



# GIS

## Professional

issue 57 : April 2014

...joining the geography jigsaw



**A web of light – progress or pollution?**

Future Cities: Unleashing the data

smeSpire – taking advantage of INSPIRE

INSPIRE consultation – how did AGI respond?

GEO: The Big Five debate begins

GI in insurance – from freak to ROI!

Promoting SDI implementation at global level

*and much more with*

News | People | Products & Services | GiSPro's columnists

# SEE.

- The latest **Esri GIS** developments.
- **Inspirational** speakers.
- Over **one thousand people** networking.

Register at: [esriuk.com/conference2014](http://esriuk.com/conference2014)



Annual Conference **11th June, London**

# 2014



*our mission . . . to help grow the business for the whole GIS community by providing an effective, reliable and timely medium for news, information and comment.*

**Publisher:** Stephen Booth  
**Editor:** Robin Waters  
**Deputy Editor:** Hayley Tear  
**Features Editor:** Robin Waters  
**Advertising & Subscriptions:** Sharon Robson

**Editorial advisory board:**  
 Chris Holcroft  
 James Kavanagh  
 Dr Muki Haklay  
 Ed Parsons  
 Adena Schutzberg  
 Dr Suchith Anand  
 Robin Waters

**Editorial and advertising:**  
 PV Publications Ltd  
 2B North Road  
 Stevenage  
 Hertfordshire SG1 4AT  
 United Kingdom  
 Tel: +44 (0) 1438 352617  
 e-mail: editor@pvpubs.demon.co.uk  
 web: www.gisprofessional.co.uk

*Material to be Published:* All submissions will be handled with reasonable care, but the publishers assume no responsibility for safety of photographs or manuscripts. Every precaution is taken to ensure accuracy, but publishers cannot accept responsibility for the accuracy of information published or for any opinion expressed.

*Reprints:* Reprints of all articles are available. Call 01438 352617 for details.

*Advertising:* Information about advertisement rates, schedules etc. are available in a media pack. Log on to www.gisprofessional.co.uk or call 01438 352617

*Publishers:* PV Publications Ltd  
 No material may be reproduced in whole or in part without the written permission of the publishers. © 2014 ISSN 1748-3646

*Printing:* The Manson Group, St Albans



**p. 08**

**A new perspective on night lights**

Concerns are being raised over the impact of light pollution from our cities. Bluesky's Night Mapper system can provide intelligence for this debate.



**p. 10**

**Unleashing city data**

The authors discuss the challenge of creating Qcumber Smart City – an open data platform that combines public and crowd-sourced data.



**p. 14**

**Future Cities: the big five debate begins**

The first of the "Big Five" events proved to be a fantastic start to the AGI's 25th anniversary celebrations.



**p. 16**

**The INSPIRE Consultation – AGI's response**

AGI spells out the challenges and benefits of the INSPIRE Directive in response to a questionnaire from the European Commission.



**p. 18**

**Promoting SDI implementation at a global level**

Roger Longhorn and Dr David Coleman discuss the mission and current activities of the Global Spatial Data Infrastructure Association.



**p. 22**

**In Dublin's fair city. . .**

On a flying visit to attend the plan4business conference, Robin Waters discovered that the GI industry is thriving in Ireland.



**p. 28**

**Case Study: agile and open when visualising assets**

Scottish Water has unlocked the potential of its geospatial data with an interactive web viewer.

*also in this packed issue:*

- p.24 INSPIRE Opportunities** – The smeSPire project is helping SMEs to exploit spatial information.
- p.25 GeoForum Lecture** – Audience treated to a buzzy and inspiring speaker.
- p.26 GeoInsurance 2014 Report** – Geography comes of age in the insurance industry.
- p.31 HERE to stay?** – Robin Waters reports from HERE's recent Enterprise Location Forum.

**> GISPro's COLUMNS**

- p.13 Adena Schutzberg** – Could geographical passwords beat cyber thieves?
- p.30 AGI Column** – Our 25th anniversary year is off to a flying start!

**> GISPro's STANDFASTS**

- p.05** Editorial
- p.06** News & People
- p.32** GISPro Products & Services
- p.34** GIS Calendar & Subscriptions
- p.35** GISPro Classified

**> GISPro's ADVERTISERS**

- p.15** AGI
- p.07** Bluesky
- p.02** Esri UK
- p.33** GEO Business 2014
- p.04** KOREC
- p.21** Leica Geosystems
- p.17** Positioning Resources
- p.35** PV Training
- p.36** smeSPire
- p.27** UNIGIS

**Next Issue: JUNE 2014**

Copy dates **Editorial:** 05 May

**Advertising:** 16 May



**Front cover:** A picture of Leicester's sprawl of urban lights captured by Bluesky's Night Mapper system, which is helping to provide focused intelligence on the impact of light pollution. Read more on page 8.

*Image courtesy of Bluesky.*

**to subscribe to GISPro, turn to page 34.**

**read on . . .**



# Pushing the boundaries



When you're out in the field it's not always possible, or even safe, to collect every point that you need. Fences, hedges, unfriendly looking livestock, or even just a busy road, they can all prevent you from occupying that space.

Now with the **Trimble® Geo 7X handheld**, you don't have to.

The integrated laser range finder and Trimble Flightwave™ technology allow you to simply point and shoot and capture that position from a place of safety.

Offering all of the benefits of the preceding GeoExplorer® series and with lots of updated and new features, you can **push the boundaries** of the way you collect data.



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

[info@korecgroup.com](mailto:info@korecgroup.com)

tel UK: 0845 603 1214 IRE: 01 456 4702

**Measured Solutions**  
Construction | Surveying | Mapping





welcome

to the April 2014 issue of *GIS Professional* . . .

## Today: Southampton. Tomorrow: the World.

AS I FINISHED MY EDITORIAL this news arrived and deserves, I think, pride of place. We all know how **Vanessa Lawrence** has driven Ordnance Survey through some turbulent times as the longest serving head of OS for over 100 years and her gradual departure is certainly newsworthy:

Dr Vanessa Lawrence CB, Director General and Chief Executive of Ordnance Survey, will step down on 14 April to focus, for the rest of this year, on a new role as Secretary General of Ordnance Survey International. Her current deputy, **Neil Ackroyd**, will act as head of the national mapping agency until a successor is recruited. Vanessa will also continue in her role as Co-Chair of the UN-GGIM. We will of course report on her new roles but I can't help wondering what 2015 will bring!

### Cooperation and consultation

I am pretty sure that Vanessa was a founding member of the Association for Geographic Information in 1989 and was certainly its chair for one of its 25 years. **Anne Kemp**, in the current chair's column, explains AGI's new branding and is delighted that the Council is entering into discussions on closer cooperation with the Royal Geographical Society. Could we see a merger?

Land Registry are on a road to at least partial privatisation – the Department for Business, Innovation and Skills has closed its consultation on how best to set up a 'service delivery company'. At the same time, the Land Registry is seeking views on its potential role handling Local Land Charges – the two are clearly related as the latter would increase the value of the new service delivery company, which in turn would require a change in legislation to take over a role now handled by local authorities. See our news pages 6 and 7.



**Talking of INSPIRE, we have persuaded the AGI SIG to document its response to the mid-term consultation on that Directive...**



### In this issue. . .

Future Cities was the theme of a very successful AGI event in Glasgow – as reported by **Abigail Page** – and Smart Cities feature in **Mark Jackson's** article on page 10. Whether 'future' or 'smart' there will be city lights and **Faith Clark** details how Bluesky are monitoring those lights in Leicester (page 08). We also have a case study on the use of Open Source software in the water industry and **Roger Longhorn** explains what the Global Spatial Data Infrastructure Association is all about. Plus your editor will be helping to facilitate a "thinkshop" in Edinburgh later this month – cunningly scheduled for St George's Day in the land of the Saltire – as part of the EC smeSpire project supporting small businesses using environmental data. Talking of INSPIRE, we have persuaded the AGI SIG to document its response to the mid-term consultation on that Directive – seven years down and seven to go! See page 16.

Also in this issue is news about English local authorities receiving £2.6m from Defra for INSPIRE implementation; ONS recommending that the next census should go online but be compulsory for all households as at present; and Royal Mail drafting a new public sector licence for PAF, which will run from April 2015 and replace the existing temporary deal.

And finally, my visit to Ireland on St Patrick's weekend was very illuminating about Irish GI, not least the forthcoming Irish postcodes. Yes I'm writing on 1 April but after noon! There should be postcodes all over the emerald isle by 2015 – but not as we know them (see page 22).

Robin Waters, Editor

## Harrow Council tackle "Beds in Sheds"



Thermal imaging and laser scan data collected by aircraft is helping Harrow Council to tackle the growing problem of landlords renting out sheds and outbuildings as dwellings. Supplied by Bluesky, the map accurate thermal images are combined with LiDAR measurements to provide the council's staff with a better understanding of where unpermitted developments may have been erected and their potential occupation evidenced as "hot spots" in the data. The Bluesky data is being combined with additional council information, such as waste collection, parking permits and noise complaints, as part of the government funded 'Hot Harrow' project.

### Funding for local government

Defra, the Department for Communities and Local Government (DCLG) and the Local Government Association (LGA) have been working closely together over the past 18 months to ease the new burden on local authorities in England created by INSPIRE Annex III data publishing, which expects data to meet the requirements set out in the EU's INSPIRE Directive. Defra has now confirmed it will be making grant payments to eligible local authorities in England to enable

them to implement their own publishing solutions (Ed – we understand that there will be between £6k and £8k per council depending on the district, county or unitary status of the authority).

### Land Registry – will proposals maximise the re-use of data?

The Department of Business, Innovation and Skills (BIS) has closed its consultation on proposals to create a new company responsible for the 'service delivery functions' of Land Registry. The aim is to make 'the

business of land registration more delivery focused and for Land Registry to have greater flexibility to operate'. The 'Office of the Chief Land Registrar' would be retained in government to 'perform regulatory and fee-setting functions to ensure that customers' interests continue to be protected'. Ownership of the company has not been decided but could range between 100% government owned; joint government/private sector; or 100% government owned with day-to-day operations contracted out.

On its own website, the Land Registry has been consulting on proposals to seek wider powers and become sole registering authority for Local Land Charges and a provider of Local Land Charge searches. This would involve extending its powers under the Land Registration Act 2002, enabling it to provide information and register services and consultancy and advisory services relating not only to land registration but also to land and other property in order to better serve its customers, align with stakeholder priorities and contribute to economic growth.

### Council choose cloud service

Stirling-based thinkWhere has won a four-year contract with Leicestershire County Council (LCC) to deliver the company's Location Centre online GIS. The council is responsible for vital services to approximately 650,000 people. The new service is cloud-based, enabling easy access to the GIS from any browser and reducing IT dependencies. It will replace the

### POST PRESS NEWS SPECIAL

The Royal Geographic Society (RGS) has agreed to form a formal working group with the AGI to consider closer collaboration between the two organisations. This has been approved by both organisations' councils and will be made up of board members, trustees and senior staff from the AGI and RGS. A report is due to be presented to respective governing bodies in March 2015. The Society and AGI already work closely in the area of professional development, awarding the Chartered Geographer (GIS) accreditation. AGI Chair Anne Kemp says that she is 'delighted to have the support of council and members in taking these discussions further and looks forward to the opportunity to continue collaboration with RGS'.

existing map viewer, generating cost savings and efficiencies as well as widening the access and use of location-based information.

The Highways Agency has renewed its real time GPS corrections service with over 100 Trimble VRS Now licences purchased from Korec. The police will therefore have centimetre level accuracy for their GNSS receivers anywhere in the UK for the Collision Investigation Units. This means faster and more efficient measurement of accident sites and less congestion on motorways and main roads.

## BRIEFS

The first of the AGI's Geo: 'The Big 5' events, with the theme of Future Cities, took place in March and attracted over 170 delegates (read more on page 14). The event series will continue with "Open Geospatial" in Belfast on 13 May.

The Open Geospatial Consortium (OGC) has formed a Technical Committee Standards Working Group



The Highways Agency has awarded a £600k contract to Atkins and Yotta for the supply of Horizons visualised asset management software and associated implementation services. The contractors will deliver and enable the use of software to inform and improve the development of the road renewals programme. The resulting model will enable the Agency to predict where and when maintenance is likely to be needed.

There is more news of companies and organisations on our website at [www.pvpubs.com](http://www.pvpubs.com)  
To get your company featured on these pages call Sharon Robson on +44 (0)1438 352617

to explore and propose terms for a standard for Discrete Global Grid Systems (DGGs). Unlike widely used coordinate reference systems that represent the Earth as a continual lattice of points, a DGGs uses a tessellation of nested cells and is designed to ensure a repeatable representation of measurements that is better suited to today's requirements and technologies than our legacy coordinate systems that were designed for repeatable navigation and manual charting.

**Ordnance Survey GB has raised its Open Geospatial Consortium (OGC) membership from technical committee to principal level. The mapping agency will participate in OGC's Planning Committee to explore market and technology trends relevant to the consortium's mission to assure that its policies remain effective and to participate in final approval decisions for all OGC standards.**

Esri UK's annual conference, SEE, will take place in the QEL conference centre in Westminster on 11 June 2014. Visit [www.esriuk.com/conference2014/registration](http://www.esriuk.com/conference2014/registration).

**The GeoPlace annual conference and exhibition, plus the presentation of Exemplar Awards, has moved to Lancashire County Cricket Club on**



## OS Director General maps new career direction

Dr Vanessa Lawrence CB, who has led Britain's national mapping authority for almost 14 years as its director general and chief executive, has announced that, from 14 April, she will focus for the rest of the year on the growth plans of Ordnance Survey internationally as secretary general of Ordnance Survey International. Neil Ackroyd, currently deputy director general and director of operations, will become acting director general and chief executive until a permanent successor is appointed from an open recruitment process. Dr Lawrence will continue to work globally in her role as co-chair of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM). She will formally leave Ordnance Survey at the end of 2014 but she has been invited by the UK government to continue in her role with UN-GGIM after that date, for as long as the Member States wish her to be their elected co-chair.

Tuesday 29th April. For information see [www.geoplace.co.uk](http://www.geoplace.co.uk).

The Woodland Trust has deployed a corporate GIS from Cadcorp, which will help manage its woodland sites and support its role as an advocate for British woods and trees.

**CompassCom now provides a connection from its CompassLDE (Location Data Engine) software to Esri's ArcGIS GeoEvent Processor, allowing organisations to track the locations and status of their mobile resources in real-time on their ArcGIS 10.2 platform.**

The storms this winter have led to a surge in users accessing the enhanced flood maps from the Environment Agency website, which are based on

Ordnance Survey's OS OnDemand service. 20 million interactions were recorded in January, rising to nearly 30 million in February.

**Aligned Assets is supplying a shared service gazetteer management system to East Dorset District and Christchurch Borough Councils. They will use Symphony iManage to manage all address and property data in both authorities.**

comes from QinetiQ to head up the defence sales team and **Douglas Talbot** joins from the Bank of New Zealand as head of development with overall responsibility for the company's growing global development team.

**Alex Brooker** has been appointed as board level director of professional services at Snowflake Software. He joined Snowflake in 2012 with 11 years of experience within the UK defence and geospatial intelligence industry. During his time as principal consultant, Brooker has been a key member of the senior management team and has made a significant contribution to Snowflake's recent growth within the defence and aviation markets.

