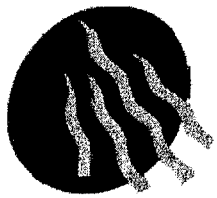

Queensland Government

House of Representatives Standing Committee on Science and Innovation

Inquiry into Pathways to Technological Innovation

Queensland Government Submission

May 2005

1.0 INTRODUCTION

The Queensland Government welcomes the House of Representatives Standing Committee on Science and Innovation's inquiry into pathways to technological innovation. Queensland supports the development of strategies at the national level that seek to overcome potential barriers to commercialisation and identify factors which determine innovation success.

This submission presents the Queensland Government's response to the Inquiry's Terms of Reference with specific comments on pathways to commercialisation, Intellectual Property and factors determining success, with reference to case studies of successful innovators in science and technology in Queensland.

2.0 INNOVATION IN QUEENSLAND

The accelerating rate of scientific and technological discovery and the global recognition of knowledge as a commodity present enormous challenges and opportunities for Australia. The capacity to enhance existing industries while developing new enterprises relies on a well-functioning innovation system that links knowledge and creativity with business and entrepreneurial skills.

In Queensland, the State Government is implementing the Smart State Strategy, which focuses on using knowledge, creativity and innovation to improve the quality of life of Queenslanders. The Strategy also guides policy and investment in research, commercialisation, skills and infrastructure. Through the Strategy, the Government has invested over $2.5 billion since 1998 in the provision of hard and soft infrastructure and supporting programs. This includes funding to target research and development (R&D), technology diffusion, commercialisation and entrepreneurship, collaboration, networks and alliances, and knowledge and skills - to assist the growth Queensland's knowledge economy.

Innovation and the Smart State Strategy are inextricably linked. The Strategy gives recognition to the fact that innovation will drive opportunities of the future, create new jobs and industries and ensure social well-being. The Queensland Government has a key leadership and partnership role in ensuring these opportunities are realised.

3.0 CONSULTATION ISSUES

In response to the Standing Committee's Terms of Reference, comments on each of the consultation issues with reference to Queensland Government programs and supporting case studies are outlined below. Further detailed information on each of the Queensland Government initiatives referred to in this submission is included in **Attachment 1** and all the case studies, which include comments on key challenges faced and factors determining innovation success, are included in **Attachment 2**.

3.1 Pathways to Commercialisation

Successful commercialisation of innovation transforms new ideas and technologies into positive social and economic outcomes for the State and nation.

The path to commercialisation, however, varies depending on the nature of the Intellectual Property (IP), technology, service or process and the skills and knowledge of the proponent. Recent engagement with commercialisation and innovation stakeholders within Queensland has identified a number of perceived barriers to commercialisation which impact on achieving successful economic outcomes. These barriers include:

- a general lack of understanding about IP and patenting, and a lack of practice in strategic IP management;
- limited knowledge of what is best practice commercialisation and what assistance is available for innovators;
- fragmentation in commercialisation efforts;
- a lack of management and business skills for innovators;
- limited supply of human capital in Australia;
- limited access to investment capital;
- operation in a risk averse culture;
- burden of taxation and other government issues; and
- lack of linkages between industry, the research sector and overseas markets.

Further details on each of these barriers are included in **Attachment 3**.

The Queensland Government is active in addressing these barriers and providing commercialisation guidance and support to all firms across Queensland through each stage of the commercialisation pathway. Working through partnerships with private enterprise, research institutions and government agencies, the Queensland Government has developed a diverse suite of initiatives that support innovation and commercialisation, and enable industry to capitalise on Queensland's strengths and competitive advantage.

For example, the Queensland Government's **Innovation Start-Up Scheme** (ISUS), was established to provide seed funding to help highly innovative, early-stage technology companies to commercialise their newly-developed products. ISUS is increasing recipient firms' chances of creating significant new industries and sustainable jobs in Queensland. Since 2000, ISUS has provided over $3.1 million in funding to forty-eight companies to assist the advancement of new technologies towards commercialisation and facilitate access to other State and Federal Government programs.

Complementing the ISUS Program is the $3.2 million **teQstart Investment Fund** aimed at stimulating the growth of high-technology, knowledge-intensive industries by helping applicants move to the next stage of commercialisation. teQstart provides support to research projects at the proof-of-concept stage so that developed IP can reach an investment ready position.

These programs are designed to address and partially correct a recognised and acknowledged market failing through the provision of funds and provides Queensland's high technology industries of the future with an increased chance of creating significant new and sustainable, high value employment opportunities.

Taking a broader role in the provision of support services in the innovation process is the **Australian Institute for Commercialisation** (AIC). Established in 2002 as a Smart State initiative of the Queensland Government, the AIC is a national organisation, head-quartered at the Brisbane Technology Park at Eight Mile Plains in Brisbane with linkages to the Commonwealth and other States and Territories. It is an independent, not-for-profit company dedicated to maximising the economic and social returns from Australian R&D.

AIC activities address key impediments to greater commercialisation success and are targeted at improving the way in which the potentially valuable research undertaken within public institutions can be successfully transformed into commercial opportunities.

One of the AIC's key mechanisms of support is the provision of tools and resources to better manage commercialisation activities. For example, the AIC's **TechFast Program**, first piloted in Queensland and now in a national pilot, works with technologically receptive small to medium enterprises (SME) and provides services to help transfer novel IP from research institutions across the country. In the area of skills and education, AIC programs such as the **Commercialisation Bootcamp** are proving very successful in equipping innovators with basic skills to effectively follow the pathway from ideas to markets. This program also helps to address the attitude of researchers towards commercialisation which is frequently characterised by a lack of understanding and resistance.

