

ECONOMIC DEVELOPMENT AND INFRASTRUCTURE COMMITTEE

Inquiry into Manufacturing in Victoria

Melbourne — 7 September 2009

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Mr A. Ballagh, Director, RMIT TAFE
Mr M. Anastassiou, Senior Manager, RMIT TAFE; and
Professor A. Subic, Head of School, Aerospace, Mechanical and Manufacturing Engineering,
RMIT University.

The CHAIR — I welcome you to this afternoon's all-party parliamentary committee hearing of evidence on the Inquiry into Manufacturing in Victoria. All evidence taken at this hearing is protected by parliamentary privilege. Comments you make outside the hearing are not afforded such privilege. Could you each state your name, your position within the organisation and the organisation's business address, please?

Mr BALLAGH — I am Allan Ballagh. I am Director, TAFE, at RMIT University. Our address is La Trobe Street, Melbourne.

Prof. SUBIC — Professor Aleksandar Subic, Head of School of Aerospace, Mechanical and Manufacturing Engineering, RMIT University, at both the Melbourne and Bundoora East campuses. We are in two locations.

Mr ANASTASSIOU — I am Marcos Anastassiou, Senior Manager in the Office of the Director, TAFE, RMIT city campus, La Trobe Street.

The CHAIR — Thank you. Evidence given today will be taken down, and you will be given a copy of the Hansard transcript in about a fortnight. You are free then to correct any typographical errors but not change the substance of your submission.

Mr BALLAGH — I might just give a short introduction, because I know that the Committee wrote to Professor Gardner and asked specifically for a bit of an update or an overview of where we were going with our Advanced Manufacturing Precinct. This is not a greenfield site in the sense that RMIT has a long and deep engagement with the manufacturing sector in Victoria, but I guess it is a reframing of where we sit in respect to our engagement with manufacturing. We are looking at alignment with our design strategy as well. We see the design hub that is being constructed up at the top end of Swanston Street on the CUB site and some of the capital investment that the Government is supporting in this Advanced Manufacturing Precinct as being very closely aligned.

The other thing to say is that we did launch the AMP — the advanced manufacturing precinct — about six weeks ago. It was a bit pre-emptive in that the building part of it has not even started yet, but the fact that we kicked the project off, if you like, in the old George Thompson foundry building — which is where the Government's \$7 million investment will be spent to renew that — was a fairly strong symbolic gesture in terms of acknowledging where our engagement may have been in the past with a sector that has moved on and transforming our capability and our facilities into the leading edge in the next phase. In that sense it is a bit of a renewal.

I might ask Aleks to speak a little bit about how he sees this development connecting with our current capability and, in particular, the design hub.

Prof. SUBIC — Although I am the head of the higher education school, this development is a multi-sector development that includes the TAFE sector and the higher education sector. Indeed I actually managed both as a coherent school until mid-year last year when we strategically established two schools, one higher ed and one TAFE. Nevertheless the Advanced Manufacturing Precinct at RMIT and the advanced manufacturing focus aim to establish — and we are working very hard in this direction — a coherent and seamless interface between the two through the advanced manufacturing theme and activity. Having said that, the higher education aspect of advanced manufacturing is really looking at advanced, concurrent and virtually driven design efforts and analysis efforts that allow us and enable us to move towards customised manufacturing and rapid manufacturing utilising advanced materials. We have focused on these aspects strategically because they are driven by creativity and by new product development, especially sustainable product development, which meets very demanding requirements much more successfully than utilising the methods of the past, including design methods as well as manufacturing methods. It is also driven heavily by new materials and green or sustainable

legislation that are not only emerging in Australia but also worldwide because we are concerned with the activities that drive export rather than looking only within.

In that regard my school has been very well positioned in terms of design and manufacturing at the advanced level because we are dealing with both aerospace on one side and the advanced green car technologies that are emerging and are the challenge of the future on the other side, and establishing synergies between the two. Those synergies are as follows: for example, we are working hard to position ourselves to work actively with the Green Car Innovation Fund. We have already established a global green car learning class through the University's structural reform fund. All these efforts are looking at creating the knowledge base and the technologies to support the rapid development and manufacture of green car technologies.

What are the synergies with aerospace? The future cars will have to be lightweight. That does not mean incremental, like we are doing now — reducing the weight by 300 kilograms and then adding another airbag or another microprocessor-driven unit that actually compensates for the 300 kilograms and ending up with the same. We are really embarking on a radical shift in technology; possibly the majority of the industry even locally and those in the public domain are not even aware of where we are heading.

The lightweight materials will come from aerospace. We will see composites that are utilised in the new dream liners and the new advanced aircraft cascading down to automotive. Where the advanced manufacturing comes in is to enable this, because unless you can manufacture cheaply and rapidly utilising those advanced expensive materials, it is not going to find itself in the real world. We are exploring those actively through research and development and we are trying to work with TAFE to bring that technology to the level where it can be produced and implemented at a shop floor level, because unless you do that, again it is hypothetical and just in the virtual environment.

The university has focused strongly on those advanced technologies, especially focusing on particular industry sectors. The aerospace sector and the automotive sector, which are critical to Victoria, are two of the five critical sectors of university focus.

