



Spatially Enabling Government – An International Challenge

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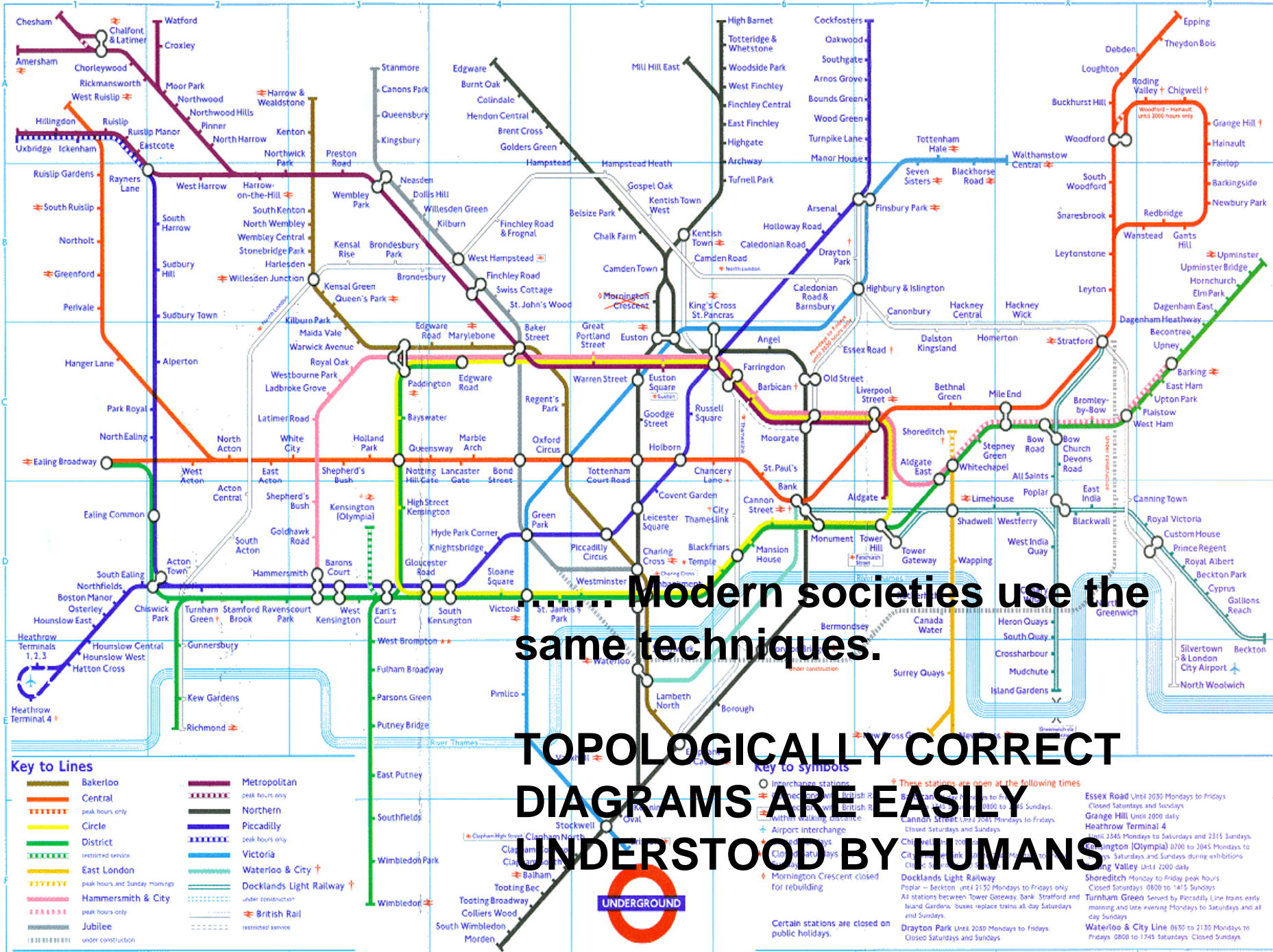


We all think spatially

Spatial concepts map directly on to the brain's cortex as topologically correct mappings.

Hunter-gatherer societies use topologically correct mappings to communicate spatial information.

