Australia needs a much stronger and vigorous entrepreneurial culture. We have a proud history of creating new inventions. But our record is quite appalling in our failure to turn those bright ideas into commercial reality. Too often this has been done offshore, and we have lost the benefits of the economic growth that flows from commercialisation.

Too few people (both young and old) are actively considering the possibility of starting their own business. This has to change. But to grow entrepreneurs we have to create more opportunities and encounter fewer obstacles.

In large part innovation and entrepreneurship drive growth economies.

Australia needs to nurture entrepreneurs.

- We must become more willing to take risks in business ventures.
- We must invest more in R&D.
- We must invest more in education, particularly higher education.
- We need to build a strong culture of innovation and entrepreneurship in our leaders of tomorrow.

- We have to build a demand driven culture where our leaders are constantly seeking change rather than waiting to have change forced upon them.

We must start at the foundations and create an environment where entrepreneurship is valued, acknowledged and recognised for its contribution to economic growth and wealth creation.

We need to surface our successful entrepreneurs after they have survived the ‘honeymoon period’ and demonstrate to the nation their true contribution with a focus on the positives rather than material wealth only.

An enterprise culture is also built on education at the ‘grass roots’ level. In the USA last year over 50% of college graduates indicated their desire to start their own business rather than join the corporate climb - now that's an enterprise culture.

If we are to challenge tomorrow's leaders in business, research, politics and education a severe ‘wake up call’ is due where tokenism is abandoned and some grass roots thinking is done - strategic thinking. This is a long-term objective and it requires long-term thinking not just patchwork initiative and political expediency. The focus should be on building an enterprise culture in an integrated way. We must attract all stakeholders to the challenge -

- Successful entrepreneurs and business creators
- Quality investors
- New economy educators
- Real policy makers
- Philanthropists, the youth of Australia, parents and the points of influence including the media.
- The investment community including super funds, banks and traditional capital gatekeepers
- Risk investors - angels, VC’s and investment funds.
- Endorsement and commitment to the enterprise culture shift from the highest levels.
To address this issue B-HERT conducted a two-day symposium in Melbourne on May 30th and 31st, Entrepreneurial Australia: Future Australia, and was delighted at the success of the event.

A first-class audience of over 150 was attracted each day to the event. The quality of the debate was excellent, and the feedback from the participants was universally positive. From responses to the feedback survey, everyone saw the networking opportunities as valuable while two out of three claimed to have identified future business opportunities. Most importantly, everyone who responded indicated their interest to participate in future activities!

As Prof Ruth Dunkin pointed out in her summing up presentation, building bridges and networks are ways to overcome gaps in knowledge and resources.

In this way, the event achieved one of its primary purposes - establishing a community of leaders who are putting in place the changes needed for Australia to become a nation of Entrepreneurs.

The event was run over two days with a gala dinner to celebrate entrepreneurship held on the evening of the first day. This dinner, “Backing Australia's Entrepreneurs” was a combined event hosted by Senator Minchin.

The program was developed from the major issues identified in the recently released Global Entrepreneurship Monitor Australia 2000 (GEM).

- **Education**
- **Lack of Capital**
- **Regulation and Tax Burden**
- **Short-Term Outlook**
- **Australia's Perceived Anti-Entrepreneurial Culture**

The format was a combination of keynote presentations and panel sessions.

**Objectives**

The objectives of Entrepreneurial Australia - Future Australia were;

- To hear from those who have cleared the hurdles and won the gold
- To hear from those who invest in them
- To hear from those who nurture their minds
- To hear from those who help create the right environment

And to commit to actions those outcomes that were seen to be crucial to Australia developing an entrepreneurial culture.

In compiling these outcomes, it became clear that there were actions, which needed to be embraced by all areas of society. It isn't a case of just leaders in government and education taking on board new initiatives and policies. It also requires those in research, industry and business and the broader community to take responsibility.

**B-HERT Entrepreneurship Action Group**

There were several very experienced and successful people at Entrepreneurial Australia who offered their services for follow-up activities - who wished to put something back into the system.

It is proposed to put together a small group of such people covering entrepreneurs, venture capitalists, business leaders, educators, media, philanthropists, networkers, and senior government representatives who will address the outcomes contained in this report.

**B-HERT Annual Entrepreneurial Australia Event**

Based on the success of this event, B-HERT proposes to conduct an annual one-day event focusing on an aspect of Entrepreneurship. This will include a range of people, processes and organizations involved in nurturing entrepreneurship and entrepreneurial activity.

An activity such as this would address a longstanding need to promote awareness and appreciation of the importance of entrepreneurs in the community.

This event will;

- highlight successful entrepreneurs, to learn from their experiences
- move around the major capital cities from year to year
- cover topics such as education, sources of capital, role of governments, markets, barriers, taxation, case studies of both success and failure, and so on
- be aimed at fostering a better understanding of entrepreneurship and encouraging entrepreneurs

**B-HERT Sectoral Entrepreneurial Workshops**

These one-day workshops will bring together entrepreneurs and potential entrepreneurs in specific industry sectors. The aim is to promote some vertical integration in each sector, recognizing that there are different sources of capital, different markets and opportunities for different sectors.

This addresses a constant criticism of fund managers that ideas are being presented prematurely or without the necessary attention to the requirements for commercialisation.

**B-HERT Basic Business Program**

There is a need for graduating scientists, engineers, and other professionals, who do not understand how business works, to be given a practical introduction in the basics of business.

This was raised again at Entrepreneurial Australia.

B-HERT is looking at the possibility of developing a suitable program with existing providers and offering it as a service to business and industry.

**ATN Best Entrepreneurial Educator of the Year**

One of the sponsorships offered at Entrepreneurial Australia was The Best Entrepreneurial Educator of the Year.

It was snapped up very quickly by the ATN group of universities - QUT, UTS, RMIT, UniSA, and Curtin and will be presented at the B-HERT awards night each year.

Another related sponsorship, The Most Innovative Entrepreneurship Programme at a Tertiary Institution, is being offered to encourage the pursuit of excellence in Entrepreneurial education.

**Government**

The role of government should be to create a positive market structure and a productive economic climate where entrepreneurs can operate with certainty and confidence.
A strong theme to emerge was that ‘hand outs’ from governments were not needed as much as an environment that supported rather than hindered entrepreneurial activity. This includes co-ordination of agencies at State and Federal Governments and the adoption of actions that recognised entrepreneurship as an important economic driver.

It is generally agreed that governments should provide financial support where markets are in their formative stages. Failures in the entrepreneurial start-up market include;

- the availability of seed and early stage capital
- industry investment in R&D
- involvement and experience of practitioners in the services supporting this sector (legal, consulting, finance, human resources etc)
- commercialisation of research
- basic research on entrepreneurship and baseline data relevant to the industry

Another theme to emerge was that of leadership. Governments must set the vision and be active in articulating it to the public. The Federal Governments “Backing Australia’s Abilities” and the Oppositions “Knowledge Nation” attempt to achieve this and must continue to be communicated widely.

Tax

It is clear that Governments need to be more active in communicating the work they are doing on tax reform and other related policy issues. State and Federal Government representatives addressed some of the issues raised by participants and panellists. In many cases, changes and actions were under way but knowledge of this work was not generally known.

Despite this, actions that governments must still address include;

- Accelerating industry-based R&D - by providing a modified R&D tax concession which rewards the high R&D performers for their total R&D spend as a % of sales and can be revenue neutral to the Government by reducing the deduction rates for low R&D spenders
- Reducing the tax burden on new ventures
- Create incentives to hold assets
- Reduce the complexities and associated costs in compliance with taxation
- Allow tax deductibility for donations to private not for profit foundations

Funding

Governments already offer a range of assistance programs that provide funding either directly or indirectly. Examples of these include Federal Government programs (eg. Industry Investment Fund - IIF, Pooled Development Funds - PDF, Biotechnology Innovation Fund BIF, Start Grants and Commercialising Emerging Technologies - COMET) and Victorian State Governments (eg. Science, Technology and Innovation Initiatives - STI, Technology Commercialisation Program - TCP, Victorian Endowment for Science, Knowledge and Innovation - VESKI).

In recent times, the focus of government assistance has been towards indirect funding by providing incentives for private sector involvement and investment. The co-funding and risk sharing strategy is an approach, which removes governments from having to directly assess potential beneficiaries. This is left to service providers with specialist skills and experience.

As a result, governments can focus on improving promotion and availability of these services.

