

GIS

Professional

issue 51 : April 2013

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Cloud GIS aids UN Development Programme

What can BIM learn from GI?

Taking GIS beyond the campus

A 'holy grail' of digital data capture?

Mapping: free and online in Malta

New guidance on BLPUs polygons

GEO-North: digital natives to friendly drones!

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Front cover: Residents of Jacobabad district wade through floodwater in November 2012. Read how Esri's cloud GIS is helping the United Nations to improve emergency mapping in Pakistan on page 14.

Photographer: Alanna Jorde



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

Postcodes to Peacekeeping

In this edition we have interesting case studies on wildlife in Yorkshire, education in Northamptonshire and mobile data capture in Liverpool. From further afield we have the use of GI for disaster relief and development in Pakistan and the timely development of a spatial data infrastructure for Malta.

We hope that **Tim Wood's** second contribution – this time on Building Information Modelling/Management (BIM for acronymophiles) will stir some thoughts on integration of GI with the world beyond – particularly with the construction industry that the government so wants to encourage. And, with tongue in cheek, I suggest that you check out the dead parrots in local government!

More seriously we note that there is continuing controversy over the future status of the Postcode Address File (PAF), which allocates postcodes to every delivery point in the country. This is maintained by Royal Mail's Address Management Unit and brings in £27.5m revenue for this government owned company. Should it be privatised along with its parent? Should it become a separate company in the public or private sectors? Should its functions be taken over by another organisation such as GeoPlace? Should the PAF be available free of charge to the public domain?

Ofcom's consultation document on PAF is very clear – only minor tinkering with the 'complex' licensing regime is needed. The government's Open Data User Group (ODUG) however, believes that we should have 'a central, high quality, publicly available set of address data for the country – owned by the public and available as Open Data for use and re-use.' ODUG's chair, **Heather Savory**, blogs that the argument is 'mainly about money – who is entitled to make money from addresses and how much'. PAF is a natural monopoly with its IPR solely vested in Royal Mail despite all addresses originating with local authorities. **Bob Barr** – a member of ODUG – has long argued that PAF is a 'core reference dataset' essential for record keeping, deliveries and the emergency services.

We know of course that some companies make considerable revenues from reselling PAF – usually with some added value – and they could be affected by opening up the data. And it is very difficult to quantify the downstream benefits – from new and more efficient services as well as direct and indirect cost savings.

We believe that ODUG should prevail over Ofcom – and not least because it might just bring to light the redacted figures in the consultation, which prevent us from knowing how on earth Royal Mail needs £24.5m to maintain PAF when Ordnance Survey maintains the infinitely more complex MasterMap, and everything else they do, for just over four times that amount!

However, whether or not Ordnance Survey adds PAF to its portfolio, **Vanessa Lawrence** will be giving a keynote speech at the 6th Spatial Socio-Cultural Knowledge Workshop being held at the Defence Academy, Shrivenham in June. The shorter and self explanatory title is 'Human Geography for Decision Support'. Vanessa is not only CEO of Ordnance Survey but also co-chair of the UN Committee of Experts on Global Geographic Information, and will be followed by Dr **Lee Schwarz**, director of the Office of the Geographer and Global Issues, US Department of State.

The workshop's stated aim is to improve decision support within the defence and other communities needing an integrated view on the information required for planning, execution and evaluation of their missions. There is emphasis on the 'accessibility, assurance and integration' of information as well as its 'density, accuracy, precision, certainty and metadata'. The flyer states that 'We may never achieve a state of perfect information, but we must strive to compile and exploit the most complete and relevant information that is possible at a cost that we can afford'.

We would all agree with the final statement. One hopes that better knowledge of human geography – key content for many GIS – will not only find its way into the corridors of power but actually influence decision makers at all levels. Policy and operations should *always* be based on good quality information.

And doesn't that include addresses and postcodes?

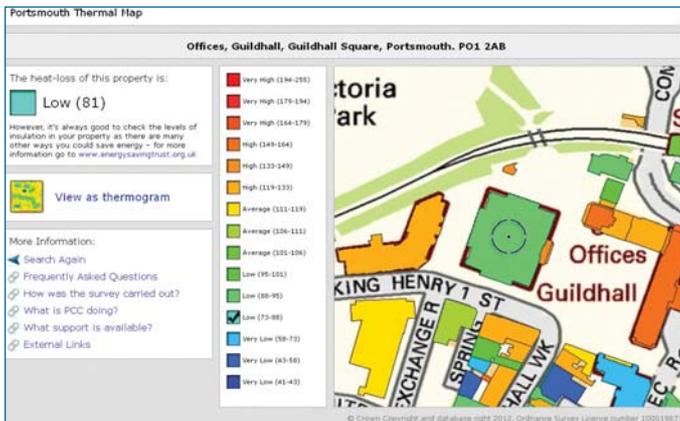
Robin Waters, Editor

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”

Bluesky for Slough and Portsmouth



Slough Borough Council has commissioned Bluesky International to fly thermal imaging to identify 'beds in sheds'. There are thought to be up to 3000 such dwellings where people may be living in unsafe conditions, with little or no heating, and/or not meeting building or fire safety regulations. The council will check to see if valid energy performance certificates exist as required by law for living accommodation.

Bluesky has created an online mapping portal to help businesses and residents in Portsmouth identify thermally inefficient properties (see image above). Airborne thermal sensors recorded the heat loss from buildings on a cold winter night. The raw data was matched to address records and the city council hope this will encourage businesses and residents to improve the energy efficiency of their properties to save money, reduce fuel poverty, and improve the city's carbon footprint.

Mapping UK greenhouse gas emissions

A team led by Edinburgh University will combine satellite data with information gathered across the UK by an aircraft equipped with sensors to measure carbon dioxide, methane and nitrous oxide – the principle greenhouse gases. The team will also take samples from a North Sea ferry and from towers located around the country to measure gases from various sources including industry, landfills and agriculture.

A group from Leicester University is leading the work on satellite-based remote sensing and will deploy a new multi-gas sensor as well as more traditional sensors. Results from the four-year survey will be combined observations from European, US and Japanese satellites to give details of UK emissions in a global context, taking account of seasonal changes such as emissions linked to agriculture.

The study is funded by the Natural Environment Research Council.

Wales – wet and noisy? The Welsh Government has published noise maps showing estimated levels of road traffic, railway and industrial noise in the three largest urban areas, and noise from the busiest roads and railways across Wales.

Extrium, an environmental consultancy, completed these maps, which were reported to the European Commission in December 2012 under the Environmental Noise Directive. New Development Advice Maps have also been released for use alongside Planning Policy Wales and TAN 15 to manage development in the context of flood risk. These provide the public, local planning authorities, developers and landowners with information on the extent and

nature of flood risk and are published on the website. More information at: www.wales.gov.uk.

Geofencing comes out of the shadows ABI Research has published "Geofencing: Technologies, Applications, and Revenue Strategies", an investigation of carrier and smartphone applications that will use geofencing, including retail, enterprise, push notification, local search, social networking, ambient intelligence, etc.

The research shows that developers are turning to companies like Google, Esri, Qualcomm and Urban Airship to provide scalable geofencing services. The report predicts that geofencing will enable new multi-billion dollar markets around these emerging areas. The market for the provision of geofencing tools alone is forecast to reach almost \$300 million by 2017. See: abiresearch.com

PSMA members licence PAF

From April 2013, members of the Public Sector Mapping Agreement (PSMA) will be able to take advantage of the Postcode Address File (PAF) public sector licence to support their use of addressing products. From April 2014, all public sector organisations in England and Wales will be able to use PAF itself free at the point of use. The Department of Business, Innovation and Skills will make a central licence payment to Royal Mail.

Targeting environmental performance

The GeoVation Challenge, sponsored by Ordnance Survey, is seeking ideas for the use of geographical data to help British business improve environmental performance.

Applicants to get a share of the £100,000 prize fund, might focus on seeing better value in waste; cooperation with local communities irrespective of geography and social demography;

and making environmental performance a more attractive proposition for investment and innovation. The challenge is also supported by the Environment Agency and runs until 1 May. The best ideas will be developed at a GeoVation Camp in June. More details at www.geovation.org.uk.

Geo Service markets quantified

Google has published a report from Oxera that estimates the revenues from global geo-services at \$150 billion to \$270 billion per year. This suggests that this growing industry is already larger than the video game industry, and about one-third of the size of world's airline industry. This study is one of the first to consider geo-services as a separate industry, encompassing all digital mapping and location-based services.

Significant benefits to the economy, consumers and businesses include: time and fuel savings from improved navigation; faster emergency services responses; improved agricultural productivity; better educated workforce able to fulfil high-end, high-productivity jobs; a more geographically informed population; and the facilitation of competition.

CONTRACTS & PROJECTS

GIS expertise helps Denmark

Atkins is helping local authorities in Denmark to create a web-based system for applications for construction and environmental permits. This is part of the Danish government's drive to get 80% of communications with the public on digital platforms to reduce costs and improve efficiency. It will go live in 2014.

Called Build and Environment, the system will cover 350 types of building projects including listed buildings and seven types of environmental cases. The system incorporates maps with integrated drawing

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tools enabling users to find particular plots of land and sketch the project. This will reveal any restrictions such as conservation or environmental protection areas.

Snowflake extend CityGML

Snowflake Software, specialist in data exchange solutions via Open Standards, has been awarded a contract by Ordnance Survey as part of the collaborative, European Commission co-funded i-SCOPE project to provide an open standard CityGML Application Domain Extension review and schema encoding. i-SCOPE is developing 3D urban information models to improve decision-making, promote inclusion and involve citizens. More information at iscopeproject.net.

BRIEFS

The Open Geospatial Consortium has adopted a Wide Area Motion Imagery Best Practices Document as an official OGC Best Practice. This describes a scalable grammar and schema enabling global dissemination of products for high performance consumption.

Adur District and Worthing Borough Councils are delivering a better service to the tax payer, whilst generating significant savings through shared services by amalgamating their street naming and numbering policy.

South Kesteven District Council in Lincolnshire are using OldAerialPhoto from Bluesky to provide evidence in planning disputes and public enquiries. They have helped with unauthorised land use and the exact position of historical boundaries.

Northumberland County Council has secured £21m in funding to help deliver superfast broadband across the county. The project used the council's local land and property gazetteer to eliminate data inaccuracies, improve decision making and give greater confidence in the data.

Snowflake Software has won an Air Traffic Control Global Excellence award for their integrated information management system, using open standards that delivers important improvements in exchanging vital aeronautical data safely and efficiently.

PEOPLE

Gamekeeper turned Poacher

James Brayshaw has resigned as a main board director at Ordnance Survey to lead the location intelligence (LI) and GIS division at Pitney Bowes Software. He will be responsible for leading the MapInfo enterprise GIS software portfolio.

James has nearly 30 years' experience in enterprise software and data solutions including over ten years in the CAD and GIS industries. At Ordnance Survey, he led their transition from mapping organisation to customer focused data services provider. He is a chartered civil engineer, an active member of the Association of Geographic Information and a member of the government's BIM Task Force Steering Group.

Leica appoints Phil Wright



Leica Geosystems has appointed **Phil Wright** as managing

director for the UK and Benelux. He will focus on the management of operations, marketing, technical support, service and the development of staff and sales markets.

Phil is a chartered land surveyor and member of the Association for Project Management and has worked within the survey industry for many years. He was previously a director at Frankham Consultancy Group and Plowman Craven and Associates Ltd.

Topcon's business manager



David Bennett will join Topcon Great Britain as business manager for positioning products from 1st April. He has been business development director for Korec. Bennett will be based at the Chester office and will be responsible for developing positioning business in the UK.

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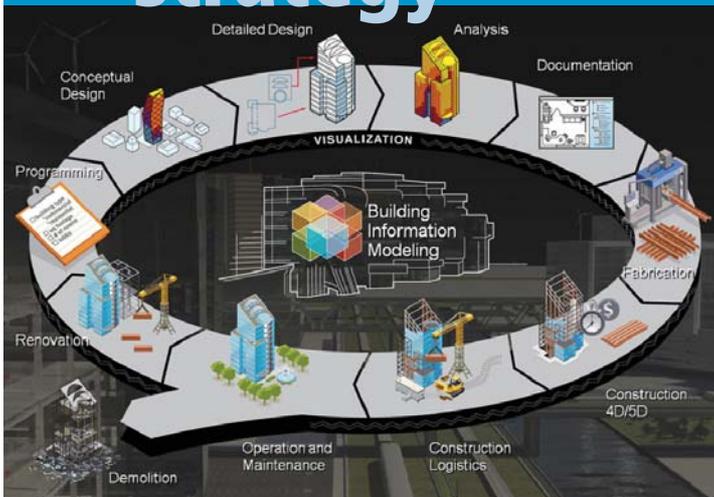
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BIM strategy



Above: BIM – or Building Information Modelling – is aimed at the whole life cycle of an asset, including conception to design and build and even to demolition.

THE UK GOVERNMENT'S Buildings Information Management (BIM) strategy is expected to deliver "... significant improvements in cost, value and carbon performance". It also addresses some of the needs for downstream asset management, by collating relevant information from the design and construction process. But what can the BIM initiative learn from GI professionals? What opportunities does it offer and how good is other information

buildings and their structures, materials, energy characteristics and services) remains largely unstandardised, inaccessible to many, and far from reusable. In other words, buildings digitisation is running twenty years late.

