Committed to Australia's ICT, electronics and electrical manufacturing industries

AEEMA

PUBLIC SUPPORT FOR SCIENCE AND INNOVATION
PRODUCTIVITY COMMISSION DRAFT REPORT
COMMENTS BY AUSTRALIAN ELECTRICAL AND ELECTRONIC MANUFACTURERS' ASSOCIATION (AEEMA) ON BEHALF OF THE ELECTRONICS INDUSTRY ACTION AGENDA STRATEGIC LEADERS IMPLEMENTATION GROUP

Executive Summary

The Productivity Commission's Draft Report on public support for science and innovation has found that there is no evidence that the quantum or mix of public support for science and innovation is currently inappropriate for Australia's needs. In reaching this finding the draft has coupled R&D too closely with innovation; the latter is sufficiently distinct from R&D and arguably more vital to national economic and productivity outcomes that it deserves deeper analysis than it receives in the draft report.

The Commission's argument for the status quo in terms of government policy ignores the strident call from industry and business for the need to elevate innovation to the national priority agenda, with a national framework to coordinate the efforts of government, business and research institutions. This innovation framework or culture will require willingness by governments and investors to value *risk acceptance rather than risk aversion or risk avoidance.*

In addition, the draft has not developed appropriate recommendations to advance the practical aspects that will allow Australia to regain what industry and business accept as 'lost ground' to become more globally competitive. In order to achieve this, any plan for the better facilitation of innovation needs to focus on national strategies that ask the question, 'where do we want to be as a nation?' in the future. In this context the concept of 'incrementalism' (page xix) has no place – 'large bets' should be considered on national priorities other than the four[1] already specified, if it agreed that Australia needs additional national research strategies. For example, the current debate surrounding additional energy sources such as nuclear raises the issue of how this aspect of research can be integrated into the Government's research priorities – which

[1] An Environmentally Sustainable Australia, Promoting and Maintaining Good Health, Frontier Technologies for Building and Transforming Australian Industries and Safeguarding Australia.

current priority must be abandoned to allow nuclear energy to be added? And how are these priorities reviewed or altered to accommodate shifting national needs?

Electronics Industry Action Agenda

In June 2003, the Electronics Industry Action Agenda (EIAA) was endorsed by the Australian Government and outlined a 10-year vision for the industry.

Its industry-led strategies and actions address the key challenges and identify a way forward for the electronics, microelectronics and photonics industries into global markets.

The EIAA, which was extended for another two-year term in August 2006, continues to receive full support from government, industry and its associations, and is providing leadership for the electronics manufacturing industry to unite and develop a strong base that will build a better industry for the future.

Since the commencement of the Action Agenda process, the leadership group has taken an active and continuing interest in contributing to government policy relating to the commercialisation of R&D and the effectiveness of Australia's innovation system as it impacts on high tech (high end) manufacturing.

The EIAA's vision is,

"The Australian electronics industry, comprising predominantly small to medium enterprises, will seek to grow existing industry and create new industries underpinned by high-tech manufacturing through clustering, **technology integration**, and product realisation. Through collaboration, the EIAA will:

- foster a business environment to support global integration,
- consolidate the industry,
- generate opportunities for SMEs to compete globally,
- assist industry in issues of standards and compliance,
- connect Australian-based multinationals with SMEs,
- reach into targeted niche markets serviced by global supply chains,

- link industry with educational organisations, and
- create investment opportunities."

The EIAA is connecting SMEs in the electronics industry to local and global markets.

The EIAA is building communities, or clusters, of like-minded companies to work together to source new markets, link with multinationals and win contracts that would normally be out of reach.

The EIAA is also helping to:

- develop opportunities in vertical market segments and other niche markets,
- lead international trade missions to expand exporting opportunities,
- forge alliances with key international markets,
- map capabilities to identify new local and global market opportunities,
- support developments in niche areas such as telematics, photonics and radio frequency,
- **improve linkages to Australia's R&D infrastructure**, and
- capitalise on the critical role of large companies.

The EIAA is being led by a Strategic Leaders' Implementation Group comprising leaders of Australian electronics companies and R&D organisations.

DEFINITIONS

Commentators and policy makers are polarised on the issue of a definition of innovation. In technology-intensive industries such as biotech, IT and mining innovation is synonymous with R&D. The draft report seems to treat only this aspect of innovation. But in other sectors that are more service oriented (business service delivery firms etc) innovation is more of a cultural transformation, a reform of workplace or individual practices to enable creative collaboration. Innovation is multidimensional, encompassing a vast array of activities in the whole supply chain including workforce skills, individual skills, leadership, management, technology uptake and cultural understanding (attitudes and behaviours). OECD experts such as Pim den Hertog indicate that the single most difficult aspect of facilitating innovation in any policy setting is *changing the behaviour of people.*

As AEEMA argued in its initial comments to the Commission, there is a plethora of OECD and EU research into the issue of innovation in manufacturing and services. One thing however is clear - it is a poorly understood phenomenon. While its linkages with

productivity, economic growth, cost savings and supply chain effectiveness are well known, the details about **how** they are linked is not understood. We have rich data about the good outcomes delivered by innovation but we remain unsure about the policy settings needed to deliver those outcomes.

