

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

28 April 2005

Dr Anna Dacre
Committee Secretary
Standing Committee on Science and Innovation
Parliament House
CANBERRA ACT 2600



Dear Dr Dacre

**RE: SUBMISSION – PATHWAYS TO TECHNOLOGICAL INNOVATION
HOUSE OF REPRESENTATIVES STANDING COMMITTEE ON SCIENCE AND
INNOVATION**

I have much pleasure in submitting a submission (attached) for consideration by the Standing Committee on Science and Innovation.

The submission specifically focuses on a range of issues relating to

- **pathways to commercialisation** through product realisation strategies,
- **research and market linkages** through innovative 'country to country' arrangements such as the Australia-Taiwan Strategic Framework Agreement for the mutual development of the electronics and ICT industries of both countries, and
- **factors which determine success** such as innovative new industry structures which include industry-led clusters and technology consortia underpinned by open innovation strategies driven by collaboration and responsiveness to market needs.

These issues address in part the approach adopted by a number of highly successful 'knowledge economies' such as Taiwan, but also take into account the particular characteristics of a broadly fragmented, Australian technology-based industry (predominantly SMEs) sector.

However, the submission clearly recognises that there is an opportunity for the national government to nurture and support industry-led initiatives, some of which are being customised to the Australian operating environment within the framework of government endorsed Action Agendas such as Electronics, Medical Devices, Scientific Instruments, and Advanced Manufacturing, all of which have key linkages and shared opportunities for mutual development. It is submitted that proactive industry groups such as AEEMA have a key initiating and implementation role to play in this regard.

Should additional information be required, I can be contacted at 6247 4655.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Angus M Robinson'. The signature is fluid and cursive, with a large initial 'A' and 'R'.

Angus M Robinson
Chief Executive
encl

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and electrical manufacturing industries



**SUBMISSION – PATHWAYS TO TECHNOLOGICAL INNOVATION
HOUSE OF REPRESENTATIVES STANDING COMMITTEE ON SCIENCE AND
INNOVATION**

AEEMA

The Australian Electrical and Electronic Manufacturers' Association Ltd (AEEMA) is the peak national, industry body in Australia representing some 400 infrastructure providers for Australia's ICT, electronics, and electrical manufacturing industries. AEEMA is organised in three principal divisions (electrical, electronics and 'ICT Australia[®]'); member companies belong to some 17 industry forums and provides secretariat services for three other associations, the Armed Forces Communications and Electronics Association, IES The Lighting Society, and the Consumer Electronics Suppliers' Association. AEEMA also supports industry-led clusters linked to national strategic development.

AEEMA is leading a national strategic plan aimed at developing further excellent Australian capabilities in contract electronics manufacturing of complex products, integrated systems for home networking and telematics, medical electronics and devices, defence electronics systems, and photonics and opto-electronics.

AEEMA is closely linked with the principal R&D institutions throughout Australia that specialise in ICT technologies (electronics, microelectronics and photonics) and nanotechnology.

AEEMA has its head office in the national capital, Canberra, and enjoys strong links with the Australian Government and regional government agencies. AEEMA's innovative Industry Cluster-Queensland is breaking new ground in collaborative activity for regional, technology-based small to medium-sized enterprises (SMEs).

AEEMA is pro-active in developing strategic alliances with overseas kindred associations as an innovative means of building commercial partnerships for its members with the members of these industry associations.

<http://www.aeema.asn.au/ArticleDocuments/27/Strategic%20Alliances.pdf>

Further information: www.aeema.asn.au

A New Approach to Technological Innovation

Last year, on behalf of a group of collaborating industry groups, AEEMA and the Welding Technology Institute of Australia (WTIA) made a submission to a working group (Growing Technology-based SMEs) of the Prime Minister's

Science, Engineering and Innovation Council (PMSEIC) chaired by Mr David Miles. In this submission, it was pointed out that the wealth of a nation is measured in what its industry can produce and what it can sustain through innovation. This assumption is the backbone of the "Backing Australia's Ability – Building our Future through Science and Innovation" policy platform. In Australia the major contribution to GDP has been traditionally the province of primary industry and mining, but this is no longer the case. Output and employment levels in manufacturing now exceed mining and agriculture combined and manufacturing continues to be the dominant source of both hard and soft technological innovation in industry. It is the main employer of technology-based SMEs.

