Geodäsie, quo vadis ?
Surveying: Where are we heading?

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Quo Vadis – the big swing...

• From Measurement to Management
  - From land surveying to land management.
• From Cadastre to Land Governance
  - From security of tenure to governance of the people to land relationship
• From Local to Global
  - Surveyors have a key role to play in contributing to the global agenda

Current Policies

Is the role of the Surveyors changing?

Yes!

From land surveying to land management

Policies - the big swing

• From Measurement
  Surveyors will still be high level experts within measurement science, but due to technology development the role is changing into managing the measurements
• To Management
  Surveyors will increasingly contribute to building sustainable societies as experts in managing land and properties

The Land Professionals

Positioning infrastructures
Versus traditional Geodetic Datum

• Enables description of position as latitude, longitude and height and underpins all geo-spatial data;
• Characteristics:
  - Coverage - initially local but has evolved to national and continental;
  - Measurement - initially ground based, labor intensive, now more efficient using GNSS;
  - Data management - initially very analogue but now a key part and often integrated in Spatial data Infrastructures (SDI)

Positioning infrastructures are the only truly global infrastructure underscoring capture and management of spatial data world wide

Source: Matt Higgins, Washington, 2009

Land Governance

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Quo Vadis – the big swing...

The FIG Agenda...

- 1996 FIG Statement on the Cadastre Concepts and standards
- 1996 Bogor Declaration FIG/UN initiative on the role of cadastral infrastructures
- 1998 Cadastre 2014 A FIG vision in six statements for future cadastral systems
- 1999 Bathurst Declaration FIG/UN initiative on land administration in support of sustainable development

Cadastral Systems

1996

The concept of the multipurpose cadastre

Land Registration Systems around the World

Deeds System (French/Latin/USA style): A register of owners; the transaction is recorded – not the title.
Title System (German, Torrens/English style): A register of properties; the title is recorded and guaranteed.

LAS provide the infrastructure for implementation of land policies and land management strategies in support of sustainable development.

- Land Tenure: the allocation and security of rights in lands; through survey of landcadaster, the transfer of property through sale or lease, surveying, and cadastral management, valuation of property, security of rights, and transactions.
- Land Development: the building of infrastructure through planning and permits; the implementation of development plans and the management of land-use conflicts.
- Land Use: the control and planning of land-use through adoption of planning policies and land-use regulations, or various plans; the enforcement of land-use regulations; and the management and adjudication of land-use conflicts.
- Land Registration Systems around the World: Deeds System (French/Latin/USA style): A register of owners; the transaction is recorded – not the title.
  - Title System (German, Torrens/English style): A register of properties; the title is recorded and guaranteed.

- Sustainable Development
- Economic, social, and environmental

Williamson, Enemark, Wallace, Rajabifard, 2010

TABLE 5.1 - TRANSITIONAL BENEFITS BY LAS

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- Sustainable Development
- Economic, social, and environmental

Williamson, Enemark, Wallace, Rajabifard, 2010
“Civilised living in market Economies is not simply due
to greater prosperity but to the order that formalised
property rights bring”
Hernando de Soto – 1993

Formal land rights can be recorded
in traditional cadastral systems

Informal rights cannot be recorded
in traditional cadastral systems

Limitations of Formal Cadastral Systems

- More than 70 per cent of the land in many developing
countries are outside the formal systems of land
registration and administration

- This relates especially to informal settlements and areas
governed by customary tenure

- Traditional cadastral systems
do not provide for security of
tenure in these areas.

The Social Tenure Domain Model: Closing the Gap

Modeling the relation between Parties – Spatial unit – Social Tenure

Parties (“who”): Not only a (legal) person – but a range of subjects such as
person, couple, groups of people, unidentified groups, authority, etc,

Spatial Unit (“where”): Not only an identified (measured) parcel – but a range of
objects such land parcels, buildings, etc and identified in various ways – such
as one point, street axes, photos, etc.

Social tenure (“what”): Not only ownership and formal legal rights – but also
range of informal, indigenous and customary rights as well as financial issues
such as group loans and micro credit.

The FIG Agenda...

- 2005 Aguascalientes Statement on development of
  land information policies in the Americas.
  Joint FIG/UN initiative

- 2006 FIG Contribution to Disaster Risk Management.

- 2008 Costa Rica Declaration on pro-poor CZM

- 2010 Land Governance in support of the
  MDGs, FIGWB initiative.

- 2010 Land Governance

The FIG Agenda from Cadastre to Land Governance

- Holding of rights to land
- Economic aspects of land use and development
- Control of land use and land development

Administering the people to land relationship through

- Land Policy
- Land Management
- Good Governance
- Building the capacity to deal with this

Land governance

Land governance is about the policies, processes and institutions by which land,
property and natural resources are managed.

This includes decisions on access to land;
land rights; land use; and land development.

Land governance is about determining and implementing sustainable land policies.
Understanding the Land Management Paradigm

Land Management includes all activities associated with the management of land and natural resources that are required to fulfill political objectives and achieve sustainable development.

