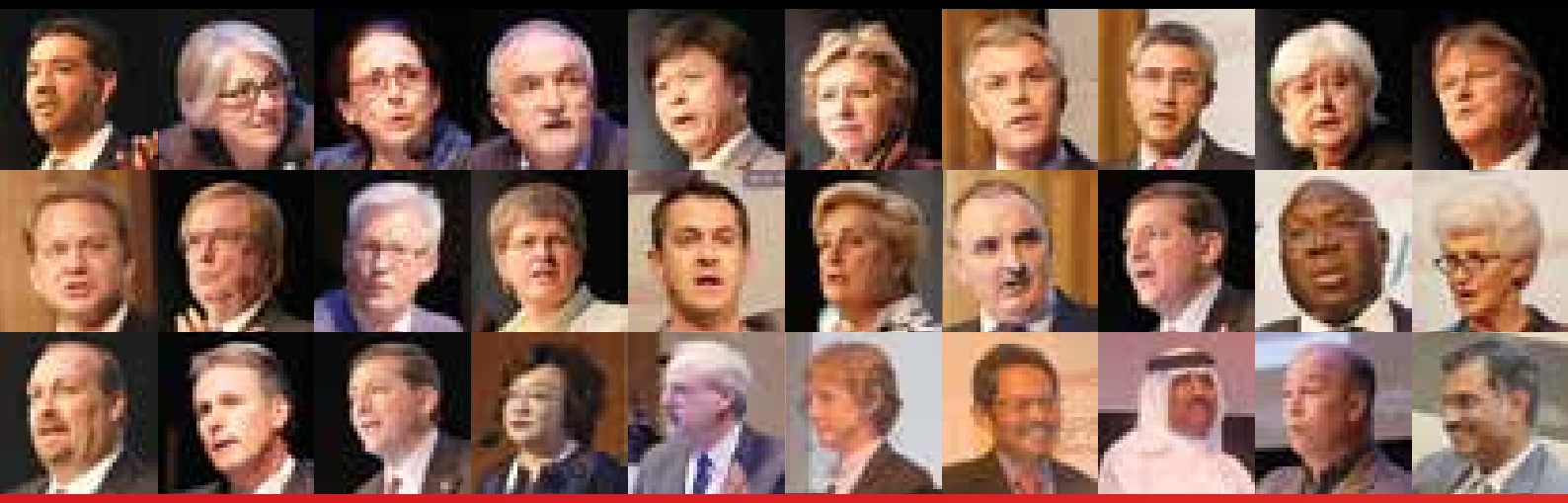
13-16 MAY 2013

Beurs-World Trade Center, Rotterdam, The Netherlands



GEOSPATIAL™ WORLD FORUM

MONETISING GEOSPATIAL VALUE AND PRACTICES

REPORT / 2013

www.geospatialworldforum.org

Addressing Geospatial Value

- 36 thematic sessions
- 344 presentations
- 1264 delegates
- 73 countries
- 51 exhibitors

Every year, Geospatial World Forum serves as the platform where all key stakeholders of the domain converge in order to touch base with each other to understand their priorities, needs and to be able to generate knowledge, deliver services and apply this technology to maximise its potential. Geospatial World Forum is regarded as one of the key conferences of the domain, which provides thought leadership to this industry and helps expand its horizons.

From 12th to 16th of May 2013, Beurs-World Trade Center at Rotterdam in The Netherlands witnessed the amalgamation of the global Geospatial community which gathered together to exchange thoughts and ideas on Monetising Geospatial Value and Practices. The various aspects and dimensions of the central conference theme was explored and discussed in **36 thematic sessions** with **344 presentations** by experts coming from various segments of geospatial domain as well as its end user vertical industries like Agriculture, Public Safety, Land Administration, Mining and Exploration, Construction and Infrastructure, City Management, Electricity and Gas and Water Resources and Utilities. Over the five-days, the conference witnessed participation of **1264 delegates** from **73 countries**.

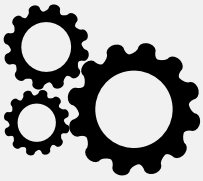
This year, the exhibition which was held from 13-15 May had **51 leading organisations** from across the globe that showcased their capabilities to the attending delegates on technologies like 3D, LiDAR, GIS, Photogrammetry, Surveying and Mapping, Satellite Imagery and many more. There were **3 country pavilions** hosted by Netherlands, India and Saudi Arabia, which showcased the technological prowess of each country in the domain.

Programme Addressed Value Proposition, Issues and Concerns

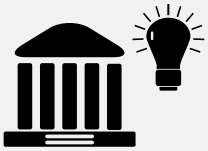
Pre-Conference Forum
Dialogue of experts from Business Enterprises & National Developmental Goals

Leaders Forum
Visionary & Thought Leadership talks by Plenary Speakers

Users Forum
Return-on-Investment and value proposition of Geospatial was discussed by end users giving many statistics & examples



Technology Forum
Discussed advances in various technologies like Cloud Computing, 3D, Earth Observation Systems, Open Source, Enterprise & Web GIS, LiDAR, Data Migration, Visualisation & Modelling and many more



Policy & Research Forum
Saw presentations on key concerns like INSPIRE, European Location Framework, Standards & Interoperability & GI Policy

Networking Opportunity

One of the key highlights of this year's forum was the **networking opportunity** extended to the delegates via an online platform created by the organisers as well as plenty of exclusive time dedicated for networking during conference and exhibition visits.

The constantly busy sessions ended on 16th May afternoon, which was followed by a Closing Session that had some key partners and speakers of the forum share their thoughts with the audience on the relevance of the forum and some constructive feedback to better the conference in coming years.

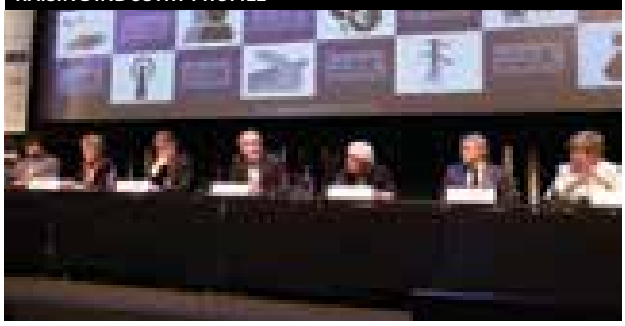
Conference Objectives

THOUGHT LEADERSHIP

CONNECTING COMMUNITIES

GLOBAL OUTREACH

RAISING INDUSTRY PROFILE



PARTNERSHIP

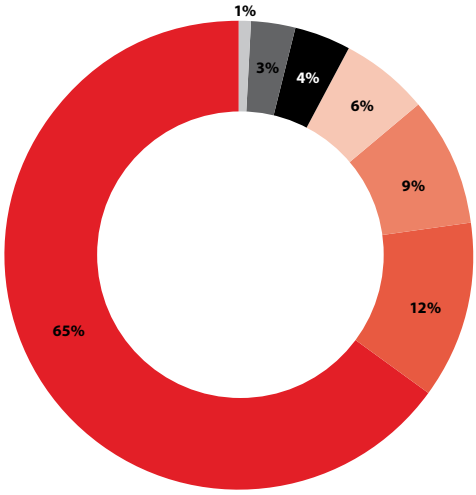
KNOWLEDGE SHARING

BUSINESS DEVELOPMENT

EXECUTIVE NETWORKING

Conference Statistics

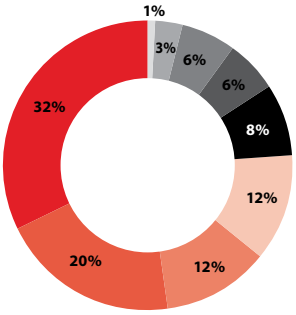
1264 delegates from 73 countries participated
467 organisations were represented
346 Senior Managemers present at GWF 2013
272 Mid Level Managers attended GWF 2013
230 Top Management delegates (including CEOs/CIOs/CMOs/CGOs/Founders/Heads/Secretary Generals/Board Chairmans/Director Generals etc.)



