

prologue

Entering a new century and the new millennium is a time for reflection as well as foresight. One reflects on the fact that one hundred years ago Australia had, with Argentina, the highest per capita income in the world. It was built upon the personal drive and ambition of individual, pioneering Australians taking advantage of our unique resources and the contemporary world market opportunities. One hundred years later the Australian economy languishes in depressed commodity prices, ever-growing competition, and decreased demand for minerals and metals. We are unable to pay for our ever-growing demand for the knowledge-intensive products and services of the new industrial revolution.

In today's world others have learnt faster and better than we have how to create new wealth based on knowledge. But this is a generalisation, confounded by those few who have, despite the impediments of the current Australia, built global organisations based on original Australian ideas, who have retained wealth creation and jobs within Australia, and who by that experience have identified the critical lessons which others can learn and then emulate.

All have a role to play in this, be they government, education companies and, of course, ourselves as individuals. Just as Tony Blair exhorts in Britain also is it so in Australia that, "we must do more to foster a new entrepreneurial spirit: equipping ourselves for the long term, prepared to seize opportunities, committed to constant innovation and enhanced performance".

And the bases for success in this long term are undoubtedly our unique resources and our special capabilities. Australia's current world-class resource is the quality of its science and technology research waiting to be mined, harvested and processed into world competitive goods and services. That requires many more of those pioneers we seemed to have had in the past, the individuals who pull together the team, who marshal the resources, who see the business vision, and who have the perseverance and commitment to carry things through to success. We do have some role models. We need many, many more.

Professor Trevor Cole

Executive Director

The Warren Centre for Advanced Engineering

denis hanley

DENIS HANLEY

Denis Hanley AM is an outstanding Australian – Denis is a wealth creator.

He became a Member of the Order of Australia and was awarded the Clunies Ross Medal for commercialising Australian technology. Principally this recognised his leadership of Memtec Limited from a small startup with four employees and proprietary technology from the University of New South Wales, to become a successful global filtration and purification business with 1800 employees, multiple technology platforms and a market capitalisation of approximately \$660 million. In so doing, Denis created significant wealth for many Australians and Australia.

Once is never enough, and Denis is now a Director of Ceramic Fuel Cells Limited and is in the later stages of negotiating Directorships with another company that has met his criteria for potential success.

Denis is also giving it back to Australia – as a Life Governor of Sydney Hospital and Chairman of the Northcare Foundation at



Denis Hanley AM

Royal North Shore Hospital. He is a former Chairman and Board member of the IR&D Board, and has been a member of the Prime Minister's Science and Engineering council, the Industry and Higher Education round table and the Australian Council for the Development of Environmental Opportunity.

Denis is a Baker Scholar from Harvard Business School and a Fellow of the Australian Society of Accountants. He is also a keen sailor.

Introduction

Distinguished guests, ladies and gentlemen.

It is with great pleasure that I share with you tonight some of the thoughts I have developed during my 14-year association with Memtec Limited. I am a practitioner, not an economist, so I will speak in some detail about a few of my most important observations.

I will not try to discuss the overarching issues of macro economics which I feel can be better presented by others, nor will I dwell on the technical issues relating to patents, when and where to list, nor the different stages of business development and such. They are the subject of another talk I have given previously, and are well known by the technical legal practitioners and bankers involved in the industry.

Rather I have chosen to focus on the task of the key managers of the enterprises who are the potential “wealth creators”. To do this I will rely on my experience at Memtec. There is room for many opinions on how to grow a business, but the one thing going for the Memtec experience and what it can teach is that in the end, it worked. Indeed it worked well.

Memtec grew from four persons and technology to employ 1,800 persons around the globe, and enjoyed a market capitalisation of \$660 million when it was taken over by US Filter at the end of 1997.

At that time it was one of the largest Australian science-based companies, and attracted a share valuation of over 50 times trailing earnings. It had created real wealth for employees and shareholders, and in terms of its innovative product benefits, a whole world of possibilities for its customers and communities all over the world.

By reference to my Memtec experience, I will try to demonstrate the most important generic lessons I believe come from that work.