Australian Aboriginal Water Dreaming. The rain (*ngapa*) story The straight lines represent the *ngawarra* (flood waters) running through the landscape. The small bar shapes signify *mangkurdu* (clouds). The small circles are *mulju* (water soakages).



..... Modern societies use the same techniques.

TOPOLOGICALLY CORRECT DIAGRAMS ARE EASILY UNDERSTOOD BY HUMANS

Key to Lines

	Bakerloo		Metropolitan peak hours only
	Central peak hours only		Northern
	Circle peak hours only		Piccadilly peak hours only
	District restricted service		Victoria
	East London peak hours and Sunday mornings		Waterloo & City ↑
	Hammersmith & City peak hours only		Docklands Light Railway ↑
	Jubilee		British Rail restricted service
	under construction		

Key to symbols

	Interchange stations		These stations are open at the following times
	British Rail		Essex Road Until 2030 Mondays to Fridays Closed Saturdays and Sundays
	Within walking distance		Grange Hill Until 2000 daily
	Airport Interchange		Heathrow Terminal 4 Until 2345 Mondays to Saturdays and 2315 Sundays
	Under construction		Kingston (Olympia) 0700 to 2045 Mondays to Saturdays and Sundays during exhibitions
	Mornington Crescent closed for rebuilding		North Woolwich Until 2000 daily
	Under construction		Shoreditch Monday to Friday peak hours Closed Saturdays to 1415 Sundays
	Under construction		Turham Green Served by Piccadilly Line trains early morning and late evening Mondays to Saturdays and all day Sundays
	Under construction		Waterloo & City Line 0630 to 2130 Mondays to Fridays 0800 to 1745 Saturdays Closed Sundays

Certain stations are closed on public holidays.

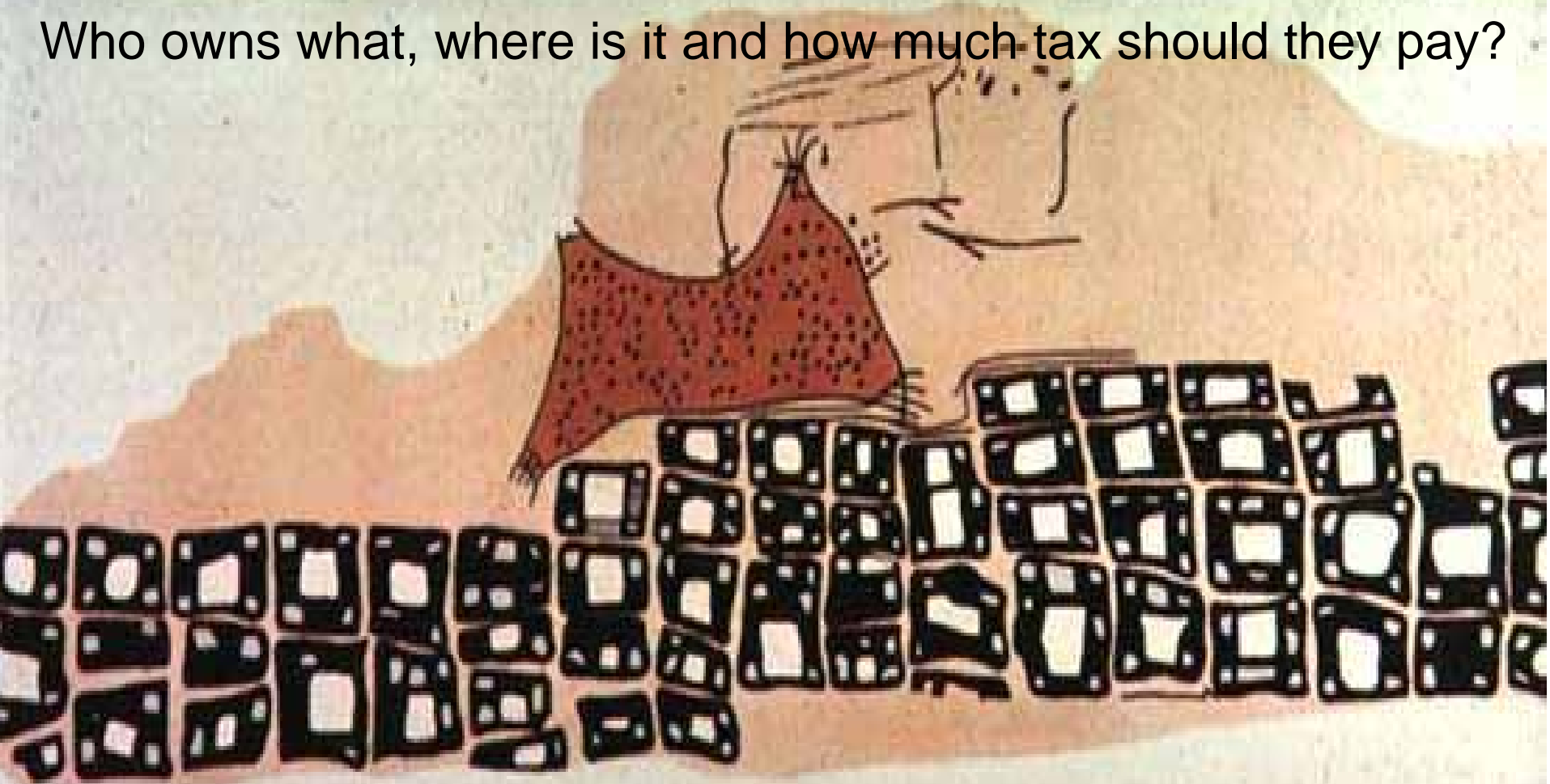
The earliest map?



