

GIS

Professional

issue 38 : February 2011

... joining the geography jigsaw

Will Linked Data be the new paradigm?

Choreographing a GIS for Sellafield

Fusion and the GEOINT multiplier

Europa's open vision on data

Legal deposit libraries: a warning for mappers

Is it true what this book says about OS?

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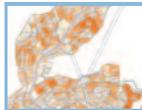
Geo intelligence is a growing asset for the military and security sector, reports Richard Groom from last month's DGI conference.



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GeoPlace to unravel Britain's addressing muddle

After more than a decade of friction across the public sector a new entity has been created. Our editorial team report.



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If you can persuade colleagues, there are opportunities for GIS in engineering and development, says Syria's Muhammad Khaliq.



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Data as a service and the freeing up of public sector data are at the heart of Warren Vick's plans for Europa Technologies.



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A timely reminder for those who publish maps, including digitally across the web. Are you fulfilling your legal obligations?



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Front cover: GIS relies on linking data. data.gov has freed up public sector data but can we easily link it? Turn to page 10 to find out whether it is indeed the new paradigm.

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

An each-way bet for GI as recession bites

This issue has some interesting nuggets for those working in the UK geospatial industry; some good, others less so. First of all, our news story on the latest Daratech report reveals that globally geospatial is poised to enjoy some good years after sluggish performance last year and a faltering 2009. Eight per cent is predicted for 2011; but it's difficult to see where numbers like that are going to come from in the UK except from the odd niche or two. Perhaps a new data corporation will help. More on that anon.

Daratech's upbeat report points out that although geospatial accounts for a fraction of one per cent of global GDP its influence and importance is growing. Investors too are starting to sit up as they realise just how pervasive geo has become across industry, the public sector and defence. We know it, now may be they do too. But just how many governments around the world get it?

We have to contrast this rosy outlook with the situation here in coalition UK. Some analysis by Ordnance Survey has revealed the changing face of the high street where estate agency and building society sites have tumbled; down a whacking 28% for the latter since 2008. On the brighter side, OS say they have detected a 5% increase in betting offices since the recession. The survey was carried out using address changes in OS Address Layer 2, which come from Royal Mail's PAF coupled with information from the classifications within OS MasterMap Topography Layer. Clever what you can do with OS data, if you can afford it.

More worrying for UK plc and Ordnance Survey is a book published in Canada by Kim Geomatics (*Why Where Matters*), which asserts that OS "competition with the private sector explains why the UK, once the world's leader in mapping, has declined to a position of importing almost all of its mapping technology and even much base data". The authors "contrast the USGS policy of not competing with industry and providing low cost high quality geospatial data, which has made it a trusted data source widely used by Americans and the world." It seems rather disappointing that in an otherwise excellent textbook for global geo opportunities the authors attempt to compare chalk and cheese. How many cities rely on USGS for managing their real estate, road network and all public utilities? As our reviewer says of this broadside, "Wow – discuss!"



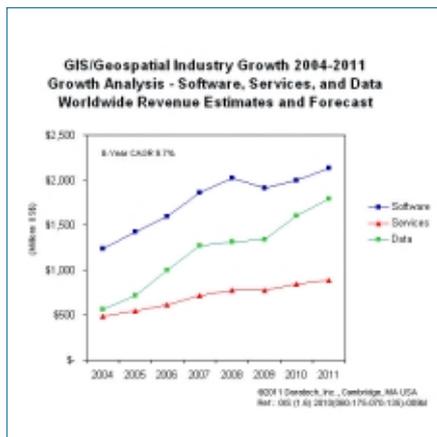
... competition with the private sector explains why the UK, once the world's leader in mapping, has declined...

This also raises the question, are we relying too much on the freeing up of government data to boost UK geo? The key to applying this data has to be in making it linkable to other sources. But that may not be possible or too costly due the complexities involved, as our article on page 10 by **Les Rackham** and **Robin Waters** reveals. The blogosphere has been busy on this topic with would-be developers claiming the raw data is too poorly documented or uses unfamiliar formats rather than industry standard ones. Outside of the immediate geo field potential users have also claimed that the data is pretty anodyne, "Yes Minister" stuff.

The new Government clearly believes they can help because the latest whiz idea is the Orwellian Public Data Corporation created to, in the words of the blurb, "...share best practice, drive efficiencies and create innovative public services for citizens and businesses." The Public Data Corporation will also provide real value for the taxpayer" they confidently conclude. One can just imagine it. Minister comes back from Cabinet enthused with freeing up data. Permanent Secretary suggests forming the PDC. 'Could be your triumph and lasting testament Minister.' Result, lots of civil servants spared the axe. Remember, public does not equate to free.

Stephen Booth, editor

Geospatial set for growth



GIS/geospatial sales bounced back last year, according to a report by market analysts Daratech. After revenues shrunk by 2% in 2009, the market is forecast to grow by more than 8.3% to almost US\$5bn in 2011. Interestingly, the report notes that the influence and power of GIS and geospatial technologies have largely gone unnoticed by investors and the general public.

Many find it hard to accept that an industry with annual worldwide sales of less than one hundredth of one percent of global GDP can make a discernable difference, yet we know that the technologies developed by the industry contribute to an ever growing range of activities in all sectors of the world economy. This has not gone unnoticed by some fund managers, says Daratech's CEO Charles Foundyller. They see the possibility of explosive industry growth within a relatively short time frame. 'Growing awareness of geo-enabled software is good news for GIS/geospatial industry investors and other stakeholders who, in some cases, have waited a long time for the knee in the J curve,' says Foundyller.

According to the report, data is the fastest growing segment of the geospatial business with a compound annual growth rate of 15.5% for the last eight years – about twice the rate of that for software and services. 'Data sales, defence and security apps, mobile device apps, and web apps, will be the top business drivers,' predicts Foundyller. Another segment to watch is engineering where CAD systems are typically not designed to interoperate with GIS. Consequently, designers of buildings, roads, bridges and other types of infrastructure don't have an easy way to understand the impact of their surroundings on their designs. This is changing as our case study on page 21 from Syria suggests. In future CAD systems and GIS will become far more closely linked, so that architects, developers and others, will be able to easily see their designs, in situ, together with other location-specific information related to their designs.

Globally, Daratech's research indicates that the industry continues to grow faster in regions outside of Europe, North America and Asia Pacific. However, these regions account for only 8% of total industry sales and it may be a while before they can make significant contributions to global total. North America meanwhile accounts for almost half the industry's annual sales and has enjoyed an 11% compounded annual growth rate for the last 8 years, while Asia/Pacific with 8.7% is ahead of Europe's 7.9% rate. For 2012 through 2015 Daratech is forecasting double-digit geospatial industry revenue gains as the factors fuelling growth gain more traction.

Daratech's GIS/Geospatial Market Report is available for purchase on www.daratech.com

Moving towards GeoPlace

On the 3 December 2010, the Department of Communities and Local Government (DCLG) announced the formation of a joint venture, GeoPlace, between Ordnance Survey and the Local Government Group. The agreement aims to bring together address information from OS and local authorities to create a national address gazetteer database, providing one definitive source of accurate publicly-owned spatial address data for the public sector. The joint venture includes the acquisition of Intelligent Addressing, the company currently running the NLPG and NSG hubs on behalf of local government. The national address gazetteer database will have product quality content by April 2011, allowing customer engagement prior to product release between July and September 2011. For a more detailed report, refer to the Jan/Feb 2011 issue of *Geomatics World*.

NLPG data conventions update

A new data entry convention has been produced for the UK's National Land and Property Gazetteer. The NLPG is maintained in accordance with the data entry conventions (DEC) and best practice for the NLPG, known as the DEC-NLPG. Version 3.1 clarifies and expands on the guidance in the previous v2.1 and brings it in line with other updated documents like the DEC-NSG version 3.5. It also answers some common queries raised by LLPG custodians, SNN officers and users of NLPG data. It is anticipated that the changes will be in place by summer 2011. The new DEC-NLPG v3.1 reference manual can be downloaded from the Local Government Improvement and Development website at www.idea.gov.uk/idk/core/page.do?pagelid=8035843.

Insurance sector opts for GI

With insurance fraud on the increase geoinformation is increasingly being used to track and uncover fraudulent

claims. According to research for Ordnance Survey, in 2010 there was an 88% increase in the number of insurance fraud investigators (IFIs) using geographic information to build up evidential cases for prosecution, with nearly four out of five now using geographic information. Also, 47% are now using GI to help with prosecutions compared to 25% in 2009. Almost four in five (77%) IFIs are using geography to help with hot spot analysis, verify customer information and help detect fraud at claim and policy inception stages. Sarah Adams, insurance and banking sector manager at Ordnance Survey adds: "Around half of insurance fraud investigators are now benefiting from the visualisation and story that maps provide to help build up evidential cases for prosecution."

Closing date for BCS awards

The closing date for the next British Cartographic Society award entries is 25 February 2011. The commercial award ceremony forms part of the society's annual symposium, which will be held at Shrigley Hall, Macclesfield, UK on 9 June 2011. The four commercial award categories comprise: Stanford's award for printed mapping; Avenza award for electronic mapping; John C Bartholomew award for small scale mapping; and Ordnance Survey MasterMap award for better mapping. Further information, including entry details, is available at www.cartography.org.uk/awards.

Draft regulation to limit GI

In the US, the national association of private sector geospatial firms, MAPPS, has submitted comments to the Federal Trade Commission opposing regulatory language that it believes would limit the collection, sharing or use of "precise geolocation data". The association argues that the draft regulation, "Privacy in an Era of Rapid Change", threatens information collected by private and government entities to perform tasks like emergency response management, environmental protection and homeland security.

CONTRACTS & PROJECTS

OS contract awarded

1Spatial has won a contract to provide software and services to support the delivery of the multi resolution data programme (MRDP). The Ordnance Survey's MRDP aims to deliver new geographic information data products to meet the changing demands of the market and customer needs and to drive internal efficiencies through more effective management of data content from which products can be created. Under the agreement, the company will provide expertise around the development of automated generalisation software. The agreement will run for four years with an initial value of £595,000.

Survey deal for education

Bluesky has signed an agreement with Eduserv that will promote the use of the latest aerial survey and 3D height data in academia. The agreement covers the company's aerial photography of England, Wales and parts of Scotland, together with accurate height data. The not-for-profit organisation will promote the company's data to universities and colleges across the UK and Ireland.

Resolving property claims

Forty-nine MobileMapper 6 GPS/GIS field terminals have been purchased by the Kosovo Property Agency (KPA) and the Kosovo Cadastre Agency (KCA) to map property boundaries and help resolve claims. According to Ashtech dealer, Lorenzo & Co, the units were selected for the easy-to-use mobile mapping software, integrated camera, excellent price to performance ratio, and the dealer's on-site product-training support.

HealthGIS Maps The Avon Information Management and Technology Consortium (AIMTC) has launched a new intranet mapping service, HealthGIS Maps, to primary care trust (PCT) clients in Avon using Cadcorp's GeognoSIS and SIS MapModeller. The consortium works alongside NHS staff to make sure that time, money, skills and equipment are used effectively to achieve better patient care. The service is available to all staff with access to the NHS network. It is anticipated that easy access to geographic information and the ability for end users to create their own bespoke maps will provide cost savings for staff who use GI for resource planning, service development and performance monitoring.

Mapping urban trees



A computer-generated 3D map of Manchester's urban trees has been created to help authorities understand the impact of trees on the environment, public health and the aesthetic qualities of the region. A consortium of organisations commissioned Bluesky after learning about the company's ProximiTREE software. Derived from aerial photography, the system generates an accurate map detailing the precise location and extent of trees and their proximity to buildings and other landscape features.

Rapid access Tamworth Borough Council is aiming to improve services to the public with a new system that gives access to information held in different council systems. The GGP Systems' NGz gazetteer management software links information together using a centralised database of all properties, land and streets. The software will be used to manage

the council's local land and property gazetteer. 'Frontline staff will be able to look up and verify addresses and, following integration with a number of existing systems, access a wealth of property related information with just a few clicks of the mouse or a couple of key strokes,' says **Jon McDevitt**, Tamworth's corporate GIS manager.

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The machine wins. . .

In a study of over 300 manually planned routes, Postcode Anywhere's route planning software, Route Optimiser, has outperformed manual routing. The study took the form of a "find the fastest route" competition and involved entrants visiting 20 waypoints and meeting two timeslot deadlines. A prize of £250 was awarded to Mr Gabhin Hill for the fastest route plotted by hand. However, over a third of entrants failed to deliver to both timeslots punctually and those that did ended up with routes that took, on average, eight hours and 17 minutes to complete – almost an hour and twenty minutes over the optimal answer!

Incident support for Jersey

Jersey Fire and Rescue Service has selected an incident support mapping system (ISMS) for deployment in its command support unit. The service chose Cadcorp's ISMS as it didn't want a complex system that required a trained specialist to manage but one that could be used by all personnel, from station manager to part-time support staff. 'We have a limited number of fire fighters on the island,' says **Will Stewart**, information services manager, '... in order to make the most of our limited resources, we need to know where our teams are at all times. We need to see the big picture – immediately and always'.

GIS offers big picture MIS Active Management Systems has selected Cadcorp to provide mapping and geographic information processing capabilities for its modular housing management product, ActiveH. The benefits of adding geography to housing

management systems are recognised by MIS' housing association customers like Cottsway Housing. 'We have gone from a situation in which GIS was the preserve of a few specialist staff, to one in which all ActiveH users have access to geographic information,' says **Nick Harris**, head of ICT at Cottsway Housing. 'By using GIS to map business intelligence data linked to our housing management system, we can all see the big picture'.

Addressing property vacancies

Ashfield District Council has introduced a revised refuse collection programme to reduce costs and minimise the environmental impact. The project is supported by an online web application and underpinned by the National Land and Property Gazetteer, according to Intelligent Addressing. The new routes were mapped and addresses for each of the 30,000 affected households extracted from the gazetteer for an initial mailshot.

Geospatial for defence

Pitney Bowes Business Insight has announced its involvement in a project commissioned by the UK's Ministry of Defence (MOD) and managed by Lockheed Martin UK IS&S. The project aims to establish a coherent geospatial capability for UK Defence by developing standardised tools and common geospatial services that seamlessly work with civilian/emergency services data. PBBI has supported the common geospatial tool set (CGTS) research project delivery team since 2008.

