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Official Committee Hansard

**HOUSE OF
REPRESENTATIVES**

STANDING COMMITTEE ON SCIENCE AND INNOVATION

Reference: Business commitment to research and development in Australia

MONDAY, 10 FEBRUARY 2003

CANBERRA

BY AUTHORITY OF THE HOUSE OF REPRESENTATIVES

HOUSE OF REPRESENTATIVES
STANDING COMMITTEE ON SCIENCE AND INNOVATION

Monday, 10 February 2003

Members: Mr Nairn (*Chair*), Ms Corcoran, Mr Evans, Mr Forrest, Ms Grierson, Mr Hatton, Mr Lindsay, Mr Tony Smith, Mr Ticehurst and Dr Washer

Members in attendance: Ms Corcoran, Mr Evans, Mr Ticehurst and Dr Washer

Terms of reference for the inquiry:

To inquire into and report on:

The international comparisons indicate that while the public sector in Australia supports R&D at an impressive level, business investment is less impressive.

With particular consideration of:

the R&D drivers in small and medium sized business;

the needs of fast-growing companies; and

the considerations by which major international corporations site R&D investment,

the committee seeks to address three questions.

What would be the economic benefit for Australia from a greater private sector investment in R&D?;

What are the impediments to business investment in R&D?; and

What steps need to be taken to better demonstrate to business the benefits of higher private sector investment in R & D?

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Committee met at 7.41 a.m.

BRADFIELD-MOODY, Mr James, Managing Director, Natural Resource Intelligence Pty Ltd

CAMPBELL, Mr Robert Gordon, Managing Director, Precision Metals Pty Ltd

CORRIGAN, Mr John Gerard, Chief Executive, Filtra Ltd

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RILEY, Mr Michael Francis, Strategy and Business Development, MFX Research Pty Ltd

TULLOCH, Mrs Sylvia Medlyn, Executive Director, Sustainable Technologies International Pty Ltd

ACTING CHAIR (Ms Corcoran)—Good morning, and thank you very much for attending this morning. My name is Ann Corcoran and I am the Acting Chair of this committee. Gary Nairn, the Chair, has asked me to pass on his apologies; he is a bit unhappy this morning because he really wanted to be here. This is a committee he really enjoys working with, and you of course are his constituents. For an MP to be away when his constituents are in Parliament House is a bit serious, but he has been called away to deal with things to do with the bushfires in the Snowy Mountains, so he has asked me to pass on his apologies to you.

In about June last year, this committee launched itself on an inquiry into research and development, particularly for small- and medium-sized enterprises. We have received about 80 submissions, and we heard evidence from a number of people last year. Towards the end of last year, it became clear to us that we had not really heard from many small- and medium-sized enterprises themselves, so we have launched ourselves into gear. We got out last Friday and went to Adelaide and Brisbane and we had a telephone conference with people from Melbourne. We also went to other capital cities just before Christmas in order to talk to the people who are

very deeply involved with it. This morning, you are part of this round table too, so I do appreciate you taking the time to come here.

Although this is a private meeting, Hansard is recording the proceedings. If you want to say something that you do not want to see in print later, feel free to do so but not during the meeting; perhaps indicate to me that you would like to say something and we can make arrangements to hear that evidence in private. The *Hansard* will be distributed to you later for you to have a look at and make sure what you have said has been accurately recorded. We will start this morning by asking each of the participants to briefly state who you are, where you are from and what you do, and then we will go around the table again and get your comments on research and development.

Mr Gaul—I am the cofounder and president of CEA Technologies. We are a radar and communications developer based here in Canberra but with offices in Adelaide, Melbourne and San Diego. We export about 40 per cent of our output. Our current R&D spend is about 31 per cent of total expenditure, and that has ranged over many years. We have been claiming the concession since 1985. We have been involved in Start grants and NPDP grants along the way.

Dr Greene—I am the chief executive officer of Electro Optic Systems Pty Ltd, which has been a publicly listed company on the Australian Stock Exchange for nearly a year. The company has been in existence for about 16 years. It specialises in aerospace products that are niche products based on highly leveraged proprietary technologies developed here in Australia.

I think our R&D spend for the last decade was about \$55 million. We are probably well over 40 per cent as a percentage of revenue because our margins on products as they emerge from the development process are very high. Our cost to reproduce products is very low compared to the cost of developing them, so we have a very high-margin business. I think it is one model that is often used for technology businesses. Our products are streamed into space applications—and in space it is mostly tracking and space debris management, which are rather topical at the moment—and military applications. Our military division develops remote and autonomous weapons systems for use in biological, nuclear and chemical warfare situations.

Mr Corrigan—I am the chief executive of Filtra Ltd. Filtra Ltd is three years old. It is on the small end of the SME scale. We set out to look for an industry that was essential to humans, that was very large and that had seen no innovation for 20 or 30 years. We settled on the sewage treatment industry and then set out to find a way to make it more productive. We are developing capital equipment that allows the sewage treatment industry to add capacity, which is one of their major drivers, at a capital cost that is 30 to 40 per cent lower than they would normally spend, which is another of their major drivers.

All of our expenditure over three years has been on R&D. We have spent between \$2½ million and \$3 million to date. We have a pilot plant here. That is part of our development funding, which comes from an agreement with ACT electricity and water. The COMET grant system really does not suit what we are doing. We have prepared applications twice for Start grants, but we have stumbled each time on having matching funds. As you can imagine, it is very hard for us to have funding more than a few months in advance of where we are, partly because funding is expensive at this stage of the company's life. So we really do not want to get large amounts of money in when it is expensive, and it is also very hard—

ACTING CHAIR—These are the sorts of things I want to hear later on. Can I come back to that? I just want to finish getting round the table and hearing where everyone is coming from, and then perhaps we can come back to that point.

Mr Corrigan—That is more or less all I wanted to say.

Mr Harwood—I am the managing director of TOWER Software of Australia. TOWER is a local, Canberra based company. The industry we are in is the provision of application software; specifically, electronic records, document management, workflow and associated technologies. These technologies are very topical and very widely used at the moment, particularly in the government space. It is also as highly regulated an industry as pharmaceuticals, telecommunications et cetera. I guess the business problem we are looking to solve is making sure that people cannot shred documents or let companies or information disappear to the bottom of the harbour, so to speak. So our technologies are all around preserving the corporate memory of organisations, in both the government sector and the private sector.

The company has been heavily involved in R&D since it was founded here in 1985. All of the R&D and development is done here in Australia, and most of the product is sold overseas. We sell very extensively in the United States and Europe. There are 100 people in the company, the vast majority of whom live here in Canberra. We have subsidiary companies in the United States and the UK, and we partner with much larger multinational organisations to go to market—companies like IBM, EDS et cetera. That, in a nutshell, is TOWER Software.

Mr Martindale—I am the business manager for the Distillery. Most people are fairly disappointed when they find out the Distillery is in fact a software product and development company! It is a Canberra operation, and we are in our sixth year of operation. We have grown from the original two founders to a staff of about 25. Our core technology was developed here in Canberra. Our clients include federal and state governments, and they are mainly involved in national security, defence intelligence, law enforcement—both federal and state—compliance, customs and immigration. We are currently seeking second-round investment funding to globalise our operations. We are one of the 115 companies that were victims of the suspension of the Start grant program in 2001. We reapplied and were told we were the first cab off the rank when the panel for the R&D Start resumed last Wednesday, so we are keeping our fingers crossed on that. We have no idea how we went. That is where we are.

Mrs Tulloch—I am cofounder, with my husband, and director of Sustainable Technologies International. STI's mission is to develop, manufacture, market and distribute a range of dye solar cell products. Dye solar cell is the third generation of solar technology, following the silicon crystalline and thin film technologies. We are commencing with facade panels, building integrated photovoltaic projects and currently installing our first order up in Newcastle. We believe dye solar cell technology is the first commercial use of artificial photosynthesis and an early use of nanotechnology. Around 200 research groups in the world have been working in this field, but we are the first to come to market. The core technology—or the core IP—was invented by a Swiss professor named Michael Graetzel, and we have one of a limited number of licences to that core technology. On top of that, we have developed around 14 patents—all listed in the useful places around the world—to underpin our own work.

SDI was set up 15 years ago as a high-tech company with no underpinning low-tech operations. It is a style of company that was well known at the time in the USA but, in those

days, very rare in Australia and not well understood or appreciated. In the late eighties and early nineties, we were involved in generic technology consortia that were predecessor programs to R&D Start. They were ones where the universities got paid and the companies got some benefits from being in the consortia. We have tried several times in the last seven or eight years for R&D Start and have never been successful. We were also caught up in the problem last year and have also reapplied.