- Wealth is a stream of cash and earnings from a business, not the components of business itself.
- Experienced, successful operating managers are key to this successful wealth creation.
- A good experienced Board of Directors is essential for an enterprise.
- Businesses should not go public in capital terms until they have a sustainable earnings stream.

There is room for many opinions on how to grow a business, but the one thing going for the Memtec experience and what it can teach is that in the end, it worked. Indeed it worked well.

Memtec: the beginning

Memtec was based on research at the University of New South Wales in the Chemical Engineering department. It owed much in its beginning to Professor Fell and Professor Fane at that institution. They conceived the opportunity, proved the possibility and, through Unisearch, enabled the commercialisation of the technology.

At that time I was interested in a career change. After more than a decade, I wanted to move from a large business, Baxter Labs, to a smaller, more personal opportunity where I could make a difference. I felt this work at the university was such an opportunity.

I set about building a capable management team of people who had all “done it before”, as I strongly believe a start-up company is not a place to learn on the job.

The science was known to Dr. Doug Ford who had extensive polymer knowledge. He took over the university research work. Very quickly Doug had a twinkle in the eyes and a belief in a way forward to financial success.

Mr Michael Quinn is well known to The Warren Centre and had experience marketing new technological products from Raychem, a USA speciality polymer company. He and I trusted in Doug’s confidence, and soon we were thinking about and discussing the potential need for rail sidings and land and other needs we believed we would have in the future.

Together, Doug, Mike and myself made up the initial management team that would take Memtec forward. My reference to the word “team” is important. We had a good and committed team right from the beginning. We were all in the foxhole pointing our guns out. We had even decided that if the capital raising should fail, we would put ourselves on the lecture tour circuit as the experiences were in many instances hilarious. To this day, Doug and Mike continue to discuss who has the film rights for our little adventure. We were collectively committed and we all discussed all aspects of the way forward.

Initially we were all paid the same meagre salary: \$20,000 pa. Shareholders later supplemented that by approving option packages which gave us the opportunity to share in whatever wealth we created.

Our entire workforce consisted of Mr. Bill Anderson, a newly graduated engineer from the University of NSW. Bill came to Memtec after working with Professor Fell at the university, and was familiar with the work done there, so we lost no continuity.

We had a good and committed team right from the beginning. We were all in the foxhole pointing our guns out.

The Memtec management team set about value creating. Many people and organisations had a piece of the puzzle that needed to be put together to create the value opportunity. Thankfully, I was able to convince all that the pieces should be pooled for a share in the one opportunity. Thus all were willing to work to concomitant goals, and all backed the management team.

Firstly, I convinced Baxter Labs of Chicago to sell patent rights it had acquired from the university and technology it had developed from those rights to our new company, promoting products from membrane technology, i.e., Memtec Limited. I am happy to give Doug Ford credit for the name.

Importantly, Baxter sold its interest for approximately its cost base, taking payment in shares. This set a pattern for the way forward. No-one demanded instant profits. All understood the wealth was in co-operation and the final outcome, not immediate self interest.

Next, with Baxter's help and encouragement, I was also able to convince the university to sell its residual rights in the technology to Memtec Limited. The university also took shares as its payment.

Next, the management team and the workforce invested what they could so they, too, would only succeed in the long term when the company succeeded.

I want to stress:

- Memtec Limited was a clean company with no history to overcome, and it owned its technology outright.
- Many businesses which have used syndication and other financial engineering to raise research monies have great difficulty in presenting a clean ownership of their technological underpinning to their commercialisation partners.
- All stakeholders in Memtec had concurrent interest in the financial success of Memtec Limited. There were no royalties or other preferential financial positions.

All were willing to work to concomitant goals, and all backed the management team.

The people

With the technical base and a company structure in place, the management team set about expanding Memtec's people capacity. The principle issue for the development of Memtec was attracting the necessary clever people to develop the business.

In all my experience at the IR&D Board I have found that almost all wealth creation failures come from poor management. Inadequate capital figures highly as a subset in that equation, but that in itself is almost always a management failure. I will talk further on the capital issues later.

