

#### Editorial:

Roger Longhorn Editor  
[t] +32 59 435396  
rogerlonghorn@geoconnexion.com

#### Correspondents and Contributors:

Peter FitzGibbon, UK  
Michael Gould, Spain  
Werner Kuhn, Germany  
Tom Poiker, Canada  
Craig Schwabe, Africa regional  
Michael P. Gerlek, Open Source  
Kevin Pomfret, Brussels / USA

#### Publisher:

Mai Ward Publisher  
[t] +44 (0) 1223 279151  
[f] +44 (0) 1223 279148  
maoward@geoconnexion.com

#### Advertising:

Micki Knight, Sales & Marketing  
[t] +44 (0) 1638 732566  
[f] +44 (0) 1638 732567  
[m] +44 (0) 7801 907 666  
mickiknight@geoconnexion.com

#### Mailing Address &

#### Subscription Enquires:

GEO:connexion Limited, PO Box 594,  
Cambridge, Cambs.  
CB1 0FY, United Kingdom  
[t] +44 (0) 1223 279151  
[F] +44 (0) 1223 279148  
[E] info@geoconnexion.com  
[E] subscription@geoconnexion.com  
www.geoconnexion.com

#### Design:

#### Burnthebook Design

25 Brunel Parkway, Pride Park,  
Derby, DE24 8HR United Kingdom  
[t] +44 (0) 1332 291 200  
[f] +44 (0) 1332 866 438  
[ISDN] +44 (0)1332 866439  
geoconnexion@burnthebook.co.uk

All extracts of Ordnance Survey mapping data illustrated in this magazine are © Crown copyright and are reproduced with permission. Media licence 178/00

GEO:connexion International ISSN: 1476-8941 is published by GEO:connexion Limited ten times a year (with combined December/January and July/August issues) and is fully protected by copyright. Nothing in it may be reprinted or reproduced wholly or in any part without the written permission of the editor.

ROGER LONGHORN

EDITOR

rogerlonghorn@geoconnexion.com



# LOCATION AWARENESS DEPENDS ON TECHNOLOGY

## SPATIAL DATA INFRASTRUCTURE DEPENDS UPON A WIDE RANGE OF TECHNOLOGIES, FROM THE GROUND UP.

This issue of GEO:connexion International features articles covering advances in surveying technology, 3D modelling and image processing, and mobile GIS applications, plus my own look at three spatial data infrastructure (SDI) programmes at national, regional and global levels. Why SDI – again? Because creating and benefiting from the use of spatial data spans all technologies – gathering geo data using terrestrial and marine survey methods, using both traditional survey equipment and GPS-enabled handheld and rugged tablet computers – to create the cartographic and hydrographic feature data that underpins all other information that may have a location attribute.

Once features have been 'mapped', how is this location-aware data collected? Numerous technologies are used, from sophisticated processing of aerial and ever higher-resolution satellite images (radar, LiDAR, infrared, visual) to handheld data loggers and vehicle-based GPS-enabled imaging systems (including cars, boats and UAVs). Sensor webs, both terrestrial and marine, are more prevalent, spurred on by advances in both sensor technology and means to interconnect sensors. And don't forget the huge volumes of information that contain addresses or place names as geo references.

In fact, once the basic underpinning geo data has been collected (and maintained) – an traditional industry in itself – then further value adding is based on 'location'. After all, everything is located somewhere – things, people and events! In recent years, the value of those location attributes has grown enormously as new tools arrived making it ever easier to record the location of things – including over time, i.e. for moving vehicles – and people! But knowing the location of something is only half the story – and half the value.

The real value of information comes from using that information. That is where allied ICT advances come into play – finding data, accessing it (on the move, if necessary), integrating it, perhaps adding further value, and then disseminating it. The internet and web mapping applications – plus scores of new 'location aware' applications that do not necessarily rely on web mapping; WiFi, GSM and other broadband communications technologies;

advances in modelling and simulation tools and algorithms; recording or transforming data to internationally agreed standards to permit integration of data from multiple sources and disciplines – countless technologies and practices go into making a successful information infrastructure that can benefit the largest number of people across the whole of society.

How mainstream is spatial data or the location attribute? As an example, look at some of the 'geo' issues covered in recent issues of the popular non-geo science digest *New Scientist* magazine. An in-car computer system containing a database of speed limits for every road in an entire nation, coupled to an on-board navigation system and local weather news feeds, computes and displays new safe stopping distances and road speeds in real time. Mapping and analysing 16,363 cargo ship routes globally helps investigate invasive marine species problems resulting from transporting and discharging ballast water internationally, linked to existing spatial and temporal species distribution data. Location tagging of social network chatter such as that on Twitter delivers profiled information direct to your location, perhaps based on your past Twitter-ing history, via your GPS-enabled smartphone – know what is happening in your area based on your own personal preferences. Full colour, 3D maps incorporating radar, LiDAR, aerial and ground survey and imagery data, accurate to 15-20 cm, becomes available for use by urban planners, architects, citizens groups – and games players! Highways of the future incorporate new types of roadside and in-car sensors and monitors, communicating wirelessly with one another, to reduce congestion, fuel consumption and lost travel time – not to mention frayed nerves!

