

## 2.0

# Executive Summary

Building a globally competitive ICT industry is an attractive and worthy objective. The ICT sector has the potential to make a significant contribution to domestic growth and the nation's trade balance. It can also generate many benefits for the broader economy by enabling efficiency gains in a raft of industries. It deserves substantial industry and policy attention.

Globally, the ICT industry currently accounts for US\$1.3 trillion in revenue (US\$180 billion in Software, US\$540 billion in IT Services, and US\$610 billion in Hardware) and represents 4.1% of global GDP. Over the 9 years to 2001, the ICT industry grew at twice the rate of the world economy (an average 7.1% compared with around 3.5% for world GDP). In Australia, it accounts for 4.2% of total GDP (1998/99) and, between 1996 and 1999, grew at 8.6% per annum compared with GDP growth of 4.6%. Its importance in Australia is set to grow. By 2005, it is expected to account for 5% of total GDP.

Further, Australia's ICT performance has important implications for our balance of trade. In 2001, Australia was a net importer of ICT goods to the tune of A\$10.8 billion—with imports of A\$14.3 billion and exports of A\$3.5 billion. While the terms of that trade have been improving as margins on manufactured goods have declined, current trends indicate that the imbalance

will grow dramatically. The deficit is currently increasing three times faster than the growth in exports.

Until recently the ICT industry also has created attractive employment opportunities. In the period 1992/93 to 2000/01, the number of people employed by the ICT sector grew by 75% and more than 163,000 jobs were created. This is against overall employment growth of 11% for the same period. It is important to also note that most ICT workers' earnings are significantly above average—compare the average 'ICT' weekly wage of A\$936 ABS, as at December 2000 with the average weekly wage of A\$653. Since 2000/01, unfortunately, Australian ICT has lost approximately 30,000 jobs due to the industry downturn.

A competitive ICT industry plays a major part in the development of other high-value-added service industries, where the effective use of information technology can create competitive advantage. To date, these industries have included information-intensive industries such as financial services, health care and education. But increasingly, other industries such as manufacturing, mining and agriculture are drawing on information technology.

### **The Current Status of the Australian ICT Industry**

Within Australia, Hardware accounts for the greatest spend of the three sectors, with domestic expenditure of A\$12.2 billion. Domestic spend on IT Services totals A\$10.6 billion and domestic spend on Software totals A\$4.8 billion. Domestic demand in each sector accounts for between 1% and 2% of global demand.

The Australian ICT industry encompasses many participants—public and private, large and small, diversified and focused, global and domestic. It includes major MNCs such as Microsoft and Cisco, as well as substantial local players such as Computershare and Mincom.

The Software sector currently sees significant local activity beyond sales, marketing and distribution. While MNCs are major players in the Australia Software sector, Australian companies have developed strong niche positions in a number of Software sub-sectors—Vertical Applications in particular. Further, the largest of these local companies have begun to develop

international sales. Australia has also successfully attracted R&D investment by software multinationals, particularly in Systems Infrastructure.

The top 10 MNCs in IT Services account for around 51% market share in Australia, but there are also a number of local industry participants—both specialists and generalists. The majority of specialists firms are focused on high-end business process outsourcing and IT management. These specialists tend to be larger and more profitable than the local generalists.

Local participation in the Hardware sector, on the other hand, is limited. Multinationals dominate this sector—the top 10 hold 69% market share. Domestic activity is largely limited to the sales and marketing functions of participating MNCs though it also encompasses R&D activity in Networking Equipment, Handsets and Semiconductors. In addition, there is a small amount of domestic manufacturing and assembly of Computer Systems (including smart cards) and Networking Equipment.

### **The Evolution of the Global ICT Industry**

Given the global nature of the ICT industry, the evolution of the Australian industry needs to be viewed in a global context. The ICT industry is remarkably dynamic, complex and competitive. ICT firms need to deal with significant technology change, rapid growth in demand as well as volatility, changing end-user needs, and evolving industry structure and regulation. Investment requirements continue to escalate; product and service lifecycles continue to shorten. Standards evolve, often creating major winners and losers. Risk and uncertainty are characteristics of this industry, particularly for smaller players.