While many of the elements of a dynamic and productive commercialisation system are now in place in Queensland, much remains to be done to ensure that the potential benefits are fully realised. The Government is in the process of developing a **Commercialisation Action Plan** to support the Smart State Strategy, coordinate the various components and programs at work in Queensland's commercialisation space and build on our current initiatives and successes thus far. The Plan will also guide improved and expanded services to maximise economic, social and environmental returns to the State. The completion of a Commercialisation Action Plan will provide Queensland with a roadmap to securing competitive advantage in a global market.

3.2 Intellectual Property and Patents

Significant opportunities exist for commercialisation of government and particularly industry IP. However, as mentioned in Section 3.1, significant barriers exist for the commercialisation of IP. These include inadequate skills in strategic IP management, limited access to skilled IP advice and poor early-stage IP protection.

The Queensland Government is taking steps to ensure key IP is identified at an early stage of its development to maximise its future potential through the development of transparent, accessible and user-friendly services. For example, the Queensland Government has released the **Queensland Public Sector Principles and Guidelines** to encourage better management and commercialisation in the public sector. As part of this framework, agencies must develop their own IP policy to reflect their agency's IP and management processes. In addition, agencies must also assign responsibility for IP issues to a designated IP officer.

To increase general awareness about IP, particularly in the early stages, the Queensland Government is developing an online IP training program that will be available to all Queensland Government employees and will include relevant case studies to highlight IP issues.

Finally, a whole-of-Government IP register is currently in development to record significant IP assets within agencies. Industry will be able to access this register to assess opportunities to value-add to Queensland Government-developed IP.

3.3 Skills and Business Knowledge

The innovation process also requires skills and experience in bringing new products, processes and services to the market place. While scientific and technical skills are required, entrepreneurial, commercialisation, regulatory, patenting, manufacturing, marketing, financing, management and other business skills are also crucial for success. Industry consultation undertaken by the Queensland Biotechnology Advisory Council has confirmed a global shortage of skilled staff with experience and knowledge of the fundamentals of entrepreneurship, innovation, commercialisation and business management. A general lack of entrepreneurial skills in Australia has been specifically identified by the Global Entrepreneurial Monitor Australia 2002.

This shortage of entrepreneurial skills is felt by companies of all sizes from all sectors. Case Study 1 - the Noosa based company *WebRaven* (refer to **Attachment 2**) identifies skills shortages, particularly during the early business development stages, as a key challenge in their growth. Through extensive staff training, development of specific programs and learning systems, and working with tertiary institutions on curriculum development to ensure the right skills requirements were being met in their industry, *WebRaven* has managed to overcome this barrier and at the same time assist the industry as a whole with its skills requirements.

The Smart State Strategy has recognised this issue as a major barrier to growth in knowledge industries and is directing investment into programs such as **Ideas 2 Market**, the **Mentoring for Growth (M4G) Program** and the **Financing Innovation Growth (FIG) Program**.

Ideas 2 Market is a commercialisation skills program which consists of half-day and one day innovators forums and three-day commercialisation short courses which are held all around Queensland. The programs provide fundamental advice on how to

get an idea to the market and is delivered by a range of experts in the commercialisation field.

Similarly, the FIG business development program is providing crucial support to information and communication technology (ICT) and biotechnology companies to develop the business skills needed to increase their competitive advantage, enter new markets and attract investment capital. The Program is conducted over four months through a series of lectures and team-oriented workshops covering team management, market research, marketing strategies, business structure, taxation and financial management with the aim to make the companies 'investor-ready'.

Complementing these two initiatives is the Mentoring for Growth Program, which provides innovative, rapid growth firms in the manufacturing, information technology, biotechnology and creative industry sectors with much needed mentoring by experienced industry champions in the workplace. This Program assists firms on the commercialisation pathway by supporting individuals with newly acquired skills by providing an extended management team around firms' owners and managers. It offers practical, real-life advice enabling firms to meet their every-day challenges which may be related to staffing issues, succession planning, protecting IP, developing an international marketing strategy and/or examining their investment readiness.

The Queensland Government is also targeting skills and business knowledge support on an industry specific basis, tailoring programs to meet needs unique to individual sectors such as ICT, biotechnology and manufacturing. For example, the Government has maintained a long-term funding partnership with **QMI Solutions** - Queensland's leading technology diffusion agency, dedicated to helping manufacturers achieve world-class status through research, education and take-up of leading practices and technologies. QMI Solutions provides small and medium-sized enterprises with expert assistance in the fields of process improvement and product development, helping to identify and implement suitable systems and technologies, and link clients with supply chain partners and the research community.

In addition, the **Manufacturing Industry Pipeline**, which has been put in place as part of the Queensland Government's Manufacturing Strategy, is providing a suite of advisory, commercialisation and capital-raising services to companies seeking to expand or take new products to market. The pipeline focuses on capability development, strategic planning and active support including intensive mentoring by experienced business people. It provides strategic guidance and aims to lift the levels of investment-readiness among manufacturing clients as part of the corporate growth and commercialisation process.

Another example under the Manufacturing Strategy is the **Australian Microelectronics Centre**. The Queensland Government supports the primary functions of the Centre which are to enhance capability in microchip design and manufacture and provide educational programs undertaken in collaboration with tertiary institutions. These programs create and maintain a pool of skilled microelectronics designers to drive future innovation and commercialisation projects.

