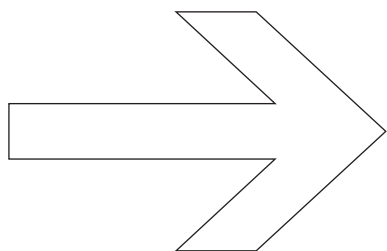


# ICT combined advantage study



**Research findings and analysis of collaboration between the Victorian Information and Communication Technology industry and the Post Secondary Education sector**

© State of Victoria, June 2004

This publication is copyright. Other than for the purposes of and subject to the conditions prescribed under the Copyright Act, no part of it may in any form or by means (electronic, mechanical, microcopying, photocopying, recording or otherwise) be reproduced, stored in a retrieval system or transmitted without prior written permission. Inquiries should be addressed to:

Multimedia Victoria  
Department of Infrastructure  
Level 10, 55 Collins Street  
Melbourne Victoria 3000  
Tel 9651 9868  
Fax 9651 9055  
Email [queries@mmv.vic.gov.au](mailto:queries@mmv.vic.gov.au)  
Web [mmv.vic.gov.au](http://mmv.vic.gov.au)

# Minister's message

The State of Victoria has an impressive track record of innovation and education excellence, making Victorian companies a competitive force on the global stage. Innovative Victorian companies are breaking new ground in all sectors of the economy from wireless streaming video systems, through to concept cars and artificial intelligence systems for aeronautical applications.

Innovation and education excellence are the foundation of Victoria's competitiveness in information and communication technology (ICT). ICT is an important sector in the Victorian economy, both as a major employer in its own right, and for its enabling capacity to transform companies across the wider economy. As the race to do things better, faster and more efficiently intensifies, businesses are increasingly turning to the education sector to access knowledge, skills and resources. Educators too, are feeling the competitive pressure from institutions, domestically and overseas, and are looking to industry to provide better training and assist with the commercialisation of new technologies.

Until now, these partnerships have focused more on large companies and multinationals – companies with the resources and strategic plans in place to pursue collaboration. Much less is known about the extent and effectiveness of collaboration by educational institutions with small to medium sized enterprises (SMEs).

Acknowledging this, the Victorian Government commissioned research, titled the *Combined Advantage Study*, to capture information about collaborative relationships between Victorian headquartered ICT SMEs and post-secondary vocational and higher education institutions.

One of the important findings of the study is that not enough is being done to publicise effective collaborations. This document is a first step in an attempt to do that. It contains many of the findings of the study along with five featured case studies outlining some of the collaborative experiences of Victorian-based companies. The case studies are intended to provide a deeper insight into the range, workings and potential benefits of collaboration.

The *Combined Advantage Study* is not intended to provide all the answers to the question of collaboration. By making this report available, the Victorian Government is keen to stimulate debate on how better collaboration could be developed between SMEs and the post-secondary education sector across the State.

There are challenges in the findings for universities, TAFEs, ICT companies and for government. Thank you to the ICT companies and post-secondary education institutions that participated in the *Combined Advantage Study* – your insights and experiences have provided valuable information and learning for all of us.



I look forward to working with you all on increasing collaboration in this important sector.

Marsha Thomson  
Minister for Information and  
Communication Technology  
Minister for Small Business



## **Contents**

Minister's message	
Executive summary	1
The Combined Advantage Study	2
Case study 01	4
Current levels of collaboration	6
Benefits of collaboration	8
Case study 02	10
What makes SMEs likely to collaborate?	12
Has collaboration been successful?	13
Case study 03	14
Future collaboration intentions	18
Case study 04	20
The challenges of collaboration	22
Case study 05	25



# Executive summary

For the purposes of the *Combined Advantage Study*, collaboration means sectors of the economy working together for mutual benefit over a range of activities.



The *Combined Advantage Study* was designed to provide the ICT industry and the post-secondary sector with a better understanding of the level of collaboration currently occurring across the State. It also highlighted what each of the parties was working on together and what they perceived as the benefits and the barriers to successful collaboration. Many of the findings of the study are presented in this report. The *Combined Advantage Study* is based on a survey of 223 SMEs, 38 university/TAFE respondents and more than 30 in-depth interviews.

## Key findings

The current levels of collaboration are significant – 41 per cent of ICT SMEs surveyed had collaborated in some form over the past three years.

There is a strong intention to collaborate in the future – 67 per cent of SMEs are considering a collaborative partnership with a university or TAFE in the near future.

The benefits from collaboration are compelling, with more than 70 per cent of SMEs and more than 80 per cent of universities and TAFEs saying that collaborations met all or most of their objectives. More than 90 per cent of the SMEs with an experience of collaborating said they would do so again.

Personal relationships are critical to the success of collaboration – almost half of the ICT SMEs and more than 60 per cent of the university and TAFEs cited personal relationships as the main reason for initiating collaborations.

ICT SMEs most likely to collaborate were companies more than two years old with a strategy to expand or grow their business and an independent board.

Universities and TAFEs agreed that the positive results from collaboration were rarely captured and poorly communicated.

The *Combined Advantage Study* also identified a number of obstacles or barriers to good collaboration.

Three of the biggest obstacles identified included achieving deadlines, maintaining partner commitment and retaining the necessary level of resources throughout the partnership. These challenges stemmed from perceived cultural differences between educational institutions and ICT SMEs and from unrealistic expectations of collaboration.

Good personal relationships helped to overcome many of the challenges faced by those in partnerships and tended to carry many projects through to completion. However, finding the right person on campus to talk to was a major challenge faced by ICT SMEs interested in establishing a partnership. Many campuses are now responding to this feedback and are taking steps to address it.

Many university and TAFE respondents noted there was a lack of incentive for them to initiate and develop partnerships with ICT SMEs, and this was a major challenge about which SMEs were often unaware.

Those forming partnerships to commercialise research and development (R&D) found the process of collaboration more difficult than for other forms of collaboration. This was underscored by the very complex nature of commercialisation and the increasing importance of intellectual property protection – particularly for products or applications with global reach. The associated costs and resources to commercialise R&D was also cited as an obstacle.

The *Combined Advantage Study* provides a valuable insight into the vibrant collaboration landscape evident in the State. It is hoped that it will also encourage greater collaboration by helping ICT businesses and the education sector to learn from the experiences of others.

Finally, the study identifies some challenges for the ICT industry, universities and TAFEs that will need to be addressed for collaboration to flourish. The Victorian Government will work with the ICT industry and educational institutions over the coming months to investigate ways to further encourage collaboration.

As a final note, while much of the study is quantitative there are elements of qualitative data. The qualitative data is pooled from interviews with people who have faced real challenges in their collaborative partnerships. Some of their comments may seem challenging but have been included to give 'voice' to the real-life experience of working in partnership for mutual benefit.

# The Combined Advantage Study

When you think about collaboration, it's pretty simple. There are two forces at work: SMEs want to survive or grow and universities want more students or funding to do research. To effect real change we need to connect these two forces, because at the moment they do not encourage collaboration [University source].



## What is collaboration?

It is possible for small technology companies to co-operate with large universities and achieve a commercial result. [IT Design Company]

Collaboration means sectors of the economy – in this case the ICT and post-secondary education sectors – working together for mutual benefit.

Collaboration extends over a range of activities, including the provision and transfer of skills, information sharing, and research and product development.

Collaboration can be formal or informal, short term or long term, cost neutral or resource intensive, academic or vocation-based.

## Objectives of the *Combined Advantage Study*

The *Combined Advantage Study's* objectives were to better understand:

- > types of interactions and collaborations that currently exist
- > benefits to each party of those collaborations
- > barriers or obstacles to the number and effectiveness of collaborations
- > key factors for successful collaboration
- > possible actions by governments, education providers, industry and third parties that would increase the frequency and benefits of collaboration.

The study was undertaken in 2004 and comprised surveys, interviews, forums and desk research.

The scope of the study considered both R&D/commercialisation collaborations, as well as those collaborations motivated by workforce development. This required two parallel investigations to take place, which essentially tracked activities that occurred on two distinct life cycles:

- > student life cycle
- > intellectual property (IP) life cycle.

### Activities on which SMEs collaborate with universities/TAFEs – student life cycle

Course or curriculum design includes activities such as:

- > developing or modifying course structure
- > membership of a joint industry/education advisory body dealing with course structure and content
- > participation in group establishing new course or degree program.

Course or curriculum delivery includes activities such as:

- > contributing content or a guest speaker to a course
- > joint supervision of research training
- > staff exchanges, coop programs.

Infrastructure sharing includes activities such as:

- > sharing university or TAFE facilities, systems or software
- > joint access to databases
- > software programs or systems.

Information transfer to improve skills includes activities such as:

- > staff exchanges, Industry Based Learning (IBL) placements
- > informal discussions and participation in networks on skills
- > participation in joint industry/education conferences and seminars.

See Figure 1 opposite.

### Activities on which SMEs collaborate with universities/TAFEs – IP life cycle

Staff and knowledge sharing to develop intellectual property includes activities such as:

- > accessing university/TAFE advisory services
- > member of research institution, business network or alliance
- > attended seminar run by university/TAFE on intellectual property or research.



