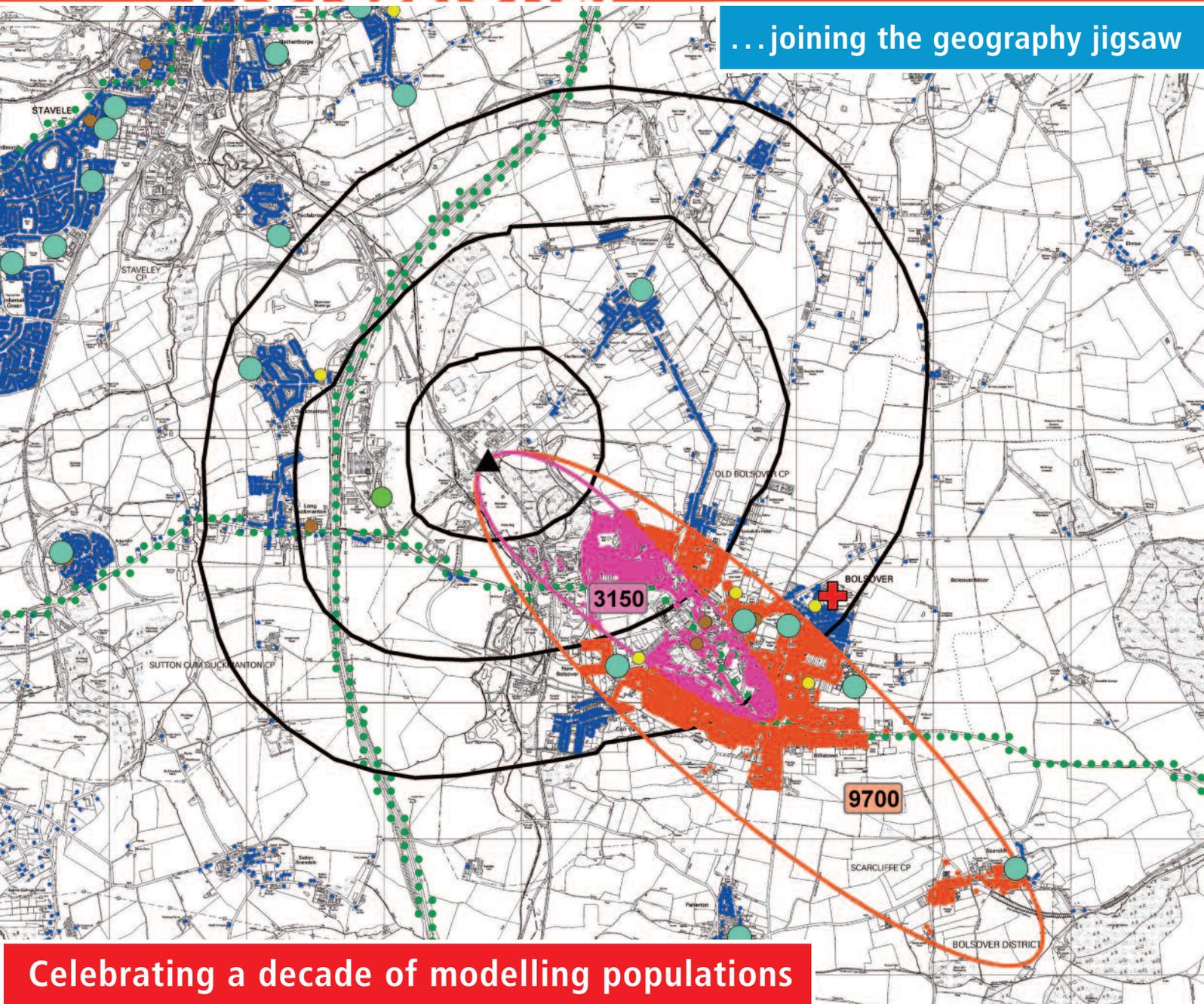


GIS Professional

issue 53 : August 2013

...joining the geography jigsaw

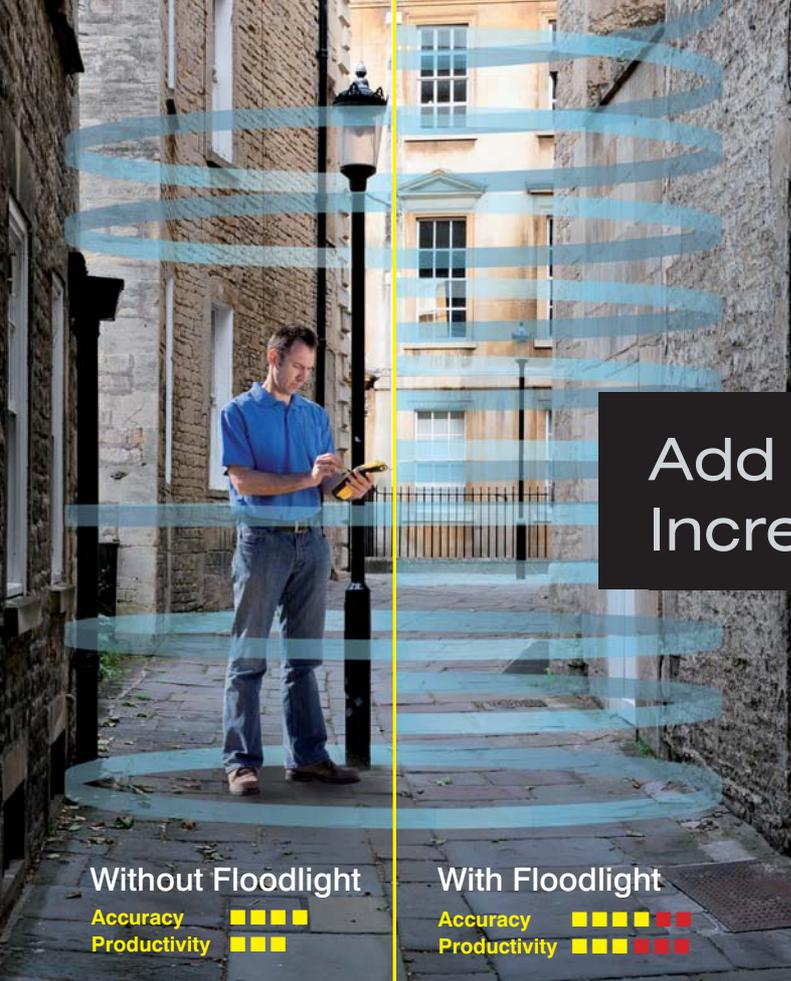


Celebrating a decade of modelling populations

The address mess – an obvious solution?
AGI GeoCommunity'13 is open for business
What is the economic impact of Geo Services?

PSI Directive – the implications for GI?
A geospatial vision of the future
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p. 08

Marking a decade of modelling populations

The National Population Database (NPD) is celebrating its tenth birthday – but how has it matured over the years?

p. 12

The address mess

Andrew Young believes the privatisation of Royal Mail could compromise the National Address Gazetteer. Can we achieve a national addressing ideal?

p. 14

Intelligent infrastructure for smarter cities

In the final part of his article on BIM, Tim Wood argues that GI must be part of the infrastructure for smart cities, facilitated by the Semantic Web.

p. 18

Open for business

Some intriguing presentations await delegates – and this year the FOSS4G conference follows with even more to tempt the GI professional!

p. 21

GiSPro Interview: manning the front line

Aligned Assets' new testing and support manager, Melvin Lindsay, explains what goes on behind the scenes in software maintenance.

p. 22

What is the economic impact of Geo Services?

Ian Masser reviews the recent report by economics consultancy Oxera, which should be of interest to all involved in geographic information.

p. 28

An evolutionary approach to geospatial

What should UK geospatial professionals expect from the global vision of an industry leader? Katherine Sandford explains Trimble's goals for the future.

also in this packed issue:

- p.17 AGI Showcase** – Making infrastructure work – BIM meets geospatial.
- p.20 Case Study** – Tracking lone workers.
- p.24 PSI Directive** – The emperor's new clothes or is this as good as it gets?
- p.26 Conference Report: UAVs** – Technology takes off at Newark.

> GISPro's COLUMNS

- p.11 Adena Schutzberg** – What happens when crowd-sourcing backfires?
- p.27 Eurofile** – INSPIRE 2013: the green renaissance?
- p.30 AGI Column** – Dialogue is key. Make sure your voice is heard!

> GISPro's STANDFASTS

- | | | | |
|------|----------------------------|------|---------------------------------|
| p.05 | Editorial | p.34 | GIS Calendar & Subscriptions |
| p.06 | News & People | p.35 | GiSPro Classified & Recruitment |
| p.32 | GiSPro Products & Services | | |

Next Issue: OCTOBER 2013

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Front cover: An example of the National Population Database (NPD) being used to identify people at risk around potential major hazard sites. Read more on page 8.

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

Gr8 marketing or ghastly grammar?!

OUR SECRETARY OF STATE for education has just announced, amidst much ballyhoo, a new school curriculum that concentrates on grammar, numeracy and history. Although we at *GISPro* do try to follow the rules of grammar, we report on an industry that is fundamentally dependent on measurement, numbers and statistics – and we do try to cover interesting bits of history. We are also pleased to see that geographic information systems are still specifically mentioned along with Ordnance Survey. Presumably internet mapping from Google, Microsoft, etc. is so easy to learn that it does not need to be on the curriculum?

We can't cap it However, we despair at the deliberate distortion of grammar perpetrated by some of our peers in the interests, presumably, of marketing otherwise opaque companies, products or services. This trend is aided and abetted by the internet, which seems to be indifferent to grammar despite Mr Gates doing his best with red and green signals in his word processor. We now have companies "officially" beginning with small letters; we have capitals in front of every word of a person's job title; and we have government departments that pick and choose where they think the rules of grammar should apply! At PV Publications we have a deliberate policy of reducing the use of capital letters to the minimum – we are, after all, the understated British and not the magniloquent Germans! We have "here", "thinkWhere" and "miso". We have DCLG but also Defra. There are chief executive officers too numerous to mention and our editors are just that.

Lost in the post Readers will know that we are well engaged with the issues surrounding the availability of addresses and postcodes in the UK. In this issue (page 12) you will find a heartfelt local authority viewpoint with an implied threat to take on Royal Mail at their own game – which would be to the detriment of us all. You may not yet have noticed the launch of a new service "which3words" (yes, all lower case!). This service might just offer an alternative to postcodes for some uses but will certainly not attract many free users if your location is to be described as "dress.apple.pounds" when, for just 99p, you could be "PVPubs". And some of their words fail my computer's family safety check! Nevertheless, with a single click from an email, you can direct anyone to your exact location, with directions to reach you as well.

Baby and moisture I am writing this editorial immediately after the first day of the Cambridge Conference hosted by Ordnance Survey for 150 leaders of national mapping and cadastre organisations. Although **Vanessa Lawrence**, in her opening speech, had to make reference to a new baby with Cambridge in his title, the conference managed to concentrate on matters more germane to our industry, including keynotes on the need for GI for security and policing (**Janet Williams** from Interpol) and the synergy with meteorology (**Paul Davies**, our chief meteorologist). Davies suggested one figure that we should remember in the context of climate change: air that is one degree warmer can hold 6% more moisture. Appropriately, after the hottest day of the year, we had the biggest thunderstorms in Cambridge that anyone can remember!

The Hotine Lecture (pronounced Ho-teen) this year was given by **Nick Crane**, author and television geographer, who regaled us with stories from Hotine's work on the re-triangulation of Great Britain and some of the research that Nick has done for his biography of **Gerardus Mercator**. However, he did not mention Hotine's other claim to fame: the creation of the Directorate of Colonial (later Overseas) Surveys after WWII. In fact, from 1947 to 1983, the Cambridge Conference was run by DOS until the latter was incorporated into the Ordnance Survey. As it happens your editor was the only ex-DOS surveyor present at the conference this year – a sign of the times.

There is no doubting Nick Crane's enthusiasm for maps and for the Ordnance Survey, so perhaps we can forgive him for mispronouncing not only "Hotine" but also the director general's Christian name. We won't embarrass her by repeating it!

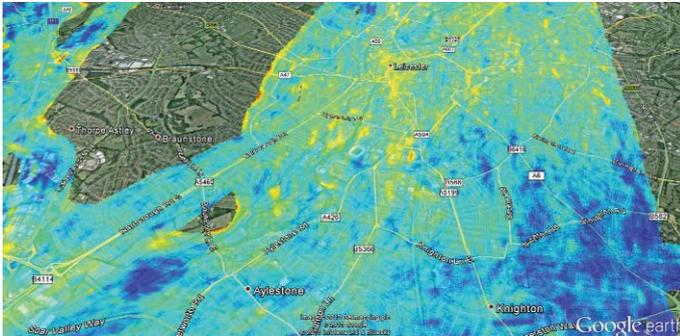
Robin Waters, Editor



. . . a heartfelt
local authority
viewpoint with
an implied
threat to take
on Royal Mail at
their own
game. . .



Mapping air pollution over Leicester



Scientists at the University of Leicester, together with Bluesky, have completed a project to map levels of nitrogen dioxide in the city. By installing pollution detecting technology on an air survey plane, the Airborne Air Quality Mapper (AAQM) project was able to capture and record accurate levels of nitrogen dioxide. The “heatmap” style images were overlaid on Google Earth and revealed distinct differences in air quality between green, wooded areas and busy road junctions and areas of industry. Air pollution is said to be the second biggest threat to public health after smoking. This project will help understanding of potential causes and contribute to monitoring research to minimise emissions.

Royal Mail PAF access

Royal Mail has agreed to improve access to the Postcode Address File (PAF). There will be free access to PAF for independent, small charitable organisations and, for one year only, to ‘independent micro businesses’ to support them in developing PAF-based products. The scheme started on 1 July 2013 and there will be consultations aimed at simplifying PAF licensing. In this context, ‘independent’ means not affiliated to any existing “solutions provider” and ‘micro’ refers to businesses with less than ten employees and turnover less than £2m. Small charitable organisations must be registered charities or community interest companies with turnover less than £10m.

Update: UK location strategy

Last year, the UK Location Council decided to close the existing UK Location Programme. The intention was that INSPIRE activities would be handled by a new group, still led by Defra, and that there would be a new ministerial mandate that would commission **Vanessa Lawrence**, in her role as adviser to the British

Government on mapping, surveying and geographic information, to take forward the other strands of the location strategy.

Subsequently, the UK location programme board agreed to the closure of the programme and the transition of the main stream of INSPIRE activity to the new group, led by Defra, focusing on compliance with the European directive. The remaining content of the strategy is still on hold, pending that ministerial mandate, which has not yet been forthcoming. However, both the UK Location Council and Location User Group have been wound up. Information on INSPIRE is available via the location tab on data.gov.uk, and the engagement strategy is being reinvigorated to ensure that the UK remains on the path towards INSPIRE compliance in 2020.

Performance targets for OS

The Department of Business, Innovation and Skills has agreed performance targets for Ordnance Survey GB for 2013-14. They are to achieve an operating profit before exceptional items, interest and dividends of £32.4 million (cf

£30.4m for 2012/13) and a “free cash flow” before exceptional items of £21.4 million (cf £22.4m). Targets for updating the database, reducing underlying cost base and achieving an 80% customer index score remain unchanged.