While manufacturing is under increasing pressure from overseas competitors, trade in manufactured goods is growing faster than primary commodities and opportunities for trade have never been greater for Australian manufacturing industries. Technology itself is far from being static and poses new challenges and opportunities for industry to progress. This requires change, improvement or innovation for success.

Thus there is an ever increasing need to provide better technological support to Australian companies. For example, to obtain the optimum benefit of the Free Trade Agreements (FTAs) reached with Singapore, Thailand and the USA as well as proposed FTAs with countries such as China and Malaysia, and with other trading partners from South East Asia and the Middle East, Australian companies, across a wide range of industry sectors, must be in optimum condition to compete internationally and to achieve sustainable export growth.

Technological Support

Innovation and Diffusion

To optimise the process of having both leading edge and appropriate technologies implemented more widely in Australian companies in the most efficient and cost effective manner, the submission to PMSEIC suggested that following technology innovation diffusion process be adopted:

- recognising that changes take place – requiring timely improvement and innovation;
- initially identifying and analysing the needs of industry;
- sourcing solutions to meet these needs – using a variety of methods including research;
- diffusing the technology and information into companies, particularly SMEs and micro-enterprises;
- companies having the desire or culture and capability and resources to innovate;
- adapting and implementing new technology/information by technology receptors;
- improving performance of the companies through innovation;
- providing feedback for further national improvement at each stage of this technology and information process; and

- where appropriate and necessary, facilitate and drive the introduction of 'step changes' in both technology and process application.

Source

The sources for such technologies include the 2-3 % of the research outcomes generated in Australia through universities, CRCs, NICTA, CSIRO, and industry laboratories, as well as the 97-98% of research outcomes generated in the rest of the world. However, a much larger source of innovative solutions comes

from global experience, development and information. Thus the right balance of research and diffusion of proven good practice will provide optimum industry performance.

SMEs

There are approximately one million companies in Australia, 97% classified as SMEs and 60% of these have less than 20 employees. Anecdotal evidence suggests that probably 10% seek improvement through the adoption of proven technology and only 1% are probably prepared to invest significantly in new technology. It is believed that many more would make the investment if they were aware of new technology and could readily and economically adopt it with minimum risk. The wide extent of fragmentation that exists within Australia is seen to be a major barrier to the adoption of technology and 'know-how' take-up.

National Support for Industry

During the past six years, the Australian Government, through the technology innovation/diffusion programs supported by the Department of Industry, Tourism and Resources, has assisted thousands of SMEs through 'not-for-profit' industry bodies (institutes/associations/networks etc), with the support of a wide range of industry sectors and State/Territory governments. This has helped create and implement highly successful innovative outcomes, giving much welcomed value and return-on-the-investment to Australia. The response of our industry grouping to the recently announced Industry Cooperative Innovation Program which funds collaborative projects linked to action agendas has been very favourable.

National industry bodies (including AEEMA and WTIA as notable exemplars) have strategically and systematically built up basic infrastructure of nationally sourced expertise and capability, developed international technology linkages, increased capacity and legitimacy to provide a broad range of technology diffusion and collaboration services, as well as proactively established a sound industry support structure both within themselves, and with other players in the innovation system.

Together with State and Territory government agencies and technology centres and, private organisations, universities, CRCs, NICTA, CSIRO, these bodies provide valuable support to industry and innovation.

Clusters and Technology Consortia

In recent years there has been much discussion in Australia about industry cluster development.