The global insurer, RSA, is the first commercial customer to take advantage of OS VectorMap Local after signing a deal with Ordnance Survey. The new mapping will allow the insurer to implement customised applications in support of activities such as risk assessment, accumulation assessment and major incident management.

RapidEye has signed a one-year framework contract with the institutions and bodies of the European Union through the Joint Research Centre (JRC) for the supply of satellite remote sensing data products and services. The contract was signed in December 2010 and replaces the former contract, which expired in the same month.

The municipality of Groningen in Holland has chosen Vicrea Solutions' Neuron Property Registration System (BAG), based on Cadcorp web mapping and GIS technology. The system will be used to comply with the "Nederlandse Overheid Referentie Architectuur" (NORA), the Dutch government reference architecture.

Somerset County Council has gone live with a highways management system based on Confirm, Pitney Bowes Business Insight's infrastructure asset maintenance and management system. The council's system enables mobile-enabled management of highway defects between Somerset's highway inspectors and its highway contractor, Atkins.

Balfour Beatty WorkPlace has moved to Confirm OnDemand to support its £100 million highways services partnership with Southampton City Council. The on-demand environment of Pitney Bowes Business Insight's infrastructure asset maintenance and management system has reduced hardware, implementation and management costs.

The US National Geospatial Intelligence Agency (NGA) has signed a five-year contract renewal with Erdas. The agreement includes support and upgrades for NGA's existing software holdings and preferred buying arrangements for additional products, licences and software maintenance renewals.



GIS live at Northern Ireland Water

A new corporate web-based GIS system has gone live at Northern Ireland Water based on Cartology.NET web GIS software from Innogistic, which has recently been awarded Microsoft gold certified partner status. The system is available to all NI Water staff via their corporate intranet and provides real-time access to the corporate asset register (CAR), the water authority's Oracle 10g based geospatial warehouse.

In a USD \$804,518 contract with the national mapping agency of France, the Institut Géographique National (IGN), Intermap Technologies will supply IGN with digital terrain models for portions of southeastern France and the island of Corsica to improve its altimetric database in these regions.

Geosystems Hellas S.A, an Erdas distributor, is collaborating with the Mediterranean Agronomic Institute of Chania (MAICh) and e-GEOS on a three-month project, which will evaluate the ability to remotely sense the Greek island of Crete. The company's products will be used for data processing and results analysis for the project. In addition, Erdas Apollo is being used to support local planning initiatives for the state of Karnataka in southern India. Erdas was also used last year to assist in the clean-up of storm damage after a tornado swept through the forests in the state of Saxony in Germany.

Intermap Technologies has received a USD \$12.4m contract to provide 3D digital elevation models and orthorectified radar images as part of a national spatial data infrastructure programme to update the client's current 1:50,000-scale base map. The geospatial data will be used for topographic map production to manage sustainable forestry projects and to support other local infrastructure needs.

BRIEFS

Bluesky has signed up to the ESRI (UK) partners and alliance programme as a data partner. The partnership aims to maximise the potential of each company's knowledge and market position to develop data solutions and products.

Aligned Assets has announced that, from January through to March, every Wednesday, WebEx demonstrations will be available both morning and afternoon. Through "WebEx

Wednesdays", members of the public sector can watch, hear and interact with presentations on gazetteer products free of charge.

Ordnance Survey has now moved to its new head office at Adanac Park on the outskirts of Southampton. The new address is Adanac Drive, Southampton, Hants, SO16 0AS. The customer service centre number remains the same at 08456 05 05 05 and current email addresses are retained.

As of January 2011, satellite imagery and geo-information company, Spot Image, and Infoterra, subsidiaries of Astrium Services, have combined to form a new geo-information business division of Astrium.

The first call for papers has been issued for the Remote Sensing and Photogrammetry Society annual conference: Earth observation in a changing world, taking place on 13-15 September 2011 at Bournemouth University, UK. Abstract submission opened on 31 January and the deadline for submission is 31 March. For more information, email Dr Ross Hill at rpsoc2011@bournemouth.ac.uk or visit www.rpsoc2011.org.

ARVAtec SRL, which specialises in GIS systems for GIS point and border determination uses, is now the distributor for Ashtech GIS mapping products in Italy.

VIASAT GeoTechnologies has joined RapidEye's Canadian team of distributors. Founded in 1991, the distributor delivers consulting and software engineering services that harness geoinformation technology.

MapMechanics has acquired the rights to the TruckStops vehicle routing and scheduling optimisation system and OptiSite, an associated network modelling system from US-based systems developer, MicroAnalytics.



New BCS president

The British Cartographic Society (BCS) has elected Peter Jolly (pictured), cartographic consultant for Esri, as its president. Also, Rob Sharpe, industry manager of Esri UK's technical solutions group, has been elected to the BCS council. Both appointments will bring with them in-depth GIS knowledge and experience to help inspire new approaches to cartography.

PEOPLE

GGP Systems' new website (www.ggpsystems.co.uk) now includes customer case studies, white papers and videos, and business and technical blogs, plus product literature, company information and GIS and gazetteer management news and events.

Edge-Pro for Information Systems is now the official distributor for the Erdas Apollo suite of products in Egypt, providing sales and technical support, product training and customisation and consulting.

Weihai Municipal Government has won the 2010 China City information application award for its implementation of Intergraph's incident management product for its emergency operations centre (EOC) at the recent 2010 China Development Forum on City Informatisation held in Suzhou, China.

Infotech Enterprises has announced that its existing UTG (utilities, telecom and government) business is being re-branded as the "network and content engineering" division or "N&CE" for short.

Shibboleth open source software can be used to set up secure geospatial services that comply with the Inspire directive, according to an Open Geospatial Consortium interoperability experiment built on ESDIN best practice. The experiment aimed to advance best practices for implementing

New recruits Cadcorp has expanded its sales and development teams with four new appointments. **Ian Robinson** has previously worked in GIS sales to the civil engineering and business mapping sectors while **Chris Rose** has experience in both direct and channel sales in the emergency services, local authorities and public sector markets. Both join the company's UK sales team. Also, **Kishor Boddhu** joins the core development team from a UK supplier of aerial photography as well as **Chu Hoang**, an experienced gaming software developer. Boddhu and Hoang will be focusing on application development and web mapping.

New presidents appointed **Todd Oseth** has joined Intermap Technologies as its president and chief executive officer. Oseth's 30 years of leadership at technology companies has encompassed product management, sales, marketing, engineering and operations in the network, computing and data storage industries. He replaces Howard Nellor, a member of the board of directors, who has been interim CEO since August 2010.

standards on federated security in transactions involving geospatial data and services.

Snowflake Software's new customer portal (support.snowflake.com) has now gone live, providing an improved level of management and ownership.

linked data part one



"Easier data sharing will help us to maximise the reuse of data, increase the success rate for new initiatives, reduce duplication of activity and save on costs. Linked Data is seen as the only practical way of achieving this."

**UK Location Programme,
Linking information and
location**

THE CONCEPT OF associating data items or objects by location is one with which we are all familiar. By creating such links we are able to derive information about locations and the relationships between objects sharing common locations. For example, by linking socio-economic data from various sources to addresses in a land and property gazetteer, it is possible to identify areas of social deprivation in a way that would not be possible if location was not used in the analysis.

Some location data is now available in Linked Data form from Ordnance Survey²; from Transport Direct; and a number of agencies such as British Geological Survey are setting up pilots with location data.

Linked Data – some basic concepts³ Linked Data uses the concepts of (i) publishing structured data that is machine readable and (ii) establishing links between disparate data resources so that machines can navigate the links and treat the web as a single database. Linked Data refers to mechanisms for exposing, sharing, and connecting pieces of data, information, and knowledge using Uniform Resource Identifiers (URLs) and the Resource Description Framework (RDF). Currently most data on the web is presented to users in human readable form as HTML encoded documents.

The single "database" is spread across the web but requires relationships between resources and individual data items. These relationships are quite arbitrary and not hierarchical or relational – no one

Linked data: the new paradigm for geographic information?

In the first of a two-parter, **Les Rackham**, *ConsultingWhere* and **Robin Waters**, *RSW Geomatics*, look at the reality and the spin of Linked Data. Is it really something new? What are the key concepts? Are there any limitations to its use? And can the GI community afford to ignore it?

These sorts of spatial relationships can be established "on the fly" using GIS tools to create a snapshot in time or can be established and maintained using some form of cross-referencing – often in a database.

Sir Tim Burners-Lee's passionate advocacy of free data is based on the new idea (for the web) of Linked Data and is part of the more elegantly phrased Semantic Web. It is presented as a novel mechanism for establishing and exploiting resources on the web that are capable of being automatically linked. So machines will understand the semantics of these resources. This, we are told, will enable us to "leverage" information from hitherto inaccessible sources.

These two articles will try to explain some of the key concepts and separate the reality from the spin and relate the new terminology to what we've understood before. Today information technology is sufficiently mature that many concepts have been around for a long time. However, in time-honoured tradition, inventing new ways of describing them makes them more "sexy" and encourages users to pay for them! Here we examine whether Linked Data is really something "new" and whether it is "the only practical way of achieving" easier data sharing when using location as the common denominator. And if it is, are there any limitations on its use?

UK Government is promoting the publication of Linked Data on its website data.gov.uk¹ and a number of information resources are available on the web.

resource has any greater importance than any other.

Linked Data enables an application with a suitable linked data browser to start with one data source and then move through a potentially endless web of data sources connected by RDF links. By following these links, the user can navigate from one information source to another, e.g. from administrative area name to population statistics to economic activity to a football team and so on. This is analogous to crawling the web by following hypertext links on HTML documents. But, by following RDF links and using query capabilities enabled by Linked Data, it is possible to return machine readable datasets rather than just HTML documents.

The standard framework for modelling resources for Linked Data is RDF which uses statements about resources in scope expressed as subject-predicate-object. These expressions are known as "triples" in RDF terminology. The subject denotes a resource, the predicate denotes properties of the resource and also expresses a relationship between the subject and the object – another resource. For example, one way to represent the idea "The Thames flows through Oxford" in RDF is as the triple:

Subject: "Thames",
Predicate: "flows through",
Object: "Oxford".

RDF can be written in a number of formats, e.g. XML



Linked Data enables an application with a suitable linked data browser to start with one data source and then move through a potentially endless web of data sources. . .

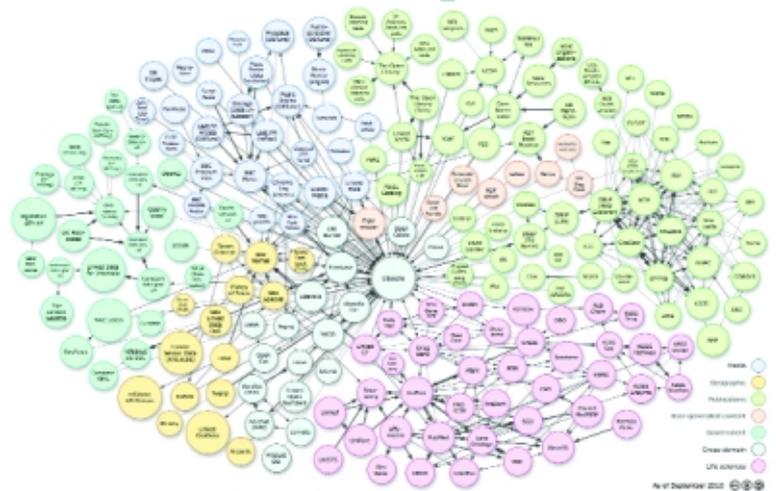


and the details will be covered in Part II of this article in the next edition of *GIS Professional*.

For now it should be understood that Subjects, Predicates and Objects need to be catalogued or registered unambiguously – at least within a particular “scope” so that machines can make the links.

So what is involved in creating Linked Data?

- **Resources in scope** – identify items in our domain of interest – the Subjects and Objects which are potentially linkable. These are “resources” and, following the example above would be databases of Rivers and Towns.
- **Information and non-information things** – on the web, documents, images, and other media files, are information resources. But many of the things – subjects and objects – about which we want to share data are not: they are real people, real physical products, real locations, concepts, etc.. All “real-world objects” outside the web are *non-information resources*. A house in the real-world is a *non-information resource* but images of the house, its land title, a plan of the house and other records about the house are *information resources*.
- **URIs** – resources are identified using Uniform Resource Identifiers (URIs).
- **Representations** – information resources can be represented in several different formats (e.g. RDF/XML), qualities or languages, just as geographic features can be represented in different ways (e.g. names, co-ordinate strings, geometric primitives).
- **Vocabularies** – well-known vocabularies should be used wherever possible. New terms should only be defined where there are no terms in existing vocabularies. Unfortunately, location data is not currently well served by such vocabularies in terms of feature types or geographical features themselves. Place-names are notoriously ambiguous – especially with respect to “extent”. Does “Oxford” relate to the administrative area “City of Oxford”; to a built-up area generally described as “Oxford”; or to the area with an “OX” postcode? Locality names, e.g. “Cowley” are even less well defined.
- **Linking to other data sources** – By definition links require two or more data resources. Links – RDF triples – can be created manually or automatically. Both require knowledge of the target datasets and that they are in a suitable form – e.g. on data.gov.uk or the OS website. Anyone familiar with the various geographies of the UK – place names, addresses, various administrative boundaries for example – will immediately understand the limitations of automatic, or even manual, linking.
- **Sustainable links** – Links must also be continuously maintained. If location is involved then the features or spatial things need to have defined life-histories and some form of



versioning must be adopted.

- **Publishing Linked Data** – “things” must be identified with HTTP URIs and data sources must return an RDF/XML description of the resource. If the URIs identify *non-information resources* then there has to be redirection to *information resources* describing them. There must also be further links to other resources to provide the database on which queries can be performed.

Current developments? In the UK, two prime sources of Linked Data are data.gov.uk and Ordnance Survey. The Linked Data page on the data.gov.uk website (<http://data.gov.uk/linked-data>) provides access to a number of resources from public bodies in the transport, legislative, educational and financial sectors. Ordnance Survey provides a number of Linked Data resources (<http://data.ordnancesurvey.co.uk/>). These include the 1:50 000 Scale Gazetteer; Code-Point Open (geocoded unit postcodes); and Boundary Line, the administrative geography for Great Britain.

