

COUNTRY REPORT

**CURRENT STATUS OF
SURVEYING, CHARTING AND MAPPING
AT THE NATIONAL LEVEL**

COMMONWEALTH OF AUSTRALIA

**PRESENTED AT THE
SIXTEENTH UNITED NATIONS REGIONAL CARTOGRAPHIC
CONFERENCE FOR ASIA AND THE PACIFIC (UNRCC-AP)**

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EXECUTIVE SUMMARY

This report contains a summary of activities in surveying, mapping and charting at the national level in the Commonwealth of Australia. The report has been prepared for the 16th United Nations Regional Cartographic Conference for Asia and the Pacific (UNRCC-AP), incorporating the 9th Meeting of the Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP), held in Okinawa, Japan, between 14 and 18 July 2003. Geoscience Australia, an agency within the Commonwealth Government Portfolio of Industry, Tourism and Resources, prepared the report.

The report is structured in two parts:

- organisations, roles and initiatives (federal government agencies; state and territory government agencies; national coordination bodies; PSMA Australia Limited; and, industry, education and professional bodies) and,
- activities in surveying, mapping and charting (geodesy; remote sensing; mapping, charting and associated databases; street addressing; geographical names; spatial data infrastructures and geographical information systems).

There has been a transformation in surveying, mapping and charting at the national level in Australia since the 15th UNRCC-AP in Kuala Lumpur in 2000.

Key policy and organisational outcomes include:

- adoption of the Spatial Information Industry Action Agenda by the Commonwealth Government;
- announcement of a new Policy for Spatial Data Access and Pricing by the Commonwealth Government; in September 2001;
- establishment of the Australian Spatial Information Business Association;
- establishment of the Spatial Sciences Institute;
- establishment of the Australasian Spatial Information Education and Research Association;
- establishment of PSMA Australia Limited;
- establishment of Geoscience Australia;
- establishment of the Defence Imagery and Geospatial Organisation;
- establishment of the Australian Global Navigation Satellite System Coordination Committee; and
- establishment of a Cooperative Research Centre in Spatial Information.

Key product and service outcomes include:

- The Australian Bureau of Statistics produced over 40,000 individual maps covering Australia's 7.7 million square kilometres for the purposes of conducting the 2001 national Census of Population and Housing.
- PSMA Australia Limited have commenced work to build and maintain a Geocoded National Address File which will be the authoritative database of reference for street address data and associated attributes.
- The ICSM has established a Harmonised Data Model to help facilitate the compilation of national data sets from data supplied by different jurisdictions. This new conceptual model incorporates cadastral, topographic, street addressing and place names elements.
- The Australian Greenhouse Office undertook a multi-temporal study of vegetation cover over all of Australia using geocoded satellite imagery. The data are used for modelling carbon pools and are available to the public.
- Geoscience Australia will complete the revision of 1:250 000 scale topographic maps and associated GIS data products of the country. For the first time this national database is being compiled in a seamless format;

This report does not attempt to provide a comprehensive picture of the broad range of activities in surveying mapping and charting in Australia. Rather, the report highlights several important areas at the national level. This report is a summary version of the information provided by various contributors. Their full contributions may be viewed at <http://www.ga.gov.au/nmd/asdi/forums.htm>.

ORGANISATIONS, ROLES AND INITIATIVES

Federal Government Agencies

Australian Bureau of Statistics

In August 2001 the Australian Bureau of Statistics (ABS) conducted Australia's fourteenth national Census of Population and Housing (www.abs.gov.au). The census, which since 1961 has been conducted every five years, is the largest statistical collection undertaken by the ABS and one of the largest peace time projects regularly undertaken in Australia. The quality of the maps used by census collectors was an important factor in the success of the 2001 census

Australian Hydrographic Office

The Australian Hydrographic Office (AHO) has responsibility for production of nautical information and management of Australia's nautical charting service under the terms of the UN Safety of Life at Sea (SOLAS) Convention and the Australian Navigation Act (www.hydro.gov.au). These responsibilities incorporate the coordination and determination of policy and standards relating to hydrographic surveying and charting. In addition, the AHO is responsible for providing maritime geospatial information including nautical charting, oceanographic and meteorological services to the Australian Defence Force.

