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Spatially Enabling Australia through Collaboration and Innovation

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Spatially Enabling Australia through Collaboration and Innovation

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Abstract

As a Federation, responsibility in Australia for the collection, maintenance and management of mapping and land related data rests with nine disparate governments.

In the past, organisations wanting to access data for the whole of the continent have been forced to enter into distinct and varying agreements with each government. This presented such a significant obstacle that most private sector organisations were not able to compile or utilise national datasets for use in products and services.

During the early 1990s, the Australian governments recognised that the demand for national or continent wide datasets was growing and set to continue to grow as the application of spatial data moved beyond traditional geographical information applications.

In response, the governments of Australia formed PSMA Australia, initially as a loose consortium to compile and distribute seamless nationwide datasets.

As demand for these national datasets continued to expand, it was agreed to form PSMA Australia Limited, an unlisted public company, limited by shares and owned by the governments of Australia.

PSMA Australia Limited does not compete with the private sector, instead it acts as a 'clearing house' for government data, by unlocking and integrating the significant data holdings held in individual governments and delivering it to the private sector as seamless, standards compliant, continent wide datasets. The private sector then adds ideas and innovation to develop products and services to meet market demands.

Ollie Hedberg, Chairman of PSMA Australia Limited will detail the history, future plans and secrets of success to this innovative organisation.

The Australian Context

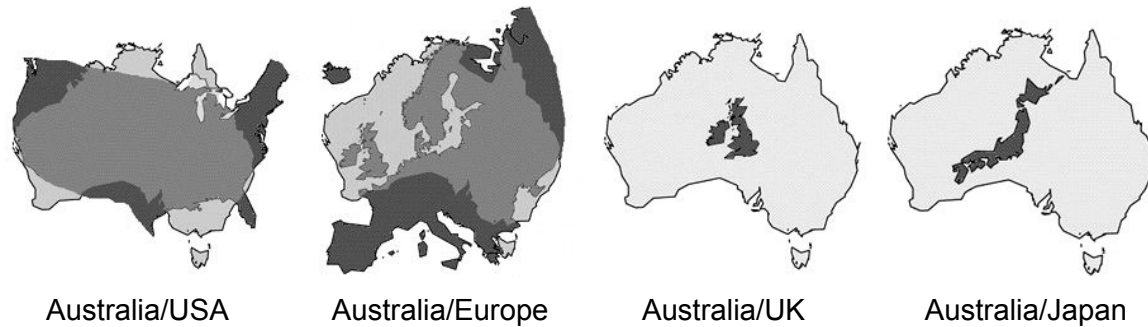
Between 1788 and 1900, six separate colonies were established on the Australian continent. The coming of self-government in the 1850s gave each colony an identity of its own, and the power to pursue its own policies. However, for reasons including immigration, trade, transport and communication, foreign policy, defence and nationalism, on 1 January 1901 the six colonies came together in a Federation, with each of the colonies becoming states within the Federation of Australia.

The Australian Constitution defines the responsibilities of the federal government, which include foreign relations and trade, defence and immigration. The governments of the States and Territories remained responsible for all matters not assigned to the Commonwealth. Notably, mapping, charting and recording of land title remained within the jurisdiction of the States (and the two Territories as they later developed.) This continues to be the case today.

Australia also has a third tier of government. Each of the States has regional or local governments. At present there are approximately 717 Local Governments across Australia, and from a geospatial information perspective, an important responsibility of local government is building and planning approvals.

Currently the Australian population stands at approximately 20 million dispersed across a landmass similar to that of the United States. Australia's population density is very low by world standards.

Figure 1. Australia's size and population density compared with other nations.



Population Densities

Australia	2.5 persons per km ²
United States of America	29 persons per km ²
Europe	59 persons per km ²
United Kingdom	244 persons per km ²
Japan	336 persons per km ²

Maps and figures courtesy of National Mapping Division, Geoscience Australia, <http://www.auslig.gov.au/facts/dimensions/compare.htm>

The implication from a geospatial data collection perspective is that a viable business of selling access to national geospatial data cannot be founded in Australia because the population base (or market) to support it does not exist. As a result, the major sources for the development of national framework geospatial datasets are the Governments of Australia – Commonwealth, State, Territory and Local.

