Spatially enabled society

Ian Williamson
Abbas Rajabifard
Peter Holland

Centre for SDIs and Land Administration
Department of Geomatics
The University of Melbourne

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OVERVIEW

- What is spatially enabled society(SES) and spatially enabled government (SEG)?
- Broad challenges for government and industry
- International trends
- The role of property in SES
- Research in SES

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Spatially enabled society (SES)

- An evolving concept where **location**, **place** and other spatial information are available to governments, citizens and businesses as a means of organising their activities and information
- Simply, SES is about ***managing information spatially, not managing spatial information***
- Transparent or ubiquitous use of place and location (use of spatial information)

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Spatial information

or place

or location?

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Spatially enabled government (SEG)

- Same principle as SES but applied to management and delivery of government services - part of e-government initiatives
- Requires a "whole of government" approach
- Applies to all levels of government. Local, county, state or provincial and federal (where countries are federations of states)
- Particular challenges where large scale parcel level data is managed at either local, county or state level

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What is SES and SEG?

- *Location* or *place* is used
  - initially to organise government spatial information
  - then to re-engineer government processes to deliver better policy outcomes by using location to reorganise other information

- *Place* is used in a transparent or ubiquitous manner. The vast majority of users do not know they are "spatially enabled" – and don't care!

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Popular uses of spatial information

- Ubiquitous mobile phone
- Displaying imagery and maps
- Showing properties via internet
- Tracking assets and inventory
- In car navigation systems
- Many GIS applications for emergency response, environmental management, planning and local government

SES reality

- Remarkable as these applications are, spatial technology can be used in much more dynamic ways.
- Spatial enablement is not just about using geographic information systems (GIS) technologies.
- Spatial enablement accelerates when countries capitalise on the power that is generated from land information within their LAS and related systems such as street addresses

FIG Congress 2010
Facing the Challenges – Building the Capacity
Sydney, Australia, 11-16 April 2010   4

The bottom line

Spatial enablement is ultimately a transformational technology to assist efficient organisation of government and its administrative systems in support of society – unfortunately this is used little if at all in the majority of countries.

Why is spatial special politically?

Electors want better services, to be more prosperous and better quality of life in their local community (all politics is local).

Spatial information allows better decisions earlier and this provides a political advantage
– Health services
– Transport
– Education
– Environment

The Hon Gary Nairn, former Australian Government Federal Minister

Why is spatial special politically?

- Transparent government – e-democracy through e-government and whole-of-government strategies
- More effective, equitable and transparent use of government resources (income and expenditure)
  - Land information for the Reserve Bank (Sub-prime mortgage crisis)
  - Social welfare fraud (Pharmaceutical Benefits Scheme)
  - Taxation across the board eg CGT
  - Marketing complex commodities (water, carbon, biota)
  - Insurance
  - Crime prevention
  - Bushfire prevention and mitigation
  - Medicare fraud

The Hon Gary Nairn, former Australian Government Federal Minister

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SES – fact or fiction?

- Current initiatives in countries worldwide, with literally hundreds of initiatives in Australia at all levels of government
- The Google phenomena
- A national cadastre for the USA – 2008 and the global economic collapse (see paper FIG 2010)
- UN resolution on SEG for member states in Asia and the Pacific – 2007
- GSDI Singapore 2010 – "Realising spatially enabled societies"
- SEG and SES conferences worldwide
- and much more ……………………

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Asia and the Pacific

17th United Nations RCC-AP, Bangkok, 18-22 September 2006

United Nations Statistics Division

Resolution:
SDI to support spatially enabled government

Recommendation *Member Nations develop a better understanding and pursue the principles of designing SDIs to support spatially enabled government.*

The potential of SES

especially with the growth of large scale people relevant spatial data

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Need to understand SES issues

- Need for a national SES vision
- A champion and leadership essential, either at a ministerial level or from influential large government department
- Importance of LAS, land parcel and street address information at a national level
- The role of SDI in promoting SES
- How SES promotes sustainable development

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The key to SES is the property base - or for the initiated - "the cadastre"

The property base connects people to land

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The cadastral concept

The traditional view of the cadastre (buying, selling, leasing and mortgaging interests in land).