Mr ATKINSON — Can I just ask a quick question? Where did the impetus for or the genesis of this initiative come from? Did it come from industry? Did it come from RMIT identifying a gap? Did it come from government? Where did it come from?

Mr BALLAGH — RMIT, as part of our current strategic plan, which goes through until 2010, puts a lot of emphasis on renewal, particularly at the high end of our TAFE programs. This is also connected with the Maintaining the Advantage push for Victoria around skills in the TAFE sector, but because in the TAFE sector we are predominantly a high-end skills provider — about 65 per cent of our work is in diplomas and advanced diplomas, for example — and because of our dual sector advantages, we put this concept together not by ourselves but in consultation with industry players and put the proposition forward as a capital project through the normal capital planning processes. But the capital component is just one element of this. This is pretty much RMIT seeking to, if you like, push the boundaries in terms of how well we are working as a dual sector university undertaking new types of engagement with industry around skills and research and training. We have a responsibility to push the future of our organisation, so we are unashamedly leading the dialogue.

Mr ATKINSON — But your vision is not something that has come about because industry has gone to you and said, 'This is a gap that we need filled'?

Prof. SUBIC — The industry interaction, although — —

Mr ATKINSON — No, I understand the interaction, and I am happy about that. I do not have a problem there.

Prof. SUBIC — There are different levels; that is why.

Mr ATKINSON — But I just wanted to know whose concept it was originally to do that — and that was RMIT's?

Mr BALLAGH — It is being driven by us, but certainly not in a vacuum; it is on the basis of our knowledge of what we understand to be some of the challenges in manufacturing. We were saying earlier that we find your terms of reference quite a useful framework, and Marcos has done a bit of work in talking to some of our industry partners around your broader terms of reference to help us get a fix on where the research and training capability that we bring to the mix can actually fit within the overall picture.

The CHAIR — Bruce's question might be driven — he put it very politely — by the evidence we have been receiving over the last little while. It has not been all that complimentary of the tertiary education sector.

Mr BALLAGH — I did read some of the SEMMA stuff, yes.

The CHAIR — Which is quite worrying, I would imagine, from your perspective as well as from ours.

Mr BALLAGH — That is right.

The CHAIR — Forgive me if I am coming in as a doubting Thomas, but what are the key performance indicators that you have set and have you set them with industry? I will quote one example that was given to us in evidence on 18 August:

... in my nine years in manufacturing there has not been one university come to our company to talk about how they could develop a relationship, how we could work together in cooperation or form some affiliate.

You are obviously really proud of the history of RMIT and what you can do, so what are your benchmarks, your key performance indicators?

Mr BALLAGH — If I could comment, we do not resile from the challenge, either. One of the reasons we are putting forward this initiative, the Advanced Manufacturing Precinct, is it is about a statement from us around a new way of engagement. I do hear and our research tells us that companies, the medium companies in particular, are looking for new ways to engage with the tertiary sector. I do not think we resile from that. In terms of setting KPIs we have a process in train now of engaging with industry and using that process further to establish what the KPIs are going to be for us into the future. We have also, I think, made a fairly good start over the last two years in particular in terms of an industry engagement strategy that the University has committed to. We are getting to a point there where we could be much clearer about the sorts of indicators that industry would be looking for out of the engagement strategy.

The CHAIR — When you say 'industry', is it peak bodies or a range of small, medium or large businesses, because 'industry' is a big term?

Mr BALLAGH — It is a big term. Aleks might want to talk on that.

Prof. SUBIC — I would love to give some concrete examples. There is nothing better than concrete examples with data, names and developments to put some more light on our statements like that, for example.

The CHAIR — Yes, because we have to test the evidence we have been given.

Prof. SUBIC — I would love to. I will give examples that in a way confirm my previous discussion about the link between higher ed and TAFE and also utilising advanced manufacturing in our precinct as the integrating medium. For example, this year we have established — as

articulated through agreements and established facilities — central expertise on automation training with Sage Automation from Adelaide. They have come here and they have established it at our Bundoora East campus. We are now using that pilot example, that model and that initial relationship to bring it forward into the advanced manufacturing precinct. That is focusing on system integration and automation, quick and rapid development of systems that are able to automate production or packaging of particular custom-made products. That automation training centre, directly established, funded and supported by Sage, is now at Bundoora East, and we are now building on that building block to actually go and take it forward into the advanced manufacturing precinct.

Here is another one. We have established a collaborative agreement with Boeing, and we are now a focal university for Boeing. At the end of this year we are finishing a Boeing aerospace structures lab, which links to the composites and lightweights that I have mentioned. We are taking Boeing corporation further, hopefully, into the Advanced Manufacturing Precinct. We have already had discussions with them and a meeting facilitated.

The CHAIR — Where will they be doing the manufacturing?

Prof. SUBIC — These companies that I have just mentioned do manufacturing in Australia. Sage does system integration work with the manufacturing industry in Victoria as well, and Boeing does its manufacturing at Fishermans Bend. We are utilising the Advanced Manufacturing Precinct as a learning environment where we have the capability to rapidly test, to play in a sandpit and identify new processes and methods in advanced skills and techniques to do things better, which act then as a pilot trial in their facilities. That kind of a model is what you are looking for.