## PEOPLE

15Spatial Group has hired three sales and development professionals. **James Bateman** joins from Esri with previous spells at Bentley Systems and Welsh Water and will focus on the utilities market. **Simon Monk**

We're going places...  
...with our new sensors

**Optech M300, CM-LW640, CS-10000**  
Multi sensor - LiDAR, Thermal & Aerial Photo

**Microsoft UltraCam Eagle**  
Ultra-large-format aerial survey camera

### Other Products & Services

- National Tree Map™
- Solar Panel Mapping
- 3D Building Models
- Nightsky Mapping
- Stereo Web Mapping
- NDVI

[www.bluesky-world.com](http://www.bluesky-world.com)



t 01530 518 518 e sales@bluesky-world.com w www.bluesky-world.com



# mapping at night



*This night image of Leicester has been captured using new super high resolution camera sensors to capture data in greater detail than ever before. The map clearly shows the light emitted from different types of lamp reflecting the introduction of new white light LED lamps. It also shows the impact of lights other than street lights. The very bright light area on the top left is the top of a multi-story car park with the nearby John Lewis store ringed in bright blue light.*

**Mapping the night lights** With no real interest in light pollution in the past, little research has been done into the extent and impact of artificial light. Aware of the lack of data and the growing debate about lighting, aerial mapping specialist Bluesky has formed a partnership with the University of Leicester to develop remote sensing technology and trials have now been completed of the world's first integrated night mapping system.

The University worked closely with Bluesky on the specification and development of the night mapping instrument. Researchers within the University's Space Research Centre have contributed expertise in instrument design and image analysis and will continue to develop new information from captured images through expertise in the Earth Observation Science Group ([www.leos.le.ac.uk/aq](http://www.leos.le.ac.uk/aq)).

The Bluesky Night Mapper system combines a variety of remote sensing technologies to provide a highly accurate digital map that can be used as an overlay in a GIS. Using advanced spatial queries and mapping techniques, the data can be used together with existing street light overlays and digital maps as well as land, street and property details held by municipal authorities.

**A new perspective on night lights** The sprawling glow of urban lights are often seen as a sign of progress. But concerns are being raised over the impact of light pollution plus street lighting at night has become a topic for public discussion. **Faith Clark**, geospatial technology consultant, explains how Bluesky's integrated Night Mapper system can provide focused intelligence for this debate.

THE WORLD AT NIGHT IS becoming a brighter place as artificial lights spread like a web across sprawling cities. The onslaught of bright lights has usually proceeded unchallenged and has been seen as a sign of progress and prosperity. However, concerns are now being voiced about the environmental impact and, with rising energy costs, the issue of energy wastage.

France seems to be one of the first countries to take the issue seriously by recognising that light pollution can be harmful when it has an impact on bio-diversity and public health. The French government surprised the world last year by ordering all non-residential buildings across France to turn off lights after 1am.

The aim was to reduce energy wastage and cut carbon dioxide emissions. The government reckoned that the move would save the equivalent electricity used by 750,000 homes a year and cut carbon dioxide emissions by 250,000 tonnes. Although the legislation covers the illumination of public buildings and monuments, major tourist sites such as the Eiffel Tower are spared, as are hotels and street lighting. It has been recognised, however, as the first serious step to tackling the issue of light pollution.

Bluesky has employed a specially adapted camera to cope with the low light levels and temperatures associated with night time aerial surveys. Captured from a height of 3000 feet, the aerial photography is combined with LiDAR and thermal imaging datasets.

Co-capturing detailed LiDAR 3D measurements and thermal images provides additional intelligence relating to night time light levels, heat loss and height. The 3D data provides for an assessment of the height of the light source above ground and gives more intelligence on how lighting affects the 3D environment. In addition, the thermal sensor gives an indication of the heat signatures of different lights, which in turn provides information on energy usage and effect on the environment.

**The light pollution debate** The whole issue of street lighting has become a topic for public discussion, mainly because of the concerns about energy wastage and the debate about plans for switching off or dimming street lights. However, light pollution has been a longstanding concern and, while the loss of the night sky for star gazers may not really be important, the impact on bird or animal habitats may be considered more so.



**Night Mapper will provide key intelligence that will help to reduce unnecessary illumination and focus lighting infrastructure where it is needed most.**





*These images compare a shopping centre in Leicester during the day and at night. Studies have identified retail, distribution and industrial sites as being responsible for a large proportion of bright urban lighting. Bluesky's Night Mapper system uses a specially adapted camera to cope with the low light levels and temperatures associated with night time aerial surveys. The intelligence provided by the system can be used to assess light pollution at night, and its impact on bio-diversity and public health, as well as help to focus illumination where it is most needed.*

Researchers are showing that 'ecological light pollution' and the disruption of the natural patterns of light and dark is seriously affecting ecosystems. Some 30 percent of vertebrates and more than 60 percent of invertebrates are nocturnal with many other creatures most active at dawn and dusk.

As well as the obvious effects on breeding and feeding patterns, millions of migrating birds are killed in collisions with man-made structures after being drawn to artificial light. It is thought that a significant decline in the moth population in the UK is a result of nocturnal light and this is important as they play an essential role in pollination and as a food source for bats and birds. Bats will avoid lit areas and this impacts ecology and also agriculture where bats play a role in natural pest control.

Humans are affected by night time light as well. Light disrupts sleep and confuses the 24-hour biological processes that regulate a body's functions. One concern is the increase in the LEDs with a blue wavelength that has a greater impact on human brains.

**Focused intelligence** The Night Mapper system produces, for the first time, a complete picture of an entire town or city. It encompasses all types of lighting, whether municipal, domestic or commercial. The debate on light pollution has focussed around street lighting but, as can be seen from the Leicester map on the opposite page, some of the most striking light pollution is from commercial buildings, such as the very bright white and blue fringed lighting from the top of a retailer's multi-story car park. Other very bright light sources are petrol station forecourts, train and bus stations.

Elsewhere, studies have revealed that about a third of brightly lit areas relate to retail, distribution

and industrial sites. Security lighting at industrial sites, although occupying quite small areas with relatively few lamps, was actually responsible for a large proportion of bright urban lighting.

Although the night mapping has obvious uses in analysing light pollution, those responsible for street lighting and city planning are expected to gain major benefits. For example, there are 7.4 million street lights in the UK and identifying those requiring replacement could lead to substantial savings.

The data can also be used to measure illumination for energy consumption evaluations and provide additional intelligence to assess the impact of light pollution from different types of lamps and shielding. It will also be useful for supporting projects involving dimming or the switching off of selected street lights in an effort to save money and reduce carbon emissions.

Tackling energy efficiency is, of course, a key factor as energy costs rise and urban areas are also expanding with new roads and developments resulting in installation of more street lighting. Night Mapper will provide key intelligence that will help to reduce unnecessary illumination and focus lighting infrastructure where it is needed most.

By providing a seamless single view of an entire town or city the light maps could be used as an aid for municipal authorities planning environmental zones for exterior lighting control within strategic plans, providing the information necessary to place any proposals in a wider context. Conservationists and ecologists can also use the maps to assess the impact of lighting on habitats. By providing evidence on the impact of light pollution on protected species, organisations will be able to work together in a joined up approach to protect all users and residents of the night time environment.

#### About the author



*Faith Clark is an expert in GIS, mapping and the use of technology in the public and private sectors. She has a degree in GIS and, for the last nine years, has been writing about geospatial technology and helping companies promote their products and services as the GIS sector specialist for The Marketing Edge.*

# future cities



Figure 1 – Q-Cumber Smart City showing a custom-shaded choropleth: a ranking of regions within Belfast by a combined measure of deprivation.

CITIES ARE VITAL to the future global economy. One third of the UK's population lives in the country's ten largest urban areas and cities are the engine of economic growth. However, cities are struggling with changes in population and demographics and pressure

and smart phone networks enabling the data platforms to realise their full potential and enabling fast input of new data by the public.

**Crowd-sourcing and social media** Crowd-sourcing has become a major source of data assets in its own right, from Wikipedia to OpenStreetMap and Q-Cumber. Government organisations are now sponsoring the collection of crowd-sourced data. The European Environment Agency's "Eye On Earth" is a good example, combining traditional datasets with crowd-sourced data submitted directly through the data platform. Q-Cumber Smart City combines two powerful trends in city data: open city data and crowd-sourcing. This innovation increases feedback and communication between the city authorities and the citizen, providing new channels for those authorities, elected representatives and the public to communicate on the key issues confronting modern cities.

Crowd-sourcing intrinsically brings the challenge of managing spam and other abuse. We are building on the lessons learnt with Q-Cumber in Italy, where it is being used by thousands of users to report environmental problems in a number of

## Unleashing city data

CERC and Algebra are prototyping Q-Cumber Smart City, an open city data platform with crowd-sourcing, which is being funded by the Technology Strategy Board (TSB) under their Future City Solutions competition "Data Challenge". Q-Cumber Smart City uses interactive map presentations and combines public data with crowd-sourced data. Open APIs (Application Programming Interfaces) provide the potential to support a thriving ecosystem of third-party apps and services based on phones, websites, smart devices and social media, leveraging direct access to data through the APIs. **Mark Jackson** and **Giuseppe Magro** discuss the challenge of creating this open city management platform.

on key resources. Over time there will be a large market for innovative approaches to creating efficient, attractive and resilient cities. The TSB's Future Cities Programme is designed to support UK firms in developing products and services for this market, with demonstrator projects to show what can be achieved by innovative use of the tools and techniques available today. The "Data Challenge" competition is to prototype a solution for a city management platform that can connect the disparate datasets and data sources to be found within a city, using a non-proprietary, generic and open API.

It is an opportune time for the development of such a system. Historically, cities have owned rich datasets. However, the data has been "hidden" in isolated silos so the value of the data has been unavailable to the public and often also to the city authorities, particularly if the city has multi-tier governance. Increasingly cities are opening their data and empowering businesses and the public to create additional value from these assets. However, it is only very recently that cities are becoming "super-connected" with fast broadband, dense wifi

Italian cities. Technical measures can reduce abuse – for example, it is important to disallow anonymous content by requiring users to provide an email address when they register on the system. However, it is likely that some degree of manual moderation will always be necessary.

**Supporting third-party apps** Traditional city data platforms often simply offer a searchable catalogue, which provides data files for download and links to external data APIs. Q-Cumber Smart City provides rich APIs to support third-party smart phone apps, websites, smart devices or other services, allowing them to read and update data. Q-Cumber Smart City will support both external apps and embedded apps, which appear within the platform itself, in a similar way to third-party apps within Facebook.

There are unlimited possibilities for third-party apps and services. One example is a "loyalty" app enabling the public to recognise and applaud traders or others who make a difference within the city, while accruing and

“  
... it is only very recently that cities are becoming "super-connected"...”

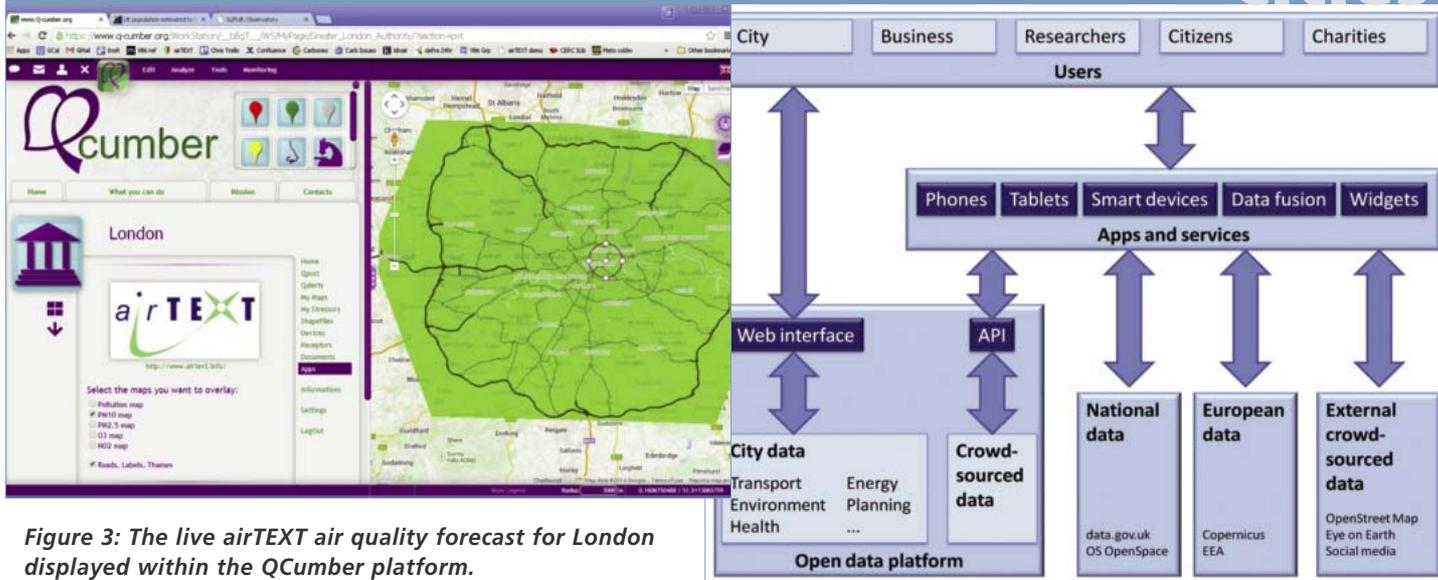


Figure 3: The live airTEXT air quality forecast for London displayed within the Qcumber platform.

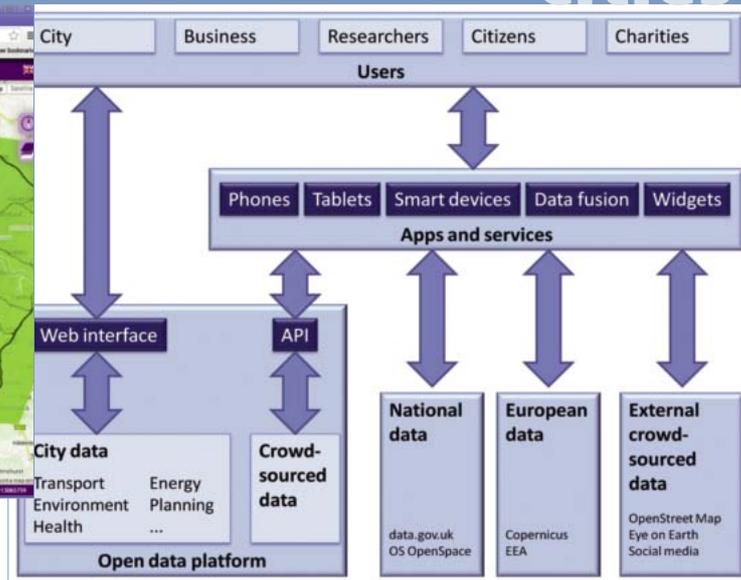


Figure 2: The Qcumber Smart City open data platform with advanced APIs to support third-party apps and services.

redeeming points that can be exchanged for local goods or services. Others include advanced health and air quality forecasts integrating live traffic information, micro-simulation of traffic emissions, crowd-sourced data and emissions measurements, and integrated tools to combine traffic, health, population and environmental data with scientific modelling to estimate health impacts through air quality and noise (see figure 2).

**Open standards** Data and APIs sometimes lack standardisation, presenting an obstacle to third-party developers seeking to exploit them to develop apps and services.

In our view, the geospatial community is in a strong position to support this movement towards open standards, since it has a rich set of well-established and proven open standards (see table below). The work of the Open Geospatial Consortium (OGC) is an excellent example of this. The OGC API standards such as WMS, WFS and CSW allow data federation, catalogue queries, querying and updating of data, and also dynamic combination of maps from different sources in 'mash-up' displays. As well as the OGC standards, there are more lightweight APIs, such as GeoJSON, which are often preferred for use in phone app development and smart devices.

There is a need for harmonisation of the

standardisation efforts from different communities. For example, the TSB project OpenIoT, an effort to improve interoperability in the Internet of Things, has developed Hypercat, a standard for metadata about APIs (services). It is to be hoped that the two communities can collaborate to prevent the development of multiple diverging standards covering the same topic area.