Defence Imagery and Geospatial Organisation

On 8 November 2000, the Defence Imagery and Geospatial Organisation (DIGO) was created by amalgamating the Canberra-based Australian Imagery Organisation and Directorate of Strategic Military Geographic Information, and the Bendigo-based Defence Topographic Agency (www.defence.gov.au/digo/). The latter organisation has since been renamed the Geospatial Analysis Centre of DIGO.

DIGO is the lead imagery and geospatial organisation in the Department of Defence. Its primary role is in the acquisition, manipulation, production and distribution of imagery and geospatial based intelligence and data in support of the Australian Defence Force. It is also the lead agency in the Department of Defence on imagery and geospatial standards where operational requirements demand standardisation amongst coalition partners.

DIGO provides a wide range of geospatial services including standard digital geospatial and imagery based products for incorporation into a Geographic Information System. A primary responsibility for DIGO is the extraction of intelligence derived from a wide range of imagery sources. This intelligence can be incorporated into other digital mapping products and identify issues, which may affect Australia's national interests.

Department of Industry, Tourism and Resources

The Minister for Industry Tourism and Resources announced several significant policy decisions relating to spatial information, the Spatial Information Industry Action Agenda (SIIAA), the Commonwealth policy on spatial data access and pricing, and the creation of Geoscience Australia.

The Commonwealth Government in September 2001 adopted the SIIAA. The SIIAA seeks to reposition the spatial information industry over the next 5 to 10 years through the adaptation to, and adoption of, new technologies under the global information economy; alleviation of impediments to growth; and creation of greater synergies between industry and Commonwealth, State and Territory government agencies. The SIIAA identifies the changes required to capture future opportunities for growth in the industry, sets measurable outcomes and specific actions for both government and industry to effect those changes. Through the Action Agenda the Commonwealth Government seeks to develop a sustainable domestic spatial information industry and facilitate access and growth into the global spatial information market place (www.industry.gov.au/actionagenda)

The Commonwealth Government announced a new Policy for Spatial Data Access and Pricing in September 2001 (www.osdm.gov.au/osdm/policy.html). Key aspects of the policy are:

- fundamental spatial data is provided free of charge over the internet, and at no more than the marginal cost of transfer for packaged products and full cost of transfer for customised services;
- there are no restrictions on commercial value-adding to the listed fundamental spatial datasets, although each transaction will be subject to a licence setting out the conditions of the transfer;
- an internet-based public access system will be developed within the framework of the Australian Spatial Data Infrastructure;

- a new administrative structure has been established to manage the implementation of the new policy. The elements of the structure are the Commonwealth spatial Data Policy Executive (CSDPE), Commonwealth Spatial Data Management Group (CSDMG) and Office of Spatial Data Management (OSDM). The CSDPE comprises representatives from 18 Commonwealth agencies.

Geoscience Australia

Geoscience Australia was formed in October 2001 when the Australian Geological Survey Organisation (AGSO) and AUSLIG, Australia's national mapping agency, amalgamated.

Geoscience Australia (www.ga.gov.au) provides information that is a key source for a range of activities undertaken by government in the national interest, including resource and environmental management, rural and regional development, navigation, disaster reduction, defence and emergency services. Geoscience Australia produces information through a multidisciplinary approach that integrates professional skills in the disciplines of geology, geography and geomatics and brings together the temporal and spatial dimensions of earth processes. This results in knowledge that provides the basis for a systemic understanding of the Australian continent, islands, and surrounding ocean floor. The information is a fundamental component of Australia's spatial data infrastructure.

