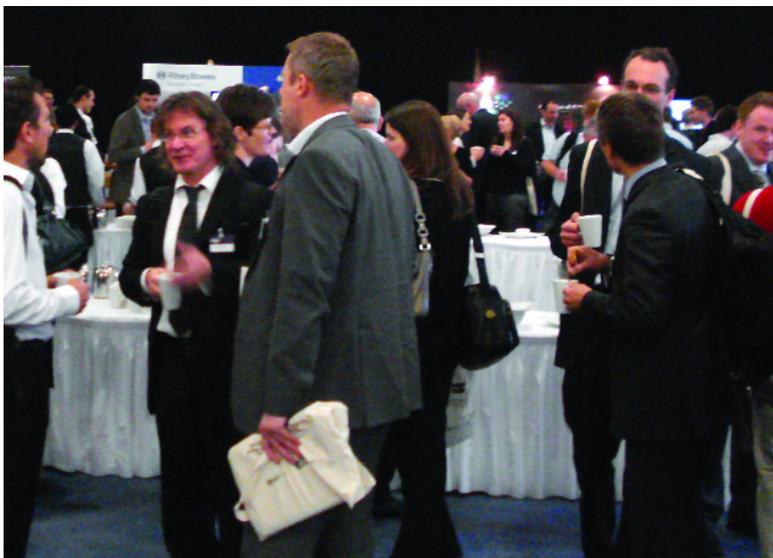
Despite the tough economic climate, enthused delegates contributed to a wonderful turnout with great sponsorship support at this year's AGI annual conference, says AGI director general **Chris Holcroft**.

role may have been. Your support, contribution and presence certainly created this success.

But, the AGI year does not end with the conference – a comment I trot out every year!

Events-wise I outline below some of the bigger ones still remaining to be run. All details can be found about these and others on the AGI website ([www.agi.org.uk](http://www.agi.org.uk)).

*Below: AGI GeoCommunity'11 – An enthused and diverse set of delegates made all the hard work worthwhile.*



'Apps, INSPIRE and the New Economy'. This fascinating day will look at new generation Location based Apps, new business models, people as sensors and the challenges these introduce. This event will be held at the British Geological Survey, Edinburgh, EH9 3LA.

### Location Wales 2011

On November 29th AGI Cymru will run a conference on 'Location Wales 2011 – Opportunities and Challenges'. The event will bring the Welsh geocommunity together to address vital structural, policy, socio-economic and technology questions, to share experiences, to express and to demonstrate the geocommunity's vital place in what is becoming a new economy. This event will be held at Cardiff City Hall, CF10 3ND.

### The AGI Annual Awards Dinner

In the evening of November 24th the AGI will run one of its major events of the year – the AGI Annual Awards Dinner.

Every year, AGI judges present a set of industry awards. This is just one of the ways in which AGI encourages best practice, innovation and maximum use of geographic information. It is also a great way for our members to get actively involved and be recognised for their efforts and achievements.

Each Award is announced and presented at the Annual Awards Dinner, which takes place this year on Thursday 24th November 2011. The award

categories ensure a spread of entries from across central and local government, the private sector, research and education.

Awards are presented in ten categories:

- **Innovation & Best Practice (Central Government)**  
– sponsored by GIS247
- **Innovation & Best Practice (Local Public Services)**  
– sponsored by Pitney Bowes Business Insight
- **Innovation & Best Practice (Private Sector)**  
– sponsored by Esri UK
- **Innovation and Best Practice (Business Case & ROI)**  
– sponsored by ConsultingWhere
- **Innovation and Best Practice (Charitable Status)**  
– sponsored by Esri UK
- **AGI Student of the Year**  
– sponsored by Ordnance Survey

- **Best Paper from the AGI Conference**  
– sponsored by Informed Solutions
- **Past Chair's Award**
- **Director's Award**
- **AGI Volunteer of the Year**

The Awards Dinner will be held at the Holiday Inn Bloomsbury, Coram Street, London, WC1N 1HT.