The CHAIR — So they present you with a problem and you try to work out the skills required?

Prof. SUBIC — And the technology required as well.

The CHAIR — And the technology?

Prof. SUBIC — That is right. This is where the higher ed comes, from the point of view of working out the technology and adding the research and development aspect, both through student training as well as through staff involvement, while TAFE comes in to identify the skills required and in some cases hopefully to develop new training modules and new training techniques for skills that do not exist yet.

Mr ATKINSON — Can I just understand what your descriptor ‘advanced manufacturing’ means to you?

Mr BALLAGH — I am going to throw to Aleks on this. I know that the term ‘advanced manufacturing’ has almost as many definitions as there are people in the room to describe it. We can point to some of the technical ones like the ones that Aleks has outlined. Computer-integrated manufacturing probably sits in that category, and rapid prototyping, automation systems, numerical control processes and nanotechnology — some of them fit around there.

Prof. SUBIC — I think it is a fantastic question, because ‘advanced manufacturing’ is a broad term. We have asked that question as well. You might see over time different facilities or groups developing their own approach to advanced manufacturing in a particular niche area. In our context what ‘advanced manufacturing’ means in addition to what Allan has said is working with new and complex materials such as composites like carbon fibre, reinforced plastics and so on. The processes and design techniques that they require are advanced. It is interfacing the manufacturing with the virtual design aspect, so that the transfer of designs to manufacturing is rapid and seamless and you take away the tooling from the critical path, which usually takes a lot of money and time. It is also customised.

The CHAIR — Can we go back to that, because I do not understand that?

Prof. SUBIC — I will give you an example. We have various approaches to manufacturing, and usually the manufacturing goes in a direction where we develop a design, and based on the design the tooling people develop and manufacture a tool and then that tool is used for a particular life to produce a particular series of products. That process is fairly effective and also depends heavily on your capability to do the tooling. The emerging area in advanced manufacturing — and indeed in advanced design — is that you cannot rely on just that capability. In order to develop customised designs rapidly, you need to have the ability to take the design rapidly from the design environment directly into manufacturing without having the tooling process in between. In the past we had just rapid prototyping to visualise and check the product. Where we are heading in the future in many industry sectors will be where you go directly not into rapid prototyping but into rapid manufacturing. So you are developing processes that allow you to immediately manufacture a series or volume of products based on the design without having to make a tool which will be used to produce those products.

The CHAIR — How can you make it? I am sorry; I am probably missing the basics. How do you make it without the tooling?

Prof. SUBIC — I will give you examples. A typical example is sports shoes, runners with a plastic sole. The way they are manufactured traditionally is that you develop a design and then you develop a tool, put it in the injection moulding machine or some other plastics production machine and use that tool to mould a shoe. That tool — which might cost half a million to millions of dollars, and which is utilised for maybe 500 000 units and then you have to replace it, and you need time to develop it, manufacture it and put it in — is used for that specific design of a sole. If you want to change the design of the sole, you have to make another tool and use that other process. Where technology is going today — and that is where the Adidas of this world are pushing the New Balances and Nikes — is that you develop a sole designed for particular biomechanical requirements or a particular demographic, which may change for another classification or demographic. That new process of manufacturing does not require a tool from the computer. Typical new processes are the sintering or printing materials that you have in a rapid prototyping machine, where it is sintering with a laser quickly, layer by layer, and you get a prototype.

The new manufacturing processes for that kind of technique do not really just rely on rapid prototyping where you make one or two of these in a time-consuming manner. It is expensive and that is it; it is just a showcase. We are taking it to a technology where you can make hundreds of thousands of units of that shoe, or tens of thousands of units, rapidly, based on the design information that is going to that laser sintering through the printer. That is the technology of the future, especially in the technologically advanced economies and knowledge-based economies, and there are examples of such technologies developing around the world. We are not the first to be considering that, but it is a question of what you are considering it for. For example, Boeing is interested in that, the sports products industry is interested in that and the biomedical industry is interested in that.

The CHAIR — Have we, through RMIT, delivered any of that to any manufacturers yet?

Prof. SUBIC — We have examples of a number of research projects that are looking at that, both in the engineering area but also in the architectural area.

Mr ATKINSON — Can we just go back to a couple of other things first of all. Before this precinct was set up, did you have similar alignments that you have already been doing with companies, corporations, where you have provided research and development services?

Mr BALLAGH — That is another question for Aleks to answer.

Prof. SUBIC — That is right. There are a number of examples where we have. For example, right now we have a number of projects in the area of the green car technologies that I mentioned — the composite materials, lightweight structures and so on — that are happening now with automotive CRC, which involve companies like Futuris, General Motors, Air International and so on.

Mr ATKINSON — This is with the CRC?

Prof. SUBIC — With the corporate business centre.

Mr ATKINSON — You have been involved with the CRC?

Prof. SUBIC — That is right; we have been and are now involved in a similar project. CRC composites, for example; we have been involved with them for over 14 years, and the research that we have developed there has led to many innovations in industry for composites manufacturing.

