

Regional Innovation in an Information Age

*A Response to the
Review of the
National Innovation System*

Pyksis Pty Ltd (www.pyksis.com)



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The Information Age – and Australia’s Regional Economies

The situation that Australia faces and, indeed, most developed economies face, is how to remain competitive while being confronted by growing international pressures in the market place, particularly from developing economies.

What was previously safe ground for developed economies has now been eroded by cheaper labour pools and up-skilling in developing economies, combined with the greater commoditisation of goods and shorter product life cycles.. An example of this has been the demise of manufacturing industries around much of the developed world in the face of growing competition from China, India, Thailand etc. The examples of globalisation are many.

Where we are now moving to is, what Phil Ruthven of IBIS¹ refers to as the “Age of Enlightenment” and what we at Pyksis simply refer to as the Information Age. Put simply, the acquisition of knowledge and its application will determine the success or failure of communities.

The advantage that Australia holds is its ability to be creative and provide a value-added differential to its goods and services. But we must also deliver these to the global markets from an Australian base and not export jobs, wealth and our futures. Climate change adds both difficulties and opportunities for Australia.

Australia’s Regions, home to a number of world-class industries, are deep repositories of industry expertise and inventiveness. They are rich in competitive innovation opportunities.

This is why it is so important that Australia develops an effective National Innovation System (NIS) that will play its role in delivering jobs, wealth and a string of high-value-add exports across *the whole Australian economy*, not just in “Global Sydney” and “Melbourne Inner”².

The current resources boom has bought time for Australia. Innovation must deliver that vital next step for Australia to be competitive into the future.

The Need

Australia competes poorly in bringing innovations to market. To succeed, this Review must result in an NIS that better delivers world-class inventions, but which is far, far better at delivering commercialisation success. That is in getting these inventions to market, from an Australian base. It must work in Australia’s Regions.

¹ Phil Ruthven, Chairman of IBISWorld, well known Australian economic forecaster

² From Richard Florida’s *The Rise of the Creative Class*



The Proposition

Such an effective NIS will mix interdependent *top down* and *bottom up* measures:

- Top Down – focused policy measures including tax, levels of funding in innovation support, integrated programs and a focus within the education system, all of which affect the economic climate within which innovation takes place;
- Bottom Up – programs and interventions which improve the capacity of innovators, and those who support them, to lift the levels of invention and increase the conversion levels of these inventions into successful commercial outcomes.

Without successful commercial outcomes, an NIS has no teeth.

Because innovation SMEs (technology and creative industries companies) play such a critical role in national innovation, it follows that an effective NIS must lead to increasing levels of SME commercialisation success³.

This submission takes a position on a *Bottom Up* approach and draws on Pyksis' considerable exposure to innovation SMEs over the last four years to identify:

- issues affecting commercialisation success rates;
- measures which will improve these;
- how the delivery of such measures might sit within an NIS.

It does so, having a good working understanding of the matters and policies that affect innovation from a *Top Down* perspective. Supporting information on work undertaken is contained in *Attachment 2 Notes on Pyksis Regional commercialisation Work (Commercial in Confidence)*

Regional examples are discussed; appropriately so because regional companies face the greatest difficulties and hence comprise the best test of success for any NIS solution.

Also, many regional innovation SMEs have the considerable advantage of being part of local world-class industries.

³ Including licensing



About Innovation SMEs

The Arrowhead opposite represents the company growth stages in successfully commercialising an invention.

Typically, most innovators require three tranches of funding:

- *initial funding* (usually internal) to establish that there is an Opportunity (typically around \$300k including “sweat equity” (or unpaid contributions));
- funding to *gain early sales and cash flow* and cross successfully into the Early Sales in Markets zone (usually in the \$1m to \$2m range). This is traditionally the most difficult funding to obtain;
- *next stage funding* to ensure that Early Sales mature into Newly Established Business (usually in the \$5m plus range)

