Topographic Mapping in Australia: The Future State

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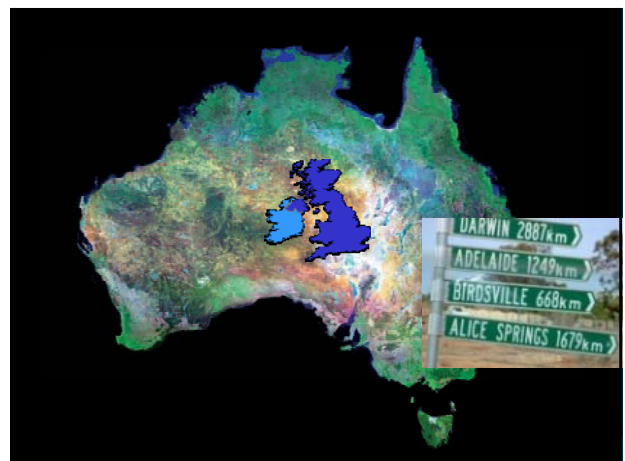
FIG Congress 2010
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Context…

Australia's geography and demography

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Presentation outline

- Context
  - Australia's geography – size does challenge us!!
  - Geoscience Australia and ICSM
- Where have we come from?
  - The past 50 years – post war reconstruction
  - Delivering the maps and data
- Where are we now?
  - Maintaining and sustaining maps and data
  - NTICI
- Where to from here?
  - The future state – technology, drivers & collaboration

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DARWIN 2887km
ADELAIDE 1249km
BIRDSVILLE 668km
ALICE SPRINGS 1679km

Mapping Australia is an enormous challenge!!

Context…

Geoscience Australia National Mapping & Information Group (NMIG)
- Required to provide fundamental geographic information at a national scale in a form that facilitates Australian Government and community decision-making and industry development
- Strategic objective: Authoritative source of fundamental geographic information for Australian Government…..to provide improved evidence based policy and decision making

ICSM Permanent Committee for Topographic Information (PCTI)
- Provide leadership in the collection, maintenance and delivery of topographic information through the participation of all of the jurisdictions in collaborative arrangements involving other key government and industry stakeholder groups
- Membership consists of representatives from the lead topographic mapping agency in each jurisdiction

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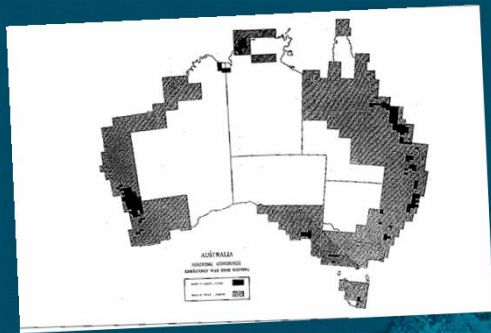
Context…

GA and ICSM: My motivation!!

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Where have we come from…

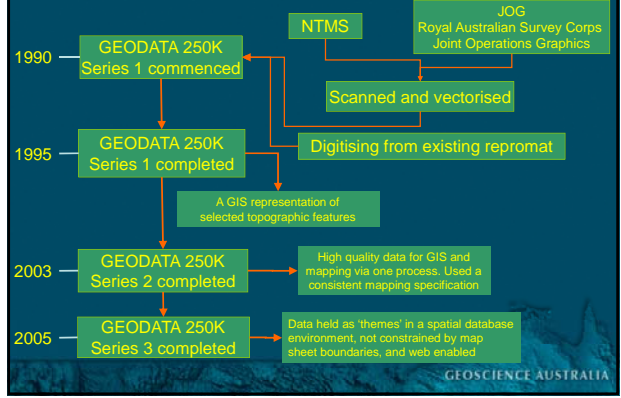Evolution of the national topographic map:
The past 50 years

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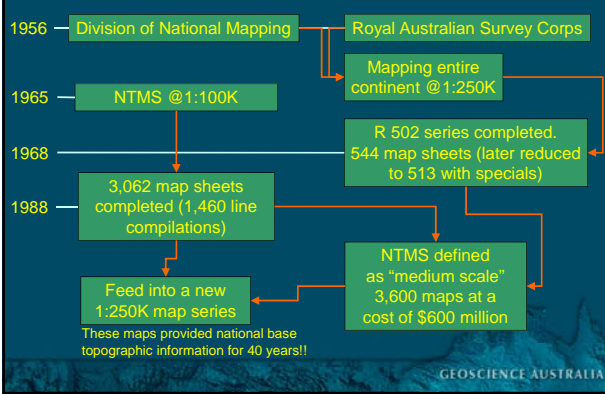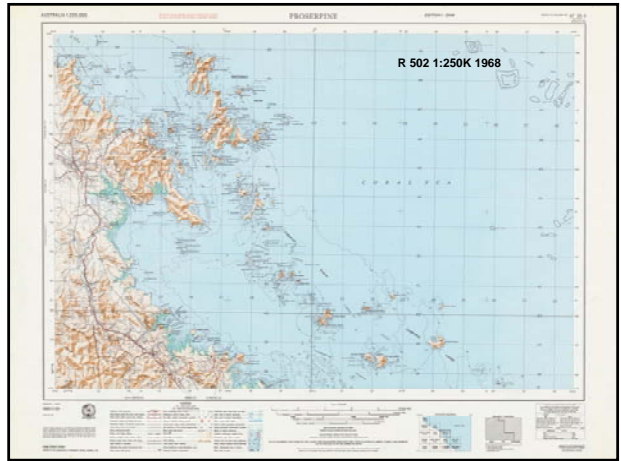
Post-war reconstruction

