COMMONWEALTH OF AUSTRALIA

Official Committee Hansard

HOUSE OF REPRESENTATIVES

STANDING COMMITTEE ON SCIENCE AND INNOVATION

Reference: Pathways to technological innovation

MONDAY, 20 JUNE 2005

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HOUSE OF REPRESENTATIVES

STANDING COMMITTEE ON SCIENCE AND INNOVATION

Monday, 20 June 2005

Members: Mr Georgiou *(Chair)*, Mr Quick *(Deputy Chair)*, Mr Hayes, Mr Jenkins, Dr Jensen, Miss Jackie Kelly, Mr Price, Mr Tollner, Mrs Vale and Dr Washer

Members in attendance: Mr Georgiou, Mr Hayes, Mr Jenkins, Dr Jensen, Miss Jackie Kelly, Mr Quick, Mr Tollner, Mrs Vale and Dr Washer

Terms of reference for the inquiry:

To inquire into and report on:

Australian technological innovation and pathways to commercialisation, with particular reference to examples of successful Australian technological innovations that demonstrate strategies to overcome potential impediments and factors determining success.

To assist in its inquiry, the Committee seeks to compile a series of case studies of successful technological innovations, and the pathways to commercialisation. Submissions are sought detailing successful examples of Australian technological innovations.

Submissions are also sought with particular reference to successful innovations, on issues such as:

- pathways to commercialisation;
- intellectual property and patents;
- skills and business knowledge;
- capital and risk investment;
- business and scientific regulatory issues;
- research and market linkages;
- factors determining success; and
- strategies in other countries that may be of instruction to Australia.

WITNESSES

Committee met at 4.32 pm

GAUL, Mr David John, President, CEA Technologies Pty Ltd

GOURLAY, Mr Robert Clyde, Managing Director, Environmental Research and Information Consortium Pty Ltd

CHAIR (Mr Georgiou)—I declare open this public hearing of the House of Representatives Standing Committee on Science and Innovation and its inquiry into pathways to technological innovation. The committee is currently conducting public hearings and informal discussions. This hearing is the fourth for the inquiry and I welcome the witnesses. Although the committee does not require you to give evidence under oath, I should advise that these hearings are formal proceedings of the parliament and they do warrant the same respect as proceedings of the House itself. It is customary to remind witnesses that giving false or misleading evidence is a serious matter and may be regarded as contempt of parliament. It is also true that these proceedings are privileged but of course witnesses are requested to bear in mind the proprieties or at least to make sure that they intend to say what they are saying. Mr Gourlay, do you wish to make a brief statement?

Mr Gourlay—Yes, I would like to make a statement of about five minutes. Environmental Research and Information Consortium Pty Ltd, or ERIC, has been operating since 1992 and has undertaken R&D and innovations since that time. ERIC is a specialist knowledge company in the application of remotely sensed data—that is satellite and airborne data—for environmental resource assessment purposes. ERIC has won numerous national, state and regional awards for R&D and innovation. However the pathway to product and service innovation and new business development has been difficult during the last five years due to increasing competition in R&D and commercial services from government agencies and particularly the government agencies comprising CSIRO—particularly the land and water division—Geoscience Australia, and the Bureau of Rural Sciences.

The negative impact can be summarised in the following points. It has changed the culture of public science from openly supporting innovation in industry to a closed system that internalises R&D and commercial ventures, primarily with large multinationals. The agencies collaborate as a cartel for access to alternative public funds that are external to their normal allocation. For example, CSIRO and other agencies may collaborate for new moneys from Land and Water Australia and the Australian Greenhouse Office. These cartels of public research agencies rely on established belief systems to control the framework and direction of public research funding. For example, the national salinity moneys are controlled through a belief system or model of rising ground water and therefore the solutions are cast into hydrological projects.

The public research agencies have become aggressively competitive in the marketplace. They can afford to be proactive in marketing and lobbying because they start with two-thirds of their revenue from Treasury and compete with small- to medium-sized companies for the other one-third. CSIRO and other public agencies are continually trying to establish long-term cash flow from commercial activities rather than relying on short-term, project based commercial income. There are other examples of problems arising from the external earning pressures placed on public agencies in my submission. However, I can say that these barriers largely exist because

the process of public funding for science and innovation lacks independence, transparency and adequate community and industry participation in the review processes.

Against this background, I will now outline one example where my company has experienced unjust treatment by the Australian government science agencies in our pursuit of innovation commercialisation. In 1992, ERIC commercialised a world-leading technology to map soil properties—this included salinity—using airborne gamma ray data. ERIC received many awards in recognition of this achievement over the next 10 years. ERIC produced over 70 technical papers and reports on this technology and presented the findings in numerous national seminars and conferences.