Services at the Centre are targeted at encouraging leading manufacturers including overseas companies, to undertake R&D and early product development in Queensland, as well as assisting small local firms through business development and incubation activities.

3.4 Capital and Risk Investment

Low levels of business R&D investment, access to capital and the risk averse nature of businesses in Australia all contribute to insufficient funding of good ideas.

With a documented steady decline in business R&D expenditure over the years (overall business spending on R&D in relation to GDP in Australia is just over half the OECD average), business R&D investment across both established and emerging industries must be broadened and deepened. There is a clear role for the Commonwealth Government to address business R&D through competitive support programs and measures, taxation drivers and access to growth funding. This latter issue will require retention of investment capital in Australia, as well as attraction of capital from overseas.

The establishment of a dedicated venture capital unit by the Queensland Government within the Department of State Development and Innovation has seen more venture capital than ever before available in the State. However, having access to capital at appropriate stages of commercialisation is a strategic requirement for companies at the start-up stage. Through initiatives such as the **Innovation Start-Up Scheme**, **BioStart**, the **Queensland Biocapital Fund**, and the **Queensland Capital Raising Pipeline**, as well as other industry assistance schemes, the Queensland Government is helping to fill this gap in the marketplace.

The gap is also being filled by organisations such as the University of Queensland through their Uniseed fund.

Further intervention, however, is still needed at two stages:

- Attraction of more business angels. With their skills and capital they have the capacity to build a base of quality investment-ready companies for further investment by early stage venture capital funds that have been developed with the encouragement of both the State and Commonwealth governments.
- Development of later stage venture capital funds capable of injecting investment into mid-sized knowledge-based companies, taking them to the point where they can raise sufficient capital to be internationally competitive. Investment at this level is not available from the Commonwealth Innovation Investment Funds, and there are very few other funds operating in Australia capable of making such large investments. This is a key area the Commonwealth should be directing investment into.

In regard to risk taking, innovation inherently involves some willingness to bear risk. It is essential, therefore, to develop a strong culture of innovation in all sectors of the community – a culture that recognises innovation and entrepreneurship as being as

important, if not more so, than other cultural and economic achievements, and to bring about an understanding of the financial risks involved. Instruction in, communication about and recognition of the significance of innovation needs to begin at the earliest stage of development of all sectors of the community. This is critical for the development of new ideas into successful application.

In Case Study 2 (refer to **Attachment 2**), Brisbane-based intelligent transport systems technology firm *Vigil Systems* adopted a service oriented strategy to reduce client risk and in doing so have reduced their own risk. The company has a conservative customer base. Understanding their clients' attitudes has led *Vigil Systems* to assist companies to change their business processes to further reduce risk and improve outcomes.

The provision of a less bureaucratic environment is one strategy that will encourage investors to bear greater risk. The regulation and change resistant nature of highly bureaucratic nations and organisations tends to stifle creativity and incentives and therefore innovation.

The Commonwealth Government is well placed to drive a cultural change across Australia towards the establishment of a national ethos that encourages and rewards entrepreneurialism and accepts that risk taking is vital to innovation and progress. Linked with this cultural change is the need for additional education programs targeted at improving the skills and knowledge of all players involved in the commercialisation pathway.

3.5 Research and Market Linkages

Across Australia, we perform well at the research level, modestly at early stage development and poorly at commercialisation. Success in developing a knowledge-based economy will be critically dependent on maintaining a strong research base while building development and commercialisation capacity.

The importance of alliances, collaborations and linkages between government, science and industry in building knowledge-based economies was clearly identified in the Commonwealth government's report on Science and Innovation in Australia[1]. At the research level, alliances between institutions provide critical mass and cross-fertilisation between disciplines that is frequently required to tackle large and complex problems. A good example of this approach is the **Cooperative Framework in Tropical Science, Knowledge and Innovation** between Queensland, Northern Territory and Western Australia aimed at major research, development and commercialisation opportunities in the fields of tropical health and tropical coastal environments. Alliances of this type are seen to be particularly effective in emerging knowledge-based industries.

There is also a need for collaboration and alliances among firms, especially between start-ups and established firms in the areas of commercialisation, marketing and

[1] DITR & DEST (2003)

distribution. In many cases, established firms that are capable of providing expertise and experience of markets, regulatory environments and distribution channels are not available in Australia, making international alliances more attractive. In this context, the Queensland Government has established state-to-state biotechnology alliances between Queensland and the USA states of Washington and South Carolina, and also has a biotechnology alliance with the New Zealand Government. These alliances offer significant opportunities to build critical mass and establish routes to market in a number of areas including the health and agriculture industries.

The final stage of the commercialisation pathway is that of global expansion. Australian companies, with some exceptions, are not achieving the necessary scale to hold their own in the international arena. This issue is critical as the continued growth of the Australian economy is largely contingent on the strength and international competitiveness of its exports.

In Case Study 4 (refer to **Attachment 2**), Queensland-based mobile data solutions company *Technisyst* faced a number of challenges in preparing to enter the US market, one being the need for an appropriate entry strategy to gain initial market share. *Technisyst* recognised the need to maximise alliances with local companies in the US to gain entry. By fostering strategic partnerships with network providers already in the market, and demonstrating an understanding of the US market, the company has achieved success and is poised for further US market penetration through other partnerships with primary telecommunications providers.