Mr ATKINSON — My interest is that you basically train students, and this is far more advanced than student work.

Prof. SUBIC — It depends on the students, at what level, because these students are actively involved in this kind of research.

Mr ATKINSON — Yes, but then it comes into IP and so forth. Boeing might be a partner, so how do you protect your Boeing arrangement? What happens if somebody else — the French manufacturer — comes along and says, ‘We want you to do this for us’? Where is your IP protected? How do you protect your research and development? To what extent is your alignment with these specific companies?

Prof. SUBIC — Our university, like most other universities, have a number of different models for intellectual property agreements and protection of IP, and they also vary on different grants, research contracts or modes of funding. If you are doing it directly with a company or via a CRC or via an IRC grant, they differ. But the basic concept that a university follows in terms of IP is that, for the product IP, you work with the industry partner to allow the local industry partner to have the exclusive rights to commercialise and actually make the money and the return for making the significant investment into this research in the first place.

What the university is interested in, always, is maintaining the IP so that you can continue to do research and teach and utilise the IP you have developed. That is in almost every case our key driver, so that in the future if we get another project or whatever, it is not about just going out and getting a competitor that needs the same thing and just transferring what we have done. That is unethical and unprofessional, and we would never be able to do that. But the research and the background IP that you have created and the capacity that you have created allow you to go into other research areas and implement it.

For example, the research we have done with Boeing or through composite CRCs with the carbon fibre composites does not preclude us now from utilising that know-how and the knowledge to do further research for the automotive industry and so on.

Mr ATKINSON — They fund your activities, but do you get a percentage? Are you getting a royalty on it? In the Boeing deal, are you getting a royalty on it?

Prof. SUBIC — In most cases, in the case of research that has been commercialised, we negotiate particular percentages or returns that will come from the commercial success of those, and we have done that in many cases, not just in these examples but in renewable energy systems as well. We have had projects in the past where we have developed some heat pipe technologies

for Fujikura in Japan, 10 or 12 years ago or something like that, and we are still getting royalties for that each year.

The CHAIR — What would you be getting per annum?

Prof. SUBIC — It depends on the value of it.

The CHAIR — Marcos, are you the business manager?

Mr ANASTASSIOU — No.

The CHAIR — No, you are the senior manager. What would RMIT be getting in income from all the work that you have done, say, in the last five years?

Prof. SUBIC — It is hard to say. I will give you an example of something that is close to me so I know the facts and I know the figures. With the automotive research, for example, through the automotive CRC and the automotive companies, we generate more than \$1 million each year of research. With composites CRCs or composites companies that are consortiums of companies that are working on various composites research projects with us, there is over \$400 000 or \$500 000 each year.

Mr ATKINSON — But is that research funds or is that royalties?

Prof. SUBIC — That is research funds.

Mr ATKINSON — That is not royalties?

Prof. SUBIC — That is not royalties.

Mr ATKINSON — What is your royalty income?

Mr BALLAGH — I could not say what our royalties on research partnerships are.

Prof. SUBIC — It is hard to say. That would be hard to say for myself. We would really have to look at the RMIT central figures.

The CHAIR — Perhaps you could take that on notice.

Mr BALLAGH — We can we take that on notice.

The CHAIR — Yes. Ministers do it; you are certainly entitled to do it.

Prof. SUBIC — I have to make one point. The success or the benefit of doing this kind of research is not measured or evidenced by how much in royalties you will get. And I will tell you, and I will put my career on the line, that there are a lot of universities around Australia talking a lot about commercialisation and royalties. I have yet to see a single university become rich because of the royalties they actually get.

Where the real value is in undertaking such research and in having these kinds of avenues for that — and I can really not emphasise this too strongly — is that this kind of collaboration and this kind of investment is allowing invaluable research to take place in the first place, and it is allowing us to train a lot of students and develop an in-house capacity for research that otherwise you would not be able to do without that kind of funding. That allows you to have repeat research and ongoing relationships, which we are able to have, and to position yourself strategically with respect to industry sectors. I think that is where the real value is.

Mr ATKINSON — What is the downstream then? First of all, let me come back to the work that you do in terms of this research. Is there a collaboration with other universities? In other words, are you working with other universities that Boeing is also employing? And if so, where?

Prof. SUBIC — That is right. Sometimes you work directly with them, and sometimes when there are complementary skills and you need to put together complementary skills, you work with others. For example, we have just now been awarded one project for the automotive CRC on utilising, let us say, composite materials to develop high-pressure carbon fibre or light alloy, depending on what the research shows is effective, for high-pressure gas tanks for future gaseous fuel engines, which will be, no doubt, going forwards, and the Green Car Innovation Fund will be looking at that strategically.

We saw that we have complementary skills with ANU, and the collaboration between ANU and RMIT is being facilitated through the automotive CRC, and that project involves, indeed, that collaboration.

Similarly, with the electric cars or hybrid cars, there is collaboration developing with Deakin, Swinburne and so on. There are many avenues where you have that kind of cooperation, and that becomes very relevant in large-scale projects where the skills required are fairly complex and you need complementary capabilities.