In January 2004, Land and Water Australia produced a report titled *Technical report: salinity mapping methods in the Australian context*. The authors were Spies and Woodgate. They concluded that the gamma ray data that my company was using to map salinity could not be used for mapping salinity. They concluded that the vendor claims—that is, the claims of my company—about the method's ability to map near surface salinity using gamma ray data does not have scientific foundation. The report promoted the use of airborne electromagnetic data, AEM, as the only effective technology for mapping salinity.

Since this time, the following issues have arisen. It is now clear that the vested interests in CSIRO, Geoscience Australia and the Cooperative Research Centre for Landscape Environments and Mineral Exploration in the Bureau of Rural Sciences, promoting the use of AEM for salinity mapping, had a clear intention to sabotage ERIC's commercialisation of gamma ray technology. ERIC's technology was perceived to be the major alternative contender for salinity mapping projects in Australia. The claims in the technical report are outrageously inaccurate and inappropriate for a government agency that failed in its duty of care to examine the evidence—

CHAIR—You are making some fairly strong statements.

Mr Gourlay—Yes. It failed to examine the evidence ERIC had made publicly available for over a decade. The chairman of the report committee, Peter Woodgate, wrote to ERIC directors stating that ERIC's evidence would not be considered as it had not been published in an appropriate scientific journal. Most members of the report committee had a conflict of interest in that they had previously either promoted or were involved in the development of airborne electromagnetics. All salinity mapping work authorised by government agencies now excludes the use of gamma ray for salinity mapping. This has resulted in ERIC not having been commissioned for such work since the release of the technical report. Consequently, ERIC's technology is being stifled by this government report even though ERIC's technology is the only technology that can accurately map salinity over regional and paddock scales, and does so at a fraction of the cost of the airborne electromagnetic technologies.

This is a clear example of the lengths that government agencies will go to to denigrate science and innovation in private industry for their own commercial interests. This Land and Water Australia tactical report has caused significant damage to ERIC's scientific credibility and capacity to trade in salinity mapping. ERIC's capital value has been significantly affected by this attack from Land and Water Australia.

I will now outline some of the Australian government policies that could overcome these barriers. These include the abolition of the cost recovery requirements of government science agencies and a requirement for these agencies to work with fixed public budgets; the affirmation of the role of public science agencies to support innovation in industry as their first priority; and the posting of public scientists to private companies to support R&D in innovation projects. This public service support should be bid for by private companies from the public pool of scientists and could also include private industry scientists. Policies could also include the creation of an independent science R&D and innovation funding program for independent scientists for at least natural resource management projects. This might be an office of sustainability under the Department of the Prime Minister and Cabinet, staffed by industry experts and including the National Water Initiative program and a new national soil initiative.

Another policy could be implementing public fund allocation rules that require all public funding decisions to be transparent, with reviewers of applications from private companies being independent of commercial interests and citing their name to these reviews. The Australian government should organise another innovation summit, but this time ensure that the summit is not hijacked by academia and bureaucracy. There is a strong case to rationalise the number of agencies involved in natural resource management science. For example, I understand that there are about 70 agencies at national, state and regional levels that could currently bid for salinity funds. Also, CSIRO has probably seen the end of its useful purpose, given the science and research capability that now exists within industry.

There is probably a need to rationalise science delivery to a regional base using regional universities as the key research centres. There will also be a role for independent public interest science. However, all public science endeavours must be linked to industry outcomes—that is, all public research should generate new ideas and information that is accessible to all Australian companies to transform into innovation and commercial outcomes. It is not the role of public agencies to get involved directly in the pathways to commercialisation. If CSIRO wishes to retain a group of scientists to support research and licences for multinationals in the areas of pharmaceuticals, health, engineering, biotechnology, and minerals exploration, then this research business should be privatised. There is no need for Australian taxpayers to subsidise the research of multinationals or any large company without a direct spin-off effect to innovation in small to medium enterprises. That is the end of my statement.

CHAIR—You note that in the 10 years from 1992 to 2002 ERIC was very highly regarded and got a number of awards.

Mr Gourlay—Yes.

CHAIR—Can you tell us how ERIC was taken to the marketplace in that period and what the results were?

