



AEEMA - Enhancing National Economic Benefits Through a New Cluster Paradigm

FINAL REPORT

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EXECUTIVE SUMMARY

The title of this project “*Enhancing National Economic Benefits through a New Cluster Paradigm*” may suggest there is a ‘one size fits all’ approach to cluster establishment and development, characterised by a prescriptive structural and operational model. However, the project team believes the reverse is true. The research from the project suggests that clusters, similar to any business network can be likened to an organic entity with distinctive life-cycle phases. The needs for cluster development will be different depending on the phase of development for a particular cluster.

Cluster development on its own is not a panacea for economic development, but rather, depending on the sustainability and effectiveness of the cluster model, a powerful tool for growth. There is an urgent need in Australia for companies to understand how to collaborate effectively, when to collaborate, and when to compete on a local basis. That is the executive decision to be made, rather than ‘should you collaborate’. Clusters provide the forum for such collaboration.

The report considers the definitional aspects of what constitutes a ‘cluster’, building on the work of Michael Porter and others to conclude that a workable definition is “a system of inter-related companies, institutions and networks with common understandings, a desire for continual growth, and a level of trust which enhances the flow of knowledge.” This is a departure from previous definitions which tended to require geographical proximity of participants. The departure is explained by the recent emergence of spatially remote clusters and newer concepts of ‘cluster of clusters’. However, whilst categorisations are useful, it is important to maintain an open flexible approach to the development of clusters.

Although recognising that clusters take time to develop, the report argues that a period of 3-5 years is necessary to avoid participants from walking away, rather than the ‘decade or so’ suggested by Michael Porter.. It is suggested that Australian clusters should focus on picking the ‘low growing fruit’ to achieve some early confidence-boosting success, rather than pursuing long-term outcomes that would try the patience of commercially pragmatic industry participants. Notwithstanding

these comments the report recognises that short time frames for success need to be tempered with the fact that trust for the sharing of knowledge and the conduct of joint projects is a key element in a sustainable cluster. Trust takes time to develop and this is a recurring theme of the report. For clusters to be successful the project group recommends that the development of trust between cluster participants must be “fast tracked” and that this process be made explicit in cluster membership. In this context the report includes draft codes of conduct and ethics which can be used as an aid to quickly develop trust between cluster participants.

While commercial self-interest is a driver of participant behaviour, the report suggests that there is an important element of ‘social capital’ inherent in clusters and successful industry leaders in clusters are often driven by the need to make some contribution to industry growth and development. This tendency towards longer term strategic behaviour which factors in an appreciation of the broader benefits of social capital is partially explained by the research undertaken by Bizmap. This tends to confirm the thesis that people with a collaborative world-view are the ones best suited to, and drawn to, cluster activity. The report suggests that there is almost an inherent pre-qualification of the leaders/drivers of cluster development according to their collaborative orientation rather than a competitive orientation.

The report explores issues of cluster organisation and governance and the selection of projects. Optimising the mix of structural and behavioural elements is fundamental to the success of clusters. The project team has noted that government-driven clusters in this country have generally not been successful over the last decade. The project team strongly believes that industry must play a key role in the establishment and operation of clusters in close liaison with government.

The ‘cluster of clusters’ approach suggests a new dynamic model of cluster development, one that is more aligned conceptually to an atomic structure, rather than a diagrammatical representation on the horizontal and vertical planes. This is consistent with the ‘organic growth’ principle as well as taking account of emerging opportunities and necessity to establish new connections in a rapidly changing environment. This approach redefines the current static model, which although connecting ‘silos’ of activity, is nevertheless prescriptive and limiting. In fact,

Australia should consider cluster development in terms of a lifecycle encompassing four discrete phases in the ideal cluster process.¹

The life-cycle approach enables a determination by both government and industry of the stage of development of a network or cluster. This could prescribe the Government's approach to funding such entities, in the same way as the R&D Start and COMET grants address discrete elements of the commercialisation cycle.

The project team, to validate its views, referred to the results of interviews conducted by Max Rose of 70 companies. The interviews 'field tested' some of the assumptions that were emerging in the project about cluster related issues and the way in which organisations engaged with potential business alliance partners and clusters. The interview process highlighted the difficulty of using formal survey techniques to obtain meaningful data, given the reticence of respondents to publicly reveal, what may be to them, commercially sensitive information. The principal themes emerging from the interviews related to trust, personal concerns, strategic views, financial strategy, marketing strategy and training.² The results tend to indicate that considerably more emphasis needs to be placed on the collaborative rather than the confrontational aspects of developing business relationships. This is particularly relevant to both endeavours to export Australian innovation and major multi-disciplinary domestic projects.

The results also support the findings of the strategic leaders industry group which planned the Australian Government's Electronics Industry Action Agenda that the industry is fragmented and is in need of a cohesive approach. It is suggested that Australia has far too many small and disconnected industry bodies and networks that are individually weak and ineffective. The 'cluster of clusters' approach is essential in gathering small networks together to facilitate real collaboration and a cohesive industry voice through the development of critical mass.

¹ As outlined below in the diagram on page 35 and explained on page 33

² See the analysis of interview responses on page 84.

The legal and ethical issues facing cluster development, and in particular the conduct of collaborative projects under the aegis of a cluster were considered important components of the study. This part of the report deals with an overview of the law relating to intellectual property and the difficulties presented by the default legal position in collaborative environments. Given the importance of trust between participants as a key enabler of collaborative behaviour amongst cluster participants, the report also provides an analysis of ethics and trust and looks at some of the environmental factors that may promote the development of trust. These include an analysis of the role of codes of ethics and conduct, sponsoring agencies, 3rd party brokers and government. The key recommendations from that section of the report revolve around organisational, operational and administrative arrangements necessary for successful cluster development.

The management of IP and confidentiality in cluster environments requires composite frameworks for the fluid nature of cluster participation. The report suggests identification of participants as core and non-core participants. Core participants are likely to have minimum performance obligations to each other as the basis for maintaining their position whereas non-core participants are those interested in the outcome of a project but in relation to whom there are no specific performance obligations. This classification is then useful in determining the level of information about projects and participants available to others. For non-core participants there would largely be unmediated access to general information about the cluster and its participants. However for core participants where the needs of trust are much higher, there would be arrangements for mediated access to, in some cases, highly confidential information. As the levels of trust develop, so do the levels of collaboration and correspondingly the need for increasingly complex legal regulation between the parties. However, the report also explores the concept of high levels of trust becoming the glue by which participants may be freed from a prescriptive agreement basis for engagement to one of ethics and conduct.

The report includes an analysis of numerous case studies and draws on these to explore consistent themes for successful clusters.

Consistent with its objective to evaluate and define new ground in this area, the report suggests that Australia should now generate its own clustering traditions, taking account of its own unique geographical, cultural and historical factors. This arguably ethnocentric approach should in no way diminish its global orientation in externally-focused industry and export development. It is time for Australia to be seen as establishing a benchmark for a sustainable cluster in its own right, rather than be shackled to past 'truisms' that may (or may not) apply to the Australian environment. In this context the 'cluster of clusters' approach is recommended as a feature of the way forward for Australia.

Key Recommendations

Business Networks Program

The former Business Networks Program which ran for 3 years in Australia should be reviewed in the light of new findings on cluster-type development and Australia's changing circumstances since the scheme was first introduced. The project team sees benefit in utilising some of the guiding principles from the program in the potential development of a new program in Australia aimed specifically at cluster development.³

International Conference

To further establish the country's reputation in cluster development, it may be useful for the Australian Government to consider the conduct of an International Conference on new models for cluster development, further exploring the theme of 'cluster of clusters', latest international findings in this area and domestic opportunities for new industry focused cluster arrangements.⁴

³ Key elements of the analysis of the program are outlined on page 112.

⁴ See page 32.

Developments in Legal Structure and Cluster Organisation

The new paradigm outlined in the report calls for something far more sophisticated than the traditional static joint venture approach in terms of structure. What is needed is a framework for the cluster of clusters approach. The key structural elements of the new paradigm are recommended as follows:

- The regularly changing identity of participants (particularly in the formative stages of clusters) can be difficult to deal with and any structure adopted needs to have mechanisms for the easy entry and exit of participants from the cluster.
- A single entity can be severely limiting on the basis that clusters often need to rely on project-based activity by different groupings of participants.
- The management of IP rights and confidentiality arrangements across all participants where there are differing levels of engagement between participants, differing outcomes in projects and core and non-core participants, becomes increasingly complex as the numbers of participants and project based activities increases. Endeavouring to deal with all of this comprehensively in a single entity may stifle collaborative behaviour which needs to be a key feature for successful clusters.

In terms of governance it is recommended that the legal entity which deals with the formation of a cluster should play little role in projects or activities and is primarily a vehicle for the entry and exit of participants. An elected board of management should be responsible for the operational aspects of a cluster such as financial control, staffing, the level of subscriptions of members, and the powers, roles and responsibilities of directors of the management committee.

At the time of formation or shortly thereafter, a cluster should, with the involvement of participants develop a suite of formation documents including a mission statement, objectives of the cluster, a code of ethics and code of

conduct for cluster participants. The report includes a model framework for a cluster code of ethics and conduct.⁵

Role of Government

Engagement by Government in industry led clusters is a key success factor for clusters. This engagement should focus on:

- Strategic support in the establishment phase of a cluster.
- Identification and potential resourcing support for the conduct of major collaborative projects by cluster members. These initiatives would need to be compatible with government objectives.

This is consistent with the life-cycle approach for clusters.⁶ The body of the report also includes recommendations for the role of government in enhancing environmental factors for the development of trust.⁷

The Next Steps - Proof of Concept/Mentoring Program

The findings of this report are based on extensive research of regional, national and international experiences in cluster development combined with practical knowledge of the establishment and operation of a successful multi-disciplinary working cluster. Given this strong foundation of knowledge it is recommended that the new model as articulated in this report be implemented in each of the Australian States as a high priority.

In practice this would be represented by:

- the identification of an emerging cluster opportunity in liaison with government and industry in each of the Australian States.
- mentoring the proposed leaders and key stakeholders of the emerging clusters in the application of the new cluster principles.

⁵ See APPENDIX 1 at page 115.

⁶ As depicted in the diagram on page 35 and explained on page 33.

⁷ As outlined on page 69

The transfer of tools and techniques of the model could take different forms according to the circumstances but may include the conduct of an intensive workshop and in the conveyance of necessary new cluster formation documents.

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CLUSTER OVERVIEW – INTERNATIONAL & AUSTRALIAN INSIGHTS

Introduction

Clusters have been heralded worldwide as a key tool for industry competitiveness and economic growth. The plethora of material recently produced on the topic indicates that cluster concepts with their key establishment and operational principles are still evolving. Yet a successful cluster can be a catalyst for the conduct of major collaborative projects; a focus for positive industry engagement with government; a mechanism for extending value chain operations and a means by which local industry can develop critical mass.

The title of this project “*Enhancing national economic benefits through a new cluster paradigm*” may suggest that there is a ‘one size fits all’ approach to cluster establishment and development, characterised by a prescriptive structural and operational model. However, regional socio-economic, cultural and technological factors necessitate the adoption of a ‘helicopter’ view of Australian clusters, drawing upon national case studies and international experiences, extracting common themes, issues and challenges. This approach recognises that cluster development on its own is not the panacea for economic development, but rather, depending on the sustainability and effectiveness of the cluster model, a powerful tool for growth.

Clusters – The Regional Context

Clusters also represent key, dynamic elements in the regional context. Taking an innovation systems approach, which shares a common core idea that “*the overall innovation performance of an economy depends not so much on how specific formal institutions (firms, research institutes, universities etc) perform, but on how they interact with each other as elements of a collective system of knowledge creation and use, and on their interplay with social institutions (such as values, norms, legal frameworks, and so on).*”⁸, clusters can be

⁸ Smith 1995

viewed within an overall regional context. This capacity of seeing ‘wholes’ and the way each of the components interact initially emerged from the learning organisation and systems thinking pioneers.⁹

Viewed in this way, clusters form a ‘demonstrator’ for collaborative, interlinked behaviour, building on the competitive advantage of that region. This is best represented by the following diagram, which informed, from an economic perspective, the successful conceptualisation and development of the ‘*Pacific Innovation Corridor*’ development between Brisbane and the Gold Coast,¹⁰ based on a new terrestrial broadband network linking a number of precincts down the corridor, most of which are now facilitating cluster behaviour.¹¹

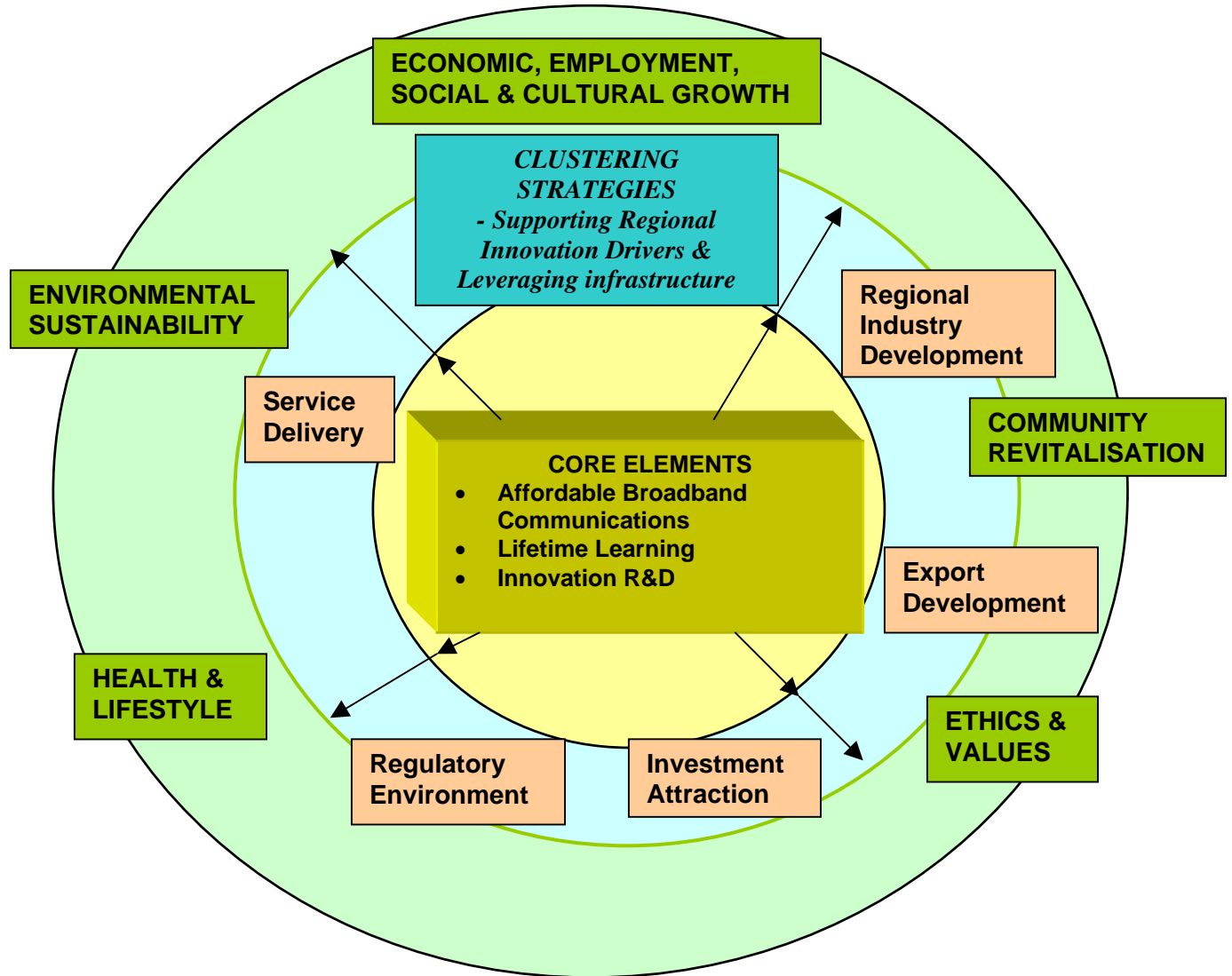
It is argued that certain ‘building blocks’ must be in place to achieve the ideal region; one in which there is a degree of integration between the broader elements of a successful region and where clustering strategies are interlinked with, strengthen and leverage on key regional drivers.

⁹ Professor Peter Senge (MIT) and Arie De Gues (Chief Planner, Royal Dutch Shell)

¹⁰ Humphreys 1997

¹¹ Refer http://www.goldcoast.qld.gov.au/t_std2.asp?PID=223

**CLUSTER DEVELOPMENT – A KEY ELEMENT OF THE MODEL REGION
THE REGIONAL INNOVATION ‘BUILDING BLOCKS’**



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Definitional Issues and Challenges

Considering the central focus of this project, it is important to have a common understanding in relation to the definition of clusters, as well as the associated issues and challenges.

Literature on clusters commenced seriously with Michael Porter's '*The Competitive Advantage of Nations*' in 1990, with his view of competitive advantage and the benefits of strong local competition. This view was subsequently restated over the past decade, with variants to the central theme, in a number of his subsequent articles in the Harvard Business Review. In addition, quoting Professor Richard Blandy from the Centre for Applied Economics at the University of South Australia, "*Porter argues that in advanced economies today, regional clusters of related industries (rather than individual companies or single industries) are the source of jobs, income and export growth*".

Therefore, there is some alignment between Porter's view and the systems innovation approach stated above. The exception is that the latter moves beyond the "*regional clusters of related industries*" statement to include infrastructure providers (such as government, research and educational institutions) and also encompasses the social dimension, in addition to economic considerations. It is argued that this view is now closer to the contemporary cluster model than is Porter's.

The South Australian Cluster model prepared by the Centre for Strategic Economic Studies (which is understood to be drawn from an earlier US model), and subsequently adopted by AEEMA, reflects this multi-dimensional, view of current clusters, albeit based on economic principles. This is illustrated at the end of this section.

Taking this broader, regional approach to the definition of clusters is insightful. Porter (2000) establishes one benchmark by defining clusters as "*a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities*". He considers that the '*Australian Wine Cluster*' is a good example of a cluster, yet the Wine Cluster is increasingly spatially-distributed, commencing in South Australia, but now extending into most Australian States in an organic growth that takes into account the changing nature of the industry. For example the growing trend towards blending wine does not recognise state boundaries. The idea of

‘geographically proximate’ clusters builds local competence and competitiveness but stands the danger of entrenching ‘silo’ behaviour in Australia, which stifles creativity and impedes innovation.

Phillip Bullock, the Chief Executive Officer of IBM Australia and New Zealand, during his keynote presentation at the Inaugural ICT Expo and Conference at Hobart in August 2003, noted that Australia “*needed to cut through the silos for the common good*” and that “*partnerships are critical (to corporate success)*”. These are key points to be considered seriously when evaluating a new model for cluster development in Australia.

Based on the project team’s findings, and in view of the observations which follow in this Report, an appropriate cluster definition could be “**A system of inter-related companies, institutions and networks with common understandings, a desire for continual growth, and a level of trust which enhances the flow of knowledge.**”¹² The ‘geographic proximate’ view also runs counter to the recent emergence of spatially remote clusters and the newer concept of a ‘cluster of clusters’ approach. This type of approach is becoming increasingly apparent in the following:

- corridor-type developments, which are not defined by narrow geographies; and,
- clusters based on inter-country linkages.

This is demonstrated by the emergence of the following:

- Canadian Photonics ‘Cluster of Clusters’
- The Atlantic Technology Corridor – (Irish, North American and European companies – 270 ICT and medical tech. – 22000 employees)
- Network of French Packaging Clusters (300 firms)
- Alliance between NE England (UK) and Sophia Antipolis (France)

Such corridor developments in Australia are also represented in the physical dimension by the Pacific Innovation Corridor development at the Gold Coast.¹³

¹² Humphreys 2003

¹³ Humphreys 1997

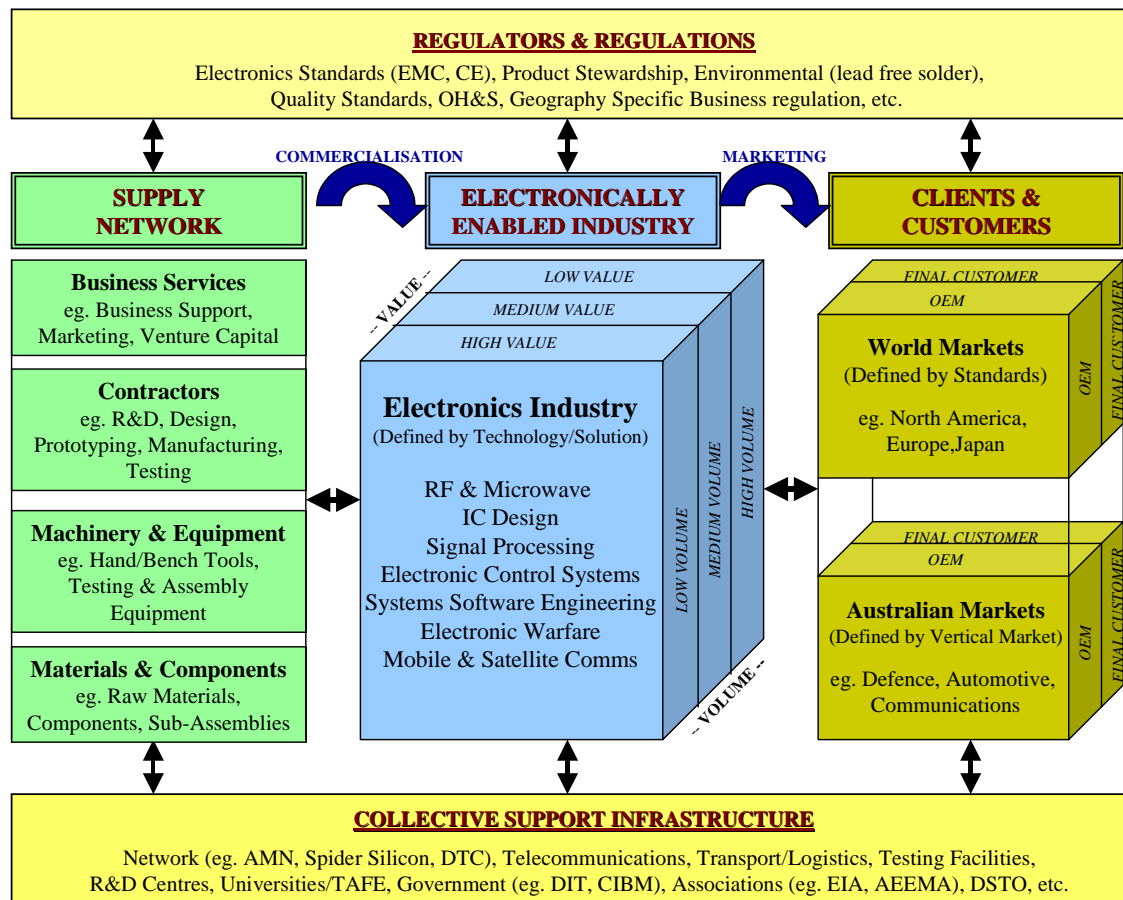
Michael Enright, quoted in the Victorian Government's recent Discussion Paper on "*Clusters – Victorian businesses working together in a global economy*"¹⁴ (October 2003) notes the following:

*The "scope of a cluster refers to the territorial extent of the firms, customers, suppliers, support services, and institutions that are embedded in the ongoing relationships and interdependent activities that characterize the cluster".*¹⁵

The above discussion implies that each of the elements of this broader, spatially remote cluster concept are independent, yet are interdependent with broader alliance partners and networks, which does not recognise geographic, regional or state boundaries. This is often consistent with the spatial distribution of a company's value chain and/or external relationships. The concept and value of 'independence yet interdependence' has been around since Ghandi's 'constellation of villages' and is still seen manifested by Australian corporate success stories such as the Flight Centre, and other franchise-based models.

¹⁴ October 2003

¹⁵ Michael Enright, Regional Clusters: "What we know and What we should Know", paper prepared for the Kiel Institute International Workshop, November 2001, p.3



16

16

Source: Centre for Strategic Economic Studies (www.cfses.com).

Establishment of Clusters

Porter also notes that clusters take time to fully establish and become successful, stating that “numerous case studies suggest that clusters require a decade or so to develop depth and real competitive advantage.”¹⁷ This Report argues that such a long-term approach may be relevant in the United States, but Australian industry structures and conditions suggest that a cluster should be sustainable within a far shorter period, otherwise its core participants will walk away. This has been the experience in this country and it is suggested that Australian clusters should focus on picking the ‘low growing fruit’ to achieve some early, confidence-boosting success, rather than pursue longer-term outcomes that would try the patience of commercially pragmatic industry participants.

A broad analogy is the argument posed about two decades ago that at least 10 years was required for research and technology parks to become sustainable and successful. In a rapidly evolving world, *‘today’s solution may be tomorrow’s anchor’*, and it is important to continually question and suggest models more aligned to emerging trends and opportunities.

Notwithstanding the above comments, a shorter time than approximately 3-5 years for clusters to successfully establish is difficult, given the fact that the necessary extent of ‘trust’ for the sharing of knowledge, and hence for the conduct of joint projects, is often not gained within a brief time-frame. The subject of ‘trust’ is a key element in a sustainable cluster which has been strongly confirmed in this project. Nevertheless, Porter’s views on clusters has influenced thinking in Europe. For example, the AEEMA Industry Cluster (Qld) hosted Alistair Nolan, as a guest speaker, at one of its monthly events. Mr Nolan is the Manager of the Local Economic and Employment Development (LEED) Unit from the Organisation for Economic Cooperation and Development (OECD), based in Paris. During this presentation, a definitional view was expressed of clusters vs. networks.

From this event and subsequent informal discussions with Mr Nolan by the project team, it was clear that Michael Porter’s definition of clustering and thinking on innovation and local

¹⁷ Porter, M.E. “Clusters and the New Economics of Competition”. Harvard Business Review, November-December 1998, 77-90 at page 85.

economic development has prevailed throughout OECD as it has persisted in Australia to the present day.

Collaboration vs. Competition

The title (due to the need for brevity) also implies that economic benefit is the sole beneficiary of cluster development. Certainly, 'commercial self-interest' is a prime motivator in cluster activity, as evident from private sector interest in participating in larger collaborative projects (even though the mechanism for that participation is often undefined) a suggestion confirmed by the recent Cluster Workshop of industry executives forming part of this study, as well as desk-top research and practical experience.

Yet most participants at the same Workshop also agreed that there was an important element of 'social capital' inherent in clusters and a need for successful industry leaders to make some contribution to industry growth and development.

Equally it also recognised that methods of engagement with government, academic and research institutions such as CSIRO need to be enhanced, and that these issues were very clearly on the cluster 'radar screen'.

In addition, the question arises about collaboration vs. competitive behaviour, or the 'world view' of existing and potential cluster participants. To test this, Bizmap surveyed a small cross section of individuals in terms of their propensity towards a collaborative or competitive world-view.

Not surprisingly, the tests confirmed the thesis that collaborative people are the ones best suited to, and drawn to, cluster activity. Even the companies that expressed no interest in the survey provided insights, begging the question that it is important to almost 'pre-qualify' the leaders/drivers of cluster development, according to their collaborative or competitive orientation. This is described further in the Bizmap report on the Values Inventory.

In general, the superiority of collaborative versus competitive behaviour has been confirmed in a number of research findings since late 1800's. This includes the studies by Drs David W. Johnson and Roger T. Johnson's research at the University of Minnesota, which determined that:

- Collaborative businesspersons earn higher salaries
- Cooperative scientists publish more articles than their competitive colleagues

There is an urgent need in Australia for companies to understand how to collaborate effectively, when to collaborate, and when to compete, on a local basis. That is the executive decision to be made, rather than 'should you collaborate'. Clusters provide the forum for such cooperation.

Clusters vs. Networks

A list of clusters in Australia reveals a large number of strongly government-facilitated clusters, primarily led by either State or Local Governments. In terms of the latter, the Brisbane City Council (Queensland) and the Playford City Council (South Australia) are examples of local governments playing a key role behind the development of what are loosely called 'clusters'. There is always a tendency to take a popular term such as 'cluster' and use it for most collaborative entities established in the country, when an alternative descriptor may be more accurate in the circumstances.

To develop a broad framework for new cluster development in Australia it is beneficial to at least make the distinction between what is a cluster vs. a network. This is consistent with Porter's view that governments need to set the policy framework (which suggests, by extension, that governments need to arrive at some degree of definitional clarity). Without this clarity, such frameworks will be difficult for government to enunciate. On the other hand, he notes that there is a requirement for flexibility in defining clusters, and that the clusters will define themselves. The two views appear contradictory. Certainly, tangible outcomes will define the success (or otherwise) of clusters in the longer term.

Alistair Nolan from the OECD (referred to previously), in noting the differences between clusters and networks, said that clusters were geographically confined (in accord with Porter's view) yet networks were broader entities. The implication from the discussion was that clusters operate at a lower level in the 'collaborative chain' than networks. This is where the OECD view differs from Porter's, who considers that clusters are broader than networks.

The project team tends towards the Porter view in this area. A true multi-dimensional cluster (including suppliers, core companies, markets, infrastructure providers and regulators etc),

which is consistent with the cluster diagram described previously (South Australia model), takes time to establish and bring together the necessary parties. It may commence as a special interest group or a more sophisticated network that grows organically (providing leadership and support exists) and outwards, as it develops a greater understanding of external linkages, many of which are not immediately evident. There may be special-purpose networks within the Cluster, which adds strength, dimension and critical mass to the cluster itself.

For example, in the case of the AEEMA Industry Cluster in Queensland, the Lighting Centre of Excellence is well represented in the cluster, at both a private and public sector level. This is a key vertical market for electronics, which in turn is one of three Divisions of AEEMA.

In a broader sense, a new model for Cluster Development in Australia should encompass the entire life-cycle, similar to an integrated technology commercialisation model. This is addressed following the Case Studies that form part of this Report. The Case Studies also inform this 'lifecycle' model.

Cluster Types and Characteristics

Considering the plethora of material on clusters, it is not intended to restate commonly held understandings on the subject. Rather, this project aims to highlight central themes on clusters that are instructive in the evaluation of new approaches to their establishment and development in Australia.

Categories include:

- Marshallian Mostly locally-owned SME's focussed on inter-firm trade
- Hub and Spoke Dominated by one or several large firms with smaller suppliers
- Satellite platforms Dominated by Multinational's Branch Facilities
- State-anchored Dominated by public entities¹⁸

Or alternatively

- Customer based Leading edge users, major markets, industries supplied, etc.
- Product based Grouping to produce an end-product, service or solution
- Needs based Grouping of SMEs working cooperatively to overcome problems
- Technology based Grouping around a product or process technology ie. Manufacturing

¹⁸ Source: Barkley/Henry – Clemson Uni

- Resource based Grouping around supply of skills, materials, funding, etc¹⁹

However, whilst the above categorisations are useful, it is important to maintain an open, flexible approach to the development of clusters. Clusters need to:

- Grow organically in accordance with changing circumstances (and outwards)
- Maximise creative conditions
- Spawn 'spin-off' and 'spin-on' opportunities

The most important features of clusters, according to the project team, is encapsulated in the following quotations:

*"Clusters are not about scale, but about relationships. They are spawned, not manufactured"*²⁰

*"Clusters depend on creating community"*²¹

*"Trust is a key factor underpinning innovation & increased productivity"*²²

For example the Nordic Countries and Ireland adopt a high trust position, whereas the French and Portuguese assume a low trust position.

What has been highlighted, through both desk-top research of national and international case studies, and the practical experience of the project team in networks and clusters over the past decade, is ***the prime importance of the development of trust and shared values in clusters.***

Cluster Organisation and Governance

In the recent Victorian Government Discussion Paper on Clusters (October 2003), it mentions an overseas observation that "Porter's framework does not say how to upgrade clusters or

¹⁹ Source: Centre for Strategic Economic Studies

²⁰ Stuart Rosenfeld – Regional Technology Strategies Inc US

²¹ OECD Clusters workshop in Copenhagen – June 2003

²² European Commission's DG Regio study on regional dynamics

how to govern cluster's collective action. Nor does he give a clear indication of which actions best suit clusters during their developmental phase".²³

Clusters add value to the competitive business approach of individual firms by increasing their opportunity to collaborate with other firms in competing for business (particularly export business). Such collaboration is relationship driven. In this context, there are numerous types of cluster internal relationships and in the most effective clusters all elements will be present. These include:

- **Organisational**
These are arrangements between cluster participants that provide the cluster with an identity and profile the relevant industry sector. They create the framework for the development of the cluster and implementation of initiatives.
- **Operational**
These are the standard operating procedures agreed by members for transferring information, communicating with each other and organizing around market opportunities.
- **Administrative**
Refers to support services that are developed to give effect to the organisational and operational elements above.

Each of these themes as a method for the regulation of cluster environments are considered further by the legal expert in the project team, and are included in the Recommendations of this Report.

Project Development

The importance of recognising the key cluster driver of 'commercial self-interest' (as mentioned in the prior 'collaboration vs. competition' discussion) in the development of clusters has been clearly evident from the work performed by the project team and via the Cluster Workshop attended by the industry reference group.

²³ Victor Gilsing, Cluster Governance, paper prepared for the DRUID PhD Conference, Copenhagen, January 2000, received via email 2002, p.8

In the experience of the AEEMA Queensland Cluster, the development of 'signature projects' to define the cluster and provide commercial outcomes for its members is an important objective. Criteria were established for the selection of these projects, as detailed in the Case Study of this Cluster, with one-page executive summaries being submitted by members in the pre-qualification stages.

However, whilst this particular cluster had the capacity to pre-qualify project initiatives, the mechanism by which they could be performed was unclear. Therefore, the scenario of larger organisations/institutions (such as multinationals or defence establishments) approaching the collective cluster to perform a larger, multi-disciplinary contract was impeded by a lack of a suitable mechanism for engagement.

Whilst individual members have the capacity to join together in consortia for certain projects, there is always the issue of the 'have and have nots' inherent in this approach. The broader cluster membership interest in participating in larger collaborative projects (even though the mechanism for that participation was not yet clarified) was confirmed by the recent Cluster Workshop of industry executives.

It was also assessed by the project team that models for such cluster engagement with larger organisations/contracts were scarce, and represented one of the reasons that many networks and clusters have not been sustainable in this country. Nevertheless, for a cluster to effectively deliver a major, multidisciplinary project and to take advantage of the cluster members' competencies, a plethora of issues remain. These include project management, IP, ethical, trust, organisational and resourcing considerations. Philip Hourigan, Partner of Deacons Lawyers, addresses some of these issues in his section of this Report. He provides comment on the interesting approaches of core and non-core participants in a cluster, as well as mediated and unmediated information and the concept of an independent project 'broker' or facilitator.

Some of the central themes relating to project development which have been identified include:

- How to identify projects
- How to fully understand complementary assets/resources of Cluster members

- How to address the many issues that surround collaborative project development and delivery (as stated above)

Clusters and the Industry and Export Development Connection

In his work on clusters, Michael Porter emphasized the importance of export activity and being internationally competitive. In Australia, Austrade has established a goal of doubling the number of exporters by the year 2006, and has engaged allies such as AEEMA in TradeStart offices around the country, to support the organisation in achieving this goal. Considering the need for most businesses to look outside Australia for new markets, contemporary clusters in Australia should incorporate a strong focus on export activities, in addition to its development of local markets.