6200 BC Ankara, Turkey excavation of
Çatalhöyük site in Anatolia

Urbanisation and the start of civil society required spatial information which was less 'relative' and more 'geographic'; less symbolic and more quantitative.

Who owns what, where is it and how much tax should they pay?



Topologically correct depictions were inadequate for the purposes of government. Consistent scale and consistent orientation appeared about 8,500 years ago to meet the needs of government



Mesopotamian City Plan, Nippur 1500 B.C., showing part of the defensive city wall and planned repairs. This shows internal property boundaries precisely, and to scale (in units of twelve cubits – six meters). There is emphasis on public structures such as temples, canals, store houses and a park. (Clay tablet 18 x 21 cm)

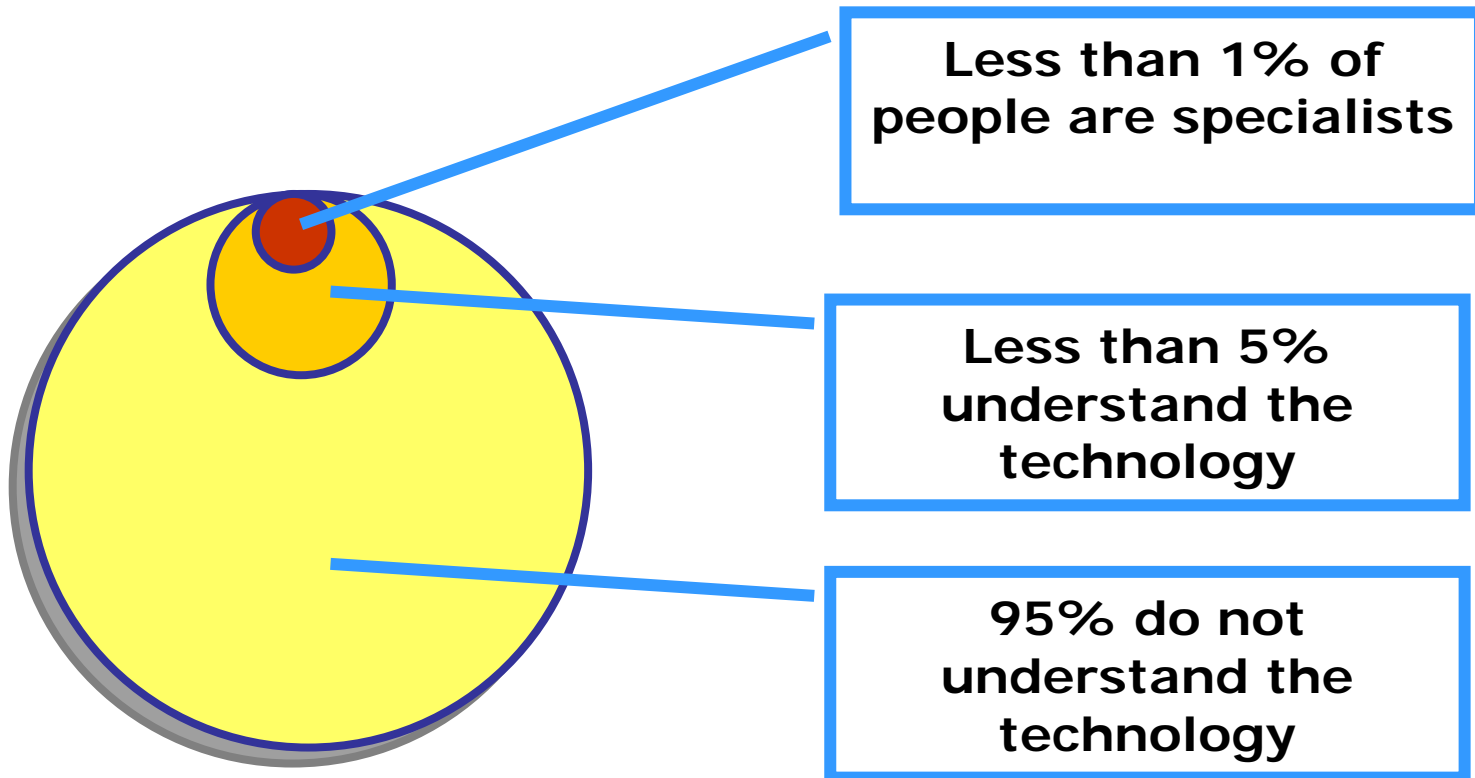
Property ownership, taxation, defence and facilities management are the main purposes of these artefacts – the universal businesses of all governments.