Mr Gourlay—During that period, my company had revenues in the order of three-quarters of a million dollars. We basically sold a range of products and services. We developed new techniques in climate mapping to work out, for example, where new products—such as neem or sandalwood, mahogany or barley—could be grown. We did this work for the Pratt Water project. That was one major project. We developed new techniques in mapping vegetation where there was land clearing and regeneration of vegetation. We developed techniques in soil mapping,

salinity mapping and hydrology—for example, techniques to find ground water and so forth. Our clients ranged through all levels of government, corporations and farms.

CHAIR—So what did you actually do? Did you do the mapping—if I can call it that—for them?

Mr Gourlay—Yes, we mapped the resources and then interpreted the resource value for that enterprise—that is, what value they could gain from the use of that resource or what the impact of using that resource might be on the environment.

CHAIR—And then what happened?

Mr Gourlay—There was a Commonwealth action agenda for the spatial information industry, which was my major industry, in about 2000. It had a primary aim to develop this industry. Unfortunately, at that time, Commonwealth agencies decided to do this work themselves. So a number of agencies, such as CSIRO, Geoscience Australia and the Bureau of Rural Sciences, started to undertake this work. In fact, I have not seen a tender out of the Commonwealth in this area of work in two years; whereas, back in the mid nineties, there was ample work around, and companies such as mine were growing—probably doubling their revenues—each year in that time. So this industry has collapsed since 2000, and I think that these agencies saw a threat in the work that we were doing. For example, we showed that the Land and Water Resources Audit mapping of salinity was quite flawed. It was wrong in most cases. We were able to map not only land clearing but also revegetation. In many cases, the revegetation was far greater than the amount of land clearing. Often, this is not what agencies want to hear. So I think they wanted to close this in and do the work themselves.

CHAIR—So, in brief, your business was developing strongly—

Mr Gourlay—Very strongly.

CHAIR—let us call it effectively—until the agencies came in and started doing the work themselves without going to tender.

Mr Gourlay—Yes. I should add that during that time those projects provided enormous research opportunities for my company, and it was only through those projects that we were able to innovate and develop new techniques.

CHAIR—Yes, I appreciate that. But what you claim happened is that they developed the internal capacity to do it and just did it.

Mr Gourlay—Yes. For example, the Department of Defence employed a considerable number of people to process data that we were processing early in the nineties. I am an ex army officer, and we were processing data to manage defence training areas. My primary job in Defence was management of these areas. But Defence decided to do all that work internally, so all of that work just disappeared.

CHAIR—In your view, what are the downsides of doing work internally?

Mr Gourlay—The primary downside is that it does not encourage innovation. It does not encourage the development of new ideas. That, I believe, only occurs when you have a business framework and the motivation and incentive to do something different from your competitor. During the period from 1992 to 2000, my company developed an enormous number of new techniques in spatial mapping. We would have been seen as the leading company in Australia in new innovation. Since that time, and in the industry magazines, there has rarely been any innovation coming out of the industry. I think it is a result of the government agencies undertaking this work.

CHAIR—Hasn't it been the emergence of an alternative technology? Is that the right term? They claim that their methods are better than your methods, so there has been some innovation.

Mr Gourlay—There will always be innovation in the hardware, the software and some of the consulting, but the capacity to draw out intelligence from data—which is where my company specialised—requires particular knowledge of how the natural systems operate and requires that contact with the land and the environment. So you need to be able to provide consulting services alongside that innovation. In my company, innovation was something that happened every day for every project. I encouraged my staff every day to be innovative. I would take them to the field and we would examine processes. That is how I discovered that the salinity process in this country that was promoted as the ground water rising was totally flawed. It was actually a soil management issue, not a ground water management issue. That would not have happened if the process had occurred within government. They would not challenge themselves.

CHAIR—How do you resolve the 'my technology is better than your technology' argument?

Mr Gourlay—I do not get involved in that game.

CHAIR—No, but you are actually asserting that.

Mr Gourlay—I am suggesting that I am not being given a fair and equitable opportunity to participate in research and development, and that when I am—

CHAIR—You are actually asserting that your technology is better than the conventional—

Mr Gourlay—I believe that it is, in salinity mapping and—

CHAIR—Okay. How you resolve that? How do you believe that should be resolved?

Mr Gourlay—It will only be resolved when these government agencies start outsourcing this work and allow a number of companies to apply their techniques and demonstrate how effective they are and to participate in the innovation process. I do not mind being competitive in the market, but I have to have a business opportunity to do that.

Dr WASHER—Can you explain that to me? I thought that if a government agency had a contractual job to be done, like salinity mapping over a certain area, they would have to tender that out—or is there no commitment to do that? I thought that, if there were private players in this bill, by law you should tender that out to all players concerned. Is that correct?