OS service proves popular

Ordnance Survey GB’s enhanced Linked Data service is proving popular. In its first month, it received over 5,000 visits and 13,000 page views. Features include: a new data hub with easy access to all three OS OpenData Linked Data products; embedded OS OpenSpace map as background information; improved metadata such as publication dates, licensing terms and coverage; SPARQL 1.1 compliant endpoints for all datasets; and redesigned search API, based on the OpenSearch spec.

Farmers kept in the picture

Bluesky aerial photographs are helping farmers and rural estate managers to gain a greater understanding of their environment. Working with Pear Technology, a developer and supplier of land and crop management software, photographs are used to enhance the overall digital mapping experience. Images provide a backdrop for Ordnance Survey mapping, offering clear, up-to-date and useable contextual detail for a range of rural applications.

Bluesky’s aerial imagery is being used within PT Mapper desktop GIS which facilitates measurement of areas and distances and enables the preparation of management or record maps for land registration, maintenance and waste management, soil management, utilities and tenancy plans. Farmers can also show cropping plans, show and measure field margins, print whole maps or part maps, at any scale.

Right of access

Although there are many differences between US and English law, many cases on both sides of the Atlantic have bearing on each other. In

California, the Supreme Court has affirmed the public’s right of access to government information in the same format that it is used by government agencies. The unanimous decision explained: “Openness in government is essential to the functioning of a democracy. Implicit in the democratic process is the notion that government should be accountable for its actions. In order to verify accountability, individuals must have access to government files.”

The court made several references to statements from “212 GIS professionals and 23 GIS organisations”, which explained the difference between software and data, made a distinction between “computer mapping system” and GIS software, illustrated the need for the GIS-formatted database over PDF-format pictures of the data, and pointedly noted that 49 out of California’s 58 counties are able to maintain their GIS databases without having to sell public record data. One of the GIS professionals was **Nick Day** who writes for our sister publication *Geomatics World*.

Forth Valley GIS becomes thinkWhere

Alan Moore, chief executive of thinkWhere, explains that they changed the company name from Forth Valley GIS because it was losing relevance as they moved into new business sectors. ‘thinkWhere is simple, concise and explains what we do. It’s an instruction – a call for organisations to introduce GIS, geography and mapping in to their work’, says Moore.

The company is also moving to a customised office on the Castle Business Park in Stirling (see www.thinkwhere.com). With room for expansion, they will be able to move further into the energy/renewables sector and build on a recent contract with the South Downs National Park Authority. Existing services to Clackmannanshire, Falkirk and Stirling Councils will help make savings by facilitating a migration from commercial GIS

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technologies to the open source platform, Location Centre.

CONTRACTS & PRODUCTS

OS join ELF project

Ordnance Survey GB will participate in the three-year European Location Framework (ELF) project (www.elfproject.eu) which will provide the platform for a single standard of geographic information to encourage business without barriers across Europe. The project is supported by a consortium of 30 partners, whose work is co-funded by the European Commission. The consortium is committed to continue to provide the ELF platform beyond the end of the project, to enable growth in the use and re-use of trustworthy, accurate and re-usable official reference geo-information on not only a European but a global level.

Aligned Assets gets GeoStore

Pitney Bowes Software has announced the technology transfer of its GeoStore Spatial Data Warehouse to Aligned Assets along with responsibility for support, account management, billing and future development. The Woking-based gazetteer specialists intend to invest extensively in the product – see our interview with **Melvin Lindsay** on page 21.

BRIEFS

Retailer Carrefour Group has implemented an enterprise-wide marketing solution from Esri partner, Galigeo. Geodashboard incorporates ArcGIS and enhances existing enterprise business intelligence software to improve decision-making.

thinkWhere (previously Forth Valley GIS) is offering a Quantum GIS Fast Track course designed for experienced GIS users. This course will run once a month alongside the already established Quantum GIS part one and two courses.

Beacon Dodsworth are now supplying Prospex users with updated Mid-Range and Street View raster maps, which include new features such as the Olympic stadium.

PEOPLE

AGI's new mapping geek!



Chris Rhodes is now the Association for Geographic Information's (AGI) marketing and communications specialist. He has already re-launched the AGI blog at:

<http://aginews.blogspot.co.uk/> and you should notice increased activity on twitter at https://twitter.com/AGI_News. Rhodes is aiming to improve the marketing presence of the AGI (and support the regional or special interest groups) as well as improving communications with members and with the special interest and regional groups.

His previous role was as an account manager at online marketing company, Axonn Media. He also has a geography degree and admits to being a mapping geek at heart!

OS appoints new manager

Ordnance Survey has recently appointed **Chris Chambers** as its product manager for the address portfolio. He was previously a GI consultant within the pre- and post-sales support team, where he provided direct assistance to commercial and public sector, primarily focusing on addressing.

Managing defence solutions
Envitia has appointed **Steve**

Photomaps guide driverless vehicle research



Aerial photomaps from Bluesky are being used in the development of unmanned vehicles and intelligent transport systems at the proving ground of vehicle engineering consultancy, MIRA, in the midlands. The photomaps are supporting the development of unmanned ground vehicles (UGVs) for military and commercial cross-country applications. These vehicles can be remotely controlled or autonomously follow pre-planned routes and the photomaps are embedded within the command and control systems, where they are used to display the vehicle location and its route in real time.

Wallace as business development manager in the defence solutions team. Wallace has had an 18-year career with QinetiQ (and its predecessor organisations DRA and DERA). He researched the use of satellite imagery and its exploitation in GIS and was then principal consultant on the procurement of geospatial systems, NATO Core GIS and the EU Military Staff GIS. More recently, he was sales manager for QinetiQ's information and intelligence exploitation business.

CGeog success

Landmark Information Group is delighted that three of its team have been awarded Chartered Geographer (CGeog) status from the Royal Geographical Society. Business analyst, **Guy Collins**, senior GIS analyst, **Matt Wills**, and IT development project manager, **Darren Lamble** are all fellows of the RGS and attained the CGeog status by meeting the strict criteria of having at least six years' geographical experience since graduation.

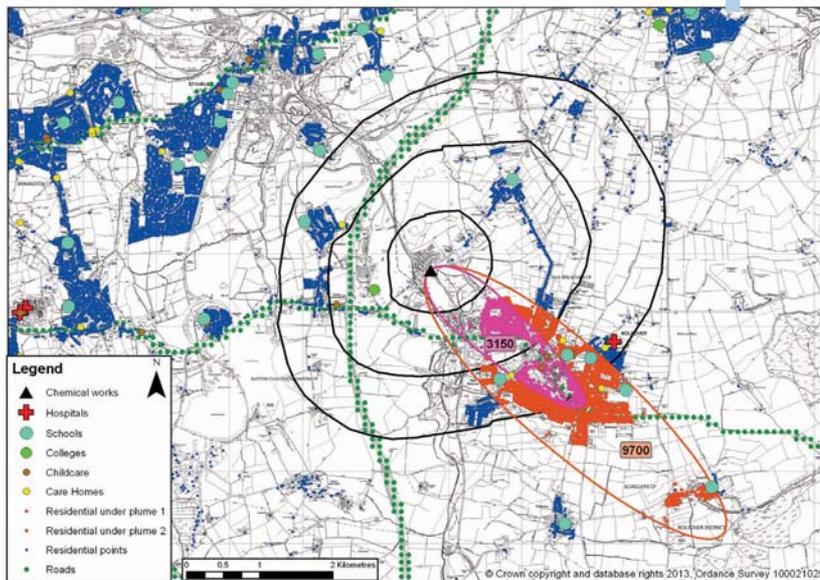


Obituary: Kenneth Appel – the four-colour conjecture

Kenneth Appel, who has died aged 80, was a mathematician who, with his colleague Wolfgang Haken and the aid of an IBM computer, solved what was known as the four colour map problem which had been perplexing

the world's best brains for over a century. Mathematicians and experts had posited that only four colours were necessary to colour in a map divided by boundaries so that the same colour never adjoined; but nobody could prove it. In 1976, Appel and Haken, at the University of Illinois, showed that the conjecture was correct. However, the use of a computer at that time was considered by many mathematicians to be inappropriate – funnily enough most of them being over 40 are presumably now retired! Image: Credit – UNH Photographic Services. Source – The Telegraph (www.telegraph.co.uk/news/obituaries/10158040/Kenneth-Appel.html).

population numbers & patterns



Above: A detailed view showing how the NPD layers can be used to identify people at risk around potential major hazard sites (the chemical works and zones shown here are fictional).

of detail, thus maximising the intelligence of the location and population information.

Applications of the NPD The NPD can support a diverse range of tasks including vulnerability analysis, economic analysis and resource allocation. The tool was the basis for an assessment of the impact of a potential flooding event along the East Coast of England and the outputs were used by DEFRA to update the National Risk Register. It is currently being used to model the economic impact of accidents at major hazard sites for research commissioned by HSE. The Health and Safety Laboratory also used the NPD to help the Department for Culture, Media and Sport (DCMS) prioritise a programme to upgrade mobile phone reception in areas where there was no network coverage by ranking the so called "not spots" in terms of the numbers of people living, working and being educated there.

In preparation for London 2012, the NPD stadia layer was updated to include Olympic venues and route maps for events such as the marathon and cycling road

Celebrating a decade of modelling populations

The National Population Database (NPD) tool is about to celebrate its tenth birthday. Its aim has always been to capture different population types but it has matured significantly over the years, explain **Kirsty Forder** and **Hannah McManus**, GIS specialists working at the Health and Safety Laboratory in Buxton.

ORIGINALLY DEVELOPED for the Health and Safety Executive (HSE) as a means of identifying populations vulnerable to harm, the Health and Safety Laboratory's (HSL) National Population Database (NPD) tool is now being used by a number of organisations, both within and outside of government, to accurately model population numbers and patterns from a national to a local level. It initially covered the whole of Great Britain but has recently been extended to include Northern Ireland.

The aim from the start was to capture as many population types as possible, with particular focus on vulnerable populations, mapping them to individual buildings and including some indication of when the people might be at these locations. The NPD accounts for numerous scenarios and population groups including residential, sensitives (hospitals, care homes, child care, schools and colleges, prisons), transport hubs (airports, bus and coach stations, light rail stops, train stations, ports and ferry terminals, London Underground), leisure (stadia and visitor attractions due for release shortly) roads and workplaces. When developing new layers, analysis is carried out to ensure that the output (e.g. point, polygon or gridded data) is the best representation of the population.

By bringing together datasets including Ordnance Survey addressing information, Census data and data from government and other sources, a comprehensive picture is built-up, ranging from national to local levels

in addition to providing detailed venue capacity information for the different events, spheres of influence were calculated to take into account the number of people likely to gather in the vicinity of venues beforehand and afterwards, as well as the spectators expected to line event routes. This updated layer was then used in a number of support areas for HSE, helping with emergency planning arrangements.

The future of the NPD The NPD is updated in line with a maintenance schedule designed to ensure that our customers are using outputs based on the most recent source data available. Our residential layer recently migrated from OS AddressLayer 2 to AddressBase Premium and work is underway to incorporate 2011 Census data. As well as updating the existing layers, the maintenance schedule factors in the development of new layers, including visitor attractions, retail/shopping centres and camping and caravanning. Research that is investigating how to incorporate improved transport data into the roads layer is also underway.

The new Northern Ireland NPD could be of great use to other bodies including HSE NI, Public Health Agency NI, NI Environment Agency and the NI Executive (government). Plans are underway for HSL developers to visit Northern Ireland and discuss NPD

Continued on page 10.

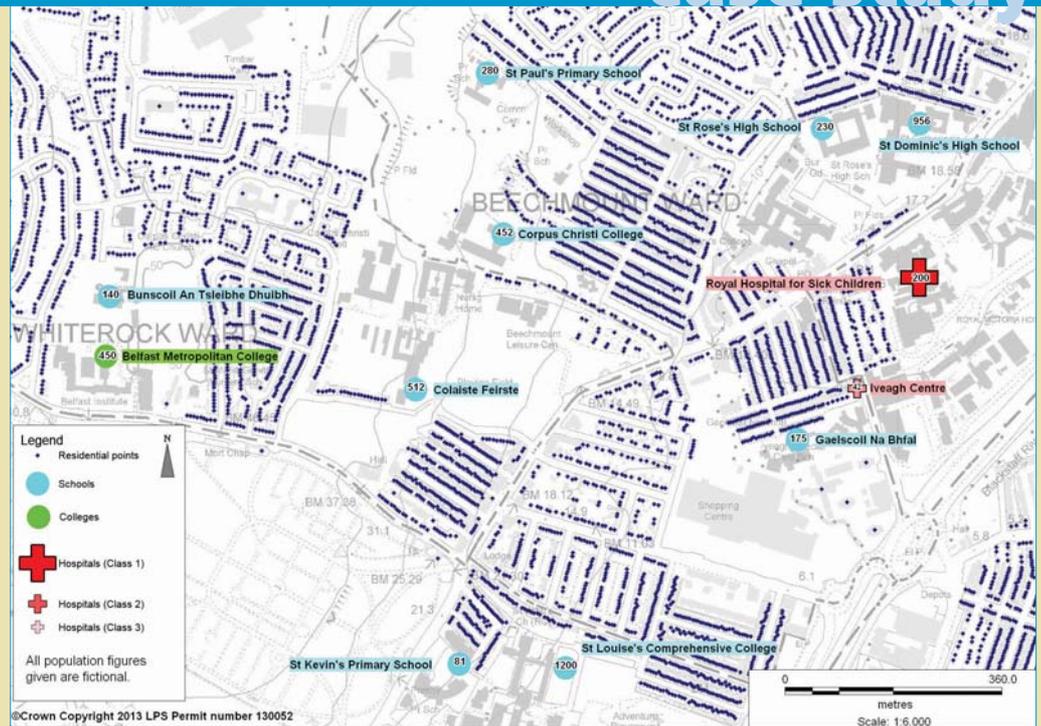
“

... a comprehensive picture is built-up, ranging from national to local levels of detail, thus maximising the intelligence of the location and population information.

”

Creating a National Population Database (NPD) for Northern Ireland

Right: An example of the NPD layers available for Northern Ireland.



RIMNET, the UK's Radioactive Incident Monitoring Network, managed by the Department of Energy and Climate Change (DECC), had been using the full GB coverage of the NPD for a year when they approached HSL to find out whether the tool could be extended to include Northern Ireland, as their remit is for the whole of the UK. The NPD forms part of RIMNET's emergency planning and response arrangements and the Northern Ireland addition was required to support an emergency exercise; the layers required were residential, hospitals, schools and colleges and workplaces.

Creating the layers

The first stage in the development of an NPD for Northern Ireland was to establish potential data sources for creating the layers. Geographical data in the form of 1:10,000 background mapping was obtained from Ordnance Survey NI along with its Pointer address database. The Pointer data was used as the source data for residential properties and as a reference dataset for the locations of establishments within the other layers. The population data came from various sources including the 2001 Census and government departments such as the Department of Health, Social Services and Public Safety Northern Ireland; the Department for Employment and Learning Northern Ireland and the Office of National Statistics (ONS).

The population data was linked to the Pointer data through automated address matching routines developed at HSL. All low confidence matches were then subject to manual matching procedures. Anomalies in the population data

were similarly assessed and corrected manually using a combination of additional data sources, internet searches and user evaluation. A verification regime was also applied.