Mr Bradfield-Moody—I am the managing director of a company called Natural Resource Intelligence. We have been around for about 10 years, although we went on the stock market just last August. We take satellite data and turn it into environmental intelligence, so we can build up a profile of the land including everything from soils—pH, salinity, depth—to vegetation, to water use, to climate et cetera. For example, we were working on the Pratt Water project, a \$100 million water project, where we found we could reduce the water consumption of irrigation areas by 20 per cent or, through the reduction of risk, improve the values of farms by 20 to 30 per cent. We are also looking at things like Start grants. We have recently got two patents on salinity and things like that. We pour 15 to 20 per cent of our revenues into R&D. On a personal level, I am very happy to be here. I am just finishing off my PhD in innovation theory at ANU, so I am hoping to learn a little bit as well. Also, I have just been asked to be one of 12 people on the Secretary-General of the United Nations task force on science and technology, so we are looking at a lot of these issues as well on a broader level.

ACTING CHAIR—Congratulations. Mr Campbell, do you have any comments to make on the capacity in which you appear?

Mr Campbell—I am the Managing Director of Precision Metals. I also own another company in Sydney in the metals manufacturing industry. In the past, I have been the recipient of some early grants, so I know the pain that we have to go through to be successful. We do a lot of R&D work for many companies around here, but we are not involved directly with R&D today. I see a lot of businesses coming through my door that deserve assistance, but they do not have the capacity to be recipients. Precision Metals is a company that has been around for 15 years. Our feeling about the R&D situation at present is that people are better off biting the bullet, doing it themselves and forgetting about the R&D grants. So that is where we stand.

ACTING CHAIR—I would like to come back to that later on this morning if I may. Mr Jacob, do you have any comments to make?

Mr Jacob—I am Managing Director of Newton Pty Ltd in Canberra, and this is our 14th year in operation. We started off 14 years ago as mainly servicing the audio industry in the ACT region. After a year, we moved into the software and electronic communication fields. For eight years, we were in that field. We were taking products from the conceptual stage to the R&D stage and then to actual installations. For example, all the work in the committee rooms of Parliament House has been done by our company. As a company, business has been done only as a result of our track record; we have never gone into advertising. We have done work only for three or four organisations: Parliament House, the Federal Police and the Crime Authority, so it has always been in the communication field. Three years ago, we found it difficult to stay in the manufacturing field, so we moved into products. We spent three years in the R&D phase, which was a very difficult phase. During that time, we did apply for an R&D Start grant and we were successful—but I will probably speak about that a bit later. Then we released our product into

the global market and, strangely, we have been able to secure orders abroad prior to securing orders in Australia.

ACTING CHAIR—Mr Riley, do you have any comments to make on the capacity in which you appear?

Mr Riley—I have a background with large multinationals and some private organisations in research, but I will let the owner and founder of Compucat speak for Compucat.

Mr Mogg—My wife and I own Compucat. We have another four companies, which we have established to develop products. We have shareholdings in other companies. They are all developing products. It is quite an interesting exercise to go through these other companies and see where they have been and where they are going. We have been in business since 1981. We spend about \$3 million to \$4 million a year on R&D, and we have been doing that for a long time. There are a lot of products that are coming to the end of their development, so it is going to be an interesting period ahead for us. I know a lot of people around here, and I am looking forward to working closely with them in the future. We have offices in Canberra, Sydney and the UK, and we are looking at expanding in other countries throughout the world. We develop secure communications products, which is our main line, and asset management systems.

Mrs Hughes—Epicorp is a technology incubator which has been set up under the Commonwealth government's BITS program, in conjunction with the CSIRO, ANU and the University of Canberra. Our role is to assist organisations to commercialise their products. In our portfolio at the moment, we have 11 companies that we have invested in. They range from companies working in the digital media areas, e-commerce, e-procurement, location technologies and alternative energy source companies. All of our companies are Newstart companies—that is, they are in the very early stages and most of them are pre-revenue. Some of them are earning revenue at the moment, but they are largely pre-revenue.

Many of our companies have applied for the Commonwealth government grant programs: Start, COMET and so on. Some have been successful and some have not. I am happy to discuss some of the experiences we have had with those programs. The current R&D tax rebate scheme is, I believe, one of the most valuable schemes to companies in the stage of development that our companies are. A number of our companies would not be alive today if it were not for the tax rebate scheme, so I am very keen to see that scheme maintained. The tax concession is also useful, but it is not as useful to early start companies as the rebate is. There is nothing like cash in the pocket! I would also like to discuss our relationships with public research agencies. We obviously have very close relationships with some of the largest research organisations in Australia. I again would like to share some of the experiences of the challenges in commercialising product out of those institutions.

ACTING CHAIR—Perhaps we can come back to that.

Mr MARTYN EVANS—When you said tax rebate scheme, do you mean the one where, if you are in a tax loss situation as a small company, you can cash that loss out as a cash rebate?

Mrs Hughes—That is right.

Mr MARTYN EVANS—That is to clarify that we are all talking about the same scheme. There are so many terms in this business.

ACTING CHAIR—We can come back to discuss that in more detail.

Ms Edwards—My name is Lindley Edwards. I am the CEO of The Venture Group. We are an investment bank. We work in a lot of areas of technology, particularly IT&T, biotechnology, health, environmental technology and what we call services technology. We like technology because it is actually the disrupter. The sorts of things I am particularly used to doing are mergers, acquisitions, divestment, a lot of fundraising and especially channel work. We use government money wherever possible; we find government will often fill the gap because there is a lack of angel investment in Australia. There are a number of capital gaps because, as the market gets more difficult, funders who have money for rent push their investments further up the value chain. That means that emerging and nascent ventures find it hard to access funding. I am particularly interested in not just R&D but the diffusion of technology past early adopter markets. It is often very easy to get a small market in Australia but it is actually the wholesale and wholesale push into large export markets that I think we are all quite concerned about here.

Mr Hoff—I am Chairman of Thiri. Thiri is an e-commerce company that has developed some technology which enables you to enhance your banking facilities, with the ability to transfer 2c between two bank accounts on the Internet and still make a profit. I am also founder and director of TOWER Software. You will hear from Martin Harwood about that. I am also a director of NICTA, the ICT Centre of Excellence. The government has given us \$130 million to establish the ICT Centre of Excellence over the next five years. I am also chairman of ACIS, a small services company, and chairman of FITAR, a small product company. I am also chairman of the ACT Knowledge Based Economy Board. We advise the Chief Minister and the minister for business.

ACTING CHAIR—John, I cut you off before. Do you want to take up that point now?

Mr Corrigan—Yes. As I mentioned, we prepared two applications for a Start grant, and in each case the stumbling block has been to demonstrate committed matching funds. The type of grant we have been looking for is roughly about \$2 million over an 18-month period, which means that at the moment of putting in an application we have to have evidence that we have \$1 million of committed funds to match the \$1 million Start grant, plus sufficient funds for the company to continue to function over the period of the Start grant. For a company of our size and position, it is extremely expensive to get that sort of money, if you can get it at all, and you cannot really get that commitment of funds over that period of time—so we are stuck.

ACTING CHAIR—You made the comment about the COMET grant.

Mr Corrigan—One of the issues with the COMET grant is that it is worked out in such a way that a commission is paid to people for any funds raised, whereas we have by far the biggest incentive to raise funds than the people within the COMET system. Ultimately, when push comes to shove we will raise funds. They may not but they will still take a commission on it. So why would we do that?

ACTING CHAIR—We will open for general discussion now. I will let John go first because I cut him off at the socks last time.

Mr Bradfield-Moody—I would love to know what we are doing: are we looking for problems, solutions, ideas?

ACTING CHAIR—The minister has made the point that it appears that small- to medium-sized enterprises are not getting into R&D and he wants to know why. What can be done to help? He also asked whether R&D is useful. I would imagine that everyone around this table is going to say yes. Yes, we will tick that one off; R&D is useful. That is the first question. Having got over that hurdle, why is it that SMEs are not investing? We have had evidence that suggests that perhaps they are; it is just not being recorded because they do not go through the government processes. We have been asked to come back with recommendations about what can be done to help SMEs engage more in R&Ds. That is what we are looking for—recommendations this committee can put to the minister.