Genesis of PSMA Australia Limited

The PSMA (Public Sector Mapping Agencies) Australia consortium was originally created in 1993 as an unincorporated joint venture between the nine mapping agencies of the Commonwealth, states and territories, to respond to an Australian Bureau of Statistics tender for the provision of mapping services and facilities for the 1996 Census of Population and Housing.

PSMA Australia was awarded the contract and broke new ground with the delivery of a national topographic dataset augmented with a representation of the nation's cadastral framework.

As word of this initiative spread, PSMA encountered strong demand to create or provide national datasets for other organisations with national interests, both in the private and public sectors. As this demand grew, the consortium acknowledged that the existing structure was inappropriate if the organisation was to explore other opportunities for use of its national datasets.

In July 1997 PSMA Australia signed its first Value Added Reseller (VAR) – MapInfo Australia. This marked the beginnings of PSMA's delivery of national datasets to end users via a value adding supply chain and a four year transformation into a governments owned company focused on the assembly and distribution of framework national geospatial datasets.

The scope of this transformation was defined by a comprehensive management and structure review of PSMA Australia which included options for the future development of the organisation. These options were considered by PSMA Australia and ANZLIC and the option adopted was to form PSMA Australia Limited – an unlisted public company limited by shares and owned by the Governments of Australia.

The advantages of such a structure were seen to be:

- Separate legal personality which provides the ability for PSMA to contract in its own right, employ staff, open bank accounts and trade in data;
- Financial transparency and accountability;
- Efficient management structure allowing necessary delegation of authority while enabling each jurisdiction to adequately protect its key interests; and
- Limited liability to shareholders.

While the decision to corporatise PSMA was made in Dec 1997 and endorsed by Ministers in early 1998, PSMA continued to operate under the 1993 arrangements while the documentation – establishment agreement and company constitution – were drafted, reviewed by the nine governments involved and ultimately signed off.

Five years after the decision to develop PSMA as vehicle to coordinate the assembly of and facilitate access to fundamental national geospatial datasets, PSMA Australia Limited was incorporated in June 2001.

Structure and Governance of PSMA Australia Limited

Vision

The creation of a National Asset of comprehensive, quality and accessible spatial knowledge.

Mission

The return of economic, environmental and social benefits to the nation through the coordination, assembly and delivery of standards-compliant, national datasets.

Key aspects of PSMA Australia Limited

- An unlisted Public Company established under the *Corporations Act* 2001, limited by shares, owned by the Federal, State and Territory Governments (single share each).
- A board of ten directors currently lead by an independent Chairman. Each shareholder (Government) has the option of appointing a Director to the board.
- Company run by the Chief Executive Officer and a small team (currently four)
- Governments licence their data to the Company.
- PSMA Australia facilitates data integration and acts as a 'wholesaler' to Private Sector:
 - The Company determines the datasets to be assembled and defines the detailed specifications for the assembly and integration of the datasets.

- The assembly and maintenance of the datasets is outsourced through competitive tendering to Data Managers.
- Revenue is generated through data licensing of Integrated National Datasets and Data Supply Agreements.
- Revenue is used to maintain existing datasets and investigate and assemble new national datasets.
- Government owned BUT not Government funded.