Population scenarios

The NPD models populations at different times of day so the population information for the different scenarios was prepared separately and then attached to the locations. The residential, hospitals and schools and colleges layers were supplied as point datasets to enable quick calculations but the workplace layer could not be reported at this resolution: it is based on the Inter-Departmental Business Register (IDBR), which in its raw form includes information that is sensitive. Instead, the population is represented using a grid of 200m cells to comply with disclosure limitations set by the ONS. MapInfo and ESRI GIS platforms were used in combination for data processing and modelling.

The residential layer contains three temporal scenarios. Scenario one is the usual resident or night-time population, which assumes that all populations are at home and equates to the average household size for each output area. Scenarios two and three are the daytime term time and daytime non-term time populations. They are based on scenario one but adjusted to take into account people at work and at school. Similarly, hospital populations are also reported for both day and night-time scenarios. For the colleges within the schools layer, it was acknowledged that the pupil numbers might be distributed across various campuses. To represent this in the NPD, research was carried out to locate

these additional sites for inclusion as flag locations in the layer; these indicate the potentially distributed nature of the population estimate. The workplace layer, based on the IDBR, required a two-stage disclosure control methodology to be developed with input from the ONS to maintain data security.

Factors & issues

An important factor that needed careful consideration during the development of the NPD for NI was the projection system required for the data. The NPD for GB is projected using the British National Grid (BNG), however this is not the most accurate projection system for Northern Ireland. The Irish Grid was used as research showed that this is more widely used than Irish Transverse Mercator. Use of a different system makes integration with the GB NPD a slight challenge, but this can be overcome by using a worldwide projection system, such as WGS 84, for both datasets.

The design of the NI NPD was carefully considered so as to ensure compatibility with the GB version. Table and symbology designs were kept consistent and the methodology was adapted from the creation of the original NPD. There were a number of issues that had to be dealt with during the course of this project and as a result lessons have been learnt that can be implemented in future NPD development work. For example, not all data is collected to the same quality and standard or is even available for use. However, the standard NPD methodology can be adapted to suit the data available so that these issues have little impact on the quality of the final outputs.

population numbers & patterns



Above: Kirsty Forder (left) and Hannah McManus (right) are GIS specialists and work on the National Population Database at the Health and Safety Laboratory.

application and use with potential users of the data in the near future.

There is also potential to develop similar additions to the NPD suite for other countries across Europe and the rest of the world. If the right data is available for locating and populating sites then our established methodology can be used to create a bespoke NPD as required.

For further information or if you are interested in using the NPD, for GB or NI, please contact the GIS team at HSL: npd@hsl.gsi.gov.uk. Further case studies can also be found at: www.hsl.gov.uk.

We look forward to hearing from you.

About the authors

Kirsty Forder and Hannah McManus are GIS scientists within a specialist team working in the Mathematical Sciences Unit at the Health and Safety Laboratory, Buxton. The team provides spatial analysis and solutions for a wide range of complex areas and works with disparate datasets to create intelligence to inform decision making. Kirsty's primary focus is the development of the NPD with a particular emphasis on the use of Census data. Hannah oversees the development of new NPD layers and manages the maintenance of existing layers.

The Health and Safety Laboratory



The Health and Safety Laboratory (HSL) is the UK's leading health and safety research facility and is an agency of the government's Health and Safety Executive (HSE). The laboratory was set up to minimise risks to peoples' health and safety at work.

Today, with over 100 years of experience, investment and growth, the scope of work is unparalleled. HSL works with a range of public and private sector organisations, often conducting complex research and development projects on their behalf. The laboratory offers a range of services including research, mathematical modelling, spatial intelligence, consultancy and bespoke training.

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Adena Schutzberg is Principal of ABS Consulting Group Inc. and Executive Editor of Directions Magazine, www.directionsmag.com

GUN GEO MARKER, an Android app that allows anybody to anonymously report the location of a gun owner "about which you have a gun-related concern", was released on July 4th.

While the site engaged both supporters and deriders, actual contributors generated quite a lot of inaccurate and irrelevant data. Per the What is page (<http://gungeomarker.org/2013/07/13/what-is-the-gun-geo-marker/>):

"Simply stated, the project suffered numerous hacking attacks that filled the database with false info, not to mention that anti-gun-safety types have also used the app itself as a tool for mischief."

That's an interesting outcome in part because the project served as an experiment in "local use only" apps. Users, ideally, were only able to post and view data within a few miles of the current location. The creators cite the anonymity of data posting as the reason for this mischief.

map, but rather focused on a tech experiment and a socio/political goal.

- **Lesson 1:** Don't add data to a map unless you know what the goal is, who will use it, who owns the data and how long it will be kept. Creators should be sure all these details are shared at launch.

Creative mischief The other project, which also appeared around July 4, is less controversial. The makers of Benadryl, an allergy medication, in association with the UK's Met Office, put together a website and app to crowd-source locations with high pollen counts countrywide: <https://benadryl.co.uk/social-pollen-count>. Visitors are invited to "add a pollen hotspot" onto a Google Map. But, instead of a map of areas of allergy suffering, the page turned into a sort of billboard for creative visitors. They marked hotspots around London and elsewhere to spell out terms and draw pictures that are not safe for work.

The team at Benadryl caught the inaccurate data and took the website down. While planning an

Crowd-sourcing map data can backfire

The geospatial and other communities continue to celebrate the success of high profile crowd-sourcing projects, including OpenStreetMap and Wikipedia. But what happens when projects that depend on the public to provide valid and valuable data go awry? Two map-based projects launched this summer provide valuable lessons to both hosts and contributors, explains **Adena Schutzberg**.

The project also had a social goal: ". . . a culture-jamming exercise intended to draw out earnest expressions from the radical anti-gun-safety community, expressions that will now become part of a second phase of the project which involves aesthetic manifestations."

It's noteworthy that the data points are meant to disappear after "a time" (not defined explicitly but described as "roughly, a few months") to keep the data fresh. The whole app will in time "morph into pure 'documentation' about the project". In short, it seems the goal of the app was not in fact a useful

update, the team offered an in-kind response, which I can happily share (see bottom, left).

It's not clear what protections the team might have added to prevent future "graffiti" on the map, but the page is back in business in mid-July as I write this.

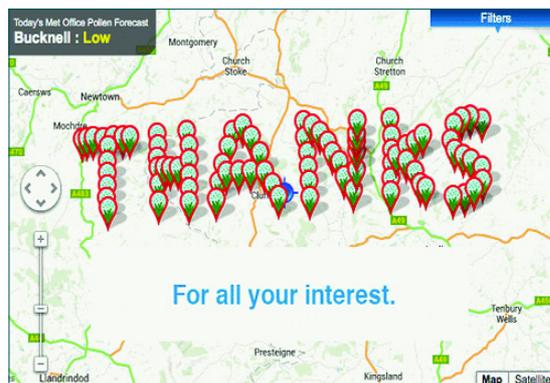
Safeguards Why did this happen? Us. vs Th3m, a humour site, admitted it was behind the inappropriate contributions but offered no explanation for the actions. Media commentator SocialSlurp notes (www.socialslurp.co.uk/benadryl-pollen-hotspot-goes-tits-up/):

". . . this map was not very well thought through in regards to how it was accessed and the usability limits. Better crisis management would have prevented more than one person from defacing the map and they could have put limits on the number of reports made.

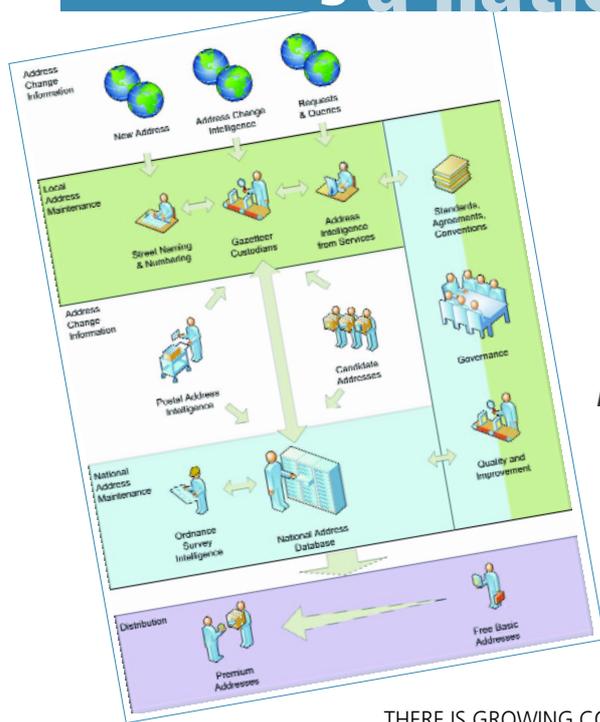
Sorry Benadryl but for being too trusting in the British public and for a lack of real-time crisis management you win this week's tasteless social media slurp award."

- **Lesson 2:** When creating a crowd-sourced map consider some safeguards to identify misdeeds quickly, monitor the data added regularly and have a crisis management plan at the ready.

Benadryl was forced to take down its crowd-sourced pollen count website after creative graffiti began to appear on the map. The company responded in kind (right) but the page is now back in business. Image: www.socialslurp.co.uk/benadryl-pollen-hotspot-goes-tits-up/



addressing a national ideal



Left: Young's diagram illustrates his belief that the sensible solution to the "address mess" is to bring the PAF in to the National Address Gazetteer.

THERE IS GROWING CONCERN in the local authorities in England and Wales over the recent papers and responses coming from central government surrounding national addressing. The Shakespeare Review of Public Sector Information and the government's response suggest that there is a widespread misunderstanding of the national addressing process that is adversely affecting government policy and decision-making.

postcodes and updates their Postcode Address File (PAF) with the whole address. Royal Mail, unilaterally decided a few years ago to pay local authorities £1 per address if it is deemed (by RM) not to have been received from another source.

- 3) Royal Mail sells PAF under licence, including licencing local authorities to use the address data that they had created in the first place. This licence is not a one-off fee; it is a perpetual licence for any use of the address at any time.
- 4) The licence therefore limits not only the use of new addresses but also any of the extensive address change intelligence collected by local authorities because they include the postcode with the address. If it's in PAF, Royal Mail claim intellectual property rights.
- 5) Subsequently, local authorities cannot freely use any addresses without licence; they have to count the searches for an address on their websites; they pay extra for addresses outside their geographic area; and they pay extra for any "other versions" of PAF they may use internally.

It is not surprising that local authorities feel that they get a raw deal; yet they still believe that, because Royal Mail is a public body, the whole process works for the greater public good. However, things may be due to change quite significantly.

The Address Mess

The recently announced privatisation of Royal Mail is likely to include their Address Management Unit with its responsibility for the Postcode Address File. **Andrew Young** is worried that this will exacerbate the strained relationship between Royal Mail, local authorities and central government and compromise the utility of the National Address Gazetteer.

A raw deal? Shakespeare and the response focused on Royal Mail and Ordnance Survey GB as the public sector authorities "dealing with" addresses. This completely discounts or minimises the fundamental role of local authorities, which are the source of, and have the statutory responsibility for the creation of, street addresses as well as being the key suppliers of address change intelligence.

For the record, the process in England and Wales is as follows:

- 1) Local authorities create new property numbers and street names under statute. No other body has the authority to do this. The addresses are added to an official Street Naming and Numbering register and to the local land and property gazetteer from whence it is passed to GeoPlace for compilation into the national address gazetteer.
- 2) Local authorities also pass these addresses (under no obligation) to Royal Mail, which adds

Cash cow The recent decision to privatise Royal Mail (with its rights to PAF) is causing growing concerns amongst local authorities over the use of address data. If PAF is privatised, then authorities will be giving the addresses they create under statute to a private company, for that company, which will have a monopoly and will make a profit. This immediately raises concerns over whether a public body should be providing data exclusively to only one private company. It also raises the issue of whether this is the most beneficial use of public sector information.

Central government is also using these addresses to make a number of efficiency savings: the Electoral Register; emergency services; the NHS; and the Department of Work and Pensions among others. All of these are bound by the same licencing restrictions imposed by the soon to be privatised Royal Mail.

The government response to Shakespeare states that "rich and detailed datasets are held by local authorities and arms length bodies – some of which are very useful to businesses and individuals alike". So

“

... there is a widespread misunderstanding of the national addressing process. . .

”

why exclude the core national address data created and maintained by local government that is used by every individual, every company and every sector of both central and local government? Not only will it not be free, it will still impose licence restrictions on the public sector using its own address data, and all future rights to its use will be vested in a private company.

The first sentence in the government response to Shakespeare is *"Data is changing the way we live and work. Open Data is a critical part of this story of transformation, with British businesses poised to benefit from the economic advantages it will bring."* The decision to privatise PAF will turn these into hollow words.

In a brief consultation with Gazetteer Custodian Chairs for each of the 13 regions in England and Wales, the overriding opinion was that if PAF is privatised, then local authorities would look at charging a higher fee for their address information, more in line with the profits gained from its sale, and would consider providing this information to other private companies that requested it. Local authorities increase the cost to Royal Mail; Royal Mail increase the cost to local authorities and a vicious cycle is created. If we are not careful, what started as a comprehensive national address database created and maintained for minimum cost for national use and benefit suddenly becomes a cash cow handed to a private company, which will have total control over the nation's use of addresses.

An obvious solution So what's the answer to this address mess? Well, it's obvious to anyone who has looked at efficiency savings in systems and processes. Capture once: use many times; master data management; lean management; they all point towards a single process with a single master dataset.

It's happened already with GeoPlace. Local authorities and Ordnance Survey provide complementary components and services to create the national address gazetteer. The sensible, nay obvious, extension is for PAF to be brought on board and for postcodes to be added to the consolidated national address gazetteer process. And here's one I prepared earlier (see diagram, left).

Currently, all new addresses and a lot of address change intelligence come through local authorities carrying out their statutory duties or meeting their own requirements for accurate current addresses for service delivery. They are already set up to create, manage, validate, check and update new and existing address records. This process could easily incorporate postcode creation to ensure unique addresses. Alternatively, postcode creation could be at the national level with a check at local level.

Royal Mail, and other mail carriers, could pass their intelligence to local authorities or to GeoPlace. There is then no need for a separate postcode address file as the official address (plus "non-official" names and the postcode) should be the only address required. There is potential to have a postal address that is different to the official address in exceptional circumstances.

New or changed "candidate" addresses would be

provided at local or national level for checking and validation. This procedure would be used by emergency services, utilities, other government departments, etc and would include all stakeholders. The more address intelligence enters the system, the more accurate the data will be.

The national address database, including inputs from Ordnance Survey such as TOIDs, co-ordinates and objects without postal addresses, can then be output as free open data or with a free basic service and with premium services, as currently offered by GeoBase (for Canada) and Ordnance Survey.

Governance is also required for dealing with the standards, agreements, convention documents, best practice, quality and improvement etc, which must maintain the link between local and national database maintenance.

This will consolidate current processes, remove duplication of address creation and maintenance and provide a single national address gazetteer with validation, quality routines and governance. All stakeholders could be involved in passing address change intelligence into the system and different flavours of address can be provided to all who require it – whether it's a postal address for delivery, a location address for emergency services and sat navs etc, a unique address reference to link information and services or simply a core dataset to spatially enable and analyse information.

Step towards the ideal Is this a Utopian ideal? I don't think so. The maintenance and management processes are already in place and with some slight tweaking, the infrastructure could be too. We are so close to an ideal National Address Gazetteer yet we are also so close to the ideal being shattered with the sale of PAF and the already tangled web of licensing and IPR claims.

