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

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

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Spatially Enabled Society

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FIG REPORT

FIG PUBLICATION NO 58

Spatially Enabled Society

Editors
Daniel Steudler and Abbas Rajabifard

Supported by:

INTERNATIONAL FEDERATION OF SURVEYORS (FIG)

FIG PUBLICATION 58

This publication on "Spatially Enabled Society" is the culmination of a three-year effort by the FIG Task Force that was established by the General Assembly of the Federation in May 2009. The Task Force included representations from the Global Spatial Data Infrastructure Association and Working Group 3 of the United Nations sponsored Permanent Committee on GIS Infrastructure 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 Prof. Dr. Abbas Rajabifard, President of the GSDI Association.

The rapid development and increased demand for spatial information infrastructures in many jurisdictions these past many 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 wealth of existing knowledge about social, economic and environmental matters, play a vital role in understanding and addressing the many challenges that we face in an increasingly complex and interconnected world. Spatial enablement requires information to be collected, updated, analysed, represented, and communicated, together with information on land ownership and custodianship, in a consistent manner to underpin good governance of land and its natural resources, whole-of-government efficiency, public safety and security towards the well being of societies, the environment and economy.

The main issue societies have to focus on is probably less about spatial data, but much more about "managing all information spatially". This is a new paradigm that still has to be explored, deliberated and understood in the context of a spatially enabled society.

Prepared by

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

Supported by

Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra	Federal Office of Topography swisstopo, Wabern, Switzerland
CSDILA, The University of Melbourne	Centre for Spatial Data Infrastructure & Land Administration Department of Infrastructure Engineering, The University of Melbourne
	Permanent Committee on GIS Infrastructure for Asia & The Pacific

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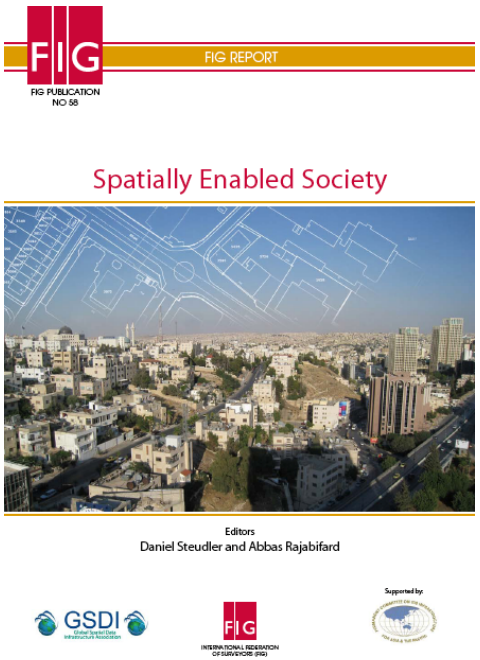


17th UNRCC-AP, Bangkok, 2006

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”.

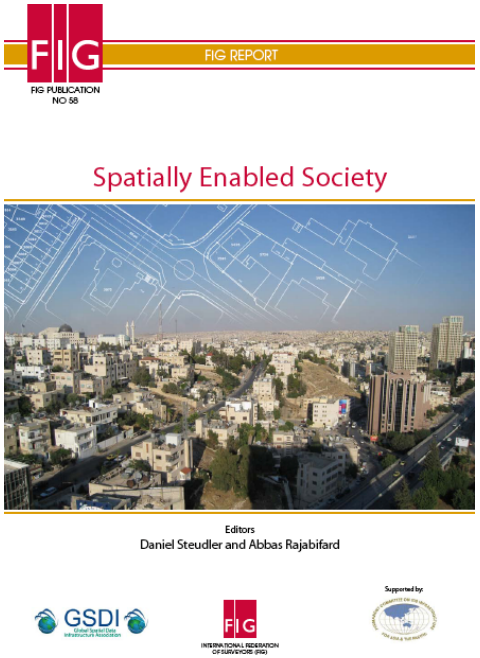
18th UNRCC-AP, Bangkok, 2009

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”

