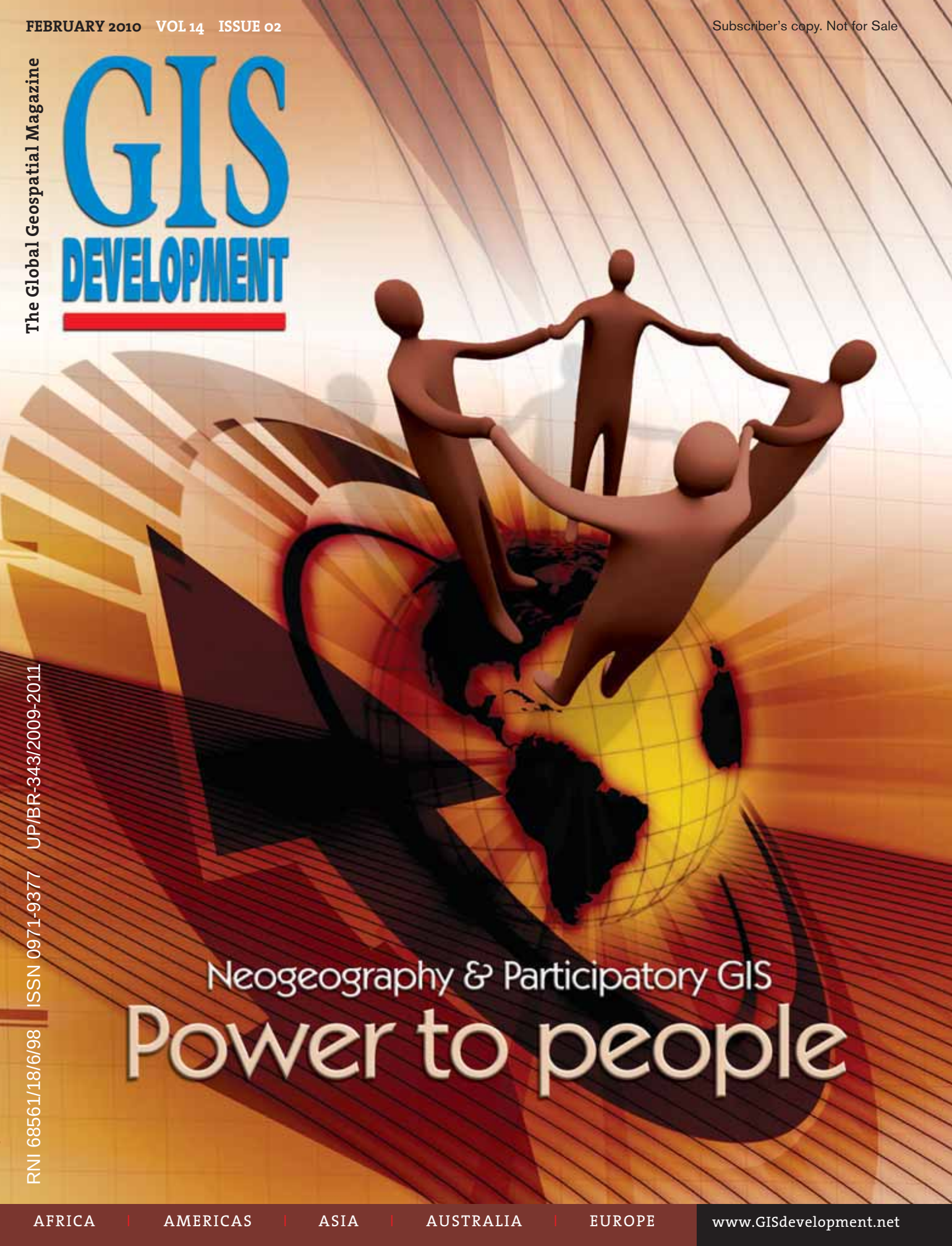
FEBRUARY 2010 VOL 14 ISSUE 02

The Global Geospatial Magazine

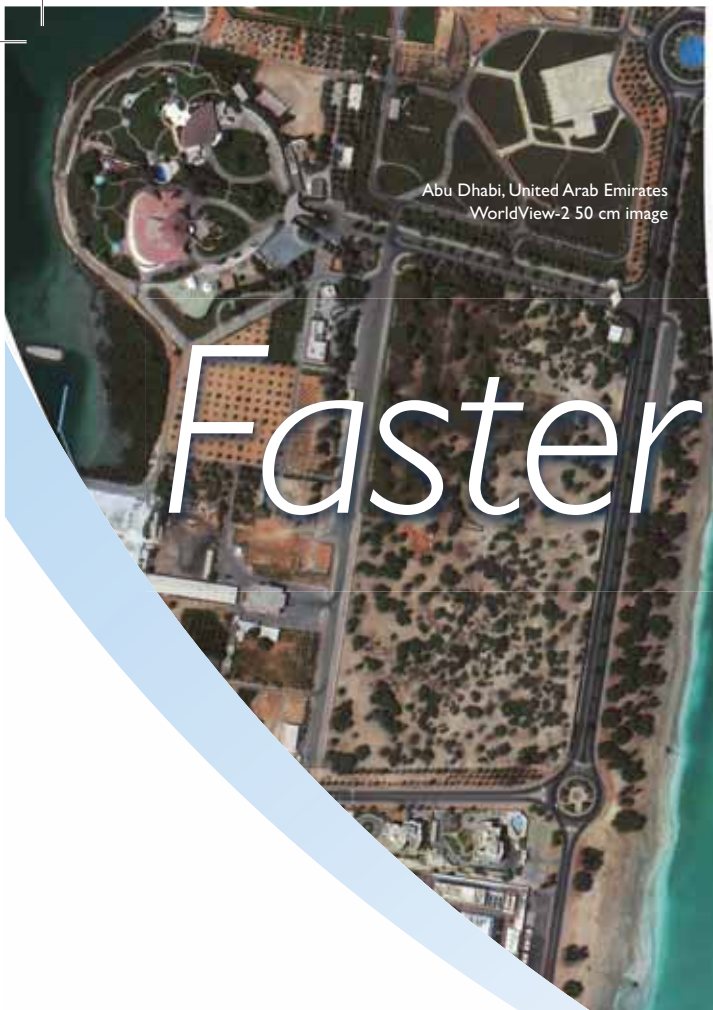
GIS DEVELOPMENT



Neogeography & Participatory GIS

Power to people

RNI 68561/18/6/98 | ISSN 0971-9377 UP/BR-343/2009-2011



Abu Dhabi, United Arab Emirates
WorldView-2 50 cm image

Faster Insight

Into Your World

Now with WorldView-2!

DigitalGlobe's WORLD IMAGERY SOLUTIONS

For the best visual understanding of the world, DigitalGlobe's world imagery products and services are at hand to provide deeper analysis and faster insight.

Our constellation of high-resolution satellites bring remarkable accuracy, agility and collection capacity, providing more of the world in the truest level of detail. The constellation now collects over 500 million km² of high-resolution imagery per year. So there is no longer a question of whether timely imagery is available. If we don't already have it in our vast ImageLibrary, we can get it faster than ever before.

You can then get rapid delivery into virtually any geospatial application with our extensive, OGC-compliant suite of web services on top of our robust hosting infrastructure.

Our mix of online services and offline products are tailored to meet whatever imagery needs you may have.

PUT US TO THE TEST
Place your order now and see how we can beat your delivery expectations!

Introducing WorldView-2

Launched October 8, 2009

- First 8-band multispectral high-resolution commercial satellite
- More than triples our multispectral collection capacity
- Joins our constellation (QuickBird and WorldView-1) for intraday revisit

Get product samples: worldview2.digitalglobe.com

www.digitalglobe.com
Corporate (U.S.) 303.684.4561 or 800.496.1225
London +44.20.8899.6801 | Singapore +65.6389.4851

DIGITALGLOBE®

Web Mapping APIs

Use Fast, Intuitive Web Maps to Share Your Geographic Knowledge

You can easily access and leverage your GIS with clients built on
Flex™ | Silverlight™ | JavaScript™

With ArcGIS® Web Mapping APIs, you can create and deploy GIS applications that are best suited for your environment. To save time and resources while learning how to use these APIs, ESRI offers live samples, training seminars, sample applications, and free maps and GIS tasks such as geocoding and routing. Discover how ArcGIS Web Mapping APIs can deliver mapping and GIS functionality in your Web applications; visit www.esri.com/mappingapis.

ESRI

The data you deliver is only as good as the technology behind it.

UltraCam technology creates the most advanced aerial mapping products for some of the world's most sophisticated projects, as well as small, single-craft operations. Each UltraCam is compatible with the **UltraMap** state-of-the art workflow software that allows you to focus on entire projects rather than just single images or stereo pairs.

If you are looking for a cost-effective option to upgrade or expand your current hardware, visit **microsoft.com/ultracam/gis**.

Take flight with advanced UltraCam technology.

Largest image footprint in the industry, fewer flight lines required.
UltraCamXp

Map the same footprints at lower altitudes with a new **wide-angle lens**.
UltraCamXp Wide Angle

Largest footprint from any **medium-format** mapping camera, ideal for smaller craft.
UltraCamLp

VEXCEL IMAGING
A Microsoft Company

Microsoft

Serious tools for serious mapping.

INSIDE...

INTERVIEW

19 **Volunteered geographic data is the future**

"GIS is all about describing the world. Geodesign will help people design a future that considers sustainability."

Jack Dangermond
President, ESRI

REGULAR FEATURES

GIS Development Pvt. Ltd. Printed and Published by Sanjay Kumar. Press M. P. Printers B-220, Phase-II, Noida, Gautambudh Nagar (UP) INDIA Publication Address P-82, Sector-11, Gautambudh Nagar, Noida, India Editor Ravi Gupta

Price: INR 150/US$ 15

GIS Development Pvt. Ltd.
A - 145, Sector - 63, Noida, India
Tel + 91-120-4612500 **Fax**+91-120-4612555 / 666

Neogeography

Participatory GIS

Power to the people

Prof. Arup Dasgupta
Managing Editor (Honorary)
arup.dasgupta@GISdevelopment.net

January was an important month for *GIS Development*. We came out with our 150th issue and we held our flagship event, Map India 2010. The theme of the event was "Defining a Geospatial Vision for India". With 1200 plus delegates, 28 countries and 41 exhibitors, clearly the vision was full of promise; and why not? While on the one hand Joseph Stiglitz calls for another round of stimuli for the economy of the developed world, on the other hand India shows a seven percent growth amongst all the gloom and doom. President Obama declares that India will not wait and to protect American jobs he promises to withdraw tax reliefs to companies who take jobs out of America. All these are part of this vision which shows India's strong growth.

There is a lesson in this for our geospatial companies that depend on work from abroad and a lesson to our lawmakers whose restrictive colonial approach to data availability is hurting the growth of the industry. Geospatial industries cannot live by selling boxes alone. They need data to be able to reach the next level of growth: value addition. The statement of the Minister of Science and Technology was both heartening and disheartening. He spelt out the futility of the present policy and promised a better one. That pronouncement gave me a distinct feeling of *déjà vu*.

Enough of the past; in this issue we cover an emerging and very important aspect of geospatial systems: peoples' participation. We were pleasantly surprised by the tremendous response from authors. It clearly shows that peoples' participation has arrived, not as a novelty but as a serious attempt to come to terms with their geospatial context. Open Street Maps showed the way; Google followed and now even established market leaders like ESRI have acknowledged the importance and value of neo-geographers. With hindsight this was only to be expected. On the one hand high resolution data from satellites require comparable fine scale data collection on the ground. The costs of such data collection are too high for any single organisation. On the other hand the common person is no longer satisfied being a passive spectator of development efforts for his benefit. He or she needs to be a part of that decision making process. Last but not least, when an event like the Haiti earthquake happens, there is just no time for a formal data gathering process. This is a situation where the efforts of neo-geographers come into focus. They can provide real time information and assist rescue and recovery efforts in a much timelier manner than formal databases. There are issues of interoperability and standardisation which need to be addressed. There is also a need for the neo-geographer to have a basic background in geography. But these are details; the future belongs to the people. ■

EditorSpeak

Africa

ZAMBIA

Satellite imagery for malaria control

Satellite imaging is being used to locate potential mosquito breeding sites in southern Zambia, in a bid to reduce malaria transmission in the area. Researchers use data, containing information such as soil moisture and water drainage patterns, to identify areas where mosquitoes live and breed.

NIGERIA

Nigeria to launch two satellites

All is now set for the launching of two Nigeria satellites to the space by the 3rd quarter, 2010. Dr. Alhassan Bako Zaku, Minister of Science and Technology, said that that the two Earth Observation satellites namely, NigeriaSat-2 and NigeriaSat-X are of high resolutions. Nigeriasat-2 carries a high-resolution imagery of 2.5m [pan] and 5m [mutispectral] along with a 32m spatial resolution payload that will be used to replace NigeriaSat-1 who have lifespan of five years which is still in the orbit.

Asia

INDIA

Rolta and Infoterra sign pact

Infoterra France has signed an agreement with Rolta India. The agreement allows Rolta to augment the capacity of its delivery centres for photogrammetric processing. Infoterra's "Pixel Factory" is a unique photogrammetric suite entirely digital, highly automated production work-flow designed to process high volumes of geographic data while maintaining a superior product quality. K K Singh, Chairman and CEO of Rolta India Limited, said, "The Agreement also promotes the cooperation between the companies to other areas of national interest such as agriculture (crop monitoring /forecasting), environmental monitoring, telecom network planning and risk management/disaster response, through proven and sophisticated solutions and services."

US help in rainfall prediction

The USA has agreed to provide India with imagery from its satellites on weather patterns over the Indian Ocean and the subcontinent that will allow scientists to predict rainfall 15 days in advance. At present, Indian scientists can predict the monsoons only one-and-a-half days in advance. It will also supply India a supercomputer that can analyse and

NSDI 9 spotlights on g-governance

NSDI 9, the annual event of the National Spatial Data Infrastructure (NSDI), was held from December 22-24, 2009 in Pune, India, with G-governance as its theme. It was held under the aegis of India Meteorological Department (IMD).

Prithviraj Chavan, Minister of State (IC) for Science & Technology and Earth Science opined that data created through public funds should be made available to the people. Data sensitivity might require certain restrictions though other speakers reiterated that data generated needs to be put to use for civil society planning and development. Discussions in the plenary session focussed on the involvement of NSDI in g-governance. Geotagging was highlighted as one of the most important capabilities of GIS for g-governance. Other focus areas of the event included NSDI research and capacity building and regional SDIs. The event also witnessed the launch of Karnataka State Geoportal.

interpret satellite images.
Climate change has made weather forecasts difficult for the Indian Meteorological Department (IMD). Unpredictable monsoons can cause losses of 1-1.5 per cent of Indian GDP

GIS-based voters' list

Karnataka State joint chief electoral officer BV Kulkarni said that by 2010, the voters' list for the city of Bangalore would be updated using GIS. The GIS-based voters' list would be made available at all the polling booths in the city. NR Narayana Murthy, chief mentor, Infosys and "Jaagte Raho" advisory board member said that citizens' potential to transform the city into a better and safer place could only be achieved by actively participating in elections.

ERDAS hosts user meet

ERDAS-India User Conference, hailed as a celebration of user community, was held on 18th January. Plenary speakers included Dr. Vandana Sharma of National Informatics Centre, Dr. KM Reddy of Andhra Pradesh State Remote Sensing Applications Centre, Major General Girish Kumar of DSSDI Project, Mark Reichardt of Open Geospatial Consortium and Sanjeev Nair of Department of Science & Technology. The plenary highlighted the integration of spatial data from various organisations, use of space technology in mitigating casualties during floods in the Indian state of Andhra Pradesh and creation of 3D model of Delhi city. Instances where ERDAS software was used in the process were also highlighted. Other issues discussed were benefits of standards and interoperability and policy issues regarding geospatial technology. The technology exposition witnessed an overview and demonstration of salient features of ERDAS 2010 product suite. The conference also featured technical sessions on infrastructure and urban planning, defence and security and natural resources management.

Award for Amity's vision

The project designed by Amity International School, Saket, New Delhi, won the top honours in the 4th annual competition, Future Cities India 2020. The Ministry of Science and Technology, Government of India and Bentley Systems presented a trophy and a cheque of 100,000 INR to Amity. Runner-up, Manava Bharati India International School, was given away a cheque of 44,000 INR and the trophy.

According to the jurors, Amity School portrayed the best way to develop modern Chandni Chowk (one of the oldest and busiest markets in central north Delhi) - keeping its heritage intact. In other categories, Apeejay School, Faridabad, Haryana won the best essay prize. Salwan public School, Rajinder Nagar, New Delhi won the best computer model prize and Father Agnel School, Gautam Nagar, New Delhi won the best physical model prize.

GIS map for seismic zones

The Remote Sensing Department of the State of Uttar Pradesh Directorate of Science and Technology has made a GIS map of the two states (Uttar Pradesh and Uttarakhand) to keep track of habitation in seismic zones IV and V of the country.

The department has found 80 spots lying in these seismic zones, which have rural or urban habitation. The project has been completed based on guidelines by the National Disaster Management Authority.

UAE

Geospatial benefit for limousines

Limousine companies in UAE could save millions of Dirhams after installing a high-tech system that tracks and monitors vehicles 24X7. ArabIT is the certified service provider in the UAE of the advanced telemetry fleet management system produced by Telargo of the United States. The on-board equipment allows real-time vehicle tracking and engine monitoring, enabling driver behaviour analysis. This, in turn, helps to preserve vehicle residual values and lower the insurance costs by increasing the transparency of operations. Location management also helps to ascertain whether vehicles have entered areas not covered by insurance or the contract.

RUSSIA

PCI now reseller of ScanEx

ScanEx Research & Development Centre and PCI Software (www.pci-india.net) have signed a reseller agreement. Under this agreement PCI Software will distribute the complete set of ScanEx software products, designed for remote sensing data processing, in the territories of India and South-Eastern Asia. ScanEx Centre offers a comprehensive sequence of handling space images. To date, dozens of software products of different difficulty levels have been developed for ground stations control, preliminary data processing, creation of RS data archives, as well as for thematic processing of optical and radar imagery data.