Mr Gourlay—That does not seem to be the case. I know that there are components of CSIRO Australia land and water division that have a commercial arm doing exactly the sort of work that my company does. They seem to be able to gets these jobs, but there seems to be no tendering of this work.

Dr WASHER—But legally—you would know the law better than me—should there be?

Mr Gourlay—I think there should be.

Dr WASHER—I think there is legislation in place to say that if there is a private organisation they should at least have the chance to tender. If that is the case, we will look at the second part: who is looking at the tenders to judge their fairness and transparency?

Mr Gourlay—I can only assume that they feel that they can do this work internally and have no requirement to tender it.

Mr HAYES—Dr Washer is right. There is a difference between doing the work internally and CSIRO acting through their commercial arm or flagship arrangements. I understand the same as you, Mal, that they actually go to tender for those.

Mr Gourlay—I am as surprised as you are that this was normal practice in the nineties, and you would expect that, with the amount of NHT money going out to the catchment management authorities, they might be tendering for companies to map salinity, but I have not seen any in the last two years.

Mr HAYES—I know we are protected by privilege here, but we have skated pretty close to the edge so far on everything that has occurred. From my perspective, I could be excused for thinking that a lot of what you are saying is sour grapes because you are left in competition with the CSIRO and other government agencies which are now operating on a commercial footing. Are you saying that, fundamentally, those agencies should not be on a commercial footing?

Mr Gourlay—I do not believe that is the role of a government agency. They are there to develop ideas and research, but there is a conflict of interest when they start to engage in commercial activities. For example, they also sit on panels to consider applications from private industry for access to public moneys. These same scientists are also engaged in commercial activities, so they have a capacity there to dismiss an application from a private company because it is competing with their commercial interests.

Mr HAYES—But if you have serious legal concern in that regard I would have thought that you would have prosecuted that in some position to date.

Dr JENSEN—I have a couple of questions. You said that ERIC has been around this gamma ray method of determining salinity for over 10 years, and then you mentioned that there had been a review by a couple of CSIRO scientists where they said that the technique did not have merit. Were any peer review scientific papers produced to actually back up your assertion? You mentioned prizes and so on, but I am talking about peer review issues.

Mr Gourlay—I have made all of the processes publicly available on my web site. They have been available in papers I have prepared for national conferences, and, without disclosing the fine detail of the IP, it has all been disclosed in terms of the—

Mr HAYES—But in that case, particularly given that CSIRO scientists a few years ago—I think you said in 2002—

Mr Gourlay—It was 2003.

Mr HAYES—highlighted the issue of the lack of peer review, why not put in a paper to a peer review journal? That would completely squash the argument.

Mr Gourlay—I could do that, but I am not required to do that. My clients accept the results that I achieve for them, and there is no doubt that these results have been spectacular. I have had CSIRO scientists come to my company and say that it is the best technique for mapping salinity, but they do not want you to disclose this publicly. I have had significant feedback from public scientists in this respect.

Dr JENSEN—I guess in that context I am wondering why you do not submit it to a peer review journal. That would completely legitimise the stand that you are taking, and basically there would be no oxygen as far as the CSIRO scientists were concerned.

Mr Gourlay—I made presentations in an attempt to expose my technique to the National Dryland Salinity Program, I did presentations to the Bureau of Rural Sciences and I did presentations to two of the heads of CSIRO Land and Water, inviting them to engage in a collaborative project. None of them took it up. It would have been a great opportunity for them to examine the technique. I applied for two Australian Research Council grants with Sydney university and Melbourne university. Both of them were reviewed by scientists in CSIRO and one within the Bureau of Rural Sciences. They basically discredited the technique we were using. So I have never received any public moneys for this work. I have never been given the opportunity for peer review, because they have knocked it out.

Dr JENSEN—With all due respect, with a technique that produces the results that you are saying it does, surely writing up a paper yourself and submitting it for peer review would squash all these arguments. I am wondering why you have not gone about doing so.

Mr Gourlay—The chief scientist in my company had 23 years in CSIRO Land and Water. He is the leading scientist in remote sensing. I think he is writing of the technique and the methodology, and that which appears on our web site and in our technical papers is adequate.

Mrs VALE—I am interested in your concern about having a lack of opportunity to compete with government agencies. Have you thought about approaching the secretary of that particular department? Have you taken any steps to actually bring it to the attention of the secretary that you should have that opportunity? The understanding that Dr Washer has I think is quite sound. Without going into litigation, how—

Mr Gourlay—I wrote to the Secretary of the Department of Agriculture, Fisheries and Forestry, who is responsible for Land and Water Australia and other programs, particularly the

salinity mapping program. I have also been interviewed by Bernie Wonder, the Deputy Secretary of that department. In both cases the responses have been rather dismissive. They have only been protecting their agency and Land and Water Australia. I have asked them to remove the Land and Water Australia report because it contains misleading information, but they have refused to do that.