Infrastructure sharing to develop/commercialise intellectual property includes activities such as:

- > use of university/TAFE equipment or resources – instruments, software, systems, buildings, communication networks, archives – to develop new intellectual property
- > location in technology precinct with industry/education tenants
- > member of formal joint industry/education cluster or network.

Development of shared intellectual property includes activities such as:

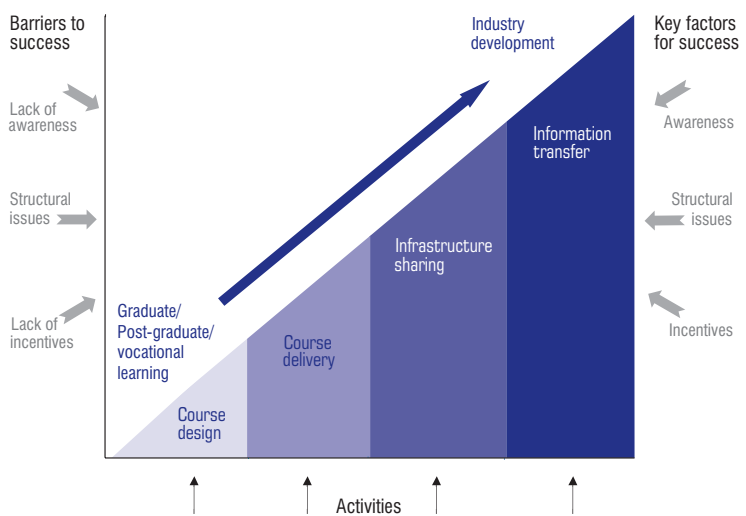
- > joint investigation, research or prototype development
- > business sponsorship of academic research project.

Established business relationship to commercialise includes activities such as:

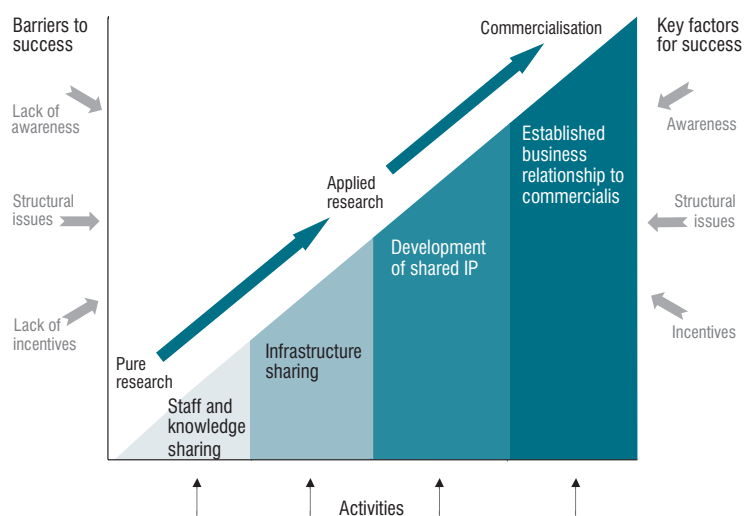
- > formed joint venture; entered licensing agreement
- > sold university/jointly-owned intellectual property. See Figure 2.

We are looking 10 years ahead, and if we have collaboration, we have a future. We are ensuring a long term R&D stream [Melbourne Software Developer].

**Figure 1. Student life cycle**



**Figure 2. IP life cycle**



# Case study 01

Our business has a relationship with NASA. We are creating a virtual Mars environment, with data currently being gathered by the Mars Explorer program. But the relationship we really needed was with our local TAFE ... an ongoing relationship which will enable our business to grow [Dave Rasmussen, Director DM3D].

## A chance meeting: from Maffra to Mars – partnering for the 3D challenge

It all started at a dinner party, here in Maffra.

Dave Rasmussen, director of DM3D, a virtual world development studio in one of the world's more unlikely locations, explains how the idea for the company came about.

The dinner party, in 2001, was organised by a community group, determined that rural Victorian towns like ours shouldn't miss out on broadband Internet technology.

We happened to meet staff from the East Gippsland Institute of TAFE at the dinner table, and before too long, we recognised the value of working together.

As a result of that community gathering, Victorian Information Technology students in 2005 will be able to gain accreditation in a new Advanced Diploma in Interactive Applications (Virtual Worlds) Course, developed through the *Product Development Fund* available from the Department of Education and Training.

DM3D is nestled between typical rural shopfronts – a gift shop and a hairdresser, on the main street of Maffra, in East Gippsland. What DM3D's neighbours probably do not realise is that this business is at the forefront of R&D in its field, and has direct commercial contracts with NASA.

The DM3D studio is responsible for developing a simulated 3D Martian environment, or 'Simhab.' Simhab is a Brahms Virtual Environment that is used to simulate work tasks within the habitat.

DM3D has also developed a 'Drive on Mars' web site, where realistic rover vehicles can be driven through virtual Martian terrain, navigated by computer mouse. As NASA's rover vehicles, Opportunity and Spirit, collect more data on the red planet, the DM3D team will be able to create an even more exact 3D model of the Martian world.

Company co-director, Merryn Neilson, says that their contacts at NASA might be somewhat surprised if they visited Maffra, but the rural location, and its apparent isolation, is of no consequence when your key business relationships are conducted in a virtual environment.

There are clever people out here in rural Victoria. Why wouldn't we be doing clever things with IT out here, and providing exciting jobs for kids?

Our relationship with TAFE is critical to the future of our business. Without it, Victorian businesses like ours would be limited by a lack of skills in emergent IT technologies.

East Gippsland's Acting Associate Director of Business and Organisational Development, Peter Heilbuth, has a close working relationship with the DM3D principals. He explains that since early last year, Dave and Merryn have been joining him on regular five-hour round-trips from



East Gippsland to Melbourne, as part of the Virtual Worlds Course Development Steering Committee.

Merryn and Dave not only helped develop the course, Peter explains, they also collaborated with East Gippsland Institute of TAFE on preparing the initial proposal for funding from the Department of Education and Training.

The funding was provided to East Gippsland TAFE, but we realised from the start, we needed to work closely with Merryn and Dave, because of their advanced skills in this area of technology.

Partnerships are especially important for regional institutions like ours. Already, our collaboration with DM3D has led to the transfer of a great deal of highly specialised information in virtual world technology.

DM3D recognises its involvement in Virtual Worlds Course development as the first step in a long-term collaboration with the TAFE.

In 2001, when Merryn and Dave established their association with East Gippsland Institute of TAFE, the DM3D studio was involved in the Alpha testing of Adobe's new 'Atmosphere' 3D software – a product which Merryn believes is the next major technological trend in web site design.

With the release of this software, the demand for skilled developers of 3D web sites is going to be extraordinary, and studios like ours are going to be looking for graduates with advanced skills in visual



design, programming and team development.

Our business needs this course, as much as TAFE needs our knowledge to develop it – and the Victorian economy needs these emergent skills in IT.

DM3D's relationship with East Gippsland TAFE will be ongoing. Merryn and Dave are considering becoming accredited workplace assessors themselves, and Merryn agrees with Peter Heilbut that there are advantages in taking the TAFE relationship into a more commercial domain.

We are open to the opportunities of shared infrastructure, research, or commercial development, offered by joint ventures with TAFE in the future.

We are on the verge of a major revolution in web-site technology, and the demands on a small business like ours will be great.

It is to our mutual benefit that we have an ongoing relationship with Peter and East Gippsland TAFE.

For young IT specialists, the sky is no longer the limit. Through the special relationship forged between their employer and the local TAFE, talented students like them will be able to set their sights out-of-this-world and Victoria will gain much-needed skills in an exciting technology area.

# Current levels of collaboration

Seventy-four per cent of university and TAFE survey respondents are in current collaboration with ICT SME.



Forty-one per cent of ICT SMEs participating in the *Combined Advantage Study* have collaborated with a university or TAFE in the past three years, and 75 per cent of those are currently collaborating.

One hundred per cent of university/TAFE respondents to the study had collaborated with an SME in the past three years and 74 per cent were currently collaborating. Most collaboration in the study occurred with universities rather than TAFEs and was evenly split between undergraduate and postgraduate levels.

Collaboration occurred at different levels and for different reasons in the student and IP life cycles.

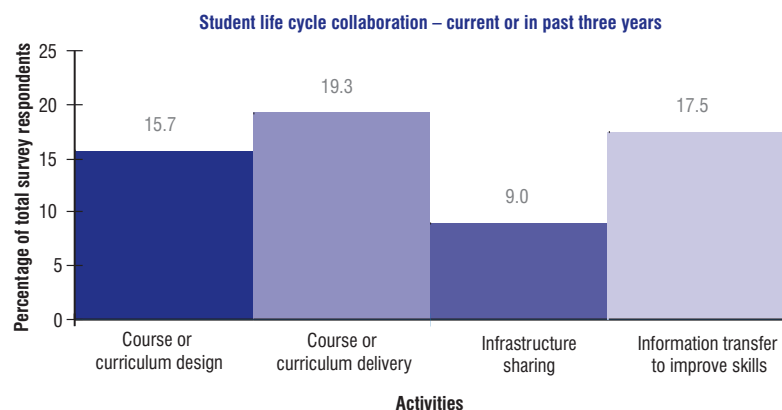
## Student life cycle collaboration

Of the 41 per cent of ICT SMEs who have collaborated in the past three years, 75 per cent of them collaborate in the student life cycle. Therefore, most SMEs were collaborating on projects that improved the skills of students or employees, rather than on projects that generated or commercialised intellectual property.