Spatially Enabled Government



Who understands place?





Where location and spatial information are common goods available to citizens and businesses to encourage creativity and product development

and

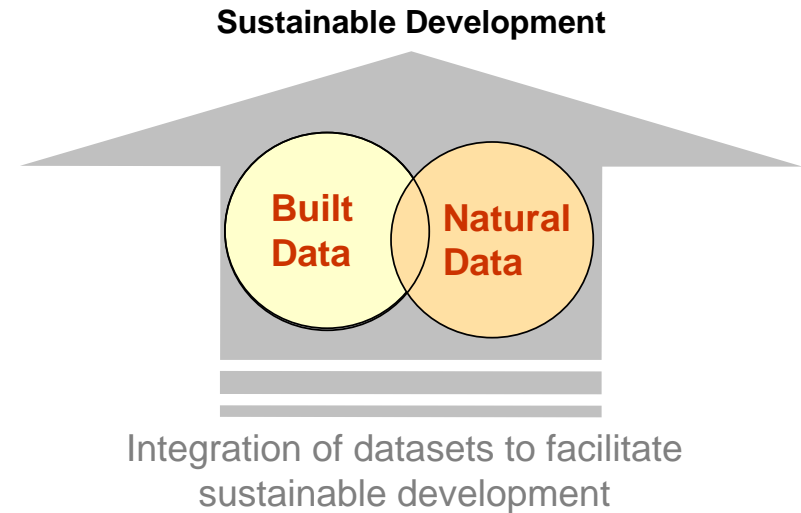
Where governments use place as a means of organising their activities in addition to information.



Enabling platform provides appropriate technical, governance and legal structure to link **data** and **services, products**, and real world objects underpinning a Spatially Enabled Government and Society.

