



GEOSPATIALTM WORLD FORUM

25 – 29 MAY 2015 /// LISBON CONGRESS CENTRE, PORTUGAL

REPORT 2015

49

EXHIBITORS



104

COUNTRIES

989

ORGANIZATIONS

40

PARTNERS

46

WORKSHOPS

325

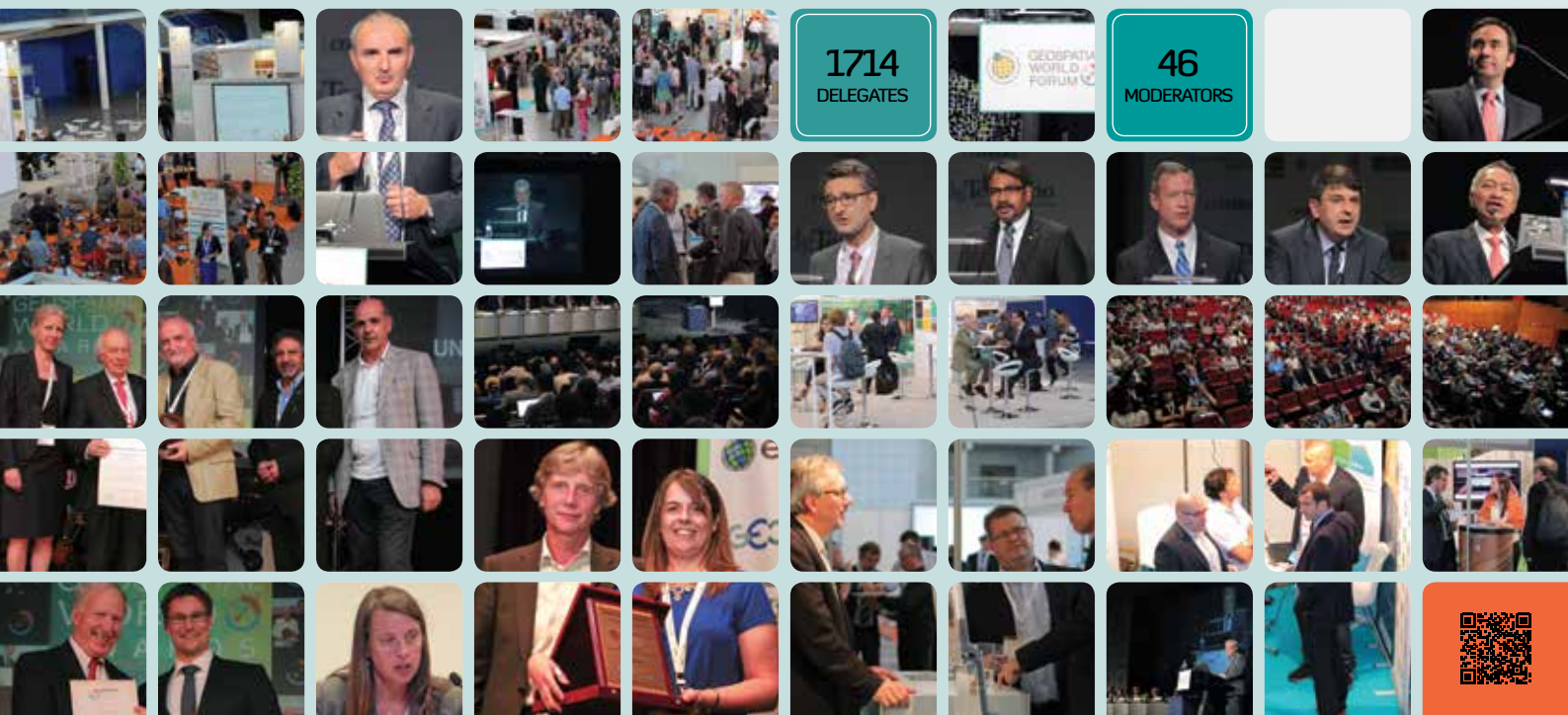
PRESENTATIONS

1714

DELEGATES

46

MODERATORS



OVERVIEW

INSPIRE-Geospatial World Forum, the first collaborative platform between European Commission & Geospatial Media and Communications, took place in Lisbon Congress Center, in the week of 25-29 May 2015. The five-day long conference was attended by 1714 delegates from 104 countries, cutting across geospatial companies, user industries, government representatives and senior academia.



INTERACTIVE
AND COLLABORATIVE FORUMS



BEST PRACTICES
AND SUCCESS STORIES



POLICY AND
TECHNOLOGY LEADERS FORUM



EXCHANGE OF KNOWLEDGE
AT NATIONAL,
REGIONAL AND GLOBAL LEVELS



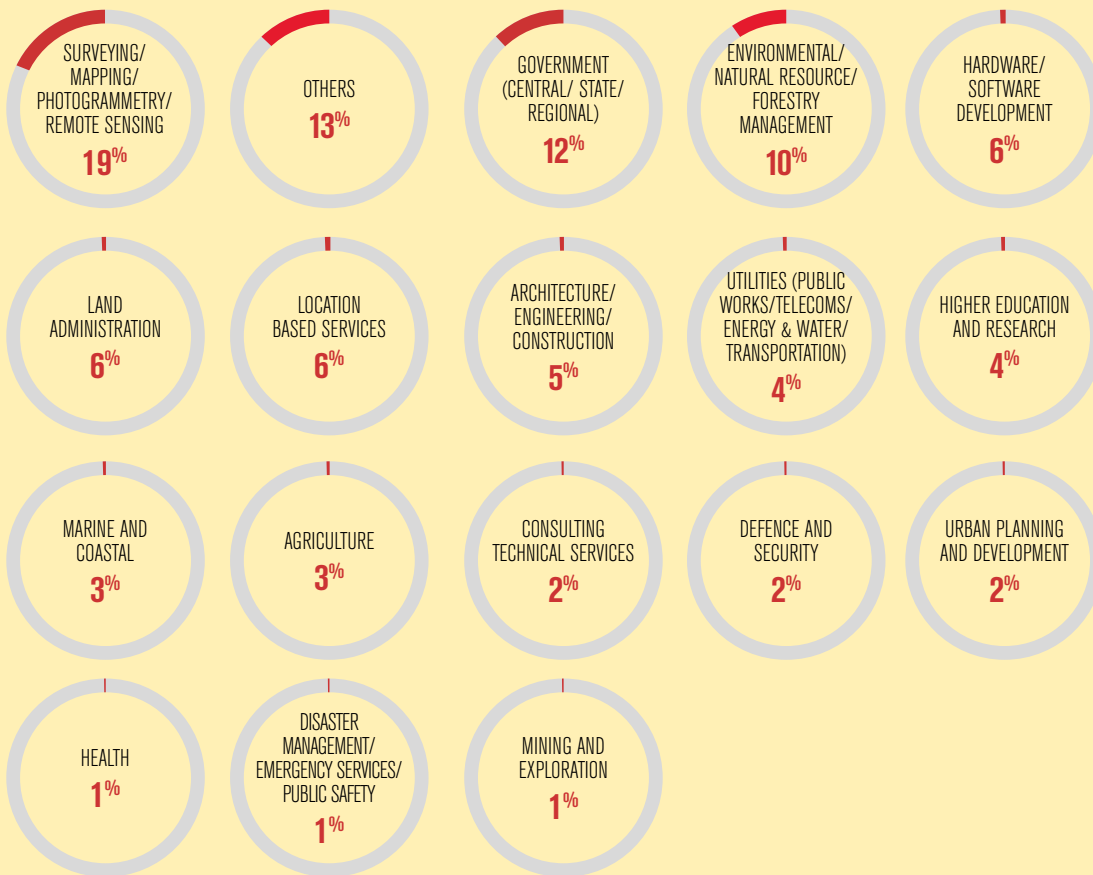
CONVERGING
PROCESSES
AND PRACTICES



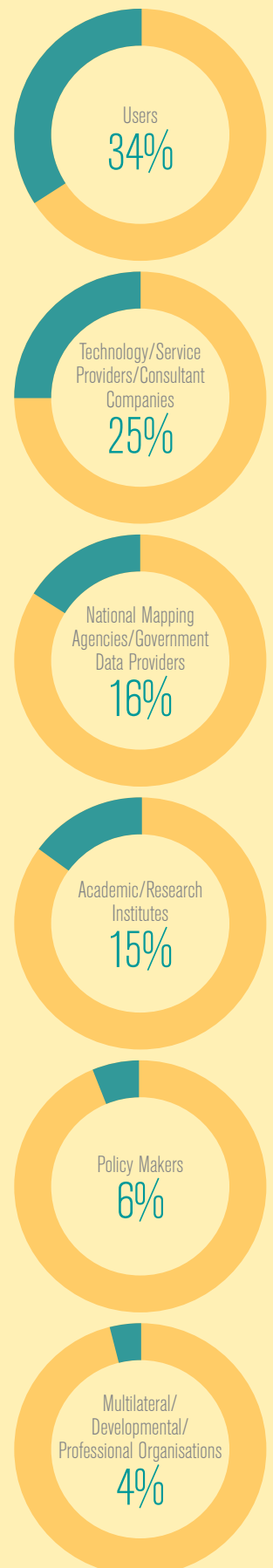
DEMONSTRATING VALUE & UTILITY
OF GEOSPATIAL-ENABLED
SOCIETY & ECONOMY

CONFERENCE STATISTICS 2015

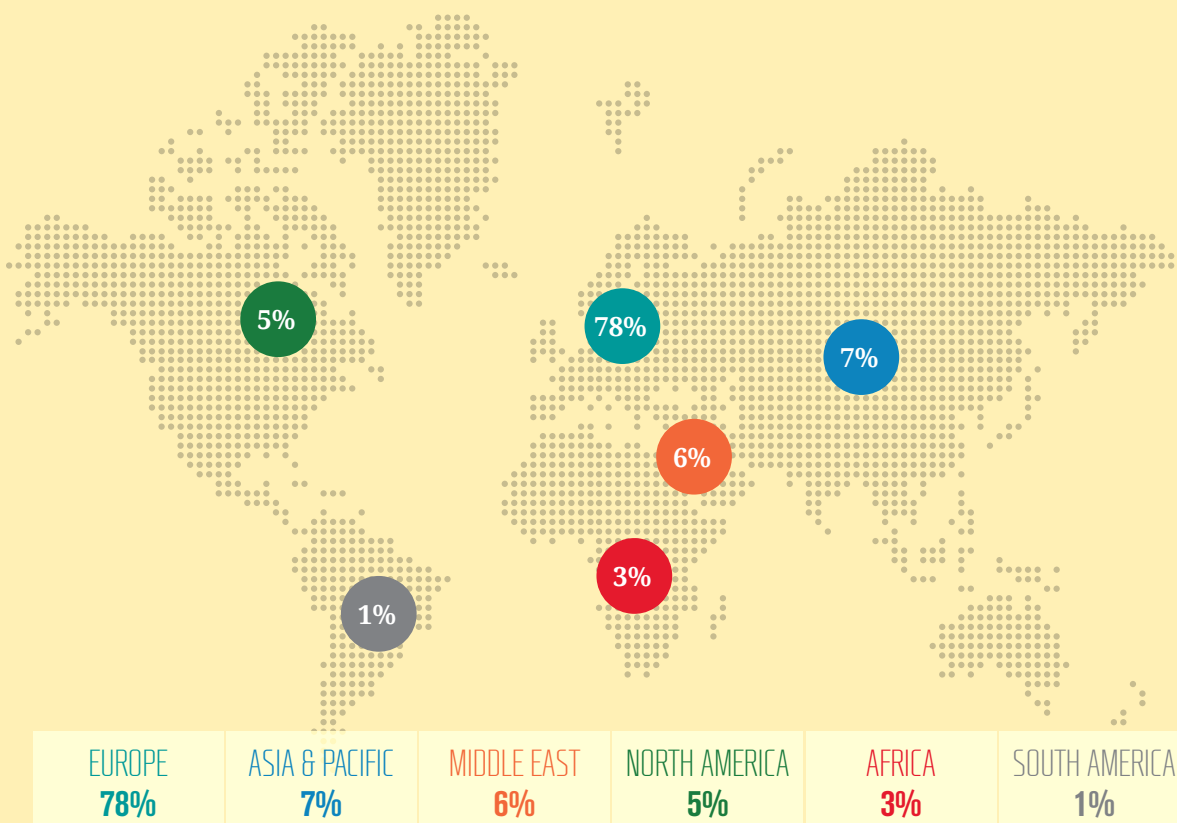
DELEGATES PROFILE



SECTOR PARTICIPATION



GEOGRAPHICAL PARTICIPATION







KEY DISCUSSIONS

In his welcome address, **Vladimir Sucha**, Director General, Joint Research Centre, European Commission (EC) talked about how geospatial technologies are fuelling up the data economy. “INSPIRE is the biggest policy innovation while EC plays an imperative driver of geospatial information infrastructure. As per a report released by Deloitte, geospatial technologies fuel the data economy – about \$200 billion in Europe and \$500 billion in rest of the world,” Sucha said in his inaugural speech. He also talked about the programmes run by EC, such as Copernicus programme – worth \$4.2 billion – and how these are helping out businesses and making data better.