While progress is being made by governments to address failures in the market, a look at the value chain shows some areas that still need attention.

The hourglass analogy was made which describes how comparatively more funds are available at either end of the idea-to-successful commercial venture continuum.

At one end, the emphasis has been on getting funds into basic research and providing financial incentives for R&D expenditure. At the other end, there are co-funding incentives for fund managers and venture capitalists. In the middle, the pipeline is squeezed. There are few funds available and few financial incentives for seed and early stage funding of ventures.

To address this problem, governments need to consider;

- programs that provide more incentive for risk sharing in private equity activity by fund managers - especially in seed and early stage ventures
- provide incentives or co-funding for investment in the high risk, early stage projects transferring out of public sector research
- encouragement for industry-based small business accelerators
- incentives for capital investment

As a commercial opportunity evolves, it is not unusual for most market potential to lie overseas. In fact, many high growth businesses will quickly need to look at global opportunities to achieve break-even and profitability.

At present, programs for development of these markets (eg. EMDG), are designed for more mature organizations. New financial incentives need to be introduced to enable Australian industries to compete overseas.

Another area in need of funding and brought up in many sessions, including Prof Dunkin’s summation, is the need for agreed definitions and a research base. Funding for entrepreneurial research is seen as a critical step in providing guidance for decision makers and policy developers in government, industry, research and education.

Government Agencies

Duplication across agencies, inconsistencies between states and points of contact are concerns that are regularly highlighted. So it was refreshing to hear representatives of the Federal and Victorian Governments describing the improvements in their co-ordination and cooperation since the Innovation Summit last year.

While it was pointed out that the Internet will help improve access to information and identification of points on contact, more distinction needs to be made between the roles at each level of government.
Other suggestions put forward to government agencies included:

- **Support of new and innovative products and services by purchasing, using and promoting them when appropriate**
- **Exchange programs with industry to give staff a better understanding of each other's situation**

### Policy

Dr Jim Fox made a strong call in his Keynote Address for the establishment of “consistent and long term policies for industry, science and R&D”. He argues that constant rule changes cause industry to avoid making longer-term decisions - especially those involving R&D investment. It is important to strive for a bi-partisan approach to this policy area even though complete success can’t be expected.

Some leadership in the spirit of a bi-partisan approach was demonstrated by both the Victorian Minister, John Brumby, and the Federal Minister, Senator Nick Minchin. Minister Brumby said that he believed the announcement in Jan by the Federal Government was a “good start” towards Australia achieving a more entrepreneurial culture. And Senator Minchin praised the Victorian Governments actions in “fostering a culture of innovation and creativity”.

All levels of Government could adopt frameworks developed in the GEM report. They would assist policy makers to monitor policies, taxation and regulatory settings - ensuring an economic infrastructure that supports entrepreneurial activity.

### Education

On one hand education is a major supporter of innovation and creativity, providing an environment for the pursuit of research and academic thought. Yet it also poses one of the biggest hurdles in the quest for an Entrepreneurial Australia.

Why is this the case? Why are so many latent entrepreneurial talents not recognised until a person exits education at secondary or tertiary levels? How can education respond to this challenge?

Outcomes have been identified addressing educational curriculum’s, commercialisation of research and leadership in Australia’s educational institutions.

### Curriculum

When it came to what subjects and material should be taught, two main areas were identified;

1. **Knowledge of basic business skills - finance, marketing, human resources, legal etc**
2. **Development of entrepreneurial qualities - opportunity pursuit, lateral thinking, motivation, risk management etc**

It was felt that every faculty could benefit from some level of business skills training as many graduates will face business opportunities during their profession.

For example, many health science graduates will work in small practices (Dentist’s, GP’s, Physio’s, Vet’s, Optometrist’s etc). An understanding of basic business skills such as marketing, finance, human resource management, law and tax will not only result in a better managed practice, but could lead to the development of plans and strategies to expand the business or take advantage of new product and/or market opportunities.

This ability to pull the necessary resources together is a fundamental quality of an entrepreneur and business skills are some of the tools needed in a kit that includes decision-making, lateral thinking, motivation and leadership.

Courses typically missing from entrepreneurship training include;

- **Team building**
- **Recognition of opportunities**
- **Opportunity pursuit**
- **Lateral thinking**
- **Personal management**
- **Motivation and performance management**
- **Managing entrepreneurial operations**
- **Leadership and decision making**
- **Risk management**

Dr Fox suggests running a business basics program for scientists in summer as short courses at business schools. And by doing the reverse with business schools - inject some science awareness as part of business undergrad and MBA programs.

Adopting changes in curriculum’s is only part of the answer. There is a shortage of teaching resources and qualified teachers available entrepreneurship education.

- **Case studies on entrepreneurial role models, start-ups and commercialisation experiences need to be prepared for use in education**
- **New educational programs must be created, aimed at producing entrepreneurial educators**

### Commercialisation

Some of the options put forward for improving the volume and quality of commercialisation ventures are;

- **Promote networking and team building opportunities between entrepreneurs and others (eg. researchers, engineers, social scientists, finance, legal...)**
- **Promote Venture Capital briefings for educationalists at tertiary and secondary level**
- **Facilitate a non threatening, no obligation social interaction between people in universities with the technology ideas etc and those with business experience (similar to B2B Café)**

### Institutional leadership (policy, culture etc)

Some of the issues requiring policy development from the leadership in education include;

- **Allowing scientists to directly and personally benefit financially from the commercialisation of their work by way of a share of royalties or equity in the venture**
- **Set up flexible employment conditions to allow scientists to be seconded into industry and start ups with the guarantee of a return to their original posts**
- **Ensuring funding for entrepreneurial research**
- **Eliminate or substantially reduce HECS fees on science and engineering degrees**
Simple actions that send strong signals are valuable in creating an environment that encourages and fosters entrepreneurship.

Entrepreneur clubs and business plan competitions can provide forums for students and staff to learn about entrepreneurship. Melbourne Universities Entrepreneurs Challenge (MUEC) has teams in this year's event comprising students (undergrad & post-grad) from engineering, law, science, economics, information systems, arts and business.

Support for entrepreneurship can't be confined to the science and engineering faculties. The Humanities and Social Sciences are vital players in this process too. Showcasing good practice in universities should be a priority for university administrators.

Industry
It goes almost without saying that the greatest direct beneficiary of a more entrepreneurial Australia is industry. Start-ups and high growth companies generate prosperity and employment, they are a source of innovation, they extend consumer choice and they drive down prices.

With a strong base of investment and venture capital, entrepreneurs are constantly erecting new industries and products to supplant those in decline. Innovation and entrepreneurship underpin the resilience of the American economy and drive constant regeneration of industry. This should also be the case in Australia.

Industry must address issues of entrepreneurship internally and externally to benefit.

Internally, organizations can;
- Improve experience in management teams - especially R&D
- Raise people's sights to see opportunities and support their actions
- Provide support for intrapreneurship - including internal capital markets
- Link internal practice managers with external providers of Venture Capital ready services
- Create a circle of dialogue around innovation within and across the organization
- Empower staff to develop new and better ways to approach work each day
- Introduce a serial/major entrepreneur to meet with the staff

Externally, organizations must support work within industry sectors to improve the flow of people and ideas. They must consider;
- Investment in pre-proof of concept opportunities - fill the gap in the funding environment
- Establishing centres of excellence relevant to industry sectors
- Encourage industry-based small business accelerators
- Provide incentives or co-funding for investment in the high risk, early stage projects - including those transferring out of public sector research
- Support for sectoral Entrepreneurial workshops - bringing industry together with scientists, social scientists, business advisors, financiers and private equity fund managers etc.

Some industries have particular requirements. For example, the venture capital, private equity and asset management sector needs to support programs that educate and attract experience and talent.

In general, industry needs to work with Government and public sector research to create a national intellectual property management framework.

Individuals
In the end, everyone is accountable for the development of an entrepreneurial culture.

As Prof Dunkin points out, culture is created and maintained by what each of us says and does. It's not just up to governments or the media to declare this is as a national priority, everyone has to be prepared to take risks and allow mistakes and enable others to do so.

But what can an individual do?
- Use the word “entrepreneur” without any hint of apology or defensiveness
- Take the spirit of entrepreneurship back to your family, workplace and community - encourage activities that promote and support entrepreneurship
- Raise the positive side of risk - don't be too critical of those who take intelligent risks and fail, but celebrate their initiatives
- Talk positively - look for business opportunities
- Encourage children to be entrepreneurs

Summary
These outcomes are numerous and wide reaching. But we have to act.