At Memtec we used two key personal networks to assemble the necessary expanded management team. As there was no business at the time, we were selling ourselves to these people when we asked them to join us in our venture. We thus had to network as the key new staff had to know us personally. We attended more Harvard Club lunches at that time than at any other time in our collective histories. It helped.

Mr Mervin Norrie, Harvard AMP graduate, agreed to become Memtec's first chairman. Mervin had been managing director of Union Carbide in Australia before retiring to begin his second career at Memtec. He had worked with, and respected, Dr. Doug Ford, who had been his research director at Union Carbide. He thus introduced Doug, one of Australia's best polymer chemists of his time, who had previously been involved at Union Carbide in the development of Cling Wrap, Union Carbide's answer to Saran Wrap.

I introduced Mike Quinn. Mike and I attended Harvard Business School together, and Mike had gone on to manage the marketing side of Raychem, a US multinational in the high-tech polymer industry in Australia.

I was also able to hire Dr. Clinton Kopp. Clint was a distinguished membrane scientist – indeed one of the best in the United States – who at the time was manager of Advanced Product Development at Baxter. Clint had worked previously on the development of thin film composite reverse osmosis membranes at Northstar Research, and had subsequently been responsible for the science of Baxter's human artificial kidney, the world's best seller at that time.

Reverse osmosis membranes remove soluble materials, such as salts, from water. The artificial kidney is a membrane ultrafilter that removes molecular impurities from the blood of a patient

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who has lost the use of his or her kidneys. Clint's experience and involvement with both of these world-class product developments well qualified him for our task ahead. Clint moved his family from Chicago to Sydney for our adventure.

Led by Doug and Clint, Dr. Phil Hone and Mr. Bruce Biltoft, a number of young graduates from Sydney's key engineering schools set about Memtec's product development with a lot of comfort. From scratch, they developed membrane production technology, membrane encapsulation technology, and the equipment to use and clean the membranes to perform the fine filtration we felt we could.

Memtec's first key product was a fine filter, capable of filtering large volumes of dirty, inexpensive liquids to a previously unattainable purity. Memtec's filters filter at 0.2 of a millionth of a meter nominal pore size, below the wavelength of light, and thus produce optical clarity and remove all bacteria, and, of course, all cysts such as Giardia and Cryptosporidium which have been recently identified in Sydney and other Australian capital city water supplies.

I used the term "nominal pore size" because in all filtration, the real filter is not the membrane barrier. It is the gel layer of material rejected by the filter. This gel layer on Memtec's membrane filters in the ultrafiltration range, successbee, remoringviraussy and otherspecliem whichaoremsuce e sizh of th, membraneitself. .

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World-class manufacturing and global marketing

After the product development team had proven the concept, world-class manufacturing and cost reduction became the next vital task. To do this I again recruited from the United States. Andrew Denver and his family moved from Chicago to sunny Sydney.

I first met Andy when we both attended Harvard Business School together. Andy had then accepted a position at Baxter after school, and had enjoyed a wonderful career at Baxter. He first managed the manufacturing operations of the artificial kidney development program that Dr Kopp had worked on. Then he was promoted to manage Baxter's global engineering resources. Next, he was promoted again to manage Baxter's manufacturing operations in Ireland and the UK which employed thousands of staff. And, after his manufacturing career, he was promoted to manage one of Baxter's vertically integrated business divisions which manufactured and marketed a broad range of medical products.

Memtec's global marketing was my next problem. When Memtec commenced marketing in the USA, I recruited Mr Pete McNerney, an MBA from Stanford University, who had just returned to the USA after a period when he managed Baxter's operations in Israel.

When we commenced marketing in Europe, I recruited Mr. Colin Monk, another MBA from Stanford University, who had just completed a period when he had been managing Baxter's operations in Brazil.

All the people who came to join Memtec from around the world immediately received a salary reduction of between 50% and 75%, but were given options at the then market price of Memtec shares to enable them to share in the growth in value of the company over time. They thus had concomitant goals with all of the rest of the stakeholders in Memtec.