Delegates Regional Represention (%)

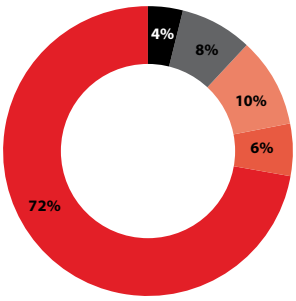
Latin America	1
South Asia	3
Africa	4
Middle East	6
North America and Canada	9
Asia Pacific	12
Europe	65

Exhibitor's Profile (%)



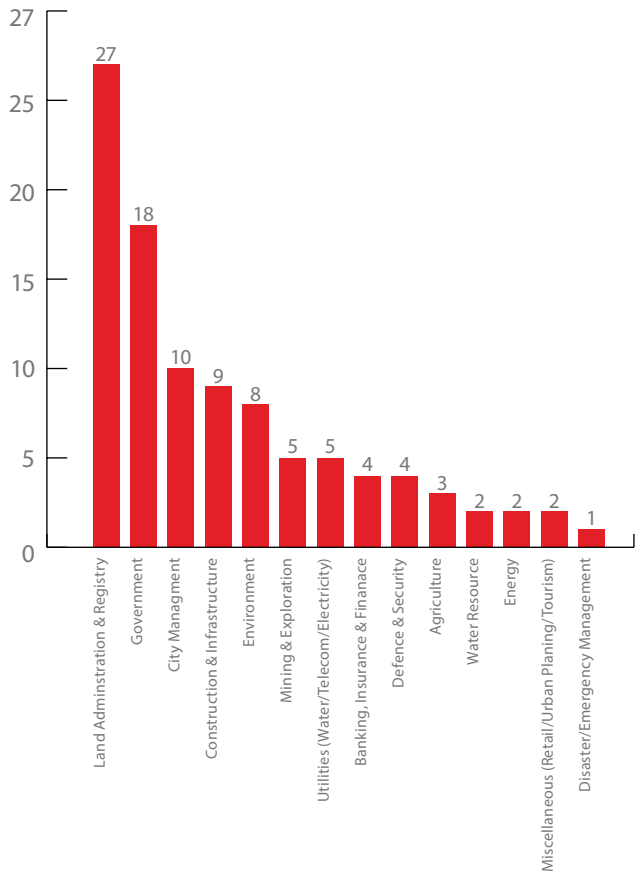
Government User	1
Policy Makers	3
Academic Institute	6
Hardware Providers	6
National Geospatial Information Agencies	8
Services Companies	12
Data Providers	12
Software Companies	20
Solutions Companies	32

Regional Distribution of Exhibitors (%)

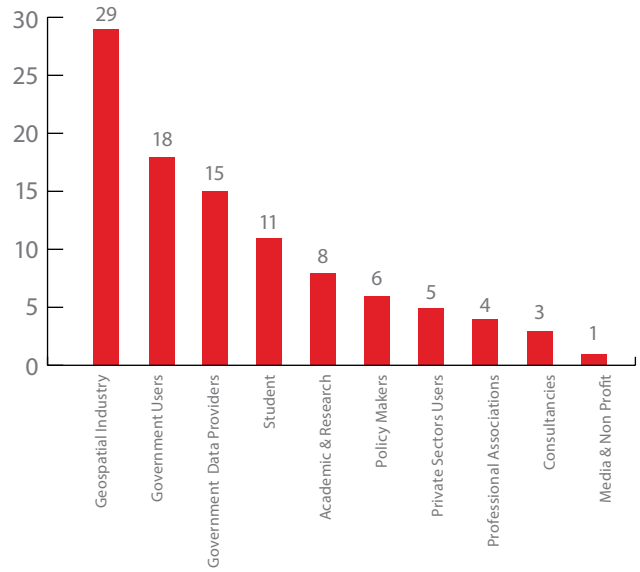


Europe	72
North America and Canada	10
South Asia	8
Middle East	6
South East Asia and Pacific	4

End User Participation Profile (%)



Delegates Participation Profile (%)



Testimonials

–Geospatial World Forum provides a venue to collaborate with professionals from different industries around the world to explore opportunities on how we drive transformation and shape the future of geospatial technologies.

Chris Gibson, Trimble

A true world class event. I got real value from discussing my presentations with attendees and being exposed to new ideas and perspectives from people across the globe.

Greg Babinski, King County Municipality

Definitely the engagement with key industry players was great, the opportunity to network and meet with them.

Alex Monino, HP

It was a great conference! During my short visit I had a lot of interesting meetings, both with other municipality colleagues and the exhibitors.

Eric Jeansson, Goteborg Municipality

The conference was wonderfully inclusive of an ever expanding community of geospatial and location information use – supporting the knowledge building and networking needs of the geospatial community, as well as making connections with leaders in insurance, geosciences, public works, the consumer market and more. The emphasis on monetization / ROI related to geospatial was spot on, with many excellent illustrations of the significant value being realized through the incorporation of geospatial in all phases of the business and decision cycle.

Mark Reichardt, OGC

The event was really impressing. Very nice venue and everything well organized.

Wolfgang Haller, Munich Airport

Indeed it was great learning for me. Few products seen in the conference can be game changer here.

Harsh Sharma, BYPL

Great quality speakers covering a wide range of industries/businesses you get perspectives and knowledge sharing from such a diverse group of people over a period of two days. Had a great time and learned some new things along the way.

Ilhami Bin Ismail, Tenaga Berhad Malaysia

The conference was very worthwhile and it gave me many ideas for further improvements here at the water utility. It's very good timing since we are updating our geospatial strategic plan.

Xavier Irias, East Bay Municipal Utility District

Well organized and educative conference. I enjoyed sharing my experience with the well versed audience and also learnt a lot from others. I will definitely improve the management of our assets using best practice from the other presenters.

Jennifer Oduor, Kenya Electricity Generating Co. Ltd

A conference that excelled in every aspect! well-organised, well-balanced and professional event. It has indeed been a worthwhile knowledge sharing experience for me.

Marcelle Hattingh, City of Johannesburg

On the whole, the conference was excellent in providing different perspectives on the conference theme. It gave a broad international perspective with complementary and sometimes conflicting views.

Jay Pearlman, University of Colorado

Pre-Conference

Monetising Geospatial Value for National Development Goals

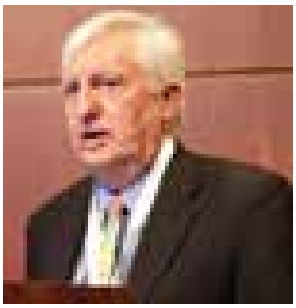
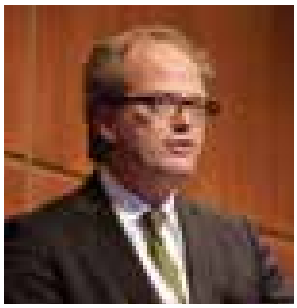
This pre-conference Dialogue Forum was organized in five sessions: An Opening Introductory Session which included an introduction by the Industry Manager of Geospatial Media and Communications; an opening address by the Chairperson, and two keynote addresses; a session on Regional Developments; two sessions on National Mapping Authorities; a session on National Development goals; and an Industry Panel Discussion and concluding session. The Dialogue was designed to maximize discussion structured by formal presentations. An example was given for the discussions and ample time was given for the discussions to maximize the input of a very knowledgeable and experienced group of participants.