The UK Location Programme is promoting Linked Data and has issued some guidance. It is also designing URI sets for locations (<http://location.defra.gov.uk/>).

Both the Open Geospatial Consortium (OGC) and the International Standards Organisation (Technical Committee ISO/TC 211) have established working groups on Linked Data.

Discussion Linked Data as a concept is here to stay and clearly has a future. It could be argued that GIS technology is entirely based on linking – if only at the level of a common coordinate space. Latterly we have seen the growth of structured GI databases that provide unique identifiers (at least within a particular system) that can be used for linking geographic and non-geographic objects and information.

Linked Data is a bandwagon onto which we have the opportunity to jump! The potential for much greater use of GI is obvious as long as we can deliver Linked Data that is relevant to a wide range of applications.

However, there are some major technical issues to be confronted:

- **Linkable and linked⁴** – there is a world of



linked data part one

difference between an information resource that is *linkable* (published as structured data with clear subjects and objects with URIs) and data that has been *linked* (published with explicit RDF triples). Turning linkable data into Linked Data is not trivial and, although there are some tools that can help, they cannot remove the need to create the linkage in the first place. We believe that there are many GIS tools that could help this process. In fact, much GIS analysis is based on implicit links (from the location of things) whereas *links* are, by definition, explicit.

- **Translation of the information resource into RDF** – this may be relatively easy if the data is well modelled in a standard conceptual schema language such as UML. There is a danger that turning a current data resource into Linked Data may be resource intensive and could be used as an excuse for not making the data available quickly. Government priority is to make data available in existing formats before devoting effort to creating real Linked Data.
- **Authorities** – recognised authorities are needed if Linked Data is going to be useful. There are clear authorities for the names and boundaries of administrative areas and census output areas in UK. But who are the authorities for locality names and boundaries? Unfortunately, the world does not divide into neat atomic units that can be used as building bricks for all types of geography. Even the semantics of geographical features differ from domain to domain. Think for example, of the differing concepts inherent in the use of the geography of rivers for environmental applications as compared to navigation. This does not mean that linkages cannot be established but that there will be some real limitations on the value of the linkages and the quality of the results from querying Linked Data.
- **Real world, abstraction and representation** – for both experienced and inexperienced users of GI, there is often confusion between the “thing” in the real world (the actual house), its abstraction (how it is modelled) and its representation in a dataset (by address, coordinate pair, polygon or image). What does the URI really identify and what type of object is being linked?
- **Vagaries of location** – Linked Data is only now being seriously adopted for location or geographical data, often by those that have not worked with this type of data before. The location “thing” comes in many guises depending on the viewpoint and application – it also has many representations. The use of postcodes for non-postal purposes has become very common but great care must be taken with their geography – there is, for example, no definitive set of postcode polygons.
- **Maintenance** – subjects and objects change over

time. They have life cycles. They are created; can be changed in terms of their location, extent, relationships to other geographical things; and they can be destroyed. These life-cycles can be very complex, not least because of the number of properties that can change whilst the real world object appears to remain the same. Maintenance of linkages may prove to be a considerable overhead. This is however no different, at least conceptually to the maintenance of conventional databases.

Beyond these technical issues, there is the question of leadership. There is currently agreement between the Cabinet Office (for data.gov.uk); Defra (responsible for the UK Location Programme and meeting the EU’s INSPIRE Directive); and Ordnance Survey (technical aspects of INSPIRE and a major reference data supplier). But, arguably, much of the push for Linked Data seems to have come from users and potential users of the many datasets being provided on data.gov.uk with location now being seen as a prime linkage. There is a real possibility that commercial interests may produce *de-facto* or proprietary standards that may not be ideal for the long term.

Conclusions Is the hype surrounding Linked Data justified? The jury is still out. There is not yet enough practical experience of providing or using Linked Data – geographical or otherwise. Should it therefore be promoted by government as the ultimate solution? Might it not actually slow down and increase the cost of opening government data in the short term?

In creating a business case for developing Linked Data, the benefits may not be at all obvious at the outset whereas the costs of creating and maintaining the links may be all too real. In so many cases, the costs are undeniably internal and very specific; but the benefits are external and diffuse.

But Linked Data is a bandwagon that the GI community cannot ignore and which desperately needs our collective expertise to ensure that it continues in the right direction at a sensible speed.

• In the second article the authors look at some of the more detailed technical aspects of Linked Data and provide examples of how RDF can be created and used with existing datasets – right down to the SPARQL endpoints!

Footnotes:

- 1) <http://data.gov.uk/linked-data>
- 2) <http://data.ordnancesurvey.co.uk/>
- 3) <http://www4.wiwiwiss.fu-berlin.de/bizer/pub/LinkedDataTutorial/#intro>
- 4) *Oi Sir Tim; hands off my spreadsheet*, Ian Painter, AGI GeoCommunity 2010 <http://www.agi.org.uk/past-events/2010/9/30/agi-geocommunity-2010-day-2.html>



... much of the push for Linked Data seems to have come from users. . . of the many datasets being provided on data.gov.uk with location now being seen as a prime linkage.





Adena Schutzberg is
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IN MY EARLY DAYS of GIS I was asked to make a map that showed the fish habitats with a fish symbol and the bird habitats with a bird symbol. My supervisor showed me how to do it using two queries. 'First you do one for the fish,' he explained, 'then you do one for the birds'. That didn't sound right to me. I thought you should be able to do it in one step. In fact, there should be a way to tell the software which symbol to use based on whether the location was coded fish or bird in the database. I didn't know it at the time but I'd "invented" a "look-up table." (A

these busy people to even look at the new options? A few stories.

Years ago I read an article in the *Wall Street Journal* (WSJ) about a new anti-spam tool. The review basically said it was the best thing since sliced bread. And, it had a two-week trial. I tried it. After the effort of getting it to work (around my three e-mail addresses and anti-virus software), it worked as promised. I bought it and used it until I left Windows behind.

More recently I worked with my instructional

The "Good Enough" Solution Just what is it that drives us to try something new, when most of us go for "If it ain't broke, don't fix it"? Be brave, says **Adena Schutzberg**, try something new or you could be stuck with the birds and the fishes and twice the workload!

friend from college "invented" multiplication when he was in grade school. He works at Google now.) So, I pored over the manuals to find how to do this magical thing. And, I was jazzed to find it was not that hard at all! When I told my supervisor, he instructed me to do two queries.

And, to be fair, we did work for a consulting firm where clients could have any two of the following in their deliverable: quick turnaround, low cost, high quality. He was aiming for "quick turnaround" and my learning more about GIS was clearly not a priority. While I loved the company, I left that job not long after this conversation.

I was thinking of that incident recently as I discussed authoritative Web content and search engines with graduate students in my current class. I'd asked them how good were they at search, what tools they used and if they used "advanced search." The responses were all the same: "I'm good at search because I find what I need. I use Google and I don't use "advanced search." That's what I feared. My students, like my supervisor all those years ago, had a "good enough" solution. Their view of the world might be summarized this way: "If it ain't broke, don't fix it."

And, that's a good rule if the return on exploring a better solution is expected to be low and the risk of doing so is high. Apparently, my supervisor and students had those expectations.

How then do those creating these new tools (and perhaps selling them!) make a compelling case to

designer at Penn State University to help me find a tool to enable a "graduate seminar" in our online environment. I wanted my students, all over the country, who logged in at different times, to "talk to one another." She came back with a suggestion. I spent a few hours exploring the tool called VoiceThread, which has since been licensed university-wide.

In the last few months I've been exploring Paper.li, a tool that creates a daily online "paper" from links found in selected Twitter feeds. Every issue I read reinforces my evaluation at this point: the lack of human intervention means a very "hit or miss" experience. I'm not bothering reading any more issues, or contemplating using this technology.

What then needs to happen to push someone from their "good enough solution" to even try a different one? Here are my suggestions:

- a recommendation from a trusted source (e.g. WSJ or colleague)
- easy (virtually no effort) access to the product/website for evaluation
- reproducible results (good or bad)

No, we can't let the "good enough" solution be the final solution! Be brave! Try something new today!

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Every issue I read reinforces my evaluation at this point: the lack of human intervention means a very "hit or miss" experience.

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GIS for site management: sellafield

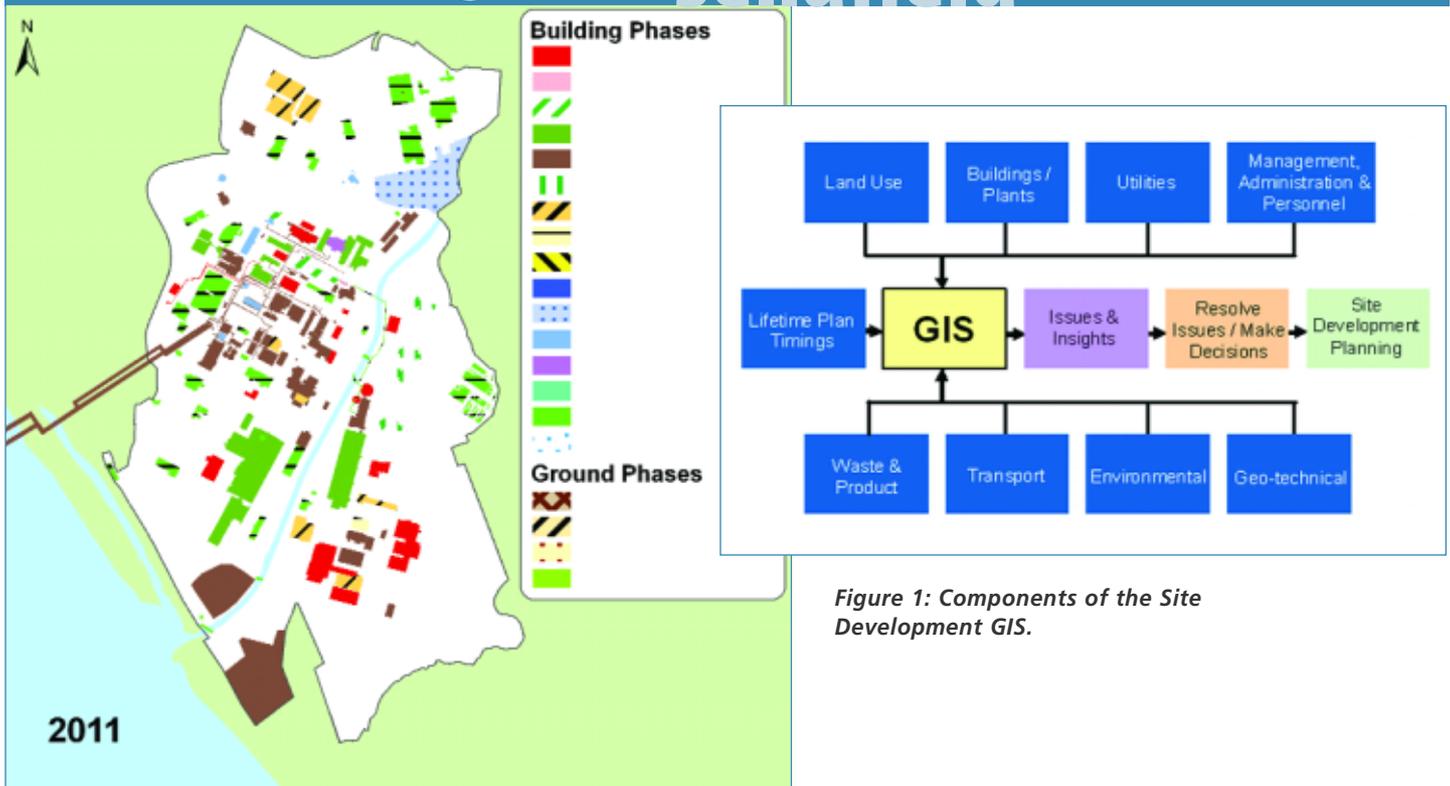


Figure 1: Components of the Site Development GIS.

The choreography of Sellafield

A prize-winning GIS is at the heart of a 110-year plan to manage Britain's leading nuclear facility, explains **Mike Cottrill**.

THE RESTORATION WORK being conducted on the Sellafield nuclear site in west Cumbria is part of a work programme spanning the next 110 years – the Lifetime Plan. Although the site occupies only a small geographical area (about one square mile) it is home to one of the most complex nuclear licensed sites in the world.

The cost of delivering the Lifetime Plan is estimated at £42bn and will involve many physical changes to the site landscape including large-scale building and decommissioning works being carried out alongside current and new operating facilities. The spatial and temporal planning of these activities is critical in order for efficient, effective and safe delivery of the work programme.

To meet the challenge of planning this work Sellafield Ltd, the organisation responsible for decommissioning the site, is using a GIS to visualize the 'choreography' of the site over the 110-year period. The solution provides visualisation of the complex interaction of all aspects of the programme, including spatial animation of programme timelines, which enable efficient and effective site planning and asset management, producing expected multi-million pound savings.

The use of GIS in this context relies on the basic principle of being able to join spatial information or 'geo-data' depicting the location of current and

future assets on the site, with temporal information relating to the associated project timescales (Fig. 1). Sellafield's Lifetime Plan GIS has been created using ESRI's ArcGIS software, together with the Tracking Analyst extension, to bring both visualisation and time-awareness to the solution. For the first time, the spatial evolution of the Sellafield site can be visualised and explored on an interactive map.

By far the biggest challenge for the GIS team in creating and developing the system has, and continues to be, the acquisition, organisation and refinement of data.

Acquiring the geo-data Much of the data relating to current features on the site resides within as-built design drawings held in CAD format. Some information still resides on paper drawings, however, much of these are now accessible electronically but only in a scanned-in image format. The compatibility associated with the data held in CAD format wasn't too difficult to deal with; for example, the information depicting the current buildings, roads and rail on the site was well captured in the CAD system and, therefore, easy to import into the GIS.

The information relating to future building and decommissioning projects, however, was a little more difficult to obtain. Although the various projects were listed in the Lifetime Plan, the information was

high-level and without any real detail or information regarding location on the Sellafield site. So a small team within the Strategy & Programs directorate was tasked with collating detailed information regarding these future projects by contacting the 70+ operating units within the business.