“Just seven minutes after the earthquake in Nepal, our satellites started taking pictures of the quake-struck region and

we were able to assess the overall damage and provide the imagery to the EC. This was possible only because we received about 4 terabytes of geo-located satellite information from our satellite. Our Galileo programme consists of 30 satellites when deployed fully,” added Sucha stressing

WORLD LEADERS FROM THE GEOSPATIAL INDUSTRY JOINED HANDS TO WITNESS THE LAUNCH OF INSPIRE-GWF AND ADDRESS HOW **POLICIES, TECHNOLOGIES AND APPLICATIONS** – THE THREE KEY FACTORS - AFFECT THE GROWTH OF GEOSPATIAL INDUSTRY.

that Public-Private Sector convergence – policies, technologies and applications are the three key factors that affect the growth of the European and global geospatial industry.

He also threw light on EC’s research support programmes - FP7 and Horizon 2020 which focus on new innova-

tions and research in the field of geo-location. “Talking of geo-location, all the dreams of smart cities are linked to geo-location and for the entire week, Lisbon is capital of geo-location,” he quipped. He also explained about European digital single market, adopted by EC a few days ago, which is

the commission’s most ambitious programme in terms of policy commitment in the digital world scenario. The programme represents 500 million consumers and aims at removing the legal and interoperability barriers between organizations, systems and data which are still fragmenting the market. “The scope and value of

“The conference has been a great experience and I was very happy to share my works during the presentation session on Land Use & Environment. I found the presentation session was very well organized and well managed by the moderator. There was a good participation from the audience as well.”

— PIERRE JORCIN, GIS and Data Administrator, Naturalia-Environnement, France

INAUGURAL SESSION



KEY DISCUSSIONS

INSPIRE is huge, it is very difficult to estimate the impact at this juncture, but it will for sure have a healthy impact on the quality of governance, policies, processes, businesses and services to the public."

Declaring the conference open, **Sanjay Kumar**, Chief Executive Officer, Geospatial Media and Communications, welcomed more than 40 collaborative partners, 250 organisational heads from 104 countries. Talking to an upbeat gathering, Kumar spoke of how hundreds of visionaries, thousands of scientists, millions of professionals, billions of users are influencing trillions of dollars for social and economic development.

At the inaugural session, **Rudolf Strohmeier**, Deputy Director General, DG Research and Innovation, European Commission stated that one of the 10 priorities of the new commission is to establish a digital single market and facilitate the interaction

with industry and research community. He also talked about formulating a GEO strategic plan till 2025. "GEO has significant achievements to build upon. GEOSS data sharing principle has opened up a wealth of essential global, regional and national

THE INAUGURAL SESSION WAS MODERATED BY **AUREL CIOBANU-DORDEA**, DIRECTOR, DIRECTORATE D-IMPLEMENTATION, GOVERNANCE & SEMESTER, DG ENVIRONMENT, EUROPEAN COMMISSION.

data sets through GEOSS," he stated adding that the geospatial community remains engaged in the next phase of GEOSS - in data access, applications and services, addressing the citizen needs.

As per Strohmeier, EC believes that there is a need to have private sector participation and political support for the success. "There is a strong need to articulate a common view on technologies, and dialogue between all these programmes. Through stronger coordination of research and

innovation, we will be able to build knowledge base," he suggested. Strohmeier ushered the leaders to understand that the European knowledge base, built on developments of INSPIRE, Copernicus, may allow Europeans access data and information to face global

challenges that affect them. "We create necessary conditions for a level playing field for geospatial industry, so that we reap the benefits of geospatial professionals," he added.

Martin O'Malley, Former Governor of Maryland also attended the inaugural session at the INSPIRE-GWF. In his speech, the governor said, "In this age where information can be mapped, the new rule is the rule that works. Data driven decision making with collaborative method, common platforms, timely and



KEY DISCUSSIONS

accurate intelligence shared by all, rapid deployment of resources, relentless following and assessment and effective tactics and strategies – we did all of this. Technology is not an end in itself. It is a means to a new beginning.”

Drawing the importance of geospatial information as the core of the evolving ecosystem of technology, economies, applications, societal forces and geospatial professionals, **Chris Gibson**, Vice President, Trimble talked about the paradigm shift in replacement of traditional techniques with much higher productivity solutions; incremental adjacencies – incremental opportunities at comparatively low investment; emerging economies’ infrastructure development, leapfrogging to new work methods; technology as enabler – integration of positioning, wireless, and software technologies enable new field solutions. “A variety of industries are truly adopting geospatial capabilities into

their integrated workflow rather than providing point solutions. Enlarge the role, the data and quality management; collaborate across the entire work flow; embrace the 3D model; adopt technologies early to achieve differentiation; expand competencies and provide greater value content and adapt to specific industry needs,” suggested Gibson.

Dato’ Sri Dr James DawosMamit, Deputy Minister of Natural Resources and Environment, Malaysia, cites the application of geospatial technologies for natural resources and environmental management in Malaysia. “Malaysia is a rapidly developing country and we want to make fast decisions to catch up with the fast development. We

invite service and technology providers to Malaysia so that we can use your services and tech to make quick decisions in Malaysia, which inspires to be a developed country by 2020.”

Jorge Moreira Da Silva, Minister of Environment Spatial Planning and Energy, Portugal highlighted the essential tools for policy making and good governance. According to him, INSPIRE is a smart framework for sharing data among public authorities and citizens in EC. By implementing INSPIRE, the region is becoming smart and efficient. “The access and integration of spatial information from multiple sources is necessary. And data and tech interoperability is essential in development of applications,” he suggested.

COLLABORATE ACROSS THE ENTIRE WORK FLOW;
EMBRACE THE 3D MODEL; ADOPT TECHNOLOGIES
EARLY TO ACHIEVE DIFFERENTIATION; EXPAND
COMPETENCIES AND PROVIDE GREATER VALUE
CONTENT & ADAPT TO SPECIFIC INDUSTRY NEEDS,”
SUGGESTED GIBSON



KEY DISCUSSIONS

CONVERGING POLICIES, PRACTICES & PROCESSES THROUGH PUBLIC PRIVATE PARTNERSHIP

Momentum on day 1 continued with the first plenary of the conference, discussing the main theme Converging Policies, Practices and Processes through Public Private Partnership. Moderated by **Hugo De Groof** from Directorate-General Environment, European Commission, who is also the Chair of INSPIRE-Geospatial World Forum 2015 Programme Advisory Board, the plenary touched upon engagement and propagation of innovations and practices in policies formulation and implementation. Public private

partnership was also discussed as an instrumental driver in bridging technological gaps and integrating stakeholders for maximum impact.

In a very engaging presentation, **Dorine Burmanje**, Chair of Executive Board, Dutch Kadaster, convinced the audience that it is high-time for geospatial to step into the decision-making spotlight. In bringing linkages between purpose, perseverance and promotion, she believes that convergence and partnership is the way forward. Burmanje also highlighted a few United

Nations initiatives that could help in protecting the planet and improving human lives.

Speaking in Geospatial World Forum for the first time, **Michael Howell**, Principal Deputy Program Manager of Information Sharing Environment (ISE), United States introduced the audience to the ISE portfolios, its data sharing model and the importance of privacy and civil rights protection. According to Howell, 'Information technology is increasingly integral to our way of life, technology

“A well organized conference with strong participation. It was a unique opportunity for people all over the world to get together and share their common passion for geospatial knowledge. I found plethora of interesting presentations and workshops, a spacious exhibition, and numerous opportunities for networking. I couldn't ask for more.”

— Panagiotis Tziachris, Spatial Information Manager, Soil Science Institute of Thessaloniki, Greece



KEY DISCUSSIONS

evolution is accelerating but every new technology brings new vulnerabilities and threats. Without vigilance and action, our way of life is at increased risk.' He opined, however, interoperability is still an issue for geospatial integration.

Representing SAP, **Hinnerk Gildhoff**, Lead of SAP HANA Spatial, talked about the world's digital transformation. 'Data has always been the foundation for good business decisions – today up-to-date, connected, and consistent data are a must have.' He adds 'With a high speed of change, big data volumes, and the growing variety, we need to switch gears to a real real-time world.' He followed this up with

a few public projects and partnerships undertaken by SAP, including the Space App Camp Challenge run by European Space Agency, Environmental Data Portal in Bavarian State Office in Germany, and smart city initiatives in Boston, Cape Town and Shanghai.

Ede Ijjasz-Vasquez, Senior Director for the Social, Urban, Rural and Resilience Global Practice in The World Bank started his presentation with alarming facts and figures of the growing population, urbanisation, food production and climate change. He believes accurate location of land, people and resources with geospatial information helps in addressing these global trends. He also adds 'We need strong collaboration between

national and local governments, the private sector, civil society and international partners to support global efforts in poverty elimination and boosting shared prosperity.'

The final speaker of the first plenary was **Josef Aschbacher**, Head, Programme Planning & Coordination, Earth Observation Programmes of European Space Agency (ESA). Aschbacher briefed the audience about Copernicus programme, coordinated by ESA, which combines satellite and in-situ observations to provide tailor-made services to a variety of users. He continued to share how earth observation is supporting policies of economic growth, development, disaster management, and others.

Overall the event was very informative, and I also think it has been an excellent platform for the communication and networking among the geospatial community, as well as sharing and exchange new technologies / ideas on geospatial from countries throughout the world.

— Sutha Veloo, Assistant Director, Department of Agriculture, Malaysia



KEY DISCUSSIONS

GEOSPATIAL TECHNOLOGY TRENDS

Day 2 of the INSPIRE-GWF 2015 witnessed an electrifying plenary session on the existing and emerging geospatial technology trends and was moderated by **Alessandro Annoni**, Head of the Digital Earth and Reference Data Unit, Joint Research Centre, European Commission.

Highlighting the European Commission's plans to create a Digital Single Market, **Anthony Whelan**, Director, Electronic Communications Networks & Services, DG CONNECT, European Commission, asserted that GIS-based mapping is the key to ensure that Europe is able to meet the need for an infrastructure upgrade at reduced costs. Elaborating

further on Digital Single Market, he said, "An area where the Digital Single Market agenda interacts directly with geospatial industry is interoperability and standards. DG CONNECT is putting together, piece by piece, not only infra-related legislations, but our own mapping initiatives. We started a project on mapping methodology on broadband, planned investments and demand. We are trying to develop an integrated monitoring platform, starting with the services provided over broadband network. We intend to have GIS-based telecom networks for the European community."