Geoscience Australia is Australia's national mapping agency. Core programs are topographic mapping, remote sensing and geodesy. In 2003, Geoscience Australia will complete the revision of 1:250 000 scale topographic maps and associated GIS data products of the country. For the first time this national database is being compiled in a seamless format.

Geoscience Australia hosts the CSDPE, CSDMG and OSDM, and provides the permanent secretariat for the Intergovernmental Committee on Surveying and Mapping.

State/Territory Government Agencies

State and Territory government agencies undertake surveying and mapping activities at greater detail than their Commonwealth counterparts. They normally have responsibilities such as land titling, valuation, Crown lands administration, land planning, and maintenance of topographic, cadastral, roads and other administrative data. Some are now taking a broader perspective and amalgamating some other State responsibilities with their spatial responsibilities, such as management of land, water, vegetation and mineral resources.

Australian Capital Territory

Department of Planning and Land Management (PALM) Urban Services (www.palm.act.gov.au).

New South Wales

Department of Lands (www.lands.nsw.gov.au/departments.html).

Northern Territory

The Department of Infrastructure, Planning and Environment (www.ipe.nt.gov.au).

Queensland

Department of Natural Resources and Mines (www.nrm.qld.gov.au).

South Australia

Department of Administrative and Information Services (www.landservices.sa.gov.au).
Department for Environment and Heritage (www.deh.sa.gov.au/mapland/index.html).

Tasmania

Department of Primary Industries, Water and Environment (www.dpiwe.tas.gov.au).

Victoria

Department of Natural Resources and Environment (www.land.vic.gov.au).

Western Australia

Department of Land Administration (www.dola.wa.gov.au).

National Coordination Bodies

Australian Global Navigation Satellite System Coordination Committee

The Australian Global Navigation Satellite System (GNSS) Coordination Committee (AGCC) was established in May 2000 (www.agcc.gov.au). The role of the AGCC is to:

- consider and develop mechanisms to coordinate all land, sea and air aspects of GNSS;
- promote the safe and effective utilisation and development of GNSS in Australia, and
- coordinate national security issues, the application of augmentation systems, and the national use of GNSS in other relevant applications.

Membership of the committee is drawn from a wide variety of sectors such as aviation; transport and regional services; intelligent transport systems; defence; emergency services; land transport; academia; spectrum management and communications; timing; geomatics and geophysics; security; and industry providers.

ANZLIC - the Spatial Information Council

ANZLIC, the Spatial Information Council, is the peak intergovernmental organisation providing leadership in the collection, management and use of spatial information in Australia and New Zealand (www.anzlic.org.au). ANZLIC is a joint initiative of the governments of the Commonwealth of Australia, New Zealand and the States and Territories of Australia.

The key role of ANZLIC is to promote accessibility to and useability of spatial information. There can be many barriers to information access such as organisational boundaries between agencies, jurisdictions and nations; lack of consistent information standards; and use of incompatible or inappropriate technologies.

ANZLIC is encouraging development of consistent government policies within Australia and New Zealand to minimise these barriers wherever possible. ANZLIC is working with all government jurisdictions and the private sector to develop policies and guidelines which adopt international best practice and which are relevant to conditions found by practitioners and users of spatial information in both countries. ANZLIC is promoting the use of best practice through mechanisms such as the Australian Spatial Data Infrastructure (ASDI) and embedding its use in the practices of both public sector agencies and business enterprises that provide spatial data and services.

ANZLIC has prepared a suite of inter-related policies and guidelines aiming to assist organisations achieve 'best practice' in spatial data management. These include:

- guidelines for custodianship of spatial data;
- policy statement on spatial data management;
- metadata protocol and standard metadata profile; and
- guiding principles for spatial data access and pricing policy.

Intergovernmental Committee on Surveying and Mapping

The Intergovernmental Committee on Surveying and Mapping (ICSM) provides leadership, coordination and standards for surveying, mapping and charting, and assembling and maintaining national framework data sets (www.icsm.gov.au). Framework data includes geodetic, topographic, cadastral, street addressing, tides and sea level, and geographical names. ICSM is made up of representatives from all the Australian States, Territories, the Commonwealth and New Zealand. Members are responsible for government surveying and mapping functions in their jurisdiction. ICSM is a Standing Committee of ANZLIC.