The option plan did not only cover the key people I have mentioned. The whole leadership, scientific and development team received options to attract them to work in this small business called Memtec. Memtec's operating staff were all proven in work similar to our chosen task. They were a group any filtration company would be happy to have had. I am proud to say they all prospered as the company did, and all did very well when the take-over occurred because of their option packages.

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Building the board

While the operations staff was growing, Memtec's board was also being built. A board is very important for creating wealth. It approves strategy, provides prudential oversight, and gives all stakeholders comfort that operating management are attending to their chores in a right and proper fashion.

Memtec's board at take-over comprised of myself as chairman, and Harvard Business School and Baxter personnel. I had replaced Mervin Norrie after he had taken ill. The time demands on the chairman of our globally based technology company were such that the chairman's work had to be remunerated as a full-time employee. I was not, however, the chief operating officer of the company. I believe that if you have an executive chairman, it is best he manages the legal and financial oversight of the business, and the company should then have a chief operating officer. This is the norm in the USA, although it is rare in Australia.

Mr. Andrew Denver was Memtec's chief operating officer. He was, of course, a Harvard MBA and Baxter person. Mr. Michael Quinn, Harvard MBA and professional director, was an independent Memtec director. Mr. Chris Smith, Harvard MBA and banker, was an independent Memtec director. Mr. Rob Stewart, Harvard MBA and managing partner at Minter Ellison, solicitors, was another independent Memtec director. Mr. George Karhan, Harvard MBA and previous Baxter general manager in Germany, was an independent Memtec director. George joined the Board after Memtec acquired Seitz Filterwerke, a very significant business in Germany.

Dr Colin Adam, assistant chief executive at the CSIRO and my ex-associate at the IR&D Board, replaced Doug Ford when Doug retired because of the statutory age limit for directors. Colin had been research director at Allied in the USA before returning to Australia to take up his senior post at the CSIRO. As a metallurgist, Colin also helped in the oversight of Memtec's US subsidiary, Fluid Dynamics, which produced metallic filter systems.

Infectious diseases Professor Yvonne Cossart, of Sydney University, who was introduced by Dr. Adam, joined when the board was subsequently expanded. Yvonne had worked at the Center for Disease Control in Atlanta and the Department of Health Labs in the UK. Her skills, particularly in virus detection and public health knowledge, were very important when our market in drinking water started to blossom and when water recycling was identified as a real opportunity.

This was a board of which any company would be proud, and was well respected internationally when we raised capital in the USA.

When you look closely you will see a pattern. There were two important networks contributing to the building of Memtec's people capital. Both the Harvard Mafia and the Baxter Alumni contributed mightily to the backbone of the management of the enterprise.

These were well qualified people who knew and trusted one another, who had all done big things in their careers before they built Memtec. There was minimal risk when they all combined to build the Memtec success. They were all Memtec wealth creators.

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Creating the wealth

Having made the point that I think people are the key to wealth creation, I want now to address the question as to what I think wealth creation is. Wealth creation for me is about building a sustainable, growing earnings output from three key inputs: technology, people, and capital. It is not just technology. It is not a product and some sales. It is the earnings and cash stream growing predictably under management that has value to pension fund managers or others in terms of providing them with the means of delivering ongoing pensions or other returns over time to their clients.

That capitalised value of the earnings stream to the purchaser of the shares in an enterprise is the wealth that is being created. This wealth creation is achieved over five to 10 years or so. Instant success only comes after many long years of hard work.

Short-term transaction-based earnings, which in Australia have come to be associated with the term 'entrepreneur', do not create this wealth. There are ample examples of this littered in Australian financial history. Those trading-based activities are about moving wealth – usually from others to the entrepreneur – not about wealth creation. The term 'entrepreneur' in Australia has thus achieved a degree of odium rightly deserved. I want to distance myself from the very public efforts of those so-called 'entrepreneurs' and their transaction- or event-based business models. Real wealth is created by managing an enterprise to serve the underlying needs of the capital market for repetitive earnings.

Think about the capital markets for a moment. They do not exist to provide money to business as and when it is needed. At the heart of the capital markets is the fund manager who manages other people's money. The money may belong to pension funds, mutual funds, trusts, individuals and other organisations that promise returns to investors.