Universities and TAFEs indicated a preference to collaborate with ICT SMEs on vocational student courses rather than on the commercialisation of products.

The vast majority of ICT SMEs were collaborating on projects which involved improving the quality of course delivery, or the skills of students or employees. See Figure 3.

Figure 3. Extent of collaboration by activity type for top four activities – student life cycle





### IP life cycle collaboration

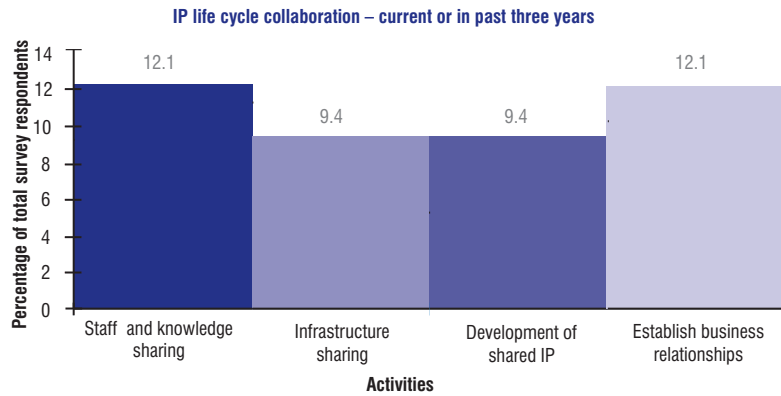
As indicated earlier, 41 per cent of ICT SMEs have collaborated with a university or TAFE in the past three years. Of these, 62 per cent are either currently collaborating or have collaborated on IP life cycle activities.

Seventy-four per cent of university and TAFE survey respondents are in current collaboration with an ICT SME. Of these, 71 per cent are currently collaborating on IP life-cycle activities.

The majority of ICT SMEs indicated that they collaborate on activities such as 'Staff and knowledge sharing to develop intellectual property' (48 per cent) and 'Establishing business relationship to commercialise' (48 per cent).

By contrast, universities and TAFEs considered 'Establishing a business relationship to commercialise' (45 per cent) to be of least importance. This mismatch in priorities may be a contributing factor to unsatisfactory experiences in collaboration. See Figure 4.

Figure 4. Extent of collaboration by activity type for top four activities – IP life cycle



# Benefits of collaboration

We believe that little companies should not work in isolation in box-like offices. We needed like-minded people around us – intellectually and technically, for the interchange of ideas [Melbourne Software Developer].



Companies enter into collaboration for a variety of reasons. For some, getting access to new skills or improving the skills of their existing employees, is a reason to collaborate. For others, collaboration is motivated by the desire to develop or commercialise intellectual property.

Universities and TAFEs are also motivated by various factors, ranging from the need to provide students with greater industry exposure, to finding an appropriate vehicle to commercialise intellectual property developed by an educational institution.

Collaboration between the education sector and industry can offer a number of benefits:

- > economic benefits for Victoria and nationally through improved competitiveness in the global economy and more effective use of private and public sector funds
- > industry benefits from more innovative approaches to all aspects of the business and access to highly specialised consultancy services, better knowledge transfer, better anticipation of training needs and a more highly skilled workforce. Industry also benefits from access to 'ideas' from the education sector's traditionally strong international linkages
- > the Education sector benefits from the potential for new revenue streams, better exploitation of intellectual property, a culture of innovation, and more industry-savvy and business-ready students.

The benefits are two-way. For us particularly, the relationship enables us to stay current and incorporate the latest thinking in the industry [eServices provider].

## Direct benefits for industry and education providers

The *Combined Advantage Study* found that:

- > the major benefit of collaboration for SMEs was the potential for increased future revenue
- > the major benefit for universities and TAFEs was the development of an ongoing strategic relationship.

## The major benefit of collaboration for SMEs was increased potential for future revenue

Fifty-one per cent of SMEs that had collaborated with universities or TAFEs cited the 'potential for future revenue opportunities' as the most common benefit gained from collaboration.

A number of interview subjects expressed surprise at this finding; with one university representative indicating that a primary challenge in getting SMEs interested in collaboration was being able to communicate its worth in terms that mean something to them. He suggests that the absence of hard data supporting the benefits of collaboration is a constant hurdle for academics trying to market their services to SMEs.

The best way to get SMEs interested in collaboration is to convince them that it will make or save them a dollar [University source].

Other benefits of collaboration cited by SMEs included 'improved skills' (34 per cent) and 'access to expertise' (32 per cent). See Figure 5 opposite.

## The major benefit of collaboration for universities and TAFEs is an ongoing strategic relationship

Universities and TAFEs nominated the development of an ongoing strategic relationship (79 per cent), improved skills (57 per cent) and potential for future revenue opportunities (50 per cent) as the most common benefits. See Figure 6 opposite.

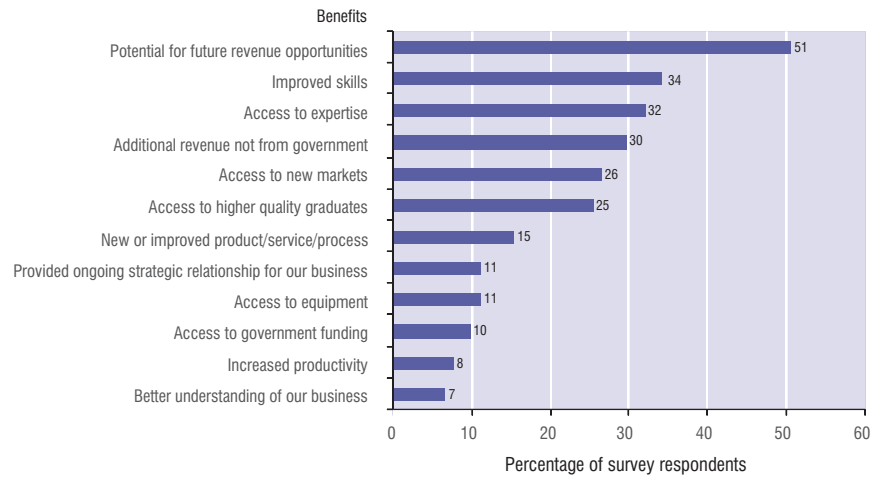
SMEs and their collaboration partners generally understood and agreed on the roles that each party was expected to perform. See Table 1 opposite.

One area of difference was with regard to training. SMEs felt they had a strong role to play in the provision of training (including industry placements for students) – a role not rated as highly by education-sector respondents.

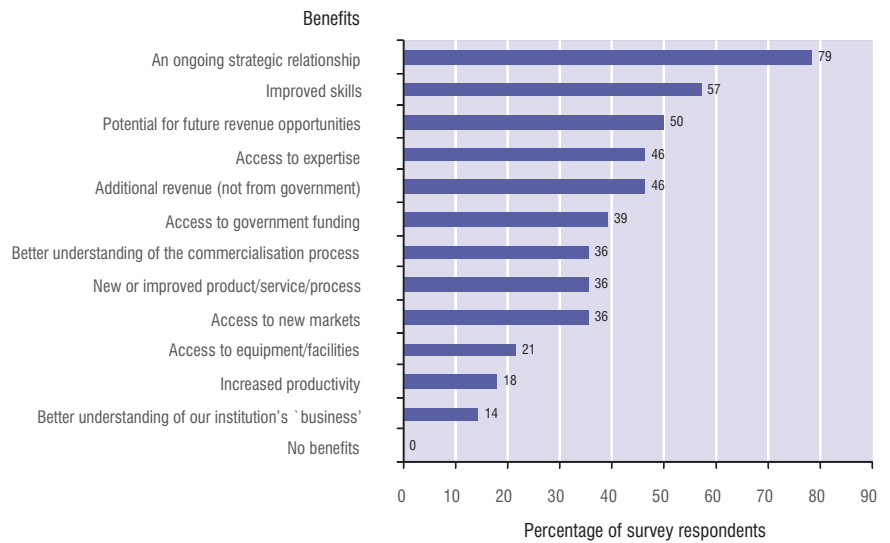
Another area of difference arose in collaborations involving the development or commercialisation of IP. SMEs saw the education partner's role as providing access to networks and/or research bodies, and their own role as providing branding. However, universities and TAFEs saw their key role as providing staff, advice and infrastructure. This may explain why some collaborations do not succeed.



**Figure 5. Benefits gained from collaboration by SMEs in ICT sector**



**Figure 6. Benefits gained from collaboration by universities and TAFEs**



**Table 1. Perceived roles in partnership**

	SME perspective %	Education perspective %
SME role	To provide advice (66 )	To provide advice (57)
	To provide training (43)	To provide infrastructure/facilities (50)
University/ TAFE role	To provide staff (33)	To provide staff (61 per cent)
	To provide infrastructure/facilities (32)	To provide advice (50)

# Case study 02

One of the attractions of AOS is its personal connection with individuals, departments and with the organisations that we have research connections and collaborations with [Professor Liz Sonenberg, University of Melbourne].