To date, this has not been visibly evident in Australian clusters, even though industry development and export activities are two sides of the same coin. In the case study on the AEEMA Industry Cluster in Queensland, it will be noted that the entity is integrally linked to an AEEMA/Austrade TradeStart Program, which provides opportunities for its members through trade missions and information on international opportunities, as well as data on Australian Government funding sources, such as EMDG.

Considering the large scope and dimension of the two areas, the Australian Government has traditionally split the Ministerial and departmental portfolios of industry development and export into two. However, industry clusters could play a role in ensuring that there is a stronger connection between the two areas.

Leadership through Industry/Government Partnerships

The Australian Government's Electronic Action Agenda (Recommendation 30), currently being implemented by AEEMA, urges the State and Territory Governments to take a leading role to

- Bring together the necessary parties
- Drive cluster development

The need for governments at all levels to play a role in facilitating clusters has been recognised in Australia for some time, and this challenge has been taken up vigorously. However, the project team has noted, from desktop research and experience, that government-driven clusters and networks in this country have not been generally successful in this country over the last decade. AEEMA, as a peak industry association, has recognised the need for industry to play a key role in the establishment and operation of clusters, in close liaison with government. This is in addition to its recognition of the need to provide a locally-based, value-added service to its members, in an increasingly competitive marketplace.

The project team suggests that the following may be more appropriate::

Cluster establishment and initial seed funding	Federal, State or Local Governments in partnership with industry Associations or industry champions
On-going management and operations	Industry participants (including support from special purpose competitive grants if appropriate)
Project-specific funding	<ul style="list-style-type: none"> ❑ Cluster to seek support from government sources, if such projects are aligned directly to government objectives; and/or, ❑ Cluster, via predetermined mechanisms and guidelines for engagement with such entities, to enter into contracts with large corporations/institutions.

Government funding for the planning and establishment of clusters is significantly higher overseas than in Australia. The Victorian Government Discussion Paper quoted Rod Brown in his article ²⁴, in which he notes the following:

- The Scottish Enterprise Development Agency Board spends an average of \$750,000 per cluster on the planning stage of its program. This stage includes data gathering, benchmarking, research and mapping.
- The equivalent of \$14 million was allocated to the food cluster and \$30 million to the semiconductor cluster for implementation.

Australian governments have traditionally not expended such amounts on cluster development, given (i) the country is a relative newcomer to clusters; and, (ii) industry

²⁴ "Clusters, Innovation and Investment: Building Global Supply Chains in the New Economy" p.19

development support has been mainly in the form of competitive grants and other industry assistance programs.

Whilst endorsing the business-led approach, the Victorian Government Discussion Paper suggests the funding of cluster facilitators through a Cluster Facilitation Unit (CFG), as a whole-of-government initiative, is a worthy candidate for support. Under this arrangement, the Discussion Paper quotes Ifor Ffwoes-Williams²⁵ that such a CFG should coordinate (and presumably fund) the following process:

- Analyse the economy
- Initial cluster stocktake
- Establish leadership team
- Develop cluster vision
- Identify stepping stones
- Develop an immediate agenda
- Institutionalise the cluster (develop an organisation capable of sustaining the cluster)
- Upgrade the strategic agenda

The above closely equates to the processes established by the AEEMA Industry Cluster Queensland, during its first 18 months of operation, which was funded via AEEMA mechanisms. However, it is suggested that a government/industry partnership in traversing the first, necessary steps in the establishment and operation of a cluster would spread the risk and maximize the productivity gain for Australia.

Government's involvement as a partner with industry in the formative stages of a cluster is consistent with Porter's view that they have a role in creating a fertile environment for the conduct of business, even to the extent of challenging and extending industry. A cluster's adoption of a comfortable 'status quo' position, reliant on government support for their ongoing existence, is not a preferred model for an innovative, progressive economy.

Clusters Asia Pacific is one of the forums in Australia for discussing industry/government partnerships in cluster development, being a repository of knowledge, as well as a source for sharing ideas and establishing joint ventures (refer www.capinc.com.au).

²⁵ "Development Clusters: Cluster Facilitator's Manual", DIIRD presentation of August 2002

Summary

From the above discussion, it is clear that Australia, whilst drawing on the strength of Michael Porter's views, should question some of his views as they relate to the future of cluster development in this country. It is important to 'foresight' emerging trends and opportunities in advanced cluster thinking and action, in an ongoing process.

This study, consistent with its objective to evaluate and define new ground in this area, suggests that Australia should now adopt its own clustering traditions, taking account of its own unique geographical, cultural and historical factors. This arguably ethnocentric approach should in no way diminish its global orientation in externally-focused industry and export development, but rather strengthen it through signalling that the '*you lead and we will follow*' approach is no longer sustainable (as it has been traditionally in areas such as technology park development etc). In other words, it is time for Australia to be seen as establishing a benchmark for a sustainable cluster in its own right, rather than be shackled to past 'truisms' that may (or may not) apply to the Australian environment, for what is a rapidly evolving phenomenon.

Nevertheless, it is important to draw on the experiences of past initiatives to ensure that there is no 'reinvention of the wheel'. In this regard, the project team considers that the former Business Networks Program, which ran for three years in Australia, is worthy of detailed consideration. Whilst this Program is partially addressed in the following report, one of our Recommendations is to fully review this initiative in the light of new findings on cluster-type development and Australia's changing circumstances, since the scheme was first introduced to this country.

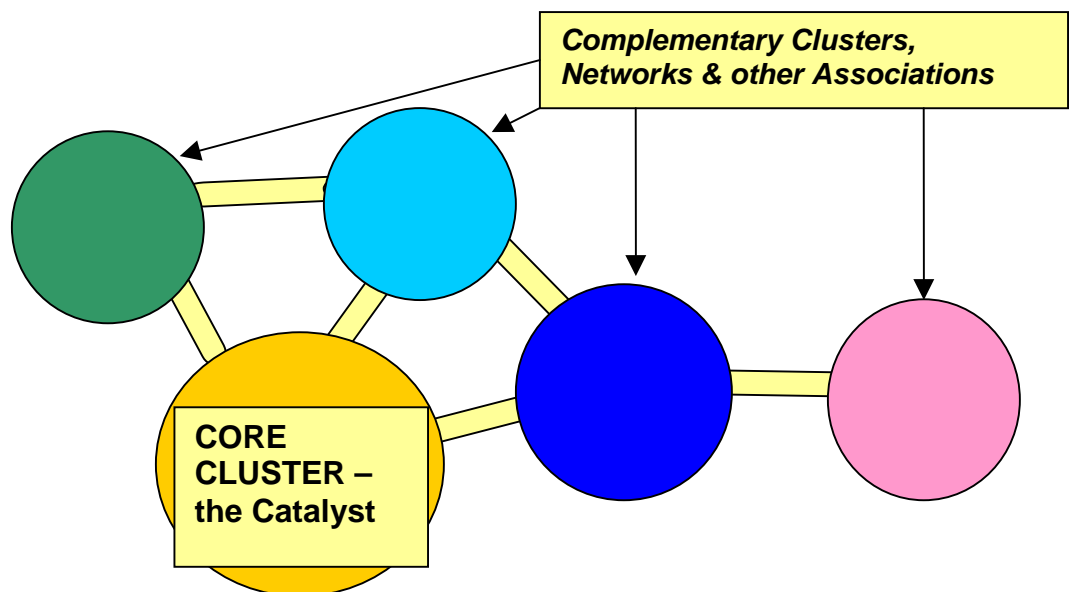
The challenge remains for Australia to break down the 'silos' and learn to collaborate effectively, rather than being confined to a paradigm that will not work for Australia in the 21st Century. In this context, the 'cluster of clusters' approach discussed above is worthy of further consideration. As a first step in this direction, the AEEMA Industry Cluster in Queensland is establishing collaborative links with other clusters and networks, including the Australian Industry Defence Network (Qld Branch) and the E-Security Cluster, also in Queensland. In addition, it is connected to AEEMA's numerous forums and groups through the peak association's international and national activities.

The 'cluster of clusters' approach suggests a new dynamic model of cluster development, one that is more aligned conceptually to an atomic structure, rather than a diagrammatical representation on the horizontal and vertical planes. This is consistent with the 'organic growth' principle, as well as taking account of emerging opportunities and necessity to establish new connections in a rapidly changing environment. It also allows for both 'spin-off' and 'spin-on' activities, where the core cluster facilitates connections with existing clusters/networks/special interest groups or catalyses the development of new networks (emerging areas of interest) that develop, in turn, a life of their own.

This approach, subject to further definition, redefines the current static model, which although connects 'silos' of activity, is nevertheless prescriptive and limiting. In fact, Australia should consider cluster development in terms of a lifecycle, diagrammatically represented at the end of this section.

A necessary stage in the development of this lifecycle model, is the linking of the "core cluster" with other complementary clusters, networks and associations as depicted below.

TOWARDS A NEW MODEL FOR CLUSTER DEVELOPMENT?



To further establish the country's reputation in cluster development, it may be useful for the Australian Government to consider the conduct of an International Conference on the topic, with the title *"Realising the Promise of Clusters: Creating the Future"* (or similar).

Such an event would then represent a contribution to the broader goal articulated by President Fox Quesada of Mexico at the World Economic Forum 2003 when he stated the following:

"On entering the third millennium, humanity has the opportunity to build a different future - a future of bridges instead of walls, a future of inclusion, understanding & association..."

This study of national and international experiences in cluster development, analysis of the nominated Case Studies²⁶, and personal experience in innovation development gained over the past 30 years, has suggested to the author of this Section of the Report that a new model of cluster development is not only desirable, but essential if Australia is to maximize the potential of this contemporary phenomenon for economic growth.

Static models have a role in providing a visual dimension to networks and clusters, however they are defined. Nevertheless, such models do not capture the dynamic nature of the evolution of a special interest group or network to become a multi-dimensional cluster, with a wide range of stakeholders and external linkages. Nor do they capture the process by which an initial entity can progress rapidly through a sequence of 'phases', to fully realise their commercial promise to its industry stakeholders.

The South Australian model has been represented earlier in this Section, as has a potential new stage of cluster development, likened metaphorically to an evolving atomic structure in the diagram *"Towards a New Model for Cluster Development"*. However, both could be seen as stages in the development of clusters, rather than the 'end game' in their own right.

This suggests the desirability of a visual representation of what the author has termed the *"Cluster Development Life Cycle"*, which is broadly analogous to the depiction of commercialisation models in Australia from idea generation, to R&D, to product development, marketing and distribution. This self-explanatory representation is attached.

The diagram implies that the ideal cluster process should encompass four discrete Phases:

Phase One:

A common interest group or network is formed around a set of shared values. Such formation may require government seed funding for its establishment phase (eg. 6-12 months), to allow for a suitable management and administrative foundation and facilitate external connections.

Phase Two:

The growth of this network will necessitate the encouragement of value chain activities, introduction of vertical market stakeholders, export activities, infrastructure providers and regulators (similar to the existing South Australian model) ie. the simple network is transformed into a multi-dimensional cluster. It is expected that industry will be playing a role in cluster development at this stage, formulating a business model for its operations that is not reliant on government funding (eg. 12-18 months). Trust between participants, unknown to each other at the outset of the process, is beginning to grow.

Phase Three:

With further growth, the Cluster establishes that there is an opportunity to 'spin-off' certain areas of special interest (eg. a wireless special interest group) or introduce missing elements into the Cluster in a 'spin-on' process. It also recognises the need to link externally with networks and clusters with complementary objectives. Through these formal and informal connections, a significant industry strength is gained through this aggregation of networks and clusters (in a 'Cluster of Clusters' approach). This Phase is best represented by the Diagram *"Towards a New Model for Cluster Development?"*.

Any resources from government are focused on the significant industry development role played by Clusters during this Phase (and the associated benefits of government's engagement with a strong industry voice in the State or region). Whilst not being prescriptive, this period could take 18 - 24 months. At this stage, the Cluster is starting to split between 'core' and 'non-core' participants, with the former being trusted with confidential information – the prerequisite for the development of Cluster projects.

Phase Four

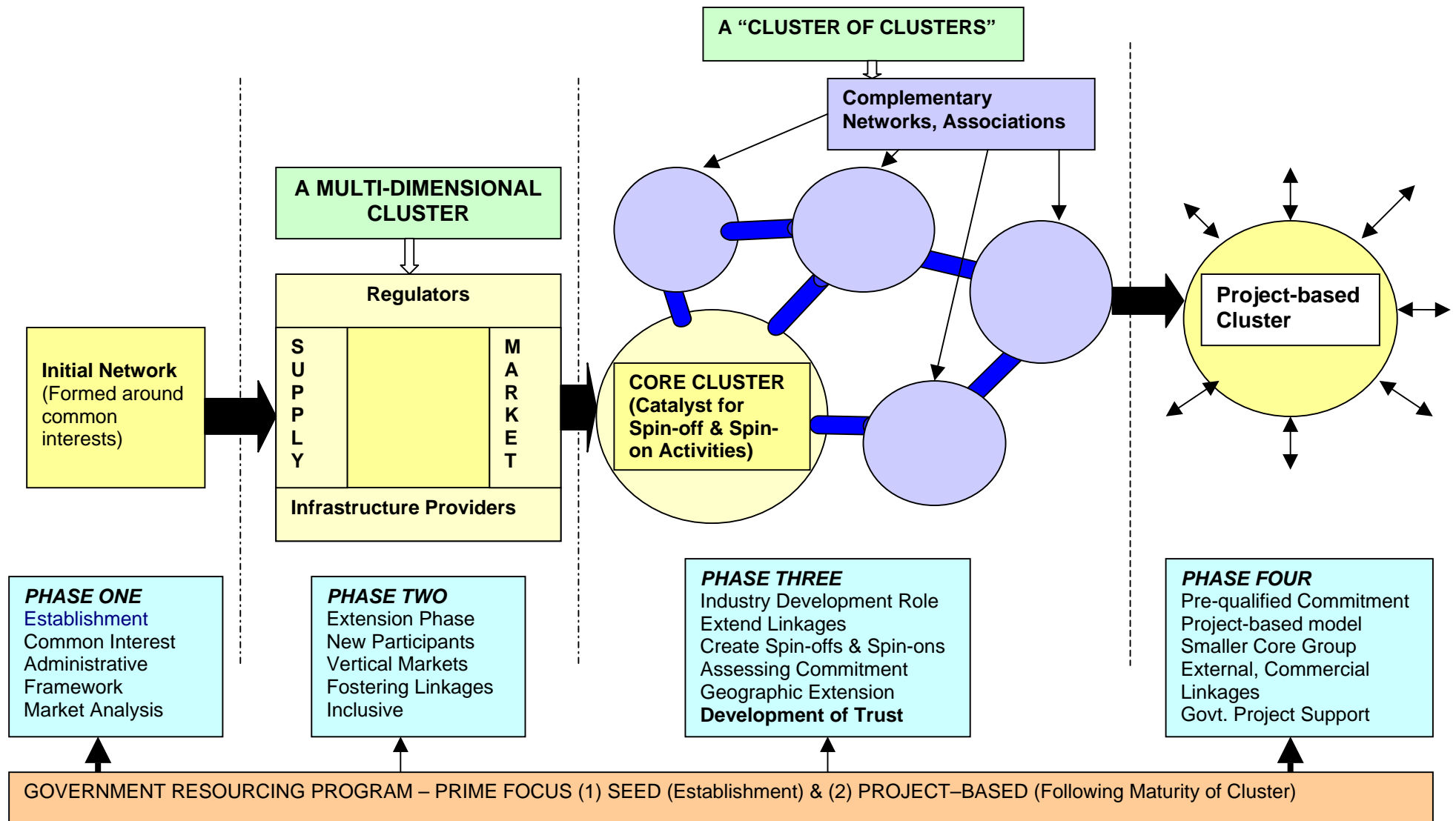
The Cluster is now at full maturity, with a solid core of trusted cluster participants still engaged. This is a self-selecting process. It is reasonable for the industry participants at this stage to expect commercial results through real projects delivering client outcomes. A mechanism for this engagement would be in place, along with the legal and contractual framework. This engagement would encompass commercial connections with larger companies (eg. transnationals, multinationals, Defence Department etc.)

This model may be a trading cooperative, similar to the Marine ICT cluster in Tasmania; a model similar to that established under the (former) AusIndustry Business Networks Program; a hybrid of the two, or some alternative business approach.

However, at this Phase (24 to 36 months), it would be unashamedly project-oriented, with external links now well developed through the previous months/years of operation and cluster building. Providing projects were aligned directly to government objectives, it would be reasonable to assume that some of the direct project funding could be forthcoming from that source, with purchasing policies reflecting the reality of commercial clusters as much as the traditional commercial consortia.

This Life-Cycle approach enables a determination by both government and industry of the stage of development of the network or cluster. This could prescribe the government's approach to funding such entities, in the same way as the R&D Start and Comet grants address discrete elements of the commercialisation cycle.

THE CLUSTER DEVELOPMENT LIFE CYCLE



OPERATING A CLUSTER - LEGAL AND ETHICAL ISSUES

Definitional Considerations

For the purpose of this paper it is essential to have some common understanding in relation to the definition of clusters. A detailed overview of the definitional elements of clusters is contained in the Cluster Overview – International & Australian Insights²⁷. This paper has been prepared on the assumption of a working knowledge of the definitional considerations for clusters outlined above. In particular the organisational, operational and administrative elements of clusters are considered further in the recommendations section of this paper.

Classification of Intellectual Property in Clusters

The Australian legal system offers protection to 'creators' through a variety of intellectual property regimes, such as patents, copyright, plant breeders' rights, registered trade marks and designs. Typically these schemes grant legal protection against imitators or 'free-riders', allowing creators exclusive rights to exploit their creation, and providing remedies for infringement of those rights. These rights can be commercially valuable and the 'price' paid by creators for this level of legal protection varies according to the regime in question.

Intellectual property protection from a statutory perspective is primarily a matter of Commonwealth jurisdiction. At federation the Commonwealth was given constitutional responsibility for 'copyrights, patents of inventions and designs, and trade marks'.²⁸

Domestic IP law and policy is also influenced by Australia's international obligations. Because the essence of IP protection is the grant of monopoly rights, the interplay with competition law has become a particularly prominent area of national and international

²⁷ See page 13.

²⁸ Section 51(xviii) of the Constitution.

policy debate.²⁹ As a signatory to TRIPS³⁰, an international agreement dealing with the trade-related aspects of intellectual property rights, Australia is subject to minimum legal standards enforceable by member states through the World Trade Organisation (WTO).

Australia is a signatory to a number of other international IP agreements, which exist mainly because creators frequently seek protection in more than one jurisdiction and regulators must frequently measure inventiveness against international and not merely domestic standards.

Statutory and Common Law Classification of IP

In broad terms Intellectual Property can be classified as statutory IP or common law IP. The statutory forms of IP include patents, designs, copyright, trade marks, circuit layouts and plant breeders rights. The common law forms of IP include trade secrets, confidential information and common law trade marks.

The statutory forms of IP are essentially a form of limited monopoly granted to the creator of industrial property. The reason for the monopoly is to encourage the development of industrial property as at the end of the monopoly period the property becomes part of the public domain and enhances the further development of ideas.³¹

In a cluster environment, engagement between participants is likely, in the initial stages, to involve the sharing of confidential information possibly leading to the creation of copyright works such as the creation of joint proposals. As a result, early considerations will require confidentiality arrangements between participants and arrangements dealing with the jointly produced copyright works. As the level of engagement increases and the participants succeed in bidding for work on the strength of their involvement in the cluster, IP creation may raise issues in relation to patents and designs.³²

²⁹ For example, the Intellectual Property and Competition Review Committee (IPCRC) conducted a major review of Australia's intellectual property laws and their effects on competition. The IPCRC was established under an intergovernmental agreement that forms part of the National Competition Policy. The IPCRC issued its final Report to the Federal Government in September 2002. See <http://www.ipcr.gov.au/finalreport1dec/welcome.html>.

³⁰ TRIPS is the acronym for Trade-Related Aspects of Intellectual Property Rights.

³¹ Although this is not the case in relation to statutory trade marks.

³² In particular issues of joint ownership as discussed below in relation to patents.

Classification of IP by Monopoly

Further classification of IP can be along the lines of the nature of the monopoly being strong, moderate or weak.

- strong monopoly rights such as patents and designs;³³
- moderate monopoly rights such as trade marks, circuit layouts, plant breeders rights, and trade secrets;
- weak monopoly rights such as copyright, confidential information and common law marks.

Classification by Nature of the Right

Further classification of IP rights can be undertaken by considering the nature of the right as follows:

- Automatic rights such as copyright and circuit layouts
- Applied rights such as patents, designs, trade marks,³⁴ and plant breeders rights
- Defendable/use rights such as trade secrets, confidential information and common law trade marks.

These classifications are primarily designed to assist potential cluster participants in understanding the differing nature of various forms of IP.

Default Provisions for Intellectual Property Ownership

Before being able to deal with IP management issues in clustering environments it is necessary to consider the basic law relating to ownership of IP rights. Detailed consideration will be given to copyright, patents and designs. In relation to confidential information it is not so much an issue of ownership but rather the components of an action for a breach of confidence. A later section of the paper will focus on an analysis

³³ Historically the decisions in relation to the enforcement of registered designs has led to a weakening of the monopoly and this is partly addressed by a new Designs Bill 2002 which is currently before the Senate and discussed below.

³⁴ Statutory trade marks under the *Trade Marks Act 1995* as opposed to common law trade marks relevant to an action for passing off.

of the action along with recommendations for the regulation of obligations of confidence in cluster environments.

Copyright

The general rule is that the author of a literary, dramatic, musical or artistic work is the owner of the copyright subsisting in it.³⁵ This is subject to special provisions relating to contracts of service or apprenticeship and certain works done under commission discussed below.³⁶ Copyright protects original forms of expression and the author is the person who creates the particular form of literary or other relevant expression. For copyright to exist the work must be committed to a material form³⁷ and it should be noted that copyright only protects the form of expression and not the underlying idea.³⁸ The level of originality for a work to qualify for copyright protection is very low and at its simplest the test is merely that the work is not copied.

Works of joint authorship are specifically defined as works that have been produced by the collaboration of two or more authors and in which the contribution of each author is not separate from the contributions of the other authors. Therefore a person who contributes written material to a collective work will not be a joint author with the compiler if the various contributions are separable and distinguishable.³⁹

Provided the work is one of joint authorship, the part owners of the copyright take their interest as tenants in common in equal shares⁴⁰ and not as joint tenants but any one of them can maintain an infringement action against an infringer without the need to join the co-owners.⁴¹

³⁵ *Copyright Act 1968* section 35(2).

³⁶ Also relevant are assignments of copyright and the rights of the Crown. See section 35(1) and section 196 relating to assignments.

³⁷ *Copyright Act 1968* section 22(1).

³⁸ Referred to as the idea-expression dichotomy. See *Blackie & Sons Ltd v Lothian Book Publishing Co Pty Ltd* (1921) 29 CLR 396 at 400 and *Autodesk Inc v Dyason (no 1)* (1992) 22 IPR 163 at 171-2.

³⁹ *Redwood Music Ltd v B Feldman & Co Ltd* [1979] RPC 385.

⁴⁰ In the absence of an agreement to the contrary. See *Acorn Computers Ltd MCS v Microcomputers Systems Pty Ltd* (1984) 4 IPR 214 at 221.

⁴¹ *Milewell Pty Ltd v Olympic Amusements Pty Ltd* (1999) 43 IPR 32 at 41.

In the context of a cluster where a work of joint authorship is likely to arise it is advisable for the authors to agree on their respective interests to avoid the potentially inequitable result of equal shares where one participant's contribution might be modest in terms of the overall work. Also relevant in the cluster context is the fact that joint ownership may arise in equity where a copyright owner becomes bound, pursuant to an oral or implied agreement to hold the copyright upon trust for the other parties jointly.⁴² It will often be the case that the implied terms of engagement between participants in clusters will include this type of equitable trust. This scope for uncertainty calls for proactive management of IP rights where works of joint authorship are likely to arise and some suggestions of management of IP rights in cluster environments are at the heart of this paper.

The basic principle that the author is the first owner of any copyright subsisting in the work is subject to the following exceptions:

- works produced by an employee under a contract of service;
- the work of journalists;
- commissions for the making of certain artistic works; and
- assignments of future copyright.

Of these, the most relevant in a cluster context will be the rules relating to works produced by employees. Section 35(6) of the *Copyright Act 1968* provides that where a literary, dramatic, musical or artistic work is made by the author in pursuance of the terms of his or her employment by another person under a contract of service or apprenticeship, that other person is the owner of the copyright in the work. The operation of this provision may be excluded or modified by agreement but employers rarely do so in a way that would grant the employee any rights of ownership.⁴³ In fact, increasingly, employers seek to extend the coverage of the general copyright provision.⁴⁴

There is a substantial body of law relevant to determining whether or not a relationship is one of master and servant on the one hand and that of principal and independent

⁴² *Robert J Zupanovich Pty Ltd v B & N Beale Nominees Pty Ltd* (1995) 32 IPR 339.

⁴³ Other than in the context of Universities which often have special arrangements with their academic staff.

contractor on the other. Works produced by an independent contractor will, in the absence of agreement to the contrary, be owned by the independent contractor whereas works produced by an employee in the course of their employment will be owned by the employer. The traditional test considers the extent that the employer exercises control over the employees in performing their work.⁴⁵ However, the test is often not appropriate particularly where the employee is required to exercise a high degree of skill and personal judgement in the creation of a work.⁴⁶ An alternative approach is to consider the extent to which the author is integrated into the business and whether the production of the work was within the scope of the employees regular duties.⁴⁷

With the increase in much more flexible work arrangements, increases in telecommuting for employees who work remotely and the move to a knowledge based economy both control and integration tests start to fail. As a result employment contracts are increasingly (particularly for highly skilled employees engaged on short term contracts) being drafted in a way to extend an employers coverage of IP ownership far beyond the basic provisions of section 35(6).

For example, some agreements now provide for assignments of intellectual property rights in relation to intellectual property developed by the employee based on knowledge acquired by the employee during employment whether or not the intellectual property was developed within the employee's job specification.

Patents

Assuming the requirements for a valid patent are satisfied⁴⁸ a patent may only be granted to the inventor, an assignee or a person who derives title from the inventor or assignee.⁴⁹

⁴⁴ Discussed in more detail below.

⁴⁵ *Queensland Stations Pty Ltd v FCT* (1945) 70 CLR 539 at 545.

⁴⁶ *Zuijs v Wirth Bros Pty Ltd* (1955) 93 CLR 561 at 571.

⁴⁷ *Stephenson Jordan & Harrison Ltd v MacDonald and Evans* [1952] 1 TLR 101 at 107.

⁴⁸ This is a sweeping assumption as the requirements for validity are complex but beyond the scope of this paper.

⁴⁹ *Patents Act* 1990 section 15.

Where only one person claims rights in relation to an invention it should be comparatively easy to determine whether that person can rightfully claim to be the only inventor. However, it is common for teams of researchers to work on projects and this is particularly likely to be so in a cluster environment. In these cases it may be difficult to identify which of the relevant collaborators should be named as the inventors. This can be vital to the continued validity of the patent as if it is subsequently shown that the persons claiming to be the inventors were not in fact the inventors or that there were others who should have been named, the validity of the application for the patent will be in doubt. In determining whether a person is entitled to be treated as an inventor, the assessment is in relation to the contribution made by the claimant, not the inventive merit of the contribution.⁵⁰

Where a collaboration between cluster participants leads to the development of a new invention and one party registers a patent without reference to the other collaborators, the other collaborators can oppose the subsequent registration of the patent.⁵¹ The nature of the claim is referred to as obtaining and claims based on it can readily occur where there is no clear record of the rights and expectations of people engaged in collaborative projects.⁵²

Where there are 2 or more patentees:

- each of them is entitled to an undivided share in the patent;⁵³
- each of them is entitled to exercise the exclusive rights given by the patent for his or her own benefit without accounting to the others; and
- none of them can grant a licence under the patent or assign an interest in it without the consent of the others.⁵⁴

⁵⁰ *Re Application by CSIRO and Gilbert* (1995) 31 IPR 67.

⁵¹ Either by revocation under section 138(3)(a) or by opposition under section 59(a).

⁵² See for example *Austgen Biojet Holdings Pty Ltd v Goronszy* (1995) 32 IPR 193 and *Re Application by Tribe and Ranken* (1983) 1 IPR 561.

⁵³ The rights are therefore those of tenants in common.

⁵⁴ *Patents Act* 1990 section 16.

The effect of these provisions is that each co-owner can manufacture and sell patented product or use a patented process and it is immaterial that one owner is more successful than the other in doing so.

Again the potential difficulties of jointly owned patents are readily evident hence the need, particularly in cluster environments, for arrangements between participants to regulate issues of ownership.

Designs

Presently designs are regulated by the *Designs Act 1906*. However, for the purposes of this paper consideration will only be given to the law as it is intended to operate under the new *Designs Bill 2002*. The purpose of the Bill is to repeal the *Designs Act 1906* and redraft the Act to provide a system of designs registration that includes a reduced period of registration, stricter eligibility and infringement tests, more streamlined registration and new enforcement procedures.

The current designs legislation is almost a century old and although it has been updated from time to time the essential nature of what is protected remains largely unchanged. The purpose of the *Designs Act 1906* is to create and protect the rights flowing from the design of manufactured articles. Of all the statutory intellectual property schemes, the Designs Act is the least utilised, and, it has been suggested the least effective.⁵⁵

Designs law involves striking a balance between two competing goals. It must be sufficient to facilitate innovation by prohibiting free riding (which reduces the financial returns to the designer), and it must facilitate innovation by enabling the use of existing designs to create new ones. There is necessarily a tension between these two objectives and it is generally agreed that the equilibrium reached in the Australian courts tend to favour the second of these goals. As a result a body of designs law has evolved which, it is often argued, does not provide adequate protection against designs free riding, and which (although in a sense workable) is irrelevant to designs related industry players and generally unsatisfactory.⁵⁶

⁵⁵ J Phillips, 'International Designs Protection: Who Needs It?' (1993) 15 EIPR 431; S Ricketson, 'Towards a Rational Basis for the Protection of Industrial Design in Australia' (1994) 5 AIPJ 193.

⁵⁶ Naomi Pearce, 'Towards a better test for infringement of a registered design: the Designs (Exposure Draft) Bill, Australian Intellectual Property Law Bulletin, v. 15, no. 3, August 2002, p. 29.

Under the new Bill a 'design' means the overall appearance of a product resulting from one or more visual features of the product.⁵⁷ A product's visual features include its shape, configuration, pattern and ornamentation but not the feel or the materials used in the product. A visual feature may, but need not, serve a functional purpose.⁵⁸ A product is anything that is manufactured or hand made.

Clause 15 introduces a two-step threshold test for a registrable design — the design must be new and distinctive⁵⁹ when compared with the prior art base as it existed before priority date of the design. The prior art base is essentially those designs publicly used in Australia and those designs published anywhere in the world at the priority date.⁶⁰ The priority date is usually the date of filing.⁶¹

The rights of owners of registered designs are set out in clauses 10-12. Amongst other things the owner of a registered design has the exclusive right to:

- make a product which embodies the design
- import, sell, hire or dispose of such a product
- authorise another person to do any of these things.

The registered owner may assign by writing all or part of his interest in the design.⁶²

A significant part of the Bill is based on the recommendations of the ALRC report, which itself was the product of an extensive review of designs law. There appears to be general optimism that the proposed reforms will go some way to making the system of design registration more effective.

The basic rule is that the creator of a design is the owner of the design.⁶³ If the designer creates the design in the course of employment or under a contract with another person,

⁵⁷ Clause 5.

⁵⁸ Clause 7.

⁵⁹ Australian Law Reform Commission, *Reform No 74 - Designs*, Sydney, 1995, recommendations 30 and 32.

⁶⁰ Subclause 15(2).

⁶¹ Subclause 27.

⁶² Clause 11.

the other person will be the owner unless the parties agree otherwise. If there are 2 or more owners of a design:

- each of them is entitled to an equal undivided share in the exclusive rights in the design;
- each is entitled to exercise the exclusive rights in the design to that owner's benefit without accounting to the others; and
- none of the owners can grant a licence to exercise the exclusive rights in the design or assign an interest in the design without the consent of the others.⁶⁴

It can be noted that the effect of these provisions are largely identical to those in relation to patents referred to above. Similar issues in relation to creation of designs arise as in relation to patents above including the possibility of rectification of the register of designs by a person who is aggrieved such as a person claiming a right as an owner.⁶⁵

Disadvantages of the Default IP Position

Jointly owned IP, whether statutory or common law, is generally incapable of commercialisation unless all owners agree.

In the context of designs and patents, some of the monopoly rights such as the right to manufacture and sell products are capable of being exercised without reference to other owners. However, this is generally counter productive as 2 owners separately manufacturing patented product creates a duopoly potentially minimising the profit otherwise achievable if the statutory monopoly was preserved.

Statutory ownership provisions are generally inflexible thereby threatening commercialisation opportunities. This can occur as a result of potential commercialisation partners being less likely to deal with joint owners or those joint owners being unable to agree on the commercialisation terms on offer from a potential commercialisation partner.

⁶³ Clause 13(1)(a).

⁶⁴ Clause 14(2).

⁶⁵ Clause 120.

Ownership Disputes in Cluster Environments

In the case of IP ownership disputes between joint owners the consequences are either a locked asset on the basis that the owners cannot agree on commercialisation or a reduced monopoly where joint owners seek to independently commercialise the relevant IP.⁶⁶

In cluster environments these risks are exacerbated by the following features of clusters:

- potentially large numbers of collaborators where the complexities of determining ownership and sharing arrangements between owners are greater;
- the changing nature of cluster participants by both identity as participants join and leave the cluster and by participation as participants change the level of their engagement within the cluster; and
- differing levels of business maturity of cluster participants particularly in relation to commercialisation expertise.

Overcoming these risks requires cluster participants to:

- have a reasonable understanding of IP extending to the nature of IP, the differences between automatic rights and applied rights and the basic mechanics of commercialisation of IP;
- have high levels of trust with other participants; and
- work to a common framework for the resolution of disputes about ownership to avoid delays to commercialisation opportunities.

Confidential Information

Participants in successful clusters exhibit a ready willingness to share organisational information with other participants. It is a fundamental requirement in clusters. Much of this information will be confidential and therefore an understanding of the law relating to confidential information is instructive.

Beyond understanding the law, this paper also makes recommendations in relation to the handling of confidentiality obligations between cluster participants.

⁶⁶ Where this is possible such as in relation to patents and designs.

Analysis of Basic Law

In many instances involving the unauthorised use or publication of confidential information the parties will be in contractual relations with each other. In those cases there is likely to be an express contractual obligation prohibiting the use or publication of the information or it may be relatively easy to imply such an obligation.⁶⁷ However, outside contractual relationships, for example where cluster participants are engaging in general discussions prior to formalising any relationship the action for breach of confidence comes into its own.