The ICSM goals are to:

- establish an effective framework that facilitates data integration;
- facilitate the development of the ASDI;
- set best practice surveying, mapping, hydrography and toponomy; and
- enable effective participation of stakeholders in ICSM processes.

The initiatives carried out by the ICSM aim to:

- avoid unnecessary duplication between jurisdictions, and

- provide a consistent and modern approach to surveying, mapping and charting for national development and defence.

PSMA Australia Limited

PSMA (Public Sector Mapping Agencies) Australia Limited is an unlisted public company, incorporated in June 2001, limited by shares and owned by the State, Territory and Commonwealth governments of Australia (www.pdma.com.au). The company aims to:

- facilitate access to seamless national datasets derived from government data sources;
- remove barriers and simplify licensing of national datasets to value added resellers; and
- enable and stimulate the spatial industry.

The PSMA consortium was originally created in 1993 as an unincorporated joint venture between the nine mapping agencies of the States, Commonwealth 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 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.

Industry, Education and Professional Bodies

Australian Spatial Information Business Association

The Australian Spatial Information Business Association (ASIBA) represents the interests of the private sector spatial information industry (www.asiba.com.au). ASIBA was founded in December 2000 and is structured as a single national entity. More than 300 companies are members of ASIBA.

The principal objects of ASIBA are to:

- develop the spatial information industry;
- foster and enhance the interests of companies and individuals working in that industry; and
- provide business support and representational services to assist members to achieve their business and commercial goals.

ASIBA and the Australian Property Institute have secured funding to develop a definition of water property rights. This project has lifted the industry's profile in the broader public arena and in the many agencies with interests in water management. Other achievements include a private lunch with the Chief of Australian Defence Forces who spoke of the importance of spatial information and the need for a close working relationship between defence and the private sector of the spatial information industry.

Australian Spatial Information Education and Research Association

The Australasian Spatial Information Education and Research Association (ASIERA) was formed in November 2002. The purposes of the Association are to:

- support all academics and researchers of spatial information studies, and other allied subject areas in Australasian tertiary and post-secondary institutions;
- promote the academic and research interests, and welfare of the Australasian spatial information industry; and
- provide a forum for discussion of academic and research matters, and to encourage close cooperation between the staff of the various institutions.

ASIERA aims to provide a unified voice to government and industry on matters relating to education and research in spatial information and spatial science.

Spatial Sciences Institute

In 2003 there was a significant change in industry professional representation in Australia. After more than two years of debate, the members of the five key industry professional bodies voted convincingly to unify into a single body providing for the professional development of all people in the spatial information industry.

The five participating bodies are the Institution of Surveyors, Australia (ISA), the Institute of Engineering and Mining Surveyors, Australia, the Mapping Sciences Institute Australia, the Australasian Urban and Regional Information Systems Association and the Remote Sensing and Photogrammetry Association of Australasia. The single body that is being created from those five institutions is the Spatial Sciences Institute (SSI) (www.spatialscience.org). The SSI was launched on 4 April 2003.

Cooperative Research Centre for Spatial Information

The Cooperative Research Centres (CRC) are an initiative of the Commonwealth Government that aim to strengthen collaborative links between industry, research organisations, educational institutions and government organisations. These collaborative activities of a CRC aim to achieve practical and real outcomes of national economic and social significance.

The CRC for Spatial Information (CRC-SI) is scheduled to commence on 1 July 2003 and will run for 7 years (www.spatialinfocrc.org). Participants in the CRC include 4 universities, 4 governments and an industry consortium of 46 companies.

