

Maximising the Benefit of Geospatial Information

The Global Spatial Data Infrastructure (GSDI) Association was formed in 2004 as an inclusive networking organisation of academic and research institutions, government agencies, commercial geomatics firms, national and regional geographic information associations and individuals from around the world. What are the latest trends and developments when it comes to spatial data? *GIM International* talked with Dave Lovell, president of the GSDI, about topics ranging from knowledge sharing and capacity building to big data.

The GSDI Association's vision is a world where everyone can readily discover, access and apply geographic information to improve their daily lives. Where do we stand now?

The simple answer is that, at the moment, no one truly knows, that's why we are working on a new approach to creating a global index of National Spatial Data Infrastructure (NSDI) implementation. It's an approach which will allow all actors, users, suppliers, consultants and the academic community to contribute. The index consolidates and condenses a large body of scholarship and experience of NSDIs into a set of key components that can be assessed and benchmarked using six indicators. The index will provide a top-level assessment and ultimately the scoring will support investment and decision making to be directed towards any weak or problematic areas of NSDI development.

After testing in the coming weeks, the index will be made available in an online platform where the results, without weighting, analysis or conclusions being drawn, will be made available dynamically by sector and as an overall averaged score from all responders to give the index value for each country. To maximise contributions to scoring we will be seeking support from the UN-GGIM thematic networks and Regions.

As an added value we believe that the process and results will promote collaboration and motivation between government departments and other stakeholders to improve their spatial data quality, management and availability. There is also the potential for the Index to raise awareness of

potential barriers to a country effectively reporting spatial data evidence to the Sustainable Development Goals and other international agreements.

Your Association is also on a mission, namely to advance geo-information best practices, knowledge sharing and capacity building. Are you satisfied with where you are today?

GSDI has achieved a great deal since its inception; nearly USD300,000 has been granted to support 117 completed projects which advanced the understanding, implementation, development and use of Spatial Data Infrastructures across the world. 15 global conferences have been organised which have been attended by thousands of delegates, a 'how to' SDI Cookbook has been published, updated and translated into multiple languages, and a wealth of other resources made available at our website. We've funded a number of development projects, attended many conferences, supported GEO and CEOS and contributed to establishing the UN Committee of Experts on Global Geospatial Information Management. In fact, I think that we can claim that the pioneering work of GSDI and its members has contributed significantly to this development. But until a job is done or an outcome is delivered, I'm not satisfied. A great deal has been achieved by GSDI, and others of course, to advance understanding of the role and benefits of applying geospatial information and technologies to real world challenges and problems be they in the environment, the economy or wherever, but there is still much

more that needs to be done in order to realise the full potential of geospatial information and technologies.

You have been making Small Grants Programme awards available since 2003. How can a grant of USD2,500 make a difference in geospatial data infrastructure?

If you'll forgive me for saying so, the question embodies a very developed world perspective. In many countries in the world, USD2,500 is a significant sum of money and the appetite for receiving a grant continues unabated. Since 2004 GSDI has supported 117 projects. This year's call for proposals stimulated 31 applications from 27 countries in Africa, Asia-Pacific, Europe, North and South America, covering a wide range of SDI and GI/GIS related project work. In addition to cash awards, some of the proposals also requested support from the GISCorps of URISA's volunteer network.

Supported projects this year include: Unlocking Government Environmental Data in Kenya, Support for Working Group on Formulating the SDI Act in Mongolia, SDI to Support Sustainable Energy Planning in West Africa, Translating the GSDI SDI Cookbook and a number of SDI promotion and training projects.

This year, the cash awards are made from GSDI's own reserve funds. I'm disappointed that we can't provide more funding so that others of the more deserving proposals can be funded in 2017. If readers wish to

contribute they can do so, without becoming a member of GSDI if they so wish, by sending an email to smallgrants@gdsi.org.

Spatial data infrastructure allows nations to better address social, economic, and environmental issues of pressing importance, including sustainable development. Can you give some eye-catching examples?