MALAYSIA

RazakSAT images to be available soon

Images recorded by RazakSAT, which orbits the earth along the equator will be made available this year to users. According to Deputy Science, Technology and Innovation Minister Fadillah Yusof, the images recorded by the satellite can be utilised for various applications such as precision agriculture, landscape mapping, disaster prevention, road network and urban planning. Even military can use these images to monitor activities along the country's border.

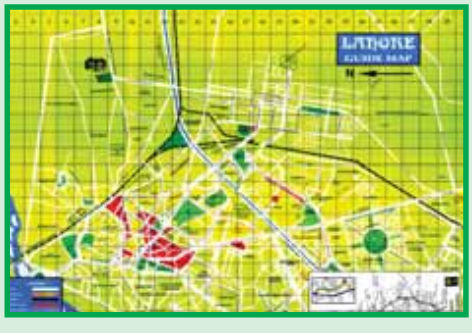
PHILIPPINES

Geohazard maps in an year

Philippines government has allotted P60 million to complete its nation-

PAKISTAN

Americans map sensitive info



According to a report in *The Nation*, Americans are conducting a detailed survey across the country and mapping each and every sensitive as well as strategic installation in Pakistan. Officials of Central Intelligence Agency, Federal Bureau of Investigations (FBI) and mercenaries of Blackwater have started making diagrammatical drawings of important routes, especially the areas which interest them the most. The report highlights, "They are collecting minute details of our geography including, urban areas, roads, bridges and other assets. Americans are employing all available tactics to get access to the maps, which have been drawn up by security forces."

wide geohazard mapping and production of digitised maps within the year- an effort that started in 1996. It includes the identification of areas susceptible to landslides, floods, coastal erosion and other ground instabilities. The 1:50,000 scale geohazard maps will be completed this year. As of end-December, the Mines bureau had mapped and assessed 89.6% or 1,451 out of the targeted 1,618 municipalities.

BHUTAN

UWICE seeding GIS

The Ugyen Wangchuck institute for Conservation and Environment (UWICE) organised a three-day training titled 'Advanced GIS in Geo-statistical modelling'. It was conducted by Dr. Moe Myint, a Research Scientist

from the Yale School of Forestry and Environmental Studies, Yale University, USA. This first of its kind training programme was structured to give hands on training on the use and application of R statistical software, ArcGIS in combination to model the spatial data in the geo-statistical perspective. The UWICE also conducted a two day in-house training on habitat modelling using GIS with the help of data points of snow leopard studies by Tshewang Wangchuck.

CHINA

Two more satellites launched

China successfully launched two of its satellites from the Tai-yuan Satellite Launch Center in Shanxi Province. Yaogan VIII remote-sensing satellite and science researching mini-satellite, Hope One, were put into orbit by a Long March 4C carrier rocket. Early this month, China launched Yaogan VII from the Jiuquan satellite launch centre in Gansu, China. Hope One satellite will be used by Chinese students and enthusiasts to study science aerospace and technology.

MONGOLIA

Atlas chronicling history

Archaeology and Landscape in the Mongolian Altai: An Atlas is a chronicle of 15 years of research and documentation in northwest Mongolia, and it is now available from ESRI Press. With its extensive maps and outstanding photographs, the atlas presents the 12,000-year history and cultural heritage of the people living in the rugged landscape found along Mongolia's borders with Russia and China.

ISRAEL

Telmap leading EMEA market

According to an independent research conducted by analyst house Canalys, Telmap is the dominant provider of mobile navigation in EMEA (Europe, Middle East and Africa), with 46 per cent market share at the end of Q3, 2009. This achievement is a result of Telmap's cooperation with mobile operators to deliver a comprehensive range of mobile navigation solutions to end users. The Canalys research looked into the use of mobile navigation across EMEA and found that of the 2.6 million people using phone-based mobile navigation solutions on a regular basis (excluding people using free trial offers), operator-provided navigation services, based on Telmap's solution was the number one choice.

GPS with MDTV receiver chips

Garmin, Mio, Navigon and others have integrated Siano's mobile digital TV (MDTV) receiver chips into their latest consumer GPS products. With Siano's MDTV receiver chips, PNDs meet the high demands of PND users, such as crystal clear reception in tough urban canyons and when travelling at high speeds.

Siano enables all vendors with 'free-to-the-user' mobile TV viewing, transmitting television programmes from major terrestrial television channels. Representative of Siano's global market reach, the navigation plus TV devices with Siano inside are available in Korea, Europe, China, and Brazil, supporting the different mobile TV technologies of these regions.

TAIWAN

GIS-based bike trail network

Taiwan EPA (Environmental Protection Administration) is GIS-based routing system for bicycle riders. EPA's aim is to promote the wider use of bicycles, increasing the development of the local bicycle industry and boosting the production value of green economy. Government agencies are providing data, such as bike trails' name, longitude and latitude, length, nearby tourist attractions, hostels and stores, to the EPA to help complete the system.

At present, the EPA website is showing graphics and images of bike trails at a cobined length of 281 kilometres on the Taiwan Island and outlying islets.

NEPAL

ICIMOD's stand at COP-15 conference

The International Centre for Integrated Mountain Development (ICIMOD) and the Centre for International Climate and Environmental Research (CICERO) together held a side event during the UNFCCC (UN Framework Convention on climate Change) COP-15 conference on 'Facing the Challenges: Climate Change in the Greater Himalayas'. The purpose of the side event was to allow the governments of the Hindu Kush-Himalayan (HKH) region to present the situation of their countries on climate change and to explain the priorities of their country in relation to adaptation. In contrast with the caucuses for Africa and the small island states, there was no advocacy for or representation of the interests of the mountain countries. Meanwhile, ICIMOD released a report which states that adaptation and mitigation of rural lands are complementary, not mutually exclusive, approaches to tackling climate change.

Positioning for Success Today.
And Tomorrow.

Visit us at Map Middle-East, 22–24 March 2010

Get your positioning right the first time. From mapping, photogrammetry and LIDAR to surveying and GNSS infrastructure networks, Trimble combines advanced positioning technologies with wireless communications, application software and services to provide complete solutions to various sectors including construction, engineering, transportation, utilities and natural resources. The result? Each one of our customers gets the industry-leading accuracy and dramatic productivity gains they need.

For a complete range of Trimble positioning solutions, visit **www.trimble.com**

Europe

UK

Aerial photos of 1949 London

Aerial survey specialist Bluesky has uncovered a series of 1949 original aerial survey photographs covering the whole of Greater London. The photographs were rediscovered following an agreement between Bluesky and Blom Aerofilms which will see these images, part of the UK's largest collection of commercial aerial survey images, available online at www.oldaerialphotos.com.

The original survey was taken by Hunting Aero Surveys in June and July 1949 and comprises two sets of photographs; a low scale survey of the whole of Greater London and coverage of the old administrative County of London at a higher scale.

Parish Online live now

Parish Online is a Web-based service designed to help Parish and local councils conduct their businesses more effectively. It provides access to Ordnance Survey digital maps, Getmapping's aerial photography and the National Land and Property Gazetteer, the nation's address database. Parish Online provides detailed mapping and some easy to use tools that enable the maps to be annotated, marked up, saved and printed. Parish Online can be purchased by an annual subscription.

LBS trends for 2010

Looking to 2010 Telmap believes that the top trends in LBS (Location Based Services) to look out for include:

- Location will start to enrich core services such as SMS and voice. In 2010, this trend will penetrate the low-end devices market.
- The explosion of mobile social networking has marked the advent of applications that integrate location into social communities. This is set to become popular as the ability to tag favourite places and share content in a simple and interactive way becomes a reality.
- Location–based advertising will come of age.

The LBS battleground is defined with direct to consumer players such as the original device manufacturers and internet players on one side, and mobile operators on the other side. Telmap believes that key developments in the mobile industry will continue to establish an environment for LBS to flourish in Europe.

DENMARK

Google at Copenhagen

Google has demonstrated a new technology prototype at the International Climate Change Conference in Copenhagen. The prototype is aimed at halting the devastation of rain forests by monitoring emissions from tropical deforestation and curtailing global warming.

The project, initiated by Google, is based on Google Earth's satellite images to pin-point the areas where deforestation is taking place. Google's cloud computing technology has powered the computational analysis of images taken via Google Earth to compare forest cover of areas to determine the rate of deforestation. Google, in order to develop the technology had collaborated with Greg Asner of Carnegie Institution for Science and Carlos Souza of Imazon.

Rugby club to track players

Bradford will be the first Super League club to track their players using satellite technology. They were at ninth in the table last year. Coach McNamara believes that GPS monitoring system will allow Bradford to have more detailed information about their players' performance during both training and matches. The device is placed in a harness incorporated into a vest and linked to a monitoring patch on the player's back. It will be used to monitor heart-rates and track a player's movement around the field.

Americas

USA

BUSINESS

NAVTEQ's agreement with Microsoft

NAVTEQ announced a new technology agreement with Microsoft. It will allow NAVTEQ to more rapidly deploy innovative collection capabilities and accelerate the collection, creation and storage of 3D map data and visuals. Microsoft will get 3D map data and visuals from NAVTEQ to power its new mapping features. "Microsoft is enthusiastic about this new chapter in its relationship with NAVTEQ and is focused on bringing the mapping experience alive for our consumers, using street level visuals powered by NAVTEQ," said Erik Jorgensen, corporate vice president of MSN at Microsoft.

USGIF joins COGO team

The United States Geospatial Intelligence Foundation (USGIF) has been unanimously voted into the full membership of the Coalition of Geospatial Organisations (COGO) during a meeting at the ASPRS/MAPPS 2009 Conference. COGO is a recently formed coalition of 16 national professional societies, trade associations and membership organisations in the geospatial field, representing more than 30,000 individual producers and users of geospatial data and technology.

Business Analyst with business search

The latest version of ESRI Business Analyst Online includes new business search capabilities and tools for more refined market research, giving business owners a thorough understanding of markets, customers and competition. It has been now integrated with Bing business search. It allows users to search for any type of business and refine search results. Bing online search capabilities provide users with access to the latest business listings, ensuring decisions are made using the most accurate and up-to-date information available.

GIS fraternity helping Haiti

The US Army Geospatial Centre's (AGC) hydrologic and environmental analysis branch compiled earthquake, water and geology maps, as well as a number of other data sets and made them available via the AGC's public and internal Public Key Infrastructure (PKI) web sites in the support of U.S. humanitarian efforts to Haiti recently. ESRI is also working closely with the GIS community and agencies responding to the Haiti earthquake by providing software, technical support, GIS data and personnel. Personnel and agencies

Geospatial in top tech spends

Cloud Computing, VirtualiSation, Service Oriented Architecture (SOA), Open Source Software (OSS) and Geospatial technologies are poised for increased federal government adoption over the next five years as cost-saving initiatives drive investment in these solutions, according to new research from INPUT. Nearly half of federal and IT industry professionals surveyed by INPUT believe these technologies will have a major impact on their technology environment despite concerns over security and up-front costs.

This report examines the market outlook for specific emerging technologies and provides recommendations for businesses seeking opportunities in the federal market. Questions answered by the INPUT report include:

- What are the factors driving growth in the emerging technology markets?
- How, when and why will the federal government increase adoption of these technologies?
- What are the primary drivers and obstacles to Cloud Computing adoption?
- How will security concerns impact IT adoption?

whoever are helping the relief effort can take advantage of maps, data, software and Web services available online through the ESRI Web site (www.esri.com/haiti). Some of the data and services include a 25-meter reference grid of Haiti, an ESRI Geo Viewer and Haiti basemap data from United Nations available on ArcGIS Online. In addition, ESRI-generated earthquake and recovery maps are available for both the media and public.

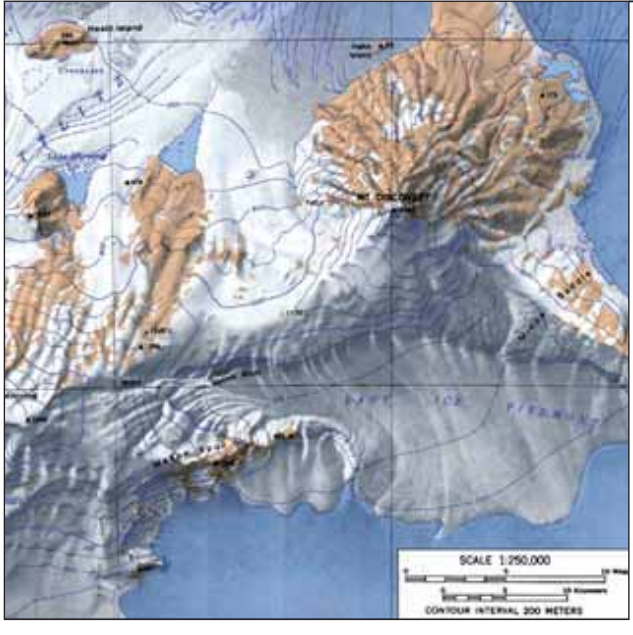
A new platform for REDD

Clark Labs created a blog (www.redd-modeling.org) devoted to utilising its GIS technology for REDD (Reducing Emissions from Deforestation and Forest Degradation) applications. Research Associate, Stefano Crema, is the primary author of this blog. The development of REDD projects requires robust modelling tools to address the inherent complexities of such projects. This blog will discuss methodologies, the potential of currently available land change analysis and prediction software and strategies currently employed at REDD pilot sites. Clark Labs' IDRISI Taiga software is already providing solutions for technical challenges inherent in addressing conservation strategies such as forest protection or sustainable forest production. The technical issues of REDD--carbon accounting,

additionality, baseline or "business as usual," leakage and permanence--can all be measured utilising the tools within IDRISI.

Clark Labs has also recently launched a new application area on its website devoted to REDD.

RELEASES



US Topo maps turn digital

U.S. Geological Survey (USGS) has turned US Topo maps into digital mode, keeping all the qualities of traditional paper topographic maps intact. However, in contrast to paper-based maps, US Topo maps provide technical advantages that support faster, wider public distribution and enable basic, on-screen geographic analysis for all users. Arranged in 7.5-minute quadrangle format, US Topo maps are available free on the Web. Each map quadrangle is constructed in GeoPDF format from key layers of geographic data — orthoimagery, roads, geographic names, topographic contours and hydrographic features — found in The National Map, a nationwide collection of integrated data from local, state, federal, and other sources.

ERDAS 2010 available now

ERDAS released ERDAS 2010 annual software. It includes new and updated versions of ERDAS' products to author, manage, connect and deliver geospatial information. It includes new versions of ERDAS IMAGINE, LPS, ERDAS ER Mapper, ERDAS Extensions for ArcGIS, ERDAS ADE, ERDAS APOLLO and ERDAS TITAN Client. In addition, ERDAS is introducing several new products, including IMAGINE Feature Interoperability and IMAGINE SAR Interferometry, as well as a technology preview of a new automated terrain extraction capability in LPS eATE.

OTHERS

WorldView-2 fully operational

DigitalGlobe announced that the latest high-resolution satellite, WorldView-2, has achieved full operational capability.

Imagery from the satellite is now available to global resellers, partners and customers. WorldView-2 expanded the constellation's collection capacity, enabling an annual imaging capacity equivalent to three times the area of earth's land mass and allows for intraday revisit, providing customers with the most timely, relevant imagery available in the commercial market.

3D GPS in Audi A8

Audi has announced that its new A8 model will integrate data from Google Earth to deliver 3D terrain maps alongside traditional satellite navigation data from mid-2010. This is the first time that Google Earth has been integrated into a production vehicle and will allow drivers to download points of interest, satellite imagery or information articles to the A8's eight-inch LCD display from the mobile network. Audi also claims that the system will be able to "predicatively analyse" route information, with the multimedia interface relaying navigation information to the car's other systems.

Protest against federal govt's stand

The federal government's decision to shut down the LORAN (Long Range Aid to Navigation) system used by fishermen and mariners in Maine is drawing protests from state officials and politicians.

Gov. John Baldacci and members of Maine's congressional delegation mentioned in a letter to Homeland Security Secretary Janet Napolitano last month that he was concerned about losing the system which had proven to be cost-beneficial while others believe that it is a mistake to shut LORAN down.

Given the vulnerabilities and limitations of GPS, LORAN should be maintained and enhanced to become a vital backup system to GPS for various critical infrastructure users. The best action should be to keep and upgrade eLORAN, a newer version of the system.

Guyana's GIS initiatives

Guyana is developing the world's first national low-carbon development strategy (LCDS) using enterprise GIS technology and expertise from ESRI to mitigate the effects of climate change. The government of Norway, the World Bank, the Clinton Climate Initiative and McKinsey and Co are working with Guyana to implement LCDS. This strategy aligns with the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD).The Monitoring Reporting and Verification (MRV) system will integrate field observations with satellite imagery and other geographic data using methodologies consistent with the Intergovernmental Panel on Climate Change (IPCC) guidelines for measuring, reporting and verification.

CANADA

Rolta and PCI sign agreement

PCI Geomatics has signed an agreement with Rolta India Limited.

This agreement will enable Rolta to develop cutting-edge earth science solutions by using advanced geo-imaging and photogrammetry capabilities. KK Singh, CMD Rolta, said, "Rolta has embarked on an ambitious programme and is developing the next generation of earth science Solutions to meet the varying needs of clients in the geo-imaging market."

Bob Moses is director, Tecterra

Dr Robert Moses, President and CEO of PCI Geomatics, has been appointed to the Board of Directors of Tecterra. Tecterra supports applied research and commercialisation of technology focussed on geomatics-based, intelligent, integrated resource management tools to observe, monitor, forecast and manage Alberta and Canada's land and natural resources.

IceWEB to track H1N1

Canadian Health has deployed IceWEB GIS server technology to augment their efforts to combat the growth of H1N1 flu virus.

IceWEB manufactures and markets purpose built appliances, network and cloud storage solutions and delivers on-line cloud computing application services.

Get Toronto city data online

Municipal data of Toronto city is available to the public now. Toronto major David Miller launched city's official data set catalogue (toronto.ca/open), at the Toronto Innovation Showcase.

This site includes data sets ranging from apartment inspection data to child care data availability to dozens of GIS mapping data (sets) that will enable a broad range of location-based applications.