The mission of the CRC-SI is to develop the concept of a Virtual Australia, uniting research and commercial innovation in spatial information. Its objectives are to:

- involve spatial information users in the identification, development and utilisation of research activities;
- strengthen collaborative links between industry, academic and government researchers and research users,
- ensure an efficient and effective research agenda for SI for the next decade, and to ensure research programs have significant technological and commercial outcomes,
- increase the efficiency of research training through effective collaboration, and to produce in Australia knowledgeable, skilled, spatial IT literate professionals required for internationally competitive business,
- provide an innovative environment for the commercialisation of spatial information technologies.

ACTIVITIES IN SURVEYING, MAPPING AND CHARTING

Geodesy

Geoscience Australia

Australia's national geodetic authority, Geoscience Australia, provides the link between the national spatial infrastructure and the international geodetic services and organisations that supply the global framework on which it is based. The Inter-governmental Committee on Surveying and Mapping, Geodesy Technical Sub-Committee, provides advice on the interface with the national datums and coordinates geodetic projects between State and Territory authorities.

The Australian Regional GPS Network (ARGN) consists of sixteen continuously operating GPS receivers across Australia, Antarctica and offshore territories in the Indian and Southern Oceans. Data from this network is automatically retrieved, quality-checked, archived and distributed to the International GPS Service as daily and hourly Receiver Independent Exchange (RINEX) data files.

Data and solutions are regularly provided to the major international geodetic services for science and inclusion in global reference frames:

- the International GPS Service (IGS);
- the International Glonass Service (IGLOS);
- the International DORIS Service (IDS);
- the International VLBI Service (IVS); and
- the International Earth Rotation and Reference System Service (IERS)

As an IGS Regional Data Centre and Regional Network Associate Analysis Centre, Geoscience Australia provides daily data and weekly solutions to IGS. Seventy weeks of global GPS solutions were recently contributed to the GPS Tide Gauge Benchmark Monitoring project. In addition to the weekly Earth Orientation Parameter solutions, ten years of satellite laser ranging solutions were contributed to the International Terrestrial Reference Frame 2000 (ITRF).

A popular outcome from the availability of GPS data and processing is the Geoscience Australia on-line GPS processing system known as AUSPOS. Anyone with a dual frequency GPS receiver capable of producing data in the RINEX format can upload the data over the Internet and have an accurate position returned by e-mail, generally within about 20 minutes.

Through Geoscience Australia, Australia has also been contributing significantly to geodesy in the Asia Pacific region. Since 1997, six major GPS campaigns (three since 2000) covering the whole region have been coordinated and processed on behalf of the Permanent Committee on GIS Infrastructure for Asia Pacific (PCGIAP). These campaigns provide fundamental ITRF positions that assist in relating local datums to the global system.

The South Pacific Sea Level and Climate Monitoring Project assists Pacific Island nations by monitoring the change in sea level. To allow an absolute measure of this change, nine continuously operating geodetic GPS receivers have been established in the region - with at least another 3 planned in the near future. Data from these sites is routinely retrieved and processed, and with the regular height connections between the tide gauges and GPS sites, provides the link between sea and land motion.

Remote Sensing

Geoscience Australia

Geoscience Australia's Australian Centre for Remote Sensing (ACRES) has implemented a number of technological improvements into its operations. A high speed link has been established between its antenna sites and its processing facility, which are thousands of kilometres apart. This has enabled metadata and quicklooks to be made available to users online within hours of reception. Also, fully processed data products can be delivered to customers within hours. Delivery of data online to customers is also available, as well as on new media such as DVD.

A second antenna has been installed at Alice Springs. This provides back-up to the main antenna (now undergoing major refurbishment), and also helps reduce conflicts due to simultaneous satellite overpasses.

The ACRES archive has been completely transcribed from Optical Tape to Digital Linear Tape in the three year report period, ensuring its continued useability in the future. A major part of the archive also now resides in robotic storage systems, providing faster production turnaround.