There are an increasing number of exciting real-time services freely available through open APIs, from free live rain radar satellite imagery from the Met Office Datapoint service through WMTS, to hygiene ratings for restaurants and other food businesses from the Food Standards Agency.

**Prototype platforms for test-bed cities** We are liaising with local authorities from the five cities who have volunteered to participate in the TSB Data Challenge: Belfast, Birmingham, Cambridge, Ipswich and London. These test-bed cities are well aware of the potential benefits and are primed to participate in developing, deploying and testing new solutions. Prototype data platforms have been developed for each of the five cities. Over one hundred datasets have been included from thirty data providers, representing international, national and city-specific data from governmental, academic, business and the public

API Standard	Description	Sponsor
<b>GeoJSON</b>	A simple, widely-used standard format for APIs with geographical data.	geojson.org
<b>WMS and WMTS</b>	Web Map Service and Web Map Tile Service. Widely-used standards for map imagery.	OGC
<b>CSW</b>	Catalogue Service for the Web is a widely-used standard for metadata for data and services. The UK has adopted CSW for data.gov.uk.	OGC
<b>Hypercat</b>	A standard for metadata about APIs, which was initially developed by the TSB project OpenIoT.	openiot.org



Figure 4 – Prototype apps showing live air quality forecasts and live satellite rain radar images.



(crowd-sourced data). We have created a custom data hierarchy for each city.

We have also developed prototype apps. For example, we have embedded the airTEXT forecasts within QCumber Smart City. airTEXT ([www.airtext.info](http://www.airtext.info)) is a free air pollution alert service for London, delivered via SMS, email, voicemail and smartphone apps, operated by CERC on behalf of the GLA and the London boroughs. The WMS API has been used to embed the live airTEXT forecasts in QCumber. This required some technical development since Google Maps does not have native support for WMS. See figure 3.

We have also developed prototype smart phone and tablet apps that link to the QCumber platform, showing the potential for live air quality forecasts and live satellite rain radar imagery. See figure 4.

The prototypes have been demonstrated to local authority representatives from the five cities through workshops and site visits. Their feedback and support has been vital in shaping the project. The city representatives have welcomed the potential of the QCumber Smart City platform. For example, **Paul Clift**, a

principal environmental health officer at Islington and chair of the airTEXT consortium, said “there is huge potential to use crowd-sourced information and engage with the public in this way to ensure people become involved and take greater ownership of environmental matters.”

**The future of QCumber Smart City** We are developing proposals to enhance QCumber Smart City, install it publicly for a test-bed city, and create apps and services that will demonstrate the possibilities of the platform and foster the app ecosystem. These solutions will be shaped with the partner city, analysing decisions to be made by the authorities that can be supported with innovative data use as well as different user needs (managers, assessors, citizens, app developers).

For further information, please contact Mark Jackson at [mark.jackson@cerc.co.uk](mailto:mark.jackson@cerc.co.uk).

• This article is based on work commissioned by the Technology Strategy Board (TSB). The views expressed are those of the authors and not necessarily those of the TSB.



#### About the authors

Mark Jackson is a Principal Consultant at CERC specialising in software development on projects such as the airTEXT forecasts and the CARBONES geoportal.



Giuseppe Magro is an environmental consultant at Algebra s.r.l. specialising in impact and risk assessment and dynamic computational GIS. Giuseppe developed the QCumber platform: [www.q-cumber.org](http://www.q-cumber.org).

### Cambridge Environmental Research Consultants (CERC)

Established in 1985 with the aim of making use of new developments in environmental research from Cambridge University and elsewhere for practical purposes, CERC is an SME (small and medium enterprise) with over 20 high level technical consultants. The company has two technical directors at the forefront of their fields: Professor Julian Hunt, FRS, chairman, and Dr. David Carruthers, managing and technical director. The company is located opposite King's College in the centre of Cambridge.

### Algebra s.r.l.

Founded in 2008 with the mission to devise new methodologies and advanced software tools for Impact and Risk Assessment, Algebra works in cooperation with several universities and institutions. The company developed Dynamic Computational GIS (DCGIS), an integrated GIS-based language and methodology for analysing and evaluating impacts, and environmental and health risks in multi-scale contexts, compliant with specific EPA, ASTM, WHO, EEA guidelines. In 2012, Algebra launched QCumber ([www.Q-Cumber.org](http://www.Q-Cumber.org)), the world wide Geo-Social Platform for environmental participation, integrating institutional and crowd-sourced data on Google Maps. The system is being adopted by several cities to provide web services to citizens, planners and environmental consultants. In 2012, QCumber was selected as one of the most significant projects at the “StartUp Games” during the Olympic Games of London 2012. Algebra's offices are in Desenzano del Garda, Italy.



**Adena Schutzberg is**  
Principal of **ABS**  
Consulting Group Inc.  
and Executive Editor  
of **Directions Magazine**,  
[www.directionsmag.com](http://www.directionsmag.com)

I READ ABOUT RESEARCH recently that suggests using map locations as part of a computer security protocol in place of traditional passwords. The idea is that memorable places or patterns on maps could stand in for the strings of numbers and letters that we currently use. Cyber security researcher **Ziyad S. Al-Salloum** hopes to make the passwords easier to remember and harder for online thieves to crack. The new codes are called "GeoGraphical" passwords.

An actual implementation might present a new website visitor with an online map where the account creation "Input password" field might have been. The to-be account holder would have to create a map-based visualisation they could reproduce on a return visit. A runner might draw a rectangle around the high school track. Then, each time she returns to the site, she'd need to create the same drawing, within a tolerance, for re-entry in the account.

**The variables** A study suggests that these maps might be easier to remember and use than the current solutions because humans are better at

figure that's drawn. Another benefit: the complexity of these passwords might mean they need to be changed far less often.

**Increasing spatial literacy** There are a number of reasons the GeoGraphical password approach is appealing. First off, everyone will have a different set of geographies to use as the basis of their new passwords. Individuals could tap into places they've lived at a variety of scales. They might use their own or, perhaps even better, the home of a childhood friend. Or they might identify and enclose the boundary of the first county they visited outside of their own. Other options might include all the places an individual wants to visit. Baseball aficionados could use ballparks while opera fans might include opera houses. It's fun to just think about creating such passwords, isn't it?

Second, this is a great way to increase spatial literacy. The requirement to look at a map, even a map of the same place, regularly turns on the spatial thinking part of the brain. Moreover, a clever implementation of these GeoGraphical passwords

## GeoGraphical Passwords

A study on cyber security suggests that visual map-based passwords would make life harder for thieves but easier for the rest of us who struggle to remember jumbles of letters and numbers. But will users just get frustrated? **Adena Schutzberg** considers the challenges and potential benefits for our industry.

remembering places than meaningless strings. From a personal standpoint, the tricky part might be remembering which place relates to which website. It'd be easy for me to draw a circle around my dorm at my college to gain access to my alumni e-mail account, but how would I associate a 1980 trip to Europe with my Facebook page?

The actual navigation to the place of interest and drawing the graphics around it provides a number of variables that create long alphanumeric strings in the background. Among the variables are the location, zoom level and the size, shape and angle of the

could also help teach geography. An optional "gamification" enhancement might offer a geographic tidbit at each visit. Visitors might be asked, after inputting the password, to locate Tanzania or explore patterns of homelessness in a European city. These short learning experiences might enhance the return on investment on a visit to a social media website.

**The bottom line** The big challenge to this kind of solution, of course, is how well it's implemented. Will it be easy for applications or websites to include in their code base? Will users be able to navigate a password that involves a map creation and drawing with ease? Will there be a reasonable "margin of error" so that users are not frustrated? Will users consider it "fun" at the outset and for the long term? And, of course, there is the bottom line: will using such a system help prevent breaches that cost online organisations significant revenue?

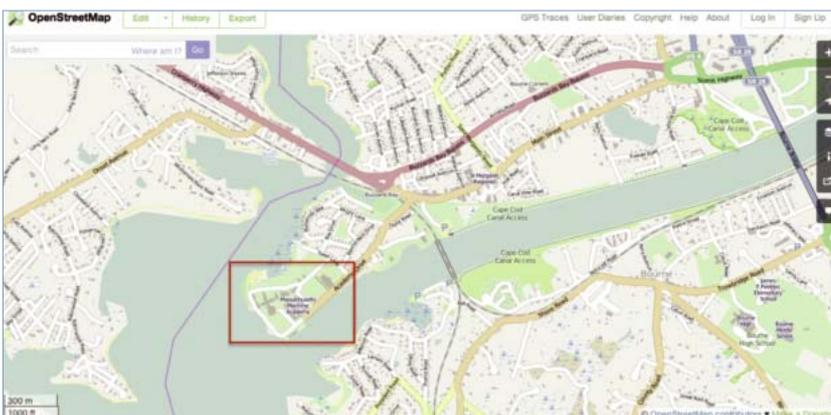
Maps are tools used to answer questions and solve many problems. In the future they might address the challenges of computer users' weak and easily forgotten passwords.

**Source:**

*Int. J. Signal and Imaging Systems Engineering*, Vol. 1, No. 1/4, 2013.

**Below: Author's mock-up of a GeoGraphical Password Map.**

© OpenStreetMap contributors.



# GEO: the big five



**Above: The first of AGI's GEO: The Big Five events took place in the beautiful Glasgow City Chambers.**

*Image: courtesy of AGI*

COUNCILLOR **Gordon Matheson**, Leader of Glasgow City Council, opened the event in the city that hosts the Future Cities demonstrator project for the UK. Councillor Matheson complemented the AGI on looking good at 25 and reflected on the changes that have been seen in technology and our industry over that period. He outlined the opportunities for geographic information to enable us to see the world differently and the key role that GI can play in supporting policy and changing the lives of citizens.

made the case for GI, specifically, to be at the core of the Future Cities movement.

**Best practice and future education** **Bruce Gittings** and **Cameron Easton** chaired the other parallel session, which provided the opportunity for industry professionals to share their best practice examples of geospatial applications. These included Forestry Commission Scotland managing a full scale ground woodland survey over six years and Angus Council on the collaborative procurement of Open Source technology by local authorities for efficiency savings. Also notable was the use of GI for delivery of the Commonwealth Games in Glasgow later this year. Other presentations were made by ERM, ESRI UK and Scottish Water. There was a real emphasis on changing ways of working and continuing to deliver (for customers or the citizen), despite constraints on resources.

Two hands-on workshop sessions focused on QGIS and then Ordnance Survey Open Data. Both were fully booked, a sign that "Open" continues to interest the industry and that training in these areas is very much in demand.

Higher geography pupils from Douglas Academy were invited to visit the event in the afternoon,

## Future Cities

The first of the AGI's 2014 event series opened in the stunning Glasgow City Chambers on 18 March. The turn-out of over 170 was a fantastic start to the AGI's 25th anniversary celebrations and evidence of the strong GI community coming together around a key topic – Future Cities. **Abigail Page** reports.

**Opportunities** **Andrew Collinge** of the Greater London Authority provided the morning plenary session, setting the Future Cities theme for the day. He also referred to the work of the Future Cities Catapult in London and specifically the role of geographic information.

Parallel streams were then presented by speakers from Scotland and the rest of the UK. **Graham Colclough** of the Future Cities Protocol chaired the Future Cities stream, which demonstrated the huge opportunities for geospatial technology and data in this arena. The stream began with specific examples of work from the Glasgow demonstrator, including **Steven Revill** who provided an overview of the project themes and details of their work on Linked Open Asset data.

**Diamud Campbell** of the British Geological Survey spoke about the importance of Sub-surface data and the work of the ASK (Accessing Subsurface Knowledge) Network and, specifically, the Glasgow Specification for Data Capture (GSPEC). **George Kirk**, Scottish Power Energy Networks, and **Kenny Monteath**, AECOM, took a look at integrated energy networks.

In the afternoon this topic continued with a look at the wider work taking place in other cities across the UK and internationally by **Richard Bellingham**, Institute of Future Cities, and **Teresa Gonzalez Rico**, Future Cities Catapult.

The stream was pulled together through an engaging debate, which examined key issues and

spending time with a number of the exhibitors and speakers. They heard about the shared concern on the future of geography education in Scotland by the Royal Scottish Geographical Society and AGI Scotland.

**Communication is key** RSGS President, Professor **Iain Stewart**, closed the formal proceedings with an inspiring presentation about the communication of Future Cities. This picked up from the opening address by Councillor Matheson, who had pointed out that in the Smart City technology may be a key enabler, but that success is ultimately reliant on the people. Professor Stewart set out the way in which we can communicate to a non-technical audience, through relating our work to their key areas of interest.

The level of debate was particularly impressive and a great start to exploring five key industry issues. The AGI Scotland committee would like to thank our sponsors – Glasgow City Council, ESRI UK, Kemeling Consulting, Landmark UK, Ordnance Survey and thinkWhere – for making the day possible. The next Geo:The Big 5 event (<http://geobigfive.co.uk/>) is in Belfast on 13 May with a focus on Open Geospatial.

### About the author

*Abigail Page is the AGI Council Representative for Scotland and is leading the AGI Scotland Events Programme in 2014. In her day job, Abigail is a Business Consultant for CGI.*



**... in the Smart City technology may be a key enabler, but that success is ultimately reliant on the people.**



# 5

# Geo

THE BIG FIVE

agi

## Tackling the big issues for Geospatial in 2014

To mark its 25th anniversary year the AGI will be tackling the Big 5 issues of the moment in Geospatial across a programme of 6 national events:

1	Future Cities	Glasgow City Chambers, Glasgow Event passed - Hosted by AGI Scotland
2	Open Geospatial	Wellington Park Hotel, Belfast 13 May, Hosted by AGI Northern Ireland
3	BIM & Asset Management	South West, June 5 June, Armada Conference Centre, Bristol
4	Big Data	London, September details to follow
5	Policy	SWALEC Stadium, Cardiff 9 October, Hosted by AGI Cymru
coming soon	GeoCom - The Big 5 : The Changing Face of Geo - Nov 11-13, Chesford Grange Warwick	

## 2

### Open Geospatial

### Belfast

### 13 May

Geo: The Big 5 series will open with an event exploring the challenges of Future Cities and opportunities that Geospatial technologies can offer to this new innovation area.

The discussion will be led by an exciting line up of speakers including representatives from the Glasgow Future Cities Team and TV's face of geoscience, Prof Iain Stewart.

Event booking, sponsorship opportunities & call for papers now open:  
[www.geobig5.co.uk](http://www.geobig5.co.uk)

**agi**  
Association for  
Geographic Information

The Association for Geographic Information

1 Kensington Gore, London SW7 2AR

Tel: +44 (0) 20 7591 3190 •

E: [info@agi.org](mailto:info@agi.org) .uk

# INSPIRE public consultation



THE AGI'S INSPIRE Special Interest Group compiled this response as a "Spatial Data Interest Community" registered with the Commission since before the directive came into force in 2007. Ongoing lack of clarity about responsibilities under the directive and difficulties in sharing data were identified as two of the challenges; overall awareness raising and the legal clout to make things happen were two of the benefits; and identifying realistic case studies and clarifying licensing issues were amongst the changes needed to encourage the data providers and potential users of INSPIRE datasets.

**Still on course?** In December 2013, the European Commission launched a public consultation on INSPIRE implementation to assess *'whether the actions already underway to establish an Infrastructure for Spatial Information in the European Community according to the INSPIRE directive of 2007 are still on course to meet*

incentive for an organisation to admit that it was an EC Directive that forced its hand!