Whilst every effort has been made to report proceedings as accurately as possible, we apologise for any inaccuracies that may have occurred.

It should be understood that the actions proposed and opinions expressed by participants are not necessarily endorsed by B-HERT.

Ashley Goldsworthy
Executive Director
It is a great privilege to be asked to provide the Keynote Address to such an important and relevant event.

I must also apologise for joining you via the imperfect medium of video. As you will shortly see, Vision Systems' customer base is pretty much all outside Australia, and we have a major $100m stake in a wireless technology business here in Cambridge. So we all spend a lot of time on the road.

Let me also compliment Ashley Goldsworthy who has shown the push and vision to pull these two days together. It is up to the rest of us to set up outcomes that will genuinely make a difference. I hope we are successful.

Australians have an international reputation for success across a wide spectrum, from sport, entertainment and the arts to science. Yet our country's track record for turning our scientific and engineering creative into a vibrant, growing and wealth creating industrial base participating in international trade of knowledge intensive products and services, has been abysmal with very few exceptions.

Refer table 1:

In this 100th year of Federation, let me go back for a moment.

It may surprise many of us to know that a century ago, Australia’s standard of living was close to the highest in the world. As historian, Geoffrey Blainey observes, the prosperity enjoyed by a typical family in the 1890’s was not just because the continent was a vast half-tapped resource bowl, we prospered because we applied the latest machines and work skills enthusiastically. By the 1890’s, Blainey notes that a network of railways penetrated the inland: In relation to population, Australia had 5-6 times the railway mileage of England, France and Germany. In the 1890’s, we made more effective use of the latest transport technology than we do comparatively today. We made steam trains on a large scale and we even supplied one of Japan’s first railway steam locos.

In the 1890’s, Melbourne had taller office buildings than any city in Europe. In the 1890’s, Australian farms at harvest time, were close to the most mechanised in the world with much of the machinery being of Australian design. Some of the world’s deepest mines and biggest livestock farms were (and are) in Australia.

With our mining background, we were at the forefront of explosives development. Australia took the world from blasting powder and unstable nitroglycerine to dynamite and gelignite. It took an Australian, Alfred Nobel, to tame the Italian invention, nitroglycerine.

At the outbreak of the first world war, we were among the first to chemically deciper aspirin. Australia was amongst the first to put aspirin, penicillin and insulin into full scale production. Having made a great start to pharmaceuticals internationally, we failed to establish world scale R&D and market presence in later decades.

Australia broke through in the ’50s and ’60s with major advances in scientific instruments (atomic absorption spectrometers) in which we still are a significant world player in specific but small sectors.

Australia was also:

• the first to design and operate “mechanical” refrigeration (1851) and see the opportunity for frozen, long-life shipments (Harrison – Geelong)
• the first to develop spun concrete pipes (Humes)
• the third country to launch a satellite from its own soil
• a leader in metals technologies
• a leader in photocopier technology in the ’50s
• the inventor of the thrust bearing without which cars, trucks, aircraft etc cannot operate
• the inventors of the black box flight recorder
... and the list goes on.

So we have had a strong history of scientific and inventive capacity and we still do, yet we have not built world scale science based industries.

How then can a country which was the richest in the world, a leader in resource-based and key industrial technologies, with 6% of the world’s identified natural resources and only 3% of the world’s population, be scratching to hold onto living standards and participate in a meaningful way in knowledge-intensive products and services across world trade?

Obviously, the world has moved on and the products and services that are in demand are very different to what they were even a decade ago. Yet, while we are now very active users of the latest technology, we are weak in getting into the creation of businesses in these new areas.

In a nutshell, I believe that we have an underlying culture of asset speculation and punting on “El-Derado”, not one of systematically investing in knowledge based industries which can generate customers across the world, skilled employment and export revenue.
I strongly suspect that many Company Boards are more comfortable in authorising multi-million dollar advertising programs or outback drilling programs rather than targeted, market driven R&D aimed at new products.

Our international debt is running up at $2 billion per month and now stands at $360 billion. Our so-called business “entrepreneurs”, lauded by the press in the 80’s and 90’s were asset shufflers and strippers, not builders. No mention of those people building real businesses based on real science, selling real products to customers all over the world. So every month we mortgage the farm to buy groceries – not a great long term strategy.

Remember every working day, somebody some where around the world has to make a decision to invest $100m in Australia to plug the deficit.

By way of background, I would like to give a small insight into our creation at Vision Systems. In doing this, the intent is not to sound over-confident or comfortable with what has been achieved over a 14 year slog. Far from it. However, I hope it goes some way to demonstrating what can be done when all of the critical factors come together and we all need to remember that a fall is always waiting for those who have their heads in the clouds.

Vision Systems is a business which takes Australian science and technology and creates products and R&D services that are sold all over the world.

Vision Systems, as it exists today, was founded in 1987 (14 years ago, so start ups take a long time) when, with $5m of venture capital, we started Invetech. Invetech was established as a contract R&D company and as a first step, we set the objective of developing a world scale R&D business (selling services to other companies) while at the same time using the resource to springboard ourselves into high value new product opportunities aimed at world markets. We were inspired to have a go at a start up by the availability of venture capital and a strongly supportive R&D and incentive policy from the then Labour Government. This Government policy set an environment where the industrial landscape was waking up to the need for R&D and financiers started looking outside traditional areas of investment. So we had Government policy actively on our side and we had finance availability. To make it happen though, we again needed people with the drive and the engineering skills.

It was a high risk venture given that it was a start up, but it was aimed at capitalising on Australia’s low cost R&D and the indigenous science base. So at startup we wrote down a number of rules which we have stuck to over 14 years:

<table>
<thead>
<tr>
<th>Strategic Drivers</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Target at least 75% of sales from USA, Europe and Nth Asia</td>
<td>86% Overall</td>
</tr>
<tr>
<td>2. Base the business on both the manufacture and distribution of high value (&gt;$1000) and high margin products (&gt;50%) and contract R&amp;D services</td>
<td>$1,000+ 65% GM</td>
</tr>
<tr>
<td>3. Operate the company’s R&amp;D resource (Invetech) as a stand alone business serving both external customers as well as being the innovation engine for VSL ✔</td>
<td></td>
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Table 3. Vision Systems
An International Growth Company

1. Target at least 75% of sales from USA, Europe and North Asia
Given that our competitive edge was to be R&D, then clearly our products were going to be innovation intensive. This meant high R&D spends on each product. Given that Australia represents only 2% of world’s GDP, it is not possible to get an acceptable return on a market around the same size as New York. You just have to decide that you will sell in the major markets and not worry about Australia. Market research is therefore also done in the USA, Europe and Asia as you define the products that will be developed. We have achieved 86% off shore sales. The negative of this is Australia is a long way from major markets and our credibility as a supplier of high technology products and services can never be taken for granted.

2. Base the business on both the manufacture and distribution of high value (>$1,000) and high margin products (>50%) and contract R&D services.
High R&D spends need high margins to fund them. If you want to compete in distant markets you must air freight so high $/m3 products are also essential. We can tick the box on these objectives as well.

3. Operate the company’s R&D resource (Invetech) as a stand alone business serving both external customers as well as being the innovation engine for VSL.
We have achieved “1 + 1 = 3” out of this strategy by getting a sharing of overheads, world scale facilities on which to draw our new products, technology exposure and our staff have the stimulation of a wide variety of projects.
4. Revenue mix by geography and market sector

Our core capability is our engineering and technology base, often common to a wide variety of products. What is always different is the route to market. For contract R&D this is not an issue for us. Diversity is a hedge to start up activities and we promote it.

Refer table 4.

5. Invest 10%+ of sales in new product R&D

If the key competitive edge is R&D and the extent of innovation in the product, then exercise it. I would also point out that we spend 20% of every sales dollar on offshore sales, marketing and technical support people and facilities. This is often overlooked at the planning stages of small companies given that you actually need to invest the $’s before you generate the sales. Route to market is actually the highest risk component of the process, higher than targeted R&D.

6. Create an environment where the top quartile of available people seeks to work.

We have been fortunate to achieve this and we have been conscious of individual rewards, peer group interaction and the environment where people work.

7. Invest in intellectual property and sales and marketing and be a virtual manufacturer.

We dedicate our capital to the creation of IP and to sales and marketing and we outsource the fabrication of all components and sub-assemblies. We do final assembly and test in-house only, thereby retaining the ultimate quality check and process intellectual property in-house.