ACRES has participated in two significant international collaborations. ACRES acquires hyperspectral data from NASA's EO-1 satellite and forwards the raw data to USGS for archiving. Also ACRES supports USGS in the Landsat 7 mission, by acquiring data for the USGS archive. As well, data about the health and safety of the satellite are forwarded to USGS after every overpass.

Australia is at the forefront in developing the Direct Broadcast (DB) capabilities of MODIS. ACRES has been receiving MODIS data from TERRA since late 1999, and AQUA since 2002. This data is now available to users online, and also from the ACRES archive. An online bushfire mapping system called Sentinel was established in early 2003.

CSIRO led an Australian contribution to the calibration/validation program of the hyperspectral EO-1 data that was coordinated by NASA.

Western Australia Satellite Technology and Applications Consortium (WASTAC)

The Western Australia Government, through membership of the WASTAC has installed an X-band receiver for reception of direct broadcast data from the MODIS sensor on the TERRA and AQUA satellites.

Mapping, Charting and Associated Databases

Administration

ABS

During Australia's fourteenth national Census of Population and Housing the ABS produced over 40,000 individual maps that together cover the entire 7.7 million square kilometres of Australia. Census maps were produced in full colour from the ABS's highly automated GIS and printed in the small numbers required on

colour laser printers and ink jet plotters. The source for both the topography and cadastral information shown on the maps was the PSMA Australia Limited national dataset first developed for the 1996 Census and revised and upgraded for the 2001 Census. The same national dataset had earlier been used for the design and construction of enumeration areas (CD) and thus provided a seamless flow of spatial information from design of CD, through field management and enumeration to creation of higher level statistical and administrative areas and geographical output products.

Cadastral

ICSM

The ICSM Permanent Committee on Cadastral Reform has been providing a leadership role in advising ICSM on cadastral reform matters, raising awareness of the cadastre and the benefits of cadastral reform and the costs and benefits of improving the accuracy of the digital representation of the cadastre.

Geoscience

Geoscience Australia and partners

In May 2002 a consortia observed 48 new stations covering the South West Seismic Zone of Western Australia. The consortia included the Western Australia Department of Land Administration, Curtin University and University of WA; Geoscience Australia; and the Institute of Geological and Nuclear Sciences New Zealand. Almost all sites were established on granite outcrops in an effort to retain long-term geological stability. The three-week GPS campaign involved 20 GPS receivers with observation sessions ranging from 7 – 21 days. It is envisaged that the network will be re-observed every 2 – 3 years.

Hydrography

Australian Hydrographic Office (AHO)

Survey Effort. The survey of Australia's vast area of charting responsibility has been ongoing with the Survey Motor Launches and Laser Airborne Depth Sounder Aircraft continuing to conduct surveys in the Great Barrier Reef, Arafura Sea and Papua New Guinea waters. The expected survey output, however, was reduced during 2001 and 2002 due to the tasking of LEEUWIN and MELVILLE to border protection operations in Australia's northern approaches. These two ships have recently returned to survey operations with a corresponding increase in survey productivity expected.

Electronic Navigation Chart (ENC). Australia's approach to ENC development is to concentrate on critical navigation and environmentally sensitive shipping routes, re-compiling much of the information from source survey sheets. This differs significantly from other national Hydrographic Offices who are, in general, sourcing their information from the paper chart. This has a significant increased resource requirement and to date the AHO has achieved coverage from Weipa to Cairns with a planned coverage to Gladstone by December 2004

Paper and Raster Nautical Charts (RNC). Australia has a portfolio of 400 paper charts covering the waters of Australia, Papua New Guinea and Antarctica. Seafarer RNC is its raster product that has approximately 2000 current users. The RNC supplements the ENC's to provide an electronic charting capability covering Australia's area of charting responsibility.

Native Title

ICSM

The ICSM Native Title Working Group focuses on developing a national data model and guidelines for defining the spatial representation of native title claims.