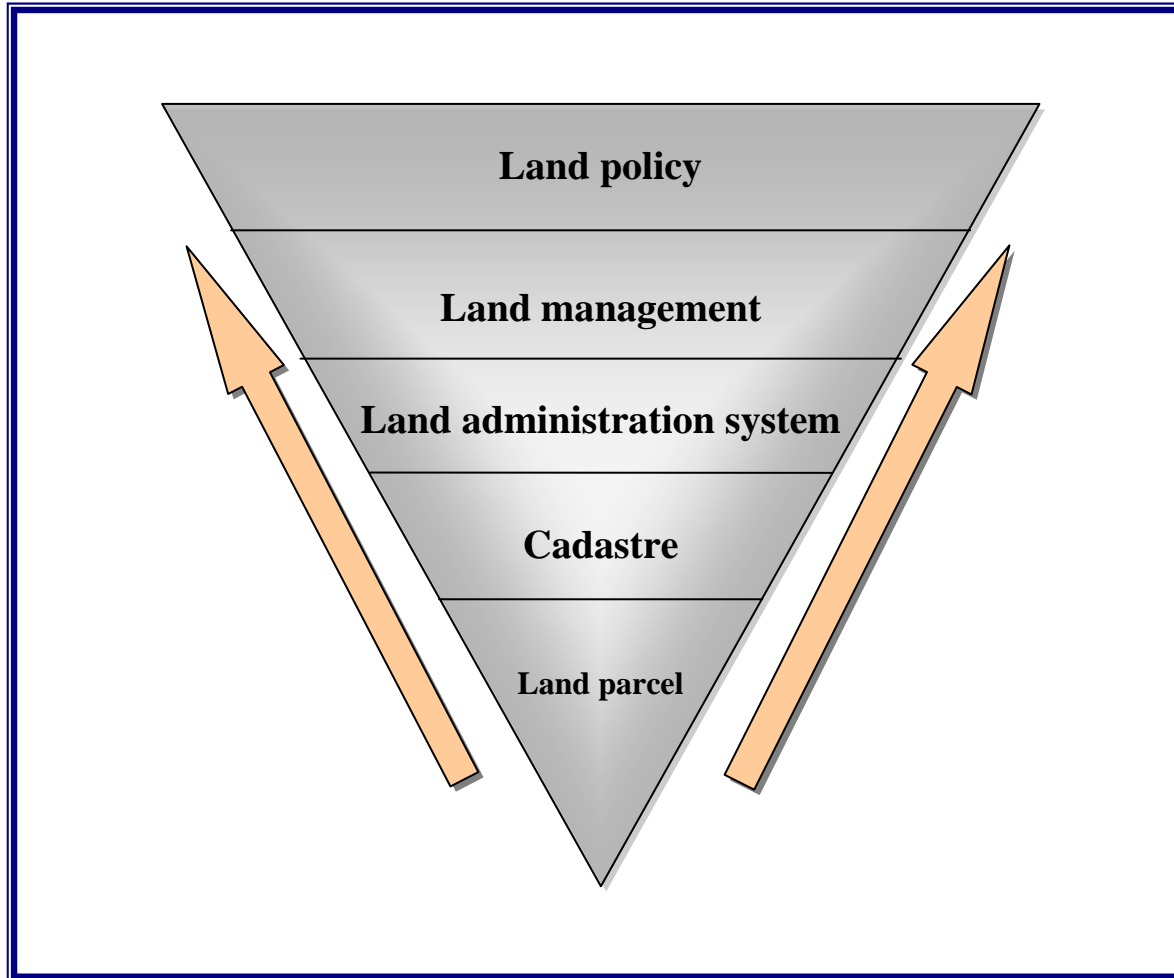


A key component of “spatial enablement” is to integrate built data (cadastral) with natural data (geographic) to deliver sustainable development