Mrs VALE—I am just trying to think of other opportunities that you could take. The secretary usually takes care of that sort of thing, so I cannot explain why he was dismissive if you were saying, 'Why aren't we getting the opportunity to compete on these tenders?' They do not put out to tender. Is that what you are saying?

Mr Gourlay—That is right. There is no opportunity.

CHAIR—Can you suggest a tangible response to the lack of transparency, independence, and adequate public and industry participation in the review process?

Mr Gourlay—I believe there needs to be a funding process that is independent of the public scientists in particular. It could be undertaken along the lines of the National Water Initiative. It is actually headed up by someone with some industry background, to start with, and I think it is an independent and objective process. To me, none of those on the board of Land and Water Australia has any experience in industry or in innovation. The applications from industry are reviewed by scientists who have vested interests in their own research, and it is very difficult to get these applications up. So there needs to be an independent process. I would suggest an office, something like the Office of Sustainability, that would contain moneys that were primarily aimed at industry research and industry innovation, and separate from the public interest moneys. It is the only way I could get a fair deal.

Mr TOLLNER—What is an independent scientist?

Mr Gourlay—To me, an independent scientist is someone who is not a public scientist but is operating as part of a private company or part of a non-profit organisation. In fact, I work with and sit on national boards with many independent scientists. I am on the board of the Australian National Sustainability Initiative, the board of Zero Waste Australia and the board of Healthy Soils Australia. These are groupings of independent scientists who pursue research initiatives and innovation initiatives. So there are plenty of scientists outside the public system capable of doing this work, and they are seeking access to public moneys and private moneys. But I note from experience, and even recent experience, that it is very, very difficult. Even with a scientist who leaves CSIRO, almost the next day they are—

CHAIR—Sorry, but can you be a bit careful with what you say. I make that point again.

Mr Gourlay—Yes.

Mr TOLLNER—I am curious as to where you find somebody without conflicts of interest. The fact is that, no matter who they are, they will have allegiances to a particular—

Mr Gourlay—Undoubtedly, and you would find that in industry too. I just think that the assessment panels need to have representatives on them other than public bureaucrats or public

scientists. There probably needs to be representatives from industry associations to ensure that there is a fair and equitable examination of the applications from industry.

Mrs VALE—Have you written to the minister involved expressing your concerns?

Mr Gourlay—I have not written to the minister but I have made a number of submissions, including to the Standing Committee on Science and Innovation's review of salinity science. I have spoken to my local member, Gary Nairn, in this respect, and I am sure that he understands the difficulty that my company faces.

Mrs VALE—Just to cover all your bases, would you think about writing to the minister expressing your concerns and giving him the opportunity of having a look at your concerns?

Mr Gourlay—If you think that would be useful, I will do it.

CHAIR—Mr Gourlay, thank you very much; that has been very instructive. Mr Gaul, would you like to amend anything in your submission and/or make a brief introductory comment?

Mr Gaul—I think the submission stands as it is, so I will not go through anything that is there. What I would like to say is that essentially innovation needs risk, and it is the management of risk that is the key issue in all of this, in moving forward into a commercialisation environment. The other major issue is credibility, and credibility comes in several areas: there is technical credibility, there is financial credibility and there is management credibility. These need to be established before you get the chance to deliver the solution you are proposing. So, in setting policy, governments need to be very aware of all three areas of credibility and in helping SMEs in particular to achieve these. The final point I would like to make is that I think we have, finally, got a pretty good environment for growing SMEs, and growing innovation in SMEs. But I think the next step we have not thought about, as a nation, is how to grow SMEs into MNEs. That is sadly lacking in our policy thinking at this stage.

CHAIR—Could you tell us a bit more about credibility issues.

Mr Gaul—Picking up on what Rob has outlined this afternoon, I have seen issues like technical credibility come up in our endeavours to get our new phased array radar systems up, and things like that. But we overcame them by linking in to the US government agencies and coming up with a multifaceted review process, so it became blindingly obvious to everyone that this was a new disruptive technology of phased array radar. It took a long time—it took five years to get to that position—but we got there, and the way to do it is with multifaceted review processes on a technical level. A suggestion might be that you need to involve other friendly governments when it is appropriate, because it is a global market that you are working in.