Despite considering below the nature of the general action which is equitable, in many cases where the courts have based liability on the breach of a contractual obligation of confidence, they have also done this on the basis of a breach of a corresponding equitable obligation.⁶⁸ Increasingly however, contractual obligations are used in a way to extend the coverage available in equity as the parties in a contractual setting are free to fix the scope of their obligations. The only significant limitation in this respect is that for obligations of contractual confidence to be enforceable the information must indeed be confidential otherwise a perpetual obligation will be read down as an unenforceable restraint of trade.⁶⁹

The most succinct formulation of the basic requirements for a successful action of non-contractual breach of confidence can be found in the statement of Megarry J in *Coco v AN Clark (Engineers) Ltd*⁷⁰

“In my judgement, three elements are normally required if, apart from contract, an action of breach of confidence is to succeed. First, the information itself, in the words of Lord Greene MR in the *Saltman* case⁷¹ must ‘have the necessary quality of confidence about it.’ Secondly, that information must have been imparted in circumstances importing an obligation of confidence. Thirdly, there must be an

⁶⁷ *Robb v Green* [1895] 2 QB 315

⁶⁸ *United Sterling Corporation v Felton* [1974] RPC 162 (Ch), *Ackroyds (London) Ltd v Islington Plastics Ltd* [1962] RPC 97 (QB), *Ansell Rubber Co Pty Ltd v Allied Rubber Industries Pty Ltd* [1967] VR 37, *Mense v Milenkovic* [1973] VR 784.

⁶⁹ See *Magbury Pty Ltd v Hafele Australia Ltd* (2001) 185 ALR 152.

⁷⁰ [1969] RPC 41.

⁷¹ *Saltman Engineering Co Ltd v Campbell Engineering Co Ltd* [1963] 3 All ER 413.

unauthorized use of that information to the detriment of the party communicating it.”⁷²

The need for the information to be confidential

Information can be trade secrets in the nature of subject matter that is otherwise capable of protection as statutory IP such as patents or designs but may extend to unpublished copyright material or other secrets that are not in the public domain. The basic principle is that the information ceases to be confidential once it is in the public domain, that is, once it has become public or common knowledge.⁷³

It can often be a difficult question of fact as to when information becomes public knowledge and therefore loses its confidential characteristic. Confidentiality is not lost simply because the information is known to persons other than its originator where all recipients are bound by an obligation of confidence. An example would be a lecture delivered to a limited audience.⁷⁴ The analysis in this context calls for a consideration of “relative secrecy”.⁷⁵ However, there will come a point where information imparted in confidence will become known to so many that it can no longer be reasonably called confidential.⁷⁶

This is relevant in a cluster environment where disclosure of confidential information to a large number of cluster participants may deprive the discloser of continuing protection. This could only occur where the widespread dissemination has driven “a hole into the blanket of confidence.”⁷⁷

Circumstances of Confidence

No matter how secret and confidential the information disclosed is, there can be no binding obligation of confidence if that information is blurted out in public or is

⁷² Ibid at 45.

⁷³ *Saltman Engineering Co Ltd v Campbell Engineering Co Ltd* [1948] 65 RPC 203 at 215.

⁷⁴ *Abernethy v Hutchinson* (1824) H & Tw 28.

⁷⁵ *Wiggington v Brisbane TV Ltd* (1992) 25 IPR 58, *Falconer v ABC* (1991) 22 IPR 205.

⁷⁶ *Dunford & Elliott Ltd v Johnson & Firth Brown Ltd* [1978] FSR 143 (CA)

⁷⁷ Ibid at 148-194 (Lord Denning MR).

communicated in other circumstances which negative any duty of holding it confidential.⁷⁸ The test is one of a reasonable man standing in the shoes of the recipient of the information realising on reasonable grounds that the information was being given to him in confidence.⁷⁹

In this context it is important to recognise the nature and limit of the obligation. For example if the information was provided for a limited purpose, the obligation of confidence crystallises around that limited purpose. It is only when recipients step beyond that purpose that they will breach their obligation of confidence.⁸⁰

Unauthorised use of the information

Once the first two requirements of the action have been established it must still be shown that there has been an unauthorised use of the information in question and that use must be to the detriment of the discloser. In the context of private and commercial secrets it has been suggested that there may be sufficient detriment to an individual that disclosure of information relating to his affairs will expose his actions to public discussion and criticism.⁸¹ In relation to public or governmental secrets it has been suggested that detriment in these types of cases should be judged by reference to the public interest.

In relation to employees, obligations of confidence can overlap with duties of fidelity of employees. On termination, any restriction on the use of a former employee's skill and labour for another employer ceases unless prevented by a valid restraint of trade. However, a former employee's obligation not to use an employer's confidential information continues subject to the general right of an employee to continue to use their overall stock of knowledge and skill. This is a difficult problem in competitive industries where skilled employees are highly valued and widely sought.⁸² In a cluster environment the problem is perhaps more

⁷⁸ *Coco v AN Clark (Engineers) Ltd* [1969] RPC 41 at 47-48 (Megarry J)

⁷⁹ *Ibid* at 48.

⁸⁰ Gurry in Finn, *Essays in Equity* (1985), p 118

⁸¹ *Commonwealth v John Fairfax & Sons Ltd* (1981) 55 ALJR 45 at 49 (Mason J).

⁸² For further detail on the classification of employee information see *Faccenda Chicken Ltd v Fowler* [1985] FSR 114 (Ch); (1985) 6 IPR 155 (CA)

acute where the fluid movement of skilled employees across organisations within the cluster is on the one hand a positive to the overall cluster but it can also be the basis for substantial conflict between individual cluster participants. To cope with this difficulty in cluster environments participants need to not only enter into mutual confidentiality obligations but potentially also non-solicitation arrangements by which they will not actively poach each others skilled employees.

Justifications for breach of confidence

Although the elements of an action for breach of confidence may be made out, the courts may still decline to provide a remedy if the disclosure is able to be justified on public interest grounds.⁸³ In Australia, the circumstances in which a public interest justification for disclosure will exist, appear to be very narrow where careful balancing of the public interest in protection of the information against the public interest in receipt of the information is required.⁸⁴

Remedies for breach of confidence

In broad terms the remedies available for breach of confidence include an injunction, account of profits, damages, orders for delivery up and/or destruction and orders for entry and seizure of evidence. Injunctive relief will be the usual form of relief as a means of protecting the confidential nature of the information. However, in circumstances where the obligation has been breached and there has been substantial public disclosure of the information, an injunction may not be appropriate.

Confidentiality in Cluster Environments

A failure to deal adequately with issues of confidentiality between participants in a cluster environment is likely to challenge the success of the cluster. Some of the potential difficulties include:

- poor levels of trust between participants;
- disincentives for participants to share confidential information;

⁸³ *Fraser v Evans* [1969] 1 QB 349

- dysfunctional behaviour between participants in relation to key employees of those participants where there is a risk of poaching of employees between participants.

These difficulties combine to act as a brake to the need in successful clusters for high levels of engagement between participants. Overcoming these difficulties calls for cluster participants to deal with issues of confidentiality between themselves. Suggestions for the necessary framework for confidentiality are set out in the recommendations sections below.

Existing Approaches to the Management of IP in Collaborative Environments

A primary source for information in non-cluster but collaborative environments is available by reference to the experience in Australia of cooperative research centres. Approaches to IP management in University environments are also instructive but in those environments, Universities as the owner of a large portion of employee created IP are in a different position to many other purely cooperative environments. Also the prevalence of university specific commercialisation entities⁸⁵ needs to be taken into account as a significant point of difference to cooperative research centres.

Relevant publications include *National Principles of Intellectual Property Management for Publicly Funded Research*⁸⁶ and *Interim Guidelines for intellectual Property Management and Commercialisation for Health and Medical Research*.⁸⁷ Both of these publications appear to have come about as a result of reports and discussion papers related to

⁸⁴ *Commonwealth v John Fairfax & Sons Ltd* (1981) 55 ALJR 45 (HC), *Esso Australia Resources Ltd v Plowman (Minister for Resources)* (1985) 128 ALR 391.

⁸⁵ Such as Uniquist for the University of Queensland and ANUTech for the Australian National University.

⁸⁶ The Australian Research Council, The Australian Tertiary Institutions Commercial Companies Association, The Australian Vice-Chancellors Committee, The Department of Education, Training and Youth Affairs, The Department of Industry, Science and Resources, IP Australia and the National Health & Medical Research Council, August 2001. See http://www.arc.gov.au/grant_programs/national_ip.htm

⁸⁷ See <http://www.nhmrc.gov.au/research/general/ipmgtgde.pdf>

Government strategic policy direction to reinforce research investment and commercialisation.⁸⁸

Some assistance can also be drawn from CRC Australia⁸⁹ and the Cooperative Research Centres Association.⁹⁰

The National Principles suggest that research institutions need to implement policies aimed at ownership, protection and exploitation. In relation to ownership, public funding agencies should have a clear policy on whether they will claim any ownership and/or associated rights for IP generated from supported research. In particular this calls for clear agreements with employees, grant holders and students (including postgraduate students) on ownership and associated rights of IP. Institutions should have procedures in place to guide researchers in assessing existing IP in the field likely to affect the relevant research and for the regular review of IP and associated commercial activities and outcomes arising from publicly funded research. The Principles also direct institutions to have policies that recognise the rights and needs of all stakeholders involved in the research supported by public funds and that define the way in which benefits from the development and exploitation of the IP will be allocated.

Finally in relation to commercialisation of research findings the principles suggest that individual researchers are expected to consider the most appropriate way of exploiting IP, it being acknowledged that there is no single “best approach”. Options offered include exclusive and non-exclusive licences, research agreements or contracts through to joint ventures or the establishment of spin-off companies.

The implementation of the guidelines requires a process whereby participants in collaborative research projects involving public funding engage in negotiation for the form of documentation regulating IP arrangements between participants at the outset. The experience in collaborative projects not involving public funding is similar where

⁸⁸ *Health and Medical Research Strategic Review: The Vicious Cycle: Working together for health and medical research* (the Wills Report) Commonwealth of Australia 1999, *Knowledge and Innovation: A policy statement on research and research training* (The White Paper) Commonwealth of Australia 2000, *Australian Science Capability Review: The Chance to Change* Commonwealth of Australia 2000, *Innovation: Unlocking the Future* Commonwealth of Australia 2000, *Backing Australia's Ability: an innovation action plan for the future* Commonwealth of Australia 2001.

⁸⁹ See <https://sciencegrants.dest.gov.au/CRC/information/Default.aspx>

⁹⁰ See <http://www.crca.asn.au/>

issues of risk minimisation and corporate governance in the private sector leads participants to similar behaviour.

In endeavouring to apply a similar approach to cluster environments the following difficulties are likely to arise:

- A highly regulated procedure for engagement between participants at the outset is likely to result in participants being less likely to engage;
- Public funded research will usually involve a lead agency such as a cooperative research centre which facilitates the brokering between participants whereas in cluster environments there is often no similar broker or lead agency for negotiations between participants;
- In a collaborative research environment the identity of participants is likely to be known at the outset and is unlikely to change during the life of the project whereas in a cluster environment project participation at the outset and during a project is likely to be much more fluid.

Initial Recommendations for the Management of IP in Clusters

Despite the difficulties of the direct application of the national principles for IP management involving public funded research outlined above, those principles are a useful starting point.

Based on the material covered by this paper to date the key issues to be overcome include:

- the inflexible and generally undesirable outcome of leaving IP ownership to the default statutory position;
- the need for an environment likely to foster participation and to cope with the changing nature of cluster participation in projects;
- in some cluster projects the lack of a lead agency to control the process of cooperation between participants in a project; and
- the sometimes poor understanding of small firms likely to be involved in clusters of the basics of IP and commercialisation of IP particularly jointly developed IP.

Based on the above and adopting a methodology similar to that outlined in the National Principles the following principles are recommended:

Identification of Participants

Frameworks need to be developed for the sometimes fluid nature of cluster participation. In broad terms the principles for identification need to focus on:

- Key projects of the cluster including core participants and non-core participants. In this context the core participants would be those whose participation is essential to the success of the project. Core participants are likely to have minimum performance obligations between each other as the basis for maintaining their status as core participants. Non-core participants are other cluster participants who are interested in the outcome of the project but in relation to whom there are no specific performance obligations other than those for general cluster participation.
- The identity of each cluster participant including basic information such as the size of the organisation and its broad objectives from cluster participation.
- Classifications between mediated access to information about participants and unmediated access. Information subject to unmediated access would be limited to the identity of the participant and its broad areas of interest and would be generally available to cluster participants and in some cases to prospective participants. However in relation to core participants in a project much higher levels of engagement and therefore information about each core participant are called for. Access to this project specific information that might extend to key financial and other trade secret data would need to be tightly controlled.
- A repository for the various classifications of information and the means of control over unmediated information and mediated information. This could be achieved either by a website with varying permission levels or some other distributable data source which is readily able to be updated.
- Consideration of the need for a cluster convenor which acts as the data store and the controller of mediated information and access to it. Without a cluster convenor or some other third party the lead time for high levels of trust between participants may be longer.

Nature of engagement between participants

A prescriptive contractual basis for engagement extending to all cluster participants is counter productive in that it presents a significant barrier to engagement between participants when in the early stages of participation those barriers need to be minimised and largely based on principles of trust. However, as projects are identified and participants in each project are recognised the need for formality starts to increase.

The extension of the principles in relation to the identification of participants dealing with projects, core and non core participants, mediated and unmediated information and the regulation of permissions between participants need to be factored into the method of engagement.

Identification of IP

The cluster should aim to develop procedures to assist cluster participants in recognising when collaborative discoveries have potential commercial value. The principles need to provide a broad framework for review processes in projects to identify IP that can be protected and commercialised.

Protection of IP

Cluster participants need to have policies in place that make it clear to staff and as between participants their respective responsibilities in relation to IP protection. These policies need to extend to the maintenance of research records and the prevention of premature public disclosure of research results prior to obtaining IP protection and should be linked to the obligations of confidence between cluster participants.

Ownership of IP

In respect of agreed projects where collaboratively developed IP is a possible outcome, cluster participants need clear policies on the claiming of ownership and associated rights for IP generated from the collaboration. These principles need to be closely linked to principles on commercialisation.

Ownership policies should extend to the principles for the resolution of sharing arrangements between cluster participants and if necessary individual employees as inventors of each participant.

Assessment of existing IP

Participants should have procedures in place to guide all parties involved in collaborative projects in assessing the existing IP in the field that is likely to affect any joint research and to determine their freedom to operate in that field of research.

Management of IP

Participants should have procedures for the regular review of IP and associated commercial activities and outcomes from collaborative research. This may extend to procedures in place to obtain advice on the options available for commercialising IP and forums for the discussion of agreed commercialisation paths between joint owners.

Sharing of Benefits

Participants should have procedures to recognise the rights and needs of all project participants and other stakeholders involved in the relevant project from which the IP is developed. These procedures need to establish a framework from which the participants can determine the way in which benefits from the development and commercialisation of the IP will be allocated.

Transparency and Reporting

Participants should agree on reporting protocols for IP management between themselves and to any other 3rd parties involved in a particular project. These reporting obligations will exist during the implementation of a project but must also extend to reporting on IP management for the life of the relevant IP regardless of the duration of the project from which that IP is developed.

Role of Business Brokers in engagement and dispute resolution

Participants should develop policies and procedures that provide guidance in relation to potential conflicts of interest concerning ownership, management, protection and commercialisation of IP. These policies and procedures may include a recognition between participants of the role of business brokers sponsoring or otherwise facilitating the cluster or particular engagement between the participants. This recognition may extend to the role of the business broker acting as a mediator in any disputes between cluster participants.

Cross Licensing considerations

Although associated with the subject heading of the management of IP this is an aspect of management that requires special consideration in cluster environments. Participants need policies and procedures for the licensing to each participant of existing IP brought by a participant to a project before any engagement. This cross licensing is only necessary to the extent required for a licensed participant to use another participant's pre-existing IP for the project purposes. This concept of approved purposes is also relevant in relation to the use of confidential information as discussed below.

Initial Recommendations for the Management of Confidentiality in Clusters

For ease of reference we have endeavoured to categorise our recommendations in a similar way to the principles outlined for intellectual property. The nature of confidential information and obligations between cluster participants necessitates some departure but where possible we have used the same categorisation as above.

Based on the material covered by this paper to date the key issues to be overcome in relation to the management of confidential information include:

- the need for an environment likely to foster the sharing of information between participants and to cope with the changing nature of cluster participation in projects and the need to preserve confidentiality;
- the possible tensions caused by key employees moving between cluster participants and the requirement for non-solicitation covenants between participants;
- the principles for permitted disclosures between participants to preserve confidentiality and permitted disclosures outside the cluster recognising the competing interests of promotion of firms within the cluster while protecting trade secrets of participants.

Identification of Participants

The framework referred to above in relation to IP is equally applicable in relation to confidentiality between participants. In particular the relevant principles in respect of confidentiality need to include:

- the recognition of core participants and non-core participants in a project including the scope of approved purposes where there is likely to be differences in scope between core and non-core participants. For example non-core participants are likely to have very narrow permitted purposes in relation to the use of another participant's confidential information whereas core participants are likely to require a more expansive scope for permitted purposes.
- Basic information in relation to the nature of confidential information of each cluster participant.
- Classifications between mediated and unmediated access to information about participants. This classification should also be linked to the permitted purposes for the use of confidential information.
- A repository for the various classifications of information and the obligations of confidence in relation to each item of information.
- Consideration of the role if any of a cluster convenor in relation to confidentiality obligations between participants particularly in relation to highly mediated information.

Nature of engagement between participants

The same difficulties apply in relation to a prescriptive contractual basis for engagement as outlined above in relation to IP. The difficulty is acute in relation to confidential information where prior to any disclosure there should be agreement in relation to confidentiality obligations between participants. The suggestion in this regard is the creation of a code of conduct for cluster participants which would include initial obligations between participants during the early stages of engagement. However, this would require some formality with each participant agreeing in writing to be bound by the code of conduct. As the level of engagement increases the need for formality in relation to confidentiality obligations will also increase.

It needs to be recognised that engagement on this basis will be uncomfortable for many legal advisers to individual cluster participants. Operating in such a loose environment presents high levels of risk to individual participants. Accepting that risk without stifling the willingness of participants to engage in the cluster requires participants to have high levels of trust. As referred to below there is likely to be a high level of self selection of

participants where the tendency to accept the risk is higher where the participant has a collaborative world view.

Identification of Confidential Information

The cluster should aim to develop procedures to assist cluster participants in recognising and classifying confidential information in relation to which obligations of confidence are necessary. The principles need to provide a framework for review processes in projects to identify confidential information and regulate obligations of confidence in relation to that information.

Identification of Employees

Participants should develop policies and procedures in relation to the identification of key employees and the nature of non-solicitation obligations between cluster participants in relation to those employees.

Mutual Covenants in relation to Confidential Information

As suggested above, cluster environments lend themselves to the concept of a code of conduct between cluster participants where a covenant of compliance with the code can be a precursor to inclusion within the cluster. This requires a balancing between a prescriptive and comprehensive legal approach and a light touch approach which encourages new participants and enables ease of entry. The code of conduct approach can also be used as a framework for trust and ethics between cluster participants and this is explored in more detail below.

Management of Confidential Information

Participants should have procedures for the regular review of confidentiality obligations between participants. This may extend to procedures in place to deal with confidential information that is created from engagement between participants and the principles for determining ownership of jointly developed information similar to those in relation to jointly developed IP.

Permitted Purposes

Participants should develop principles for the development of permitted uses and disclosures of another participant's confidential information. During the early stages of cluster engagement between participants, permitted use and disclosure is likely to be narrow and may be recognised as part of the cluster's code of conduct for engagement. For project specific engagement between participants, specific parameters for use and disclosure may need to be agreed.

Transparency and Reporting

Participants should agree on protocols for reporting of uses and disclosures of other participants' confidential information. These protocols need to span early engagement at the general cluster level and project specific uses and disclosures. These reporting obligations will exist during a participant's engagement with the cluster but must also extend to reporting as long as the relevant confidential information remains confidential.

Role of Business Brokers in engagement and dispute resolution

Participants should develop policies and procedures that provide guidance in relation to potential conflicts of interest concerning the recognition of and permitted uses and disclosures of confidential information of all cluster participants. These policies and procedures may include a recognition between participants of the role of business brokers sponsoring or otherwise facilitating the cluster or particular engagement between the participants. This recognition may extend to the role of the business broker acting as a mediator in any disputes between cluster participants.

The approach taken in suggesting principles in relation to IP ownership and confidentiality obligations adopts something of a traditional adversarial approach in the resolution of these issues. For clusters to truly succeed, high degrees of trust are required between participants. **Rather than the principles being seen as a regulatory framework between participants, high levels of trust can become the glue by which the participants can be freed from a prescriptive agreement basis for engagement to a code of conduct basis for engagement.** This theme is explored in more depth in the trust and ethics section of this paper.

Ethics in Clusters

For a cluster to truly succeed there needs to be high levels of engagement between participants. High levels of engagement require trust between participants. Trust between participants requires shared values. A consistent interpretation of shared values by participants in a cluster leads to the importance of ethics in the relationships between cluster participants.

Conduct and behaviour of cluster participants both imply an ethical framework or a set of principles that serve to justify or ground those actions. Participants may not be consciously aware of the ethical or moral orientation adopted, but, each participant is likely to be acting from some guidelines that fall into one or more basic ethical traditions.

There are various moral theories which underlie ethical choices. Preston (1996) identifies various theories, such as the following.

- Virtue theory is the valuing of dispositions appropriate to human flourishing and an integrated life;
- Communitarianism is the appeal to the shared and evolving traditions of one's community;
- Utilitarianism is the determination of the value of an act by referring to its moral consequences;
- Deontological principles are reflected by an appeal to general principles, such as justice, human rights or respect for persons;
- An ethics of care is when an individual is being guided by care, compassion and a concern for the human relationships within each situation.⁹¹

A comprehensive account of cluster participants ethics would examine each of the above moral theories more closely. For success, an ethical nature of the cluster's objectives needs to remain at the forefront of concerns embedded in each participant's everyday activities relevant to the cluster. Furthermore, these ethical stances, by necessity, need to be explicit, accepted and openly acknowledged. To achieve this, participants need to display the following characteristics:

- an ethical participant will be characterised by ethical awareness; and
- within each participant there needs to be an acceptance by corporate personnel of responsibilities for their actions, both individually and as a collective.⁹²

Reference is made above in the section dealing with confidential information to the use of a code of conduct approach as a means of achieving an informal and easy method of initial engagement between participants. However, codes of conduct do very little, if anything, to promote ethical behaviour. A solution to this could be the development of a code of ethics between participants, but even this will not address the real issue of trust and shared values between participants. In this respect it is the culture of the cluster and the culture of engagement between cluster participants that is the key and codes are not an alternative to the active and creative management of that culture.⁹³

Codes of conduct are often prescriptive and set out specific (but minimal) guidelines for conduct by cluster participants. Codes of ethics, unlike codes of conduct, are predominantly aspirational. They usually contain a smaller number of general or fundamental principles which will be of particular importance in instances where a code of conduct is silent or unclear. In developing codes, care needs to be taken that ethics are not defined as legal compliance. To do so implicitly endorses a code of moral mediocrity for the cluster.⁹⁴

Despite the above limitations, the exercise of developing codes can be worthwhile as it forces all participants to think through in a fresh way the mission of the cluster and the important obligations they as a group and as individuals have with respect to the cluster and more broadly.⁹⁵ The process is also educative as it forces participants to become ethically aware and to consider ethical choices. This could potentially be a starting point for achieving shared values between participants.

⁹¹ Debowski, Reuck and Herschmann, "Facilitating Ethical Practice in Business: A Primer in Professional Ethics for Corporate Administrators", March 2003. See http://www.icponline.org/feature_articles/f8_03.htm.

⁹² Ibid.

⁹³ "Why Codes Fail", Simon Longstaff, St James Ethics Centre 1994. See <http://www.ethics.org.au/>.

⁹⁴ Lynn Sharp Paine from "Ethics Complexity and Change", St James Ethics Centre, 2001. See <http://www.ethics.org.au/>.

In taking the decision to develop codes it is important to recognise their limitations and reasons for failure. It is clear that there needs to be a level of trust between cluster participants sufficient to ensure that participants are prepared to believe claims by the cluster or any participant that the rules are designed to prevent a serious mischief or promote a worthwhile good. In a similar vein, it must be recognised that the range and quality of relationships that underpin the cluster's culture and the culture of engagement between participants needs to be such that a sufficient degree of loyalty is felt to be owed to the cluster and its defining ends and to other participants.

Recourse to a 'quick fix' has a further disadvantage. At first glance the error might seem to be quite trivial. However, there is considerable significance to be found in the fact that so many organisations set out to develop a Code of Ethics and instead produce a Code of Conduct (or some sort of hybrid). The significance of this goes beyond the issue of mis-description. Rather, the confusion is evidence of the phenomena in which the broader issue of ethics is set aside in favour of the 'hard science' of specifying types of behaviour that, in defined situations, are to be prescribed or proscribed.⁹⁶

"There are many reasons why a set of regulations will be inadequate in ensuring that clients are properly protected. Firstly, regulations cannot cover every case and hence, without a good understanding of the 'spirit' of the regulation, it may be misinterpreted or considered irrelevant. Secondly, precise regulations create a climate in which people feel able to abandon any sense of personal responsibility, once they have made a token effort of what is required of them. Thirdly, if no attempt is made to help employees explicitly reflect upon, and internalise, an ethical standard (which includes an understanding of the purposes of the regulations and a commitment to those purposes) the employees' behaviour may be reduced to legalistic rule-following or minimalist compliance, where the letter of the law is observed but its spirit is not. Fourthly, precise regulations can reinforce a 'culture of compliance', in which doing the right thing comes to be equated with following instructions, regardless of their content and regardless of the gaps or flaws they contain. We have consequently taken away the intellect and creative potential of an employee which often generates that 'human' approach."⁹⁷

It is reasonable to suggest that these observations can readily apply to participant behaviour in a cluster environment. In developing codes as part of a broader recognition of the importance of culture the aim should be to develop an ideal cluster as an ethical

⁹⁵ DeGeorge, Richard T. *Military Ethics: A Code of Ethics for Officers*. Washington: National Defense University Press, 1987

⁹⁶ Supra, footnote 93.

⁹⁷ Supra, footnote 91.

community. The essential features of this type of ethical community should include a community where:

- participants care about each others' well-being and seek to promote that well-being;
- ethics as seen as something positive such that ethical conduct is consciously promoted in all relationships rather than as something to constrain or promote guilt;
- the notion of participants as worthy of respect and consideration is not abstract or impersonal but rather participants are driven by principles based on awareness of each participant's uniqueness and 'specialness';
- consistency and justice is the basis of all actions and considerations of participants such that emphasis is placed on the worth of each participant in a concrete and particular sense;
- the cluster and participants recognise that those that they engage with outside the cluster are persons also and are treated respectfully and in a caring manner; and
- those associated with the cluster are guided by a concern to build up the cluster as a caring community, where every person is of worth and is helped to contribute to the well-being of the cluster community.⁹⁸

The process of developing codes should not be allowed to take too long but should be done in such a way as to retain the sense of ownership sought at the outset. The codes then needs to be reviewed at regular intervals to avoid becoming 'stale' and forgotten. Clusters must go through the process of developing their own codes rather than using codes already developed within other clusters as ownership is the key to success. In this regard the process is as important as the result.

Trust in Cluster Environments

From the perspective that clusters grow from collaboration between competitors, the importance of trust is clearly recognisable. The difficulty is that for many business people, collaboration between competitors is oxymoronic. This tends to be the view where competition is approached from a Darwinian perspective of the survival of the

⁹⁸ Ibid.

fittest . However, from the perception of collaboration to achieve international competitiveness concepts of competition become something more in the nature of healthy rivalry where potential competitors band together to achieve a market position that no individual firm is capable of achieving. Trust is the key and potential competitors must be persuaded to trust each other, to believe in the value of the cluster and to commit themselves to the vision that every successful cluster needs.⁹⁹

Trust, where it stems from shared values between participants takes time to develop. Successful clusters need to look at environments conducive to fostering the promotion of trust between participants. As a means of promoting shared values the research in the area of ethics suggests beginning with a values audit. This would involve asking the participants to indicate:

- what they think are the most important values the cluster stands for;
- how prominent they believe each of these values ought to be in the cluster; and,
- how prominent they believe each of these values actually is in the cluster.

This activity may initiate the identifying of a 'values gap' between the participants and the cluster. Such a gap may provide a springboard for a code of ethics as the development of a set of principles which will contribute to closing that gap. Guidance in this process should be given to participants employees.

Within that framework, the code of ethics should be hammered out by the participants themselves. The outcome is more likely to be relevant to the daily experiences of the cluster, while the process will reflect the principles founded in the notion that all participants within the cluster are respected and will promote a culture in which trust is engendered and value differences are acknowledged and negotiated. It will also be very important to 'authenticate' the code by applying it to actual ethical dilemmas confronted by participants in relation to the cluster.¹⁰⁰

Further work in this regard can be undertaken by reference to the cluster mapping initiatives which are explored in other sections of the report.

⁹⁹ "Clusters and Regional Development", Hon Pete Hodgson, New Zealand Minister of Energy, Minister of Fisheries, Minister of Forestry, Minister of Research, Science and Technology, Minister for Crown Research Institutes, Minister for Small Business, 28 November 2001. See <http://www.regdev.govt.nz/conferences/2001/hodgson/>.

Legal Regulation of Trust

As outlined above in relation to codes of conduct, a prescriptive regulatory approach to conduct between participants has numerous difficulties including the following:

- Regulations cannot cover every case particularly where the outcome of any engagement between cluster participants is likely to be a largely unpredictable work in progress at any point in time.
- Precise regulation creates a climate in which participants may feel able to abandon personal responsibility in favour of merely token effort.
- Contractual methods of regulating behaviour will have a tendency to reduce participants to legalistic rule-following or minimalist compliance without participants embracing the 'spirit' of the cluster.
- Regulations can lead to a culture of compliance in which behaviour is driven towards following instructions without regard to gaps or flaws in those regulations.¹⁰¹

The most telling argument against the idea of using contract or some other legal means of regulating trust in a cluster environment is one of complexity. Adopting a legalistic view from an adversarial standpoint tends to result in documentation between potential participants prior to engagement being lengthy and complex particularly where the approach is one of certainty in risk allocation. Further, there can be no guarantee that the documentation would adequately cover every possible aspect of future engagement between those participants.

Environmental Factors to Enhance Trust

Codes of Conduct and Ethics

Recognising the dangers of codes as explored above¹⁰² codes offer a method for early engagement between participants minimising the need for complex legal arrangements. One additional (and significant) difficulty is that new participants to

¹⁰⁰ Supra, footnote 91.

¹⁰¹ Supra, footnote 91

¹⁰² See the section dealing with Legal Regulation of Trust on page 67

a code based cluster may be required to sign up to the code without the sense of personal ownership and responsibility that is an essential feature of successful codes.

This difficulty needs to be addressed in some way. The preferred time to address the difficulty is in the induction process for new participants and potential methods include:

- requiring potential participants to undertake a values assessment to determine that the participant has a collaborative or closely related world view; and
- the use of a sponsoring agency, broker or some other selection committee to educate the potential participant about the cluster and the importance of its code, values and goals as a means of promoting self selection of participants.

Sponsoring Agencies

Industry association based clusters can use association membership as a precursor to active engagement in the cluster. This has the advantage of an additional layer of filtering to ensure there is a sense of self selection by cluster participants. However, this potential advantage needs to be weighed against the disadvantage of a non-inclusive approach to participation where significant contributors may be excluded on the basis that membership of the industry association adds nothing to the particular organisation.

Other potential advantage of a sponsoring agency to cluster formation include the use of that agency as a:

- 3rd party broker as discussed below; or
- contracting entity by which participants can join together for a specific project without the need for incorporation of a special spin-off entity or the adoption of one of the participants as a prime contractor.

3rd Party Brokers

Adopting the approach of limited hurdles to participant engagement in a cluster highlights the important and varied roles for a cluster convenor either as an industry association referred to above or some other 3rd party convenor.

If there is a low level of formality to participant engagement in a cluster then there needs to be a high level of trust for that engagement to be effective. 3rd party brokers can play a key role in brokering trust initially between the participant and the 3rd party broker and subsequently between participants across projects.

Potential roles for 3rd party brokers in cluster environments include:

- a collection agent for each participant's confidential information and any pre-existing IP;
- the source for information relating to all cluster participants, any projects, the core and non-core participants in any project and each participant's areas of interest relevant to cluster participation;
- the controller of access to mediated and unmediated information relating to each participant;
- a point of contact for the entire cluster with other networks and clusters to promote the establishment of a cluster of clusters;
- a mediator between project participants in the case of any dispute.

It can be recognised that the various roles require a broad range of skills and some clusters may develop a network of brokers that fulfil different roles within the cluster.

The Role of Government

In terms of resource allocation, industry led clusters present a desirable alternative to government sponsored clusters. However, government has key roles to play in the following areas:

- the promotion of links across clusters and networks through the cluster of clusters approach by ensuring engagement between individual clusters and government to maintain the currency of government information about individual clusters and networks.
- to facilitate links between clusters and publicly funded educational institutions, R&D institutions and other CRCs relevant to the industries in which the cluster operates.
- the use of clusters and networks as a means of promoting access to industry incentives in areas of need (such as the use of AEEMA as a partner in the Tradestart Program thereby enhancing the availability of those incentives to cluster participants).

- engaging with cluster participants to ensure that R&D tax concessions are readily available in cluster environments.
- enhance the connections between local, state based, national and international programs to promote the concept of industry led clusters being in partnership with all levels of government.

Cultural Complexity

Shared values, ethics and trust are difficult enough without adding cultural complexity. This can be illustrated by reference to attitudes in relation to IP which is a key theme of this paper.

- The European tradition emphasises the moral rights of the authors (droit d'auteur). These are related to the person of the author and concern the integrity and authorship of the work as well as the author's reputation.
- The Anglo-American tradition emphasizes the property or economic rights (copyright). These rights can be transferred. According to this tradition original works of authorship in any material form should be protected.¹⁰³
- The Asian tradition(s) consider copying as a matter of emulation of the master.

Conflicts arise when national and international laws and moral traditions protect different aspects of various media. Also a cluster participant's cultural background may have a significant impact in how that participant considers IP and confidentiality obligations in the cluster environment. The suggestions in relation to codes of ethics, values audits, shared values and trust in other sections of this paper are important in overcoming cultural background to achieve a common ethical understanding of participant behaviour in the cluster.

However, it needs to be recognised that clusters where the participants cross significant cultural boundaries are the subject of special challenges.

¹⁰³ In Australia see the *Copyright Act 1968*. This is substantially similar to US protection in relation to "original works of authorship in tangible means of expression" (17 U.S.C. sect. 102(a)). However, international harmonisation has led to moral rights now being a feature of the copyright in works in anglo-american jurisdictions.

Final Recommendations for the Management of Clusters

As outlined in Activity 2 of this report successful clusters exhibit elements revolving around organisational, operational and administrative regulation. These elements are adopted here as a useful way of grouping together various aspects for the organisation of successful clusters.

Organisational

Cluster as a legal entity

Structuring for legal entities is a substantive subject in itself. In broad terms the alternatives in a cluster context are joint venture either incorporated or unincorporated, partnership, incorporated association or co-operative. In the context of a corporate entity (company) the choices would be either company limited by shares or company limited by guarantee.

For the purposes of a cluster as a whole engaging with 3rd parties, the existence of a legal entity representing the cluster is important. However, a single corporate structure for a cluster has significant shortcomings including the following:

- The regularly changing identity of participants (particularly in the formative stages of a cluster) can be difficult to deal with and any structure adopted needs to have mechanisms for the easy entry and exit of participants from the cluster.
- A single entity can be severely limiting on the basis that clusters often need to rely on project based activity by different groupings of participants.
- The management of IP rights and confidentiality arrangements across all participants where there are differing levels of engagement between participants, differing outcomes in projects and core and non-core participants becomes increasingly complex as the numbers of participants and project based activities increases. Endeavouring to deal with all of this comprehensively in a single entity may stifle collaborative behaviour which needs to be a key feature for successful clusters.