Talking about the transition from Big Data to Smart Data,

Ola Rollen, President and CEO of Hexagon, emphasised on smart geospatial vertical solutions. Giving an example of mining, Rollen discussed planning operations over vast distances, safety, productivity aspects, and detailed how geospatial technology can contribute in connection with verticals. "By breaking down the silos in mining organisations, we can improve the productivity. The fusion of geospatial analytics with content derived from multiple sources, delivered with the help of lightweight apps, is the current trend. The new era of collaboration calls for hardware manufacturers, content providers, software providers, system integrators, government

"We at GeoSolutions are very impressed with the GWF 2015, it was one of the best events we have attended in a while. It was well organised, the presentations and workshop programme was good and the energy in the exhibition area was impressive. Definitely the place to be for a GIS company."

— **Simone Gianecchini, Managing Director, GeoSolutions, Italy**



KEY DISCUSSIONS

organisations and institutes coming together to create something greater than what we are today," he said.

Insisting that the power of GIS mapping is changing the way people do business, **Damian Spangrud**, Director of Solutions, Esri, quipped, "Spatial is not special; it is an integral part of everyone's life today. GIS is bringing together data, tech and people to create a framework for solving world's most complex problems. WebGIS has transformed GIS into an open platform, empowering everyone with apps and infrastructure."

Arjen Frentz, Committee on Drinking Water, European Federation of National Drinking Water and Waste Water Associations (EUREAU), Netherlands, detailed the pros

and cons of the INSPIRE directive on water services in Europe. EUREAU provides water services to more than 400 million people in Europe. INSPIRE provides information to assess environmental threats and predict abstracted water quality. Arjen opined that INSPIRE must provide relevant and usable data for authorities and water suppliers, and restrictions must be set regarding free access to information. He also said that INSPIRE must be well integrated with other EU-legislations, especially the EU Water Framework Directive, and that downloading of data should be subject to terms of use and license agreements.

Eduardo Falcon, EVP & GM of Topcon Positioning Systems, said, "Population

growth is accelerating and unstoppable. From 7 billion people in 2012, it is expected to grow to 9 billion in 2040. This is putting unprecedented demands on food, infrastructure, communications, living standards, etc. Global construction needs are growing by leaps. By 2030, the world requires \$60 trillion to meet these demands, but has the ability to provide only \$24 trillion. In such a scenario, the democratisation of geo-referenced data and positioning technology is a must."

Giuseppe Sgorbati, Scientific Technical Director, Regional Agency for Environmental Protection, Italy, detailed how geospatial technologies can be used for promoting sustainable development and saving land consumption.

The 2015 GWF was a valuable opportunity to present BlackBridge's satellite imagery products and applications. We were pleased to network with the diverse mixture of colleagues, organizations and markets that attended.

— **Jason Setzer**, Cloud Product Manager, Blackbridge, Germany



KEY DISCUSSIONS

GEOSPATIAL PLATFORM ENABLING WORKFLOWS

The integration of geospatial technologies with mainstream technologies such as Cloud Computing, Engineering, Wireless and Sensor Web; and business processes including Building Information Modelling, Analytics, Social Media, and others are becoming one of the key elements in overall value chain of geospatial offerings. A plenary session with theme Geospatial Platform Enabling Workflows was held on the third day of INSPIRE-GWF 2015, to discuss how geospatial platform is enabling evolution of workflows and transformation of geospatial data into valuable solutions for serving different industries. The plenary was moderated by **Barbara Ryan**, Secretariat Director of GEO.

Kanwar Chadha, Executive Chairman of Binatone Global Marketing kicked off the plenary with an interesting presentation on location awareness for 'emotional home'. Through Internet of Things (IoT), consumers can stay connected with everything going on at one's house, and keep track of elders, children or pets.

Kanwar ended his presentation with a few examples of mainstream location awareness which include self-driving cars, location-enabled sensors and telematics navigation.

Talking in detail about workflows, **Steven Hagan**, Vice President Development at Oracle, stressed that shareable, reusable, location data requires workflows. He also adds 'sharing requires semantics / ontologies / linked open data and interoperability'. Citing some exemplary data workflow use cases, Steven advised in order to enable lowest cost and successful geospatial workflows, complete platforms and cloud services are essential.

Focusing on infrastructure asset management, **Ted Lamboo**, Senior Vice President, Infrastructure Owners Global at Bentley Systems, showed the audience the integration of engineering data, point cloud and geospatial data to create high resolution 3D representations of an existing environment. He believes geospatial information is critical to sustaining

infrastructure, especially for the owner-operators. He says 'Intelligent infrastructure that is managed throughout the lifecycle of public assets is now of critical importance to the owners and the entire ecosystem. The ability to add spatial services to infrastructure asset management is exciting in the industry.' He also notes that demands for subsurface utility data have risen as of late, which requires ground-breaking technology and workflows integration.

Andreas Erwig, Vice President of Business Development and Business Operations, Traffic Product Unit at TomTom, presented an interesting Traffic Index in major cities worldwide. Since 2007, TomTom has collected anonymous GPS measurements from a wide range of sources, which include navigation apps, mobile phones, traffic sensors, road cameras, and others, to generate real-time and historical traffic information. Integration of these data sources and platforms helps in analysing road traffic and incident information.



KEY DISCUSSIONS

GEOSPATIAL PRACTICES DRIVING POLICIES

Geospatial technologies are responsive to the societal needs of a wide range of public and private sector policies. Active engagement, collaboration and understanding between geospatial community and its major user domains help in harnessing true value of geospatial information and enhancing awareness of its potential among policymakers.

Plenary 4: Geospatial Practices Driving Policies highlights the best practices that facilitate further development and improvement of geospatial policy framework, and its integration with policies of other major industries at local, national, regional and global levels. The discussion was moderated by **Rolando Ocampo Alcantar**, Vice President, National Institute of Statistics and Geography (INEGI), Mexico.

Prashant Shukle, Director-General, Canada Centre for Mapping and Earth Observation, Natural Resources Canada, believes that geomatics has opened up a plethora of oppor-

tunities for the public sector. He says, "Canada's vast northern geography is our single biggest geospatial policy driver. Since we are one of the world's richest natural resource bases, there is a huge demand for geospatial information in Canada. It should be noted that 80% of the population lives along the US-Canada border, thousands of miles away from these natural resources."

Prashant adds, "What is the best way to deploy geospatial technology continues to be a tough question. Various vertical sectors have started using geospatial technology and experienced significant productivity gains. Canada's GDP grew by C\$ 20.7 billion due to productivity improvements from the use of geospatial technology. However, to ensure that GIS is adopted by more and more sectors, we need an integrated policy response, from supply driven by governments to demand driven by end users."

Karl Falkenberg, Director General of European Commis-

sion, DG Environment, feels that a substantial transformation in governance is being witnessed in Europe and most parts of the world. He says, "It is very important that not only do we reconsider the legislation, but also that we know how to measure impacts. A good way to start would be to have accurate information on the system. Now, getting this information is difficult. However, regulatory bodies need to collect information not only at regular intervals, but on a similar basis. Through INSPIRE, we collect and share information at the level of member states and make it available not just in the limits of one piece of legislation, but use it wherever required. It is important for the regulators to get more access to data so that we can implement, measure and monitor the impact of our policies."

Representing Director General, Directorate General for Territorial Development, Portugal, **Carlos Simoes** tells, "Since its



KEY DISCUSSIONS

inception in 2012, the Directorate General for Territorial Development has been pursuing spatial planning to promote and support good land management practices, and develop and disseminate guidance and technical knowhow to ensure good organisation, presentation and use of national territory.”

Talking about INSPIRE’s influence on spatial planning policy, he adds, “The first territorial plans came in Portugal in 1765, after the Lisbon earthquake. In 2014, the organisation introduced a new Spatial Planning Act. This year, it has introduced a new law on spatial plans. INSPIRE’s data themes and general approach to protect environment boosts spatial planning. The IGEO – Spatial Open Data – is a new initiative which aims to make available public administration data for society and to research and educational institutes.”

Discussing the German marine data infrastructure and the EU directives, **Johannes Melles** – Coordinator for

Spatial Data, German Federal Maritime and Hydrographic Agency (BSH), Germany – quips, “Data providers need to live with the decisions made at policy level. Sometimes, this causes problems. But, on the other hand, what we are trying to do is not only accepting what we get from policy, but also come up with some ideas from our projects and get our influence on the policies. This works two-ways. Eighteen agencies and institutions in the exclusive economic zone (EEZ) in a 12-mile radius constitute the data providers for the maritime SDI. It is a service-oriented architecture; a decentralised network of data providing services. Data and services are documented with Meta data. The focus is on interoperability. We are looking into open standards defined by the International Organisation for Standardisation (ISO) and the Open Geospatial Consortium (OGC). The geoportal for Marine SDI is ready. There have been several learnings: partners have to be on the same level (tech and thinking); data has to be interoperable and licensing of the data has to be clear (preferable when data is free); data provision has to meet user requirements (quality, instead of quantity); and a clear task for the use of the data is to be established (theoretical use cases are not sufficient).”

Taking the discussion forward, **Vanessa Lawrence**,

Co-Chair, UN Initiative on Global Geospatial Information Management (UN-GGIM), United Kingdom, says, “The UN-GGIM has been set up for developing a strategic framework for geospatial information at a national, regional and global level. The UN-GGIM, along with the OGC, has developed an international standards document. The UN-GGIM website shares best practices models from around the world. It has also brought out a report on the future trends in geospatial information management. The UN-GGIM has identified legal and policy issues as one of the main challenges facing the geospatial community in the next ten years. It recognises the growing demand for more precise positioning services and the economic importance of a global geodetic reference frame for sustainable development.”

Abe Usher, Chief Technology Officer, HumanGeo, United States, believes that two macro trends – evolution of cell phones and evolution of big data – are colliding. Geospatial professionals aggregate billions of weak signals to analyse the world. This technology evolution is creating a policy shift. “Today, we do not go to an expert for answers. Instead, we go to google.com. Data consumption today comes from Smartphone users, not the government and institutes.”

The background of the entire page is a light blue color. Overlaid on this background is a complex, abstract pattern of white lines and shapes that resemble a circuit board or a neural network. The pattern consists of numerous thin, parallel lines that curve and branch out, creating a sense of movement and connectivity. Interspersed among these lines are various circular elements: some are solid dark blue, some are white with dark blue outlines, and some are larger circles with concentric outlines. The overall effect is a high-tech, digital aesthetic.

INSPIRE PROGRAMMES

INSPIRE IMPLEMENTATION - STATE OF PLAY



KEY DISCUSSIONS

- › The INSPIRE maintenance and implementation framework and work programme (MIWP) was established to support maintenance and evolution of INSPIRE infrastructure.
- › Efficiency of INSPIRE implementation increases with wider strategy integrating related policies e.g. Open data, e-Government, extending across sectors.
- › MIWP has been supporting EU member states in the technical implementation of INSPIRE through various guidelines, including on validation and conformity testing, INSPIRE download services, updating of INSPIRE metadata and XML schema maintenance.
- › Engaging INSPIRE thematic communities is important to help INSPIRE deliver its objectives.
- › There is a need for 'fine-tuning' of INSPIRE components to meet different requirements by stakeholders, and at the same time satisfying the legally binding requirements of the Directive.
- › EU Interoperability Solutions for European Public Administrations (ISA) Programme run by the EC for the EU Member States facilitates efficient and effective cross-border electronic collaboration between European public administrations and contributes to the e-Government Action Plan 2011-2015 and the Digital Agenda for Europe initiatives.