BRAZIL

Airlines to get GPS landing system

Brazilian airline will equip all its aircrafts with sensors to allow the use of the GPS landing system, a landing and takeoff system and vertical situational display, a tool for determining the aircraft's position in relation to the ground.

The GPS landing system allows the plotting of curved segments in a single procedure, with increased accuracy and safety, enabling continuous ascent or descent.

Vertical Situation Display enables pilots to accurately identify information on ground relief and obstacles from the cockpit, by providing an additional tool for monitoring the position of the aircraft in relation to the ground.

VOLUNTEERED GEOGRAPHIC DATA IS THE FUTURE

Jack Dangermond
President, ESRI

How do you define GIS in today's changing world? How do you position GIS vis-a-vis geospatial and how do you see a convergence of these technologies happening?

GIS continues to evolve and be applied to many complex problems around the world. The technology itself plays three main roles - as an application platform technology for geospatial applications, as an information management system for geospatial content and as a framework for integrating many different types of geographic information. This framework supports cross cutting analysis, science and increasingly affects the way people think and approach problem solving.

Today, the term geospatial is being used synonymously with geography. Personally, I prefer to use the word geography because it is basically the root science of what we do (e.g. the science of our world).

A lot of integration is happening between GIS and imagery. What in your view holds the future in this aspect? The technology of producing and processing imagery is taking giant leaps. Will imagery be a branch of geospatial replacing cartography in the future?

First, imagery data has become a foundation dataset inside of a GIS. Historically, there's a distinction between image processing technology and GIS. In the last several years, with the integration of raster data models in GIS, we have seen the full integration of image processing tools with traditional GIS technology. For example, at version 10, ArcGIS can manage, process, serve and visualise imagery data with the same speed and functionality as traditional image processing systems. At the same time, modern high-end image processing products such as ITT-VIS have been engineered to fully integrate with GIS. This merging of technologies is having enormous impacts on the marketplace. People don't want to acquire, learn and support two technologies. They want their GIS to manage all types of geographic data and support common tools and trade craft in a single user experience. The big trend from my perspective is the enormous growth in the

The big trend technologically is in image serving wherein imagery is processed and served dynamically. This breakthrough happened only a few years ago and has changed the way people access and use imagery

volume, frequency and quality of imagery for use as standard background basemaps as well as advanced analytic applications. This imagery is also increasingly being pipelined into real time GIS applications for situation awareness and command and control environments.

I think there is a strong role for both kinds of geographic visualisations (imagery and maps) and we increasingly see them mixed in various kinds of applications. The big trend technologically is in image serving wherein imagery is processed and served dynamically. This breakthrough happened only a few years ago and has changed the character of how people access and use imagery. Image server technology not only processes imagery in near real time but also makes it available as disseminated services to mobile phone, browsers, desktops and high end analytic users. This is critical in applications like emergency management.

What will be the role of geospatial technology in sustainable design?

GIS has a long history of applications related to sustainability. Geodesign is a new emerging area of interest that focuses on integrating traditional GIS and interactive design tools. It integrates interoperative maps (suitability modelling) with the ability to sketch land use proposals on top of these maps and in such a way these proposals can be immediately evaluated in terms of their consequences. The idea is to combine the science of GIS with the ability to quickly evaluate the sustainability consequences of a design.

We are building these tools into core GIS technology. We think this will improve how users make design decisions on land use, business, public facilities and virtually every other type of location plan. The tools will help them evaluate the consequences of the decisions so that they can then ultimately make wiser choices.

Right now GIS is all about describing the world. Geodesign will help people design a future that considers sustainability. They will incorporate all the knowledge and consider all of the environmental factors that will ultimately make us more sustainable.

What in your opinion are the three most disruptive technologies we will see in the next five years?

The first is the computing platform. GIS technology has evolved from mainframes to mini computers to workstations to desktops to client server technology to now rapidly being deployed on the Internet with Web services. With each of these historic stages, GIS has grown about an order of magnitude. This platform, in addition to reach, has the added characteristic of being much easier. Ultimately, I see the Web as the platform for a kind of distributed, global GIS. I see multiple orders of magnitude of growth reaching all corners of the world, from rural farmers in Africa to businessmen in New York. GIS servers provide the foundation for both enterprise GIS and Web GIS. GIS servers are evolutionary technology.

The second technology is that of mobile. Mobile GIS is not stand alone; it is intermingled with GIS servers. Mobile GIS serves map and analytic services that help the mobile workforce connect back into the enterprise, capture data in the field and send it back.

The interesting technology trend involves the concept and technology supporting volunteer geographic information (VGI). This involves users (via mobile devices and browsers) to contribute geographic data. Today, we see the beginning of this with simple sketching and dots on maps at consumer websites. This year, we will be releasing a Web application that does this directly on a GIS geodatabase. These transactions

will be done with well organised data models in a DBMS. This approach is very powerful because it means that this type of observational data can be intermingled with all the other GIS layers and analytics applied to it so we can build new kinds of applications. This Web 2.0 concept will support many applications (i.e. citizen science, community feedback and crowd sourcing, etc.). Fundamentally, all three of these changes are enabled because of Moore's law. Computing is getting faster, pipes are getting bigger, storage is getting cheaper, etc. It is just the systematic and steady application of Moore's law. I have seen it through my entire career.

How can the geospatial community become relevant in the context of world challenges today?

The footprints that geospatial professionals have laid down are exciting and are contributing enormously. They are making organisations more efficient, helping people do more science based analysis and make better decisions. The next big step will involve GIS knowledge being available as Web services on the open Web. Today, GIS is already successful at and is delivering huge value across organisations and enterprises. The next big step will be to leverage these individual contributions to build a large framework of geospatial information that can be leveraged by all of society.

If we go back to the fundamentals of geospatial, we would say one of the reasons that it has been successful is the concept of sharing data. This will require that each user who creates geographic knowledge, serves it out in open standards based services that can be easily discovered (like REST services), that can be mashed up with open APIs like the ones that ESRI now provides. This will mean the entire Internet will be leveraged for GIS. To realise this vision we will need to collaborate and share our work, datasets, applications and knowledge. The internet provides us the technical framework to do this. I have a lot of hope that GIS users and the concepts that we have built can be leveraged in that way to support advanced environmental applications, land use planning applications, health applications, making government transparent applications, and on and on.

GIS development **has just completed 150 editions. You have been following GIS Development from its inception. What is your view about our publication? Are we meeting the aspirations of the stakeholders? What more can we do?**

This is an enormous accomplishment. To be able to pull this off from nothing to such a powerful knowledge dissemination publication has been very important for our field. Your work and your dedication on an ongoing basis has meant that people who didn't have access to both the fundamental technologies and applications and knowledge of how to implement them, had their eyes opened and had understood things much better. I am sure your readers as well as other stakeholders would agree that it has provided a kind of community that is unparalleled in the geospatial world. ■

Franz W. Leberl
Institute for Computer Graphics and Vision
Graz University of Technology, Austria
leberl@icg.tugraz.at

TIME FOR NEO PHOTOGRAMMETRY?

With the advent of Internet-of-things, all objects can be catalogued, monitored and tracked. Community contributed images and Web-resident photogrammetry solutions will soon dominate geo-data

In January 2008, a keynote was delivered at the Consumer Electronics Show in Las Vegas by Microsoft's Bill Gates. He argued that the world had just entered into its second digital decade. He defined the first digital decade by:

- The install base of personal computers at well beyond 1 billion;
- Cellular telephony available to more than 40% of humanity;
- Broadband connectivity having gone from nothing to 250 million users;
- Imaging by the "power of software" in lieu of film.

Of course, Bill Gates connected this to the Internet which predated the first digital decade. What strikes one in this statement is that "digital imaging" is one of the four defining elements of our digital age. Well stated, given that a year later, in 2009, the Nobel-price for physics was awarded to the inventors of the digital camera. Anyone dealing with "photogrammetry" will thus pay attention. An alert observer will note today's creative Internet-juices enabling dramatic changes in how we all live, work, read, interact, travel and drive. Some say that we have hardly scratched the surface of what is feasible. We do snap digital images with a smart telephone, upload them via a broadband connection and publish them on a medium like Flickr, and this is happening at a rate of 1 million images per month, with 3 billion images already being available today. 20% of all Internet traffic is taken up by YouTube movies.

How is this related to geodata? The major source of fresh geodata is from imagery and their analysis by photogrammetric and photo-interpretation technology. One might ask how a field so heavily dependent on images will change during the second digital decade. Let us try and find out.

LOCATION AWARENESS OF THE INTERNET

Search in the Internet

'Search', as an Internet-phenomenon, is best understood by the rapid growth of one company, Google. By 2005, search started to become supported by geodata, first in the form of 2D street maps, identical to the data used in car navigation. Not much later, the 3rd dimension was introduced in the form of a topographic model, a DEM and the density of information was increased by the use of aerial or satellite orthophotos. Today's search providers all need to offer a 'location-aware internet'.

Navigation and location based services

Massive digital street map repositories have been assembled for navigation, and were entirely decoupled from the Internet. Today, it is the location-based search function that overwhelms the commercial relevance. Adding the GPS enhances the travel planner to a navigation system so that navigation function is now available on every smart phone equipped with a GPS-receiver. As a result we now observe a vast transition of geodata from everyone's car to everyone's pocket. "Everyone" is us all, but also includes experts in location-based services or engineers using augmented reality to combine camera images from a smart phone with computed 3D geoinformation received via a broadband connection to the Internet.

From the Internet-of-things to ambient intelligence

Objects in museums or parts of a car are valuable, do of course get digitally cataloged and are being oftentimes digitally modeled and closely monitored. However, with the advent of the Internet-of-Things, all objects, even living beings do become of interest to cataloguing, monitoring, tracking.

At the root of the development is RFID in the form of tiny markers as small as 0.5 x 0.5 mm2. These get embedded in all objects as they are being manufactured, as well as in many living beings, and even in electronic markers in credit cards, car keys, phones etc. One can see the RFID as the successor of the bar code.

It seems fairly obvious to combine RFID-marked objects and beings with a wireless network and the Internet. If we assign to each marker an URL, we have the Internet-of-Things. An essential idea of this development is the location of each mark and associated object. In the Internet-of-Things, location will need to become known at a human-scale, naturally in 3 dimensions and at accuracies in the ±10 cm range.

Now consider an extension of the Internet-of-Things with hundreds of sensors in each home measuring everything one can think of, from the temperature of each wall, the moisture in each room to the status of the milk supply in the refrigerator and associated computing and display facilities. We find ourselves in a world of ubiquitous sensing, computing, connecting and displaying that will extend to all areas of the human presence. One denotes this as ambient intelligence.

The entire surface of the Earth at	15 cm
Urban street canyons at	2 cm
Important building interiors at	0.5 cm

Table 1: Expected image resolution for a 3D World Model.

Example of a 2D street map and the vastly enriched information when superimposed by an orthophoto,,. This example is being taken from www.bing.com/maps.

Augmented Reality in a Smart Phone connects the image of a natural environment with computed data from a GIS, perhaps showing an underground structure This example is from project Vidente (2009).

AN EXABYTE 3D WORLD MODEL?

Support for an Internet-search is thus but an initial factor in developing a model of the world at a human scale so that we can experience the world via its model in some realism.

Photosynth Output - The block of images is triangulated, a sparse cloud of 3D points has been computed and the individual photographs can now be navigated in 3D.

Earth's land area, sq km	148 million
Area of an aerial photograph, in sqkm	4
Aerial photos, at 10 times redundancy	350 million
Terabytes for images of the landmass	190,000
People on Earth	7,000,000,000
Structures on Earth	1,750,000,000
Images, at 40 per structure	70,000,000,000
Terabytes for the images of structures	1,260,000
Structures with need for interior	175,000,000
Images, at 100 per interior	17,500,000,000
Terabytes for images of the interior	315,000

Table 2: The input images needed to create a 3D World model are expected to be at geometric resolutions shown in Table 1. To fully automate the image analysis, a redundancy factor of 10 is postulated. This will add up to more than 1 Exabyte of input data. We assume a structure to exist per 4 people. For example, France has a population of 60 million and 15 million structures, as reported by the Institut Géographique National (IGN) in Paris.

The Internet-of-Things and Ambient Intelligence may come to mind when reflecting on such ambitious visions. The human scale of such data leads one to a specification for the geometric resolutions, as shown in Table 1. Street canyons need to be sufficiently resolved to be able to read street signs and text on facades. The interior of buildings needs to be resolved to model geometric detail.

We now convert this into an estimate of Terabytes of the image sources. Table 2 summarises that we will deal with data in excess of 1 exabyte to develop such a model once, and additional data will be needed for upkeep.

NEO-PHOTOGRAMMETRY: COMMUNITY-CONTRIBUTIONS TO A 3D WORLD MODEL

Considering the need to use street-level imagery and images of the interiors of important buildings or shopping malls, one will quickly expect that such images will come from us, the universe of Internet users. We are already feeding images at a rate of 1 million per day into FLICKR and similar sites. In anticipation of such developments, Microsoft has introduced its Photosynth solution, and has begun to integrate this with its BING/Maps location aware search engine.

While this is an ongoing effort and far from being completely integrated with the 3D world model, it already shows how users can submit a set of overlapping images from street sides or from the interior of buildings. The uploaded photographs then get processed by the website into a triangulated block and a navigation tool helps one to navigate the 3D space using the rectified 2D photographs. Figures 3 and 4 explain.

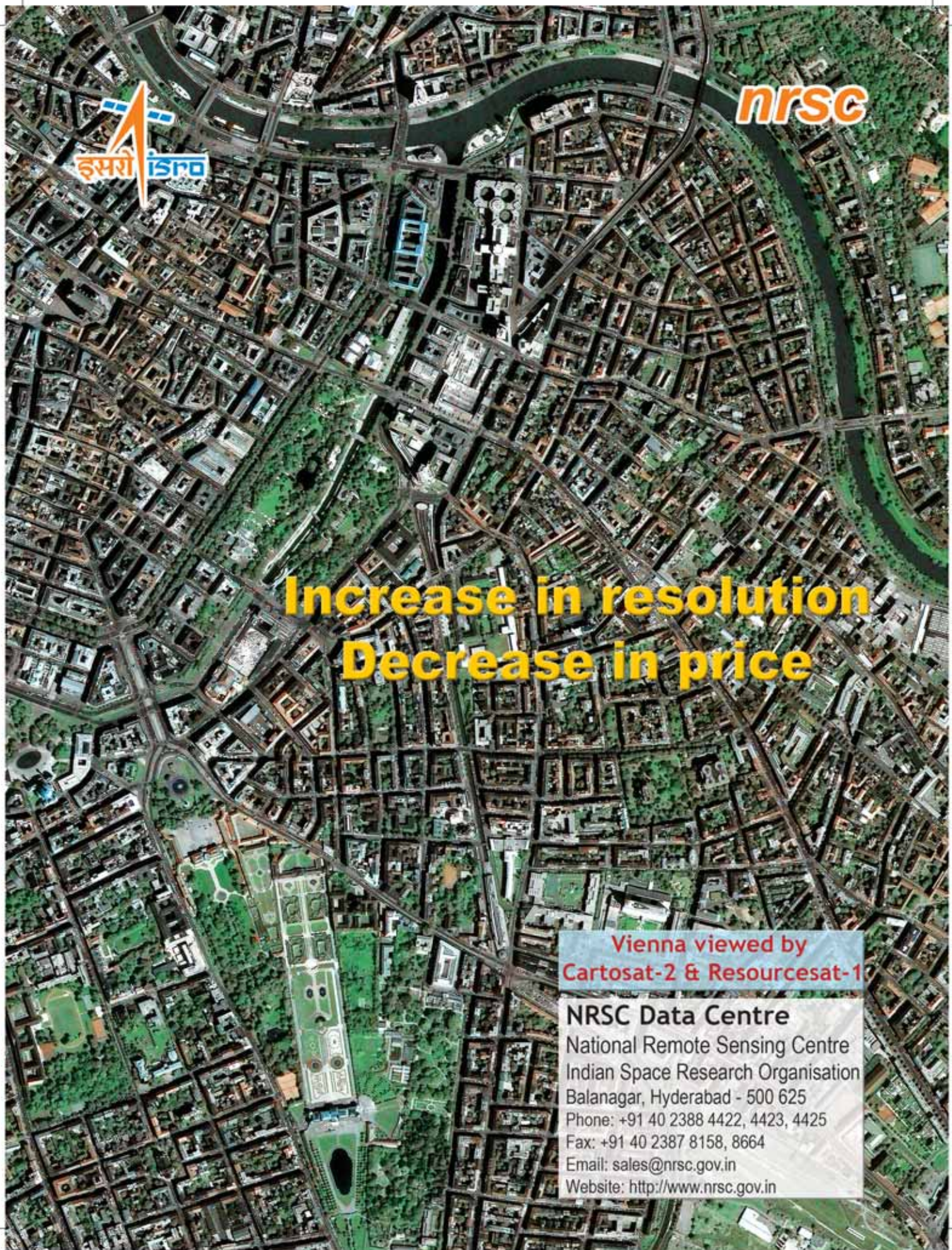
NEO-PHOTOGRAMMETRY: TOWARDS WIKI-TYPE URBAN MODELS

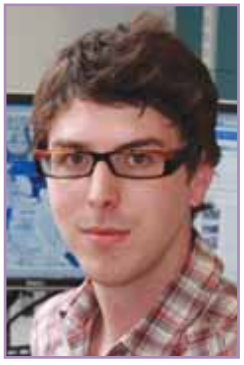
Traditional photogrammetric mapping has been in the realm of industrial organisations collecting imagery from the air and developing maps and perhaps 3D information of urban spaces from these images.

The 150 sq km surface area of the city of Graz has traditionally been imaged from the air onto about 150 film images. Scanning of these images may have produced a pixel size in the 25 cm range. Lately, a digital aerial coverage has been collected, but now on 3000 images, simply because the lack of variable image costs results in selecting a smaller pixel size at 8 cm, and because one collects images at a much higher overlap, namely at 80% forward and 60% sideward overlaps: less occlusions, more automation.