Whatever the source of funds, the fund managers are simplistically evaluated by the return that they achieve for their investors. We all know this, but sometimes we do not think about its consequence for investee businesses. Instead of potential investee business managers lamenting the lack of capital for "their business", they should recognise that their customers, in so far as their shares are concerned, are those fund managers.

Customers are always right. It is no use complaining that they do not understand. Thus, if fund managers want an underlying continuing stream of growing profits from their individual investments in enterprises, that is what enterprise management must deliver. They rarely get that from young businesses.

Wealth creation for me is about building a sustainable, growing earnings output from three key inputs: technology, people, and capital.

As a rule of thumb, companies are valued by the market on the basis of their earnings yield plus their growth. Strong, smooth growth in earnings typically generates a Price-Earnings multiple equal to the annual compound growth expressed as a percentage. Thus a company growing earnings at 20% pa sustainably might expect a PE of 20. The market capitalisation or the wealth in that company might thus be expected to be 20 times the previous year's profit. That company satisfies the fund manager's needs the best. There are predictable growing streams of profit generating an appreciating value of the monies he or she is managing.

Then there are low-growth but steady performers. They will be valued at a small premium to their steady yield expressed as a percentage return on the fund manager's investment. Typically these businesses sell for a PE of approximately 10. These businesses do not help the fund manager much in his or her quest to build a return on his fund. These companies partly satisfy the manager's need for maintaining the fund's value and are often traded in cyclical fashion to catch the peaks in the performance of the general industrial value cycle.

Lastly, there are the companies which have earnings all over the place. They will have difficulty sustaining a PE multiple much above their prospective next deal. That means the value will fluctuate widely. These high beta companies are dangerous investments for the fund manager as he or she does not know what will happen next and the erratic performance can affect his or her total fund performance. They become strong candidates for take-over by better management. Fund managers will facilitate that process.

The typical fund manager manages a lot of money from the top down. He or she does not manage the companies in the fund he or she is managing. The company management is solely responsible for the earnings performance, and that very much includes the nature of the earnings stream required by the fund.

The conversion of the technology, workforce and capital to produce that earnings stream is a company management issue alone. But a technology company has a big advantage. Because its product is innovative, it has a strong potential for generating revenue and earnings growth.

Memtec grew from nothing to \$660 million in 14 years, although in truth it grew from \$60 million to \$660 million in about seven years. The earnings growth, and so the price earnings multiple of 50 times trailing earnings, was greatest just before the take-over because of the annual earnings achievement, but more particularly because of the growth in earnings.

That is why wealth from technology is, in my opinion, one of the best ways to create wealth. Once the earnings begin to flow, the opportunity for growth is second to none.

The company management is solely responsible for the earnings performance. The conversion of the technology, workforce and capital to produce that earnings stream is a company management issue alone.

Raising capital

However, what about the period in the life of a business before an earnings stream is generated? The early years in a technology company see cash flow growth, but it is most often negative cash flow. Obviously the capital markets are not about to invest directly in such businesses. Those businesses are better off remaining private rather than public businesses.

When Memtec was beginning, venture capital in Australia was not available. In retrospect, I believe that was the only significant problem Memtec faced over its 14-year life. Memtec's management team was able to raise speculative public capital to complete product development and commence marketing from the private client base of Ord Minnett.

The original public offering was styled after a speculative mining issue. That worked, but as a speculative stock, the 'price' was subject to excesses and was not soundly related to the risk discounted long-term earnings potential.

As a consequence, a hiatus developed between the time that product development was complete when the speculative investors started to desert the company, and the time when the earnings began to flow smoothly. That caused a share price fall from \$5.00 per share to \$1.00 per share. The correction was greater than was warranted, but it is also fair to say that the speculative early price rise was too high for what was achievable within a reasonable time horizon.

While Memtec survived this period with some magnificent management, laced with a massive dose of good luck, it was not good for the enterprise to run ahead of the earnings potential and then correct savagely as it did. Most businesses that experience this are stranded in the capital markets and fail in time because of lack of new capital at a reasonable price.