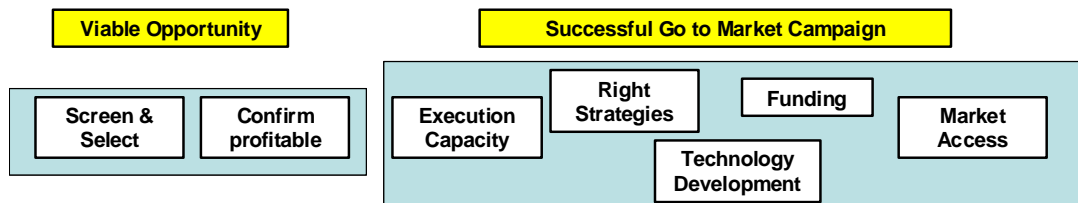


To obtain the funding required, or to justify its use from internal sources, companies have to be able to:

- select *internationally competitive opportunities* and confirm they can be *taken profitably to market*;
- execute *successful go-to-market campaigns* including developing effective, execution capacity, building flexible and competitive strategies, completing further technology development and finding channel partners and strategic allies for market entry. And, of course, the all-important funding.

They have to travel successfully along the Pathway below.

Pathway to Early Sales in Markets





About Innovation in Regions

Australia's Regions are home to a number of world-class industries including different forms of agribusiness, mining and tourism and are an abundant source of inventions. These are usually created by *demand-pull* within these industries or their supply chains (or simply, in some cases, by innovators with an irresistible urge to solve a problem).

Many of these inventions, given their provenance, are genuinely internationally competitive.

Invention is a way of life for innovation SMEs – with over 95% of the credible opportunities seen by Pyksis coming from the various companies' deep industry experience, rather than from preliminary market research⁴ or from importing other parties' intellectual property⁵.

This intensely practical, inventive capacity is a valuable national asset which deserves fostering for its economic potential, and for the impact that its success can have on the psychology of industry and regional economies. Commercial success is the most powerful demonstrator of the benefits of innovation.

The overall commercial potential of these innovations is large and, in many cases, unique to the Regions involved.⁶

About Regional Innovation SMEs

Over four years in Victoria and ACT/ Southern NSW⁷, Pyksis screened some two hundred and fifty (250) regional innovation SMEs through diagnostic workshops, and subsequently worked closely with one hundred and forty (130) of these in three-month commercialisation support group programs. Sixty (60) of the companies went on to receive support in obtaining early commercialisation funding. A further 80 ICT SMEs were seen in a long running SA program

The companies ranged in size from around A\$40m pa turnover to startups.

From this experience, Pyksis developed the model that a competitive commercialisation opportunity was one considered capable of generating a minimum of A\$4m in new sales in Year 3, and around 60 new jobs. It was judged that about half the companies undertaking the commercialisation support programs (70) might achieve this.

Thus, an opportunity existed to create about \$280m in new sales, and about 4,000 new jobs from a limited catchment area. An investment (private equity) in the opportunities of around A\$40m was required to realise this (internal and external sources).

⁴ It is a Pyksis aphorism that the two most under-used words in commercialisation are "market research"

⁵ We see this as a very valuable addition to innovations coming out of corporates, and from research organisations and universities

⁶ Certain types of innovation related to strands of agribusiness, for instance, will only be found in Regions where this industry exists. If it is to be developed, it generally needs to be done regionally

⁷ See Attachment 1 Statement of Interests



Companies required an initial average investment of around three quarters of a million dollars per company, ie within the first tranche of external investment in moving into the Early Sales in Markets zone.

The obstacles these companies, with world-class innovations, faced were:

- *inexperience* in this most difficult of all commercial activities, *and lack of execution capacity*⁸ (small management pools)
 - this in turn led to difficulties in team development, strategy formation, choice of suitable expert service providers, and difficulties in alliance partner selection;
- lack of high quality, *locally accessible expert service providers* and other reliable sources of advice; and consequently poor quality of support;
- *difficulties in obtaining funding*
 - not good at accessing innovation grants (or even accessing R&D Tax Concessions)
 - if needing private equity, facing a sparse and disorganised market for angel or high net worth individual funding (<\$1m)

These problems, of course, are not unique to Regions, but find their most acute expression there.