But what if one augments the coverage by street side imagery? Graz has about 70,000 structures. If each one of these gets photographed onto 40 images, either by the owners or by interested amateurs, one will obtain almost 3 million photographs. If one had those street-side images, do we still need aerial imagery? We may get surprised by emerging fully automated photogrammetric solutions, such as those implemented inside Photosynth, and seeing these executed on GPU-accelerated computers capable of passing through 3 million photographs within a single day.

We envision a geo-data-future dominated by community-contributed images and Internet-resident automated photogrammetry solutions. One may well find an entirely new mapping paradigm, away from industrial solutions and defined by the global community of Internet-users, each one a potential neo-photogrammetrist. ■


इसरो ISRO
nrsc
Increase in resolution
Decrease in price
Vienna viewed by
Cartosat-2 & Resourcesat-1
NRSC Data Centre
National Remote Sensing Centre
Indian Space Research Organisation
Balanagar, Hyderabad - 500 625
Phone: +91 40 2388 4422, 4423, 4425
Fax: +91 40 2387 8158, 8664
Email: sales@nrsc.gov.in
Website: http://www.nrsc.gov.in



Alex Singleton
Centre for Advanced Spatial Analysis
University College London
London, United Kingdom
a.singleton@ucl.ac.uk

ENGAGING PEOPLE FOR COMMON GOOD

Neogeography has a clear power to engage with the public by providing access to information that previously has been disparately located or in formats that hindered interpretation

Whether they are aware of it or not, most casual browsers of the Internet over the past five years would have come across at least one website which could be described as being an example of neogeography. These websites commonly show some sort of spatially referenced data as a point or choropleth map overlay on top of Google, Yahoo, Microsoft and more recently OpenStreetMap-supplied cartography or satellite background layers. These "mashups" will typically function as "slippy maps," where users can click and drag around a map interface, with the content seamlessly streamed to the viewer without needing to refresh the web page.

An example of a neogeography website is Maptube (www.maptube.org) from the Centre for Advanced Spatial Analysis at University College London. The Maptube website and accompanying software GMapCreator enables a user to convert a standard offline GIS data file (e.g. Shapefile) into a format which enables display online and on top of Google background imagery. These data can then be overlaid with maps created by other Maptube users, enabling collaboration or enhanced interpretation. The interface also gives users some basic GIS operations such as zooming, panning and the ability to show, hide and change the opacity of layers. Websites such as this have taken GIS away from the realm of the isolated desktop user and in doing so created a broader and enthusiastic new audience who may traditionally have only engaged with geographic information as part of simple map reading tasks.

Evolution of neogeography

The two main technologies that have enabled neogeography are Asynchronous Javascript And XML (AJAX) and Application Programming Interfaces (API), both of which are now supported in modern web browsers. AJAX enables the development of websites with interaction that feels more akin to a desktop application. The XML component of AJAX refers to eXtensible Markup Language which is a set of data standards that enable information to be formatted in such a way that it is usable across a variety of different software. For example, using GeoRSS (an emerging XML type standard), location can be coded into online content such as news stories or blog posts. This information could then be used in multiple Web applications; for example, simple display on top of a base map in a web browser, or, in location based services delivered to Internet equipped mobile phone handsets. In both applications the source information would remain the same, however the application differs. APIs are available from a

Full-function Mobile GIS Software

Just 50% of your cost ~~$700 USD~~

Only SuperPad 3

SuperPad 3 is upgraded significantly to boost your field efficiency and productivity.

Its user interface, performance, functionality, and customization flexibility are all enhanced greatly. The mapping speed and data-collection effectiveness can be highly improved, too.

You would spend much less cost and time to complete more and better tasks in the field!

Key Features

- Intuitive and user-friendly interface
- Powerful and convenient editing functions
- Uniquely support drawing interrupting and on-the-fly projection
- Perfect integration with Enterprise Server Software
- Fully compatible Symbology with SuperGIS
- New core component fits any mobile devices supporting .NET CF
- Multiple extensions, e.g. Advanced Attribute Editing, Sketch Labeling, Bird View, Network Tool, etc.

Compare SuperPad 3 with an equivalent product :

Task	SuperPad	xxxPad
Drawing		
Full extent redraw	14 sec.	35 sec.
Zoom in certain extent	1 sec.	4 sec.
Editing		
Add a feature	1 sec.	35 sec.
Move a feature	1 sec.	20 sec.
Delete a feature	7 sec.	36 sec.
Edit an attribute record	1 sec.	20 sec.

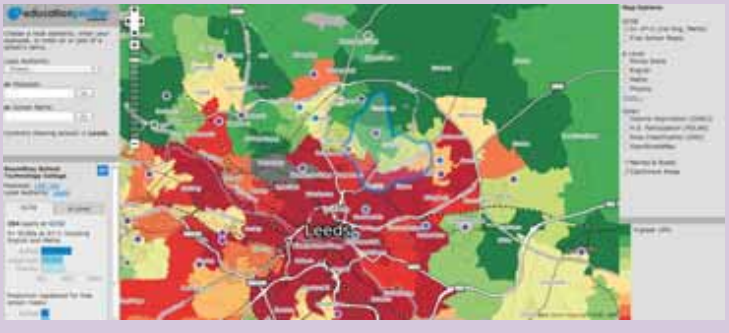
Tested data: 88564 point features in 15.8MB
Hardware: GETAC PS535E CPU 400MHz 64MB SDRAM.
For more testing results, contact staff@supergeotek.com

SuperGeo GIS Software & Solution

Learn how to save more, please visit www.supergeotek.com
or contact staff@supergeotek.com

Maptube showing the distribution of deliberate fire incidents in Greater London

The OpenStreetMap website showing an area of South East London



The Education Profiler website showing a school in Leeds, England

variety of websites, both spatial (e.g. Google Maps, Yahoo! Maps or Microsoft Live Maps) or aspatial (e.g. Facebook, Nestoria) and provide a variety of functionality to third party applications. Although it is a task to create websites using APIs, the construction of these applications is far simpler than the learning curve required to install, configure and manage more traditional Web GIS platforms. Other contributing factors to the rise of neogeography have included the increasing prevalence of cheap mobile data bandwidth, the growing sophistication of mobile phone web browsers and the decreased cost of devices that are location aware. Through these combined technologies citizens can act as distributed sensors to gather huge volumes of information from across wide geographic areas.

This crowdsourcing relates to how large groups of people can work together for a common goal by performing functions that would either be difficult to automate or expensive to implement in a non distributed environment. One, if not the most successful neogeography project using this collaborative paradigm is OpenStreetMap which aims to create a set of free to use global map data through assimilation of volunteered geographic information. This information is collated by the OSM community from a variety of sources including GPS traces, digitising of satellite data or the agreed upload of licence free spatial data from third parties (e.g. a NMO). Once entered into the OSM database, these data then become available online as a slippy map in a publicly accessible website. In addition, unlike commercial mapping websites, the data are also available to download in vector format with a creative commons licence where the only requirement being that an attribution is given when the data are published or displayed. This resource has begun to spawn a number of commercial businesses who have based their services around these data.

Digital justice: Public data, neighbourhood and civic engagement

Neogeography requires something to map, be this community created content such as the location of photographs on Flickr or the availability of free to access databases such as houses for sale, e.g. Nestoria. There are a variety of potential motivations for why people create mashups from data such as these. Some of these mashups exemplify serious social concerns, such as plotting hurricane damage and locations of people at risk, while others remain less serious such as the global prices of beer or Big Macs.

However, a trend starting to emerge from the many multiple examples of neogeography are increasingly sophisticated uses of the technology to provide information portals that create opportunities for civic engagement or pro-

vide neighbourhood intelligence. For example in the UK, one can request that local authorities fix some aspect of the local area or get alerts of potential new buildings being planned near one's home. Other sites provide local intelligence systems detailing multiple aspects about the neighbourhoods in which one lives. It looks as though this trend is set to continue in the UK.

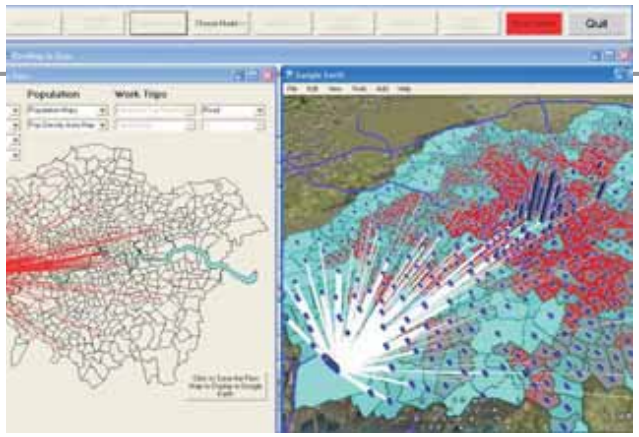
Neogeography has a clear power to engage with the public by providing access to information that previously has been disparately located or in formats that hindered interpretation. As such, neogeography powered geoportals present significant potential to enhance social justice by empowering local communities with sophisticated yet simple-to-use tools for describing and challenging those issues of neighbourhood concern. However, during this flurry of development, it is important for policy makers to remember that there is a world outside of the Internet.

Previous research at University College London showed that these patterns of disengagement are far more complex than a simple "digital divide," with users of the Internet engaging (or not) in many different ways. Promoting the benefits of the Internet or enabling access to restricted groups is a priority if the maximum societal benefit is to be utilised from neogeography.

Towards an intelligent neogeography

Neogeography has had massive impact in technical communities and is demonstrating increased potential to benefit society. However, neogeography is already equipped with the bulk of those tools necessary to enable rich data to be assembled and then displayed in visually engaging formats. So where do we go from here?

Two avenues for future developments in neogeography that appear to have growing academic and community interest are data mining and linking visualisation to modelling capability. Much of these distributed data are openly available through APIs and can be queried by third party applications. However, as Charles Leadbeater (author of "We Think") describes, "crowds are not automatically wise and mobs are not necessarily smart." How do we make sense of all this data, what is reliable, and how can we aggregate it into operational information? Fortunately for the neogeographer, data mining communities have been thinking about this for a long time

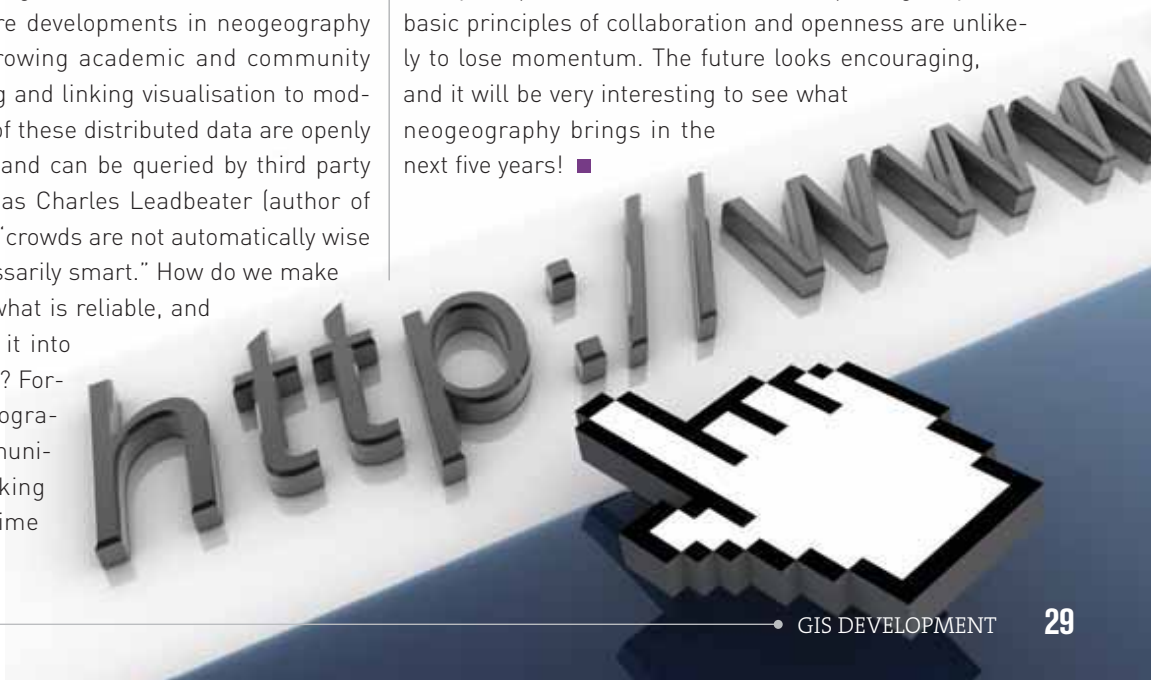


Spatial interaction model of transport flows outputting results to Google Earth

and a plethora of knowledge exists which could be brought into the field. This area of research is likely to be enhanced further with the growth of the semantic Web where data is provided with associated metadata enabling enhanced linkage or query. A second area of development is the linking of analytical platforms to neogeography style visualisations which will transform simple query and browse type websites into those which offer modelling and scenario testing capability.

For example, developments in the computational statistics field have begun to extend the capabilities of the popular statistics package R to offer Web service capability. These could be loosely coupled to neogeography interfaces and create very sophisticated analytical tools.

Neogeography has made significant advances in bringing basic GIS operations to the masses, enabling users with no previous geographic training to create, search and share their geographically referenced data with relative ease. Although the use of the term neogeography may lose popularity in a similar way to other online neologisms such as "cyberspace" or the "information super highway," the basic principles of collaboration and openness are unlikely to lose momentum. The future looks encouraging, and it will be very interesting to see what neogeography brings in the next five years! ■



Rolta provides dramatic insights through innovative fusion of business & spatial information

EGIS Consulting / Customisation and Geospatial Fusion™ Solutions

EGIS Technical Services

Photogrammetric Mapping / Imaging Solutions & Services

Advanced Military Mapping / Charting / EGIS Solutions / Image Exploitation

EGIS Solutions for Military Operations

EGIS for Homeland and Maritime Security

Rolta is a leading provider and developer of state-of-the-art and field proven Enterprise Geospatial solutions / services for core segments such as Infrastructure, Telecom, Electric, Airports, Urban Development, Town Planning, Environmental Protection, Defense and Homeland Security to clients worldwide. Rolta has successfully executed multi-million dollar projects in these segments in over 20 countries.

Innovation Technology
Rolta envisions a world where spatial data, business data and analysis converge, without the nightmare of custom programming and replacement of legacy applications. A world in which businesses assimilate, analyze and visualize complex relationships, operational status and trends in seconds, not days. A world in which information accessibility is no longer the constraint to informed decisions. This is the world of remarkable technology innovation, a world enabled by Rolta's Enterprise Geospatial Information Solutions (EGIS).

Insights Technology
Rolta understands that insights happen when you can see the world differently. Rolta specializes in the convergence of spatial data, imagery, business data, network topologies, asset data, operational status and event data. As these typically diverse and isolated information sources are converged, new relationships emerge; new patterns and trends are visible and new levels of real-time operations are achieved.

Impact Technology
ROLTA Geospatial Fusion™ provides impact for business and governments. Spatial and business information convergence amplifies the insights that can be visualized. The speed of decision-making is accelerated because of Rolta's integration technologies and the rapid configurability of its solutions. Benefits are realized as organizations use ROLTA Geospatial Fusion™ to focus on gaps in operational work processes.

Rolta's Geospatial Fusion™, based on the company's own IPR, is an innovative, world-class solution and frame work, which fuses the information, applications and processes of an enterprise into a seamless, cohesive solution. This extends the value of the legacy systems, GIS and existing investments in data and enterprise business applications by enabling cross-functional integration and creating spatial business and operational intelligence.

Rolta's cutting-edge Earth Sciences solutions are based on an exceptional combination of Rolta's existing repository of Intellectual Property (IP) and key technologies acquired at the source code level from various companies worldwide. Rolta Earth Science solutions provides some of the most advanced Geoimaging and photogrammetry capabilities.

Rolta provides specialized services and solutions for data capture and integrity checks, especially for Remote Sensing based thematic mapping using multispectral and hyperspectral satellite data, Photogrammetry mapping using aerial and multispectral satellite images, and LiDAR processing. Other solutions and services include 3D Terrain modeling, orthophoto creation, digital cartography, base map creation and updation, 3D GIS creation, analysis and visualization, etc.

Rolta has one of the largest State-of-the-art Photogrammetry & Geospatial delivery center / production facility in Asia, highly skilled and dedicated team of over 2000 technical professionals & several thousand man-years of domain experience.

Geospatial information is indispensable for Defense & Security forces for intelligent, and updated situational awareness, during peace or war. Rolta's Military-off-the-Shelf (MOTS) solutions employ innovative technology linking operational needs with Geospatial data. In response to increased demand from the Forces for advanced MOTS systems, Rolta has lined up an impressive array of highly responsive and reliable systems for Defense & Homeland Security environments.

In the area of Homeland Security, Rolta is able to provide solutions for Surveillance, Intelligence, Analysis, Operations and Public Safety solutions including Emergency Response solutions for the Police Forces. For Maritime Safety & Security, Rolta offers complete solutions for search and rescue operations, protecting offshore critical assets, shipping lane management, territorial waters surveillance, environmental monitoring, offshore platform protection, prevention of trafficking, fisheries control and harbor protection.

As a Principal Member of the Open Geospatial Consortium (OGC®), Rolta employs an innovative Geospatial business model that fully exploits the Internet and OGC Web Service standards.

Rolta, headquartered in Mumbai, employs over 4500 professionals with countrywide infrastructure and international subsidiaries across the globe. Forbes Global has ranked Rolta amongst the "Best 200 under a Billion" for four times in six years. Rolta has been included in the S&P Global Challengers List™ 2008, by Standard & Poor's. This List identifies 300 mid-size companies worldwide that have a total market capitalization between US $1 & $5 Billion and have shown the highest growth characteristics along dimensions encompassing intrinsic and extrinsic growth. Rolta was ranked at the #1 position in Human Relations (HR), and at the 3rd position in overall ranking in the 2009 DataQuest survey of Best Employers in the IT sector. The Company is listed on the NSE in cash and F&O segment and forms part of CNX IT, NIFTY Midcap 50 and CNX 500 indices. The Company is also listed on BSE 'A' group and forms part of BSE Midcap, BSE 200, BSE 500, BSE IT and BSE TECK indices. The Company's GDR is listed on the Main Board of London Stock Exchange and its FCCB's are listed on the Singapore Stock Exchange (SGX).