I find it impossible to select just two, as there are already many thousands of case studies that address these issues, where 'location' is a key aspect of the challenges being faced. Another challenge is one faced by all stakeholders who engage in pre- and post-SDI implementation cost-benefit studies. That is, are you measuring the societal benefit achieved by the specific application(s) or the additional benefit achieved due to having a robust spatial data infrastructure in place, i.e. one in which the required data can be created, managed, publicised, accessed, shared, used and re-used with greatest efficiency and at least cost. Research has been ongoing for over two decades now, and the challenges are well described in 'Assessing the impacts of SDIs: A report of the international workshop on spatial data infrastructures' cost-benefit / return on investment' held at the EC's Joint Research Centre in 2006 – see http://cordis.europa.eu/publication/rcn/200718878_en.pdf. Research carried out by our Secretary General has identified cost benefit ratios ranging from 1.8:1 to as high as 27:1 for different sectors and applications in nations across the globe, in areas such as cadastre, land management, remote sensing, census statistics, managing local government, and many, many more.

Geospatial big data is a hot topic in the geomatics industry. Which developments do you foresee when it comes to managing the data?

I'm not really the right person to ask given my interests are principally in association management and articulating the benefit of the use of geospatial information, but from the many things that I've recently been exposed to the following two stand out:

1. Blockchain - which allows for records between different parties to be recorded and managed in an efficient, verifiable and permanent way with records held in a database distributed across multiple computers, has I think real potential in land registry and land information systems;

2. Machine learning – which gives computers the ability to learn without being explicitly programmed, particularly within the field of data and predictive analytics, has the potential I believe to help us move from a spatial data infrastructure to the more powerful spatial knowledge infrastructure which is envisioned in the Australia and New Zealand Cooperative Research Centre for Spatial Information's white paper www.crcsi.com.au/spatial-knowledge-infrastructure-white-paper/.

The European Union has its INSPIRE Directive, which establishes an infrastructure for spatial information in Europe to support Community environmental policies. Is the GSDI Association involved?

GSDI members, particularly EuroGeographics, National Land Survey of Finland, Kadaster (The Netherlands), KU Leuven, TU Delft and others have contributed immensely since its inception, and continue to do so. The recently completed European Location Framework and current transitional programme towards European Location Services project provide excellent examples of their practical work to provide the single access point for international users of harmonised, pan-European, authoritative geospatial information and services; and enable national mapping, cadastral and land registry authorities to be recognised in their international effort to contribute to the wider public good.

Members have also contributed at a number of INSPIRE Conferences and will do so again this year. For example, Abi Page, chair of the Association for Geographic Information (AGI) and Technical Product Development Manager at EuroGeographics, presents on the role of open data in the journey to operational European Location Services. Our Secretary General, Roger Longhorn, will present one of our current projects in the Marine SDI, INSPIRE and the EU Marine Directives Workshop and will report on Multiple Agency Cooperation for Implementing the EU Maritime Spatial Planning Directive. One of our key founding members, the Open Geospatial Consortium, has also been directly involved in several projects relating to INSPIRE implementation.

You organise GSDI World Conferences – and other events – around the globe. What makes these conferences/events so relevant?

For me, the sheer variety of topics covered and the diversity of presenters and



▲ Dave Lovell.

presentations differentiates GSDI Global Conferences from the rest. Our conferences aren't stage-managed platforms for global companies to promote themselves and their products, but rather a platform for everyone from early career professionals to people with decades of experience to present their latest research, report new and exciting uses of geospatial information and technologies or project achievements. At our fifteenth and most recent conference in Taipei in December 2016, simultaneously in different streams, our member PSMA Australia Ltd with Digital Globe delivered a workshop on the development of the 'ground breaking' Geoscape product whilst in another room an assessment of building evacuation scenarios considering panic and knowledge of exits using a 3D GIS agent-based model was presented.

By choosing a different location around the globe for each conference, we provide opportunities to people and companies unable to travel to 'far flung' international destinations to showcase their work and receive feedback from the expert knowledge our delegates represent.

The Proceedings of the GSDI 15 World Conference are available for downloading from the GSDI website.

GSDI has signed several Memorandums of Understanding with partner organisations such as FIG, ICA and ISPRS. What are the benefits of these partnerships?