Refer table 5.

Out of our contract R&D business, Invotech, we have developed two other major divisions. One is Vision Fire and Security where we create and sell sophisticated and high value laser based fire detection and video surveillance systems. Over 96% of what we make, we sell outside Australia.

The other division is Vision BioSystems where we create and sell high value, complex medical instruments used in the detection of cancer and blood disorders. As you can hopefully sense from the product pictures, our products are high value, high margin and high $/s/m3.

Refer table 6.

This graph shows revenue growth over the last eight years. The main highlights that I want to point out are that out of about $145m in sales this year, $125m will be from outside Australia. And in our journey so far, over 600 high level jobs have been created. All based on the commercialisation of technology, aided in the early years by policy settings and driven by people who took significant personal risks (although frankly like adolescent kids, you don’t really get the full extent of the risks until you nearly crash a few times – then you get it!)

Refer table 7.

Finally, this figure shows where we sell our products. Everywhere but here almost!

Take the $125m per year that VSL will export this year, add in Cochlear and ResMed, and only another 250 companies like us and Australia goes into trade surplus. Another astonishingly small number yet apparently a very difficult one to achieve.
Australia has some great examples of what we should be striving for, such as Cochlear with its hearing implants and ResMed with its sleep apnoea products. They exist because there was leadership and a risk taker at the beginning. People.

Australia’s critical asset, even in commercialising science and creating new enterprises, is people. Apart from our natural resources, the only competitive advantages we have are world class science skills and one of the lowest cost industrial R&D capabilities in the world.

Combine this with the necessary ingredients of people and leadership, available venture and seed capital, appropriate economic and taxation settings by Government and success will follow.

Cochlear Ltd is the world leader in hearing implant products. Based on science conceived in the 1960s at the University of Melbourne, it took until 1982 for the first implant to be fitted. Nucleus Limited, founded by Paul Trainor, won the commercialisation tender in 1979. Today, Cochlear is a $2 billion company which dominates its market sector. Catherine Livingstone, the previous CEO of Cochlear, nominates some of the success factors as:

- **Nucleus Ltd umbrella at the commercialisation stage** (Nucleus of course needed a leader and entrepreneur to exist in the first place – and Cochlear was a new division, not a completely isolated start up)
- **Global perspective**
- **First mover advantage**
- **Collaborative research around the world**
- **Costs in A$, revenues in vs US$, Euro, Yen etc.**

Do you see any common threads yet?

Let me briefly look at a couple of wider issues.

A critical missing link in the capture and conversion of Australia’s evident creative ability is a competent and sustainable industry-based research and development activity, given that while there can always be better and more science, even at present levels of science spend we are not capitalising fully on what we as a community are presently investing.

Without a vibrant industry based R&D activity, there is little hope that public science and private invention can be routinely commercialised in this country. With a tiny domestic market and vast distances to major international markets, only companies with a vision to target customers outside Australia as their number one priority will ever have the scale to invest in the required R&D and the international marketing costs that go with the territory. Very few Australian companies invest anything like their international counterparts on R&D and very few have a mind set that the world is their market.

While recent initiatives from the Government have positive components more at the science and small business end of the spectrum, I believe it falls way short in stimulating vitally necessary, industry-based R&D. By far the quickest strategy for our Country is to accelerate those that are the bigger R&D spenders already and challenge management of those companies to be double their size in 5 years time. It is the only intermediate strategy available while we set about creating an environment where the number of start ups accelerates, and while we wait the 10-15 years it takes for those start ups that make it to contribute in a meaningful way to our GDP and trade.

Refer Table 8.

For decades, Australia’s spending on industry based R&D has been way down the international league table. This figure shows where we sit for total (Government/Higher Education and Industry) R&D spend as a percentage of GDP. What is clear is that our spend in the Government/Higher Education sector is at least competitive and indeed I think we run a world class basic and applied science outfit. What is equally clear is that Business Expenditure on R&D (BERD) is very low by world standards. Indeed out of a list of the top 24 OECD countries we ranked 17th on the BERD as a % of GDP list. Our BERD/GDP was 0.80%, the average was 1.6% and Sweden topped the list at 2.7% or more than three times Australia’s spend.

Refer Table 9.

Fewer than 20 companies in Australia in 1998 spent more than 5% of their sales on R&D! Less than 3000 companies registered for the R&D tax concession in 1998 – an astonishingly low number. Is the incentive useless or is nobody doing R&D out there? It is
sobering to compare our total R&D spend as a nation (Table 10), to major industrial companies. Companies have now reached the scale of countries and this foreshadows a very different competitive environment going forward. For me it is not a negative, just a reminder of the shortfall in Australia and a reminder of the enormous opportunities that can be tackled, even by small businesses.

I would also observe that, out of close to $4 billion in Government outlays in science and technology in the last budget, only 17% was aimed directly at industry where we have the major problem.

I believe a further and revenue neutral adjustment to the tax concession is required. Simply put, I would bias higher concession rates to the high R&D spenders at the expense of the low spenders and not just on a year by year basis on incremental R&D as the new 175% acceleration provision prescribes. Remember that the tax concession requires industry investment up front and rewards the company only if the venture is successful.

Refer table 10.

Could I also flag another long term issue that impacts on all of this. I was surprised to see the contents of (Table 11) given that I had always promoted the thought...well at least we have a strong education base to start from. Admittedly 1996 data, but if this has held then we are not as smart a country as we think. We ranked 19 out of 24 countries on a table driven by the percentage of our population between 25 and 64 years of age with upper secondary or higher education! You can only speculate what the relative numbers for Australia against the rest of the world for science based education might look like.

On the cultural and attitude front, I think most of us would agree significant opportunity exists. We spent a lot of time agonising as a Nation after the 1976 Montreal Olympic games where we bombed completely in the medal count. In response, a bi-partisan strategy and hard funds were put into the creation of training and coaching infrastructure, reward systems and publicity programs in the context of multi-decade returns. Athletes became heroes and at the Sydney Olympics, we celebrated internationally significant success. In this context, Australians also learnt to celebrate those that compete without winning. This bi-partisan, long term commitment and community involvement, celebrating heroes is long overdue in the area of science, industry development and new business creation. Even with our relatively low levels of performance, we still have lots to talk about.

So my proposition is that it is entirely within our reach to capture, develop and grow international, science based businesses in Australia. First, it is all about people – leadership, risk taking, celebration of success, support for the failures. People build businesses and people trade – not companies, not governments.

Yet Government provide the environment for structural change and the basic elements of our competitive base and they can help shift attitudes and the rate at which investment occurs. When the industrial environment is right, commercialisation of science occurs systematically. You only have to look at the remarkable story of Ireland where a 15 year, bi-partisan approach to industry policy to completely overhaul its ailing economy has led to massive investment by major corporations, trade surpluses, employment growth and increasing per capita community wealth. The industries targeted were pharmaceuticals, electronics and software development.

Refer table 11.

(Table 11) shows the turnaround in Ireland’s debt from almost the moment in the second half of the ’80s when the restructuring of infrastructure and extremely interventionist industry development policy started. Refer table 11 above.
The following shows the wealth creation resulting from this aggressive and interventionist play. The reality is that Australia is not far away from a flat earth approach to industry policy. Economic rationalists of course cry foul at any kind of investment encouragement and would hold New Zealand up as a model of the “dry” approach. In reality, the contrary economic progress of New Zealand to Ireland speaks for itself.

So Governments can make a difference, but only if there are people willing to capitalise on whatever Government makes available.

Pulling all of this together, let me suggest a few summary actions:

**Some Actions to Think About…**

- **Accelerate industry-based R&D**
  > Install a revenue neutral R&D tax concession that rewards the high level R and D performers (as a % of sales) for total R and D spend at the cost of the low R and D Performers

Accelerate industry-based R&D – a modified R&D tax concession which rewards the high R and D performers for their total R&D spend as a % of sales and is revenue neutral to the Government by reducing the deduction rates for low R&D spenders – this is straightforward and will work.

- **Set a more consistent, longer term approach to policy and make sure this also exists between departments (ATO/DISR)**

Establish more consistent and long term policies on industry, science and R&D. Constant rule changes do not lead to long term industry responses. A more consistent approach between the ATO and the Industry Department is also essential; for the initiatives to be trusted by users. In an ideal world we would look for a bi-partisan approach to this policy area. However, history shows that “bi-partisan” only seems to come about in a crisis. So we will have to wait!