Further, industry boundaries continue to change and blur as a result of technology shifts, such as convergence. The roles of sub-sectors change and their importance shifts as a result of technology developments. The industry is also affected by developments in adjacent industries—developments in the digital content, for example, influence and affect both Software and Hardware.

Competition is increasingly global. Relatively uniform end-user requirements across geographies and the benefits of scale mean the ICT sector continues to globalise. Hence, changes to the

global industry affect the Australian industry almost immediately.

Technology shifts are leading to a dramatic unbundling of products and services. Escalating capital requirements create significant economies of scale (in some sub-sectors, the marginal cost of production is close to zero), placing a super-premium on scale within a specific function or product.

The importance of market access through brand and distribution is also leading many companies to broaden their product lines to better leverage their customer relationships. Further, as ICT becomes increasingly central to business processes of many companies, enterprises are demanding higher levels of specialisation and greater transparency around their return on ICT investments.

As a result of these forces, there are likely to be opportunities for specialist providers who can offer world-class products or services tailored to specific end-user needs. For Australia, this could create opportunities to develop export-oriented specialists or to nurture the local provision of specific functional skills to meet the regional and/or global requirements of multinationals. The same trends will also create major challenges for sub-scale local companies, particularly generalists.

### Technology shifts will enable increased specialisation

The emergence of shared (IP) networks, and the resulting disentanglement of many functions from the underlying infrastructure, means that many services or functions that could only be delivered as part of a bundle can now be delivered discretely and remotely. The proliferation of Wide Area Networks (WANs) and the growth in specialist network-based services such as data storage illustrate this trend and its implications.

Further, the development of global standards will facilitate the integration of these now-unbundled services. Customers will increasingly be able to select services from different providers based on fit-for-purpose rather than compatibility with existing infrastructure and applications.

The development of global standards will also make it increasingly easy to access services via multiple technologies—for example, accessing the Internet via a mobile phone as a

result of WAP and increased data speeds. This convergence of technology increases the distribution channels available to content and applications providers, and hence also increases the potential returns.

### Increasing fixed costs will drive further consolidation

Fixed costs are an important factor in both the Software and Hardware sectors and to a lesser extent in IT Services. Fixed costs create advantages for providers who have scale and who can amortise their investments in development, manufacturing capacity or distribution over a larger base. Indeed, the benefits of scale are increasing across all three sectors as activities become more standardised and/or automated. As a result, all sectors are likely to see further consolidation of activities as firms attempt to capture the benefits of scale in specific functions. This consolidation will take the form of internal restructuring, outsourcing of sub-scale activities and mergers and acquisitions.

The trend towards consolidation is consistent with increased specialisation. Consolidation of activities aims to capture scale within, rather than across, functions. In encouraging the outsourcing of sub-scale functions, it could even create opportunities for specialists. However, it also means that successful specialists need to achieve sufficient scale in key functions if they are to compete effectively.

### Economies of scope will drive adjacent market expansion

As markets mature and competition intensifies, many companies are moving into adjacent markets to realise continued growth. SAP's movement into continuous relationship marketing and supply chain management software and Dell's move into the printer market are two examples of this trend.

Such moves allow companies to leverage substantial fixed cost investments in distribution and marketing. Further, given ongoing integration challenges, many customers will prefer to purchase integrated solutions from a single provider. In particular, this would benefit the providers of pivotal products such as operating systems. However, rapid adoption of global standards and more open access to global distribution and

marketing would make horizontal integration relatively less attractive.