As you can see, there is much still left in the AGI year. So keep an eye on the AGI website for all the latest information about our many events and activities.



The AGI exists to "maximise the use of geographic information (GI) for the benefit of the citizen, good governance and commerce". Membership details are available from [info@agi.org.uk](mailto:info@agi.org.uk) or by calling: +44 (0)20 7036 0430



***It allowed the conclusion to be drawn that the AGI GeoCommunity platform remains fresh, evolving and still has lots to offer.***

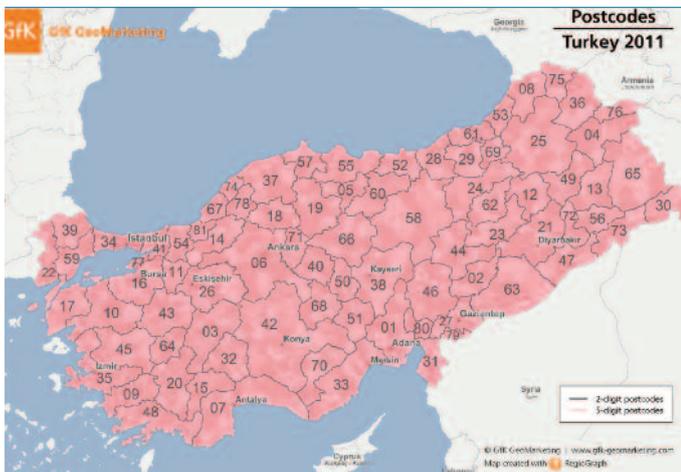


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## 2011 maps reveal regional reforms

Europe-wide regional reforms took place in 2010 as part of cost-saving measures among administrative and political bodies, resulting in the dissolution of thousands of postcodes and municipalities. The GfK Europe Map Edition 2011/2012 reflects these changes for 42 European countries with approximately 1,000 administrative and postcode maps that include affected countries like Poland, Sweden, Turkey and especially Greece. The updated edition from GfK GeoMarketing, is available in all standard digital map formats. The digital maps are offered as standalone country sets and as part of a Western Europe, Eastern Europe or comprehensive Europe package.

GfK GeoMarketing has also completed the English version of its geomarketing product, RegioGraph 2011, which includes market data and maps for European countries and can be expanded with worldwide map editions.

## AddressBase debut

Three addressing products produced by GeoPlace, a joint venture between Ordnance Survey and the Local Government Group, were unveiled at the recent AGI conference. Since the 30 September, the AddressBase products have been available to the public and private

sectors – to the public sector under the Public Sector Mapping Agreement (PSMA) and through commercial licences to other sectors. The products – AddressBase, Plus and Premium – combine the National Land and Property Gazetteer (NLPG), OS MasterMap Address Layer 2 products and the

Royal Mail Postcode Address File (PAF). Each of the products has been designed to meet differing needs of users. For more information go to: [www.ordnancesurvey.co.uk](http://www.ordnancesurvey.co.uk).

## Managing data as layers

Web Map Layers is an off-the-shelf, extensible web-mapping product designed for map viewing and interrogation. It manages spatial data as individual map layers, each served as an Open Geospatial Consortium (OGC) web map service (WMS). The user interface is a web-browser and built on the OpenLayers JavaScript library. The product is the latest addition to Cadcorp's SIS – Spatial Information System line and is aimed at users with no experience of GIS, such as members of the public, and non-specialists who interact with spatial data.



Trimble's TerraSync software with the GeoXH handheld.

## TerraSync updated

Trimble has announced an update for its TerraSync software, used by utilities, public sector, natural resources and other organisations as a component of enterprise GIS data collection and asset management projects. Updates include: QuickPoint data collection mode for one-click data capture and LaserAce 1000 rangefinder integration. Also, TerraSync Centimeter edition supports the company's surveying instruments like the R8 GNSS receiver; by leveraging RTK receivers, field workers can achieve centimetre-accuracy using existing GIS workflows.