Today, a good VC fund should get very involved and provide the development capital to help the company from its product development phase through to the development of the earnings stream. The company at that time should be private and managed for cash flow maximisation, with the VC fund having sufficient time and expertise in the capital markets to husband the business for the eventual successful listings.

The price of the shares of the individual investments by the VC will be reasonably low. That does not matter. What is important is the value of the enterprise when it reaches the capital markets. These VC investments need to be conservatively valued. The sweat equity the other stakeholders have already contributed has to be respected, but all must also respect the risk the VC fund has in investing in a negative cash flow business which is still vulnerable in the short term.

Today, a good VC fund should get very involved and provide the development capital to help the company from its product development phase through to the development of the earnings stream.

Memtec's original investments were at 25c per share, and the next couple of rounds of development capital were at 50c and \$1.00.

The VC funds are part of the risk phase of the business development, not part of the eventual earnings-based investors. Their provision of the needed funds while husbanding the building of the earnings stream capability contributes mightily to the eventual success of the IPO. All make their real profits when the wealth recognition of the public market comes into play.

When the company does come to the public market, it is not the size of the initial profits that is important. It is the ability of the management to demonstrate consistent and growing earnings. Heavy provisioning is fitting for all the contingencies that are appropriate for a young business. This is because at almost any reasonable growth in earnings, the growth effect on the price multiple will be greater than the yield part of the valuation equation.

Variations in the quarterly performance as a public company will undermine the Price-Earnings ratio. Trust will also be a most important determinant of success. Stakeholder wars are always damaging. Again, networking is important.

Trust in the financial community is not given; it is earned. Thus a young company would be well advised to have wealth creators with experience and a track record with VC and other capital providers on its board. When raising capital, the truth is that there is no shortage of money. VC managers, and indeed all funds managers, need to deploy their funds. They are much more ready to do that, however, if they are investing beside people who have delivered the wealth in the past. This is particularly the case when a company approaches its IPO.

At this time the interest of 'sell side' analysts is key to the success of the capital raising. Although these analysts are employed by the Wall Street banks, up to 50% of their remuneration comes from their rating scores given periodically by the 'buy side' fund managers. The fund managers in turn assess the score of the 'sell side' analyst on what the 'sell side' analyst presents to the fund managers for investment.

Getting an IPO off the ground is only a small part of the management of the wealth created by a company. If you pay the transaction fee, some sort of an IPO can almost always be accomplished for any good business. It does not matter whether a stock is listed on the ASX, NASDAQ or the NYSE. The listing is only a ticket to ride. The ride itself comes from the market maker and the 'sell side' analyst.

When the company does come to the public market, it is not the size of the initial profits that is important. It is the ability of the management to demonstrate consistent and growing earnings.

Relations with 'sell side' analysts and, indeed, 'buy side' analysts at the larger financial institutions are facilitated if they "know" the work of key people associated with the new investment prospect. This "know" is based on prior track records. It means the analyst is confident that the new business at least knows what has to be done to help the fund manager to succeed.

Memtec enjoyed very robust market making. Over 50% of all the capital on issue traded every year after NASDAQ listing. 'Sell side' analyst support for this was robust. As a consequence the share price, and thus the wealth created, was maximised. For the five years before Memtec was acquired, a compound earnings growth of more than 30% was achieved.

At Memtec over 10 years, I met and remained in contact with all the key 'sell side' analysts for the world capital markets dealing in environmental businesses. I also personally knew key 'buy side' analysts and all the fund managers that invested in Memtec. Many worked at the world's largest investment houses. I still know these people and based on that experience, I believe they trust me.

Always remember that excuses do not help the fund manager. Their clients only want a return for their pension or some other purpose. A pensioner does not live well on excuses.

Those associated with Memtec all participated in the wealth created by Memtec.

*Those associated
with Memtec all
participated in the
wealth created by
Memtec.*



Summary

In summary, then, I wish to emphasise a few key points.