## The planned partnership leaving nothing to chance

Co-location with the University of Melbourne was always part of our company's plan.

Expertise flows in both directions, and that sharing shouldn't be hindered...but once you start a project together, you must discuss how things are going to work, in detail.

Nick Howden's favourite footy team trains just a few hundred metres away from where he works, and checking on their form is often part of his working day.

The fact that these players are not highly paid soccer stars, but look like mechanical extras from an episode of Doctor Who, makes their skill on-field even more appealing. The Melbourne University RoboCup robotic soccer team is a great source of pride for Nick, Business Applications Manager for Agent Oriented Software (AOS) and the university personnel he collaborates with nearly every day.

AOS's 'intelligent agent' software is used in the 'Roobots,' enabling them to play autonomously. AOS's product, JACK™ Intelligent Agents is what enables the robotic soccer team to manoeuvre around obstacles, avoid on-field opponents and put the ball into the net, without a human 'player,' controlling the action.

JACK software is applied in three main areas. As an 'Intelligent Assistant,' it filters information and performs mundane tasks. This application is used in call centres, and in military decision support tools. 'Autonomous Entities' are used extensively

in the defence forces, particularly in training and simulation, in the robotic soccer players and other robots such as Unmanned Aerial Vehicles (UAVs). JACK agents also represent an 'Architectural Paradigm,' that enables the development of complex distributed and multi-threaded applications.

When AOS was established by Managing Director, Dr Andrew Lucas in 1997, the decision to co-locate the software company in the same precinct as the University's Intelligent Agent Laboratory, was a strategic first step for his company's long-term R&D stream.

Small companies like ours can be one-puff wonders, who commercialise one product, then have no resources for R&D.

You can't compete with the likes of IBM, Boeing, and companies with large R&D budgets who have the next 10 years of product development in their sights.

We need like-minded people around us – intellectually and technically, for the interchange of ideas.

AOS's collaborative research relationship with the university is an example of how the right approach to planning, managing expectations and goals, and implementation, are vitally important to sustaining a mutually beneficial partnership.

Then Head of the Department of Computer Science and Software Engineering, Professor Leon Sterling, encouraged the co-location.

Andrew Lucas and I both attended a two-day conference on artificial intelligence held by the Defence Science and Technology Organisation (DSTO), and discussed co-location. There were obvious synergies. We were happy to support developments in agents, and he wanted a start-up activity.

From my perspective, we were offering a safe environment, with low overheads. We added credibility to each other.

Professor Sterling had initiated the University of Melbourne's involvement in the international RoboCup competition. When AOS co-located, they realised the autonomous robots were a great opportunity to further develop their intelligent agent software, and they became keen contributors.

Australian Research Council Linkage Projects have supported three research/higher degree students, and paved the way for ongoing project opportunities. According to the Head of the Department of Information Systems, Professor Liz Sonenberg, it helps that AOS has staff, qualified to supervise PhD students.

Professor Sonenberg supervised the master's thesis project, where AOS's intelligent agent software was applied to the soccer robots. The project gave the two partners a concrete activity to implement and focus on, and has provided an enduring model for successful collaborative effort.



Some relationships don't get beyond an ethereal conversation, nothing goes any further and no projects get off the ground.

Find something concrete to work on together, to get started – perhaps a student or colleague who can be the focus for a specific project or case study.

For AOS, the collaboration provides invaluable feedback for the development of their product. Their model relationship also demonstrates how collaboration can work, between two very different styles of organisation – the private SME and the tertiary institution. Professor Sonenberg agrees that personal relationships are key factors, but SME expectations have to be realistic.

Don't underestimate the time it takes to build a relationship.

Some SMEs have had the expectation of an instant return on investment, but collaboration is a strategic activity and returns are less immediate.

Nick Howden agrees that a company's focus needs to be more long term.

For us, we are not expecting immediate outcomes, but we expect ideas that feed into longer-term product development. This collaboration is our long-term research.

Information transfer is both ways. We provide industry contacts and applied expertise, while we receive immediate product feedback, as well as contacts which may lead to further collaboration, product exposure or even sales.

Professor Liz Sonenberg says she understands that smaller organisations can find it both confusing and expensive

up-front to establish a collaborative project but that government schemes are the key to seeding collaboration between universities and SMEs.

With government linkage grants, for example, both parties have to put something on the table.

If we can bring an SME to the table, it may only be able to contribute a small amount but we can put this into a scheme to get a proportionately bigger return.

University IP arrangements can be complex and vary between institutions and Professor Sterling emphasised that both sides need to talk about the details of the relationship at the very earliest opportunity.

Keep alive the conversations and connections. Keep having discussions. The key is working at keeping the relationship going.

Nick Howden agrees that an SME has to fully understand the implications of university IP policies in the early stages of the relationship and be aware of potential outcomes. At the same time, he says, tertiary institutions have to understand that companies make a huge investment in commercialisation; developing a product, finding markets and marketing.

We have had problematic relationships with other organisations that held on to IP too tightly. Having a good idea is one thing, but commercialisation is another. What unis often want is credibility, through research publications, and the credibility of research being commercialised.

Collaboration involves finding win-win situations.

# What makes SMEs likely to collaborate?

Companies with an independent board were almost twice as likely to collaborate as those who did not.

The Combined Advantage Study found that the SMEs most likely to collaborate are established companies (>two years old) with an independent board and growth strategies that are dependent on new products and services.

Companies whose growth objectives are tied to the development of new products and services, access to new markets or access to new skills, are twice as likely to collaborate as companies focussed on improved business development. This suggests that companies see a greater role for universities in the development of new products rather than new processes.

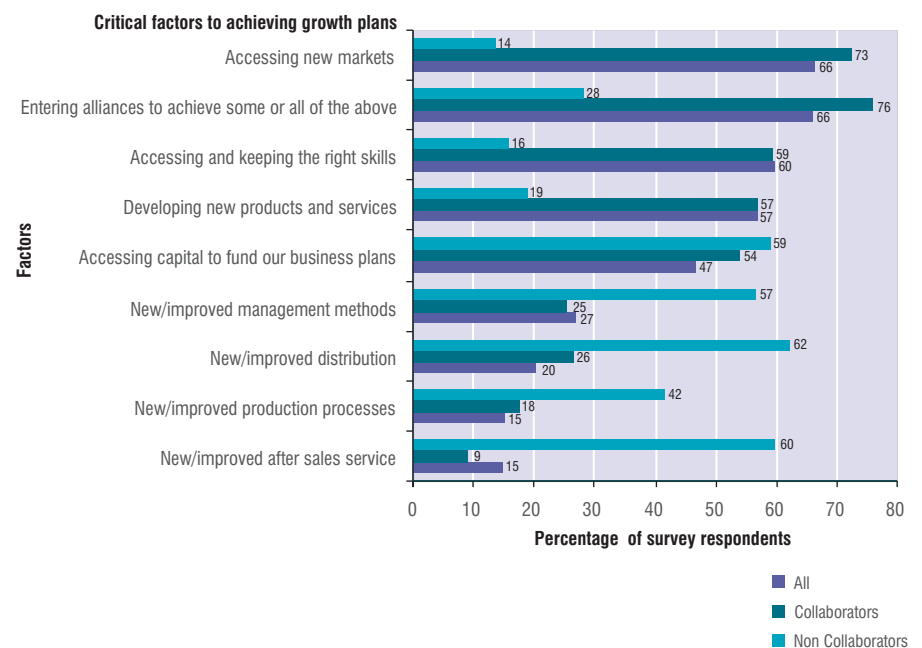
Companies that were less than two years old were much less likely to collaborate. This is probably due to the fact that start-up companies are more focused on survival than expansion.

Companies with an independent board were almost twice as likely to collaborate as those who did not (however, only 17.5 per cent of companies had an independent board, so the result may be skewed). Independent board members may be more likely to promote product development and marketing approaches involving collaboration.

The size of a company, its revenue, and the number of its staff, had no significant bearing on whether a company would collaborate with a university or TAFE. Similarly, a company's geographic location and percentage of revenue derived from exports was of little consequence. The core business activity of a company also was not a factor.



Figure 7. SME growth plan factors by collaboration status



# Has collaboration been successful?

Collaboration is people-related, more than technology or business-related. Relationships are No. 1 by a mile [University Source].



The *Combined Advantage Study* showed that both SMEs and educational institutions generally benefit from collaboration.

Almost 64 per cent of SME respondents felt that the collaboration had met all or most of their objectives. Thirty-one per cent said the collaboration had met 'some' of their objectives. Only 5 per cent indicated the collaboration had failed to meet any of their objectives.

*A lot of SMEs embark on the collaboration process with a lot of trepidation, thinking that the process is going to be a nightmare. They are careful in ensuring that their objectives are realistic, and generally the process lives up to expectations [Third party adviser].*

The results for university and TAFE respondents were even more positive, with 86 per cent of collaborators indicating that their objectives had been met. A further 14 per cent said the collaboration had met some of their objectives, and none thought the collaboration had failed to meet any of their objectives.