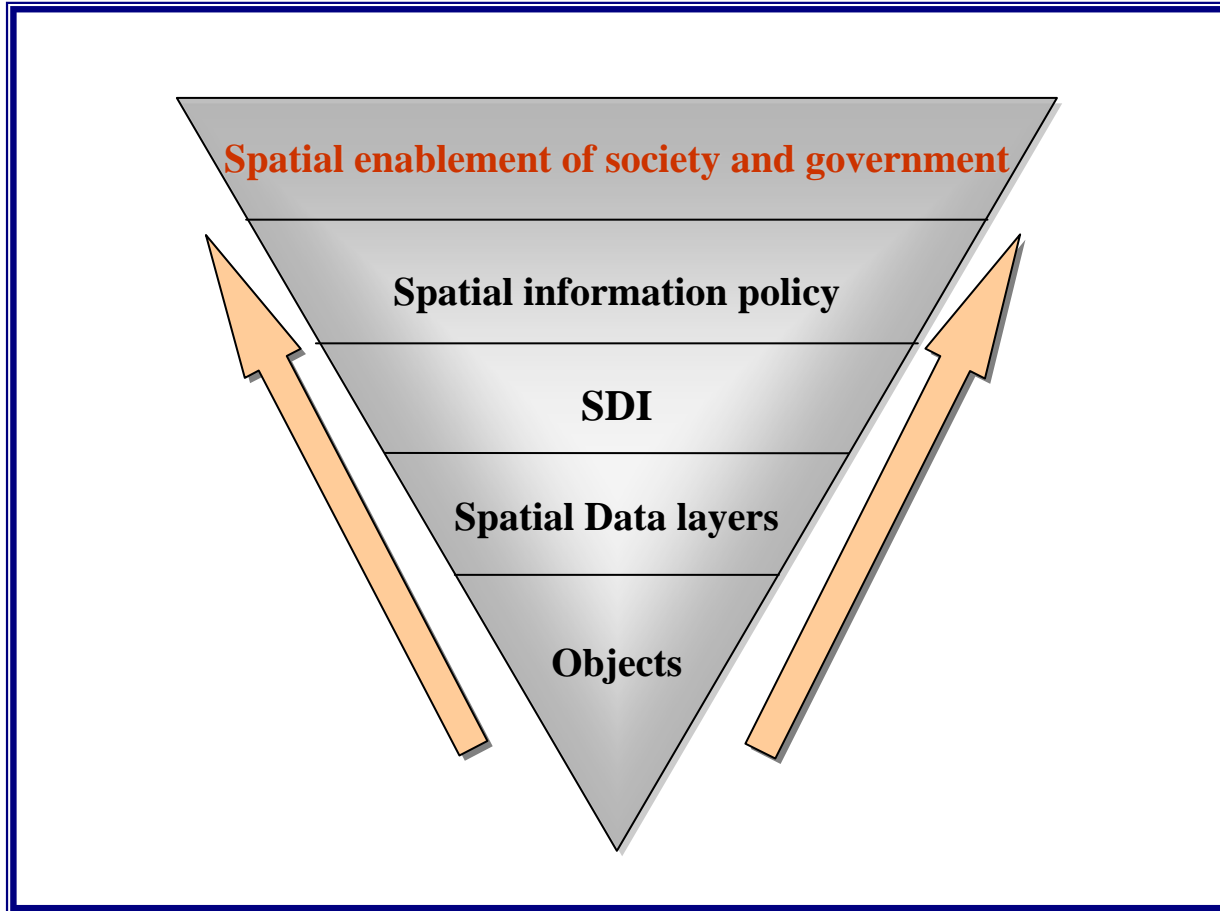


Land in Society





Spatial Information in Society



The “where” solution



1. To date, ICT has organized information by ‘what’, ‘who’ and ‘when’ - *alpha-numeric and time/date*
2. Now ICT is capable of organizing information using PLACE in a dramatic new way



3. This is big news... Why?
 - ~90% of government activities have a spatial element
 - ~65% of government activities (by legislation) have spatial element as a core identifier
4. Spatial information and its management is one of the 8 priority areas for achieving eGovernment



- The discipline of Land Administration has taken advantage of *ICT advances* over the last three decades...



- Why...
 - Location remains constant
 - Collect once and use many times
 - Location allows for integration
- Now it's time to seize on these strengths....

Research background



- Land management paradigm
- Spatial data infrastructures
- Sustainability accounting
- Stages of development of land markets
- Complex commodities
- Marine administration
- Integration of built and natural environmental datasets
- Management of all significant restrictions and responsibilities affecting land
- A flexible cadastral data model



- PCGIAP – Resolution 3 of the 17th UNRCC-AP
- INSPIRE initiative and Belgium Institute for SDI development
- FGDC (USA) – national cadastral model for land parcel databases and “blanket medium to large scale topographic map”
- GSDI, vision and future direction
- International adoption of ICT



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

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.*

Path to spatial enablement



- Define a comprehensive view of spatial enablement
- Develop data sharing and data integration
- Build on existing initiatives
- Identify new opportunities to improve efficiency and effectiveness of government administration
- Use Geocodes and place related information
- Bring spatial to non-traditional users including taxation, human services, health, census, immigration and others