The CHAIR — Talking about cars, we have done quite a bit of research in relation to greenhouse gas emissions and the automotive industry. It would be fair to say that a number of us were re-educated in what are really green components for a car. Given Australia's gas reserves, are you doing much in that regard, on gas in particular?

Prof. SUBIC — That is our key focus. In my school that has been articulated as the key focus for our strategy. There are a number of technologies that could be relevant. Keep in mind that it could be a portfolio of technologies. There is already, I would say, a global agreement that we will have to look at various things, but for Australia I do believe — and I think Laurie Sparks and others who are advising a number of stakeholders in that regard agree — that as a transitional technology, let us say in the next 10 to 20 years, but it is hard to pinpoint, the gaseous fuel engines in Australia will be very strategic. That is compressed natural gas and so on.

The CHAIR — Yes, exactly. With our small product uptake in Australia, would you see us as becoming a manufacturing base for overseas exports, or would you consider that the kind of work you would be doing would be more for the domestic market? Because again, from the evidence we have received, Australia is not going to be manufacturing cars here for primary domestic consumption.

Prof. SUBIC — I believe that the gaseous fuel technology area is one of those that is strategic for Australia also because there is a fair bit of knowledge already in Australia. There is a technology platform at a particular level already and experience with gaseous fuel engines and gaseous fuel technologies. That is why I feel also it is strategic in addition to having gas as a resource. I do believe that if we invest, grasp and develop that technology, that is exportable and that is global technology. We should not just be looking at it, as we always tend to do, for export to Europe or whatever. That is also critical technology, I would say, for the developing world and the Asian region as well.

If you want my expert opinion, I do believe gaseous fuel engines and technologies are strategic. They are exportable, and I feel the Australian automotive industry could have a significant revival by grasping and pushing that technology.

The CHAIR — Is it too early for you to articulate which companies you are working with in strategic partnerships on that?

Prof. SUBIC — I mentioned the research we are doing with the auto CRC on the gaseous fuel, because you have to develop it; there are a lot of things to gaseous fuel engines or gaseous fuel cars that are important, not just the engine itself. Because of our carbon fibre and our composites and light alloy work with the composite CRCs and other partners, we are well positioned to look at the high-pressure storage tanks for the gaseous fuels. We have been working on that.

You have probably heard already that we have designed, developed and released the Formula H, or formula hydrogen, car that is now around Germany, and over 50 magazines have been reporting on it. We have done that on purpose, first of all to position ourselves and to show that we have mastered an even more complex technology. The science and technology we have utilised for the gaseous hydrogen car — and we have developed everything ourselves — is all transferable to the gaseous fuel cars that can utilise CNG.

The CHAIR — I am going to pull you back. We are about manufacturing in Victoria. That is what our terms of reference relate to. It is about our manufacturers here in Victoria. I read about that and I was most impressed, but how are we going?

Prof. SUBIC — You are interested in which industries are here. I will tell you. Ford has the capacity to do that and has proven that with LPG. General Motors is a collaborator.

The CHAIR — No, but how is RMIT working on an interface with those companies?

Prof. SUBIC — We are working with General Motors right now within the automotive CRC on this gaseous storage tank for gaseous engines.

The CHAIR — Okay. So we could very well be manufacturing in Victoria and exporting?

Prof. SUBIC — Absolutely.

The CHAIR — And at this point are we looking at Ford being serious about doing that?

Prof. SUBIC — Yes, we are. I think Ford has demonstrated that with its LPG technology. General Motors has equally demonstrated that with its focus on gaseous fuel and also with LPG technology. Now everybody needs to take the next step with proper focus and investment and collaboration with industry.

The answer to the twofold question you have asked is, firstly, there is significant local industry that can grasp that technology and already has some track record in that area; and secondly, we are working with some of them and will hopefully work with more of them.

You need to know also that I am on the board of directors of the Society of Automotive Engineers Australasia. Last year and this year we organised, with financial support from the Victorian Government, a conference on gaseous fuels which has brought together a significant number of small and medium enterprises that are interested in that technology and are involved in some ways, including the OEMs — but I am talking about the SMEs.

The CHAIR — What are OEMs?

Prof. SUBIC — OEMs are the original equipment manufacturers, the large car manufacturers. We have done that. There is also now a Victorian interest group for gaseous fuels that we have organised through the Society of Automotive Engineers Australasia. The professional industry associations are now emerging in that area as well. I would say that if there is any dream car technology that is getting a very big boost from top up it is that area.

Mr ATKINSON — Just from the associations and the discussions you have had with manufacturers and the manufacturing sector, what are the sorts of things that drive them overseas for offshore manufacture?

Prof. SUBIC — I might give it a rest and let the others answer.

Mr ANASTASSIOU — I think labour costs is one of the things they look at. But having said that, I understand that even manufacturing in Asia now is becoming quite expensive. For example, where Singaporean companies have positioned themselves to be advanced manufacturers in the medical and electronics manufacturing areas they are competitive with Australian prices. As we

go into the future, Australia will remain a competitive place to manufacture. Having said that, I think New Zealand is probably a little bit more competitive than we are because of the dollar exchange rate. I think we are probably pretty well positioned to manufacture in Australia.