### **Users will demand greater specialisation and expertise**

As the industries that use ICT products and services become more competitive, they demand more tailored offerings from their ICT providers and focus increasingly on the return on their investment. In turn, this will drive the development of industry-specific products and services, creating opportunities for skilled specialists. Vendors such as Suncard, Misys and Finserve, for example, have tailored offerings to serve stockbrokers, banks, insurance companies and fund managers.

The need to demonstrate an adequate return on investment and increased competition will drive even greater customisation of relatively generic enterprise solutions over time. This will also strengthen the position of the focused specialist.

### **Developing a Competitive ICT Industry in Australia**

In seeking to build a competitive domestic ICT industry, Australia must position itself to compete in a rapidly evolving, complex and highly competitive industry that is becoming increasingly global.

The Australian ICT sector faces some specific challenges. The Australian domestic market is comparatively open. Enterprise customers, and even consumers, are often more familiar with, and have more confidence in, global brand names than those of local participants. As the ICT industry continues to globalise, competition from MNCs will only intensify. Local industry participants will need to develop world-class capabilities and build brand recognition and reputation to compete effectively.

The Australian domestic market is also relatively small—Australian expenditure accounts for only 1 to 2 percent of global demand in most sub-sectors. This creates challenges for local participants given that scale is becoming more and more important. Local firms need to develop export sales to compete effectively with global players. Export sales can help local firms to achieve minimum efficient scale while also exposing these firms to the requirements of a broader range of end-users thus

helping to stimulate the customer-focused innovation necessary for long-term success.

Further, the relatively small size of the domestic market, and the fragmentation of activity between various cities and institutions, inhibits the formation of industry clusters that can serve to promote industry development. This will need to be addressed.

In addition, the traditional focus of our economy—with its focus on the export of basic materials and agriculture and domestic provision of services—has not been the development of new globally competitive high tech or service industries. The policy challenges that will need to be addressed to facilitate the development of a globally oriented ICT industry are very different from those of the past. It is unclear whether Australian policy makers are equipped to meet this challenge.

For the Australian ICT industry to thrive, long-term vision, commitment, energy, creativity and the development of world-class capabilities will be required. This will also require a distinctly Australian mix of policy and industry action that balances the need for local industry development and vigorous competition from MNCs.

Given global trends and specifically the challenges in Australia, we see three important implications for local industry:

1. Globally-oriented specialists are likely to play an increasingly important role in the industry. These specialists who maintain focus on a specific function and/or end-user segment, particularly in software, are likely to be successful, particularly if they focus on 'white space' where MNCs are not, as yet, well entrenched. Increasingly, they will need to be global or at least regional to survive.
2. Local firms, particularly generalists, will struggle to compete against MNCs operating in Australia who have substantial scale in individual products or services and local distribution. To succeed, local firms will need to differentiate their offer and will probably need to pursue export markets to achieve sufficient scale.
3. MNCs are likely to increase their share of domestic ICT demand. MNCs already capture a significant share of

domestic ICT spend—revenues for the Top 10 MNCs in 2000 amounted to A\$15.4 billion or around 56% of the domestic Australian ICT spend. As a result, Australian industry will need to determine ways it can increase the local participation of MNCs.

Looking forward, Australia needs to develop a clear understanding of the likely evolution of the global industry; of the opportunities and challenges it raises and the implications for Australian corporations; and of the imperatives for industry leaders and policy-makers.

### **The Opportunities for Australia's ICT Industry**

Australia's challenge is to facilitate the development of the ICT industry—to the benefit of all participants—while focusing its resources on the most attractive opportunities.

Focus will provide a number of benefits. It will clarify aspirations. It will improve performance. It will facilitate the achievement of scale in an industry where scale is increasingly important. It will encourage the allocation of scarce resources, such as talent and investment, to the areas of greatest return and will simplify this process thus conserving resources.

Focus is also the foundation of specialisation. We believe specialisation is key to the long-term development of the Australian ICT industry.