Opening Session

The Chairperson, **Prof. D. R. Fraser Taylor,** outlined what he saw as some key issues on Monetising Geospatial Value for National Development. These included:

- The value of a geospatial approach
- The need to avoid "preaching to the converted"
- The argument that geospatial is not special anymore
- The importance of effective communication
- The need to respect recent and rapid societal change including the need to focus on the individual
- The importance of "human interoperability" and the need for effective dialogue among stakeholders from various government agencies, private industry and international organisations
- The importance of a user and problem oriented approach

Prof. Taylor detailed a number of important national, regional and international developments from 2011 to 2013 and gave a detailed description of two recent studies commissioned by Google: "Putting the US Geospatial Services Industry on the Map by the Boston Consulting Group in December 2012 and "What is the Economic Impact of Geo services by Opera Consulting Limited" in 2013. Both of these put monetary value on both the geospatial industry and the much larger location-based services at both a national (US) and global level. The monetary value of geospatial services is many times that of the geospatial industry and that value is increasing at an estimated 30% per

year. Several of the key issues identified were further developed and illustrated by speakers in subsequent sessions.

Prof. Henk Scholten, CEO of GEODAN introduced the concept of Geodesign in his keynote presentation arguing that this integration of geography and design is of critical importance in increasing the value of a geospatial approach. He used the example of a Geodesign Framework to address the problem of climate change in Bangladesh as well as the need for performance audits to measure the results of spending. He argued that the approach should start with the problem, not with the data, and that the people involved must be consulted and involved in any Geodesign framework.

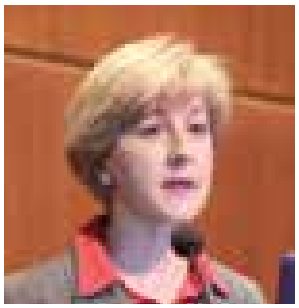
Dr. Barbara Ryan, the Director of the Group on Earth Observations, outlined the impressive efforts of the 90 member states and the 87 participating organisations to develop the Global Earth Observation System of Systems (GEOSS) to apply earth observations to some key societal benefit topics. GEO is coalition of the willing and uses a brokerage approach to increase the value of its efforts. Data sharing principles and practices are of great importance.

Session on Regional Developments

Three presentations were made on developments in Europe. **Dr. Massimo Craglia** outlined the impressive developments of the INSPIRE initiative in Europe. Twenty-seven member states are building a community of practice. Data interoperability is key. A recent study on INSPIRE shows that the assumptions made on the value of INSPIRE are valid. Any evaluation, qualitative or quantitative, is only as valid as the assumptions made to conduct it, a point also made by the Chairperson and numerous other speakers during the Forum.

Dr. Michael Von der Menlen, speaking on behalf of the Geological Surveys of Europe, outlined the many difficulties facing an unambiguous picture of geology, soils and other geological variables in Europe caused by a lack of agreement between and among the national geological surveys involved. There are numerous short term projects but few substantial cooperative efforts over time. A new European Geological Data Infrastructure is proposed but lacks funding. One Geology Europe is also a promising development.

Dr. Steffen Jensen, of the European Environmental Agency described the shared Environmental Information System being developed by the European Union including environment, geology, mapping, infrastructure and subject content. The initiative is geared towards meeting specified societal benefits. The Eye on Earth initiative emphasises free data availability and cooperation is key. The benefits are very difficult to quantify.

National Mapping Authorities

Presentations were made on the approaches being used by National Mapping Authorities with case studies from the Netherlands, Brazil, the United Kingdom, Switzerland, Japan, Korea and Chile. Each of the speakers presented a comprehensive description of activities at the national level. Each case was very different in terms of detail but certain commonalities emerged.

- The difficulty of quantifying the value of the significant contributions made by each authority. The UK presented a number of very valuable case studies of quantifying variables at the local scale which, it was argued, is a more useful approach than national or international scales and have more impact with decision makers as they are easier to comprehend.
- The importance of a place-based, locational approach rather than a geospatial one
- The challenge of interaction and cooperation with other government agencies
- The challenge of obtaining an adequate budget in times of fiscal constraint
- Moving from a supply-oriented to a demand-oriented model
- The need to respond and contribute to the policy of open government which is emerging in many countries
- Dealing with the growing impact of "crowd sourced" data and open sourced data such as Open Street Map
- Adapting to the growing reality of Google Maps and related readily available "free" mapping products
- The challenge of providing authoritative and timely data
- The need to ensure that data are available to record change over time

It was recognized that each of the case studies was unique in terms of the socio-economic, cultural, historical and political circumstances of the nations concerned.

Session on National Development Goals

Three case studies from Taiwan, South Africa and Indonesia provided the context for a discussion of the role geospatial technologies for meeting national development goals. In the Taiwan case the contribution of the National Centre for Disaster Response was outlined. In the South African case the land management system of the City of Johannesburg was described and an Indonesia's One Map was discussed. Again, each case was different but key points which emerged were:

- The importance of the local scale in meeting national development goals
- The importance of the active involvement of the individual citizen. In Taiwan this involved training volunteers to ensure that the quality of the data they provided was adequate. In Indonesia extensive use of traditional knowledge was made.
- The importance of building partnerships with the agencies and breaking down "information silos"
- The importance of demonstrating concrete cost savings from the use of geospatial technology

Industry Panel Discussion and Forum Conclusion

Five panelists from industry set the stage for the discussion and conclusions by giving their thoughts on a number of issues raised by the presentation. Discussion was wide ranging and the following points emerged:

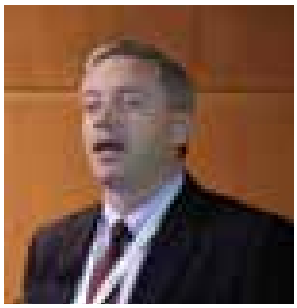
- Although monetisation of the contribution of geospatial data and technologies to national development was difficult, considerable recent progress has been made with a number of important studies emerging over the last two years, several of which are of a quantitative nature.
- The value of LBS is several times that of the contribution of the more narrowly defined geospatial industry.
- The added value of a geospatial approach to many sectors of society is growing exponentially.
- The general statements on the nature of location are being supplemented with concrete quantitative studies which provide a clearly documented and strong case.
- The large amounts of "Big Data" being generated are more than we can effectively cope with and use. This poses a number of problems for the geospatial industry and location-based services only some of which are technological in nature. Ontology and semantic driven geospatial applications pose many challenges.
- The need to ensure that data are available to measure change over time is important and effective policies for archiving and preserving data over time is required. Policies are required to decide what is preserved and what is discarded. Archiving and preservation are best served when they are part of the life cycle of product creation.
- There is a clear need for interdisciplinary work which brings together those who understand the application areas with those who understand the technology so that new synergies can be created. In particular, this needs to be done to show the value of geospatial approaches in meeting the goals of national development.
- Capacity building is a major challenge and at present there is a disconnection between a rapidly expanding market both on the industrial side and the consumer side and existing approaches to capacity building in universities in particular. Traditional geomatics and surveying departments are having difficulty attracting students and there is a need to make curriculum more relevant and less boring.
- Crowd sourcing, volunteered geographical information and social networking are rapidly growing market trends, and location and place are central to many of these "non-traditional" uses of geospatial data. These trends are being embraced by the geospatial industry but many national mapping organisations are not following suit as they are concerned about data quality. Official and authoritative data are important but there are a variety of ways in which they can be complemented and enriched by crowd sourced data.
- Effective access to, and sharing of, data in a timely manner at low, or no, cost is important. Many recent studies show that the value added by making data accessible is many times that of alternate, more restrictive approaches.
- Open government policies create a major opportunity for increasing the use and utility of geospatial approaches.
- Open standards and specifications, such as those being developed by the Open Geospatial Consortium, are very important to facilitate data sharing and access to data.
- Emerging new frontiers for geospatial technologies and approaches include three and four dimensional applications – indoor wayfinding, and underground applications
- There will be increasing focus on the individual user in a whole number of "non-traditional" use areas
- Collaboration, sharing and holistic approaches will work best

Monetizing Geospatial Value and Practices for Business Enterprises

The objectives of the two-day Forum on Monetising Geospatial Value and Practices for Business Enterprises were to demonstrate the RoI of geospatial technology in different markets through case studies and best practices, to identify areas of promising return, and to highlight successful implementations. In addition, the Forum sought to discuss impacts of latest developments in geospatial technology and add to the body of knowledge, encouraging additional ongoing best practice development. Finally, it was intended that the information and insight obtained from the Forum – from both speakers and attendees – be distributed to the global geospatial community. The Forum began with two keynote presentations addressing two important areas of geospatial data acquisition and interoperability and standardization of data.