Rolta India Limited
Rolta Tower A, Rolta Technology Park, MIDC
Andheri (East), Mumbai 400 093, India.
Tel. : +91(22) 2926 6666 / 3087 6543
Fax +91(22) 2836 5992

Subsidiaries:
• Rolta USA • Rolta Canada • Rolta TUSC • Rolta UK • Rolta Benelux • Rolta Middle East • Rolta Saudi Arabia • Rolta Asia Pacific

India offices:
• Mumbai • Pune • Vadodara • Gandhinagar • Jamnagar • Bhopal • Kolkota • Bhubaneshwar • Delhi NCR • Chandigarh • Deharadun • Chennai • Bangalore • Hyderabad

Innovative Technology for Insightful Impact

CMMI Level 5
ISO/IEC 20000 -1
BS ISO/IEC 27001
ISO 9001 : 2000 CERTIFIED

www.rolta.com

GIS Development Ad 2009 / 15.5 X 10.25 Inches

Ahmed Abukhater
Community Development Industry Manager, ESRI
AAbukhater@esri.com

FOSTERING CITIZEN PARTICIPATION

Social media and the GeoWeb can provide the needed societal infrastructure for human interaction wherein the government can obtain feedback from the public with a high level of transparency and accountability

Planners constantly make decisions and have to think on their feet. Though the voices of elected leaders and officials ring loudly in their minds, planners must also be careful to listen closely to the voices of the citizens they serve. Planning for the people requires involving communities from the very onset of the planning process, which must be comprehensible, transparent, legitimate and interactive. When planners fail to engage communities and only follow the status quo, the outcomes are undesirable at best.

To engage citizens today, it is important to communicate in new ways and provide collaborative decision-making platforms. Exchanging information effectively in planning means expanding the communication footprint, moving beyond technical jargon and the resulting language boundaries. It also means holding conversations outside traditional in-person community meetings and forums to reach across the entire community.

Social media tools and the GeoWeb answer this call, and planners are already utilising these Web 2.0 technologies to create effective planning support system (PSS) platforms that cater to planning processes and workflow needs. The emerging Planning 2.0 environment fosters the bi-directional citizenry participation that is so critical today. Open, accountable, interactive government takes us to a higher level of democracy, where citizens are empowered in new, bold ways to help shape the decision-making process and define desired future conditions. For this to happen on a broad scale, a profound transformation in the way planners conduct their business is required.

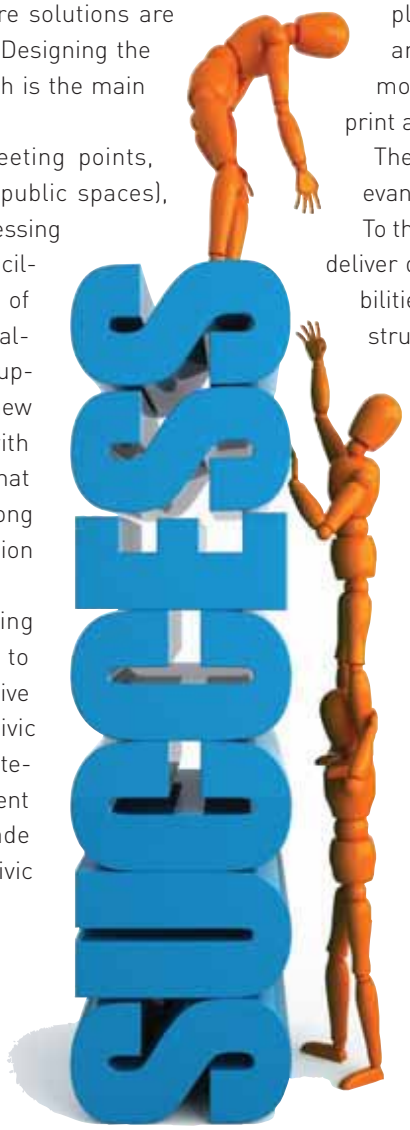
How should planners leverage Planning 2.0 to connect with their communi-

ties? Dr. Zorica Nedovic-Budic, professor and chair of spatial planning and GIS at the School of Geography, Planning, and Environmental Policy at University College Dublin sees Planning 2.0 technology as readily available for use by planners. She also believes that new communication channels and tools ought to provide information that is relevant to the varied urban communities. This is meaningful information that sends clear messages about the community-its condition, issues, prospects and the forces and factors affecting its future. She also notes that capacity building is the key to widespread adoption. She also observes that there is an uneven landscape of technology usage even among planners and within government organisations, let alone in the broader environment. The high-quality and innovative ideas are not necessarily related to the ability to utilise the technological tools. Insights into both status quo and future solutions are embedded deep within the community. Designing the interfaces that would reach to this depth is the main task that planners face.

Her notion of interface includes meeting points, Internet access nodes (in private and public spaces), and opportunities and formats for expressing opinions and ideas. Web 2.0 is here to facilitate those interfaces, but only as part of the overall setting and process. The challenge for planners and their technical support staff is to carefully integrate the new tools in well thought-out exchanges with the public. It is an art of public debate that could be enhanced with Planning 2.0 along with other information and communication technologies.

Michael Gallis, an expert in developing integrated multi-system approaches to strategic planning, observes that effective planning processes should include a civic engagement and a communication strategy to ensure that the broadest involvement of stakeholders and the public is made possible. The most common form of civic engagement is the town hall meeting. This type of meeting is typically focussed on a single topic area, which can be either very broad or quite narrowly focussed (e.g., future community vision or project input). The strength is in its openness and inclusiveness, but its weakness is that it is still limited in both attendance and the ability of its participants to continue to provide input following the meeting.

Gallis notes that more sophisticated techniques are available to broaden public participation. These techniques are based on creating a hierarchy of engagement opportunities that extend from steering committees, advisory boards, topic-specific task forces and town hall meetings. The strength of these more sophisticated processes is that they offer additional structure and ongoing involvement, but their weakness is that the coordination of activities becomes a very expensive and time-consuming process that most planning agencies cannot afford. Communication strategies used in planning processes exhibit the same simple-to-complex range, from flyers sent out to announce meetings and public events to more sophisticated techniques involving print and broadcast media.



The concept of Planning 2.0 is especially relevant to the quest of democratic processes. To that end, social media and the GeoWeb can deliver data acquisition and dissemination capabilities and provide the needed societal infrastructure for human interaction wherein the government can obtain feedback from the public with a high level of transparency and accountability. This will take us to a whole new level of democracy, where citizens are empowered to help shape the decision-making process and define desired future conditions. For this to happen, a profound transformation in the way planners conduct their business is warranted.

The success of planners in combating chronic urban problems is largely determined by their ability to communicate their ideas and the extent to which they proactively seek public involvement and support to execute them. This is especially important because planners do not plan for themselves-they plan for people, and the people are flocking to new forms of communication. Now it's up to planners to embrace them. ■

MAPPING FOR CHANGE

Dr Mordechai (Muki) Haklay
Senior lecturer
m.haklay@ucl.ac.uk

Louise Francis, Dr Hanif Rahemtulla
Honorary Research Fellows

Dr. Claire Ellul
Lecturer in GIS, Department of Civil Environmental and Geomatic Engineering
University College London

The emergence of new mechanisms like geospatial Web has the potential to address current challenges and build upon the current PPGIS/PGIS practice facilitating two-way dialogue between govt and the public

As awareness about the environment started increasing, there is growing acknowledgment that 'the global environment is no longer a matter solely for the heads of state and government'. People's habitats and lifestyle which cannot be changed through the dictate of national strategies, plans, policies and procedures have an impact on local and global environmental problems (Agenda 21, UN 1992). Therefore, the public has a critical role to play in initiating change by contributing ideas and spreading knowledge and involvement (Church and Elster, 2005).

However, expectations from the public about modes of engagement mean that traditional methods of public participation are being challenged. E-government systems, such as authoritative Web mapping sites, which were heralded as the solution for over a decade since the emergence of the Web, predominantly offer one-way communication from government bodies to the public and do not include effective means to collect citizen feedback nor engage citizens in two-way dialogue (Rahemtulla and Sieber 2009). The challenge therefore 'is to try to communicate information to people and organisations having different

specific concerns, as well as encouraging them to gather and exchange knowledge, and hence participate more in the environmental debate'. (Sieber 2007, p.1)

Recent changes in the use of information technology and Web-based resources have provided new opportunities for information dissemination and more importantly, for information exchange. The emergence of new mechanisms such as the Geospatial Web (GeoWeb) has the potential to address current challenges and build upon the current PPGIS/PGIS practice facilitating two-way dialogue between government officials and the public (Sieber and Rahemtulla 2009, 2010). This opens up new possibilities for communicating and engaging the public on a range of issues from local environmental inequalities to community action to deal with climate change.

To demonstrate the potential of these tools, this article focusses on the lessons learned during the Mapping Change for Sustainable Communities (MCSC) project and subsequent activities that are being implemented within the activities of Mapping for Change, a social enterprise dedicated to community mapping. MCSC aims at mapping environmental change and development in London. The project is designed to assist community groups towards greater participation in local decision making by providing interactive community maps displaying local information which are controlled and managed by the community itself. The project combines community development and participatory mapping, using a public mapping system (Google Maps) to monitor local sustainability and local development plans.

Community mapping

Many communities face change through activities such as

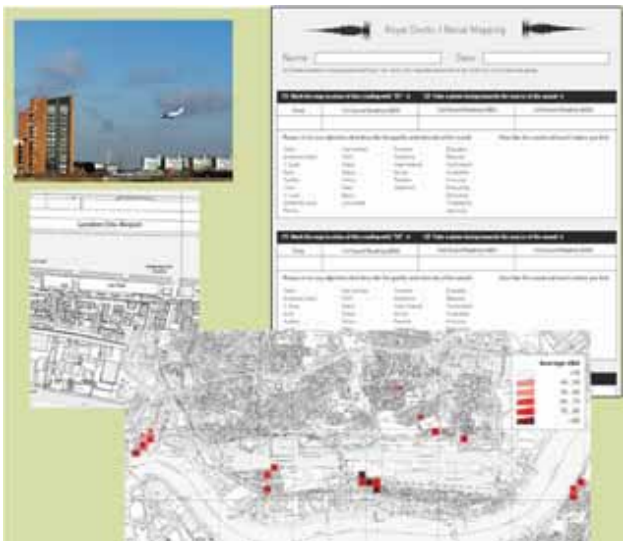
The Participatory Mapping Process

Hackney Wick Community Map:
The map highlights elements of local history in addition to community views, facilities, Olympic developments, transport details and more.

regeneration projects and commercial development projects. If local people and communities are to engage effectively with the processes of change, they need to know what is going on, understand how proposed changes may affect them and to feel confident that they can play a positive role in those changes. Mapping is a powerful way to engage local communities as well as visually represent their information, helping to draw new links and ideas. An on-line map and directory provides an effective alternative to the static directories of old and offers a new way to highlight local facilities and resources. The ability to access an interactive map that provides information on anything from health services to education, support organisations to transport, provides a way in which people interested in their community can find out what is going on and those operating within the community can promote their services and activities.

Furthermore, mapping provides a mechanism to communicate community-gathered ('local') information to highlight environmental issues and priorities. For instance, many decisions made about local areas in the United Kingdom are based on 'evidence' collected or supplied by the government. While this seems reasonable, often this official information fails to communicate the whole story or evidence is missing altogether. Bringing information based on local knowledge to a situation can help challenge official views and help create positive transformations in the community.

However, while an online interactive map can be a valuable resource, research shows that developing community initiatives as part of a participatory process is extremely important. Understanding the needs of end users and



Royal Docks Noise Mapping

Development of the North Dorset Climate Action Map

their input in the development of the map is ultimately what leads to the development of a successful tool.

The MCSC community maps were developed using Google Maps. Although much of the functionality required for a community map can be obtained by using standard Google Maps, LiveSearch or similar technology, a number of additional features are also required to create a fully-functional community map.

Following the development of the community map infrastructure, the MCSC team initially worked with four London-based communities to establish local websites (Royal Docks, Thames Ward, Hackney Wick and Archway). In establishing each local web-based map, the project team developed, through iterative learning process, a generic process that was adapted according to each community.

At each stage in the participatory process, various mapping methods and resources were used ranging from paper based exercises using large Ordnance Survey maps of the area, Web-based maps such as those provided by Google, and our own community map website developed as part of the project. In each community we held workshops and focussed meetings with representatives from various organisations and businesses, the local authority and individuals. The results of the participatory mapping exercises were digitised by the team and formed the basis for the information available on the community map website. The key issues that emerged during these exercises ranged from noise pollution to the loss of historical landmarks. These issues were followed-up with additional mapping activities designed to gather more data. Within some communities, this took the form of general perception mapping and focussed evidence gathering.

Significance of community maps

The importance of these community maps extends well beyond their immediate circle to include many different organisations and people within the community:

- Local organisations can add themselves to the map and inform other in the community about their initiative. They will be able to promote what they do and find and learn from others doing what they might wish to do.
- Local service providers can provide details of their services, communicate any changes to these in a format that is not in isolation but is holistic.
- Individuals can use such a map to find out what is going on in their neighbourhood and ways in which they can become more active and engaged.
- Individuals can use the map to express concerns they may have surrounding specific issues, which can also stimulate the creation of new groups.
- Local government agencies and other similar bodies will get a clearer idea of what is happening in their area.

Other advantages include:

- Mapping change over time: These maps can be saved or 'archived' annually. This will provide a record of how activity changes and develops: in the longer term this will provide a valuable social and institutional memory and a unique historical record of a sector that has always been poorly recorded.
- Capacity-building: Many organisations are still lagging behind in their use of IT systems. This easy-to-use system, complete with training and support, can help develop local skills so that the use of what may now be seen as a complex

system becomes a simple part of day-to-day working.

• Dissemination of new ideas and issues: This system offers a unique way to get to interested organisations: e-lists and discussions, for a link to the database at the core of the system will allow for much better interaction between organisations.

It should be noted that this study has highlighted issues with the use of geospatial technologies for community mapping. Specifically, the study brings to light a mismatch between the Web skills of active community group members and the Web skills required to access and process information provided using these emerging Web-mapping platforms.

As Ellul et al. (2009) note, the skills required to operate Web mapping platforms are beyond those of basic Internet use and extend to map reading, the ability to understand and interpret information presented in map format as well as evaluate its quality, currency and source - always assuming that the user is able to successfully locate the information in the first place. In response, our project partner - Planning Aid for London - was set up to provide free and independent advice to individuals and groups unable to afford professional consultants, and to help such persons overcome the technicalities of the process.

From the positive responses to the processes and tools developed as part of MCSC, London, in partnership with University College London (UCL) has set up a new social enterprise known as Mapping for Change (MfC) whose aim is to develop local and regional mapping to facilitate access to data, maps and mapping techniques that will provide people with a better understanding of place and help them make positive improvements to their environment.

Conclusion

The MCSC project provided learning for team members and participants alike. There are clearly benefits to providing communities with the support and tools required to access and interpret a range of 'relevant' spatial data, in addition to collecting their own user-generated data. With sufficient support, communities are able to focus community action and construct their views and experiences in a format that facilitates dissemination to a wider audience. The apparent lack of this type of service provision within the GI industry has been the driving force behind the setting up of MfC.

Georges Thierry Handja
Programme Advisor
Participatory GIS, Congo Basin
Rainforest Foundation UK,
London, United Kingdom
handjagt@gmail.com

EMPOWERING FOREST COMMUNITIES

Rainforest Foundation's programme empowers forest communities in Congo Basin to ensure sustainable livelihood by reinforcing their rights to access and control forest resources

Maps are more than pieces of papers; they are stories, conversations, lives and songs lived out in a place and are inseparable from the cultural and political context in which they are used" (Warren, 2004). This is especially true concerning participatory maps, maps that make visible the association between land and local indigenous community uses and perceptions. These maps can play a key role in planning and understanding forest uses. They can be used in many different ways: to describe the landscape and vegetation of a particular region, to delimit traditional and customary territories, to assign land uses and forest exploitation regimes and to identify areas of cultural interest. Used well, a map can be a powerful tool for development. Both literate and non-literate people can use and discuss around a map to develop a common understanding of the challenges facing their area and to plan how to address them. However, this does depend on the map being sufficiently accurate and containing enough information on which to make informed decisions. The Rainforest Foundation started supporting participatory mapping work in Congo Basin many years ago and has developed a robust community mapping programme in the region, mapping more than a hundred communities. The aim of the programme is to empower forest communities and institutions working with them in the countries in the Congo Basin to ensure a sustainable livelihood by reinforcing their rights to access and control forest resources. The programme is supposed to inform about the development of forest policy in the region which includes securing of traditional rights to forest lands and resources as a central element.

Project coordinator during a prospection meeting in a the village of Aballa in Congo

A community member collecting data with a GPS unit

Approach used

The overall participatory mapping process involved representatives from civil society organisations working with local and indigenous communities, state representatives in charge of forest management in different countries and communities' representatives.

State agent and civil society organisation representatives who are trained are called "mapping facilitators," and community representatives are called "local mappers." Before the trainings, prospecting visits in various regions are organised where the intention is to help communities do their maps. The objective of this phase is to inform the target communities the importance of mapping in participatory decision-making in the context of participation of indigenous and local communities in managing forest resources, encouraging commitment to the project and establishing with communities a projected timetable of activities.

After this phase, mapping facilitators are trained to be able to better help communities to produce their maps. Their training consists of notions on participatory approaches and knowledge on participatory mapping. At the end of this training, participants are divided into many groups and sent to different villages previously identified to trained local mappers help them to produce sketch maps of their land and resources use, and help them to use GPS to collect data. The training of local mappers covers drawing of the map on the ground and transferring the map on paper, symbols of resources by types of activities, ways to take GPS points using a GPS unit and checking different tracks to cover all information provided on the draft maps on paper. At the end of the training of the local mappers in the communities, teams composed of local mappers, other community members and/or mapping facilitators are organised and sent to the forests according to the paths using by the community to gathered resources and exercise cultural and cultural activities on their land. Once the GPS points have been uploaded into the ARC GIS software, a draft map is produced which is then taken to the communities for validation. Specifically this phase enables communities to:

- Analyse the printed version of their maps;
- Comprehend the legend (symbols) of the map or propose new ones;
- Correct any errors;
- Reflect on advocacy and negotiation strategies.