- **Cultural change/“hero” advertising and promotion of science based business success stories**

Tackle culture change programs which celebrate the role of individuals in the creation of successful new export-based companies – “hero” advertising along the lines of sports heroes and a campaign of success stories.

- **Allow Scientists to benefit financially from their work by way of cash and/or shares**

Allow scientists to directly and personally financially benefit from the commercialisation of their work by way of a share of royalties or equity in the venture.

- **Establish flexible employment that allows Scientists to move in and out of industry with a safety net**

Set up flexible employment conditions to allow scientists to be seconded into industry and start ups with the guarantee of a return to their original posts.

- **Encourage industry-based small business accelerators**

Provide incentives or co-funding for investment in the high risk, early stage projects transferring out of public sector research.

- **Don’t just focus on spin offs as the commercialisation mechanism eg. lower risk licencing and subsidiary company formation as alternatives**

Encourage all forms of public sector commercialisation – not just start ups or spin offs.

- **Eliminate or substantially reduce HECS for science and engineering**

Eliminate or substantially reduce HECS fees on science and engineering degrees.

- **Establish a business basics program for Scientists**

Establish a business basics program for scientists – run them in summer as short courses at business schools. Do the reverse for business schools by injecting some science awareness as part of their programs.

Target science education programs at the schools and encourage kids into science and engineering.

- **Work the schools in science and engineering promotion**

Introduce engineering and science cadetships for industry.

As part of a great team at Vision Systems, having a real go at this international game, clearly there are examples in Australia that show that:

**Australia(ns) can make it**

...we just need a few more to come and join the party.

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**DR JIM FOX**, Managing Director, Vision Systems Limited (VSL). VSL Incorporates the Invetech group, founded by Jim in 1987. VSL is a leading supplier of contract R&D and technology commercialisation services to the manufacturing industry. Under Jim’s leadership, the company has grown at more than 30% annually with current sales of $150M (85% earned internationally), and over 650 employees. www.vsl.com.au
I want to talk about the role of education in encouraging entrepreneurial attitudes and entrepreneurial behaviour. It is a very important topic for a number of ministers in government, especially those that are part of the PM’s Science, Engineering and Innovation Council – at every meeting the issue of entrepreneurial attitudes comes up.

In particular, leading up to the significant reports from David Miles and Robin Batterham before the PM launched his innovation statement. Australians are very conscious of the fact that we are very good at research and creating ideas – particularly out of the publicly funded research centres like the Universities and CSIRO. However, we are conscious that those ideas too often end up in someone else’s ownership – in someone else’s country. The jobs that those ideas generate are not Australian jobs.

These issues were discussed year after year as we came down the road to the PM’s Innovation package. Entrepreneurial attitudes begin at a very early age and the critical thing is to see what our schools are doing to teach our young people entrepreneurial skills. It appears they are doing very little and this one of our major problems.

But there is an exciting and interesting story about what is happening in Australian schools, VET’s and Uni’s. Innovation and Entrepreneurship is absolutely essential to our National future. Australians must develop Australia for Australia. Everyone else in the world is trying to compete and develop their countries – so we can’t look for help elsewhere in this area.

Our future rests in our hands – through our skills, our determination and commitment and in our excellence. High among these national qualities needed to secure our future, is Entrepreneurship. To innovate, to take advantage of change, so that challenges are not seen as threats but are seen as opportunities.

It’s important that Australian citizens can handle change – to see opportunities in change and to capitalise on them. Australia will need to be highly successful in this and despite many obstacles and instances of failure, there are also many success stories. While we can all point to examples where we haven’t been as successful in the past, there are plenty of examples of good success stories.

And when we look at what is happening at our schools, our training institutions and our uni’s, there are plenty of grounds for feeling positive about the future. Probably Entrepreneurship starts in the family as most of our attitudes and values do, but without a doubt, our educational institutions have a critical role to play in developing those attitudes.

Education is crucial to producing cultural change. We see changing attitudes in our young people in many areas as a result of changes in the education system. As the youth minister, I meet twice a year with the National Youth Round Table. These young people will blow you away with their capacity to think outside the square, their capacity to formulate new ideas.

The government is very keen to pursue programs and policies that will assist our educational institutions to become more Entrepreneurial.

There are entrepreneurial skills that can be communicated and these skills are best taught and communicated, not by lecturers in the classroom, but by experience. By seeing what it means to run an enterprise – to put them in an entrepreneurial context, in a workplace. They can learn employability skills and can develop realistic views of the nature of the challenges of work outside the school.

And many of the changes that have taken place in recent years have been structural changes. I believe the best way to bring about cultural change is through institutional change.

This is because institutions through the incentives that
they provide, do guide behaviour.
Bureaucratic institutions produce bureaucrats and enterprises produce enterprising attitudes.
Institutions that produce an entrepreneurial society have to be institutions that are entrepreneurial.
Now that’s where the huge challenge lies in the educational sector.
Because traditionally our educational institutions have not been run as enterprises or institutions that encourage entrepreneurial behaviour.
Our schools are very centralised in the State system still, although there has been a very important movement towards devolution and self-governance with quite perceptible effects.
But there are those who still want to run them as centralised bureaucracies – as centralised industrial relations systems.
Our TAFE’s come out of the same departments that run our schools. In Victoria, we like to think we have the most decentralised, entrepreneurial TAFE system in Australia.
Governments have set out to encourage the development of private sector schooling and training providers. We now have a mixed system that is very strong because of the healthy positive competition that having a mixed system creates for all the providers.
We have uni’s that are in the process of change and development – which in their least regulated market (the international education market), are extraordinarily entrepreneurial.
Some may have the view that uni’s are not very enterprising institutions though the Vice Chancellors here know the feeling of constant change and the challenge of innovation.
However, those in the business world who may hold this view, will be interested to learn that in the International marketplace for education, where Australia’s market share has been growing quite dramatically in recent years, Australian uni’s are seen as quite entrepreneurial. And when I visit their international campuses, I see this is the case.
So a very significant change is going on in our education and training institutions. It still has a long way to go, I won’t deny that but I would like to tell you a bit about some of the changes that are taking place there.
In Queensland recently, I launched a program for young people in years 5 – 9 and their teachers. It was a program developed by IP Australia called Innovate IT. This is a resource to teach young people about IP and to give them the understanding that they can actually have ownership of their ideas. Their ideas could actually become the basis for somebody’s business, or when they complete school, their own!
You would perhaps not be surprised, but very pleased and heartened by the enthusiasm with which young people embraced the idea that they can create thoughts that could turn into intellectual property.
Now you might think that is an obscure and abstract idea to teach young people in years 5 – 9 but now there is a resource available to do just that.
On a larger scale, the Commonwealth is working with the States and Territories to develop a whole range of innovation approaches to teaching – particularly linking our schools into the on-line revolution. And the PM’s innovation statement put $34M into developing on-line curriculum content for the schools, so that education in the digital era has got quality material to work with.
The mere act of working with technology and digital content will encourage our students to be part of the digital world.
In March this year, I launched a new campaign called Go-Career.

Governments have set out to encourage the development of private sector schooling and training providers.

Go-Career – enterprise and career education – a campaign designed to highlight the activities and opportunities that are now available under a nationally agreed framework for vocational education.
This is an outstanding development in Australian education and when I am no longer a Minister of the Crown, I will look back at this as one of the developments that I am most proud of.
Because what we are seeing is that in the senior years of schooling (and extending back into the middle years), is a revolution of the curriculum and teaching in schools and the place of schools in the community.
And it’s happened as schools increasingly seek to provide curriculum for the 70% of school leavers who do not go straight from school to university.
As a result of the recession in the early ‘90s when school leavers were ending up on the unemployment queues, dedicated school principals began establishing linkages into their local communities and with the businesses that operated there.
They now provide within the new industry-training framework (that has come into place over the past few years), high quality, industry recognised vocational training.
The numbers of students involved in this activity has grown from something like 26,000 in 1995 to 167,000 last year and it’s going to continue to grow. There are now over 30,000 businesses around Australia that have partnerships with schools.
The new apprenticeship training schemes this government introduced has students employed by enterprises while still undertaking schooling to attain
their leaving certificates. They are fully employed apprentices under workplace agreements who work (say) two days a week while attending school the other three. The subjects they study include industry certified vocational subjects as well as standard curriculum.

One of the impacts has been to see the retention rates at schools grow from 60% – 80% as a result of these programs. This is because they show young people tangible benefits of continuing their education.