- National geocoded street address files as key organiser
- Move from legal land parcels to legal property objects to manage all rights, restrictions and responsibilities
- Holistic cadastral data models to integrate separate land administration data “silos” using spatial enablement
- Complete and up-to-date (real time) cadastral maps of legal parcels, properties and legal land objects

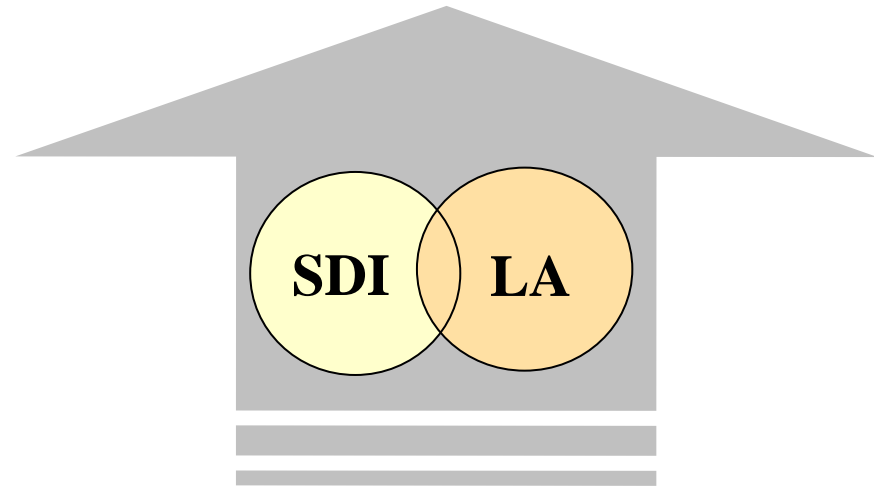


Land administration generates information about places.

SDIs organise spatial information.

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

Sustainable Development



A spatially enabled cadastre



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

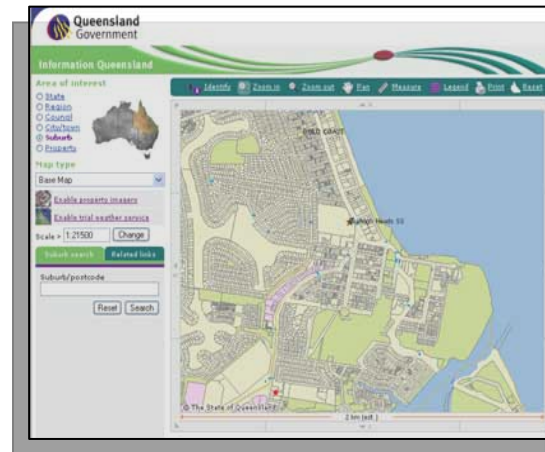
The technical core of SEG is the **spatially enabled cadastre**.