Having regard to the successful Marine ICT Industry Co-operative Tasmania considered in Activity 2,¹⁰⁴ it is worth considering the idea of a co-operative as a

¹⁰⁴

See Case Study- The Marine ICT Industry Cooperative Tasmania on page 142.

suitable legal mechanism. While exhibiting the disadvantages outlined above the Tasmania example endeavours to overcome those difficulties by recognising that the co-operative is the principal entity regulating membership but allowing individual collaborative activity between cluster participants occurring via project specific contractual arrangements between members. However, the Tasmanian example recognises the co-operative as being the representative of the cluster with all activity including risk/reward being dealt with entirely within the co-operative structure.

The new paradigm outlined in this report calls for something far more sophisticated in terms of structure to create a framework for the cluster of clusters approach. The key structural elements necessary for the new paradigm are recommended as follows:

- Clusters should be led by a sponsoring agency which could be government but is preferably industry led such as an industry association.
- Early participation in a cluster should call for little more than acknowledging a code of ethics and code of conduct for the cluster with no concept of contribution other than personally committing to the objectives of the cluster. Despite this clusters may want to otherwise formalise the induction process to ensure that participants are sufficiently attuned to concepts of collaborative behaviour and exhibit shared values consistent with the objectives of the cluster.
- The creation of specific legal entities should be project or activity based to recognise that participation will be different depending on the project or activity. This also promotes context specific thought being given by participants to each individual project or activity thereby allowing specific allocation of risk for each activity. As a result, successful clusters are not likely to exhibit any single style of corporate structure. Rather, a loose collaborative framework between potential participants exists whereby “marriage” to a particular project or activity occurs on a case by case basis.

These themes of structure are expanded upon in each of the following areas of final recommendations for the management of clusters.

Governance

Where a cluster is represented by an industry association its governance can be regulated under by-laws for that industry association so that active roles in governance are only available to members of the industry association. Where that is not possible the cluster could deal with aspects of membership and governance

via an incorporated association, industry co-operative or company limited by guarantee. In adopting any of these approaches it needs to be recognised that the entity should play little role other than the means of allowing the entry and exit of participants. Project or activity based collaboration between participants should then occur via a specific entity for that project or activity recognising the differing inputs and allocations of risk and reward to the specific participants in that project or activity.

An elected board of management should be responsible for the operational aspects of the cluster such as financial control, staffing, the level of subscriptions of members, and the powers, roles and responsibilities of directors or the management committee.

Codes of Ethics and Conduct

At the time of formation or shortly thereafter a cluster should, with the involvement of all participants, develop a suite of formation documents including a mission statement, objectives of the cluster, a code of ethics for cluster participants a code of conduct for cluster participants. These documents will be in addition to the appropriate constituent documents depending on the nature of the corporate entity adopted for the representation of the cluster. However, if the cluster is established under the umbrella of an existing industry association it will be able to adopt the constituent documents of its sponsoring association. In developing codes, the participants need to recognise the shortcomings of codes as outlined above.

Error! Reference source not found. sets out a suggested form of code of conduct and ethics. However, as outlined above, for codes to work there must be a strong sense of ownership by members of a particular code and merely adopting a pro forma approach without active discussion between potential participants will largely invalidate the benefit of having a code. The code in APPENDIX 1 also endeavours to deal with some other operational elements in relation to confidential information. The draft code should also be tailored so as to be consistent with the remainder of the formation and constituent documents for a particular cluster.

Funding

For clusters established as a sponsored industry association cluster, initial funding for the establishment of the cluster can be from the sponsoring industry association. A disadvantage of this approach is that it may tend to “cheapen” a potential participant’s view of the cluster and commitment to the success of the cluster. However, it has the advantage of keeping a vibrant base of potential cluster participation during the early phases.

For non industry sponsored clusters, early funding requires member subscriptions. These need to be at a level so as not to undercapitalise the venture from the outset but during the phases of trust development.¹⁰⁵ However, it is the view of the project team that establishment funding for non industry sponsored clusters is better dealt with by government grant to make the base of potential cluster participants as broad as possible. It is recommended that this funding needs to be limited to approximately 2-3 years by which time the core participants will be known and their ongoing commitment to the success of the cluster should be dependent on continuing subscriptions or those core participants will gather together via a project or activity specific corporate entity.

Sponsoring Agency

The project team sees the existence of a sponsoring agency as critical during phases 1 and 2 of a cluster lifecycle. The continuing commitment of a sponsoring agency is desirable during phase 3 but by phase 4 where a core group gathers under a project based model the role of the sponsoring agency is substantially diminished.

As outlined above the sponsoring agency forms the basis for participants to gather together and may take on some of the roles for a 3rd party broker.¹⁰⁶

Intellectual Property

During early phases of the cluster lifecycle IP in relation to the cluster will largely relate to formation documents and other early stage collaboration where the

¹⁰⁵

Phases 1 and 2 as outlined in the cluster development lifecycle on page 35

commercialisation value of foreground IP will generally be low. There is a fine balance to be struck between flexibility in cluster participation to promote success for the cluster and the management of IP in relation to jointly developed material. Adopting a project or activity basis for engagement between cluster participants, the detail in relation to the management of IP can largely be left to the time of establishment of the project or activity. As outlined above the risks associated with jointly created IP need to be managed with a light touch approach until a spin-off project or activity is documented. The initial recommendations for the management of IP in clusters outlined above¹⁰⁷ continue to hold true on the basis of cluster formation and development outlined in this section and need to be dealt with around the elements outlined above in the recommendations. In the organisational area the relevant recommendations relate to the identification of participants, the nature of engagement between participants, the assessment of existing IP, the role of business brokers in engagement and cross licensing considerations.

Confidentiality

As outlined above the project committee recommends arrangements at the organisational level to include:

- The management of unmediated access via the cluster sponsoring agency or other appropriate formation body with mutual covenants being managed by a formal signing process for new participants to the code of ethics and code of conduct;
- The role of a cluster sponsoring agency, convenor or other 3rd party broker in relation to access to mediated information;
- The method of engagement between participants in relation to specific projects or activities and in the case of spin-off entities the management of confidentiality and IP via contractual arrangements for the creation of the spin-off entity;
- Classifications of participants to core and non-core participants in relation to specific projects or activities linked to mediated and unmediated access to information;

¹⁰⁶ As outlined above in the section dealing with 3rd Party Brokers on page 68

¹⁰⁷ See Initial Recommendations for the Management of IP in Clusters on page 54.

- Development of principles for permitted uses and disclosures of another participant's confidential information.

3rd Party Brokers

Clusters at all phases need to consider the roles, if any, of 3rd party brokers in relation to the methods of engagement between participants. Some of the potential roles include:

- a collection agent for each participant's confidential information and any pre-existing IP;
- the source for information relating to all cluster participants, any projects, the core and non-core participants in any project and each participant's areas of interest relevant to cluster participation;
- the controller of access to mediated and unmediated information relating to each participant;
- a point of contact for the entire cluster with other networks and clusters to promote the establishment of a cluster of clusters;
- a mediator between project participants in the case of any dispute.

The identity of the broker is a matter for each cluster but may include a convenor, a key executive or secretariat for the sponsoring agency if any of the cluster or professional advisors or other sponsors of the cluster.

Operational

Intellectual Property

In the operational area the relevant recommendations outlined above¹⁰⁸ relate to the identification of IP, protection of IP, ownership of IP, management of IP, sharing of benefits, transparency and reporting and the role of business brokers in dispute resolution.

Confidentiality

The project committee recommends arrangements at the operational level to include:

¹⁰⁸

See Initial Recommendations for the Management of IP in Clusters commencing on page 54.

- A method of early collection of confidential information from participants relevant to participation in the cluster;
- The classification of confidential information in relation to unmediated access and mediated access;
- Development of procedures to assist cluster participants in recognising and classifying confidential information in relation to which obligations of confidence are necessary;
- Development of policies and procedures in relation to the identification of key employees and the nature of non-solicitation obligations between cluster participants in relation to those employees;
- Procedures for the regular review of confidentiality obligations between participants;

Administrative

Administrative arrangements are likely to be highly specific to an individual cluster.

Aspects to consider include:

- The use of online facilities to manage information in relation to the cluster, cluster participants and as a method of engagement between the cluster entity (sponsoring agency or convenor) and individual participants;
- The provision of support services to the cluster particularly where during early phases it has no separate legal existence and relies on support from a sponsoring agency.

Further Development Opportunities

It is beyond the scope of this report to deal in detail with all aspects of legal regulation between participants. In adopting any recommendations consideration needs may need to be given to:

- The use of prime contracting and sub-contracting as a means of dealing with project participants engaging with 3rd parties;
- Precise funding obligations between project participants;
- The tax consequences of a particular project or activity structure including the deductibility of any R&D expenditure;

- The impact of competition law in relation to arrangements between cluster participants, in particular arrangements to avoid any proscribed activity between horizontal competitors.

Each of these areas could be the subject of further work to build on the material already developed for a new Cluster Paradigm.

INDUSTRY MATERIAL AN INDUSTRY SPECIALIST'S PERSPECTIVE

Background

Australia needs to take real and positive steps towards revitalising its high technology manufacturing industries. One way this can be achieved is by industry, in concert with all levels of Government, supporting the development of strong design, development and manufacturing networks, coupled with the positive attraction of base level infrastructure development initiatives. These activities must be undertaken with the view to making Australia's high technology manufacturing sector globally competitive, thus underpinning 'on shore' rapid commercialisation of local ideas.

For many years seen from an industry perspective, no definitive government policy has emerged to guide the development of such an important strategic industry.. Over the past ten (10) years, with the advent of 'the non-core business outsourcing model', Australia has lost most of its large electronics manufacturing players to the global economy. With these global business changes, Australian industry has lost real jobs, across the spectrum, from product development engineers, process engineers, manufacturing engineers, prototyping and testing technicians and production process workers.

It is too easy for Australia to excuse the closures of many of its high quality manufacturing plants with a simple statement to the effect that "Australia is not globally competitive as an electronics manufacturing centre in the world scheme of things". This attitude has not only been a disaster for the electronics industry; but, also for the thousands of quality workers who have lost their jobs and mostly, their expertise has been lost to the industry forever.

High technology design and manufacturing is recognised world wide as a wealth creator. This industry has the potential to be a significant employer of the many technology students that graduate annually from our TAFEs and Universities. Support for the Australian high technology electronics design and manufacturing industry is crucial if Australia is to avoid the already evident trend from technology "maker" to technology

“taker”. It is pertinent to question the procurement policies of all levels of Australian government, in terms of their preference for Australian designed and manufactured goods. It is perhaps pertinent to ask the question: Do we support our local technology industries with a bias to local design and supply? The tendency, over recent years, towards “off the shelf” solutions, seriously mitigates against Australian designed and manufactured supply.

In many respects, being ‘World Competitive’ is about levels of critical infrastructure in the supply chain and of maintaining critical manufacturing mass. Over time Australia has failed to reach and maintain the critical mass required to sustain world’s best practice in a number of areas. This is especially so in the fields of rapid prototyping, high technology manufacturing and technology diffusion. All of this has happened at a time when many other countries in Latin America, Eastern Europe and Asia have embarked on comprehensive and deliberate plans to attract high technology manufacturing. In our region, China and more recently, India have been particularly successful in this regard.

Industry Snapshot

There continues to be an urgent need for Australia to be able to attract high technology electronics manufacturing work from multinationals doing business in Australia and from major defence projects. This is particularly relevant where Australian industry involvement and other offset obligations exist. Australia needs this level and quality of activity in order to establish longer term contracts which, in turn, will provide the impetus to further develop and grow the currently under developed (and in some areas under utilised) electronics design and manufacturing sector in this country.

The need for a strong manufacturing sector as a multiplier to lead the industry in jobs growth and wealth creation has been well documented over many years. A number of industry reports have been presented to Government and eminent people, such as Professor Ashley Goldsworthy, together with industry bodies such as AEEMA and MTIA, have also spoken out strongly on Australia’s lack of strong manufacturing infrastructure projected into the 21st Century.

A good example and one worth a review in the current climate, is the report to the Information Industries Taskforce, titled *“Spectator or Serious player ? - Competitiveness of Australia’s Information Industries”*, by David Charles, Roger Allan and Roger

Buckeridge, dated March 1997. This report is clear and unequivocal in its recommendations that Government must create the climate to encourage “*value add*” activities, such as manufacturing, if Australia is to receive worthwhile financial rewards from its innovations, particularly in the high technology electronics industry.

Strategic alliances with key multinationals, underpinned by strong Government support has been demonstrated, in places such as the European Union and China, as the most successful model for achievement of rapid technology growth goals. By partnering with multinationals it allows for the establishment of long term contracts that are essential for the attraction of the necessary levels of venture capital required to keep pace with world standard manufacturing technology. Multinationals, government agencies and defence contractors also have the volume and quality requirements that allows for ongoing investment to achieve the critical mass necessary to be world competitive in areas such as design, prototyping, manufacturing, raw materials purchasing and robotic machine utilisation. In many fundamental areas of manufacture (eg printed circuit boards) Australia’s manufacturing volumes are now so small as to be arguably below the threshold to maintain a sustainable industry.

With the Electronics Industry Action Agenda (EIAA) now being progressed across Australia there is a **once in a lifetime** opportunity to look seriously at new and innovative ways of doing business to achieve real, growing and sustainable high technology industries.

A number of very progressive individuals have a clear vision for Australia’s high technology industries. There is now an opportunity to develop a world’s best practice design and manufacturing infrastructure locally, providing the nation’s resources are co-ordinated. In this regard, “manufacturing matters” but “high technology manufacturing matters more”.

Industry Surveys

From very early in the actual interview process it was determined that a key theme, not previously addressed in any detail, was a company’s official and unofficial attitude towards collaboration as a means of accelerated and sustainable growth.

Accordingly, a number of questions were framed around recognition of and attitude toward both existing and potential business alliance partners. Specifically, evidence of strong strategic alliances was sought and also whether independently initiated links that involved regular information exchange, data sharing or co-development activities existed.

The survey endeavoured to determine whether the target company had any experiences and views (good or bad) regarding joint ventures, buyer-seller alliances, marketing alliances, technology alliances, technology exchanges, distribution agreements, R&D alliances and the like.

Broadly, surveys were conducted in a one on one mode and in an atmosphere as near as possible to totally informal. This technique was used specifically to elicit 'off the cuff' remarks and instant reactions rather than measured responses which might tend to have people trying to 'second guess' what type of responses were being sought.

In this respect the technique worked extremely well as it took the formality out of the equation and people's reaction was not: "Oh, not another survey?"

The survey was conducted across seventy (70) companies, covering the entire spectrum from micro-enterprises to SME's to trans and multi national and government supported enterprises. The selection process was carefully constructed to cover as broad a spectrum of views as thought possible.

Survey questions were divided into four broad categories and then sub-divided into specific data category, as follows:

1. Size of Organisation

Ownership status of business

No of staff

When founded

Approx turnover

No of management staff

Does the company practice TQM/ LEAN?

Has the company obtained Quality Assurance?

If so to what standard

If not, why is this not seen as an issue?

2. Strategic Issues

What is the company's strategic focus?

What is the composition of the customer base, is it local/interstate/international

What vertical markets is the Business involved in?

Is the company an electronics company?

What industry or industries does the company see itself involved in?

Why was the business formed?

Ownership status of business

The initial capital was raised from what source/s?

Ongoing capital raising from what source/s?

Exit strategy, personal corporate

3. Marketing and Export Focus

Methods of marketing

Interest in export

What countries are being targeted?

How are export opportunities identified?

Future business development strategies

4. Collaborative and Partnering Experiences

Has your company been associated with any industry development activities?

If so which ones Federal / State?

Do you have a personal interest in industry development initiatives?

Is your company a member of any industry association or network?

If so which one/s

Does your company engage in formal/ informal collaboration?

Are short or long term deals are preferred?

Are these considered successful or not?

What were the company's expectations, at the outset?

Were they met?

No of companies partnered?

Does the company expect to grow?

Is the expectation for slow and steady or rapid growth?

How is growth going to be funded?

How will growth be coped with organisationally?

Does the company expect to experience cultural change with growth?

Interview Responses in Review

An analysis of the responses to the survey drew out the following overriding themes, categorized into six (6) sub-groups, namely: Trust Issues, Personal Concerns, Strategic Views, Financial Strategies, Marketing Strategies and Training.

Taking each of the above listed major issues in turn produced the following results:

1. **Trust.** Many companies, particularly those at the micro enterprise and small to medium end of the SME spectrum, see themselves in a totally competitive environment. They do not want to share perceived trade secrets and therefore, collaboration is not something that they think could work for them. Accordingly, lack of trust and difficulties in working together long enough to establish trust in others whom they see (rightly or wrongly) as competitors, is a major issue.

Often the individual claims to have been 'badly burnt' in the past because they trusted somebody, be it a work colleague, manager, or such. Therefore, they are very reluctant to trust anybody in a similar situation again and particularly so, since this time they have their own hard earned capital on the line and also often a mortgage over their personal property, to support the business. Add to this a genuine concern about how a number of separate entities could work together, sharing resources on a development project over a lengthy period of time, without a major conflict.

Larger organisations have very different views of collaborative activities and are generally less reluctant to participate. However, they usually require a much more formal and legalistic approach to setting up a collaborative arrangement before any activity can start. This has a very negative effect with companies at the smaller end of the scale as all they see are significant legal costs with little tangible reward in the early days. This creates an immediate barrier to further progress.

Such organisations also adopt the attitude that 'big brother always knows best, or 'do it our way or not at all'. This creates a natural barrier to progress when dealing with smaller organisations. Larger companies have a range of middle managers who would generally be dealing with these matters. On the other hand, micro-enterprises and SMEs would have the CEO or Managing Director at the table.

This often creates a mismatch of views, ideas and drivers which frequently leads to sufficient mistrust to block any progress toward collaboration.

2. **Personal Concerns.** A large percentage of individuals start up in business because they see an opportunity to 'be independent'; 'be their own boss'; 'be in total control of their own destiny' and 'make all the real decisions'. Generally they are not particularly interested in what might be required for intercompany collaboration to succeed.

Since the start of the great "non-core business" outsourcing rush, from the mid 1990's onwards, many thousands of Australia's technology development individuals have lost their jobs in the larger organisations by process of retrenchment and/or redundancy. This global industry restructuring process has personally touched these people in a number of ways. Firstly, they now have a severely curtailed future income stream and secondly, many also have a greatly diminished view of their ultimate worth to society. Generally, they are in their late thirties through to their mid fifties and many held very senior positions in the development end of the technology products' supply chain.

Often they had been labouring for their entire careers under the often stated belief that they would have a job for life. Subsequent events have proven that this was a mistaken view, with a number of these engineers commencing their own technology businesses as a means of "getting a job" and demonstrating independence. They will 'never work for someone else again' is often stated. They do not have readily identifiable strategic goals either for themselves or for their business, many don't have a detailed, written Business Plan, Quality Plan, or have heard of an Information Memorandum.

Also, many have started technology businesses without ever having a clear understanding of the costs and challenges associated with the manufacturing and marketing of high technology products, both in Australia and overseas.

3. **Strategic Views.** For Australia to compete on the world stage, a collaborative and expansive attitude is essential, as it is the willingness to take calculated risks and market aggressively. The true entrepreneurial ingredients are not always in evidence. A number of SME managers have little understanding of the mechanism of how intellectual property (IP) is created, how it should be controlled

and just what it may be worth to the business in its growth cycle. Generally Australian companies have not been particularly successful in valuing and commercialising IP.

Many smaller organisations do not have a broad range of industry contacts from which they can seek views and advice, or see any reason why they should participate in business networks, given the time impost. Working 'in' the business and not 'on' the business is often the adage. This attitude is not conducive to collaborative activity, as there is then no mechanism for developing collective trust.

4. **Financial Strategy.** Many of the technology 'start ups' are extremely undercapitalised from their inception. This comes from a number of issues, namely: the entrepreneur desires to maintain 100% control of the business; start ups in the technology field are seen by the general investment fraternity as being particularly 'money hungry' and risky in their early years; banks will only lend to these businesses against 'bricks and mortar' security and many individuals are not prepared to place this extra burden on their families.

Accordingly, many companies have developed a 'hand-out' mentality culture from government. Those companies try to obtain small amounts of 'soft money' to fund their development activities. Because these grants are competitive and generally for relatively small amounts of money, product development tends to be slow, not very cost effective and frequently late to market. The grant subsidies are normally well and truly exhausted by the time the product has reached prototype stage and more likely than not, there is no finance left for either marketing, or for the costly exercise of production manufacture.

In the Australian Government and business world most large development contracts are tendered and let on fixed price contracts. This mode of operation differs markedly from many overseas countries where such contracts (which tend to carry significant technical and logistical risk) are let on a cost plus margin basis. In addition, in Australian fixed price contracting, hard cash normally only begins to flow when the first major deliverable is supplied. For most small to medium enterprises they cannot sustain doing business in this manner, and hence tend to be frozen out of the process completely. Additionally, tender packages are now

bundled into such large chunks of work, that smaller enterprises cannot possibly cope and hence see the bidding process as a complete waste of their time.

5. **Marketing Strategy.** To be successful in the high technology product field Australian companies need to have a clear export focus. Exporting of product is costly in the beginning and often takes considerably more time and human resource effort than a single individual or small company can devote. Accordingly, some form of collaborative international marketing appears to be the most cost effective method of achieving this aim. In the past, some efforts have been made at group marketing strategies on behalf of a number of individual companies. None of these have been particularly successful, mainly due to technical product and funding issues which could not be adequately resolved.
6. **Training.** The survey highlighted a serious lack of both industry specific and general management development training amongst both small and larger enterprises. This lack of skill has left knowledge gaps, particularly in the areas of middle management, that make them disinterested in fostering inter-company partnering arrangements. This is an issue that is already on the agenda of the EIAA Implementation Group Working Party on training. It is identified here as a significant issue which needs to be resolved if true collaborative projects are to succeed.

However, for the training to be effective, companies need to be of a certain size whereby they are able to carry the training burden and to hold out the prospect of real jobs for those who step forward to undergo such training. It is an issue that needs also to be addressed for micro-enterprises and smaller SME's.

Implications for Clusters

The recurring themes flowing from the observations and comments of this industry survey, when linked to the early results produced by the preliminary and ongoing studies that constitute the Electronics Industry Action Agenda (EIAA), tend to indicate that considerably more emphasis needs to be placed on the collaborative rather than the confrontational aspects of developing business relationships. This is particularly relevant to endeavours to export Australian innovation offshore, to maximise its potential.

Micro-enterprises and SME's need to be encouraged to develop a more co-operative and collective approach to business and hence to nurture relationships that allow them to lever off each other's strengths and experiences in global marketplaces. Australia in particular needs strong and proactive industry associations that can link across industry boundaries, can initiate and support industry training initiatives and support local companies by encouraging the spawning of networks and clusters that more effectively develop business trust and understanding.

It is suggested that Australia already has far too many small and disconnected industry bodies and networks that are individually weak and ineffective, through lack of membership numbers. In some industry sectors there are as many as three or four industry bodies competing for the scarce membership fees of each small company. Because of the lack of financial strength of many of the bodies that purport to represent various industry segments, they are unable to focus on high level industry development issues, let alone attempt to address serious international issues. Accordingly, from the results of the survey, many micro-enterprises and SMEs are confused and disillusioned to the stage of trying to do everything for themselves, from both a business and political dimension.

As a consequence, government is in a position where it is forced to address this infrastructure gap and play the leading role in the creation and development of clusters, rather than be driven by an industry/government partnership model.

COMPANY SURVEY TABLE

AS AT 19 NOVEMBER 2003

CATEGORIES

Company	Micro-enterprise	SME	Multi-national	Govt-funded & Other	General Comments
Advance Metal Products Pty Ltd		X			Collaborative, Expansive, Core Focus
AEMS Limited			X		Core Business Focus, Expansive
Aerospace Technologies Pty Ltd	X				Core Business Focus, Collaborative
AIDN				X	Collaborative, Network Focus
AME Electronics	X				Technology Focus, Independence
Anti Bio-Tech Pty Ltd		X			Product Focus, Independence
Aquarius Technologies Pty Ltd		X			Product Focus, Independence
Audio Art	X				Technology Focus, Independence
AussiChip Pty Ltd	X				Technology Focus, Independence
Australian Institute for Commercialisation				X	Network/Training Focus
B&R Enclosures Pty Ltd		X			Collaborative, Core Business Focus
Ball Services Solutions			X		Collaborative, Systems Focus
Barrett Communications Pty Ltd		X			Overseas Market Focus
BEC Manufacturing Pty Ltd		X			Core Business Focus, Expansive
Boeing Australia Limited			X		Collaborative, Systems Integrators
Buchanan Advanced Composites Pty Ltd		X			Collaborative, Core Business Focus
Business Management Limited				X	Core Business Focus, Not Expansive
Caboolture Electronics		X			Core Business Focus, Independence
CDA Electronics	X				Technology Focus, Independence
Circuit Master	X				Technology Focus, Independence
Commercial Capital				X	Collaborative, Expansive
Craig Mounsey Designs		X			Collaborative, Expansive
CSIRO				X	Notionally Collaborative, Expansive
Data Acquisition Pty Ltd	X				Product Focus, Independence
Diagnostic Monitoring Systems Pty Ltd	X				Technology Focus, Independence
EFEKT Designs Pty Ltd	X				Technology Focus, Independence
EM Solutions Pty Ltd	X				Technology Focus, Independence
EMC Services Pty Ltd		X			Core Business Focus

Enermet Pty Ltd			X		Core Business Focus
Fibreight International Pty Ltd		X			Technology Focus, Collaborative
Filtronic Australia Limited			X		Technology Focus, Collaborative
GPS Online Limited			X		Core Business Focus, Collaborative
Griffith University Microelectronics				X	Technology Focus, Collaborative
Harnex Pty Ltd		X			Core Business Focus
Hyperion Technologies Pty Ltd		X			Product Focus, Collaborative
Ian Capps Electronics	X				Core Business Focus, Independence
Intelec Systems Pty Ltd		X			Product Focus, Independence
Intelliquip		X			Core Business Focus, Expansive
Lardley Electronics Pty Ltd	X				Technology Focus, Independence
Leyshon Group Limited				X	Core Business Focus
Micreo Limited		X			Collaborative, Core Business Focus
Microwave & Materials Designs Pty Ltd	X				Technology Focus, Independence
Motorola Australia			X		Collaborative, Core Business Focus
Neurizon Pty Ltd		X			Product Focus, Independence
Orion Technologies Pty Ltd	X				Core Business Focus, Independence
Pacific Broadband Limited			X		Collaborative, Core Business Focus
Prime Electronics		X			Core Business Focus, Independence
Progressive Management Systems Pty Ltd	X				Collaborative, Core Business Focus
Prolificx Ltd			X		Collaborative, Expansive
QMI Solutions Limited				X	Collaborative, Technology Focus
RADBE Consulting Pty Ltd	X				Core Business Focus
Rinstrum Pty Ltd		X			Core Business Focus, Independence
Safemap Technologies Pty Ltd		X			Technology Focus
Sage Consultants		X			Collaborative, Technology Focus
Shu-Roo Australia Pty Ltd		X			Product Focus, Independence
SMCBA				X	Collaborative, Technology Focus
South West Electronic Services		X			Core Business Focus, Expansive
Surtek Pty Ltd		X			Core Business Focus, Expansive
Sutek Services Pty Ltd	X				Core Business Focus, Independence
Syndetic Pty Ltd	X				Technology Focus, Independence
Techstar Limited			X		Technology Focus, Overseas Markets
Thew & McCann Pty Ltd		X			Collaborative, Product Focus
TMQ Electronics		X			Collaborative, Product Focus
Transcale Pty Ltd		X			Product Focus, Independence
Ultramotive Technologies Pty Ltd	X				Technology Focus, Independence

Vescor Pty Ltd	X				Technology Focus, Independence
VMS International Pty Ltd		X			Collaborative, Core Business Focus
Vortex Insect Control Pty Ltd		X			Collaborative, Product Focus
Whitehills Business Advisers				X	Collaborative, Core Business Focus
Zetron Pty Ltd			X		Product Focus, Overseas Focus
Numbers	20	29	11	10	

THE SOCIAL DIMENSION – AEEMA CLUSTER AND THEMES (BIZMAP)

Background

Logic was previously tabled foregrounding the utility of exploring the Worldviews of AEEMA Qld members to test the theory that collaborative cluster behaviour might be easier for some members than others. That statement can also be expressed in the negative to make an important point: collaborative cluster behaviour might be more difficult for some members than others.

It has been proposed that if that appears likely, pre-emptive steps that might minimise or eliminate potential hurdles might be engaged proactively.

This sampling was proposed to explore the range of divergent worldviews existent in members, and predict what extent of effort and preparation might be reasonably expected to sustain a cluster initiative. The measures taken have been established employing the Minessence Values Inventory.

Design

It was proposed to extend invitations to a representative range of AEEMA members covering different sizes of organisations, from local multinationals through medium down to small, including micro enterprises, with types varying through manufacturers, research, design and consulting organisations, AEEMA leadership and government.

The organisational executives active in AEEMA were invited to participate, assuming they were at the level in their organisations that would drive any collaborative initiatives.

Invitations to participate were emailed to people who were believed to be representative of industry segments. This approach with something as personal as a values inventory is less than ideal. Best engagement is achieved where people, if anxiety levels are kept at a minimum, have had several hours of workshopped warm-up to the concept and education, which has the effect of reducing fears and addressing misconceptions.

Such an approach was not feasible here due to budgetary constraints and the difficulty in getting all parties together for an extended engagement.

Follow-up emails were sent to those who had not responded. Those who responded that they were interested to participate were emailed the web address where they could perform the inventory on-line with instructions on how to engage.

Values/Worldview Theory

The Minessence Values Inventory employed for this pilot is an Australian evolution of the pioneering work performed by Hall in the Americas in the area of values over 30 years ago. Pioneering work by Brain Hall and Ivan Illich lead to cross-cultural cataloguing of the emotional energy being evoked by a range of words, that led in turn to the values, or life-style priorities, that lay behind or beneath the words. Across all cultures studied these values were distilled to 125.¹⁰⁹

It is important to note that research shows that people's values are not randomly distributed, rather that they cluster into groupings that are aligned with particular ways of seeing the world. What the Australian work added to the US initiative was the insight, later formally validated, that there was a high level of alignment of preferred brain processing mode and values.

In general terms this work states that people's perspective upon the world, and the breadth of their engagement with it, expands as they move further away from mere survival and security. The attached diagram – Values Clusters and World Views shows how eight (8) values clusters couple in a series of overlapping pairs that form seven (7) Worldviews.

Most individuals priority values will form a bell-curve across the spectrum, from their Foundation Values on the left, their Focus Values in the centre, and their Vision Values on the right. Values inventories reveal different mixes between those three (3) areas, and the statistical centre will determine the persons World View.

Of the full set of seven (7) Worldviews, the Collaborative Worldview is number five (5), just past half way across the spectrum. This is where theory would suggest that people's capacity to function collaboratively reaches critical mass. This should not be construed to imply that some level of collaborative capacity can't be achieved

¹⁰⁹ Refer to Daryl Sturges of BizMap for further details on the full list of values.

prior to this, but that the broad range of personal skills and perspective to sustain and value such activity, achieve a particular level at that point where it actually becomes the preferred way of functioning.

The utility of including brain preference in this values/worldview inventory, is to provide some clarity around the personality types attracted to the industry. Broad theory would suggest that as the industry is very technology-intensive, that the people – mainly men - drawn to it, may in fact have a preference for the predictability of technology and systems over the higher variability of human dealings.

Important Note Regarding Privacy

As a Values Inventory can be quite revealing about the psychological and lifestyle priorities of a person, it is totally inappropriate to publish anyone's Values Inventory without their permission. All invitations to participate here were done on the undertaking that details would be kept private, and only World View and Brain Preference included in the report, both anonymously.

Survey Outcomes

Participation

11 members to date have been invited to participate in this study, of which 5 participated, 1 declined involvement, 3 expressed interest, but have not completed the survey, and the remaining 2 failed to respond to the invitation in any manner at all. This engagement level is somewhat disappointing, if not entirely unexpected, particularly at the micro-enterprise level, where managers are more likely to be working in, by contrast with, on their business. This outcome is tabulated below.

	Complete	Response ¹¹⁰	Rejection	No Response
Sector				
Micro	2	1		2
Small			1	
Medium	2	1		
Multinational		1		
Government	1			
Total	5	3	1	2

¹¹⁰ Response indicates a response indicating interest to participate was received, but the on-line survey was not completed at the time of writing of this report.

World Views

Definitions of the 7 Worldviews are attached as with an introduction that explains the value of appreciating how diverse world views are, and the value of appreciating that diversity.

Of the five (5) people who have participated to date, one (1) of the five (5) had an Organisational World View as measured by the Minessence inventory. That worldview is summarised as:

Organisational

The world is a problem with which I am expected to cope by becoming educated and making an adequate living. My chief struggle at this time is to be successful and to please those who control my future on the one hand, and to have enough time to spend with my family or friends on the other.

Of the five (5) people who have participated to date, one (1) of the five (5) had a Self-Actualisation/Service World View as measured by the Minessence inventory. That worldview is summarised as:

Actualisation/Service

The world is uncertain and values are seen as somewhat relative in nature. I am driven by an urge to find my own unique place in the scheme of things and define a core set of values around which to orient my life. There is a "tug-of-war" between what the institution demands of me and what I believe is "right". The "tug-of-war" manifests itself in the form of priority focus values that are seemingly at odds with each other.

Of the five (5) people who have participated to date, three (3) of the five (5) had a Collaborative World Views as measured by the Minessence inventory. That worldview is summarised as:

Collaborative Project

"The future is subject to creation!" I view institutions as entities that are what we have made them. I am strongly motivated to discover new ways to integrate my gifts and collaborate with others in projects that transform institutions/organisations into new forms - usually with the intent of improving the quality of life for the members.

These three (3) world views are in sequence Organisational – Actualisation – Collaborative Project, so not that far apart, however it could be predicted that those holding Collaborative Worldviews would experience less stretch in functioning within a collaborative cluster environment, as can be extrapolated from their outlook.

One potential challenge could be anticipated if this small sample is indicative of broader AEEMA membership. What is seen as “cricket” by someone holding an organisational worldview is quite different from someone holding a collaborative worldview.

This tension is best illustrated by a problem inherent in the intervening worldview – the Self-actualisation/Service worldview. To quote from the Collins and Chippendale’s¹¹¹ example from their book *New Wisdom II*, of the inherent tension that exists from that perspective:

“There is a “tug-of-war” between what the institution demands of me and what I believe is “right”. The “tug-of-war” manifests itself in the form of priority focus values that are seemingly at odds with each other. For example, I could hold Law/Guide and Law/Duty as priority values at the same time. Law/Guide is a value related to the belief that rules are to be taken only as a guide for how I ought to behave, whereas Law/Duty is related to the belief that I have a duty to follow rules and any breach should be dealt with accordingly. If, as a manager, I hold both these values as a priority, it can be very confusing to my employees.”