SMEs, universities and TAFEs have realistic expectations about the difficulty of collaborating. Seventy per cent of SMEs and 75 per cent of University/TAFE respondents said that the collaboration experience was easier or about the same level of difficulty as they had imagined. The remainder found the experience more difficult than expected.

However, for SMEs forming a business relationship with an education institution to commercialise IP, 48 per cent found the overall experience more difficult than they had imagined.

**Table 2. Survey respondents' experiences with collaboration**

Reflection on collaboration Experience	SME perspective %	Educational institution perspective %
Easier than imagined	16	0
About the same as imagined	54	75
More difficult than imagined	30	25

**Table 3. Survey respondents' experiences with collaboration**

	SME perspective %	Educational institution perspective %
<b>Activities easier than anticipated</b>	Establishing complementary work styles (29)	Getting the necessary information from the partner (29)
	Scoping the project and setting objectives (28)	
	Maintaining the level of commitment of collaboration partners (28)	Maintaining the level of commitment of collaboration partners (29)
<b>Activities more difficult than anticipated</b>	Maintaining the level of commitment of collaboration partners (33)	Obtaining and retaining the necessary level of resources (39)
	Achieving deadlines (33)	Achieving deadlines (36)

# Case study 03

Working on industry associations and networks, as part of ongoing business practice, facilitates the personal relationships and awareness of opportunities offered by collaboration [Ian Gillard BendigoIT Director].



## It's easier for the well-connected

We have learned that universities have to be more flexible in offering a range of different schemes and opportunities to business.

We understand that for small business the up-front costs of engaging in a joint project may be a problem. I am a farmer's daughter so I completely understand cash-flow problems.

Mary Martin, Head of the Department of Information Technology at La Trobe University, Bendigo, works hard at maintaining links with the local ICT industry, not only for the benefit of students, but also for rural communities and economies.

She explains that rural Victoria and farming communities in particular, understand the value of collaboration. This attitude stems from the long tradition of people banding together and becoming involved in meeting local needs, for the combined advantage of the community.

Connectivity is a strong force, which has been identified as a factor in the survival and revival of rural cities and towns, as thriving centres of business and learning. A renewed focus on partnerships, to provide valuable community-owned resources, has proved a successful and popular model for not only rural, but also metropolitan areas, as demonstrated by the success of community banking.

Mary Martin believes that tertiary institutions have an important part to play in 'taking collaboration to another level.' The

partnership between the IT Department at La Trobe and local business software specialist, BendigoIT, is a model of mutual and community benefit.

An outstanding example of the success of the La Trobe and local business collaboration is the Bendigo Business Continuity Centre, located just a minute's walk away from the Bendigo campus. Completed in September 2003, the Continuity Centre operations are managed by Bendigo Community Telco, a major partner in its development. Other members of the team, including Bendigo Bank and the City Council, now use the centre's resources.

Community Telco Australia and two other SME technology companies are tenants in the building, and BendigoIT has a number of staff working on the community Telco project at this site. The 'community telco' concept is a model that BendigoIT Director, Ian Gillard, predicts will be successful in communities throughout Australia.

With its impressive contemporary design, the Bendigo Business Continuity Centre represents the future opportunities that ICT capabilities and resources offer to rural Victorian communities. The facility is also testament to the advantages that community connectivity and collaboration between business and the educational sector can deliver.

Tight electronic security surrounds the centre's telecommunications/server central control room yet there is a relaxed

friendliness and a sense of pride among the tenants. The centre has made a profit since its inception, and for Ian his involvement in projects initiated by La Trobe has been more than just commercially rewarding.

By partnering, and drawing on the strengths of the university and local industry expertise, we get things done well. This project worked out on time, and to budget, and has made a profit since day one.

The Bendigo Business Continuity Centre project, made possible with State government funding, was one of many collaborative projects where BendigoIT has provided advice, information, equipment and human resources to assist La Trobe in driving better connections with local SMEs and the community.

In metropolitan Melbourne, proximity to a TAFE or university has been part of the growth strategy of only a small number of businesses in the ICT sector. According to Mary Martin, the proximity of a tertiary institution is frequently a key factor in business's decision to locate in rural areas.

IT companies can be confident, with a university here, they will have an enduring supply of expertise.

As a former lecturer, Ian believes that SMEs need to become more involved in the networks and associations, where relationships with the tertiary sector can be established, if they are to make the most of collaborative opportunities. Ian understands, as both a former faculty





member and now a small business owner, the difficulty some SMEs might have with finding, 'the right person to talk to,' at a university.

From Mary Martin's point of view, it is essential that universities are involved with industry, and not just big corporations, to ensure they are producing graduates who are industry-ready.

University staff are expected to engage in research more than they used to and this can distract from putting together courses which have the most appropriate and up-to-date content. It is important that industry and academics are drawn together so they can review courses and ensure they 'stay relevant'.

Mary describes Ian's contribution to course advisory committees and course delivery, including much-needed technical expertise in computer hardware and emerging technologies, as vital.

Ian is one of our best critics. He will tell us where we have gaps in our courses and how to fill them – particularly in the areas of web applications and integration of legacy systems.

BendigoIT has been a keen supporter of the Industrial Based Learning (IBL) scholarship program – an initiative proposed by the Bendigo Bank to the university back in 1993 – where undergraduates gain valuable industry experience working for one or two

companies in a year. The company, in turn, gives feedback on their students' progress for assessment. Mary says it is important for potential employer partners to appreciate that students involved in the program have to apply for their scholarship and 'win' a place with the employer.

This is not just a 'sandwich' course, but a partnership between the business, university and the student.

Some employees might be tempted to just use a student in a limited capacity in their business, with very little learning involved. Organisations that participate in IBL, know that the placement must be a learning experience.

Two IBL students, Kathie Hocking and Adam Brough, have worked with Ian at BendigoIT. Ian says that they fitted into the work style of his company quickly and easily. Kathie and Adam were focused on business goals and were able to deliver within the time lines industry expects.

Becoming involved in the IBL program was expensive only in 'time' really. Whatever we spent on scholarships was returned in value from our IBL students.

The Bendigo campus has a 40-year legacy of industry-connected learning programs, having introduced one of the State's earliest information-processing diploma courses back in 1964. In 1978, a student project for the local sewerage



authority was an outstanding success. To deal with its commercialisation, BendigoIT (then called Scientific Business Software Systems) was formed, with lecturer, Ian Gillard, as one of the directors.

Most of our 23 employees have trained at La Trobe and so BendigoIT has an ongoing interest in collaboration to ensure that training is relevant.

The advantage of employing an IBL student is that students have already worked for you for six months so when you employ them they understand business and hit the ground running.

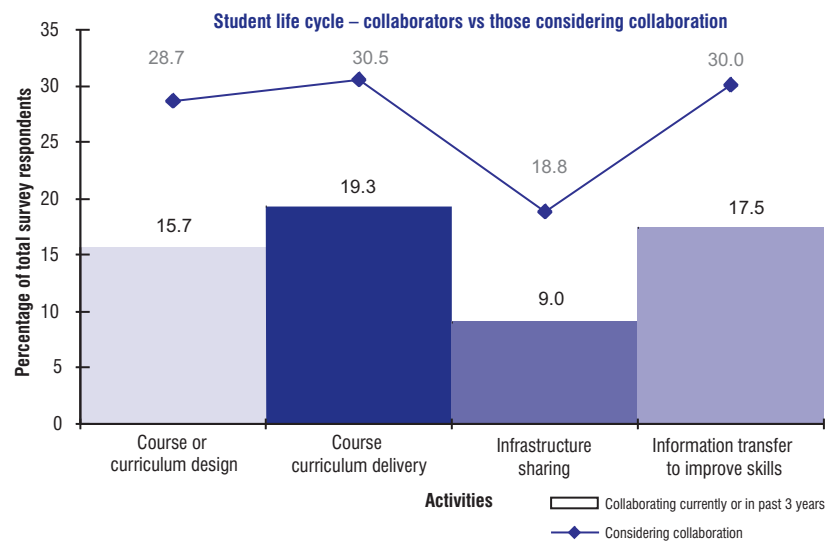
Mary says that that the benefits of collaboration between ICT industries and the tertiary sector are compelling but finding those connections need to be worked on from both sides.

La Trobe will continue to seek out opportunities and get to know the needs of the local ICT industry, by working at personal relationships. That means, attending industry functions and organisations such as the Central Victorian Business Network (CVBN).

# Future collaboration intentions

The study revealed that 40 per cent of all survey respondents, including universities, TAFEs and SMEs intended to collaborate again in the next three years.

Figure 8. Extent of SME current and future collaboration in the student life cycle



The study revealed that 40 per cent of all survey respondents, including universities, TAFEs and SMEs intended to collaborate again in the next three years. Twenty-seven per cent were unsure about whether they would collaborate and 33 per cent ruled out collaborating with a university or TAFE in the next three years.

The major areas of potential future collaboration in the student life cycle were course design and delivery and information transfer to staff. See Figure 8.