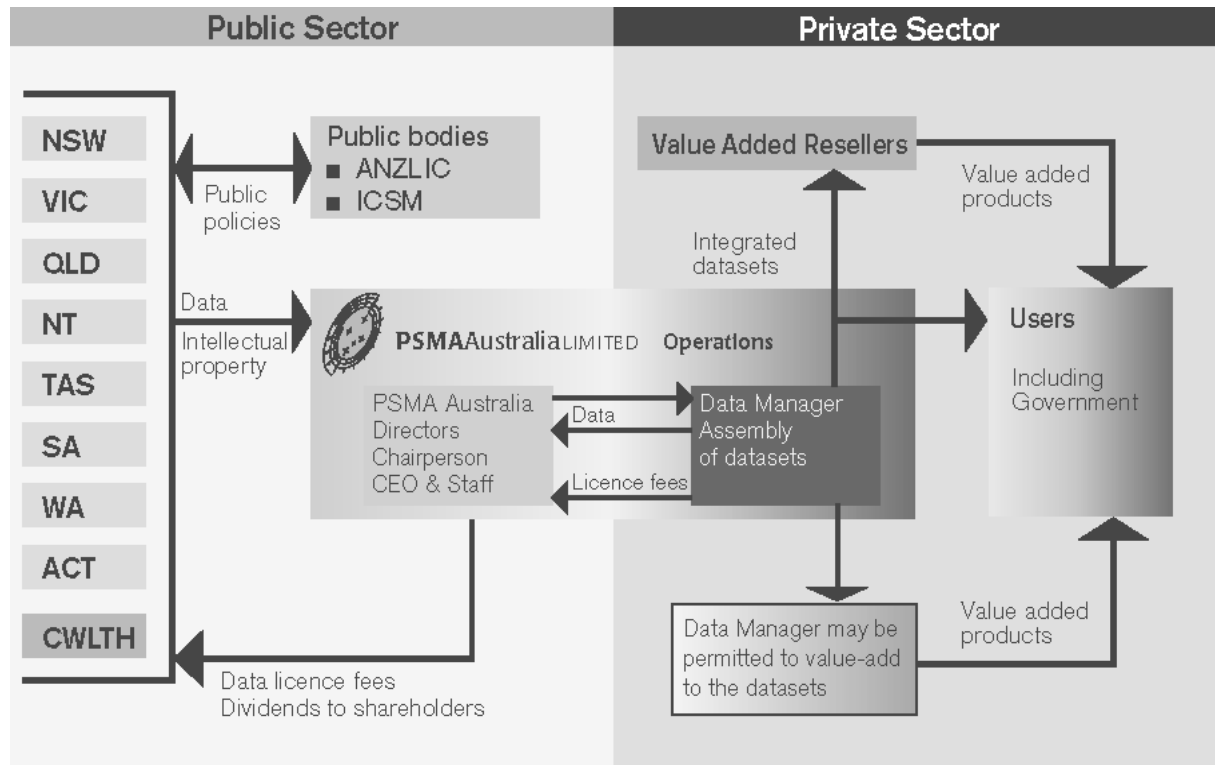
The supply chain Model

In Australia, prior to the availability of the PSMA Australia national datasets, the supply chain for spatial data was fragmented. For the reasons previously discussed, geospatial information is by and large available via the mapping agency in each of the States and Territories. While the markets for geospatial products and services remain contained by the borders defining these jurisdictions, the local mapping agency was able to meet demands. However as markets expanded it became necessary for organisations to negotiate with multiple government mapping agencies to access the geospatial information necessary to meet that demand. The market rapidly expanded to include the whole of Australia, and organisations found the task of negotiating data access and pricing with the nine governments complex and time consuming. Added to this administrative burden were the technical difficulties associated with integrating disparate geospatial datasets – various coordinate systems, varying accuracies, different data models and contrasting technologies and data formats. There was a geospatial information supply ‘bottleneck’. Without access to high-resolution national datasets, national products and services were difficult or impossible to offer. Indeed few if any organisations managed the task of negotiation ongoing access to all nine Governments mapping data prior to the creation of the PSMA in 1992.