The Queensland Government is assisting local companies like *Technisyst* to "crack" international markets through its **International Trade Show Assistance Program.** The Program provides dedicated funding assistance to companies to exhibit or participate at international trade shows and in trade missions outside of Australia and New Zealand. This program is helping firms create international linkages and facilitate global partnering.

The Queensland Government is also a strong supporter of the **Australian Technology Showcase**, a national program which has been delivered in Queensland by the Department of State Development and Innovation for the past three years. The Showcase is designed specifically to assist firms with leading edge technologies to increase exports and attract venture capital, with the Queensland scheme servicing the second largest membership in Australia. It also funds internships to assist commercialisation and other development activities, and fosters corporate partnering to underpin capital raising and business growth.

Further investment in networking and global partnering initiatives by the Commonwealth Government would strengthen efforts in the global expansion stage.

3.6 Factors Determining Success

Culture of Innovation

As discussed in Section 3.4, our success in innovation will be enhanced by the creation of a culture of innovation and a willingness on the part of government and

industry to take risks. Risk taking behaviour is dependent on an environment that does not identify a lack of financial success with the failure of an entrepreneur. To this end assistance can be provided through greater support and promotion of existing initiatives that encourage the engagement of the broader innovation community in the commercialisation continuum.

Another factor determining success is greater collaboration and on-going government leadership in terms of developing critical business infrastructure and streamlining of processes to better suit a dynamic creative environment.

R&D Infrastructure

Essential to the successful commercialisation of R&D is supporting research infrastructure – both hard and soft.

The Queensland Government has given significant support over the last seven years to infrastructure for science and research through programs such as the **Smart State Research Facilities Fund**. This investment is being built upon with three new investment initiatives – the $128M **Innovation Building Fund**, the $60 million **Innovation Projects Fund** and the $12 million **Innovation Skills Fund**. Due to be launched later this year, these funding initiatives will provide dedicated capital and operational funding support for research infrastructure, strategic research programs and collaborations, and staff and skills to expand the research capacity of Queensland universities and research institutes, and build Queensland's international reputation in science.

Incubators and Technology Parks

Initiatives such as incubators and technology parks are widely acknowledged to be integral components of a successful commercialisation program. They have a unique role in assisting firms at different stages of the commercialisation pathway. Where incubators nurture high growth potential technology start ups, technology parks respond to the needs of more mature firms. Both provide a range of soft and hard infrastructure to build an environment that fosters the of growth tenant businesses, develops effective networks between firms and encourages the clustering of businesses involved in the exploitation of scientific and technological R&D.

The Queensland Government is directing substantial investment into technology incubators and technology parks. With its **Statewide Technology Incubator Strategy**, for instance, the Queensland Government has committed more than $2.5 million to extend the success of its **i.lab Incubator** to other regions of the State. The Government will develop an integrated network of up to seven incubators across Queensland catering specifically for knowledge-intensive start up companies by early 2006.

In the same way, the Government plans to stimulate the development of knowledge precincts – where technology firms cluster around universities to capitalise on local R&D – across Queensland. Having introduced the concept to Queensland with its **Brisbane Technology Park** initiative at Eight Mile Plains, the Government is

working with local partners to see similar facilities developed at Southport on the Gold Coast, Sippy Downs on the Sunshine Coast and at Douglas in Townsville.

4.0 WAY FORWARD

It is pleasing to see the Commonwealth's support for technological innovation through backing of programs such as TechFast as delivered by the Australian Institute for Commercialisation. The Queensland Government strongly encourages the Commonwealth Government, however, to work further with the States and Territories in addressing barriers to commercialisation (refer to Attachment 3) and promoting technological innovation at a rate equal with the levels of other Organisation for Economic Co-operation and Development (OECD) countries.

This requires rapidly increasing our R&D intensity through increased expenditure on R&D. In 2002, the European Union (as a region) set a target of raising its R&D intensity (spending) from 1.9% of Gross Domestic Product (GDP) in 2002 to 3% of GDP by 2010[2]. Australia should be looking to set a similar goal of raising its gross expenditure on R&D from 1.62% of GDP in 2002 to 3% of GDP by 2015. This growth is needed to underpin the future international competitiveness of Australia's existing and emerging industries.

The Commonwealth is also encouraged to embrace the provision of world class supporting infrastructure and work with the States and Territories in addressing skills shortages in areas that will drive economic growth.

[2] OECD (2004) Science, Technology and Industry Outlook

Queensland Government Initiatives

Further information on all the initiatives below can be obtained by accessing the Queensland Department of State Development and Innovation website – www.sd.qld.gov.au

Queensland Capital Raising Pipeline

The Queensland Capital Raising Pipeline comprises a number of support programs for companies and potential investors, including:

- Investment education seminars and workshops which help entrepreneurs prepare an investment plan and pitch to investors.
- Business Angel Groups, including:
  - Enterprise angels investor and mentoring groups throughout Queensland
  - Gold Coast Founders' Forum group of private investors
- Queensland Entrepreneurs' Association which supports aspiring entrepreneurs by providing mentoring and access to high-level business networks.

Mentoring for Growth (M4G)

M4G assists businesses that are in rapid growth phase or have a high potential for rapid growth to achieve their commercial potential by surrounding them with experienced industry champions (Mentors) who can challenge commercial assumptions and offer options that may overcome potential challenges or increase commercial opportunities. Essentially, M4G places an extended management team around firms' owners and managers.