What is to be Done?

There is a very substantial regional national innovation opportunity; it is currently being pursued very inadequately.

New *Top Down* measures will help, particularly improving the climate for smaller amounts of private equity investment. This should be a priority.

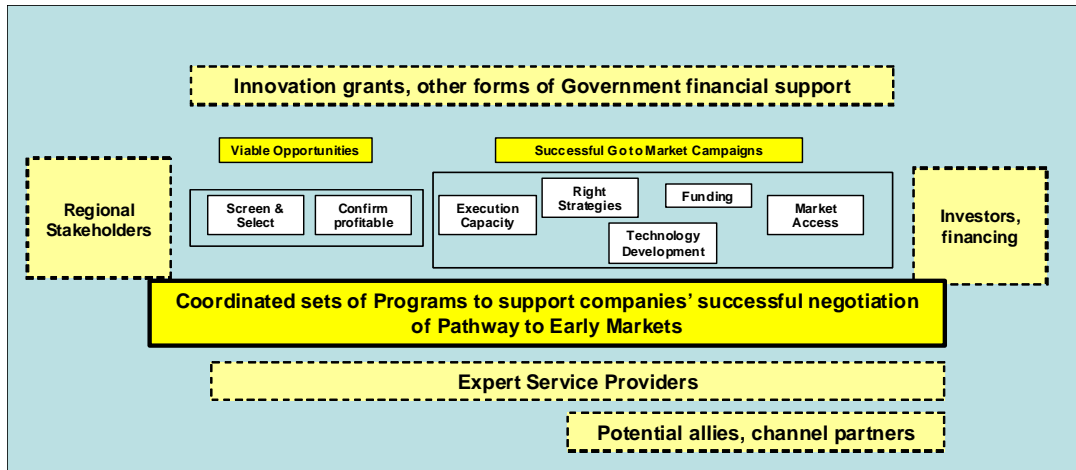
But in the *Bottom Up* world, innovation companies' capacity to respond successfully to their opportunities (especially first time around) is critical to the success of any new policies.

Placing the companies at the centre of a system, or a community, (see below), provides a good way of thinking about this. The dotted lines enclose key areas of influence and support.

⁸ Less than 25% of founder directors or managers had ever undertaken any formal management training. Where they had, it did not necessarily provide commercialisation skills



The Regional Innovation Community⁹



Each of the dotted line areas needs considerable work to improve its current relevance and impact. What is required is:

- more effective, more accessible *innovation grant support* to fund further technology development and its commercialisation, with a greater emphasis on the commercialisation step;
- better educated, more involved *regional (or industry) stakeholders* who can engage companies in smarter ways of doing things, and promote the benefits of successful innovation
- better educated, more engaged small end *private equity investors*;
- access to *expert service providers* with metropolitan and internationally competitive skills (with an ability to up-skill suitable regional/local service providers);
- improved support to access *channel partner and strategic alliance partner opportunities* both within Australia and internationally (particularly on an industry basis).

The challenge is to deliver these outcomes in a coordinated way, turning a currently staccato series of events (and non-events) into a concerto. It requires a visible hand, and an organising mind, in the regional market place to produce dramatically better results.

The Community diagram thus shows a *Coordinated Set of Programs* box, which would work with all the other elements to pull an effective effort together.

Such an approach would handle a pipeline of innovative SMEs, rather than work with individual companies. Each of the companies would be assisted to complete those of the

⁹ A variation on the national innovation system diamond, P5 of Call for Submissions



Pathway tasks that are presently beyond their reach, and could well require multiple interventions.

What Pyksis' experience has shown is that companies frequently require multiple interventions to reach an *auto-catalytic* state where success can be reasonably assured. This might require access to a mix of several grants, private equity, ongoing specialist advice, mentoring, assistance with Board manning.



A Regional Case Study with Multiple Interventions

An innovative dairy equipment supplier in Victoria had developed a world-class innovation for the milking shed (another example of world-class industries acting as a source of world class inventions). And business was good (in the face of largely international competition), but not great.