Mrs Tulloch—I am going to make a comment on why SMEs are not doing more, having followed a career in multinational business for 15 years in our own company. I have to tell you that it is very difficult. When you get to the third mortgage on your house—

ACTING CHAIR—Why is it very difficult? That is what we need to know.

Mrs Tulloch—To do R&D costs money. I sympathise with Robert's suggestion that you should just do it, but \$16 million has been spent on our program. By international standards, to develop artificial photosynthesis third generation solar cell technology, that is really cheap. But it is a lot of money, so gathering that amount of money to enable you to see out your vision is very difficult, and it is certainly much more difficult to do in Australia than it is in several overseas countries, and the people in the overseas countries are our competitors. So you have to be of a very sterling determination and character to be able to hold the vision, and it is often a long vision. I look at people in the IT industry with envy because in IT you can make things happen relatively quickly—in only a few years. Peter is raising his eyebrows, but you know what I mean: in materials technology it has taken us 12 to 15 years and we are the first in the world to get there. So you are looking at very long time frames with very little sympathy from the investment community or from government that those are the time frames you are looking at. I cannot address the incremental R&D. I know there is also a need for existing companies with low-tech products et cetera to do incremental R&D, but we are discussing new companies doing really big things in R&D. It is really hard; it is very hard in Australia. There is a huge temptation to give up—either give up in Australia or give up and go overseas and do it.

ACTING CHAIR—You said that it is more difficult in Australia than in overseas countries.

Mrs Tulloch—Yes.

ACTING CHAIR—Which countries are you talking about and why is it more difficult here?

Mrs Tulloch—America, certainly, many places in Europe and, increasingly, places in Asia. We try to benchmark ourselves against overseas companies that are doing very similar things to what we are doing. A USA company is about six years behind us in the work in artificial photosynthesis—it has been around only a couple of years. It has raised venture capital of \$US13½ million from a range of three or four different companies. It has had a \$US2 million contract from the Department of Defense in the United States, because in the United States the Department of Defense puts contracts out for a range of R&D, and not just for very specific

defence R&D like ours does a bit of. Last week it announced a \$US1.5 million grant from something that sounds a bit like our Greenhouse Office. These are contracts and grants that are not 50 per cent matched. We are ahead of them now, but are we going to be in two years time when that is the competition? My bet is that we will—I know the people, and I know our people—but, God, it is hard work.

Mr Campbell—Sylvia is right; we do a lot on a shoestring. The government's view that there is not a lot of investment in R&D has proven to be false. That is demonstrated by the number of people who are here today and who are engaging in a massive amount of R&D without any government help whatsoever. The R&D dollars are being spent—or the R&D hours are being spent, aren't they? If you look at what Sylvia has done and what you people have all done, you will see that a lot of hours have been spent but no dollars have been recorded against it. A lot of R&D is being done, but I do not think the government is recording it properly. Therefore, they are not responding appropriately. If the government chucked in 50 per cent of what these people chuck in, we would be a long way ahead.

Mrs Hughes—I would like to support what Sylvia and Robert are saying. The assumption that R&D is not going on in SMEs is patently false. A large number of organisations apply to funding organisations such as the BITS program and Epicorp. In our program, which has been running for about 2½ years now, we have received upwards of 180 applications, all from SME type organisations that have been conducting research and development. That is going on across the country. I am sure that if you took just a straw poll of the venture capital organisations and the early seed funding organisations, you would find that the numbers of organisations that are in that R&D type stage would be quite significant.

The other point we miss is that there is a difference between research and development. The nomenclature that we use—R&D—is a grab bag that is across a huge spectrum, and it is actually quite seriously misleading. It is time that we started to separate those two notions, because what we are quite good at is research. We spend large amounts of dollars in the public institutions and in many of the SME type organisations, but we do not spend anywhere near enough dollars in the development and the commercialisation of those developments.

Mr Harwood—I certainly agree with some of the comments that have been made by people previously. The issues come down to two stages of development of any organisation that is looking to bring a product to market. Government probably has visibility on the amount of R&D that is happening in the formative stages. Things like the Start programs, et cetera, highlight the activity—and obviously government investment in those sorts of activities—and also the corporation in question. When you get to the second stage of development and you actually have a product and you have commercialised it and opened up some markets, hopefully here and overseas, that is when the real action starts for most organisations. It is probably the area where the government needs to have a look at policy to see whether, in fact, policy is aligned with driving the growth of those companies.

TOWER invests a very significant amount of its revenue and profits back into R&D. The fact of the matter is the company has never had a Start grant, or anything like that, from government—the funds have been raised privately. Continuing to attract investment from the private sector is a problem. Obviously government cannot fund R&D for all SMEs in Australia—that, clearly, is not a viable proposition—so the vast majority of investment needs to come from the private sector. How do you get the private sector to invest in R&D in Australia?

That is where government policy comes in. Support from the government through the tax regime for things like company tax and R&D activity are important. We spend a large amount of our money on R&D, but we are outspent by the Americans by as much as 10 to 40 times. So, no matter how good you are at maximising the effectiveness of your R&D dollars, sheer bulk takes over. The only way to grow our industry here is to increase the amount of private investment in organisations to fund development and marketing of overseas markets.

Mr Martindale—I have to agree with Roslyn and differentiate between R&D. We are a small company, but we spend a lot of money on the ‘D’ to keep the doors open. We have responsibility for the lives of 25 people—we need to pay them; their careers are at stake—so we do the development for our clients. We want to do the research, and that is why we went to the Start grant. Our research and development program—but, basically, our research program—is one of the Prime Minister’s recently announced research priorities: Safeguarding Australia. A lot of what we wanted to do came out of problems that caused September 11 and the breakdown with the intelligence organisations. We were a victim of the suspension of the grant, but we thought our research was so important that we went to government to see whether we could get funding for the research whilst we waited for the R&D Start scheme to come back on again. It was totally impossible. We went to many of our clients and other departments, but they are not in the research game and did not have funding for that, although they were all very supportive of what we wanted to do. We have to carry on with developing our immediate needs for our clients, but there is so much more that we can do. We have been to VCs and the banks, but they are risk averse—they do not invest in risky business, which research is.

Mr Bradfield-Moody—I totally agree about separating R&D; in fact, I think innovation should be put at the end of that. One of the biggest issues is that the national approach to innovation—including the report *Chance to Change* and *Backing Australia’s Ability et cetera*—has been very much a technology ‘push’ model of innovation. We really have not been looking at ‘pulling’ innovations through the system. We have been looking at putting more money into the research side of it, hoping that the ‘D’ comes out of that and then hoping that somehow somebody commercialises it at the end. Take a look at the money that is traditionally spent on research. For every \$1 that is spent on research, it will take \$10 to develop and \$100 to commercialise. The real issue is not necessarily how to get more money into research—a lot of it is unaccounted for—but how we get the stuff to market. This includes identifying the markets and marketing the finance communities to convince them that these things can be winners. I liked what Lindley said about gaps. A big issue is trying to identify those gaps. If you look at the innovation cycle, I can supply you with information about where the gaps are in bringing things to market. You have to try to make it easier to make those gap transitions. Venture capital is very important.

The final issue, which is somewhat controversial—although it is getting better in some cases—is making sure that, when we do finally get private companies starting to do this research, they are not actually competing with the government. In what is known as ‘competitive neutrality’, our industry tries to provide services that overlap with those provided by government. There is a big question now about whether those services are for the public good—salinity mapping, for example. Because it is an immature market, we have to try to commercialise our products without standing on the toes of the people we need to work with. There is an internal perception in some quarters that we are going to be encroaching on other people’s space. The biggest issue is that we need to be pulling innovation through the system as much as pushing it.

We have moved through five big innovation cycles since the Industrial Revolution: milling, steam, automobiles, transistors and ICT. At the beginning of a wave of innovation, there are heaps of companies being formed and innovating. Towards the end, everything basically consolidates and you get a global depression. We are hitting that global depression. The next wave of innovation will start in around two or three years. The larger policy question is: will Australia be at the front of that? That is where we have to look at picking winners. I am glad that we had the research priorities coming out.

