The Australian Electrical and Electronic Manufacturers' Association Ltd (AEEMA) is the leading industry body representing Australia's information and communication technology (ICT), electronics and electrical manufacturing industries. ICT Australia, AEEMA's ICT Division, comprises Australian and international companies involved in the design, development and production of ICT industry equipment and systems.

Ms Shelley McInnis
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Dear Ms McInnis

Please find attached a copy of the submission by AEEMA's ICT Division. Representatives of the Board have indicated that they would welcome the opportunity to attend any planned inquiry sessions to discuss aspects of the submission. I would be happy to liase with you on any arrangements as necessary.

Yours sincerely

James Galloway

Inquiry into Business Commitment to R&D in Australia

1. Scope of Submission

This submission has been prepared in response to the terms of reference released by the House of Representatives Standing Committee on Science and Innovation. It is based upon preliminary data from a survey carried out by AEEMA and the CSIRO on the needs and concerns of small and medium enterprises in the electrical, electronics and communications sector. The second source is the views and experience of multinational corporations operating in Australia.

2. The R&D Drivers in Small and Medium enterprises

AEEMA and CSIRO are currently undertaking a survey of the needs and concerns of SMEs (< 50 staff) operating in the technology sectors of electrical, electronic and ICT sectors. The early indicators from this survey work relevant to this inquiry are as follows:

- SMEs typically invest approximately 12.5% of revenue on R&D activities.
- "Lack of resources for R&D" was a high ranking "impediment to growth" for the businesses surveyed. The key motivating factor for this investment is technology obsolescence. Companies surveyed suggest that their business activity could be sustained for a period of approximately 3.5 years in the absence of ongoing R&D. Companies were under constant pressure to improve and innovate in order to maintain their commercial viability. On average, 70% of current revenue was from 'new' products developed within the last 5 years.

The majority of firms interviewed have indicated that they would make additional commitments to R&D but lack the resources to do so. These include both human resources and financial resources. Most enterprises reported that they would apply additional resources in the area of R&D to fuel business development and growth.

A further aspect of the R&D capabilities of SMEs in the ICT sector has been the impact of the major dis-investment that has occurred in the MNC sector of the industry. The magnitude of this shock is difficult to estimate for Australia, but it clearly has flowed through to the SME sector. Relationships developed between SMEs and MNCs have been lost in the wake of a significantly reduced capacity of MNCs to provide support to external research activities.

3. The Needs of Fast Growing Companies

No Comment

4. The Considerations by which Major International Corporations Site R&D Investment

Investment considerations affecting MNC activity in Australia need to be viewed against the background of two major impacts. The first is the longer term trends in the industry. The second is the more immediate impact of the so-called 'tech-wreck'.

Over the longer term there has been an observable historic trend for R&D investment to be more centralised. Shorter product lifecycles and rapid commoditisation of product encourages R&D to be located near to major centres of demand and leading-edge customers. Although it is now possible to manage separated facilities and customers by the use of good communications facilities Australia has had to compete for investment against the increasing pull of emerging centres of high demand and leading edge customers.

This 'natural' trend has been overtaken in its effect by the more immediate shock of the 'tech-wreck'. This phenomenon has seen significant withdrawal of capital from the telecommunications sector on a world-wide scale. It has turned a high growth industry into one that is still undergoing severe cuts in spending and investment. Estimates of the scale of cuts are difficult to establish but in the US the reduced market capitalisation for the sector has been reported in the vicinity of $2.5 trillion with some 500,000 jobs lost and a series of corporate collapses and mergers.

In response to this downturn of fortune the industry has concentrated on essential skills and product areas. Non-core assets have in many cases been sold or wound-up and activities such as R&D have suffered cuts to match revised revenue expectations. The industry is continuing to restructure in response to falling demand and major reductions in staff, including R&D staff, have and are occurring both overseas and Australia..

Australia's industry is sometimes said to have been not so severely affected in relative terms. In part, this is an uninformed perception that has resulted from a lack of coverage of the facility closures and major downsizing that has occurred here. It is also partly a function of the mix of our economy rather than any unique strength in the local ICT sector. Falls in the sector have not had so significant an impact on fundamental economic indicators as they have had in the US or elsewhere where an ICT explosion was driving growth. Australia has lost significant production and R&D capability and it is highly unlikely that, in the face of the key decision factors being applied to R&D investment that this can be recovered under the current policy and program mix. Currently there is a real risk of the loss of further facilities.