Part of the reason lies in the way intellectual property (IP) is managed. Information about buildings and infrastructure comes into existence through separate engineering projects and the IP of data (as opposed to drawings) has either been overlooked or tends to remain with design firms. Lack of information standards and any central authority and/or repository compounds the problem. Unlike topographic data, buildings and infrastructure information has been viewed as transitory and disposable, and used to make plans rather than to accumulate IP for re-use. So what contribution will BIM make to our national digital asset?

What is BIM? BIM ostensibly stands for Building Information Modelling but is also taken to mean Building Information Management. It is a standardised production process that governs the flow, use and content of information exchanged at each logical step.

When BIM meets GI

While the UK GI community is lucky that we have an enviable national spatial database for our business needs, the government's BIM strategy can still deliver needed improvements to information about the built environment. But what can the BIM initiative learn from GI professionals? **Tim Wood**, with contribution from **Ian Bush** of Black & Veatch, explains what BIM is and its connections to GI before they put forward their own roadmap for managing this information in the next issue of *GiSPro*.

about the built environment? In this first of a two-part feature, we explain what BIM is and look at the connections to the world of GI. In the second, we put forward our own roadmap for managing information about the built environment.

Whilst the UK government's current strategy focuses on the design and construction stages, BIM per se is aimed at the whole life cycle of the asset – from conception, through design, build, operation and maintenance, refurbishment/re-use and demolition.

Transactions are managed explicitly so that successive stages and teams get the information they need and it is guaranteed fit for purpose. Mistakes and inconsistencies are ironed out early in the design process and not on site. At the leading edge, improved software from CAD vendors makes it possible to design multi-functionally in 3D, support off-site assembly, enable closer client involvement and even control the movements of vehicles on site as well as optimising site working. At the trailing edge, BIM's principles and procedures allow low-tech companies and SME's to participate and lay the foundation for the later investment in these tools. There are numerous case studies where BIM has resulted in better, faster design and reusable data. Large infrastructure owners such as airport and rail operators are also looking to BIM for a coherent approach to managing the long term asset base.

GI – Information on tap The geographic information community takes for granted the availability of a high quality national digital asset. There will always be room for improvement but we do have an enviable national spatial database supported by agreed standards and, by and large, it does meet the vast majority of our business needs for GI and has done for many years. Creating this national digital asset has taken a long time and hasn't been easy. Of course, there is still work to do in many areas and there have been several major step-changes along the way. But the vision of accurate, fit-for-purpose, standardised, unified, nationally maintained, reusable and affordable digital mapping has not changed significantly. By comparison, information describing the built environment (referring to infrastructure and



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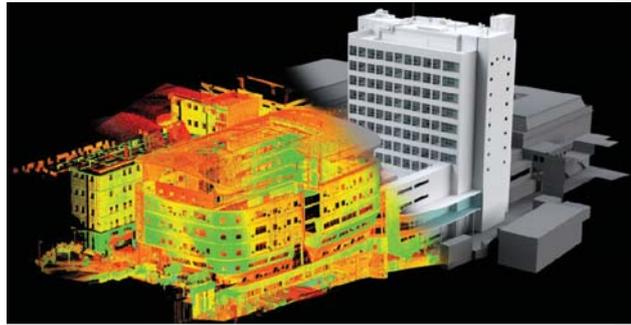


BS1192 and PAS1192 Enshrined in British Standards BS1192, PAS1192 and supporting documents¹, the UK's approach to BIM is much less about technology or data. It concerns how different stakeholders involved in design and construction can best work together by sharing standardised information. It is not only about buildings, it is about the collaborative process of *building*. For the most part, stakeholders are clients contracting for civil engineering or architectural design and construction services, as well as the supply chain upstream and facilities management downstream. Within the supply chain, stakeholders may include teams concerned with different logical zones of the development and delivering different aspects of the design whether structures, heating, water, health and safety, decor or carbon saving. BS1192 advocates that stakeholders use a *Common Data Environment* (comprising defined roles, processes and deliverables) and *Standard Methods and Procedures*, governing the quality and content of deliverables through to measuring 'as built'.

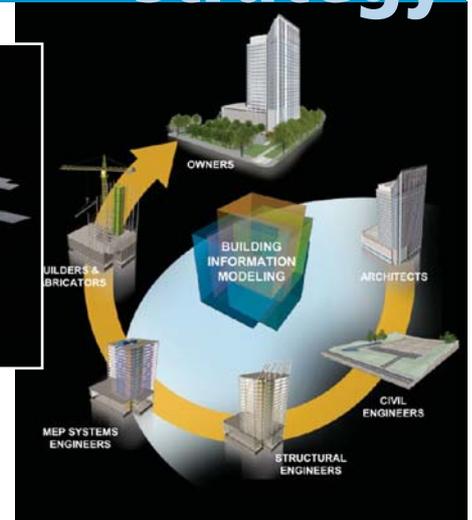
In recognition that many organisations in the supply-chain will be at different stages of technical capability, the UK has adopted a phased approach for government buildings and infrastructure. By 2016 all such projects must comply with 'level 2' BIM. However, this means that the information exchanged for many endeavours is likely to remain as drawings and data abstractions, leaving the geometric data with designers and/or construction firms unless otherwise stated.

The focus of BIM is largely on individual structures and is essentially project based (with the exception of some large infrastructure operators). There is no explicit over-arching purpose or demand for a national inventory of 3D built form and associated information. It is possible to comply with BS1192 whilst continuing to exchange 2D drawings using local coordinates together with energy, materials and structural information provided as metadata. Such an interpretation of BIM is fit for asset and performance management and some aspects of future contracting but not for a collective, sustainable view of the built environment.

Digital divides Despite the advances of BIM for the construction industry, professional divides and silo-thinking still dominate the overall approach to our national digital asset. This is not new. Chainage-based measures have been used to describe and locate transport assets using linear distance measures from a reference point (e.g. railway assets were always referred to by their distance along the line from the



Above: GIS companies help convert information into location-based intelligence that can be used with other spatial information.



Above: BIM is a standardised production process that governs the flow, use and content of information exchanged at each logical step.

relevant London terminus). Only when GIS companies were persuaded to invest in 'dynamic segmentation' and other methods could this information be converted into location-based intelligence and used with other spatial information. Similarly, transport planners used to create their own versions of the road network, unable to integrate other map-based intelligence until technology caught up.

Cross-referencing of disparate national datasets such as the national Land and Property Gazetteer, Ordnance Survey Mastermap Address Layer 2 and the Non-Domestic Ratings file from the Valuation Office Agency, is evolving but made difficult by fundamental differences in underlying concepts about what a 'building' is and how it should be defined (e.g. 'where two or more properties are within the same curtilage or contiguous to one another, and are in the same occupation, they are as a general rule to be treated for rating purposes as if they formed parts of a single hereditament', Lord Denning). Similarly, securing and integrating data about energy performance (a key focus of BIM) is obstructed by conflicting views on data ownership and protection, data definition and referencing. Progress is being made but it is slow and without any coherent direction or purpose.

Institutional divides Our institutional divides are comparable to hospital departments having different definitions for the same parts of the body, different names and different ways of measuring and describing them. In contrast, Eastern medicine is concerned with a holistic approach and overall well-being. Our cities are open systems formed of transport and other networks, buildings and open space. They have their own microclimates and environments. If we star-gaze for a moment, imagine being able to access coherent information about the urban landscape from cloud repositories in order to obtain a holistic 4D view. If that sounds overly ambitious, remember that building cadastres were established in many central and eastern European countries well before the age of digital cartography.

“
Our institutional divides are comparable to hospital departments having different definitions for the same parts of the body. . .
 ”

The government's 2008 Foresight Report 'Sustainable Energy Management and the Built Environment (SEMBE)' concluded that a national data observatory is a top priority if we are to manage our energy and carbon futures. There are, as yet, no visible stepping stones towards this vision. Integration is the ultimate test for how well information is defined and managed. In practice there is a tendency to start at the wrong end, finding information and exchanging it, finally questioning what it is actually supposed to mean when problems arise with integration. Is a building defined by physical structure, legal ownership, occupancy or activity? At the most simple level, it is not as easy as it sounds to uniquely identify a built structure in order to exchange information about it. BIM is a huge step forward for the construction industry and long overdue. To make BIM data become part of the UK's digital roadmap, we need to be able to uniquely identify built structure and have a common, consistent understanding of what the information means, as well as a unified coordinate space. History has shown that trying to rationalise after the event is a slow and painful process. In summary, it's time we got our act together. In the next issue of *GIS Professional*, we will discuss what the national digital roadmap is and where it leads.

References:

- 1) www.bimtaskgroup.org/

Acknowledgements

GiSPro acknowledges the contribution to the feature by Ian Bush, Director of BIM, Black & Veatch.



About the author

Tim manages business change initiatives across information management, energy, transport and environmental sectors and clients include utilities, the private sector, Central and Local Government, most recently delivering a business case for £75m of

energy efficiency and carbon savings across Sussex. He has also co-authored a new approach to business change – In-flight, the blueprint for successful business change – has enjoyed senior roles in companies such as Atkins, Black & Veatch and the MVA Consultancy. Tim likes to think of himself as a GI professional.



... we need to be able to uniquely identify built structure and have a common, consistent understanding...



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*Adena Schutzberg is
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Consulting Group Inc.
and Executive Editor of
Directions Magazine,
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HERE IN THE UNITED STATES, lawmakers and the public are abuzz about drones. Those same groups are also abuzz about a recent court case suggesting that county GIS data is not as open as many would like. The similarity? Many of the sparks are flying because of challenges related to separating a single entity into two parts. Let me explain.

From broad to distinct Legislators at all levels of government are pondering how to, or even if they will allow, the use of drones within their jurisdictions. Those in the field may know these remotely controlled flying platforms as unmanned aerial vehicles (UAVs) or unmanned aerial systems (UASs). In the US, federal plans are still maturing

comes from satellites. We know better; we know that some of the sensors used to capture the imagery were carried on planes and other platforms. In short, legislators and the public need to know more about existing and emerging aerial platforms (from kites to drones to satellites) and existing emerging sensors (from visual imagery, to infrared to sound, to radar and LiDAR).

Separate understandings The court case I mentioned was decided in March by the Ohio Supreme Court. It relates to the state's Open Records Act, which, like many similar state laws, states that records created using tax dollars should be available at no or minimal charge to the public. It

Separation anxiety Untangling data from software may increasingly be necessary as legislators demand free or open data from publicly funded projects. But currently, many do not understand what remote sensing technologies are capable of. It all boils down to education argues **Adena Schutzberg**.

and, in the meantime, cities and states are developing legislation to increase citizen comfort. In the state of New Hampshire for instance, early drafts of legislation prohibited "images of a person's residence to be taken from the air", which would potentially impact traditional aerial and satellite data collection! That broad statement has since been updated, but it suggests legislators and the public need to learn to separate broad categories into valuable, distinct, smaller ones.

What needs to be separated? Legislators need to explore the difference between:

- 1) **Manned and unmanned platforms**
- 2) **Platforms near to the ground and those in space**
- 3) **Data with low and high resolution**
- 4) **Sensors designed for different parts of the electromagnetic spectrum**
- 5) **The speeds of data capture and turnaround among others.**

These are subtle but important differences, of which individuals outside of geospatial circles may not be aware. Casual users click on the "satellite imagery" button in Google Maps and believe all the imagery

seems some aerial photographs and details of properties were not available from a county engineer. When pushed to deliver the entire dataset of both layers by a constituent, the engineer was happy to deliver the data, but with a \$2000 fee. Why? The data could not be easily separated from the copyrighted software. The fee covered the cost of separation. The state Supreme Court decided the fee was acceptable, prompting many questions about software and data: Are data and software separate? Do GIS professionals, lawyers and judges understand the difference, or do they have separate understandings?

The need to know The best advice I can offer on these two matters boils down to education. Users of remotely sensed data need to know from whence it comes. They need to know that many flying vehicles capture data remotely and do so with a variety of sensors for a variety of reasons. Those dealing with open records laws need to understand the relationship between data and software and when, why and how they are "intertwined" with software programs.

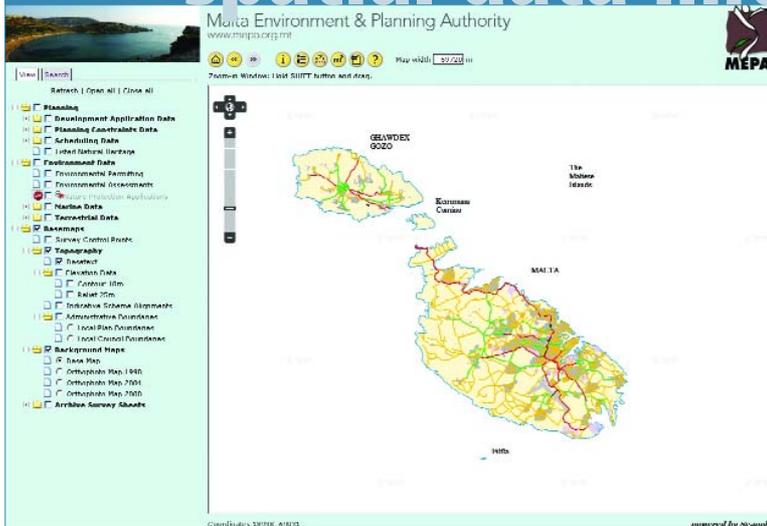
In the meantime, we in the geospatial industry will all suffer a bit of separation anxiety.



Casual users click on the "satellite imagery" button in Google Maps and believe all the imagery comes from satellites. We know better. . .



Malta spatial data initiative



Above: A screen grab of the Malta Environment and Planning Authority's (MEPA) map server.