The end-product was a spatial dataset containing information on new-build projects spanning the Lifetime Plan. In cases where the on-site location was known, this information was captured in the GIS; in cases where the on-site location had not been identified yet, a series of 'marker' features were created in the GIS and located in a 'holding area' outside the Sellafield site. As these projects evolve and the sites are determined, the features are then given a correct on-site location and ultimately shape/topology, thus building up the accuracy of the map.

Acquiring the temporal data

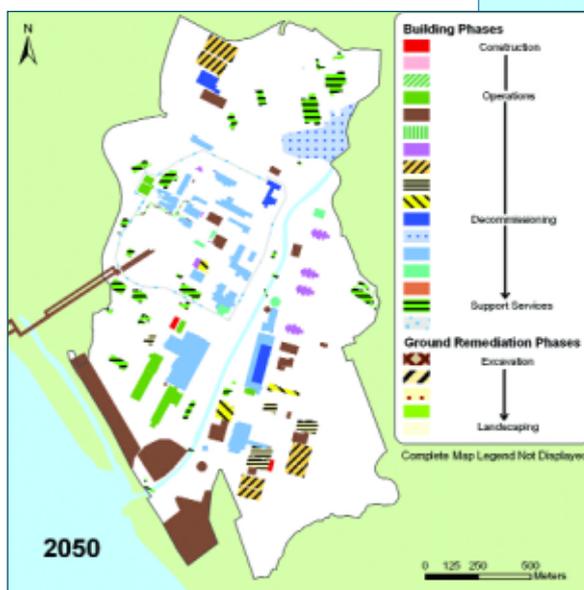
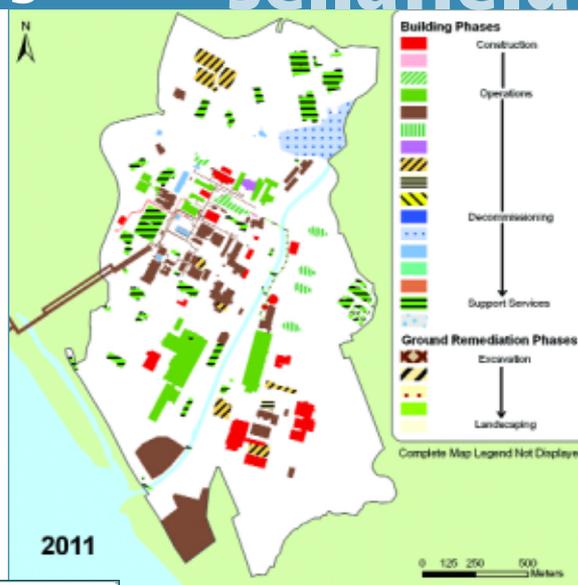
For the temporal information, a separate non-spatial database system called the Sellafield Site Remediation Model (SSRM) was the source of data for timings associated with each of the strategic buildings (future and current) on the site. This system had been set up by a separate department within the business where location-enablement was not a requirement. A simple export from this system was required to obtain the data.

Further work was also carried out to determine the various transport requirements of the Lifetime Plan; in this case geo-data for roads and rail is joined with temporal information relating to the year-on-year fluctuations in traffic volumes on these transport routes.

Joining, Visualisation and Animation After a degree of data manipulation, to allow the joining of the temporal data to the geo-data, it is possible to map out and visualise the evolution of buildings, year-on-year, throughout the Lifetime Plan. In the case of transport moves it is possible to depict the volume of traffic expected on the site's road and rail network year-on-year. Figure 2 shows examples from the system depicting the building layout in 2010, 2050 and 2100. This type of interactive map allows the business to visualise the location and timing of projects in the Lifetime Plan. The benefits associated with this are now being realised.

Benefits The system has provided the ability to quickly and effectively visualise temporal data spanning the entire Lifetime Plan, e.g. when and

Figure 2: Three maps taken from the Lifetime Plan GIS. The maps depict the layout of buildings in 2010, 2050 and 2100; the different colours representing the different phases of a nuclear facility.



Please note, in order to meet security restrictions the full map legends and annotations used in conjunction with these maps cannot be displayed.

where buildings are being constructed and decommissioned, and when and where transport routes across the site are being most heavily used. In simple terms, it provides a more effective and

GIS for site management: **sellafield**



Figure 3: The Sellafield Ltd GIS team receive 'highly commended' in the category of Innovation & Best Practice (Private Sector) at the AGI Awards 2010. From left to right (Mike Cottrill, Karen Pegler, Ray Buckingham, John Robison).

interactive way of communicating the complex work programme.

In the area of strategic or long-term planning of the site the system has made it much easier to reveal any development conflicts between the many different projects that are underway and scheduled for the future. It is now possible for the strategy team to develop a fully considered site plan taking time to analyse the best location for a given project. The benefit in this case is improved efficiency during the siting phase of all construction projects.

For near-term and current project work the system acts as a communication tool allowing any project team to quickly understand where and when other work on the site is taking place. It provides projects with a mechanism to understand what their 'neighbour' is going to be doing and plan-ahead. The benefit in this case is the avoidance of any clashes such as availability of space or demand on the road/rail network. Furthermore, efficiencies associated with sharing of common resources across multiple projects are possible.

In the area of Stakeholder and Regulator communications, the system has provided an improved means for demonstrating site development. To this end, it has been used effectively to help resolve planning issues with local authorities; assist with regulator communications and presentations; support the Nuclear Decommissioning Authority in the planning of new nuclear sites within the county; and provide assistance during the Cumbrian floods of last year.

In addition to direct benefits, the system has also led to a number of unexpected spin-offs for the wider organisation. Off the back of the Lifetime Plan work a central GIS repository has been developed; this is now being made available to all directorates in the business. For example, the information is being used to a greater/lesser extent by the following teams: Engineering, Environmental Health Safety and Quality (EHS&Q), Land Quality, Operations Support, Emergency Response/Planning and Finance.

In some areas this extended use of the system

has led to an improvement in the quantity and quality of the data held. As the uptake for GIS has grown the need for appropriate controls and procedures to manage the data, hardware and software have been put in place and GIS is fast becoming corporate/enterprise (for want of a better definition!) in scope.

Summary / Future Although the geographical footprint of Sellafield is relatively small in area, the site is considered to be one of the world's most complex and hazardous industrial sites. The safe management and decommissioning of the site is therefore paramount, which is why the government are spending billions of pounds delivering the restoration programme. Combine this with the changing political landscape surrounding nuclear development, including the immediate adjacency of a proposed nuclear reactor site at Braystones (north of Sellafield), it is fair to say the area will continue to be one of remarkable change for many years into the future.

To allow these physical changes in the landscape to take place in a safe and sustainable manner the need for innovative solutions that provide benefit to the work will be in demand. The opportunity to use geographic information and associated technology to aid the planning process and subsequent work delivery is inevitable, which is why Sellafield Ltd has chosen to formalise the development of its GIS capability.

The Lifetime Plan GIS work described in this article won 'highly commended' at the 2010 AGI Awards (Fig. 3), 1st prize at the ESRI UK Conference and gained 'Excellent' at Sellafield's internal Business Excellence Awards. Looking to the future, the challenge for the team now is to grow the GIS capability in new areas in a way that will bring further benefits to the business.

About the Author



Mike Cottrill (BSc, MA) has occupied the role of senior technical advisor on GIS at Sellafield Ltd for three years. Previous experience in the GI space includes postings with MWH, working on water utilities projects; GDC, working on local government projects; and Natural England, working on the 'Open Access' mapping project. He also sits on the committee for AGI Northern Group (www.agi.org.uk/north) Contact: mike.cottrill@sellafieldsites.com



As the uptake for GIS has grown the need for appropriate controls and procedures to manage the data, hardware and software have been put in place and GIS is fast becoming corporate/enterprise prize. . .



The Sellafield nuclear site in west Cumbria.



ESTABLISHED IN THE 1940s, Sellafield spans the entire history of the UK's civil nuclear industry. The site started life as a Second World War Royal Ordnance factory but shortly after the war in 1947 the construction of nuclear facilities began; firstly to produce materials for nuclear weapons and later to provide commercial energy to the grid. The Calder Hall plant at Sellafield was the world's first civil nuclear power station capable of delivering electricity in commercial quantities. Powered by four Magnox reactors, Calder Hall began operations in 1956 and remained in operation 47 years. During this time many more nuclear facilities were constructed on the site, the emphasis being not only on the production of nuclear energy but also the reprocessing and storage of nuclear material associated with Sellafield's own activities and other national and international nuclear contracts.

Current site operations include Mixed Oxide (MOX) fuel manufacturing; reprocessing of fuels produced by nuclear power stations; storage of nuclear material and radioactive wastes; and decommissioning of the earlier legacy plants. All these activities are managed by specialist operating units and assisted by a vast number of support services. To put this in context there are currently more than 1000 buildings on the site, two hundred of which are nuclear facilities. There is a large network of electric, steam, water, drainage and chemical distribution lines, many of which are interdependent. There are approximately 8000 staff who work on-site with a huge range of skills and procedures being delivered side-by-side to achieve safe, round-the-clock operations.

The challenge facing the company is to plan the restoration of the Sellafield site taking into consideration the following aspects:

Previous land use:

- The site was used in the 1940s for armament production resulting in ground contamination

and associated legacy infrastructure.

- Other nuclear facilities including waste stores, which have previously been fully or partly removed.

Existing congested site arrangement:

- Within its 262ha, the site contains:
 - 1400 buildings
 - 200 nuclear facilities
 - 40km roads
 - 15km rail routes

Complex network of existing and planned utilities:

- 110 km underground drains
- 168 km water distribution pipework
- 48 km high voltage cables
- 30km steam distribution pipework
- 21km active effluent pipework
- 14 km chemical distribution pipework

Concurrent adjacent activities:

- Nuclear chemical process plant operations
- Nuclear material storage
- New facility construction
- Decommissioning
- Demolition
- 150 decommissioning and major projects underway this year

Contamination

- Radiological and chemotoxic contamination of ground and groundwater exists due to previous uses of the site.

Interdependent facilities and processes

- 60% of facilities on the site are considered shared service facilities, i.e. their continued operation relies on upstream and downstream facilities.



... there are currently more than 1000 buildings on the site, two hundred of which are nuclear facilities.



report DGI 2011



THE DEFENCE GEOSPATIAL INTELLIGENCE conference is an annual event, which again took place at the Queen Elizabeth II Conference Centre in Westminster at the end of January. This was my third DGI and, despite hard times for all, over 650 delegates had registered. Although this is an impressive figure, it was perhaps more significant that the MoDs or defence forces from

'discussion'.

The highlight of the first day was a keynote talk by Air Marshall Sir **Stuart Peach**, currently Chief of Joint Operations at the UK MoD, but formerly Director General of Defence Intelligence between 2003 and 2006. His plea was to "keep it simple", which he demonstrated by drastically shortening the

Fusion: the GEOINT multiplier

Geo intelligence is a growing asset for the military and security sector despite tough economic constraints for many countries. **Richard Groom** attended the sector's annual conference in London and found plenty for the wider geo community to ponder on.

forty-two countries were represented at this year's event. I did however feel that, although military numbers had held up, perhaps there were fewer delegates from civilian government departments.

DGI means business DGI is special because one really feels that it has an impact. Each year the issues of the day are aired and one gets the impression that the participants listen and act, so that the following year measurable progress has been made on that batch of problems, leaving the speakers and delegates to set and get stuck in to a new agenda for the following year. The conference means business and a lot is crammed into two very busy days.

The pattern of the conference was a morning of plenary sessions, which included three panel discussions followed by specialist streams in the afternoon. The first panel session was rather a disappointment because the panelists had got together beforehand and agreed a communiqué that was delivered by the discussion moderator. This was then followed by speeches by each member of the panel, which left precious little time for

length of the title for his talk to "Geography on Operations". He has seen too many cluttered maps and urged the delegates to think of their audience: advice that would go down well anywhere.

Geography enables understanding Sir Stuart's remarks reflected those of many others. "Create once, use often", the "Perfection dilemma", the "Share – Protect balance" and "Geography enables Understanding" are mantras which sum up his views and concerns. By the "Perfection dilemma" he means that commanders need 80% solutions to be provided in time rather than 100% solutions late. He, and other speakers, saw this as a pragmatic solution to funding cuts. But from the providers' side came the comment that the same commanders will criticise if they find flaws in the product. Something to work on, chaps!

The "Share – Protect balance" is in the spotlight following Wikileaks. Several speakers picked up on this and stressed the importance of establishing clear rules and communities of interest. However, as Sir Stuart said, there will always be a need to protect some information. He urged the conference to remember that, "Geography enables Understanding".

The military are affected by spending cuts and have been making plans to deal with them. **Stuart Haynes**, Director of the Defence Geographic Centre, Intelligence Collection Group has clearly been putting some considerable thought into this. His proactive approach to the challenges and

'Everything happens somewhere, for a reason', was the mantra inside the conference hall but things were happening too in the exhibition area.



A busy exhibition was also a chance for old friends and acquaintances to catch up.



opportunities ahead was a breath of fresh air. Something his civilian counterparts could learn from.

Another well-worn phrase received a minor makeover at DGI. "Everything happens somewhere" became "Everything happens somewhere, for a reason". The purpose of Geo Intelligence (GEOINT) is, of course, to find the reason. The exhibition was larger than last year's and, as usual, there were plenty of interesting stands. The power of fusion was demonstrated graphically by two particular exhibitors.

GEOINT from AIS John Allan from "exactEarth" brought with him a system for tracking shipping in the Gulf of Aden – or anywhere else for that matter. Nowadays all ships over 300 tonnes are obliged under international law to have installed an Automatic Identification System (AIS) transponder. The objective is to enable ports and national security organisations to track shipping. It is however only designed to work within about 40 nautical miles of the coast as a collision avoidance tool.

The company has devised a method of tracking ships anywhere by using two satellites in polar orbit to pick up the signals from all shipping – even in the open ocean. They have solved the technical problems associated with differentiating the signals and are able to plot the position, heading, speed and identity of each vessel. Put this data into a GIS, and it becomes possible to look at trajectories and observe patterns of behaviour. The data can be analysed to detect departures from expected behaviour, which can then be investigated.