This may be a definitional issue – there are as many definitions of innovation as there are commentators. For many, especially governments, 'innovation' is used as a descriptor for the entire process of commercialisation, from idea to market, so that any targeted polices are aimed at enhancing outcomes across the entire spectrum of these activities. Another definition that appears to have gained currency is 'change that adds value'. The recent Report by the House of Representatives Standing Committee on Science and Innovation uses this approach as the basis for its accepted definition, "…the path of conceiving, developing and implementing ideas through to the generation of products, processes and services. It gives economic value to the nation's knowledge."[2]
But **innovation** is not **invention** – the most effective innovation involves the application of *existing*, *old* knowledge in new and inventive ways, not necessarily new knowledge itself.
It is evident from this definitional approach that there can be many different types of innovation, and this is clearly recognised by the OECD;
Product innovation – the introduction of a good or service that is new or significantly improved
Process innovation – the implementation of a new or improved delivery method
Marketing innovation – the implementation of a new marketing method involving changes in design, placement or pricing
Organisational innovation – the implementation of a new method in a firm's practices, workplace organisation or relations.[3]

These different categories of innovation may have characteristics that span more than any one category, and they may also be inter-dependent at times. But the key word in all of these types is 'implementation'. What is recognised as critical to a successful implementation is appropriate support for the two leading phases of innovation: creativity and development. Only then can we have enough "meat on the bones" to build the commercial proposition (industrialising) by which innovative success can be measured.

AUSTRALIA'S PERFORMANCE

[2] "Pathways to Technological Innovation" June 2006, page 8
[3] op.cit., page 10

Australia maintains only an average position in world benchmarks. The most recent econometric analysis of Australian innovation, "Assessing Australia's Innovative Capacity: 2005 Update" [4] is a sample of 29 OECD countries over the last 20 years, from 1973 to 2004. The sample has measured innovative capacities using weighted indices showing the extent of each country's current and accumulated resources and policy commitments to innovation. The key finding from this analysis is that **Australia has not made any gains in innovative capacity since 1996** (page 9).

There is good reason to question why the status quo is acceptable to the Commission (and thus no major overhaul of the funding system required) if this strategy places Australia in not much more than the average level. If Australia is to be shaped as an innovation economy, a higher achievement should be our aim.

CURRENT IMPEDIMENTS TO INNOVATION

Our key strategic capability is the ability to exploit creative and innovative engineering skills which can integrate and adapt technologies sourced globally with local field knowledge to quickly meet niche market opportunities locally and overseas. Any innovation support structure must recognise this at the outset to be successful. The key point to be made here is that Australia's innovation system is not 'externalised'; our major R&D institutions are not developing R&D to meet the needs of the world; technology development must instead be "market facing". This situation has been made worse because public research funding is directed through the publicly funded R&D institutions. Specifically, the latest budget data shows that 40.8% of the 2005-06 expenditure is directed to the higher education sector while support for the major government research agencies comprises 23.9%. Only 17.6% is directed to providing support for the commercialisation activities of Australian businesses. The percentage of BERD financed by the Australian Government remains well below OECD and EU averages.

MANUFACTURING INNOVATION

The draft appears to dismiss the place of high-end manufacturing as a springboard for innovation. Yet manufacturing opportunities are growing in focal points of new technology integration such as automotive telematics (i.e.integrating consumer electronics, communications, computing and the car), building upon existing mature industries such as the automotive industry.

As reported in the Electronics Industry Action Agenda:

[4] Joshua Gans and Richard Hayes, University of Melbourne. www.mbs.edu/jgans

"For example, it is estimated that 90 per cent of all future innovation in the automobile industry will be driven by electronics, with electronics representing up to 40 per cent of a vehicle's production cost by 2010. According to the Department of Defence, the value of electronics in defence related activities is even higher, with electronics representing up to 80 per cent of the production cost of a modern war ship and a submarine".

(Electronics Industry Action Agenda, http://www.dcita.gov.au/Article/0,,0_1-2_11-3_475-4_107122,00.html)

Defence electronics is another key sector which is currently providing opportunities for innovation development. Australia is a world leader in high frequency RADAR surveillance (the Jindalee Over the Horizon Radar Network – JORN) and has the requisite skills in complex system integration to design, construct, operate and improve such systems. Radio astronomy is another area of strength which has a very bright future with the establishment of the Radio Astronomy Park at Mileura in WA by the State Government and the associated Radio Quiet Zone being set up by the Australian Communications Management Authority (ACMA). These developments position Australia exceptionally well to be selected as the nation to host the Square Kilometre Array (SKA) project.

But these comparative advantages can count for little if Australia's innovation system is not 'market facing' and Australian hi-tech companies are not the 'best of breed' in creating and delivering customer solutions (i.e. value) through tangible goods. Therefore, for global integration to be truly effective i.e Australia's innovation system to be responding to the needs of markets and not just to the needs of Australian technology producers, AEEMA is of the view that the focus of innovation reform and the application of resourcing must be applied upstream of the commercialisation stage – through industrialisation and market development. If this can be achieved the ultimate measurement of innovation will be achieved – new markets, new products and services and new wealth creation for Australia.

CONCLUSION

Because Australia has positioned itself as a leading user and developer of technology and associated solutions, we now have the chance to pursue policies and investment strategies to establish ourselves as an 'innovator nation'. The draft report has missed the opportunity to provide suggestions for the correct settings to achieve this. Those settings should include the following:

- Ensuring a world class pool of trained innovators by maintaining a high level of university excellence and providing incentives for students to pursue science and engineering careers
- Providing incentives for deployment of risk capital
- Educating the community that innovation is a cumulative, step-by-step process, not a 'big-bang' invention
- Continuing to open up Australia to more international competition and investment and increasing the effectiveness of IP protection
- Reducing barriers to entry and excessive regulation on business. These hinder cluster development.

When it is developed, Australia's innovation policy must be focused on the external environment where the impact of globalisation is determining whether or not domestic policies and strategies will address the opportunities offered by global markets. In essence, this means a higher level of attention and the application of resources to the 'industrialisation' not just the commercialisation of technologies, a process which includes market development. In short, Australia's innovation system must be globally integrated.