SITUATED IN THE STRAIGHTS between Sicily and North Africa, Malta is the smallest state in the European Union with a land area of just over 300 square kilometres and a population of just over 400,000. This means that it is one of the most densely populated parts of the EU.

A need for change We live in a rapidly developing world where massive online information systems have enabled both scientists and the public to interact with

Upgrading monitoring capacity The Maltese Islands are now in the final stages of acquiring a comprehensive monitoring system (strategy, hardware, software and data) that will serve as a basis for cross-thematic research. This follows the development of an extensive blueprint on spatial data enhancement in the physical, social and environmental domains. It is being made possible through the creation of fundamental datasets that will put Maltese terrestrial and bathymetric baseline data, as well as thematic data, into the public domain. This development formed part of a €4.6 million project, entitled Developing National Environmental Monitoring Infrastructure and Capacity, co-financed by the European Regional Development Fund (85%) and the government of Malta (15%). The government finance comes under its Operational Programme 1 – Cohesion Policy 2007-2013 – Investing in Competitiveness for a Better Quality of Life.

The project is enabling the procurement of equipment, information management systems, environmental baseline surveys, training of staff, and the enhancement of the national monitoring programmes. Malta is thereby upgrading its current monitoring capacity, as well as acquiring new environmental

Mapping and GI, free and online Helped by funding from the EU and aiming to meet the requirements of various Directives, Malta now has an enviable integrated spatial information system with datasets available for many uses. **Saviour Formosa**, University of Malta, and **Elaine Sciberras**, Malta Environment and Planning Authority, explain how the island is developing the very comprehensive web portal that will make mapping, imagery and a variety of thematic datasets accessible to everyone.

remotely-located data across the globe. This access to data, and eventually to information, has led to the realisation that there are still both technical and social barriers to accessing such data. In small states, data availability is less than perfect for a range of reasons including a lack of baseline information and a lack of both human and financial resources to manage these relatively large datasets. Malta is no exception.

The need for change has been realised since the mid-1990s when a review was carried out on the geographic information legacy acquired since independence in 1964 and which was then subject to rapid changes in visualisation and data transfer. Two main action areas were identified at the time: those related to digital mapping and data collection, and those related to the application of GIS in an operational context. A national mapping agency was set up in 1988 and there was a transition to a fully digital scenario between 1994 and 1998. At that time, GIS was first introduced to Malta and a map server was launched in 2000 with datasets and procedures aligned to EU standards culminating in the creation of thematic information systems and leading to a shared environmental information system.

monitoring data, including data acquired through new technologies, such as lidar and sidescan sonar.

This initiative will bring together different experts aimed at ensuring compliance with EU spatial and environmental monitoring requirements and is instrumental in spanning the divide that has existed between fieldworkers and surveyors, information specialists and thematic analysts.

The project delivers terrestrial and bathymetric data at sub-metre resolution suitable for detailed environmental modelling and for EU reporting purposes. This will give administrators, academics and commercial enterprises information for comprehensive land use planning, environmental monitoring and the resultant socio-security impacts.

Outputting to the public GIS and geomatics specialists will particularly relate to the high resolution 3D terrestrial data coverage using a combination of oblique aerial imagery (Figure 1) and LIDAR data (Figure 2), as well as the bathymetric survey of coastal waters within one nautical mile of the coast, using a combination of LIDAR, acoustic scans and physical grab

“
This initiative... is instrumental in spanning the divide that has existed between fieldworkers and surveyors, information specialists and thematic analysts.
 ”

sampling. The main outputs being disseminated to the public comprise:

- LiDAR scan: terrestrial digital surface model (DSM) and digital terrain model (DTM) for the land surface (316 sq km)
- Bathymetric LiDAR aerial survey - depths of 0 m to 15m within one nautical mile from the Maltese coastline (38 sq km)
- Bathymetric scan: acoustic (side scan sonar) DSM and an acoustic information map of the seabed (361 sq km)
- High resolution oblique aerial imagery and derived orthophoto mosaic and tiled imagery of the Maltese Islands
- Satellite imagery (GeoEye, RapidEye, Quickbird) for the islands

In addition to these products, modern geospatial technology has been acquired and implemented:

- Remote GPS-enabled cameras (remote capture GPS receiver)
- Integrated GI infrastructure (workstations, servers, with both raster/image and vector capabilities)
- 3D scanner and 3D printer
- Handheld data collection devices for field surveys
- Global Navigation Satellite System (GNSS) station

This data will be enhanced by information acquired from the other project themes such as air, water, noise, radiation and soil information as well as the integration of the Census 2011 dataset.

Enhancing knowledge Mapping the terrestrial and seabed topography has various applications. It will provide a basemap for the environmental strategy being developed as well as studies required by the EU's Corine land cover programme, the Water Framework Directive and the Marine Strategy Framework Directive. These aim to provide more effective protection for land and marine environments, which in turn affect the well-being of the island's population.

Knowledge gained by thematic experts will therefore be enhanced for studying, monitoring, analysing, and protecting those areas that are vulnerable to degradation and exposure. Spin-offs from the results include updated nautical charts, viewshed analysis and cross-thematic studies in the physical, social and environmental domains. Following the delivery of the aerial and marine surveys from Terraimaging, and the AquaBioTech Group, users will be able to generate DTMs for use in various applications such as urban and transport planning, environmental impact assessments, infringement analysis, security review, modelling of run-off water, enforcement of land use provisions and many others.

Of paramount importance remains the assurance

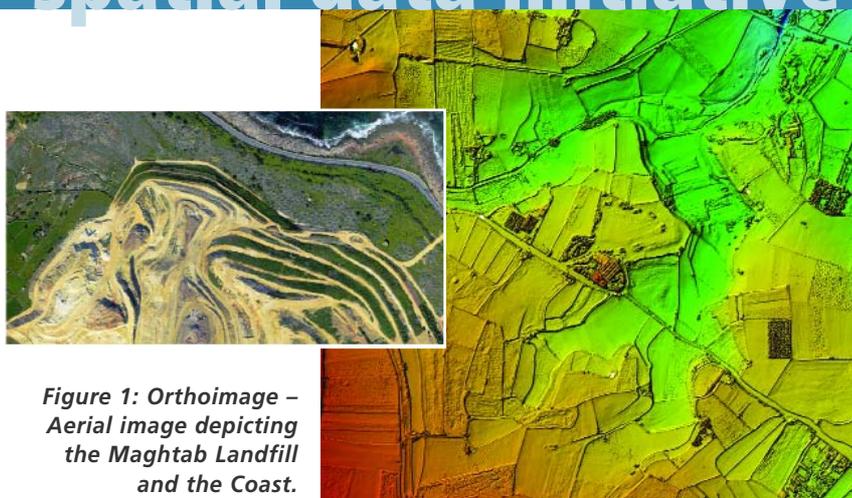


Figure 1: Orthoimage – Aerial image depicting the Maghtab Landfill and the Coast.

of free delivery of all data to the general public. This is the result of an integrated exercise to adhere to requirements outlined by the European Commission's COM (2008) 46 "Towards a Shared Environmental Information System", the INSPIRE Directive and the Aarhus Convention.

Public access will be ensured through the development of a viewing and analytical dissemination tool employing a web portal, which will be compliant to the EU's Shared Environmental Information System (SEIS) and which will be launched in the near future. Malta's spatial information is coming of age!

About the authors:



Saviour Formosa is a senior lecturer at the University of Malta. His research covers the spatio-temporal analysis of crime and its social and physical relationships using spatial information systems. His expertise is in the implementation of cross-thematic approaches

with emphasis on thematic and spatial data structures, visualisation, modelling, web-mapping, analysis and dataflow management and reporting. He has led projects on Aarhus, INSPIRE, ERDF, ISEC, ESPON and serves as contact point for various international fora. Dr Formosa has a Ph.D. and MSc from the University of Huddersfield and a BA from the University of Malta.



Elaine Sciberras is a senior projects officer within the Information Resources Unit at the Malta Environment and Planning Authority. She is currently part of the team managing a European project to develop national environmental monitoring infrastructure and capacity. Dr Sciberras holds a

B.Sc. from the University of Malta, a M.Phil. and PhD from the University of Cambridge.

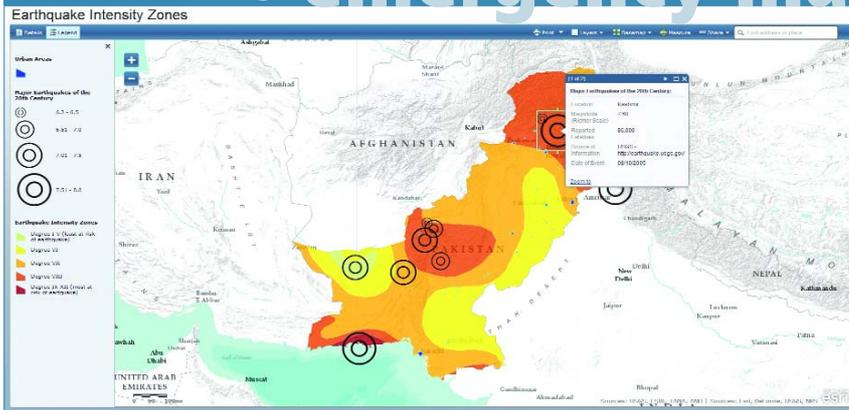
Above: Figure 2 – Lidar image depicting the countryside in Malta.



Of paramount importance remains the assurance of free delivery of all data to the general public.



case study emergency mapping



Above: A screenshot from ArcGIS Online showing earthquake intensity zones.

IN SEPTEMBER 2012, the United Nations Development Programme (UNDP) became the first organisation in Pakistan to purchase a subscription to ArcGIS Online, the newly-released Cloud GIS technology from Esri. This has enabled UNDP to create their Web Map Hub. It was established in order to address some long-standing problems within the UN, not unfamiliar to many other organisations, namely silos – the isolated islands of information, services and expertise that characterise organisations and countries everywhere.

Empowering staff – old and new ArcGIS Online offers a potential solution to the first of these problems by providing a platform that makes for greater information visibility between the different agencies. In fact this has already resulted in much improved communication. So there is now better cross-agency awareness of the data, projects and activities that already exist – reducing future duplication of work.

The second problem is addressed by the Hub holding all the available information and being on-line for twenty-four hours a day. By using web maps, the Hub provides a platform that empowers staff by enabling them to find information for themselves without having to go through an information management or GIS expert.

The Hub now offers a good starting point for new staff – introducing them to the UN's existing GIS activities and datasets. This is vital because the project-based nature of UN work means that there is a high turnover of staff.

All of the UN staff now have immediate and intuitive access to GIS datasets such as political boundaries,

Cloud GIS maps development in Pakistan

The problem of silos is a familiar one to many organisations. **James Gasson**, a United Nations volunteer based in Pakistan, explains how Esri's cloud GIS technology has allowed the UN Development Programme to create a Web Map Hub to centralise isolated information in under three months.

There are many silos with spatial information in the 20 UN agencies in Pakistan. Each one is responsible for its own GIS capacity, with various 'standalone' GIS users and licences. Because of this separation, a lot of datasets are effectively kept hidden and the agencies and projects work independently of each other. They are often unaware of exactly which spatial datasets exist and what related work has already been done. This scenario leads to much duplication of work.

The UN Office for the Coordination of Humanitarian Affairs (UNOCHA) had already addressed this problem by creating a GIS data centre, where many users can download shape files (<http://pakresponse.info/MapDataCenter/GISData.aspx>), although more is still needed to be done.

To many casual and untrained users of spatial data, the GIS community itself may be seen as behaving like a silo. Within the UN, a lot of valuable information is kept out of view (this is especially true of GIS data). Staff are often not aware of the information that is available to them; in order to make use of data and information they have to be made aware of its existence.

UNOCHA has also made some headway with this by creating a UN Map book – an extensive collection of pdf/jpg format maps, which display a variety of datasets available through the GIS data centre, although more is still needed to be done.

population statistics, satellite imagery, previous flood extents, earthquake risk zones, cyclone/storm surge/tsunami risk zones, detailed terrain models, road networks and evacuation routes, medical centres and many more.

Crucially, users can overlay or 'mash-up' these datasets in order to create a web map for their specific task. Typically, this might be flood extent data overlaid with political boundaries and population distribution data.

Web maps address transparency ArcGIS Online also provides an efficient communication and coordination platform. The web maps can be posted to Facebook and Twitter, plus users are able to embed maps within their own websites – helping to broadcast live information across the internet to other UN staff and beyond. During the immediacy of a natural disaster, this will provide a superb vehicle for information dissemination at a time when everyone needs access to accurate information quickly.

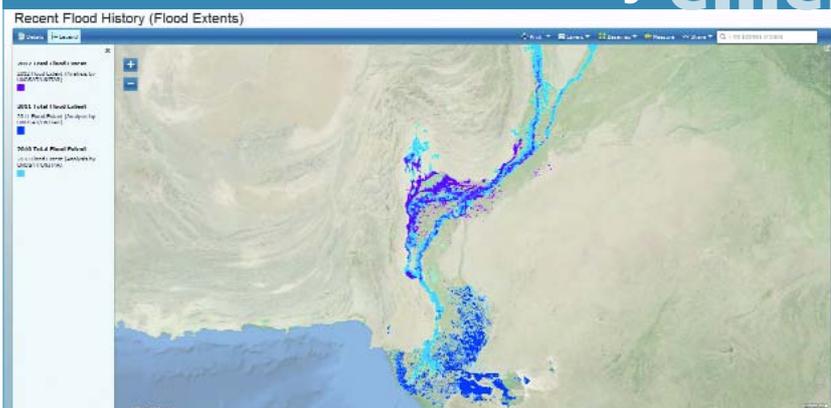
Additional benefits should not be underestimated. The UN is always looking for ways to increase donor visibility. It is very important that the organisations donating money are able to see how that money is being spent. The system now provides a platform for creating project-specific web maps, showing relevant information and progress via an intuitive and attractive interface. Donors are thereby empowered to provide more and better advocacy and transparency



... a platform that empowers staff by enabling them to find information for themselves without having to go through an information management or GIS expert.



case study emergency mapping



Above: A screenshot from ArcGIS Online showing information on previous flood extents for UN staff.

through the better visualisation and presentation of up-to-date web maps to visualise the work and projects that they have funded.