The validation of the maps is an important step in the process of participatory mapping because it allows the improvement of working relations with communities and the production of effective tools. This is where the preparation and the planning of the use of the maps for lobbying and negotiation start. Communities start thinking who in the community could take the leadership on the next stapes.

Training of community mappers in Moale, CAR

What next

When the final version of the map is produced, there are different scenarios possible depending on the issues going on around the communities and in the countries. Generally, we help communities to have discussions with government representatives in charge of forest management. During these meetings, maps are presented by communities' representatives together with all the history, the culture and beliefs around these maps, and at the end communities make recommendations of how they would like to be involved in forest management and also how they will like their right to be considered and include into policy and legislation. ■

> Validation of maps is an important step in participatory mapping because it allows improvement of working relations with communities and the production of effective tools.

SHOULD PGIS SERVE TWO MASTERS?

Jeroen Verplanke
University of Twente
Faculty of Geo-information Science and Earth Observation - ITC
The Netherlands
verplanke@itc.nl

The government needs to communicate its intentions clearly in order to overcome bias and misunderstanding while communities, citizen groups, etc. need to make all relevant government institutions aware of their needs & concerns

People at local level wish to be informed about the decisions taken at higher levels that influence their environment. Planning agencies acknowledge that spatial knowledge from communities is useful or even vital for sustainable planning to be made. This interaction can be seen as a two way process where the government gains knowledge and information to serve national interests while communities expect government assistance and input to address their needs as well.

Participation and local spatial knowledge

When information for planning purposes is required from local level sources (maps, records of ownership, etc.), this usually encompasses both information that is formatted to suit government data infrastructure and information that doesn't fit. As an example, we can look at a situation where statutory and customary law applies. In many developing countries, a transition occurs from customary into statutory law. One field where this can become a problem with

regard to planning is land rights. In the process of transferring rights or incorporating the customary and statutory system, it is vital to have information from both systems available.

Comparison of these information sources depends to a great extent on the local spatial knowledge (LSK) that is available. When it comes to eliciting LSK, many participatory approaches exist to accomplish this. As PGIS is the flexible toolbox as presented, one can ask a question whether the output (maps, inventories, plans etc.) of such practice can only be suitable for one interest group?

One could argue that communities would like to provide the best information out of reciprocal interest. But that still does not deal with the fact that PGIS puts form and nature of the spatial information second to culture and custom of the community.

If PGIS is used to visualise LSK for planning purposes, it is difficult to make the outputs (maps etc.) acceptable for official purposes. Mapped LSK often does not fit the data infrastructure or legal standards that government uses. Officials also tend to have a natural suspicion towards the quality of community maps. Luckily in many cases where officials are invited to join such mapping exercises, they rapidly overcome their scepticism and turn it into amazement.

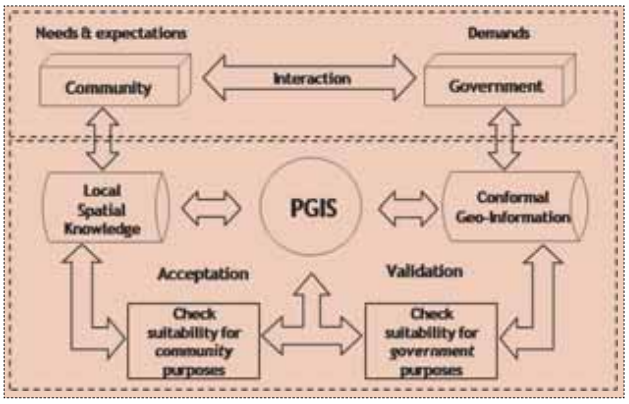
Still many community maps fail to live up to standards and criteria of official mapping and surveying. As it is not very useful to see if we could adapt those standards, the way forward is to see if it makes sense to incorporate more standards into PGIS. But the argument here isn't about these standards. It is about what would happen to the participatory practice if it was to incorporate more of these standards and conventions, whatever they are. Would PGIS be able to listen to and serve two sides equally?

Putting 'P' into practice

When we look at PGIS as if it was about adding or integrating participation into existing geographical information systems (p-GIS), the answer might be 'yes'. Most of the existing GIS software have all of the important conventions and standards incorporated and the tools would have to be adapted to fit a participatory practice. The outputs of such practice could then be acceptable to both official and customary systems.

When we look at PGIS as if it was about handling geographical information within a setting of (ongoing) participatory practice (P-gis), the answer is not so straight forward. The purpose of a participatory practice is to create as many benefits as can be associated with participation for the target community. The starting point of such a practice is to put the purpose of the output in line with the objectives of the (target) community. Imposing a set of mapping conventions doesn't allow the community objectives to stay in front. They might want to map different pieces of spatial knowledge that do not fit or combine under the conventions. So if PGIS serves two masters, can it then still serve community purposes the best way? Maybe not if we consider it from a purist participatory perspective. Serving two masters then implies compromising the methods and therefore eroding the basic principles of participation.

When PGIS is 'sold' as the flexible toolbox for participatory spatial planning, the 'purpose' of the participatory action is taken as a basis. In spatial planning, government is likely to take initiative and define the purpose. The participatory action in spatial planning should therefore suit the set of objectives of national/regional level according to the 'three P's of participation' (purpose, purpose and purpose) (Chambers, 2005). We speak of PGIS products, useful for (government) planning agencies, which could be useful for the community as well, but not per definition and most likely not vice versa. PGIS is then 'possibly' serving two masters at once. PGIS will in such a way enable the local spatial knowledge to be communicated to



enhance decision making. Within PGIS practice, it is well known that just representing LSK to suit community purposes is by itself a difficult task. To have LSK suit national purposes does not make the issue simpler. Still much depends on the acknowledgement and accreditation of the information and an error free translation of the LSK into formally accepted standards. Extraction of LSK without clear benefits or function for the owner of the knowledge is always a tricky issue and one that many communities are sensitive to, especially when rights or livelihoods are at stake, planners must be highly convincing to gain trust and acceptance within communities. Planning objectives must therefore be to a large degree in line with community needs.

Also sufficient tangible benefits or incentives must be available if any participatory practice to elicit LSK is to be successful. The value and quality of LSK is widely acknowledged but with formal or legal issues much scepticism still exists.

So a thin line becomes visible along which PGIS could serve two masters. The right purpose must be defined from a planning point of view. A purpose that is in line with community needs. A set of tools must be used that can function within the formal planning system as well as in a community setting. The tools must be able to grasp and communicate LSK. The tools must be able to create output that is useful for the community and which fits the formal system.

Mapping local spatial knowledge

But is it worthwhile to tread on such a thin line? We run the risk of compromising so much on the participatory practice that the quality of the elicited LSK is unsatisfactory. Putting too many constraints on the methods to fit formal (scientific) conventions might limit that quality. Maybe a less participatory way of capturing LSK will provide similar results quicker and cheaper. Studies have been done (Asare, 2008; Elifas, 2008; Neewa, 2007; Rambaldi et al., 2007) where LSK about land use, land rights and natural resource management (NRM) was added to existing spatial information layers. In all these studies the mode of eliciting information was different as were the existing in-formation layers and the level of participation differed in each of these studies. Asare (2008) explored tools for eliciting the customary knowledge of a community with the view of helping bridge the gap between the two systems.

This knowledge was sought to see if they could suitably reflect the local spatial knowledge of the customary people and at the same time communicate customary land issues to the formal system. Maps were subjected to the formal system's tests to see their suitability to communicate customary land issues. These maps proved invaluable as they produced alternative sets of land rights and boundary maps which showed areas of conflict and overlaps with the views of the formal agencies. This "bridge", linking the two systems is one step to help close the knowledge gap existing between the two systems. PGIS tools here helped to enhance the body of knowledge in the system of land interaction in Ghana. The customary owners' spatial knowledge was useful in mapping and reflecting their perspectives which was duly communicated to the formal system through the use of existing layers of spatial information.

The answer could therefore lie with the existing layers of information. Maybe the quantity and quality of LSK that can be recorded of media such as topographic maps, aerial photographs or satellite images is not in the first place dependent on the participatory approach. Participatory methods were used to elicit the information, but the purpose, time and resources involved were all different. What was clear from the studies by Asare (2008) and Rambaldi et al., (2007) in comparison with Neewa (2007) and Elifas (2008) is that best results are obtained from high resolution aerial photographs. These enabled the community members best to visualize their LSK in terms of accuracy. While many visualizations of LSK lack a verifiable measure of accuracy, this is not the case with aerial photographs. Information added to these can easily be verified and officials have been impressed on many occasions of the accuracy and precision with which communities are able to map.

Back to the future of PGIS?

Can we then say that "Participatory use of GIS" is able to serve two masters, but "PGIS/PPGIS" as an acronym is not? The issue of how to name the practice has been raised before and for a few years the consensus has been to refer to "PPGIS or PGIS" when tools from the wide range of participatory practices (RRA/PRA/PSP etc.) deal with spatial information. This acronym was in the first place the real abbreviation of adding participation (P) to GIS. But since in 2005 the "Mapping for Change" conference was held in Nairobi, practitioners in developing countries have given a boost to the "adding GIS to the participation" idea. As a consequence, "GIS" has been diluted to include every imaginable piece of (spatial) information. The processing and data management qualities of GIS software and hardware have indeed become much less important. Maybe we should, in the context of PGIS, no longer refer to GIS in capitals (Pgis). The understanding about the importance of spatial information has however increased. PGIS has apparently become much more about including (unused) spatial information in the (planning) process than it is about processing the data. It is likely that this change has caused the shift from PGIS to Pgis. So do we need two acronyms: "P-gis" and "p-GIS"? Must we divide the practice into "soft and hard"? Maybe we need to use more descriptive acronyms that fit the purpose better as for instance Corbett and Keller (2006) have done with Community Information Systems (CIS) and Weiner and Harris (1999) with Community-integrated GIS (CiGIS).

Participatory Spatial Planning (PSP) is probably the best definition to cover the use of PGIS in planning. The concept of PSP leaves open to which extent GIS is added to the "P" or vice versa (McCall, 2004). PSP does however strongly depend on participatory principles and therefore the output of PSP also might not immediately be suitable to serve "two masters". Most important is that the awareness of the different approaches within PGIS practice exists. To focus (P)PGIS more on people and participation than on GIS was a necessary achievement that nobody regrets. When people understand that PGIS has become more like a noun rather than an abbreviation or acronym there is no need to change. ■

INDIGENOUS KNOWLEDGE VALIDATES GIS OUTCOME

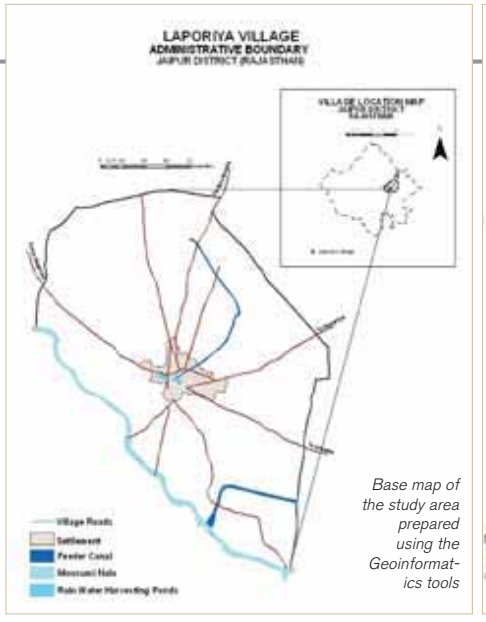
Purabi Chanda
Research Fellow
purabi.chanda@gmail.com

Sonali P. Mazumder , Ranjeet Kaur, Sandeep K. Sharma, K.H. Kamble, R.N. Garg, Debashis Chakraborty
Indian Agricultural Research Institute, New Delhi

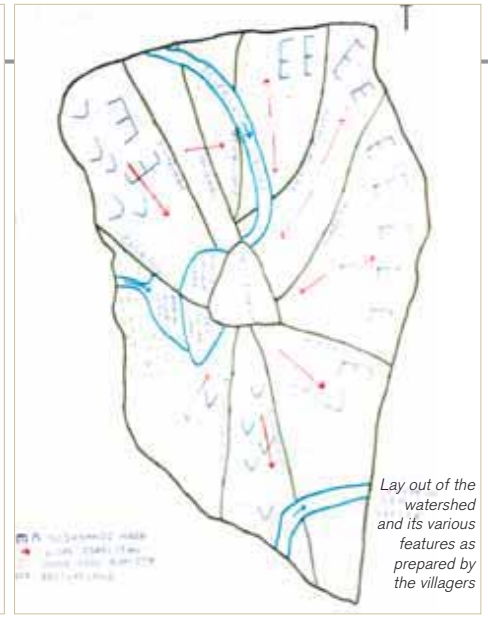
As GIS has plenty of agricultural applications, the participatory approach of GIS can serve as an effective technique for sustainable management of natural resources

India has gained excellence in science and technology in recent years, but the development seems incomplete without proper blending of science and technological advances with indigenous knowledge, which has been created and nurtured since long. Researchers are executing various innovations for development, but they are giving partial benefits. It is understood that the involvement of common people can significantly hasten the developmental process once it becomes a part of the efforts of the researches, scientist and government and non-government organisations. Participatory GIS is fast emerging as a tool for better management of natural resources. In place of time consuming and complex procedures of scale mapping, P-GIS methods employ participatory rural appraisal techniques in creating spatial natural resource maps. This requires effective strategy for developing the communication skills of local people regarding the current natural resource endowment of their areas and socio-economic aspects.

Farmers have a good understanding of their soil and land, though they may



Base map of the study area prepared using the Geoinformatics tools



Lay out of the watershed and its various features as prepared by the villagers

not be able to scientifically explain the phenomena and processes. They need to be educated and explained the behaviour of the land, different soil quality aspects, inputs (water, fertiliser, plant protection measures) required for a better and sustainable harvest. As GIS has plenty of agricultural applications such as spatial mapping of soil and groundwater resources, managing crop yields, estimating soil loss, optimising input application for single field or farm or entire region, the approach of P-GIS should improve the GIS application potential. This article focuses on the transfer of indigenous knowledge of people in Lapodia village in Rajasthan, India, regarding the soils and the crops to the spatial scale of the watershed on a GIS platform. The focus is the soil type pertaining to the watershed from local individuals' point of view. Simultaneously, it includes new technology like collecting ground control points with GPS, spatial mapping with remotely sensed satellite imagery etc., extraction of information and giving it a spatial dimension.

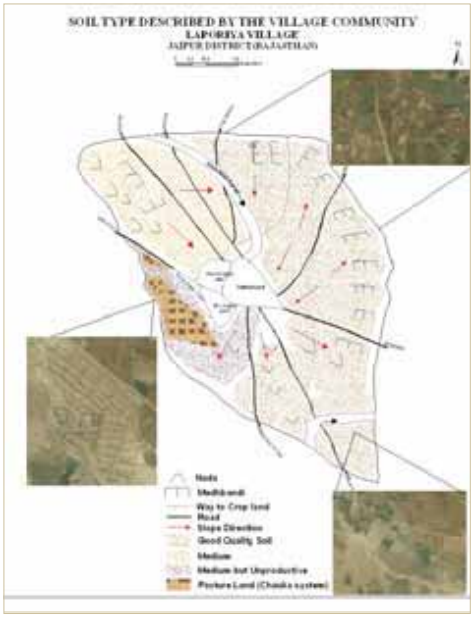
The exercise involved generating spatial distribution of land use using geoinformatics tools like remote sensing satellite images, GPS etc, preparing a layout map by the villagers of their village and identifying their piece of land in the map along with the problems associated with their field, giving the hand drawn map a geospatial dimension by rectifying it with reference to the map created using geoinformatics tools and generating maps showing the distribution of soil parameters throughout the village.

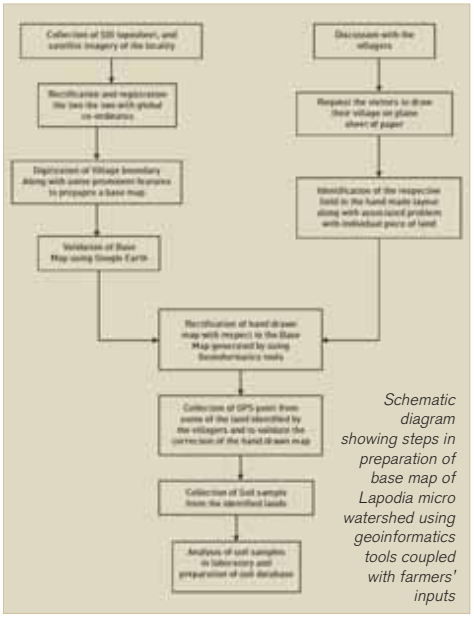
Using Google Earth satellite data, the study area was delineated. It was also identified on the Survey of India toposheet no. 45N/2SE of 1:25000 scale. The toposheet was rectified and registered using ERDAS software following the standard procedure to match with the world coordinates for further proceedings. Subsequently, the village (Lapodia) boundary was digitised form the toposheet and the areal extent was calculated as 1161 hectares. The main features like settlements, roads, water bodies were identified from the toposheet and digitised to complete the base map. Remote sensing satellite imagery was used for the land use, land cover classification. Once the necessary pre-processing steps were over, both the data sets were subjected to various classification techniques like unsupervised, hybrid and supervised classification. In the beginning, due the enhancement of spatial resolution, seven land use classes were identified as settlement, cropland, seasonal fallow, cultivable and uncultivable wastelands, ponds (otherwise called as water harvesting structures) and other prominent land use classes like pasture land.