There are now over 500 different occupations for apprenticeship training opportunities. These include occupations from not only traditional sectors but also new sectors such as service industries. The numbers of people involved in apprenticeship training has doubled to around 300,000 over the last five years.

Australia is now fourth in the world behind Germany, Austria and Switzerland in the numbers of people participating in enterprise apprenticeship training opportunities.

Remarkably over half the teenagers employed in Australia are in a new apprenticeship.

I have no doubt that this will have a significant cultural impact on this country as young people see that there are other careers and pathways to success.

At Willunga High School in South Australia they operate as Waverley Park Business Enterprises. They operate five registered business enterprises including the production, sales and promotion of wine, olives, wood and metal products – all of which they manufacture at the school.

Durham High School in Western Australia won an award for an enterprise that created web information pages for local businesses.

And there are many such examples.

A study on innovation and best practice in teaching and education in 150 schools was recently completed. The study concluded that a willingness to innovate and change teaching methods and materials resulted in some remarkable educational outcomes being obtained. In other words where teachers and principals were entrepreneurial, students find their motivation and energy to learn, significantly increased.

I believe there needs to be a further devolution (along with proper accountabilities), in our public schooling system to allow the leaders of these schools – the principals and teachers – the freedom to implement their entrepreneurial programs.

In this year’s budget, just to give you a sense of the context in which this is happening, a further $9.7 million has been made available for a group called the enterprise and career education foundation chaired by Phil Kiely of Oracle.

This foundation has been established with the budget of $100 million over the next three years to promote these linkages between schools and businesses. In particular it will encourage businesses that it is in their own self interest in the short term for students to get this enterprise experience and to improve their employability. And we wouldn’t have 30,000 businesses or more working with schools if they didn’t think there was something in it for themselves. And what’s in it for them is that first crack at some of the brightest and most entrepreneurial students coming through the schools.

The government is determined to continue looking at the transition of students between school and the wider community.

I believe this is the next great challenge in education at this level – to make sure that every young Australian gets a successful transition from schooling to the wider world of work and further education and training.

We can’t as a country make that promise at the moment but the Prime Minister’s Youth Pathways Task Force, which reported recently, contains in their report the proposals to get to that position within the next few years. It requires substantial commitment not just of Governments but also of the community as a whole.

The knowledge creation that goes on in Australian universities has been a key element of Australia’s success at remaining advanced industrial society.

There have been many enterprises in Australia that have started as a result of the innovation that has come out of the universities.

The universities have a number of contributions to provide. One of those is skills.

There are major skill shortages, not just in Australia, but also around the globe, in areas such as information technology and biotechnology. And one of the key elements of the Governments innovation strategy is to fully fund some 2000 extra university places a year in those areas where there is a skill shortage.

We will be giving these places to universities, which demonstrate innovative and creative approaches to filling these skills gaps.

The ideas at universities are going to be a critical element in Australia’s future economic success.

The ITC revolution and the Biotechnology revolution are the two great scientific revolutions of our time and can be the basis for hundreds if not thousands of new Australian enterprises and jobs. And we are determined to not let Australia lose that opportunity.

The innovation package provided for a major investment in centres of excellence in these two areas.
Those centres will bring together partnerships between scientists and business to ensure those ideas are successfully commercialised here in Australia.

This requires a Whole of Government approach – which we know is not something that easily happens in Australian governments. So one of the greatest challenges for Australian governments is to develop the capacity to put into place a Whole of Government approach.

The innovation package itself required some innovation in the practice of government – to allow various ministers to come together and ensure their departments approaches to innovation were integrated. And one of the remarkable features of “Backing Australia’s Ability” is that it achieves this integration with measures from Senator Minchin’s department, Industry Science and Resources, my department, Education Training and Youth Affairs and Senator Alston’s department of Communications, Information Technology and the Arts.

The Whole of Government approach includes more than that – it also includes the treasurer.

Tax reform is critical to innovation.

The new Capital Gains Tax system is going to encourage Entrepreneurial behaviour including risk taking to improve the incentives to save and invest and increase the ability of startup and innovative enterprises to attract and manage capital.

It is an attempt to address one of the significant shortfalls in Australia until now and that has been the lack of a large and vibrant venture capital market.

Since the introduction of the CGT reforms, nearly twice as much venture capital money was invested in Australian companies in the year following compared to the year before.

These changes have not been designed just to mobilise Australian capital but also to attract international venture capital that has not been interested in Australian investments because of the tax regime.

Ranges of other tax reforms have also been put in place to provide Australia with a more enterprise friendly tax system.

Undoubtedly there will be those who constructively suggest that there could be further changes to the tax system for encouraging entrepreneurial enterprises, and that is exactly what we need to hear to ensure we finally get in place the tax system that we want.

The reduction in company tax from 1 July 2001 is going to be a further boost to entrepreneurial research and ideas in Australia. This will make Australia one of the most competitive company tax systems in the region.

Backing Australia’s Ability addresses a number of areas. It doesn’t try to turn scientists into entrepreneurs although some will undoubtedly take advantage of the new environment.

It’s been said that the sign of success will be the acceptance of the fact that it’s quite appropriate for academic scientists and researchers to arrive at the university in a part time capacity, showing that it is acceptable for scientists to be entrepreneurs at the same time as scientists.

We want to ensure that our universities have a culture that can identify the ideas that can be commercialised and will be capable of taking action to ensure relationships with industry and other resources are developed to realise the potential of these ideas.

The white paper on innovation and knowledge in December 1999, took the view that if university research was going to be funded by government grants then the allocation of those grants would be made to universities that take an outward looking approach that involves industry and industry funds in the research.

It has been identified many times that a gap exists in the commercialisation process from the idea to an enterprise that can attract venture capital. The Backing Australia’s Ability package addresses this with a fund of $78 million being available for pre-seed capital investment. This fund will be available to universities and other public funded research institutions.

There are many important developments going on. The education system is not static. Much is happening that is already changing the culture of Australian science. And that will change more rapidly as more entrepreneurial minded students come out of the school system and as those who started their careers through the apprentice skills system decide to further lift their skills by undertaking university courses.

In the end it is very important that we get our industry and education systems working together. The barriers are dropping as each group better understands the other and as more linkages and relationships are developed.

The revolution is underway and everyone here can be a participant in it.

As the PM acknowledged in Backing Australia’s Ability, this is an important milestone but only a single milestone in a long and unending journey.

This government recognises that more must be done on a continuous basis to improve our national capacity for innovation.

In conclusion can I say that I’d like to thank B-HERT for hosting this workshop. It is very important to bring together industry and education and B-HERT has done this very well.

This is the kind of gathering that has the potential to make a significant contribution to the process and I have no doubt the recommendations coming out of this will be welcomed by government.

I trust that all those here will find these two days of great interest and value and will leave knowing that Australia can be one of the worlds top entrepreneurial countries.

Thank you.
Thank you to Dr Roland Williams for his introduction.

- Professor Ashley Goldsworthy – Executive Director of the Business/Higher Education Round Table
- Dr Mark Toner – President of the Business/Higher Education Round Table
- Members of the Organising Committee
- Distinguished presenters
- Delegates

It is a great pleasure to join you this morning at this important forum.

Two weeks ago, as Treasurer, I delivered the second budget of the Victorian Labor Government.

It is a budget that focuses on three key areas: infrastructure, education and innovation.

Each of those areas is crucial to building a competitive and globally-oriented economy.

They are essential for the development of a positive climate for business and investment.

They are fundamental to the growth of a culture that welcomes and supports creativity, innovation, flexibility and skills.

That is the culture we want to foster here in Victoria. And that is the sort of culture that opens up opportunities, drives new industries and embraces and encourages entrepreneurs.

There’s no shortage of entrepreneurial flair and ideas here in Victoria.

That can be seen in competitions like the Melbourne E-Challenge – which showcases some extraordinarily talented young Victorians and which attracts the support of government, the University community, large corporates and the banking and venture capital sectors.

It can be seen in the confidence a company like Rothschilds has in Victoria – in basing their bioscience and life science venture capital funds here in Melbourne.

There is also strong recognition here in Victoria of the importance of skills, education and training in fostering a climate of innovation.

For example, this year Victoria’s RMIT University offered the first undergraduate entrepreneurial business course of its type anywhere in Australia – a course in which students start and manage their own ventures.

In a separate initiative the Victorian Government has brought together experts from Victoria’s universities to develop a series of Entrepreneurship Workshop Modules.

The main purpose of the Module is to stimulate students’ interest in entrepreneurship – and to equip them with the knowledge and skills they need to develop their own ventures.