Nowhere will this tension be more apparent than in the types of “contracts” two parties might find comfortable for engagement in a cluster project. Someone possessing a Law/Guide value might be content to work from a Heads-of-Agreement having squared away the in-principle approach.

By contrast someone possessing a Law/Rule value, will remain anxious with anything less than the law “set in stone”, and be more likely to rush to the “letter-of-the-law” should any problem develop, rather than use communication and clarification to resolve apparent difference or divergence.

This divergence holds deep significance for what types of agreement might be acceptable around joint and individual IP and its sharing.

Brain Preference

The following table summarizes the preference brain-processing mode of the parties holding each World View. This exhibits wide variance in preferred processing, and predicts therefore considerable challenges in working together unless some appreciation of the variation, and the resultant challenges and opportunities this offers.

¹¹¹ Paul Chippendale, joint author, is Australian principal of Minnesence, developer of the AVI.

World View	Brain Preference	Sensate	Feeling	Intuitive	Thinking
Organisational		Y			
Self-Actualization					Y
Collaborative Project			Y,Y	Y	

This study has only attempted to engage people who have already indicated by their interest and engagement in the AEEMA cluster that they are interested to be engaged in collaborative activities. It could be argued that the group is self-selecting and that therefore the above finding was predictable.

The way to test this would be to actively attempt to include non-AEEMA Cluster industry players in the scan, activity which the funding of this project does not extend to cover. In spite that that might be seen as a deficiency, there is still great utility in assessing likely cohesion and levels of effort to achieve and maintain cohesion amongst cluster groupings.

Many analyses of clustering have stressed the importance of project-based clustering, and the adhesive value of money/profit that is the prize for projects. This writer regards as neglectful to leave in place or unscrutinised any assumption that money is a cure-all cluster-adhesive, and that nothing can approach it as a problem-resolving or cluster-generating agent.

Review of the place of money in the values scheme of things shows that it is one of the lowest motivators, fitting in the first two (2) values clusters – Self-Preservation and Security in various forms. Yes, it must be acknowledged that money and financial viability must of necessity remain an important priority in any commercial operation, but to assume that it is the only or the highest priority is a trap which can distract from the importance of other factors.

Numerous studies over recent years have shown how money has slipped as the primary reason many employees work for particular employers. Further, it can be demonstrated that where people's priority values are acknowledged, (whilst monetary goals are kept in mind), then the financial outcomes are more likely to exceed those where it was the one and only priority.

The other significant issue arising from this table is that (based upon this small sampling), the theory that cluster members might be happier dealing with technology than people does not stand up. Sensate and thinking preferences are consistent with

that model, but with three (3) people revealing primary preferences for feeling and intuitive functioning, the weight of numbers here would suggest that any stereotype that suggests the industry is full of “heads”, should be seriously scrutinized.

Cautionary Note

One note of caution should be added to the obvious small sampling here. All men participating are over 43 years of age. A sampling that included more young industry figures might be worth considering for future studies, given that younger people might exhibit more competitive behaviour than “elders” and therefore experience more challenge in collaborative clustering.

The lack of testing on women, who are not well represented at Executive levels in the manufacturing sector is a significant deficiency, as many studies indicate that women are more prone to collaborative behaviour.

Implications

This small sampling indicates that existing cluster members hold a Collaborative Worldview or those within reasonably close proximity.

This is encouraging, as it suggests that the gap between talk of collaborative cluster behaviour, and the actual capacity to engage in it is relatively small. Taking into account the limitations of the small sample included in this survey, this is encouraging, as it suggests that currently popular industry and government notions like clustering and collaboration, are not just buzz-words that roll off the tongue easily and sound like the right thing to say, but are in fact reasonable approximations of current member priorities.

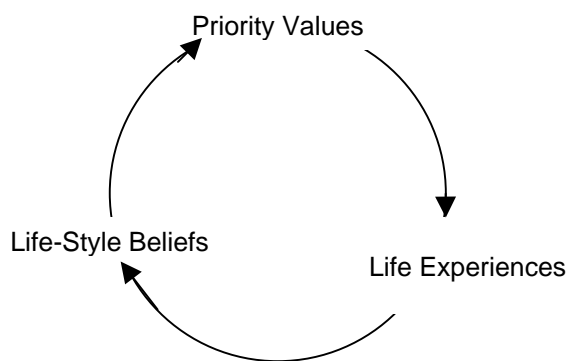
A sampling of eleven (11) people of whom only five (5) were involved here has to be treated with healthy caution. It has been noted that women and young men are not included in this sampling.

Perhaps more significantly, it is plausible, even moderately likely that people who were anxious about this inventory might be amongst those who have not responded. Such reticence in turn could be based in either 1. Self-knowledge of a worldview well outside Collaborative or 2. Unexpressed fear or anxiety.

If such fear-based reticence exists, and was not clarified by an approach to Bizmap or AEEMA Qld leadership, then that would herald a potentially serious impediment to collaborative engagement in future demanding projects.

This brings to the foreground the whole issue of enhancement of collaborative skills and thinking. Values Theory does not propose a unidirectional model of Brain Preference -> Values -> World View -> Beliefs -> Actions -> Life Experience. Latest theory suggests that these function in a relatively closed System-Loop where filters exclude ideas and data that do not reinforce the existing preferred paradigm.

Human beings experience these as a loop along the following lines:



When new concepts come into our life, that are reinforced by significant others in our sphere of operation, in this case: industry peers, leaders, government, etc. , the chance is high that we will consider changing our behaviour, most particularly if we can see that we stand to gain not just the approval of significant others, but also it turns out, financial gain and enhanced security.

Such is the impact of promoting, educating, and modelling collaborative behaviour.

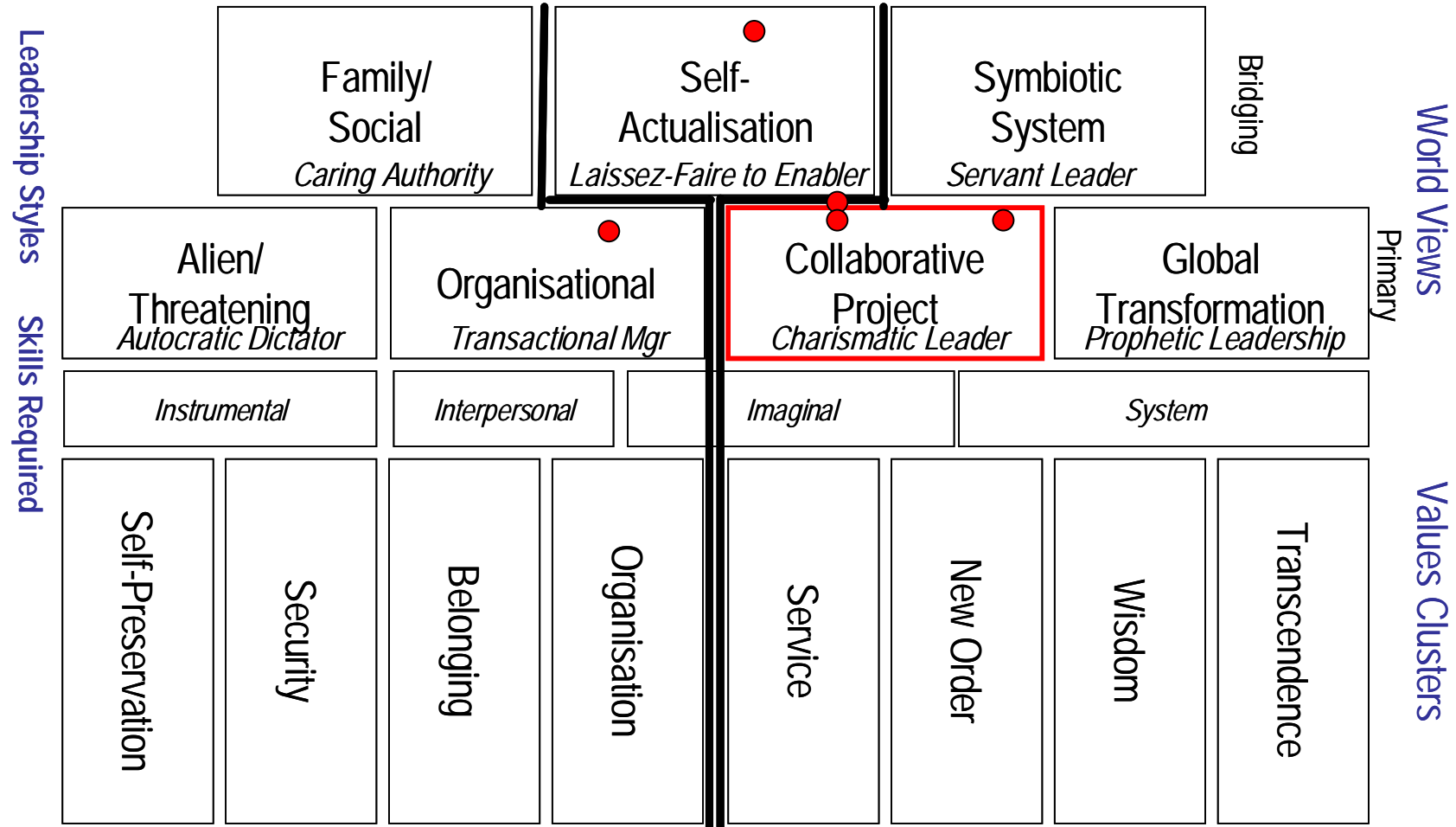
Previous reports have fore-grounded the value of explicitly naming and challenging predictable hurdles and obstacles to collaborative behaviour.

Recommendations to Expand Clustering and Collaboration

Steps that might be taken to achieve this include:

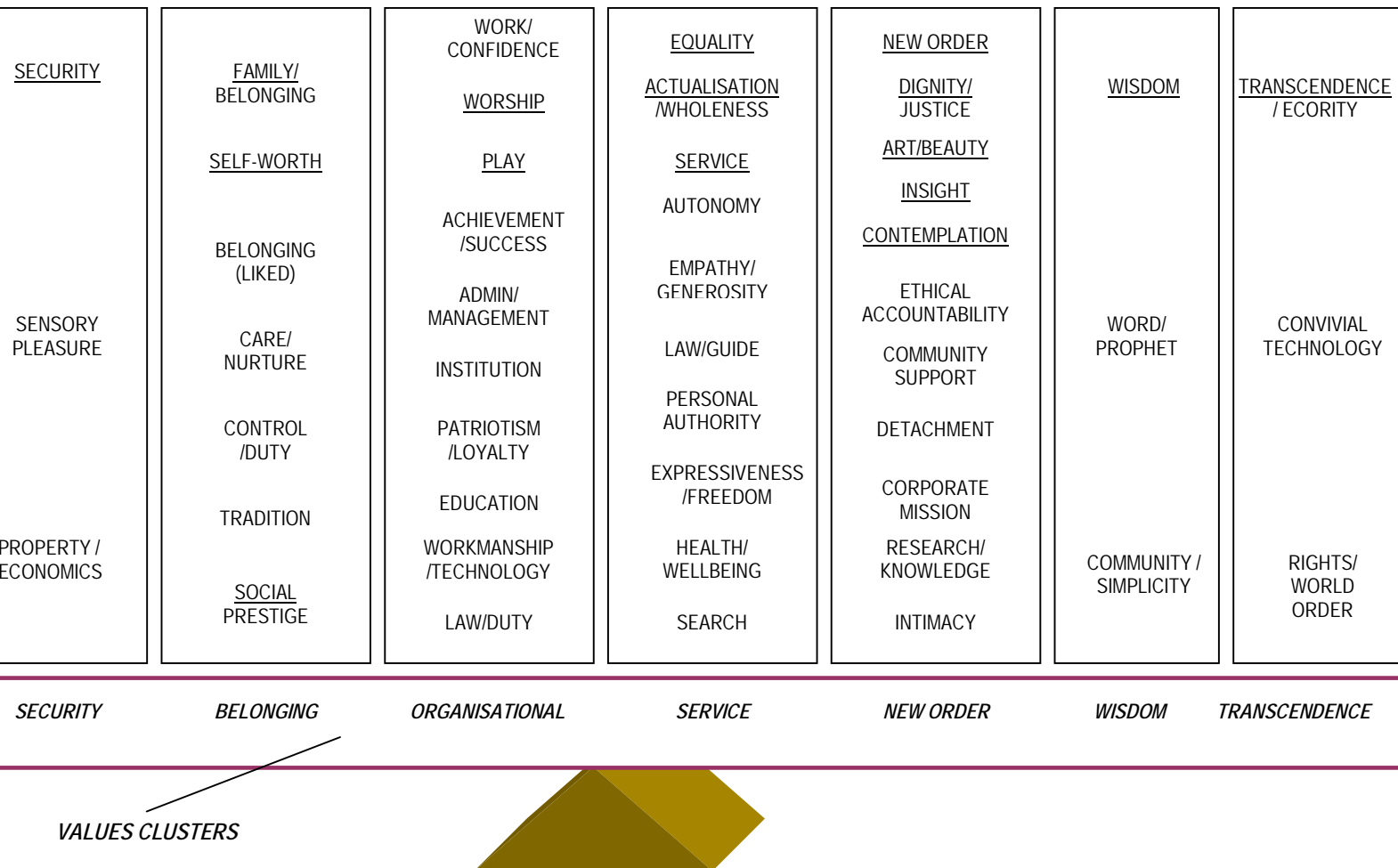
- Guest speakers and/or materials expounding the limitations of competitive behaviour within and between businesses, and the utility of collaboration as an alternative.
- Promotion of the gains on offer from more collaborative behaviour, along with examples (“hero-stories”) that will make the benefits of striving for same more tangible, more realistic and therefore more likely to generate early successes that will encourage further initiative.
- Encourage more active participation in developing a uniquely Australian Clustering Model. This approach can foreground that because clustering is a complex, new development, with complex and varied factors fuelling success, that Australians are as capable as anyone in identifying their needs and generating innovative ways to satisfy those. Such an approach would acknowledge that Australia:
 - Does not have hundreds of years of trade history & tradition like Europe
 - Has a small, largely homogenous population, scattered widely across a large continent, but connected with quite modern infrastructure.
 - Has a history and folklore forged in geographical isolation, of resourceful innovation.

Figure 1 – Values Clusters & World Views



The red dots on this diagram indicate the positioning of the five (5) participants in the survey.

Figure 2 - Values Balance



Definitions - Seven (7) World Views

"When people are aware that there are different ways of thinking about any one reality (or set of realities) they do not so readily condemn perceptions that differ from their own... a people who are able to move freely from one mode of thinking to another, and again to another, can choose to debate, dialogue, synthesize and search for wholeness, and they find that the patterning of perceptions (their's and other's) changes. Their final choice of action can take account all those possible perceptions, not just the one backed by the greatest force." Kelly and Sewell.

World-View: Alien/Threatening

I experience the world as an alien and threatening, sometimes mysterious place, controlled by a distant authority. My major needs are for security and material ownership as I struggle for physical survival.

World View: Family/Social

My home is my world. It is important to have friends who shelter me from a sometimes unfriendly, or uncaring, society. Hospitality and respect for authority, too, are important.

World View: Organisational

The world is a problem with which I am expected to cope by becoming educated and making an adequate living. My chief struggle at this time is to be successful and to please those who control my future on the one hand, and to have enough time to spend with my family or friends on the other.

World-View: Actualisation

The world is uncertain and values are seen as somewhat relative in nature. I am driven by an urge to find my own unique place in the scheme of things and define a core set of values around which to orient my life. There is a "tug-of-war" between what the institution demands of me and what I believe is "right". The "tug-of-war" manifests itself in the form of priority focus values that are seemingly at odds with each other. For example, I could hold Law/Guide and Law/Duty as priority values at the same time. Law/Guide is a value related to the belief that rules are to be taken only as a guide for how I ought to behave, whereas Law/Duty is related to the belief that I have a duty to follow rules and any breach

should be dealt with accordingly. If, as a manager, I hold both these values as a priority, it can be very confusing to my employees. Looking at the focus the values of this world view below, you see that there is a potential for many conflicting values to be held simultaneously as a priority: e.g. administration and freedom, loyalty and autonomy, etc.

World View: Collaborative Project

"The future is subject to creation!" I view institutions as entities that are what we have made them. I am strongly motivated to discover new ways to integrate my gifts and collaborate with others in projects that transform institutions/organisations into new forms - usually with the intent of improving the quality of life for the members.

World View: Symbiotic System

I view the world from a systems perspective. I view co-operation more highly than competition (Darwinism is reframed from "survival of the fittest" to "survival of who have learned to co-operate for each other's benefit"). I see the world as an unjust place. Through some form of public expression, I intend to make a significant positive impact on the way the general populace views and experiences the world.

World View: Global Transformation

The world is a fragile ecosystem of which we are part and for which we must care. The WE is emphasised because my vocation is seen as a global one requiring nothing less than the collaboration of all concerned institutions. I rely on a global perspective, and the ability to see how one institution relates to another institution in the global society.

REVIEW OF OUTCOMES FORMER AUSINDUSTRY BUSINESS NETWORK PROGRAM

Acknowledgements

Material in this section has incorporated information gained on the initiative through David Nathan, now NSW Case Manager for AusIndustry's Comet Program, and Max Rose MBE (former Managing Director of Oz Electronics). The latter was involved in the early development of a Queensland-based business network, from a private sector perspective.

Background

One of the key activities of the Innovation Access Grant Project is the review and documentation of outcomes from the (former) Business Network Program (BNP), which was launched by AusIndustry in 1994 until its formal cessation (at least on the Federal level) in 1998. It is understood that the program was successfully implemented in Norway for a period of 3 terms x 3 years. In other words, the Norwegian Government viewed the program as a long-term economic development tool, and was prepared to persist with the initiative for almost a decade.

In 1997, the Department of Industry, Science and Tourism released a "*Self Development Manual*" which provided information to network participants on areas such as:

- Understanding Inter-firm Collaboration: Alliance and Business Networks
- Establishment of a Network
- Finding Network Partners
- Commencement Processes
- Development Networks
- Relevant Case Studies

A number of organisations and individuals contributed in some way to the formulation of this Manual, and these included:

- Norwegian Network Program
- Canadian Business Networks Coalition

- Broker Reference Group
- The Warren Centre
- State Program Managers

It was noted at the time of the release of the Manual that “*manufacturing and some parts of the services sector are yet to establish a track record of successful collaboration*”.¹¹²

In referring to a Business Networks Program in the Hunter region in 1997, a study prepared for and funded by the Centre for Australian Regional Economic Development (CARED), based at the Southern Cross University, noted the following:

*“The concept behind the program is simple: by combining resources and sharing costs in a business network, companies can often achieve far more than if they try and tackle export or import replacement opportunities on their own. The BNP offers funding to develop a feasibility study and business plan for the network and funding to help implement the plan. The program is not restricted to geographically bounded networks (ie clusters) but in practice this may often be the case”*¹¹³

Whilst the Program was terminated at the Federal level in 1998, a number of BNP initiatives within the States still persist. At that time, South Australia had the national record for the most networks, with 30% of all Australian networks. That State’s Department of Industry and Trade then picked up the baton with the establishment of its own network program.¹¹⁴

A number of networks facilitated by David Nathan on behalf of the Warren Centre since 1996 are still operating successfully today.

¹¹² Introduction to “How to Develop a Business Network”, Department of Industry, Science & Tourism, October 1997, Introduction vii

¹¹³ Associate Professor Peter Murphy, Neil Pfister, and Professor Tong Wu, “*Industry Cluster Strategies for Regional Economic Development*” June 1997, p.32

¹¹⁴ Professor Richard Blandy, “*South Australian Business Vision 2010 Industry Clusters Program: A Review*” Centre for Applied Economics, University of South Australia

A Business Networks Case Study – No.1

Networks in the Australian Toolmaking Industry

An observer to the development of two networks in the Australian Toolmaking Industry made the following comments about the BNP program as it related to the establishment and development of these networks.

1. The individuals running the member companies in the networks were experienced 'rugged' SME owners that typically persist past the first adversity they encountered (in this case they were hardened through seeking business in the competitive vehicle manufacturing market in Detroit.)
2. Industry specific factors. In the toolmaking industry the last 10-15 years have witnessed increasing volumes of work going to Taiwan and other sources of cheaper and often inferior products. These toolmakers had to protect their business by investigating alternative markets, which placed a premium on higher quality goods and reliable delivery.
3. The level of trust that facilitated the flow of knowledge within the network enabled them to increasingly specialize in what they individually did best, whilst referring other work to their fellow members, thereby enhancing their own core competencies.

It was considered that factors number 1 and 2 were equal first in importance with the third factor running second.

A Business Networks Case Study - No. 2

Business Electronics Network (BEN) and Oz Electronics Manufacturing

Oz Electronics Manufacturing Pty Ltd (the company) as opposed to the earlier trading partnership known as Oz Electronics Manufacturing, was born out of the BNP, and was one of the first networks formally funded through the Program.

Relevant facts are as follows:

- An external consultant (facilitator or network broker) led the network in this instance
- The first and second instalments of funding went to the consultant
- BNP was focused on three or more companies working together to achieve a common purpose

- The program required a lead company that was required to be an auditable legal entity
- Milestones were set for each of the three phases of the program
- The Australian Government provided the marketing focus, which was conducted with a high degree of professionalism
- The program offered excellent public relations opportunities to the companies and individuals involved in the program

Outcomes of the Program for Oz Electronics

- The Brisbane Electronics Network (BEN) as it was then known grew the 'high end' market share of Oz Electronics by over 300%
- Through the Network, new high technology manufacturing equipment and ICT control processes were installed
- Oz Electronics invested in securing overseas contracts
- R&D was conducted, directed towards 21st Century manufacturing

Broader outcomes for BEN were equally positive. The Network comprised seven companies at the beginning, with three firms of the seven committing money to the venture. The three companies were Oz Electronics, Stallion Technologies (which subsequently went on to establish a successful computer hardware business, with overseas markets including the United States) and TPS Pty Ltd.

The overall aim of BEN was to reduce costs and increase throughput in a high technology electronics manufacturing facility. The principle network aim was to establish a world competitive manufacturing organisation using the latest technology. The BEN, including Oz Electronics, met this aim and set a new standard in advanced manufacturing in Queensland.

Federal Supply Chain Partnerships Program

When discussing the BNP, it is also useful to mention a more recent "Federal Supply Chain Partnerships Program" again funded by the Australian Government.

Again, a network was formed in Queensland, comprising Oz Electronics, Filtronic Australia Limited, Ferra Engineering and Acorn Nisel Pty Ltd; three of which were all suppliers to Filtronic in the 'hey days' before the telecommunications 'bubble' burst.

Anecdotal evidence suggests that the program was too theoretical, at least at the Queensland level.

The funding approach in this instance was as follows:

Phase	Activities	Amount and Recipient
Phase One	Scoping Activities	\$10,000 paid to consultants
Phase Two	Project Conduct Support	To \$60,000 on a \$ for \$ basis
Phase Three	Project Outcomes Demonstration	\$5,000 fully funded – paid to consultants

Outcomes from this program appeared not to be as positive as the BNP, with the following comments made by an industry observer at that time:

The program appeared to be too theoretical

- Many SME's are unfamiliar with the value chain concept and the inherent partnership approach
- The program seems to suit larger companies, with Ford/BTR Engineering and Baxter Healthcare/Mayne Nickless two companies claiming success
- Effort was good to very productive at the CEO level, but not as effective below that level in each of the partner companies
- Training is necessary for middle to upper senior management in Australian SME's, as they are not committed to the Supply Chain concept in this country, as in overseas countries
- Advocated a middle management training program associated with supply chain development and mentored by senior "hands on" industry people
- Difficult to convince SME's to work together in this program

Relevant Literature on Networks

- "Business Networks" by Ewa and Alan Buttery, published by Longman – Business & Professional, ISBN 0-582-80474-4
- "Beyond the Firm – An Assessment of Business Linkages and Networks in Australia", Research Report 67 by the Bureau of Industry Economics, published by the AGPS, ISBN 0644-29232.

Analysis

1. Discussions with those directly involved, either as a facilitator or committed network participant have revealed a favourable disposition to the BNP model, as introduced by AusIndustry.
2. There is some resonance between the BNP approach with the concept of participants in a cluster being classified as core and non-core – those who commit the funding receive the confidential information and derive the benefits (refer extract below)
3. The ‘independent broker’ or facilitator concept has been raised in the context of Deacons Lawyers’ analysis (refer extract below)¹¹⁵
4. The idea of phased payments, according to identified progress, is consistent with the concept of the lifecycle evolution ‘best practice’ cluster model (as diagrammatically represented at the conclusion of the “Overview” of this Section)
5. The phased payments arrangement of the BNP, as described above, is also consistent with suggested resource commitments by government, in accordance with the same diagram.
6. The commercially-oriented Cooperative model, as described in the Marine ICT Cluster Case Study in Tasmania, also has resonance with some of the principles of the BNP

In the light of the above and considering the other findings contained in the Main Report, it is recommended that the Business Networks Program be revisited in more detail, with the view of utilising some of its guiding principles in the potential development of a new program in Australia.

¹¹⁵ With reference to points 2 and 3, it is useful to refer to relevant extracts from the section of the Main Report written by Deacons Lawyers, in relation to the development of projects within clusters) – refer to Initial Recommendations for the Management of IP in Clusters on page 54 and the subsequent sections on Identification of Participants on page 55 and the Nature of engagement between participants on page 56

APPENDIX 1 – MODEL FRAMEWORK CODE OF ETHICS AND CODE OF CONDUCT

Code of Ethics

An essential characteristic of participation in the cluster is for participants¹¹⁶ to abide by this code of ethics and the code of conduct. The cluster requires participants to commit to a set of values and ideals which advance the honour, dignity and effectiveness of the cluster and to a high standard of responsible and ethical behaviour.

Mission and Goals of the Cluster

These will be specific for each cluster.¹¹⁷

Values and ideals

You must act with professional responsibility and integrity in your dealings with the Cluster, other participants, the community, clients and employees.¹¹⁸ In adhering to these principles you must:

- place the interests of the Cluster above those of personal interest;
- work competently and diligently in all your dealings with the Cluster and participants of the Cluster;
- strive to enhance the interests of the Cluster as a whole;
- enhance the integrity of the industry in which the Cluster operates.¹¹⁹

¹¹⁶ The terminology of “participant” is merely indicative. Depending on the structure of the cluster it may be more appropriate to refer to “members”.

¹¹⁷ It is a matter for each cluster to determine whether the mission and goals need to be included in the code of ethics. The reason for the suggestion is that inclusion gives the codes a context. However, depending on the legal standing of the cluster the mission and goals may be expressed in other foundation documents of the cluster in which case a cluster may prefer that the code need not refer to them.

¹¹⁸ Depending on the nature of the cluster it may be necessary to expand this list to include other stakeholders such as a sponsoring industry association, government and any 3rd party brokers necessary for the proper functioning of the cluster.

¹¹⁹ This should be industry specific. For example in the case of the AEEMA Industry Cluster it would be the ICT industry.

Cluster as an Ethical Community

As a participant of the Cluster you acknowledge that the Cluster aspires to be recognised as an ethical community where:

- participants care about each others' well-being and seek to promote that well-being;
- ethics is seen as something positive such that ethical conduct is consciously promoted in all relationships rather than as something to constrain or promote guilt;
- the notion of participants as worthy of respect and consideration is not abstract or impersonal but rather participants are driven by principles based on awareness of each participant's uniqueness and 'specialness';
- consistency and justice is the basis of all actions and consideration of participants such that emphasis is placed on the worth of each participant in a concreated and particular sense;
- the Cluster and participants recognise that those that they engage with outside the Cluster are persons also and are treated respectfully and in a caring manner; and
- all persons associated with the Cluster are guided by a concern to build up the Cluster as a caring community, where every person is of worth and is helped to contribute to the well-being of the Cluster community.

Principles

As a participants of the Cluster You must:

- Act in good faith and with impartiality, integrity and conscientiousness to further the aims of the Cluster.
- Be frank and honest in your dealings with other participants and the Cluster;
- Not act in a way that may bring the Cluster into disrepute.

Code of Conduct

This code has been prepared with an understanding that personal integrity is a quality which cannot be created or preserved by written rules alone. Codes of conduct, like laws, cannot substitute for a sense of honesty, fairness and decency. Ultimately the ethical conduct of the affairs of a participant depends on the understanding and judgement of its

employees. The Cluster expects that the actions of participants will reflect the ethical standards of their organisation and bring credit to it.

The rules and comments in this code are descriptive of the type of behaviour expected from participants in all circumstances. However, the code is not intended to be exhaustive and should not be read as definitively demarking the acceptable from the unacceptable in behaviour in all practical situations faced by a participant.

Responsibilities

You should be familiar with your responsibilities under the code as they form part of the Cluster conditions. If you have questions about the code please contact . . .

Representation

As a participant of the Cluster You must:

- Become familiar with the role, initiatives and promotional material of the Cluster;
- Undertake to represent the Cluster with the highest levels of professionalism; and
- Ensure that a consistent and professional 'message' about the Cluster is conveyed at all times.

Conflict of Interest

As a participant of the Cluster you must:

- Ensure that the work of the Cluster is not compromised or affected by any direct, indirect pecuniary or non-pecuniary interest to ensure that wherever possible, there is no public perception that its work may be so compromised or affected; and
- Formally declare any conflict of interest, whether direct or indirect pecuniary or non-pecuniary interest, at Cluster meetings.

Gifts gratuities and hospitality

You must avoid giving any indication that gifts, gratuities or hospitality relating to your participation in the Cluster will be accepted, either for yourself or for any other person or body, or that these may influence decisions.

Free Competition

Participants recognise that free and fair competition is the basis of the free market economic system and must avoid collusive, anti-competitive discussions and agreements between competitors. Except when permitted by law, participants must not hold discussions or enter into arrangements with competitors concerning prices for products or services or other competitive policies or practices.

Inside Information

Inside information about a participant's affairs or those of its customers must not be used by participants for their own gain or that of others.

Confidentiality

You will maintain the confidentiality of any information to which you have access to as a result of participation in the Cluster. You recognise that this obligation is owed to the Cluster as a whole and to each participant whose confidential information is disclosed to you in your dealings with that participant.

Intellectual Property

Where new intellectual property is created as a result of collaboration between participants you agree to negotiate in good faith to fairly and equitably reach agreement with other collaborators in relation to the ownership of the intellectual property and the sharing of benefits in relation to its commercialisation.¹²⁰

Sanctions

If in the opinion of three-fourths of those present at any properly convened meeting of the executive committee of the cluster, any participant is adjudged guilty of dishonourable, improper or unprofessional conduct, that participant can be excluded from the cluster.

¹²⁰

This is nothing more than an agreement to agree and needs to be recognised as being largely unenforceable from a legal perspective. Where the likely value of foreground IP is high and the relative input costs for participants in the creation of that IP are high the parties should enter into formal agreements with each other and not rely on the general statements of intent in the code of conduct. It should also be noted that the code does not deal with cross licensing of background IP which may be an important feature of some projects or activities.

I _____ of _____
 (Name & position title) (Name of company)

have read the Code of Conduct and Code of Ethics of the Cluster and agree to abide by those codes as a participant of the Cluster

Signed _____ Date _____

Notes on the Codes

- Each of the codes purport to bind participants to a set of principles or conduct. Where the cluster is not incorporated or conducted via some sponsoring legal entity (such as a sponsoring industry association) those covenants are in practical terms largely unenforceable. This is particularly important in relation to those aspects of the code of conduct dealing with confidentiality.
- The provisions dealing with confidentiality purport to bind participants to each other but from a legal perspective the obligations of confidence are owed to the cluster (provided it is a legal entity). If a participant wants to commence an action for breach of confidence it can only be brought by that participant against an infringer under common law. However, the cluster could seek remedies against an infringer on behalf of an owner of confidential information to the extent that the code of conduct constitutes a contractual relationship between the cluster and an infringing participant.

APPENDIX 2 – CASE STUDIES

Primary Case Study The AEEMA Industry Cluster (QLD)

Background

The Australian Electrical and Electronic Manufacturers' Association (AEEMA), the peak Australian industry body representing over 400 Electrical, Electronic and ICT manufacturers in Australia, has completed a re-branding and repositioning of the Association nationally. Based in Canberra, AEEMA's prime focus is to provide value-added services to its members, regardless of location in Australia, in addition to its broader industry development role, conducted in partnership with all levels of government as well as education and R&D providers in the country.

The repositioning of AEEMA included the principle that the Association should not be perceived by its members as Canberra-centric, but rather be viewed as a body that understood and was responsive to, the local issues of its members. As part of this equation, it was also sympathetic to the Federal Government's objective, via Austrade, to double the number of Australian exporters by the year 2006. It subsequently joined the Austrade Allies program, by which TradeStart officers throughout the country provided export services to 'new exporter' companies within the specialist areas encompassed by AEEMA.

To perform this work, AEEMA engaged the Global Innovation Centre Pty Ltd, an extensively networked private sector consultancy in Brisbane, to manage both the TradeStart Program on a national basis, and to establish and convene the inaugural AEEMA Industry Cluster in Queensland. This engagement occurred in mid-2002, and leveraged on the experience already possessed by the company in TradeStart (National Manager - Janice Humphreys) and industry development activities. This engagement was consistent with the identification of Queensland by AEEMA as a fertile test bed for an inaugural 'best practice' cluster, given its "Smart State" policies and enhanced focus on innovation.

It also provided the mechanism for a locally based service to members, as well as a template for the potential development of other such clusters in Australian States. The cluster focus was duly embedded in the AEEMA Constitution, as approved by its Board.

The Chief Executive of AEEMA, Angus M. Robinson, is a strong and continuing advocate for the Queensland Industry Cluster, as articulated by the views he has expressed in the following section of this Case Study, entitled *“New Roles for Industry Associations”*.

New Roles for Industry Associations

Industry associations such as AEEMA have existed historically to represent the interests of members to government. In recent years, the more progressive associations have recognised that their principal role has moved from protecting their industries to working with government to improve their operating environments and creating opportunities in global marketplaces. Commonwealth Government-sponsored initiatives such as the Electronics Industry Action Agenda represent an approach that enables government to support these industry-led initiatives.

How industry associations can be effective in responding to these opportunities is often predicated on the way their members are organised. Most national industry associations have fairly standard structures, with state-based chapters enjoying local autonomy. In recent years, the AEEMA model has been that of a national organisation with industry groupings (i.e. forums) bringing together members with shared product or technology interests. AEEMA has recently restructured to better respond to continuing changes in the external environment and to provide new opportunities for regional organisation through formalised cluster development activity.

Clusters and Technology Consortia

Recent research work in the USA on the 'public good' of industry clusters has suggested that the principal advantage of clusters has been to strengthen localised economies and provide cost savings to firms. This has been achieved through a greater availability of input suppliers, trained workers, better gearing of public infrastructure and enhanced technology transfer.

This same study identified one type of cluster most similar to the AEEMA model i.e. a cluster comprising primarily (but not exclusively) locally owned, small- and medium-sized businesses concentrated in medium- and high-technology or producer service industries. The cluster encourages substantial trade between firms; specialised services, labour markets, and institutions develop to serve firms in the cluster. Firms consciously 'network' to solve problems, and government policy evolves to improve cluster competitiveness.

AEEMA recognises that for its members and linked stakeholders, however, the worth of the cluster organisational model will be the extent to which new business opportunities are realised.