Conducting focus group discussions among the income groups

After generating the base map of the study area, focus group discussions were held to retrieve the current natural resource endowment of the

> Though the villagers were not able to provide information in a scientific way, their perception regarding soil was more or less similar to result of the soil survey carried out by a project team





Schematic diagram showing steps in preparation of base map of Lapodia micro watershed using geoinformatics tools coupled with farmers' inputs

area and capture the decision making process in context of natural resources management. A list of questionnaires was prepared and the village people were asked questions regarding their natural resources and basis of taking their decisions regarding their natural resources. People were also asked to draw a resource map of Lapodia which had different kinds of crops grown at various places, rainwater harvesting systems, type of soil, slope of the area. Once the maps are prepared, the task was to give the indigenous knowledge of the villagers a spatial dimension. There were two methods for carrying out this process - either by keeping the digitised map in front of the villagers or by georeferencing the map drawn by the villagers with reference to the digitised base map. Fields were identified by farmers on both the maps.

Analysis of remote sensing parameters

The classification of remote sensing images and their analysis in a temporal scale gives a change detection matrix that shows the change of crop land to fallow which can be associated with the decrease of rainfall over the years. The area statistics shows that there was enormous difference in agricultural production in 1998 and 2007, due to the huge difference in amount of rainfall in these years. The above themes were generated using geoinformatics tools (GIS and GPS) with the soil data analysed in the laboratory following standard protocols. At the time of discussion, villagers could identify the patches of land where the quality of soil is good and therefore, favourable of agricultural practices, and where it is not. These perceptions were much similar to the results obtained through application of geoinformatics tools. As per the observations, the soil quality is good and favourable for agricultural productivity in the eastern and north eastern and in some parts in the southern direction where as the quality degrades towards the western part where the soil has been unproductive. In course of time, the natural vegetative cover (grasses, shrubs and trees) was regenerated. Thus, a non productive land was converted to productive one (other than cultivation) through the process of pasture land development. Though the villagers were not able to provide information in a scientific way, their perception regarding soil was more or less similar to the results of the soil survey carried out by the project team. The soil parameter maps were validated with resource map prepared by the community.

Conclusion

The study presented in this article tries to integrate the geoinformation techniques with farmers' ingenious knowledge regarding their land and water resources. The soil quality was found suitable for agricultural production, though low productivity of crops was observed. The GIS themes of soil information identified patches of low soil productivity, which coincided well with the observation by the farmers. The single most problem was the unavailability of water for irrigation due to poor rainfall. Some initiatives have already been taken by the villagers through the efforts of Gram Vikas Navyuvak Mandal Lapodia (GVNML), a formal group working for the village. However, the study envisages that more conservation of the rain water and their utilisation in irrigation is required. Training programmes should be conducted in the village to improve the awareness of water harvesting and saving techniques, improvement of soils and their suitability to crops. ■

HIT **PRINT**
EFFECTIVELY

Introducing the new HP Designjet T1200 Printer series.
Two printers in one#, ensuring your larger-than-life ideas are also true to life.

- 2 online rolls with smart switching
- 32 GB of memory for speedy file processing
- 2 A1/D-sized prints per minute*
- Original HP-GL/2 and RTL printer language
- HP Instant Printing Utility 3.0

Improve your productivity with automatic switching among 2 rolls.
* Economode print setting.

www.hp.com/go/DesignjetT1200

Interview

TOWARDS EFFICIENT AND SAFE MINING

K. Singh

CMD
Central Mine Planning
& Design Institute
India

What are the consultancy services provided by CMPDI?

Central Mine Planning & Design Institute (CMPDI) - a Miniratna company and a mining consultant, is a subsidiary of Coal India Ltd. Under the Ministry of Coal, Govt. of India, CMPDI offers its services in the fields of geospatial technology, mineral exploration, mine planning, coal preparation and utilisation, environmental management, information and communication technology, mining electronics and infrastructure planning.

What are the geospatial services provided by CMPDI?

Realising the potential of geospatial technology in the natural resources sector, CMPDI established a geomatics division way back in 1989, when India had launched its first remote sensing satellite (IRS-1A).

CMPDI offers geospatial technology services ranging from topographical survey, mineral exploration, land use/ vegetation cover mapping, water resource survey, land reclamation monitoring, excavation measurement, pre-mining baseline data generation for environmental management, monitoring of opencast operation, slope stability, infrastructure planning, coal mine fire mapping, locating the sites for TPS and coal washery and siltation in reservoir/river.

How has the use of geospatial technologies facilitated better mining activities?

Geospatial technology is closely associated with all the three stages of mining ie pre-mining, syn-mining and post mining. During the mining stage, excavation measurement of OB, slope stability monitoring in open pit mines is based on terrestrial LiDAR, monitoring of mining operation is using GPS technology and underground correlation survey in UG mines based on Gyromat 3000 is used for safety of the man and machinery in the mines.

At the post mining stage, land reclamation and mine closure monitoring of all the opencast projects have been taken up by CMPDI using high resolution satellite data on an annual basis till the life of the mine to ensure proper land reclamation and mine closure of the mined out land and to take remedial action, if any required, for environment friendly coal mining.

Environmental impact factors prominently in mine planning. How does CMPDI ensure that the impact is minimum?

There is an urgent need to ensure that along with mineral sector growth, environment and sustainable mining issues are addressed by the stakeholders constructively. Mining is a site-specific industry and it cannot be shifted anywhere else from the location where the mineral occurs. CMPDI has started using high resolution remote sensing data for land reclamation monitoring of opencast coal mining projects of Coal India Ltd. to minimise the impact of mining on land environment. Remote sensing data is very useful in generating the pre-mining database with respect to land, water, drainage, vegetation cover, terrain, settlement, infrastructure etc. present in the core and buffer zone of the mining projects before the mining. Land use/cover database of all the coalfields are updated regularly at an interval of 3 to 5 years to assess the impact of coal mining on vegetation cover and land environment. CMPDI, in collaboration with Survey of India, has taken up the task of preparing maps of 28 major coalfields covering about 26000 sq. km. area using remote sensing technique. Topographical maps will be generated on 1:5000 scale with 2m. contour interval in digital GIS format. These maps would be useful for detailed coal exploration, mine planning and environmental management planning of the mining projects. Coal India Ltd. has funded Rs.117.26 crore for this project. Land reclamation monitoring of all the opencast coal mining projects has been taken up by CMPDI using geospatial technology to assess the impact of mining on land environment.

CMPDI has prepared a comprehensive environmental management plan which includes land reclamation, rehabilitation and resettlement planning and mine closer planning with alternative scenarios

Does CMPDI suggest any alternative ways for environment management? Does it also look into the conservation aspects?

CMPDI has prepared a comprehensive environmental management plan (EMP) which includes land reclamation, rehabilitation and resettlement planning and mine closer planning with a number of alternative scenarios. High resolution satellite data are very useful in mapping the vegetation cover at species level and conservation of endangered species can be planned by analysing topography, landform, soil characteristics, water availability etc using GIS for conservation site suitability.

How are geospatial technologies helping in disaster management of mines?

Accidents in opencast mines due to failure of OB dump and slope stability have been monitored using geospatial technology. LiDAR technology is very useful for rapid and accurate measurement of the dump slopes in all mining projects,

CMPDI has taken an initiative for creating a geospatial database of coal resources called ICRIS. It has taken up satellite surveillance of all opencast mines to assess land reclamation status

so that remedial action can be initiated if required to prevent the dump failure. It is possible to monitor ground subsidence regularly using microwave remote sensing data to take the mitigative measures due to the effect of underground mining on surface. Gyromat- (3000) is being used in correlation survey for precise plotting of underground working in order to prevent mine accidents/disasters caused by inundation from surface or underground water logged workings.

Coal mine fires are affecting the Jharia coalfield, which is the only prime source of coking coal in our country. CMPDI had procured Deadalus Thermal Scanner and used the same for fire mapping in collaboration with NRSC, Hyderabad. The spatial resolution of the scanner was 1.00m. The scanner has now outlived its life. In India, there are no airborne thermal scanners available at present. Aster satellite has thermal infrared band but spatial resolution is 100m., which is not useful for detailed fire mapping. ISRO should consider putting a high resolution thermal infrared band in its next generation satellite for mapping of coal mine fires, forest fires, hot springs etc.

Change detection is another aspect of great importance in mining operations. How does CMPDI ensure this?

CMPDI has taken up satellite surveillance of all the opencast mines regularly on annual basis to assess the land reclamation status. Such monitoring is very effective in taking the remedial measures if any are required for environmental protection. Studies reveal that 74% of mined out land has already been reclaimed and balance 26% area of land is under active mining. Land reclamation monitoring was also included in a 100 day programme by the Ministry of Coal. There is a programme to cover all mega projects of more than 5 million tons (coal+OB) per year capacity and other mines at three years interval. The report on land reclamation has been already uploaded in the website of CMPDI and Coal India Ltd. in public domain and will be updated on an annual basis. At present we are using Resourcesat -LISS-IV satellite data with 5.8 m. spatial resolution for this monitoring. We are using terrestrial LiDAR for measuring the slope stability of OB dumps in OC projects for mines safety as well as for OB excavation.

What are the initiatives of CMPDI to build a spatial data infrastructure (SDI) of mines in India?

CMPDI has taken an initiative for creating a geospatial database for coal resources of the country called ICRIS (Integrated Coal Resources Information System). This project is funded by the Ministry of Coal. Under this project, all the data related to coal resources like location of coalfields, coal blocks, coal reserves, coal quality, etc. will be generated and uploaded on the website of CIL, CMPDI and MoC. ICRIS will provide comprehensive information about the coal resources of India. CMPDI has also generated database for land use, vegetation cover, wasteland, mining area, water bodies, drainage etc. for all the major coalfields based on satellite data on GIS platform to assess the impact of coal mining on land environment at a regional scale. Furthermore, CMPDI has also started land reclamation monitoring of all the OC projects producing more than 5 m. cum. (Coal +OB) regularly on annual basis and generating the dynamic database for land reclamation.

Is CMPDI looking at exploring alternative mineral/energy sources?

Apart from coal, CMPDI is actively involved in exploring the alternative energy resource coal bed methane (CBM) in the country. Assessment of CBM in Singrauli and Korba coalfield is under progress. Coal bed methane is a greenhouse gas, associated with coal which gets liberated in the atmosphere during the mining. CBM resource can be utilised for generating energy and reducing greenhouse gas. The data dossier consisting of preliminary information about the occurrence of CBM resources was prepared by CMPDI for open bidding of the CBM blocks for exploration and exploitation of the CBM and same was highly acclaimed by international experts.

CMPDI is the nodal agency for CBM resources in India. A CBM clearing house has been established at CMPDI in association with the United States Environmental Protection Agency (USEPA) to provide information related to CBM resources of the county. We are committed to bring clean coal technology in India, especially under ground coal gasification (UCG) in collaboration with International agencies for exploiting energy from coal deposits which are difficult to mine.

11th ESRI India User Conference 2010

21 - 22, April 2010
Hotel Radisson MBD, Noida (NCR Delhi)

THEME: *GIS: Designing our Future*

Call for Papers

ESRI India hosts its 11th ESRI India User Conference from 21- 22 April 2010 at NOIDA (NCR Delhi) and we like to invite you to play an active role by submitting an abstract. The wide range of presentation topics attracts users from all over the country who want to hear about your experiences using ESRI GIS technology—from research activities to enterprise-wide project implementation.

As a presenter, the reward from sharing your work and best practices—as well as the networking these presentations lead to—is what this conference is all about. We encourage you to share your GIS experiences with us today by submitting your abstract.

Inspiring

Enlightening

Influential

Submit your Abstract at
http://www.esriindia.com/uc2010.htm

Conference Highlights

Plenary Session
Technology Exposition
User Presentations
State-of-art-Exhibition
Map Gallery

The deadline for submissions is **February 28, 2010.**

For More Details Contact

User Conference Secretariat
NIIT GIS Ltd.
B-1/H-9, Mohan Cooperative Industrial Estate
Mathura Road, New Delhi - 110044
Tele: +91 (11) 40570700 /701
Fax: +91 (11) 40570516
Email: **UC2010@esriindia.com**

ESRI India

www.esriindia.com/UC2010.htm

VIENNA

PROFESSIONAL TO THE CORE

Prof. Gottfried Konecny
Former President, ISPRS (1984-1988)

During my studies of Geodetic Engineering at the Technical University of Munich, one of my teachers, Walter Hofmann attended the ISP Congress 1952 in Washington, where Germany was re-admitted into the Society after World War II. During a presentation, Hofmann painted the future of photogrammetry, as seen during that Congress, in bright colours.

My colleague Gerhard Winkelmann from Munich and I entered the graduate school of Ohio State University in 1954. Bertil Hallert, ISP Congress Director of 1956 in Stockholm was my teacher there along with Fred Doyle. Fred, in preparing a paper on digital photogrammetry for the 1956 Stockholm ISP Congress, took me to Dayton, Ohio, where the Wright-Patterson Air Force Base held a new digital image coordinate measuring device on which we did the measurements. In 1959 I joined the University of New Brunswick in Canada, starting a surveying engineering degree program with the help of Sam Gamble, the Canadian Director of Surveys and Mapping, who later became ISP President. I made it to the 1964 Lisbon ISP Congress, where I reported on our UNB efforts in photogrammetric education while Prof. Burkhardt from Berlin was ISP Commission VI president.

Hamburg- The Congress Director and the incoming Secretary General Prof. Konecny

At the 1968 ISP Congress in Lausanne, Sam Gamble became ISP Congress Director for 1972 and Kurt Schwidefsky of Karlsruhe ISP Commission II President. At UNB we had acquired the first programmable analytical plotter, the OMI-AP/C. Schwidefsky invited me to present the experiences at the Photogrammetric Week 1969 in Karlsruhe. At this meeting I got an invitation to come to Hanover, which I finally did in 1971.

At Hanover, I was able to pass on Duane Brown's paper on bundle block adjustment with additional parameters to Dr. Bauer, who had just completed his dissertation with my predecessor Gerhard Lehmann on bundle block aerial triangulation. Bauer applied the methodology and was able to produce unbelievably accurate results for bundle block adjustments based on German accurate test fields. He presented this in a paper to the 1972 ISP Ottawa Congress.

During the Ottawa Congress, Landsat was successfully launched, and it brought photogrammetry into a new direction, remote sensing and space photogrammetry. Already during my last year at UNB I was able to participate in the Canadian assessment of this technology and I had defence connected projects using line scanners, which prompted ISP Commission IV President Van der

Weele to entrust me and Franz Leberl with an ISP working group on geometry of remote sensing systems with Franz Leberl covering the radar part.. In Hanover we had the chance to cooperate in the German Space Agency (DLR)n managed remote sensing program with first results presented at the 1976 ISP Congress in Helsinki.

In 1975 I had applied for the vacant professorship in photogrammetrry in Munich, but the appointment committee favoured to appoint H.K. Meier who did not accept the position due to his engagements at Carl Zeiss and Heinrich Ebner in the second place and me in the third place. My challenge was clear: Let's do something for photogrammetry in the north of Germany instead. With the help of the newly established Congress Center organisation in Hamburg and the German Society for Photogrammetry (I had become President in 1972 on suggestion of K. Schwidefsky), I applied in the name of the German Society at the ISP General Assembly for the 1980 ISP Congress to be held in Hamburg, and we won.

There was hardly a photogrammetrist in Hamburg. Therefore we organised the Congress by a joint German effort, with two University Institutes for Photogrammetry carrying the main burden: our Institute in Hannover and the Institute of Fritz Ackermann in Stuttgart. Fritz had become my successor as president of the German society, shortly after we changed the name of German Society for Photogrammetry into German Society for Photogrammetry and Remote Sensing. In Hamburg we were able to change the name of the International Society for Photogrammetry (ISP) into International Society for Photogrammetry and Remote Sensing (ISPRS) as well.

For us it was important to open relations to nations, for which political boundaries blocked international cooperation in our disciplines. We especially invited scientists and engineers of the Soviet Union and its neighbours to our Congress, as well as those from China. In preparation for this I was invited to travel to China in 1979, and we prepared the membership of the Chinese Society into ISPRS. Together with President Jean Cruset and Secretary General Fred Doyle we managed long negotiations, so that after a change of our statutes "Countries and Regions thereof, which have an independent budget" could become members of ISPRS, which meant that China could be admitted despite the fact that Taiwan was already a member. One statute change also permitted another - after 1980 as Congress Director I could become Secretary General of ISPRS during the 1980-1984 period, while my revered teacher Fred Doyle could be president of ISPRS during the 1980-1984 period. This Council period was very constructive and worked beyond political boundaries with Ivan Antipov from the USSR and George Zarzycki being Vice Presidents. Zarzycki as former Polish citizen was not permitted to go to the Eastern block, so we had a Council meeting in West Berlin in 1983 which could be attended by Zarzycki but not by Antipov. Instead we arranged a second Council Meeting in Minsk in the Soviet Union at which Antipov could attend, but not Zarzycki.

The 1984 ISPRS Congress in Rio de Janeiro was the first Congress outside of Europe and North America and it brought home to photogrammetrists and remote sensing experts that we are global disciplines.

In Rio I was elected President of the Society, and it became a challenge to personally visit 40 ISPRS member countries on official missions, extending from Cuba to Latin America, Africa, Australia and Japan.

At the Kyoto ISPRS Congress in 1988, Washington in 1992 and Vienna in 1996 I was very happy that this tradition was followed by my able and dedicated successors Kennert Torlegard and Shunji Murai with others to follow. After Amsterdam 2000, Istanbul 2004 and Beijing 2008, ISPRS is a forward looking professional society meeting the demands of our changing globalised world. It has been a privilege to have been part of this effort. ■

TIME TO STATE A VISION FOR INDIA

Map India 2010, the 13th Annual International Conference and Exhibition on Geospatial Information Technology and Applications, aimed at steering the future direction that geospatial technologies can provide to the various verticals in the country, was a resounding success with an impressive participation from the government, academia and industry and discourses on its stated theme "Defining the Geospatial Vision for India." The event, held during January 19-21, 2010 at Epicentre in Gurgaon, India, witnessed 1262 delegates and visitors from 28 countries gracing the occasion and 41 companies exhibiting.