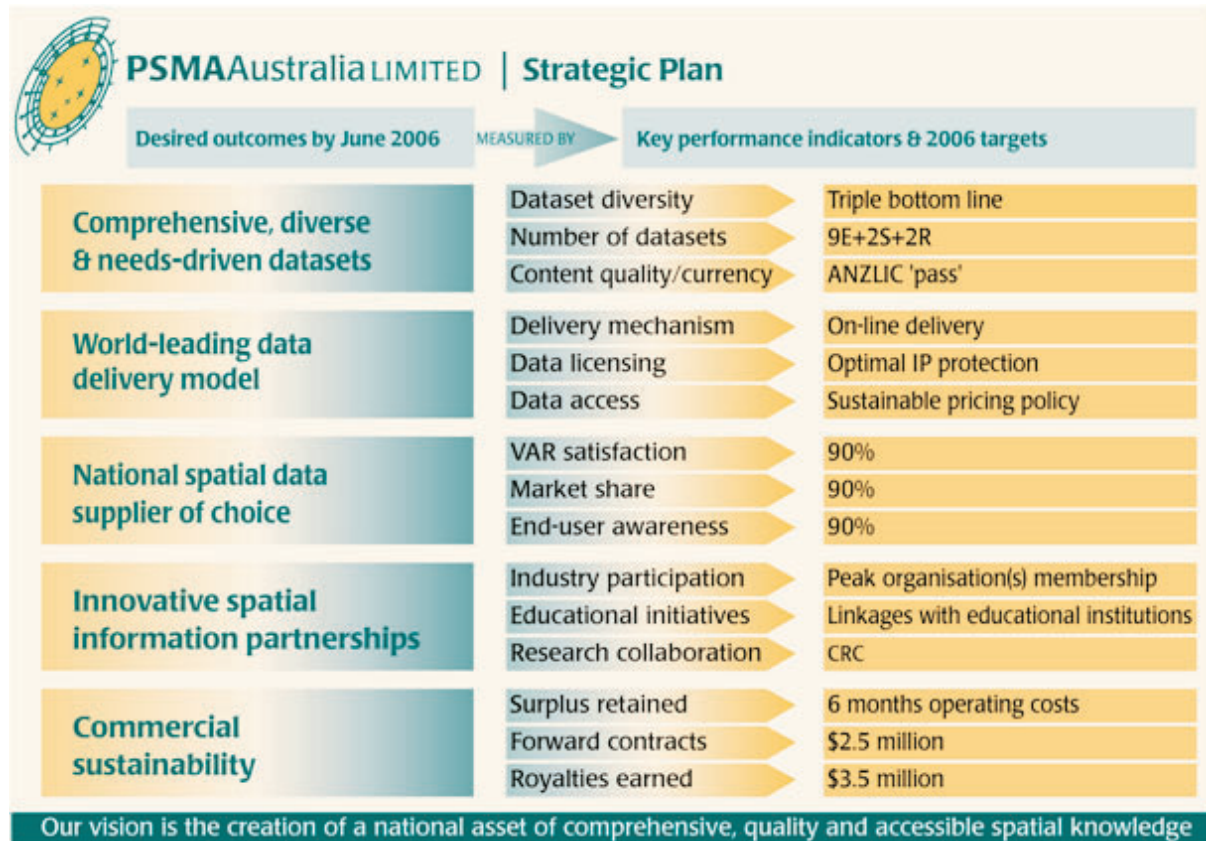
PSMA Australia is the crucial link between the supply and demand sides of the market. The organisation eliminates the difficulties of negotiating multiple licence agreements and the problems of integrating the data into a seamless consistent national dataset. Furthermore the existence of PSMA Australia minimises the duplication of effort within the market for organisations wishing to access national data.

The position held by PSMA Australia is a delicate balance. As a Government owned company, it is not the intention of the organisation to compete with the existing industry players. On the contrary, the organisation actively seeks industry participation and support and endeavours to be an industry stimulator of growth by ensuring the availability of critical and timely framework national datasets. To this end, PSMA Australia does not deal with end users but rather with organisations that develop products and services for end users through a process of value adding.

As noted previously, PSMA Australia does not receive any Government funding and is required to ensure that its activities – maintaining existing national datasets and investigating and developing new national datasets – are fully funded from data licensing and data supply contracts. This requires the organisation to define a data access and pricing policy that sets the data price not to maximise returns but to cover existing costs and projected future activities whilst not imposing a barrier to access.