Because AEEMA members operate in medium and high-technology driven businesses, there is an opportunity for the cluster to perform another role: as a 'technology consortium'. In this role, a research effort can be developed among business firms, government and universities that helps the participating companies to maintain leadership or gain a competitive edge over international competitors in a particular industry. Government can then be encouraged to provide a public subsidy for co-operative R&D as an effective incentive for private firms to develop knowledge infrastructure. This AEEMA-developed model also offers a means for the cluster to engage with publicly funded R&D institutions such as the CSIRO, DSTO, and the new National ICT Australia Centre of Excellence. The model also facilitates engagement with technology precincts, located both in Australia (for example the Australian Technology Park in New South Wales) and in overseas regions close to new markets e.g. the Hong Kong Science and Technology Park. With 'clustered' industry driving the R&D effort, AEEMA believes that commercialisation imperatives can be optimised.

History of Queensland Cluster

Following the engagement of the Global Innovation Centre, an informal meeting was called in June 2002 of Queensland-based AEEMA members. At that event, members agreed that it was worthwhile to pursue the establishment and development of a cluster in Queensland, recognizing that the entity would be a 'guinea pig' for the rest of Australia. Haines Norton Accountants, with offices in most Australian States, hosted the first 2 cluster meetings.

The first formal event of the Cluster was conducted in July 2002, and it was agreed that regular meetings, preceded by an Executive Committee meeting, would be conducted monthly. These meetings have subsequently been held to the present day, in accordance with the initial agreement. Deacons' Lawyers agreed to sponsor the monthly events, through the provision of a fine venue (17th Level of 175 Eagle Street – one of the newest river-side developments in the Brisbane CBD) and associated hospitality.

The Inaugural Executive Committee comprised a number of key executives from a range of Queensland companies, including:

Max Rose MBE	Managing Director	RF Technologies Pty Ltd
Ken Bridges	Managing Director	B&R Enclosures Pty Ltd
Tim Shaw	Managing Director	Micreo Pty Ltd
Russell Loane	Managing Director	Spectra Lighting & Eyelighting Australia
David Tilbury	Managing Director	Intralux Pty Ltd
Michael Usher	Managing Director	FLI Research Pty Ltd
Ron Mulder	Director Business Development	VMS International
Jim Fogarty	Marketing Manager	Nulec Aust (Schneider Divn)

The Convenor appointed (on a part-time basis) was John Humphreys, Managing Director of the Global Innovation Centre Pty Ltd, consistent with the company's terms of engagement by AEEMA.

The public announcement of the Cluster is included below:



INDUSTRY CLUSTER QLD

"The Australian Electrical and Electronic Manufacturers' Association (AEEMA), the leading industry body representing Australia's ICT, electronic and electrical manufacturing industry sectors, has successfully established a Queensland Industry Cluster in Brisbane. This is the first time in Australia that such a venture has been underpinned by and co-located with an AEEMA/Austrade TradeStart Office. The Prime Minister, The Honourable John Howard MP, announced the establishment of this national office at AEEMA's Excellence Awards event in September 2002.

Nationally, AEEMA is taking the lead role in the Government's electronics industry Action Agenda, an important industry/government partnership program that is providing a future strategic direction for the industry. In addition, the Association has a 'seat at the table' at a number of key national and international forums.

The Industry Cluster (Qld) comprises AEEMA members, associates and invited stakeholders who are committed to establishing sustainable networks in the electrical, electronic and ICT industry sectors. Cluster members work collaboratively to identify and develop opportunities to improve the world-competitiveness of manufacturing processes, products and product-related services. In addition to these core industry sectors, Cluster members represent emerging areas such as photonics, nanotechnology, rapid prototyping, biomedical, environmental management, lighting, renewable energy, energy efficiency, waste minimisation, wireless technology, e-security and smart card technologies.

The Cluster, which serves as a model for the future development of similar entities nationally, held its first meeting in June 2002. It now holds regular monthly meetings and recently hosted visits by The Hon. Ian Macfarlane MP, Federal Minister for

Industry, Tourism and Resources and Bruce Thompson, Chair of the Strategic Industry Leaders Group which is driving the Electronics Industry Action Agenda.

Apart from the networking benefits, members have been developing 'signature project' concepts. The establishment of outcome-oriented projects within clusters is part of an emerging trend worldwide, particularly in Europe, for industry development initiatives with potential commercial return for proponents. As the first spin-off from the Core Cluster, a Wireless Industry Network is being proposed, to facilitate growth in the newly emerging area of wireless technology. Other areas of potential commercial benefit to Cluster members will be evaluated."

Mission and Goals of the Cluster

Considering the high calibre of the new Executive, AEEMA members, and special guests/presenters, as well as the need to present itself as a 'best practice' Cluster, it was agreed that the entity should establish a strategic framework for its operation at the earliest possible moment.

The Mission Statement, as developed by the Executive Committee, is as outlined (in bold) above, with underlying goals established as follows:

Cluster Goals

1. To be recognised Federally as a "best practice" industry cluster that acts as an exemplar for the development of other clusters in Australia
2. To be the peak body in Queensland for representations to State and Local Governments on behalf of AEEMA members and associates
3. To provide a focus for networking activities for enterprises in the electrical, electronic and ICT industry sectors
4. To identify major signature projects providing demonstrable benefit to AEEMA members and associates
5. To be the catalyst for the development of 'spin-off' activities, consistent with the ongoing development of the cluster
6. To be the Queensland reference point for Federal Government initiatives within AEEMA's industry sectors (incl. the Electronics Action Agenda)

To further define the strategy for the Cluster, a “Future Directions” workshop was facilitated by one of the Executive members, Russell Loane, with the following questions being forwarded to participants prior to the event:

PRE-WORKSHOP QUESTIONS

In preparation for the direction-setting workshop on Wednesday, 25 June would you please take a few moments to respond to the questions. We are interested in aggregate answers only so you can be as candid as you like. No one will know who said what. Brief, bullet point responses are fine.

- What is important to you as a member of the Queensland Cluster? What is it about your involvement that you value most?
- What seems to be happening at the moment?
 - (a) What factors (external or internal) are working for the Cluster?
 - (b) What forces (external or internal) are working against the Cluster?
- If you could put in place just any three changes or initiatives to improve the effectiveness of the Cluster’s activities, what would they be?
- What three or four issues or opportunities do you most want to discuss at the workshop?. Please express these as questions eg “How to...?”, “In what ways might we...?” etc. (Topics get discussed, questions demand answers).
- Anything else you feel we need to know prior to the workshop?

This vigorous workshop established the strategic direction for the Cluster, through the establishment of a Milestone Chart and associated timetable.

Forum/Cluster By-Laws

The above cluster process, including appointment arrangements, was consistent with the “Guidelines on Forum/Cluster By-Laws”, as stated below:

AEEMA recognises that its Forums/Clusters may wish to adopt by-laws to further their objectives. It is important that any such by-laws are consistent with AEEMA's Constitution, are consistent with competition law and that they have the support of the overwhelming majority of the Forum's/Cluster's membership. Accordingly the following conditions apply when developing Forum/Cluster by-laws:

1. By-laws must be consistent with the AEEMA Constitution and not contravene any of its provisions.

2. By-laws must not be in contravention of Australian trade practices law or any other Commonwealth or State government legislation relevant to the operations of an AEEMA/Cluster forum
3. By-laws, and any amendments thereto, must be adopted by resolution at a meeting of the Forum held in accordance with meeting and voting rules as set out in clauses 16 and 17 of the AEEMA constitution.
4. The Chairman of the Forum/Cluster is a person recognised and/or approved by the AEEMA Board.
5. Associate members of AEEMA may attend meetings of the Forum/Cluster but are not eligible to vote on any matter relating to by-laws or amendment thereof.
6. All Forum/Cluster members must receive notice of proposed by-laws, or proposed amendments to existing by-laws, at least twenty one (21) days before a vote on the by-laws, or amendment thereto, is taken.
7. By-laws, and any amendments thereto, must be approved by the Board of AEEMA before they have any effect.

Engagement with Qld State Government and Government-linked Bodies

The Cluster has been active in its engagement with the Queensland Government and other Government-linked bodies since its inception. As an example, meetings have been conducted with the following:

- The Honourable Tom Barton - Minister for State Development
- The Honourable Paul Lucas - Minister for Innovation and the Information Economy
- Senior Policy Advisors to Minister Barton
- Executive Director – Industry (State Development) and other senior Department executives
- Executive Director – Information Industries Bureau
- Interim Executive Director –Australian Institute of Commercialisation (AIC)
- State Director of Australian Industry Group and other senior AIG executives
- Executive Director – Queensland Manufacturing Institute

- State Manager – Industries Capability Network (ICN)

The strength of the Cluster is also its cross-fertilisation with other Associations and networks in Queensland, for example:

Ken Bridges – Chair (current) of AEEMA Industry Cluster Qld Executive Committee
Industry Committee of Australian Industry Group (AIG)
Manufacturers Leaders Group for Minister Barton

Jim Box – Member of AEEMA Industry Cluster (Qld) Executive Committee
Manufacturers Leaders Group for Minister Barton

Ron Mulder – Member of the AEEMA Industry Cluster (Qld) Executive Committee
Member of the Australian Industry Defence Network (AIDN) Qld Branch

The Cluster is currently investigating an MOU with AIDN(Qld) Branch, and a closer relationship with the E-Security Cluster in Queensland, consistent with the 'cluster of cluster' approach mentioned in the Overview section of this Report.

It should also be noted that the Lighting Centre of Excellence (via its Secretariat – the Built Environment Research Unit) and two former Cluster Executive members, are strong supporters of the Cluster, and demonstrates the way in which the cluster is engaging vertical markets.

Engagement with Electronic Action Agenda/AEEMA Nationally

In addition to connections with the many Forums of AEEMA, the Qld Cluster Executive is well represented both on the Electronic Action Agenda's Implementation Committee and with AEEMA's national agenda. The following illustrates:

Electronics Action Agenda

Max Rose MBE – Chair of the Cluster Mapping/Value Chain Implementation Group
Ken Bridges – Member of the Industry Implementation Committee

AEEMA - National

Max Rose – Member of the Electronics Division Advisory Committee
Russell Loane – Member of the AEEMA Advisory Committee
Ron Mulder – Member of the AEEMA Advisory Committee

Guests and Guest Presenters to Cluster

A number of guests and guest presenters, from a range of areas, have visited cluster meetings. One of the first guests was Federal Industry Minister Ian Macfarlane, who was invited to one of the cluster events in Brisbane, speaking on a one-to-one basis with the Executive members.

Other guests/presenters have included:

- Bruce Thompson, Managing Director of KeyCorp in Sydney and also Chair of the Electronics Action Agenda Strategic Leaders' Group
- Alistair Nolan, Smartlink Fellow to Australia and Manager of the LEED (Local Employment and Economic Development) Program of OECD (based in Paris)
- Sue Ryan Director of Manufacturing Programs – Queensland Department of State Development
- Members of Austrade's ICT Global Team – in a panel session
- Alan Faulks – Director of Electrical Safety – Queensland Government
- David Curtis – Giesecke & Devrient

Interstate industry guests have also been invited to the cluster meetings during their Queensland visits, to promote interstate industry collaboration. In addition to the above 'members' spots' have been introduced into the program, to allow each of the members to briefly present his/her company and capabilities.

"Signature Project" Development

Consistent with the Cluster's objective to create commercial value for its members, "signature project" development, consistent with the European model, has been given a high priority. From the outset, it is recognised that the Cluster must deliver real outcomes for members, to remain sustainable. However, there have been challenges, some of which are listed below:

- To the best of our knowledge, no mechanism yet exists for collaborative project development involving an entire cluster
- IP/Confidentiality issues need to be addressed
- The question of who takes the lead/project management role still needs resolution
- Who provides seed funding, particularly for the larger projects?

- How does the Cluster differentiate its offering, and fully understand the capabilities of its members”?
- Who takes the legal responsibility and the need for milestone achievement?

A template for candidate projects, for consideration by the Cluster, was developed along the following lines:

“SIGNATURE” PROJECT

Proposer (AEEMA Member)

Organisation

Project Criteria

- Meets Mission of Cluster
- Is a collaborative venture
- Can be categorized as a large-scale ‘signature’ project or an initiative that provides the necessary foundation for such a project
- Can be completed within a pre-determined timeframe within an agreed set of milestones
- Is capable of attracting public and/or private sector investment
- Provides demonstrable benefits to the Nation or State and the industry or industries the project supports
- Provides demonstrable benefits to AEEMA members

Short Project Title

Project Description/Compatibility with Criteria

In response to a request from the Cluster, three projects were submitted, as follows:

- Establishment of a Wireless Industry Network with an associated project, namely RF radio for developing countries (discussed with World Bank representative – Wireless special interest group established)
- Project to ensure that suitable Australian facilities for testing product to international standards (interest also expressed subsequently by Victorian and New South Wales AEEMA-facilitated clusters.
- Queensland Smart-Card project – to facilitate better eating habits for Queensland children through smart card technology

As it was determined that mapping of the Cluster would further define projects, a company known as BizMap joined with the Cluster in introducing the concept of applying a CRM enterprise software package to the mapping of clusters. As sponsors of this work, BizMap, which is linked to the Sydney firm Prism (John Forrest), has already established a HTML map of the networks and linkages of the Cluster, and is seeking to further apply this approach to other aspects of cluster operation. To the best of our knowledge, this is the first time that this approach has been tried in Australia. Alistair Nolan from the OECD indicated that he had not heard of this technique in his broad role in the OECD.

The ultimate objective is to be able to determine the gaps and opportunities through the cluster mapping approach, so that the gaps can be addressed and the commercial potential from the identified opportunities maximized.

Current Status

The Cluster has recently declared all Executive Committee positions vacant, in accordance with AEEMA protocols, after the first full year's operation.

At the November 2003 cluster meeting, a new Executive Committee was announced, following the requisite call for candidates for all nine vacant positions. This followed a motion at the October Cluster Executive Committee that all positions be declared vacant, due to the need for a regular 12 month rotation of members. A strong mix of nine executives from micro-enterprises, SME's and multinationals nominated for the nine vacant positions, with a spread across the three AEEMA Divisions. The Inaugural Chair, Max Rose, stood aside to focus on national issues, but still remains as an Executive member representing the electronics sector.

Three inaugural Executive Committee members did not renominate.

The new Cluster Executive Committee is as follows:

- Ken Bridges, Managing Director, B&R Enclosures (Chair)
- John Britton, General Manager QLD, Siemens Ltd
- Max Rose, Managing Director, R.F. Technologies Aust
- Hugh Crowther, Operations Manager, AEMS
- Jim Doriean, Chairman and CEO, Broadband Systems & Megascreen
- Craig Mounsey, Managing Director, CMD
- Jim Box, Chief Executive Officer, ICN
- Tim Shaw, Managing Director, Micreo Ltd

Ron Mulder, Director Business Development, VMS International

The collaboration inherent in the Cluster is now being reflected amongst traditional competitors. As an example, Ernst & Young recently delivered a joint presentation on government grant opportunities with KPMG.

AEEMA has demonstrated its ongoing commitment to the Cluster development in Queensland by relocating Emma Johnson, its Manager for Membership Services, to the AEEMA Brisbane Office (Spring Hill, CBD environs). Ms Johnson provides administrative support for the initiative and the TradeStart Program (as well as performing the membership task remotely from Queensland).

Cluster meetings continue to be well attended by a diverse and complementary audience, with a degree of enthusiasm evident for activities in the coming year. Participants are particularly interested in the outcome of this Innovation Access Grant, as it is considered that, through its findings, a mechanism for the delivery of commercial projects will be determined.

Analysis

The AEEMA Industry Cluster represents one of the very few industry-led clusters in Australia (as defined by almost total independence from government involvement). It is still successfully operating after 18 months, and has provided a benchmark for the Victorian and New South Wales Cluster (the Queensland Convenor co-facilitated both inaugural events, conducted in Melbourne and Sydney). Its templates have been used in the establishment phase of its southern counterparts.

Nevertheless, the Executive Committee (comprising senior industry executives from successful enterprises) has been disappointed with the degree of support received from the Queensland Government, with the exception of the Built Environment Research Unit of the Department of Public Works (Associate Member of AEEMA), which has been a strong supporter of the Cluster from the outset. This raises an issue of relevance to the future development of Australian clusters, and again highlights the 'geographic proximate' argument.

State-based cluster strategies should recognise the importance of industry playing a key role in the establishment and development of clusters, in a true partnership with government. They should also take cognisance of the need for clusters, with their prime physical location within a particular State, to be closely connected to Australian

Government and broader national industry initiatives. To do otherwise is to minimise the potential of clusters in this country, and disconnect their participants from both the national and international agenda.

On a more positive note, the Cluster has served as an ideal mechanism to attract new members to both AEEMA (approximately 15) and its related TradeStart Program (now servicing 28 micro-enterprises and SME's from four States). Industry members have enjoyed a successful year within their own enterprises, with Micreo in particular enjoying a significant coup for its business, Defence Minister Robert Hill and Industry Minister Ian Macfarlane recently announced the awarding of three more contracts to Australian companies under the Joint Strike Fighter Program. The press release included the following:

“Brisbane-based Micreo Ltd is the first small business outside the United States to win a JSF electronic warfare missions systems contract. The contract is with BAE Systems, a JSF partner responsible for the electronic warfare sub-systems on the aircraft. The contract is for the design, development and qualification testing of two sub-assemblies to be used on the electronic warfare system on the JSF. Micreo is a small independent-owned company with a staff of 25 people which specialises in the design and manufacture of microwave and electro-optical components for aerospace applications”

Also from a project perspective, the AEEMA Industry Cluster has held discussions with representatives from the Defence Department and some large multinationals. In this context, this current Innovation Access Grant project is seen as important in producing a mechanism by which such organisations can engage with the Cluster in multi-disciplinary commercial project activities. Such parties are awaiting the results of this grant project with keen interest.

The informal principle adopted by the Cluster is to have at least 90% of participants from industry, with the balance being from government, quasi-government bodies, education and research institutions. This approach would appear to meet the approval of most cluster participants.

At this stage of the development of the Queensland Cluster, the challenges that remain include:

- How to best engage with government
- How to extend beyond the traditional “meet and greet” network

- Introduction of new approaches to cluster mapping to understand strengths, gaps etc
- The mechanism by which a cluster can collectively address “signature” projects
- How to maintain ‘freshness’ and enthusiasm through continual review and refinement.

Case Study – Australian Wine Cluster

Background

The Australian Wine Industry Cluster is included as a ‘success story’ in the Discussion Paper (October 2003) entitled “*Clusters: Victorian businesses working together in a global economy*”. Material in this background report has been extracted from that document, which draws heavily on a number of sources¹²¹:

Relevant Statistics

- Mid-1980's Australia exported 2% of its production
- It was a net importer of wine during the same period
- Exports now total 335 of total production, which is a figure, which is a figure well in excess of other Australian industry sectors
- Industry now comprises 1,465 wineries and over 4,000 growers
- Dominated by a few large companies
- Top 8 companies account for 78% of total production
- Top three firms, Southcorp, BRL-Hardy and Orlando-Wyndham group, account for 70% of total exports
- The top 20 companies own or lease about 33% of all vineyard hectareage
- 22% of the total grape intake is processed at three processing facilities
- Estimated 663 firms providing a wide range of specialized inputs (in addition to core wine growers and producers)

Factors contributing to the success of the wine industry include:

- Devaluation of the dollar
- Changing consumer tastes, demand, lifestyle changes
- Mechanization of harvesting and pruning
- Some nature endowments (land and climate)
- Structure of the industry has facilitated growth

¹²¹ Ian Marsh and Brendan Shaw, Australia's Wine Industry: Collaboration and Learning as Causes of Competitive Success
 Australian Wine Online, Australian Wine Industry Overview, 2002
 Winemakers Federation of Australia, Strategy 2025, 1996 refer
www.winetitles.com.au/awol/overview

- Industry leadership
- Strong role of industry associations
- Development of support structures
- Ongoing support from Government

One of the major success factors in the Australian wine industry is the significant extent of stakeholder collaboration, which has occurred at many levels, including;

- Agreement on export targets of \$200 million in 1993 and \$1 billion by 2000
- Increase in promotional expenditure for the Australian Wine and Brandy Corporation (AWBC), as a result of the above
- 1996 launch of the collaboratively-based initiative, Strategy 2025, which provide an holistic approach to growth
- R&D expenditure increases in line with the Australian Government's offer to match industry R&D investments
- Technological developments in wine and grape production

Other key indicators include the following:

- Exporting firms grew from 270 in 1994, to 414 in 1998 and 659 in 2002
- 45% of firms are exporters
- Wine exports grew an average 26% each year 1989 to 1999
- Exports now account for 46.8% of total sales compared to only 3% in 1984.
- The value of exports has increased from \$13 million in 1981 to \$2 billion in 2001-2002
- Market capitalization of wine grew from \$1 billion in 1992 to \$4.2 billion by 1999
- 68% of Australian winegrowers have adopted one or more innovations (eg. improving grape and water quality as well as better pest and chemical management)

Marsh and Shaw indicate that the Australian wine industry provides many lessons for other sectors, and particularly emphasise the following:

- Collaboration improves economic performance through which export and innovation opportunities are developed and disseminated
- Clustering enables firms to access innovation and take advantage of global opportunities

- Public policy – new policies in the sector, developed through collaboration and clustering, enable businesses to overcome general transaction costs which are a barrier to economic growth.

One of the main themes that can be derived from the Australian Wine Cluster experience is that its success has been driven by the strength of the partnership between industry and government.

Views on the Australian Wine Cluster

Michael Porter has consistently held up the Australian Wine Cluster as being a 'best practice' cluster example in Australia, and a mechanism by which Australia's economic performance can be boosted (which, as mentioned elsewhere in the Main Report, is contradictory to his 'geographic proximate' definition of clusters).

In his own study of the Australian Wine Cluster, Michael Porter (with Orjan Solvell) highlight the following 'collaborative institutions' that form the Cluster:

<i>Collaborating Institutions</i>	<i>Details</i>
Winemakers' Federation of Australia	Established in 1990 Focus: public policy representation of companies in the wine cluster Funding: member companies
Australian Wine Export Council	Established in 1992 Focus: Wine export promotion through international offices in London and San Francisco Funding: Government, cluster organisations
Wine Industry Information Service	Established in 1998 Focus: Information collection, organisation, and dissemination Funding: Cluster organisations
Cooperative Centre for Viticulture	Established in 1991 Focus: Coordination of research and education policy in viticulture Funding: other cluster organisations

Grape and Wine R&D Corporation	Established in 1991 as statutory body Focus: funding of research and development Funding: Government, statutory levy
Wine Industry National Education and Training Council	Established in 1995 Focus: Coordination, integration and standard maintenance for vocational training and education Funding: Government, other cluster organisations ¹²²

From the above, it can be seen that the Australian wine industry has been characterised by a number of institutions that collectively address the key elements of industry growth, namely public policy formulation, research and development, education and training, information dissemination/marketing and export.

From a South Australian wine industry perspective, Professor Richard Blandy, from the Centre for Applied Economics of the University of South Australia, holds up the South Australian component of the cluster as being *“the classic example of a successful industry cluster in South Australia”*, heralding the State’s wine industry as being *“a group of competing, complementary and interdependent firms that have given strong economic drive to the State through the cluster’s success in exporting its products and know-how nationally and internationally”*.¹²³

In further support for the Wine Cluster, Professor Blandy notes the following

“Over a long period of time, the interaction of the firms in the South Australian cluster, and their interaction with the firms and other bodies that create foundations for the cluster, has led to a virtuous, self-reinforcing circle of increasing productivity, competitiveness, excellence and value creation, in a process long recognised in economics as the creation of ‘external economies’.”

Analysis

Success factors from the Australian Wine Cluster study that are particularly relevant in the context of the broader Innovation Access Grant Report are as follows:

¹²² Source: Michael E. Porter and Orjan Solvell, The Australian Wine Cluster – Supplement, Harvard Business School Case Study, 2003 (Copyright 2003 – Professor Michael E. Porter)

¹²³ South Australian Business Vision 2010 Industry Clusters Program: A Review

- Evidence of leadership by a number influential individuals/companies
- Collaborative activity extending beyond State boundaries
- Strength of the ongoing partnership between industry and government
- The key role of industry associations
- The establishment of a critical mass of interrelating institutions (Professor Blandy's broad view on interacting companies and institutions supports the 'innovation systems' approach mentioned earlier in this Report)
- Availability of funding on an ongoing basis, from both the public and private sector

The Australian Wine Study Case Study also suggests that market conditions, both nationally and internationally, were favourable to the development of the industry. However, there was also an element of the wine industry itself creating demand through innovative branding and marketing of its products.

The geographic spread of the Wine Cluster throughout the nation also suggests that it is consistent with the 'cluster of clusters' approach noted in the Grant report, with each region and each State creating clusters of activity in their own right, each interconnecting in a national grid.

Case Study – Food Cluster – South Australia

“FOOD BAROSSA”

Overview

This Cluster is a good example of a predominantly geographic-bound cluster, which has developed a strong regional food brand founded on the rich traditions of the Barossa Valley, and its natural advantages. It is significantly complemented by the South Australian wine industry and its cultural history.

Background

Food Barossa, which is stated to be the first officially licensed regional food brand in Australia, was launched in 2001 at Hutton Vale Vineyards in the Valley. The Cluster, characterised by the “Food Barossa” brand, was established by a group of committed farmers and food producers collaborating to produce a large and diverse range of food products.

Whilst “Food Barossa” is the over-arching regional brand, a large number (almost 20) individual brands fall under its broad umbrella. The Cluster does not export overseas and is operated through a Project Manager. It now has 46 members working to develop collective marketing and distribution systems, and provides a point of differentiation through the identification of common methods and traditions that characterize their food offerings.

Their marketing material states this competitive advantage as follows:

- Products are grown, produced or processed in the Barossa region.
- A HACCP plan or other food safety accreditation is in place.
- Products comply with Federal, State and Local food legislation.
- Owners are all personally involved in making their goods.

The Barossa Vintage Festival, one of Australia’s longest running food and wine festivals, provides a centrepiece for marketing the brand on a regional basis. Another significant feature is the existence of a national gourmet food icon, Maggie Beer, as an active participant in the Cluster.

The existence of a government/industry partnership is evident, with the South Australian government supportive of cluster developments in its State, leveraging on its regional competencies. Also evident in the development of food clusters generally (ie the creation of a “Food and Manufacturing Cluster”) is the Playford City Council, which is in the process of releasing a report, in association with Clusters Asia Pacific (Rod Brown).

Analysis

This brief study on the Food Barossa Cluster indicates the following (in the context of the Innovation Grant project)

- The importance of a core group of committed individuals
- Support of both Local and State government for the sector
- Capacity to leverage on other key sectors of the economy (eg wine)
- Existence of a local champion, who is recognised in the area for his/her achievements
- Existence of a project manager/convenor/secretariat rather than an honorary arrangement
- A central point of local cluster engagement with the marketplace (in this case the Barossa Vintage Festival).

Case Study- The Marine ICT Industry Cooperative Tasmania

Acknowledgement:

Mr Roy Pallett, Interim Chair of the Marine ICT Industry Cooperative kindly provided information for this Case Study, much of which is included below. Input was also provided, via Mr Pallett, from Michael Rochford. Initial discussions on the development of this Cooperative were conducted during the Tasmanian Inaugural ICT Expo and Conference, between Mr Pallett and John Humphreys, Convenor of the AEEMA Industry Cluster in Queensland.

Overview

This Case Study is addressed in some detail, for the following reasons:

- The availability of extensive material on the establishment phase of this Cluster/Cooperative
- The interest of the Innovation Access grant project team in elements of the Cooperative model, in terms of its 'sustainability model'
- The potential of the Cooperative model in meeting the 'commercial outcomes' objectives of typical members of a cluster
- The involvement by the project manager of this grant initiative as a keynote speaker on Australian clusters at the above Expo/Conference.

Background

A Steering Committee supported by the Lord Mayor of Hobart, TasIT, Dept Economic Development, Intelligent Island, the University of Tasmania, the CSIRO, the Antarctic Division and local business representatives, has worked for 15 months to establish the Marine ICT Cluster as a formal, functioning body. Through this conceptual development phase, the Cluster has evolved into a trading cooperative administrative structure.

The Department of Economic Development and Intelligent Island has also provided considerable support. The following Mission Statement was established as part of the above process.

Mission Statement

The Marine ICT Cooperative (Tasmania) will be the leader in the adaptation and commercialisation of ICT related intellectual property generated within the Tasmanian marine science community, in other local scientific institutions and in the ICT private industry.

Operational Principles for a Cooperative

The establishment of the Cluster as a trading cooperative was consistent with the following principles:

- **Equality** – in shareholding, financial inputs and voting rights for all members. Larger organisations have no greater rights or responsibilities than smaller ones.
- **Democracy** – members elect the board, which runs the cooperative for them. Certain matters, such as changes to the way the cooperative operates, its focus and annual budgets, must also be voted on by members
- **Transparency** – all records of the cooperative are open to members, who must maintain the confidentiality of that information.

A Cooperative operates under a set of rules adopted by its members. These rules control what the Cooperative can do [Objective], how it is managed [Governance] and what rights and obligations its members have [Membership]. The structure is based on the trading cooperative model¹²⁴ with participating companies as the formal members. Model rules for trading cooperatives and the registration of trading cooperatives are the responsibility of State governments. The Cooperative has had its registration papers approved by the Commissioner, and fees have been paid. Following this registration, application will be made for an ABN number.

Benefits for members of the Cooperative are expected as follows:

- Participation in a sustainable business model through the development and attraction of complementary companies
- A collaborative approach by industry, science and government to the growth of the ICT industry
- New commercial opportunities through teaming and joint marketing
- New commercial networks

¹²⁴

Tasmania Cooperatives Act 1999

- Increased throughput and income for all involved in the Cooperative
- Stronger businesses with reduced reliance on government
- Provision of a competitive return on their investment to each member, through the identification and development of projects that members can work on together.

Projects will generally be of such a scale or complexity that no one member can provide all the necessary resources and/or skill sets. In some instances, specialists outside the cooperative may be contracted to complete a project team.

Objectives of the Cooperative

The Cooperative's prime focus is on ICT opportunities in marine science at a national and international level, exploiting Tasmania's natural advantage in the Antarctic and Southern Ocean. The overarching purpose of this Cluster is to grow members businesses, enhance their skills, develop vibrant, long-term relationships between members and to increase the membership so that the Cooperative becomes a potent commercial and intellectual force in Tasmania.

In general, the objectives of the Cooperative are as follows:

- Develop products for national and international markets
- Foster co-operation between Science and ICT groups to advance business development
- Encourage result driven partnerships to achieve more together than they could individually
- Boost employment, innovation, commercialisation and exports
- Develop business expertise in promoting products to national and international markets.

While the major long-term aim is to develop and commercialise intellectual property owned by the science organisations, the other specific, short-term aims are to:

- Seek service and other routine hardware and software assignments and tenders
- Develop protocols and procedures within the Cooperative for completing projects
- Seek larger tenders for the Cooperative members to complete as a group. It is expected that completing the tenders will require the use of the resources of the approximately 9 members of the Cooperative

- Establish the Cooperative's administrative unit and be responsible for the development and implementation of marketing strategies, fund raising (grant and loan), seeking and identification of developmental and marketing projects for the members of the Cooperative to carry out

Board Arrangements

An elected Board of Management is responsible for the operational aspects of the Cooperative – financial control, staffing, level of subscriptions, with details of their powers and responsibilities included in the rules. The Board shall have 9 members, one third of whom will be elected each year with no member serving for more than two consecutive terms. Members of the Board elect the Chairman and Secretary of the Board annually. Board members receive a discount on their annual membership subscription as recompense for their time and expenses, with the Chairman and Secretary receiving a higher level of discount.

A co-operative is managed and controlled by its Board of Directors subject to any restrictions imposed by rules. The Act does not confer any powers on the Manager, Secretary, Treasurer or employees of a co-operative. Under the Act it is the Board of Directors that is responsible for issuing instructions to those persons charged with the day-to-day management of the co-operative.

Responsibilities of Directors

The business responsibilities of Directors are as follows:

- The development of basic guidelines for the control of the business activities of the co-operative
- The appointment, supervision and removal of employees including the determination of their pay and description of their responsibilities
- The calling of special meetings whenever necessary or upon the request of members as provided in the rules
- The approval of general business arrangements such as entering into contracts with distributors or suppliers
- The settlement of arrangements for handling funds and the designation of the people who may sign cheques
- The borrowing of funds for any legal and approved purpose

- Ensuring that an adequate bookkeeping system is maintained, that regular financial reports and audits are performed and that a complete record of Board meetings is kept in accordance with accounting standards
- Ensuring that the organisation establishes and maintains systems of internal control and supervision and safe custody of appropriate documents
- Exercising prudent decision-making regarding the level of debt entered into
- The duties of loyalty, honesty and good faith
- Declaring interest in proposed contracts

The Directors' responsibilities to members are:

- Serving to the best of one's ability and capacity
- Representing members' interests on an impartial basis
- Selecting good staff and overseeing activities without undue interference
- Adopting policies and procedures along sound business lines. These should be based on study and analysis of available facts and should be compatible with the organisation's objectives
- Using adequate checks to make certain that employed staff and voluntary officers, the Manager, Secretary and Treasurer are conforming to the policies adopted by the Board of Directors
- Studying operating results in order to determine whether policies should be continued, changed or dropped
- Taking active and energetic steps to keep members fully informed as to the organisation's activities and problems. Care must be taken, however, to ensure that individual member's private and confidential business is not disclosed
- Providing high-quality, reliable service and making members' interests of first importance

It is important that a person possesses the ability to implement these responsibilities when being appointed as a Director.

In practical terms, the day-to-day control will be placed in the hands of a single person. That person may have a title of Secretary, Manager, Executive Officer or some other title reflecting the size of the organisation. Regardless of the size of the organisation, it is important that the person takes a businesslike approach to his/her duties whether as an honorary officer or paid employee.

Cooperative Operations

The Board of Management, which is expected to act diligently and in a timely fashion to manage the affairs of the Cooperative, and respond to members' enquiries, is responsible for the Cooperative's operation.

Staffing

Initially, the Cooperative needs staff to identify and develop opportunities for its members. As the Cooperative grows it may take on additional roles to manage projects or actively sell goods and services. The selection, allocation and supervision of staff is the responsibility of the Board.

Budget

The Cooperative will operate on a budget developed by the Board and approved by its members. Where necessary, the Board can vary the detail of the budget over the year without recourse to members. It derives income from annual subscriptions, commissions, direct participation in projects and ongoing royalties and other such payments. The main expenses are in administration, human resources and the costs involved in evaluating and securing opportunities for its members.

Where there is a surplus of income over expenditure, the Board can

- distribute some or all of the monies to its members in proportion to their transactions with the Cooperative, ie the more work you do the higher your dividend
- use the monies to further develop the Cooperative
- support other activity approved by the members.

Insurance

As a trading entity, the Cooperative will maintain its own insurances for public liability, workers compensation, product liability and professional indemnity. It will also maintain cover for any plant, equipment, furniture and so forth that it owns.

Conflict Resolution Procedures

There is always a risk of conflict between members of any organisation. However the impact of these conflicts will be minimised by:

- making unanimous decisions by the membership binding on the Board and Executive
- seeking widespread agreement, even if only tacit agreement, on issues that affect the daily operations and long term strategies. A simple majority is not sufficient to determine an issue, with an agreed percentage of members needed for a majority
- having documented procedures in the rules of the Cooperative to deal with issues that have become deadlocked.