“It was a very grateful experience sharing knowledge on Web GIS with colleague from different countries and sectors such as public organizations and private companies. In general, I am really satisfied with the content of the whole conference.”

— Alicia Gonzalez, Geographer Engineer - SDI Department, National Geographic Institute, Spain

INSPIRE: PROGRESS IN IMPLEMENTATION



KEY DISCUSSIONS

- › The 2013 INSPIRE Country Monitoring Reports shown that implementation of INSPIRE is well underway and necessary steps are being taken by Member States. There has been significant improvement in the quality of reporting costs and benefits but benefits quantification seems to still be a challenge.
- › European Environment Agency is developing a dashboard to ease the reporting process for Member States and enable data comparison and trend detection throughout INSPIRE implementation.
- › The French Ministry of Environment has been implementing INSPIRE data model for its flood directive to avoid duplication of costs. The complex data models with high-density of associations, however, are posing difficulties in data production process.
- › While environmental data has always been the intended target of INSPIRE, a reference data foundation needs to be in place which depends on the co-operation with other communities (mapping agencies, statistical offices).
- › Germany has developed a tool as part of its SDI component to automate delivery of INSPIRE Monitoring information.
- › The potential of INSPIRE to play an active role in supporting efficient and effective environmental management has not yet been fully exploited. It is important to make INSPIRE valuable for those working with environmental management as they are the main suppliers and users.

“The INSPIRE-GWF has been a perfect opportunity to meet people from all over the world in a single place, sharing experience and visions about the future of the geospatial market and applications.”

— Massimo Zotti, Head of the Strategic Business Unit 'Government & Security', Planetek Italia, Italy

INSPIRE: INTEROPERABILITY IN PRACTICE



KEY DISCUSSIONS

- › Spanish Inventory of Natural Heritage and Biodiversity (IEPNB) has defined the spatial data sets in its Natural Data Bank (NDB) that corresponds to each INSPIRE theme and is active in the testing of the specifications of Annexes II and III for Land Cover, Habitats and Biotops and Species Distribution themes.
- › European Location Framework (ELF) project has developed a change detection tool that compares two releases of same dataset, which ensures persistent identifiers and sustain temporal attributes.
- › Ministry of Environment in Slovak Republic identified the need for a registry to support registration, exchange and further re-use of harmonised spatial related items within its organisations.
- › In many cases, datasets contain additional information not covered by the INSPIRE Data Specifications but considered valuable for potential users. Extension possibilities during data transformation should be taken into account to ensure valuable information is not lost.
- › French Mapping Agency (IGN) has set up a download service (WFS) based on the tool “Deegree” as part of its IGN-F Geoportal, which is INSPIRE-compliant.
- › Institute of Agronomical and Food Research and Development of Murcia (IMIDA) in Spain uses an INSPIRE-compliant data schema to transfer its meteorological data and make them available as an INSPIRE Download service.
- › Although initially the ISO 28258 Soil Data Exchange Model had a differing scope and a more direct link to other environmentally important themes than INSPIRE, the revised version shows more similarities with the INSPIRE Data Specification Soil model, especially regarding terms.
- › An Executable Test Suite (ETS) containing a set of tests to be applied on a dataset to evaluate whether it fulfils the INSPIRE requirements has been developed and made accessible on-line as a web-service, developed in the frame of the European funded project eENVplus.



A lot of the discussions I found very insightful and valuable and I thought overall there was a good balance of technical and non-technical (legal, best practices, etc.) content.



— Laura Delgado Lopez, Project Manager, Secure World Foundation, United States



KEY DISCUSSIONS

- › INSPIRE deployment is challenging national mapping agencies to modernise their products. Cartographic and Geological Institute of Catalonia (ICGC) in Spain improves its existing data models and polices to adapt its services and products according to customers' needs.
- › European Location Framework datasets are often of significant volume, hence support for change-only updates is required.
- › The Spanish National Geographic Institute has implemented and published INSPIRE Download Services, WFS 2.0, and INSPIRE View Service, WMTS 1.0.0, in its CNIG portal.
- › A French startup developed an INSPIRE-compliant on-demand thematic download web-services called "fit2INSPIRE", which helps existing SDI to achieve INSPIRE conformity at data level, as well as to boost their Open data projects by data standardization.
- › Schematron, an XML encoded rule language, allows automatic checking of constraints in data model to assure that all data being delivered is correct and complete in accordance with the underlying legal requirements.



The conference was amazing - very strong opening and plenary sessions and very useful working sessions. Excellent speakers, very impressive!



— Rumyana Tonchovska, Senior Land Administration - IT Officer, UN FAO

INSPIRE: EUROPEAN SDI SUCCESS STORIES



KEY DISCUSSIONS

- › In Spain, its SDI services are used in various application, including seismology, navigation, recreational as well as petrol price information. As of April 2015, the service has delivered about 230M tiles of raster, vector and images, with more than 26TB (100m files) downloaded from the download web centre.
- › BaseMap, a web pyramid of digital cartographic images at different zoom levels, produced through European Location Framework project can be used to create cartographic products based on complex and heterogeneous INSPIRE data models.
- › The Dutch INSPIRE implementation approach has helped empower the new Dutch Environmental Planning Act and the way related information is organised.
- › The Flemish Geographical Information Agency (FGIA) in Belgium has embarked on a project that will develop a set of integrated 'basic registries' for geographical information in Flanders. The set will at least consist of registries for addresses, buildings, cadastral parcels, roads and topography.
- › Year 2014 was projected to be the year that tangible benefits of INSPIRE would begin to materialise, however, there is no clear direction on how EU member states can assess and measure these benefits.
- › The UK Government has contracted out work to carry out case studies on 4 local authorities on their INSPIRE implementation and benefits. It was reported that Land Registry, publishers of one of UK's most popular INSPIRE datasets was earning £5 million from selling that data.
- › French National Mapping Agency (IGN) conducted a trial for 3 of its datasets with a dozen of organizations (local, thematic or national) engaged in using environmental geographic data to determine whether the users are ready to work with INSPIRE datasets. It was found that there is a strong need of users' empowerment/trainings on how to utilize INSPIRE data.
- › The Portuguese Directorate-General for Territorial Development analysed the linked open data INSPIRE-related initiatives, including SmartOpenData and eEnvPlus, to understand INSPIRE's contribution in addressing water legal framework accomplishment in different regions.

The background is a solid red color. Overlaid on this are white, stylized circuit traces. These traces are composed of multiple parallel lines that meander across the page, often branching or merging. Interspersed along these traces are various circular elements: some are solid black, some are white with black outlines, and some are larger circles with concentric outlines. The overall effect is a complex, organic-looking network of lines and nodes, reminiscent of a printed circuit board or a neural network diagram.

USER SEGMENTS



KEY DISCUSSIONS

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|--|---|--|
| <ul style="list-style-type: none"> > The contents and the amount of data for Water Framework Directive (WFD) and Flood Risks Directive (FRD) are bigger than the data specification required by INSPIRE. Hence, some attributes for INSPIRE were added in the central database with one data pool created for all reporting, INSPIRE included. > Collaboration with organizations in charge of the management of utility networks data, i.e. Water Supply network and Sewerage network, will make it possible to enhance the use of INSPIRE principles for daily manage- | <ul style="list-style-type: none"> ment of utility networks data. > Availability of utility networks data through Open Linked Data Scenarios will provide decision makers with the necessary tools to plan maintenance tasks more efficiently. > Flood risk monitoring can be carried out by linking sensor data (from reservoir levels, storm drains, etc.), weather forecast predictions and map of risk zones from a GIS. > The Flemish Environmental Agency (VMM) in Belgium created a new exchange model based on INSPIRE data speci- | <ul style="list-style-type: none"> fications in collaboration with the sewage sector to enable all stakeholders to deliver sewage data in a uniform way. > Flemish Information Site regarding Cables and Conduits (KLIP), a system for exchange of plans for excavation works in Flanders, will be made digital in 2016. > PLUS Expressways, the largest highway operator in Malaysia, combines Interferometric Synthetic Aperture Radar (IFSAR) and rainfall data in a geospatial analysis to create an early warning system for slope failure alongside its highways. |
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It was excellently run and I thought the sessions worked very well. I look forward to attending your event again.

land

— Lorraine McNerney General Manager for Geospatial Systems, Ordnance Survey Ireland



- I was very happy with the Earth Observation session, as were the other ISPRS speakers. We had a strong programme thanks to the collaboration between GMC, ISPRS and EARSeL. Geospatial World Forum is a very useful forum for collaboration.

SPRS and “

URBAN RESILIENCE & SUSTAINABILITY



KEY DISCUSSIONS

- › Safe, resilient and sustainable cities depend on an underpinning, spatial framework enabled by standards to converge and make sense of information flows.
- › City of Rome has started the participative process of designing its urban resilience strategy where strong geospatial data component is expected for each of the key priority areas.
- › As part of its mandate, the ITU Telecommunication Standardization Sector (ITU-T) develops international “green” standards to promote innovative solutions to tackle e-waste, combat climate change and promote environmental sustainability using ICTs.
- › ITU’s Smart and Sustainable Cities focus group developed a key performance indicators (KPIs) to assess the impact of ICT on the sustainability of cities. Dubai will be the first city to pilot ITU’s KPIs worldwide.
- › Open standards and ICT tools can interact with crowdsourced information, especially VGI, for the capacity building of urban resilience and disaster response.
- › The Command and Control C2-SENSE Framework aims to develop a (GIS) tool that facilitates communication, resource management and offer decision making solutions in crisis situations. The system gathers sensor network data from disaster affected areas and presents them to the user of the system.
- › The Portuguese Public Security Police (PSP) uses GIS to analyse patterns of crime and accidents in its urban areas.
- › GNEXT project aims to contribute to the transition of the Copernicus services for Security applications, where it will supply information and intelligence data, including mapping and geoinformation products ready for deployment in emergency and crisis situations.
- › Geological Survey of Italy (ISPRA) developed an INSPIRE-integrated approach as interoperable added-value services to provide access to harmonized and customized data to improve community resilience against natural disasters.



- 25



KEY DISCUSSIONS

- › There is an imminent need for comprehensive planning and adoption of sustainable practices that help to increase production with limited use of land, water, and fertilisers thus preserving the natural resources for future use.
 - › The accelerating pace at which geospatial technologies are being used in the agriculture sector offers possibilities for meeting the demands of the scientific communities, private industries and the public.
 - › Enabling the selection of appropriate technology for various agricultural activities in a particular region and later improvising the same for achieving better results is the mandate of geospatial industry.
 - › Dutch farmers' association, ZLTO, introduces its smart-farming 2.0 that combines usage of GPS, remote sensing and RTK in agricultural sector in Netherlands.
 - › Being a first mover on using big and open data
- in agricultural sector, Netherlands was chosen as the living lab to test new ideas and findings regarding precision agriculture and smart-farming in Europe.
 - › Centre for Remote Sensing and Geographic Information Services (CERSGIS) in Ghana has proposed the development of a national geoinformation driven agriculture information system to support data collection and management for agricultural development in the country.
 - › Aerial imagery can be used to make robust vegetation maps that solidly identify areas of dense and sparse vegetation. These maps can help with determining water, fertilizer and pest control tactics.
 - › Active mobile proximal sensors are an emerging technology designed to overcome many of the limitations associated with satellite or aerial
- remote sensing systems on vineyard vigor vegetation management.
 - › Farmers in the city of Thessaloniki in Greece uses sewage sludge as an alternative soil-enhancement product for their crops with spatial data and specialized algorithms guiding the rational application of the sludge, according to their soil parameters and their crops' needs.
 - › Herbert Resource Information Centre (HRIC) is an example of a successful public private partnership that provides access to shared geospatial information, tools, and expertise to partner organisations and the local community in Australian sugar industry.
 - › GNSS such as EGNOS and Galileo can be used in precision farming for applications including farm machinery guidance, yield monitoring, biomass monitoring, soil condition monitoring, livestock tracking, etc.