On the issue of management and financial credibility, again it is in policy areas that we are letting ourselves down a bit in Australia. Our venture capital industry is not mature enough or big enough and does not have the critical mass to provide the funding that is so necessary to grow SMEs and give them the backing so that they can implement their innovation. On the management side again, I do not think we do enough about giving the skills to our growing companies and making sure that they move to the different levels as they grow. There is work that can be done in the area of management skill improvement. Some of that is trying to

repatriate some of our offshore executives, who go overseas for a very good reason: there aren't any big companies here. Yet they are world leading in their management techniques and things like that, so we need to repatriate people like that.

Mr QUICK—When you first meet the barriers from some of the agencies, and then, as you said, you get into the American market and come back with some credibility, is the door just as hard to batter down, or after a while do you start getting some credibility? I would ask Rob the same thing.

Mr Gaul—You do eventually build up a momentum.

Mr QUICK—But for a small to medium enterprise to be really pushing it uphill for five years, yet the Americans, the Europeans and others probably think, 'What a bloody good idea'—

Mr Gaul—I think we are letting ourselves down by having this cultural barrier, which is what it boils down to.

Mr QUICK—Is it a bureaucratic mindset, where people in various government agencies in some cases have the ability to allocate funding?

Mr Gaul—I think it would be too easy to allocate one single reason to these issues. I think they are multifaceted. Those certainly exist. We have seen many times that people are absolutely astounded when an Australian suddenly gets traction overseas. Let us face it, Melba did it; it has been going on for some time. It is a cultural thing that we have to overcome as a nation if we really want to hit our straps.

Mr QUICK—You mentioned venture capital. I have always argued that we have hundreds of billions of dollars in our superannuation funds and we ought to perhaps look at changing some of the legislative requirements. I think it is a couple of per cent that can be used for venture capital. We hear about the amount of money that moves up and down on the Australian dollar, with agencies investing in whether it is going to go up or down, in the newspaper daily. What are your thoughts on perhaps freeing up some of that superannuation?

Mr Gaul—I could not agree more, basically. On the PMSEIC working group on growing SMEs, which I was on earlier this year and last year, we came up with a suggestion about a 'fair-dinkum fund', as I nicknamed it, where you basically allow the mums and dads to shift off and get concessions, which would cost $15 million a year for five years to the revenue base but give you a billion-dollar fund at the end of it. I think we have to start thinking about things like that. It is Australian capital that we need behind our SMEs. You do not want the SMEs to be influenced by overseas capital too early, for obvious reasons.

Dr WASHER—David, you mentioned Austrade a few times. Generally, I have heard that Austrade does a good job. You have said that they need some specialty fields and that they obviously lack one in the particular national security, defence and law enforcement markets. That is a big player; internationally, it is hell of a marketplace. Have you addressed that concern to Austrade? What has been the response?

Mr Gaul—Not directly. I assume that this report would go to them anyway. It goes to the way Austrade have been set up. We are dealing with history. We are suggesting that we need to take a bit of a new approach. I think, again, from the PMSEIC group we have suggested that they reward them differently, expand the numbers and give commissions for contracts that are actually signed. So they get down into the weeds, as it were, and get involved with the commercial activity, rather than just at the introduction level.

Dr WASHER—As a supplementary question, but staying with Austrade, are you suggesting—I do not want to put words in your mouth—that they are more versed with traditional-style industries rather than new—

Mr Gaul—Shall we say introductory, facilitative, but not down and dirty doing it and that is where we have got to move to.

Dr WASHER—The last question but still on Austrade, if I may: that is an exporting unit, right? To address Rob's problem, would it be of value to have something similar to Austrade that does internal trade so that it can address the issues that he has?

Mr Gaul—That is a natural progression of that thought—isn't it?—to an internal problem.

Dr WASHER—You also mentioned that you would need a fairly big home-grown industry—Rob alluded to that, too—before you can export. Internal trade would seem to be fairly closely related to external trade.

Mr Gaul—One way to quickly do that would be to restore an old policy which I lauded at the time and every time I get a chance to do so—that is, the NPDP, which—

Dr WASHER—What does the acronym stand for?

Mr Gaul—The National Procurement Development Program. It brought together people with a problem needing a solution; it could be a government department in a state—for instance, in our case it was the Queensland department of transport—and the federal government. They funded that Australian project fifty-fifty. It acted as a reference site. It generated over $40 million worth of export for our Brisbane port system that went into the US Navy. It was not fifty-fifty where the SME had to find the 50 per cent; it had a customer that found the 50 per cent and the federal government backed that up. It was an excellent system and an excellent project but it was killed early by the Productivity Commission. Surprisingly, in their report they used two companies as part of their example—industry welfare I think they called it—which were Memtec and EOS. Memtec sold itself for $500 million and EOS is worth over $200 million on the stock exchange right now. In other words, looking back with 20/20 hindsight, they reacted too early and for the wrong reasons. That was good policy that was thrown out.