Membership

Membership is often limited in terms of numbers of organisations, to ensure that all members can have a say and that the common interests of members are clearly defined.

By signing a Shareholder Application Form, members have agreed to a number of propositions outlined in a series of Position Papers referenced in the Minutes of the Foundation Meeting and to the Cooperative's Articles of Association and the Rules and Regulations of the Board. The Position papers relating to Intellectual Property describe the principle to be used in developing binding contracts between members, between the Cooperative and the Science Institutions and between the Cooperative and Clients. The Constitution is based on the Tasmanian Trading Cooperative Model Rules (1999).

Joining fee

An initial joining fee is levied, which represents a members' shareholding in the cooperative. It is hoped that the founding members will contribute up to 30% of the initial capital requirements, with the remaining 70% coming from borrowings or government establishment funds.

Ongoing fees

An annual subscription falls due on 1 July of each year. If a member has not paid this fee by the due date, they will be considered non-financial and will not be entitled to the full rights of membership of the Cooperative, for example, to vote at meetings, be a member of the Board or receive dividend payments.

The annual subscription may be amended by agreement amongst the members, and/or there may be additional calls for funds by the Board at any time.

Entry and exit provisions

Where a member wishes to sell their membership, the proposed member must meet the criteria for transfer of membership, as stipulated by the Board. The value of the transaction is a matter between the existing member and the proposed member. If at any time the number of members falls below a certain percentage of the initial subscription target, the Board may invite additional organisations to join the Cooperative at a joining fee determined by the Board.

Code of Conduct for the Cooperative

The Cooperative has established the framework for its operations by establishing a Code of Conduct, which ensures, in its own words, that only 'serious players' in the Tasmanian ICT industry are involved ie. not those who expect benefits without making the necessary contribution to its success.

The Code of Conduct for the Cooperative establishes the ethics and principles to guide its operation, and the conduct and standards of behaviour expected of all members in their interactions with each other and with clients.

This document is currently in the form of a Position Paper presenting what the Steering Committee regards the basis for membership. It provides the framework for appropriate conduct by Cooperative members in a variety of contexts, as well as providing guidance on ethical questions, which may arise.

1. Responsibilities

Each member of the Cooperative should be familiar with his/her responsibilities under the Code

2. Principles

2.1 - Act in good faith and with impartiality, integrity and conscientiousness to further the aims of the Cooperative.

2.2 - Be frank and honest in their official dealings with each other;

2.3 - Not act in a way that may bring the Cooperative into disrepute.

3. Conflict of Interest

Members of the Cooperative must:

3.1- Ensure that the work of the Cooperative is not compromised or affected by any direct or indirect pecuniary or non-pecuniary interest to ensure that wherever

possible, there is no public perception that its work may be so compromised or affected.

3. 2 - Formally declare any conflict of interest, whether direct or indirect pecuniary or non-pecuniary interest, at meetings of the Cooperative or directly to the Cooperative's administration where Cooperative initiated or promoted project is involved.

4. Confidentiality

Members acknowledge and agree that by providing documents or information to an open meeting of the Cooperative they have waived any claim to confidentiality of those documents or that information. However documents provided confidentially to the administration will not be divulged to other members, except by proper agreement.

5. Improper or undue influence

Cooperative members must take care not to use their position on the Cooperative Board to unduly influence any other member or staff of the Cooperative for the purpose of obtaining any advantage for themselves, or any other person or body, whether that advantage is direct or indirect.

6. Gifts, gratuities and hospitality

Members must avoid giving any indication that gifts, gratuities or hospitality relating to their membership of the Cooperative will be accepted, either for themselves or for any other person or body, or that these may influence decisions.

Intellectual Property Ownership/Licensing

The ownership of intellectual property will be managed on a project-by-project basis using a limited number of pre-defined contracts that cover:

- Licensing/transfer of pre-existing IP to the cooperative or client, for one or more of ongoing use, further development or future sales
- Cross-licensing of IP brought to and developed during the project to some or all participants for their ongoing use, development and sale
- The distribution of royalties, if any, that derive from the use or sale of intellectual property brought to or developed during a project.

The opportunity exists for the ICT industry to work cooperatively with science bodies to develop their intellectual property for a number of initially small, specialist projects from the list of projects that they have internally identified. (As an example, it is mentioned in the ICT Marine Cluster Report compiled by KPMG that the University alone has potentially 113 projects.)

Through formal agreements with the Science Institutions, the Cooperative seeks their full participation in the commercialisation process and long-term license agreements. The Cooperative requests a mechanism for determining commercialisation agreements to develop, manufacture and market products and services that incorporate intellectual property developed by the Institution.

The challenge lies in melding a commercially promising research idea with the commercialisation goals of the Cooperative and to achieve a profitable outcome for all.

In completing workable and equitable licensing arrangements for projects, the following will need to be taken into account:

- the existing protocols and licensing arrangements of the science and academic institutions;
- the practicalities of working with a group of private firms in a trading Cooperative;
- whether the science organisation is free to be part of a Cooperative and the degree of involvement;
- initial financing for a project;
- the disbursement of profits; and
- other factors.

Cooperative Share Financing

Introduction

In a Cooperative, the members own and provide the permanent capital base and management decisions are made on a democratic “one member, one vote” basis.

Members who contribute permanent capital to the business receive a modest remuneration from the capital invested. The balance of any profits is distributed

amongst the Cooperative members. The anticipated advantage is increased job opportunities.

In practice Cooperative members can only count on their own capital contributions to raise funds and cannot raise funds from the general public as a public company can.

Basic Principle

The Cooperative relies on 6 basic principles:

- Membership is open and is voluntary
- Decision making power is distributed equally between members
- Investment does not accord power and should receive a limited remuneration
- Profits are distributed evenly between members. However the more active company members will expect higher returns by way of added business activity
- Beyond commercial objectives, a cooperative venture should entail social and educational objectives
- Cooperative members should help each other

By providing capital, the shareholder obtains title to part of and management power over the Cooperative according to the previously stated one member, one vote principle.

Cooperative members receive a modest remuneration from the capital they invest and can only dispose of it when they leave the co-operative.

The Cooperative Share

A shareholder should be willing to exchange a sum of money in return for a future dividend flow.

When a Cooperative issues a cooperative share, it is to raise permanent capital finance. The cooperative will be unable to say when it will reimburse the investment and if ever it will. It is therefore necessary that the share generates an annual dividend stream.

The objective of investing in a Cooperative share is not to make excessive capital gains but to improve the value of one's investment through time. The (annually re-

valued) dividend flow is there only to enable a valuation of capital that cannot be immediately returned to the investor.

Financial Needs of the Trading Cooperative

The financing needs of companies fall into 3 categories:

- Working capital financing needs
- Fixed Asset Financing Needs
- Risk Financing Needs – possibly R& D activities.

Finance Sources

No Cooperative can rely solely on debt to finance its activities. The Cooperative therefore needs a permanent capital base. This permanent capital will have to be created in the following ways:

- the original capital contributions of shareholders (whether founding shareholders or subsequent investors);
- annual membership;
- grants – Government or Intelligent Island;
- loans from members; and
- retained profits (some may be distributed by way of dividends to shareholders).

When a Cooperative is founded (and consequently when there has been no previous trading) the only source of permanent capital is the capital contributions of the constitutive shareholders.

Financial Benefits for Shareholders

The needed result in a trading Cooperative is a financing mechanism within which:

- The Board selects (and effectively) authorizes the Cooperative's investment projects and commercialisation projects and protects the total capital invested
- Increased activity of Cooperative members will reduce the risk of financial stress of individual members and of the Cooperative fund
- The participating companies receive access to increased work opportunities, better collective marketing and benefits such as reduced insurance premiums

- The shareholder is remunerated in the form of a dividend, which assures the value of capital through time and allows possible withdrawal of capital

Members can benefit from long term capital investment in the Cooperative while still being their own bosses and running their own businesses.

Initially there cannot be a guaranteed return, including to those who hope for reimbursement in return for the role accorded to them in the early stage management of the Cooperative.

If the Cooperative is well managed, it will enable shareholders to make an annual profit that can be: reinvested or distributed.

Conclusion

Cooperatives operate and are placed within the market economy. It is important to note that the method of organizing finance for Cooperatives by way of a risk analysis of each project proposed also uses a market-based mechanism. The Cooperative members will not accept a new project unless the risk they agree to take on will generate a financial return.

Establishment Issues and Current Status

When a Cooperative is founded (and consequently when there has been no previous trading) the only source of permanent capital is the capital contributions of the constitutive shareholders. Under the model rule for trading cooperatives, this is inadequate for planned development activities.

Even though larger, well-established members have the financial resources, they cannot contribute more funds than the smaller, impecunious members. The smaller members contribute their diverse skills and experience. The Cooperative must seek additional funding from external sources to sustain it through the initial few months. There is a clear desire on all sides for a strong, formal linkage between the ICT industry and the science institutions in Tasmania.

In recognition of the above, the Cooperative has submitted a proposal for support funding from the Intelligent Island's Small Grants Program, under its Industry Development initiatives, to establish the entity with a formal administrative structure. If approved, the project is scheduled for completion in June 2004.

The project includes the following elements:

- Project identification procedures
- Intellectual Property protocols
- Commercialisation guidelines
- Marketing procedures (to establish an initial marketing presence within the Australian Marine Science marketplace).

Discussions have been held with CSIRO, the University of Tasmania, and AAD regarding support for the Cluster and the development of working procedures for the future.

The seven local companies signed up to the Cooperative (5 are needed for a Cooperative), have a wide range of capabilities in information technology, including in Marine related GIS fields. Detailed discussions are being held with 5 other candidate organisations.

The Cooperative Board will consider using consultants with strong business expertise to better enable the Cooperative to establish sound practices for future growth.

Analysis

This Case Study review was insightful due to the fact that a Cooperative model has been around for centuries, yet is being applied in the context of the development of a contemporary cluster.

The Cooperative demonstrates a number of success factors that suggest a positive future. These include:

- Leadership: a committed Chair (Roy Pallett) has been driving the agenda since its formation, supported by a civic leader (ie the Lord Mayor of Hobart) who has demonstrated a keen interest in the Cooperative's outcome, and has played a key role in the Steering Group.
- Management and Administrative Foundation: The initial period of establishment (15 months) has been spent in obtaining expert opinion regarding the application of the Cooperative model to this emerging cluster. Strong foundations in this regard have been laid.

- Member Commitment: The true measure of commitment to a cluster is whether organisations are prepared to provide funds to an entity (which is inherent in the cooperative model). Seven organisations have already signed up in this regard.
- Support from the State Government. Intelligent Island has been supportive of the development of the Cluster.

The Mission of the Cooperative encompasses a broader responsibility for enhancing the Tasmanian marine sciences sector. Cooperatives are normally limited to a certain number of members, and those excluded from the process may argue that the Cooperative is 'exclusive' rather than 'inclusive' (despite existing Cooperative members having demonstrated their commitment through providing their own funding). Nevertheless, perceptions must be taken into account from a political perspective when a Cluster is speaking on behalf of the sector, and obtaining large contracts through that Cooperative.

However, it is suggested that the above issue is not as pertinent in Tasmania than it is in some of the more populated Australian cities, given the larger number of companies on the mainland.

In summary, it is considered that this Cooperative should be given every chance of success, as certain elements of its operation have national implications in regard to a suitable approach to clusters development.

Case Study – AEEMA/ECAANZ Cluster - Victoria

Background

Following on from the successful establishment and development of the AEEMA Industry Cluster in Queensland, the Association decided to explore the establishment of a similar group in Victoria. Central to the new model suggested is the principle that any nurtured cluster must form organically from existing and new AEEMA member companies, and develop with effective linkages to universities, TAFE, R&D providers and commercial service providers. The Cluster must be led and managed locally, and must be externally focused and sustainable.

The initial exploratory meeting in Melbourne, facilitated by the Convenor of the Queensland Cluster on 28 April 2003, was well attended by a good mix of industry participants. Hosted by one of AEEMA's members, Siemens, the event focused on the development of 'signature projects', and the early identification of project teams to carry such initiatives forward. Mr Bruce Kendall from the Victorian Government, was also a participant at the event.

An interest in both new wireless technologies and Australia's capabilities in international compliance testing was similar to projects proposed in Queensland. This suggests that there is an opportunity for interstate collaboration in these areas.

Action on Project Discussions

From the initial, exploratory meeting, the following projects and team leaders were determined:

Team Leader	Company	Proposed Project
Martyn Kernel	Radio Frequency Systems Pty Ltd	Effective and Measurable Supply Chain Operations
*John Villela	Dallas Delta Corporation	A project to map Australia's international compliance testing capabilities
Arthur Lowery	VPI Systems	A project to examine the socio-economic benefits offered through the use of new integrated building technologies, with a particular focus on wireless technologies

* The principle behind this project is that Australia's companies often have to source offshore facilities for international compliance testing, at a relatively high cost. Whilst some facilities do exist in Australia, there remains an infrastructure gap in this area, which impedes export activity.

Example of a Proposed Project

The following is an example of an Executive Summary of a nominated project (in accordance with the template established by the AEEMA Industry Cluster Queensland.

<i>Proposer (Cluster Associate):</i>	Martyn Kemel
<i>Organisation:</i>	Radio Frequency Systems Pty Ltd
<i>Project Criteria:</i>	(as detailed previously)
<i>Short Project Title</i>	Effective and Measurable Supply Chain Operations

Project Description/Compatibility with Criteria

"By reviewing existing practices (eg. 'on time in full') and processes within individual companies and throughout the supply chain, the project will investigate and analyse how Australian companies in the ICT, electronics and electrical manufacturing industries can improve their understanding of customers requirements, and how best they can target global markets, based on understanding their competitiveness in both cost and 'time to market'. A major issue is to understand product supply and delivery timing, understanding the customer needs.

This collaborative project will be undertaken by clustered companies in Victoria and interested suppliers and allied stakeholders in other States as an initiative of the Electronics Industry Action Agenda to be implemented by June 2006. The participants will be identified and invited following the completion of the national mapping of the electronics industry that will identify more clearly strategic supply chain linkages. By utilising existing funding programmes, state government support will be sought to prioritise programme delivery for encouraging innovation in internal company processes and through supply chain interactions, and to raise awareness of the imperative throughout industry generally.

The project, to be completed by June 2005, will prove of national significance once industry has identified new market opportunities and a need will emerge to optimise quickly supply chain efficiencies to remain competitive in world markets".

Second Cluster Meeting

This event was held on 29 July 2003 at the Institute for Horticultural Development, Knoxfield, and was convened to enable the above project leaders to report back to AEEMA and ECAANZ members and discuss a major industry mapping project.

A Special Interest Group meeting emanated from this cluster event, with an emerging interest in Automotive Telematics. This initial interest has catalysed further activities in this area, with Victorian Government encouragement.

Current Status

As in New South Wales, the AEEMA Board needs to see a suitable Business Model for the sustainability of the Victorian Cluster, before the commitment of additional resources to its development. It also needs, in this exploratory stage, to understand the commitment of AEEMA members willing to play an active role.

In referring to the Victorian and NSW Cluster experiences, the Business Development Manager of AEEMA made the following observations concerning cluster development:

- There are more Australian Associations per capita than anywhere else in the world (thus there is a high degree of competition for members – which implies the need to introduce new ways of attracting and maintaining membership, with clusters being one of these tools)
- Past failures with traditional networks in Australia has resulted in a degree of scepticism, which therefore impedes active engagement
- Trust and relationships between companies and employees will drive the success of clusters
- Intellectual Property Issues in the cluster context need resolution
- It is important to have a committed core group in a cluster
- There is a need for clusters to be driven by industry. Industry investment is essential to any possible long-term success
- Clusters need both customer and vendor involvement
- Facilitation and leadership is necessary, with Industry Associations such as AEEMA playing a key role in this regard
- It is important to sell Australian capabilities via clusters, not States

Analysis

- Clusters are an excellent way to pre-qualify opportunities and catalyse ‘spin-off’ networks (eg. the one developing in the Victorian automotive telematics area).
- It is important to establish a viable business model for the sustainability of a cluster from the outset
- Whilst AEEMA can play a leadership role, the emergence of “champions” for ongoing cluster development is crucial
- Clusters should be resourced sufficiently

- There is a strategic advantage in industry or industry associations establishing the network, in partnership with government.
- Government support should be focused on seed and project-based activity.

Case Study – AEEMA/Australian Technology Park Precinct Management Ltd/ATP Innovations Ltd Cluster – New South Wales

Background

The Inaugural meeting of the AEEMA/Australian Technology Park Precinct Management Ltd/ATP Innovations Ltd cluster, was held at the ATP in Sydney on 17 July 2003, with the following Mission Statement:

“To provide a delivery mechanism for a NSW State-wide implementation over the next three years of the Electronics Industry Action Agenda, recently approved by the Federal Cabinet. Under the broad branding of ‘Technology Australia’, the parties recognise that this Action Agenda is focusing on the growth of electronics, the definition of which includes photonics, microelectronics, wireless and embedded software.”

AEEMA has been assigned the role as the National Coordinator of the Action Agenda. The ATP has strong linkages with key Commonwealth and State Government agencies including the NSW Department of State and Regional Development. The ATP, with its strong links to four universities and NSW TAFE, hosts a key node of the National ICT Australia Centre of Excellence, the Australian Photonics CRC, and other key facilities such as the Bandwidth Foundry. It is recognised that this Cluster could establish innovation system linkages across the Sydney Greater Metropolitan Region (including Western Sydney and the North Sydney IT corridor), as well as regional centres such as Bathurst, Illawarra and the Central Coast, all of which need to be linked into the national effort.

Inaugural Meeting

The Inaugural meeting attracted almost 70 attendees, from a wide and diverse range of companies, with the facilitation overview and signature project strategy being provided by the Convenor of the Queensland Cluster. Angus M. Robinson delivered a presentation that set the framework for the cluster development, and Darryl F. Bubner from Wave Global Pty Ltd provided a methodology for Rapid Opportunity Scanning. Steve Montgomery, the General Manager of ATP Precinct Management and Mark Bradley, the

Chief Executive of ATP Innovations were also involved in proceedings, providing considerable support for the event.

The focus of the Cluster from the outset was clearly on the development of collaborative projects by participants, building on current commercial opportunities. The following were identified:

Specific Target Markets	Identified Opportunities	Selected Signature Projects
Sydney Transport Bid and Associated Opportunities Aircraft and A/C maintenance <ul style="list-style-type: none"> Partnership electronics and tooling Plastic Fibre (copper replacement) A.I.4 High Performance Computing Automotive Applications Superconductors <ul style="list-style-type: none"> Power conversion X Mission applications Commercialisation 	Wearable Medical Wireless Devices Integrated Emergency Services Health Sector <ul style="list-style-type: none"> Miniaturisation wireless Low-voltage devices Commercialisation and market entry Remote Security <ul style="list-style-type: none"> Access Monitoring Recognition Technology Wireless messaging <ul style="list-style-type: none"> North American market Improve Science Industry Linkages <ul style="list-style-type: none"> ESP New and Emerging Technologies 	Development of Wearable Medical Wireless Devices <ul style="list-style-type: none"> Brian Vale/Charles Lindop Michael Mak/Trevor Bird Opportunities for SME's Group to engage decision-makers re. Sydney Transport Bid (Telstra et al) <ul style="list-style-type: none"> Angus M. Robinson, Mathew Walker, Christopher Janssen Aircraft and A/C Maintenance including electronics and tooling <ul style="list-style-type: none"> Geoff Goeldner Automotive Applications <ul style="list-style-type: none"> Bruce Grey and Christopher Janssen Health sector (linked to wearable medical wireless devices) <ul style="list-style-type: none"> Miniaturisation of wireless devices Low-voltage devices Commercialisation and market entry issues

Actions on Project Discussions

- George Paul of CAP-XX to facilitate the Medical Electronics Project and a number of companies have agreed to attend the first meeting scheduled for October 17
- Geoff Goeldner from APAC is scoping the Aircraft project. AusTool, WTIA and the Defence Department, as well as the Australian Government have an interest. (AusTool and WTIA already have federal funding for a similar project, but do not include 'electronics / photonics' at this stage).
- A meeting has been held with automobile manufacturers and leading auto electronics suppliers. It is envisaged that this Cluster will be established in Victoria

with close links into NSW. The Chief Executive of AEEMA, Angus M. Robinson, has met with the Victorian State Government and other interested parties.

- Sydney Transport. Angus M Robinson has met with Telstra as the lead contractor, as a prerequisite to arranging a meeting with all interested parties.

Subsequent to the Inaugural meeting, a further NSW Cluster event has been conducted, as well as two special interest group meetings. From one of the latter meetings, held October 16 at the Australian Technology Park, it was agreed that the potential for the establishment of a medical electronics network should be investigated.

The clear focus in New South Wales is on electronics in general, consistent with the thrust of the Electronics Action Agenda, and specifically on the area of medical electronics.

Analysis

It would appear, based on the enthusiasm evident at the NSW meetings, that the foundations of a sustainable cluster have been laid, considering:

- the early identification of projects within targeted areas of opportunity; and,
- the support of the Australian Technology Park Precinct Management Ltd and ATP Innovations Ltd

Nevertheless, the AEEMA Board still needs to confirm that the Cluster will be sustainable without a significant resource commitment from the Association. From an AEEMA perspective, the NSW Cluster is in its exploratory stage, and its longevity depends on the Cluster establishing the right formula for its ongoing operation.

This suggests the following about the establishment agenda of Clusters:

- Whilst it is important to introduce the commercial agenda as soon as practicable (via nomination of projects) the trust factor (as mentioned in the Overview of this Report) may not be there in an initial group of disparate individuals. Therefore it is suggested that some of the fundamentals be established before moving into project development phase¹²⁵
- There is a need for industry people to come forward and enthusiastically grasp the mantle as 'champions' for the cluster or special interest group.

¹²⁵

This is consistent with the 'Cluster Development Lifecycle diagram' at the end of the case studies' section

- Clusters need some seeding support in the way of funding to support the management/administration of the cluster. The model of an honorary supporter or an individual that has other full-time employment commitments is not sustainable.

Case Study of a Network Represented in the AEEMA Industry Cluster (QLD)

LIGHTING CENTRE OF EXCELLENCE

Background

The Department of Public Works, Queensland, fostered the concept of an Australian Lighting Centre of Excellence by forming a small Working Group around the proponents of two Queensland Sustainable Technology Development Program research proposals – adopting a collaborative approach from inception.

Recognising that lighting in Australia, and the Region, did not have the same status as in Europe and North America, the Working Group saw a need and an opportunity to lift the profile of lighting, the level of lighting technology applications and the quality of lighting design solutions, particularly in building-related industries.

It also recognised a potentially large market niche, across Australia and the Region, for lighting systems and applications developed for tropical, sub-tropical and bright-temperate conditions. Australia's exposure to these conditions presents an opportunity to establish a unique position and reputation for lighting design and technology excellence applicable to these climates, especially as most new lighting technology is developed in Europe and North America where these climatic conditions do not prevail.

A nationally representative Steering Committee was established in mid 2002 with stakeholders from the lighting design, lighting manufacturing, building design, property management, education and government sectors. They have identified opportunities and constraints to create a Centre and the means to best address them from a broad, collaborative, whole-of-industry perspective. Given the diversity of potential stakeholders final representation may differ, however current members of this consortium are:

- Illuminating Engineering Society of Australia and New Zealand
- Lighting Council Australia
- International Association of Lighting Designers
- Queensland Government (Department of Public Works)
- Royal Australian Institute of Architects
- Institution of Engineers Australia

- Property Council of Australia
- Australian Electrical & Electronic Manufacturers' Association
- Queensland University of Technology
- University of Sydney
- Deakin University
- Griffith University.

This consortium is committed to the creation of an independent and influential Lighting Innovation Centre that will operate collaboratively to deliver value to lighting professionals, industry, and governments; benefits to end-users and the community through increased quality in lighting; and broader economic benefits to the nation through the creation of new high-value jobs and increased export of services and manufactured products (particularly of high-added-value integrated lighting systems).

A Business Plan has been developed in consultation with key stakeholders – through individual interviews, market surveys, attendance at Trade Shows and conferences, several targeted focus group workshops, and discussions with academics and policy makers involved in developing collaborative networks and industry clusters.

The concurrent development of the Lighting Centre Business Plan and the AEEMA Queensland Industry Cluster has also been mutually beneficial.

The following extracts from the Lighting Centre of Excellence Business Plan demonstrate how a 'Product Systems' approach (after Marceau) identified case-specific relationships, issues and requirements for the 'lighting industry'.

Following these extracts is a section that recognises the potential for close parallels between lighting industry specific issues and other Australian industries. It uses lighting as an example of an 'industry specific' cluster and suggests that a similar cross-jurisdictional, cross-disciplinary approach to mapping the players and requirements of other industry areas could be applied under a 'Super-cluster' approach. This fits with the broader concepts associated with developing industry clusters as espoused in this Report.

LIGHTING CENTRE OF EXCELLENCE – BUSINESS PLAN EXTRACT

Need for Better Educated Users and a Skilled Workforce

Lighting is a ubiquitous element of everything we do and is critical to the value of the building, construction, property, entertainment, and visual arts industries. Lighting also contributes to productivity and workplace health and safety in businesses, education facilities, public places and many other areas.

Good lighting outcomes encompass a mix of artistic and scientific elements and the integration of products and services from many fields of expertise across the lifecycle of the asset (e.g. planning, design, procurement, installation and management in use).

Individuals consulted have stated that, even with the best intentions of various practitioners, lack of integration of design elements and technologies chosen, or ill-informed use or maintenance, have commonly diminished lighting outcomes. Lighting designers, manufacturers, facilities managers, electrical contractors and others all speak of difficulties caused by this lack of integration and in finding employees with the required breadth and depth of knowledge to oversee and optimise lighting outcomes.

Rapidly changing technology (in light sources/ luminaire design/ adaptive control technologies), market pressure for more energy efficient lighting, and, commonly, ill-informed users, complicate achieving the right mix.

The absence of a well founded and widely used series of credentials in the fields of lighting design and application leaves the lighting design community and lighting manufacturing industry open to a lack of credibility in the eyes of other building design professionals and end user clients. The opportunity for individuals to differentiate and market their capabilities, or for employers to accurately distinguish between and recruit people with the right skills, is also reduced.

Addressing these issues requires a structured, multi-tiered but integrated training and education system that can provide relevant knowledge and credentials, at the right level, to those that need it. Structured credentials allow greater differentiation of services – both to those that sell them, and to those that seek them.

There is therefore a tangible demand for greater awareness and knowledge of lighting across all fields and across all stages of the asset life cycle associated with the delivery of light. This lighting education and training must address scientific and artistic elements and

at multiple levels to meet the needs of numerous disciplines and fields of expertise. It must also be accessible across the Region – not just Australia – and is best conducted within a structured credentials framework.

Need for Facilitated Networks

Optimal lighting outcomes require the knowledge and integration of many professions and trades. Despite this ubiquitous need, however, only a proportion of the players in each client group have a need for high-level education or training. Consequently no single trade or discipline specialises in lighting and no single champion of better lighting outcomes exists to cover all aspects.

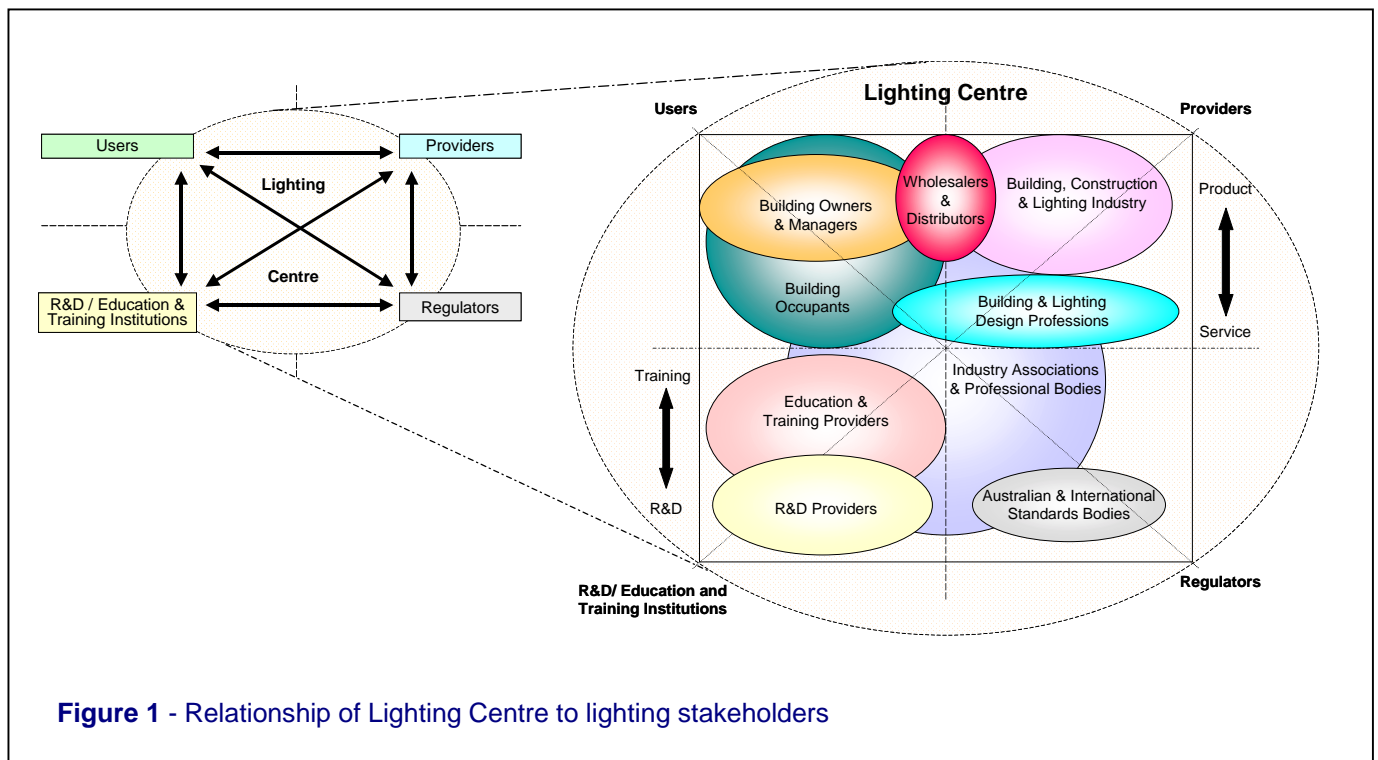


Figure 1 - Relationship of Lighting Centre to lighting stakeholders

An approach that cuts across disciplinary boundaries is needed to bring the required elements together in the right sequence to meet multiple, often competing requirements.

A few Australian lighting companies have some level of in-house technical resource, however many organisations find innovation processes intangible and hard to grasp. This is especially true for small to medium enterprises trying to gain customer, market and technological insights. This issue is recognised as a significant barrier to effective innovation and industry growth in a variety of sectors.

Industry associations and the Federal Government sponsor various schemes to promote technology diffusion. However, a specialist, independent focal point that facilitated and strengthened beneficial interactions amongst the broad range of players involved in lighting outcomes would support the industry and benefit all parties – particularly information and technology diffusion and facilitation of collaborative R&D endeavours.

Information, Awareness and Networking

Current Dissemination of Lighting Information and Networking

The following shows a range of the major players that develop, disseminate, receive or need lighting related information. Existing information is provided through a variety of media, including magazines (e.g. IESANZ's 'Lighting'), various newsletters and Association websites. Most of these are targeted at specific audiences as stakeholders have differing information and networking requirements. No single medium serves all players.

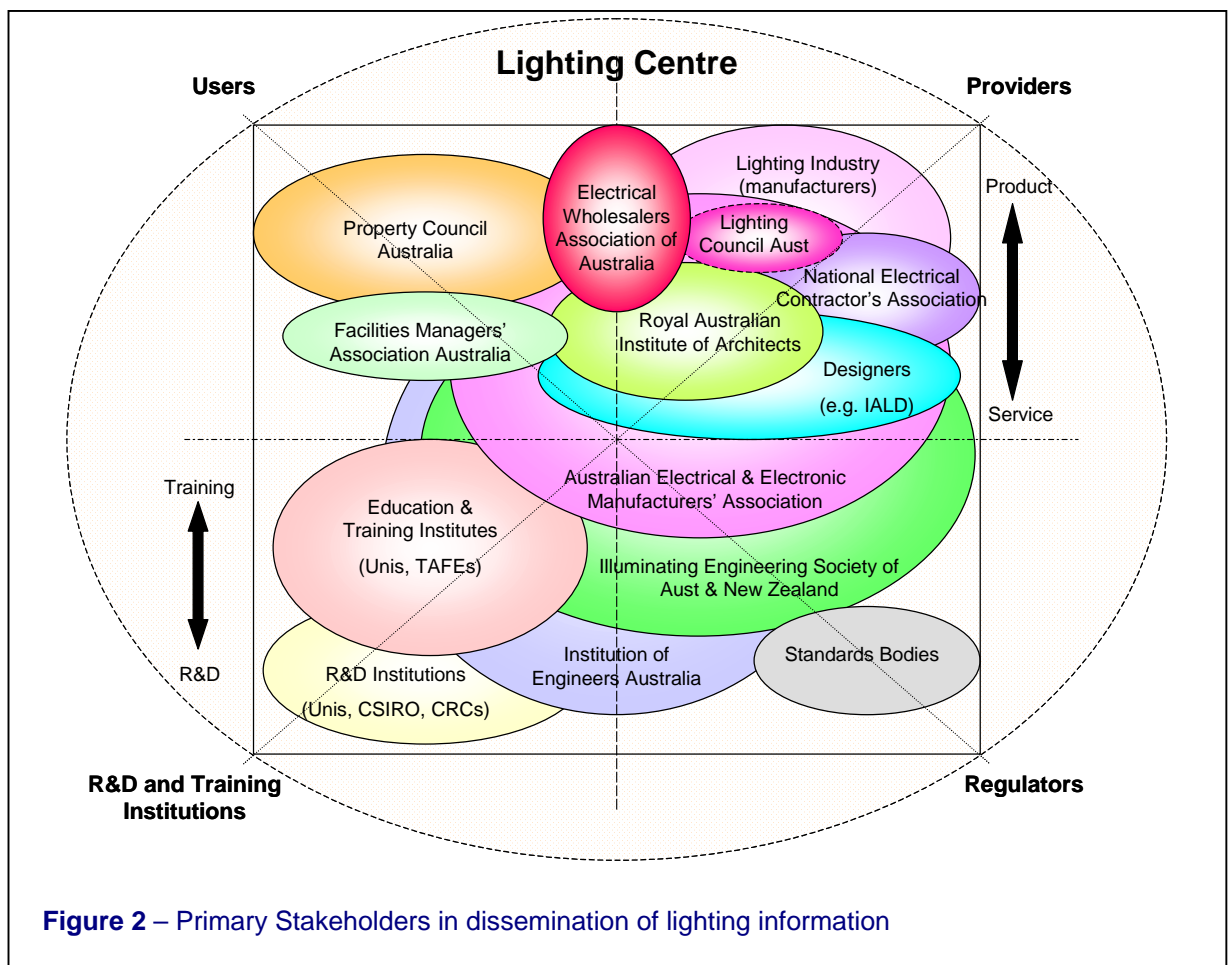


Figure 2 – Primary Stakeholders in dissemination of lighting information

Issues with Current Services

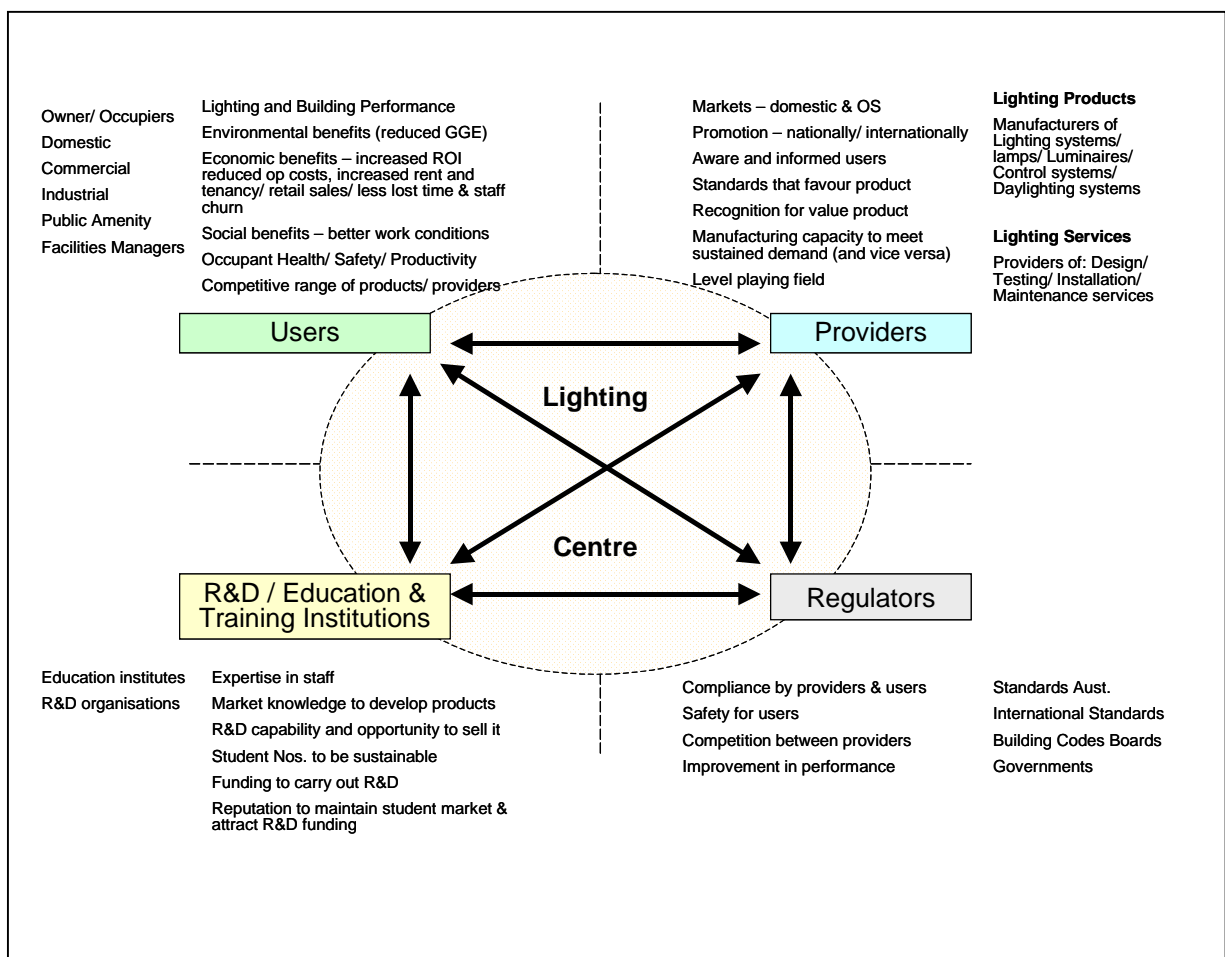
Australia is well respected throughout the region for the expertise of its lighting industry, electrical engineering and education.