Recent research work in the USA on the 'public good' of industry clusters has suggested that the principal advantage of clusters has been to strengthen

localised economies and provide cost savings to firms. This has been achieved through a greater availability of input suppliers, trained workers, better gearing of public infrastructure and enhanced technology transfer.

This same study identified that a cluster comprising primarily (but not exclusively) locally owned, SMEs concentrated in medium- and high-technology or producer service industries encourages substantial trade between firms; specialised services, labour markets, and institutions develop to serve firms in the cluster. Firms consciously 'network' to solve problems, and government policy evolves to improve cluster competitiveness. The AEEMA Industry Cluster - Queensland is structured to satisfy this need.

www.aeema.asn.au/default.aspx?ArticleID=41

Through the collaboration of existing 'not for profit' industry associations and institutes, there is a further opportunity for these clusters to perform another role: as a 'technology consortium'. In this role, a research effort can be developed among business firms, government and universities that helps the participating companies to maintain leadership or gain a competitive edge over international competitors in a particular industry. This model also offers a means for the technology consortium to engage with a comprehensive range of industry stakeholders which include the publicly funded R&D institutions such as the CSIRO, DSTO, and the new National ICT Australia Centre of Excellence. The model also facilitates engagement with technology precincts, located both in Australia and in overseas regions close to new markets e.g. the Hong Kong Science and Technology Park.

In recent times, a number of the leading groups (including AEEMA) which are active in industry development in the manufacturing industry are of the view that it is timely to apply the 'technology consortium' model in an Australian context, particularly as a key structural element of the Government's action agenda approach to industry development. Moreover, the InnovationXchange has successfully applied a strategy of introducing the concept of 'trusted intermediaries' to facilitate commercialisation of R&D amongst collaborating companies in the Biotech industry.

Cluster Projects

One of the most important and very recent outcomes from the Electronics Industry Action Agenda (being implemented by AEEMA) is the embryonic emergence of a new industry for Australia – automotive telematics.

Employing cluster, product realisation, and market development strategies defined by the action agenda process, this initiative has been seeded by the Victorian Government and supported by major project funding from AusIndustry. Industry support has also been exceptional, with the initial \$0.3 million grant by the Australian Government supplemented by up to \$0.6 million of in-kind contributions from the private sector.

The considerable momentum, which has built up in this project, is best exemplified by the priority demonstrator project, "AT Signature" (the connected car), with its attraction of exceptional nationwide media coverage.
<http://www.smh.com.au/articles/2005/04/17/1113676643649.html>

The rapid development and evolution of this project to the point where demonstrable pilot projects with realisable commercial potential are now being offered into key overseas market segments identified by the Action Agenda planning. The project cluster approach has linked Australian electronics industry SMEs with major companies such as Holden, 3M, Clipsal and Sensis across the three industry verticals of the automotive, telecommunications and the building and construction industries. "

Plans for phase 2 of the project, led by AEEMA in liaison with ITS Australia and FAPM incorporates the review of up to 10 industry demonstrator projects submitted under the umbrella of the initiative as well as the determination of the optimum model for the engagement of Australian SMEs with major international corporations in the automotive telematics area. Of particular significance is the very recent engagement of the project team with a Taiwan based mobile telco operator, with the opportunity now for a major automotive telematics initiative to be incorporated within the Australia Taiwan Electronics and ICT Strategic Framework Agreement, the carriage of which is being negotiated and implemented by AEEMA. It is worth noting that Taiwan industry has been very impressed with the short time frame of eight weeks that it took for the Australian project team to integrate existing technologies into a working prototype for the AT Signature project.

The opportunity exists for Government to support this innovative model within the broad strategic policy framework of 'Backing Australia's Ability 2 during the period 2005 to 2011, and to develop further public funding programs which can enable higher levels of public investment in worthy industry-led projects.