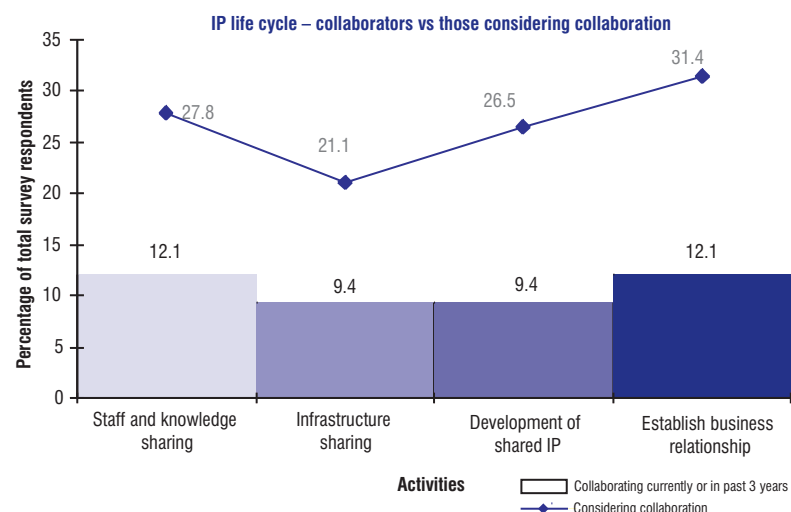
The major areas of potential future collaboration in the IP life cycle were staff, knowledge and infrastructure sharing, developing shared IP and establishing a business relationship. See Figure 9.

ICT SMEs expected the development of IP to be the main reason for collaborating in the future.

Companies that expressed an intention to collaborate in the next three years were motivated by three key business drivers:

- > gaining access to resources such as knowledge, skills and equipment (54 per cent)
- > taking advantage of the unique capabilities of universities/TAFEs (42 per cent)
- > development of a new product (38 per cent).

Figure 9. Extent of SME current and future collaboration in the IP life cycle



Universities/TAFEs intending to collaborate in the future gave the following three reasons:

- > provide developmental experiences for their staff (73 per cent)
- > gain access to resources such as knowledge, skills and equipment (73 per cent)
- > ensure graduates are more business-ready (55 per cent).

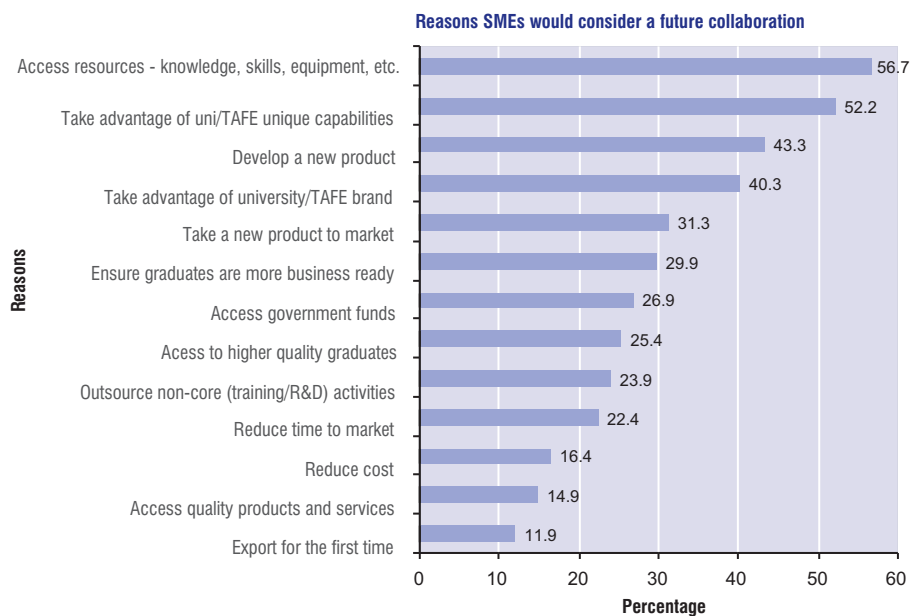
Eighty-nine per cent of SMEs with past collaboration experience are considering collaborating again in the next three years. University and TAFE representatives that had experience of collaboration also expressed a strong intention to collaborate in the future (only 4 per cent of respondents ruled out further collaboration).

Sixty-seven per cent of all SMEs surveyed would consider collaborating in the next three years. Of these, more than 50 per cent were experienced collaborators. Four per cent of all SMEs surveyed (10 per cent of SMEs with experience of collaboration) indicated that they would not collaborate in the next three years. See Figure 10.

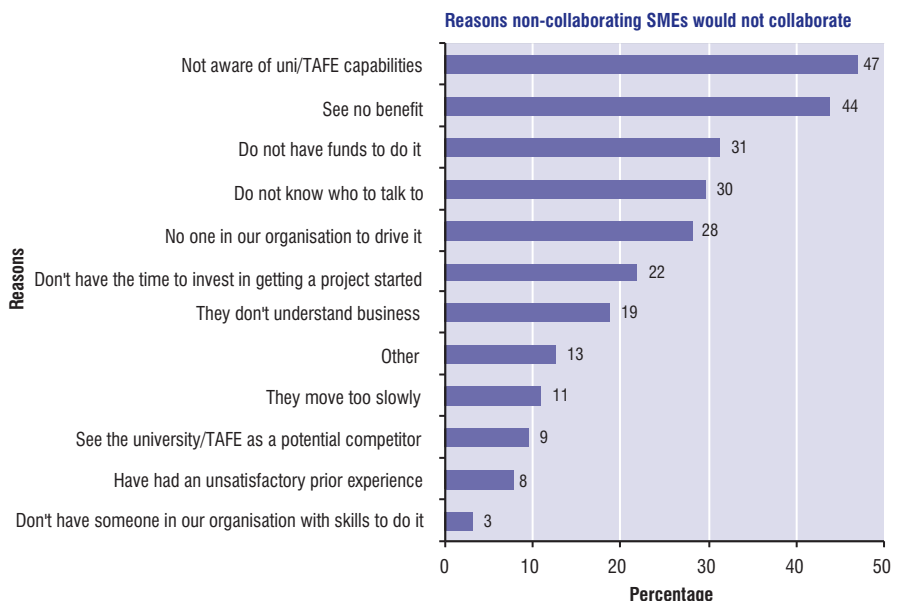
Among the 4 per cent who would not collaborate, two common reasons why SMEs with experience of collaboration will not collaborate in the next three years were that the experience was unsatisfactory (67 per cent), and that university/TAFE partners moved too slowly in response to opportunities or demands (56 per cent).

Of total survey respondents, 28.7 per cent had no collaboration experience and has no intention of collaborating in the future. The main reason why SMEs currently not collaborating will not do so in the future is that they are not aware of university/TAFE capabilities (47 per cent) and see no value in collaborating (44 per cent). See Figure 11.

**Figure 10. Reasons why SMEs would collaborate in next three years**

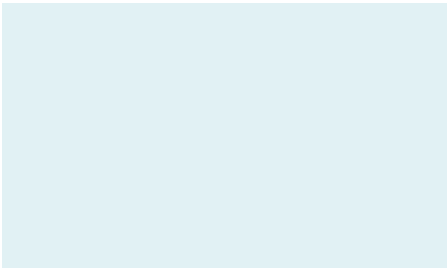


**Figure 11. Reasons why non-collaborating SMEs would not collaboration in the future**



# Case study 04

The collaboration with Senko is a good model of how the tertiary sector can seek collaborative relationships with companies to achieve mutual and industry benefit [Warwick Howland Swinburne TAFE, Centre for New Manufacturing].



## The targeted approach

We have a mandate to introduce photonics to manufacturing, and we sought out an industry partner who could not only provide specialised equipment but also help with up-dating our courses and developing learning materials.

As Project Manager for Swinburne TAFE's Centre for New Manufacturing, Warwick Howland has little time to spare in responding to emerging needs for new technologies and skills in manufacturing. One of his first tasks was to go shopping for specialised equipment and then find an industry partner to help him with his mission to 'enlighten' manufacturing.

Warwick approached Senko to purchase highly specialised photonics equipment for the Centre, with a request for a large 'value-add.' The add-on is an agreement to help in developing photonics course modules for students, and professional development for Swinburne staff. As part of the deal, Senko specialists will be providing input to workshops and lectures, and transferring knowledge and skills.