The new approach makes the cadastre central to spatially enabling government

The Cadastral Concept

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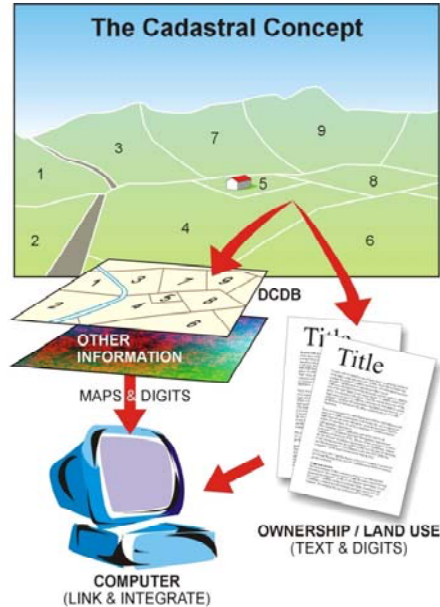
Spatially enabling LAS

Land administration (and particularly the core cadastre) generates information about places (parcels, street address)

SDIs organise spatial information.

Together they provide information about unique places people create (built) and use (natural).

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A holistic approach
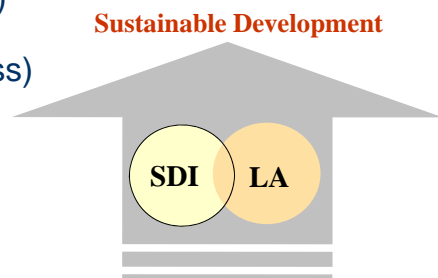
*A holistic approach
is to integrate cadastre, land
administration and SDI*

*The cadastre is the core of large
scale SDIs*

The significance of properties
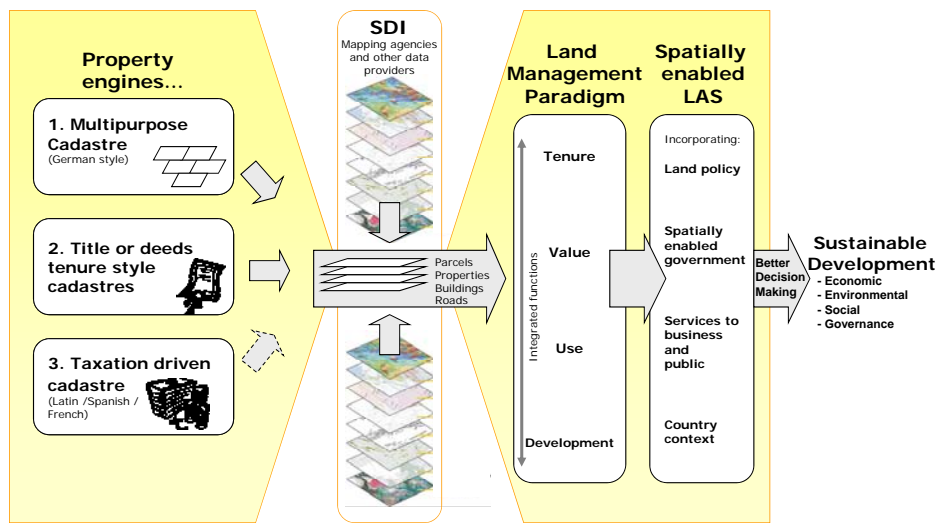
Example of SEG - *the big one*!

- Would a world's best practice spatially enabled LAS in the USA have lessened the impact of the global economic collapse?
- How can spatial enablement, particularly related to LAS, contribute to ensuring this does not happen again?
- See paper by Buhler and Cowen "The United States Mortgage Crisis and Cadastral Data" at this FIG 2010

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Thanks to Donald BUHLER and David COWEN, FIG 2010

Michael Howell, Deputy Administrator of the Office of Management and Budget (OMB) and Co-Chair of the Federal Geographic Data Committee (FGDC) Steering Committee, stated during his welcoming statement at the Mortgage Crisis Stakeholders Meeting in May, 2009:

"This meeting is very timely, we are working across governments and with multiple stakeholders to develop effective responses to deal with the distressed housing and mortgage markets. We need to be open to innovative and creative ways to address this complex set of problems and take advantage of new tools and capabilities to develop effective responses. Parcel data is an excellent case in point. I think you will see from some of the examples today the powerful capabilities that land parcel data can provide when combined with other data sets and analytical tools and technology" (FGDC Cadastral Subcommittee, 2009)