<ul style="list-style-type: none"> › Flanders Spatial Development Department in Belgium developed a GIS tool which can geographically calculate the best areas for development of energy landscapes where big scale renewable energy production can find its place. › University of Stuttgart conducted a research to analyse renewable energy potential in Gauteng, South Africa using GIS tools, which can help policy makers in policy creation, and developers and planners to integrate renewable energy solutions in new settlements. › Integrating production and operations data with 3D data will add a lot of 	<ul style="list-style-type: none"> › value to the data for the entire mining lifecycle. › Information from super spectral imagery ranging from visible to SWIR bands can be used to enable in-time critical decision making on the ground in mineral exploration, mine operations and reclamation, and other aspects of mining. › The Minerals4EU project, which will finish in September 2015, is designed to meet the recommendations of the Raw Materials Initiative and will develop an EU Mineral intelligence network structure delivering a web portal, a European Minerals Yearbook and foresight studies. 	<ul style="list-style-type: none"> › SIORMINP is the Portuguese mineral occurrences and resources information system that contains information such as categorization of mineral potential, past concessions, commodities reserves and resources, and exploitation activity. › Information from earth observation provides a component to be integrated or updated in minerals resources systems, such as the aerial extent of deposits and waste materials or their geochemical and mineralogical characterization depending on the sensors spatial and spectral resolution available.
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Doug Specht, Director, VOZ Geographic Information Systems, United Kingdom

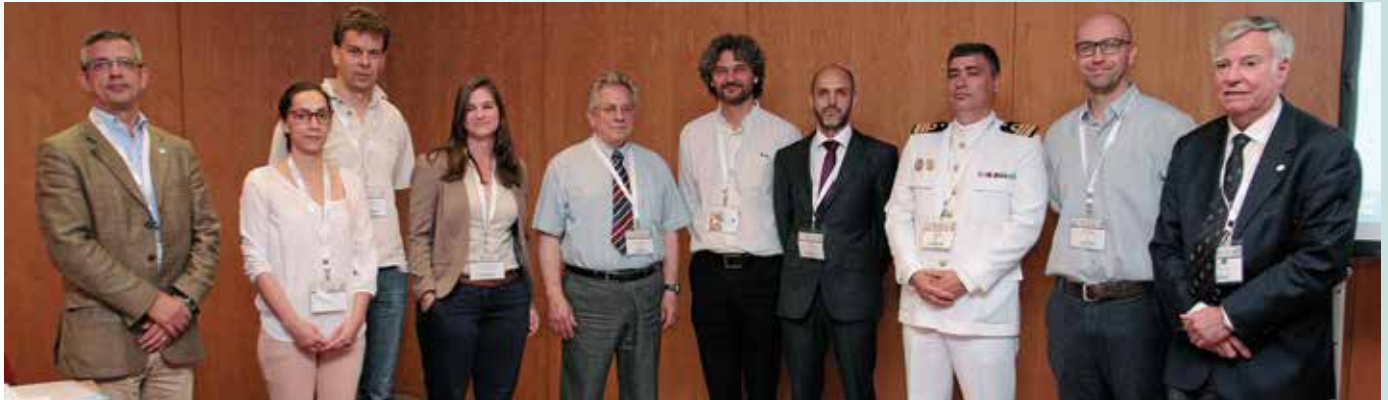
KEY DISCUSSIONS



- › The Portuguese interactive health mapping tool was specially designed to present regularly updated health indicators at regional and national level on interactive maps.
- › The European Location Framework project (ELF) implemented a standardised Table Joining Service (OGC TJS) to automatically join health statistics data tables to administrative units on CASPER platform to enable analysis and visualization of health statistics across Europe.
- › Simple field mapping technology helps turned Australian GIS-based Dengue Outbreak Surveillance System from an entirely paper-based system to fully digital.

“I enjoyed the GeoHealth programme very much, because I did learn a few things and got in touch with other colleagues. The entire conference in general was really well organized.”

— Luis Serra, Senior Officer, Directorate-General of Health, Portugal



KEY DISCUSSIONS

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| <ul style="list-style-type: none"> > A survey conducted by Global SDI Association found that despite the integrated approach promoted by Integrated Coastal Zone Management (ICZM) and maritime spatial planning (MSP) concepts, platforms allowing access to a wide range of data related to marine, coastal and land territories are not frequently available across sectors in Europe. > INSPIRE Directive brought the need to establish new processes and services to the Portuguese Hydrographic Office, the agency responsible for maintaining spatial data infrastructure for the marine environment in Portugal. > INSPIRE can support implementation of Maritime Spatial Planning Directive in the process of data compilation, establishment of inventory, reuse of reference spatial data, mapping present settings and activities managed by different national insti- | <ul style="list-style-type: none"> tutions (responsible for e.g. maritime transport, fisheries, oil & gas exploitation, wind farms, etc). > The European Maritime Safety Agency has expanded its EO information to serve multi-community, i.e. CleanSeaNet (oil spill monitoring), FRONTEX (surveillance), MARSURV-3 (fishery control), and the upcoming Copernicus Services using data from multiple sensors. > The Norwegian Coastal Administration and Norwegian Clean Seas Association for Operating Companies collaborated to develop an application for information exchange between people working on shore and in operation headquarters in oil spill operations. > The SNIMar project, "Preparation of integrated geographic information for marine and coastal water management", aims to develop a Marine Spatial Data Infrastructure that will assimilate the large | <ul style="list-style-type: none"> diversity of marine data that exists throughout all marine institutions and to increase capacity of assessing and predicting environmental status in marine waters. > Web application "Collaborative SNIMar Thesaurus", based on the folksonomy concept, intends to streamline communication between stakeholders and to achieve consensus on keywords definition for the marine environment. > French Marine Institute (IFREMER) developed the oceanotron server to improve data sharing and dissemination services between multiple ocean in-situ observation data repositories. > The Portuguese Institute for the Sea and Atmosphere (IPMA) partnered with Portuguese Task Group for the Extension of the Continental Shelf (EMEPC) to address its sea and atmospheric data management challenges. |
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TRANSPORTATION & NAVIGATION



KEY DISCUSSIONS

- › Spanish Railway Infrastructure Administrator (ADIF) uses Register of Infrastructure (RINF) to improve interoperability of its railways network-topology within INSPIRE implementation to support different application such as traffic planning and regulation, topology studies, speed restrictions impact on the traffic, interoperability with other OGC Services, etc.
- › European Commission has produced indicators on urban public transport in Europe using EU-wide city definition, high-resolution data on population distribution and 'big data' on public transport stops and schedules.
- › American Association of State Highway Transportation Officials (AASHTO) GIS Task Force estimated that 40% State Departments of Transportation (DOT) in USA have implemented GIS as part of their overall Information Technology (IT) program.
- › Port of Lisbon developed a web GIS as a decision support tool for its daily operation covering 42 km extension area sheltering both port activities and tourist activities.
- › Mobile Mapping System consisting of laser scanners and GNSS receivers is advantageous in measuring cross sections of tunnels, mapping the overhead cable system of a railway station and mapping the side slopes of a highway without disturbing normal traffic.



In general, I think it was a good joint organization between GWF and INSPIRE providing excellent networking opportunity.



— Giacomo Martirano, Engineer, Epsilon Italia, Italy



KEY DISCUSSIONS

- › Geographic information will become increasingly important for showing statistical data in a harmonised manner.
- › INSPIRE has enabled the statistical community to integrate geospatial information in the production of policy-relevant information describing sustainable development issues and changes over time.
- › Eurostat has launched an ESSnet grants project, GEOSTAT 2, which will be carried out by a group of Statistical Institutes during 2015 and 2016 with the aim to make recommendations for a unique, harmonized point based reference framework for European statistics which will be of great importance for the coming round of housing and population censuses and various other types of statistics.
- › Central Statistical Office of Poland (CSO) developed statistical address point database, a spatial representation of census enumeration areas and dwelling locations, created in regional statistical offices for the whole area of Poland.
- › CSO's Geostatistics Portal provides tools for creating choropleth maps and various kinds of diagram maps based not only on census data but also on resources gathered in the Local Data Bank - a database with a broad scope of statistical data available down to the LAU2 level.
- › Statistics Finland ran a pilot project in autumn 2014 outlining a future service platform for statistical web interface service for data users. In this model, the statistical office is in central position with its statistical data, spatial statistical data and services.
- › As statistical standards do not interoperate with INSPIRE-compliant standards, there are a great deal of work ahead for integration of statistical practice and standards with spatial standards.
- › Measuring sustainable development and progress is one of the major aims of statistical agencies in modern days, however, the information and statistical data is only partly available at subnational and local level. This has led to several initiatives to use new data sources such as big data (including satellite images) and the foundation of UN GGIM Europe to meet the users' needs more appropriately.
- › Statistics South Africa uses geo-statistical analysis to define and classify areas into urban and rural as part of the country's developmental agenda.

The background of the entire page is a stylized, abstract representation of a circuit board. It features a dense network of thin, dark green lines that meander and branch out across the light orange background. Interspersed among these lines are various circular elements: some are solid dark green dots, while others are hollow circles with dark green outlines. The overall effect is a complex, organic-looking pattern that suggests the flow of data or electrical current.

POLICY AND

The background of the entire page is a stylized, abstract representation of a circuit board. It features a dense network of thin, dark green lines that meander and branch out across the light orange background. Interspersed among these lines are numerous small, solid dark green circles and larger, hollow dark green circles, some of which are also filled with a lighter shade of green. The overall effect is a complex, organic-looking pattern that suggests the intricate wiring of a modern electronic device.

TECHNOLOGY PROGRAMMES

KEY DISCUSSIONS

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KEY DISCUSSIONS

- > UML and GML application schemas are integral part of INSPIRE data specifications. It is important to measure application schemas complexity to ensure interoperable data exchange.
- > INSPIRE Building model should include both topographic and cadastral data, which involved a variety of databases with different scales and data layers. A proper standard and conversion process are required to provide complete building data service.
- > There is a need for joint cross-standards. Some best practices example: W3C R2RML for producing OGC GeoSPARQL, W3C PROV for producing ISO 19115 lineage metadata and IETF new headers and W3C best practices for OWS.
- > The ISO19115-3 plugin is now supported in GeoNetwork 3+ and supports all features supported by ISO19139(-search, view, edit, multi-lingual, validation).
- > German Federal Agency for Cartography and Geodesy developed a Python script to convert ISO 19139 (AP ISO) to Govdatajson based on mapping table to connect SDI to an open data portal.
- > European Environment Agency (EEA), under the Copernicus program umbrella, is working on a system called COpernicus Reference Data Access (CORDA). The system aims to provide national reference data through a single access interface.
- > ELF/INSPIRE standard-needs to be simplified to be used in geo-processing.



“Well organized show with relevant and cohesive streams that were very well attended.”