CHAIR—As an aside, could you provide us with the relevant details on cosseting industry and the outcomes? There is nothing like the virtue of hindsight.

Mr Gaul—I would be happy to.

Mr HAYES—Would you agree with me that one of the main issues that you raise is that an impediment to commercialisation really is the marketing, hence your comments about Austrade? Are you seeking to get greater access to marketing expertise for Australian scientific based companies?

Mr Gaul—No, it is not so much marketing. I guess if you take the broad context of marketing it is covering that credibility issue of marketing. But that is a very narrow part of marketing.

Mr HAYES—I was thinking a lot wider, in terms of Austrade—I have had a lot of experience with Austrade in the past—particularly when you go so far as to talk about opening up Austrade specific areas in relation to both defence and local acquisition areas.

Mr Gaul—The problem is that they do not have any officers in Austrade with that expertise. They would have to recruit them and they would probably come from ex-defence backgrounds and things like that, having industry experience at the same time or afterwards. So a combination of those skills would then provide you with an Austrade officer who could actually go out and get right through the maze, particularly in the Pentagon or somewhere like that, or UK purchasing—

Mr HAYES—I might be using a generic word in 'marketing', but that is what I intended by it in terms of what Austrade were doing. But, if that is the case, it is not the impediment to your level of research or R&D out here. You are looking for somewhere to assist or access markets, and hence the capitalisation.

Mr Gaul—We normally need funding for large development projects to get to the next stage of a product. For instance, the AUSPAR phased array radar required our government and the US government to pony up $15 million each to put in place a decent sized program that will get us to—

Mr HAYES—Commercialisation.

Mr Gaul—a commercialisation outcome that is capable of going into all our fleets.

Dr JENSEN—I have a couple of questions. I am curious about the steps that you went through. Did you speak to DSTO at all?

Mr Gaul—Many times.

Dr JENSEN—I am just wondering. You have got the 'not invented here' syndrome. Did you have to go to, say, DIPA or the Raytheons and Westinghouses of the world in the US and get your CW technology and your radar surveillance technology accepted there before coming back here and getting acceptance?

Mr Gaul—Not with CWI, but with phased array we did. We had both supporters and knockers in DSTO. You had to move around the knockers and encourage the supporters.

Dr JENSEN—Phased array has been around for the better part of 30 years now. Was the problem that people thought, 'This is a technology that's already relatively mature, and the Yanks probably are right up there at the cutting edge. What can a little Australian company do'?

Mr Gaul—A lot of that. Lockheed are the biggest defence company. They are the leaders of active phased array or passive phased array in the US Navy. Why would you think that you could even be up there?

Dr JENSEN—Yours is an active technology, I take it.

Mr Gaul—Yes, ours is active and modular. We can take it from frigate size, which they cannot do, right up to cruiser size. So it is a disruptive technology now; it is a new way to do it.

Dr JENSEN—And you are potentially looking at, for instance, getting this into things like the air warfare destroyer and so on, as well?

Mr Gaul—Hopefully, yes. The US government's ambition is to have it as able to, if it meets their needs, go into the CGX program, which is a cruiser development program.

Dr JENSEN—So I guess the question is: what would actually help you in terms of this process, this 'not invented here' syndrome? You have got a good technology. There is a perception in this case that the Yanks are right at the bleeding edge anyway. Is it an issue where you really need to go overseas and demonstrate it before coming back here, or would an organisation like DSTO in effective giving it a tick help?

Mr Gaul—It is yes and no to both those things because it is multifaceted at certain levels. DSTO supported our 'CEA-FAR to Sea' program. Having gone through those steps, it got through the perception 'Hey, this is a real risk.' So we got incrementally down a path. But we had to put all those incremental steps in place before we could get to where we are now. It has taken five years because that is the process. It will always be thus, I think, when you are pushing edges like this.

CHAIR—Could you tell us a bit more about the risks inherent in comparative test programs?

Mr Gaul—Yes. The problem there is that obviously there are vested interests in the foreign territories that you are trying to do a comparative test program in. They will do everything they can to stop that congressional funding heading in our direction compared to heading where they want it to go.

CHAIR—Can you just tell us at little length about what is involved in the comparative test?