Mr ATKINSON — Is there anything else that takes them overseas?

Mr ANASTASSIOU — It is not skills. We have a very good skills base here, and 60 years of automotive manufacturing has provided a robust level of skills and training. You would have to say that Victoria is pretty good at training for the manufacturing sector, and we should maintain that skills base, not diminish it in any way.

Mr ATKINSON — Given that we have the skills and I think the design capability and expertise in the development of new materials and technologies, interestingly enough I also read that Boeing has reduced its manufacturing capacity here and that it has actually pulled back in Australia.

Mr BALLAGH — Short term.

Prof. SUBIC — Short term, but interestingly they have been developing a research capacity by opening the Melbourne research centre, the former Phantom Works branch. It is working not only with us; it has just invested in a joint facility with Swinburne as well.

Mr ATKINSON — This comes to the two areas that I am thinking about. One of the issues about research is that we are pretty good at coming up with ideas. The biotechnology area is another one where we are really good at research and development and getting ideas, but then we say goodbye to it as it goes overseas.

It is all very well for them to come out here and have a research and development facility that uses some of our best ideas and best brains and puts them to work, but if the manufacturing downstream ends up somewhere else, then there is less value to us than if we were able to manufacture and value-add here. Certainly if we are doing work in universities we are not getting a commercial return for the work that we are doing; we are doing it on a premise of training people but not actually getting the downstream work.

I am interested in hearing your comments on the downstream situation as to how the skills development will be a key factor in our generating manufacturing activity in Victoria. I am also interested in — and I like what you say about providing examples all the time — having an example of any manufacturing businesses that have been overseas that have decided to invest in Victoria or have relocated the manufacturing they took offshore back to Victoria because of whatever capability reasons were evident in terms of the Victorian proposition, be they some of the research-based work that has been done, an enhancement of the ratio or comparative labour cost, or whatever. I am interested in those examples.

Mr ANASTASSIOU — I can give one example. This is a small-to-medium enterprise. It is involved in high-tech plastic injection moulding using glass fibre technology. They considered moving offshore. They have done the tooling offshore. What kept them here — and they were just a small start-up company — was one, skills; and two, that they have more than just the level of skill but the IP issues. If you go to places like China there are major threats to your IP. You do not have the legal frameworks to protect your IP and trade practices. The company made a deliberate decision to stay here in Melbourne.

Mr ATKINSON — Are you able to tell us their name, or can you go to them and ask them if you can give us their name?

Mr ANASTASSIOU — I can give you their name. It is IP Plastics.

Mr ATKINSON — Thank you.

Mr ANASTASSIOU — When I posed the question to them about what would keep a small-to-medium enterprise here, they said, ‘What we need is a lot of assistance’. A lot of the start-up companies need assistance, not with consulting necessarily. Some of these small companies have very well-developed and articulated business plans. They need assistance with some basic start-up finance for either purchase of equipment or IP — you know, doing all the patent work. They need those sorts of things: practical help that assists the small-to-medium enterprises stay here. Much of the focus is on the larger companies, and we understand that because they are the large employers, but what keeps the small-to-medium enterprises here is if we look after those smaller start-up companies. I think there are a lot of blind spots around those SMEs and the small start-up companies.

The CHAIR — Can I explore that a bit further about the blind spots? I think there is a lot of government assistance, be it federal or state, for all sorts of organisations and for good ideas and for jobs, retention of jobs and expansion of jobs in Australia. I would value your advice on how government — and we are a state government, but if you want to make a comment on federal issues, that is okay too — can think medium and small as well as big. Again in the evidence we are picking up there are claims the government is too focused on the big manufacturers and forgetting about the smaller ones. Marcos, would you like to make a comment because that is on a small one?

Mr ANASTASSIOU — I think it is very difficult for us to actually talk sensibly to small and medium enterprises, particularly in manufacturing. There are models; that Southeastern area has a pretty good model.

The CHAIR — We had them give evidence.

Mr ANASTASSIOU — We need networks of small-to-medium enterprises and we need ways of talking with them collaboratively involving ourselves, the TAFEs, government and so on. We speak easily with the larger bodies because they are much more articulate. But if you try to bring a bunch of small-to-medium enterprises together you will find they all have different interests. A plastics company is quite different from, say, a supply chain manufacturer which does jobbing for a whole range of other industries in the manufacturing sector. They find it difficult to speak with one voice. There are many different voices and they all, in some way, need to be heard. I think we struggle with that.

The CHAIR — You might like to take this on notice and have a think about what recommendations you would make in regard to that last question I asked. That is key for us.

Mr BALLAGH — About the SMEs? For those of us who have been around the training sector for a long time the issue of how we, as a training sector, engage with the SME sector has been a perpetual issue. It keeps cycling around; we never quite seem to crack the nut of it. Aleks might have some models — —

The CHAIR — Sorry, which sector?

Mr BALLAGH — Small-to-medium enterprises.

The CHAIR — This is generally, not just at RMIT?

Mr BALLAGH — No, it is a general issue.