The Chairperson, **Robert M. Samborski,** Consultant, USA, outlined the objectives of the forum and provided a brief note on key challenges faced by the users in monetising geospatial value. The session started with the two keynote speakers. **Chris Gibson,** Vice President of Trimble, described the impact of rapidly accelerating data capture times on the ability to provide more real time data analysis and enhanced decision support. Fueled by cloud computing, the increased value of integrated geospatial information into industry workflows is resulting in more and better return on investment on users' geospatial technology investments across a wide variety of industries. He sited that the Ipswitch Motorway in Australia is an AUD $700 million project that completed using Trimble's Site Controller Software that reduced reliance on survey crews yielded a savings of AUD $4 million just in survey related costs. **Mark Reichardt,** President & CEO, Open Geospatial Consortium, described how interoperable geospatial capability provides return on investment in addressing the world's major social, environmental and economic issues. Increased emphasis on location standards and interoperability is providing substantial additional benefit to the user community and technology providers alike. The key to interoperability is the adoption and consistent use of standards.The keynote presentations were followed by the user cases.



User Case

Greg Babinski, Project Manager for the King County GIS Center (KCGIS), USA

- Initial cost benefit analysis conducted in 1992 as their initial GIS was being designed identified 126 different business applicaitons requirng a capital investment of $22 million
- King county benefited more than 1 billion $ in a decade by using GIS.

Susan Ancel, Director, Water Distribution and Transmission, EPCOR Water Services, Edmonton, Alberta, Canada

- Since 1985, $400 million in water main renewal programs for Edmonton has reduced water main breaks and associated water losses to the lowest levels since the 1960s.

Xavier Irias, Director, Engineering & Construction, East Bay Municipal Utility District, USA

- For a utility, maps are essential: the question is not *whether* to maintain them but only *how* to do so.
- EBMUD's GIS has resulted in improved customized service, as the ability to map water main break patterns and provide additional analysis enables quicker and more targeted notification to the public in the event of a water main break or other system interruption.

Ilhami Ismail, Head of Geomatics Tenaga Nasional Berhad (TNB), Malaysia

- GIS implementation proved to be a catalyst for better productivity and output, cost effective decision making for planning, operation and maintenance and ultimately an improved bottom line for the company.
- High level benefits include better asset management through provision of system network overviews, particularly useful in crisis management and disaster recovery. Another system benefit is better customer service delivery. 85% of system benefits are realized in transmission and distribution activities.

Phil Mannell, Director, Customer Connections and Construction, Enbridge Gas Distribution, Canada

- Implementation of Enterprise GIS helped increase customer base by 25% at Enbridge. Many business units begin using GIS at core
- GIS based risk assessment and safety should be key areas to be included in the RoI assessment for most utility companies
- Implementation of Enterprise GIS helped increase customer base by 25% at Enbridge. Many business units begin using GIS at core.

Dan Shannon, Sr. Program Manager, Planning & Engineering, Telus Communications, Canada

- The RoI of Geospatial IT in today's telecoms requires the integration of geospatially managed assets with enterprise wide corporate intelligence
- There is need to understand the services those assets can provide, the nature of the marketplace into which they are providing those services, and the geographical relationship between those assets and potential customers.




Vesna Milinkovic, GI Manager, London Police, UK

- London Police saved 60% of budgeted data cost for Olympics following interoperability principles
- Enterprise-wide use of GI at London Met Police not only strengthened its operations but also saves almost 1 Million Ponds annually

Manny Rios, President & CEO, American Modern, Insurance Group, Inc., USA

- GIS allows us to integrate all of these data points into a visual that allows analysis to be performed
- More time for resources to take a strategic view versus a tactical view from analysis of GIS results
- It fully leverage specialty expertise and deliver a robust bundle of products, services and solutions

Sharon L. Palmer, Divisional Director, Global Analytics**,** Willis Group, UK

- Geospatial analytics in the insurance sector centre upon two core themes, exposure and risk. The analytical objective is to understand and price this risk
- The challenge is to identify geospatial solutions for industry sectors ranging from agribusiness to aviation and marine to supply chain.

Andreas Siebert, Head Geospatial Solutions Corporate Underwriting Accumulation Risks, Munich Reinsurance, Germany

- Property insurance is one of the areas where Munich Reinsurance uses geointelligence: local industrial accidents or regional earthquakes are linked to the geographic distribution of the insurer's portfolio to model specific loss expectation figures.
- 3D information, crowd sourcing data future input datasets to be looked into by insurance sector

Rosina Howe, Chief Innovation Officer & Group Director of Innovation & InfoComm Tech, Land Transport Authority, Singapore

- LTA developed a national Land Transport GIS Hub capable of meshing engineering designs with transport planning and road safety. Through this repository of data, LTA also provides up-to-date information services to motorists and commuters through smart devices.

Nigel Stroud, Geometry Information Manager Knowledge & Information Management, Technical & Quality BAA, Heathrow Airport Limited, UK

- Planning and Development teams utilise the information to design and construct new facilities in appropriate locations. For them access to quality information about existing infrastructure is vital to confirm the feasibility and accurate costs of a future project.
- Heathrow Map Live has given the business a graphical view of our asset information and enabled real time smart decision making.

Oscar E. Jarquin, PLS, GISP, Former Caltrans GIS, Program Manager, California, Department of Transportation, (CALTRANS), USA

- Focused on aligning geospatial data development with the mission of the organization to maximize the benefits and justify the cost
- Discussed the role of geospatial technology and data development in the organizations information lifecycle

Points highlighted during the Panel discussion

- Many executives are simply not well versed in the technology and view it mainly as a cost center, examples of significant project ROI notwithstanding.
- While organizations should focus increasingly on ROI to sell the value of the technology to executives and decision makers, geospatial professionals have had a history of a lack of proficiency in the financial analysis capabilities required to undertake a solid ROI study and then communicate results accordingly.
- There is a need for more and better approaches to developing a quantitative methodology to apply to geospatial technology implementations, although it was also noted that this has been an issue for many years, if not decades.
- One potential tradeoff as leveraging expanding technology to reduce the workforce. Intelligent use of intuitive GIS software and hardware, and the expansion of data collection into the sphere of the general public, is already resulting in fewer people doing more at all types of organizations. There is no reason why this trend should not only continue, but escalate rapidly, in fact this may be an inevitable development.

Main Conference

The four-day Geospatial World Forum got off to a spirited start. After two days of brainstorming pre conference sessions that saw user industries from across sectors and countries participate in discussions about how geospatial technology is enabling their work.

Welcoming the delegates, **Drs Th A.J. Burmanje (Dorine),** Chair, Executive Board, Cadastre, Land Registry and Mapping Agency, the Netherlands, said the theme of this year's conference – Monetising value geospatial technology – becomes all more relevant owing to the difficult times the world is passing through. The growing economic crisis is promoting acceptance of geospatial technology as an enabling tool.

In similar vein, **Chris Gibson,** Vice President, Trimble Navigation, said geospatial technology is driving enhancing and transforming technological changes. New technologies and technology convergence is driving the demand for g-tech. Gibson identified agriculture, civil engineering, building, transportation and logistics as the areas where geospatial is playing a key role.

Manny Rios, President & CEO, American Modern Insurance Group, USA & **Rosina Howe,** Chief Innovation Officer & Group Director of Innovation & Info Comm Technology, Land Transport Authority, Singapore presented the significant benefits yeilded by their organization with the technology.