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

Technology Convergence

Trimble

Angle & Distance Measurement

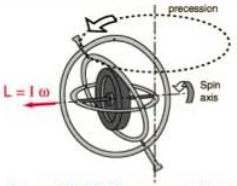

Theodolites, tapes, chains


EDM


Total Stations

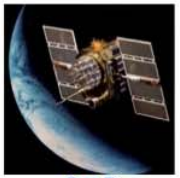

3D Scanning

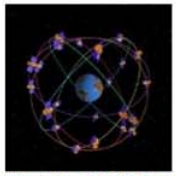
Space & Inertial Measurement



Inertial Surveying

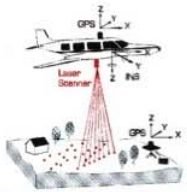

Transit


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

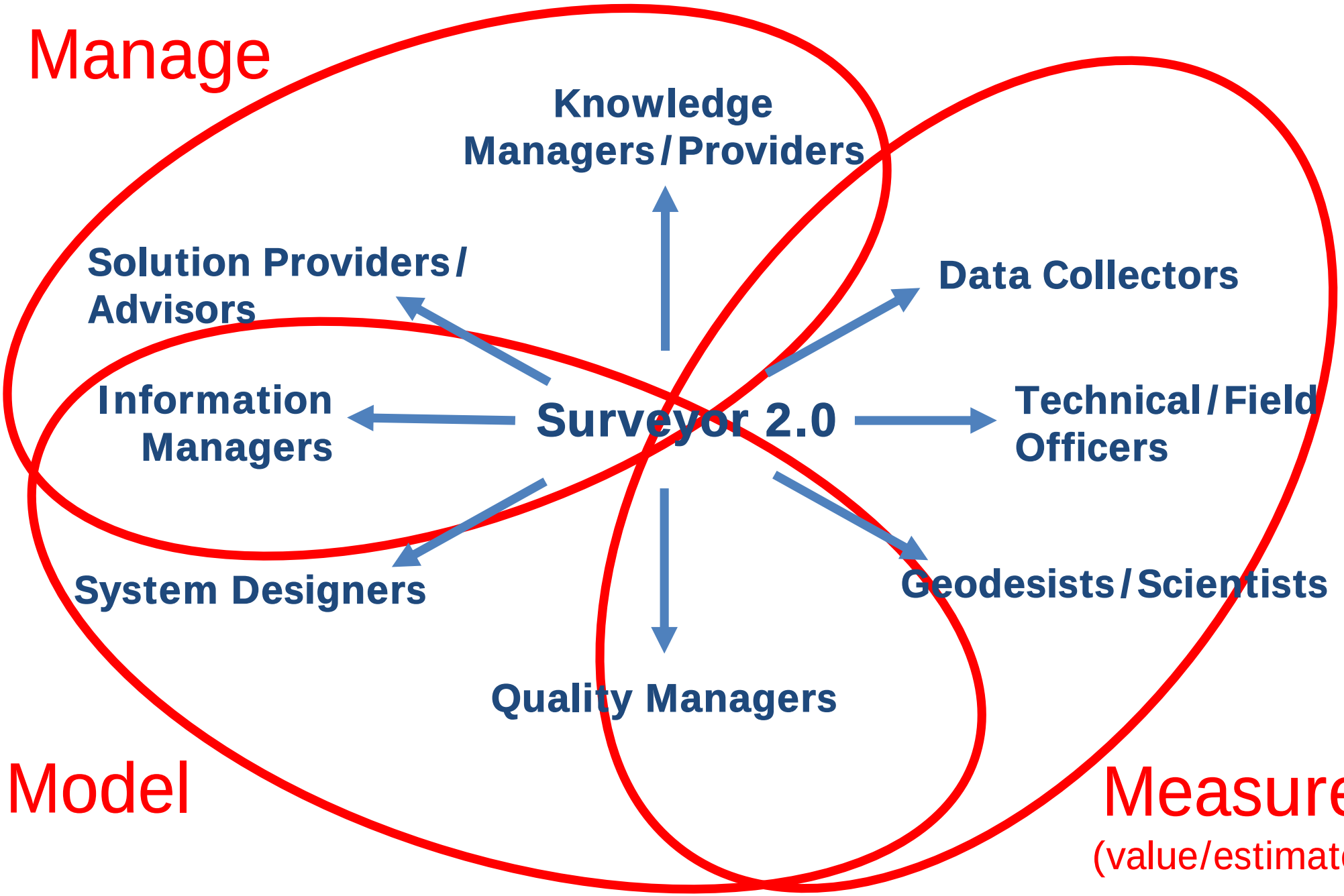
(Pete Lage, Trimble, FIG–Abuja, 2013)

Technology is Changing Rapidly

Coevolving with Other Enabling Technologies

Building the technology platform for land administration……

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


Manage
Knowledge Managers / Providers
Solution Providers / Advisors
Data Collectors
Information Managers
Surveyor 2.0
Technical / Field Officers
System Designers
Geodesists / Scientists
Quality Managers
Model
Measure
(value/estimate)


Informed Decisions & Sustainable Actions
Manage
Knowledge
Model
Information
Measure
Data
Policies
Places
Peoples

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:

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

quality services, standards, frameworks and what users want.

people, places, services, businesses and points of interest

Abbas Rajabifard, 2012

Spatially Enabled Society

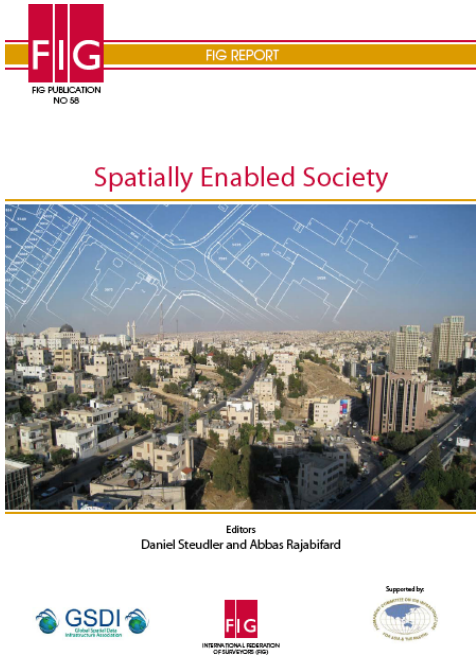
Six fundamental elements are required, namely –