Mr Jacob—I agree with what Roslyn said. We need to have a break between research and development. The major problem that SMEs face in the research area is that the funds that we apply to the government for are relatively small in relation to those given to large organisations, and the time spent getting one of those grants ranges between eight weeks and 12 months. The applications are also expensive. Smaller companies cannot spend 12 months wasting their time applying for a grant. I also agree with what Sylvia said earlier. What then happens is that people who really believe in their product go from their first mortgage to their second and third mortgages. We are a classic example. When we brought our product out a year ago, it was the only such product on the global market—which happens in many cases here. When it comes to the commercialisation phase, you go back, having completed the R&D phase, and you are told that it is best to then apply for a loan for commercialisation, which takes another 12 months. To get through those phases takes a long time, and normally you cannot stay there that long. That is the real problem we face.

Ms Edwards—Small- to medium-sized enterprises spend most of their time on research and development because they have to keep moving to find market niches—it is a matter of recording and measuring what research and development is. The big issue for me, which several people have picked up on, is the diffusion of innovation. I have spent quite a bit of time in the US. Small- to medium-sized enterprises in the US have the same issues that we have; however, the critical difference is that we are in a market of 19 million people and they are in a market of 270 million people. That is a critical difference, and our nascent organisations need to start looking at export markets a lot earlier than most other countries. That problem is not unique to Australia—it also happens in Israel, for instance.

I have been looking at what the Israelis have done about that problem. Israel has set up what is called the BIRD Foundation, which helps Israeli companies access US markets; but it captures knowledge so that you are not reinventing the wheel. So many times in Australia everyone has the same problems and we are reinventing the wheel. There is a lack of collaboration amongst Australian companies and a lack of leverage of the existing knowledge base. We do not own many distribution channels—very few compared to the Americans and Europeans. It is critical that we find ways to link our emerging businesses and our products into these distribution channels, which requires us to understand differences in culture, in business practice and in how business models are undertaken. In a small market such as Australia, we access the market very differently. Quite a number of people have been through the process, and somehow we have to capture that knowledge so that people coming up behind them can use it to their advantage.

We have spoken about policy. There are capital gaps that exist in other markets. I have just read some stuff out of the OECD. Korea, the UK and Canada all have similar problems to us, and they are starting to put some tax breaks around some of the companies who are wanting to invest in smaller companies to bring it through. So I do not think our problems are unique. It is

just a case of looking around the world to see who has the same problems and modifying their solutions to adapt to our situation. We cannot adapt the American business model, because they have got a huge market, but our answer is going to lie in other, smaller countries.

Dr Greene—Rather than agree with anyone else, I want to make a statement in a different direction. I think we spend way too little on innovation in this country, and we get very poor value for what we do spend. We have to find more creative ways to be more effective with what we do. I do not know what is the chicken and what is the egg. I do not know whether we spend too little because what we spend is perceived as being not very productive in terms of our innovation spend as a percentage of GDP. There are so many things we could do to be more effective in how we spend our money.

Brand is chairman of the Canberra Knowledge Based Economy Board. One of the things we have done there is pick up a model that I have seen work very well in other countries. I should point out that, in 20 years, our company has never done business in Australia; we have been a 100 per cent export business from day one. As a high-tech company, our markets have always been principally in the US. A third of our staff are employed permanently in the US, but 90 per cent of our R&D is done in Australia. That is not necessarily because of financial incentives; it is because of a historical reason—that is how our labs have developed. Our labs here have hung on by a slender thread to their existence over the last three years. They are barely making a case on a year by year basis to continue to be the heartbeat of our company in terms of technology. That is on an economic basis.

A really simple example—and I do not want to take much time—is a country that borders on the US and that has a much smaller economy. It has programs that go out and identify US government procurement programs that are coming in the next two or three years, and it focuses its own requirements to be ahead of those programs. I will be blunt: Canadian companies, having had the experience of working on a smaller program but to exactly the same specifications as a US government program, win an amazing proportion of those programs, which spend 10 times more than what the Canadian government spends. It is simple intelligence; it is so simple. We do not do it. Why don't we do it?

ACTING CHAIR—That is a good question.

Dr Greene—I can identify so many areas. We used to have a program called NPDP. At this end of the table, there are representatives from two rather successful technology companies in this region. Both of them have benefited from what was the NPDP program—where the Australian government identified a procurement requirement and went into a partnership with a local company to develop that requirement. We took our program and dominated that market sector globally thereafter. I do not know why that program went away.

Mr Hoff—Sylvia raised the situation she finds herself in with a competitor in the US, where a government department gave the US company, a small- to medium-sized enterprise, a contract. That is the first step that a company needs in the commercialisation process—that is, a first customer, a reference site, a place where they can do trials and things. This program that Ben is referring to is a terrific idea, because the American companies do not do anything about it until the requirement comes out. But if our government knew what the American government was going to do in, say, three years times and we did it with a government customer here, then we have a perfect opportunity to go and win that US business, just like the Canadian companies

are going to do. As a result of that, I would really like to see the committee look into the business of assisting SMEs to obtain government business. SMEs do not get a significant share of federal government business, and I would like to see some initiatives in that respect.

I have a couple more comments to make. Having policies to encourage the large companies in Australia to use SMEs to do R&D would strengthen the SME sector; that does not happen. Large companies tend not to place contracts with SMEs necessarily but rather tend to do it themselves in-house. During harsh times, they will cut those programs because the chief executive officer of a company believes it is the easiest place to make cuts. If they were placed in contracts with SMEs, of course, contracts are harder to get out of.

The last point I would like to make is that, in the ICT industry, we are currently in what might be called a nuclear winter. As far as venture capital and the capital markets are concerned, it is really a pretty tough time here at the moment. However, the point made by James is that we are, in fact, in the first part of a major revolution in the knowledge based industries, and investing in this ought to be encouraged in Australia—in government, business, everywhere—in order for us to get our piece of the next revolution.

Mrs Tulloch—I have a couple of points on the contract R&D front. In the United States, government labs put contracts on SMEs to do research and development for them. Does the CSIRO ever do that? Does ANSTO ever do that? DSTO sometimes does it.

Mrs Hughes—CSIRO want to go the other way round.

Mrs Tulloch—That is right. In fact, I suspect that even the recording of how much money is spent on R&D by government and business in the United States is skewed by the fact that, if a US company gets a contract from one of the energy departments—as it would be in our case—then it is them doing the R&D. So it is company R&D, and 110 per cent of it is paid for by a government laboratory. That is a mechanism that does not exist here that is very well used in the States and other places. That is one point on contract R&D.

The other point on contract R&D is that we were approached by the National Renewable Energy Laboratory in the States to do some work for them. We put together a bid, went to them and they said, ‘We definitely want this done but we are not allowed to give it to you because you are Australian. Can you come in under an American bid?’ We came in under a bid that DuPont were putting up and then DuPont decided, for their own reasons, not to go ahead with theirs, so ours did not get funded. Perhaps the Canadians have a privileged position, but the Americans are supposed to be our friends, aren’t they? In this particular case, the job has not been let to anybody else because nobody else can do it yet. Mind you, if they keep putting money into this competitor company, in a couple of years they will be able to do it. So we are banned from applying for these contracts to do particular work under the American system.

Mr Gaul—I just wanted to talk about the NPDP program. Basically, it got thrown out because it was politicised. It had a label that belonged to a former Labor government, so that is why it went. One of the things we have got to do in this country is depoliticise R&D and activities like this so that you do not throw the baby out with the bath water when a new government takes over and wants to launch its own schemes. NPDP was all about getting a government department to look at a requirement that it needed and then going out to Australian industry and finding someone to develop that product for them. We developed a vessel traffic

management system for the port of Brisbane. Fifty per cent of the funding came from the federal government and 50 per cent came from the Queensland government. Under that 100 per cent funding we were contracted to produce a new system. That subsequently became our reference site, and, when the US Navy found out about our radar technology, our tracking algorithms and things like that, they came and had a look at that reference site.

That \$1.5 million from the federal government and \$1.5 million from the Queensland government made a total of \$3 million, and we turned that into \$35 million of exports to the US Navy just in that one program. There have been a whole lot of other programs that we have now gone into the US on, including a new phased array development which is going to benefit our own Navy. Just out of that one reference site and that small amount of money—\$1.5 million—we have had flourishing business growth.

ACTING CHAIR—Before you go ahead, Mrs Hughes, I just want to flag to my colleagues that I have a growing list of speakers here and if you want to ask a question you had better stick your hand in the air.

Mrs Hughes—Could I just make the point that the critical element of David's example is that it was funded by the federal government and the Queensland government but David's company retained the IP associated with that and was enabled 100 per cent without claim by any other party to commercialise that. That is an absolutely critical point, and governments do not get that.