The chief guest on the occasion, **Alhaji A.B. Inusah Fuseini,** Ghana's Minister for Lands and Natural Resources, said geospatial technology was crucial for economic and social development and poverty eradication in the developing world. Giving example from his country, he said Ghana's rapid growth has led to rapid urbanisation in the recent years and this cannot happen in isolation. Application of geospatial and space technology is empowering Ghana to deal with urbanisation with its new scientific land policy, natural resource management, agriculture etc. The country has recently launched a World Bank funded land management project for land titling, land use and land use planning etc.

Sybilla Dekker, former Minister of Housing, Spatial Planning and Environment, the Netherlands, said spatial planning started with knowledge and its ownership. That is an essential tool for growth and development. A strong functioning land record system is beneficial for citizens and lays the pillar for economic development of a country. In today's world of uncertainties, geospatial is the example of a sector finding newer possibilities. "Our challenge is to create cross-border infrastructure to enable better decision making for growth and development," she added while adding g-tech is a tool for changing today's economic challenges and create value for society.

Plenary I

Business Directions of Geospatial Industry

The plenary was chaired by Barbara Ryan , Secretariat Director, Group on Earth Observations (GEO) Switzerland.

Ray O'Connor, President & CEO, Topcon Positioning System, USA

"The landscape and business direction of the geospatial market is changing but are we changing along with it?" That was the question from Ray that set the stage for the opening plenary session of the Geospatial World Forum 2013 here on Tuesday. The business direction of geospatial industry is towards construction automation and we have to turn this process into reality, he added

Ted Lamboo, Senior Vice President - Civil & Geospatial Global Operations, Bentley Systems, The Netherlands

Point clouds and mobile devices are the future and geospatial industry must make a move towards greater information mobility, said Ted , "For Bentley the 'G' of geospatial is everywhere. It is available everywhere in the world and from every area – from bridges to roads, buildings to fields. And we have to make use of all this geospatial information at work, at the location of work and at various stages of reuse," he added.

Stephen Wood, Vice President Analysis Center, DigitalGlobe, USA

The world is constantly changing due to a plethora of reasons such as military conflicts, natural disasters, infrastructure and climate change, and geopolitical instability and the geospatial industry's job is to accurately capture all these changes, said Stephen Wood.

Amar Hanspal, Vice President - IPG Product Group , Autodesk, USA

The future of geospatial technology is design technology, said Amar Hanspal. The world needs $60-trillion in infrastructure but the current capabilities have been estimated to be around $24 billion. While much of this demand-supply gap is owing to various reasons like legislations, environment, capacity, technology has also fallen short in keeping up with the challenges.

Ramon Bartolome Pastor, Vice President and General Manager - Large-Format Printing Business, Hewlett Packard, Spain

The big picture is important because prints allow GIS professional to arrive at a conclusion by combining geographic and numeric information and the geospatial sector is very important to Hewlett Packard because of the complexity and amount of data it handles.Large format prints also enable better decision making, communicate with clarity and improve day to day productivity of GIS executives, said Ramon.

Plenary II

Collaborative Geospatial Strategy for National Development Goals

The plenary was chaired by Prof Josef Strobl , Director, Department of GeoInformatics, University of Salzburg, Austria

Guest speaker Saskia J. Stuiveling, President, Court of Audit, The Netherlands talked about better understanding the world by integrating information. The information structure should enhance transparency and accountability on what government spends where with which results.

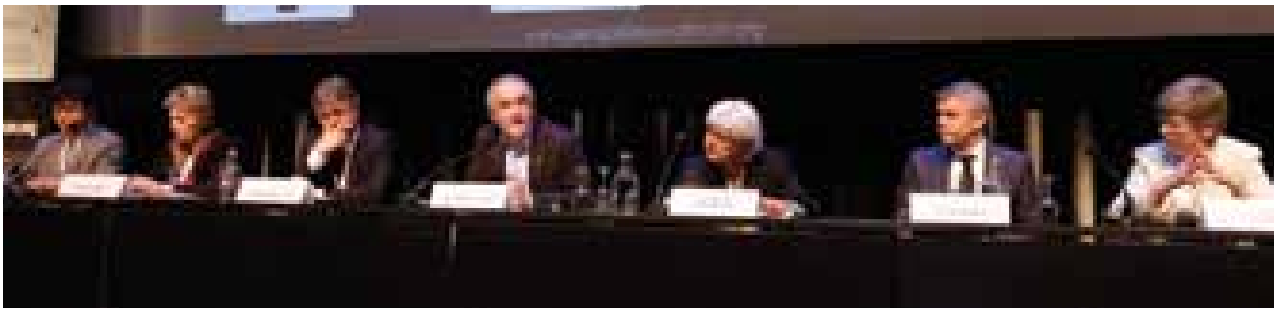
Siebe Riedstra , Secretary General , Ministry of Infrastructure & Environment, The Netherlands elaborated that every square metre of land 'must' be used well. In order to make the right decisions, geo-information helps to understand issues of complex nature. To make sure the right information is in place for this matter the national geo-information policy strives to the realization of some major developments.

Dr. Li Pengde, Deputy Director General National Administration of Surveying Mapping and Geoinformation, China pointed that new national development goals are changing the strategic directions of surveying, mapping and geoinformation in China. Ecological protection and sustainable development call for national geographical status survey, monitoring and analysis. Information society progress needs public geospatial information service platform for data sharing.

Ola Rollen, President and CEO, Hexagon, United Kingdom highlighted that geospatial data is truly revolutionary when it can fundamentally change a national government's relationship with information. Such intelligent decisions have a far-reaching, positive impact across a wide array of industries and applications, ultimately allowing a nation to be more competitive and move towards its productivity and development goals.

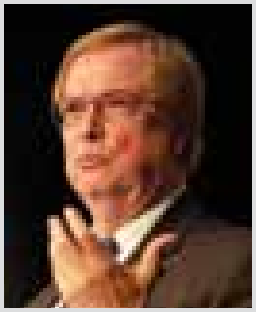
Dr. Vanessa Lawrance CB, Director General & Chief Executive, Ordnance Survey of Great Britain, United Kingdom highlighted within the presentation Public Sector Mapping Agreement, a 10 year agreement to provide core geographic datasets to the Public Sector; GeoVation, promoting innovative uses of Geographic Information through a series of challenges; and specific user case studies in growth of GI within Great Britain.

Maria Betti , Director Joint Research Center, IES – Institute for Environment and Sustainability, European Commission , Italy talked about the lessons learned and new directions for Research, the in-house science service of the European Commission. A major contribution to the European and global geospatial community is the work as technical coordinators of the INSPIRE Directive, which is the legal framework establishing an infrastructure for spatial information in Europe.



Plenary III

Convergence: Transforming Business Process and Workflows?



The plenary was chaired by **Ingrid Vanden Berghe,** Director General, National Geographic Institute, Belgium.

Peter Large, Vice President of Channel Development at Trimble wove in the history of mapmaking. He stressed on the fact that the convergence of the data, with connectivity and analytics, will drive the ubiquity of geospatial solutions to whole new levels. Geospatial information workflows are happening across many business processes and New geospatial frontiers are very much about convergence.

Steve Hagan, VP of Development, Server Technology, Oracle, discussed platforms issues for the development of geocloud. he identified four drivers: BI in real time, big hardware, cloud platforms, massively parallel data base machines and scalability.

Christopher Tucker, Founder, MapStory Foundation, USA discussed his MapStory.org initiative, which will enable a global community of experts to "crowd source" socio-cultural data within a geospatial and temporal framework through an online social media channel or platform.

Hapee de Groot, Programme Officer, Hivos.nl represented Juliana Rotich and delivered the address showcasing the various work of Ushahidi.