✓ 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;

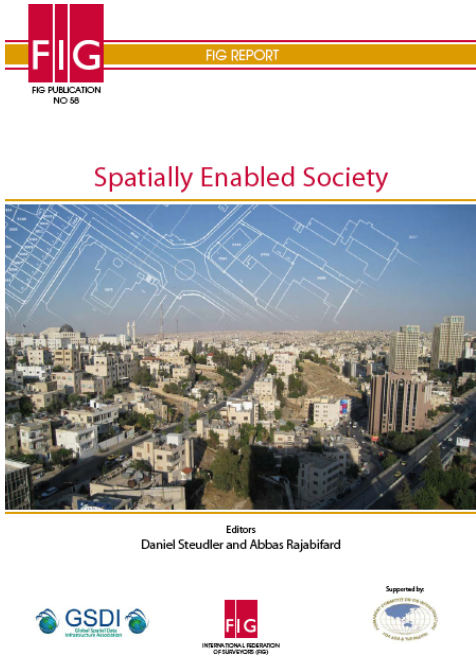
✓ Spatial information infrastructure to facilitate data sharing, reduce duplication and link data producers, providers and value adders to data users



Spatially Enabled Society

✓ Land ownership (and custodianship) information as the dominant issue in the interactions between government, businesses and citizens; and

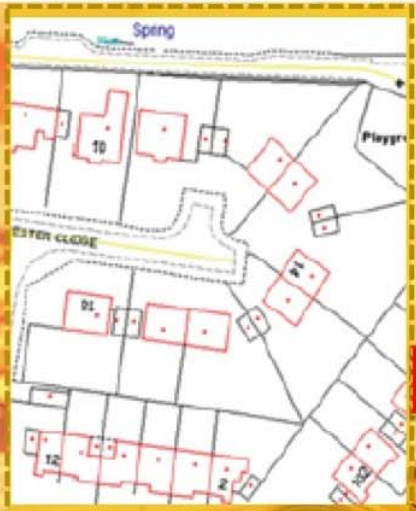
✓ data and information to respect certain basic principles and to increase the availability and interoperability



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)