## Q.1) What are the three biggest challenges encountered by AGI on INSPIRE?

1. Lack of leadership and clear direction on what's required, including how to interpret legislation. Lack of buy-in on how benefits can accrue.
2. Keeping INSPIRE regulation in step with innovation and technical developments. Technology has moved on since originally set up. Raising awareness of any changes.
3. Promoting a culture of data sharing amongst users: changing existing attitudes to data sharing and making those involved understand the

## AGI's response to INSPIRE consultation

The Association for Geographic Information (AGI) spells out the challenges, benefits and potentially useful changes in the implementation of the INSPIRE<sup>1</sup> Directive in response to a questionnaire from the European Commission.

*the objectives pursued*'. The results will contribute to the INSPIRE interim-policy evaluation, which must be carried out seven years after it comes into force. The outcome of the policy evaluation will be reported to the European Parliament and Council in 2014 and may lead to remedial policy action to adapt current approaches, in the light of a changing environment, to align better with the realisation of the original objectives.

The questionnaire attracted over 700 replies in many languages. As well as rating various statements about the quality and impact of INSPIRE implementation, there were three open-ended questions about challenges, benefits and the changes thought necessary to achieve INSPIRE's objectives. The basic responses are available at [http://ec.europa.eu/environment/consultations/inspire\\_en.htm](http://ec.europa.eu/environment/consultations/inspire_en.htm) but only cover the multiple choice questions and not the more interesting free text entries that are dealt with below.

It should be noted that the separation of the influence of INSPIRE from other initiatives (national or international) on the general availability, accessibility and use of spatial data is very difficult. This is inevitable and makes it almost impossible to measure the success or otherwise of such initiatives. Metadata on data.gov.uk and INSPIRE datasets are not usually labelled as such. Why should they be? Only where an organisation has decided to brand a product or service as INSPIRE (such as the Land Registry Index Polygons), or where there has been a noticeable change in an organisation's stance on the sharing of spatial datasets, is the Directive's influence visible. But, given that INSPIRE is mandating outcomes that in most cases are generally recognised as desirable, there is no

benefits that can be derived from participating in data sharing projects such as INSPIRE.

We did not think that any of these challenges are unique to INSPIRE or even to European Directives in general. Public sector initiatives are all subject to cuts in funding and to tensions between principles of "openness" and "transparency" on the one hand, and "cost savings" and "confidentiality concerns" on the other. We have seen how communications intercepts and the sharing of medical data can embarrass government agencies with the best of intentions. Perhaps, on reflection, we should also have included ongoing privatisation of some agencies as a challenge. Royal Mail and the Land Registry come immediately to mind. Monopolies on datasets do not bode well for general purpose sharing across the public sector.

## Q.2) What are the three biggest benefits of INSPIRE to AGI?

1. Raising awareness of need for inter-operability.
2. Providing the legal driver to build more robust national SDIs. Resources are now allocated to things that they wouldn't otherwise have reached.
3. It's early days, but so far implementation of the Metadata Implementing Rules has shown benefits. In the future, it will become harder to distinguish INSPIRE benefits from other benefits that would have happened anyway.

“  
... there is no incentive for an organisation to admit that it was an EC Directive that forced its hand!  
”

There is no doubt that INSPIRE has initiated an unprecedented review of spatial data assets in the public sector and has bolstered efforts to make more efficient use of data and to share datasets that have previously been kept in "silos". None of this is unique to INSPIRE or spatial data – but having a legal "stick" does help to concentrate minds!

### Q.3) What three changes does AGI consider necessary to achieve INSPIRE objectives?

1. Clarification and further guidance, and keeping the legislation up-to-date with technology.
2. Clarification on licensing and charging, enabling better access.
3. The European Commission should seek out and publish more use cases for INSPIRE - this should get easier as Annex III<sup>2</sup> is more widely implemented.

Laying down very specific data formats and exchange mechanisms can be counter-productive when technology is changing so fast. INSPIRE came very soon after Google Earth and other global mapping providers completely changed the perception of spatial data and its capabilities for everyone. Trying to keep up with very innovative and well funded initiatives is difficult, if not impossible, but they are not necessarily benign and nor do they have the same goals. Everyone involved with INSPIRE has admitted that there have been so few 'use cases' and part of that problem is again that separating an INSPIRE use case from a general spatial data use case is actually impossible.

Much of the Directive's results so far have involved large data providers – e.g. national mapping and environment agencies – these organisations all have (or should have!) very well established use cases, which the Directive hardly touches. The Annex III themes should present much more opportunity for innovative products and services at all levels – from cross border international cooperation to local services in individual towns and cities. INSPIRE is only mandatory for public sector information and there will therefore be issues arising from ongoing privatisation, outsourcing and open source initiatives. Public sector agencies providing "official" or "authoritative" datasets will need to justify their monopolies in the face of new data sources and the growing pressure for more "open" and less expensive solutions with fewer restrictions on re-use.

**A hard sell** Overall, the response recognises that AGI is a very broad church and that INSPIRE affects different members in different ways. The announcement of extra government funding for local authorities came after the response had been sent off – we don't believe that would have altered our response significantly. The overriding issue with all such initiatives – whether

legislated or merely "encouraged" – is that the costs and benefits do not necessarily fall in the same organisation or department. The greater good is very hard to "sell" in an age of austerity and when apparently "free" services are available online.

*The AGI's response was compiled by members of the INSPIRE SIG committee, especially Gesche Schmid (Chair), Kristin Warry (social media), Dan Haigh (Secretary), Prof Ian Masser, Clare Hadley, Robin Waters and Rob Walker. They were all contributing as individuals and not on behalf of any organisations for which they work.*

### References:

- 1) INSPIRE is a European Directive for enabling access and sharing of geospatial information related to the Environment. The data is harmonised across Europe based on a technical standards framework for publication and data structures.
- 2) Annex I and II datasets are typically provided by central governments and include transport networks, hydrography, land registers and addresses; Annex III datasets cover more specific themes such as protected sites, demography, pollution sources, etc.



**None of this is unique to INSPIRE or spatial data – but having a legal "stick" does help to concentrate minds!**



Back
Measure

## Measure App for TruPulse Photo and Measure Direct to any Smart Phone

**Angle  
Height  
Distance  
Missing Line**

**Positioning Resources Ltd**  
 64 Commerce Street, Aberdeen AB11 5FP  
 Tel : 01224 581502      E-Mail : [info@posres.co.uk](mailto:info@posres.co.uk)  
 Web : [www.posres.co.uk](http://www.posres.co.uk)

# GSDI association



Above: The GSDI Council members enjoying the sunshine at the GSDI 14 World Conference in Addis Ababa, Ethiopia, November 2013.

- To foster international communication and collaborative efforts for advancing SDI innovations and concepts via our global and regional monthly newsletters, website, workshops and conferences.
- To support interdisciplinary research and education that advances SDI concepts, theories and methods via publications and the world conference series.
- To promote the ethical use of, and access to, geographic information held by government in support of open data initiatives globally.

### Outreach, networking and capacity building

Our main outreach, networking and capacity building activities include the GSDI World Conferences, the monthly global and regional newsletters, support to SDI initiatives in developing nations via the GSDI Small Grants Programme and training opportunities.

## Promoting SDI implementation at a global level

The Global Spatial Data Infrastructure Association promotes SDI research and implementation best practice across the globe at national, regional and global levels, emphasising international standards and principles and providing professional networking opportunities. **Roger Longhorn** and Dr **David Coleman** discuss the Association's mission and current activities.

THE WORK OF THE GSDI Association is accomplished via four main Committees, whose leaders and members are individuals (volunteers) from GSDI member organisations and IGS individual members. These are:

- Legal and Socioeconomic Committee
- Societal Impacts Committee
- Outreach and Membership Committee
- Technical Committee

Committees are supported by the GSDI Executive Committee, comprising the President, President-elect and past President. In 2014, the new post of Communications and Operations Manager was created, to assist the Executive Director in conducting the affairs of the Association.

**GSDI: mission and activities** GSDI and its individual membership arm, the International Geospatial Society (IGS), exist to promote international cooperation and collaboration in support of local, national and international Spatial Data Infrastructure (SDI) developments that will assist members to better address social, economic and environmental issues of pressing importance in their nations. The primary activities of the GSDI Association are:

- To support implementation and expansion of harmonised local, national and regional SDIs that are globally interoperable, through capacity building and knowledge gathering and sharing (via the GI Knowledge Network).

The GSDI World Conferences are typically held in partnership with another national, regional or international GI-/SDI-related conference, in different parts of the world, approximately every 18 months. The conference series started in 1996 in Bonn, Germany, and has had a continuously successful track record ever since (see [www.gsdi.org/gsdiConferences](http://www.gsdi.org/gsdiConferences)), bringing together thousands of government staff, academics, researchers, consultants, geomatics industry vendors and SDI implementation practitioners from across the world.

The most recent conference was the Global Geospatial 2013 Conference, incorporating GSDI 14 World Conference and AfricaGIS 2013, held in Addis Ababa, Ethiopia, at the UN Economic Commission for Africa (UN ECA), a valued GSDI member, from 3 to 8 November 2013 (see [www.gsdi.org/gsdi14/](http://www.gsdi.org/gsdi14/)). The conference, attended by more than 550 participants, featured seven plenary sessions and more than 190 presentations in five parallel technical sessions. Papers were published in extended form in both peer-reviewed and non-peer-reviewed publications and an electronic Proceedings are available from the website. The new GEO AfriGEOSS initiative was officially launched at the conference and twelve workshops were offered over the course of the conference.

**Outreach via Newsletters and E-mail** GSDI have published the GSDI & IGS Global Newsletter monthly since 2011. From May 2012 to the end of 2013, 16 issues were published and distributed to the full GSDI Association mailing list of approximately 4500 addressees.

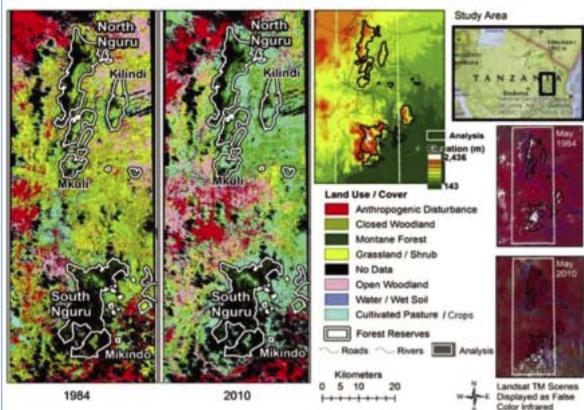
Three SDI Regional Newsletters are published



**... promote the ethical use of, and access to, geographic information held by government in support of open data initiatives globally.**



Land Use/Cover Maps and Regional Landscape (Eastern Arc Mountains, Tanzania).



Above: Land use and land cover map developed with support from the Small Grants project 'Tanzania – Modelling Fragmentation in Vulnerable Ecosystems Using Remote Sensing in Morogoro Region'.



Above: GSDI Societal Impacts committee vice-Chair, Jeremy Shen, with students at the ICLPST training session in Taipei in 2012.

monthly – for Africa (since 2002), Asia-Pacific (since 2003), and Latin America & Caribbean (since 2004) regions (see [www.gsdi.org/newsletters](http://www.gsdi.org/newsletters)). The Asia-Pacific Newsletter is published in both English and Chinese, while the Latin America & Caribbean Newsletter is published in English, Spanish and Portuguese. Each issue of each regional newsletter is typically 20-25 pages in length. Several hundred regional newsletters have been published in total, since 2002, and all are available for free download at <http://www.gsdi.org/newsletters>.

There are also active e-mail discussion lists for all five global regions, including Europe and North America, which are monitored by members of the relevant GSDI Committees, spanning a wide range of SDI-related topics and issues. The message archive can be seen by subscribing to the lists (for free, no membership required) at <http://www.gsdi.org/newslistarchive>.

**Outreach via Capacity Building** Since its launch in 2003, the GSDI Small Grants Programme has supported more than 100 projects across the globe. Historically, the programme has been sponsored through a partnership between the GSDI Association and the GISCorps of URISA, with financial support from leading government agencies. Three types of

awards are available: a cash award of up to US\$ 2500 per project; SDI/GIS consulting services up to the value of US\$ 2500; or a combination of cash award and SDI/GIS consulting services. The consulting services are offered through the GISCorps.

From the 2011-2012 Call for Proposals, 17 projects were supported, beginning in 2012 and concluding in 2013. These ranged from a multilingual place name database in China to establishing a geoportal in Ethiopia and from introducing cadastral mapping to the SDI in Tajikistan to modelling the fragmentation of ecosystems in Tanzania.

The full range of projects supported can be seen at <http://www.gsdi.org/sic1> with final reports submitted by the beneficiaries.

The Small Grants Programme is continuing throughout 2014 with financial support provided by GeoConnections, a national collaborative initiative led by Natural Resources Canada. GeoConnections supports the integration and use of the Canadian Geospatial Data Infrastructure (CGDI), an online resource that improves the sharing, access and use of open geospatial information. We also wish to acknowledge the very valuable past support of the US Federal Geographic Data Committee and USGS, as well as continued professional services support from URISA's GISCorps.

## Introducing the GSDI Association

The Global Spatial Data Infrastructure (GSDI) Association has 40 institutional members from national and regional GI/SDI associations, government agencies, academia and private industry, from 20 countries, including four regional organisations and the UN Economic Commission for Africa (UNECA). The individual membership arm of GSDI – the International Geospatial Society (IGS, [www.igeoss.org](http://www.igeoss.org)) – has 340 individual members from 55 countries. GSDI has representation on the UN GI Working Group (UNGIWG) and in the United Nations Initiative on Global Geospatial Information Management (UN-GGIM). The Association also promotes the open data principles of GEOSS and is involved in SDI capacity building activities in many developing nations via its Small Grants Programme, which has funded over 100 SDI-related capacity building actions in the past ten years.

GSDI are also members of the Joint Board of Geospatial Information Societies (JBGIS) and have participatory MoUs with the International Cartographic Association (ICA), the International Federation of Surveyors (FIG) and the International Society for Photogrammetry and Remote Sensing (ISPRS). Most recently, the UN's Economic and Social Council (ECOSOC), who launched the UN-GGIM initiative, Committee on Non-Governmental Organisations has recommended Special Consultative status for the Association within ECOSOC.

The list of current board members, officers, committee chairs and vice-chairs can be found on the GSDI website at [www.gsdi.org/associnfo/](http://www.gsdi.org/associnfo/) along with links to all current members. The members of IGS can be seen at [www.igeoss.org/members/](http://www.igeoss.org/members/).

# GSDI association

**Global Spatial Data Infrastructure Association:  
Advancing a location enabled world**



*Left: GSDI IGS  
Member  
Demographics  
November  
2013.*

The purpose of the GSDI Association: to encourage international cooperation that stimulates the implementation and development of national, regional and local spatial data infrastructures.

The mission of the GSDI Association: to advance geo-information best practices, knowledge sharing and capacity building for the improved sharing and application of geographic information.

The vision of the GSDI Association: A world where everyone can readily discover, access and apply geographic information to improve their daily lives.

**On-site GIS Training** Through GSDI Societal Impacts Committee vice-Chair, **Jeremy Shen**, the Association is able to provide a free training opportunity for three candidates from Latin America and/or Africa to attend the International Center for Land Policy Studies and Training's (ICLPST) Geographical Information Systems and Land Management training seminar each year. The training comprises an all expenses paid two week trip to Taipei to attend the seminar, with preference shown to GSDI and IGS members, although the competition for places is open to anyone fitting the advertised attendance requirements from Africa or Latin America.