And that is only the tip of the iceberg for current and planned information services based on location-awareness, made possible by integration of multiple technologies and advances in those technologies, both geo and ICT.

Information Infrastructure? Spatial Data Infrastructure? These are underpinned by enabling technologies, supported by the policies and data access and sharing principles that ensure the widest possible use of any form of geo-referenced information.



# CONTENTS

## FEATURES

### 20. INNOVATION PUSHES SURVEY AND DEVICE PERFORMANCE

Ashtec's François Erceau looks at advances in surveying and GIS technology from new applications to core GNSS services, yielding improvements in accuracy, interoperability and ease-of-use for all practitioners.

### 23. NEW MAP DATA COLLECTION TECHNOLOGY

A combination of rotating LiDAR, panoramic and high-resolution cameras plus GPS and IMU positioning come together in NAVTEQ True.

### 24. DUTCH KADASTER LEVERAGES GEOSPATIAL SOLUTIONS

Intergraph's SDI solutions support spatial data infrastructure (SDI) developments and other key initiatives in the Netherlands, at local, regional and national levels.

### 26. GPS AND GIS AIDS DISASTER MANAGEMENT

Victoria police use Trimble Juno SC handhelds to speed assessment of damage caused by bush fires on Black Saturday, February 7, 2009 in Victoria, Australia.

### 28. TECHNOLOGY MAKES A VAST DIFFERENCE

Surveyors at an Alaska gold mine track material extraction safely and productively from a distance using Topcon IS robotic survey equipment, offering reflectorless long-range surveying and integrated digital imaging and 3D modelling.

### 32. THE MANY FACES OF SDI

Our editor looks at Spatial Data Infrastructure (SDI) developments from a national, regional (trans-national) and global perspective, noting the similarities and some best practice.

### 36. OUR GREEN AND PLEASANT LAND

Bluesky International's James Eddy presents ProximiTREE, a new digital map layer for modelling the location and extent of trees and their proximity to buildings, offering both 2D and 3D height measurements for use in GIS, web mapping or CAD applications.

### 38. GIS DELIVERS THE GOODS

Vilnius Duonas shaves costs and optimizes truck usage with ESRI's ArcLogistics, generating significant logistics efficiency gains in a matter of months for one of Lithuania's largest bakeries.

### 41. 3D CITY MODELLING TECHNOLOGY

Blom, a leading European service provider for acquisition, processing and modelling of geographic information, has produced high quality 3D city models for more than 200 cities during 2009. The models are delivered either off-line or using the BlomURBEX® platform technology to stream the data over the web.

### 48. ECO SUSTAINABILITY AND 3D DESIGN

Sustainability principles need to be made common practice across for all designers. Desautl Système's Bruno Delahaye talks to our editor about eco sustainability, with some views of the future.

## NEWS AND EMERGING TECHNOLOGY

### 6. EMERGING TECHNOLOGY

### 14. PRODUCT SHOWCASE

### 16. MARKET WATCH

### 18. ANNOUNCEMENTS

### 50. GEOMART

**EVENTS** – Listing is found on [www.geoconnexion.com](http://www.geoconnexion.com)

## COLUMNS, CONFERENCES & MEETINGS

### 3. EDITORIAL

### 44. IMAGINA 2010 CONFERENCE REPORT

**COVER IMAGE:** Surveying the Fort Knox open pit gold mine, located near Fairbanks, Alaska owned by Kinross Gold Corporation, benefits from surveying and digital imaging technology that allows surveyors to track material inventories across vast spaces, as seen here

# ALGIZ 7

## Super-rugged, ultra-mobile



Probably the most full-featured  
tablet PC in the world:

- 1.6 GHz Intel Atom processor
- 2 GB DDR2 RAM
- 64 GB SSD
- Windows 7 Professional
- 2-megapixel camera with LED light
- MaxView™ technology display
- 7-inch touchscreen
- Dual Li-Polymer Battery Pack, 2600 mAh each
- GSM/UMTS/EVDO communication
- GPS, antennas integrated
- 802.11b/g
- Bluetooth
- Gobi™ 2000 ready
- Waterproof USB 2.0 and RS232 ports
- 1.1 kg and 140x230x40 mm
- Full MIL-STD-810G
- -23 °C to 60 °C
- IP65-rated



**handheld**  
www.handheldgroup.com