Social networking Another company, i2 Group, has been around for a couple of decades. Their specialism is social network analysis. Nothing to do with Facebook, I was assured. The data is more likely to come from mobile phone traffic records and emails. The idea is to observe who communicates with whom, when and how. From that, the system can build up a network of social (or business) contacts. One can imagine this sort of technology in use for analysing contacts within suspected terrorist cells but it could equally well be used to look at anyone's network. This does have rather a whiff of 'big brother' but one can also see applications for analysing how people in businesses communicate. An interesting application is to compare how people actually communicate at work as opposed to how they

are supposed to communicate. Astonishingly, social networking has been carried out without geography until August 2010 when i2 teamed up with ESRI. Put the topology of social networking together with geography and the value of the tool is multiplied many times.

Interoperability This was a conference with plenty of 'wow', but back down on earth another major problem for the military is standardisation. Several speakers related their experiences. Lora Muchmore is Director for Business Enterprise Integration, Deputy Under Secretary Of Defense (Installations & Environment) at the US Department of Defense. Her lengthy job title involves the equally big business of looking after US military facilities worldwide. When she took up the job, she found that there were 300 different management systems in use to maintain military installations and that none were interoperable. The solution was the fairly obvious: introduce a real property unique identifier.

Problems of non-interoperability are widespread and several organisations have decided to develop 'defence' spatial data infrastructures (SDIs) as a means of control. The Australian Government Department of Defence appears to be the most advanced although representatives from the EU and Britain also expressed enthusiasm for the idea. There was a discussion panel on the subject of standards during which the panelists did actually debate their points. There was also talk about the extent to which military and civilian bodies need to be interoperable and the need for standard procedures as well as data. This question of military and civilian co-operation was of particular importance to the EU as most of their missions are actually humanitarian.

So, what of the future? Sir Stuart expects more fusion with clearer direction and more sharing of data with clearer balance between openness and protection. And some words of advice: he urged the audience to learn from others, integrate, address the customer's needs and make complexity simple. Oh... and come again next year!

• For more information, visit <http://www.wbresearch.com/dgieurope/home.aspx>



Problems of non-interoperability are widespread and several organisations have decided to develop 'defence'... SDIs...



addressing sorted!



FOR MOST PEOPLE an address is a label attached to the places where they live, work or perhaps shop. Somewhere with a letterbox or at least a recognised entrance. As GI people we have always concerned ourselves with location, although often at differing accuracies depending on the application! But with the rise of GIS and GPS-controlled delivery and emergency services, the lines between address and position have become fuzzier. Location has become the 'buzz' word, usually meaning a place that you will recognise when you get there.

In the UK, whilst many find postcodes (with associated geocodes) reliable enough it is not always accurate or suitable for locating those features – such as individual buildings – that are recorded on large-scale mapping like OS MasterMap. Ordnance Survey therefore developed the Addresspoint and Address Layer 2 products, which assign accurate coordinates to individual addresses. This geo-coding of addresses is the fuel that drives many GIS applications.

owned spatial address data, for the whole of the public sector.' Tim Maxwell, managing director of GGP Systems, a supplier of GIS software to the public sector and utilities, adds, 'This is a really positive move for all connected to the GIS industry.' Michael Nicholson, MD of Intelligent Addressing, says: 'Commercial competition over the nation's addressing has been quite a feature of the UK's geographic information scene for about ten years. The joint venture approach is something we first proposed in 2000 to resolve the muddle and again in 2001 but perhaps conditions were not right then. Now, changes at Ordnance Survey, the success of the NLPG and the new focus on efficiency in government have created conditions where resolution is both more achievable and more urgent.'

Subject to approval from the Office of Fair Trading, GeoPlace will combine the NLPG and NSG with Ordnance Survey's OS MasterMap Address Layer 2. However the NSG will continue to be managed separately, as it is at present. The initiative supports the

GeoPlace: one address database

The UK has long struggled with having two address databases, causing problems and friction between those that rely on location. The new Coalition Government has now moved to merge two of them, report **Richard Groom, Robin Waters and Stephen Booth.**

Meanwhile, the Local Government Group (LGG) contracted Intelligent Addressing to manage the creation of the National Land and Property Gazetteer (NLPG) from individual local authority gazetteers, which have proved very effective for local authorities own use and for the emergency services. Geocoding of these gazetteers relied on a mixture of OS provided information; derived data from OS mapping; and new GPS positioning. Repeated attempts to bring these two competing datasets together have foundered – primarily due to a lack of government will and the need for competing public sector agencies to make "profits".

Sorting out this very British muddle has at last moved a step closer. In December 2011 the Department of Communities and Local Government (DCLG) announced the formation of a joint venture, "GeoPlace™", between Ordnance Survey and LGG. Geoplace will develop a single definitive set of address data for England and Wales. This should finally resolve difficulties arising from non-interoperability of Britain's two national address gazetteers. Geoplace will acquire Intelligent Addressing and all its intellectual property rights in the NLPG and the National Street Gazetteer. It is understood that Intelligent Addressing's management team will transfer to the new company except for the directors **Michael Nicholson and Tony Black.**

The move has been widely welcomed. Describing it as 'an important step forward', the Association for Geographic Information (AGI) believes the move is 'providing one definitive source of accurate publicly-

UK Location Strategy's concept of a "Core Reference Geography" and the key principles of the Inspire directive, including that data should only be collected once and kept where it can be maintained most effectively. Existing products and their customers will continue to be supported for awhile. New products will integrate the currency and consistency of existing address products and enable organisations to readily exchange address based information with each other, thereby streamlining government services, reducing duplication, and facilitating partnership working. This should deliver significant efficiency savings and improvements for both the public and commercial sectors. The first cut of the new national address gazetteer database will be developed by April 2011, allowing customer engagement prior to product release between July and September. It will be free at the point of use for all government bodies via the Public Sector Mapping Agreement. Commercial customers will be able to license it in the same way as they currently license OS and NLPG products. It is envisaged that over time all customers will migrate to the products created from the unified gazetteer.

STOP PRESS! The Office of Fair Trading (OFT) is due to reach a decision on the formation of GeoPlace, the anticipated joint venture between Ordnance Survey and Local Government Improvement and Development, and the proposed provision of addressing products, on February 15/16th 2011.



The initiative supports the UK Location Strategy's concept of a "Core Reference Geography"...





THERE IS A GENERAL IMPRESSION in the Middle East that GIS cannot help in engineering works. We have managed to change this perception through an infrastructure project north of Damascus in Syria. For the Dimas housing development project, with a population of 25 to 30 thousand people, our task was to design the infrastructure with a brief of plenty of walkable tracks and cycle paths, where children can walk or cycle safely to schools, shops, playgrounds and sports fields.

The first challenge was to persuade and



in spreadsheets, e.g. parcel number xxx falls within boundary of phase 4 in AutoCAD but the Excel version says it belongs in Phase 3!

After resolving all these issues, the next step was to calculate demand/load for individual plots for all utilities including: potable water, irrigation,

GIS and engineering – good practice

The integration of GIS with traditional design and spreadsheet software for the development and planning of projects is still in its infancy in many parts of the world. **Muhammad Khaliq** reports on how he convinced colleagues to use GIS for a Syrian infrastructure project.

motivate colleagues to use new technology. We found that people like to work in traditional ways for planning and design, using AutoCAD and spreadsheets. It seems hard to get them to adopt GIS software in their planning and delivery despite the benefits. We noticed the reasons behind this behaviour – lack of knowledge of GIS, fear of trying new technology, fear of integration with existing traditional systems.

DWGs and spreadsheets Somehow we managed to persuade our client to use GIS in our scope of services, which is the planning and design of utilities for the whole development. For this purpose, we received planning information from the master planner in DWG files and spreadsheet formats, which looks great in terms of hachuring, colouring and layout setting but provides a challenge for us to integrate into a GIS with error-free data from our design work.

We converted the CAD and tabular data into our geo-database. Spatial analysis helped us to identify gaps in the data provided by the planner. These gaps included duplicate parcel numbers assigned to more than one plot and the wrong association of development phasing

sewerage, storm water, electrical and telecommunications. To achieve this we added columns in the spreadsheet, one for each utility and calculated the load/demand based on rates as per the standards set by local authorities.

Spatial analysis also helped us to identify suitable locations and sizes of sub-stations, water tanks and sewerage treatment plants. Now we are in the final stages of presenting our results. We have produced a series of maps and queries by simply re-linking a modified spreadsheet to planning in ArcGIS. We use annotation to show our design demand/load for individual plots and apply different symbologies to enhance the presentation.

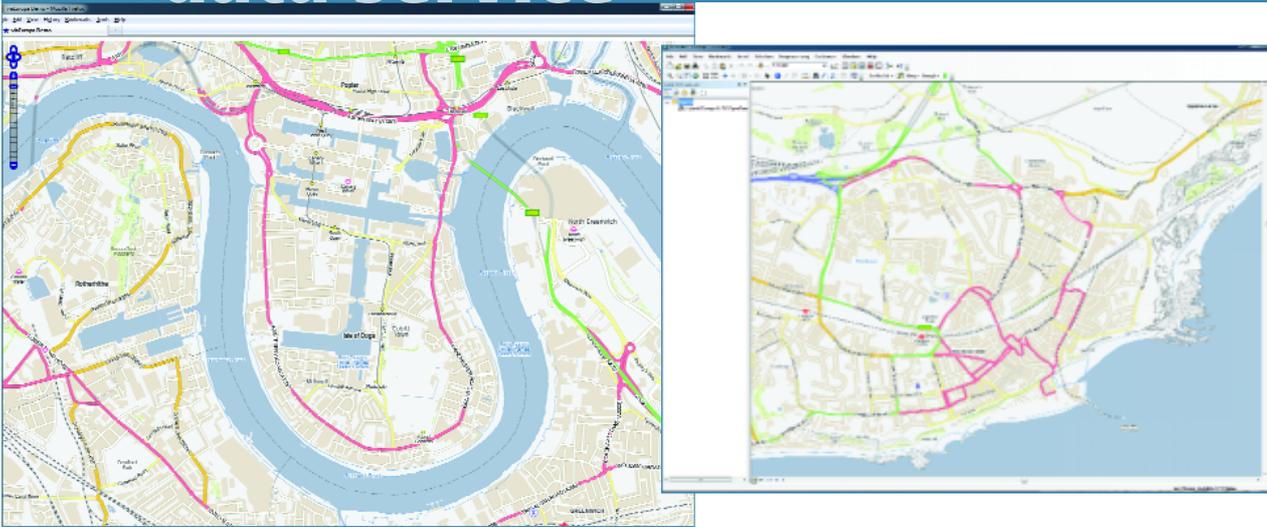
Softwares used: *ArcGIS version 9.2*
Microsoft Excel
Adobe Acrobat Professional

About the author

With 13 years of experience, Muhammad Khaliq is a GIS specialist working with a multidiscipline engineering consulting company based in Sharjah, UAE. khaliq60@yahoo.com

“
Spatial analysis also helped us to identify suitable locations and sizes of sub-stations, water tanks and sewage treatment plants.
”

open data service



Above: Screenshots taken from viaEuropa's web browser within ArcInfo.

EUROPA TECHNOLOGIES provides global data to the telecom and insurance industries and more recently its maps have been used for the delivery of Google Earth. Although winning a number of awards for its technology, including supplying Fortune 500 customers, the world of location data does not stand still and Europa is now starting on an evolutionary process to fulfil its growth plans. Two major trends are the growing

albeit that many face other challenges like the after-effects of spiralling government borrowing, it is a time to think smart. It is no longer just a case of being good at being a data provider – it is about being good as a data service provider. It is not just about creating and publishing your own data but also about how to apply the skills gained in doing so to help others work with their own data.

An open vision on data

Europa Technologies is a small company with big plans for the data distribution business. *GISPro* takes a look at their offering and talks to founder **Warren Vick** about how he sees the future for data as a service.

market interest in 'Data as a Service' (DaaS) and the greater openness in the provision of public sector data. The company's vision may be ambitious but leading these trends will only be achieved by some significant changes in direction.

Is content really king? A good starting point is to look at how the data business is changing. Most data providers have grown up with the philosophy that "content is king". Data providers were seen to be the market drivers and their success came with the quality and usefulness of their products. But, in any market, there are always disruptors that come along and turn the existing world upside down. In the geospatial world, the entry of Google has done just that. Few would have predicted that its impact could have been so swift or far-reaching. But established public sector data providers can also shift the market. In 2010, Ordnance Survey OpenData was launched – arguably the most significant development since it first moved into digital mapping over 30 years ago. The message is quite clear: data providers really have to add value to compete. There is now a lot of good quality data on the market and commercial data providers need to differentiate their products.

As global economies emerge from recession,

A foot in the open world Europa Technologies has always seen itself as a good product creation company as well as a commercial company with a foot in the "open" world. Spanning the commercial and open spaces is not without its challenges. Some companies from the open world have tried to dabble in the commercial world without success. Others have remained blinkered to the needs of the commercial world and so have refused to work with anything other than open source software and data.

However, Europa has been able to extend its experience and best practice with new ideas. One of these is the recently launched viaEuropa – a hosted service delivering pre-rendered tiles of raster map data to desktop GIS and web-mapping applications.

The viaEuropa model grew out of changes in the global data market and the need to find a better way to deliver global data. However, the growth in web-based applications meant that tile delivery was better able to support emerging Internet and Intranet applications. Delivering data for the web needs greater intelligence in the rendering process to optimise display speeds within the application.

So what does it take to make a service like this successful? Warren Vick, director and founder, thinks the key

“

There is now a lot of good quality data on the market and commercial data providers need to differentiate their products.

”

ingredients are simple: quality, price and delivery. 'The starting point has to be good quality cartography. It is all about delivering high quality maps to a user's desktop or mobile device and this means the data has to look good,' argues Vick.

And the other elements?

'Delivery must be based on a reliable and predictable hosting service – while the price cannot lose sight of the importance of value for money in the current economic climate,' says Vick.

To help entice users to try out the technology, a viaEuropa Open free service is being promoted. As Vick points out, 'there are a growing number of open services out there but viaEuropa Open is not just delivering sample data – in Great Britain it delivers national coverage using OS OpenData supplemented with some of Europa Technologies' own global data'.