Trimble

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

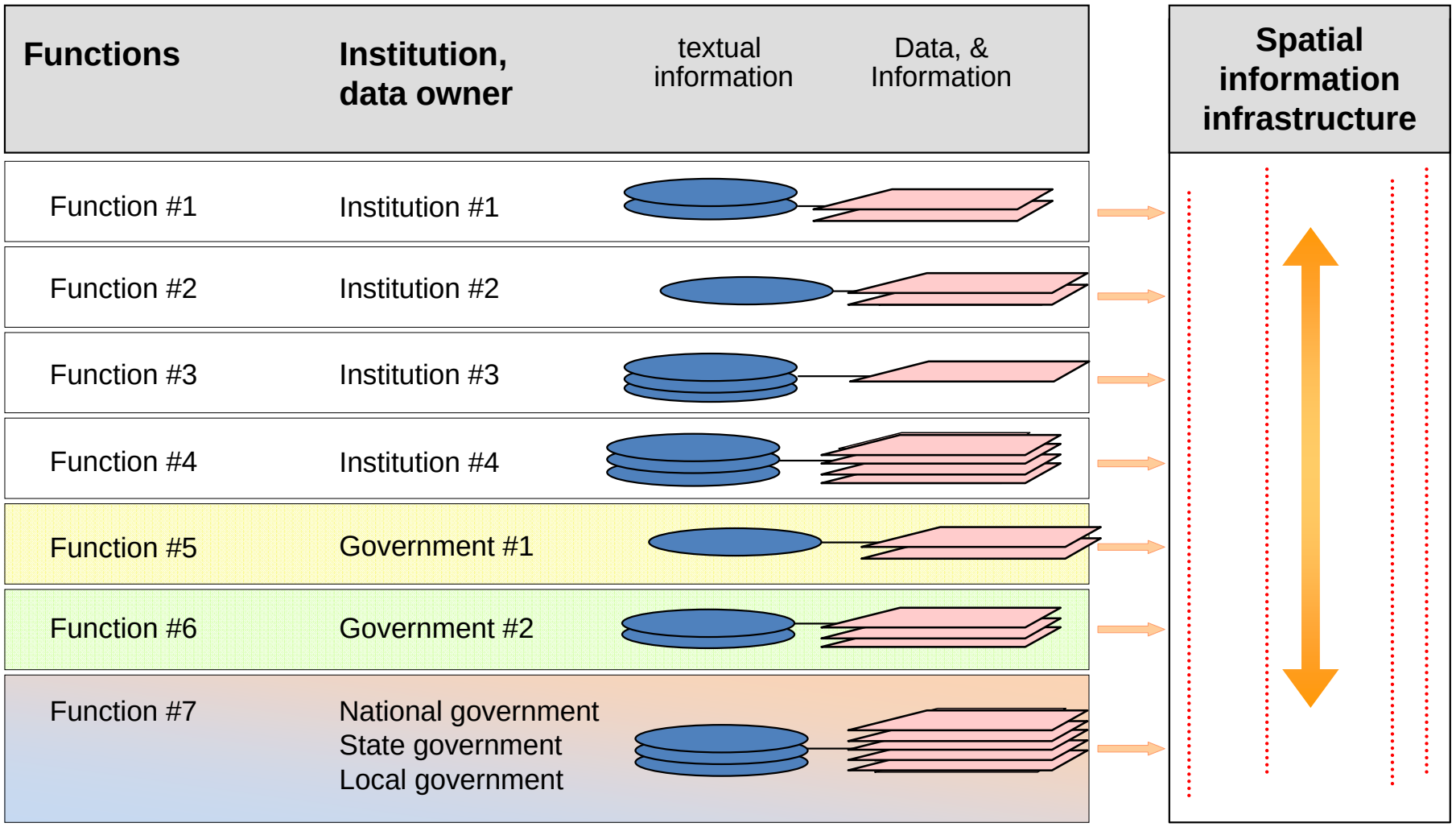
Virtual Worlds

Accurate 3D in the cloud

Billions of Data Users

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

Data Integration Concept

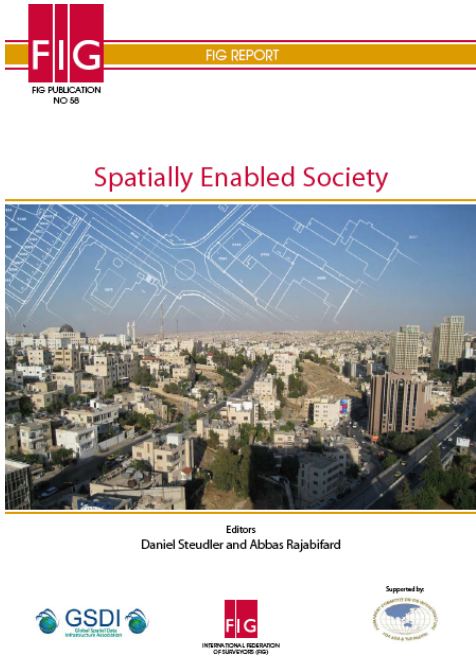


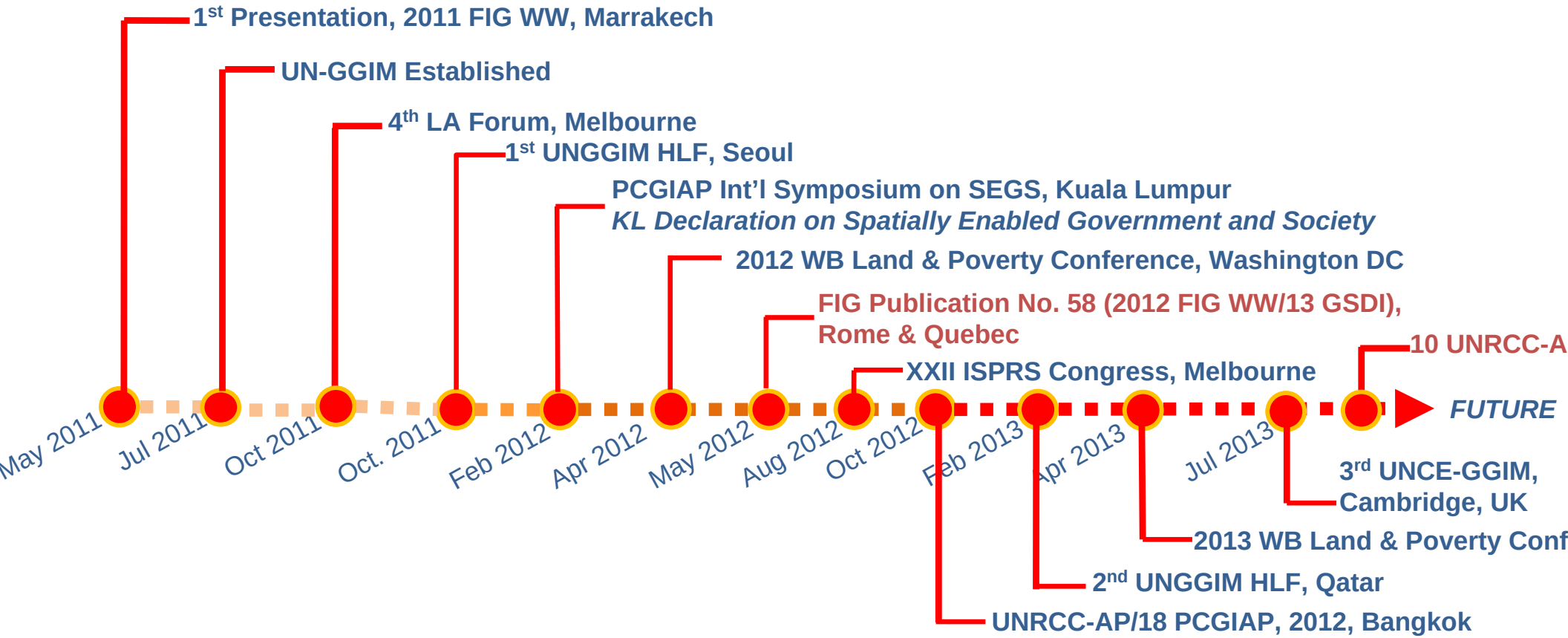
Three pre-conditions:

- *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

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





Spatially Enabled Society

still a work-in-progress

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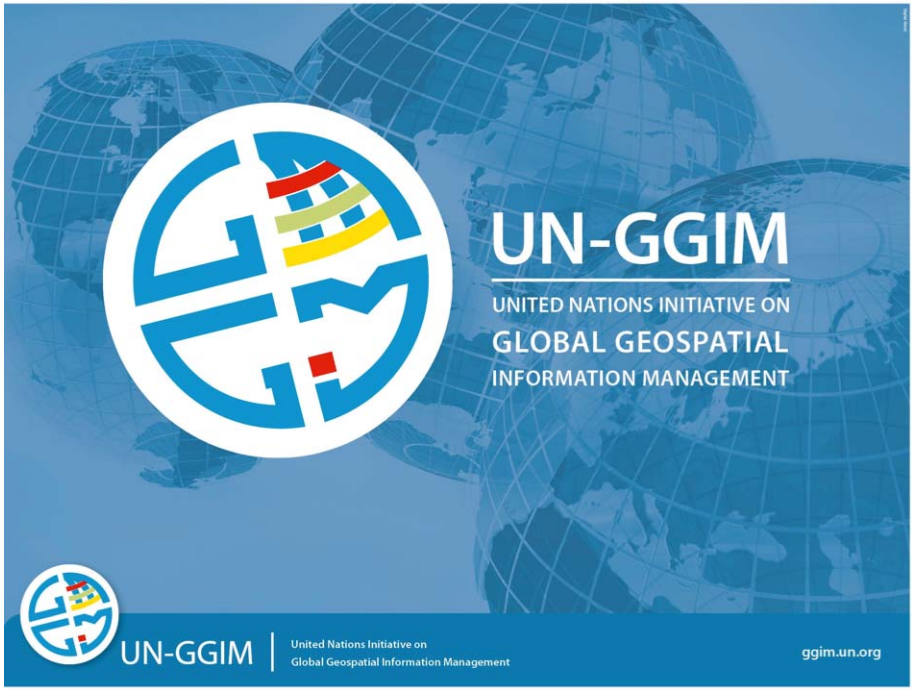
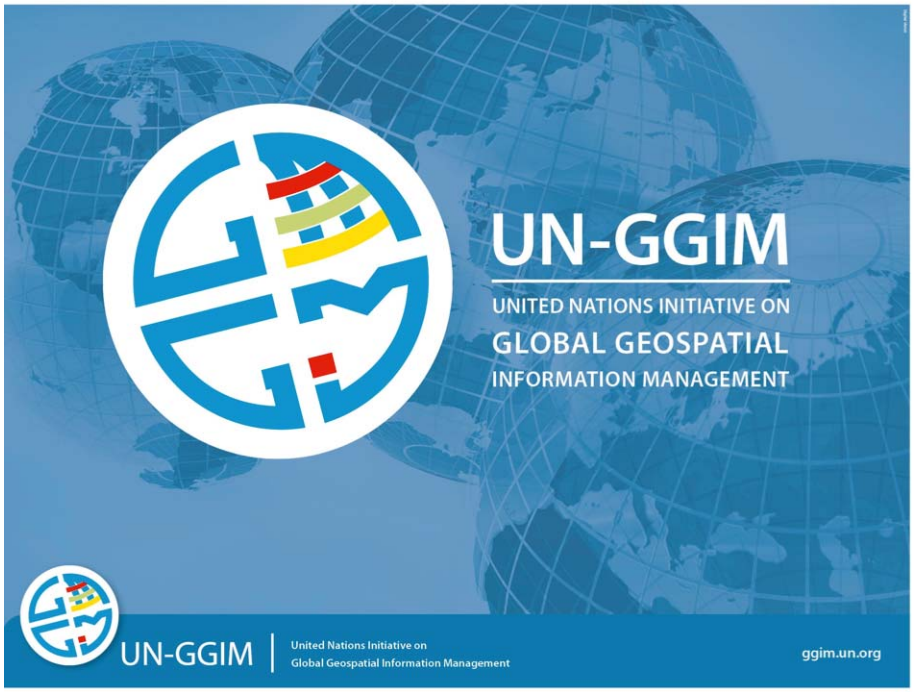
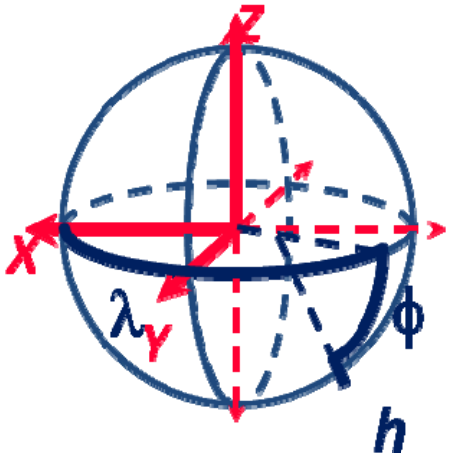
This is the new paradigm that still has to be explored, deliberated and understood in the context of a spatially enabled society.