Tides and Mean Sea Level

ICSM

The ICSM Permanent Committee for Tides and Mean Sea Level continues to work in standardising the tidal data exchange format by aligning it with the National Marine Data Group format. They are also reviewing the Australian Tides Manual, providing advice on tidal information of the future and participating in discussions on the Australian marine cadastre issue.

Topography

Geoscience Australia

National scale mapping. In July 2003 Geoscience Australia will achieve a significant milestone with the completion of the revision of all 513 tiles of the 1:250 000 scale maps and data covering the entire Australian continent. This Series 2 product has been produced with the aid of the latest satellite imagery, information sourced from local and state authorities, as well as other informed sources. The paper maps (NATMAP) and digital versions (GEODATA) have widespread application for defence, immigration, customs and emergency management, exploration investment, land-use assessment and planning and general public use. It is expected they will also be an important resource in homeland security.

Seamless coverage. Geoscience Australia is undertaking various developmental projects to improve and innovate products and our services. For example, Geoscience Australia is developing an object-oriented, 'seamless' spatial database of topographic data. The data model developed for the task adopts the ICSM national harmonised data model for topographic data. Customers will be able to access and interact online with the Geoscience Australia seamless spatial database for immediate and personalised use. Two thirds of the GEODATA map tiles have been loaded into the database, with the balance to be completed by September 2003.

Geoscience Australia and Defence cooperation. Over recent years Geoscience Australia and the Department of Defence have been working together with a shared goal of achieving greater coordination and cooperation in the collection and management of spatial information covering Australia. Through a recent initiative, Geoscience Australia now manages the onshore topographic map production requirements for DIGO. This arrangement allows for a more coordinated approach to national topographic mapping and strengthens the spatial information industry in Australia through extended contract opportunities for the private sector map producers.

Vegetation

Australian Greenhouse Office

As part of a National Carbon Accounting System, the Australian Greenhouse Office undertook a multi-temporal study of vegetation cover for all of Australia between about 1970 and 2000. Using remote sensing techniques, it maps the changes in land cover which drive change in various carbon pools. It provides a consistent and objective approach to identifying afforestation, reforestation and deforestation across Australia over time.

Street Addresses

PSMA Australia Limited

PSMA Australia Limited is letting a contract to build and maintain a Geocoded National Address File (G-NAF). It is expected that the initial build of the G-NAF will be completed by December 2003. G-NAF will be the authoritative database of reference in Australia for street address data and the associated geocode attribute. Partners in the feasibility and business case development have been the ABS, the Electoral Council of Australia, Australia Post and Telstra. G-NAF will provide the ABS with much improved georeferencing of statistical data and will enable a number of new developments in statistics in coming years.

ICSM

The ICSM is developing a new standard for Urban and Rural Addressing. This new standard has now been finalised and is currently being published by Standards Australia. ICSM has developed a promotional campaign with the intention of building awareness, commitment and compliance with the new standard. The roll out of the promotional campaign will commence in 2003.

Geographical Names

ICSM

The ICSM Committee for Geographic Names in Australasia continues to work in creating a greater

community awareness of geographic place names through educational and promotional campaigns. They are developing and promoting national guidelines for geographic place names especially in areas of indigenous naming issues, and geographic domain names. They also continue to support and provide active representation on the United Nations Groups of Experts on Geographical Names.

ICSM has been Influencing auDA (.au Domain Administration Ltd – responsible in operating the .au domain in Australia) to adopt a community based usage model for geographic domain names. This will maintain the usage of place names by the local community and prevent private companies using geographical names for commercial gain.

ICSM has produced a video and CD-ROM titled “What’s in a Name?” that promotes and publicises Australian geographic place names. Both the video and CD-ROM outline how geographic place names are given, their history, heritage, character and how they shape Australian culture.