The open service will not be suitable for all and, as has been widely recognised, it is difficult to make money out of free data. Europa sees the open service as enabling users to try out the service in a risk-free way before stepping up to the commercial service - viaEuropa Plus.

Why the need for a premium service?

Users can only use the free service in certain ways and can't deploy the data over the Internet, explains Vick. Once the free service proves its worth, it is anticipated that users will need more capacity, better quality of service and better guarantees of availability that come with the premium service.

So, not losing sight of the fact that people can still adopt a DIY approach – where does Europa Technologies see its added value?

A customer could take the raw data but there is a huge chasm between this and consuming a finished mapping product. Over the years, Europa has used its experience to build its own in-house proprietary toolset, coupled with the use of best-of-breed commercial and open source tools. Even with these tools, not all datasets are equally ready for transformation and delivery via a service. A significant part of the work in data preparation is the pre-processing of datasets before the tiles are rendered including, for example, label placement. Processing is time consuming and needs to reflect that each dataset has its own personality – unique datasets need uniquely adapted processing.

Another area of the company's expertise is in creating consistency across datasets, which then enable a user to zoom seamlessly across them. Lastly, there is a growing need for Europa to use its expertise to adapt maps for those users with colour blindness, now more correctly known as Colour Vision Deficiency (CVD).

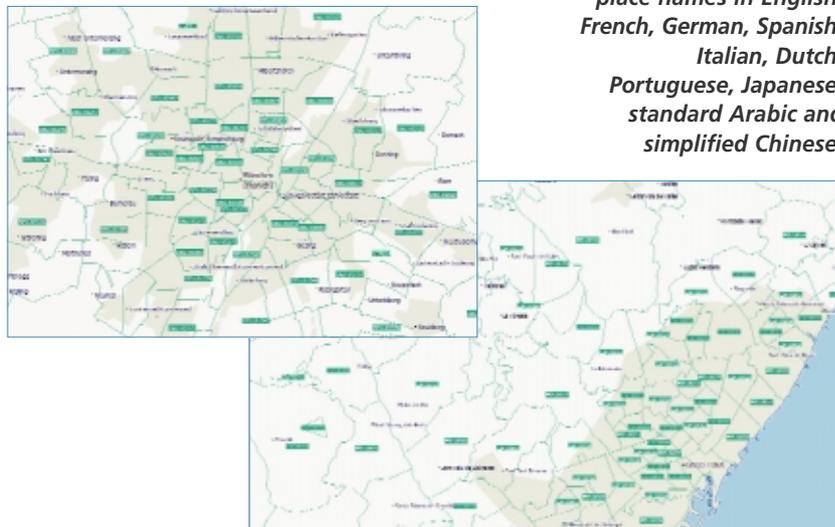
The DaaS model is also well suited to public sector users. Although its global data has been used mainly by the private sector, Europa believes it will have a growing

relevance to the public sector. Although it does not seem like great timing for a move into the public sector market, the forthcoming Public Sector Mapping Agreement (PSMA) represents a significant milestone in the use of location data in over 800 organisations across the sector. The viaEuropa approach fits with the principles of austerity planning because each public sector organisation does not need to waste time and effort on handling its own base map data. As an OS partner, Europa has been working closely with Ordnance Survey with the PSMA in mind. The agreement opens access to national (GB) coverage for nearly all OS datasets and allows the public sector to focus on its own data and not worry about the base map. As many different scale products are covered by the agreement, it means that viaEuropa can offer a seamless transition between mid scales found in OS OpenData and the larger scale commercially licensed products.

Where does Europa see scope for future developments?

The viaEuropa service still has room to be extended to even higher availability applications – especially where a Service Level Agreement (SLA) is needed. There will also still be a need for custom work to enable user's own datasets to be deployed in the service – an example being to style the tiles to a specific customer need. Some websites have a dominant colour palette or a corporate colour scheme that means the tiles need to be rendered in specific colours but can still be delivered through the online service or delivered to the customer as a tile set for them to manage themselves.

Because it is an open platform and can work with data from other sources, viaEuropa can provide an open, multi-provider service that encourages others to get involved. The message to data providers is simple – why bother to build your own service if you can deliver your data through existing services? A philosophy which Europa Technologies hope will lead to benefits and being recognised as a spatial data technology leader in Europe.



Processing is time consuming and needs to reflect that each dataset has its own personality – unique datasets need uniquely adapted processing.



Below: a recent upgrade to Europa's Cresta allows insurers to zone in on areas and includes a gazetteer of over 850,000 locations pre-coded with zones and sub-zones. The gazetteer supports place names in English, French, German, Spanish, Italian, Dutch, Portuguese, Japanese, standard Arabic and simplified Chinese.

legal copyright & deposit libraries

BRITISH LIBRARY

ABOUT US

Home > About Us > Strategy, policies and programmes > Legal deposit

Legal Deposit in the British Library

Publishers and distributors in the United Kingdom and the Republic of Ireland have a legal obligation to send one copy of each of their publications to the Legal Deposit Office of the British Library within one month of publication.

What's new

- 28 Dec 2010: British Library submit response to DCMS Consultation on the Draft Legal Deposit Libraries (Non-Print Publications) Regulations 2011. See 'PDF files'.
- 01 Dec 2010: Implementing the draft regulations for non-print legal deposit: technical FAQ. See 'PDF files'.
- 31 Mar 2010: Technical guidance notes for publishers depositing electronic journals under the voluntary scheme. See 'In this section'.
- 01 Mar 2010: Updated code for the voluntary deposit of UK offline and microform publications. See 'In this section'.
- 08 Dec 2009: DCMS public consultation on proposals for depositing UK offline and microform publications and for archiving the UK "free web". See 'External links'.

Introduction and background

Legal deposit for printed books and papers has existed in English law since 1662. It helps to ensure that the nation's published output (and thereby its intellectual record and future published heritage) is collected systematically, and as comprehensively as possible, both in order to preserve the material for the use of future generations and to make it available for readers within the designated legal deposit libraries. These are the British Library, the National Library of Scotland, the National Library of Wales, the Bodleian Library Oxford, the Library of Cambridge University and the Library of Trinity College Dublin.

The legal deposit system also has benefits for authors and publishers:

Search About us

Search box

In this section

- Joint Committee on Legal Deposit
- Technical guidance for e-journal publishers
- Voluntary code for offline publications
- Voluntary scheme for e-journals

PDF files

The links below are to Adobe PDF files. [Accessibility problems](#) and [free reader software](#) are available from Adobe.

- BL Response to Legal Deposit Consultation 20.12.2010 - PDF format 160.09 KB
- Implementing the draft regulations for non-print legal deposit: technical FAQ - PDF format 294.66 KB
- BL response to DCMS Public Consultation - PDF format 66.61 KB

Related links

- Integrated Catalogue
- Bibliographic Standards
- International Standard Serial Number (ISSN)
- Information for Publishers

External links

- Legal Deposit Libraries Act 2003
- Ireland: Copyright and Related Rights Act 2000
- DCMS - Legal Deposit
- DCMS Public Consultation 08 Dec 2009

published when copies of it are issued to the public. The place of publication or printing, the nature of the imprint, and the price or the size of distribution are immaterial. It is therefore the act of issuing or distributing to the public in the United Kingdom or the Republic of Ireland, which renders a work liable to deposit. Items originally published elsewhere but distributed in the United Kingdom and in Ireland are also liable for deposit.

Publishers' legal obligation Publishers are obliged to send one copy of each of their publications to the British Library, free of charge, within one month of the date of publication. The other five libraries have the right to request the deposit of publications, free of charge, within a year of the date of publication. In practice many publishers deposit their publications with all six libraries without waiting for a claim to be made, which is greatly appreciated. The Legal Deposit Libraries are very keen to protect publishers' copyright, and are strict over controlling any requests for copies in line with copyright legislation.

UK and Irish legislation The Legal Deposit

Calling all map publishers... send us your publications!

With changes in the pipeline, the British Library has issued a timely reminder to map publishers in the UK and Ireland of their responsibilities under legal deposit and copyright legislation.

IN RECENT YEARS, a growing proportion of maps and atlases, published or distributed in the United Kingdom, have not been received by the Legal Deposit Libraries. This may be due to uncertainty over the legislation, over what constitutes a publication, or to whom publications should be sent (following the move of the Agency for the Legal Deposit Libraries last year). We are very keen to try to address this problem by explaining these issues below.

The principle of legal deposit has been well established for nearly four centuries and has advantages for cartographers and publishers. Publications deposited with the legal deposit libraries:

- Become part of the national heritage
- Become an archive of publishers' output
- Are catalogued and preserved for the benefit of future generations
- Act as a shop-window for publishers, encouraging people to buy items

What is included? All published items come within the scope of legal deposit. A work is said to be

Libraries Act 2003 (UK) and the Copyright and Related Rights Act 2000 (Ireland) make it obligatory for publishers and distributors in the United Kingdom and Ireland to deposit their publications. These acts cover printed and electronic publications, though legislation is not yet in place for the latter. In the meantime, a code of practice exists in the United Kingdom for the voluntary deposit of electronic publications, and also for microform and other non-printed publications. In Ireland, the Copyright and Related Rights Act 2000 proposes to extend legal deposit to electronic formats.

Where should publications be sent? Publications destined for the British Library (with the exception of newspapers and pure electronic content) should be sent to:

The Legal Deposit Office
The British Library
Boston Spa, Wetherby
West Yorkshire
LS23 7BY
T +44 (0)1937 546268
legal-deposit-books@bl.uk



These acts cover printed and electronic publications, though legislation is not yet in place for the latter.



Enquiries about the deposit of pure electronic content should be sent to:

The Digital Acquisitions Co-ordinator
The British Library
Boston Spa, Wetherby
West Yorkshire
LS23 7BQ
www.bl.uk
T +44 (0)1937 546535
LDO-Electronic@bl.uk

Other Legal Deposit Libraries The Agency for the Legal Deposit Libraries is authorised to collect publications on behalf of the other five legal deposit libraries. Publications and enquiries should be addressed to:

The Agent
Agency for the Legal Deposit Libraries
161 Causewayside
Edinburgh
EH9 1PH Tel: +44 (0)131 623 4680
Fax: +44 (0)131 623 4681
<http://www.legaldeposit.org.uk/>
Email: publisher.enquiries@legaldeposit.org.uk

Irish publishers should send material destined for the British Library to them directly, and publications destined for the five Legal Deposit Libraries to:

Irish Copyright Agency
c/o Trinity College Library
College Street
Dublin 2
T +353 (0) 896 1021
F +353 (0) 1671 9003
www.tcd.ie/Library/
Email: libraryaccessions@tcd.ie

Issued on behalf of the map librarians in the six Legal Deposit Libraries:

- The British Library
- The Bodleian Library, University of Oxford
- Cambridge University Library
- The National Library of Scotland, Edinburgh
- The Library of Trinity College, Dublin
- The National Library of Wales, Aberystwyth

More information at
<http://www.bl.uk/aboutus/stratpolprog/legaldep/index.html>



In Ireland, the Copyright and Related Rights Act 2000 proposes to extend legal deposit to electronic formats.



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EUROPHILES WILL KNOW THAT it is Hungary's turn to hold the Presidency of the EU. This role has less significance since the creation of a permanent President of the Council of Ministers but it still enables each country in turn to set the agenda for six months and to ensure that its own priorities are recognised. Spain, Belgium and Hungary have also formed a unique "trio" to agree a common agenda through the whole of the 18 months of their successive presidencies. In fact, not surprisingly in view of its location, Hungary is prioritising cooperation along the Danube and also the accession negotiations for its neighbour, Croatia. And if you are

portal (<http://en.foldhivatal.hu/>) has just been launched with access to mapping and land information products – not least TakarNet, which was the main focus of your correspondent's work in the Ministry of Agriculture in 1996. This now provides access to land registration and cadastre information across the whole country.

But the Ministry of Agriculture is no more! After a period as MARD (Ministry of Agriculture and Rural Development), it has now dropped the Agriculture and is simply for Rural Development. This is of course in the best British tradition – our MAF long ago morphed into Defra – though the

A Tale of Many Cities

What do the cities of Prague, Pisa, Florence and Padua have in common? Why might you want to be in Edinburgh and Cambridge but not at the same time? Why is Budapest in the news? For the answers, read what our observer, **Robin Waters** has to say on this and other geo matters as Hungary assumes the EU presidency.

in Brussels then do visit the Council's Justus Lipsius building and walk all over the Hungarian exhibit – a huge 200 square metre carpet depicting Hungarian culture from Arpad's crossing of the Carpathians more than a thousand years ago!

Conferences, Galileo and the loss of agriculture

So Budapest is setting the scene in 2011. It will also host the June conference of the Permanent Committee on Cadastre in the EU, which will be chaired by Hungary this year. Appropriately, an English version of the country's geoinformation

Hungarians do still have a separate environment ministry. The Department of Land Administration has also lost the word 'GeoInformation' from its title – though clearly not the substance judging by the contents of their portal.

Galileo is of course the link between Prague and those Italian centres of the renaissance. They all have good reason to be thankful to him. Galileo Galilei was born in Pisa, educated in Pisa and Florence and flourished as a scientist in the university at Padua. These cities are no doubt proud of this heritage – and are perhaps even a

Right: The handover of the Permanent Commission on Cadastre in the EU from Belgium to Hungary. Represented by Mrs. Pierrette Fraise (Première attachée des Finances chargée de la Direction de la Cellule de Géomatique patrimoniale, Documentation patrimoniale, SPF Finances) and Piroska Zalaba (Senior Councillor, Dept of Land Administration, Ministry of Rural Development).



The logo in the background of the main image is of the Belgian presidency (of EU as a whole). The Hungarian logo is the same shape but different colours as shown in the inset picture.

little richer from the tourists on the Galileo trail.

Now Prague will also have a greater fondness for Galileo as the headquarters of the European GNSS Supervisory Authority, which has a variety of roles with respect to the Galileo navigation satellite system – although ultimate responsibility rests with the European Space Agency and the technical control is exercised from back home in Italy at Fucino. Apparently, this will be the Czech Republic's first European 'institution' – paid for from our European taxes of course. So we just hope that our satnav systems don't start spitting out all those Czech accented words! Caution: Although reportedly confirmed by GSA officials, there is no formal announcement of this move on the GSA website at the time of writing. www.gsa.europa.eu

Conflict of conferences? So what about the British cities? Yes, they do all have universities but otherwise have quite contrasting histories and topographies. However, we are more likely to be interested in their conference facilities.