It should also be noted that the speed of deployment was very impressive. This was not a long running IT project. A subscription to ArcGIS Online was purchased on the 17 September 2012 and UNDP were able to launch the Web Map Hub on the 3 December 2012. It took less than three months to create the Hub, load it with data and make it operational.

Avoiding pitfalls There are, of course, some issues that still need to be addressed. The Hub is totally dependent on the Internet, which is not always available (or not at high enough speeds) for GIS work. This is particularly true in remote areas. And, although there is an offline editing capability in ArcGIS Online, the licence explicitly prohibits the use of the basemaps (a key feature of the product) in a disconnected cache. This is, to say the least, inconvenient. Perhaps even more importantly, there are issues associated with data ownership and accountability, especially when the accuracy of a dataset is required in order to match it with others.

Two pitfalls should be avoided. The first is lack of awareness of new personnel. There is a need for continual promotion of the Hub and associated services to all of the UNDP staff and their national counterparts. A new project must be made aware of maps and data that are relevant to that project. It is the nature of the UN agencies that staff turnover is rapid. If newcomers are unaware of the Hub and the services that it can provide, then it will remain under-used and the silos will continue to be isolated.

The second pitfall is the potential lack of continuity. This is not the first time that attempts to integrate mapping have been made in Pakistan, in UNDP or in other agencies. Many of these fail for lack of continuity – especially of the staff responsible for maintaining them. At least with ArcGIS Online, there should be no problems with maintaining the base data but it is vital that resources and personnel should be made available to continue to support the Hub.

The UNDP Web Map Hub is a crucial initiative for the UN in Pakistan. Alongside the OCHA data bank

and OCHA Map book, it gives all staff easy and intuitive access to spatial datasets. This reduces the isolation of the silos; provides better access to information and provides enhanced donor visibility for the many on-going projects. It gives all UN staff immediate access to the information they need, presented in an easy-to-understand way, helping them make informed decisions.

‘As I have been searching for data, maps and geographical information for a long time and often met great barriers, finding the Web Map Hub was a marvellous surprise! This tool is a powerful source of very valuable information, and its best advantage is that it can concentrate and consolidate a lot of knowledge in one single hub and make it accessible to all staff. I hope this portal will develop further so to include sectorial specific information, projects information, baseline information, etc. from all the UN agencies.’

– Gianluca Guidotti, World Bank.

Esri’s ArcGIS Online is being promoted world-wide for many different applications. Can anyone think of a more useful and satisfying application than helping the UN when faced by the emergency and development needs in a country like Pakistan?



About the author

James Gasson is a United Nations Volunteer (UNV), working as a GIS Specialist within the United Nations Development Programme in Pakistan. Based in Islamabad, he provides GIS and data management support to the UNDP and the PDMA Sindh (Provincial Disaster Management Authority).

The main objective of his role is to enhance the technical capacity of the UNDP and relevant Government counterparts, in order to improve response to disasters (such as the Monsoon flooding seen in 2010, 2011 and 2012).



Above: Residents of Jacobabad district in northern Sindh province of Pakistan were still wading through floodwater in November 2012, two months after record-breaking rainfall.

Photographer: Alanna Jorde

“ . . . not the first time that attempts to integrate mapping have been made in Pakistan, in UNDP or in other agencies. Many of these fail for lack of continuity. . . ”

the GiSPro interview



John Booth has worked within the civil engineering industry for 23 years as contractor, client and consultant. For the last ten years, he has been with Mouchel in the Liverpool and Oldham offices. He started his career as a land surveying technician and is now the team leader for Highways and Engineering projects.

John's six key points on choosing the right data collection system are:

- Assess what you need and why
- Identify equipment
- Try it – try it again
- Make sure the support is there
- Buy it
- Get on with it

"If you always do what you always did you always get what you always got" – Anon

FOR OVER TEN YEARS, the manufacturers and suppliers of digital mapping systems have preached a simple sales message. . . if you want to improve your efficiency and increase your field/office productivity, then digital data capture is the way forward.

However, the realities of switching to a new way

first UK users of Trimble's Geo6000 series devices for data collection.

What is the background to this procurement?

I have been involved in many data collection projects from the days of pen and paper to the digital systems used by Mouchel today. For the surveyor, the manager and, most importantly, for the client, it is evident that only digital systems can deliver the productivity, data integrity, accuracy and QA environment we all require. But I was still looking for the 'perfect' system offering the 'one stop shop' of easy data collection, analysis, mapping and seamless data transfer between them.

Although disappointed with previous trials, I began a new search for this 'holy grail' for the division to meet an immediate requirement from the Liverpool office, which was working with several local authorities. One of these wished to collect positional and attribute data on all signage, both directional and informative, within a 2-3 mile radius of the city centre. This information would provide innumerable benefits for the area's residents and

Field data collection: a story from the field

Our editor Robin Waters talks to **John Booth**, team leader for traffic management at Mouchel, who explains why he switched his department to digital data capture, the challenges involved and why he chose Trimble's Geo6000 series.

of working – which can sometimes obscure the end rewards – cannot be ignored. An initial capital outlay, introducing change, training field workers and, in some cases, overcoming an underlying scepticism towards new hardware and software are seen by some organisations as burdens to be side-stepped by simply retaining old methods.

John Booth, Mouchel's team leader for traffic management, was able to see beyond the initial challenges in changing work practices within his department, but was still faced with the problem of finding a data collection system for which it was actually worth changing.

John has recently been involved in several data collection projects and knew that, if he was to deliver the service and value that Mouchel's clients expected, he needed a complete solution from easy, accurate recording in the field and a seamless transfer of data to the office mapping system. Past experience with underperforming technology had left him with a mistrust of fancy sales presentations. He was really concerned that the 'cradle to grave' digital data capture solution didn't yet exist. It was therefore with some reservation that he had his initial meeting with Trimble mapping distributor, KOREC.

A year later and John is in a position to explain the process that led to his team becoming one of the

visitors as well as the council itself. The data collected about directional signage – helping people to move smoothly around the city – could then be used for many purposes with the ultimate aspiration of placing all the information on the council website for public access. An up-to-date database of signs, positions and condition would also enable the council to become proactive in its repair and replacement programme, leading to cost savings and greater efficiency.

How did you go about looking for a new system?

I carried out my initial research on the internet and contacted KOREC to look at the Trimble Juno S Series, which I thought could be useful on this project and for future contracts. My first meeting with their mapping consultant, **Richard Gauchwin**, was a good opportunity to establish some trust. I knew from the website that KOREC was local to us and well placed to handle any technical support issues that might arise with a global supplier. Richard also took the time to listen to my requirements – including my doubts – and provide advice specific to Mouchel's needs rather than general sales talk. He identified that the Juno would fit my short term needs but also took the time to explain what the higher spec Trimble Geo6000



I was still looking for the 'perfect' system offering the 'one stop shop' of easy data collection, analysis, mapping and seamless data transfer between them.



Series XH model would enable me to offer my clients. At the end of our second meeting, Richard didn't leave me with a glossy leaflet but with the GeoXH itself. We were then able to test it in all the different scenarios that we might encounter.

Your final system was more accurate than you had specified – why?

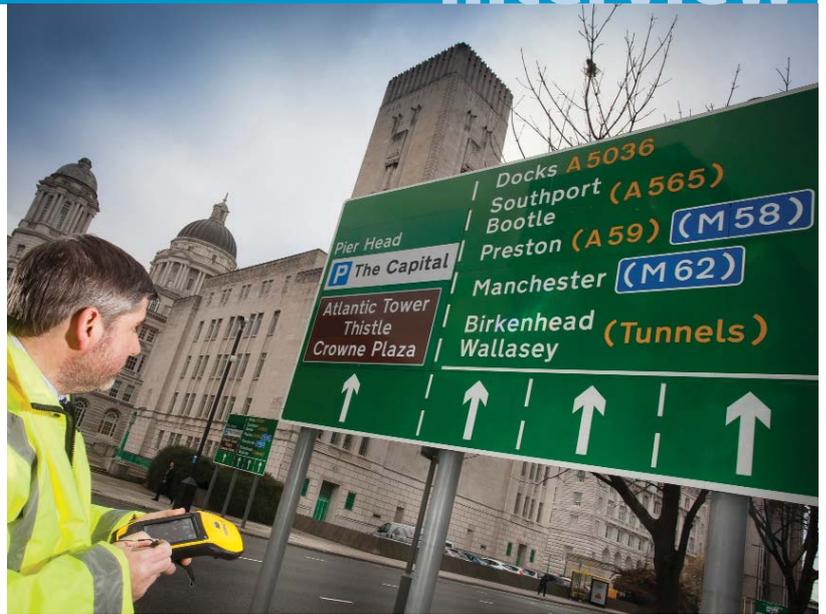
Following an extensive and successful testing process, our final solution was the Geo6000 Series XH with Floodlight technology, VRS Now H-Star Technology and FastMap on-board data collection software.

Whilst my original choice would have been a useful tool offering us basic data collection and 2-5m accuracy, it quickly became obvious that the decimetre accuracy offered by the GeoXH was vital for the more detailed work we envisaged – such as mapping yellow lines. I was also concerned at GPS performance in the city centre environment but Trimble's Floodlight technology handles the 'canyon effect' well. Even in difficult conditions such as a five-metre wide street surrounded by tall buildings, we were still consistently obtaining 700mm accuracy compared to our normal 100mm.

For some of our staff, this was the first time they had seen such a device but the software was easy to use, a vital factor when introducing change, and for many of our field workers a 15-minute briefing was sufficient to get them up and running. There were some early glitches but these were quickly addressed.

How do you see the future of the new system at Mouchel?

A vital aspect of my job is listening to clients and finding out exactly what they need from us. Some immediately saw the benefits that data collection, in general, could bring them; whilst others, quite understandably, were concerned that commissioning the work would be expensive and the data hard to maintain. It quickly became clear to me that the new system would not just be a luxury to make



our lives at Mouchel easier. It would also be a business tool that I could use to offer existing clients a cost-effective, top quality data-collection service and to win new business by reassuring prospective clients that project costs could be managed and collected data easily maintained by using digital methods. By working digitally, we could also offer our clients not just site specific tasks such as sign location, but the opportunity for them to integrate all collected data into relevant layers within their GIS and build up a complete and accurate picture of their assets.

Logistics are also an important part of any data collection exercise and following a time and motion study we knew exactly how long a job would take us. This enabled us to manage our costs very closely.

By raising the profile of both our digital data-collection capability and showing how data could be displayed in various forms to serve multiple purposes for our clients, we were winning commissions based on the quality of service and

Above: There were concerns about GPS performance in the city centre environment but John found that Trimble's Floodlight technology handles the 'canyon effect' well.



The Trimble Geo6000 XH

Mouchel selected Trimble's Geo6000 Series XH model with FastMap data collection software. This offers decimetre accuracy in the field and a good GPS performance under tree canopy and in urban canyons thanks to the Floodlight technology. The unit also has a five megapixel camera, 3.5G modem for internet connectivity, large sunlight readable display and a field swappable battery offering 8+ hours on a single charge. Real-time accuracies were achieved through the VRS Now H-Star Subscription service.

Floodlight technology is best described as satellite shadow reduction technology. Once installed, this can compute positions even with very weak satellite signals. The technology increases the number of positions that are gathered in difficult locations and boosts accuracy where it otherwise degrades.

the GiSPro interview



A year down the line and John believes the new system has provided new ways of working and paid for itself in new work won.

the efficiency with which this work could be carried out. Using digital data capture had the additional benefit of increasing our productivity and therefore keeping our tenders competitive. With traditional techniques you can spend three times more time in the back office converting field data into usable formats than you spend actually in the field collecting the data. Using the GeoXH we are more efficient in the field and only spending as much time again processing the data – a saving of 30%-50%.

After a year in the field, has the new kit met your expectations?

Our business aims at the beginning of this process were to win work in competitive trading conditions, to provide clients with services that they needed and could afford, to work efficiently and to increase our margins by utilising digital data capture.

A year down the line, we've had plenty of time to reflect on our progress. KOREC understood that for us buying the equipment was not the end of the story but the beginning. It was the start of new choices, new ways of working and new opportunities. In our case, the new system has paid for itself in new work won. KOREC has not only been our supplier but also our partner and because of the trust and good working relationship we established from the outset, we purchased the right tool for the job.

I believe that our biggest challenge today is to deliver more for less. Innovation and efficient working are the keys to achieving this. There is no doubt in my mind that by embracing this technology we can achieve these objectives as well as being able to amalgamate project specific data to feed larger and more strategic data management systems. (Ed: See BIM article on page 8). Have we succeeded in our aims? Yes, I think we have.