Robert Jastram
Vice President of Sales
Luciad, Belgium



KEY DISCUSSIONS

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| <ul style="list-style-type: none"> > Location context should be used more often to form a robust evidence basis in policy-making process. A solid consistent base of geospatial data should also be available as supporting data. > In majority of cases, licences and charges of geospatial data are not available on the web. Standardised licences and harmonising types of conditions can improve geospatial data usage. > Africa Europe Spatial Infrastructure (AESI) Align was established to identify suitable framework to align SDI in Europe and Africa based on INSPIRE framework. INSPIRE will provide the lessons needed to sustainably implement SDI in Africa. > In the next decade; standards, transparency, confidentiality, harmonization | <ul style="list-style-type: none"> should be the key targets of geospatial policies. > Government of Canada developed a tool called Federal Geospatial Platform (FGP) to enable integration of location into its public policy through client engagement. > INSPIRE played an important role in opening up data access and coordination in Europe by enforcing legal changes in data sharing specification. > Spatial Data Infrastructure Act should meet user requirements and the needs of regional population. > There are significant legal and policy challenges emerging related to geospatial information, including licensing, pricing, liability, security, and open data > Proposal for a Directive on the dissemination of Earth observation satellite data | <ul style="list-style-type: none"> for commercial purposes (COM(2014) 344 final) in EU is currently under review by Parliament and Council Space Working Party, expected to be implemented in 2015 > There is a need to develop a simplified and standardized procedure in licensing public geospatial data > At the moment there is no global approach or instrument addressing personal data protection in relation to geospatial data and services, resulting in a high degree of uncertainty for industry whether or not data protection laws apply and how they should be observed. > United States is currently reviewing its Commercial Remote Sensing Policy and NOAA Commercial Data Policy, both expected to be implemented in 2015 |
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For me the conference was an excellent opportunity to exchange information and experience with international colleagues and it was well and nicely organized.

Tomaz Petek, Deputy General Manager, Surveying and Mapping Authority, Slovenia



KEY DISCUSSIONS

- › A digital single market can create up to EUR415 billion in additional growth, hundreds of thousands of new jobs, and a vibrant knowledge-based society.
 - › Recent policy evaluations of the PSI Directive and the Infrastructure for Spatial Information in the EU (INSPIRE) Directive demonstrate the need for public authorities to improve the sharing and re-use of their data.
 - › The digital market today in EU (28 MS) is made up by 42% of national online services while the EU cross border online services represent only 4%. In USA the online service is 54%.
 - › Digital Single Market gives better access for consumers and businesses, advanced digital networks and innovative services and enhances the digital economy.
 - › The scale provided by a completed Digital Single
- Market will help companies to grow beyond the EU internal market and make the EU an even more attractive location for global companies.
 - › An ambitious digital trade and investment policy should be further developed including by means of the EU's free trade agreements.
 - › European Interoperability Framework, as State of Play of Interoperability in EU, is well accepted by the MS (72%) but still some way to go to have it implemented.
 - › The ISA2 (Interoperability Solutions for Public Administrations) programme (2016-2020) shall facilitate efficient and effective electronic cross-border or cross-sector interaction between European public administrations and between them and citizens and businesses.
 - › Location information is essential in integrating infrastructure for the
- Digital Single Market.
 - › Digital Single Market is not only a matter of price, but also of reliability, speed of delivery and consumer choice.
 - › INSPIRE and ISA are necessary framework deliverers but more need to be done together with the private sector & the consumers.

“It was a great opportunity for me to learn and get involved with experts in these areas and to give my contribution to the discussions of some issues during the week of the event.”

Rear Admiral Carlos Rodolfo (Ret.), Regional Vice President, AFCEA International's Atlantic Region, Portugal

REGIONAL AND INTERNATIONAL DEVELOPMENT



KEY DISCUSSIONS

- › Cross Border Cooperation Operational Program of Spain-Portugal has co-financed OTALEXC project – an environmental monitoring system connecting 3 regions, Extremadura in Spain, and Alentejo and Centro, in Portugal. The system is currently moving towards integration of new technologies related to geo-linked data and sensors.
- › International boundary measurement requires stable coordinate transformations with sufficient accuracy. ETRS coordinates should be primary definition of international borders.
- › Although INSPIRE process is well managed within countries, the cross-border coordination is rather limited. There is a need for better collaboration between EC and national/regional stakeholders to support provision of reliable information at regional level.
- › Five countries have already signed the African Union Convention on Cross-Border Cooperation (Niamey Convention).
- › The African Union Boundary Information System (AUBIS) has developed a comprehensive set of tools that provide reference information about borders in Africa.
- › Danube Reference Data and Service Infrastructure (DRDSI) provides a common entry point for data, projects, applications, training materials, experts, and users' feedback, which facilitates coordination and cross-border collaboration among Danube countries.



I think the programme was structured well and that the various presentations fitted nicely together and were presented in just the right order.



— Marie Haldorson, Director, Statistics Sweden





KEY DISCUSSIONS

- › INSPIRE now in its implementation phase, it is important to change communication method to support the implementers to gather and channel feedbacks appropriately and trigger improvements.
- › Private and public sector investments in space create a tremendous amount of complementary capability.
- › Aalto University in co-operation with the Finnish INSPIRE Network created a GIS maturity model to assess organisation's capability and readiness to utilise spatial data to reach objectives of the organisation. The model was further developed into a web-based tool to assess the current state of utilisation of spatial data in an organisation and sets a roadmap for improvement.
- › Spatial data providers should adapt better to governance reality of decision makers as to ensure optimal uptake of spatial information in political decision making.
- › Based on the feedbacks received after French INSPIRE Day 2014, an annual national INSPIRE event is important for INSPIRE national coordination and capacity building.
- › In Australia, geospatial research programme is expected to bring in ~A\$580 million of revenues from ~A\$180 million of investments.

The conference was really well organized and alive. I liked the setup having a good choice in sessions and plenary meetings. I met a lot of colleagues that I had not seen for a while. So, keep up the good work. I will certainly join Geospatial World Forum 2016 in Rotterdam.

— Michel Grothe, Consultant, Geonovum, Netherland





KEY DISCUSSIONS

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| <ul style="list-style-type: none"> › The emergence of high resolution aerial photography and the explosion of GPS ownership via smartphones are enabling citizens to become better sensors of the world. › GPS, cameras and sensors on smartphones allow citizens to monitor and measure variables such as temperature, noise, orientation and acceleration – and use these data to track temporal changes in environment. › Integration of VGI datasets into SDI requires further research, especially in the aspect of validation/production of official cartography. › 28 organisations from Europe, Israel, South Korea and Australia have partnered up for a 4-year joint-project called CITI-SENSE (2012-2016) to develop a sensor-based Citizens' Observatory Community for improving quality of life in cities. CITI-SENSE will | <ul style="list-style-type: none"> › strategically deploy a vast network of cheap, portable and reliable air quality sensor nodes to enable the general public to work as environmental sensors for both indoor and outdoor spaces. › VOZ, a multi-platform participatory GIS allows campaigners, activists and social movements to quickly and easily post live reports of human rights and environmental abuses occurring in their locality. › Citiclopsis an FP7 European project created to estimate parameters related to water optical properties using low-cost technologies and citizen collaboration to generate big amount of data. › City of Rio de Janeiro developed a participatory map platform to facilitate access to information and allow citizens to identify and map information from where they live. The initiative aims to enable a more | <ul style="list-style-type: none"> › qualified participation and greater engagement of citizens in the discussions on public policies and city planning. › Italy and Switzerland created a joint platform using open geospatial data and technologies to promote sustainable tourism of Via Regina, a cross-border area between the two countries. The platform allows citizens to map elements in the area using mobile application, and can be viewed in a 3D viewer. › The first step for crowdmapping is simplifying geographical techniques and tools that can be used by non-expert users. › The Flamingo Crescent Informal Settlement re-blocking project in South Africa is a successful demonstration of community-led, participatory planning, collaborative implementation and improvement of informal settlements. |
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KEY DISCUSSIONS

- › Ordnance Survey used to take 12 months to manually generate implementation schema based on logical model, but with the key modelling tool built on enterprise architecture, it takes just one week to automatically generate documentation content.
 - › Swedish Environmental Protection Agency has developed a validation service for environmental data based on INSPIRE and EEA registries to cut time-consuming manual QA-processes.
 - › Spanish Cartographic and Geological Institute of Catalonia (ICGC) has designed a data preservation strategy across the organization to ensure data sustainability. A model that adopts ISO19115-1 and makes minimal extensions to cover data preservation has been
- defined and tested with real examples.
 - › Through latest technology and strong strategic partnerships with online services and software providers, high quality satellite imagery and other geospatial products and services can be accessed, managed, stored, distributed and geo-processed easily and cost-effectively.
 - › Digital data preservation is more challenging than paper preservation. There is no standardized model for geospatial data preservation.
 - › Most data management solution is based on top-down approach, led by central and local government decisions rather than by end-user requirements. This approach is time-consuming and inflexible with minimal ROI.
- › National Mapping and Cadastral Agencies (NMCA) need to respond to the growing demand for accurate, up-to-date and well structured data at the same time INSPIRE Directive compliant. A modern, highly automated system could help to achieve these challenging goals.
 - › City of Jyväskylä in Finland uses authoritative data management to support its public administration, ensuring geospatial data and registers to remain authoritative, connected to an up-to-date database.
 - › Austrian Federal Railways (ÖBB) deployed an end-to-end geospatial data collection system that allows direct and uniform access to pointcloud data, automated processing, integration with existing data and linear asset management.

We found the conference and exhibition to be very well organized and beneficial to our professional and business development objectives. The world was truly present at this conference and we were able to network with people from many different nations. For sure, we will be exhibiting and attending the Geospatial World Forum every year from now on.

— Robert E. Zee, Director, Space Flight Laboratory, Canada



KEY DISCUSSIONS

- › In Poland, there is a clear demand for digital public services providing spatial data and analysis functionality. Access to Geoportal's services has been ensured in law acts regulating other areas of the state like: emergency notifications, Police, fire protection, Emergency Medical Services, health protection system.
- › INSPIRE is a very good framework and provides

“Conference was well organized. Sessions within the exhibition hall were a nice idea to attract people and provide good networking conditions.”

Christian Ansoorge, Project Manager - SEIS and INSPIRE implementation, European Environment Agency, Denmark

- the best practices for the creation of e-Government digital spatial public services.
- › In 2012 the Danish government agreed with the local governments to do an address program (2013-2017) to create a basis for an efficient and consistent reuse of basic data on addresses, place names and administrative units.
- › In Catalonia, Municipalities, supramunicipal bodies and ICGC are starting to apply BDMAC (Municipal Database of Addresses of Catalonia) specification for generating the official data sets.
- › The Catalan authorities believe that the definition of a common specification with the participation of the data providers that specify criteria for data collection at a minimum agreed quality level ensures greater homogeneity of the data, facilitating its integration and exploitation as a whole. It also allows the development of validation and transformation web services to be used by the community of users, with the consequent saving of resources.
- › The municipality of Espoo, Finland uses a combination of solution tools for local government which are a productized set of modular software applications and services for managing built environment data and carrying out planning and building process tasks from land use, planning to building supervision, asset management and customer service. It helps to deliver the high quality services in growing city.
- › City of Copenhagen is following a smart city approach and has 3 initiatives about data: Open data, Copenhagen Data Market and Data tank.

- > Environmental considerations should be integrated into planning decisions relating to land use so that they are made more sustainable, with a view to making progress towards the objective of “no net land take”, by 2050.
- > Spatial Development Department Flanders, Belgium developed a generic platform for digital exchange, allowing user with competence of establishing spatial zoning plans and regulations to upload his own (geo)data and use those of the other users.
- > TOWN (ESPON project for small and medium-sized towns) suggests that the allocation of population to higher resolution grid cells and the integration of land cover data may improve settlements' identification.
- > Currently there are 14.9 million dwelling frame with reference Sept 2011 is available for South Africa and this will be used to continue collaboration for ongoing maintenance.