The following interventions were provided:

- *government grants (including R&D Tax Concession)*
- *strategic planning*
- *linkages with other innovators in the field from a Pyksis regional pipeline to deliver a total solution package (part of the strategic advice)*
- *links to outside sources of R&D for future products (see triangle above)*
- *linkages to local and overseas channel partners with potential investment*

Exports are now imminent, as well as an expanded domestic market. Additional investment is being sought to accelerate growth. The company has the potential for rapid and profitable growth.

But the whole process could have been considerably speeded up (speed to market is definitely a major factor for most innovations) with coordinated support from an effective NIS.



Results being Obtained

Table 1 – Program Results to Date¹⁰

Regional Victoria (42 out of 70 companies in first two years of Programs, half of companies were receiving assistance to obtain early funding at time of survey)		
Metric	Amount	% Change since entering Program/s
Total annual revenue	\$162m	16%
Exports	\$28m	15%
Public Sector investment (\$6.4m	
Private Sector Investment	\$6.4m	
ACT (16 out of 24 companies in first two six-months cycle of Programs, no support for obtaining funding, high proportion of start-ups)		
Metric	Amount	% Change since entering Program/s
Total annual revenue	\$11.3m	34%
Exports	\$1.6m	56%
Public Sector investment (\$240k	
Private Sector Investment	\$2.6m	

The *Victorian figures* are based on a typical regional mix of companies ranging from regional groups down to start-ups. We regard these as very encouraging and the beginning of a successful regional innovation story (ie; the average time companies were out of their initial Program involvement was about one year).

The leverage on total Victorian Program costs in funding obtained is likely to be 10-20x. there will also be a large dividend in high quality jobs created. The *ACT figures* are similarly encouraging. (The large revenue and export growth increases are due to a high proportion of start-ups in the Program participant mix). No support in obtaining funding was provided and this is reflected in the relatively low figure of Public Sector (grant) investment obtained. Again, we are seeing the start of a successful innovation story.

¹⁰ For greater detail, see Attachment 2



In addition to obtaining a range of results including those shown above, the market research company asked survey respondents how highly they rated program involvement as a factor in their current progress. Almost all participants said that the intervention/s were highly important.

This shows what can be done through a planned approach to helping innovation companies in regional economies. Much greater results, at a modest cost, can be obtained from a by a wider, more through approach like the one set out in *The Regional Economic Community* diagram on Page 7.

Conclusion

An effective NIS must combine both *Top Down* and *Bottom Up* assistance/interventions to provide the best support for developing and bringing to market, Australian innovations.

Any support system that is proposed will need to take into account these two complementary needs in its structure and delivery.

The intervention that a successful NIS is able to deliver will need to be directed, coordinated and be more intensive per innovation company.

Only then will significant quantities of innovative and world-class products and services be fast-tracked in a growing stream to global markets to deliver jobs, wealth and prosperity to Australia.

This will be true generally, and particularly true in Australia's Regions.

Pyksis Pty Ltd

April 2008

Attachment 1: Statement of Interests

Attachment 2: Notes on Pyksis Regional Commercialisation Work Assisting Innovation SMEs (Commercial-in-Confidence - see separate document)



Attachment 1 – Statement of Interests

Pyksis Regionally Based Activities

Pyksis Pty Ltd delivers commercialisation support services to innovation SMEs, for the following clients, through its proprietary programs, delivered under the initiatives specified below:

- AusIndustry – ACT and Riverina Regions Technology Commercialisation Program (BESB);
- Victorian Department of Innovation, Industry and Regional Development – Regional Technology Commercialisation Program (State-wide);
- Regional Development Victoria – Mentoring for Commercialisation Funding Program (State-wide);
- SA Department of Trade & Economic Development – Success Factor element of the Growing Global Companies Program;
- SA Centre for Innovation – Pathways to Growth Program (Pilot State-wide).

Pyksis works one to one with high potential innovation companies.



COMMERCIAL-IN-CONFIDENCE

**Attachment 2 – Notes on Pyksis Regional
Commercialisation Work Assisting Innovation SMEs
(see separate document)**