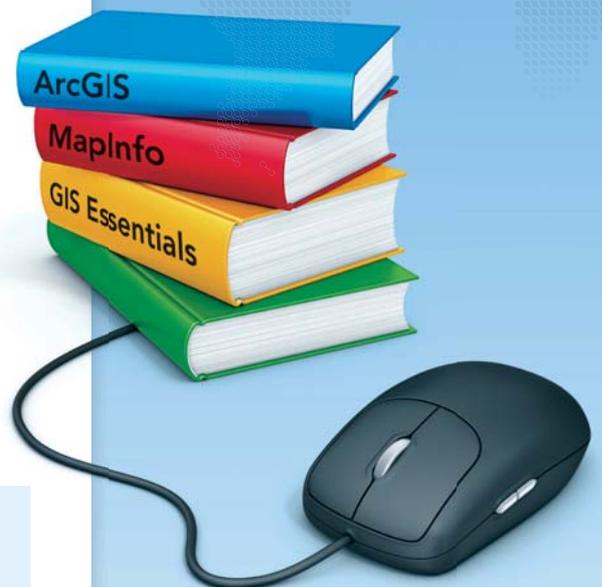
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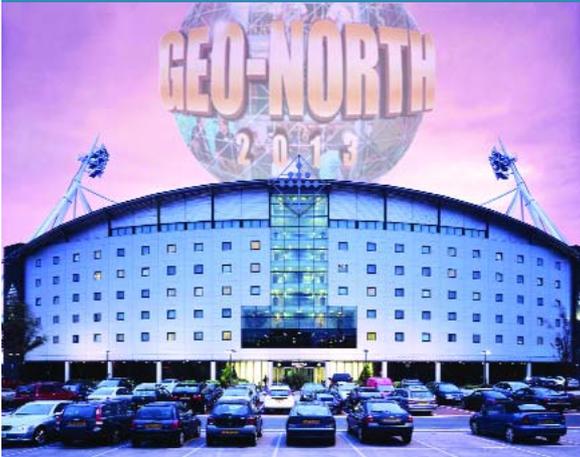
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Digital natives Bob McEwan, chief technologist at HP UK, kicked off with a keynote entitled “Trends and Thoughts on Change in a Changing World”. He illustrated changing business models with Rolls Royce as an example. They don't sell jet engines anymore. They sell time on jet engines which comes

with the obligation for service and maintenance. He thinks that ‘free’ applications will in the future only be tasters for ‘paid for’ services or software. And the ‘metadata’ that we all generate just by visiting websites is also valuable and traded for targeted marketing. Big Brother is watching you and this is

Chris Little, independent consultant, asked some important questions. What is the model? Is it survey, design (or as-built), laser scans, or a combination? These are all questions that have not been fully answered by the BIM fraternity. Then there is the question of the spatial coordinate system, the scale and accuracy. Comprehension of these concepts by the architects and engineers currently controlling BIM is still alarmingly low. He illustrated his talk with examples from the Crossrail project in London, which stretches from Reading to the Essex coast.

A brief discussion session chaired by **Richard Groom** (Environment Agency and technical editor of *Geomatics World*) debated how best to open a dialogue between surveyors and their clients on BIM despite apparent lack of leadership from RICS and the ICES.

The age of open data? Bob Barr is visiting professor at the University of Liverpool, Director of Manchester Geomatics and a fervent campaigner for open data. He

Geo-North: digital natives to friendly drones

A day after Manchester United succumbed to Real Madrid, the first of this year's GEO-events travelled north to the Reebok Stadium, home of Bolton Wanderers. Organised by *GiSPro's* publishers, PV Publications, the GEO events attract geo-spatial data producers and users alike.

completely understood and accepted by ‘digital natives’ – the under 30s – who have grown up with the technology and have different way of looking at life and work. For them, the two are combined. How does that fit with the much vaunted ‘work - life balance’?

The ‘cloud’ looks set to dominate GIS in the next ten to fifteen years, but it is not so obvious that other developments will be winners. McEwan reckons we will have terabit ethernet by 2020 – not far away then; four wall screens and flexible electronic paper; there will be a revolution in personalised medical care including 3D printing of replacement organs; sensors will be everywhere which will probably be intelligent. He was not so sure about Google glasses or GPS shoes – they already exist, but would you want a pair?

BIM: geospatial perspectives BIM (Building Information Modelling/Management) is the topic of the moment and took centre stage during the morning seminars. **Anne Kemp**, from Atkins Global and chair of AGI, roamed amongst the audience to get her message across. BIM (see separate article in this issue) means different things to different people and Kemp approaches it from a GI perspective. She sees an opportunity for surveyors to provide the ‘single point of truth’ – position is the unifying element in BIM. It must be coherent and sustainable as well as being available to many different disciplines at any time.

commended the government's white paper on Open Data in 2012 and championed open data as a resource for economic growth as well as transparency to hold government and public servants to account. Barr's sights are set firmly on natural monopolies such as the post office address file (PAF) and the land register. These core reference datasets are vital to complete public tasks, regardless of whether they are resold or reused. He agrees with the EU view that they should be made available “at marginal cost of redistribution” – in a digital age is essentially zero.

Geoplace's **Richard Groombridge** talked about his former work using Kent's street gazetteer to improve the inspection and management of roads. The project optimised inspection routes and costs while improving the service. They have cut their workforce by more than 50% at the same time and are saving hundreds of thousands of pounds. There is no reason why all highway authorities could not optimise their work in the same way.

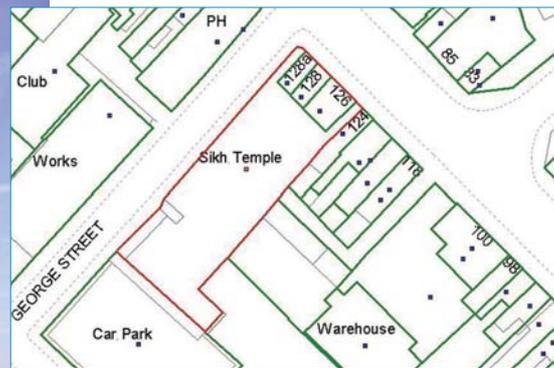
Take off Unmanned aerial vehicles (UAVs) were to be seen in the exhibition and two talks explained how they complemented more conventional aerial or satellite imagery. **Andrew Blogg** of Digital Mapping & Survey spoke as a service provider and **Brecht Lonneville** of Gateway, a manufacturer. These systems are very competitive with other methods for small areas requiring constant monitoring. They produce orthoimagery and height models with resolution and accuracy of a few centimetres. More details are in the Jan/Feb issue of *Geomatics World*.

“

These core reference datasets are vital to complete public tasks, regardless of whether they are resold or reused.

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guidance BLPU polygons



Above: The shop BLPU Polygon follows the building outline in the base mapping. The first floor of the temple extends over the shops. Therefore, the BLPU Polygon for the temple overlaps the BLPU Polygons for the shops.

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Above: The temple is a two storey building with an entrance at the corner of the building. Three shops are on the ground floor under part of the temple.

THE DEBATE ABOUT the use of polygons rather than points to represent basic land and property units (BLPUs) in land and property gazetteers has been raging vigorously for many years, with each side lobbying a barrage of pros and cons back and forth over the now well-established barricades.

The release of a consultation document from the GeoPlace Gazetteers Polygon Working Group

local authorities, this work was then merged into the production of LLPGs.

The working group was composed of volunteer representatives from local authorities with interests in this specialised topic. GeoPlace (to whom LGIH responsibilities have been transferred) released an initial consultation document in December 2011 with an invitation to all local authorities and system suppliers to respond. There were

Dead parrots save money! New guidance on polygons helps local authorities

The publication last year of new guidance on the creation and maintenance of polygons for basic land and property units (BLPUs) suggests that not all local authorities are yet convinced of the need to move from single point coordinates for each unit to a full polygon describing the area covered by each unit. **Gayle Gander** from GeoPlace describes the development of this guidance, which included extensive consultation with many practitioners in local government.

(GPWG) might therefore be regarded by the cynics as just another artillery shell. In fact, it may be a star shell that actually illuminates the issues. It offers clarity for those in local government who wish to create polygons, whilst acknowledging that some authorities may opt out. This may be for a variety of reasons. Some authorities have already captured polygons using GIS; some, especially large rural districts, have very complex boundaries; others simply do not have the resources to maintain their polygons on a sustainable basis.

Established in 2008 by the Local Government Information House (LGIH), the GPWG was set up to respond to the increasing number of requests from local authorities for guidance on how to capture spatial extent polygons to be held in their Local Land and Property Gazetteers (LLPGs). Some local authorities, such as Sandwell Metropolitan Borough Council, had been capturing property extent polygons as early as 1996. In common with other

votes on specific options as well as a wide array of qualitative responses. In this way, consensus were achieved on pertinent issues surrounding polygon creation.

This process culminated in the September 2012 release of 'Data Entry Conventions and Best Practice for Basic Land and Property Unit (BLPU) Polygons', which addresses both creation and maintenance of polygons. For those already committed to polygons for their BLPUs, it gives guidance on maintaining the data more efficiently and consistently across local government.

Of equal importance, the document is for those in local authorities that are contemplating the creation of polygon data, or those simply wishing to understand why some authorities take the time and effort to maintain this type of data and what business benefits can be achieved.

The basic concept is that one should "draw once, use many times". The problem being that, if you ask five people to draw a polygon for the same object, it is likely you will end up with five different polygons!



... it gives guidance on maintaining the data more efficiently and consistently across local government.



The guidance Central to the guidance is best practice in polygon creation and maintenance with particular focus given to the versioning, accuracy, objects without a postal address (OWPAs), and shared access-ways. On these issues, direct consultation took place with local authorities and it was their responses on each issue that formed the basis of the final document.

Versioning focuses on the management of polygon change, splitting, merging or amending BLPU, and how these changes should be recorded. Although there was some feedback that suggested no requirement to maintain historic polygon data, the overwhelming consensus was to add version numbers (v1, v2, v3) to every major change – such as when a back garden is sold off.

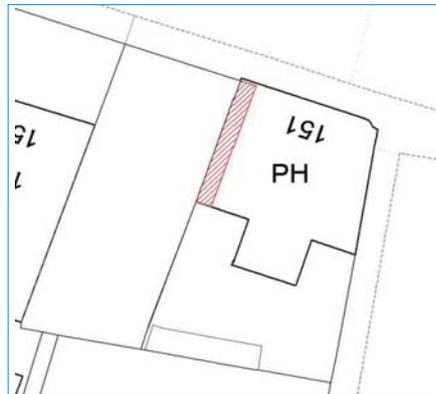
In the case of smaller changes, often corrections to existing inaccuracies, sub-versions (v1.1, v1.2) should be used. By doing this, and including an end date to each historic polygon, councils would have the ability to 'time slice' a site to see how it previously looked, and be able to refer to previous planning applications on that site.

Accuracy, or more importantly, confidence in the data accuracy, has relevance across all GIS and although there is a desire to see BLPU polygons created, this clearly shouldn't be at the expense of accuracy. The guidance therefore suggests both the use of metadata to record the source of the polygon, e.g. from the base mapping, and a confidence 'flag'. This flag demonstrates the data quality and ranges from one to six with the low numbers indicating a high level of confidence.

Level 1, for instance, indicates that known boundary conflicts or problems are resolved, typically through on-site inspection, whereas level 3 indicates no existing feature on the vector base mapping but that the source of the change data is high quality. Use of the flag enables new polygons to be created from developers' plans or via the street naming and numbering process and marked in such a way as to allow the user to determine whether their use is appropriate for any particular project.

OWPA's and shared access ways Objects Without Postal Addresses (OWPAs) have always been difficult to record in a standard way and this is still an issue with their representative polygons. For those of a certain size, such as places of worship, polygons are relatively easy to capture, but for those with a footprint of less than 0.2 square metres, the question was whether to rely solely on points or create a one square metre polygon to act as a buffer around that point.

Although there were those that felt that complete polygon coverage should include all OWPAs, the general consensus was that points would prove sufficient as there is limited value in capturing a polygon that is not an accurate representation of a real world object. It was also noted that GIS are perfectly capable of analysing a



The photo and BLPU polygon show an example of an OWPA.

Objects without a Postal Address

(including street furniture) which are within the scope of the DEC-NLPG, may require a BLPU Polygon. In most cases, features such as lakes and nature reserves have a clear physical extent which can be captured. If the footprint is insignificant then a point is sufficient, for example milestones or free standing advertisement hoardings. When drawing a Polygon for a wall-mounted advertisement, ensure that the Polygon is completely within the boundary of the Polygon of the Parent BLPU. This leads to the advertisement appearing to be on the inside, rather than the outside, of the Parent BLPU. The Polygon should be drawn in this way to allow the correct results from any spatial analysis.

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mix of point and polygon data so no significant functionality should be lost.

There was consensus on many of the major issues, but how to represent shared access-ways exposed an almost even split between those advocating a single polygon including the extent of the access-way and those that wanted multi-part polygons excluding the access-way extent.

This split reflected the different business needs of local authorities and the different uses of BLPU polygons with some arguing that departments currently work with single polygons and others that multi-part polygons should be used as it is easier to merge them than to split a single unit.

In order to cater for these differing requirements, it was decided that both options should be allowed with the inclusion of a provenance code to demonstrate the method applied. To ensure consistent advice, this guidance also provides similar options for shared driveways.

Local Land and Property Gazetteers LLPGs have shown that one standardised method of data creation and maintenance ensures the highest quality and at the same time facilitates the sharing of the data. The centralisation enshrined in LLPGs has seen huge gains in efficiency through their use as a source of highly accurate address data by multiple council departments and it is these benefits that should be enhanced by creating and maintaining polygons following the published guidance.