Addresses and a national address database are such an important pre-requisite for economic growth and technological development that nations worldwide are striving to develop their own gazetteers. Ghana, Lebanon and the United Arab Emirates are currently embarking on comprehensive street addressing programmes and the US Federal Geographic Data Committee has commissioned a report based on the fact that *'Numerous stakeholders have identified a critical need for a National Address Database'*. And if you still think a privatised national address is a good idea, just ask the Dutch how much money they have spent in trying to return their postcode address file to the public domain.

The Universal Postal Union have identified the provision of a national address infrastructure as the basis of a society's welfare and as an essential "public good". We are only one small step away from the ideal for which the rest of the world is striving. So let's all collaborate on providing the best national gazetteer in a fair and equitable partnership for the good of both public and private sector alike – not to mention the average taxpayer!



About the author

Andrew Young is the Chair of the Regional Chairs Address Group and principle contact on the Authority Contacts Executive for the National Gazetteer. He specialises in spatial information management and writes a regular blog on address management and gazetteers called "Addressing Everything" – www.addressing.me.



Local authorities increase the cost to Royal Mail; Royal Mail increase the cost to local authorities and a vicious cycle is created.





Figure 1: Buildings and physical infrastructure provide the skeleton for future cities but it is the information infrastructure that will ultimately help us to survive in a sustainable environment.

IN THE LAST ISSUE, we presented a roadmap for a common information currency for smart cities against the backdrop of BIM. "Smart" in this context means being able to predict, prevent and adapt. It also means getting the right information to the right

environment. The information infrastructure will need to be scalable, intelligent, open and sustainably financed (see figure 1).

Scalability

"The Americans have need of the telephone, but we do not. We have plenty of messenger boys."

– Sir William Preece, chief engineer of the British Post Office, 1876.

Here are some astonishing facts. Think of one megabyte equating to a square metre of land. In 1920, information would have covered an area the size of Madagascar. By 2010, it covered the world. By 2020, we will need 1700 globes to represent the volume of data we will have generated⁴ and one third of all data will have passed through the cloud⁵. The number of internet connected devices will grow to 50 billion by 2020 and the rate is increasing⁶. "As individuals, we leave continuous trails of data, plumes of information. It's the personal exhaust from our digital interactions; the shadows and messy footprints of our daily lives."⁷ This background noise of a smart

Intelligent infrastructure for smarter cities

In this final feature on Building Information Management (BIM), **Tim Wood** argues that smarter cities will need much more open and intelligent information infrastructure to survive and prosper. With contribution from **Ian Bush** of Black & Veatch, he explains why this infrastructure must include geographic information and location aware assets and how it will be facilitated by the Semantic Web.

people when and where needed. They are the co-workers responsible for the physical, intellectual, social, financial, environmental, organisational and behavioural assets that together determine quality of life. Despite global investment in smart cities, much of this information in the UK remains bottled up in inaccessible silos, defined in different ways with inconsistent meanings. Investment is needed in an intelligent infrastructure that connects and empowers; we argue that geographers are uniquely placed to lead this revolution.

Globally, we will have to build the same amount of housing and infrastructure in the next 40 years that we have built over the past 4,000 years¹. By 2015, there will be over 1.2 billion cars. Demand for renewable ecological resources will exceed two Earths well before mid-century². India alone is set to build 500 new cities over the next 20 years to house 700 million more city dwellers by 2050³. Buildings and physical infrastructure provide the skeleton and circulation of these future cities but the information infrastructure provides the brain and nervous system, the ability to think collaboratively and, ultimately, the ability to survive in a sustainable

city, big data, can be analysed to detect the meaning in these trails. Despite "big brother" concerns, big data could increase the smartness and lower costs of intervention across civic services but, to understand and respond to big data collaboratively and in context, we also need common conceptual models of reality⁸.

Intelligence Geographers have long maintained that location provides a common language. Location is one way of sifting through and helping make sense of big data. However, coordinates and proximity are not enough – we must understand meaning as well. The Semantic Web (SW) is the name of a long-term project started by Sir **Tim Berners Lee** and the World Wide Web Consortium (W3C). The stated purpose is that data on the web should be defined and linked so that it can be used by machines, not just for display purposes, but also for automation, integration and reuse. The SW conveys the meaning of each data item in terms of a stated fact, expressed as a relationship of some kind. These relationships enable us to link separate pieces of intelligence into a real-time view of a city and can help create a new generation of GIS.



Location is one way of sifting through and helping make sense of big data. However, coordinates and proximity are not enough. . .





Figure 3: Smarter cities will require collective intelligence but in turn this requires the right information to be available at the right time by the right people.

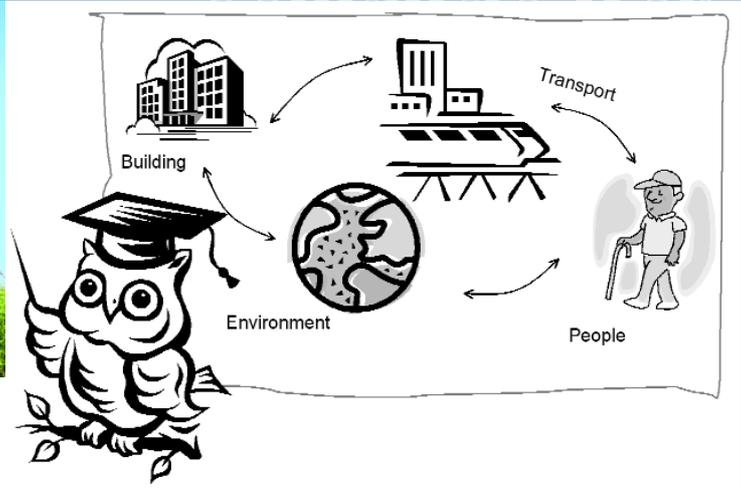


Figure 2: Well-referenced, mediated ontologies for the built environment will benefit the entire world.

The SW uses a graph model that is a natural language way of representing information, instead of the rigid models of typical databases. Implementing complex queries on the SW takes days or weeks, as opposed to months or years, and can be a decentralised, collaborative activity. Reasoning and inference capabilities are also supported, creating a global network that could analyse the complex and fluid interactions of a city and knows no limits. Rules for actions support advanced machine reasoning capabilities and automatic response.

More complicated relationships such as the rooms in a building, buildings on a street or any other physical, social, financial, organisational or environmental knowledge and rules can be supported by published models of reality – ontologies – built using OWL⁹. An ontology could contain the contextual rules and intelligence to determine the different spatial representations and contextual meanings associated with a simple placename¹⁰. However, there is not yet any concerted approach to defining and mediating the ontologies needed to support an intelligent infrastructure for cities. Having a disparate collection of ontologies referring to different aspects of the same real-world things requires continual investment in mediation with serious risks of misinterpretation. Collaborating on well-referenced, mediated ontologies for the built environment, with appropriately structured governance, will benefit the entire world (see figure 2).

With these tools, it will become possible to expose all the information needed by citizens and service providers but also by machines and systems, including GIS, alerting and informing us on how to improve outcomes and manage problems. The SW has moved into production in leading industries such as financial services and pharmaceuticals. The Sensor Web Enablement (SWE) standard (defined by the Open Geospatial Consortium) means we can include real-time data streams about anything being monitored such as water, electricity, GPS-enabled devices, buildings and weather. More ontologies are being defined and used for datasets in the Linked Open Data Cloud. The Architecture, Engineering, Construction and Facilities Management (AEC/FM)

standard ‘International Framework for Dictionaries’ (IFD), registered as ISO 12006-3:2007, supports the development of unified AEC/FM ontologies at the national, regional or domain levels. The work on Smart Cities by Liviu-Gabriel Cretu of Alexandru Loan Cuza University in Romania has shown how intelligent inferences can be made from linked data to improve decision-making and intervention. However, there has been little progress on agreeing an event-driven information architecture to support publishing and subscribing to the various services that will be needed¹¹ and there is a danger of proprietary solutions “locking up” cities that are early adopters.

Openness

“The ant is a collectively intelligent and individually stupid animal; man is the opposite”

– Karl von Frisch.

Collective stupidity will not solve the daunting problems that our growing cities face but collective intelligence requires access to the right information at the right time by the right people. Currently, most city information in the UK is not open. Widely reusable data about social and other assets is fragmented. Some is split between two tiers of local government or collected by government agencies with one purpose in mind and locked away. The private sector holds much data about the built environment and extracting this needs specific legislation. The European Commission believes that giving away data created using public money stimulates new products and services (see figure 3).

In the UK, compared to the USA, access to information is inhibited by attitudes to data protection, the narrowness of statutory gateways and commercial imperatives limiting use. This impedes innovation. An inability to connect data causes hardship and contributes to social deprivation. Investing in the energy efficiency of buildings or tackling social isolation requires information about those in most need as well as investing in provision.



... access to information is inhibited by attitudes to data protection, the narrowness of statutory gateways and commercial imperatives limiting use.



BIM semantic web



About the author

Tim Wood 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.

This needs value-chain thinking, identifying all the steps between investment and return even when different stakeholders are involved. Initiatives such as the London Data Store and Data.gov.uk remain focused on static, historic datasets. The full potential of intelligent infrastructure goes beyond planning and performance management to operational support and full-scale automation.

Finance Technology giants such as Fujitsu, Toshiba, IBM and Deutsche Telekom are investing heavily in what promises to be a boom market. Tackling these issues in the UK will require public-private partnerships at a time when local authorities are preoccupied with spending cuts, and government funding remains focused largely on smart city R&D. In contrast, the State Information Centre of China has reportedly announced that 154 cities have already proposed smart-city plans driving first-round investments of £120 billion. The smart cities market in India is estimated to be worth \$1,200 billion in the next 20 years¹² with seven new cities under development through Japanese funding. With its legacy of old building stock and infrastructure, the UK should be thinking about an intelligent infrastructure that will drive down the costs of becoming smarter or risk being left behind in the building of smart, green, efficient and effective city environments.

Conclusion While the amount of information flowing through our intelligent infrastructure is exploding, our ability to listen, assess, predict and act upon it has hardly moved forward. The perceived upfront costs of standardisation continue to exceed the discounted value of downstream sharing, further hindered by a combination of institutional resistance and disengagement.

Collaboration and the harnessing of collective intelligence will require an intelligent infrastructure that can cross silo boundaries and support new citizen-centric services, creating a new marketplace for information technology but that requires significant upfront investment, a step-change in information sharing and openness, a unified language and a common, powerful vision of the future. Custodians of our national digital assets, such as Great Britain's Ordnance Survey, will need to play a central role in realising the opportunities of an intelligent infrastructure.

Acknowledgements

Ian Bush, Bob Barr, Liviu-Gabriel Cretu.

References

- 1) World Economic Forum
- 2) Global Footprint Network
- 3) Booz & Company
- 4) Mike Sanderson. Linked data for executives: building the business case. BCS, November 2011.
- 5) http://www.csc.com/insights/flxwd/78931-big_data_growth_just_beginning_to_explode
- 6) Eddie Townsend. UK Future Internet Strategy Group: Future Internet Report. s1: Technology Strategy Board, 2011.
- 7) Alan Moore. No Straight Lines
- 8) Fujitsu. Linked data: connecting and exploiting big data. White Paper, March 2012
- 9) Web Ontology Language
- 10) Tim Wood. Joining up the BIM Roadmap, GIS Professional 52, June 2013
- 11) Liviu-Gabriel CRETU. Smart Cities Design using Event-driven Paradigm and Semantic Web, Informatica Economica vol. 16, no. 4/2012
- 12) IBM and McKinsey

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The AGI's BIM Showcase focussed on the "how" of BIM for infrastructure and sought to encourage industry engagement.

THE FIRST OF AGI'S new Showcase events was hosted by the BIM4Infrastructure SIG at the Royal Geographical Society (RGS) in June and was billed as "covering the Why, Who, What and, more particularly, the How of BIM for Infrastructure". Held in association with the Institution of Civil Engineers and the Royal Geographical Society, it sought to highlight the key drivers behind BIM – and why the geospatial industry has a key role to play when 'Building Information Management' is dealing with infrastructure and the wider urban context.

Setting the scene The event attracted 60 representatives of industry, academia and government as well as 30 from the sponsoring vendors. Introduced by Dr **Anne Kemp** (Atkins and chair of AGI), **David Henderson** (Ordnance Survey) opened the first session, saying that Britain needs 3D modelling data as much as 2D mapping data. OS records landscapes in 2D when the technology exists to provide 3D for new modelling demands but information about private assets is still not being made

standards such as ISO 15926, which could provide an overall framework for a common set of semantic and logical definitions and representations so that data captured once could be used many times and not only by the construction industry. But one member of the audience still contended that it was good to have different formats, to reflect cultural differences, as if this was part of the "diversity agenda"!

Tim Chilton described the status of ISO TC211 (geographical information) and ongoing harmonisation with ISO TC59 (building and civil engineering works). The committee for the former is drafting a white paper focused on collaboration, framing the problems as separate case studies of data exchange. **James Brayshaw** (formerly of OS and now with Pitney Bowes Software) gave an overview of the BIM process in the UK, followed by an update from **Paul McRoberts** (Autodesk) who provided some startling examples of visualisation and modelling of BIM data. A debate with the supply chain followed (Balfour-Beatty, Costain, Skanska, Motts, Atkins and Parsons-Brinkerhof),

Making infrastructure work – BIM meets geospatial

Building Information Management must not just be a tick box exercise to meet the government's 2016 deadline but should enable long term sustainable management of the built environment.

Tim Wood, a speaker at AGI's recent Showcase event on BIM, reports back with contributions from **Richard Groom**, a surveyor and editor of our sister magazine, *Geomatics World*.

available even when it adjoins public spaces. 'Smart cities' will need to move from mapping to modelling as well as enabling joined-up data.

Professor **David Philp** (Government head of BIM implementation) stated that asset management is a large global market. We need to make better use of information about the built environment with greater collaboration within the construction industry, learning from other disciplines. **Karen Alford** (Environment Agency) explained that BIM is a far more consistent way of working and the resulting integration of data could save the agency £2m a year. **Malcolm Taylor** (Crossrail) explained that working over such a large geographical area has necessitated additional internal standards, including extending Uniclass (Unified classification for the construction industry), to address infrastructure. There are already 1.25m CAD files and 850,000 documents to be managed, with a master GIS providing overall control.

making the point that clients have also to invest in processing data-drops and participating in the BIM process. Tough and often adversarial contracts make it difficult to propose a collaborative process with a degree of shared risk. Because the public sector is unlikely to take the lead, the private sector will have to continue to invest over the long-term, including the cost of capturing legacy data.

The real world In the final session, **Graeme Forbes** (Kier) gave insight into their company-wide BIM roll-out and integration, giving a 'proactive view of causation' instead of a 'reactive view of outcomes'. He noted that BIM adds more complexity to change management and that risks have to be shared with subcontractors. Finally, **Davin Crowley-Sweet** (Network Rail) reminded attendees that infrastructure is largely about asset management and covered BSI PAS55 as used in the rail industry.

Survey for BIM Anne Kemp summed up the meeting and announced the formation of a new group, "Survey for BIM" to be led by **Ian Bush**, chairman of the Chartered Institute of Civil Engineering Surveyors.

Despite the venue and the hosts, presentations were largely focused on discussing BIM in the context of the construction industry although exhibitors were more representative. It would be good to see far more challenge and engagement from the GIS community to ensure that their wider needs will be met by BIM, and to contribute their expertise.