"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





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)

Naciones Unidas E/C.20/2013/9

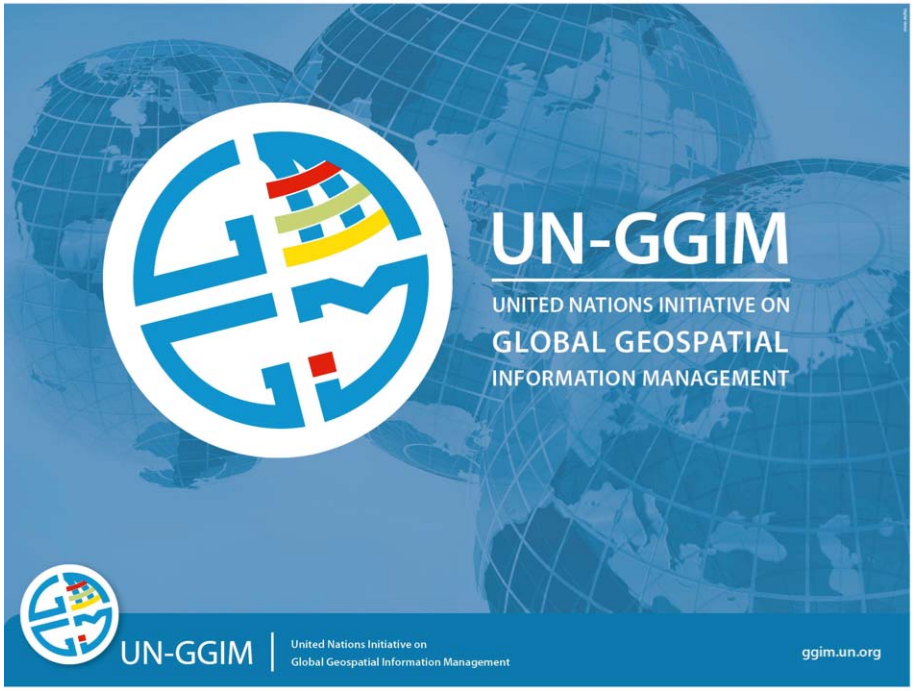
Consejo Económico y Social

Distr. general
15 de mayo de 2013
Español
Original: inglés

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



UN-GGIM-AP

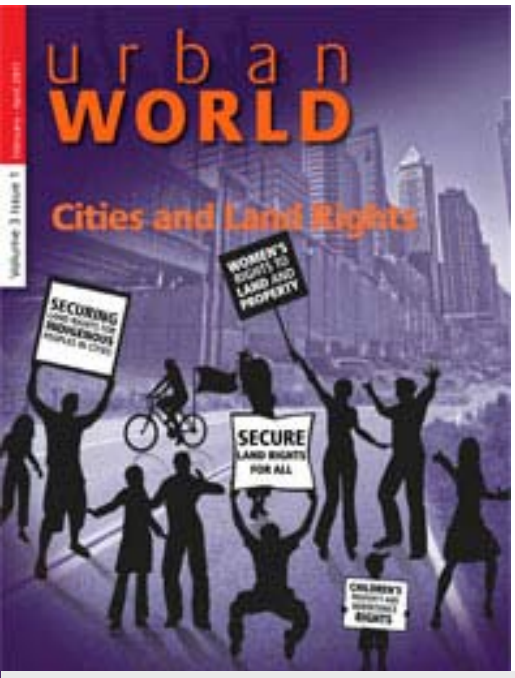
UN-GGIM: AP WORKING GROUP 3

Place-Based Information Management for Economic Growth

Time, 2009

Chaiwat Subprasom, Reuters (2011)