M4G operates in several regions across Queensland between the Gold Coast and Cairns. M4G is managed jointly by the Queensland Department of State Development and Innovation (DSDI) Venture Capital and Commercialisation unit, participating DSDI regional offices and industry leaders who volunteer their services as M4G convenors.

M4G is designed to assist innovative, rapid growth firms in the manufacturing, information technology, biotechnology and creative industry sectors. Firms may register at any stage of business from start up to going global.

Innovation Start-Up Scheme (ISUS)

ISUS is a Queensland Government initiative to help promote innovation and commercialisation in the Smart State.

ISUS provides seed funding to help highly innovative, early-stage technology companies to commercialise their newly-developed products so that they have an increased chance of creating significant new industries and sustainable jobs in Queensland. Forty-eight companies have received ISUS funding through six rounds of the program since 2000.

The Queensland Government provides up to $80,000 (including GST) to successful applicants via a competitive, rounds-based grants program. Applicants are required to match funding on an 80:20 basis (government : private). An additional $5,000 is available on the same basis to recipients who complete all milestones successfully and within the agreed timeframe, to assist in the preparation of applications for Commonwealth grants or private venture capital.

The objectives of ISUS are to:

- assist the formation, development and growth of highly innovative new companies with technology products and services;
- assist the advancement of new technologies towards commercialisation; and
- facilitate access to other State and Federal Government programs.

teQstart

The teQstart Investment Fund (teQstart) is a $3.2 million initiative of the Queensland Government which aims to stimulate the growth of Queensland high-technology, knowledge-intensive industries. It is managed by a Queensland Government-owned company, teQstart Pty Ltd, through an independent board of directors.

teQstart funds technology research projects at the 'proof-of-concept' stage so that developed Intellectual Property (IP) can reach an investment ready position. With the help of teQstart, successful applicants will receive the necessary investment to move to the next stage of commercialisation.

BioStart

BioStart is an initiative of the Queensland Government which aims to stimulate the growth of the Queensland biotechnology industry. The $3 million program is designed to encourage and support young start-up companies by providing them with early stage funds to progress their research to a proof of concept level. BioStart began in 2001 as a cooperative venture between BioStart Pty Ltd and Start-up Australia Ventures Pty Ltd (Start-up Australia). It has recently been expanded to allow for co-investment from other investors.

International Trade Show Assistance Program (ITSAP)

The ITSAP assists companies to exhibit at an international trade show or participate in a trade mission outside of Australia and New Zealand by providing up to $5,000 to help with direct expenses incurred.

Rounds 10 and 11 of the program are scheduled to run in 2005, as follows:

Round 10	
Application Open	Tuesday 5 April 2005
Application Close	Friday 13 May 2005
Notification	Companies can expect notification on Friday 24 June 2005
Round 11	
Application Open	Tuesday 30 August 2005
Application Close	Friday 7 October 2005
Notification	Companies should be notified by Friday 18 November 2005

Financing Innovation Growth (FIG) Program

FIG is a Department of State Development and Innovation subsidised business development program, providing opportunities for ICT and biotechnology companies to develop the business skills needed to increase their competitive advantage, enter new markets and attract investment capital.

The Program is conducted through a series of lectures and team-oriented workshops over four months covering team management, market research, marketing strategies, business structure,

taxation and financial management with the aim to make the companies 'investor-ready'. These workshops are supported by intensive one-on-one business mentoring.

The FIG program is currently conducted by the Achaeus Group. Achaeus was chosen after competitive public tender process to provide three workshops over 18 months. The first program was conducted in Brisbane in the last half of 2004, the second is currently being conducted on the Gold Coast and the third will be conducted again in Brisbane in the second half of this year.

Ideas 2 Market

Ideas 2 Market is an online resource providing innovators and entrepreneurs with advice, ideas, hints and links that can assist them in commercialising their ideas. The site highlights the steps involved in bringing an idea to the market and offers tools to assist innovators in determining the feasibility of their idea.

Other features on the site include a glossary to explain commercialisation terms, a search function to enable users to quickly find information of importance and a detailed links page to other government agencies and programs that assist innovators.

Ideas 2 Market also includes a Skills Program which consists of one day Innovators Forums and three-day Commercialisation Short Courses which are held all around Queensland. This Program provides innovators with the opportunity to learn and successfully apply the necessary skills and knowledge to commercialise their ideas.

Queensland Biocapital Fund

The Queensland Biocapital Fund is a $100 million biotechnology-specific venture capital fund that aims to establish globally enduring bio-businesses. It is managed by the Queensland Government's fund management arm, the Queensland Investment Corporation (QIC).

Smart State Research Facilities Fund (SSRFF)

SSRFF provides funding on a competitive basis for R&D infrastructure in any scientific or technical field where Queensland has a comparative or potential advantage. So far, $170 million has been committed under the SSRFF and $129 million has been allocated to 19 projects over three rounds since 2001-02.

Smart State Health and Medical Research Fund

The Queensland Government has established a $4.7M Smart State Health and Medical Research Fund to support the health and medical research sector in Queensland.

The Fund builds on Queensland's strengths in health and medical research and will help ensure the State's capabilities are maintained at a nationally and internationally competitive standard by providing Queensland hospitals, health services and independent medical research institutes with the support needed to continue with the world-class research they are undertaking.