Mr Corrigan—I would like to comment on Brand's point and Sylvia's point. When we started looking at the sewage treatment industry, we did very a detailed survey of senior managers. We interviewed 70 senior managers within the sector, and that represented about 80 per cent of installed capacity in Australia. Of the 10 possible priorities that senior managers could have, R&D was the 10th most important but by a long way. There are two interpretations. One is that there is no possibility of innovating in that industry and therefore there is no point in doing R&D. Another alternative is that these companies do not do R&D effectively themselves and therefore there is an opportunity for a company like ours to do it on their behalf. I think it is the latter. We found at least one player within the industry where the latter is the case. In a sense, that is an excellent positioning for a company of our type, because we are associated then with a large player in the industry that recognises that they are unable to do the R&D as cheaply as we could do it and, in some instances, are simply unable to do the R&D themselves because of the way they are internally structured—mainly for operations as opposed to R&D. As Brand said, it is a very viable way for SMEs to access funding and leverage their position.

ACTING CHAIR—Robert, do you have something to say?

Mr Campbell—Yes, I had something brilliant to say but I have forgotten what it was now! What I did want to briefly say was that we always seem to focus on the United States. I am firmly of the belief that if a product that is being developed in Australia succeeds in Australia then it will succeed in the United States and it will succeed in the whole world. I was involved with taking a product to the United States and dealing with Austrade and those sorts of organisations. It was a dismal failure, but the product succeeded here and it subsequently succeeded in the United States. I think we should focus at home. David's NPDP was fantastic but it was abandoned. R&D for small businesses, microbusinesses, should be handled through

the tax system and we should get rid of the grant system. Make it succeed at home and then you can take it offshore.

Mr Mogg—A lot of our work is done through multinationals, and they are usually fairly large contracts. I put SMEs into two categories: those that develop products and those that provide services. We develop products, and usually the products that we put into these contracts take a unique and important part in it. As a result of that, that is one of the high-risk areas. The multinationals love to give those away to the SMEs because if anything is likely to go wrong it is going to go wrong in those areas. When it comes down to the liquidated damages clauses, we usually say, ‘If the Commonwealth hits you, we don’t mind being hit.’ But, no, they will not have that. They say, ‘We must have the opportunity to hit you if the Commonwealth doesn’t, because you might be the cause of us having a delay and so forth.’ Usually it is the full amount, and often that is one of the reasons why we have to back away. It is one of those areas where we really have to concentrate on trying to sort it out.

Another problem is that, when it comes to the flow-down of the maintenance contracts, the prime loves to hold on to the money, not flow it down and then just use intimidation to make you perform. If something goes wrong with your product and you are not under a maintenance contract, then two years down the track, no matter how much we yell and scream, we are put in a position where we are going to look bad if we do not do something. This is the sort of money we rely on to keep the expertise and development within that product. Dave, you would know all about this. I will leave it at that for the moment.

Mr TICEHURST—I have some observations. I suppose my colleagues and I are hanging back because the format today is a little different from the previous format, so we have to jump in. I would certainly like to agree with Robert. My experience has been in small companies, multinationals and also a service company that I set up some years ago. Companies will do R&D because it is going to add to their sales, irrespective of any tax. I have found that, if you are in a large company, you can have somebody there specialising in obtaining grants and putting all that effort in. If you are in a small company of one or two people, as they often are when they start up, the paperwork is really not aligned with what you want to do—it does not line up with the business plan, it does not usually line up with the strategic plan and finishes up by getting chucked into the bin. Those are the sorts of things we need to address to overcome that. Somebody mentioned—it might have been you, Robert—doing it through the tax system. If the R&D component is highlighted in your accounts, then you have actually done it. People cheat, of course. That has happened over the years.

Mr Campbell—No, not small businesses!

Mr TICEHURST—Larger ones. They put stuff in an R&D account which is probably not R&D—it might be associated with something else.

Mr Campbell—It is subject to audit, though. It can be audited.

Mr TICEHURST—Exactly. If you did start to record it there, you would probably find that there is much R&D going on in small business but that it is just missed because it does not come through any government programs. There was another issue highlighted which I think is very relevant, and this is government competing against Australian companies. That was another experience I had in setting up a lightning tracking network. It was an American product.

I set it up here as a service business. Before too long, the fellow who originally supplied the equipment went broke and it was taken over by his American competitor but then he was able to successfully compete against us here because he was dealing with a government department.

Issues of probity come into it. A lot of government organisations look at small companies as being too small. We have a similar problem with small companies trying to do research with universities, where the culture is very different. It is very difficult to have a level playing field. The other thing that comes into it—and nobody has actually mentioned it here today—is that all the R&D type grants are related to products. If you are in a service business you do not qualify, because you are out on definition. I do not know whether anybody here has that problem.

Mr Hoff—I would like to comment on that as somebody in a product business. If we have very talented Australians and they are put to work building a product that is capable of being sold 25,000 times over, you are going to make a lot more money than if you develop a slightly better service which you cannot often gear up to that 10,000 or 20,000 times sale. I would like to see the program continue to target products rather than services, because we are going to take better advantage of our intellectual capacity and educated people here. Services can be easily copied or modified slightly overseas, even if you invent an improved service, so I do not see the upside leverage on the services side.

Mr TICEHURST—I think service is a growing business. Manufacturing here is largely going downhill rather than uphill. Service is something that you can provide locally. If you are going to provide a service, you have local employment.

Mr Hoff—Anybody who starts a software company in Australia puts money into it. We started spending \$40,000 a year; we now spend \$40,000 a day at TOWER. You have to have a world market in mind from day one. You have to get that leverage, and I do not think that happens in the services business.

Mr Gaul—I would like to make a plea about the bureaucracy in the R&D concession claims area. When we first started in 1985, I think the first return was on one page. I cannot count the number of pages that are required for our return this year. What has sprung up over time is a tremendous level of bureaucracy—an example is the relationship between the ATO and AusIndustry. They both now require you to report on the same R&D concession claim but in a different format. The report is not due in to AusIndustry until the end of April, but the tax return needs to be lodged prior to this—namely, 31 October—and yet the ATO requires exactly the same information that AusIndustry requires. I just wonder what the use of this duplication is.

Secondly, I must question what it is hoped will be achieved by the requirement of R&D plans. In an SME R&D firm like CEA, where the real innovations happen, the advances come because the inventor comes up with an idea and the scientific process starts from there. The plan requirement adds nothing. At best, it adds an expensive layer of bureaucracy, instituting an approval process which must go through the board and be carefully recorded. It is just an example of form over substance. The second point I would make on that is that if it is going to be enforced—and I think Robert has already mentioned this—it is likely to kill a lot of innovations. The inventors, faced with all the approval processes and the bureaucracy involved, are likely not to pursue a claim. They will probably go ahead with the R&D but they will get out of the scheme. We have over-regulated this whole area and you are going to find the very small players no longer entering at all.

Mr Riley—I have been involved in large multinationals and small companies for quite some time and previously within government. I would like to make five or six points. With regard to the method of measurement of R&D, we do not know where we are going unless we can measure it. I have looked at many of the submissions and this came up a few times—and again, today—and I am not sure that we are measuring it properly. People obviously love statistics and base arguments on them but to me the measurement criteria are flawed.

We talked about large industry and their use of SMEs. Peter made a comment on this before and I have been involved with them. The large organisations are primarily project based, and any R&D is probably more ‘D’ and is probably related to a specific project. In that particular scenario, SMEs—who are usually innovative and a lot more efficient and can tackle the tricky elements of design—are usually given design related projects, but the IP is generally not.

I would like to make a comment on government R&D. The submissions and the statistics show that we are spending a fair amount of money on government based R&D, but let us take two of the big ones, CSIRO and DSTO, and make some comparisons with other smaller countries—for instance, Sweden. Sweden’s R&D organisations are extremely small compared to the Australian equivalent and yet their relationship with the SMEs is almost reciprocal. We have already heard that government organisations in the United States let contracts for R&D and, most importantly, allow the R&D developer to own the IP exclusively, and that is the incentive. Here we will spend a small amount of money on an SME and then at the end of that one- or two-year period, if you are lucky, they will tell you, ‘We’re going to compete with this on the public floor and/or we will compete with ourselves.’ You will find that through DSTO in particular, which is competing directly with its industry partners in a fair number of cases. I have one other point on the IP ownership. That is one of the key elements that needs to be sorted out before you will get long-term strategic R&D. You may or may not argue over a shorter term for product, but it certainly must be longer term from a strategic point of view.