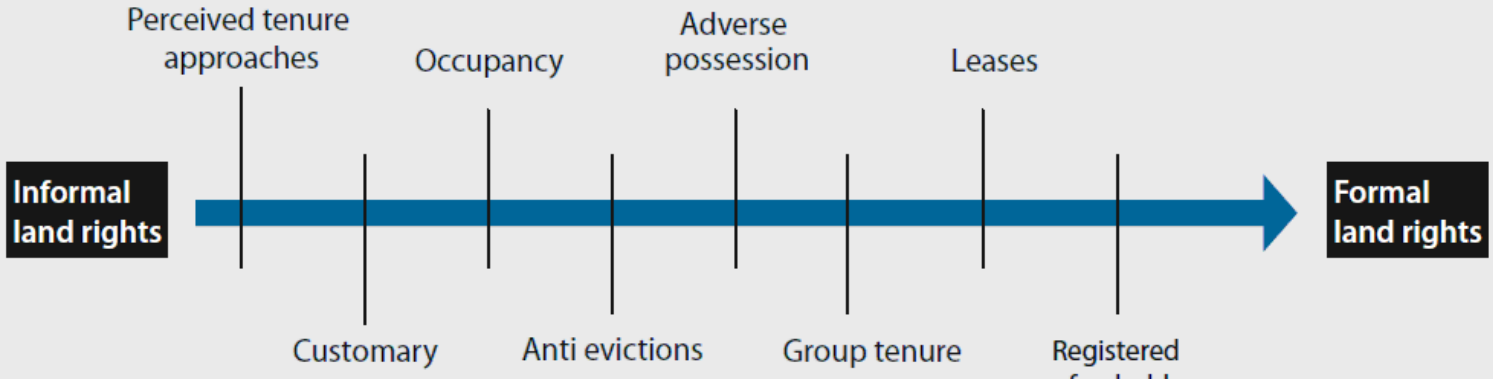
"climate change is becoming a risk multiplier for the poor and the vulnerable and a core development challenge for both developing and developed economies alike"



"Land is a scare 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)*



GLOBAL LAND TOOL NETWORK

FIG

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

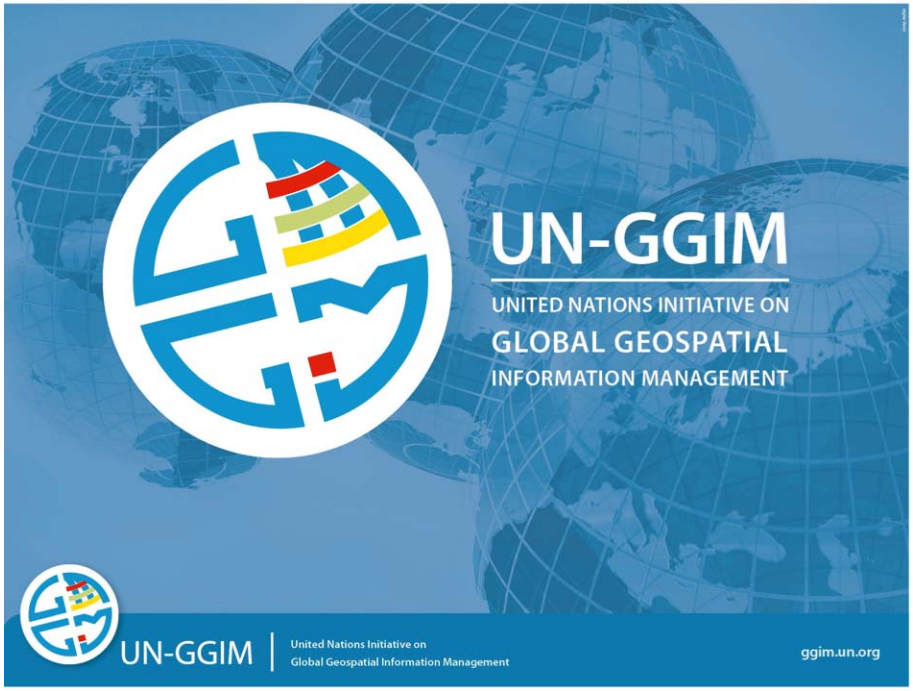
2013 LOUGH ERNE

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.

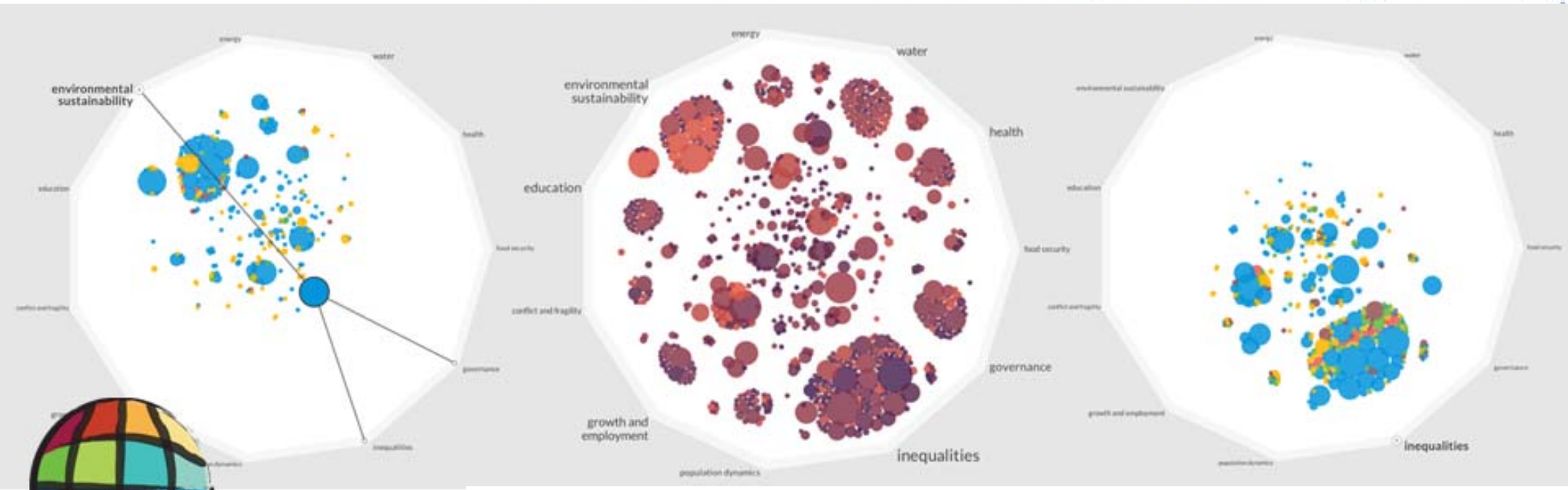
3. Our economies together make up around half of the global economy, and we have a responsibility to support prosperity worldwide. We agreed actions in three specific areas:



"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"

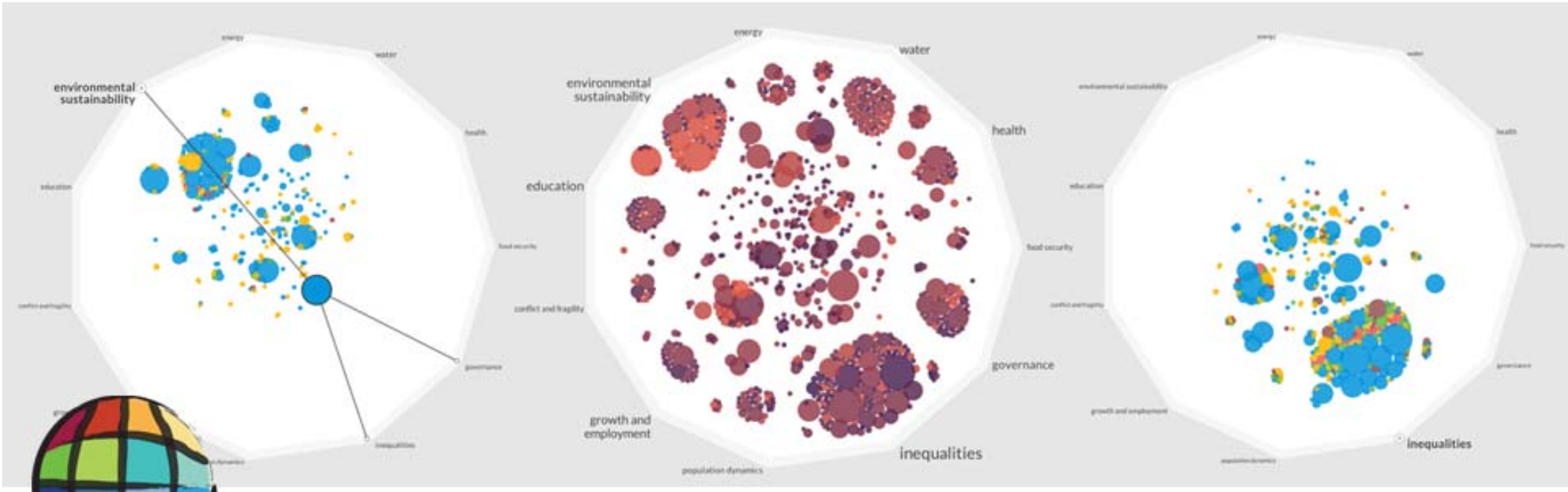
Prof. Paul Cheung (UN Statistics Division & GGIM Secretariat), February 2012

High-level Panel on the Post-2015 Development Agenda



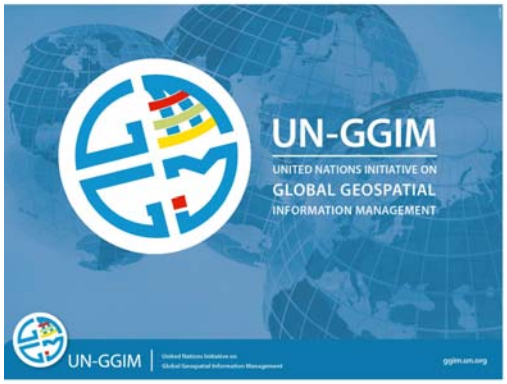
THE WORLD WE WANT

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

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?

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

XXV FIG Congress
KUALA LUMPUR 2014
Fédération Internationale des Géomètres
International Federation of Surveyors
Internationale Vereinigung der Vermessungsingenieure

"Engaging the Challenge; Enhancing the Relevance"

Kuala Lumpur, Malaysia, 16th – 21st June 2014

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