- Wealth is a stream of cash and earnings from a business, not the components of business itself. The creation of this cash flow is the ultimate goal of the true wealth creator.
- Experienced, successful operating managers are key to successful wealth creation. They have to be better than their current job demands as they will guide the future of the business. They have to be well paid, but not via a salary - they have to receive options so that their reward is tied to the success of the enterprise. They will often be introduced into the business because of the network of associates already part of the organisation.
- A good experienced Board of Directors is essential for an enterprise. It must provide essential prudential oversight. It should draw on a cross-section of business skills. It should include experienced successful wealth creators to network with capital providers.
- Businesses should not go public in capital terms until they have a sustainable earnings stream. They should be funded by private patient capital before that time.
- Often the best source of the patient capital will be VC funds.

Thank you for your patience. I would be happy to answer a few questions.

Denis Hanley.



The Warren Centre for Advanced Engineering

The Warren Centre for Advanced Engineering is an independent, industry-linked institute committed to fostering excellence and innovation in advanced engineering throughout Australia.

It is a self-funding non-profit body operating within The University of Sydney, controlled by representatives from industry.

The Warren Centre has four objectives:

- Stimulating innovation in the advanced engineering technologies to accelerate Australia's industrial development;
- Encouraging effective deployment and use of new engineering technologies;
- Promoting the integration of technology, management, design and enterprise among Australian businesses;
- Providing independent advice and comment on these issues and their impact on development, national policies and enterprise.

Since opening in 1993, The Warren Centre has gained wide recognition for its unique approach and its achievements in diverse fields of engineering technology and industry development.

The Centre's core services include investigation of major technical issues; keeping people informed through lectures, seminars and round tables; and bringing emerging industry groups together to enable cooperation and faster creation of competitive advantage.

The Warren Centre Innovation Lecture is part of The Warren Centre's seminar, lecture and conference activities which promote understanding of new technologies and encourage their use among Australian businesses.

The Warren Centre wishes to thank AusIndustry, the Industry Research and Development Board, Macquarie Bank, F B Rice and Co and Ansett Australia for their generous support in presenting the 1999 Warren Centre Innovation Lecture at the Hotel Inter-Continental Sydney on Thursday 29th April 1999.

AusIndustry and the IR&D Board. The Industry Research and Development Board is an independent statutory body whose purpose is to administer specific Federal Government programs in support of industry-based innovation, and to provide advice to government on national industry-based R&D strategies and priorities. By these means, the IR&D Board has as its broad mission to increase the level and commercial success of industry-based R&D in Australia. In line with industry assistance programs, the IR&D Board utilises the services of AusIndustry (within the Department of Industry, Science and Resources) as a single point of contact for businesses wishing to access the innovation programs. AusIndustry is the Commonwealth Government's central point for business information and assistance. Specifically, it aims to encourage research and development and innovation within Australian industry. Programs administered through AusIndustry include the Business Information Service (BIS), R&D Start, the Innovation Investment Fund (IIF), and the R&D Tax Concession. AusIndustry Business Entry Point Hotline 13 28 46. www.ausindustry.gov.au

Macquarie Bank is committed to assisting Australian high technology companies realise their commercial potential by providing a full range of investment banking services, including assistance with fund raising, advisory services, corporate planning and strategic alliances. These services are provided both domestically and offshore, through Macquarie's Australian, United States and South East Asian offices.

F B Rice & Co Patent and Trade Mark Attorneys applaud the initiatives of The Warren Centre in fostering a culture of technological innovation in Australia. With offices in Sydney and Melbourne and an international network of associates, F B Rice is able to call upon specialist patent and trade mark attorney skills in establishing or avoiding protective rights of concern to Australian innovators and industry.

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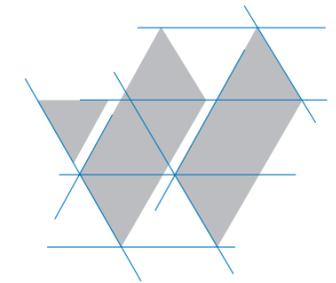
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The Warren Centre
Engineering Building J13
Sydney University NSW 2006
Australia

Telephone: +(61 2) 9351 3752
Facsimile: +(61 2) 9351 2012
Internet Home Page: www.warren.usyd.edu.au
E-Mail: warrenc@eng.usyd.edu.au



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