With respect to paperwork and the process, we have talked this morning about increasing incentives to get into it, but from a government point of view we should also try and reduce the costs of the paperwork exercise. Let us get rid of the paperwork. Let us put an electronic process in place, perhaps. In that regard, the R component was already mentioned before—it is not a business. The R component is a research activity, so if you are going to have a business plan for the research I think it is flawed in its concept. You could do it for the development phase perhaps. I think they should be very much separated in the way they are looked at and in the way they are nurtured.

Mr Hoff—It is not going to come up anywhere else, but it was suggested at the Innovation Summit in Melbourne a couple of years back that, for the protection of intellectual property, we should strengthen our own system. It is basically almost not worth while registering a patent in Australia; you might as well go straight to the US and register it there, because the legal system there is able to defend those patents much more easily. If a patent is attacked here by a multinational from America or somewhere else then basically you are excluded from the US market. There is one company in Canberra which has actually experienced this: even though they have a better product, they are excluded because their patent on that same thing is being attacked. I would like to see the government look at a system—and they could maybe call it a ‘patent support sinking fund’—where they put aside funding and put their name alongside a patent and, if one is attacked by a big company and it is worth defending, they could take that

money and defend it. That would tell everybody that our patent system is rock solid and should prevent our companies from going to the US and other places.

Dr Greene—This problem finishes up being directed at the people who sit in this House on a regular basis. My comment comes from my five years serving as chief executive of our companies in the US, and I want to correct a perception. US government labs do not outsource research and development; they are forced to outsource research and development by the House of Representatives and the Senate. When the appropriations are passed every year—and I have had the pleasure of working with congressmen and senators from right across the board in the US—there is in every budget for every government lab a small business set-aside, and it is typically hundreds of millions of US dollars. Those labs then cannot access that money other than through small business.

I am directing this to the people who sit in this House: you control the purse strings. If you really value innovation, if you value what SMEs can bring to the economy, then you can do something about it. It really is that simple. If you do not want to do anything about it then you do not have to. I am saying there is a simple action that you could take, and it is the small business set-aside. You could get used to the same sort of crap coming through your offices! You would get some good stories and you would get some bad stories, but I am sure you already have a good instinct for what is real and what is not.

Mr Bradfield-Moody—On that point, can I say I think Ben is absolutely right. It is so simple, and it is a perception change to ask, ‘How do we create more of a market for this R&D?’ We will find the money. That is the thing; that is what venture capital is there for. There is a lot of money out there, but if you do not have a market you cannot demonstrate it or you cannot get a contract to go out and test your salinity technology or whatever. Do you know what I mean? When you are competing against other parts of government, how do you get there? We will find the money.

Dr Greene—I had just one follow-on point. The SBIR grants are up to \$US1 million. You do not even have to be incorporated to apply for them, you need zero staff and they pay you 100 per cent of R&D costs plus 10 per cent profit, plus your admin costs and, if you have the US government as your first contract before you are even incorporated, the angel money falls out of the sky. It is a complete reversal. This place could send the message to our whole economy, and it does not have to use billions of dollars to do it. The body language of this place is incredibly important in this country; it is much more important relatively than it is in the US. Yet the body language that comes out of this place is very negative when it comes to SMEs.

Mrs Tulloch—Thanks for adding that; I think that was really helpful. I wanted to change the topic, if everyone is finished on that issue, and discuss the issue of matching funds. I think it was John who talked about this problem in R&D Start and, if we continue with it in its current form, this business about approving the matching funds. The thing that has always seemed to me to be very inequitable in it is that it does not matter how much money you have spent to date; it is only the next lot of money that counts. So if you are in a growth phase—which it sounds like John is, and we are in the tail end of that phase; we have been in it for 15 years—the fact that you have spent \$16 million to date and you have raised virtually all of it through the company and very little from government does not count. What counts is: have you got in the bank or through signed contracts the next two or three years that will match 50 per cent from the government?

Even leaving our current scheme in place, it should be possible to take some kind of a holistic look at things. I suppose part of it is this three-year project approach. The fact is there are very few real projects that are three years long. You need to phase them and you need to have milestones, but a project like ours is a 15-year project. We always knew it was a 15-year project. In fact, we started it at the request of the ERDC—the Energy Research and Development Corporation—and the very first application to them had the full timing all laid out in phases and different funding proposals.

If we look at what came through as R&D Start as subprojects often of a larger project and then look at the funding of the total project and say, ‘What is a fair share?’ then if the government regards a fair share as 50 per cent and you have already spent \$16 million of your company’s money, the next \$16 million should come from government—could I suggest that? That is not going to happen, but there needs to be some sort of formula that says that, if you have spent \$16 million, at least 10 per cent should be from government. That would be nice. The other thing too is that these sorts of formulas could look at the national good element, and the national research priorities are an important part of this. We have now identified some national research priorities, but how do we reflect that back into the various granting programs out there? We work in greenhouse gas reduction, and that has been identified as a national priority for some years. It takes absolutely no priority at all when we go to a scheme like R&D Start.

Mr Martindale—I would agree with that. There is a social benefit that is not taken into account.

Mr Harwood—I wanted to reinforce some comments that were made some time ago during this discussion that I think are very, very important in terms of how government can really assist in the development of not only R&D but the whole export economy with its own procurement decisions. We heard the earlier example about the Port of Brisbane Authority, the Queensland government and the federal government putting some money into a program which not only developed a product but gave the reference site for further sales. That is Marketing 101. Marketing is about finding customers who have similar or identical needs and who reference one another in their buying decisions. The fact of the matter is that government agencies around the world do very similar things, and they reference one another.

I think the Australian government is not particularly supportive of its native industry in its own procurement decisions. We will often choose products from overseas when there is a product that is equivalent, and sometimes better, in Australia. That is not going back to the old offset days; I think that was bad news. We do not want to go back to the old offset programs, but I think there has to be some criterion for the effect on our own economy from some of the government procurement decisions. It is very hard for an Australian company to develop state-of-the-art products, leading edge products, when they then go to overseas agencies—UK government departments and US government departments—who check your bona fides and find that US or European companies are being sourced by your own government in your own country. It begs the obvious question: what is wrong with your product if it is not good enough for your own country?

Mr Hoff—Just for the record, we did a survey a few years ago. There are 85,000 government and semigovernment organisations in the USA alone. That is a big market for us.

Mr Martindale—Increasingly I find that there is a total disconnection between government policy and what is happening in the Public Service. You can read Backing Australia's Ability or any of those documents, but when you go and deal with a government department most people would never have heard of it. This goes back to a point I made earlier on. When we did not get our R&D grant and it was suspended, we went to all our clients. We have enormous support from every one of our clients, but everyone said, 'We're not in the research business, so don't come to us looking for money; that's not our job. However, what you're going to do is what we really need.' We have a strong letter of support from every one of our clients saying, 'We really need this stuff,' but nobody was interested in helping us do it. It was really interesting.

Mr Campbell—I want to back up what Ben was saying. I remember attending a function similar to this with Bronwyn Bishop at the Defence Staff College. She made it her mission to drive forward the procurement process put in place by Defence to include local SMEs. She was adamant that this was going to happen. We left that meeting, which must have been five years ago, and we were pumped up. We thought we were going to make a fortune out of this, and we were going to do it properly. At the functional level, they just said, 'Forget it.' If you go and deal with the purchasing officers or the contract administrators, they have no interest in taking any risks, because they are the ones perceived to have their seat on the line. Only by having it mandated at the top, at your level, will it work. It did not work last time, did it? There are a couple of lucky guys at the end there, but for the rest of us it was a dismal failure.

Dr WASHER—We are enthusiastic. From a government point of view, I am sure to achieve these, but how can you mandate that? At the end of the day, most of these organisations are fairly autonomous. We put out an edict. We have policy, but it is like the tax office. How they interpret that policy would be a bloody difficult thing for us personally, let me assure you. I cannot see that legally we could dictate the size of an organisation—a procurement agency. When you define that in reality, how the hell do you do it? I am genuinely asking: how do you do it? Let us take Defence. Let us take a hypothetical—we are going to have to take a radar part. What am I going to say—that if they employ more than 30 people it is too big? What are we going to define as a small- to medium-sized enterprise? Okay, we are going to say it is an Australian company, but say there are four Australian companies going for this but one happens to be a big company and comes in better. In what legal way can I stop that big company from winning that contract? Do you understand the problem? I understand what you are saying, but I do not know how to make it work.