The Fund comprises two streams:

(i) Operational Support Program

- Funding support for the operational costs of research undertaken by Queensland independent health and medical research institutes
- Provides proportional funding per competitive peer-reviewed grant dollar received

(ii) Queensland Clinical Research Fellowships Program

- Funding to provide fellowships for early-career and experienced clinical researchers to be employed in Queensland hospitals and health services
- Four fellowships will be appointed per year
- Matches funding from other industry, Commonwealth and overseas sources

Smart State Fellowships

Smart State Fellowships support the Queensland Government's investment in leading edge research facilities by funding talented early career researchers, working in leading Queensland based research teams.

The Smart State Fellowships program is designed to:

- retain the talents of promising early career researchers in Queensland;
- attract outstanding researchers nationally and internationally;
- grow mutually beneficial linkages between research and industry;
- support research which will benefit the future economic and social development of Queensland;
- help build critical masses of internationally recognised and competitive research;
- develop networks with national and international researchers; and
- advance science and research as a desirable career path.

The Queensland Government is providing up to $150,000 in grant funding per Fellowship, which is being matched collectively by research organisations and industry cosponsors, totaling $300,000 over three years per Fellowship.

Seven Fellowships have been granted through Rounds 1 and 2, with announcements of the successful recipients for Round 3 to be announced in June 2005.

New programs under development 2005-2006

Innovation Building Fund (IBF)

The Queensland Government has committed $128M over 4 years for the establishment of the IBF.

Scope of the IBF:

- Establishment of a whole-of-Government fund to support investment in strategic R&D infrastructure.
- Will supersede the existing Smart State Research Facilities Fund (SSRFF), which provides funding on a competitive basis for R&D infrastructure in any scientific or technical field where Queensland has a comparative or potential advantage.
- The IBF will be based on the principles of the existing SSRFF, but will enable flexibility in funding arrangements in exceptional circumstances and at the discretion of the Queensland Government.

Applications for IBF funding will be open to a broad range of organisations including:

- universities and other post-secondary educational institutions;
- research institutes, firms, co-operative research centres;
- Queensland Government agencies; and
- other Government agencies active in Queensland

Funding allocated under the IBF will be for hard science and research infrastructure in Queensland including purpose-built and/or upgraded buildings, facilities, plant and equipment.

Round One of the IBF will be launched, with a call for expressions of interest in August 2005.

Innovation Projects Fund (IPF)

The Queensland Government has committed $60M over 4 years for the establishment of the IPF.

The IPF will provide a coordinated and strategic whole-of-Government investment and support package for priority Queensland-based 'soft' R&D infrastructure and innovation projects, and national and international innovation alliances.

There are two streams under the IPF:

(i) Collaborative Partnerships Program

- Program funding of between $200,000 to $1M will be provided on a mostly tripartite arrangement for R&D and innovation projects.
- Program funding must be equally matched by funding from the research institute (one-third) and funding from industry, philanthropic organisations, the Commonwealth, local or other State governments, and/or other non-Queensland Government funding sources (one-third) (i.e. Program funding will leverage 1:2 from other sources).
- A pro-rata allocation of between 10-15cents in the grant dollar to cover the proportion of operational overhead costs of conducting the project incurred on-site by the Queensland research partners, where operational costs are not reimbursed by another source.
- Separate funding of up to $20,000 would also be available on a competitive basis as a one-off grant on a matching basis to assist Queensland R&D and innovation partners to identify and bring to concept stage collaborative projects with other research institutes/industry partners.

(ii) National and International Alliances Program

- Program funding of between $200,000 to $1M will be provided on a matching basis and will leverage one-half of the total project costs (in cash contribution) from non-Queensland Government sources (i.e. Queensland Government funding will leverage 1:1). Of the non-Queensland Government component, a minimum of 25% of this funding must be from an international partner.
- Program funding either must be expended wholly in Queensland, or if partly expended in the partnering jurisdiction, must directly support the Queensland research proponent.
- Separate funding of up to $20,000 would also be available on a competitive basis as a one-off grant on a matching basis to assist partners to identify and bring to concept stage collaborative projects with other research institutes/industry partners in other jurisdictions.

The Fund will be open to Queensland research institutes and Queensland Government R&D agencies where projects leverage non-Queensland Government funding and, in the case of Queensland Government agencies, are in R&D and innovation areas not considered part of agencies' core business.

Round One of the IPF will be launched with a call for applications in October 2005.

Innovation Skills Fund (ISF)

The Queensland Government has committed $12M over 4 years for the establishment of the ISF.

Scope of the ISF:

- The Fund will address projected industry science skills shortages, reverse negative trends in science research and education qualifications, and attract and retain outstanding researchers in Queensland.
- The Fund is comprised of three programs – PhD Scholarships, Early Career Sponsorships and Iconic Research Fellowships.
- Will be a whole-of-government fund that will leverage non-Queensland Government and industry investment to attract and retain talented researchers and PhD students, and train commercialisation professionals in Queensland. The Program will investigate incorporating existing scholarship and fellowships programs across the Queensland Government into specific programs for PhD Scholarships, Early Career Scholarships and Iconic Research Fellowships.

There are three streams under the ISF:

(i) PhD Scholarships

- Scholarships will be awarded each year at $25,000 per Scholarship per annum for three years (i.e. $75,000 paid over three years), exclusive of GST.
- Preference will be given to applications with demonstrated support from research organisations and industry.

(ii) Early Career Sponsorships

- Sponsorships will be awarded each year at $50,000 per Scholarship per annum for three years (i.e. $150,000 paid over three years), exclusive of GST.
- The Government's contribution will be matched collectively by two co-sponsors, one research and one industry/ business, bringing the funds available for each sponsorship to a total value of $300,000 over three years.