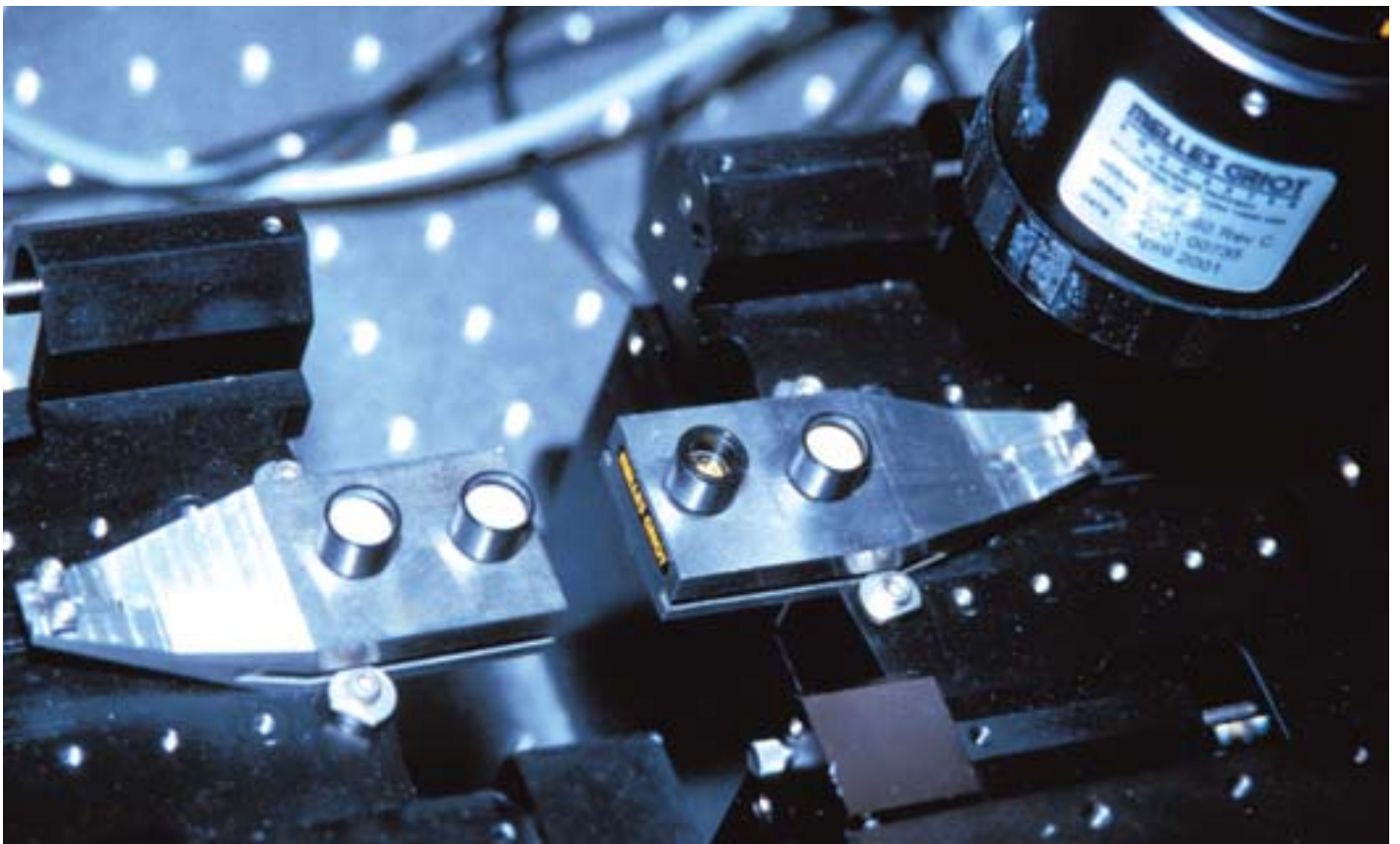
The year-old Specialist Centre encourages the adoption of new and emergent technologies such as photonics, micro and nano-technology, robotics and laser technology. To make this possible, three photonics modules are being introduced into the Advanced Diploma of Electronics with a plan to include the subject into all of Swinburne University of Technology, TAFE's engineering courses, including mechanical and robotics.

Senko's Product Specialist, Dr Charlotte Marra, completed her postgraduate studies at the University of Melbourne last year. She is now helping develop course materials for the specialist centre, as well as having developed a High School Photonics Educational Kit. This kit provides a range of exciting, hands-on activities for students, and supplements the introduction of photonics into the Victorian school curriculum this year.

Although traditionally regarded as the province of the telecommunications industry, photonics is an important technology for a wide range of industries. Fibre-optic cable delivers communications products to our homes and businesses, but there are broader applications. As Warwick explains, information technologies and IT skills are extending beyond the boundaries of the traditional ICT sector, and into all areas of industry and manufacturing.

Industry itself can't be expected to know or understand what skills they need, or the process of developing them. We have to respond quickly to those needs and we cannot do it alone. Without introducing photonics into our courses, the manufacturing industry would have nowhere from which to source students technically trained in this area.

New and different applications of photonics include its use in manufacturing of compact discs, robotics, and 'sensing' processes in manufacturing, including industrial safety devices.



Senko Account Manager, James Cowcher, says the collaboration with Swinburne is a 'two-way street,' with both sides focused on the need for industry development.

What is interesting about our agreement is that we are on the starting blocks together, and we can both see the relationship evolving into something much bigger.

Warwick describes the relationship as, 'open ended,' and likely to develop into further mutually beneficial ventures. He believes the benefits of collaboration are too great for the tertiary sector not to be more actively seeking partners.

Inter-personal relationships are the most important. Often I go to industry events only to find that I am the only representative of the tertiary education sector there.

We must make SMEs more aware of what we have to offer. We need to be more 'out there' and open to possibilities.

We've just had three of our teachers on industry release. It is important that they too are aware of what's going on in industry.

Already, an agreement to provide professional development has resulted in an unexpected benefit for both partners. Senko's associate manufacturing operations in China were unable to produce components for one of the company's products and Swinburne's facility now has a contract to provide accurately manufactured engineering components for an inspection microscope.

Through their involvement with the Victorian Photonics Network (VPN), Senko Managing Director, Frank Jaffer and Warwick Howland were brought together as collaborators. They agree that for both partners to be successful the relationship has to extend beyond the professional development agreement that they have in place. Frank Jaffer is hopeful that their commitment to a strong relationship will lead to future joint ventures.

Our aim is to work closely with Swinburne to promote our services and enable export generated will give Victorians the edge for providing unique and innovative services to our industry. We are grateful to organisations like the VPN for providing such an opportunity.



# The challenges of collaboration

SMEs and unis usually have different objectives and expectations regarding collaboration outcomes. For example, SMEs want ‘real world’ projects that give them ‘real’ products. They don’t understand that unis and students are more process-based [University source].



The *Combined Advantage Study* identified that most collaborations occurring between ICT SMEs and universities and TAFEs were successful in meeting objectives. However, it also identified a number of obstacles to successful collaboration between the ICT industry and post-secondary education sector.

Personal relationships were nominated by both SMEs (46 per cent) and education providers (64 per cent) as the most important ingredient for success in a collaborative project. The lack of any such personal relationship is a significant obstacle to initiating collaboration, and poor personal relationships are an important reason for failed collaborations.

*Working on industry associations and networks, as part of ongoing business practice, facilitates the personal relationships and awareness of opportunities offered by collaboration [University source].*

Low awareness of what universities and TAFEs can offer SMEs was another reason for lack of intended collaboration (41 per cent). TAFE interviewees agreed that many SMEs had a poor understanding of the different services offered by universities and TAFE. In particular, TAFE was not credited as a legitimate partner, except for vocational training courses.

*There is a perception that TAFE is for people that can't get into university – that it's a second rate education [TAFE source].*

*Businesses are not going to give TAFEs the time of day in collaborating and sharing ideas [TAFE source].*

Many SMEs failed to see any benefit to collaboration (40 per cent). However, a number of education sector representatives felt that SMEs were blamed too often for the low rates of collaboration. Some interviewees suggested that universities and TAFEs had done a poor job of clearly articulating what they could do for SMEs, and that educational institutions had made noises about being more business-friendly, but their actions had not necessarily supported the rhetoric.

*I am singularly disappointed in the failure of the IT school to engage with SMEs [University source].*

Some SMEs lacked funds to engage in collaboration (33 per cent). Forty per cent of SMEs surveyed expected their revenues to remain at about the same level, or reduce, compared to last year. The largest challenges faced were poor cash flow (45 per cent), reduced demand (42 per cent) and new competitors (40 per cent).

*You need to understand that SMEs can only participate in 'good times' – they will participate when business is booming, but pull out as soon as there is trouble [University source].*

University and TAFE respondents overwhelmingly acknowledged that, while the majority of SMEs were resource poor, others had the capacity to commit adequate financial and human resources to a collaborative project. The critical factor is recognising what an SME can afford up-front, so that expectations about results, outputs and deadlines can be

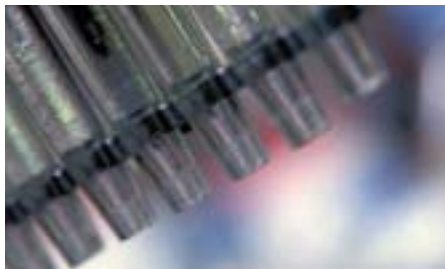
worked through and agreed upon, before the project begins. In some cases, this approach has the effect of preventing a project from advancing to the next stage, which SMEs and education-sector interviewees suggested may be a good thing in the long run.

*It's a common story. An SME wants work done, the university says it costs \$X, the SME says they can't afford \$X. The collaboration is over before it began [University source].*

Several education sector respondents observed that the challenge is to reduce the costs of the early stages of engagement, rather than the costs of collaboration.