**Webinars and Videos for Training Support** Instructive webinars covering many aspects of SDI implementation, both technical and non-technical, of value to those involved in implementing SDIs globally, are listed on the GSDI website at [www.gsdi.org/webinars/](http://www.gsdi.org/webinars/). Additional capacity building material, including instructive videos, training opportunities and the GSDI SDI Cookbook are available from [www.gsdi.org/sic3/](http://www.gsdi.org/sic3/) and [www.gsdi.org/SDIvideos/](http://www.gsdi.org/SDIvideos/). As part of the focus in the next GSDI Strategic Plan (2015-2020) on "Capacity Building", these resources will be expanded and made more visible.

**SDI Implementation Support** Capacity building publications are also linked to on the GSDI website at [www.gsdi.org/publications/](http://www.gsdi.org/publications/), from which page users can reach the GSDI SDI Cookbook wiki, open access SDI-related books, all past GSDI conference proceedings (which are all open source), and all current and past GSDI and SDI Regional Newsletters, plus those of related organisations.

Additional capacity building is provided via access to reports, studies and professional papers submitted to the

spatial documents depot of the Geographic Information Knowledge Network ([www.giknet.org](http://www.giknet.org)), face-to-face geomatics training opportunities, webinars and videos offered by GSDI members and associated partners.

Individuals and organisations, including government agencies, can submit their profiles to the GIKnet Community Register, which also holds the profiles of all IGS members. At the end of 2013, there were more than 590 profiles recorded in the Community Registry from 96 countries.

Documents can be submitted to the GIKnet Spatial Documents Depot, relating specifically to SDI implementation issues. These are searchable by keyword or category classification, and all are open access documents, i.e. they can be accessed and used freely subject only to attribution in some cases. Valuable papers are also available in the online proceedings of all 13 GSDI World Conferences held since the first conference, in 1996, available at [www.gsdi.org/gsdiConferences/](http://www.gsdi.org/gsdiConferences/).

Practical experiences for state / provincial / regional (sub-national), national and transnational SDI implementations are also recorded in GIKnet, although this is still very much a 'work in progress', with new data collection methods being investigated.

**SDI promotional and liaison activities** Various GSDI members, board members and/or officers participate in a wide range of geo-related conferences and meetings across the globe, such as:

- 1st Eye on Earth International Summit
- UNSDI/UNGIWG and UN GGIM meetings (as official observer)
- National, regional and international conferences held by our industry members (including Esri, Intergraph & OGC).
- International conferences of the International Cartographic Association (ICA), International Federation of Surveyors (FIG) and International Society for Photogrammetry and Remote Sensing (ISPRS), with whom we have memorandums of understanding.
- Regional conferences of members EUROGI, EuroGeographics, PAIGH and CAF (Latin American Development Bank's GeoSUR initiative).

**International Geospatial Society** The International Geospatial Society (IGS) is the individual membership arm of the GSDI Association, whose members have related professional or specialist interests. The Society enhances communications globally among individuals that are actively involved in promoting, developing or advancing spatial data infrastructure and related concepts ([www.igeoss.org](http://www.igeoss.org)).

In 2013, **Sives Govender** (executive director, EIS-Africa) was elected President and **Dev Raj Paudyal** (Lecturer, University of Southern Queensland, Australia) was elected President-elect. They are supported by the GSDI Outreach & Membership Committee.

In June 2013, IGS launched a member survey seeking input from all members on a range of topics and issues to be used to help focus the new strategy and proposed activities in the future work plan. Based on the

“  
... enhances  
communications  
globally among  
individuals that  
are actively  
involved in  
promoting,  
developing or  
advancing  
spatial data  
infrastructure...  
”

results of that survey, with a 45% response rate, the current strategic plan can be found on the IGS website at [memberservices.gsd.org/files/?artifact\\_id=1499](http://memberservices.gsd.org/files/?artifact_id=1499).

The IGS team are also actively participating in the project to redesign the current GSDI and IGS websites to better serve the membership and promote the Association and Society.

**Support to related initiatives** Through its many different educational activities, the GSDI Association and IGS provide support to initiatives such as GEO/GEOSS, Eye on Earth and ISCGM by:

- Helping to prepare young professionals to participate in national and global geospatial initiatives that are underpinned by SDI developments.
- Providing a communications and collaboration platform for government and industry professionals working directly in SDI implementation.
- Offering global networking and learning opportunities between students, young professionals and SDI experts in tackling geospatial harmonisation and interoperability issues that are at the core of SDI implementation globally.

**Conclusion** The GSDI Association has come a long way since the first GSDI Global Conference was held in 1996. Our 14 world conferences have spanned the globe in the

intervening 18 years, with more to come, bringing together many thousands of geo and SDI researchers, implementers, practitioners and other stakeholders, from all sectors of society, to meet, to learn and to share experiences and good practice. If you are interested in learning more about GSDI and IGS, its work programme and activities, please visit the website at [gsdi.org](http://gsdi.org). You can also contact the President, Prof. David Coleman, via his details on the website. We look forward to hearing from you!

**About the authors**

*Roger Longhorn, GSDI Communications and Operations Manager, is an independent consultant in information policy and strategy, former editor of GEO:connexion International magazine and SDI Magazine, and consultant to the European Commission on geo and SDI-related projects, including INSPIRE implementation. Roger has consulted on national SDI implementation in Ireland, the UK, Spain (Catalonia), Turkey and Egypt.*

*GSDI President Dr. David Coleman, PEng., FCAE, is Dean of Engineering and a Professor of Geomatics Engineering at the University of New Brunswick, Canada. David is a Fellow of the Canadian Academy of Engineering, a member of two Boards of Directors, three federal government advisory boards, and has consulted on projects in Canada, Australia, the UK and South America.*



**Above: The authors, Roger Longhorn (top) and Dr David Coleman.**



Leica Zeno GG03 GNSS  
Engineered for efficiency

The Leica Zeno GG03 is an upgradable GNSS SmartAntenna for organisations that require a compact and lightweight device for accurate and reliable sub metre to 1cm positioning. The GG03 connects to all Zeno handheld and tablet devices including the new Leica Zeno 5.

- Leica Zeno 5 & the GG03 SmartAntenna combined provides increased efficiencies to your daily workflow
- Accurate, rich & authoritative data is captured quickly on one ergonomic pole even under tree & building shadows
- The GG03 dual frequency antenna delivers the best possible performance in demanding environments

For more information on how our Zeno range can make your job more efficient email [uk.assetsolutions@leica-geosystems.com](mailto:uk.assetsolutions@leica-geosystems.com) or call 01908 513 451.



**Leica Geosystems Ltd**  
Hexagon House  
Michigan Drive, Tongwell, Milton Keynes, MK15 8HT  
Tel: 01908 513 451  
[uk.assetsolutions@leica-geosystems.com](mailto:uk.assetsolutions@leica-geosystems.com)  
[www.leica-geosystems.co.uk](http://www.leica-geosystems.co.uk)



- when it has to be right



# GI in Ireland



*The Molly Malone statue in Grafton Street, Dublin based on the song of the same name (also known as "In Dublin's Fair City") about a beautiful fishmonger who died young of a fever.*

DUBLIN IN MARCH means St Patrick's Day! My visit missed by a weekend but it was already a sea of green with balloons at the airport, silly hats in the streets and a huge funfair in Merrion Square. Why didn't anyone tell St Patrick that his day always falls in Lent and that just leaves lots of people with a

An even wider international perspective was provided by **Gulnara Roll**, Head of the Housing and Land Management Unit at the United Nations Economic Commission for Europe in Geneva, who explained how the real challenges of land management and planning are often in the political arena rather than the technical. **Angus McIntosh**, who specialises in real estate forecasting at Oxford Brookes University, articulated a 'hard headed' property business perspective. He made it clear that although some of the public sector planning data was important, the vital information on recent deals and land and property valuations was not freely available – at least not until several months after the deals had been done. Several companies have up-to-date market information that is available as a commercial service but which the public sector (e.g. planning authorities) are often unwilling or unable to access.

Bruce McCormack's concluding words were: 'We are going to face a "data tsunami" in the immediate future from new and innovative technologies. It is up to us to develop appropriate services and solutions.' For more details, see [www.plan4business.eu](http://www.plan4business.eu).

## In Dublin's fair city. . . On a flying visit to attend the plan4business conference, **Robin Waters** discovered that the GI industry is thriving in Ireland.

guilty conscience! And yes, I did walk past Molly Malone, and here is the photo to prove it (above)!

The main purpose of my trip was the final conference of the plan4business project at the headquarters of the Society of Chartered Surveyors of Ireland, which also happens to be in the Georgian surroundings of Merrion Square. But during my visit I had the opportunity to talk to two small Irish companies – Gamma about the new Irish postcode system and Compass Informatics about many projects involving spatial data. Finally, I interviewed **Colin Bray**, chief executive of Ordnance Survey Ireland, in his office in the magnificent Phoenix Park. My impression from these meetings was quite clear – Ireland is very well engaged with the latest GI technology; is at the forefront of efficient use of spatial data from a range of government and commercial sources; and has used the recession as a boost for the industry in several ways.

**plan4business** One of the highlights of the plan4business conference was **Bruce McCormack's** presentation of [www.myplan.ie](http://www.myplan.ie) – a portal for Irish spatial planning information that brings together central and local government data with a base of Ordnance Survey mapping. This is exactly the same concept as [www.whatstheplan.eu](http://www.whatstheplan.eu), which has been developed by plan4business for Europe as a whole, based on web services and the standardisation of data schemas inherent in INSPIRE. This was demonstrated by **Tomas Mildorf** with data from Germany, Poland and the Czech Republic.

**Heritage Maps** Compass Informatics are based in Blackrock, a suburb on the southern shore of Dublin Bay and well served by the Dublin Rapid Transport System (DART). This train system doesn't look particularly modern but it certainly has free wifi – how many commuter trains to London have that? And in fact I didn't have to go all the way to Blackrock but met **Ali Robinson** for brunch in Sandymount village. She told me a lot about Compass and its projects – many of which are for the public sector and driven by EU Directives. INSPIRE was the least of these whereas Water Framework and Marine Strategy Framework directives were much more important.

One of the more recent projects has been to provide the Heritage Maps website. This project started in 2012 and is co-ordinated by the Heritage Council, working in partnership with the local authorities, and it builds on the work carried out for the National Biodiversity Data Centre. Linkages have been made to other projects within the Irish Spatial Data Infrastructure including Myplan.ie. Other initiatives are being developed with the Discovery Programme, the National Roads Authority and the National Inventory of Architectural Heritage. Compass also carried out the survey work for the National Transport Authority to capture the positions of all public transport nodes for their journey planner [www.journeyplanner.transportforireland.ie](http://www.journeyplanner.transportforireland.ie) and they have developed the systems for information management at the National Biodiversity Centre ([www.compass.ie](http://www.compass.ie)).



**This train system doesn't look particularly modern but it certainly has free wifi – how many commuter trains to London have that?**



**Taming the townlands?** In the centre of Dublin, I had the pleasure of meeting **Richard Garry** and **Ronan O'Connor** of Gamma Ltd ([www.gamma.ie](http://www.gamma.ie)) who cannot wait for the 2015 scheduled launch of Irish postcodes. Their business includes heavy use of GIS for the collection and analysis of data for commercial clients keen to establish the best locations for retail outlets, the geographical elements of risks to be insured or the best routes to follow for deliveries and other services (see image, right).

Right now 35% of addresses in Ireland are not unique – there may be up to 100 houses in a ‘townland’ with only the names of the inhabitants to distinguish one from another. The local An Post postie should know these but commercial delivery firms and the emergency services probably do not and, therefore, waste a lot of time trying to find a particular person or building. Mail order deliveries, and now web ordering, have even spawned services that use a UK proxy address (and postcode) in Northern Ireland as an intermediary to reduce the cost of delivery to Ireland’s idiosyncratic townland addresses.

The government has now contracted Capita Ireland with partners Bearing Point and Dublin-based Autoaddress (a Gamma partner company), to devise an official postcode system. An Post, the Irish post office, and Ordnance Survey Ireland are providing their GeoDirectory database – which is the nearest equivalent to the UK’s AddressBase (previously AddressPoint and Address Layer). However, in contrast to Royal Mail’s complete control of postcodes in UK, the Capita consortium will be responsible for creating and maintaining the Irish versions for ten years. The postcode format (not yet formally approved) is likely to be of the form A99 A9AA – the same number of characters as in the UK but with only the first three having any geographical significance. These will describe the 200 odd post towns in Ireland with Dublin’s existing codes maintained e.g. Dublin 14 become D14, Dublin 2 becomes D02. The four remaining characters will probably be random alpha-numeric codes with no geographical significance but will uniquely identify every delivery point from the GeoDirectory and will therefore also have geocodes if required.

This means that there will be no direct equivalent of UK Postcode Districts or Sectors – which have boundaries determined by Royal Mail – or of individual Postcode polygons (such as ‘CodePoint with polygons’ marketed by Ordnance Survey GB.) However, townland names will be retained and any other ‘geography’ will be derived by finding all postcodes within the chosen boundary. The Irish postcode address database (PAD) will have 2.2m entries all representing physical delivery points. It is not yet known whether ‘postcodes’ could be assigned to buildings or objects without postal addresses.

The only indication of the price for the whole PAD is that the existing GeoDirectory sells for between 18 and 50k per annum but we do not know



*Above: Individual properties in Ireland with their unique postcodes.*

how the postcodes will be licensed. If the Irish government can get the pricing and licencing right, this could be a much more rational system. Anyone familiar with Royal Mail postcodes and their geographies will, however, need to think very clearly when they cross the Irish Sea!

**Phoenix Park** Ordnance Survey Ireland ([www.osi.ie](http://www.osi.ie)), headquartered in Phoenix Park, is, I suspect, the best location of any national mapping agency. Near the centre of Dublin and with deer grazing outside the window, Colin Bray, who has now been chief executive for just over a year was very enthused about the ‘state spatial platform’ and the forthcoming merger with the Valuation Office and the Property Registration Authority. In a later issue we hope to cover the changing relationships between the Ordnance Surveys, Land Registries and Valuation Offices in these islands. In Northern Ireland they have already been subsumed into Land and Property Services.

Colin has promised that we can carry a longer article on OSi achievements later in 2014 but for now I will also mention PRIME2, which is the ‘authoritative spatial reference framework’. I particularly liked the concept of ‘skin of the earth’ for the basic ‘seamless topological carpet’ of polygons that cover the country and from which Z order (relative height) is always calculated – e.g. for bridges over or under.

**Impressions** The overall impression from my flying visit to Dublin was of our industry being very innovative and effective in providing services that are both better and more efficient or less expensive than in the past. I would defer to experts on how much more advanced is the OSi database, but I need no convincing that myplan.ie is way ahead of the Planning Portal for England and Wales in offering nationwide planning information. All of the people I met ‘buy in’ to a spatial data infrastructure although the concept of a government sponsored postcode – that An Post considered unnecessary – is slightly bizarre. And several of my contacts, privately, also have their doubts about rural Ireland accepting government sponsored postcodes! We will see.



**Right now 35% of addresses in Ireland are not unique – there may be up to 100 houses in a ‘townland’ with only the names of the inhabitants to distinguish one from another.**



# SMEs and Inspire



## smeSpire Environmental Data Thinkshop

Opportunities for Small Businesses

Why, What, Where, When and How to take advantage  
Royal Scots Club, 29-31 Abercromby Pl, Edinburgh, EH3 6QE  
23rd April 2014 10.30 – 16.00 Lunch included

FREE Registration: <http://gistandards.eu/registration/>

### Register and Contribute

Registration on the smeSpire database is free – join 400+

European companies already registered. Then add your Best Practice(s) to the Catalogue and be seen by the world – also free ([www.smeSpire.eu](http://www.smeSpire.eu)). And/or use the training and presentation materials available on-line at the same address.