(iii) Iconic Research Fellowships

- Fellowships will be awarded each year at $250,000 per Fellowship per annum for three years (i.e. $750,000 paid over three years), exclusive of GST.
- The Government's contribution will be matched by one or more co-sponsors.

Round One of the ISF will be launched with a call for applications in October 2005.

Smart State University Internships

The Queensland Government has committed $1.05M over 3 years (i.e. $750,000 per annum) for the establishment of this program.

Scope of Program:

- The Program will provide support for the coordination of industry placements for undergraduate and postgraduate students.
- The Program aims to increase collaboration between the university and industry and business sectors, expose students to other disciplines and career options, develop knowledge and contacts of students through networks with Queensland industry, and increase the attractiveness of science, technology and engineering as a career path.
- The funding will be awarded to public Queensland universities to help coordinate and administer the industry placements.

Round One of the Internships Program will be launched with a call for applications in late 2005.

Innovation Case Studies

Case Study 1 - WebRaven

The Company

WebRaven was founded in 1995 in Noosa by husband and wife team, David and Michelene Bevan. In 1995 the Internet was practically unknown yet the Bevans believed it had strong growth potential. They started WebRaven as a web development company targeting the corporate sector. By the late 1990s WebRaven was experiencing record sales. However the founders felt that the advent of web creation tools, combined with the high costs of outsourcing web design would lead many companies to in house web site development, effectively destroying the market for the WebRaven product.

This market knowledge led the company to focus its efforts on commercialising a number of products it had already developed, with a particular emphasis on the largely unexploited market of e-Learning. WebRaven's Learning Management System - DOTS (Dynamic Online Training System) became their flagship product. DOTS enables content and assessment creation and manages competency and compliance tracking, position management and blended learning environments in one effective web-based application.

Challenges

When WebRaven commenced operations there were very few successful web development companies in existence. WebRaven not only had to build credibility in the market but were faced with severe skill shortages particularly during the early business development stages.

Factors for Success

WebRaven has provided extensive staff training to enhance the skill levels of all new and ongoing staff. Furthermore, the company has worked with Allaire to introduce ColdFusion into the curriculum at the Queensland University of Technology (QUT) to provide a larger pool of available talent and cut down on training costs and time.

WebRaven's founders attribute a large proportion of their success to their hands-on approach with clients who are encouraged to take an active role in product testing. This ensures that WebRaven's products are tailored to meet the needs of their target audience.

WebRaven focuses on its strengths and seeks partnerships with companies who both complement these strengths and provide access to additional markets.

Future Plans

WebRaven has won numerous bids over major US-based Learning Management Systems. The company's growing client list includes 3M Australia, the Queensland Government, Sydney Water Corp, ABN AMRO Morgans Stockbroking, QBE Mercantile Mutual and Zurich Australia, and they have recently partnered with Hewlett Packard (HP) Australia for the distribution of the DOTS system.

WebRaven's partnership with HP is a clear indicator of its success to date. WebRaven initially met HP representatives through the Queensland e-Learning Cluster, where WebRaven's DOTS product sparked HP's interest. The DOTS system complements HP's current portfolio of e-Learning solutions, adding an extra dimension to HP's offering. As part of the alliance, WebRaven has appointed HP as its premier distributor, allowing it to strengthen its focus on product development, while HP provides system integration services for the DOTS system.

www.webraven.com

Case Study 2 - Vigil Systems

The Company
Vigil Systems Pty Ltd is a Brisbane-based developer of intelligent transport systems technology, focused on driver and vehicle measurement. Vigil Systems offers specialised technology for the training of bus, emergency vehicle and truck drivers. The VigilVanguard system is used for recruiting and training drivers and managing driver competency.

Corporate customers say that this real life technology compares extremely favourably with expensive and limited simulators, at a fraction of the cost. Unlike simple GPS vehicle tracking systems or logging systems, VigilVanguard enables effective driver training and evaluation. It is highly portable and can be fitted and removed in less than 5 minutes by trainers in the field.

Challenges
As a small manufacturer trying to get a radical new technology into a conservative market, Vigil Systems found that customers were not interested in products alone, but also needed assistance to re-engineer their business processes, reduce risks and guarantee outcomes.

The target markets are typically risk averse and not technology savvy; a challenging combination for a company trying to offer a radical technology solution.

Factors for Success
In addition to the product, Vigil Systems offers a range of services to early adopters of the technology. In this way they educate clients about what the technology does and allow them to trial it.

The market has transformed Vigil Systems from a product oriented company with a service component into a service oriented company manufacturing a competitive product. Vigil Systems provides professional consulting for customers using its proprietary technology. It also offers a range of assistance for pilot projects including training in the use of its technology, equipment hire and engineering support.

The "Service-Enhanced" strategy was born out of necessity. Without it Vigil Systems were struggling to make in-roads into the market. As a market entry strategy it has proved invaluable in delivering a profitable business model and determining the viability of the business.

Future Plans
Vigil systems have taken a risk averse market and by working with them in a low-risk, service environment have developed strategic customers who are now very loyal to a radical new product. These customers are recognised around the world as industry leaders and provide vital assistance in promoting Vigil Systems' products to the global market.