The Modules cover topics like Intellectual Property, Commercialisation Processes and Business Planning – and they will be available for use in any university, in any course.

In our second budget, the Victorian Government is also investing an additional $386 million to education and training infrastructure - the biggest such investment in decades.

Cabling, Internet access, computers, science labs, e-learning facilities, libraries.

We are giving schools and TAFEs across Victoria the facilities and equipment they need to teach the skills young Victorians will require in the coming decades – the skills demanded by business and industry.

We’re setting up new centres in our schools: like the Science and Technology Centre at Bacchus Marsh Secondary College; the Gene Technology Access Centre at Uni High; and the Space Science Education Centre at Strathmore Secondary College.

We’re modernising existing research facilities and building new ones.

We’re driving innovation in traditional industries like manufacturing and agriculture.

And we’re backing new industries – like biotechnology, like the aerospace industry, like engineering and design – where Victoria has the potential to become a regional and global force.

We’re also undertaking a massive program of investment in infrastructure – with projects worth more than $2.1 billion commencing in the coming financial year.

It is the biggest new budget investment in public infrastructure in Victoria’s history.

Through the support of such projects, the Government aims to leverage private and public sector collaboration and develop world-class infrastructure in Victoria: from rail and road transport, through to information and communications technology.

Once again – the infrastructure that is needed to generate a competitive business environment and support entrepreneurial ventures.

The Government is also building on Victoria’s existing strengths in science and technology.

Victoria’s strong research and knowledge creation
In the first two quarters of the program’s operation, 76 businesses have been assisted and we have achieved at least a 1:20 ratio of Government funding to private sector funding for the support of new enterprises. This is beyond original expectations.

It shows the depth of talent we have in Victoria. And it shows the willingness of investors to put up capital if an idea has substance and is sufficiently developed.

Of course, innovation and entrepreneurship also requires a competitive business environment in which the private sector can prosper and capital can be accessed.

To that end, the Government has moved to cut business taxes by more than $770 million over the next four years.

We have reduced the burden of payroll tax, cut the number of state business taxes and reduces paperwork and red tape.

Lower, fewer and simpler taxes.

That is a significant boost to the competitiveness of the Victorian economy — and it will make Victoria an even more attractive place in which to invest.

Finally, today, I want to talk a little about small business — because that is where much entrepreneurial drive originates.

Some data has emerged over recent years to suggest that new small businesses, in particular, have created a remarkable 57% of new jobs in Australia.

So it’s the small business sector that is the largest net creator of employment in this country.

We may be witnessing a particular Australian trend — as it appears that jobs are coming more from the start-up of new businesses than from growth of existing ones.

That’s something governments must encourage.

Here in Victoria, our Showcasing Small Business Strategy encourages and supports businesses that want to enter and compete in the global marketplace.

It also assists more traditional small businesses find ways to stay competitive — and shift into new areas.

It aims to help Victoria’s small businesses — from the traditional retail or manufacturing business to the innovative new hi-tech company — to grow, expand and become nationally or globally competitive.

Last year, Victoria’s own Swinburne University conducted a national benchmarking study.

The Global Entrepreneurship Monitor, or GEM contained much useful advice for the development of Government strategy and policy.

It highlighted the fact that small business is often not entrepreneurial business.

We understand that — but we realise that many entrepreneurial businesses do start small and require sophisticated and specialised support and advice.
We also recognise that many small businesses will benefit from a more entrepreneurial approach. The GEM identified key entrepreneurial issues as:
- skills and education
- regulation and tax burden
- short-term outlook
- culture and
- lack of capital

The Victorian Government is addressing each of these issues.

We are addressing them in terms of direct investment – meeting our responsibility as a government.
And we are addressing them through creating the right business and economic climate for the entrepreneurial spirit to grow and flourish.

On the last point of access to capital, the Government is developing a Victorian Venture Capital framework.

The framework aims to further encourage industry maturity by outlining the characteristics of a well developed venture capital market, identifying international best practice and educating investors and investees about the venture capital industry sector.

A draft of Victoria’s Venture Capital framework – Growing Tomorrow’s Big Australians – has been publicly released for comment.

We are investing heavily in education and training – and encouraging innovative education.

We are fostering a culture of innovation and creativity.

We are investing in world-class infrastructure – and planning for the medium to long term with all our education and infrastructure investments.

We are working on improving access to capital.
And we are reforming the business tax system.

These are not only the drivers of entrepreneurship.
They are the drivers of future economic growth.

The Government’s decision to invest in these areas reflects our determination to show leadership in building a Victorian economy that is innovative, creative, flexible and competitive.

But it also reflects our determination that Victoria will be a State where the benefits of growth are shared more fairly, where growth is environmentally sustainable – and where innovation and entrepreneurship also lead to significant improvements in the daily lives and well-being of all Victorians.

Thank you.
There are five key themes....

1) The start of a journey

All change processes involve people recognising the need to change and creating a sense of urgency about that change. Implementing change involves developing specific programs to embody and carry the change, celebrating the wins and consolidating those gains. However it is not a linear process – it is only through involvement that our understanding grows.

I think an important message from this conference is that while there are still plenty of gaps, the change to the culture is beginning. We are recognising the need; we are able to celebrate some wins; to learn from some of the great initiatives that have been put in place. We need to be careful in conferences like this that we don’t lose sight of the gains that have been made, for example through the Shell Livewire program and the increasing take-up of triple bottom line performance monitoring.

However there has also been some ambivalence. In the discussion on the one hand we are looking for leadership and so have a long list of things others should do, but on the other hand we have also spoken about many initiatives and wins. As a group, we have swung between being gloomy and recognising the achievements.

Let’s take collective responsibility for moving forward.

2) The need for agreed definitions and research base

A key focus of discussion has been “what exactly has to be fixed?”. We have heard that there is a lack of systematic research about the phenomenon of innovation and Australia’s relative standing and preparedness to be innovative. We have heard of alternative frameworks that would allow different diagnostics, different programmatic responses, different views about the coordination required.

We have even heard of different uses of the terms “innovation” and “entrepreneurship”. There is a lack of specificity and the definitions are not agreed. The Innovation Summit Implementation Group adopted a definition of innovation as “new ideas and their take-up by people”. Although this is not a commonly accepted definition, I believe it is a useful one as it encompasses the full range of activities in the innovation cycle. The word “entrepreneurship” is problematic for different reasons. It is still tainted for some people by connotations of unethical practice and greediness. Broader concepts help to break this down, for example social entrepreneurship.

Let’s work on getting some agreed definitions and a research base about how Australia is performing now and how the initiatives we take can improve this performance.

3) The need to build an entrepreneurial culture

If we accept from my first theme that we have begun on the journey to change a culture we need to strongly reinforce the progress we have made by celebrating our wins, telling the stories, creating new national heroes. We need to start sharing these stories and ideas with children from primary school onward.

Everyone has accountability for culture – culture is created and maintained by what each of us say and do. It’s not just up to governments or the media to declare a national priority. All of us have to be prepared to take risks and allow mistakes and enable others to do so.

Of course there is an important role for government. The endeavours of countries like Finland have flourished because of long-term, bipartisan commitment to making innovation a national priority. Such a commitment flows through to create stability and a supportive environment and underpins a whole-of-government approach. All government programs (State and Federal) must be tested through a lens of innovation and entrepreneurship to ensure that they enable rather than impede.

Specific aspects of governments’ role, which are critical to innovation, include:

- Providing pre-seed and early stage funding for innovation projects
- Concessions for research and development (a topic we have heard much about at this meeting)
- Capturing and disseminating information
- Measurement systems and data collection, in particular the Australian Bureau of Statistics collections
- Adjusting accountability regimes for education to foster innovation
- Reviewing accountability regimes for corporates to provide more space for creativity and risk-taking and encourage triple bottom line approaches to accountability
- Creating a national intellectual property management framework.

The ambivalence of the commitment we sense from governments reflects a broader Australian ambivalence about committing to a leading role in the knowledge economy. Leadership is also about follower-ship! Until the majority of us understand and accept the need for a different culture and national priorities then our social and economic structures will reflect that ambivalence.
4) Education is seen as a key element

Education was frequently mentioned throughout this conference in the context of skills development and bringing ideas to market. However there was also a strong message that the current curriculum is insufficient to help support the development of an entrepreneurial culture. There was a strong validation of the role of educational institutions in socialisation and culture building.