... although there is a desire to see BLPU polygons created, this clearly shouldn't be at the expense of accuracy.



guidance **BLPU polygons**

The centralisation of LLPGs and existing integration with other council systems make them ideally placed to be the repositories of polygon data, whilst the address management and GIS expertise of the LLPG custodians, means that skills exist to ensure that the process is carried out effectively and efficiently.

From the LLPGs, polygon data can be seamlessly fed across council departments with wide-ranging benefits particularly noted in building control, land charges, social services, education, transport, planning, and economic development.

Generally speaking, all service areas can realise efficiency savings by using BLPU polygons as it removes the need for duplication, thereby releasing back office staff to concentrate on more specialist areas of their job and freeing the front-office to deal with their main priorities.

More specifically, there should be improved decision-making that will come from the use of BLPU polygons. A typical example is the analysis of which residential properties are within a specific proximity to the site of a planning application, which cannot be achieved accurately with point representations of properties or sites.

Similarly, the intersection of BLPU polygons with, for example, conservation areas or green belts, can show precisely whether a property is affected, whereas point

data could see the point fall outside even when at least a part of the property is still affected.

The guidance suggests that, by incorporating BLPU polygons into the gazetteer, they add to the existing benefits by improving GIS data management because users across an authority are then using the same base land and property dataset against which to capture their own data.

Additionally, users and decision-makers can have confidence in the quality of the data because it is created in a controlled consistent manner as part of the LLPG process. This also means increased confidence in any automated analysis or policy decisions derived from LLPG data in a GIS environment.

Conclusion For those working with local authority gazetteers who feel that polygons suit their business needs, the new guidance from GeoPlace and the GPWG provides a level of standardisation that was previously missing. Public sector addressing has long benefited from British Standard BS7666, leading to tremendous savings and dramatically improved delivery of public services. These new data entry conventions and best practice for polygons should increase these benefits further.

The Monty Python sketch notwithstanding – dead parrots can be very valuable!

About the author



Gayle Gander is head of marketing at GeoPlace LLP.

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

IF YOU LOOK at the lists of registered organisations on the Inspire website (www.inspire.jrc.ec.europa.eu) and the density maps, you will see that UK leads the way for both government organisations and spatial data interest groups – both in absolute numbers and per head of population. Respect?

If you follow the links to each country there are three different 'models' for Inspire contacts. Four countries appear not to have live websites at all – Cyprus, Ireland, Italy and Malta. The rest are split between dedicated Inspire branded sites and either sites that have further links to Inspire stuff or, like the UK's data.gov.uk, take you to mapping or spatial data portals in their own right without any particular Inspire emphasis.

Struggle masks efforts You have read a lot about the Inspire Directive in this column over the years but you will struggle to find it mentioned, and certainly not headlined in many other contexts in the UK. That reflects our Euro scepticism but underplays the efforts made by many people who have helped with the gestation of Inspire



UK seems to have been well represented with linked data being a common theme for **Bill Roberts** of Swirrl on Open Data for Local Government Planning and Sustainability; **Oliver Bartlett** of the BBC on Linked Data Journalism; and **Alex Foley** from Defra with the somewhat tired example of the Bathing Water application that must be at least two years old! **Stefan Carlyle** from the Environment Agency on Reducing Environmental Risk through Inspire and **Shaun Bennett** of Ordnance Survey on How Geospatial information underpinned the

Are you still INSPIRED? You didn't need the EU Inspire Directive to appreciate the benefits of good topographic mapping, street networks, address databases, and other geospatial datasets but it might help to share that information more widely, explains **Robin Waters**.

and who are now delivering the datasets required by the directive even if they don't know they are part of Inspire or don't want to admit it if they do!

This is perfectly understandable. Arguably Inspire is just trying to standardise datasets (or at least the delivery of those datasets) that are, or would be, delivered in any case by most public sector organisations. We didn't need the EU to tell us to produce useful topographic maps, street networks, address datasets, height models or whatever. So why would we label them as 'INSPIRE'd' datasets? All that is needed is an 'Inspire compliant' in the small print and access to the dataset through one or more portals that offer search facilities for spatial data. So then it is up to the user.

Talking of which, Safety, Mobility and Sustainability were the themes of the 'Powered by INSPIRE' conference held in Brussels early in March. Over 250 participants were welcomed by **Karl Falkenberg**, director general of the EC DG Environment, stressing the importance of data sharing to tackle environmental issues. **Euro Beinat** (sic), Professor of Location and Context Awareness, Salzburg University ended the two-day conference by demonstrating the potential of sensor data that is being collected every second both knowingly and unknowingly. In between there were presentations and animated panel discussions on public and citizen benefit and the use of public spatial data for the private sector.

London Olympics, completed the line up. Pictures show that **Ed Parsons** from Google was on the panel but there is no published presentation from him!

One of the other presentations concerned SMEspire – an attempt to both measure and encourage the progress of small businesses in the 'Geo-ICT' sector. UK is well represented here as well – see the map above. Any small business should consider signing up to this network which costs nothing and provides information and support in our field www.smespire.eu Their initial survey produced results comparable to those carried out by Prof **Ian Masser** and the author in the UK last year for the Location Programme. Plenty of knowledge about Inspire but that it was very public sector oriented and the current economic climate is not conducive to spending from that direction.

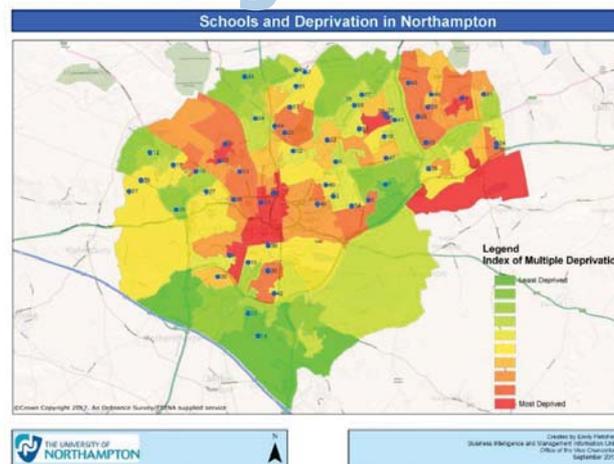
Hungarian Rhapsody And finally. . . A few years ago (1996 to be precise) I spent a year in Budapest working for Know Edge on an EU funded project to computerise the Hungarian Land Offices. The project actually started in 1992 and last September Robin McLaren, Director of Know Edge, went back to Budapest to celebrate the 20th anniversary. The full story will appear in the May/June issue of our sister magazine, *Geomatics World*, but suffice it to say that the programme is generally reckoned to have been a great success, with all the main Hungarian protagonists still involved and joining in the celebration!



... Inspire is just trying to standardise datasets. . . that are, or would be, delivered in any case by most public sector organisations.



case study marketing education



Far Left: At the University of Northampton, as many as 80 undergraduates and 20 postgraduates are introduced to GIS every year.

Left: The map plots the location of schools in Northamptonshire against the National Index of Multiple Deprivation to highlight those in the poorest areas.

ALL UNIVERSITIES IN England and Wales are facing up to one of the biggest changes in higher education in decades. Students now have to pay tuition fees of up to £9,000 per year and this huge financial consideration is deterring many young people from continuing their education. Indeed, in the autumn of 2012, there was a 12% decline in student

GIS for administration – not just teaching Like many further and higher education institutions in the UK, the University of Northampton teaches geographic information system skills to its students. Every year, as many as 80 undergraduates and 20 postgraduates are introduced to GIS as part of Environmental Science, Geography and Waste Management courses, and the

Taking GIS beyond the campus

The University of Northampton is situated in the heart of England and so promotes its range of GIS-based undergraduate and postgraduate level courses to a broad range of prospective students. However, with higher tuition fees deterring many young people from continuing education, the university found that Esri's ArcGIS software could be used beyond the classroom to shift its marketing activities to a more precise location-based approach.

enrolments across the UK. As a result, many universities failed to fill their courses and suffered a reduction in funding.

Marketing backed by geography The University of Northampton was quick to realise that the introduction of tuition fees would necessitate a dramatic shift in the way that it promoted itself to prospective new students.

Firstly, the university recognised that it would need to aim its marketing activities more precisely towards those students most likely to choose Northampton and thereby help it increase applications. Analysis of postcodes from applicants had been undertaken but not, however, an analysis of the postcodes of enrolled students! Nor had there been any opportunities to monitor changes to the location of enrolled students over time.

Secondly, the university was being asked to contribute towards economic reports relating to graduate employment of students from Northamptonshire. It was recognised that this report would also demonstrate the quality of the University's education to prospective students and reassure them that they would be able to find work in graduate-level employment after graduation.

university has a site-wide licence to use Esri's ArcGIS software for this purpose.

Emily Fletcher, a business intelligence officer within the office of the vice chancellor, discovered that she could also employ this software for research and business intelligence purposes at no additional cost. In the first instance, she used ArcGIS Desktop to create a map showing the precise locations of the homes of all enrolled students. This project provided conclusive evidence that many of the university's enrolled students come from – guess where – Northamptonshire! But it also revealed that pockets of students originate from locations further afield.

Every year, the university undertakes a survey to ascertain the destination of leavers. Fletcher used this survey information to create an application that displays students' home towns, where they subsequently obtained jobs after graduation and whether those jobs are graduate-level positions. These maps are used in a variety of ways to inform students about job prospects, as well as to supply data to Northamptonshire County Council for use in its economic reports.

Finally, Fletcher has also used ArcGIS Desktop to



Analysis of postcodes from applicants had been undertaken but not, however, an analysis of the postcodes of enrolled students!



case study marketing education

plot the locations of Northamptonshire's primary schools against the National Index of Multiple Deprivation and highlight those schools in the poorest areas of the town and county. University students then visited these primary schools to talk to children about university life. 'Using GIS, we were able to allocate our ambassadors strategically to help raise the aspirations of pupils in the most deprived parts of the county,' says Fletcher.

Better understanding The use of GIS has given the University of Northampton a deeper level of intelligence about its applicants and students. It will now be able to foster links with schools and colleges in areas where, historically, young people have tended to select Northampton. 'ArcGIS has provided the university with an opportunity to picture exactly where our students originate,' says Fletcher. 'It has given us greater insight, which will help us further tailor our marketing and attract more applicants to our university'.

In addition, the university has gained a great deal of value from being able to analyse the results of its annual leavers' survey using GIS. Although information about students' destinations had always been available in the past, this information is now clearly displayed on interactive maps for the



Above: The University of Northampton has shifted its marketing approach to focus more on geo intelligence with Esri's ArcGIS software.

administration and the prospective students. They can easily see where past students have moved to and whether they have obtained graduate-level employment. This helps them to understand the value that they will gain from an education at the University of Northampton.

Finally, the use of GIS is helping the university to target its ambassadorial activities more precisely to those areas of greatest need or relevance. The Government seeks to raise the attainment of young people from deprived areas, and the university can now clearly demonstrate how it is supporting this national agenda.

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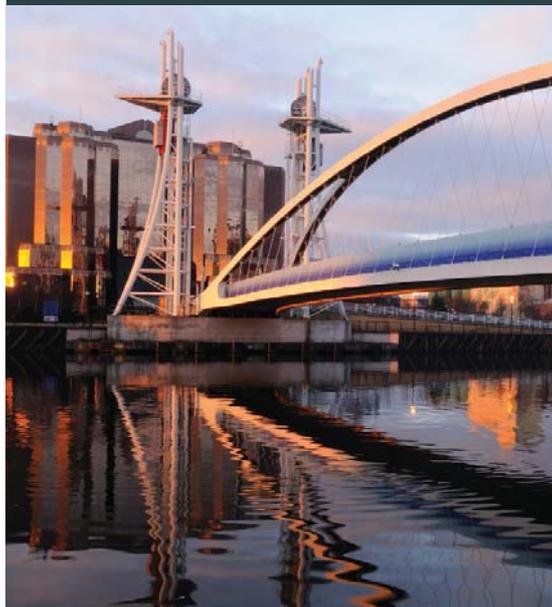
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case study: open data



Weatherproof and shockproof, Splashmaps use a combination of Open Data, OpenStreetMap and crowd sourcing.

A map for the real outdoors If a map were properly designed around its real outdoor use, the most essential needs would be:

continuous availability – no switching off or “dropping-out” when most needed

weatherproof – not turning to pulp if it rains or drops in a puddle

shock proof to deal with hoofs, and tyres and unexpectedly hard trees

clear communication of your position and your destination

presentation we shared our experience when using Forestry Commission (FC) data to highlight off-road cycle routes in the New Forest. Although the FC wanted us to help people stay on the right tracks, they had verified their GPS data against the OS 1:10 000 map. This, despite various attempts to minimise the cost, meant we would have faced a licence fee of £6000 for every 100 maps printed! A non-starter.

Volunteer data sources OpenStreetMap has become an increasingly trusted source of mapping data. It contains more tracks and paths and higher levels of attribution than is possible in most on-line and printed maps. Mountain bikers and trail finders of all sorts are already using this “crowd-sourced” creation to help them find adventure in the real outdoors.

The data is extensive and detailed, but it's not always perfectly categorised. Open Data comes to the rescue again as more and more local authorities respond to recent FoI requests to provide Rights of Way data. Typically, they provide the data once resources and their licensing regime allow. We don't know exactly how long it will take to get full GB coverage, but a significant number of authorities are complying and it is a clear indication that derived data issues are now being taken seriously.

SplashMaps – a tangible return from Open Data

Government has invested time and energy in the Open Data initiative as part of its drive for growth and innovation. Businesses now have to exploit the benefits. **David Overton** explains how SplashMaps show one way to help our community feel and understand the possibilities.

