

**UNRCC** 10th United Nations Regional Cartographic Conference for the Americas  
19 – 23 August 2013, New York

**UN-GGIM and the Americas:  
Addressing Global Challenges Through Geospatial Information**

Fédération Internationale des Géomètres  
International Federation of Surveyors  
Internationale Vereinigung der Vermessungsingenieure

Kalvebod Brygge 31-33  
DK-1780, Copenhagen V, Denmark  
Tel: +45 3886 1081; Fax: +45 3886 0252  
url: www.fig.net

**Spatially Enabled Society**

CheeHai Teo  
chteo.surveyor@gmail.com

**FIG** FIG REPORT

**FIG PUBLICATION 53**

**Spatially Enabled Society**

The publication on Spatially Enabled Society is the culmination of a three-year effort by the FIG Task Force on Spatially Enabled Society, established by the General Assembly of the FIG in 2009. The Task Force included representatives from the Global Spatial Data Infrastructure Association and Working Group 3 of the United Nations Geospatial Information Committee on Geospatial Information for Asia and the Pacific. This is a collaborative effort led by the FIG Task Force and the publication has been compiled and edited by Dr. Daniel Steudler, Chair of the FIG Task Force on Spatially Enabled Society, and Dr. GSDI, Executive Director of the GSDI Association.

The work developed and presented in this publication reflects the global geospatial information community from these past years have made spatial information an invaluable tool in policy formulation and evidence-based decision making.

Spatial enablement, that is, the ability to add location to almost all existing information, unlocks the power of existing knowledge about social, economic and environmental systems, and offers a new way of understanding and addressing the many challenges that we face in an increasingly complex and interconnected world. Spatial enablement requires collaboration in the public, private, academic, operational and commercial sectors, and a commitment to build ownership and collaboration in a consistent manner to support good governance of land and to ensure that geospatial information is used to improve the lives of people and to contribute to the well-being of societies, the environment and economy.

This new book provides a new way to think about geospatial data, that much more than a mere collection of information, it is a new paradigm that will be to be explored, defined and understood in the context of a spatially enabled society.

Edited by  
Daniel Steudler and Abbas Rajabifard

Prepared by  
International Federation of Surveyors (FIG)  
Copenhagen, Denmark  
Global Spatial Data Infrastructure Association

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Netherlands Commission on GIS, Infrastructure for the Sea of the Future

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**17th UNRCC-AP, Bangkok, 2006**  
PCGIAP WG-3 reported that its future work plan would include the initiation and work on "Spatially Enabling Governments".

**PCGIAP, 2006**  
PCGIAP WG-3: Land Administration renamed to "Spatially Enabled Government".

**18th UNRCC-AP, Bangkok, 2009**  
recommended that PCGIAP undertake a study to understand, compare and determine the state of spatially enabled government and society.

**PCGIAP, 2009**  
PCGIAP WG-3 was renamed to "Spatially Enabled Government and Society"

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**FIG Task Force on "Spatially Enabled Society"**

established at FIG's 2009 General Assembly with Dr. Daniel Steudler (Switzerland) as Chair

- to explore the issue of Spatially Enabled Society (SES);
- to identify the role of the profession in a spatially enabled society; and
- to make recommendations

"Place matters! Everything happens somewhere"  
Stig Enemark, FIG President, 2009  
9th UNRCC-A, New York, 2009

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**Trimble**

**Technology Convergence**

Angle & Distance Measurement: Theodolites, tapes, chains, EDM, Total Stations, 3D Scanning

Space & Inertial Measurement: Inertial Surveying, Transit, GPS, Multi-GNSS + Inertial

Photogrammetry & Remote Sensing: Photogrammetry, Airborne Scanning, High Resolution Remote Sensing

Peripheral Sensors: Barometers, Gravimeters, RFID, Automotive Sensors, Billions Devices/Sensors

Computation & Communications: Manual Computation, Digital Computation, Real Time Information

Integrated Mobile Mapping

**BIG (Geospatial) DATA**

(Peté Lage, Trimble, FIG-Abuja, 2013)

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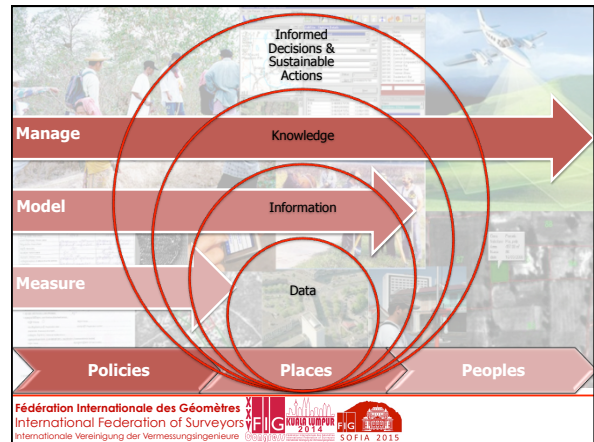
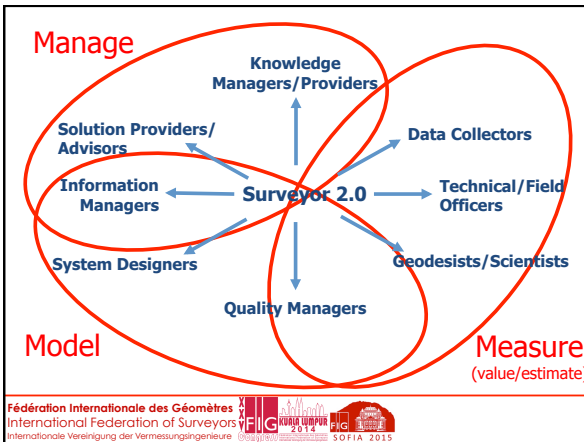
**Technology is Changing Rapidly**  
Coevolving with Other Enabling Technologies