Prof. SUBIC — It is a very good question, and it is a critical question. We have collaborations with a number of associations, not just companies, such as the manufacturing association that Angela Krepcik runs, or charities and so on. One good example of the kind of support that works is the automotive suppliers excellence funding and the ICEA project that has been awarded to the automotive CRC. It is looking at bringing together all the large manufacturers in Australia with

everybody sitting around the same table for the first time, including tier 1 suppliers, identifying the skills required and developing those skills.

That support was primarily for large enterprises as well and for tier 1 suppliers. When we talk with all the industry associations that are dealing with tier 2 suppliers, tier 3 suppliers and the small enterprises that Allan and Marcos are talking about, somehow they are most the vulnerable and they are the ones that cannot help themselves. I think you have hit the nail on the head. That is where some level of organisations' concerted funding for skill development is essential because they are the most vulnerable and they cannot help themselves.

The CHAIR — You might also like to take that question on notice with 1 or 10 recommendations.

Mr BALLAGH — Can I say I think we know enough about working with small-to-medium companies to know that the model of engagement and training is different from the way you might approach a large company. It is about an integrated approach to business management and new technologies meeting their KPIs around productivity or efficiency, and building skills sets in an integrated way around that whole strategy. It is not easy to do. It is not like having a class full of students and training them. It might be partly to do with that in terms of building the skills base, but it is a more integrated model. If you were to put the question back to us about developing KPIs for where we are aspiring to go with the advanced manufacturing precinct, engagement with SMEs and innovation in models of skill development would be a couple of those you would want to put on the list.

Mr ATKINSON — I would like some more information on that precinct to come back to us as well. I think one of the things that we need to understand a bit more is the intellectual property and the use of the research and development, just how exclusive it is to the partners.

Mr BALLAGH — You might be overstating the importance of that issue.

Mr ATKINSON — I need to know that.

Mr BALLAGH — That is fine. We can get that back to you.

Mr ATKINSON — Again one of the things about the SME debate is if something is developed with Boeing, that is fine, and we are dealing with new materials and new technologies. The small business sector will identify the products, it will identify the opportunities and it will probably do things more quickly if they understand the technologies and the materials and what is happening with those materials. The SMEs will find some things for it.

Prof. SUBIC — And there are no constraints on that.

Mr ATKINSON — Yes, so my issue is their access to that sort of information because that is quite crucial. Boeing is one example, and the car industry is one example. I guess one of the things that we probably have concerns about in this inquiry is that we do not want to become overly concerned about the car industry because manufacturing inquiries are not something new. The car industry is not an industry that has not been looked at in the past. There has been plenty of evidence on the car industry and everybody at Collingwood football matches has an idea of what they think about the car industry. We need to look at other opportunities and other industries.

I guess the importance of the car industry is, as you identified, it has continued to provide a skills and training base in Victoria that was possibly lost when the SEC, Telstra and PMG and all those people pulled out of a lot of their training activities because of changes in their structure, ownership and so forth. The car industry has had an ongoing role and that is important; that is key. It is particularly important and, as you said, is probably more these days driven by the aeronautical industry in terms of materials and so forth. We understand all that. As an inquiry, how we can we get that sort of high level information about what is happening and what you guys are doing over

there in the precinct out to small manufacturers so they can make great use of it and develop products that we know they will manufacture here. Whereas with Boeing, we are not sure they will manufacture here. Do you know what I mean? Do you understand that?

Prof. SUBIC — Yes, it is a good strategy and I think it is not a difficult one to answer. As I mentioned earlier, our key premise, our key platform to doing research and having IP agreements is that we are free to do further research and further work in that area which is not product-related. What is protected in terms of what we need to abide by and provide security to our partners for is in regard to the product research.

Mr ATKINSON — Yes.

Prof. SUBIC — But the know-how, the skills — —

Mr BALLAGH — The skills that come out are transferable.

Prof. SUBIC — Otherwise we would not have a strategic outlook for our research. That has to be accessed by others.

Mr ATKINSON — Is that all we have? I guess the committee staff will contact you; that is what we need to tease out because I think that is the important thing that you bring to the table and is something that is pretty important to us.

The CHAIR — On a last point, should you wish to follow it up, the evidence I was quoting before was from MaxiTRANS on 18 August. They make semitrailers; they are a big transport operator.

Mr BALLAGH — Are they based in Ballarat?

The CHAIR — Yes. They would be very keen, I would say, to pick up on the kinds of things you have just been outlining. The last one is a real challenge and it is not just for RMIT; it was for the TAFE sector in general so you may wish to pass on this. We have been hearing evidence that the TAFE sector — and it has been put in that broader term — does not necessarily have up-to-date — —

Mr ATKINSON — Equipment and people.

The CHAIR — Trainers who are tuned into current business problems and practice, and it could be a nice, slow pace. How do we, as a committee, address that? I am not saying RMIT does it; I am just saying it comes up quite a bit.

Mr BALLAGH — One of the drivers for this AMP project, which is as much a rebranding and positioning — —

The CHAIR — Yes, it is.

Mr BALLAGH — Is about putting the pressure on ourselves around making some quantum leaps into the way we understand our facilities to function effectively, and our own staff skills. That is why a government investment in this project is very, very important from the perspective of building TAFE infrastructure and bringing it up to speed, and also there is government support around upgrading skills of TAFE teachers for the TAFE development centre.