SMALL AND MEDIUM ENTERPRISES (SMEs) are often hailed as vital to the health of economies worldwide. They are claimed to be nimble, innovative, massive employers (collectively) and, of course, some of them will grow to be the large companies of the future. But they have also found the last few years very difficult and especially perhaps in the geospatial business where many of them

gap between the INSPIRE driven supply of environmental spatial data and industry offers of geo-ICT solutions.

**The thinkshop** In the UK, smeSpire is running a “thinkshop” in Edinburgh on 23rd April to help SMEs get to grips with these opportunities (see box). The event (a thinkshop is a facilitated open debate engaging experts and other stakeholders) will cover how small businesses can help to ensure that the environmental data becomes available by helping with data collection, verification, management and transformation as well as implementing the services required for displaying and disseminating the data. There are also many opportunities to develop new value added applications using the “Big Data” now becoming available. “Mashing-up” datasets will provide completely new insights into our environment and how it is managed. Mobile apps will draw in a completely new audience and also enable crowd sourcing of ever more accurate and up-to-date information.

**Small business opportunities** While small and medium enterprises (SMEs) are key to economies worldwide, many have struggled to survive over the last few years. smeSpire is one of the EU-funded projects aimed at supporting SMEs, specifically in enabling them to exploit environmental information being freed up by the INSPIRE directive.

rely on public sector procurement, which has been cut back in the age of austerity. The EU is supporting the sector with several projects promoting international cooperation between SMEs and aimed at re-using government datasets now being freed up for exploitation following the Public Sector Information and INSPIRE Directives. Part of this support is smeSpire – a support action for SMEs driven by a consortium of organisations from 12 different EU member states – led by Epsilon Italia and partners include the Joint Research Centre of the EC and GiStandards from Scotland.

The event will be facilitated by **Cameron Easton** who was responsible for INSPIRE within the Scottish Government and **Robin Waters**, a GI consultant and editor of *GIS Professional*. Experts will include **Bruce Gittings** from the University of Edinburgh, **Scott Cadzow** on data security issues and representatives from OGC and several small businesses already involved in this field.

The thinkshop format enables the event to cover different topics influenced by the participants and takes place “in the round” rather than with fixed presentations “from the front”. Numbers are limited to around 30.

**Opportunities and obstacles** smeSpire aims to encourage and enable the participation of SMEs in the mechanisms for harmonising and delivering environmental information freed up by the INSPIRE Directive. This is legally binding on the public sector bodies that it affects and therefore provides “entry points” – business opportunities – opening new, or reinforcing existing, technologies such as linked and/or open data, sensor web, cloud services and many environmental applications.

Specifically, the project has created a training package for those implementing INSPIRE; a best practice catalogue; a business model for turning INSPIRE related innovation into economic value; and a database of European SMEs providing geo-ICT solutions. smeSpire has, specifically, conducted an assessment of the market potential for geo-ICT SMEs in relation to INSPIRE and explored the obstacles facing geo-ICT companies entering this market in terms of knowledge gaps and training needs. Finally, smeSpire has created a network of SMEs and other institutional stakeholders to help bridge the

**Market potential** The “Report on the market potential for Geo-ICT SMEs in relation to INSPIRE” was published in November 2013 and claims to be the first study of the private sector in this context at European level. Nearly 300 companies participated in the survey from more than 18 countries.

Predictably the report recommended further research and in particular on the definition of the assumed targets – Geo ICT SMEs. More importantly, given the predominant role of public sector organisations in INSPIRE, it re-emphasised the need for SMEs to be better acknowledged and supported at all levels and specifically for Innovation Vouchers to be made available for geo ICT projects – see <https://vouchers.innovateuk.org>. Building on the smeSpire network and the Best Practice Catalogue (see box), there should be a continuing drive to ensure that SMEs continue to promote themselves.

If you work for an SME why don't you join in – register your company and upload your Best Practices – its free and you might just make some useful contacts.



**...given the predominant role of public sector organisations in INSPIRE, it re-emphasised the need for SMEs to be better acknowledged...**





**Above: Splashmaps in action (Courtesy of David Overton).**

ARNULF CHRISTI is a passionate advocate of anything “open”. He was a founding director and past president of the Open Source Geospatial Foundation (OSGeo) and is now a consultant on all things geospatial or, as he prefers, “metaspatial”.

Much of his talk took us at a gallop through the development of computers. Most of the audience would have known a fair bit about hardware and software but

Christi’s talk then took a turn through the development of “geospatial”. A key moment on this journey was the foundation of the Open Geospatial Consortium in 1994 – now in its twentieth glorious year. Shortly afterwards, the internet began to mature and eventually tapes, disks and CDs were no longer necessary to deliver software and the capacity of the web increased to the point where data could also be transferred almost instantaneously. Not just copying – instant copying!

**Paying for data** The “Open” revolution first encompassed standards, then software and latterly data. Concerning data, Christi reckons open data is in the “chasm” between visionaries and pragmatists on the innovation development pathway. He sees two main sources of open data: government data and community data (through crowdsourcing). Some government data is already open and there was a hint that he expects more to become so: ‘OS MasterMap isn’t – yet!’ he said, but was he joking about the possibility?

‘How do you ensure the quality of authoritative data?’ asked one member of the audience. Christi is

**Christi makes a Splash** This year’s GeoForum lecture was delivered by **Arnulf Christi**, a founding director of the Open Source Geospatial Foundation (OSGeo), at the RICS’ London headquarters in January. The subject as advertised was “SplashMaps”, but the audience was treated to a great deal more from this buzzy and inspiring speaker. **Richard Groom** reports.

Christi’s viewpoint is so quirky that we all must have left the event having learnt something new or, at least, with an improved understanding. His (unsaid) point was that open source is part of the natural development of computing. The first computers consisted of hardware only – no software. The term “software” was only actually coined by John W Tukay in 1958. Christi argued that software is untouchable, unbreakable and does not degrade but, most significantly, it multiplies when shared. You can’t steal software, you can only copy it. He has a point.



**... software is untouchable, unbreakable and does not degrade... it multiplies when shared. You can’t steal software, you can only copy it.**



**Open fosters innovation** He then took us through the evolution of open source. Key to this was the Unix operating system, which was developed in the mid 1960s, and the “C” programming language associated with it. Unix was developed by AT&T who tried to commercialise it. It is now owned by The Open Group and exists in a number of variants – notably Apple’s OSX and Linux. It is easy to commercialise software that is tied to particular hardware but software development in general will be held back by that limitation. Microsoft gained the best of both worlds by shipping its software with hardware produced by any PC manufacturer. Christi argues that the move towards open standards, software and data has been an essential prerequisite for the software development needed to make the knowledge economy happen.

sure that authoritative data has a vital role to play and that it has to be paid for somehow. He took examples from Germany and the USA, where some government data has been made completely free, with adverse consequences. He suggested that the cost of data collection (as-built surveying) is a negligible proportion of the cost of development and should be paid for by the developers. Perhaps developers should pay a levy to the OS to have their development added to OS MasterMap. And the beauty of micro-charging is that you barely notice it.

**SplashMaps** An innovative “mash up” of open data from the Ordnance Survey and other sources is used to produce SplashMaps. These are maps for the outdoors printed on fabric that is washable, waterproof and wearable and that does not smash like a mobile phone! The idea gained its initial funding through the Kickstarter website, which invites entrepreneurs to invest in start-up projects: one thousand backers raised £8000. Its expansion has been such that from one map in 2013, there are now thirty-five and the product has been taken on for a number of high profile events such as the Tour de France UK in 2014. Another is the route of Nightrider, a 100km night time cycle ride around London, which demanded special cartography for reading in the dark.

# conference report

Whispers down the lane in global insurance business  
The importance of detailed exposure data

Munich RE 



**Above: Figure 1 – Reduced resolution from reality to reinsurer.**

CAN ANYONE DOUBT the relevance of geography to the insurance industry? Probably not. But we are at last beginning to see intensive use of the most detailed geographic information in risk analysis, underwriting and claims management. For far too long whole postcodes have been blighted because a few houses in them are subject to a particular risk or even because the often spurious geography of postcode polygons intersected a flood risk area.

common denominator dictating the pricing of some products but was assured that models and underwriting software would use the best available data in any particular location. I certainly hope so, but experience with UK insurers that have had access to very accurate data for many years suggests that they have often ignored it.

Another very interesting example of variable resolution shows how an address might be 'generalised' from the exact position of a building (for example) through insurer, broker to the reinsurer who might only see the country! This type of generalisation was clearly exposed during the 2011 floods in Thailand where whole global supply chains were disrupted when important component factories were put out of action (see figure 1).

Andreas suggested that the use of GI in insurance (and probably in many other industries) went through four major phases – the "freak" phase with only experts involved; the "touch" phase with some supporters in the main stream; the "integration" phase with the whole company/community in support; and finally the ROI phase – a return at last! But he also cautioned that even now 'Most of the benefits (of GI) have only a qualitative component and it is extremely challenging to quantify the financial impact!'

## Geography comes of age in insurance industry

Why has it taken so long? In search of clues, **Robin Waters** went to the recent GeoInsurance 2014 event, organised by Corinium Global Intelligence, where the industry presented what it was doing and why, and some data suppliers and software vendors plied their wares.

**From "freak" to ROI** The two-day GeoInsurance 2014 event in London was well chaired by **Tony Boobier** of IBM who suggested that we had reached a 'tipping point' for geoanalytics caused by intensive competition in the market, more frequent and costly weather related events and the potential to anticipate the future from the use of 'big data'.

**Andreas Sibert** from Munich Re showed a useful timeline for the growing use of GI in the industry – starting in the late 1980s – with milestones marking some catastrophes; the introduction of particular technologies; and cooperative efforts to share data and standardise risk models. He noted in particular the German insurance companies' joint approach to flood risk in the absence of consistent nationwide data from a national environment agency. Technology advances were typified by Google Earth validating web mapping in 2005 and the introduction of the CRESTA web mapping system (jointly developed by Munich Re and Swiss Re) to standardise geography in 2011.

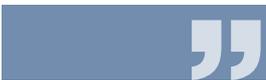
A brief glance at CRESTA ([www.cresta.org](http://www.cresta.org)) serves to show how different countries are segmented – some to much more detail (e.g. UK) than others (e.g. Russia). I asked several people during the day whether this differential 'resolution' in GI could lead to the lowest

**Informed insight** Geography is also an important framework for 'emerging risk' – that which is perceived to be potentially significant but which may not be fully understood. **Matt Foote** from Mitsui Sumitomo declared that a 'geointelligence' framework – based on military experience – was needed and that this was incorporating many new data types and real time sensing of activities with geography as the underlying connection. However, Matt admitted that data of inconsistent quality being used in models that have created higher expectations are 'problematic'! So Matt's presentation was complemented by **David Henderson** of Ordnance Survey explaining how it is putting more and more structure into its datasets giving context, ensuring connectivity and enabling more informed 'discovery and insight'. This public sector offering was followed by Digital Globe with their very high resolution satellite images from which they also attempt to extract meaningful information using pattern analysis.

**Larry Stokes** from Zurich considered the local authority market and specifically the concentration of properties insured by various groups. He summed up the impact of 'geographic tools' as essential for portfolio management and vital for risk assessment. Swiss Re has used geo information and technology since 1995 and their on-line Hazard Atlas is shared with clients as CatNet® with extra



**... experience with UK insurers that have had access to very accurate data for many years suggests that they have often ignored it.**



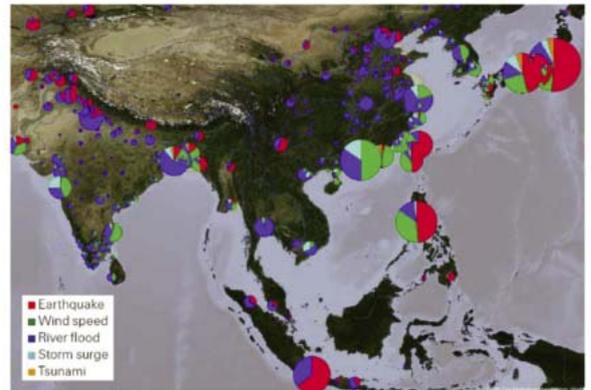
tools available internally. The company uses an eclectic range of data and technologies including Esri, Google maps and GfK GeoMarketing services to produce maps such as Risky Cities (see figure 2).

**Rob Dakin** of Axa concentrated on the Geo Assessment for Fire, which is much more difficult, in general, than for natural hazards. He even suggested a return to the shared information available on the Goad Fire Insurance Plans that the industry used extensively from the later 19th C through middle of the 20th C. These included details of the building construction for commercial areas of major cities enabling insurers to see what was most at risk and how concentrated a portfolio could become. It will be some time before comprehensive coverage of Building Information Management (BIM) is achieved.

**The answer** This report has covered most of the presentations on the first day of the conference, which was very educational and from which I drew several conclusions:

- The importance of GI for the insurance business is now very well established
- There are plenty of tools available
- The supply of data is still very variable
- There is still a need to improve the performance of systems when modelling or displaying geospatial information – this is Big Data.

## Mind the risk Natural catastrophe exposures in urban areas – Asia



Swiss Re

Dr. Octavian Iercan | GEO Manager |

- Improved geographic tools will enable ever more accurate underwriting but will presumably increase costs for risky areas.

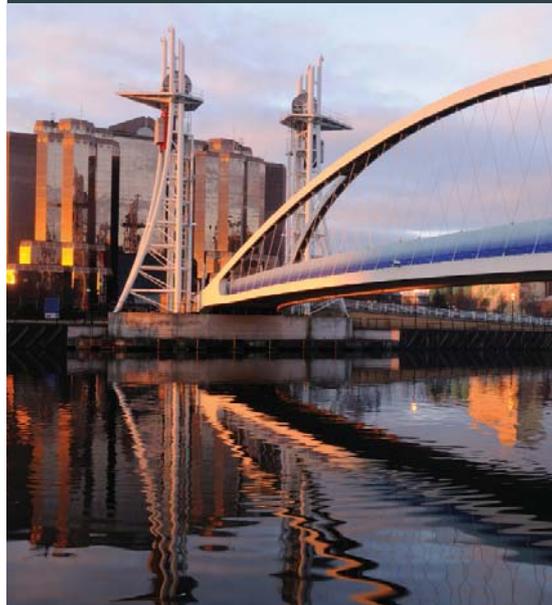
**Above: Figure 2 – A Risky Cities map.**

So these conclusions provide the answer to why it has taken so long – a long learning process and still data availability and processing power issues. My guess is that the improved processing capability will leave the onus on the data – which still has a long way to go.

DISTANCE LEARNING GIS PROGRAMMES

# UNIGIS UK

## Study for a postgraduate qualification in GIS by distance learning



UNIGIS UK has been at the forefront of GIS education for over 20 years providing distance learning-based postgraduate education and training in Geographical Information Systems and Science. Our programmes support the personal development, career advancement and career change ambitions of students typically already in employment. September 2011 sees the launch of our new suite of Masters programmes to meet the changing needs of the GI-related economy, those programmes are:

**PgC/PgD/MSc in Geographical Information Systems** - providing a broad grounding in the major aspects of contemporary GIS

**PgD/MSc in Applied GIS** - focuses on the applications of GIS and Geographical Information

**PgD/MSc in Geographical Information Technologies** - which provides the opportunity to look at the technologies underpinning GI solutions

Established in 1991, UNIGIS UK is a collaboration between Manchester Metropolitan University and the University of Salford. We have a proud track record of helping our students achieve their goals. Visit <http://www.unigis.org> for further information.