Paper maps, smart phones, and GPS fail on one or more of these essential criteria. SplashMaps' user-insights programme defined the most desirable solution as a washable, wearable and waterproof map. But the map content must also be tailored to be simple, clear, and uncluttered. Open Data from our public authorities and volunteers turns out to be the real enabler.

Open Data – a tangibility challenge! We used the Ordnance Survey's Open Data offering, Vector Map District, amongst other Open Data sources and combined this with a number of the layers available from the OpenStreetMap. The exact combination and their adaptation has been determined by our users in numerous interviews, rides, walks, runs and conversations we've had with them.

Open Data gives us the freedom to experiment with various data combinations and test them directly on the market without fear of contravening a licence, allowing us to continually improve our map and sell at the same time.

However, one of the biggest issues is still derived data, and this was a hot topic for a number of presenters at the AGI's South West conference on Open Data in early March. After the SplashMaps

The future We use open source software, based on MapServer and use the OGC Web Map Server standard. Our database already covers the whole of Great Britain and is set up to create print files of SplashMaps. Of course this is just one of many possible outputs. It's really the way we show that the whole “open” stack proposition stands up commercially and reliably.

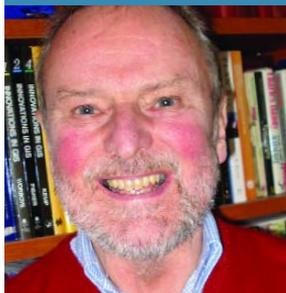
We will improve coverage and content in the database and printed products, exploiting open data sources as they become available and whenever they are the best choice. For the printed products we strive for clarity, simplicity and usability. Continuous dialogue with users and consequent improvement of the offering underline our approach, regardless of the media. European coverage will increase and our engagement with all the communities that contribute to SplashMaps' success will be a model for the most effective way to run the mapping business of the future.

• **David Overton founded dbyhundred (www.dbyhundred.co.uk) in 2009. SplashMaps Ltd (www.splashmaps.net) is the first spin-out business, making washable, wearable, all-weather maps.**



Open Data comes to the rescue. . . as more and more local authorities respond to recent FoI requests to provide Rights of Way data.





Ian Masser retired as Professor of Urban Planning at ITC in the Netherlands in 2002. Educated in geography and town planning at Liverpool University, Ian received his PhD in 1975 and a LittD in 1993. Ian was Founder Chairman of the Association of Geographic Information Laboratories in Europe (AGILE) (1998-2000), President of the European Umbrella Organisation for Geographic Information (EUROGI) (1999-2003), and the Global Spatial Data Infrastructure Association (GSDI) (2002-4).

THE IMAGINE CONFERENCE was organised by EUROGI (the European Umbrella organisation for Geographic Information) on March 7th and 8th 2013. It was preceded by the European Environmental Agency sponsored Eye on Earth user conference at the beginning of the week and a one-day event organised by the EU-funded ENVIROFI project dealing with GI and future internet technology. The theme for the imaGIne conference was 'unlocking the power of GI today and tomorrow'. A star-studded cast of experts as well as the stylish setting stimulated some rich and wide-ranging discussions.

Exploring emerging trends The first two keynote speakers dealt with the exploitation of currently available GI for governance and business development. Professor **Jacqueline McGlade** (executive director of the European Environment Agency and co-organiser of the conferences with EUROGI president **Bruce McCormack**) highlighted the importance of involving more stakeholders. **Dean Angelides** (corporate director of international relations at Esri) expounded on the role of spatial

A shared dislike! Many of the topics raised by the keynote speakers were picked up and elaborated in the panel discussions that ended the first and second days of the conference. Panel members included the keynote speakers together with other leading experts in the field such as **Suha Ulgen** (United Nations SDI), Professor **Mike Jackson** (president of the Association of GI Laboratories in Europe), **Yves Ralliant** (Director General of the French national GI association Afigeo) together with **Daniel Rizzi** from the European Commission's DG CONNECT and **Paul Smits** from the Joint Research Centre.

Despite the number of keynote speakers and panel discussions, there were also sixty other presentations. These fell into two main categories: submitted papers on various topics and two sessions organised by the European Commission on the European Location Framework and the Commission's Open Data Strategy. The session on crowd sourcing described a number of research projects in this field and highlighted the participants' shared dislike of the term 'crowd sourcing'! The session on the European Location

Unlocking GI in Dublin Readers may be forgiven for having not realised that Ireland currently holds the EU Presidency. It is only when these 'eureaucratic' events touch us personally that we tend to notice. So the geospatial industry should take note of the three meetings held in March to celebrate the event at the stylish new Dublin Convention Centre on the north bank of the River Liffey. The events covered the overlap between the environment, spatial information and the future internet. Prof **Ian Masser** attended the imaGIne conference and came away with some noteworthy "take home" messages from speakers.

data infrastructures (SDIs) for benefiting both governance and business.

There were four keynote speakers on the second day who had each been asked to consider emerging trends. Professor **Mike Goodchild** (University of California at Santa Barbara) discussed some recent developments in academic research, arguing that most users were more interested in a qualitative sense of place than in the more precise outputs of surveying or mapping. **Geraldine McBride** (recently of SAP, an enterprise software vendor, and an invited speaker at the World Economic Forum in Davos) described some of the new business models that have been developed to exploit new opportunities. **Ed Parsons** (geospatial technologist at Google) described what he saw as the location-based tidal wave of change and considered what it means for governance, business and communities. **Mark Reichardt** (president and CEO of the Open Geospatial Consortium) provided some fascinating examples of the ways in which technological developments might interact to shape a new geospatial environment.

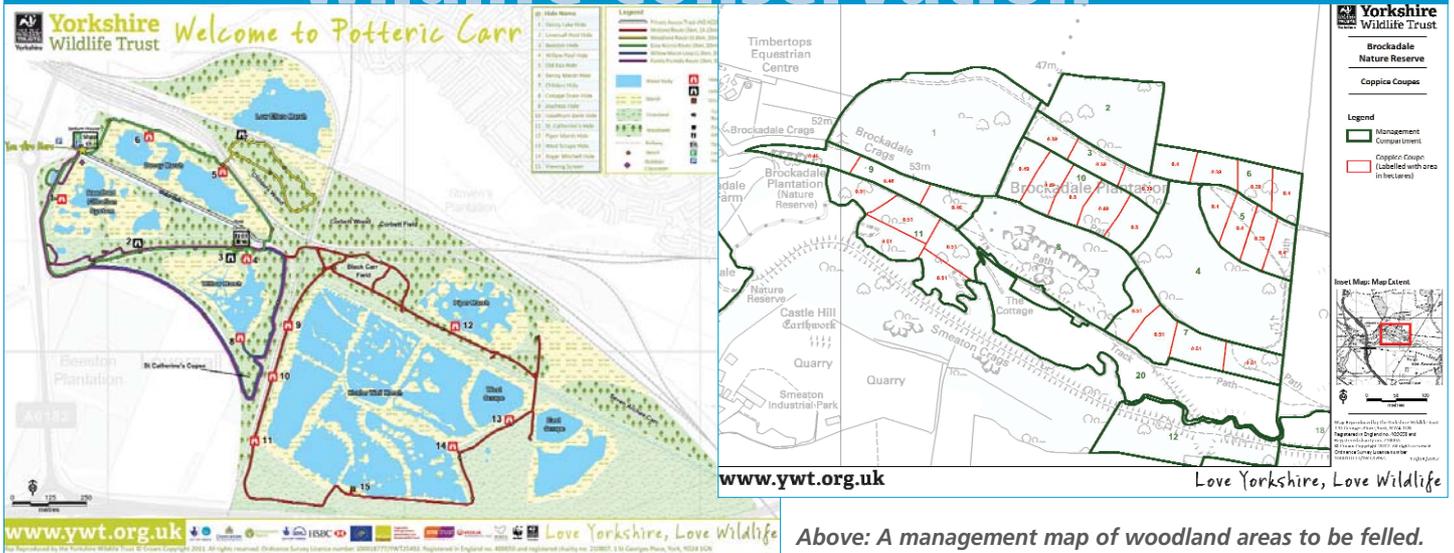
Framework concluded with a wide-ranging panel discussion, which was skilfully mediated by **Ray Boguslawski** (ex Programme Director of the UK Location Programme).

Messages of note There were lots of 'take home' messages for delegates. Two messages stood out for me. The first is the need to engage more fully with stakeholders to help move from the traditional supply centred approach towards a demand centred approach that is driven by users and consumers. This can only be realised if new audiences were inspired to participate and contribute to further development and will require a considerable expansion of existing networking activities.

The second is the need to recognise the real obstacles that still inhibit data sharing and then to devise ways of removing them. It was agreed that the most important indicator of a successful SDI is the extent and intensity of its usage. SDIs will be regarded as failures unless strenuous efforts are made to overcome these barriers to data sharing.

“It was agreed that the most important indicator of a successful SDI is the extent and intensity of its usage.”

case study wildlife conservation



Above: A management map of woodland areas to be felled.

Above: MapInfo interpretation map of the YWT flagship reserve.

YORKSHIRE WILDLIFE TRUST (YWT) is responsible for over 95 sites covering in excess of 6300 acres. The Trust manages assets on these sites, maps and tracks the ownership and boundaries as well as collecting, maintaining and visualising extensive conservation data from surveys, and even carrying out market research.

Having such a broad and varied range of datasets means that it is vital for the Trust to be able to view and analyse the

has also enabled the Trust to provide background mapping for its site location and projects as well as for the distribution of its membership and for maps that are now essential when bidding for funds.

Site maps range from simple location plans to more detailed habitat or infrastructure inventory maps. YWT also produces maps for on-site contractors to highlight areas for particular works and surveys.

Mapping the wild

Yorkshire Wildlife Trust sees the future of wildlife conservation as a "living landscape" and seeks to identify and join up key areas to protect across the county. In this case study, we see how GIS technology, in the form of MapInfo Professional, has provided the tool to view and analyse the Trust's many datasets on a digital map.

information on a digital map so as to successfully manage their increasing caseload. This data needs to be presented visually and geographically in order to fully understand the spatial relationships between the datasets.

A professional solution MapInfo Professional, supplied by Yorkshire-based CDR Group, has enabled the Trust to capture, store, manipulate, analyse, manage and present all types of geographical data essential to site management and the daily work of the Trust.

Using Ordnance Survey data within the system

The software and the relevant data mean that it is now much easier and more efficient to plan and carry out much of the work on these sites.

The Trust uses MapInfo to clearly define the boundaries and territories that they own, lease or manage across the whole of the county. They also work with a wide range of other landowners for many ongoing conservation projects that need to be mapped in a similar fashion.

Successful results Phillip Whelpdale, Wildlife Data Officer for Yorkshire Wildlife Trust, views the new system as forming a crucial foundation for their work. Certainly, MapInfo and the OS data have helped the Trust to secure more funding and to raise the level of the projects it is able to undertake. Recent examples include mapping the moorland fringe and mapping Yorkshire's own Living Landscape boundaries, which are the areas with recovery plans championed by Wildlife Trusts countrywide.

'Being able to produce these maps has enabled us to improve funding bids by providing the potential donors with easily interpreted overviews of what each bid aims to achieve,' says Phillip. 'I believe the necessary

The Yorkshire Wildlife Trust

Yorkshire Wildlife Trust (YWT), part of the influential UK-wide partnership of 47 Wildlife Trusts, has worked for more than 60 years to protect wildlife and wild places, and educate, influence and empower people. The work is helping to secure the future of many important habitats and species, which might otherwise be lost.

The Trust sees the future of wildlife conservation as a Living Landscape. By identifying key areas to protect for wildlife, improving and joining them up across the county in partnership with other landowners, the Trust can create an inspiring, accessible landscape which is full of wildlife and rich in opportunities for learning and sustainable economic development.

case study wildlife conservation

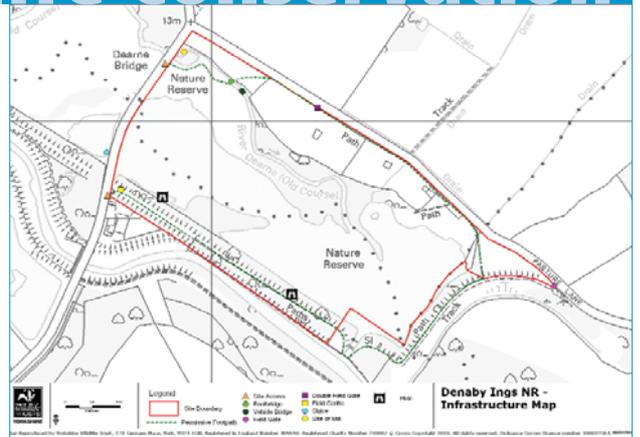
funding was in some cases secured thanks to the impressive visualisation that the maps provided'.

With MapInfo, OS data and, more recently, ONS 2011 census data, YWT are able to map and analyse membership distribution and standardise it against population figures to highlight areas with lower than expected membership (both overall and as a percentage of the population). This enables better targeting for in-house membership recruiters and identifies areas where they may have a low presence and therefore may need to target new site acquisition, project work etc.

The Trust's GIS and data officers and the Peatland Restoration team use GIS for mapping project sites and presenting GPS survey results. Conservation planners at YWT also use the software to view and query data related to local authority planning and various developments. This enables them to make informed comments about the proximity of sites with designations or any other conservation interest.