"Geospatial technology is fast maturing and government will facilitate the speedier development of this industry in the country," pronounced Prithviraj Chavan, Minister for Science and Technology and Earth Sciences, in his inaugural address. Chavan added that the information we are trying to hide is already available on the Internet and information should be accessible to the citizens who are the legitimate owners. He called on the geospatial community to work together closely to create innovation-based enterprises. Delivering the guest address at the inaugural, Prof Yashpal, distinguished academician and scientist, lamented that while technology innovation is fast removing the boundaries, physical boundaries between people, between countries are actually gaining ground. According to Dr Shailesh Nayak, Secretary, Ministry of Earth Sciences stressed the need and potential of seabed mapping.Rajendra S Pawar, Chairman and co- founder, NIIT Group, had a bottom-up prescription for GIS in India.

Delivering the keynote address, Dr Krishnaswamy Kasturirangan, Member, Planning Commission, called upon the geospatial stakeholders to make India a geospatial provider by 2020. According to KK Singh, CMD Rolta India, the national map policy needs to unleash the potential of private sector to build a robust geospatial infrastructure in the country.

Panel Discussion

The panel discussion "Defining Geospatial Vision for India" endeavoured to set the map for the road ahead for the geospatial industry in India. Moderator V.S. Ramamurthy, Director, National Institute of Advanced Studies, India, asserted that the end user and his expectations should play an important role in defining the vision for the sector, and highlighted the need for better governance using this technology. Maj.Gen. S.V. Chinawar, Additional Director General, Military Survey, Indian Army elaborated on the need to satisfy the end user. Ajay Seth, Managing Director, Elcome Technologies, analysed that archaic policies and procedures are inhibiting growth in a much unregulated industry. "Collect right" was his vision for the geospatial industry.

Amitabha Pande, Former Secretary, Inter State Council, India, viewed the vision for the geospatial industry as its role in the vision for India. He expressed that the distinction between those who produce knowledge and those who use knowledge should get completely blurred, with the end user becoming the producer of his own knowledge for his own use and his own application. The panel was of the view that if the issues of data availability and interoperability, education and awareness creation are addressed, then the geospatial industry can reach where it wants to.

Plenary sessions

Technology Trends: he plenary session 'Technology Trends' witnessed a debate on the latest technologies in the geospatial by stalwarts. AR Dasgupta, Distinguised Professor BISAG and Managing Editor (Honorary), GIS Development asserted that neogeographers who make rural data available for digitisation are the need of the hour. Shantanu Bhatawdekar, Scientist, ISRO, highlighted the activities and role of ISRO in Indian geospatial panorama. Rob Laudati, VP- Mapping/GIS and Derrick Darby, VP -Connected Site, Trimble addressed various aspects of real time data availability including the importance of real time data in utility sectors, fleet management and asset management. Bruce Chaplin, VP- Product Development, ERDAS, demonstrated the need of oblique imagery with the help of some imagery from Google and Microsoft. He concluded that cloud computing has to lead the geospatial industry.

Connecting Communities: The plenary 'Connecting Geospatial Communites' on the second day of Map India 2010 explored possible ways to connect the disparate communities working with geospatial technologies. Discussions veered around ways of exploiting geospatial intelligence provided by high resolution imagery, need to leapfrog with technology adoption, best practices of design and construction etc.

According to Mukund Rao, President and COO, ESRI India, GIS will no more be just maps and images. Geotagging of business data, tabular data is happening and once these are served on maps, enabling visualisation and analysis, it will be a third generation boost to GIS. He also added that a national G-cadastre and a GIS system of systems can accrue immense benefits to individuals and to the society.

www.mapindia.org

Symposia

Urban Development: The symposium on geospatial for urban development had a look at the current scenario in India and to discuss the possibilities of defining a vision for urban India. J Premnath Singh, Head-Data Delivery, ESRI India spoke about the changing trends in urban planning impressing upon the audience the importance of technology for developing master plans in a easier way. Dr. P.S. Uttrawar, Director (Planning), Delhi Development Authority (DDA), presented a case study on use of geospatial technologies to develop a township. Prof Mahavir, School of Planning and Architecture advocated the need to establish a ministry of regional development, which according to him will solve lot of issues. The panel discussion witnessed a number of issues highlighting the problems urban planners face. It was discussed that the legal system has to recognise the work being done by using geospatial technologies to make the system more effective and accepted. Some pointers like keeping the scale of data in mind for a particular requirement and that the technology needs to be made user-friendly and simple to enable the common man to use it for their data requirements were made.

The symposium and panel discussion **Geospatial for Electricity** on the second day of Map India 2010 strongly took up the case of power sector reforms through the R-APDRP (Re-structured Accelerated Power Development and Reform Programme). Devendra Singh, Joint Secretary, Ministry of Power opined that GIS can be an effective solution to eradicate power theft and efficient power distribution without pilferages. Jayant Sinha, Tech head (Power IT), SPANC, said that if any state government does not complete the project within the timeframe, the grant will automatically get converted into a loan. BM Verma, Ex Chairman, Jharkhand State Electricity Board, India talked about public resistance in rural areas with people often misunderstanding mapping and surveying practice. Dr R S Hooda, Chief Scientist, Haryana Remote Sensing Application Centre, India, emphasised the importance of alternate energy sources like biomass. Satya Prakash, GIS global practice head, TCS, underlined the need for a meeting of GIS professionals every quarter to discussion the progress of GIS implementation.

The symposium **'Climate Change and Disaster Management'**, on the second day of Map India 2010 witnessed an enthusiastic discussion on the use of geospatial technologies in the context of climate change and disaster management. Dr KJ Ramesh of MoES moderated the session.

Eminent speakers during the symposium included Dr. Orhan Altan, President, ISPRS; Michael Oberg of Digital Globe; Dr. K. Krishnamoorthy of Vikram Sarabhai Space Center, India; PH Joshi of TERI University, India; Vinay Sehgal of Indian Agricultural Research Institute, India; Dr G Srinivasan of Asian Disaster Preparedness Centre, Thailand; Dr. Sisi Zlatanova of Delft University of Technology, The Netherlands; G. Srinivasa Rao of National Remote Sensing Center, India and Dr. Akhilesh Gupta of Department of Science and Technology (DST), India.

The symposium highlighted the need of effectively explaining the importance of role of geospatial technology in observing human induced and natural disasters, use of geospatial technologies in monitoring and management of climate change culprits carbon dioxide and aerosols, geospatial tools for climate studies in forestry sector, changes in agro-ecosystem using spatial datasets to support climate change studies, the importance of taking decision despite uncertainty in climate change management, importance of user-centric systems for emergency

response, technological convergence and Indian government's initiatives in disaster management.

The key observations made by participants in the panel discussion included the importance of data dissemination and sharing, the challenges posed by climate change to weather predictability and need for increased accuracy levels in various models, a system on the lines of Wikipedia regarding data and a semi-philosophical observation that Earth is a system and we have to observe it.

Speakers at the symposium, '**Geospatial for Development Sector**' reiterated that geospatial data is a critical ingredient for sustainable development.

Key issues discussed at the symposium included advantages of remote sensing data and other spatial data in the development sector, need for data dissemination amongst different organisations to tackle a common problem, importance of mapping of regions like PCPIR and SEZ as it helps a lot while dealing with hazardous waste keeping environment concerns in the mind, value of geospatial data in vulnerability and disaster preparedness and management, role of GIS in monitoring and evaluation and observation that GIS cannot be a replacement for existing data models. Eminent speakers at the symposium included Prof Amitabh Kundu of Jawaharlal Nehru University, India, Dr. Elizabeth Warfield of USAID, India, Dr. Basanta Shrestha of ICIMOD, Nepal, Dr. George Mathew of TISS,, Vijay Kumar of TCS, India and Dr. Juergen Bischoff of GTZ, India.

Seminars

The seminar '**State SDI implementation: Challenges and Road Ahead**' on the second day of Map India 2010 highlighted the initiatives by various states including Delhi, Gujarat and Karnataka in this direction and presented the status of their SDI implementation.

The challenge of coordination among various state government agencies to acquire data was voiced by all the speakers. The need to have a data access policy and a central mandate for developing SDIs was also mentioned. The Herculean task of developing dedicated applications for each department having different requirements was specifically highlighted. No or little metadata, lack of involvement of real end users were the other concerns.

Apart from the presentations about various state SDIs, a demonstration of the village information systems (VIS) by Salil Das stole the show. Kaushik Chakraborty from ERDAS observed that effective governance comes from gleaning information from data and then converting it to knowledge - wisdom follows.

The seminar, '**GIS for Government**' started with a guest address by Dr. C Chandramouli, Registrar General, Census of India who mentioned that work is already underway for 2011 census and that this will be the 15th census that would be undertaken since the inception of Census of India in 1872. The census would also be preparing the National Population Register for the Unique Identification Number (UIN) Scheme. There was also discussion on how NIC has developed Web-based modules created on a collaborative service delivery platform using common standards for various G2G projects for better governance.

In the concluding panel discussion it was strongly advocated to make GIS common man friendly for making g-enable governance possible and successful.

Round Table

Public Private Partnerships: The round table on public private partnerships (PPP) reiterated that all stakeholders are partners in development and tried to find ways to

build successful partnerships.

Maj Gen (Dr) R Siva Kumar, CEO-NSDI assured that government is soon coming up with a policy that is conducive for the growth of geospatial industry. Manosi Lahiri, MD & CEO ML Infomap, said that a lot of private players in geospatial industry feel they are treated as low cost outsourcing units and this attitude needs to change. The participants reiterated the advantages of switching to PPP mode but strongly felt the lack of guiding policy and legal framework.

Capacity Building: On the concluding day of Map India 2010, industry luminaries and academicians got together in a round table discussion on capacity building to put forth their ideas and recommendations. Amit Khare, Joint Secretary, Bureau of BP & CR Education Policy, UNESCO, INC & ICC, Department of Higher Education, Government of India, highlighted government as one of the key sectors in addition to social organisations and for educational institutions to develop capacity with existing faculty.

Some of the proposals from the panel included the need to prescribe a minimum qualification for candidates aspiring to take up courses related to geospatial technologies, flexibility in curricula framework, introduction of GIS as a subject in IT, necessitating vertical specific GIS courses in curriculum, teaching GIS in relation to one or more application themes, programmes to provide students with sufficient background in science and mathematics, establishment of business hubs, sharing of knowledge by elite organisations, recognition of this branch of learning as a profession, govt funding for capacity building, taking GIS beyond classroom, fitting GIS education into existing framework of education and promoting distance learning.

Technical sessions

Map India 2010 witnessed 198 papers being presented in technical sessions on Web GIS; Mapping, Surveying and LIS; Utility and Infrastructure; Technology Trends; NRDMS; Disaster Management and Climate Change; Education and Health; Environment, Agriculture and Forestry; Urban Planning and Development; Remote Sensing, LiDar & Image Processing; Natural Resource Management; SDI, Database Management & Spatially Enabled Government and LBS & Enterprise GIS. The Best Paper Award was won by Kapil Oberoi of IIRS, India, followed by Malay Adhikari of NALSAR University of Law, India, and Sneha Rao of CIESIN, Columbia University, New York. The winner of the Best Poster award was Bharti Bajaj.

Renewed confidence

In the concluding session, Sanjay Kumar, CEO, GIS Development, stated the need to involve and engaging with all stakeholders and facilitating discussion on important areas for growth. In his valedictory speech, Dr. T. Ramaswamy, Secretary, Department of Science & Technology, observed that government is a promoter and facilitator but not the owner of data. He also proposed that the geospatial industry should follow the economic liberalisation model. Map India Awards for Excellence were also announced during the session. ESRI India was adjudged the Best Exhibitor, followed by Rolta and Trimble.

Dr. Manoshi Lahiri, Founder, MD & CEO, ML Infomap, received the Lifetime Achievement Award for her pioneering and visionary work in the field. The three-day Map India 2010 brought renewed confidence and cheer to the Indian geospatial stakeholders. International players and associates in the Indian g-field too had something substantial to think, plan and execute. ■

Awards for the year 2009-10

Geospatial Personality	Dr. Mukund K Rao President & COO, ESRI India
GIS Software Company	ESRI
Image Processing Company	ERDAS
Photogrammetry Company	ERDAS
Computing & Graphic Hardware Company	Hewlett Packard
Survey & Positioning Company	Trimble
Engineering and Machine Control Company	Trimble
Cameras and Sensors Company	Leica
Geospatial Solutions Company	Rolta India
Geospatial Services Company	RSI Softech

6TH ANNUAL MIDDLE EAST CONFERENCE & EXHIBITION ON GEOSPATIAL INFORMATION TECHNOLOGY AND APPLICATIONS

Map Middle East

Enabling G-Lateral Ties

22 – 24 March, 2010

Abu Dhabi National Exhibition Centre, Abu Dhabi, UAE

Overview of the Conference

PLENARY SESSIONS

- Technology Trends
- Geospatial Applications

WORKSHOP

Roles and Responsibilities of National Mapping Organisations by **Ordnance Survey Great Britain (OSGB)**

SYMPOSIA

- Earth Observation Systems: Policy and Coordination Framework
- Environmental Management
- Spatial Data Infrastructure for City Management and Governance
- Surveying and Engineering

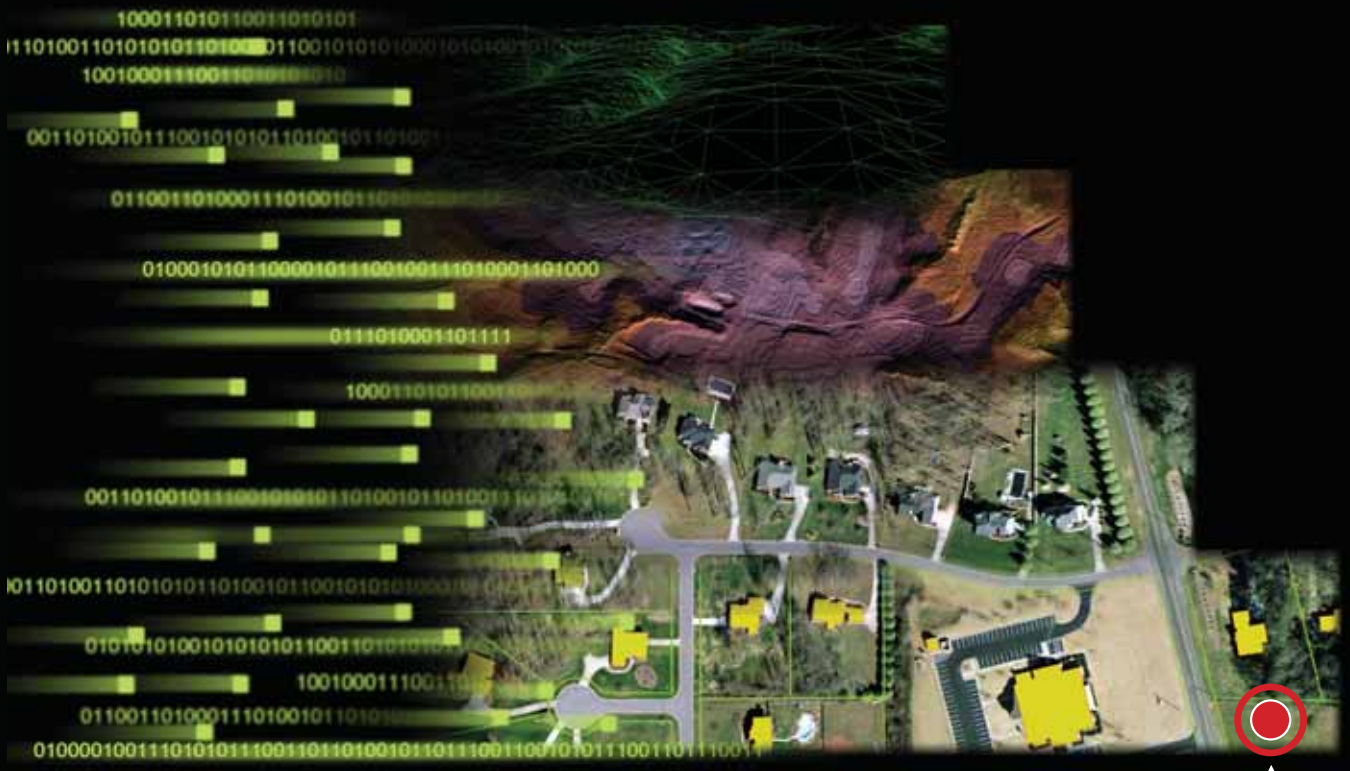
REGISTER NOW!!!

For **Registration** related queries, write us at **registration@mapmiddleeast.org**
For **Exhibition** related queries, write us at **exhibition@mapmiddleeast.org**

Organiser	Strategic Partners	Silver Sponsor	Supporting Organisation	Knowledge Partner	Symposium Partners
GIS DEVELOPMENT	Space Reconnaissance Centre, UAE; Environment Agency Abu Dhabi	ROLTA	OGC™ Open Geospatial Consortium	United Arab Emirates University	isprs; United Nations Committee on the Peaceful Uses of Outer Space; SPACE POLICY INSTITUTE

Map Middle East 2010 Secretariat
GIS Development FZE, P.O Box : 234170, Dubai, UAE
Tel No. : 009714 2807407, Fax No.: 009714 2807514, Mobile No. : 0097150 6400768, 0097150 559802 www.mapmiddleeast.org

Are You Creating the Map of the Future?



Emergency Landing Zone (34°10’47.98” N, 84°25’08.70” W)

The Intelligent Image is Here.

ERDAS transforms your digital data into an intelligent image, containing all the terrain, vector and raster information that you need. With the most comprehensive and authoritative geospatial tools available, we completely understand your data types and sources, simplifying the workflow required to create your final product.

Geospatial experts and novices throughout the world rely on our interoperable remote sensing, photogrammetry, GIS and enterprise solutions daily, including:

- ERDAS IMAGINE®
- ERDAS ER Mapper
- LPS
- ERDAS Extensions for ArcGIS
- ERDAS APOLLO

We provide you with the technology you need to complete your project, as well as the means to quickly and securely deliver it. With ERDAS, your data is transformed into the map of the future.

For more information on ERDAS, please visit www.erdas.com or contact us at info@erdas.com or +91 124 4633000.

erdas
The Earth to Business Company