Mr Campbell—Let me tell you.

ACTING CHAIR—On this issue, there is a whole string of people who, the minute Mal opened his mouth, jumped.

Dr Greene—The way it can be made to work is that the small business set-side operates through two elements of an organisation's budget. Let us take DSTO rather than Defence as a whole, but the principles are the same. They get a certain amount of money in their budget that they must spend through grants to SMEs. That forces DSTO, for example, to look through its whole range of activities and say, 'What are the pieces of this that we could outsource?' In some cases, it will mean that the balance of employment changes as well. Some permanent positions in DSTO will find themselves in outsourcing companies. That is also very healthy for the economy and very healthy for the country, because you break out intellectual property that is

locked up in government institutions which, although they are innovative and perform very well, just do not deliver the return to the economy.

With one part of their SME budget, the organisations are forced to find different parts of their annual requirement to meet their customer needs, and they outsource those. The other part of the SME set-aside budget is for procurement—in other words, they do not have to award contracts per se for research, but they can award contracts to deliver things that are required in the routine operation of their business. For example, when Defence is buying frigates, you will obviously need a prime systems integrator, which is a multibillion dollar corporation. To use Dr Washer's example of Defence, there are people in this room who could swear on a Bible—or whatever else they hold true—that there have been many times when an SME could have done a much better job than a multinational or large foreign company. The contract may not have been for a radar system; it may have been for something slightly lower tech but which had the potential to grow into a larger market.

Mr MARTYN EVANS—But it is only a percentage of the budget.

Dr Greene—Yes, absolutely.

Mr MARTYN EVANS—You just define the percentage and then let the organisation pick the percentages.

Dr Greene—You let the organisation decide which parts go to SMEs and which do not. You just say, 'Here's your budget of \$6 billion. By the way, this \$300 million is an SME set-aside which has to be executed in one of two forms: research contracts for advanced technology or procurement contracts.' In the context of Washington, Capitol Hill does not get involved in telling them what to do. Government research organisations in the US are much smaller and more compact than ours, because they focus on identifying the best resources in industry. They are very sophisticated. Part of the brief relates to identifying dual use technologies and another part relates to identifying markets for the technology beyond their own requirement. There is a weighting system for the award of that money. As I said earlier, if you have a really good case that has dual use technologies and multiple markets, you can get millions of dollars worth of grants. It is not even necessary to have your company registered; you put in a proposal and form your company when you get the grant.

Mr Hoff—I want to give a partial answer and offer some views on Dr Washer's question about how you discriminate between companies when you are awarding contracts. Clearly, you must not discriminate, because you must use public money with the best effort and in the best way possible, and it must be accountable. However, you can require the purchasing authorities to split things up into smaller pieces of business. If you have smaller pieces of business, more companies will be able to bid for smaller chunks and it will not necessarily be the multinationals that get all of that business.

I would also like to suggest that there be a two-stage tendering process, at least in the field of IT. The first stage of that process would merely be a capabilities assessment to make sure the companies bidding are capable of doing the job, have done it before, have some references and have technology that will suit the particular purchasing decision. That should be immediately at the first stage, without going to tender. There may be six companies that can do the job, all of which will go forward for the real tender. Currently, there is only one stage. There was a

situation recently involving a contract worth around \$100,000 that 90 companies bid for. There was probably a \$10,000 profit to be made, but each company spent about \$1,000 on tendering for it. That is a ridiculous situation, which two-stage tendering would address.

One other question that the committee may care to look at relates to purchasing and small- to medium-sized enterprises. These government departments have big contracts and they give them to big companies. But all the big failures that have cost the government and Australia a lot of money have been by the big companies. The small- to medium-sized enterprises are excluded from bidding for those contracts because they are not big enough and are high risk. Those enterprises are not the ones costing the government a lot of money in the risk side of things; it is the bigger failures from the bigger companies that have been the problem.

Mr Riley—I will first answer the member for Moore, Dr Washer. You have already heard one quick response on how to do it. I will just pick up on your theme. Your point was: how can I legally defend it? I will not pick up on that specifically, but the general ethos—and it is not you alone; it is throughout government—of what that brings across is: how do I defend my position? Why am I so risk averse? I can only speak primarily for the defence industry at the moment, but there is no culture that permits someone to make a mistake or to try something. It is always so far back from the line that there is no innovation possible or even no assessment of risk to the point where you can actually make a decision.

I guess in our Australian culture the fact is that in some cases we are extremely able to address risk—and I think that was brought out quite strongly in one of the submissions—but I do not want a two-tier tendering process. I do not want more money in the cost of tendering; I want a streamlined process. But I feel, certainly from my experience, that if government set the benchmark, if they set the outline and the framework, we can work to it as long as it becomes consistent over time. If you can actually lay out the road rules, we are quite happy to fit within those requirements and make a decision as to whether we are in or out. But the continuing change or the lack of a rigid framework seems to be due to the fact that, if a framework does not work and a new government comes in, they throw out the whole lot—that has been brought up today—and we do not seem to be able to have a refinement process. In terms of the R&D plan, a defence sector plan was put up by Defence which industry rejected. Certainly one rather large industry body rejected it out of hand. It becomes very political as to what things are said there, but processes are in place. Maybe you will want to pick up on what some of that feedback was in the industries.

Mrs Hughes—I want to pick up on a couple of points. Firstly, we talked about the retention of knowledge previously, and I think what is demonstrated in this room is that there is no mining of the knowledge that exists around things that work and things that do not work. We have heard today about the programs that were well respected and worked well in the past, but we do not know about those things. I think the government as a whole probably does not do an analysis of programs that work and programs that do not work in a way that brings those things out and in a way that allows the people who have to work with the programs—the SMEs that have got their feet on the ground—to say what works for them and what does not. So I think an analytical exercise of the elements of those sorts of programs is needed. For instance, I am sitting here today saying that the tax rebate scheme, as opposed to the concession scheme, is one of the most valuable programs that I have seen for the types of companies that I work with in the very early stages. I think we need to record that and understand why that is so.

The other thing we have not talked about is the time frame—the expectation of a return, a success or the knowledge that something works. In my experience, the time frames are too short. Government programs et cetera expect time frames that return something in a very short time—three or four years, not 10 or 20 years—and I think we have to start thinking longer term.

Mr TICEHURST—One of the problems that I found, particularly in the smaller companies, was that you could buy a whole pile of capital equipment and put a lot of money into researching and doing things but it just added to your tax loss. The rebate on tax just did not come in until you made a profit. To work successfully, the rebate should come in earlier rather than years later if you are in the old scheme.

Mrs Hughes—Yes, the current rebate comes in in the current time frame.

Mr TICEHURST—That is right; that is why it is successful. In the past there could be a 150 per cent or 200 per cent tax rebate, but if you were not making a profit it was no good to you.

Mrs Hughes—You might be dead by then!

Mr Gaul—I would like to support what Roslyn said. I think she put it very succinctly, and it is a very important point.

Mr Corrigan—I also support Roslyn. The gentleman over there said that the only tax concession that increases the loss of a company, so to speak, is of no value at all to companies such as ours, because the set-up of the company may well change by the time we get to commercialisation and therefore the losses may be lost, so to speak.

The actual cash in hand is of enormous benefit. It is a benefit in two ways: one, cash in hand is always of enormous benefit; two, the anticipation that you will get a rebate due to the fact that you have spent money, when things get difficult and you cannot see where the next bit of money is coming from, means that you know there is some money coming at the end of the year. It gives you an incentive to scratch around to find the money to keep going, which is a very significant incentive for companies of our type.

ACTING CHAIR—I am aware of the time; we have promised to be finished by 9.30. One issue was flagged very early on, and we have not come back to it yet. If no-one else wants to say something, I will hop in with my little bit. We have raised and skirted around this idea of getting the good idea onto the shop shelves—the commercialisation of good ideas. Does someone want to address that? Roslyn or Lindley, is that something that either of you want to speak about?

Mrs Hughes—Did that relate to the focus on the commercialisation of innovation?

ACTING CHAIR—Yes.