Research and Market Linkages

PMSEIC has recently released the report (Growing Technology-Based SMEs). AEEMA was pleased to see that the report's findings broadly concur with our policy directions as an organisation representing a large number of technology-based SMEs. Moreover, we have noted that the report is mooted changes that are likely to translate into the way in which Australian industry works with government to achieve its export targets.

AEEMA has noted that the Working Group has proposed changes that will:

- back technology-based SMEs to develop the agility and sustainability to deliver high-value exports;
- maximise the benefits of all export-related activity, whether government or commercially-led, to enable growth in the number, sustainability and value-add of SMEs and to their transition to larger firms or MNEs; and,
- resource the pipeline of skill attainment required by individuals and their businesses to drive the business capability to deliver high value-adding, sustainable SME technology-based exports.

A key recommendation in this regard (Recommendation 1) is to implement a 'Tech-Team' concept for technology-based SMEs through cooperation between key representatives from the States, Territories and Australian Government, relevant industry representative and commercial sectors, to establish:

- a network comprising all levels of government and private sector partners;
- a shared vision for growing technology-based SMEs through strengthening the links between exporting and innovation;
- initiatives that align policies and programs to enable the delivery of the vision; and,
- the skills needed now and into the future to drive the achievement of the vision.

From an AEEMA perspective, the entire export activity is viewed as a 'pipeline', underpinned where possible by industry-led action agendas, with support mechanisms throughout, from the birth to the full maturity of the exporting company.

In implementing a 'Tech Team' concept, AEEMA is of the view that it is important that a true partnership between industry, government and the education sector is established (not government-driven alone – a situation which invariably militates against success). It is submitted that the implementers of 'Tech Team' should not take a 'green fields site' approach to the initiative – rather they should:

1. understand the objectives of the various export mechanisms established to stimulate export activity in this country;
2. place these mechanisms within the broader export 'pipeline' mentioned above;
3. perform a gap analysis; and,
4. provide the necessary national framework which incorporates existing mechanisms and addresses the gaps identified above (such a framework may include a national 'super cluster').

In summary, AEEMA supports the idea of a 'super cluster' framework as one suitable for the 'Tech Team' approach and supports the idea of an 'export pipeline' to ensure that a national, holistic perspective is adopted.

As an excellent example of the approach being adopted under the Action Agenda supported framework, in October 2004, as a result of combined teamwork (Victorian Government funding, AEEMA leadership, and Austrade field support), AEEMA successfully managed a major electronics/ICT industry capability mission to Taiwan, Hong Kong and Thailand. This mission comprising both companies and research institutions has resulted in the establishment of a holistic Strategic Framework Agreement between AEEMA (on behalf of the Electronics Industry Action Agenda Implementation Group) and Taiwan's Institute of Information Industry. The Framework Agreements is underpinned by five inter-related pillars:

1. Research and Product Development collaboration.
2. High Value ICT Manufacture.
3. Strategic Alliances.
4. Trade Facilitation.
5. Investment Attraction.

The Australia-Taiwan Strategic Framework Agreement

This landmark initiative is aimed at facilitating the mutual development of the electronics/ICT industries of Australia and Taiwan and will be monitored by the Bilateral Economic Committee (BEC) arrangements that exist between both countries. This whole project has been driven by AEEMA arising from a relatively long-standing relationship based on a MOU supported on the Taiwan side by AEEMA's kindred association, the Taiwan Electrical and Electronic Manufacturers' Association (TEEMA).

So as to provide some indication of the scope of the Strategic Framework Agreement, two of the pillars, which are particularly relevant to the Committee's terms of reference, are described below.

1. Technology Research and Product Development

The agreed strategy is to take advantage of the close relationship between industry associations and research organisations of both sides to promote next generation information and communication technology (ICT) cooperation so as to develop new industries by

- Developing new co-ventures focused on key verticals where Australia has specialised sectoral strengths in ICT systems e.g. mining, agriculture, multimedia, telecommunications (fibre to the premises, distributed sensor systems), medical devices, defence, security, and environment.
- Developing new co-ventures around areas of emerging technological advantages e.g. photonics (opto-electronics), nanoelectronics, advanced materials, wireless, and volumetric data storage.