[unigis@mmu.ac.uk](mailto:unigis@mmu.ac.uk) +44 (0) 161 247 1581

Educating GIS Professionals Worldwide



Manchester Metropolitan University



University of Salford  
A Greater Manchester University

[www.unigis.org](http://www.unigis.org)

# case study: Scottish Water



*Scottish Water's portal offers an interactive web-map that can be displayed through a web browser, providing rapid and simple access to geospatial information across the organisation.*

LARGE, DATA-RICH organisations face inevitable problems when accessing their information<sup>1</sup>. Ever increasing emphasis is being placed on data-driven decision-making and a closed proprietary desktop GIS can struggle to provide the speed of access and clarity of visualisation required by decision makers.

Creating a data-driven organisation and altering business processes begins with progressive small steps

At Scottish Water, an interactive web-map has been developed that can be displayed through a web browser and served through the organisation's intranet. This enables rapid, clear access to geospatial information and, as the viewers are open-source and browser-based, it can be accessed anywhere in the organisation without any "client side" software licence or installation. The Scottish Water Viewer offers:

## Agile and open when visualising assets Tom Stork explains how an interactive web viewer has allowed Scottish Water to unlock the potential of its data and share geospatial information throughout the organisation.

leading, eventually, to a paradigm shift. Solutions need to develop from early ideas before becoming the foundations of better information access. This is achieved by continually addressing user needs and evolving to address realistic expectations and requirements. Simply purchasing new software will not change attitudes or business processes<sup>2</sup>. Change needs to be progressive, flexible and closely managed.

Kemeling Consulting<sup>3</sup> works with asset rich companies to unearth the potential in their data. Scottish Water has provided a recent example of this transformative process. For over 30 years, the organisation<sup>4</sup> and its predecessors have invested extensively in proprietary desktop GIS applications. These have served a useful purpose in the creation and manipulation of geospatial data and work well in the traditional business model. However, they struggle to address the changing requirement for sharing geospatial information on a platform that is universally accessible.

**Rapid access to information** Since October 2012, Kemeling Consulting has offered companies a solution for changing the way in which information can be accessed, queried and visualised. Access to simple GIS functionality – basic tools and visualisations – no longer has to be restricted by proprietary licences and/or the need to learn specialist skills to create even the simplest map.

- A variety of interchangeable map backgrounds
- Thematic layers of assets
- Selectable features
- Text search of attributes
- Exporting selected features to spreadsheets
- Simple buffers, mark-up and redline tools

Speed of access is crucial to its success. Conventional map production often takes days and produces static images. With the new system anyone can make simple queries and map production can be completed in fewer than six clicks of a mouse.

Working with investment planning teams, two viewers were created showing asset information from a range of different sources. Several existing GIS layers were merged with new layers created from datasets such as standalone spreadsheets and geocoded addresses. This process has unearthed potential information that had been locked in "silos" by different formats and incompatible software. The reductionist design of the viewers stripped back functionality to create a simple and intuitive user interface with only the most essential tools. Extra functionality can be added or created, but only when a clear need is identified.

The basis of the development is MapGuide OS/Maestro<sup>5</sup>, a simple server and web-map authoring tool. This comes complete with an intuitive graphical user



**Conventional map production often takes days. . . With the new system . . . map production can be completed in fewer than six clicks of a mouse.**



interface, which speeds up map production, with limited training or specialist skills required. Changes to symbology and the addition of new layers are straightforward. The GUI was essential for a progressive transfer of ownership to Scottish Water business planners and shows the maturity of open-source mapping solutions. The rapid start-up, from download to a fully functioning web map, has enabled the creation of an agile, easily deployable product.

**Hands-on development** An agile project management approach was adopted by Kemeling, differing from the conventional “waterfall” method – a linear, sequential design process from start to end – used extensively in large IT projects. It embraces and plans for changes during development. Projects that alter business processes and offer new capabilities inevitably need tailoring and change as they progress and it is essential to work closely with those that will use and maintain the system.<sup>6</sup>

For Scottish Water, a simple viewer was rapidly deployed allowing instant access from the very start of project. This enabled direct, hands-on use of the system by the client as it developed. Small changes to symbology, or thematic layers, were performed quickly. Successes were recorded and benefits shared from the very start. With any new software deployment, remaining agile is crucial to ensuring that morale is kept high, learning curves are minimised and small problems addressed promptly. This prevents the deluge inherent in waterfall led projects where a completed system is delivered in one step at the end of the project only to find that it does not fully meet expectations or requirements.

**Future development** Flexibility and inter-connectivity are inherent to open-source systems, with the consequence that expanding capabilities is simplified. From the huge range of tools available within the open-source community, functionality can develop as and when required. The benefit of open-source software is the ability to alter and retrofit components, with limited impact on service. This stands in stark contrast to proprietary offerings.

After delivery of the initial project for Scottish Water, a need for automated updates was highlighted. The requirements for an ETL (extract, transform and load) tool and a more robust spatial database were also clear. GeoKettle<sup>7</sup> as an ETL tool was quickly integrated and provides a sophisticated and mature system for uploading geospatial data. PostgreSQL/PostGIS<sup>8</sup> is an industry leading relational database system with spatial extension and provides another building block for a mature and robust system. The adoption of these components was possible thanks to unrestrictive licensing and the flexible, inter-connective nature of open source software.

**Benefits** The power of visualising information on a map cannot be underestimated. In this instance, more informed decision-making was immediately realised. Breaking away from conventional proprietary licences allows anyone with the rights to the content to access the information.

Growth among users and across departments has only been restricted by the confidential nature of some information. Previously cluttered and dense spreadsheets have become elegant thematic layers in the viewers. Creating a shared space for information has reduced misunderstanding and duplication between departments. The benefits of the system have led to a reduction in time taken to locate and identify assets, increasing efficiency. Within Scottish Water, its SR15 investment programme is responsible for planning £1.8 billion worth of capital maintenance between 2015 and 2021. An efficiency gain of only 1% as a result of better access to data and better understanding of interaction between programmes would result in £18 million worth of saving.

**Conclusion** A combination of the right software and the right project management should enable a flexible and bespoke approach that will deliver clear benefits from the very start of a project. Agile management and open-source components, used together, can produce a successful, sustainable and expandable system with a potentially unlimited life span. Compared with proprietary software, produced and often delivered using waterfall project management, the benefits are clear.

At Scottish Water, the target users of the system were an integral part of the development process, so ownership and training were implemented gradually. Successes and benefits are recorded throughout and new, unexpected, benefits are still being realised. The successful development and continuing expansion of the system are testament to the process of building from successive small incremental steps and should be seen as an example for a brighter future for information management in asset rich companies.

#### References

- 1) McKinsey Global Institute. *Big data: The next frontier for innovation, competition and productivity*. 2011 [www.mckinsey.com/insights/business\\_technology/big\\_data\\_the\\_next\\_frontier\\_for\\_innovation](http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation) (Accessed 19/02/2014).
- 2) Andrew McAfee and Erik Brynjolfsson, Harvard Business Review. *Big Data: The Management Revolution*. 2012 <http://hbr.org/product/big-data-the-management-revolution/an/r1210c-pdf-eng> (Accessed 19/02/2014).
- 3) Kemeling Consulting. <http://www.kemeling-consulting.com/> (Accessed 19/02/2014)
- 4) Scottish Water. <http://www.scottishwater.co.uk/> (Accessed 19/02/2014)
- 5) MapGuide OS/Maestro - <https://trac.osgeo.org/mapguide/wiki/maestro> (Accessed: 19/02/2014)
- 6) Arnulf Christl. Agile Project Management. [http://arnulf.us/publications/innovation\\_gis.business\\_2013-07\\_intergeo.pdf](http://arnulf.us/publications/innovation_gis.business_2013-07_intergeo.pdf) (Accessed 19/02/2014)
- 7) GeoKettle [www.spatialytics.org/projects/geokettle/](http://www.spatialytics.org/projects/geokettle/) (Accessed 19/02/2014)
- 8) PostgreSQL/PostGIS <http://postgis.net/> (Accessed 19/02/2014)



*Tom Stork has worked for Kemeling Consulting since March 2013 and is a passionate GIS analyst with broad-ranging skills covering the storage, analysis and visualisation of spatial data. Tom specialises in creating open-source solutions for geospatial information access and is a recent graduate from the MSc in GIS at the University of Edinburgh.*

## AGI column



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

THE AGI HAS SET itself an ambitious programme for 2014 – revitalising our events, refining our message, energising our members and improving our systems. These are all essential ingredients in ensuring that AGI remains effective as an evangelist for our members and in promoting the value of GI. We are delighted to have welcomed Ordnance Survey and ESRI (UK) as Diamond Sponsors for 2014 and to welcome many other corporate members to our new range of sponsorship packages that are built around our “Big 5” event series. Following consultation with our Suppliers SIG at the end of 2013, we have re-vitalised our sponsorship packages to make them easier to understand and more attractive. We hope you will approve and will get involved during this exciting year. See [www.agi.org.uk/storage/geocommunity/AGI\\_the\\_Big\\_5\\_Sponsorship.pdf](http://www.agi.org.uk/storage/geocommunity/AGI_the_Big_5_Sponsorship.pdf).

**Geo:The Big 5 begins** We were delighted with the success of the first of the Geo: The Big 5 events – “Future Cities” in Glasgow. A detailed review is on page 14 and we would like to thank all the event sponsors and delegates for their support, to thank Glasgow City

hard work last year to define our identity and where we stand in the world of GI. The work and branding were based on feedback that we needed to improve our professional image. We are now confident of our message and the branding will reflect this visually as well as emphasising that, while we are proud of our 25 year heritage, we are now refocusing very much on what we can achieve going forwards.

**The year of digital engagement** Alongside the new branding we are also developing a new website. As befits a digital and interconnected industry, we are implementing a digital engagement strategy that will enable us to connect more effectively with our geographically disparate members. Part of this process has been to increase activity on social media and the new website will form the centrepiece of this project. As well as providing a showcase for the AGI, it will provide a real benefit to our members, serving as a content hub for geospatial. We plan to stream content from our events, host webinars and facilitate the sharing of ideas amongst our membership. We expect to launch our new website in the summer of 2014.

**Off to a flying start!** With a fresh professional brand and a successful start to its “Big 5” event series, the AGI is energised and ready to make the most of its 25th anniversary year.

Council for the use of their wonderful building, and to congratulate the AGI Scotland team on the event organisation. This was the best attended one day event we have held in Scotland in the last decade and delegate feedback was incredibly enthusiastic for the event format and for the overall concept of the Geo: The Big 5 series.

The event stimulated some fantastic conversations that are extremely encouraging for the AGI and for the industry as a whole. There was a marked shift from engaging at a predominantly technical level to taking a broader view of how geospatial can bring information together, inform decisions and enable collaborative response to challenges. Technology is increasingly being presented as an enabler and the contributors showed how GI is being applied to new challenges and is delivering value in both government and corporate realms.

We look forward to replicating this success across the rest of the Geo: The Big 5 programme. Planning for Belfast, focused on all things “Open”, is well advanced and I look forward to seeing many of you there in May.

Our annual conference “GeoCom: The Changing Face of Geo” is now booked for November at the Chesford Grange Hotel, Warwick. During April we will showcase the new venue to our Suppliers SIG and early event sponsors. This will provide suppliers with a chance to experience the new venue and to input to the event plans and ensure that the 2014 conference will be a fitting culmination to the year's events.

**A new year, a new brand** We are in the process of launching a new AGI brand – the result of a lot of

**Promoting Innovation** This year will also see the launch of the revitalised AGI Awards in line with our new vision. We have refocused our awards to recognise and showcase really innovative projects at the cutting edge of geospatial. They will be presented at the end of the GeoCom conference, bringing the year to a close with a celebration of innovation and achievement.

**Our volunteers – we couldn't do it without you!**

Finally, I would like to say that we are very grateful to our volunteers who make the AGI possible and I encourage both our members and the wider industry to be proactive and get involved. We welcome input at all levels, from simply joining a SIG and attending an informal networking event to writing a guest blog post or helping organise one of our events. Do get in touch!



*We champion the value that the intersection of geography and information has for the economy, business and for the individual.*

*We do this in order to give our members a collective voice in a world where GI has the potential to touch every part of today's life.*

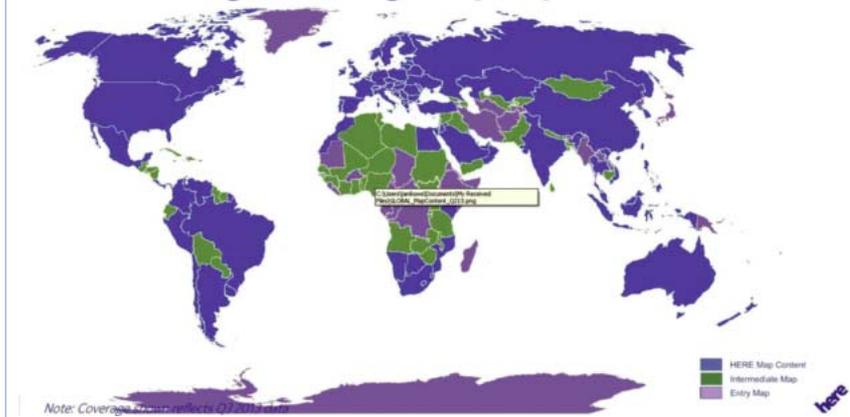
*The AGI is an independent and balanced organisation, offering equal standing to every type of member. We're not a trade body, a learned society or a policy influencer – but we engage in all and more.*



**... we are implementing a digital engagement strategy that will enable us to connect more effectively with our geographically disparate members.**



## Global Coverage Including Entry Maps



**Above: Neil Watts, sales director, claims that HERE has the broadest global coverage with maps of every one of the 196 countries on the planet.**

AT HERE'S RECENT Enterprise Location Forum, **Neil Watts**, sales director, explained that they aim 'to capture and index real life; compute the right map for every moment; and create experiences that reflect our human behaviour.' He claimed that HERE has the broadest global coverage with maps of every one of the 196 countries on the planet; full 'auto-grade' navigation in 96 of them and that it receives 21 billion web "probes" per month.

information surrounding us – or any object/place of interest. Clearly location is vital to this concept.

**Traffic for Enterprise** The highlight of this event for me was undoubtedly the detailed explanation of HERE's "Traffic for Enterprise", which goes back to Navteq demonstrations of real time traffic in 2002. It now claims to be the largest collector of GPS real time probe data and the largest global traffic supplier. HERE Traffic provides real time traffic information but there are also a lot of customers looking for historic traffic patterns and analysing them. GPS sources are connected cars, smart phone apps, satnavs, fleet management systems, tracking systems (e.g. insurance companies) and road sensors. Incidents come from national centres and road works data providers as well as their own centres in Germany and the USA. Traffic patterns are available for all routes in 82 countries and are essential for efficient logistics operations. Analytic traffic patterns for roads with traffic message channels are available in North America and in 20 countries of the EU.

Other presentations were more predictable with the links to business intelligence and Oracle's endorsement to

## HERE, there and everywhere – or just HERE to stay?

HERE, the Nokia owned and rebranded Navteq, is aiming to become the premier "Location Cloud" supplier. In February they shared their vision and strategy with some 40 invited industry players at their Enterprise Location Forum in London. **Robin Waters** reports.

**The location context** HERE's "Platform for Business" includes web APIs as well as native APIs for both Android and iOS devices – it is independent of, and adjusts for, different types and sizes of screen across the range from desktop workstation to mobile phones. The platform serves maps, satellite/aerial imagery and "traffic tiles"; it has a powerful geocoder with reverse geocoding and batch geocoding functionality; a comprehensive database of "places"; full routing functionality taking account of traffic, vehicle type and multiple destinations, and a comprehensive JavaScript API and RESTful web services. Service level agreements (SLAs) range from free development – with no commitment – to "Premium enterprise" with guaranteed 99.9% availability and specified response times, incident management, business continuity, release notifications and SLA reporting.

