

## INNOVATION: THE SPATIAL DIMENSION

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**Senator Lundy  
Ladies and Gentlemen**

Firstly I'd like to congratulate David Hocking (CEO, Australian Spatial Information Business Association, and Dennis Puniard, CEO, Spatial Sciences Institute for arranging this conference. The program of speakers is outstanding and the two days promise to be of tremendous value to our industry.

**In 2005 the OECD said, and I quote:**

***“In advanced industrial countries, innovation and exploitation of scientific discoveries and new technologies have been the principle source of long run economic growth and social well-being...”***



### Other studies have demonstrated the relationship between Innovation and Prosperity

- A 2004 study of 21 countries showed strong correlation (statistically 0.7) between economic growth and investment in innovation  
(Hindle, 2004)
- Another study of 194 companies in the UK found a significant correlation between high achieving companies and a strategic plan that references innovation  
(O'Reagan et al 2005)

So how does Australia shape up:

**The 2005 International Networked Readiness Index defines the degree of preparedness of a nation to participate in, and benefit from, ICT developments**

1. United States
2. Singapore
3. Denmark
4. Iceland
5. Finland
6. Canada
7. Taiwan

15. **Australia**

(INSEAD, WORLD ECONOMIC FORUM, Global IT Report 2005-06)

## In the World Economic Forum's Global Competitiveness Index, 2005

1. Switzerland
2. Finland
3. Sweden
4. Denmark
5. Singapore
6. United States
7. Japan
8. Germany
9. Netherlands
10. United Kingdom

(World Economic Forum,  
Global Competitiveness Report,  
2006)

19. **Australia**



## Australia's Investment in R&D

The engine room of our economy are our companies

- Australia has over 1 million companies
- 99.8% of Australia's companies are SME's (<99 employees)
- The PMSEIC found that only 13% of these export and for those that do their critical mass is too low (PMSEIC, 2005)
- A London Business School study of 2000 companies in 43 countries found that Australia's company managers were too focussed on business differentiation and not enough on new products and services (GEM, 2004 – survey of 2000 businesses in each of 43 countries)



## Australia's Investment in R&D

And the Australia Bureau of Statistics has found that:

65% of Australian businesses do not invest in innovation

That is **650,000** companies!

(Sources: BHERT 2004, ABS & DITR 2006)

## What do we know of Innovation in Australian Spatial Information Companies?

The Research:

- International review of best practice for the management of innovation across all industries
- 5 Australian company case study companies in the spatial information industry
- Australian-wide survey of 70 spatial information companies; looking at factors of innovation of the external environment, factors internal to the firm, and factors specific to the individual innovator. These are factors that operate to assist or impede innovation

## Selected Summary of Findings

- Over 60 common factors of success
- 78% felt skilled labour was limiting innovation
- 74% companies say that innovation is critical to their success (although only 45% of SI firms reference innovation in their Strategic Plan)

### A majority:

- (64%) felt that government red tape impeded innovation (especially export incentive schemes)
- (60%) cited significant internal impediments (ones controlled by the company) to innovation including lack of knowledge of customer requirements, poor management of innovators and the process of innovation
- (58%) wanted a broadband upgrade (Japan, Hong Kong, Sweden, Korea at least an order of magnitude faster than us)
- Proportion of turnover spent on R&D = 8% on average

## Critically what we don't know

Whether 8% investment in R&D on average is good enough?

How an organisation works out the right level of investment?

What are the trends in investment in innovation and R&D in the spatial information industry?

What would happen if all university graduates knew how to manage innovation?

### So why is this critical?

We live in a resource constrained world whose problems will be solved only by innovative new approaches:

- **Take water** – Australia does not have a functioning suite of national water accounts – we cannot account for all of the water coming into the system, moving through it naturally, being extracted for our use or leaving it. Makes it very hard for us to manage future demand etc
- **Take Carbon** – the world needs authoritative registries of carbon to permit carbon credit trading by 2010. Carbon sequestration through forestry will be critical. Authoritative techniques for mapping carbon will be needed.
- **Take food and fibre** – Australia probably does not have one sustainable agriculture system at present – most are in decline, especially our soils and our terms of trade have been running against us for most of the last decade. So have we redrawn the maps of productive capacity factoring in rainfall reductions of up to 25% over the next 50 years? What is our nations long term strategy for food security?
- **Take education** – the rate of growth on undergraduate enrolments in recent years has been around 4% but the rate of growth of science and engineering has been 1% - a growing gap in a society increasing moving to knowledge society

### In each of these spatial will play a critical role

- **Water** – the National Elevation Data Framework (NEDF [www.anzlic.org.au/nedf.html](http://www.anzlic.org.au/nedf.html)), data infrastructures such CSIRO's Water Resources Observation Network (WRON [www.wron.net.au/](http://www.wron.net.au/)) and Water Information Research and Development Alliance (WIRADA [www.bom.gov.au/water/wirada/](http://www.bom.gov.au/water/wirada/)) will all rely heavily on spatial information and spatial technologies which will be crucial to helping manage Australia's water issues
- **Carbon** – National Carbon Accounting System (NCAS, [www.climatechange.gov.au/ncas/index.html](http://www.climatechange.gov.au/ncas/index.html)) and the proposed Global Carbon Monitoring Scheme, especially its role in our region in adapting new radar and emerging hyperspectral satellite imaging for monitoring forest cover accurately and building additional skilled capacity across our region
- **Food and fibre** – integrated satellite, Unmanned Aerial Vehicles (UAV's), ground sensors and modelling systems
- **Education** – taken broadly by facilitating the move to the 'spatially intelligent citizen' (a term coined by Prof Mike Goodchild one of the founders of GIS)