## BRIEFS

Software provider to emergency services, 3tc Software, now offers Cadcorp SIS as a GIS and mapping engine in its MODAS mobile data product, which enables operational personnel to have information where they need it and when they need it, typically in the vehicle.

Huntingdonshire District Council has gone live with an online mapping and information service supplied by Astun Technology. "myHuntingdonshire" enables local residents to use their postcode or address to find information about council services and to locate facilities on maps.

Support for metadata is now offered within Blue Marble Desktop v2.3 with a metadata editor tool that allows users to create or update FGDC (Federal Geographic Data Committee) compliant, which are processed through Desktop. This feature allows for the seamless



## Field Data. Captured.

### MobileMapper 10

Ashtech's latest product, the MobileMapper 10, is a complete and easy to use mapping solution for real-time collection of accurate data.

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integration of metadata into existing workflows, helping users to share geographic data across their complete enterprise while retaining data integrity throughout the entire lifecycle.

Erdas has announced ECW for ArcGIS Server version 11.0.2, which includes backward compatibility with Server 9.3 and 9.3.1. The product provides a means for the server to deliver data in the enhanced compression wavelet (ECW) format to clients via OGC-compliant web coverage service (WCS) and web map service (WMS).

German software company conterra GmbH has announced a free trial for monitoring the health and performance of spatial services using sdi.suite serviceMonitor, which can monitor geoservices for performance and reliability, and notify administrators if services

*Trimble's Field Inspector software with the Nomad, Juno and GeoXT handheld devices.*



## Driving field efficiency

Field Inspector version 2.1 is designed for automating utility infrastructure and smart grid asset maintenance and inspection. The software from Trimble is compatible with several of the company's handheld computers and features enhanced functionality including: GeoExplorer 3000 and 6000 series support and Esri ArcGIS 10.0 support. Used with mapping and GIS handheld devices, the software allows utility field workers to capture GNSS time and location information along with 1D and 2D barcode data, digital images, digital sketches and electronic signatures.

become unavailable. More information at [www.conterra.de/monitor](http://www.conterra.de/monitor).

Exprodax's Team-GIS Acreage Analyst, a toolkit for evaluating, ranking and screening petroleum leases, opportunities and risks, has been released for ArcGIS 10. The new version delivers geospatial analytic tools to geoscientists in oil and gas companies.

LinuxIT, an open source specialist, has launched an indemnification program to underwrite community-based open source software. The company will verify software by running it through an accreditation process. The program enables the company to fix or replace software that does not work as expected. Cover to

the value of £5m is provided.

Laser Technology in Colorado has announced LaserGIS version 1.0.1 for ArcPad: a toolbar extension that aims to enhance the data collection workflow by making the process quicker and easier. The version is also available in German and French with a localisation toolkit being offered for other international markets.

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**SPAR Europe 2011**  
**8-9 November, World Forum, The Hague, The Netherlands.**  
 More information:  
 www.spar-eu.com

**UGI 2011 – Regional Geographic Conference**  
**14-18 November, Escuela Militar, Santiago, Chile.**  
 More information:  
 www.ugi2011.cl/

**European LiDAR Mapping Forum 2011**  
**29-30 November, Salzburg, Austria.**  
 More information:  
 www.lidarmap.org/ELMF/

**2012**

**International LiDAR Mapping Forum 2012**  
**23-25 January, Denver, USA.**  
 More information: www.lidarmap.org/LMF.aspx

**GEO-12: The GEO Event**  
**21-22 March, Holiday Inn, London-Elstree, UK.**  
 More information: www.pvpubs.com/events.php

**GIS Research UK (GISRUK) Conference 2012**  
**11-13 April, Lancaster University, UK.**  
 More information: www.lancs.ac.uk/gisruk2012/

**SPAR International 2012**  
**15-18 April, The Woodlands, Houston, Texas, USA.**  
 More information: www.sparpointgroup.com/International/

**SPAR Japan**  
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