Building the technology platform for land administration.....

(Brent Jones, ESRI, FIG-Montevideo, 2012)

Web Enabled Collaboration, Data Volume, Access, Connectivity, Social Networking, Wireless, Mobile, Security, Distributed, Computing, Performance, Visualization, Cloud, SaaS, Predictive, Real Time, Network, Science, Modeling, Analytics, Open Access, Usability, Multidimensional, Location, GIS, Mobile, Data Management, Analysis, Solutions

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### An Enabling Platform

- ✓ Spatial Information can be a unifying medium – **linking** solutions to location.
- ✓ User demand has shifted to seeking **improved** services and delivery tools. This will be achieved by creating an environment so that we can:

**Connect**  
systems, services, businesses, partnerships and link with other industries

**Locate**  
people, places, services, businesses and points of interest

**Deliver**  
quality services, standards, frameworks and what users want.

Abbas Rajabifard, 2012

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### Spatially Enabled Society

Six fundamental elements are required, namely –

- ✓ Legal framework to provide the institutional structure for data sharing, discovery, and access;
- ✓ Sound data integration concept to ensure multi sourced data integration and interoperability;
- ✓ Positioning infrastructure to enable and benefit from precise positioning possibilities;
- ✓ Spatial information infrastructure to facilitate data sharing, reduce duplication and link data producers, providers and value adders to data users

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### Spatially Enabled Society

- ✓ Land ownership (and custodianship) information as the dominant issue in the interactions between government, businesses and citizens; and
- ✓ data and information to respect certain basic principles and to increase the availability and interoperability

Without these six elements, the spatial enablement of a government or a society would seriously be held back in its progress.  
(FIG Publication No. 58: Spatially Enabled Society)

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Geospatial information has evolved from paper maps, to GIS, to 3D virtual models of the world, accessible to billions.

**Paper Maps**  
Large Scale  
Small Scale  
Map Makers  
Map Users

**GIS**  
Digital Maps coupled to a database  
GIS DC  
Map Users

**Virtual Worlds**  
Accurate 3D in the cloud  
Billions of Data Users

(Pete Lage, Trimble, FIG-Abuja, 2013)

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### Data Integration Concept

Functions	Institution, data owner	textual information	Data, & Information	Spatial information infrastructure
Function #1	Institution #1			
Function #2	Institution #2			
Function #3	Institution #3			
Function #4	Institution #4			
Function #5	Government #1			
Function #6	Government #2			
Function #7	National government State government Local government			

**Three pre-conditions:**

- legal resp. institutional independence
- common geodetic reference framework
- standardized data modelling concept

after Daniel Steudler & Jurg Kaufman, 2012  
FIG Publication No. 58: Spatially Enabled Society

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Spatially Enabled Society

Society can be regarded as spatially enabled when location and spatial information are commonly available to citizens, businesses and governments to encourage creativity, innovation and product development, evidence based decisions and informed actions. It promotes transparency and e-Democracy

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**Spatially Enabled Society**  
still a work-in-progress

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### FIG REPORT

#### Spatially Enabled Society

The main issue societies have to face and focus on is probably less about spatial data, but much more about “managing all information spatially”.

This is the new paradigm that still has to be explored, deliberated and understood in the context of a spatially enabled society.

Editor: Daniel Steudler and Abbas Rajabdar

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**UN-GGIM**  
UNITED NATIONS DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS  
GLOBAL GEOSPATIAL INFORMATION MANAGEMENT

“building effective geospatial infrastructures and promoting greater use of geospatial information are part of a new frontier in harnessing science and technology for advancing sustainable development”

*Mr. Wu Hongbo*  
Under-Secretary General,  
United Nations Department of Economic and Social Affairs,  
August 2012

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GLOBAL GEOSPATIAL INFORMATION MANAGEMENT


**Good Coordination starts with Good Coordinates**  
- Dave Doyle  
FIG Regional Conference, Costa Rica, 2007

“ recognized the importance of a global geodetic reference frame and the need to maintain national positioning infrastructure,

to work with all stakeholders to improve intergovernmental coordination for a sustained operational global geodetic reference frame and infrastructure.”