Mr Gaul—Basically it is a program the US government set up to try and overcome the problem of reinventing the wheel when they do not need to, because they recognised that overseas countries had very good technology in certain areas and they wanted the US defence force to be able to get access to that. So they set up this comparative test program, funded by congress and kept separate from other funding, to try and get exposure to those technologies so that they could then get support for the user—like COMTHIRD fleet or someone like that—say, 'Yes, I definitely need that in my ships tomorrow,' and then fund them. Very few have really got

up, when you examine it very carefully. The Americans are very sensitive to that because of this problem of being white-anted by the internal industry and the lobbyists, who have vested interests. When you set up a program like that, it is very hard to keep it independent of those—

CHAIR—To keep the evaluation independent?

Mr Gaul—Yes.

CHAIR—What are the intellectual property risks?

Mr Gaul—The intellectual property risks are that the idea will be eventually pinched and copied in some form or another, or that the company involved will eventually be taken over by interests that recognise that they have got a market edge and, therefore, think, 'We had better buy them up; otherwise they're going to come at us.' They will then buy that technology from that other country and bring it home to America that way.

CHAIR—Isn't that inherent to the nature of business?

Mr Gaul—That is business, yes. But if you are Sweden or Australia, and have very good technology, you would rather it be exploited from this base rather than the American base.

CHAIR—All I am saying is: is the risk any greater because of the overseas comparative test programs? Or is it just that, if you have something good, somebody will try to buy it?

Mr Gaul—That is right.

CHAIR—So it is a quite separate issue.

Mr Gaul—Yes, it is.

CHAIR—I understand your point but how do you combat that?

Mr Gaul—The way we have done it with AUSPAR is that we have our government side-by-side with us as big brother. We have another big brother, the US government, so now we can deal with other multinationals with two big brothers who are going to, hopefully, keep the playing ground a bit flatter.

Mr QUICK—Rob, there is your technology and the others, and they sort of lampooned yours. What is happening in, for example, Canada, the US, Mexico or South America with mapping salinity? What technologies are operating down there?

Mr Gourlay—I am not familiar with technologies in those countries for salinity mapping. I think salinity is treated differently in those countries, as it ought to be in Australia. I have been to America and our techniques of resource mapping are streets ahead of the Americans in the use of satellite and airborne data. In the nineties, we had very good R&D and innovation in this country in private companies. I have undertaken projects in other countries. I have undertaken mapping in China, New Guinea and I have a project in Turkey at the moment. These countries are keen to get hold of our technology but I do not know of other countries involved in salinity mapping,

although I have had an inquiry from Iran, of all places. I would be very keen to export my technology overseas, particularly to America. There does not seem to be an opportunity left in Australia now. The salinity mapping market just seems to have dropped and there does not seem to be any interest because of this conflict about what technology is the most appropriate.

CHAIR—Mr Gaul, would you chance your arm and say, if you were in Mr Gourlay's position, how you would reconceptualise the issue? Or would you say: 'No, I've got enough problems of my own'? Maybe you could talk about it afterwards.

Mr Gaul—I think there are avenues internationally that would be worthwhile following to try to get a balance of view and some sense brought to the debate. Obviously, the emotional level is pretty high now after this history. You have to diffuse that somehow.

Mr QUICK—I think John Forrest, the member for Mallee, is having the same battle with cloud seeding.

CHAIR—He is having a battle over cloud seeding after all these years? You are joking!

Mr QUICK—No. CSIRO and others are saying that it is not the way to go.

CHAIR—They have gone that way for a decade.

Mr QUICK—John is still battling to get some credibility in the marketplace.

Mr Gourlay—One only has to look at the experience of Peter Andrews in the Hunter Valley and the techniques he has developed for harvesting water in the landscape through chains of ponds and putting organic matter back in the soil. It took the Deputy Prime Minister, Gerry Harvey and Richard Pratt to promote him. I know he was knocking on the door of the land and water division of CSIRO back in the early nineties, but no-one took any notice of him. The guy deserves a national medal for what he has done; it is brilliant. But no-one took any notice of him, probably because he is not a scientist—but he had a tremendous understanding of the landscape. In fact, what he has implemented is exactly the approach that I have been recommending for salinity, which is to manage the organic matter in the soil to allow for deep penetration of water and to tie up that salt in the system rather than have it escape into the rivers and creeks and have it deeply percolate. He has a brilliant system, but no-one took any notice of him.

CHAIR—Thank you very much. It has been very illuminating. We might come back to you with some more questions after things have settled.

Resolved (on motion by **Mr Quick**):

That this committee authorises publication of the transcript of the evidence given before it at public hearing this day.

Committee adjourned at 5.26 pm