Cadastral and land information



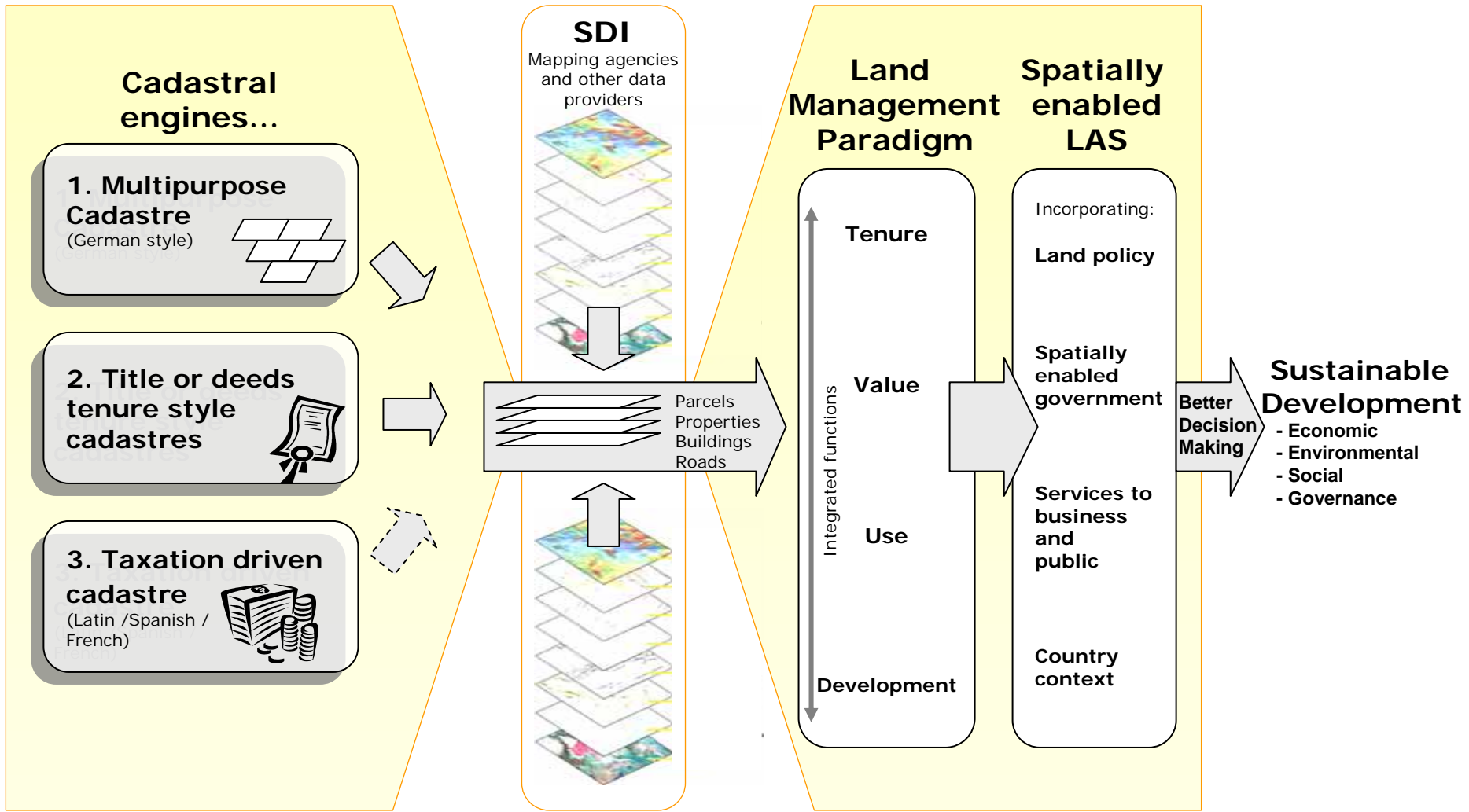
Consider: Google Earth merging with built and natural environment data. This unleashes the power of both technologies ...



emergency response, taxation assessment, environmental monitoring and conservation, economic planning and assessment, social services planning, infrastructure planning, etc, etc



The significance of the cadastre





Example: Spatially enabled Australian Tax Office in 2015

The new **spatially enabled cadastre (SEC)** authoritatively identifies **parcels with owners, interests and transactions.**

The SEC provides the ATO with real-time, accurate information including images, owners, interests, land identity, market prices, values, address (GNAF) and transactions *as these occur* (because stamp duty collections use the SEC), and *as they are lodged* (because the land registries use the SEC).



- Multi-disciplinary
 - Research from disciplines of Geomatic Engineering, Management, and Law.
- National organisational collaboration
 - Cooperation between agencies of government that coordinate and manage geographic information, cadastral information and land registration processes
- Private sector collaboration

Toolbox Approach



- **Stage 1** – improve organisation of information
- **Stage 2** – encourage re-organisation of government administration and work patterns and processes



Institutional & Framework Tools

1. Institutional framework
2. Policy on spatial enablement
3. Business models for use of “place” to organise information, services and activities
4. Monitoring and evaluation processes

Technical Tools

5. iLand – spatial information availability platform
6. Spatially enabled cadastre as an authoritative register
7. SDI – interoperability platform



SEG will:

- Increase efficiency, effectiveness and competitiveness of governments
- Identify innovative use of spatial technologies in public and private sectors
- Reengineer government processes
- Achieve cross jurisdictional and inter agency solutions essential for effective government and regional management



Thank you