Earlier this year ACIL Tasman completed a study on  
**'The Value of Spatial Information:  
The impact of modern spatial information technologies on the  
Australian economy'**

(<http://www.crcsi.com.au/pages/publications.aspx>)

In 2007 the Spatial Information Industry contributed:

**\$6.4 and \$12.6 billion to GDP (nearly 1%)**



## Future 5 years

The study also told us that with the right policies the contribution of SI to the economic aggregates could be up to 50% higher than in 2007 if:

- New applications introduced
- Greatly improved access to data –especially government data
- Improved infrastructure – especially GPS base stations (known as GNSS CORS)
- Improved skill levels through education programs

These are recurring themes.

ACIL TASMAN REPORT is available at:  
[www.crcsi.com.au](http://www.crcsi.com.au) under Publications



### There is another impediment to the growth of the SI industry and indeed to all knowledge working industries

- The Australian Accounting Standard (AASB 138), based on the International Accounting Standard (IAS 38) precludes the recognition on the balance sheet of certain types of intangible assets, including some forms of spatial information.
- As a result Corrs Chambers and Westgarth and Ernst and Young, in advice provided this year formed the view that 'entities that rely heavily on investment items (particularly internally generated intangible items) such as knowledge capital and intellectual capital may be significantly undervalued'.
- So as the value of intangible assets to the Australian economy increases we risk making investment decisions that do not properly favour development of information-based assets and related technologies
- Interestingly the International Accounting Standards Board said in Dec 2007 that it was timely to fundamentally review the treatment of intangible assets



### We have even more recent evidence to support investment in spatial technologies

- Australia is inexorably moving to a nation-wide 2cm positioning accuracy for:
  - Mining, for fully automated mines – RioTinto in the Pilbara
  - Agriculture – precision agriculture (water, fertilisers, seed, tillage)
  - Construction (site surveying and asset mapping)

The infrastructure that will deliver this capability is known as the Global Navigation Satellite Systems (GNSS). This will become the 5<sup>th</sup> Infrastructure after power, water, roads and telecommunications.

#### Allen Consulting – 'Economic benefits of high resolution positioning services' (draft Oct 2008, study not yet released but will be available at [www.crcsi.com.au](http://www.crcsi.com.au))

- Cumulative benefit of at least \$73 billion over next 20 years
- This benefit is realised through the location of base stations approx 70km apart that correct the signals from GPS which alone give positioning accuracies of between 5 and 10 m and bring them to a real time accuracy of 2cm
- But we have a largely uncoordinated and patchy network of base stations – about 100 all up owned by government and around 3000 in private hands none of which talk to each other or the governments. We need about 1800 to cover Australia – cost \$300 million
- If we did this we could add at least another \$32 billion in cumulative benefits over the next 20 years – for these 3 industries alone



BUT – these will only be realised through concerted partnerships between government and the private sector

In recent years we have seen national approaches that have stressed; commercialisation, infrastructure, productivity, social inclusion and innovation

Where are we, Australia, next going to find our competitive edge?

### My 5 Point Plan to address these issues of national importance

#### 1. Strategy – think 30 years

We need to cultivate strategic intent and learn as a nation to exercise the discipline of strong strategic thinking. On water, carbon, food and energy where do we wish to be as a nation in 30 years?

#### 2. Treat information as both a key capability and as fundamental as tangible infrastructure

The Cutler Review on Australia's National Innovation System points the way in this regard.



### 5 Point Plan, cont..

#### 3. Leadership in our region – the pacific

On carbon, sea level rise, and capacity building new skills in the societies of our neighbouring nations. Australian leadership in the region from China, through south east asia through the pacific would act as a springboard for greater activity

#### 4. Regulation reform – Smart Regulation

Review of regulations that are impeding the growth of knowledge working industries eg Australian Accounting Standards

#### 5. Forge new institutional alliances

That foster greatly improved collaboration between the sectors. In the spatial information industry in Australia we formed last year the Australian Spatial Consortium (ASC). The ASC is made up of the peak private sector organisation the Australian Spatial Information Business Association, the peak government organisation ANZLIC – the Spatial Council, the peak research organisation the Cooperative Research Centre for Spatial Information, the peak professional body the Spatial Sciences Institute, and two leading companies operating across the public and private sectors; PSMA Australia Ltd and 43 Pty Ltd. The ASC will tackle those issues of national importance that can only be addressed when all of the sectors work together.

It would be very much in Australia's interests if other market sectors were to create leading bodies like the ASC and if these bodies could work together.



Thank you