Overall, the prospects for the global industry into the future are still positive but it must be expected that future growth and investment decisions will be cautious and subject to more stringent analysis. Multi-national corporations can be expected to continue to be at the forefront of technology development but R&D, along with manufacturing, is expected to expand in countries such as China and India as those markets develop.

Against this background the significant criteria affecting decisions on R&D investment decision location, include:

- **Influence of large customers on R&D location**

In a networked industry such as telecommunications the demands of large service companies for location close to their own customer base has been influential in the past. There was a tendency for major R&D activities to be centred in within or in proximity to major emerging markets but this is increasingly less important due to the

use of communications facilities. The relative size of customers is also significant. At present Australia comprises less than 2% of the global ICT market.

- **Market Characteristics**

Leading edge demand is also a factor. Here Australia can lead but is at risk from some adverse regulatory, media and political views. The modern state of the Australian communications network makes it possible for the development of applications that are applicable to North American and European markets.

- **Availability of a skilled labour force**

While Australia has a general level of skills there remain some significant shortcomings in specialised areas. There are limitations in some engineering skills such as wireless, RF and security.

More critical perhaps there is also a lack of SMEs to capture the required skills and undertake supporting roles in research and development under contract.

- **Local Partnerships and Alliances**

The capacity of an MNC to access supporting partnerships and alliances within an R&D market will be important element in a location decision. Australia has in the past benefited from alliances developed through programs such as the Partnerships for Development. However the greatly decreased relative importance of the government market has subsequently diminished the leverage of government purchasing to the extent that programs such as PfD became a mere encumbrance on industry, rather than a meaningful basis for productive partnerships.

There is also a mixed degree of synergy between the needs of industry for contract R&D and the aspirations of Universities to participate almost exclusively in 'premium' projects or pure research.

- **Sustainability of Investment, risk and investment return**

The sustainability of any R&D facility will be influenced by a number of factors as R&D activities come under increasing centralised control and scrutiny. To some extent smaller facilities are most vulnerable to closure or relocation under international decision making.

New facilities are also at risk because of their lack of accumulated experience. Return on investment is longer when new facilities are developed and capital costs are higher, this tends to bias decision-making in favour of supplementary investment in existing facilities

Under the current global malaise within the telecommunications sector the decision making framework on R&D investment has come under pressure to deliver some form of payback in much shorter timeframes than has previously been demanded.

- **Government support**

Government support for MNC R&D investment is an awkward subject. In many respects direct government funding will not compete with location decisions when the decision criteria are dominated primarily by a desire to serve the needs of major customers and markets in global terms. Nonetheless, there are clearly issues at stake

for Australia if it continues to lose MNC investment because of poorly articulated messages about Australia's capabilities and advantages.

While government in Australia has made investments in R&D though a range of mechanisms it has not yet fully converted this into a compelling case for business R&D in Australia in the face of competitive claims from other nations.

- **General political/policy and geographic influences**

Australia does rate in global terms as a generally stable and developed economic and political entity. This is one factor that can clearly be exploited further. Although geographic location remains an isolating factor this too can be exploited to benefit through strategies such as time zone servicing from Australia.

5. What would be the Economic Benefit for Australia From a Greater Private Sector Investment in R&D

R&D underpins national competitiveness and a greater private sector spend in R&D will translate into enhanced national wealth and public well being.

In relation to the ICT sector, we contend that the national and social return on R&D investment is magnified because of the strategic wealth creation opportunities and efficiency dividends that accrue to other industries through the application of ICT technologies. In recent decades, the ICT sector has been a major driver in economic productivity growth and through the ongoing development of networked technologies the productivity and growth opportunities for other industry sectors will continue.

Alongside the economic benefit the technology also provides the means for enhanced delivery of socially oriented services such as education, health, and commerce in both the urban and rural environments.

6. What are the Impediments to Business Investment in R&D

Many of the impediments to business investment in R&D have been adequately covered in earlier work such as the Prime Minister's Science, Engineering and Innovation Council report Australia's Information & Communications Technology ICT Research Base: Driving the New Economy. We support many of the conclusions drawn in that document and emphasise the following factors:

Impediments to SME Investment:

- Accessibility of R&D support

Many companies complain of the time and effort spent on compliance activities for tax concessions and grants. This is particularly true for very small companies (<10 staff). Most very small companies stated that the 125% tax concession was not worth the effort and don't bother applying, e.g. one company said it cost $3000 to claim $3500 and that it only became worthwhile when the company grew larger.
Many companies complained that START had 'stopped' (for the time being).

- Quantum of R&D support

An increase to a 150% concession was considered as being a significant incentive. Some companies preferred the older $ for $ investment schemes to the tax concessions. Many companies were unaware of the existence of the 'Offset Rebate'.