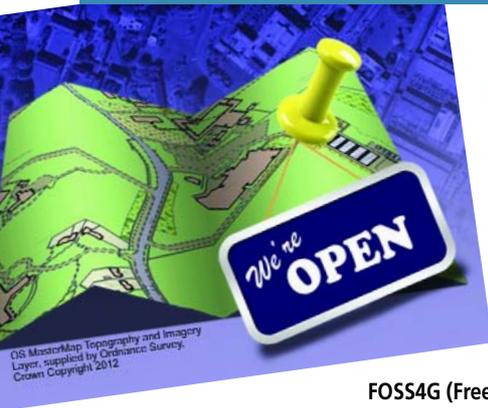


... adversarial contracts make it difficult to propose a collaborative process. . .



Archives and standards **Ian Bush** and **Tim Wood** introduced the second session and explained that, to create a national digital archive of the built environment of equal value to everyone, we need a common language that can provide an effective foundation for a much wider range of uses even than envisaged by BIM. Industry has at least eighteen standards defining the built environment in different ways whereas, with the right governance, we could define and model assets once and for all. Attention was drawn to mature

AGI GeoCommunity'13 preview



Open for Business

This is the theme for AGI's GeoCommunity'13 conference, being held at the East Midlands Conference Centre in Nottingham from 16 to 18 September. The format is much the same as last year's successful event but will be followed this year by the

FOSS4G (Free and Open Source Software for GI) conference, which has been timed to start as AGI closes. It is salutary to see that FOSS4G has over 150 presentations scheduled over three days – three times as many as AGI has over two. But with nine parallel sessions, it will be very difficult to get an overview!

THERE ARE SOME intriguing presentations scheduled for AGI GeoCommunity '13 in September. Betjeman would perhaps not have been surprised by the illegal "beds" and "sheds" in Slough though we doubt that his "friendly bombs" would be an acceptable solution in 2013! And from the other side of the Thames, the Royal Borough is going "hybrid" open – whatever that means. If you are wondering about a definition of "Giality" then come and find out from the Scottish company responsible! Catastrophe models, a crofting register and the Fish Passage Center (sic – it is in the USA) all feature in the programme with more prosaic sounding titles involving "Open", "crowd-sourcing", INSPIRE, BIM and 3D.

With five parallel streams, we don't think anyone is likely to be bored and the presenters come from a wide range of organisations from the public and private sectors. In the "Open Source" stream, the world's leading reinsurance brokers will be followed by a Cambridge company working on carbon "fluxes and pools"; an Irish company on "promises and pitfalls"; and the aforementioned fish centre on visualising spatio-temporal information (we can find big words as well!).

Smart cities feature in presentations from Glasgow and from UCL, London. The "Infrastructure" stream on day one has tramways – from Nottingham itself – roads and sewers and, as the Canal and River Trust puts it: it starts with a bit of Geography! Universities are well represented with talks from London, Cambridge, Nottingham and Leeds as well as local authorities from the two previously mentioned riverside boroughs, Glasgow and Poole.

The keynotes will be delivered by **Vanessa Lawrence**, CEO of Ordnance Survey, and by a speaker from Esri. The plenary sessions start with the Territorial Army Geographic Squadron on day one and continue with Sainsburys, the Cabinet Office and Ubisense on day two. Your editor will certainly want to find out why the latter's shares have been going down recently!

We are pleased to see Pitney Bowes Software in several places but surprised to see that Esri is not represented in the parallel sessions, at least not directly. There are several smaller British companies presenting, as well as one from the Netherlands. INSPIRE features in four of the titles but very much from the "producers" – where are all the predicted users? We also note that at least one company is looking to the export market with a presentation on applying their new 3D data model to Paris.

The above is only a taster of what AGI GeoCommunity has in store for 2013. To view the full conference programme, visit www.agi.org.uk/conference-programme.

Finally, we must mention this year's sponsors who have helped make the GeoCommunity conference possible. As always, *GiSPro* offered sponsors the opportunity to provide more information about themselves and their plans for the event. Below you can read the entries we received:

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Esri UK is a privately-held, UK-owned company that provides world-class enterprise geographic information systems (GIS). Our solutions help businesses, governments and educational institutions make timely, informed and mission-critical decisions by leveraging the power of geography. At AGI GeoCommunity '13, Esri UK will preview the latest version of the location-based platform, ArcGIS 10.2, and demonstrate the benefits of ArcGIS Online: Esri's cloud-based geospatial content management system for storing and managing maps, data and all geospatial information.



Ordnance Survey will be supporting AGI GeoCommunity'13 as a platinum sponsor.

As well as an opening keynote address by chief executive Vanessa Lawrence CB, there will be a presentation on 3D data, the organisation's cartographic design principles and workshops on making use of OS OpenData products. In the exhibition area, the national mapping authority will be showcasing its latest innovative product development ideas and highlighting the OS Insight programme.

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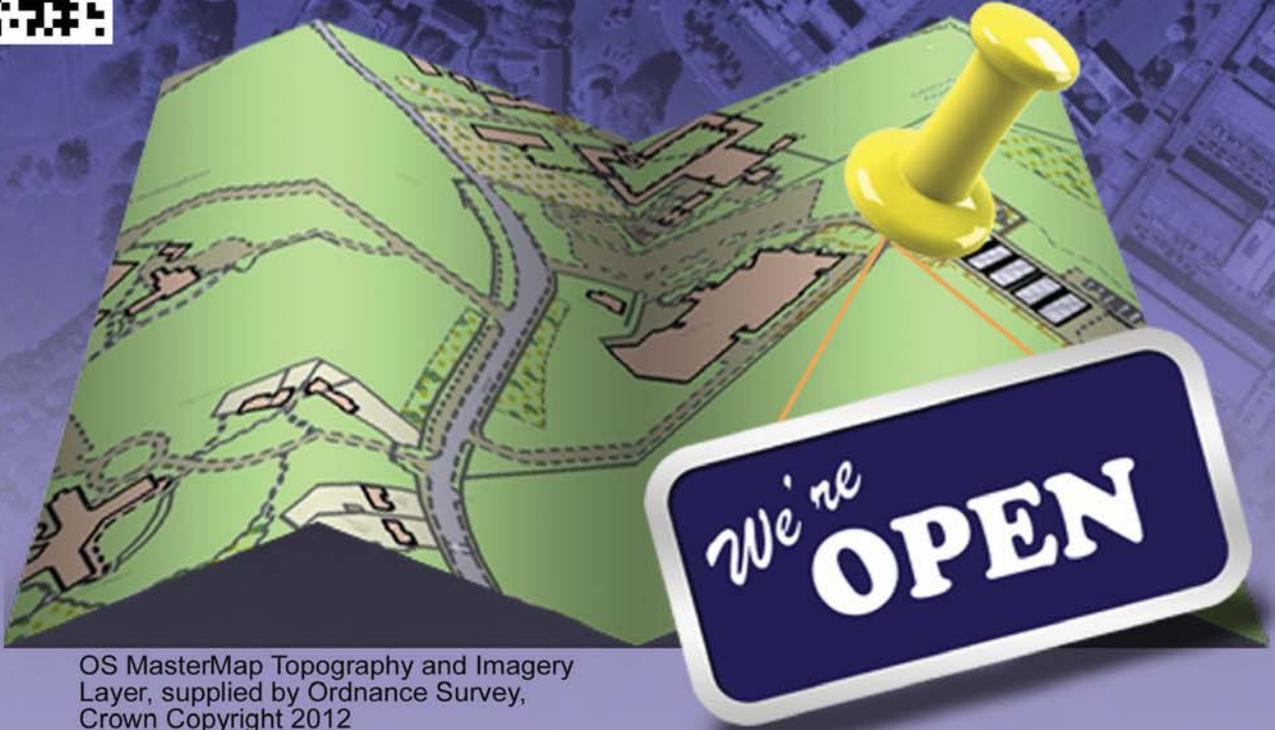


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The remaining sponsors are: Atkins, Cadline, Civica, Europa Technologies, MangoMap, Océ (UK), Pitney Bowes Software and 135 Geographic Squadron Royal Engineers.

- The full list of sponsors can of course be seen on the AGI's website at: www.agi.org.uk/geocommunity-sponsors. MapAction is once again the supported charity and you can find out more about them at: www.mapaction.org.



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case study tracking lone workers

Left: One Scottish council has found that lone workers in its bridge inspection team can be particularly at risk in isolated areas like this, where there is poor mobile phone reception.



“Staff lone working in areas that are known to have communication black spots do feel more confident of being able to summon assistance using Trackplot.”

– Scottish Local Authority.

NOT ONLY DO YOU have a duty of care to your lone workers but you also need to comply with the Health and Safety at Work Act 1974 and the Management of Health and Safety at Work Regulations 1999. Sounds

assess each bridge up close, presenting hazards that could compromise their safety. A number of incidents proved this - a common accident being falling down embankments and ending in lucky escapes, which could have been far more serious.

The council realised that a system was required to enforce the importance of health and safety and provide a means of emergency communication. Trackplot was approached to provide a suitable solution.

Tracking progress The Trackplot Portal is an online mapping tool designed for people who work outdoors. It uses GPS to find each worker's location and integrates with a range of devices to either transmit messages via communication satellites or the mobile phone network. The council understood that this system, supported with appropriate policies and procedures, would mitigate the risks their workers faced on a daily basis.

Training was provided to the management team. Each bridge inspector was given a GPS device to

Keep safe, keep legal Many businesses have a need for a lone worker system but do not realise it. If you, your staff or contractors work alone you need to consider your legal position carefully explains **Gert Riemersma**, technical director of Trackplot Ltd.

serious? It can be. Lone workers may be exposed to significant risk – simply because they work alone and they may behave differently to workers in teams. Tens of thousands of lone workers are injured in the UK every year and injuries for lone workers seem to be worse than for those who work in teams.

Understand your risks As well as keeping your staff safe, you need to keep legal. The best approach is to understand your risks, write your lone worker policies and then develop and implement your risk mitigation. Documentation is key: demonstrate that you have considered all aspects of your responsibilities. This will help you avoid prosecution, reduce hassle and alleviate the negative impact to your reputation that non-compliance issues bring.

Lone workers can be found in a wide range of industries from construction, highway and railway maintenance to professionals on site or on call. Local authorities are a good example, having many lone workers across a variety of professions from social care to engineers. Changes in government spending have led to council jobs being carried out by lone workers to reduce cost and increase productivity. This strategy also increases the chances of accidents occurring whilst at work.

A Scottish council employs a specialist team of engineers to inspect the condition of bridges, ensuring they are suitable for public use. Many bridges are isolated, accessible via single track roads with little traffic and poor mobile phone reception. The bridge inspectors

advise on their progress or raise the alarm if needing help. The portal works across the UK, including all remote areas, which removed the worry of staff being in areas not covered by a mobile phone network.

The position and status of each bridge inspector is collected regularly to track progress on the portal against their planned locations. If the trail does not concur with their intended route, the situation is escalated. A check-in, check-out facility enables each bridge inspector to confirm they are “OK” at agreed intervals during the day. If a check-in time is missed, the engineer is sent a reminder. If the reminder is missed, the escalation procedure starts. The portal uses a range of OS digital maps to display location, enabling a quick and easy recovery by the emergency services if an incident occurs.

Safety awareness Two years on and the bridge inspector team use the Trackplot Portal daily. They have developed a procedure to check-in and check-out to show when they leave the office to attend a job and when jobs are started and completed. They utilise the tracking function to show a snail trail on the portal of each engineer as they progress along a particular route. To date, there has not been a single accident or emergency across the team. The process of considering risk, what they need to do to prevent incidents and implementing a lone worker system has heightened awareness of the importance of safety to the team, which in itself has brought an increased level of care and attention.

About the author



Gert Riemersma trained as a land surveyor, worked as a hydrographic surveyor and then started a geospatial engineering company, MAPIX technologies. Well aware of the risks of working in hostile environments, Gert developed the Trackplot Portal in 2008 and uses his expertise in GPS and GIS to ensure the latest technological advances are included.



Melvin Lindsay holds a degree in business information technology and has previous experience as an IT analyst and IT project manager. He took over the role of support and testing manager in March 2013 with the brief of streamlining Aligned Assets' support processes.

Aligned Assets specialises in AddressBase, gazetteer and address management solutions. The company supplies software to both public and private sectors including over 100 local authorities, fire and rescue services and police forces. As well as the software and data solutions, it offers a complete range of consulting, training, development and project management services.

Firstly, congratulations on your new role. How are you finding it so far?

It's been an "enjoyable challenge" I'd say. Just prior to me taking up the role, Aligned Assets had one of their support technicians move on to pastures new so, although I'd not expected to be hands-on straight away, my background as a first line support engineer proved very useful.

What was great about doing this was that I could really get involved in the support process. I've been

In terms of customer service, how do you ensure that the highest possible levels are maintained?

Customer service is vital and, although we have contractual service level agreements, I never forget that a simple support issue to us can be of vital importance to the customer relying on our software to do their job.

Of course we have standards for logging new issues, responses and resolving them, which we constantly work to improve. I strongly believe that the customer benefits from high levels of transparency and visibility - people like to know what's going on!

We therefore created a web portal where customers can track the current status of their issue, see who is responsible and see all correspondence between both parties. A user forum informs customers of all the latest news about relevant products and encourages liaison within the community and the sharing of best practice.

Can you tell me a bit more about GeoStore?

GeoStore is a spatial data warehouse, which acts as a central repository for spatial and non-spatial data. Instead of having data scattered in departmental silos across an organisation, GeoStore facilitates the

Software support – manning the front line

Carl Hancock talks to Aligned Assets' new testing and support manager, **Melvin Lindsay**, who explains what goes on behind the scenes in software maintenance, development, testing and de-bugging.

able to implement improvements in response times that I might not have been able to do had I simply been looking down from a management level.

Staffing issues I'd expected, but the biggest challenge has come from taking over GeoStore from Pitney Bowes Software (PBS). Although it's a well-established product, it was completely new to Aligned Assets, so there has been a lot of overtime working to get up to speed.

You mention testing but just how difficult is it to achieve bug-free software?

Just like Microsoft and other large vendors, we do everything we can to ensure that our software is the best it can be. However, as the software is constantly being developed and is expected to work in different environments, the reality is that sometimes things do get missed. Consequently, what's important is how quickly we can provide a workaround or even a patch to resolve an issue or bugs when they do occur.

Achieving this necessitates the whole team working closely together. The support team holds daily meetings with the developers and testers so that everyone knows what people worked on yesterday, what they'll be working on today and what issues are preventing them achieving their targets.

If something in the software changes, then the testers can update their test scripts to cover the alterations in the code. If a bug is reported to the support team, then it can be fed back to the developers.

storage, management and publication of all data from one place, as well as providing the option to convert data from one format to another, e.g. MapInfo Tab files into ESRI Shape files etc.

GeoStore came to Aligned Assets as part of a technology transfer from PBS in March 2013. The procedures we have in place for our gazetteer software have been copied for GeoStore and feedback thus far has been positive.

We recently held a user group webinar to ascertain users' thoughts on the product and how it might be improved. From this listening process we've been able to define a clear product roadmap containing the majority of the requested features. The next release will see INSPIRE compliance and a more user-friendly installation process, with larger projects such as compatibility with open source databases scheduled for subsequent releases.

As a final thought, do you ever think you'd rather be out there demonstrating the finished software?