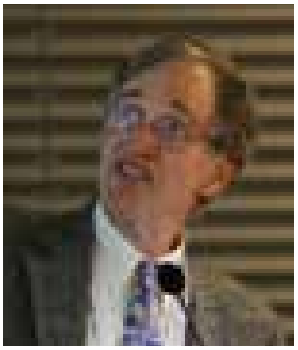
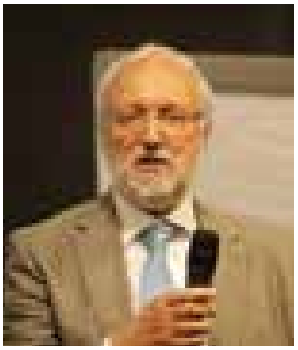
User Forum

Construction and Infrastructure

- How cloud-based applications can be used during the construction phase to record as-built data. The use of these types of systems offers opportunities to significantly reduce the cost of data capture, while improving safety and reducing schedule risk.
- A decision makers' knowledge is based on information and information is based on data. This process of creating results from actions that were based on decisions that were based on information that was based on data, in turn creates a new reality and generates more data.
- Integrating geospatial data in the 3D laser scanning and modeling process combined with plastic 3D printing allows for a diverse array of applications.
- Location information is rapidly becoming part of mainstream ICT and the Web empowering the vision of a 'Geo-Enabled Cloud'. 'Cloud GIS' is simply part of the tool set enabling this vision.
- The steps towards a 'Geo-Enabled' enterprise and how it is critical that business drivers lead any 'Information Management strategy' and GIS strategy.

City Management

- More attention to be paid to data use rather than data production; to tool delivery rather than data providing.
- Document your data (use provenance information) so each system within the local government can decide from it's own business context if the data is suited and trusted in this context.
- A well organised GIS of urban green areas can allow you to share all relevant information with all stakeholders, document all activities and thus take decisions based on data and gives legal security in case of accidents, improve management activities by learning from past experience and ensure save and enjoyable parks and recreation areas in your town.
- Geospatial is a powerful features for planners to illustrate projects and plans and efficient workflow for planners to share and publish externally for dialogue and feed-back.
- For any future policy decision-making, an analysis would need to consider not only the null comparison of not funding any GIS technology, but also various levels of GIS funding and different types of GIS technology, since this is the true rubric against which any future GIS policy should be compared.

Open Geospending: Monetising Geospatial Value via Opening up and Mapping of the Spending of Public Funds

- The workshop explored the concept of open geospending which was introduced in the guest address from Mrs Saskia J. Stuiveling, President of the Netherlands Court of Audit (NCA) during the plenary session on Collaborative Geospatial Strategy for National Development Goals
- Open geo spending is not common practice yet. In the concept the worlds of geo, policy making and auditing come together. Openness, cooperation, sharing and integrating information as a layer on a map, are key element to improve policy making, policy implementation and the services provided to the public
- Peter ter Haar from the Ordnance Survey (UK) illustrated the added value of including geospatial data in decision making. He presented a number of analyses from his office in which the geo data gave an enormous gain for service levels and reducing costs at the same time
- The power of geo in policy analyse was also illustrated by Jeff Peters from ESRI Inc (USA). The Recovery.gov site which he helped design can be seen as an example that comes close to open geo spending. He gave several more recent examples to illustrate that mapping social data can help you ask questions you would otherwise overlook
- All other speakers are involved in an experiment in the southern districts of Rotterdam. Central and local government and other agencies, schools, employers and lots of other institutions have signed an agreement to join forces to lift up these areas and to overcome in the coming ten years the problems in social deprivation, housing, education, employment and crime. The NCA and the local audit office (Rekenkamer Rotterdam) are also involved to help design an information model based on the concept of open geo spending

Earth Observation Systems for Economic Development

- Emphasised the importance of free and open data (FOD) for expanding the use of data and also the importance of collaboration between organisations and disciplines and the need to make use of opportunities offered by higher resolution, faster revisit and greater coverage to increase the return on investment (RoI).
- Threw up several important challenges and opportunities:
  - Commercial companies may be reluctant to release data.
  - Real world business requires quality control and regulation.
  - Case studies can convince decision makers.
  - We must be realistic in taking on projects: ask whether we are the best organisation to do this, and collaborate with others.
  - We need feedback from users.
  - Access to data is the essential component of development.
- Showed that there are many excellent examples of the achievement of economic development from earth observation data but that more can be done to increase RoI and to improve efficiency and success.

Electricity & Gas

- GIS implementation is helping business with objectives of safety, good customer experience and increased productivity.
- Business Units are realizing operational efficiency and productivity gains from GIS by using spatial business intelligence in the decision making process.
- The Remote Sensing industrial, commercial, and scientific community can contribute providing support and solutions with products and services with high spatial, spectral, and temporal resolution at the appropriate scale, with higher accuracy, in a standardized repeatable manner, focused on the specific needs of the energy sector thus facilitating the decision making process and reducing the licensing time.
- If managed properly the process of data integration will alleviate or neutralize problems of data duplication, reduce data limitations and help to reduce data capture costs.

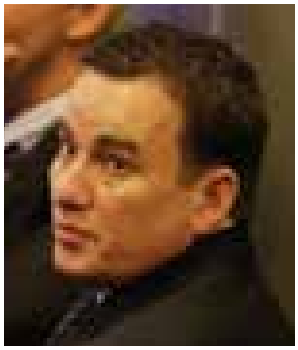
Public Safety

- The evolution of cloud computing platforms now enables emergency personnel, law enforcement agencies and other first responder's access to mission critical GIS maps and applications when and where needed.
- Scanning technology is useful in putting together a package for their scenes of crime officers that will utilize 3D data to simulate crime scenes.
- For sensitive data there is always a need for protection. In the defence and intelligence area especially, security may be mission-critical, therefore access to information is granted based on the need-to-know principle.
- Satellite images allow not only objectively assessing the extent of emergency situations and the extent of the damage, but also increasing the reliability of forecasting the onset of crises and natural disasters.

Societal Impacts of Improved Environment & Geospatial Information

- Introduced new ideas and case studies that had not been discussed by the community ranging from architecture in cities, to power line placement (human factors) to water contamination and ecosystems.
- Challenges presented were how to quantitatively assess the impacts of decisions and the impacts of information for making more effective decisions. Whereas this can be done for the commercial market with some comparative monetizing of the market evolution, for government and social issues, the way forward needs more consideration.






Monetising Geospatial Value and Practices for Land Administration

- Gave an overview of the economic impact of different land administration systems in the world. The way these systems are monetised, vary widely in different countries and regions. Even within countries, the economic return on land administration systems can be very different.
- Return on investment can be specified in many places in the world. Examples were given, where even 10 to 1 returns on investment were achieved. However, it is difficult to establish this in advance, due to unpredictable political situations and decision making and impacts of the system. Therefore, land administration is not just an easy to sell investment for policy and decision makers.
- The setting up of a land administration system should have a strong focus on being fit for purpose. The resulting impact and outputs of a land administration system are always related to costs, time and quality.

Mining and Exploration

- Geoscientific knowledge underpins industry development as well as public policies and regulations for the benefit of society. Geological surveys have been key geoscientific information providers for many years, but very often, in a way that made it really usable only by geoscientists.
- New disruptive technologies like crowdsourcing will provide opportunities to collect, manage, and deliver the information in an efficient way at a reasonable cost for the benefit of our current and future users.
- Fast, reliable, and accurate high wall movement monitoring is critical to ensure safe production in a large operating open pit mine.
- High resolution global coverage of our changing planet is used by mining companies to save time and resources in exploration, site monitoring and impact assessment.

