



The Spatial Sciences Institute

response to

Senate Economics Committee

Inquiry into

The Current State of Australia's Space Science & Industry Sector

Introduction

The Spatial Sciences Institute (SSI) is a Professional Institute representing the interests of over 3000 professionals involved in the Spatial Information Industry. These professionals work in government institutions, academia, research institutions and private industry. The Spatial Information industry encompasses those aspects of Science and Technology associated with location based services including:

- remote sensing (earth observation) and photogrammetry,
- land, hydrographic and engineering surveying,
- mapping, and,
- the development and application of geographic information systems.

In relation to this enquiry the SSI and its members work in several areas of space technology including positioning using space based services (such as GPS), analysis and interpretation of satellite imagery and space based communications needed to transfer spatial data between locations. Our main area of interest in respect to this enquiry is in earth observation from satellites.

Our members have been pioneering earth observation activities since the earliest days of this technology and have accumulated considerable knowledge and experience across all fields of the earth observation sector including managing space based assets and ground receiving stations and the processing and application of the data acquired from satellites across many key application areas. There is a particularly strong Australian community in the R & D areas of earth observation based in government, industry, CSIRO and the university sector.

In a recent report on "The Value of Spatial Information", industry revenue in the spatial sector was conservatively estimated at \$137 billion annually and industry gross value at around \$682 million (ACIL Tasman Economics Policy Strategy) in 2006-7. This has been achieved with limited government involvement. The SSI feels this is a key Science and Technology area where government investment in a space program would stimulate and create innovation. This would lead to growth in high technology jobs and enterprises, provide universities and research institutes with much needed tools and data, enhance Australia's reputation in R&D internationally and address nationally pressing environmental, social and defence issues. More importantly it would provide government with assurance in

satellite data continuity and quality for its 'public good' remote sensing needs which are growing.

The SSI has been concerned for some time about the current state of Australia's space science and industry sector and welcomes this opportunity to raise issues of concern and propose initiatives to strengthen and expand Australia's position in relation to earth observation from Space.

Due to the short time frames notified for this enquiry it is proposed to develop an SSI response to the enquiry in four parts:

1. An initial response by the deadline of 18 April; (this document)
2. A more detailed response by 7 May;
3. If appropriate, more detailed proposals for inclusion in the initial report due by 23 June, and,
4. A final submission to feed into the Senate committee's final report by October 2008.

The SSI has already commenced consultations with its membership on this matter. During the development of our submissions the SSI will conduct a series of meetings and workshops to facilitate further input from all interested members and external stakeholders. The SSI is also preparing a response to the *National Innovation System Review*, and as the outcomes of that review become better identified it is expected that the two submissions can be complementary.

Scope of our submission

The SSI proposal in its final form will address:

Existing Australian activity in Earth Observation of world-class standard.

Some technology areas in which Australia is already well positioned include:

- The downlink and processing of many different forms of remote sensing data including data from all parts of the electromagnetic spectrum covering microwave (radar), visible bandwidths and the infrared portions of the spectrum;
- The application of this data across key areas of concern for Australia including environmental management, national security, disaster management, agriculture and mineral exploration.
- Sensor development for use on spaceborne platforms;
- Innovative software development for processing and applications.

Areas in which there is currently little or no activity but are within our technical and intellectual capacity.

Australia currently has no space borne sensors of its own and relies heavily on systems developed by other countries. This stifles development and innovation and requires us to follow rather than lead. With no input into the design of sensors or the orbital parameters of spaceborne platforms, most applications are not optimised for Australian requirements and those of our unique environment. Development and deployment of such a system would stimulate innovation and lead to significant downstream economic benefits in environmental monitoring, salinity management, native vegetation condition assessment and precision

agriculture. In an era of significant concern over the impact of climate change, improved earth observation capabilities are essential to the prosperity of the nation.

A number of key policy options need to be identified and pursued to address these issues for the longer term benefit of the nation.

Key Issues

- a. There are compelling arguments for more control over aspects of earth observation data acquisition and the security of key data sources. In the same light there are strong arguments that we cannot be a strong nation across all aspects of space technology and previous efforts in developing satellite construction and launch capabilities have been less than fruitful.
- b. Whilst Australia has a sound skills base in earth observation areas of technology there are strong arguments for further enhancement and development of our intellectual capacity here.
- c. Whilst there is a small and vibrant private industry capability in sensor development, data acquisition and processing and in applications and software development, for true self sufficiency there needs to be considerable development of these capabilities.
- d. There are considerable risks to Australia's national interest in our present total dependence on foreign-owned and operated satellites for earth observation. Whilst there is presently a good mix of data sources available either through direct downlink or acquisition from overseas suppliers none of these are guaranteed. We rely heavily on the USA, France and Japan for key data and a number of other sources such as India, China, Brazil and European nations. A number of our Asian neighbours have or are developing their own substantial spaceborne capabilities.
- e. The potential benefits that Australia can enjoy from further development of our existing world class capability in the application of remote sensing data and technology is in more acceptance in the international earth observation community and the flow of information sharing that comes from being fully engaged in the space sector of the industry. Control of our own space based assets in this area also ensures control of acquisition programs and instrument capabilities.
- f. Reliance on access to foreign resources for earth observation data has serious implications for key areas of concern to Australia including environmental management, national security, weather forecasting, disaster monitoring and mitigation, crop management, agricultural development and minerals discovery and exploitation. We have no control over the availability of space assets, delivery timeframes or the pricing of data from such sources.
- g. The lack of government direction and investment in the space based sector has resulted in a loss of both opportunities and capabilities compared with other nations. Whilst there is significant government investment in ground infrastructure and some limited coordination efforts in data supply, these are far from adequate to take the industry forward. A whole new approach to coordination, funding and industry cooperation is required to ensure the opportunities in earth observation can be

seized. This will not be achieved through current administrative structures. ***National strategic leadership and some real focussed resources are required in this key area of innovation and opportunity.***

Our full proposal will address some realistic goals to strengthen and expand Australia's earth observation capability with a focus on economic impacts. This proposal will also present a visionary earth observing program which seeks to place Australia centre stage in world class research and application of earth observation technologies.