Australian Participants include so far:

- CSIRO ICT Centre (Governing Agency)
- NICTA,
- Australian Photonics CRC,
- the Bandwidth Foundry Pty Ltd,
- Future Materials (i.e. the Australian Materials Technology Network)
- ATP-Innovations,
- R&D institutions (e.g. RMIT) linked to the Australian Photonics Forum and Victorian Photonics Network, the Australian Microelectronics Network and the Victorian Microelectronics Designers Network,
- Victorian Synchrotron,
- State government industry development agencies,
- and other nominated Australian ICT co-operative research centres.

2. High Value ICT Manufacture

The agreed strategy is to focus on strengths of both sides represented by Australian industry (represented by AEEMA) and TEEMA to provide assistance for global markets by

- Accessing Australia's highly competitive, contract manufacturing and design capacity for the development of prototype electronics/ICT products tested in an Australian (western) marketplace.
- Developing clever, innovative, Taiwan-branded products then mass manufactured in China for the China, USA and new global markets.

Australian Participants include so far

- AEEMA (Governing Agency),
- the Australian Electronics Industry Action Agenda Implementation Group,
- registered participants of Australian Government linked Action Agenda (e.g. Electronics, Medical Devices, Scientific Instruments, Advanced Manufacturing) linked projects,
- members of AEEMA and appropriate industry forums and networks, including the Australian Photonics Forum in collaboration with the Victorian Photonics Network, the Australian Microelectronics Network in collaboration with the Victorian Microelectronics Designers Network,
- the Bandwidth Foundry Pty Ltd,
- the Australian Advanced Technology Enterprise Centre,
- the Institute for Instrumentation, Control and Automation,
- other registered electronics and ICT companies,
- the Industry Capability Network (ICNL), and
- state government industry development agencies.

One of the projects under consideration by both sides is a **National Product Realisation Centre** development. The participants are to undertake a feasibility study and, if feasible, develop a detailed proposal for a Centre of

Excellence in Electronic Product Realisation (Product Realisation Centre) as provided for in Recommendation 15 of the Electronics Industry Action Agenda.

Pathways to Commercialisation New Concept – National Product Realisation Centre

The Electronics Industry Action Agenda has highlighted the significant and growing role that the electronics industry plays in world trade and in economic development of individual nations. Electronics and software are invariably the means by which innovativeness is incorporated into the competitive products of almost all industry sectors. The statistics reveal, however, that Australia has not sufficiently grasped this economic opportunity - despite having many of the underpinnings seen as essential for a vibrant electronics industry.

Reaching global markets is the only way Australian companies will grow to significant size. Despite individual exceptions, companies as well as entrepreneurs have shown weakness in translating identified market opportunities or research results of commercial potential into effective global products.

Professor Trevor Cole, Chair of the Action Agenda's Working Group on Industry Development, has argued that overcoming this "product realisation gap" is the key to creating quality-designed and market-relevant prototypes that justify the high levels of investment needed for the product to reach global markets. Only through prototypes which have been designed speedily, to world standards and with manufacturability as an integral part of the design process will Australian companies have products with appropriate gross margins and with a pathway to medium and then high volume production ahead of competitors.

There are generic tools, infrastructure and skills which are core to overcoming the electronic product realisation gap. At the moment in Australia, all of these are in short supply, often poorly understood, and too expensive for individual small companies to develop on their own.

Addressing and overcoming this gap needs a centre of focused and practical support. A national centre for electronic product realisation is proposed.