GSDI has MoUs with FIG, ISPRS, ICA, ISDE (International Society for Digital Earth), and CDMP (the Centre for Disaster Management and Public Safety) of our member Univ. of Melbourne, the earliest dating back to 2010. The main benefits are sharing geo-related news and ensuring participation on themes related directly or indirectly to SDI at multiple international conferences and workshops of our MoU Partners. As well as joint promotion, over the years we have seen an SDI focus appearing in the structures of the organisations, such as ISPRS Commission 4, Working Group WG IV/6 - SDI: Internet of Things and Spatial Decision Support, the ICA Commission on SDI and Standards and FIG Commission 3 – Spatial Information Management.

A good example of how all the MoU Partners work together is demonstrated by the International Workshop on the Role of Land Professionals and SDI in Disaster Risk Reduction in the context of Post 2015 Nepal Earthquake held in Kathmandu, Nepal, 25 – 27 November 2015, directly supported by our Nepal member, NGIID (National Geospatial Information Infrastructure Department, Nepal) and jointly organised by FIG Commission 2 (Professional Education) and ISPRS Technical Commission IV (Spatial Information Science), supported also by FIG Commission 7 (Cadastre and Management). This level of cross pollination of skills and expertise would be much more difficult to achieve without the existence of the MoUs – and we wish to thank all of our MoU Partners for their continued work with GSDI.

You are also involved with education focused on SDI development and implementation, and related geomatics technologies. Can you give some examples?

The joint GSDI / FIG / ISPRS workshop mentioned above is one good example. Many different GSDI members have also been directly involved in implementing SDIs nationally and at trans-national level, such as for INSPIRE in Europe. Our members include not only the Open Geospatial Consortium (OGC), whose international geo specifications

work is crucial to implementing SDIs, but also eight universities in Europe, North America and Australia, plus UNIGIS, the global GI Science distance learning network that boasts 9 university partners, 15 study centres, 4,000 active students and over 10,000 alumni. We have also been implementing an expanded Capacity Building Programme since 2016, which includes many webinars relating to the work of our Strategic Projects, such as Marine SDI Best Practice and developing the global index of National Spatial Data Infrastructure (NSDI) mentioned earlier. In 2017, we are delivering specific webinars focusing on SDI issues that are often not covered by others in the geo sector, such as data policy, IPR and licensing practices, open data and big data challenges. GSDI also maintains a major online resource of open access publications directly related to SDI implementation, best practice, case studies, webinars, cookbooks, etc. at our website.

How do you foresee the future when we zoom in on the geospatial sector? Are there any developments that will change the industry in the coming years?

We can be sure that there are developments that will change the industry in the coming years; only time and hindsight will tell us if we were able to predict them!

It seems that everybody I meet professionally at the moment is talking about the potential of Geospatial Platforms. When I looked for a definition, I found the one from FGDC the simplest to consume - 'The Geospatial Platform will be a portfolio of common geospatial data, services, and applications, managed, contributed and administered by authoritative sources and hosted on a shared infrastructure'. What struck me was that this was in a document published in June 2011. If this is the future, it's a long time coming!

Most recently I've been struck by the conversations about the future of national mapping authorities, and given the first forty years of my career were happily spent in a variety of roles with Ordnance Survey (GB), I guess that's inevitable. Nowhere is this better covered than in an output from the recently held Cambridge Conference. I recommend reading the story 'Mainstreaming geospatial data: an exercise in market satisfaction' from the CEO of one of our members.

So, fundamentally, I see the biggest need and the biggest change coming from the greater



integration of information and technologies driven by people with similar ambition, foresight and passion to maximise the benefit of geospatial (location) information as was the vision of those who founded GSDI in the first place. ◀

ABOUT DAVE LOVELL

Dave Lovell is currently president of the Global Spatial Data Infrastructure Association, chair of UN-GGIM Geospatial Societies, a member of the UN-GGIM Expanded Bureau, a Board member of the Association for Geographic Information and until 2014 a member of the British Geological Survey advisory committee. Lovell started his career with Ordnance Survey (Great Britain) and spent forty years with them in a variety of roles in Surveying, Sales and Marketing and concluded his time with them as their head of Public Affairs. Between September 2007 and October 2015 he was Secretary General and Executive Director of EuroGeographics the International not-for-profit association now representing 63 National Mapping, Cadastre and Land Registry authorities in 46 countries in Europe.