Ms Edwards—The best way to fund anything is to actually get a client who pays. I will give you an example. Recently, I spoke to someone who funds a reasonable amount of venture capital in Australia and he asked me, ‘How do you tell if a piece of technology or a piece of R&D is worth funding?’ I asked, ‘Do they have an end client?’ He said, ‘Yes, that is what I

would do, but I thought it was more scientific.' I said, 'No, it's not.' It is the thing of using and bringing forward. That allows you to bring forward contracts and it allows funders to have confidence. Let us look at what venture capital is: it is only money for rent, and it needs a big return. You know your market space because you work in it all day, but these people have superannuation money and all the constraints of it being superannuation money, with what the trustees of super funds have said to them. They have to make sure that when they put it down—because it is high risk—there is a good chance that they are going to get their money back and a return. The best way is to actually go out and get clients.

Also, in early-stage ventures, you often do not know the valuation but you think you have something that is very valuable. If you can get someone to come in and fund it, it means you have a chance to develop up your venture a bit more without giving away too much equity. If you have a decent contract, sometimes even banks will finance it. It gives you other means to finance your business, so it is a really important point.

Mrs Hughes—I would like to tie that concept to something that I think Robert was espousing before. I totally support the notion that, if you can make a link between whatever product you are researching or developing with a real client who is going to pay money for it, that is absolutely critical to developing something that is innovative and worth while. What we could do is develop some programs that encourage not only public sector customers but also private sector customers to take the risk and get involved at the very early stages of helping companies develop their products. I am sure some creative program could provide an environment where it was to everybody's, and the client's, advantage to take that risk.

What happens with these companies—and I see it every day of the week—is that they have a good product and they have an innovation that is new and not necessarily high risk but has some risk attached to it. They go to customer after customer and the customer says, 'Great, this is what we want. Where have you got it installed? Who can I go and visit to show me that it works?' They come up against that brick wall all the time. They find it very difficult to get their first large, blue-chip client. If we could run a program that provided some mechanism for making that happen a lot earlier and making the clients take the risk—it is the customers who do not want to take the risk—it would help in the whole process of commercialisation.

Mr Hoff—If there were a criterion that a first customer would help focus SME research in a slightly more commercial way, it might also focus publicly funded research in a more commercial way. That might be a criterion to be added to the publicly funded research, which sometimes to me seems to be about research for research's sake rather than research for commercialisation's sake.

Mr Bradfield-Moody—On that note, I think we have to be very careful. Once again, I think the real question is how to create more customers for SMEs. If you have a product, you might be creating a competitor from SMEs if the end goal is not for public research. If the end goal is to commercialise something or it is a spin-off and you are at a stage where you can spin it off and you can get VC-ed, then that is great. But if you are saying there have to be customers for stuff that a publicly funded research organisation in Australia is doing then you might have that same problem in that you are creating competitors for SMEs.

Mr Hoff—That is true. But then you could argue that we should look at the total spend with respect to public research and support for SME type research programs, see what percentage is public research and see what percentage is business and then say, ‘Is that right or is that wrong?’

Mr Campbell—Could we provide a tax incentive for the client?

Dr Greene—If they outsource R&D or if they cofund it?

Mr TICEHURST—Let the customer take the risk.

Mr Campbell—I have been to the movie and bought the T-shirt. If I were to go to a customer with a new product and they said, ‘I like it, but show me where it’s working,’ maybe the tax system could acknowledge that my client company was taking a risk and therefore provide them with some incentive.

Ms Edwards—There could be an insurance process of some sort, because the counterparty risk is big. Financial services technology is a good example of that, where some of the largest organisations in the world have to deal with some of the smallest. Here they are as counterparties, where they would not even lend you a dollar, taking one of your systems and, if something goes wrong with that, you do not have the balance sheet. For some other credit enhancement, the balance sheet of the SME is brought more on a par with a counterparty that the financial institution can deal with. Retentions and insurances are always issues. It is like risk minimisation and mitigation.

Mr Jacob—Roslyn brought up a very important point from the SME’s point of view. I think you need that reference site for your next win, and that is what you and David said. By the Commonwealth and the state ploughing in, that really was the launching platform for their business. Every time you go, you can prove the concept. You can even go through a trial period and prove the concept, but then you still come back to the reference site. Then the SME will say, ‘Hasn’t a larger company done it?’

Mrs Tulloch—It occurred to me that we have not dealt with one issue that I think is important—that is, as an SME dealing administratively with the government is, of course, a challenge. One challenge is that the person who you are dealing with is constantly changing. Even within one application for an R&D Start, we have had three project officers. That was only for R&D Start, let alone things like China-Australia cooperation—I cannot think of what it is called these days—and different programs. It seems to me that there must be a better way round that. Every time you start from scratch. You forget what you told the last person and what you need to fill in with respect to the paperwork. They do not necessarily know about all the paperwork you put across. You are putting through the same thing, again and again.

It occurs to me that we have the Australian Technology Showcase, which is a fairly light program but, to become part of it, there is a peer review process. It seems to me that we could beef up that or something like it so there is a prequalification and a company is already accepted into some group that says, ‘Yes, we’ve checked that these people have got the innovative capacity, the commitment and the background and whatever else.’ So you could go through a process that got through all that and then, when you were dealing with specific projects, just very detailed project stuff could be done but you would not have to do all the rest. If you did that, you could then potentially have a single officer within that Australian Technology

Showcase or analogous program who was your contact. Each time you dealt with government, they could be your person. Even if they turned over, at least it would always be the one person.

Mr Jacob—I guess your experience was not bad; we had seven officers!

Mrs Hughes—At least we had only three.

ACTING CHAIR—The point has been made.

Mr Martindale—I just want to relay our experiences. We have spent over 600 hours putting in our application at huge expense, including for scientists, accountants and whatever. It is an enormous process. But, at the end of the day, the person who takes your thing to the panel which assesses it has got absolutely no background in small business or your technology. You are not allowed to do that yourself. We have been pretty lucky because we have kept the same person right through—I do not quite know how—and he has been enormously helpful. He could not have been more helpful.

Mrs Tulloch—They all try really hard.

Mr Martindale—They try really hard but they have no idea about your business.

Dr Greene—I want to mention something here that helped us a lot. We also had an NPDP that established a pilot facility here for the Australian government in the ACT that we sell \$50 million of in international markets. I said that we do not do business here in Australia; we do development work here, and that was a codevelopment program. I want to mention Austrade, because during the eighties we had the ‘balance sheet’ problem. We were the premier company in our technology in the world. We had completed successful programs with all the major space agencies, yet our balance sheet was not strong enough to break into subsequent markets. The first five major programs that we entered into in terms of international contracts were signed on our behalf by Austrade as the prime contractor, which is still a legal capability within Austrade. The fact is that Austrade’s willingness to do that—and we have not needed it for 10 years, so I am not complaining—has evaporated as successive governments have made it more and more commercially oriented.

I accept the fiduciary responsibility of board members on Austrade, and I think they act properly within the guidelines they have been given. But there is a capability that existed in the eighties, and it was used by small companies and large companies. Telstra used it in the Middle East, using Austrade as a prime contractor doing back to back contracts. To us, we paid Austrade whatever the fees were—and they were considerable—and Austrade made money; they never lost money on a single prime contracting program, net. So why did they give up doing it to support SMEs? You have to understand that the requirements to qualify for the government acting as prime contractor support are extremely high, but it is still a facility that allowed us to reap tens of millions of dollars of export revenue that would not otherwise have been obtained, and that leveraged us into bigger and bigger programs. It is another area where government had a role and they were very active and successful in that role—they never had a loser—yet they pulled out.

Mr Riley—I want to absolutely support that. I was involved in an R&D program in Electro Optics for infra-red. We spent our time going around the globe competing with the big

multinationals and doing one-offs or comparisons on a one by one basis and we beat them hands down—and these are the big Lockheed Martins and all those companies. Yet the technology was not supported by the Australian government. The funding came from the R&D through the Australian government. We had proven that we were a global leader in that environment. It had both military and civil applications, yet it just evaporated for no apparent reason. We have our views on that. In support of Ben, I would say that the balance sheet issue is important. If we could use not necessarily Austrade but somebody that has got commercial experience with relevance to the technology to assist us to match that requirement, I think you would see at least a lot more visibility of the R&D, if nothing else.

ACTING CHAIR—We could probably go on for quite some time, but we promised to finish at 9.30 and we will. I want to thank you all very much for coming here today. We have heard a number of ideas from you that we have heard before, but it is very good to have it reinforced. We have also heard a number of new ideas, so it has been an excellent morning from my point of view. I hope you have found it interesting, too. Thank you for your attendance.

Committee adjourned at 9.29 a.m.