The CHAIR — Can I cut across? So if you were writing the recommendation for our committee in relation to what TAFE generally needs to do to have currency with current manufacturers, what would your recommendation or recommendations be?

Mr BALLAGH — We do need investment from government in both our facilities, so there is a capital issue there, and investment in our staff capabilities as well. To be fair, they are not areas

the Victorian Government is ignoring as part of the investment underpinning the Maintaining the Advantage statement; there is some capital money.

The CHAIR — Have you given any thought to a point that we have picked up quite a bit, that a number of the small manufacturing companies were owner operated, have expanded, and many of those people are now nearing retirement. Is that a source of teachers/trainers?

Mr BALLAGH — It could well be.

The CHAIR — Does TAFE actively seek them, or at this point it is not?

Mr ATKINSON — If you have run your own business, you are not necessarily flexibly minded.

The CHAIR — You know how to make a quid, you know how to keep staff employed and you know what is current, but you might not be the best teacher.

Mr BALLAGH — The sorts of project spaces that we are developing through the renewal of the old foundry building will promote partnerships with the equivalent vendors; we are doing some work with AMTIL with a showcase. The technology vendors are as much of the mix here as are the universities and companies. They hold certain skills, and they can provide us with access to current knowledge around some of the new technologies. The role of the vendors is that we are trying to create a sort of dynamic engagement through this. It is not saying, 'You work in the industry. You will send us your students. We will train them'.

Mr ATKINSON — Can you provide us with some more on that, too?

Mr BALLAGH — Yes, sure — models of engagement.

Mr ATKINSON — I do not know if you intend to actually have an expanded submission, but we would not mind hearing a bit more from you on a number of areas. Again, that concept is actually a very good concept. It really makes a lot of sense, because it means you can keep up and that the whole thing comes across, so if you can expand on that for us.

The other thing that we would not mind is your just going away and having a reflection on is what you think of the concept of a manufacturing university. Also, Mr Anastassiou, you said that there were not major skills issues. I would be interested in, if you are putting some more information to us, some amplification on that. I suspect what you were saying was that overall it is fine, but I suspect you would agree that there are some gaps.

Mr ANASTASSIOU — There are always gaps.

Mr ATKINSON — I am interested in some amplification on that answer that you gave as well, and coming back to us.

Mr BALLAGH — Can I say on that, again, one of the issues for us is around attracting young people into the manufacturing sector. A Dickensian sweatshops still pops up into people's eyes.

Prof. SUBIC — I concur with that from a higher education point of view as well.

Mr ATKINSON — Which is one reason why people have suggested a manufacturing university to actually raise the whole profile.

Mr BALLAGH — We are probably at the stage then where we would change some of the drawings or the models of what we are trying to do physically with the shape. There is nothing more useful than a very exciting space exposing new technologies; project-based work; industries working together with universities, both higher education and TAFE; bringing schoolkids into that as part of their VET in schools and showing them the potential, the excitement that is the new

manufacturing environment. We need to do that as much for the kids as for the parents and for the careers people in schools.

Prof. SUBIC — As long as the workplace reflects that as well.

Mr ATKINSON — That would be terrific. If you could amplify those things, that would be great.

Mr ANASTASSIOU — I have only got time to mention one thing about training. Have you heard from Swinburne about the manufacturing industry train-up program, MITUP.

The CHAIR — We can follow that up.

Mr ANASTASSIOU — Okay. It is worth having a look at that, because that is a really good program, and we are part of that.

Mr ATKINSON — You also have an entrepreneurs program.

Mr BALLAGH — We have a bachelor of entrepreneurship and various other issues around that.

Mr ATKINSON — I would be interested, again.

Mr BALLAGH — We will have to employ a research person to do this!

Mr ATKINSON — I know, but you guys — —

Mr BALLAGH — Yes, it is a pivotal role.

Mr ATKINSON — Because of your focus you are actually in a pivotal area.

Mr BALLAGH — That is right.

Mr ATKINSON — Your perspectives are of interest. I do not know whether there is somebody over there at the entrepreneurs area who can say, ‘This is where we think we fit in to the jigsaw’.

Mr BALLAGH — Absolutely. We know through this AMP concept that we have worked it up, that leadership and management-type skills are absolutely critical to the mix.

Prof. SUBIC — Do you know that we are probably now the only university that is still keeping the name ‘manufacturing’ in one of our bachelors programs. We have bachelor of manufacturing engineering. While everybody else has gone away, due to the media pressures of the unpopular word ‘manufacturing’, we have still kept that. We are now possibly the only one.

The CHAIR — The committee agreed we will have a sentence on that in the report. Thank you very much. We appreciate what you have provided prior to coming and what you have provided today. It looks like you have some homework, if you decide to do it. There is no deadline for this homework, but if you would do it for us, we really would appreciate it.

Mr BALLAGH — I think the timing of the engagement is right for us in terms of being through the starting gates of repositioning through the AMP. I think it is a good time for us to be maintaining that engagement, so we will happily do that.

The CHAIR — A transcript will be with you in a fortnight. Thank you.

Witnesses withdrew.