Impediments to MNC Investment:

- Perceptions of Australia as a location for R&D activity.
- Understanding of what features in the Australian environment offer opportunities for development of applications for the global market.
- Disjunction between industry approach to applications development and academic focus on core technologies and/or fundamental research.
- Business and employee taxation arrangements.
- The competitive investment attraction effort of Australia relative to other nations for R&D investment with regional and global interests.
- Lack of unequivocal benchmarks of Australia as an R&D centre against competitor nations.

In the ICT sector the overall level of public support for R&D is also, in our view, disproportionately low compared to the contribution that the sector makes to the economy and relative to the public investment in Australia's traditional industries.

7. What Steps Need to be taken to better Demonstrate to Business the Benefits of Higher Private Sector Investment in R&D

The picture presented above in relation to business commitment to R&D in Australia might be interpreted by some as unduly pessimistic and as reflecting a rejection of any form of commitment to Australia by global technology providers. Both of these impressions are false. On the one hand local firms understand all too well the importance of R&D to their commercial viability, while MNCs have established and continue to operate R&D facilities in this country.

The benefits of R&D are understood. What is more to the point is the extent of measures that a small and isolated economy needs to undertake to attract private sector R&D investment in a competitive global context. AEEMA is of the view that the issue for the committee is less to do with demonstrating to business the benefits of higher private sector investment in R&D than in identifying and clearing obstructions to the retention and expansion of existing R&D in Australia. Both SME and MNC understand all too well the importance of R&D for long-term business viability.

Ultimately the objective must be to create a compelling case for Australia to be considered a prime investment option that will both attract new investment and support local subsidiaries of MNCs to the extent that they are able to secure mandates within their corporate structures for product/service development.

In simple terms this will only be achieved on the strength and capacity of Australian-based R&D to deliver the required quality of output, on-time and within budget. No single public measure will achieve this objective. However, the major issue for business R&D in Australia is not that it cannot be done or that it is not competitive, it is more the case that the necessary supports relative to the challenge we face as small economy are not in place.

The above discussion has looked at the immediate issues for R&D business expenditure. For the longer-term Australia needs a more fundamental approach that looks at initiators of the R&D cycle. AEEMA's early view is that University and public funded research institutions are the main contributors of basic research. It is

this research that is then commercialised and leads to the formation of new companies with new ideas that attract international interest. This forms the basis for a sustainable R&D infrastructure and may be more valuable than focussing on one part of the problem as suggested by the terms-of-reference for this Inquiry.

Australia as Investment Location

The key challenge is to understand better and communicate more effectively the relative strength of Australia as a centre for R&D. The strengths need to be elaborated and articulated at government level and useful data made available for industry to support arguments for retention and expansion of R&D in Australia:

- Development of a sector specific investment attraction strategy
- Elaboration of trade and market access benefits accruing from
- Documentation of a set of performance benchmarks relevant to R&D location

To do this it is essential that government establish and maintain close relationships with industry so it can be aware of trends and adjust tactics and/or policy to a rapidly changing competitive international market for R&D investment. AEEMA is not convinced that arrangements currently exist to do this on an ongoing basis.

Technology related matters

Australia retains some features in its basic infrastructure that makes the development of applications for other markets possible. Aspects such as this need to be more effectively exploited through:

- A leading edge regulatory environment that does not inhibit technology rollout and encourages and rewards risk taking. This does not mean more regulation but it does mean better regulation.

Alliance Building between Industry and the Education sector

As discussed above there is a significant mismatch in the aspirations of industry and academic research institutions to the extent that the universities play a limited role in industry related R&D. The environment for business R&D could be enhanced by some measures directed towards improving linkages between industry and academia, through:

- Encouragement for universities to pursue applied research within a commercial framework
- A more responsive framework for curriculum development (particular cross discipline skills)
- A more efficient and realistic approach to IP sharing and contracting
- Retraining incentives for individuals seeking to move between industry sectors
- Enhance mobility between of researchers and students between the education and commercial sector

Fundamentally AEEMA is of the view that the benefits of R&D are well understood in industry and that there is a willingness to invest. The main difficulties facing industry are the lack of resources available to SMEs and the lack of meaningful information to support the efforts of MNCs to attract investment from within their

corporate structures. The latter has been significantly compounded by the recent dis-investment in the telecommunications sector.

Australia is clearly in competition with other nations for R&D investment. The existing evidence suggests that Australia has claims for recognition as a centre for R&D but the information and effort needed to sustain such a claim must be intensified and better co-ordinated if it is to be heard on the global stage.