Many people pointed to the key ingredients of entrepreneurship – passion and doggedness. Role models and the provision of practical experience and guidance within educational experiences were identified as important to equip students with theory and application as well as the inspiration. The development of self-confidence and the internal resources to sustain passion is the outcome.

We also heard a lot about the need to concentrate on the primary school level, particularly in relation to the capacity and background of teachers. I would add that vocational education and training also has an important role in developing the capabilities of people and organisations to understand and take up new ideas and technologies.

5) Building bridges and networking as a means of overcoming gaps

Many of the solutions discussed over these two days relate to new ways of interacting and new ways of managing through networks. This includes networking between those who have ideas and those who have resources to market and commercialise; between those who have experience and those who have the will to learn; between those who are looked to and those who are looking, that is, improving the flow of deals.

Networking was also evident in new management practices, with specific examples including B-HERT itself, and the Triton Foundation. The shift to management for opportunities and problem solving as opposed to management for risk was identified as comprising a number of parts:

- Revision of our accountability and reward systems and through this to influence what gets publicity;
- Business’ own investment in R&D;
- Influencing tax and regulatory environments;
- Providing and accessing incentive seed funding.

Links to the education sector were identified including Shell’s LiveWire, Young Achievers and Austrade.

CONCLUSION

At the beginning of our discussion we were reminded that our stereotypes of entrepreneurship had limited our understanding of the phenomenon. Prof. Hanich introduced broader concepts, like social entrepreneurship and “intrapreneurship”.

Why we’re interested in entrepreneurship is because we’re interested in the future well being of Australia. Our concepts of well-being encompass economic, social and environmental goals, yet in this discussion we have focused on business entrepreneurship. We need to focus equally on all three and take them all into account in measuring our success.

Someone here diagnosed the problems in building an entrepreneurial culture in Australia as being:

- Creating entrepreneurial bridge to capital
- Australians don’t really understand global markets
- Australians don’t know how to value IP research or ideas
- Life’s pretty good – no drive to entrepreneurship ”

These sum up much of what we have heard. But our challenge is to move forward: personally; within our organisations and within our larger networks like B-HERT.

SIFE

The SIFE Australia National Competition in June this year was won by the University of Melbourne. The student team, together with their mentor Ms Emma O’Connell, contested the inaugural SIFE World Cup held at the London Hilton in July. While they did not proceed beyond the opening round (they found themselves up against the US team, which went on to be the overall winners), the students acquitted themselves well and drew high praise from the judging panel.

The SIFE World Cup was very professionally run and the standard of entries from the 18 participating countries was uniformly high. The final round of four comprised the US, Poland, Brazil and Malaysia. The fellowship with other nations’ students in the ‘pressure cooker’ atmosphere of competition and exposure to more than 70 CEOs and senior executives of leading UK, European and US corporations made a lasting impression on all the students who participated and vice versa: several of the Melbourne students were asked whether they were considering working overseas!
The Awards will be presented at a gala dinner in Sydney on 15 November 2001.

In the next issue of B-HERT NEWS (March 2002) there will be a full report of the winners.
B-HERT Policy Statements & Papers

As a unique group of leaders in Australian business, higher education and research organisations, the Business/Higher Education Round Table (B-HERT) sees as part of its responsibility the need to articulate its views on matters of importance germane to its Mission. In recent times it has issued Policy Statements and Papers — copies of which are available from the B-HERT Secretariat at a cost of $7.70 (GST inclusive) per copy.

Position Paper No. 1 (July 1998) —
Higher Education in Australia: The Global Imperative

B-HERT has identified the necessary key features of the higher education sector in this country – the prerequisites for Australian universities to compete effectively at the highest international levels.

Position Paper No. 2 (October 1998) —
The Development of Co-operative Research Centres

Overall the program has resulted in a strongly positive effect on Australian spending on research and development by government departments, universities, CSIRO and other public R&D agencies and industry.

Position Paper No. 3 (April 1999) —
The Case for Additional Investment in Basic Research in Australia

Australia needs to ensure that additional funding is provided within a broader policy framework. Such a framework should ensure maximum returns from this investment through diffusion of knowledge to industry and community, improving the skills level of the workforce, encouraging organisational culture change and collaboration, and promoting competition.

Position Paper No. 4 (February 2001) —
The Critical Importance of Lifelong Learning

This paper aims to establish the significance of lifelong learning in the Australian context. Drawing on analyses of lifelong learning policies and practices in Australia and other OECD countries the paper seeks to identify a number of policy priorities for government, particularly in the areas of lifelong learning, business and higher education.

Position Paper No. 5 (June 2001) —
What is Needed to Make Australia a Knowledge-Driven and Learning-Driven Society?

This paper aims to identify major public policy challenges that stem from a proper understanding of the nature of knowledge and learning.

Position Paper No. 6 (August 2001) —
Sharing Administrative Functions at Lower Costs

This paper highlights an innovative approach to achieving savings in administrative activities.

B-HERT Policy Statements & Papers

B-HERT Paper No. 1 (June 1999) —
R&D Leadership Training: Direct Contribution to an Enterprise

F. H. Faulding & Co. Ltd is a diversified health and personal care company. The CSIRO/B-HERT R&D Leadership Program was selected to be the vehicle to assist driving change and improvements in Faulding’s development processes. The team of trained participants has helped reduce total development and technology transfer times by 25-30%. A significant increase in the number of parallel activities has been achieved with a greater number of projects and product introductions being handled simultaneously. Without exception all participants realised significant personal outcomes from the course – both in their professional and private lives. The return on this investment in Faulding’s case this represented a dollar contribution to the bottom line of $1.5 million in the first year.

B-HERT Paper No. 2 (August 1999) —
The Knowledge-Based Economy: some Facts and Figures

Provides some useful and interesting comparative data on Australia’s relative global position within the context of the knowledge-based economy.

B-HERT Paper No. 3 (September 1999) —
B-HERT: Survey of Benefits from Commonwealth Government Business Programs

The Report identifies what the respondents saw as the critical issues in R&D support and provides a series of compelling short case studies highlighting the experience of the business community with various government business programs in support of R&D.
The purpose of the Business/Higher Education Round Table (B-HERT) is to pursue initiatives that will advance the goals and improve the performance of both business and higher education for the benefit of Australian society.

It is a forum where leaders of Australia’s business, research and academic communities can examine important issues of mutual interest, to improve the interaction between Australian business and higher education institutions, and to guide the future directions of higher education.

Mission Statement

In pursuing this mission B-HERT aims to influence public opinion and both government and non-government policy on selected issues of importance.

B-HERT believes that a prerequisite for a more prosperous and equitable society in Australia is a more highly-educated community. In material terms it fosters economic growth and improved living standards – through improved productivity and competitiveness with other countries. In terms of equity, individual Australians should have the opportunity to realise their full social, cultural, political and economic potential.

The membership of B-HERT comprises, by invitation, the chief executives of major Australian corporations and research organisations, and the vice-chancellors of Australian universities.

B-HERT pursues a number of activities through its Working Groups, State Chapters and active alliances with relevant organisations both domestically and internationally. It publishes a regular newsletter (B-HERT NEWS), reporting on its activities and current issues of concern relevant to its Mission.
This study, by the Institute for Research into International Competitiveness at Curtin University of Technology in Perth, commissioned by the Business/Higher Education Round Table (BHERT), quantifies for the first time the enormous contribution made by the university sector to the national economy.

The study measures the economic impact of the university sector in three ways –
1. The income and employment generated by teaching and research;
2. The enhancement of the nation’s human capital through its education of university graduates; and
3. The creation of wealth through the spillover effects of its R&D activities.

The Report quantifies each of these impacts separately. It shows that the government gets a positive payback in a number of ways.

It is interesting to note that less than half the total economic impact of the university sector comes from the direct expenditure of universities. Of more significance is the estimate that the total impact is some $22 billion per year.

The Report provides a unique insight into the information and methodologies utilised in the study. It underlines the importance of higher education as an “economic good.”

In his Foreword to the Report Dr. David Kemp, Minister for Education, Training and Youth Affairs says:
“...it provides a foundation from which to consider the crucial issues of public and private funding of higher education.”
And further “…note(s) how valuable the information it contains will be for everyone interested in higher education issues.”

Additional copies of B-HERT NEWS can be obtained at a cost of $5.50 per copy (GST incl.) by contacting the B-HERT Secretariat by • Phone: 61 3 9654 8824 • Fax: 61 3 9654 8835 or • e-mail: bhert@bhert.com