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KEY DISCUSSIONS

- > Agile aerospace is revolutionizing the space industry eco-system with miniature satellites capable to provide high-resolution images of the entire planet on a daily basis.
 - > RADARSAT-2 has acquired over 4,000 hours (> 5.5 months) of data resulting in >400,000 images. Despite coming to the 7-year anniversary, what is nominally the original design life, RADARSAT-2 is expected to continue to operate for a long time to come.
 - > RCM is a Canadian C-band SAR mission, consists of a constellation of three SAR Earth observation satellites, scheduled to launch in 2018.
 - > Following the success of Beijing-1, a new high resolution <1m Triple Satellites Constellation will be launched in July 2015 with global daily revisit capability.
 - > Space Flight Laboratory (SFL) is currently developing a highly modular 70-kilogram Earth observation spacecraft called NEMO-HD, offering high definition video and multispectral Earth imaging on a micro-satellite platform.
- > Deimos-2 is the only European fully-private satellite capable of providing sub-metric multispectral imagery.
 - > WorldView-3 is the first high-resolution "super spectral" (> 10 bands) satellite in the industry, beneficial in monitoring damage assessment, construction progress, refugees movements, etc.
 - > The UK government is supporting an initiative to develop low-cost solutions for Synthetic Aperture Radar (SAR) missions called NovaSAR expected to be launched in 2016. Along with other imaging modes, an innovative maritime mode is being implemented, which will operate in parallel with an Automated Identification System (AIS) sensor to receive signals from ships synchronised with image acquisition.
 - > Dense image matching method is proven to provide more details in DSM, in particular in the vicinity of depth discontinuities and useful additional information for automatic object recognition, which is necessary for true orthophotos and 3D visualization, e. g. for cultural heritage documentation.
- > Videos captured from space are useful to detect changes during monitoring period, assessing different parameters of objects activity, like traffic, operating, development, etc and to get all standard geospatial object's characteristics (position, size, etc.) and assess its dynamics.
 - > In 2010, China launched a global land cover (GLC) mapping project, and finally produced the 30 m GLC data product (GlobeLand30) with 10 classes for years 2000 and 2010 within four year period.
 - > The 2014-2017 Roadmap of the Africa-EU Partnership commits the two partners to cooperate to strengthen African capacity to monitor environment and security in Africa using Earth Observation techniques through the implementation of GMES & Africa Action Plan, in 3 priority thematic chapters: marine and coastal areas, water resources and natural resources management.

KEY DISCUSSIONS

- › The use of UAVs in agricultural and environmental sciences is increasing, but the payload and stability requirements need dedicated remote sensing instruments. Wageningen University in Netherlands developed its own UAV hyperspectral mapping system to acquire high resolution hyperspectral datacube maps for agriculture, corals and tropical forests mapping.
- › The World Bank and FAO developed a methodology for low cost technological solutions for data quality improvement and to integrate UAV-derived geospatial products into the development of the national SDI for improved land administration and management in line with the „Fit for Purpose“ mapping concept.
- › Low level flight of unmanned aircraft allows detection of fine features such as power lines, railway corridor and vegetation monitoring. Embedding a laser scanner onto UAV makes it possible to carry out reliable monitoring, to penetrate vegetation and to extract fine features of interest almost automatically out of a remarkably dense point cloud.
- › Availability of UAV with on board RTK for geo-referencing opens up many new markets for aerial surveying by incorporating UAV technology with traditional surveying methods.





KEY DISCUSSIONS

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|---|--|--|
| <ul style="list-style-type: none"> > A research assessment shows that companies have invested between 11.5 and 14.5 million Euros in the development of services and products based on open topographic data in Netherlands. > Since 2011, Land Information New Zealand (LINZ) Data Service provides free and open access to over 40 of LINZ and New Zealand's geospatial datasets to support the creation of new and improved products and services across business, government and the community. The most current publicly-owned aerial imagery, covering 95 percent of the country, was made available through the LINZ Data Service in 2014. > Mapcode system is a free, brand-less, international standard for representing any location on the surface of the Earth by a short, easy | <ul style="list-style-type: none"> to recognize and remember "code", particularly useful in countries that don't have a universal address or postal system. > RECODE project leverages existing networks, communities and projects to scope and address the challenges related to Open Access, dissemination and preservation of scientific data by identifying a series of targeted and over-arching policy recommendations for Open Access to European research data based on existing good practice. > In 2014 the Portuguese government promoted the creation of iGEO, an internet portal to boost the use of open spatial data that is complementing its national spatial data infrastructure (SNIG). > The need to reach-out and engage with new users to ensure the design and | <ul style="list-style-type: none"> creation of next generation open data is paramount to achieving increased value to a broader range of stakeholders including all of those who champion policy, economic or societal benefits. > PublicaMundi is an FP7-funded research project aiming to democratize open geospatial data publishing and reuse, making it easier for publishers to share data and for developers to discover and reuse data. > In Denmark, as part of its Basic Data Program, the structure and content of real property registers are changed to enhance data quality and improve accessibility of these data across registers. Together with the implementation of 'common data distributor', these changes influenced the usage of data related to real property, including mortgage, insurance and taxation. |
|---|--|--|

I think the conference was successful, even beyond the technical contents, and the joint organization GWF - INSPIRE certainly was a remarkable added value for all the attendees.

Diomede Illuzzi, Senior Technical Manager, Planetek Italia, Italy

KEY DISCUSSIONS

- › Combination of computer vision, machine learning and crowdsourcing can turn large volumes of raw very high resolution imagery into actionable knowledge scaling to state and country sized regions.
- › Dynamically evolving Geospatial Big Data layers will be indispensable source of information about our changing planet.
- › Management of various kinds of 3D geospatial data and the associated meta-data at national level poses a significant challenge due to the large data volumes involved. Using a scalable and spatially-enabled database could help in expediting data retrieval, processing and visualization.
- › Australian Government's open spatial data visualisation platform NationalMap.gov.au provides several analytics tools to extract immediate value from the Government published data to help in its policy development.
- › Flemish Institute for Technological Research (VITO) develops PADUA (Product Archiving, Distribution and User oriented Access), an end-to-end solution to address the challenges in big data handling related to the EC Copernicus programme.



LINKED DATA & CLOUD COMPUTING



KEY DISCUSSIONS

- › A cloud based approach can overcome technology limitations, budgetary and human resource constraints in managing acquisition, storage, maintenance and distribution of large satellite imagery collections.
- › Fundamental concept of elasticity of cloud-based platforms helps to address the challenge of varying and unpredictable loads on the services within an SDI, which makes it ideal for a cloud infrastructure.
- › SDIs are evolving from a traditional concept of data sharing to a new approach of automated interlinking of data and information, according to the machine-2machine paradigm.
- › National Land Survey of Finland (NLS) is working towards a URI-based management of its national spatial data infrastructure, including multiple URI linking that constitutes a framework of data infrastructure for data distribution and re-use.
- › Despite the longstanding discussion about the importance of linked data, the market is yet to see well-established software implementations and tools that support the generation, storage and sharing of geographic data.
- › Abu Dhabi is in the process of implementing a new addressing system, using GIS and Linked Data concept. It will be a first-of-its-kind public persistent URI infrastructure through which the entire government, as well as businesses and residents, gets a common, free persistent URI that they can attach information to.
- › LusTRE is a Thesaurus Framework for the Environment developed as part of the eENV-plus project about infrastructures for the INSPIRE implementation. It allows interlinks between different environmental domain vocabularies and offers access to them as one virtual integrated linked data source.



I enjoyed the conference. I've noticed a big move towards new technologies such as linked data, open data, crowdsourcing ... A great opportunity for networking.

— Tomas Mildorf, Research Fellow, University of West Bohemia, Czech Republic





KEY DISCUSSIONS

- › Provision of large 3D data as high quality visualisation on web and mobile leveraging WebGL/HTML5 will make 3D more available in applications and integrated in existing applications.
 - › Application of 3D data in smart cities planning process reforms and visual assessments.
 - › Environmental Protection Agency of Calabria in Italy initiated STAR project – ‘Territorial Spatial Augmented Reality’ to create a multi-channel and multi-sensory platform for edutainment in the Environmental sector, through integration of science and ICT. It is also available as a mobile app, which allows users to surf in Augmented Reality mode.
- › AGH University of Science and Technology in Poland undertakes a research to examine similarities and differences of 3D/4D data specifications between INSPIRE (especially “Cadastral Parcels” and “Buildings”) and ISO 19152 Land Administration Domain Model (LADM).
- › South Korea developed a 3D Geospatial Information Open Platform (V-world) in 2011 as a pilot project to encourage its geospatial industry. The platform includes portal service, map service, user participation service, and others.
 - › HassoPlattner Institute in Germany developed a processing and analysis techniques for 3D point clouds, which can detect, categorize, and quantify changes for buildings, vegetation, and ground surfaces.



I was satisfied with the attendance and the follow-up discussions to my presentation in the Cloud/Linked Data track, so the event was well worth the time.

— Hans Viehmann, Product Manager EMEA, ORACLE Corporation, Germany





KEY DISCUSSIONS

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> > During Fall 2014, Finnish Transport Agency published its second generation spatial web services for INSPIRE and non-INSPIRE data, which include not only view and download services but also a graphical user interface and an easy to use data retrieval service. > StaGe is a Web-GIS platform for merging statistical and geographical data in Slovenia. It enables cartographic presentation and dissemination of geospatial statistical data by selected spatial units in combination with various base maps. > CartoCiudad is a seamless cartographic database covering the entire Spain with road network topo- | <ul style="list-style-type: none"> logically structured; it also contains building numbers, blocks, kilometre points, toponyms, boundaries and postal and census information of each municipality. > Web-based geo apps will in future need to measure more at their ease of use and rapid information delivery as on a possible comprehensive but hardly controllable functionality. > Australia's Centre of Excellence in Information and Communication Technology has developed a software platform for web-based access to spatial data, which is being used in the Australian government's National Map service and provides easy | <ul style="list-style-type: none"> web-based viewing of a wide range of spatial data directly from data custodians. > Instituto Pereira Passos (IPP), a department under Rio de Janeiro's City Hall responsible for GIS and management of municipal geoprocessing system—recently established the Municipal Urban Information System, integrating all geospatial data produced in Rio de Janeiro's municipality, organizing it in a single corporate database and developing web application for municipal departments to do online editing, updating and georeferencing of their cadastral data and actions. |
|---|---|--|

In general the conference was a good meeting point. High level people and relevant companies represented. Overall, well organized and valuable networking for me.

— Hakan Engman, CEO, Agency9 AB, Sweden



KEY DISCUSSIONS

- › Recent cuts in budgets due to the worldwide crisis and the latest regulations emerging in a few EU countries regarding open data have been favourable towards Open Source solutions.
- › No upfront cost is fostering the adoption of open source but it also generates wrong expectations that open source is completely free. The support and training for open source are not free.
- › With the increase in open source projects and implementations, it is necessary to address the need for specialized support, especially with the emergence of many small and medium sized local specialised service suppliers.
- › Open source community in Europe should have the ambition to create a strong software eco-system, based on free and open source software (FOSS).
- › Since its inception in 2009 in France, geOrchestra has grown into a fully featured and mature Spatial Data Infrastructure, able to cope with thousands of datasets while being INSPIRE-compliant.
- › Finnish Spatial Data Infrastructure was built on open source technology called Oskari platform, which utilizes the most important OGC web services for spatial data searching (CWS) viewing (WMTS/WMS), downloading and exploring (WFS), and processing and analyzing (WPS).
- › Part of INSPIRE Geoportal is a validator component which ensures that the data provided by the member states comply to the INSPIRE regulation and technical guidelines. The validator was built based on open-source software using the OSGeo project, deegree.



I enjoyed the conference very much. I think it was a good session in terms of the presentation and how they fitted together.