Back in June 2010 there was an announcement in Krakow that the next INSPIRE conference would be held in Edinburgh. Then silence. It was not until

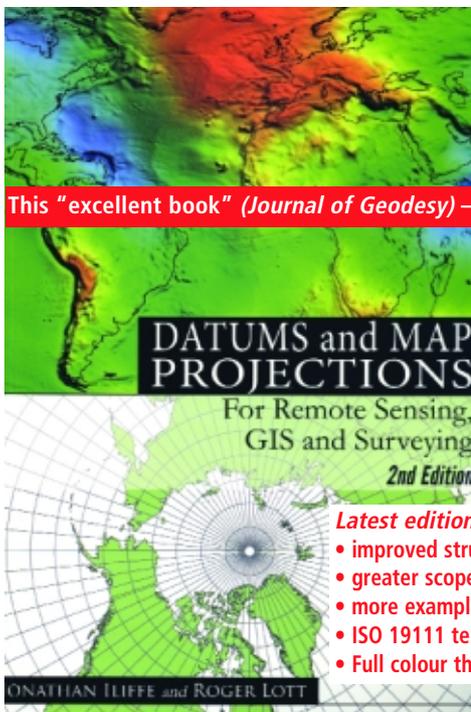
December that we were informed that the conference will indeed be in the Edinburgh International Conference Centre at the end of June this year. If you are quick you can still submit a paper – closing date is 24th February.

http://inspire.jrc.ec.europa.eu/events/conferences/inspire_2011/

Unfortunately, the Cambridge Conference – 'a forum for debate about geographical information for tomorrow, for the world' – organised by the Ordnance Survey – is also scheduled for the same week. Although this is being held in Southampton this year, and is for heads of national mapping agencies by invitation only, the clash is unfortunate and could affect sponsorship for both events as well as meaning that some national mapping agency bigwigs will have to make a difficult choice or perhaps book their north-south flights as soon as possible!

• *Robin Waters is an independent consultant. He is also chair of the AGI's INSPIRE Action Working Group and secretary of the BSI IST36 Standards Committee for Geographic Information.*

“ . . . the next INSPIRE conference. . . will indeed be in the Edinburgh International Conference Centre at the end of June. . . ”



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Chris Holcroft is Director and CEO of the AGI.

2010 ENDED WITH the AGI in better shape than initially anticipated. The economic woes of the nation, the pending General Election and the uncertainty surrounding both made budgeting for the year quite tough, particularly when bearing in mind our reliance on member's discretionary expenditure for subscription renewals, events attendance, CPD activity and so on. AGI is also highly exposed to the public sector and thus the implications of public sector cuts.

It was down to the support of AGI membership and those members who selflessly volunteer to contribute to the activities of the Association, plus the professionalism of the AGI staff that made 2010 a more successful year despite the broader national difficulties. Reassuringly, AGI made no financial deficit and was able to top-up its financial reserves – vital assets for the longer term viability of the Association and its ongoing services to members. It is important to now thank all who have been involved with the AGI throughout 2010. Our members, the contribution and the support they give, make the AGI what it is. This keeps the Association in step with

Association all the facilities and services needed to host and deliver *AGI GeoCommunity '11* and AGI W3G. This means enhanced space for our sponsors who exhibit, as well as new delegate cost savings to minimise barriers to entry in this 'age of austerity'. Announcements about AGI GeoCommunity '11 have already been made (see www.agigeocommunity.com/). Registration and sponsorship packages will be made available in February and the Call for Papers will follow soon. The new conference committee is chaired by Dr **Jeremy Morley**, an AGI conference veteran who will be working closely with the AGI staff on delivering another excellent conference in 2011.

The AGI will also continue to evaluate and launch new services with a view to widening its revenue base. Why do this? The AGI is a private not-for-profit organisation. It receives no public subsidy and relies on member's discretionary spend. Income from membership fees does not cover operational costs and never has. Extra income is therefore essential. Readers may already know that just before Christmas 2010, the Association opened an online GI bookstore

Keeping in step with the geographic community Despite tough trading conditions in 2010, AGI emerged in a stronger state than expected, says AGI Director and CEO **Chris Holcroft**. For 2011, there is an enhanced events programme, new services and outreach programmes,

the evolution and needs of the geographic information community.

Looking to 2011, we now have a new Chairman, **Andrew Trigg** (Chief Geographic Information Officer, Land Registry) and new AGI Council office bearers. An AGI operational plan for 2011 is already in place and approved. Overall plans are more comprehensive than what follows; the idea is to give readers a flavour of some of the activities and objectives being pursued in 2011.

Membership – following on from the initiatives of 2010, the Association's focus will be to retain existing and attract new members and offer relevant services and benefits. New initiatives will include, for example, a scheme for members to recommend a friend or colleague to the AGI.

Services – the AGI will continue to enhance its events programme and continue to spread it more evenly throughout the year. Events tackling topical subjects, both policy and technology related, are being planned to add to the vibrancy of the events programme.

The flagship conference, *AGI GeoCommunity '11*, will take its well proven formula to a new venue in 2011. East Midlands Conference Centre will give the

(general texts and leisure books are also sold). AGI will look to other opportunities in 2011, including those related to services supporting Continuing Professional Development (CPD) which is a vital plank in our activity and cooperation with the Royal Geographic Society.

Influencing Public Policy – the Association has developed an excellent platform to advance its informing and influencing mission through membership of various national bodies and committees covering geographic information matters. AGI will continue to engage senior commercial and public sector figures on various public policy issues of interest to members and the broader GI community. Already this year AGI has responded twice to the Office of Fair Trading on the subject of GeoPlace LLP and it will be engaging shortly in the consultation process for the recently announced Public Data Corporation.

Outreach - based on the initiatives developed in 2010, where the AGI signed memoranda of understanding with the Institute of Marine Engineers Scientists and Technologists (ImarEST) and the British Cartographic Society (BCS), the AGI will continue to build and strengthen relationships with other



... AGI...will be engaging shortly in the consultation process for the recently announced Public Data Corporation.



representative membership bodies both within and without its current areas of activity and influence. This is an important plank in achieving retention and growth in membership along with lending further weight to the AGI mission.

Communications – to increase awareness of the work of the AGI within the membership, the geographic information market and wider public sector and business community, AGI will continue to develop and exploit the widest range of media available. Such activity is considered vital to convey new messages about the AGI vision, focus on future market and user needs and how the AGI's influence can help its members. Recently AGI added a further *LinkedIn* group to its line-up – a generic AGI group – which has swiftly attracted members.

This year will be full of activity and commitment to address the challenges and opportunities in a period when the nation is still gripped by economic gloom. The AGI mission and services cannot simply stop. The AGI Team – the staff working in the London office – will be at the heart of the conference, events programme, CPD, outreach and much more. The team strives to be close to AGI members and volunteers. The AGI mission remains as relevant

today as it was back in 1989 when the Association was established. Members can be confident, 22 years on that they have a dedicated association that is working hard on their behalf.



The AGI mission remains as relevant today as it was back in 1989 when the Association was established.



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)20 7036 0430

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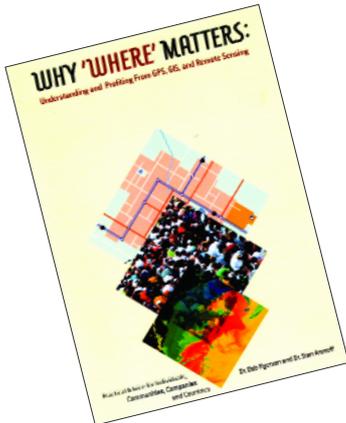
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Why "Where" Matters

By Dr Bob Ryerson and Dr Stan Aronoff
Published by Kim Geomatics Corporation 2010 ISBN 978-0-9866376-0-5

Why "Where" Matters is subtitled "Understanding and Profiting from GPS, GIS and Remote Sensing" and aims to offer "Practical advice for individuals, communities, companies and countries". Clearly the authors are not short of ambition! Over nearly 400 pages this book is a tour de force of geospatial technology, applications and policies with a wealth of references and a good index.

Dr Ryerson is the president and owner of Kim Geomatics Corporation (based in Ontario, Canada and also the publishers) and was also director general of the Canada Centre for Remote Sensing for three years. Dr Aronoff is a senior associate of the same consulting company.

The world is apparently at the beginning of a new economic era – the GeoEconomy. The authors believe that some governments, companies and organisations 'get it' and may therefore prosper; whereas those that don't will fail. However, in the first chapter – "GeoSpatial Knowledge" – there is enough history (and some good examples) to show that all civilisations have required geographical information to expand and survive. There is then – without apparent logic – an attack on the Ordnance Survey's pricing policy as compared to that of the US

a wonderful resource with many practical examples that are driving the geo economy, but with some hard-hitting criticisms for Brits and Ordnance Survey.

Geological Survey. For Brits there is a key quote "In our opinion the quasi-public Ordnance Survey's competition with the private sector explains why the UK, a nation that was once the world's leader in mapping, has declined to a position of importing almost all of their mapping technology and even much of their base data. By contrast the USGS policy of not competing with industry and providing low cost high quality geospatial data has made it a trusted data source widely used by Americans and the world." Wow! Discuss – or dispute?

The conclusion of the second section hammers at the same policy theme – with many valid arguments and with the benefit of the authors' experience of worldwide cost benefit studies. Arguably the tide has turned on "cost recovery" policies in the UK and some other jurisdictions with the advent of INSPIRE for the EU; the Public Service Mapping Agreement in England & Wales; OS OpenData in Great Britain; and, not least, the intervention of Sir Tim Berners Lee and co in the more general open government debate.

Section 3 "NOW!", covers the technologies that are driving the geo-economy and which policies are helping or hindering. It is an eclectic mix of descriptions of geospatial and related technologies; an explanation of the datasets thereby created; the policies being applied; and the overwhelming need for these datasets in many applications.

Sections 4 and 5 cover the "convergence and societal" impacts of GI in the present and the future. We are all experiencing the convergence of technologies and datasets – just look at your latest mobile phone and its multi functionality. As I write we are told that a standard mobile phone is to be trialled as an on-board controller for a complete remote sensing satellite! But are we able to keep up with the technology and ensure

that appropriate, effective and efficient use is made of geospatial data in our daily business? Clearly not, judging by some of the examples quoted. Why? Information or decision making overloads are factors; so is deliberate blindness on the part of decision makers. A company director might argue that ignorance is a better defence than trying to withhold unflattering information about land or property. Politicians are renowned for not wanting to be confused with the facts! The book has several specific examples in the text and the references.

One of the authors once observed that there was at one point a negative correlation between the health of the economy and the use of satellite imagery. Has this been repeated in the last few years? Is the opening up of government data an example in practice?

The penultimate chapter is entitled "Gaining the Geo-Advantage". Anyone in the industry will recognise most of the examples quoted – whether in theory or in practice. One intriguing example concerns our own careers! The authors have identified 25 cities (see Table 1) across the world that are clusters of geospatial expertise and are "poised to reap the rewards of the GeoEconomy". This research is based on over forty factors including existing business, research capability

and government policy. One suspects the list will soon be outdated with the rapid advances of China and India. For those of us in the UK the future is bleak – no clusters at all. But we have a right to work in Enschede, Wageningen, Munich, or Montpellier. And, if you have enough points on the immigration ladder, head for Melbourne or Perth!

The book concludes, naturally, that the use of appropriate geospatial information is beneficial to individuals, companies and governments: "If we leave one message, it is that very often one can see that the reasons for the successes – and the failures – in everything from our environmental protection to our economic decisions, are directly tied to how well we use geospatial or geographic information. . . .those who 'get it'. . . do well. Those who do not depend on 'geo-luck'.

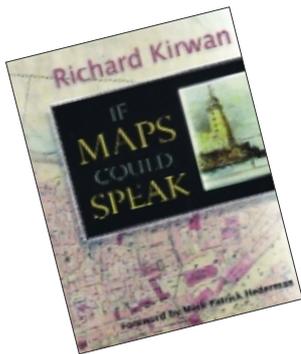
This book is a wonderful resource for anyone looking for examples of technologies, applications and policies in the geospatial arena – almost any page will provide a pithy quote or a great example of the use of geographic information. It might even help convince your boss that you are worth your salary whatever the state of the geo-economy! It certainly achieves its aims.

Reviewer: Robin Waters

Table 1 Geospatial Cities?
Clusters of Geospatial Expertise: Poised to Reap the Rewards of the GeoEconomy?

Colorado, USA	Lethbridge, AB, Canada	Redmond, WA USA
Calgary, Canada	Melbourne, Australia	Tokyo, Japan
Bangalore, India	Mountainview, CA, USA	Toronto, Canada
Boston, MA USA	Munich, Germany	Stennis/ Slidell (MS/LA, USA)
Enschede, Netherlands	Montpellier, France	Wageningen, Netherlands
Fredericton, Canada	Ottawa/Gatineau, Canada	Washington, D.C. USA
Geneva, Switzerland	Perth, Australia	Wuhan, China
Houston, TX, USA	Quebec City, Canada	
Huntsville AL, USA	Redlands, CA, USA	

Source: Study by Kim Geomatics Corporation. If your City belongs on this list, or if you would like to take advantage of the advantages you have because you are already on this list, contact the senior author.



If Maps Could Speak

By Richard Kirwan
Published by Londubh Books, Dublin
euros 14.99/£12.99

This is an extremely well written and vivid account by the author of his life from childhood to leadership of Ireland's mapping agency, Ordnance Survey Ireland; all set against a backdrop of Ireland's history and culture. Dick Kirwan offers fascinating insight into his childhood in Waterford where a map of the district first sparked his interest. Once begun on his career with Ordnance Survey, he sets his surveying travels

a well written and enlightening memoir that stands out from the rest – inviting readers to keep turning the page.

around the country against the extraordinary history of Ireland as well as the characters he worked with and encountered on the road. In my own experience Ireland remains one of those places where you can meet people with time to chat and wonder upon the world. Kirwan captures this well with tales of questions asked on the best path to a summit only to get a commentary on the habits and beauty of the swallows in the hedgerow nearby.