Spatial Data Infrastructures (SDI) and Geographic Information Systems

ANZLIC

ANZLIC is leading an initiative to implement a national infrastructure for spatial information – called the Australian Spatial Data Infrastructure or ASDI (akin to communication, transport and utility infrastructures). ANZLIC believes that the role of the ASDI is to ensure Australia’s spatially referenced data, products and services are available and accessible to all users. Similar national SDI’s are underway in the US, Canada and Europe;

All government jurisdictions are involved in the ASDI because they have common needs that are best addressed through a cooperative approach. Common drivers include:

- maximising the economic, social and environmental benefits from investment already being made in spatially referenced data;
- facilitating industry development;
- rising community expectations for online services;
- globalisation;
- technology;
- changing societal priorities;
- environmental degradation and natural resource depletion; and
- protecting communities through measures such as emergency management and counter terrorism.

Australia-wide cooperation and funding is provided by all jurisdictions to maintain local nodes on the national catalogue of available spatial data sources, called the Australian Spatial Data Directory which has been available since 1999;

The ANZLIC Spatial Data Infrastructure Standing Committee has produced an ASDI Action Plan to further generate debate and encourage buy-in by jurisdictions, agencies and business enterprises under a common “sharing the load” approach.

ICSM

ICSM established the Harmonised Data Framework and the Harmonised Data Model (HDM), which is part of the ASDI initiative. The HDM is a conceptual model that integrates and harmonises elements common to four ICSM models, comprising cadastral, topographic, street addressing and place names. The primary objective of the HDM is to facilitate the compilation of national data sets from data supplied by different jurisdictions.

EDUCATION AND RESEARCH

ASIERA

In Australia there are nine universities that specialise in surveying, geomatics, cartography or geospatial science. However, another 12-15 universities now offer either individual subjects or full programs in GIS or spatial information. In addition, vocational programs in surveying or land information are offered at approximately six colleges of Technical and Further Education (TAFE).

There are approximately 75 full-time academic staff from the nine universities that specialise in spatial information degree programs. These are supported by a further 30 full-time research staff and another 35 support staff.

At the nine universities there are approximately 1520 undergraduates studying surveying, geomatics or spatial science programs. At postgraduate level there are over 200 coursework students (mainly graduate certificate and diploma level) and over 150 research students (primarily undertaking PhDs). These universities employ over 70 full-time academic staff, approximately 30 full-time research staff and another 35 technical and support staff.

The annual teaching and research budget (including all university overheads) for these schools is between AUD\$28-32 million. In addition, it is estimated that the recently established Co-operative Research Centre in Spatial Information will contribute about another AUD\$10 million into spatial information research and development annually. If the budgets of the other universities that teach and research in spatial information (estimated at approximately AUD\$25 million annually) are included, this would make the total annual budget for the academic sector of the spatial information industry in Australia almost \$AUD70 million.

Universities have had to become more responsive than they were 30 years ago and now operate in a more commercial and competitive environment.

There is now greater diversity in the degree offerings across the universities with programs ranging from two year Associate Degrees, three-year Bachelor of Technology and Bachelor of Science, four-year degree programs and five-year double degree programs.

Overall graduates are in high demand for employment with most finding jobs before graduation or soon afterwards. Graduates are very mobile with many working in Asia, North America and Europe after graduation. With the increased financial demand being placed on students many are choosing to complete their degrees on a part-time rather than a full-time basis.

In recent years there has been less demand for cadastral surveyors (including working in the land development sector), whilst other areas such as engineering and mining surveying appear to be employing a significant number of graduates. Employment in the wider spatial information area (GIS) continues to expand with graduates finding positions in a diverse range of related industries. The majority of graduates find employment in the private sector. Employment in the government sector remains relatively low since the downsizing of the late 1980s and 1990s. However, there is evidence in recent times that this trend may be reversing.

Over the last decade the research activities in departments have increased considerably with some departments having a higher research budget than their teaching budget. Australian academics are very active internationally in research and collaborate with a wide range of universities and government bodies around the world. There is also a very strong link between Australian universities and overseas institutions.

The last decade has seen improved linkages with the government and private sectors. This relationship between universities and industry has been strongly supported by both state and federal governments and through the national research grant schemes.