However, feedback from Trade Shows indicates that specialist lighting expertise is difficult for the uninitiated to locate and that even then information and advice is not necessarily regarded as impartial. It also indicates that existing lighting related Associations and Professional Bodies are perceived as being restricted in their membership, State/ Territory representation, and, in some cases, their focus.

Designers, property owners, facilities managers and manufacturers recognise that improved awareness among users, procurers and consulting engineers about the benefits and means of achieving quality lighting will complement education and training services and lift the profile and sophistication of lighting design solutions and technology applications. Achieving broader lighting outcomes means developing ways of effectively communicating with and engaging a range of client groups broader than those currently reached by existing publications or associations.

Client Groups and Needs

Each client group involved in lighting and the lighting industry will benefit from an independent centre tailored to provide lighting information and raise awareness.



Users

A growing range of lighting users (e.g. Governments, property portfolio managers, tenants, occupants, entertainment industry, education providers, retailers and the broader community) want cleaner, greener and smarter solutions that allow user control, integrate with other building services, reduce energy costs and Greenhouse gas emissions, reduce life cycle maintenance costs, optimise productivity or sales, and reduce WH&S or insurance liabilities.

Users want information on how to improve lighting and building performance to reap economic benefits (increased ROI, reduced operation costs, increased rent and tenancy/ retail sales/ less lost time and staff churn), social benefits (better work conditions, occupant health and safety, and increased productivity), and environmental benefits (reduced energy consumption and greenhouse gas emissions). They also want to know how to distinguish between a competitive range of products and services and their providers.

Providers

Providers of services (e.g. lighting design, testing, electrical contracting, facilities management etc) want to promote the quality and benefits of their services beyond their field. Similarly product providers (e.g. manufacturers and distributors of lamps/ luminaires, control systems, daylighting systems, buildings etc) want increased market share for their products. They also want recognition for higher performance products or services, sustained customer demand to justify changes to manufacturing capacity or tooling, introductions to funding or collaborative research partners, and access to testing services.

R&D and Training Institutions

Universities, TAFE's, private training providers and private R&D organisations want to promote the expertise and capabilities of their staff and courses to target audiences nationally and internationally in order to build their reputation, attract students and R&D funding. Increasingly they also want to market and commercialise their knowledge and technology applications.

Regulators

Government agencies (e.g. the Australian Greenhouse Office), Standards Australia, Australian Building Codes Board and others are interested in improving safety, health, design and product performance, and competition between providers to improve outcomes for users.

Benefits of Improved Information, Awareness and Networking

Greater awareness, access to information and stronger relationships are keys to markets in education, lighting design and products. Client groups will benefit from increased awareness and dialogue with each of the other groups, for example:

- Aware and informed users increase providers' domestic and overseas markets through greater uptake of higher quality solutions, increasing the rate at which overall lighting and building performance can be improved;
- Aware and informed providers are able to identify trends in market demand and position themselves for development of new products and markets;
- Aware and informed R&D/ training institutions are better positioned to identify and develop better lighting design and technology to satisfy user demand; and
- Aware and informed regulators can develop standards and performance criteria to maintain a level playing field for industry while improving performance through more effective and efficient designs and products.

Increased awareness will also drive greater investment in R&D to prove the link between improved quality in lighting and performance indicators such as productivity, absenteeism and staff churn (for regional conditions).

The ability to demonstrate and quantify potential benefits in these areas will influence people with the power to promote the importance of quality lighting and drive better lighting design solutions, bringing real value and benefit to individuals, businesses and agencies that promote and develop quality lighting solutions.¹²⁶

¹²⁶

This approach complements an increasing emphasis on raising awareness about improved sustainability and productivity of indoor environments, elements which comprise strong drivers for the current focus of the Australian Green Building Council, the Australian Council of Building Design Professions and other agencies. The Australian Greenhouse Office sponsorship of the Best Practice in Lighting Seminar series exemplifies efforts to achieve these outcomes

Providing information and creating a hub for client groups will also benefit the Centre through cross-promotion of its education and training and R&D services.

*“Opening the Door: A Discussion on Industry and Public Research Institute Collaboration”*¹²⁷ provides a summary of the benefits of such collaborative partnerships. It reflects on issues similar to those discussed and developed by the Lighting Centre Working Group and Steering Committee and reinforced during preliminary market research for the Centre.

Information and Networking Service Methods and Roles

The Centre will be an independent and trusted intermediary between the origin and application of new ideas; adding value by identifying interested parties and building relationships and networks that assist in the validation and diffusion of ideas and knowledge.

In this regard the Centre will provide a range of information, awareness and networking functions for its client groups, act as a Resource Centre for services affecting skill needs and industry development, and facilitate links to relevant professional bodies, associations and clusters.

Establishing connections & facilitating collaboration

To be functional and relevant it is critical the Centre builds relationships with and among companies, Universities and other educators, in the region and across the globe. It must be well connected to organisations recognised by the Government as representative bodies of the industry, its affiliates, and industry clusters. This is perhaps the most important function of the centre and will benefit all client groups and all other aspects of the Centre’s operations.

The Centre already has strong connections with the Australian Electrical and Electronic Manufacturers’ Association (AEEMA), Lighting Council Australia (LCA), Royal Australian Institute of Architects (RAIA), Australian Council of Building Design Professionals (ACBDP), Universities and other agencies through its Steering Committee and Working Group. Through its University, industry and government partners the Centre also has connections to State and private business incubators.

¹²⁷ July 2003 – RMIT Business/ Ernst & Young

Centre partners have also been involved in the development of industry cluster mapping approaches in Queensland (through AEEMA); and the Centre, even in its current state of development, is regarded as providing the basis of a functional cluster. The Welding Technology Industry Association (WTIA) was consulted about the Centre's approach as it manages a similar network and has developed methods of measuring the benefits of its services.

As an interface for lighting related industry cluster organisations the Centre can provide a collective voice for the private sector (including SME's) and more effectively design and develop information, educational and R&D programs. It will be important however to stay above intra-cluster altercations.

Information portal for industry

Maintenance of close relationships with industry and partnering academic institutions will enable the Centre to function as an information portal for industry, providing detailed on-line information on industry-specific capabilities, laboratories and equipment, instructional expertise and education and training programs.

As an active hub for information exchange and a neutral meeting point for cluster firms, the Centre will be current with industry trends and activities and play a role in collecting relevant industry information and conducting industry needs assessments (in conjunction with existing industry bodies – Lighting Council Australia / IESANZ etc), as inputs to curriculum development, or, into industry development policy initiatives through nationally recognised bodies (e.g. AEEMA).

These information collection roles are important given the current absence of accurate, broadly available lighting industry related information and will enable the Centre to keep programs and services relevant.

The Centre will also work with existing organisations to disseminate information through a variety of new and existing outlets. Examples may include:

- Participation in industry events (e.g. Exhibitions, Conferences, seminars);
- A regular Newsletter available both on-line and in hard-copy format;
- A regular column in 'Lighting' magazine or its own occasional magazine;
- Easily accessed (phone and web) technical information services and advice; specialist bookstore, and technical library; and

- Publication of guides for use of Standards.

It is currently considered that the above are best provided as components of a Membership Package.

During informal discussions RALA Information Services (publishers of the magazine '*Lighting*', official journal of the Illuminating Engineering Society of Australia and New Zealand) indicated that they saw positive potential for close cooperation in advancing the aims and objectives of the Centre.

The Centre will also be well placed to coordinate occasional articles on lighting in various industry, industry association and technology-focussed magazines (see Figure 5 for an indication of likely conduits).

Specific Topic Seminars and Industry Forums

The hub provided by the Centre will facilitate coordination, development, promotion and delivery of special seminars and industry forums on current topics of interest in conjunction with Centre partners.

In recognition of this role the partners of the Centre have been commissioned by the Australian Greenhouse Office to develop a Best Practice in Lighting Seminar series for delivery in 2004. The AGO is liaising with the Queensland University of Technology (as contracted party), the Australian Council of Building Design Professions and the Facilities Management Association with respect to coordinating the project.

In another example a group of Victorian country lighting retailers and distributors approached the Centre to coordinate a topical seminar for their annual General Meeting, scheduled for early 2004. The Centre has referred this on to an IESANZ representative in Melbourne.

Each of these services will be developed according to priorities determined by demand, opportunity and return on investment.

Application of the Lighting Centre Approach for other Industry Areas

Industry Super-Cluster Benefits (applied across Specific industry areas)

The Industry Super-Cluster (cluster-of-clusters approach) will create an innovative, collaborative, cross-jurisdictional and cross-disciplinary approach. The common factors influencing the success of individual industry stakeholders within Australia far outweigh the industry specific differences between them. These common factors include the limited domestic market; access to R&D; access to government grants and capital; access to skills, experience and expertise; market awareness and readiness; potential offshore markets; lack of economy of scale etc.

Consequently a Super-Cluster approach will provide the economy of scale required to develop generic solutions and pipelines applicable to Australia as a geo-political region.

Industry Specific Clusters

At the individual industry scale however there are significant differences between the various industries under the broad 'Electrical and Electronic' banner. Various industry specific factors, such as drivers, barriers, markets, standards, skill levels (etc) require a tailored, industry specific focus on those aspects specific to each industry – Industry Specific Clusters will manage these for priority areas.

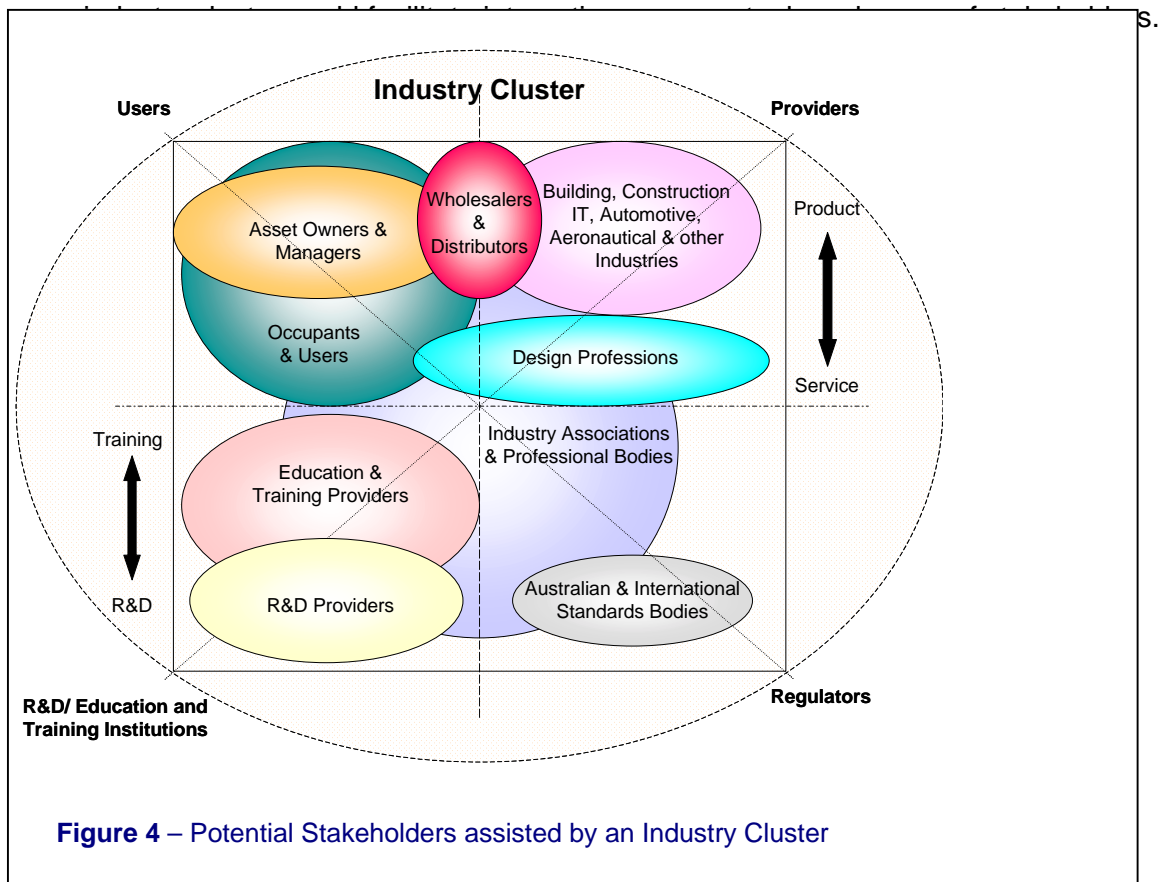
Each Industry Specific Cluster will provide a national industry development service, variously benefiting its specific range of stakeholders by (potentially):

- Influencing the people with the power to promote the importance of better quality design and technology solutions;
- Facilitating information and education for industry & practitioners, building design professionals, government agencies, and end-users;
- Generating a larger, more highly skilled workforce through uniform access to Nationally consistent (insert relevant) education and credentials in all major cities in Australia & New Zealand, and by distance education;
- Integrating existing and potential research capacities at both regional and national levels;
- Assembling a critical mass of expertise and spreading the concept of Lighting excellence beyond the participants; and

- Developing and maintaining Australia's competitive advantage as a source of Lighting systems and specialist Lighting education for the Region.

Each Industry Specific Cluster's services (and the Super Cluster's approach) will also generate broader national economic and environmental benefits through creation of a larger manufacturing base for advanced products and systems, and export markets for Australian technologies, expertise and education.

This Figure depicted at the commencement of this Case Study illustrates how an



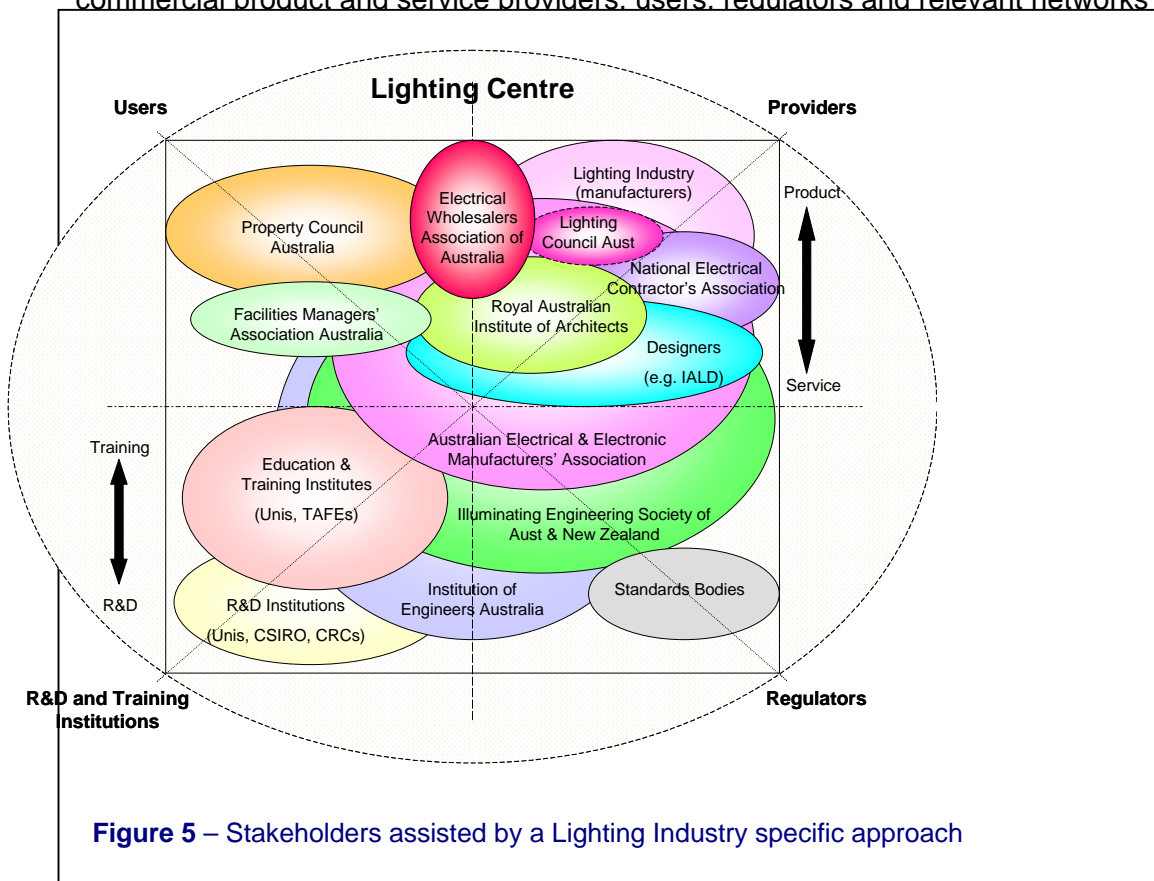
Industry Specific Cluster Example – Lighting Centre of Excellence

Each Industry Specific Cluster will need to be scoped and developed in its relevant context. A multidisciplinary collaborative approach has recently produced a Business Plan for a Lighting Centre of Excellence to address the needs of this industry sector. The following modified extract from that Business Plan illustrates one potential outcome of an industry specific approach.

Lighting is a critical enabler of safe and productive commercial, industrial and domestic environments. Lighting design and application have major impacts on the manufacturing, R&D, architectural science, engineering and building industries.

Lighting solutions for our region require consideration of factors, such as a range of climatic conditions (from tropical through to bright temperate), that differ from Europe and North America, the source of most current Lighting R&D. Australia possesses the manufacturing capability and specialised skill base (from advanced physics and electronics through to high aesthetic design) to become a centre of excellence for Lighting in our Region – provided these skills can be effectively developed, harnessed and integrated.

There is strong support for a centre that focuses on optimising Lighting and Lighting industry outcomes by developing and strengthening the interactions between players and effective linkages with R&D, education and training institutions, commercial product and service providers, users, regulators and relevant networks



The Lighting industry in Australia will grow as applications and expertise developed find new national and international markets, creating employment for those with advanced skills and knowledge in Lighting design, manufacture and education.

Timing is opportune as there is an unprecedented alignment of drivers for transformation of the Lighting industry. This industry-driven approach aligns well with Government policy direction at Federal and State levels and is strongly supported by Lighting design and manufacturing industry groups, several Universities and relevant professional bodies.

Acknowledgement

Sincere appreciation is given to Neil Davidson and Dale Gilbert from the Queensland Department of Public Works (Built Environment Research Unit) and the Secretariat of the Lighting Centre of Excellence for their ongoing support for the AEEMA Industry Cluster in Queensland, as characterized by the above contribution. Both have played a key role in recognizing the opportunity for the Cluster to break new ground in Australia, and have provided intellectual input that has been greatly appreciated.

APPENDIX 3 – Proceedings from AEEMA Industry Cluster Workshop – IAccP Grant

Wednesday 5 November 2003

Deacons Lawyers – Level 17, 175 Eagle Street, BRISBANE

ATTENDEES

Ken Bridges (Chair of Cluster)	B&R Enclosures
Chris Vorbach	Biometric Innovations Pty Ltd
Daryl Sturgess	Bizmap
Cambell Smythe	CMD
Phillip Hourigan	Deacons Lawyers
Neil Davidson	Department of Public Works
Alan Townson	ICN
Malcolm Hall	KPMG
Bradley Cadwallader	Lumascape Lighting
Tim Shaw (Cluster Executive Member)	Micreo Ltd
Max Rose (Cluster Executive Member)	R.F. Technologies Aust
John Humphreys (Project Manager)	Industry Cluster Queensland
Emma Johnson	AEEMA Industry Cluster Queensland

APOLOGIES

Jennifer Liston	AEEMA
Hugh Crowther	AEMS
Jim Doriean	Broadband Systems Pty Ltd
Craig Mounsey	CMD
Russell Loane	Eye Lighting Australia
Mark Steiner	Hetech
Jim Box	ICN
David Tilbury	Intralux Australia
Grant Wensor	Sage Consultants
John Britton	Siemens Ltd

1. WELCOME TO PARTICIPANTS

John Humphreys welcomed participants to the Workshop indicating that a number of key players representing various industries had been invited to attend and provide input into the report for a new model for cluster development in Australia

2. 5 MINUTE POSITION STATEMENTS

2.1 Overview – Project Status – John Humphreys (Project Manager)

It was noted that the title of the project under the grant was 'Enhancing National Economic Benefits through a new Cluster Paradigm'.

The main contributors to the project were introduced.

- Phillip Hourigan, Deacons – providing a legal prospective on IP, clustering and major project development by cluster.
- Max Rose, R.F. Technologies – providing case studies, success and failure factors.
- John Humphreys, Global Innovation Centre – project manager and researching clusters on an international/national and regional level.
- Daryl Sturgess, Bizmap – mapping and values inventory.
- Jennifer Liston, AEEMA – link to the national body, AEEMA, with associated industry information
- Emma Johnson, AEEMA – providing secretariat and research services

To date extensive work had already been performed on the project, however it was now necessary to obtain industry input into the way the project would progress and feedback on past activities. This group also represented the main industry advisory/reference mechanism for the project.

John Humphreys indicated that both Ministers Macfarlane and Vaile were interested in attending a future Cluster meeting (Minister Macfarlane for the second time), noting that the grant of \$140,000 had been received from Minister Macfarlane's Department.

It was noted that the Cluster would benefit from the Grant for its industry reference and information activities, being allocated \$20,000 as a Grant contributor.

It was advised by John Humphreys that the final outcome from the Workshop is to identify issues and opportunities which capture the overall themes from the event. Recording of these issues and opportunities will represent a key input into the Report. In this context, it was noted that a Draft Report is required to be submitted to the Department by the 28th November.

2.2 Social / Mapping aspects of Study – Daryl Sturgess

Daryl Sturgess from Bizmap advised of the origins of the enterprise mapping approach being applied to this project, as follows:

- Originally looking at enterprise mapping and methodology in Melbourne
- Given its characteristics, it was evaluated further in terms of Clusters
- In particular, the value and challenges in pursuing this approach are being determined
- A related question is what prescribes boundaries of a Cluster? It was noted that a Cluster is currently defined by geographical boundaries (consistent with the Michael Porter definition)
- However, the project team is questioning this definition
- Values and worldwide views shape behaviour

- Referred to a presentation made by the Director of Manufacturing for the Qld Department of State Development at a previous Cluster meeting, where both clusters and collaborative behaviour were mentioned – however what do these terms mean?
- Very easy to refer to collaboration, but putting it into practice is not so easy
- Signalled the intention of using a base level Values Inventory, approaching a number of people within AEEMA and associated organisations(indicative study only)
- Collaboration vs. Competition – dichotomy in terms
- Underlying attitudes and culture important in clusters

2.3 Overseas and Australian Cluster experiences – common themes, issue, etc – John Humphreys

Overseas Experience

John Humphreys noted that he disagreed with Michael Porter's definition of a Cluster, being geographical-defined. He considered that this was too limiting, in terms of contemporary clusters, noting that Michael Porter holds up the Australian Wine Cluster as being 'best practice' in this country, but that this cluster is not geographically confined. He sees that linkages with other Associations and Networks such as AiG, AIDN, E-Security (Qld) and other clusters or Associations are vital for a Cluster to succeed, ie a 'Cluster of Clusters' approach.

John's definition of a Cluster, as presented at the inaugural ICT conference in Tasmania and the inaugural Tweed Economic Development Summit is *"a system of inter-related companies, institutions and networks with common understandings, a desire for continual growth and a level of trust which enhances the flow of knowledge"*

He provided the following overseas examples of the 'Cluster of Clusters' approach:

- Canadian Photonics 'cluster of clusters'
- Atlantic Technology Corridor
- Network of French Packaging Clusters
- NE England – Sophia-Antipolis connection
- Australian Wine Cluster

In drawing out the themes of his research, he noted the overriding characteristics of a Cluster:

- "Clusters are not about scale, but about relationships. They are spawned, not manufactured." – Regional Technology Strategies US
- "Clusters depend on creating community." – OECD workshop in Copenhagen June 2003

- “Trust is a key factor underpinning innovation and increased productivity.” – European Commission’s DG Regio study on regional dynamics

It was noted that in certain countries (Nordic countries and Ireland) that the level of trust was high, whereas in countries such as France and Portugal the trust was low.

Prime importance was mentioned of the development of trust and share values in clusters, confirming the work of Daryl Sturgess.

John mentioned that Michael Porter notes that people should be patient with clusters, that they take about 10 years to fully establish. John noted that, in the Australian experience, this was far too long, and that participants need to see the benefits at the earliest possible moment, consistent with the time required to establish the required level of trust. He suggested that it was important to fully establish a cluster in around 2-3 years.

Despite the numerous categorisations of clusters now around, it was noted that categorising clusters is limiting, as clusters need to grow organically and outward, changing in response to the external environment and commercial conditions.

Australian Experience

- Government-driven networks are not sustainable.
- Networks led by government alone have lacked real industry commitment – need a ‘true partnership’ approach.
- Australian networks have lacked commercial ‘hard-edge’ and lack protocols/templates for collaborative project development.

Case studies being investigated:

- AEEMA Industry Cluster – Queensland (primary)

Secondary Case Studies

- Wine Industry Cluster
- Food Cluster (SA)
- Marine Cluster (TAS)
- AEEMA/ECAANZ Cluster (Victoria)
- AEEMA/ATP Cluster (NSW)

Five main issues are being examined in the project from John’s point of view include:

- How to extend beyond the ‘meet and greet’ networks
- How to best engage with government and educational institutions
- Cluster mapping for linkages, strengths, gaps and opportunities
- Continual review and refinement
- Tackling ‘signature projects’

In relation to collaborative projects the following needs to be addressed:

- How to address the IP/structural/trust and resource distribution issues
- How to fully understand complementary assets/resources of Cluster members

- How to identify/prequalify larger projects

2.4 Outcomes of SME interviews – Max Rose

Max Rose reported that he was the Chair for the Electronics Industry Mapping under the Federal Electronics Industry Action Agenda.

He indicated that he has experience in joint operations from his defence/military experience. Max noted that in the military it was easy to learn to work as a team, however it was more difficult in a business environment.

He noted that there was currently a lack of a mechanism to generate project proposals.

Some comments on this issue were provided by participants:

- A new approach to the contribution of education and training to commercialisation was required, as one of the key drivers.
- Awareness is a demand puller.
- Focus needs to be on the commercial outcome to drive the need for networks etc.

Max reported that he had interviewed a large number of companies, ranging from start-ups, SMEs to large multinationals (such as Boeing and Motorola). A number of themes were emerging from the interview process including the following (note: this is particularly relevant to micro-enterprises and SME's, rather than the multinationals).

- Lack of Trust
- Difficulties in Establishing Trust
- Difficulties in espousing personal agenda
- No real understanding of intercompany collaboration
- Lack of clear understanding of where the business is headed (No Comprehensive Business Plan)
- Lack of Working Capital
- No desire to share/ lose control
- Want to be independent (own boss)
- Want to be sole decision maker
- Lack of understanding of what is required for exporting
- No audited Quality Assurance system in place
- No understanding of how to become Investment Ready (No Information Memorandum)
- Lack of understanding of the value of IP and how to exploit it
- Relative lack of contacts and business networks

- Concern about how a number of separate entities could work together on a development project over lengthy periods of time
- Australia's predisposition towards fixed price tendering (contracts) for development
- International Project Development (many international contracts are developed on cost plus contracts)
- There are some who have developed a hand out mentality (business dole approach)

2.5 IP / Ethical / Organisational issues – Phillip Hourigan

Phillip Hourigan indicated that he had been looking at the regulation of IP in a clustering environment. He reported that IP ownership is made more difficult with multiple 'owners' and that the legal framework does not currently deal well with joint ownership of IP.

He made the following observations:

- Regulation potentially cuts across collaboration
- There are difficulties in dealing with 'confidentiality and trade secrets' in clusters– questions whether this can this be done without formal non-disclosure agreements?
- Emphasis on the importance of 'ethics and trust' as the framework for cluster/networks to function effectively

The importance of developing a strong level of trust early on in clusters was noted. The analogy of picking the 'low hanging fruit' was considered a sound early strategy for developing clusters.

Phillip Hourigan listed a number of main themes covered in his paper.

Identify participants

- Revolving door concept
- Freedom to take input from short term players

Project opportunities

- Changing members to different project requirement for success
- Core and non-core participants
- Mediated and non-mediated access to information

Framework recommendation

- Trusted third party
- Legal industry for early participation
- Barrier to entry/disadvantage

Notice of engagement

Dealing with IP in projects

Organisational elements

- Legal entity, governance, codes of conduct/ethics, funding

Operational elements

- collaboration, confidentiality, trust

Administrative elements

- business processes, communications, support etc

3. COMMENTS/INPUT FROM PARTICIPANTS

Tim Shaw, Managing Director of Micro Pty Ltd made the following comments:

- How do we grow a bigger and better industry?
- How do new industries get built?
- How do good new businesses form and survive?

Need both a body of knowledge and a large company around which new players can be spawned.

Commercial pull

- People need a reason to collaborate
- Self interest is a driver
- New approach is needed to academic involvement with some payback and freedom to participate
- Currently, this sector has little priority for commercialisation

Malcolm Hall from KPMG made the following comments:

- Universities such as the ANU are separating out (Research Schools versus Faculties)
- Interesting to see how much commercialisation is done by each Faculty or Department
- There is an existing group known as the Intelligent Manufacturing Systems Network, an international collaboration which fosters R&D. This network is administered through Sinclair Knight Mertz in Sydney and would represent an interesting case study in the future.
- 'Tax paying' participants of CRCs
 - ability to claim deductions has been impacted by taxation rulings on unincorporated joint ventures
 - change in status of unincorporated ventures with participants

- how the IP is held is critically important, as well as how it will be exploited

Other Workshop participants provided a range of views, which included:

- A cluster needs to be self-perpetuating
- Participant interests should be aligned on a long-term basis
- Why can't a commercial consortium approach be applied to a cluster consortium?
- Purpose – greater good, commercial outcome, awareness
- Identify purpose of the project
- Identify players prior to the project process
- Pipeline model interesting, noting various participants in the project development change eg. In manufacturing, ensure prior relationships are established with existing entities (eg Qld Manufacturing Institute in Queensland)
- Values project will provide an interesting perspective
- Cluster should not only be project-centric. There should be second order elements that create sustainability. A contribution to broader industry development (enhancing the industry in which one works) is a prime example of this.
- **Commercial self-interest was seen to be the main cluster driver**

From the above Workshop Proceedings, the following “Issues and Opportunities” Matrix was extracted:

ISSUES	OPPORTUNITIES	OTHER CONSIDERATIONS
What is the reason for cluster participants to collaborate?	Core / non-core participants concept for project development	Cluster to adopt a Commercial Consortium Approach? Why won't this work in collaborative cluster environment?
Funding source to establish projects required	Mediated / non-mediated knowledge – sharing of confidential information in relation to the above	“greater industry good – contribution to industry development” aspects.
What is the responsible entity – legal entity? Who takes the project management role?	Clusters need to grab the “low-hanging fruit” – that is the smaller projects that are easier to manage, particularly in the short term. This provides confidence for tackling the larger, multidisciplinary projects downstream.	Identify overriding purpose of cluster – integrating theme supported by all participants
Issues of ‘Social Capital’ important in clusters	Third party broker model is interesting and should be further evaluated.	
Trust / Relationships need to be built as soon as possible	Existing models e.g. IMS Sydney may be useful to research	
“Commercial Self Interest” is a predominant goal for most participants	QMI Rapid Prototype et al – bring into play some of the manufacturing support enterprises in major project development	
Need for cluster to be self-perpetuating - understanding of capabilities and resources	Align needs – Prepare ‘pipeline model’ of potential project participants	
Method of engagement with universities and research institutions		
Tax / Legal issues / IP need to be addressed		
Limited time frame for clusters to develop, without interest waning		