Australian Context

Australia has international strengths in publicly funded research. Its industry has low research and development intensity. Australian universities produce many more scientists than engineers and the engineering programs concentrate more on individual technologies and research rather than the issues involved in product design and manufacture. The engineering schools in universities are increasingly constrained financially leading to less exposure of the graduates to world-class design tools and the experience of design implementation. As a consequence, the industry professional workforce is ageing and is falling behind in the professionalism applied to its core functions.

On the other hand, the research institutions including universities, CRCs and CSIRO are developing ideas with commercial potential and many companies are identifying market-related concepts across a wide range of product sectors. Agriculture, medical device, automotive, consumer and defence are just a few of the fields where access to effective electronic product realisation is central to Australian industry growth.

Electronic Product Realisation

For competitive success, an integrated approach to product realisation is required in which, from the very beginning, the three areas of technology, market and business strategy are addressed concurrently. At the basic idea or concept stage, a preliminary analysis can be used to justify the subsequent design and prototyping stage. It is in this design and prototyping stage that significant value is added to the concept by dramatic reduction in the technology, market and business risks involved in progressing further. That is, the output of a prototyping stage consists of pre-production physical prototypes supported by market analysis, intellectual property strategy, marketing strategy and business development strategy. Such a complete package greatly facilitates decisions on funding, manufacture and marketing.

Within the product development flow (and in parallel with market and business considerations), a number of basic decisions are made:

- Market-related function to be fulfilled
- Hardware/software partition
- Number and form of printed circuit boards required
- Standard/custom integrated circuit partition
- Custom device technology selection
- Inwards licensing or in-house design
- Sub-system design, simulation
- System simulation
- Industrial design
- Prototype construction
- Test

The complexity of the design challenges and the need for both speed and effectiveness makes it imperative that "Electronic Design Automation" (EDA) tools are available and are used to full capability. The requirement to design for easy transition to manufacture means prototypes must be made to industry standard supported by expertise in packaging, assembly and test.

The generic nature of the realisation flow means that an extremely wide range of product is supported. There needs to be a number of core competencies, tools and infrastructure at world-class level if timely, globally competitive products are to be produced. The following is required. Rarely found in Australian companies, the list is too expensive for individual SMEs to implement and is lacking from the teaching and research profiles of almost all Australian universities:

- Integrated suites of commercially licensed EDA tools
- Design engineers competent in EDA tool use
- Pathways to prototype fabrication of integrated circuits
- Advanced performance prototype printed circuit board manufacture and assembly
- System-on-package assembly competency
- Access to integrated test facilities for digital, analogue and RF assemblies
- Intellectual property and licensing strategy
- Product development strategy
- Market analysis

National Centre for Electronic Product Realisation

The Implementation Group of the Electronics Industry Action Agenda is proposing the establishment of a centre which undertakes applied research across the core competencies of electronic product realisation, maintains staff with professional skills in those competencies, develops in-house that infrastructure for product realisation not readily available through other agencies, and liaises closely with related facilities, institutions and companies. It undertakes the following activities:

- Applied research on product realisation issues relevant to industry
- Contract services to research bodies to develop product prototypes
- Contract services to Australian companies to develop product prototypes
- Facilitation of transfer of prototypes to manufacture
- Undertakes forward looking demonstrator projects involving partners from universities and companies
- Stimulates the education of graduates with skills relevant to competitive electronic product realisation
- Stimulates more fundamental research on EDA, system-on-package and packaging in conjunction with universities.

Structure and Funding

Because of its applied research focus, its strong industry support role and its focus on advanced joint demonstrator projects, the Centre differs from the conventional Cooperative Research Centres (CRCs). It complements these by offering added commercial value to product ideas from CRCs as well as from universities and industry.

A single site of critical mass is envisaged supported by a small network of relevant university department/centre partners. The centre, whilst national in focus, would attract industry members involved in the demonstrator projects and applied research and who could potentially co-locate some of their activities. The Centre would liaise with and support State-based electronics and microelectronics initiatives.