No. . . I prefer making sure people are happy with our products and that their issues are resolved.

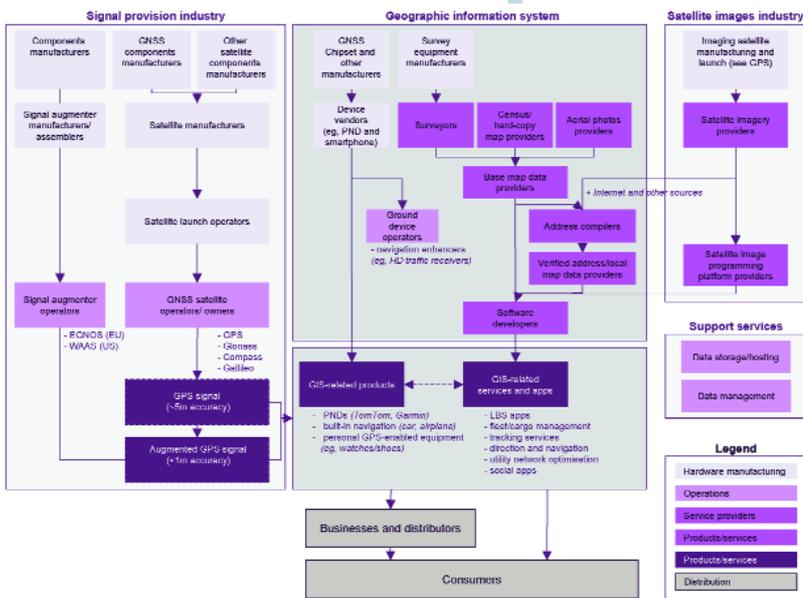
• *Carl Hancock has worked in marketing for over ten years and with Aligned Assets for five and half of those years. In July 2012, he established his own marketing consultancy specialising in both information technology and small business start-ups.*



. . . portal where customers can track the current status of their issue, see who is responsible and see all correspondence between both parties.



review oxera report



Above: Figure 1 (Image Credit: © 2013 Oxera, Google)

THE ANSWERS TO the title question may surprise some people. Using material from a variety of different sources, Oxera estimates that the global geo services economy generates somewhere between \$150 and

Oxera estimates that the sector has a global GVA of \$113 billion, which is roughly 0.2% of the global gross domestic product. In terms of global employment, this amounts to about four million jobs. These estimates suggest that the geo services industry is at least five times the size of the global video games industry and about one third that of the airline industry.

Consumer benefits The authors of the Oxera report define “geo services” in broad terms as incorporating ‘a wide range of services, including maps, satellite images, location services and combinations of these’. The main value chains of geo services include three main components: the GNSS ‘signal provision industry’; the GIS sector from hardware and software providers to data collectors – including aerial imagery, ground surveyors and map makers; and the satellite images industry (see figure 1).

Later sections of the report consider the consumer benefits of the estimates on particular sectors of the economy. It recognises that geo services are essentially an ‘intermediate good’ in that they are not normally valuable in themselves, but help consumers engage in other activities. One obvious example of consumer benefits concerns the

What is the economic impact of Geo Services?

This question, posed in a short report by economics consultancy Oxera in January, should be of great interest to all those involved with geographic information and related services.

It is also interesting that the report was prepared for one of the biggest internet-related service providers, Google. **Ian Masser** reviews the report for *GiSPro*.

\$270 billion (£95 to £170 billion) of revenue each year. They point out that while revenue calculations provide an indication of the size of the transactions that are occurring, they do not capture the full economic contribution of a sector. An alternative method of quantifying the impact of a sector is to examine its GVA (gross value added). This can be broken down into the profits accruing to geo services providers and the wages paid to those working in geo services. On this basis,

reductions in journey time and fuel savings that are derived from drivers using satnavs. Oxera estimates that this impact could be worth around \$22 billion (£14 billion per year) to consumers and that it reduces petrol consumption by 3.5 billion litres every year. The report also estimates that, in the UK, around 152 lives a year may be saved by faster emergency response to cardiac arrests. Educational benefits of geo services are worth around \$12 billion (£7.5 billion) to individuals (see figure 2).

About Oxera

Oxera is one of Europe’s foremost economics consultancies and combines economic thinking and quantitative methods with a practical business approach to advise clients on matters in competition, finance and regulation.

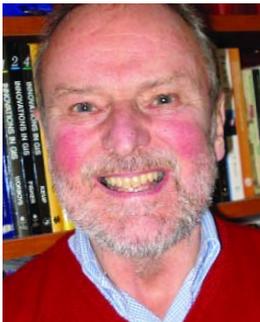
With 30 years’ experience of real-world economics, Oxera’s competencies include:

- In-depth knowledge of institutional structures
- Experience of analysis of competition issues
- Detailed understanding of the costs and benefits of different forms of regulation
- Familiarity with the theories of finance and their application to regulatory regimes
- Expertise in modelling demand and costs

Source: www.oxera.com

Potential for further study Oxera has not carried out a desk study and based their findings on a wide range of materials ranging from consultancy reports to academic studies. The materials used are referenced in more than 80 footnotes to the report, which make it possible for interested readers to follow up and judge for themselves the conclusions that they have reached. However, it must be emphasised that this study is a static study of the sector at the beginning of 2013. Consequently, there is little discussion of the reasoning behind the two different growth figures quoted in the executive summary and the concluding section of the text.

Potential readers should note that Oxera have made the report freely available on the web (www.oxera.com). This is a welcome move as it should encourage a more informed discussion of some important issues relating to the broader economic impacts of the geo services industry. From the standpoint of *GIS Professional*, it would be interesting for somebody to take on the task of interpreting these global findings into estimates for the UK and Europe.



About the author

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

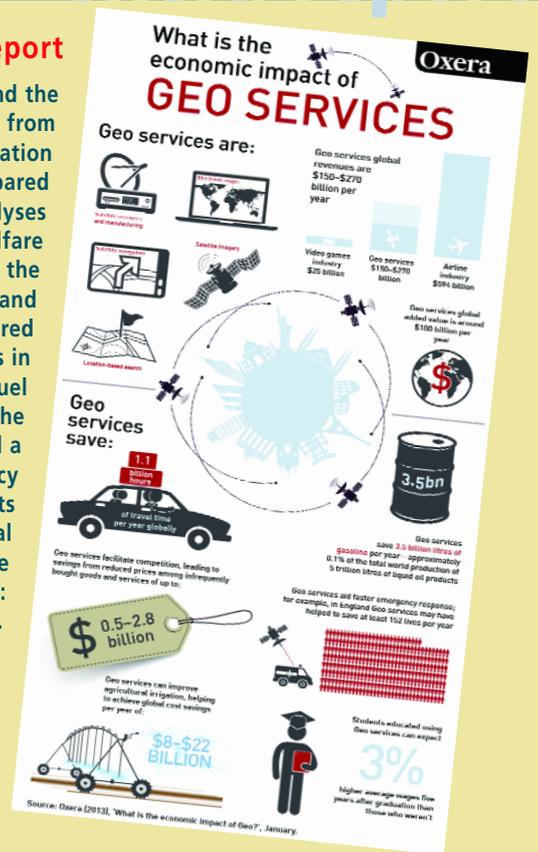
Laboratories in Europe (AGILE) (1998-2000), President of the European Umbrella Organisation for Geographic Information (EUROGI) (1999-2003), and the Global Spatial Data Infrastructure Association (GSDI) (2002-4).

The Report

How do consumers and the economy benefit from electronic maps and navigation devices? The report prepared by Oxera for Google analyses some of the consumer welfare benefits that arise from the use of these services and devices. Benefits covered include the reductions in journey time and fuel savings from satnavs, the lives that can be saved a year by faster emergency response to cardiac arrests as well as educational benefits. The report can be downloaded at: www.oxera.com.

Figure 2 (right) summarises the impact of geo services.

(Image Credit: © 2013 Oxera, Google).



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PSI directive



Marc de Vries has professional degrees in both law and economics (Utrecht 1991). He has been active in the field of PSI re-use for more than 15 years, both at the national and European levels. Any comments are welcome: +31 653897002 marc@thegreenland.eu www.thegreenland.eu www.linkedin.com/pub/marc-de-vries.

"TODAY WE CAN celebrate our efforts to bring government data closer to citizens and businesses in Europe. We are finally getting the much needed legal framework to boost the economy and create new jobs". This is how EU Commissioner **Neelie Kroes** announced the adoption of the Directive of the European Parliament and of the Council amending Directive 2003/98/EC on re-use of public sector information¹ in June 2013. Ms Kroes had initiated the process in December 2011, acknowledging evidence² that European socio-economic potential was unexploited and complaints from large groups within the open data community that the 2003 legal framework required review.³

Some disappointment An appraisal of the outcome against the ambitions set in December 2011 leaves a slight sense of disappointment, as some of the more forceful, much-needed measures have been lost along the way. The original proposal held some remarkable provisions that would have significantly changed the equation between public data holders and re-users.

The first novelty the proposal had sought to

marginal cost regime by default but the system is as solid as Swiss cheese: *PSBs that are required to generate revenue to cover a substantial part of their costs relating to the performance of their public task, as well as documents for which the PSB is required to generate sufficient revenue to cover a substantial part of the costs relating to their collection, production, reproduction and dissemination* are exempted. This means that costs can be recovered, including a reasonable return on investment (the "old" article 6 regime). However, even this cloud has a silver lining: terms are to be set up-front and published, including the structure and the principles underlying the charges.

Some steps forward Of course, the revised directive also introduces some new elements that are a step forward. Firstly, it introduces a new paradigm. Where under the old regime PSBs could disallow re-use of publicly accessible documents, the new directive synchronises access and re-use: if there is a right of access then there is a right of re-use. And although PSBs can still impose conditions, including charges, under article 8(1), those conditions shall not

The emperor's new clothes or is this as good as it gets?

Last month, after a relatively brief 18 months of negotiations, the European Parliament adopted a proposal for a revised PSI Directive. Quite something for the European GI community, as most geographic information is produced by the public sector and, therefore, will be affected by the new rules to be implemented within the next two years. So what's in the new directive? What are the implications for GI stakeholders?

And how should we judge it? **Marc de Vries** offers some answers.

introduce was a stringent pricing regime for public sector information (PSI), as a rule disallowing public sector bodies (PSBs) from charging above the marginal (reproduction, provision and dissemination) cost level, which is practically zero in a digital environment. Exceptions were to be allowed only if this would entail instant bankruptcy of the PSB. In such exceptional cases, higher charges could be set. The PSB had to show that the charges were determined by objective, transparent and verifiable criteria and obtain approval from an independent authority. That was the second novelty introduced. The independent re-use watchdog was also to be endowed with specific regulatory powers regarding PSI re-use, serving as a means of redress. Its decisions were to be binding and, in doing so, would mimic the fairly successful models used in the United Kingdom and Slovenia.

Alas, we lost both. Now the Directive, by its article 4(4), allows the independent authority to be an existing national judicial authority. This means lengthy and costly procedures instead of swift decisions, which are much needed by re-users, in particular small and medium-sized enterprises (SMEs). Article 6 continues to refer to a

unnecessarily restrict possibilities for re-use and shall not be used to restrict competition. This implies a kind of "compulsory licence" for material protected by (Crown) copy- and database rights.

Secondly, and quite relevant for the GI community, the new directive addresses the issue of accessibility. According to consideration 11, *PSBs should make documents available through open and machine readable formats and together with their metadata, at the best level of precision and granularity, where possible and appropriate, in a format that ensures interoperability, e.g. by processing them in a way consistent with the principles governing the compatibility and usability requirements for spatial information under the INSPIRE Directive*. Although not incorporated in the actual provisions – which are to be transposed into national legislation – this is a clear encouragement to the Member States to rely on the INSPIRE framework also for other areas of PSI.

This being said, the directive (article 5(2)) explicitly states that this does not imply an obligation to create or adapt documents or provide extracts in order to comply with that paragraph if this would involve

“

... a slight sense of disappointment, as some of the more forceful, much-needed measures have been lost along the way.

”

disproportionate effort, going beyond a simple operation. Put differently, the success of expanding the INSPIRE regime will depend on the willingness of individual PSBs. One would expect that this will happen in those sectors that are close to or partly reliant on INSPIRE-related information.

Momentum Looking at the bigger picture, the new directive is the next and necessary step of a process started more than 14(!) years ago with the adoption of the 1999 Green Paper 'Public Sector Information : A Key Resource for Europe'.⁴ It is part of the transition that we are witnessing: governments are gradually returning to their core public tasks and enabling companies and citizens to avail of opportunities (and take on responsibilities no longer catered for) and to fill the vacuum created by this retreat. This appears to be an irreversible process.

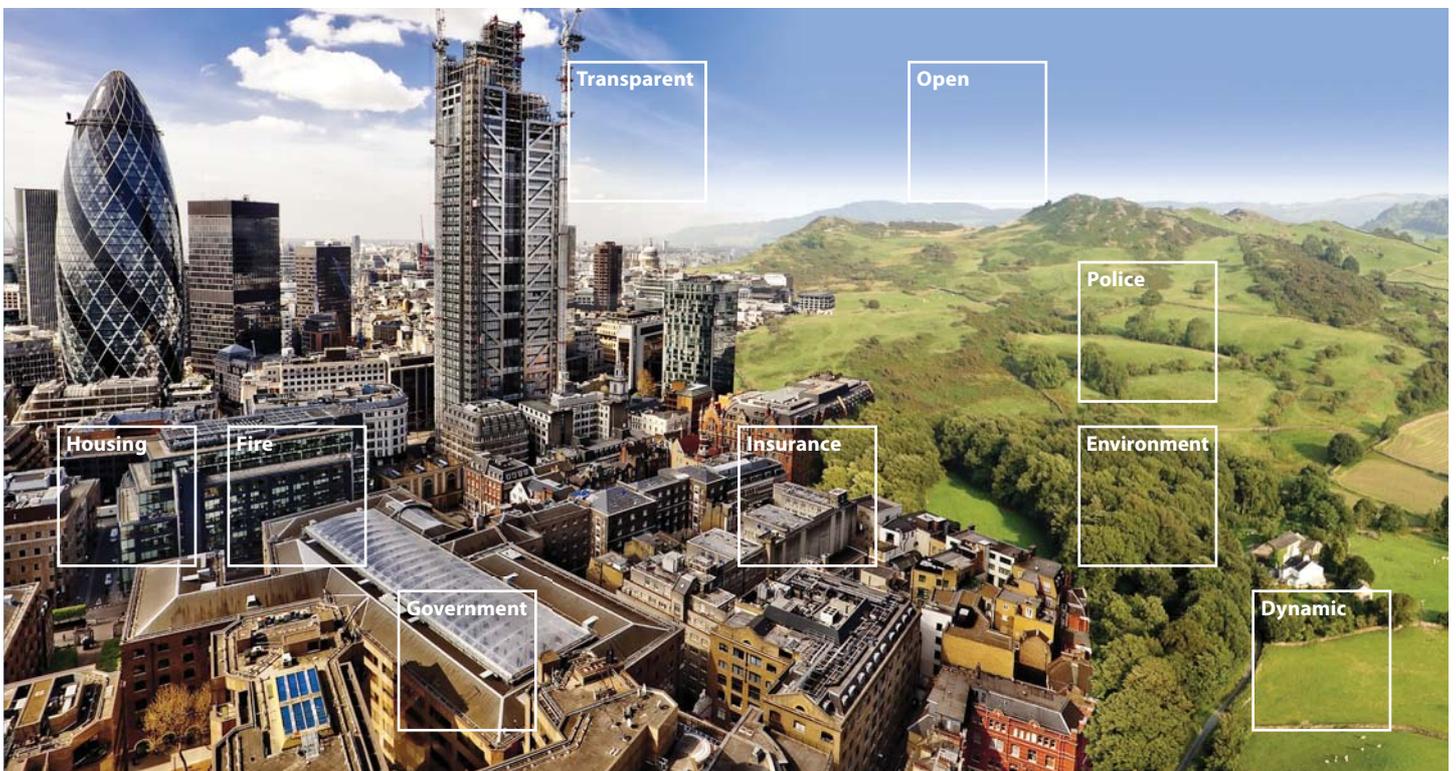
The watering down by the Council (read: Member States, including some of the big ones like the UK) of the charging and redress provisions should be put in context of the time needed to reconsider public data holders' funding models that are moving from fee-based models to general State budget financing. This shift is unmistakably taking place, judging from the ever increasing number of PSBs adopting open data policies across Europe. The

new directive will catalyse this process, where the transposition obligation will put these points on the political agenda for the next two years. This momentum will likely be used by the open data community and those in the GI field in particular, as it is the most precious source of PSI, both in terms of market size and infrastructural value. Exciting times!