The NTMS and GEODATA

1990	GEODATA 250K Series 1 commenced	NTMS
		JOG Royal Australian Survey Corps Joint Operations Graphics
		Scanned and vectorised
1995	GEODATA 250K Series 1 completed	Digitising from existing repromat
	A GIS representation of selected topographic features	
2003	GEODATA 250K Series 2 completed	High quality data for GIS and mapping via one process. Used a consistent mapping specification
2005	GEODATA 250K Series 3 completed	Data held as 'themes' in a spatial database environment, not constrained by map sheet boundaries, and web enabled

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The NTMS and GEODATA

1956	Division of National Mapping	Royal Australian Survey Corps
		Mapping entire continent @1:250K
1965	NTMS @1:100K	
1968		R 502 series completed. 544 map sheets (later reduced to 513 with specials)
1988	3,062 map sheets completed (1,460 line compilations)	
		NTMS defined as "medium scale" 3,600 maps at a cost of $600 million
	Feed into a new 1:250K map series	

These maps provided national base topographic information for 40 years!!

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R 502 1:250K 1968

NTMS 3 1:250K 2005

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The status in 2005

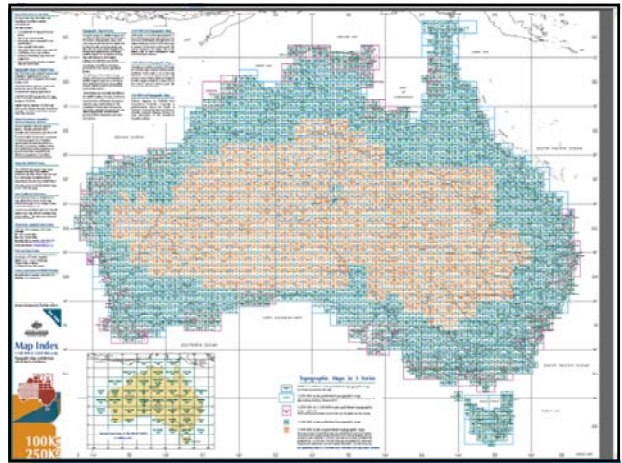GEODATA TOPO 250K Series 3 launch

Where are we now...

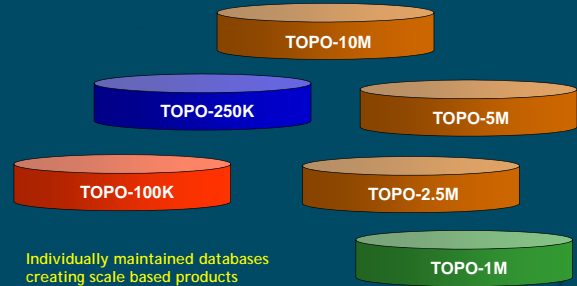Facing the Challenges: Building the Capacity