Spatially enabled land administration

Land tenure, Land value, Land Use, Land Development

Spatially Enabled Government

A spatially enabled government organizes its business and processes around “place” based technologies, as distinct from using maps, visuals, and web-enablement.

The technical core of Spatially Enabling Government is the spatially enabled cadastre.

Significance of the Cadastre

The role of FIG

FIG intend to play a strong role in building the capacity to design, build and manage Land Governance systems in response to Climate Change and in support of the Millennium Development Goals.

“Building the capacity for taking the land policy agenda forward in a partnership with the UN agencies and the World Bank”

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Do Surveyors have a role to play in the global agenda?  
Yes!

Simply, no development will take place without having a spatial dimension  
And no development will happen without the footprint of the surveyor.

The Global Agenda  
The Millennium Development Goals

Goal 1: Eradicate extreme poverty and hunger
Goal 2: Achieve universal primary education
Goal 3: Promote gender equality and empower women
Goal 4: Reduce child mortality
Goal 5: Improve maternal health
Goal 6: Combat HIV/AIDS, malaria and other diseases
Goal 7: Ensure environmental sustainability
Goal 8: Develop a Global Partnership for Development

The framework includes 18 targets and 48 indicators enabling the ongoing monitoring of annual progress.

People, human rights, engagement and dignity
Politics, land policies and good governance
Places, shelter, land rights, and natural resources
Power, decentralisation and empowerment

Facing the new challenges

- Climate change
- Food shortage
- Energy scarcity
- Urban growth
- Environmental degradation
- Natural disasters
- Global financial crisis

All these challenges relate to governance and management of land
The surveyors – the land professionals - play a key role

Global partnership drives development for achieving the MDGs

Global recognition, national recognition, local recognition
The most important environmental concern now is climate change. The authoritative Stern Report on the economics of climate change concludes that it will affect the basic elements of life for people around the world - access to water, food production, health and the environment. (Planning Sustainable Cities: Global Report on Human Settlement 2009 (UN-Habitat)

No matter the inequity between the developed and developing world in terms of emissions and climate consequences, there is a need to develop relevant means of adaptation to climate change both in the rich and the poorer countries.

Sustainable Land Administration Systems should serve as a basis for climate change mitigation and adaptation as well as prevention and management of natural disasters.

- Incorporating climate change into current land policies
- Adopting standards for energy use, emissions, carbon stock potential,
- Identifying prone areas (sea level rise, drought, flooding, fires,...)
- Controlling access to and use of land in relation to climate change and disaster risks
- Controlling building standards and emissions in relation to climate change
- Improving resilience of existing ecosystems vulnerable to climate change

Rapid Urbanisation

<table>
<thead>
<tr>
<th>Year</th>
<th>1950</th>
<th>1975</th>
<th>2007</th>
<th>2025</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Urban Population (million)</td>
<td>737</td>
<td>1,318</td>
<td>3,294</td>
<td>4,584</td>
<td>6,398</td>
</tr>
<tr>
<td>Percentage</td>
<td>29.1%</td>
<td>37.3%</td>
<td>49.4%</td>
<td>57.2%</td>
<td>69.6%</td>
</tr>
<tr>
<td>More Developed Region (million)</td>
<td>427</td>
<td>702</td>
<td>916</td>
<td>995</td>
<td>1,071</td>
</tr>
<tr>
<td>Less Developed Region (million)</td>
<td>310</td>
<td>817</td>
<td>2,382</td>
<td>3,590</td>
<td>5,327</td>
</tr>
</tbody>
</table>

Close to 1 billion people, or 32 per cent of the world’s current urban population, live in slums in vulnerable and the-threatening conditions, and are directly affected by both environmental disasters and social crises, whose frequency and impacts have increased significantly during the last few decades. (UN-Habitat 2009)
The role of the land professionals

Dealing with the land issue will require skills in the following areas:

- High level geodesy models to predict future change
- Modern surveying and mapping tools to support management and implementation
- Spatial data infrastructures to support decision making on the natural and built environment
- Secure tenure systems and sustainable systems for land valuation, land use management and land development
- Systems for transparency and good governance

Land governance is an interdisciplinary and cross-cutting area mixing technical, natural and social science.

The Educational Profile of the Future

The only constant is change...

Lifelong Learning

The status as professional expert cannot be achieved only through university graduation and it cannot be achieved solely through professional practice.

The idea of "learning for life" is replaced by the concept of lifelong learning.

All graduates must have access to the newest knowledge throughout their professional life.

E-Learning and innovative interaction between education, research and professional practice is essential in this regard.

The Agenda

Flying High
- Global partnership with the UN-agencies incl. the World Bank in support of the global agenda such as the MDGs

Keeping the feet on the ground
- Professional and institutional development at regional, national, and local level in support of the needs of our member associations and individual surveyors.

Key Message

The linkage between climate change adaptation and sustainable development should be self evident but is not well understood by the public in general.

Land Professionals are custodians of an enabling technology and should take a leading role in explaining this linkage to the wider public.

This should also ensure that the land management perspective attracts high-level political support and recognition.
Thank you for your attention