Water

- GIS is used to assist asset management to make the right decisions between just-in-time maintenance or replacement of mains. Investing in just-in-time maintenance on the right assets will reduce operating costs. This gives the water companies a steady revenue, which makes it possible to invest in less favourable economic times.
- Water and Wastewater Companies are exchanging a lot of data with local authorities, so in order to become more efficient, digitization and standardization of data in Water and Wastewater Companies become more and more important.
- GIS was used to identify all crossings as well as harvest all data pertaining to the pipes - including cleaning records, as-built drawings and inspection video. Mobile GIS was used in the field to locate, update and prioritize crossing data.
- For successful implementations focus to be developing solutions from the end user's perspective, implementing projects in manageable phases ensuring successful user uptake, guarantees funding for training and documentation while meeting the scope of work for GIS.
- The benefits of remotely sensed seabed maps over traditional methods of LiDAR and MBES are numerous as very large areas of seabed can be surveyed remotely at a fraction of the cost & time without the need of permits or mobilizations for aircraft & boats.

Research Forum

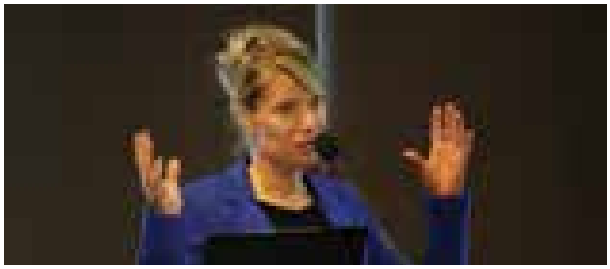
Capacity Building

- Too few companies are actively involved in helping to capacity build the geospatial sector, therefore we must create a forum for education-industry collaboration and improved communications.
- Much more industry support is needed to help scale up outcomes from projects, research, courses and other capacity building initiatives.
- Industry, with the support of education, must initiate a positive promotion campaign to change the image of the geospatial sector and raise the profile of the industry to interest young people.
- Industry needs to advise and inform education about its present (and future) labour force requirements.
- Education, with industry, must seek to look for and promote standards in employment, sometimes referred to as ‚education labelling'.

Spatial Thinking Challenge

Following questions were answered

- Are men better spatial thinkers than women?
- Are teenagers better crisis managers than professionals?
- Does the use of navigation devices lead to reduced navigation skills?
- Are good gamers also great spatial thinkers?
- Are spatial thinking skills critical?



Policy Forum

The Alchemy and Anarchy of Geo-Information: Is the European Location Framework a solution for both?

- ELF will be building on ESDIN but will take a quantum leap to an operational mode. The co-operation of governments, industry and academia is of great importance.
- The Macic mix will be based on standards, national data and INSPIRE specifications.
- ELF BaseMap will be the new map for Europe offering user adatable visualizations, it can be combined with image data and elevation data.
- Innovation programmes around Europe will be utilized to enage applications utilizing ELF platform. Project will provide an open source platform which will be used to provide ELF demonstration website but also targeted to be used for open source application development.
- Operational cloud GIS platforms exists to make the European Location Framework a reality and support demanding applications.
- A sustainable business model is the key factor to make the platform work for providers and users alike. The various roles and relationship that this new platform creates was described and discussed.

Standards & Interoperability

- Interoperability is a powerful enabler of capability. Recent examples were given for aviation, transportation, weather, hydrology and business.
- Using City GML in a 3D environment allows human friendly access to index features provided onto a perspective view of available commercial real-estate across the greater Berlin area. Adding new features, for example, available solar array area on building roofs was quickly accomplished by following standards.
- Additionally, the ability for business to create new capabilities is significantly augmented by the ease which software implementers can adopt approved standards for implementation. For small businesses this can be a real force multiplier. Software development resources can best be focused on new capability vs reinvention of extant (perhaps not - interoperable) capabilities.
- Establishing global agreement on approaches to recording and sharing data can be a challenge. Understanding the cultural and technical process within Consortium of Universities for Advancement of Hydrologic Science Information that has taken place since 2008 to establish a general agreement on WaterML. This has now been adopted by universities and government allowing significantly improved interoperability. Importantly this will allow a timely sharing of realtime water data that allows new applications such as a rapid time-varying display of water levels. This will enable powerful new capabilities and a significant improvement to global water reporting, modeling and analysis.

Leveraging SMEs' Strength for INSPIRE

- The focus of INSPIRE should now be on the content: the data. It will be the data that will drive the new applications and solutions to which SMEs can contribute. Growth of the SME sector should be expected in this area, both for assisting public authorities to make the data available, and for using data made available into new applications.
- An important innovative aspect of INSPIRE lies in the re-use and extension of the INSPIRE (data) standards for new applications.
- SMEs have a fundamental role to play in making links, and partnerships, between INSPIRE and different policy domains.
- SMEs should be provided a clear channel for providing feedback for improvements to the INSPIRE Implementing rules legal acts and the Technical Guidance documents. It was suggested that the SMESPIRE Network, promoted by the SMESPIRE project, could be such a channel when properly linked to the INSPIRE Maintenance and Implementation Framework.
- New requirements were already identified for inclusion in the INSPIRE framework, in particular the need to address the Sensor Observation Services (SOS) as a recognized INSPIRE Download Service.

Policy Forum

GI Policy

- Open Data Strategy is designed to increase the supply of raw data produced by public sector bodies for re-use, to encourage the creation of applications based on ‚open' geographic information and to help remove barriers to wider uptake of data by the economy.
- Unfunded open data can soon cease to exist. For this reason sustainable and transparent business models are required to deliver properly funded data which remains free at the point of use.
- The availability of multiple, emerging GNSS argues for interoperability and transparency in the provision of civil signal and services for the benefit of the widest number of civil users. Use of multiple GNSS and combined receivers can leverage the increasing number of GNSS satellites for greater safety and economic benefits.

Spatial Data Infrastructure

- How can we stimulate the actual take up of the wealth of spatial information that SDI's provide?
- There was a shift from discussing SDI's as in infrastructural facility to the use and optimization of SDI's.
- All aspects were covered: governance, stimulating participation not only from the public but also private sector, access to data, standardization and better software tools. What struck out is that SDI's become a more global phenomenon where all continents have reached a level of maturity which makes it very useful to share ideas and learn of each other's approaches.

Technology Forum

Open Source

- The parts of the software value chain where Open Source companies generally make their earnings, since the usual business case of selling licenses does not apply here.
- Flamingo Geo CMS is a system as user friendly as this, is very important for the Open Source Sector, since the sector has a very technical feel.
- Any component of a product can get outdated. In that case you'd need to be productive with a new component asap, by limiting the dependencies between components and have components interact using Open Standards.
- You'll get the best support from the people actually involved in the projects, in his case geotools, geoserver, geonetwork. Stay away from forks and vampires, in the end they are no better than proprietary software.
- Types of open data (Community driven, Government Data, Proprietary Data in a Freemium Model (open content?)), types of data licenses (ODBL, Gov Open Data, CCO) and options these open data licenses offer to SME to create new business opportunities.
- Discussion on how open source components can operate together with proprietary products in any SDI. Another question from the public stated that many standards registered at OGC/ISO are actually not that 'open', and would not really fit in today's track.

Modern Cartography

- It was noted that the relevance of cartography needs to be considered in all parts of the „Geo-domains“
- The importance of the visual interface between geodata and humans (maps) is key for supporting decision makers, enable spatial awareness; thus to unleash the power of geodata and geoinformation

Sensor Web, Big Data

- “Big data” can enable us to connect people, places and things and provide increased insights as to the nature and importance of various activities and transactions. What has been lacking is a meaningful consideration of how organizations can derive value from the data available to them by making it part of their enterprise ecosystem and business workflow.
- Highlighted data integration, data mining, and the possibilities of working with Big Data.

Airborne Sensors & Photogrammetry

- Today’s streamlined digital workflows are facilitating a new era of remote sensing to move beyond reality capture and answer profound questions about global change, offering new insight into our complex planet, how we interact, and how our actions impact the health of our planet.
- Advancements in automation and efficiency that make the technology more accessible, spreading the impact of imagery analysis across many industries.

Data Migration, Visualization & Modelling

- 3D realistic graphical representation is very easily understood by as managers, planners, decision policy makers, and the public who are always afraid of meeting complex mathematical models.
- The 3D technology became a new tendency in cartography, the 3D visualization got more popular in last years. Thematic maps are the best solution to present the economic and social data.