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The status in 2005

- GEODATA TOPO 250K Series 3 complete – but no maintenance or Series 4 regime initiated
- The national mapping program resides within a national geo-scientific research agency - Geoscience Australia (GA)
- GA mandate to map nationally at small-medium scale
- State and Territory mapping agencies map large scale and cadastre
- PSMA had been created to manage and broker data for industry under a VAR arrangement
- Little coordination and collaboration across central mapping agencies
- Duplication and inconsistencies in the extent, availability and quality of topographic information
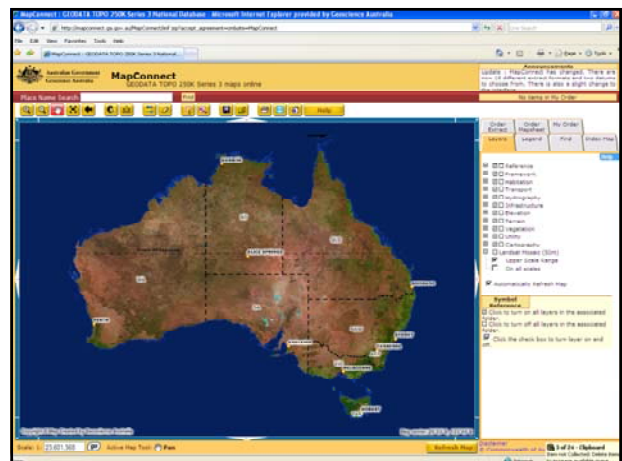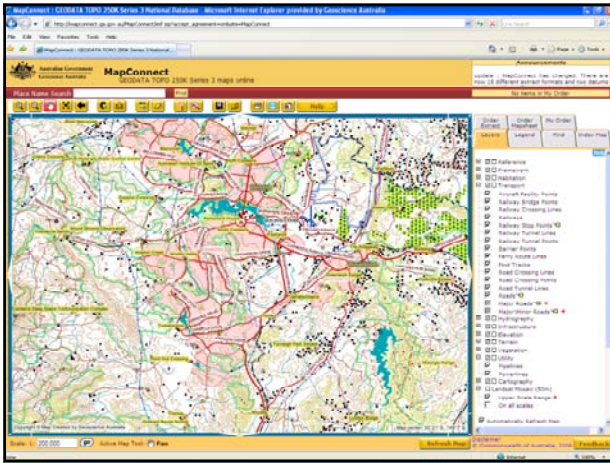
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Multiple databases

TOPO-10M

TOPO-250K

TOPO-5M

TOPO-100K

TOPO-2.5M

TOPO-1M

Individually maintained databases creating scale based products

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Mapping product delivery

NTICI
Sustaining national topographic mapping

- PCTI established the National Topographic Information Coordination Initiative (NTICI)

- A framework under which a collegiate approach to the topographic mapping of Australia is undertaken

- A whole of government approach to the collection, integration, dissemination and maintenance of topographic and related information to meet the needs of governments and the public

- A mechanism to add value to the topographic layers of the ASDI, whilst recognising the different but complementary roles and responsibilities of the spatial data agencies in the jurisdictions

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How do we deliver and sustain national topographic data and maps with appropriate investment and resources?

NTICI annual mapping program

Geoscience Australia

"capture once, use many"

States & Territories

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NTICI benefits

- Improved availability of accurate, up to date, reliable and accessible large scale topographic information
- Maximisation of the efficiency and effectiveness of government expenditure on topographic mapping and related activities
- Development and promulgation of standards and strategies to alleviate inconsistencies in the national topographic framework and promote on-demand access (interoperability)
- Strengthened jurisdictional relationships and capacity through sharing and exchange of ideas
- Resilient whole of government approach to topographic data collection, integration, dissemination and delivery

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Where to from here...

The future state

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NTICI limitations

- Relationships are excellent, but informal. No MoU or Heads of Agreement in place
- No vision of how NTICI relates to other mapping programs that jurisdictions may be involved in
- No strategy that defines the custodian of the data and how future data maintenance will be carried out or fed back
- Mapping proposals do not consider more broader Australian Government priorities
- Forward program needs to be more strategic in its approach to a sustainable mapping program
- Inconsistencies with data schemas and specifications presently limits true seamless integration

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The future state

Maintaining a sustainable topographic mapping program in Australia requires:
- A cultural shift from a data/product owner/provider to a geographic information content integrator, provider, and enduring data custodian

Relying on three factors:
- Improvements in and leveraging of available technology;
- Changes in the federal government's business ethos; and
- Collaboration - a program of partnerships

The future collaborative approach to topographic mapping will need to:
- Resemble a distributed data sharing arrangement;
- Leverage smart enabling technologies improving turnaround times;
- Consistent specifications and schemas;
- A focus on maintenance of priority themes and areas; and
- Integration of NTICI data into jurisdictional and GA databases as 'single point of truth'

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Priority drivers from government

Social Inclusion

National Elevation Data

Climate Change

Emergency Management

Tourism

Environment

Energy Security

Water Resources

Government and business partnerships

PSMA data products:
Admin. Bdys
CadLite
G-NAF
Points of Interest
Post Code Bdys
Transport & Topo

Australian Government Agencies

PSMA

States & Territories

Industry

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The peak spatial bodies

Australia New Zealand Land Information Council (ANZLIC)

National Spatial & Information Management (NSIM)

Intergovernmental Committee on Surveying & Mapping (ICSM)

Office of Spatial Data Management (OSDM)

Cooperative Research Centre for Spatial Information (CRCSI-2)

PSMA Australia

Yesterday

Geoscience Australia

Consumers

Small/Med Scale Program — Acquire — Integrate — Maintain — Publish & Deliver

Map Product

Data Product

States & Territories

Large Scale Program — Acquire — Integrate — Maintain — Publish & Deliver

Map Product

Data Product

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Thank you – Questions??
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