— Tina Svan Colding, Data Distribution and Property, Danish Geodata Agency, Denmark



MEASURING PROGRESS: ACHIEVING SMARTER CITIES



KEY DISCUSSIONS

- › Smart city is not necessarily devoid of traffic jams, but has such communication infrastructure that provides timely and energy-saving information to commuters to choose routes effectively.
 - › More than 50% of the world population lives in cities today, impacting all aspects of city life including housing, mobility, utilities, infrastructure, health etc. It's not a surprise that most countries are heavily focusing on making cities smarter by integrating technologies to ensure better resource management, improving living conditions, providing safety measures for its citizens and creating jobs that can help economies grow stronger.
 - › Smart Cities have achieved their success not by working in silos, but in an environment of openness, integration and coordination. A number of players working together to create 'Actionable Data' — data which enriches information and helps create positive action.
- › Understanding the significance of convergence of stakeholders, technologies and need for improved policies and programmes, the United Nations Economic Commission for Europe (UNECE) launched the United Smart Cities initiative in May 2014 with the aim of establishing a platform to share experiences and best practices among the cities in the UNECE region.
 - › UNECE introduced Smart Cities Indicators, which will help to evaluate the current status of a city and monitor the changes done and are developed by a well-represented stakeholder network in line with the Sustainable Development Goals (SDGs). The indicators are expected to be adopted by end of 2015.
 - › City of Glasgow has revamped its infrastructure to add sensors to houses, street lights and invested in smart grids.
 - › City of Cape Town is accruing return-on-investment after modernising its property valuation system. The results of investing in land information systems are seen as helping city administrators assess the costs and benefits of introducing LIS technology as they strive to develop smarter cities.
- › Smart Cities consist of computerisation of entire city infrastructure. The potential of Smart Cities can only be reached by achieving interoperability between the various technologies involved in such computerisation.
 - › In their pan European study on Smart Cities, RAND Europe found that 51% of cities have implemented or proposed Smart City initiatives, while larger proportion of large cities have smart cities initiatives as they have more resources for focusing on such initiatives.
 - › Under the Open Data Charter, Her Majesty Land Registry has recently opened up its data and is witnessing its impact in the country. Although they are facing challenges like lack of public awareness, issues of sustainable financing or licensing issues, the overall impact is positive and encouraging.

A total of 46 workshops were conducted at INSPIRE-Geospatial World Forum covering industry solutions, latest technology trends, policy papers discussions, project updates and INSPIRE implementation.



SPECIAL PROGRAMMES

INSPIRE-Geospatial World Forum 2015 saw the successful execution of two brand new initiatives by Geospatial Media and Communications, focusing on opposite ends of professional groups: the geospatial business leaders and the young professionals.

GEOSPATIAL BUSINESS LEADERSHIP SUMMIT

A by-invitation-only programme, Geospatial Business Leadership Summit, provided unique opportunity for geospatial leaders to share, learn, deliberate, collaborate and move forward with emerging trends and opportunities of geospatial business. The half-day programme was fully-packed with attendees ranging from CEO and business heads of geospatial companies, CEO/CIO and divisional heads of user industries, administrative and political leaders associated with policy making agencies, heads of national geospatial agencies focusing on public private partnerships and investment and financial institutions. The Summit discussed among others, trends and business direction of geospatial industry, value and business models of geospatial solutions and its impact to national economy.



YOUNG PROFESSIONALS FORUM

Responding to the ever-changing role and capacity expectation faced by geospatial graduates in modern days, a full-day Forum exclusive for young geospatial professionals was organized in collaboration with UNIGIS, Leibniz University of Hannover, FIG Young Surveyors and Portuguese Association of Engineers. The Forum featured talks from senior executives and young CEOs of geospatial companies advising students and young professionals in attendance on various prospects awaiting them in the industry.



CLOSING SESSION



At a heavily attended closing session on Thursday, 28 May 2015, **Alesandro Annoni**, Head of the Digital Earth and Reference Data Unit, Joint Research Centre, European Commission, summed up the four days' takeaways alongside some statistics of the conference. He stressed that "Industry, government and users should work closer to ensure that new technologies fit the needs of users and that governments make the right actions (political and financial) to address the needs of the users and facilitate industry to develop solutions." He also adds "INSPIRE-Geospatial World Forum has been an important step in this direction but still a lot remains to be done."



of a platform such as INSPIRE-Geospatial World Forum to act as a medium to disseminate information and exchange of ideas between policy makers and geospatial community.

Sanjay Kumar, Chief Executive Officer, Geospatial Media and Communications, in his closing speech believes that the conference will not only impact the 1700+ attendees, but millions other users worldwide, especially through the ongoing social media discussions and the upcoming conference proceedings to be made accessible online.



Speaking to the delegates earlier, **Miguel de Castro Neto**, Secretary of State for Spatial Planning and Nature Conservation, Portugal, talked about geospatial implementation in Portugal, and the importance

It was announced that INSPIRE conference will be held in the month of September next year in Barcelona, while Geospatial World Forum 2016 will take place in City of Rotterdam, The Netherlands on 23-26 May 2016.



SPECIAL AWARDS FOR RECOGNITION OF EXCELLENCE IN GEO-INFORMATION TECHNOLOGIES

Dirk Frigne

on behalf of open source communities behind Geosparc
WeTransform, lat/lon teams

Michel Grothe

Geonovum, Netherlands

BEST PAPER AWARDS

Harm Bartholomeus

Wageningen University, Netherlands
Design of a UAV-based Hyperspectral Scanning System and
Application in Agricultural and Environmental Research

Peter Willems

Department of Spatial Development of the
Flemish Government, Belgium
An Exchange Platform Gathering & Distributing Spatial
Zoning Plans in Flanders, Belgium

Sheetal D Marathe

University of Stuttgart, Germany
Mapping Gauteng's Renewable Energy Potential:
A GIS-Based Analysis

BEST POSTER AWARD

Cristina Carrico

Intermunicipal Community of Central Alentejo, Portugal
OTALEX C Assess Cross Border Sustainability Indicators

GEOSPATIAL WORLD AWARDS



GEOSPATIAL WORLD AWARDS

GEOSPATIAL WORLD LEADERSHIP AWARDS

Category	Winner
Geospatial Technology Company of the Year 2014	FARO
Geospatial Systems Integration Company of the Year 2014	Trimble
Geospatial Solutions Company of the Year 2014	AAM
Geospatial Content Company of the Year 2014	DigitalGlobe
Geospatial Scientist of the Year 2014	Dr. David R. Maidment, Hussein M. Alharthy Centennial Chair in Civil Engineering, at University of Texas, Austin, USA
Geospatial Business Leader of the Year 2014	Don Murray & Dale Lutz, Co-founders, Safe Software
Geospatial Ambassador	Ed Parsons, Geospatial Technologist at Google
Geospatial Institution of the Year 2014	UNIGIS International
Geospatial Professional Organisation of the Year 2014	African Association of Remote Sensing of the Environment (AARSE), Nigeria
National Geospatial Information Agency of the Year 2014	Kadaster, The Netherlands
Geospatial Business Hub of the Year 2014	Bonn - Geobusiness Region, Germany
Lifetime Achievement Award	Lawrie Jordan, Founder of ERDAS and Director – ESRI, United States

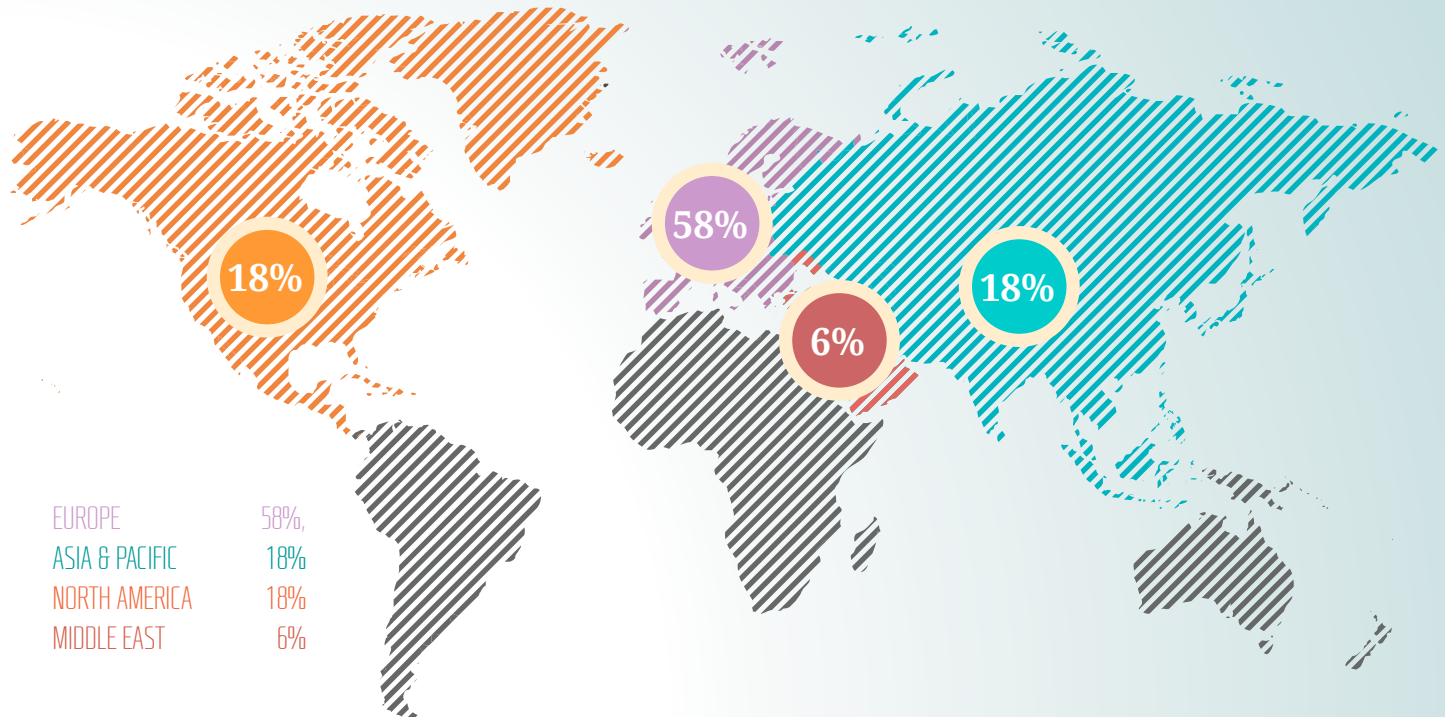
GEOSPATIAL WORLD EXCELLENCE AWARDS

Winner	Project Name
National Survey Authority, Oman	Oman National Geodetic Datum (ONGD)
General Commission for Survey, Saudi Arabia, and ROLTA	GCS –GeoPortal
Department of Municipal Affairs Abu Dhabi (DMA), UAE	Municipal Spatial Solutions Infrastructure (MSSI)
The National Agricultural Technology Institute (INTA), Argentina	SEPA (Monitoring of Agricultural Production) Mobile Application
Telekom Malaysia Berhad, Malaysia	SaveME 999 Deaf
Cape Peninsula University of Technology, South Africa, and Slum Dwellers International	Flamingo Crescent Informal Settlement Community Engagement/Service-Learning Project
Reliance JioInfocomm Ltd., India	Enterprise Telecom GIS
INNOVATE UK and Glasgow City Council, United Kingdom	Future City Glasgow Program

GEOSPATIAL WORLD INNOVATION AWARDS

Category	Winner	Project Name
Innovation in Digital Elevation Modeling	Airbus Defense and Space, Germany	WorldDEM
Innovation in Land Cover Mapping	Ministry of Science and Technology (MOST), China, and the National Administration of Surveying, Mapping and Geo-Information (NASG), China	Global Land Cover Map

EXHIBITORS BY GEOGRAPHY



EXHIBITORS BY PROFILE

32%

HARDWARE/SOFTWARE PROVIDERS

27%

CONSULTANCY/SOLUTIONS/SERVICE PROVIDERS

21%

SATELLITE IMAGING/POSITIONING

8%

JOINT PROJECTS/INITIATIVES

8%

ACADEMIC/RESEARCH INSTITUTIONS

4%

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