A presentation from Cognizant on master data management (MDM) stressed the importance of the postal address gazetteer as a central shared and unambiguous source of location information. Dr **Anthony Hamber** pointed out that MDM is essential to the efficient running of any large organisation and that location was one of the elements needed to make it work. Eighty five per cent of information has a location context – whether input from the GPS on the phone with which you take your "selfie" to the street address of your house to the traffic lane in which your vehicle is travelling at a complex junction. Code Halo™ is Cognizant's attempt to capture and manage the

fore. HERE provide various Oracle branded information including boundaries, ODF world map and an underlying platform. UniCOOP is an Italian supermarket chain that has implemented a centralised "geo-data warehouse" from which they have a "store by store" view of key business indicators on interactive maps and continuous access to analyses of spatially related sales, purchasing and demography. Apparently, this has reduced operating costs by 35% and the system has paid for itself in three years.

**Everywhere** Also mentioned were the possibilities of driver profiling – relating actual driver behaviour and relating it to the road configuration and conditions. Of course this is already being used by some insurance companies and is of great interest to academia and to road safety organisations. **Andrew Hudson-Smith** of the Bartlett Centre for Advanced Spatial Analysis at UCL showed some interesting visualisations from Twitter data – how there is a real 'mountain' of usage in certain centres like Soho – and how city administrations are becoming 'Smart'. Apparently, the mayor of London has a wall of touch screens able to display maps and data in real time and elsewhere in this issue there are several references to smart or future cities – all dependent on the underlying geographic information.

From this event I certainly got the impression that HERE is taking on Google Maps in the corporate world and delivering some impressive functionality. Whether or not it can catch the public imagination like Google Earth is a different question. But HERE is certainly everywhere!

“  
**Eighty five per cent of information has a location context – whether input from the GPS on the phone with which you take your "selfie" to the street address of your house. . .**  
”

# products

There is more news of products and services on our website at [www.pvpubs.com](http://www.pvpubs.com)  
To get your company featured on this page call Sharon Robson on +44 (0)1438 352617

## Green map of Britain



Bluesky has created a map of Britain showing the health of the nation's forests, fields and parks. Created using Colour Infrared (CIR) sensors on an aircraft, the map compares the "green-ness" of vegetation, thereby providing an indicator of health, vitality and even maturity. With vegetation under threat from pests, disease, pollution and adverse weather conditions, the map is set to become an essential tool for those who manage and protect our green infrastructure. The map is available to view and purchase at [www.blueskymapshop.com](http://www.blueskymapshop.com).

### Web service for NSG

GeoPlace has launched a web service for the National Street Gazetteer (NSG) to ensure that it is compliant with the INSPIRE Transport Network theme. This has been delivered on behalf of all local highways authorities under the Data Co-operation Agreement. The NSG is a national compilation of individual English and Welsh local authority street datasets including the street network and related information. GeoPlace has provided a Web Map Service (WMS) for viewing and a Web Feature Service (WFS) for downloading data. This central provision of services removes the need for individual local authorities to publish data thus making substantial savings. Access is for registered NSG users only at

<https://services.geoplace.co.uk/#Transport-Networks>. GeoPlace provides a similar service for the Address theme within INSPIRE.

### Building height data released

Ordnance Survey has released building height attributes as an enhancement to its MasterMap Topography Layer for almost 20 million buildings across Great Britain at no additional cost to existing licence holders. This "alpha" release covers some 8,000 sq km of major towns and cities and will aid planning for "right to light" policies in local government and utility smart meter installation. It enables simple 3D visualisations of buildings and assists analytical applications across land and property, energy and infrastructure, public and financial services

sectors. Ground level, base of roof level (eave height) and the highest part of the roof will all be provided for each building. Ordnance Survey are seeking early feedback from existing customers for this release.

### Address-Point compatibility

Aligned Assets has announced a conversion process for the private and public sector that will allow organisations to migrate to Ordnance Survey's AddressBase Premium product whilst retaining compatibility with the older Address-Point legacy product, which will be discontinued in October 2014. Available as a standalone product or as a part of Aligned Assets' corporate gazetteer system, the company's conversion solution works by feeding updates to AddressBase Premium into a central database, with these updates then automatically converted into the Address-Point format and sent out to all recipient systems. The process will keep address data up-to-date whilst allowing organisations time to invest in new systems.

### Positions from pictures

The new Trimble V10 Imaging Rover is an integrated system that captures 360-degree digital panoramas for precise measurement of the surrounding environment. It extends the company's VISION technology and enables faster work in the field with the ability to pick up objects from the recorded imagery. This sophisticated 'range pole' has twelve calibrated cameras – seven panoramic and five downward-looking – integrated to provide complete site visualisation and documentation that can be used to make measurements later in the office. It works as a standalone or can be integrated with the R10 GNSS receiver and S-series total stations so that panoramic images can be captured with positions for a highly accurate geospatial dataset.

## BRIEFS

The latest version of Trimble's eCognition software for geospatial data analysis simplifies and reduces the time taken to classify objects in imagery datasets using a template matching function. With eCognition 9, users can define objects graphically to streamline the template creation process.

Promap, a digital mapping information service of the Landmark Information Group, has launched a Digital Utility Overview Plan for utilities reports. This captures all asset information from individual utility report responses and displays it on one plan. The plan and reports are sourced from individual utility companies and can be formatted in layered pdf, DWG or DXF on any selected background map.

Map publishers Lovell Johns and SpatialTEQ Inc have announced a partnership to provide a UK version of the latter company's business mapping website, [MapBusinessOnline.com](http://MapBusinessOnline.com). The website has been modified to accommodate UK geographies with its latest version released in December 2013. Lovell Johns' sales and marketing director, Liz Murray, says: 'We're targeting the general business market in the UK. We see a definite requirement for business mapping services like customer visualisation, sales territory mapping, drive time analysis, and optimised routing'.

Ordnance Survey's latest iOS app, OS Locate, is a fast means of pinpointing a user's exact location in Great Britain. Designed to be used alongside an OS map, the free app converts GPS location readings from a mobile phone to Ordnance Survey National Grid references and does not require a mobile signal to function.

**REGISTER  
FREE\***

Register online today at:  
[www.GeoBusinessShow.com](http://www.GeoBusinessShow.com)

# GEO

## BUSINESS 2014

**BUSINESS DESIGN CENTRE  
LONDON • UK 28 – 29 MAY**

### THE GEOSPATIAL EVENT

A brand new geospatial event for everyone involved in the gathering, storing, processing and delivering of geospatial information.

Incorporating:

- **International exhibition** showcasing geospatial suppliers from across the globe
- **Innovative conference** presenting the latest advances across the breadth of the industry
- **Commercial workshops** demonstrating products and services in action
- **Welcome Drinks and Gala Dinner** offering a chance to network and socialise with colleagues old and new

For more information on the event visit

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

Organised by:

**diversified**  
COMMUNICATIONS ■ UK



GEO Business



@GeoBusinessShow  
#geobusiness

In collaboration with:



**RICS**



THE SURVEY  
ASSOCIATION



chartered  
**ICES**



Association for  
Geographic Information

**EMPOWERING GEOSPATIAL INDUSTRIES**

\*Exhibition and workshops are free to attend. Registration fee applies for the conference.

**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 or e-mail: [hayley@pvpubs.demon.co.uk](mailto:hayley@pvpubs.demon.co.uk).

**APRIL 2014**

**smeSpire Environmental Data Thinkshop: Opportunities for Small Businesses**  
 23 April 2014, The Royal Scots Club, Edinburgh, Scotland  
 More information: <http://gistandards.eu/registration/>

**Everything Happens Somewhere Conference and Exhibition 2014**  
 29 April 2014, Emirates Old Trafford, Manchester, M16 0PX  
 More information:  
[www.geoplace.co.uk](http://www.geoplace.co.uk)

**MAY 2014**

**AGI Geo:Big Five – Open Geospatial**  
 13 May 2014, Wellington Park Hotel, Belfast  
 More information:  
[www.agi.org.uk/the-big-5](http://www.agi.org.uk/the-big-5)

**GEO Business 2014**  
 28-29 May 2014, Business Design Centre, London UK.  
 More information:  
<http://geobusinessshow.com/>

**JUNE 2014**

**HxGN LIVE – Hexagon Annual International Conference**  
 2-5 June 2014, Las Vegas, Nevada, USA  
 More information:  
<http://hxgnlive.com/geosystems.htm>

**AGI Geo:The Big 5 - BIM & Asset Management**  
 5 June 2014, Armada Conference Centre, Bristol, UK  
 More information:  
[www.agi.org.uk/the-big-5](http://www.agi.org.uk/the-big-5)

**Esri UK Annual Conference 2014**  
 11 June 2014, QEII Conference Centre, London UK  
 More information:  
[www.esriuk.com/conference2014](http://www.esriuk.com/conference2014)

**FIG Congress 2014**  
 16-21 June 2014, Kuala Lumpur, Malaysia  
 More information: [www.fig.net/fig2014](http://www.fig.net/fig2014)

**British Cartographic Society Annual Symposium 2014**  
 24-26 June 2014, Marwell Hotel, Winchester, UK  
 More information: [www.cartography.org.uk](http://www.cartography.org.uk)



## subscribe today and get access to 10 years of searchable archives!

**GiSPRO** is essential reading for professionals working in geographic information. Subscribers get access to our online searchable database of back issues. You can also subscribe by going to [www.gisprofessional.co.uk](http://www.gisprofessional.co.uk) or calling **+44(0)1438 352617**.

**Please subscribe me to GiSPRO.** Type of subscription: 1 year £34.95 (AGI or RICS members pay £27.95) 2 years £59.95 3 years £79.95  
 \*For the special low rate of £20.80 you must pay by direct debit (UK bank accounts only) – call 01438 352617 or email for details.

CAPITALS please Title: ..... First name ..... Surname .....  
 Job title: ..... Company/organisation: .....

**Please complete: Type of organisation?**

- Central Govt (including agencies)
- Local Govt (including agencies)
- Utility
- Not for profit
- Education & Research
- Reseller, Dealer, Agent
- Commercial User
- Consultancy
- Developer/Manufacturer
- Service Supplier
- Other

**How do you use GIS?**

- End User
- Data Collector
- Data Supplier or Processor
- Technical Support
- Management
- Developer

**Total employees in your organisation** (tick one only):  1-9  10-29  30-99  100-249  over 250

Please debit my credit card for the amount of: £ ..... Credit Card (Visa, Mastercard) AGI/RICS membership No .....

All subscribers receive a receipted invoice. If you prefer to pay on invoice please tick here

\* Card No:

Start date: ..... Expiry date: ..... Security code (last 3 digits on reverse): .....

Signature: ..... Name on card: .....

Card registered address: .....

Postcode .....

Tel: ..... mobile: ..... email: .....

**IF PAYING BY CREDIT CARD, COPY & FAX OR POST THIS FORM IN A SEPARATE ENVELOPE TO:**

PV Publications Ltd, FREEPOST, 2B North Road, Stevenage, Herts SG1 4AT, UK  
[www.pvpubs.com](http://www.pvpubs.com) **email:** [enquiries@pvpubs.demon.co.uk](mailto:enquiries@pvpubs.demon.co.uk) **fax:** +44 (0)1438 351989

## EDUCATION

DISTANCE LEARNING GIS PROGRAMMES

# UNIGIS UK

### MSc/PgDip/PgCert courses in GIS by distance learning

Jointly delivered by Manchester Metropolitan University and the University of Salford

#### New Masters in

- GIS
- Applied GIS
- GI Technologies

Designed to meet the needs of GIS professionals and those new to the industry.

See our website for further details:

[www.unigis.org](http://www.unigis.org)

+44 (0)161 247 1581

[unigis@mmu.ac.uk](mailto:unigis@mmu.ac.uk)

Educating tomorrow's GIS professionals

## 3D SOLUTIONS

# ATKINS

### 3D solutions with earthmine™

Find out how earthmine™ 3D panoramic imagery and mapping can help support your next project.

[Jeremy.Haigh@atkinsglobal.com](mailto:Jeremy.Haigh@atkinsglobal.com)  
07803 260 759

## SPATIAL INFORMATION TECHNOLOGIES

# ENVITIA

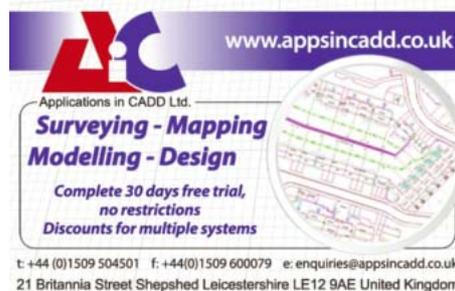
World Class Spatial Information Technologies

- Spatial Infrastructures and Portals
- Open Geospatial Web Services
- Data Quality and Modelling

Tel: 01403 273 173

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

## SOFTWARE



**www.appsincadd.co.uk**  
Applications in CADD Ltd.  
**Surveying - Mapping**  
**Modelling - Design**  
Complete 30 days free trial,  
no restrictions  
Discounts for multiple systems  
t: +44 (0)1509 504501 f: +44(0)1509 600079 e: [enquiries@appsincadd.co.uk](mailto:enquiries@appsincadd.co.uk)  
21 Britannia Street Shepshead Leicestershire LE12 9AE United Kingdom



**Cadcorp®**  
WORLD LEADING GIS SOFTWARE  
Open technology and  
standards-based solutions  
for sharing spatial data  
[www.cadcorp.com](http://www.cadcorp.com)



## PROFESSIONAL TRAINING DAYS

With the economy improving day by day...  
are you investing enough in training and new skills?



### THE COURSES

We offer a range of courses throughout the year for professionals looking to learn or refresh their skills, including Introduction to Total Stations and GIS Data Collection. For more information on our upcoming training courses, contact Sharon Robson on [sharon@pvpubs.demon.co.uk](mailto:sharon@pvpubs.demon.co.uk) or +44 (0)1438 352617.

### WHO?

All courses are conducted by Chris Little Training and include comprehensive notes, practical as well as classroom teaching, tea, coffee and refreshments throughout the day.

### WHERE?

Stevenage Arts & Leisure Centre (direct access from Stevenage Station).  
Free parking available.

**Call +44 (0)1438 352617 for bookings & more information**  
All courses cost £169.50 + VAT. Discounts available for three or more attendees.  
Attendees receive a certificate of participation plus copies of industry publications.

*Note: Numbers limited to eight persons per course. We reserve the right to cancel if there are insufficient attendees.*

*Image courtesy of Mobile GIS Services Ltd*

# A European Community of Geo-ICT SMEs

SME /  
SPIRE

smeSpire is an EU funded project that aims to encourage and enable the participation of small and medium sized enterprises in the implementation and exploitation of spatial information being made available under the INSPIRE Directive.

legal  
days  
form  
gaps  
terms  
beyond  
open  
best  
practice  
enable  
analysis  
integral  
including  
digital  
available  
Web  
obstacles  
training  
maintenance  
organised  
made  
data  
SMEs  
providers

[www.smespire.eu](http://www.smespire.eu)

SME /  
SPIRE



This project is funded by the European Union under the grant n. 296307

environmental

innovation commons network  
implementation

Business across large  
available project

Europe

workshops value  
knowledge

INSPIRE

content

member analysts  
smeSpire

data

geo-ICT

train

results

EU

**FREE Environmental Data Thinkshop:  
Opportunities for Small Businesses**

Small and medium sized enterprises (SMEs) are perfectly placed to exploit these opportunities and this Thinkshop will illuminate the issues around Why, What, Where, When and How to take advantage.

**Royal Scots Club, 23rd April 2014. For more details, turn to page 24.**