(UNCE GGIM, August 2012)

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Naciones Unidas E/C.20/2013/9

**Consejo Económico y Social**

Dato: general  
15 de mayo de 2013  
Español  
Original: inglés

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**Comité de Expertos sobre la Gestión Mundial de la Información Geoespacial**  
 Tercer período de sesiones  
 Cambridge (Reino Unido de Gran Bretaña e Irlanda del Norte)  
 24 a 26 de julio de 2013  
 Tema 9 del programa provisional  
 Vinculación de la información geoespacial con datos estadísticos y de otro tipo

**Vinculación de la información geoespacial con datos estadísticos y de otro tipo**

Nota de la Secretaría

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**UN-GGIM: AP WORKING GROUP 3**  
**Place-Based Information Management for Economic Growth**

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*Time, 2009*  
*Chalwet Subarassam, Reuters (2011)*  
*Norbert Lantschner, 2012*

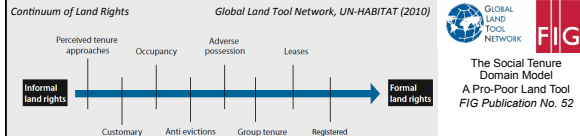
“climate change is becoming a risk multiplier for the poor and the vulnerable and a core development challenge for both developing and developed economies alike”

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“Land is a scarce resource involving a wide range of rights and responsibilities. When poorly managed, it can become contentious often leading to disputes, conflict, degradation and other problems, all of them drivers of slum development and poverty in urban areas.”

(UN-Habitat)



**Continuum of Land Rights** Global Land Tool Network, UN-HABITAT (2010)

Perceived tenure approaches: Informal land rights, Customary, Anti evictions, Group tenure, Registered, Formal land rights

Occupancy, Adverse possession, Leases

The Social Tenure Domain Model  
 A Pro-Poor Land Tool  
 FIG Publication No. 52

include rights that are documented as well as undocumented, from individuals and groups, from pastoralist and informal settlers, that are legal as well as extra-legal and informal

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**2013 LOUGH ERNE**


**Preamble**

1. As leaders of the G8, we are committed to open economies, open societies and open governments as the basis of lasting growth and stability. We have today agreed concrete steps to play our part in ensuring a safe and prosperous world.
2. We met at a time of continued economic uncertainty. Our urgent priority is to promote growth and jobs, particularly for the young and long-term unemployed. We will continue to nurture the global recovery by supporting demand, securing our public finances and reforming our economies to deliver growth.
3. Our economies together make up around half of the global economy, and we have a responsibility to support prosperity worldwide. We agreed actions in three specific areas:

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“Sound geospatial information is crucial for addressing the complex problems the world is facing today. These problems are global in nature and affect different regions, rural and urban areas alike, requiring coordinated efforts, more innovative and sophisticated approaches, as well as effective tools to ultimately guide our way to sustainable development”

Prof. Paul Cheung (UN Statistics Division & GGIM Secretariat), February 2012

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### High-level Panel ON the Post-2015 Development Agenda

The High Level Panel Report is of the view that “business-as-usual is not an option. We concluded that the post-2015 agenda is a universal agenda. It needs to be driven by five big transformative shifts”

**THE WORLD WE WANT**

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FIG KUALA LUMPUR 2014 SOFIA 2015

**THE WORLD WE WANT**

High-level Panel ON the Post-2015 Development Agenda

Question:  
Will spatially enabling society be the key that unlocks the wealth of existing knowledge about social, environmental and economic matters leading to sustainable development? and  
**Will GGIM be the intergovernmental mechanism for the geography needed for The World We Want?**

**UN-GGIM**  
United Nations Geospatial Information Management

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FIG KUALA LUMPUR 2014 SOFIA 2015

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Spatially enabled Government and Society, recognizing that all activities and events have a geographical and temporal context, make decisions and organize their affairs through the effective and efficient use of spatial data, information and services.

*Spatial enablement*, that is the ability to add location to almost all existing information, unlocks the wealth of existing knowledge about social, economic and environmental matters, and can play a vital role in understanding and addressing the many challenges that we face in an increasingly complex and interconnected world

UNRCC-PCGIAP Kuala Lumpur Declaration on Spatially Enabled Government and Society, 2012

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FIG KUALA LUMPUR 2014 SOFIA 2015

FIG Pacific Small Island Developing States Symposium  
Policies and Practices for Resilient Governance  
Fiji 18–20 September 2013

**XXV FIG KUALA LUMPUR 2014 Congress**  
Fédération Internationale des Géomètres  
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“Engaging the Challenge; Enhancing the Relevance”  
Kuala Lumpur, Malaysia, 16<sup>th</sup> – 21<sup>st</sup> June 2014  
[www.fig.net/fig2014](http://www.fig.net/fig2014)

**FIG SOFIA 2015**  
FIG Working Week 2015  
“From Wisdom of the Ages to Challenges of the Modern World”  
Sofia, Bulgaria, 17-21 May 2015  
[www.fig.net/fig2015](http://www.fig.net/fig2015)