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Karen Siderelis, chair of the FGDC stated in the introduction to the 2009 FGDC Annual Report:

"Land parcel data combined with other geographic information are essential to such functions as the management of emergency situations, development of domestic energy resources, management of private and public lands, support of business activities, and monitoring of regulatory compliance. The feature story of this year's report underscores the need for a coordinated system of land parcel information across the country." (FGDC, 2009)

Donald BUHLER and David COWEN, FIG 2010

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Centre for SDI and Land Administration, University of Melbourne, Australia

csdila.unimelb.edu.au

Research Focus

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The project aim:

"To use an engineering approach to design, build and manage a new infrastructure for integrating disparate, state based land information and administration processes to meet national needs"

The project is driven by a number of national priorities

- Managing the economy
  - Macro-economy and interest rates
  - Capital gains tax

- Managing the built and natural environment
  - Strategic planning of Australia's capital cities
  - Providing drought relief

- Managing the activities of people
  - Crime - including terrorism and drug syndicates
  - Emergency management and warning systems

...there are more

Some specific examples…

- **Coastal Zone Management**
  - *"Climate Change Risks to Australia's Coasts" (DCC, 2009)*
  - *"Managing our coastal zone in a changing climate" (SCCCWEA, 2009)*

- **Urban Planning in Capital Cities**
  - *"COAG Communique 2009" (COAG, 2009)*

- **Property Market Management**
  - *"The Market for Retail Leases in Australia" (Productivity Commission, 2008)*

- **Harmzonized Governance**
  - *"Harmonization of legal systems within Australia and between Australia and New Zealand" (SCLCA, 2006)*
  - *"Reforming our constitution: A roundtable discussion" (SCLCA, 2008)1*

A National Infrastructure for Managing Land information

NIMLI

Problem

Land information is largely generated and managed by Australia's states. Increasingly, we need this state information to be aggregated nationally to attend to priorities such as administering property markets, enabling fair taxation, managing the natural environment, and responding to national disasters.

Aim

The project aims to use an engineering approach to design, build and manage a new infrastructure for integrating disparate, state based land information and administration processes to meet national needs. Four components will be studied.

- Policy framework
- Legal framework
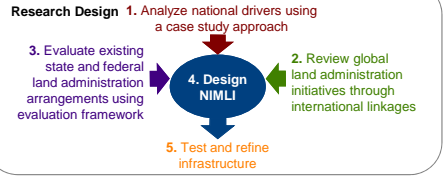- Institutional framework
- Technical framework

Research Design
1. Analyze national drivers using a case study approach
2. Review global land administration initiatives through international linkages
3. Evaluate existing state and federal land administration arrangements using evaluation framework
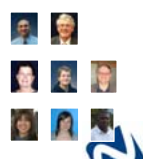4. Design NIMLI
5. Test and refine infrastructure

Project Partners

The project brings together some of Australia's leading land and spatial information agencies.

Australian Government
Australian Research Co

Landgate

New South Wales Government
Land and Property Management Authority

Victoria
The Place To Be
Department of Sustainability and Environment

PSMA
AUSTRALIA
LIMITED

Research Team

Chief Investigations : Abbas Rajabifard and Ian Williamson

Researchers : Jude Wallace, Rohan Bennett, Brian Marwick

Postgraduate Scholars : Nilofer Tambuwala, Katie Potts, Muyiwa Agunbiade

web: http://blogs.unimelb.edu.au/nimli email: rohanb@unimelb.edu.au

International implementation of SES

- *Authoritative registers* (properties, addresses, people, businesses) especially a high integrity geocoded national address file (GNAF)
- New *cadastral data, tenure* and *land administration domain models*
- Land information becomes a national *commodity* and supports a wider spatial information market place
- Acceptance of the concept of *SEG* and role of *place* as part of whole-of-government *e-strategy*
- Complete up-to-date *property layer* is fundamental to NSDI
- Mapping/GI and LA/cadastral organisations operate as *one*
- SEG facilitates *private sector* and wider society
- *R&D, education and capacity building*

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Every country has its own journey

But most countries have four key challenges

- Understanding and capitalising on the concept of *place and location* ("Building the capacity")
- *Spatially enabling* key national registers (and making land information a national commodity)
- *Integration* natural (topographic) and built (property or cadastral) data
- Building the *infrastructure* to facilitate spatially enabled government and society

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