References

- 1) European Parliament legislative resolution of 13 June 2013 on the proposal for a directive of the European Parliament and of the Council amending Directive 2003/98/EC on re-use of public sector information (COM(2011)0877 - C7-0502/2011 - 2011/0430(COD)).
- 2) See in particular the POPSIS Report and the Vickery Report.
- 3) Directive 2003/98/EC of the European Parliament and of the Council of 17 November 2003 on the re-use of public sector information.
- 4) Public sector information: a key resource for Europe, Green Paper on Public Sector Information in the Information Society, COM(1998)585.

“
... the success of expanding the INSPIRE regime will depend on the willingness of individual PSBs.
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conference report UAVs



Unmanned aircraft like the above from Gatewing were on display at the Survey Association's conference, where delegates discussed UAV operation in the UK and abroad.

THE CIVIL AVIATION AUTHORITY prefers the term "unmanned aircraft" (UA) to unmanned aerial vehicle (UAV) or system (UAS). This may sound pedantic but (thankfully) logic and order are fundamental to air traffic control. And the

first speaker, **Gerry Corbett**, who is in Flight Operations Policy at the Civil Aviation Authority (CAA), says that the same principles apply to piloting of aircraft, whether they are manned or unmanned. Both have pilots who operate the aircraft and have the same responsibilities, even if the pilot stays on the ground. UAs currently used for commercial surveying are all less than 7kg in weight, at the lower end of the lowest CAA category.

Certification Unmanned aircraft can only be operated within line of sight, nominally 500m, and at an altitude lower than 400 feet. UA operation in the UK is covered by the Air Navigation Order and

Privacy issues In the USA, the industry also has to contend with privacy. **John Palatiello** of the Management Association for Photogrammetric Professionals, or MAPPS, (see our sister magazine *Geomatics World* May/June 2013, p20) gave a video presentation explaining that privacy of the individual is guaranteed by the constitution. Two states have passed bills to prevent use of UAs for "surveillance" but with specific exclusions to enable the use of UA imagery for mapping purposes. There is a possibility that aerial photographers will have to gain the permission of all land owners before taking photographs, which would clearly render the technology unviable.

Processing the data **Christophe Strecha** described how Pix4D software converts image data in to orthoimagery and digital surface models. Strecha contrasted conventional photogrammetry, using precise, calibrated, large-format photos/images, precise GNSS positioning and IMU data with image processing of UA data. It works by using massive redundancy from 80% overlaps, which means that the data itself can be used for calibration and precise relative orientation. Absolute positioning uses GNSS or with

Unmanned aircraft: technology taking off

Richard Groom reports back from the Survey Association's recent UAV conference at the Newark showground in June. Sadly the weather limited the flying display but delegates still got a real understanding of the latest technology for mapping.

these rules should ensure the safety of third parties.

The CAA licenses UA operators who have a qualification taught and examined by the European Unmanned Systems Centre (EuroUSC). The two-day course equips operators with the knowledge to operate an aircraft safely and there are currently about 200 licenced pilots with another 20 qualifying every month. A refresher course is required every year. The CAA encourages discussion on adaptation of the rules for a particular use and some conference delegates had been able to relax the maximum flying height and/or the maximum operating range.

Inconsistent safety Corbett was at pains to point out that the purpose of CAA regulation is safety, but this does not quite gel with the CAA policy of requiring only commercial pilots of UAs to be licensed. Surely safety has the same importance whether you are paid or not – as is the case with manned aircraft. Although several delegates made the point that accidents have to be avoided at all costs if the future use of UAs is not to be put in jeopardy, there was some evidence from the audience that everyday health and safety standards are not being fully implemented by all operators. Each flight should be recorded but not all near misses or minor incidents were being reported. There did not appear to be full awareness of the established relationship between the frequency of near misses, injuries and fatalities.

reference to ground control points. The results are close to accuracies obtained with conventional photogrammetry.

UAs in action Three users presented their results and experiences. Trimble's **Tor Erik Dujpos** talked about the data workflow and analysis of Gatewing data and reported on a test with lots of ground control. The result was an average positional error of 31mm with a maximum – on a relatively isolated point in the model – of 60mm.

Alan Cooper at Sky Futures spoke about how his company uses its three UAs – a Gatewing, an Aztec Falcon 8 and an Aeryon Scout. They notify CAA of all surveys and gave a rather alarming account of a low flying military aircraft crossing their site minutes before they had planned to take off. Clearly, the notice to CAA (which are issued as Notices to Airmen or "NOTAMS") had been ignored. **Duncan Forrow** from the Geoinformation Group described a 3D creator / viewer that the company has developed in conjunction with English Heritage, which produces 3D images viewable with glasses on 3D televisions.

The day concluded with questions and answers that covered, among other things, insurance – professional indemnity and third party risk – and the practicalities of deriving "bare earth models" from the surface models typically generated in the first instance.

Your correspondent congratulates the TSA on a well run, enjoyable and useful day despite the wind, which limited flying to a single demonstration.



... some evidence from the audience that everyday health and safety standards are not being fully implemented by all operators.





• **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.**

TWO STRANDS OF PRESENTATIONS were picked out at the annual INSPIRE conference by Clare Hadley and Graham Vowles. The EC sees most of its work on Inspire complete – pretty much all of the legislation is in place and it is about to review and evaluate the outcome with a view to deciding what happens next. However, the Member States (MS) are in the midst of implementation and finding many issues on which they feel the need for guidance and support. More positively, Inspire data is increasingly becoming available through web services; cross-border and cross-sector applications are becoming feasible.

A whole plenary session was devoted to links with e-government, which is clearly important to both EC and MS. Open Data was also mentioned frequently, although not always with the same definition or understanding. “Free of charge” and “open licence” are not the same and issues of sustainability inevitably arise when there is no revenue stream. MS, believing that they can avoid licensing hassles, may be deluding themselves: there is still a need for interoperable access control to services – for sensitive and secure data, other licensing restrictions, service performance management and user communication requirements.

in Europe reports on a study of open data initiatives in Denmark, Finland, Iceland, Netherland, UK and Spain. The differences in the meaning of “open” came to the fore and particularly for cadastral mapping. In the UK, we do not yet know exactly how the cadastral parcels (from the Land Registry index map) will be made available, mainly because the geometry is derived from Ordnance Survey MasterMap, which must be licenced.

Graham attended a workshop dedicated to the future: “European location initiatives – Putting location in a better place”. Three projects are building and extending the Inspire foundation to support the development of new applications and services. The European Location Framework project (ELF) focuses on harmonised national reference data delivering authoritative, interoperable, cross-border reference data. The European Union Location Framework (EULF) (this is not the same as ELF – confusing or what!) and The Reusable INSPIRE Reference Platform (ARE3NA) projects are part of the Interoperability Solutions for Europe (ISA) Programme, which supports sharing and reuse among European public administrations.

INSPIRE 2013 – the green renaissance?

Florence, with its jaw-dropping renaissance architecture, was an inspiring city in which to hold the 2013 INSPIRE conference. **Clare Hadley** (Ordnance Survey) and **Graham Vowles** (currently with the EC’s Joint Research Centre) provide the content for this report at a turning point in the implementation of our favourite European directive. But who gets the most pineapples?

Simple messages All of the presentations are available on the <http://inspire.jrc.ec.europa.eu> website and those highlighted by our correspondents were:

INSPIREd Location – a gateway to e-government, from Denmark, with the message that even the finance ministry will come on board if the message about “how” is changed to a simple message about “why” (see image below). The finance ministry is now on record saying that they were inspired by Inspire!

What have the EC INSPIRE team ever done for Northern Ireland??! was delivered by **Suzanne McLaughlin**, the NI INSPIRE coordinator, based on a well

known scene from *The Life of Brian*. The Romans left “aqueducts”, “sewerage”, “the roads” etc – do you recognise any Inspire themes here? She suggested that NI had several good news stories including the creation of a new non-commercial Inspire licence; better coordination of local councils and much progress on the use of unique identifiers and de-duplication of datasets.

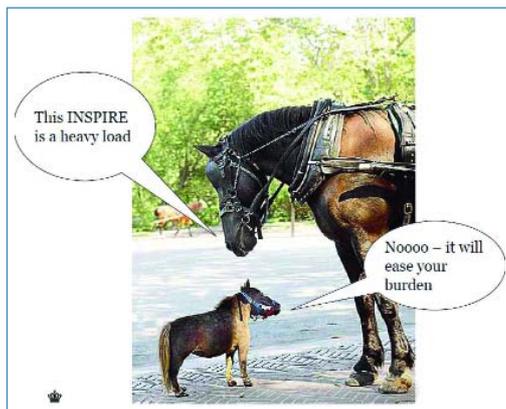
A comparative analysis of open government data initiatives

Pineapple ranking **Alessandro Annoni**, EC Joint Research Centre, highlighted a report from the Netherlands Environmental Assessment Agency, which reported “enormous increase of INSPIRE data in the last months, making cross border mixing and matching possible”. The report suggests that the “harmonisation of look and feel of data services within the INSPIRE themes is a quick win”. Annoni placed the current INSPIRE 1.0 at a general ranking of three and a half “pineapples” (from the INSPIRE logo) out of five, with some unforeseen side benefits, including use of the data models elsewhere; increased collaboration for cross-border initiatives; and emerging applications combining INSPIRE and crowd-sourced data.

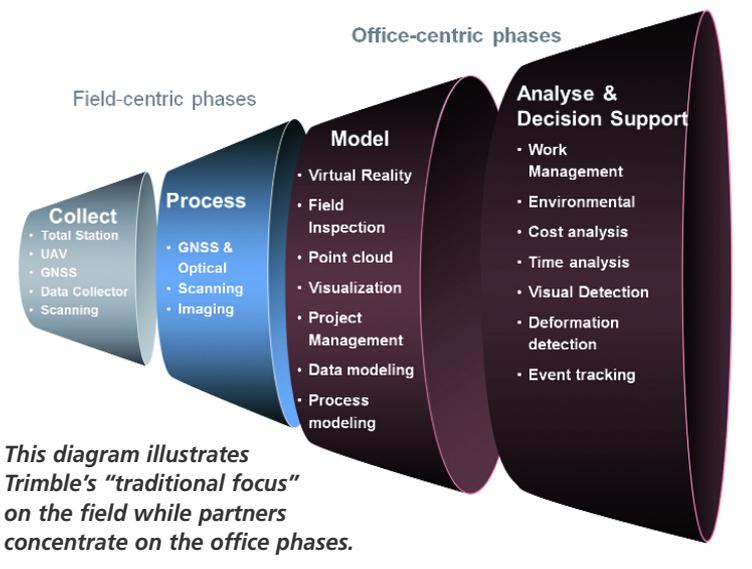
As for the future, INSPIRE 2.0, Annoni advocated a shift from supply-oriented data provision towards a demand and user-driven provision of data. Focus needs to shift towards a user-centric application of data and services enabling a broader audience of domain specialists, application builders and the open data community. He acknowledged the challenging feedback received by the EC team and, specifically, the continued necessity of promoting collaboration and improving communication among all stakeholders. It will achieve five pineapples when it delivers more benefits to a wider range of users!

• *The 2014 conference will be at the Aalborg Hall, Aalborg, Denmark from 16 - 20 June 2014.*

Below: Sometimes a simple message focusing on the “why” rather than the “how” can make all the difference.



Trimble vision



TRADITIONAL BOUNDARIES between surveying, mapping and aerial imagery are blurring. Imaging technologies from the aerial mapping sector are now becoming part of land-based surveying and mapping solutions. Total stations – measuring angles and distances – are becoming spatial stations with satellite positioning technology and

logger connects with the two systems at the same time. It's a simple process that has increased our productivity enormously; depending on the task, 50% - 100% compared to using our old systems individually,' says **Charlie Stratford**, Centre for Ecology and Hydrology.

The Inpho (photogrammetric) and eCognition (image analysis) software packages are used to process, model and analyse geospatial data from vector files, images and point clouds. The latest version of Trimble Business Centre (TBC) incorporates these packages, enabling customers to work with GNSS and optical surveying data as well as with data and images from UAs.

Customers want to reduce manual data entry and have access to different data types as well as needing flexibility to carry out accurate survey work one day and GIS data collection the next. Modern data management aims to provide the facilities to complete tasks quickly and to efficiently deliver accurate results to stakeholders.

Three key developments in data flow have helped. Sophisticated software in the vehicle-based MX8 mobile spatial imaging system, for example, merges data from GNSS, inertial software, photographs and 3D scanning to provide detailed datasets for highway maintenance.

An evolutionary approach to geospatial

Trimble has not been shy of sharing its geospatial vision of the future. But what should UK geospatial professionals expect to gain from the global vision of an industry leader? **Katherine Sandford** explains Trimble's goal to enable a 3D virtual world.

the ability to integrate accurate co-ordinates with high resolution video and imagery. Surveyors are now combining data from a range of data collection devices including terrestrial and mobile 3D laser scanners, GNSS receivers and unmanned aircraft (UAs) – for a single project. In the 21st century, survey, mapping and GIS are all blending into "geospatial".

Customers drive changes This convergence is being driven by rapid technological development, which is fundamental to Trimble's business. Initially, the company provided general products with a focus on surveying and GIS but, in the last ten years, has moved towards segmentation. The heavy civil construction business now includes joint ventures with Caterpillar and the agriculture business offers precision farming systems and more detailed offerings for particular crops such as sugar cane.

Trimble users in the UK, and in particular KOREC customers, have traditionally been involved with surveying and mapping. Now there is interoperability between surveying, scanning and aerial imagery achieved through a field controller and software that provide a common interface to many different instruments and sensors.

'If our line of sight is compromised with the optical instrument, or heavy tree canopy affects our GNSS signal, we simply push a button and switch over. Our

Developments in analytical software enable the extraction of 3D objects and surfaces from point clouds to provide understandable information for designers. Integrated systems combining innovative hardware and software have been designed for specific industry tasks and also to enable interaction with external, third-party sensors. These developments have all been reinforced by the rapid innovation and growth in communications technology.