Many readers may not realise that Ireland was the first country in the world to be fully mapped at large scale (6 inches to the mile) by the then British Ordnance Survey's sappers under Thomas Colby. Kirwan reflects on the struggles the English soldiers had in naming places as the locals either mispronounced place names, used various different forms or deliberately misled them. This ubiquitous problem of

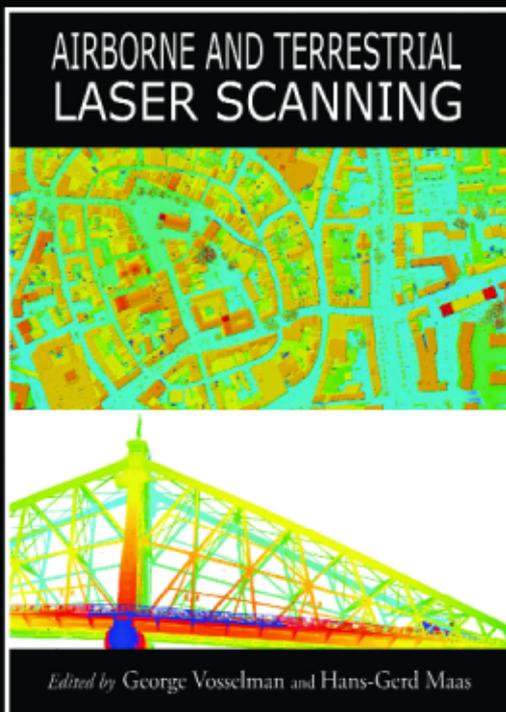
mapping is amusingly dealt with in Irish writer Brian Friel's play, *Translations*. He explains how they eventually had to employ Irish language scholars to guide them; all of this before the terrible famine that engulfed the country and probably did more than anything else to set the Irish on a determined path for independence.

When Kirwan joined Ordnance Survey Ireland in the early 1970s it was indeed a backwater amongst mapping agencies. All employees, apart from the director general's secretary, came from the military and the mapping was struggling to keep up with new roads and estates as the economy began to burgeon. To meet the need for up-to-date mapping Kirwan and his predecessor took the bold decision in the early 1980s to opt for aerial photography and computerised mapping. The latter an expensive process

at that time. Despite many trials and challenges, visits to far-flung parts of the globe to visit suppliers, the move paid off with Ireland being a world leader in this type of mapping and Kirwan in demand worldwide as a consultant since his retirement in 2006.

Over the years I have read many biographical accounts by those in mapping and surveying but none stand out like this one. It really is an enlightening memoir that invites the reader to carry on turning the page to the end. The author gives a candid account too of the vice too many in his position succumb too: overwork. His personal story, its effect on his family and the path it eventually took him is revelatory. Wisely, Kirwan undertook a writing course before he began the work. I think he should try his hand at a novel next.

Reviewer: *Stephen Booth*



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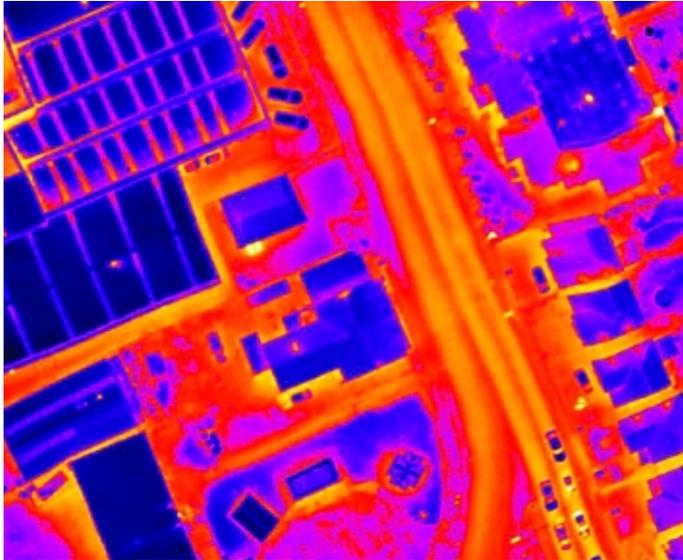
Laser scanning is a relatively young 3D measurement technique offering much potential in the acquisition of precise and reliable 3D geodata and object geometries. The book brings together the various facets of the subject in a coherent text that will be relevant for advanced students, academics and practitioners. After consideration of the technology and processing methods, the book turns to applications. The primary use thus far has been the extraction of digital terrain models from airborne laser scanning data, but many other applications are considered including engineering, forestry, cultural heritage, extraction of 3D building models and mobile mapping.

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Heat loss from homes



With a new thermal sensor fitted to its aircraft, Bluesky is capturing measurements of heat loss from buildings. The results of the night-time thermal surveys will provide local authorities, energy providers and householders with intelligence to tackle energy inefficiency and fuel poverty across Britain's towns and cities. The "microbolometer" thermal camera has been specifically designed for airborne surveying and is ideal for use in aircraft flying at night.

VRS Now in Benelux Trimble has announced the launch of its VRS Now RTK correction data services for Belgium, the Netherlands and Luxembourg. In addition, new service plans allow users to perform precise positioning with centimetre-level accuracy in all VRS Now networks

across Europe, simplifying access to high-precision GNSS corrections. Trimble has also announced a mobile GIS developer community website providing a selection of developer tools and services. The online community provides members with access to software tools and services as well as

documentation, a developer forum, knowledge base and support resources. The software development kits (SDKs) available to members include the GPS pathfinder field toolkit and the mobile GNSS field and office tools. Members pay an annual fee covering software maintenance and developer support and also pay licence fees when they deploy applications to their customers.

Optimised routing Postcode Anywhere's latest satnav service goes beyond A-to-B route planning to re-order multiple waypoints into an optimised itinerary. The feature adds satnav integration to the online routing service, RouteOptimiser.com and enables commercial vehicle drivers to take optimised routes with them in satnavs using TomTom's HOME software.

Promap services extended Following the recent Ordnance Survey licensing changes, Landmark Promap is extending its services to offer larger areas of mapping to its customers. The modifications will allow customers to access and order mapping data up to GB size (over 200km² mapping data), as well as access to new datasets, like the integrated transport network (ITN) layer and VectorMap Local, through a bespoke online ordering process.

BRIEFS

The latest version of Leica's MobileMatriX software fully integrates the company's Viva total stations and Viva GNSS receivers. With the imaging support of the TS15 and TS11, users can take an image with the total station and store it directly in a GIS database. The image assisted documentation enables users to supplement their GIS archive with detailed information about the situation on-site. With this latest version, the import of RINEX data has also been improved.

The mobile ArcGIS API for the Windows Phone is available from the Esri's ArcGIS resource centre. The API can be used to create interactive applications that combine mapping resources such as maps with the phone technologies and frameworks, such as the application bar, controls and location. The company has also updated its ArcGIS for iOS app so users can collect and update GIS information from their iPhone, iPad or iPod touch devices.

The English edition of *Semiology of Graphics* by Jacques Bertin (ISBN: 978-1-58948-261-6, 460 pages, \$79.95) is now available online from Esri Press. The book is based on the author's experience as a cartographer and is an attempt to synthesize the principles of graphic communication with the logic of standard rules applied to writing and topography.

Europa Technologies has launched a map service harnessing its map rendering technology. A free version, viaEuropa Open, is available as well as a paid-for version with dedicated hosting, viaEuropa Plus. For more details on this service, turn to page 22.

Getmapping has launched a WFS service to stream Ordnance Survey MasterMap over the Internet. WFS is a standard protocol from the

Producing city models

Tridicon 3D software enables users to produce 3D city models in level of detail 2. The 3D buildings generated with the software can be exported in common data formats like CityGML, 3D Shape, KML, OBJ, 3DS or VRML. The software from German company GTA Geoinformatik, delivers high-quality models from stereo aerial imagery, plus lidar data and stereo satellite imagery, which are also suitable data sources. Depending on the type of source data and the targeted quality of the results, different software suites are available.





Delivering data

The new Trimble TSC3 controller allows geospatial professionals to collect, share and deliver data for improved accuracy and productivity between the field and office. Optimised for use with the company's Access field software, the controller includes: a digital camera, integrated communications and a GPS navigator, compass and accelerometer. The controller also features: a 4.2 inch, high-resolution, sunlight-readable touch-screen display; integrated Wi-Fi and Bluetooth wireless capabilities; ruggedised bumpers; a long battery life; and optional QWERTY or alphanumeric keyboards.

Open Geospatial Consortium for streaming georeferenced vector mapping data over the Internet to web-based applications, GIS and CAD software.

Envitia has released a spatial data management suite (SDMS) that provides support for over 200 data formats specialised for the defence and security domain. It is fully integrated with both the company's MapLink Pro product and its GI web services.

A new start-up package will enable UK social housing providers to take advantage of free Ordnance Survey digital mapping. GGP Housing is an off-the-shelf software package including licences of GGP Systems' GIS together with a complete installation, training and support programme. The package also includes a strategic review of an organisation's existing software, hardware and data.

Bing Maps AJAX Control 7.0 lets developers build mapping applications that render multiple points nearly three times faster than version 6.3. This latest version also delivers the new "bird's eye": a 45-degree perspective, viewable from all four compass directions with smooth zooming, life-like building models in urban centres and 3D-like terrain features.

Erdas 2011 software has been released and includes Imagine,

LPS, Apollo, Extensions for ArcGIS 10 and other desktop and server products. Portfolio-wide changes include: ability to localise the company's products for a global audience; integrated support for Bing Maps base imagery and map data; distributed processing throughout the desktop offerings; and the new Erdas Engine.

GAF AG, a geo-information technology and consulting company, has released a free trial version of GeoRover mobile geological mapping software. The software integrates GPS navigation, GIS functionality and spatial raster data management in one tool.

GeoSpatial Experts has introduced three new GPS camera bundles designed for geotagging and mapping digital photographs. The company offers its GPS-Photo Link 5.0 photo-mapping software with the Ricoh G700SE, Sony A55 and

Casio EX-H20G GPS cameras. The software enables photographers to map the locations of photos taken with a standard digital camera and handheld GPS receiver or with an integrated GPS camera like those offered in the bundles.

Following the release of the ArcSquirrel API, exeGesIS has now released ArcSquirrel for ArcGIS 10, which transforms ArcView into an editing client for Microsoft SQL server without the need for additional middleware or licensing.

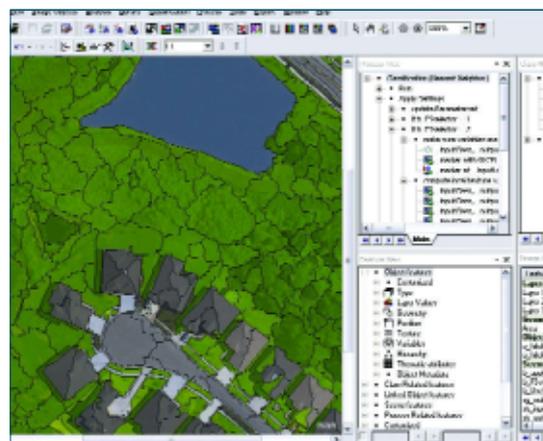
Blue Marble Geographics has announced an enhanced area calculation tool within Geographic Calculator v7.5. Blue Marble Desktop 2.2 now features the area calculation tool, which allows users to calculate area based on user defined boundary definitions. By entering points to describe a polygon, the user can control the methods used for

defining each segment between the points and calculate the area on a geodetic or grid model.

Pointools Ltd has licensed Pointools Vortex point cloud software platform to Safe Software to help GIS professionals and organisations streamline point cloud data transformation and delivery and overcome point cloud interoperability challenges.

Geomod's MITHRA-REM application for predicting public exposure to electromagnetic waves generated by mobile antennae, based on Cadcorp SIS technology, is now used by four main mobile telecommunications operators in the Brussels region.

RapidEye has announced that its first large-scale mosaic is now available for purchase. Consisting of 750 tiles, covering 25 x 25 km² areas, this contiguous satellite image covers Germany in its entirety.



eCognition supports 64-bit

The eCognition version 8.64 image analysis software suite for geospatial applications aims to set a new standard for native 64-bit object-based image analysis. Production workflows can benefit from the additional random access memory offered by 64-bit operating systems. Trimble's software suite enables users to automatically segment and classify large datasets, generating billions of image objects without being limited by operating system restrictions. The software assists data providers, value adders, scientists and end users in integrating earth observation and remote sensing data to generate accurate GIS-ready information.

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

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

2011

Esri DeveloperHub Conference 2011:
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2 March, Hilton Birmingham Metropole Hotel, Birmingham, UK.

More information:
www.esriuk.com/trainingevents/events/dev_conference11/

GEO-11: World of Geomatics and GIS Innovations
6-7 April, Holiday Inn, Elstree, UK.

More information: Email, sharon@pvpubs.demon.co.uk or
www.pvpubs.com/events.php

GITA's 2011 Geospatial Solutions Conference
10-13 April, Grapevine (Dallas), Texas, USA.

More information: www.gitaservices.org/websites/gita2011

Emergency Services Gazetteer Best Practice Day
11 May, Sheffield Hallam University, South Yorkshire, UK.

More information: www.aligned-assets.co.uk/events/GBPD_110511/gazetteer_best_practice_day.html

Esri UK Annual Conference 2011
16-17 May, London Hilton Metropole, London, UK.
 More information: <http://eukac.esriuk.com/>

The British Cartographic Society Annual Symposium
8-10 June, Shrigley Hall, Nr. Macclesfield, Cheshire UK.
 More information: www.cartography.org.uk

Third Open Source GIS Conference (OSGIS) 2011
21-22 June, University of Nottingham, UK.
 More information: http://cgs.nottingham.ac.uk/~osgis11/os_home.html

INSPIRE Conference 2011
27 June – 1 July, Edinburgh, Scotland.
 More information:
http://inspire.jrc.ec.europa.eu/events/conferences/inspire_2011/

11th International Conference on GeoComputation
20th – 22nd July, University College London, UK.
 More information: <http://standard.cege.ucl.ac.uk/workshops/Geocomputation/index.html>



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