*In the early stages of engagement, the cost of collaboration is prohibitive and comes with high short-term risk for SMEs. Larger businesses can afford to think longer term and have the resources to invest in this stage of collaboration, but SMEs cannot [University source].*

Of SMEs surveyed, 26 per cent said that not knowing who they should talk to at the university/TAFE was a major reason for not collaborating. A number of industry association representatives suggested the impenetrable nature of educational institutions, particularly universities, was a critical barrier. One SME which had been involved in a previous collaboration suggested that things were not better the second time around:



You would assume that because I am based at a university and I have been through the process before, I would be able to get to the right person quickly. Wrong. I am so frustrated by this experience and it is only that I know how important the collaboration is to my business that I am continuing. If I was less convinced, I'd have given up by now [SME interviewee].

University staff acknowledge the issue is real, and empathise with SMEs. One interviewee suggested that finding the right person to talk to in his own institution was a constant challenge, despite having a deep understanding of how the organisation is structured and a feel for where to start.

SMEs have no idea who to ask, and when they get to the wrong person (likely), they don't get the response they were after which reinforces all their prejudices [University source].

The issue was generally acknowledged to be much less important in the TAFE environment, as they are smaller and have less bureaucratic processes.

SMEs reported frustration at the lack of customer focus provided by universities. Common complaints included failure to return telephone calls, the inability of universities (but not TAFEs) to communicate in plain English, and a general lack of responsiveness. University staff accepted that SME claims were generally accurate and acknowledged that this was an area that needed dramatic improvement.



However, a number of university respondents suggested that the issues were not lack of customer focus but high workloads on academic staff. Interestingly, SMEs believed that TAFE staff had more industry experience and a better understanding of the needs of the SME.

Some interviewees from universities and TAFEs suggested that the incentives for collaboration are greater for SMEs than for educational institutions.

*When you ask why universities aren't proactive in this process, you have to ask what's in it for the responsible person at the coalface? It's unlikely they will be formally acknowledged by their institution for collaborating with industry, except if it makes lots of money – which is rare [University source].*

Other education staff resent the 'corporatisation' of education and feel that industry collaboration is an unnecessary distraction.

A recurring frustration in the education sector was the difficulty identifying appropriate SMEs to collaborate with. One respondent suggested that, unlike the United States, Australia did not have a strong 'cluster' focus, which made it difficult to engage with SMEs. Regional Victorian towns such as Ballarat and Bendigo were considered the exception, as clusters occurred more naturally.

*Connectivity is seen as of greater importance in regional districts – it is necessary for survival [University source].*

A number of respondents felt that, despite market opportunities, connecting with the right SMEs was a challenge.

*We have difficulty engaging the sector. In the past they have tried using industry associations – generally ICT ones – but have had little success. The Australian Computer Society is probably the most academically focused of the associations, but even then it's hard to get traction as we are competing with a lot of other issues [University source].*

Thirty-three per cent of SME respondents and 36 per cent of university/TAFE respondents that had collaborated in the past three years cited failure to achieve deadlines as the No. 1 barrier to implementing the project. A number of SMEs and industry associations suggested that universities, in particular, did not understand the need to complete projects on time. Several reported that this was a major source of conflict and frustration during the collaborative process. However, interviewees from several universities suggested that the key issue was often not completing the work faster, but rather being more realistic about deadlines and time frames in the project commencement phase. Divergent views on deadlines may result from the fact that it was generally accepted that SMEs are seeking shorter-term outcomes, while universities are pushing for longer-term commitments.

A similar conflict is reported in agreeing to project outcomes. Several respondents suggested that SMEs are seeking 'real world' projects that result in tangible

products, but have little understanding of what universities are seeking from the collaboration.

The often onerous administrative requirements are another disincentive to collaboration. A quarter of all SMEs found the contractual process more difficult than they had predicted. The issue was much more significant for SMEs establishing a business relationship to commercialise, with 44 per cent citing contracts and paperwork as an activity more difficult than anticipated. The frustration with the contracting process was echoed by education interviewees. Many complained that the process was actually worse for staff members within universities, as they had to negotiate once with the SME, and again with the internal legal department – creating two parallel processes.

Although the majority of SMEs and education partners felt that collaborating had achieved all or most of their objectives, interviewees from the education sector suggested that successes were sometimes undersold, and much more could be done to publicise the outcomes and benefits of successful collaboration to SMEs.

# Case study 05

The efficient management of bioinformatics data will greatly facilitate its analysis and in turn help to create new and valuable research projects [Dr Steven Kovacevic Monash University].



## Finding harmony: new domains

The challenge is to find harmony between the rigid structure and timelines that a company expects and the freedom of university researchers to explore and improvise.

Monash's culture has become more corporatised, and the gap between the research and corporate cultures is not as great as it once was.

For Research Officer, Dr Steven Kovacevic, any given working day at Monash University's laboratories at the Department of Microbiology, can involve endless hours of repetition. The microbiologists, in Monash's Biotech Centre, conduct painstaking, yet world-leading, research into diseases such as malaria and tuberculosis.

Thanks to a collaborative project, medical research and leading-edge information technology have converged to create an innovative platform to support the emergent scientific field of bioinformatics.

Although laboratories such as those at Monash conduct world-leading research into diseases, the methods for recording scientific data and observations are still decidedly low-tech.

Experiments and research findings are hand-written into paper notebooks similar to the ones used by school science students. According to Dr Kovacevic, the massive amounts of paper records are repetitive, susceptible to inconsistencies and often difficult to mine information from.

In a lab of this size, there are 20 scientists each generating three full books per year – that's 60 big notebooks containing our lab work.

With electronic data-management hardware and software in place we can standardise the way data is recorded, and free-up valuable research time, by using templates for repetitive processes and functions.

The new software platform, Biogenix, revolutionises the way data is managed in laboratories, and gives researchers more time to conduct experiments. Setting up studies is quicker, through the use of reusable templates, data input time is much less, as the platform can acquire data directly from laboratory devices, and errors in analysis and results caused by manual input of data have been reduced. Most importantly, collaboration and knowledge-sharing has increased as the platform allows research studies to be shared through the Internet with other research groups.

Melbourne software development company, Neuragenix, is almost as familiar with the routine in a busy microbiology lab as it is with its 'intelligent' software products. The company's IT specialists are also comfortable working in collaboration with university researchers in Monash's Medical Sciences precinct.

Eighteen months ago, Neuragenix began developing Biogenix in conjunction with Monash University's Centre for Women's Health, as part of the Victorian Government's Next Wave Grant Program.





The software enables patient and study-related data to be gathered, analysed and mined for valuable information. The software has the 'predictive' capacity of an intelligent information management system and the ability to navigate clinical pathways for treatment.

Neuragenix IT specialists gained valuable information in the biomedical domain while working at the centre. They were able to understand what the software needed to look like and how it would be used to keep patient records, and extract and manage research data. Neuragenix Products Manager, Shendon Ewans, describes the collaboration as a commercial success, and a model for engaging with other institutions.

Collaboration is the spark that kicked off the software development. It is important in terms of having access to experts for system design.

Monash contributed its time and knowledge in the biomedical domain to assist us. Neuragenix had the IT and management process skills.

The arrangement is that the data belongs to Monash, but Neuragenix owns the software IP.

Neuragenix wanted to expand the use of its software from the clinical setting to the research laboratory and develop software capabilities that will support genomic research. This is being achieved through collaboration with the Victorian Bioinformatics Consortium (VBC), based at Monash University's Clayton campus.

The VBC is an initiative of the State Government and brings together scientists engaged in 'wet lab' research with computer scientists and statisticians. In collaboration with Professor Ross Coppel, Director of the VBC and a professor at the Department of Microbiology, Neuragenix IT specialists are currently working together with research scientists in Professor Coppel's microbiology laboratory.

For scientists like Dr Kovacevic and his team, the very nature of their research demands greater IT capabilities.

The human genome sequencing project, for example, demands the management of massive disease-causing agents.

The efficient management of bioinformatics data will greatly facilitate its analysis and in turn help to create new and valuable research projects.

Observing the scientists' working environment, techniques and data management needs has highlighted the different cultures of the company team and scientists. As Dr Kovacevic admits pure research funding, with its longer time frames and tolerance of broader outcomes, is more suited to the scientist's culture.

We do tend to get distracted. Projects never progress the way you want them to, and this often leads to new directions in research.

Generally speaking though, for short-term collaborative projects with commercial partners, we realise the time lines are quite different.'



Shendon agrees that working together with the university has been highly successful, with goals achieved within suitable time frames.

SME collaborators are going to worry about the same things... burning time on non-deliverables and whether the institution is sufficiently commercially focused.

When dealing with Monash, we have found they have a commercial focus and a culture of helping companies.

In an era of tight budgets, software development companies like Neuragenix have relied on collaboration with the tertiary education sector and government research funding, to help kick-start research and development activity.

According to Joint Managing Director, Steve Godinho, collaboration enables Neuragenix to develop its products, and its business, at the technological edge.

Find the right people to work with and progress will be good. Not all companies have personnel who understand and can exploit the research-industry nexus.

Neuragenix has now fully commercialised its software product and Monash's Centre for Women's Health is using the software at a 'token' cost – software that would have required hundreds of thousands of dollars for Monash to develop.

More information  
[www.mmv.vic.gov.au](http://www.mmv.vic.gov.au)