Vision of the future **Katherine Sandford** explains the vision as: "To enable a 3D virtual world by providing fully interoperable application workflows for geospatial professionals, specific to industry and regardless of technology platform".

She says that they will continue to deliver the best in data collection and processing tools, but will also seek to provide value adding tools for modelling and analytics. 'We see the complete geospatial value proposition to be collect; process; model; analyse – with potential for data to be used and re-used depending on customer need. We will target industry specific workflows and we will manage a cloud-based software ecosystem that supports mixed fleets of devices and that includes software developed by customers and partners.'

'We have traditionally focused on the field (see diagram, left) leaving our partners to add value in the office. Now we will move "upstream" with the data flow



In the 21st century, survey, mapping and GIS are all blending into "geospatial".



while removing boundaries between field and office.'

KOREC's **Martyn Palmer** says there are customers needing to combine data collected from a variety of sources for a single project. For example, **Justin Moat**, GIS manager at Royal Botanic Gardens, is going to Peru and Madagascar equipped with a 3D laser scanner, UA and GPS receivers. He will use eCognition to collect plant measurements and scan vegetation changes. A GIS will be used for analysis and presentation. Director **Andrew Beckerson** adds: 'The customising of simpler workflows, to ensure that data is complete and correctly formatted, is a major benefit from using the Access software development kit.'

Conclusion Innovation is vital for addressing new growth opportunities, increasing productivity, saving money and gaining a competitive edge. Behind the evolutionary vision is 'a simple desire to do what's right for our customers who require customised workflows, real-time field-to-office data transfer and the integration of sensors tuned to their job and industry. By optimising every phase of the workflow we aim to understand and solve our customer's challenges as well as building cool technology,' says Sandford.

She concludes: 'Trimble has many pieces of the puzzle in place and work continues apace. Whilst there is still much to do, the future is near.'



About the author

Katherine Sandford is the general manager of civil infrastructure within Trimble's geospatial division. She has previously held general management positions with Trimble's Imaging and Utilities Field Solutions (TUFS) businesses. Both Imaging and TUFS were founded through acquisition of a number of companies, technologies and domain specialities, each requiring a focus on unified portfolio development and integration.

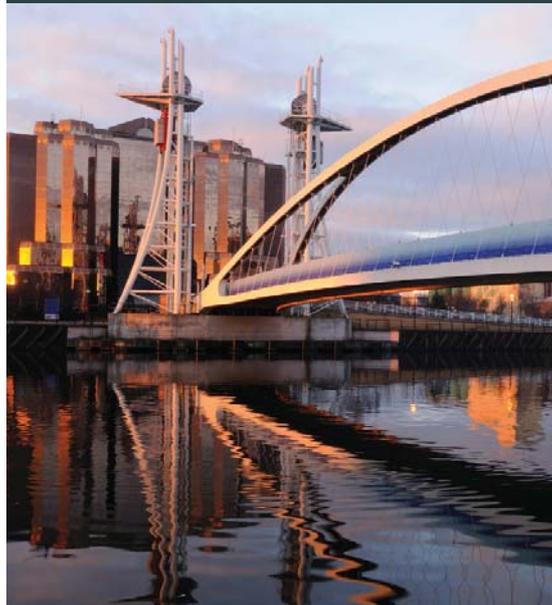
Since joining Trimble in 1991, Katherine has also held a number of sales positions including EMEA and India sales manager, and worldwide director of sales. Her early career at Trimble was in customer support and related services. During that time, she held both regional and global management roles across multiple businesses.

Above: The vehicle-based MX8 mobile spatial imaging system merges data from different sources, such as GNSS and photographs, to provide detailed datasets for highway maintenance.

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AGI column



Dr Anne Kemp is a geographer who has worked in the infrastructure industry for 25 years. She is currently serving as Chair for AGI and is also Director at Atkins and Vice Chair of BIM4I, and of ICE's BIM Action Group.

WALKING UP TO THE Royal Geographical Society in glorious sunshine, enjoying the holiday atmosphere, I find myself anticipating our family camping holiday wandering around France. We have no idea where we will end up, but I will be using the good old hardcopy Michelin Map and Camping Guide. This really is me returning to my roots. I've been doing this since I was nine years old – and love poring over the maps and discovering hidden gems to share with the family.

And arriving at the AGI office, this has left me reflecting on my belief that geography is such an important part of our identity as AGI – and why I love the fact that our home is now at RGS.

What drives your interest? Throughout my own career, I believe the ease with which I can work with multiple disciplines, and be so stimulated by this, has been because of my background as a geographer. It has made me constantly curious about the world and how it operates. It is a key part of my success,

development, asset management. The real shift that I am still determined we should facilitate at AGI is the understanding that GI has a big role to play in making BIM for infrastructure work. I am having many conversations now with planners, engineers and operators/maintainers who are asking how they can use geospatial technologies – they have realised that this is, to them, a part of the solution. But the dialogue with GI suppliers about BIM seems more difficult at the moment – there is less vision about the potential role they can play. I really hope that over the next few months this will change as we showcase the projects and organisations where this is happening, and open up connections across different industries.

What are your needs? Our recent BIM4Infrastructure and AGI Showcase event – BIM Meets Geospatial – at RGS, London, was attended by over 100 people from a wider range of disciplines than we have seen before – and with sponsors and attendees who more usually

Providing a common view

Our common interest in geography can help drive engagement with people still discovering the benefits of GI but dialogue is key, says **Anne Kemp**. With a diverse range of AGI channels available this year – from SIGs, Showcase events and GeoCommunity'13 – there's no better time to make your voice heard!

something I feel I can be proud of and enjoy. And I think it is this inheritance that allows us as professionals to be able to access, interpret and integrate information from a wide range of sources, and across a wide range of industries, "for the benefit of the citizen, good governance and commerce" (from AGI's mission statement of 20 years standing).

But I am also aware that a large number of AGI's membership has very little to do with geography, and everything to do with information and technology. So I am wondering – just how important is the link to geography? What drives your interest with AGI – what do we need to do to ensure we keep that interest? I would really welcome your thoughts.

The real shift We frequently talk about silos and stovepipes – not only in terms of data and systems – but in terms of people. We should be in a great position to enable connection across silos. How many projects have you been involved with where you were able to enable discussions across different groups because you provided a common view into the data maze? For me, it has been one of the most rewarding aspects of my job, facilitating better engagement and better dialogue.

Through my work in Building Information Management (BIM), I am constantly discovering people who are finding that geography is implicit to the problems they face – smarter cities, infrastructure

frequent the engineering and infrastructure space (read more on page 17). This was a great opportunity to have some very different conversations to what we might be used to. This is certainly a model we would like to repeat for other sectors – for retail, insurance, health. We have more showcase events coming up where we want to demonstrate the "power of place". So please do let us know if this is something you are interested in contributing to or if there are other areas that you think we should prioritise.

There is increasing activity across our special interest groups (SIGs) and we want to ensure this continues. The suppliers' SIG is on LinkedIn and we are encouraging all suppliers to enter the debate about the content for our Showcase events and conference. We are more than prepared to take on feedback and adapt our thinking in line with your needs.

At the same time, the showcase events are proving a great way for the SIGs to pull together and demonstrate what is really happening across the industry. We have learnt a lot during our first events in Scotland, the South West and London – not least because of your willingness to talk to us about issues you may have. This is so important for us. We are working on the content for Northern Ireland and for the north of England events – focusing on the environment, asset management, smart cities and health. If you want to see something different, don't hesitate to get in touch. With **Chris Rhodes** (see page 7)



... the dialogue with GI suppliers about BIM seems more difficult at the moment – there is less vision about the potential role they can play.



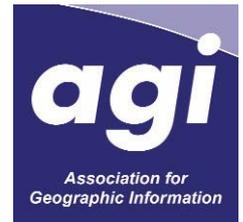
now in place, the AGI team has a much improved capacity to listen and respond to your ideas, together with all the fantastic volunteers who are beavering away behind the scenes on the SIGs and on the council. And over the summer we have two Defra supported events to discuss the Inspire directive – do visit the AGI website to find out more.

Year to remember Preparations for GeoCommunity'13 also continue. Finer details for the programme are being thrashed out, and story lines being clarified, so that we can be confident that the conference delivers what you – our attendees and sponsors – really want. Please do get in touch with the AGI team if you have ideas or thoughts on this – we very much want to hear from you. As the editor writes in the GeoCommunity Preview (see page 18), this year is a tremendous celebration of the joint running of AGI's GeoCommunity'13 and FOSS4G for which I must thank the AGI team enormously. They have been working incredibly hard to support both events – and we are looking forward to welcoming many of you to Nottingham. It really does promise to be a year to remember.

The epitome of this year is the gathering of 170 global experts in the field of geospatial information at Cambridge during July to discuss the future of geospatial information. This event is the Third Session

of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM), co-chaired by the director general and chief executive of Ordnance Survey, Dr **Vanessa Lawrence** CB, and established as the official UN consultative mechanism on place, locality and geographic information. High on the agenda was a discussion on critical matters such as effective global geodetic reference frameworks, the development of a global map for sustainable development and the publication of a report on "Future trends in geospatial information management: the five to ten year vision". This visionary report presents the thoughts of leaders in the geospatial world as to the future developments in surveying and mapping over the next decade. AGI will provide a commentary on this in the autumn. The starting point for me will be meeting the New Zealand minister for building and construction, customs, land information and statistics, who wants to understand any barriers, in the UK, to the use of geographic information, and also how the UK is succeeding in the implementation of BIM in combination with GI.

So, I am hoping that, as you read this, you are enjoying our beautiful summer, in all its guises, and are gearing up to join us in the autumn at Nottingham. I look forward to some great conversations!



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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Fly in, map and fly out



Leica Geosystems has entered the mobile mapping business. Pegasus:One allows customers to use their existing, terrestrial scanner in profiler mode, for mobile mapping. It is vehicle independent and comes self-contained in two Pelican cases – simply fly-in, map, and fly-out. The software platform, ArcGDS, is a complete solution from data acquisition to post-processing to database. It offers users immediate access to their imagery and point cloud data in the same GUI, navigating visually through images and clicking on street views. In situations where users want only to capture images, an image only system without a scanner is available. This provides the same calibrated camera and leverages photogrammetry software to calculate distances from the images – ideal for GIS applications.

TerraFlex for GIS applications

TerraFlex, a software and services platform to manage data collection activities from Trimble, helps managers maintain control of the flow of geo-enabled field data. With an online data repository and streamlined toolset for creating custom form templates, a cloud service provides a centralised system to manage data collection. In the field, a mobile app provides a common interface for users of common mobile and smart devices.

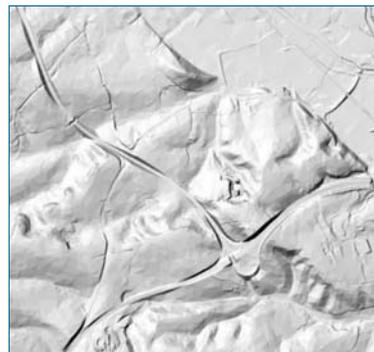
COU baseline delivered

Change Only Updates (COU) are now available for Ordnance Survey's AddressBase (including the plus and premium products), available as six weekly supplies in GML and CSV formats. Working with GeoPlace, OSGB delivered the "baseline" in May 2013. Customers and partners can now receive COU or full supply updates for these products. It is envisaged that this could save customers the processing time required to update their databases. All customers will be able to get a

full supply from July and thereafter get the COU updates.

NSG enhanced services

GeoPlace has enhanced services available on the National Street Gazetteer (NSG) website following requests from across the community of NSG data producers and users. Local authorities will now be able to make a "second submission" to the NSG hub within a calendar month thus improving the currency of the NSG. Another improvement is to help with lane rental schemes for charging utilities for works that occupy the highway.



One word or three?

London-based what3words (<http://what3words.com>) has launched a mapping tool that provides a unique three word label for every one of the 57 trillion 3m x 3m squares on the globe. This free app enables anyone to link from the three word tag to a Google map display centred on that location. For a small fee, this can be made simpler by registering your own "OneWord" (if it is not already taken) and moving it to wherever you want to be found. This is at address level resolution – better than a postcode – and in many fewer characters than a typical street address.

Centremaps in the air

Aerial photography and digital elevation models have traditionally been expensive to capture. Now areas up to ten square kms can be mapped in a single flight with an unmanned aerial vehicle (UAV) carrying a digital camera. Centremaps believe that UAV imaging is most suitable for users requiring the most up-to-date data for a specific site. Orders can soon be placed online with clients showing exactly where imagery is required using an interactive map.

BRIEFS

Atkins is introducing earthmine 3D mapping to the UK engineering market following trials in the UK. As a "value added reseller" for earthmine, Atkins can offer cost and time savings to engineering projects

through high-quality 3D imagery and mapping. The trials took place in Bristol, London, Southampton and Oxford, along with significant lengths of the M25 and M11.

A distribution agreement between Leica Geosystems and Aibotix, a manufacturer of multicopter unmanned aerial systems, will create end-to-end solutions for the inspection and mapping market.

Intermap Technologies has launched its Orion Platform enabling governments to manage a country's spatial data infrastructure (SDI) from a unified control point. Initial contracts for Orion worth US\$16m have been announced for two countries.

Esri has joined the In-Location Alliance (www.in-location-alliance.com/en/home), which aims to drive market adoption of high-accuracy indoor positioning and related services. Esri will help to define standards for indoor mapping and logistics.

Planet Labs is planning to launch a fleet of earth imaging satellites and has two test satellites already in orbit. The fleet of "Doves" will act together to provide images at 3-5m resolution but exact update frequency is not quoted.

MapMechanics has added time-based analysis of geographical data – 4D GIS – in version six of its GeoXploit geographical analysis system, which also includes a range of digital mapping and data from many leading suppliers.

The shape of Britain

Ordnance Survey GB has released a height product, OS Terrain 5, depicting the shape of Great Britain's landscape in both grid and contour formats. Presented as a digital terrain model, it adds the third dimension to analytical applications such as flood risk assessment and infrastructure development. Updates will be quarterly with details enabling various practical uses across business and government. This is the first commercially available product from Ordnance Survey to be supplied exclusively by download and follows the release of the free Terrain 50 as part of the OS OpenData portfolio. Image: The OS Terrain 5 grid has been shaded in a GIS. © copyright Ordnance Survey GB.



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25-30 August, Dresden, Germany
 More information: www.icc2013.org

RSPSoc 2013 Annual Conference: Earth Observation for Problem Solving
4-6 September, Hilton Glasgow Grosvenor Hotel, Glasgow, UK.
 More information: www.rpsoc.org.uk/index.php/rpsoc-2013.html

AGI GeoCommunity '13: Open for Business
16-18 September, Nottingham.
 More information: www.agi.org.uk/geocommunity/

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www.korecknowhow.com

British Cartographic Society (BCS) Annual Symposium
3-5 September, Hothorpe Hotel, Leicestershire, UK.
 More information:
www.cartography.org.uk/symposium

Intergeo 2013
8-10 October, Essen, Germany.
 More information: www.intergeo.de/en/index.html

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9 October, Institute of Education, London WC1H 0AL.
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Bluesky	p.16
Cadcorp	p.25
Esri UK	backcover
Everything Happens Somewhere 2013	p.33
Intergraph	p.04
KOREC	inside frontcover
Leica Geosystems	p.10
Location-Source	p.35
thinkWhere	p.23
UNIGIS	p.29
University of Aberdeen	p.31



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