Vigil Systems has already had strategic discussions with major, international transport companies about joint venture possibilities that will potentially lead to significant capital injections into the business.

www.vigilsystems.com.au

Case Study 3 - Jabiru

The Company

In early 1988 Rodney Stiff and Phil Ainsworth formed Jabiru Aircraft to develop a highly efficient, composite light aircraft. Four years later the Jabiru LSA 55/2K model aircraft was certified by the Australian Civil Aviation Authority, but the following month their Italian engine supplier advised that it was ceasing aircraft engine manufacture.

Jabiru decided that there was a significant opportunity to develop its own lightweight aircraft engines. This led to the local design, certification and manufacture of an innovative light aircraft engine which is gaining success in an expanding international market. Jabiru Aircraft has built up a highly successful business producing aircraft and engines in Bundaberg.

Challenges

The main challenge for Jabiru was diversifying into a new market to enable the continued production of their primary product.

Factors for Success

Jabiru has developed into both an aircraft and aircraft engine manufacturer. Very few companies in the world have this dual production goal. Jabirus success is due to:

- a strong emphasis on international markets and exports;
- the establishment of an effective agent network in export destinations;
- well-targeted marketing – focusing on the broader general aviation market and specialist customers (e.g. kit aircraft builders requiring engines);
- close cooperation with sub-contractors to form a well-managed supply chain;
- mastery of new composite materials to reduce initial and maintenance costs of the aircraft; and
- continued reinvestment of income to expand its product range, increase production and improve productivity.

Future Plans

Jabiru now produces airframes at the rate of 120 per year and engines at the rate of 500 per year. Aircraft and kits have been sold to 16 countries and engines to 31 countries.

This expansion has been driven in large part by Jabiru's international distributors who have worked with Jabiru to rapidly extend the range of aircraft types now fitted with the Jabiru engines. Jabiru also manufactures its own propellers, wheels and brakes and control system components.

www.jabiru.net.au

Case Study 4 - Technisyst

The Company
Queensland-based mobile data solutions company Technisyst is going from strength to strength, providing innovative communications solutions for field operators in the emergency services and transport sectors.

Brian Webb started Technisyst in 1986 to provide a systems integration service. With the increasing reliance on wireless communications infrastructure, Brian saw the potential to enhance network capacity with the development of an intelligent software Message Switch (TC Gateway) that provides the vital link between wireless data networks and mobile client applications in the field.

Technisyst's first success in this area was in 1997 when it provided a wireless solution for field service operators of the Brisbane City Council. From here, Technisyst turned its sights to the emergency services, one of the most significant users of wireless technology. Partnering with Ericsson's Mobitex private network technology and other public network technologies, Technisyst has facilitated communications for emergency services across Australia and New Zealand.

Having established itself within Australia and New Zealand, in July 2004 Technisyst turned to the US market. By December 2004, Technisyst had established a strategic partnership with one of the largest providers of public safety telephony equipment in the US market, Positron. They are currently working on a number of major US public safety projects.

Challenges
In preparing to enter the US market, Technisyst faced a number of challenges. The first of these was deciding on an appropriate entry strategy to gain initial market share.

Technisyst opted to focus on its strengths and targeted its initial efforts solely on the US public safety market. However, even with this significant client base, Technisyst recognised the need to maximise alliances with local companies.

This led to Technisyst's seeking leverage from US partners with existing credibility in the market. Technisyst had already built a strong relationship with Positron as its Australian distributor and as such had the foundation upon which to build a partnership proposal to assist them with US market entry.

Factors for Success
With a systems integration background, Technisyst has maintained a focus on providing solutions rather than just technologies. Building alliances with network providers and device manufacturers allowed Techisyst to provide total communications solutions which allows their customers unprecedented flexibility in choosing networks and devices to best suit their business needs. They also guarantee 100% access to the network and 100% reliable and secure data transactions.

Technisyst is poised for further US market penetration through other partnerships with primary telecommunications providers.

Future Plans
Technisyst is expanding its US operations in order to meet the growing demand in the market and anticipates a firm foothold in the US by mid 2005. Technisyst is a shining example of an innovative Queensland ICT company using industry expertise and strategic alliances to increase its share of the global marketplace.

www.technisyst.com.au

Barriers to Commercialisation

Intellectual Property
- A lack of general understanding about IP and patenting, and practice in strategic IP management
- Limited recognition and value of intellectual capital (Government as prime contributor)
- Access to skilled IP experts **early** in the commercialisation process
- Protecting confidential information/valuable IP
- Determining ownership issues prior to development of IP

Knowledge and awareness
- Awareness of best practice commercialisation activities occurring elsewhere
- Limited knowledge of assistance available to innovators
- Promotion of good news stories
- Benchmarking (market) data
- Valuation expectations

Linkages and capability
- Lack of management and business skills for innovators
- Fragmentation in Commercialisation efforts
- Talent drain to overseas expertise
- Lack of serial entrepreneurs, persons skilled in commercialisation

Availability of Investment Capital
- Lack of significant risk capital
- Restricted access to finance and grants
- Stepped consistent support for innovators at all early stages
- Low levels of business contribution to R&D funding

Culture
- Australians tend to be risk averse (need to admit failure – Tall Poppy Syndrome)
- Differences between culture of industry, business and research community
- Commercialisation is considered an end product rather than a part of research

Taxation and Government Issues
- Capital Gains, Fringe Benefits, Valuation methods applied to options and shares, disincentives for researchers/employees, payroll tax – disincentives
- Government processes too slow
- Administrative burdens on start-ups and lack of transparency of regulation

Linkages and Networks
- Bringing together researchers and commercial people
- Across and within industry sectors
- Access to markets