Phillip Whelpdale concludes: 'Certainly, as new datasets like OS Open Data have become available, new opportunities have emerged such as postcode mapping. We have been supported to access this new functionality such as 'Drive Time' distances from the Trust's sites and are also using the Routefinder add-on with OS Open Data road network information. CDR Group have enabled us to get the best from the MapInfo software'.

Right: YWT nature reserve infrastructure map.



About the author

Phillip Whelpdale works as the Wildlife GIS & Data Officer for the Yorkshire Wildlife Trust offering GIS and data management expertise across all areas of the charities work. Prior to this he worked as a Fisheries Scientist for the Centre for Environment Fisheries and Aquaculture (Cefas), one of Defra's executive agencies, after gaining an MSC (Distinction) in Fisheries Science thus demonstrating the ability of GIS to open up completely new career paths and areas of work previously not considered.

About CDR Group

The CDR Group has over 30 years of experience specialising in geographic information systems and in particular in MapInfo software. They can provide foundation and advanced level training courses as well as full support and regular open days informing clients of any new developments.

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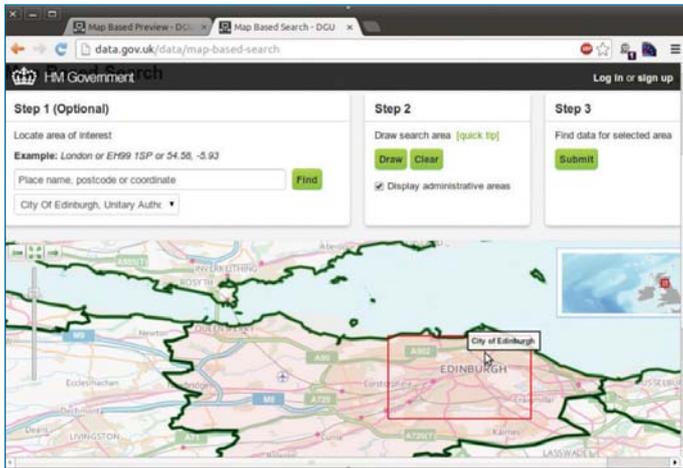
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Data.gov's open source mapping tools



Data.gov.uk has released the open source code for two mapping tools used in their portal for finding and then viewing location based datasets. The tools were developed by Ordnance Survey in collaboration with the UK Location Programme and the Cabinet Office. The work enables the publication of location datasets in support of the UK Location Strategy and the INSPIRE directive.

Map Based Search provides a box search function and a gazetteer of place names. Map Preview displays geospatial data as previewed samples on a background map. Data providers must publish using the OGC standard Web Map Service (WMS).

The tools require access to web map services and gazetteer services to operate. Ordnance Survey supply commercial-grade versions of these services to data.gov.uk under licence, but other websites that wish to use this software can obtain their own licences or substitute free alternatives.

Location Intelligence for Insurance

Cadcorp, has launched Web Map Layers for Insurance which integrates the location of both assets and hazards in a single GIS and provides location intelligence in support of multiple business activities in the insurance industry - sales, underwriting, customer service, and claims investigation. The product uses browser-based web mapping and GIS deployed on a company's intranet. The user interface is consumer-oriented but is completely independent of the map data used for public applications. Clients will typically combine base map data of their choice

with their own business data in a series of map layers. Users choose which layers are visible



An MoU between GeoPlace and the Joint Authorities Group should improve roadworks disruptions and delays.

for their particular interest and have a number of tools for data interrogation and analysis. cadcorp.com

Updated World Imagery

Esri and DigitalGlobe recently updated the ArcGIS World Imagery basemap service with more than 10 million square kilometres of high-resolution aerial views. This is a free map service for ArcGIS users which contains contributions from Esri partners and the global GIS community. The new update includes 60 cm imagery for large parts of Western Europe down to 1:2,000 scale. Throughout 2013 the map will expand with more than 100 million square kilometres of updated high-quality imagery, making it one of the most detailed free map services available.

Yorkshire exports to Austria

York based Beacon Dodsworth Ltd has helped Austria launched an advanced system for measuring the audience for poster advertising. The Austrian outdoor industry needed market research that conformed to the latest international guidelines and were impressed by a Dutch project in which the company was involved. Using their Trip Trax software Beacon Dodsworth

rolled out a series of web surveys that were either self-completed or conducted by interviewers. They measured where, when and by what mode respondents had travelled the day before.

beacon-dodsworth.co.uk

Streamlined street works

The Joint Authorities Group (JAG (UK)) has signed a memorandum of understanding with GeoPlace for the provision of services to their members. JAG(UK) represents all 209 Street and Road Authorities in matters relating to the New Roads and Street Works Act and the relevant parts of the Traffic Management Act. GeoPlace maintains the National Street Gazetteer containing definitive information for streets in England and Wales enabling local authorities to efficiently manage all their own road works as well as those carried out by statutory undertakers. Local authorities will be provided with better support services from a co-ordinated centre which will help them identify common goals and deliver solutions while having more say when presenting joined-up solutions to central government and others.

New Rugged Tablet

DAP Technologies has introduced the DAP MT1010 lightweight Windows tablet that integrates into existing networks but with a rugged construction to survive heavy use in challenging environments. Ideal for mobile GIS, field surveying and navigation, the large touchscreen can be handheld or vehicle-mounted and has plenty of I/O ports for multiple peripherals

The tablet features a 10.1-inch, sunlight-viewable multi-touch capacitive display and is compatible with Windows 8 although it ships with a

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Windows Embedded Standard 7 operating system. It weighs just 1.36 kg and is less than 2.1 cm thick and includes USB 2.0, mini USB 2.0, Ethernet, serial and HDMI ports. There is built in WiFi and Bluetooth with optional extra WWAN capability. Standard features include barcode scanner and dual autofocus cameras - 5 MP back-facing with flash and 2 MP front-facing ready for video conferencing or document scanning.

daptech.com/products/mt1010

Software update for Zeno GIS

Leica Geosystems has announced software updates for the Zeno GIS series, Leica Zeno Office (v3.1) and MobileMatriX (v5.1) to enable support for the new Leica CS25 GNSS tablet computer



The Leica Zeno 5 Handheld now with updated software.

and Esri ArcGIS 10.0/10.1. There are also post-processing accuracy improvements as well allowing organizations to access authoritative data to support enterprise analytics and GIS.

BRIEFS

Ordnance Survey has released a set of style sheets for all its vector products, including OS MasterMap Topography Layer and OS VectorMap Local. These will help users reduce the effort for cartographic styling for web and GIS visualisation.

MapMechanics has launched the ForGIS Boundaries for the UK postcode areas (e.g. RG...), districts (RG40....) and sectors (RG40 1...). Boundaries have been digitised against detailed Ordnance Survey mapping.

GGP Systems have launched a mobile app for local authorities to carry out live searches for records on smartphones and tablets. The app provides access via a central address database

and can be used on iPads, iPhones and Android devices.

Using high resolution aerial photography from Bluesky, graphics and print specialists Creative Image Management have created a large display for Abbots Countrywide Estate and Letting Agents in their Thorpe St Andrew office.

The new Esri ArcGIS Explorer Desktop release makes it a more powerful tool in an enterprise GIS by including content sharing via ArcGIS Online, tabular information display, and new presentation tools.

Students on civil engineering and geoscience courses at Newcastle University will now use Promap Contaminated Land module under a partnership with Landmark Information Group.

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Peter Capell is the interim Director and CEO of the AGI.

THE RECENT HIGHLIGHTS of my AGI life have definitely been the first two events in our new 2013 Showcase programme of events. The first was in Scotland in the grand and imposing Hunter Halls within Glasgow University. An enthusiastic audience ranging widely across GI fans from recently initiated students to many very familiar figures from the AGI Scotland group. **Abigail Page** and her team from AGI-S had put together three parallel streams covering Scottish Initiatives, Building Information Modelling, BIM, and a technical stream with a range of practical 'hands on' sessions.

The open approach The opening plenary speaker was **Mike Neilson**, the Director of Digital for the Scottish Government. Mike set out the broader 'big picture' for the future exploitation of IT in Scotland and emphasised the value that he saw in having the AGI community in Scotland as a major contributor to this development. BIM is rapidly becoming a major 'cross over' topic of

here in the Royal Geographical Society and others in Belfast, Cardiff and the North of England, can be found on our website (go to the events section via the button on the front page).

On a lighter note, something for our more adventurous and London-based members to look out for is 'Maureen's May Madness' on 16 May starting at the Monument. I'll leave the nature of this a surprise but you will also find this described in the Events section of the AGI website.

AGI and the UN As I am sure readers will well know, the United Nations works through a formal structure of subject matter councils, which in turn establish committees comprised of representatives nominated by UN member states. Up until now, it is very rarely, if ever, the case that such committees have been chaired by a representative from the UK. So it is a particular honour for **Vanessa Lawrence** CB, DG and Chief Executive of

Future trends In his final column for *GiSPro*, **Peter Capell** updates us on the latest AGI activities, including the first two Showcase events. He signs off by encouraging the UK GI community to play a leading role in assisting other countries to realise the full potential of geospatial information before introducing the new author of this column, AGI Chair Anne Kemp.

discussion and AGI Chair **Anne Kemp** from Atkins led an informative and lively debate on this. Later in the day, **Mike Saunt** of Astun technology gave a particular coverage of all things 'Open'.

Mike Saunt, who gives a great deal of time and enthusiasm to the AGI, featured again in the second Showcase event in Bristol on the 21st of March at the famous Colston Hall – where nearly half a century ago a youthful version of yours truly was transfixed and transformed by the Duke Ellington Orchestra and many other visiting legends of Jazz and Blues.

Returning to the present, with the AGI event speakers on stage, Colston Hall was resounding to a fascinating and varied series of presentations focusing on the relevance of Open Source, Open Data etc to environmental applications, where the 'Open' approach to GI is making a difference in such areas as water quality, mining and air quality, amongst many others.

Future of address management Looking ahead, one of the topics which has engaged debate most consistently over a number of years in our world is address data management. It is some time since the AGI offered an event on this and, at the time of writing, we are greatly looking forward to the 'Future of Address Management in the UK' at the Clore Management Centre, Birkbeck College, London on 18 April. The programme for this event and for all of the forthcoming AGI events, such as the Showcase events in London on the 24th June

Ordnance Survey, and a mark of the esteem with which she is held internationally, that she has been appointed by the member states to the chair (formally co-chair, as all UN committees have a co-chair) of the newly established UN Committee of Experts on Global Geospatial Information Management – UN-GGIM. Further information on the committee can be found at http://ggim.un.org/ggim_committee.html.

The aim of the committee is to be the official UN consultative mechanism on place, locality and geographic information. It will play a leading role in setting the agenda for the development of global geospatial information and to promote its use to meet key global challenges. This includes providing a forum to liaise and coordinate among Member States, and between Member States and international organisations. Other functions of the committee are to propose guidelines to promote common global principles and to promote standards for the interoperability of geospatial data and services.

Earlier this year, the expert group published a draft paper titled 'Future trends in geospatial information management: the five to ten year vision'. This visionary paper highlights areas of specific interest and change for the GI industry, these include:

- Trends in technology and the future direction of data creation, maintenance and management;
- Legal and policy developments;
- Skills requirements and training mechanisms;



... the famous Colston Hall – where nearly half a century ago a youthful version of yours truly was transfixed and transformed by the Duke Ellington Orchestra. . .



- The role of the private sector, Non-Governmental Organisations (NGOs) and voluntary sector;
- The future role of governments in data provision and management.

The latest version of the Future Trends paper, which can be found at: <http://ggim.un.org/docs/meetings/2ndHighLevelForum/UN-GGIM%20Future%20Trends%20Paper%20-%20Version%202.0.pdf>.

I do encourage all readers to look at these documents and comment on them. A revised version will be launched later in July this year.

However, my main aim in writing about this development is that it is a great opportunity for the UK GI community as a whole to play a significant and leading role in assisting countries around the world to realise the full potential of geospatial information and to enable the sharing of best practice on geospatial management and models. The AGI is ideally placed to help deliver this opportunity and you will be seeing more on our website about how this can be put into action.

Sign off Finally from me, I am very pleased that AGI Chair Anne Kemp has agreed to take over the authorship of these articles for the remainder of 2013 and I now hand over to her:

First, I want to thank Peter for providing such a valuable steadying hand whilst we transitioned to a re-formed AGI team and moved offices to RGS. All this whilst helping the council to re-invigorate our messaging and connections with sponsors and members. This activity continues as we re-examine and roll-out a business plan fit for the future. I look forward to telling you more about this in our next article.

Do look out for the exciting job advert in this publication as we seek to expand our team with additional marketing communications expertise – and, of course, please pass it on to anyone who you think may be suitable.

Oh – and finally – do come along to one of our new look Showcase Events. The next one is in collaboration with the Royal Geographic Society and the Institute of Civil Engineers on 24th June at RGS – run by our BIM4Infrastructure and Asset Management Special Interest Groups – under the strap line “Clash of the Titans – BIM meets Geospatial”. We will hear how clients, and the construction industry, are responding to the challenge that all publicly funded projects must use BIM by 2016, and examine why geospatial has an important role to play in achieving this.

– Anne Kemp



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 or by calling: +44 (0)207 591 3190



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Geospatial World Forum 2013
13-16 May, Beurs-World Trade Center, Rotterdam, The Netherlands
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Esri UK Annual Conference 2013
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 More information: www.esriuk.com/conference2013

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24 June, 1 Kensington Gore, London, SW7 2AR
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23-27 June, Florence, Italy
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More information about the AGI can be found at www.agi.org.uk. Application packs are available from claire.gilmour@agi.org.uk. Closing date for applications is 30th April 2013.

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