National activities and facilities that would underpin the Centre could include:

- Australian Microelectronic Network and the Victorian Microelectronics Network (including proposed microelectronic Design Resource Centres).
- National Networked Teletest Facility (a Major National Research Facility program).

Because of the focus on system-in-package, strong synergistic relationships would also exist with photonics systems manufacture and sensor/MEMS manufacture. In both cases, electronics and microelectronics are essential components to function and performance.

International Exemplars

Initiatives in other countries can be identified and that have been established to stimulate the realisation of advanced electronics-based products and services. These represent investments made by governments, industry and researchers in enhancing the economic strength of their country and region. Three have been specifically identified with particular relevance to the proposed centre for electronic product realisation. They are described in more detail in their websites, viz

ACREO, Stockholm, Sweden

www.acreo.se

Yamacraw, Atlanta, USA

www.yamacraw.org

Alba Centre, Livingston, Scotland

www.albacentre.com

Long Term Sustainability

Purely by its focus on relevant applied research and the development of competencies at the heart of product development, financial self-sustainability for the Centre can be confidently predicted. The commercial model would have many similarities to the number of contract applied research and product development companies which have sprung out of and around Cambridge University in the UK. Originating in Cambridge Consultants, the series of spin-outs has created a pool of companies each very successful in the fields of:

- consulting and contract research,
- contract electronic product development, and
- intrapreneurship – spinning out internally generated product and company concepts.

Particular companies in the Cambridge area include:

- Cambridge Consultants www.cambridge-consultants.com
- PA Technology www.paconsulting.com/innovation
- The Technology Partnership (TTP) www.techprt.co.uk
- Scientific Generics www.generics.co.uk

Within Australia the nearest exemplar to these would be Invetech with strong links to TTP and with a focus on medical device instrumentation
www.invetech.com.au

Core Competencies and Focus

The Centre would, in the first instance, focus on five key areas within its complete suite of competencies. It is considered these are the most important contributors to product differentiation and value-add and which would most benefit from programs in applied research within Australia.

- EDA – Electronic Design Automation
- Embedded Software
- Design for Test
- System-in-package
- Intelligent Microproducts

In addition, challenging demonstrator projects would be initiated which push to the limits the capabilities in these five areas at the same time as exploring a product application area of major potential within the Australian industry profile.

In very general terms, a microsystem which combined sensors, intelligence and communication capabilities could be the first area to explore for a demonstrator system.

Industry Vision

Electronics product realisation is identified as important to Australia's economic future due to it being:

- The key enabler for the knowledge economy.
- The key technology underpinning innovation in almost all product sectors, and the mechanism for bringing together 'product realisation' imperatives of linked national action agendas such as Electronics, Medical Devices, Scientific Instruments, and Advanced Manufacturing.
- A way to tackle the major and growing trade imbalance in high value-added goods.
- Focused on the design phase which contributes the greatest value add to final products.
- An effective means to embed the Intellectual Product concept.
- The enabler of system-in-package which combines complexity with re-use and rapid personalisation.
- Distinct from any need for local IC fabrication facilities – separates design and fabrication.
- A combination of microelectronics, real-time software, and technological entrepreneurship.
- A key driver of downstream jobs in system and product development, manufacture, test etc.
- A technology supported by powerful EDA software – leveraging the power of the individual.
- "Attractive" to student engineers – especially if designs can be prototyped.

As a consequence it is possible to foresee significant growth in national wealth and job contribution through

- Interlinked clusters in which ideas for market-related products and services are translated into solutions containing embedded electronic systems.
- Stimulation and enablement of the particular product emphases within individual clusters.
- Enablement of partnership with MNCs for those products with mass production and global marketing requirements.
- Australia capturing significant parts of the value chain beyond concept to include design, and high value-add manufacture.

It is worth noting that the newly established Strategic Leaders Group for the Medical Devices Industry Action Agenda has decided to focus one of the key working groups on 'product realisation'.