Cloud Computing

- Talked of several key technologies powering geospatial cloud computing platform, for anyone to use, and how using the services have help customers solve their real-world problems.
- As the consolidation of the different types of geospatial data, such as 3-dimensional terrain or city models, point clouds or raster data as well as the integration of semantic query capabilities into the data management layer also has a positive effect on operational cost, this should be included in the systems consolidation.






3D - The Next Challenge of National Mapping

- EuroSDR is anxious to facilitate the transfer of key knowledge and experience from those countries that have dealt successfully with the issues to those that are at a much earlier stage.
- Recent innovations in matching algorithms in combination with the increasing quality of digital airborne cameras considerably improved the quality of elevation data generated automatically from aerial images.
- How to develop a workflow that combines the strengths of the map, e.g. boundary location, shape and function of an object, with the dense 3D point information from the LiDAR data.
- A sustainable simple process flow with high tech components also demands a new kind staff and management organization where more than traditional Cartographers, professionals with multi disciplinary approach with knowledge related to ICT and GEO modelling and production concepts and techniques will create a new business logic.

Crisis Management Using 3D

- Still the communication between the real users and technology are not really good. The users are not aware of the possibilities and cannot imagine what can be better in 3D. Our emergency responder concluded that 3D in tunnels would be the first one he would like to have. He also mentioned that it depends very much on the different regions. Some regions want to be more advanced other are more conservative and don't care that much about fancy technology. Sometimes systems are developed on a personal basis.
- The problems that emergency reponders are now facing is cross border: different data sets, different semantics, different languages. A systems was demonstrated that the symbols used in such cooperative actions are 'translated' to fit the local meaning and representation.
- The technology is developing very fast. Data can be collected for small areas with UAV, point clouds can be combined with images for damaged detection, point clouds can be processed very fast, 3D data can be integrated for a complex dynamic spatial analysis needed for management of airport activities. Even research is done in indoor 3D for navigation and evacuation. However, it might be that this technology is too complex for regular user. the interfaces might need to be made more user friendly and understandable for all.
- We need to strengthen the link with the users by promoting the benefits of technology: cool apps, useful tools, convenient and easy interfaces.

Enterprise & Web GIS

- During construction there are typically many survey and CAD data models and databases. Much of this data is lost during commissioning and has to be recaptured by the asset and facilities management teams using a GIS. This loss of data integrity impacts operational efficiency, reporting and analysis.
- Outlined some of the trends that are driving developers and consumers to develop with and use tools designed specifically for mobile devices in the cloud. The trend where users are migrating from from workstations and PCS to smartphones and tablets has affected other types of software and is now affecting GIS.
- Virtual reality (VR) provides a first-person view of an actual location and is a very useful tool in providing the target audience a way to experience a specific location without having to be there physically.

LiDAR

- Besides the established bathymetric airborne laser scanners with high penetration but low resolution there is a new class of airborne laser scanners dedicated for joint topographic and bathymetric surveying.
- LiDAR data can be combined with spectral imagery sources to efficiently provide map and information support for relief and recovery in the aftermath of a disaster, such as an earthquake.
- Airborne Laser Scanning (ALS) produces vast amounts of data, which must be efficiently stored, processed and retrieved - accompanied by the data lifecycle management including metadata.

Poster

The buzz generated by the youngsters through their posters was very noticeable. It provided an opportunity to bring in youngsters, make the connections between industry and education as well as research and policy.

Geospatial World Awards

JUDGES

CHAIR

- David Schell, Founder and Chief Strategist of Open Geospatial Consortium.

PANEL OF JUDGES

- Matt O'Connell, Former CEO, GeoEye
- Prof. D. R. Fraser Taylor FRSC, Director, Geomatics and Cartographic Research Centre Carleton University
- Aida Opoku- Mensah, Director, ICT&S&T, UN ECA

THE RECIPIENTS

Lifetime Achievement:
Professor Gottfried Konecny

Geospatial Entrepreneur
Melker Schorling

Geospatial Business Leader
Raymond O'Connor
President & CEO
Topcon Positioning Systems Inc.

Geospatial Technology Company
Trimble Navigation

Geospatial Content Company
OpenStreetMap Foundation

Geospatial Solutions Company
Critigen LLC

Strategic Merger of the Year 2012
DigitalGlobe

Geospatial Ambassador
Juliana Rotich

National Mapping Organization:
National Administration of Surveying, Mapping & GeoInformation (NASG) China

Geospatial Business Hub
The City of Hyderabad, India


L BUSINESS


Prof. Gottfried Kor
Emeritus, IPE, Leibniz Un


GEOSPATI

Geospatial World Awards

JUDGES

- **Matt Ball, Founder and Editor, Vector1 Media, USA**
- **Robert Samborski, Private Consultant and former CEO, GITA, USA**
- **Geoff Zeiss, Director OGC and Former Director – Autodesk, Canada**
- **Prof. Arup Dasgupta, Managing Editor Geospatial World Magazine, India**
- **Dr. Hrishikesh Samant, Associate Prof & Head, Dept of Geology, St. Xavier's College, India**

GEOSPATIAL WORLD EXCELLENCE AWARDS (For applications)

Category	Organization	Project
Disaster Management and Mitigation	*Massachusetts Emergency Management Agency - USA and Previstar Inc. USA*	Mobile application 'Incident Resource Management System - CPS Mobile'
Agriculture	*Ministry of Agriculture of the Russian Federation and Sovzond Company Ltd. Russia*	System of State Land Monitoring
Environment Protection, Monitoring and Management	*Australian National Water Commission And Sinclair Knight Merz*	National Atlas of Groundwater Dependent Ecosystems
Visitor Information Systems	*Saudi Authority for Tourism and Antiquities, Saudi Arabia*	Tourism Map – GIS Based Tourism Information Portal
Transportation Management	*Land Transport Authority of Singapore*	GIS@LTA
Urban Planning	*Norrkopings Kommun, Sweden and Agency9, Sweden*	Web-based 3D Visualisation for Project Communication and Collaboration in Urban Planning
Land Management	*Shenzhen Municipal Commission of Urban Planning and Land Resources*	City geo-database
Enterprise GIS (Land Records)	*Directorate of Settlement and Land Records, Government of Goa, India*	Dharnaksh - the Land Records Portal
Resources Management: Water	*Azersu OJSC And Odakent Ltd. , Azerbaijan*	GeoSP@TIAList'
Utility Services - Water Distribution & Transmission	*EPCOR Water Services Inc., Canada*	Developing and integrating its spatial database with its work management database
City Planning and Land Management	*Al Ain Municipality*	Building Permits through GIS

GEOSPATIAL WORLD POLICY AWARDS (For policy implementation)

Category	Organization	Project
Standards	*Agentschap voor Geografische Informatie Vlaanderen (AGIV), Belgium*	Central Reference Address database – CRAB
Spatial Data Infrastructure	*Coordinating Agency for Federal Geographical Information, Switzerland*	geo.admin.ch: the geoportal of the Swiss Confederation
Knowledge Transfer	*United States National Aeronautics and Space Administration (NASA) and NASA (Earth Science Division-Applied Sciences Program)*	NASA Applied Sciences Program
Geospatial Information Act	*Indonesia Geospatial Information Agency (BIG)*	Geospatial Information Act
3D Standards	*Kadaster, The Netherlands and Geonovum, The Netherlands*	National Standard for 3D Geo-information

GEOSPATIAL WORLD INNOVATION AWARDS (For technology innovation)

Category	Organization	Project
Image Data Management and Processing	*Rasdaman GmbH, Germany*	Rasdaman - raster data manager
Sensors	*Visual Intelligence LLP., USA*	iOne Sensor Tool Kit Architecture
Surveying	*RIEGL LMS Gmbh, Austria*	RIEGL VQ-820-GU

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