Figure 2: PSMA Australia Limited – Supply Chain Positioning

PSMA Australia Limited is lean and focused. Our core business is not the manipulation of data. PSMA Australia is a collection of people, technologies and policies necessary to coordinate assembly of and facilitate access to national framework geospatial datasets. In reality, PSMA Australia's core business is the management of relationships – relationships with data custodians, relationships with data managers, relationships with value added resellers and relationships with stakeholders. Without doubt, PSMA's greatest achievement is not so much its assembly of national datasets but facilitation of ongoing, high-level productive relationships with the nine governments of Australia responsible for the mapping of our nation for over a decade. It is in this area of relationship development, partnership building and cooperation that PSMA Australia has excelled. There is no secret formula, however those representing each of the jurisdictions do share a strong commitment to a common goal and enthusiastically espouse the vision of PSMA Australia and its importance throughout their organisations.

Figure 3: PSMA Australia Limited Strategic Plan 2002-06

Data Access and Pricing Policy

For PSMA Australia, the principal objective is to facilitate broad, yet sustainable, access to PSMA Australia data. Partnerships with the private sector are encouraged and data distribution is facilitated through licence arrangements with VARs.

The basic principals underpinning the PSMA Australia Data Access and Pricing Policy are:

- **simplicity** of concept;
- **equality** of access to all users;
- **logical** structure;
- **dual** pricing structure including access fees and licence fees;
- ability to be **flexible** to as yet unknown applications;
- **supportive** of existing revenues of individual Member Agencies;
- **non-exclusivity** with respect to VAR Agreements; and
- **protection** of intellectual property rights of PSMA and VAR's.

Pricing of PSMA Australia data reflects the value of each dataset in different applications. The intention is to ensure that high value products are reflected in the pricing matrix, whilst also facilitating opportunities to have the data used ubiquitously in low price digital products.

A dual fee structure applies to access to PSMA Australia datasets. Annual Access Fees and Royalties are based on a matrix of data type, data volume, user applications, and number of users.

Datasets

PSMA Australia now offers the following layers and attributes in five themes:

- A detailed national topographic dataset, underpinned by the road centreline dataset, with over 30 feature types within hydrography, transport and points of interest themes.
- A basic national topographic dataset, which includes highways, main roads, coastline, major drainage, railway lines and key locality points.
- A national cadastral database of Australia's 10.4 million parcels, each with five key attributes.
- An administrative boundaries dataset containing a variety of key administrative boundaries in a series of themes.
- A Points of Interest database with over 130,000 cultural points of interest with feature code and name attribution.

PSMA Australia has recently let a tender for the creation and maintenance of a single authoritative geocoded database of reference in Australia for street address data, to be called G-NAF (Geocoded National Address File).

The critical sourcing and input of address data will be derived from both the jurisdictions (at state and local government level) and several participating Commonwealth Agencies.

Multiple address sources will provide the capacity to cross-check addresses between sources, leading to an ability to attribute a confidence to every address in the G-NAF – the more often it occurs, the higher the confidence.

PSMA Australia will be responsible for establishment and ongoing coordination of efficient, effective and harmonious relationships between the stakeholders necessary for the continuous updating and maintenance of the G-NAF.

It is expected that a first cut of G-NAF will be completed by December 2003.

The Future

The importance of geospatial information in decision making is well understood. Discovery of the appropriate information to assist in that decision making can be as much of a challenge as the decision itself. The concept of a Geospatial Data Infrastructure is the means by which the appropriate information is discovered and employed in that decision making process. That mechanism is often described as a collection of people, technologies and policies. The infrastructure **is** the supply chain.

As seen in the Australian experience, the demand for geospatial information drove the assembly of national framework datasets and a mechanism by which to access them. PSMA Australia is a Geospatial Data Infrastructure albeit one fashioned around traditional business concepts rather than the much espoused technological models.

The ultimate goal of PSMA Australia, even from its earliest days, is to make a significant contribution toward the achievement of the Australian Spatial Data Infrastructure (ASDI) through the assembly of standards compliant national datasets. Today this objective is embodied in the Company's vision – *The creation of a National Asset of comprehensive, quality and accessible spatial knowledge.*

The challenge for PSMA Australia in the years ahead will be to not just continue to develop national datasets of significance to the country and maintain those datasets but apply the advancing technologies to the development of its existing delivery mechanisms – the Data Infrastructure – to ensure greater availability and usability of the geospatial data held by the Governments of Australia.