Local generalists are likely to struggle given the global forces at work. This is particularly true in the Software and Hardware sectors. While there will continue to be a role for local IT service providers in the short- to medium term, in the longer term, local activity is likely to be increasingly restricted to the marketing and distribution activities of global firms.

Broadly speaking, we see two sets of opportunities for the Australian ICT industry:

1. Globally-oriented specialists who have distinctive capabilities and who focus on specific industries or specific customer needs.
2. Local provision of specific functional skills—such as specialist R&D or high-end development—to meet the regional and/or global needs of MNCs or to complement MNC activities.

Many other developed nations with ICT aspirations will also pursue these opportunities. To be successful in either arena, therefore, will require global orientation, world-class skills and facilities, a clear commercial focus and timely execution.

### Globally-Oriented Specialists

There are at least six areas of opportunity for the globally-oriented specialist in Australia:

- 1. Industry Vertical Applications.** Vertical Applications represent an opportunity for those Australian ICT companies that focus on industry segments that have unique needs and a relatively sophisticated local customer base. These are industries such as financial services, mining, wine and agriculture. There are many areas of various industry operations or regulations where Australia is among the most advanced in the world. There are already some successful Australian Vertical Applications providers, such as Mincom in the mining industry. Evidence suggests Australian ICT companies are more likely to be successful if the Vertical Applications they focus on are below the 'radar' of the global majors—at least during the early development stages.
- 2. Specialised Functional Horizontal Applications.** In particular, Australian companies can focus on applications that address distinct functional requirements but that are of insufficient scale to attract the MNCs. These specialised applications will continue to emerge as regulation, customer needs and technology evolve. Success here is likely to be driven by customer-focused innovation—most likely by leveraging the insights gained in providing IT Services to world-class companies. Specialised Horizontal Applications could represent an attractive international growth opportunity, particularly for local IT Services firms, if similar requirements exist across multiple geographic locations (not always the case due to regulatory differences) and if international distribution can be accessed. Australia does have some examples of successful horizontal applications providers, such as Tower Technology in archive technology, and Hansen Technology in billing and resource management. Australian companies have also demonstrated real strengths in security software—an increasingly vital function in many information-intensive businesses.

- 3. Independent development of Consumer Applications.** There are likely to be increasing opportunities in this arena as global standards and development tools make independent development easier. This arena is heavily influenced by adjacent industries, such as creative content, and Australia might be able to leverage its relatively early adoption of new technology and its creativity. The music and film industry experience suggests that local consumer content development can be successful.
- 4. Specialised Embedded Operating Systems.** Australian companies could capture opportunities in Embedded Operating Systems—particularly in those devices that are used in industries or functions in which Australia has experience or expertise, such as transport management and measuring equipment. Australia already has a number of successful companies in this sector—such as ERG, which, in 2001, captured almost 70% of its A\$290 million income through exports. Given the principles of Moore’s law, as computing power increases, it can be argued that the need for specialised embedded software declines. Therefore it is possible that demand for specialised operating systems may fall over time.
- 5. Specialised technical IT Services.** The development of distinctive technical skills that satisfy specific functional or industry requirements could offer a point of differentiation and allow local firms to build sufficient scale in a niche to compete effectively with multinationals. There are a number of technical specialists in Australia—including Volante and Kaz Computing. At this point, these companies have a relatively limited international presence, but the opportunity to grow appears to exist.
- 6. Outsourcing services for ‘high-end’ business applications.** Improved communications are making the offshore supply of outsourced services increasingly viable. Certainly, lower cost countries like India, and even China, present the most obvious solutions to many companies that seek to outsource relatively low value-added activities like call and processing centres. However, Australia does have the potential to compete, particularly in the higher value-added outsourced services. In situations where security, reliability and the cost of skilled labour are all equally important, Australia could offer an attractive alternative to

the US or the UK. Amcon Solutions, for example, currently provides outsourcing services to customers in the US and the UK. Whether this business model is sustainable will be determined by the speed with which lower wage countries, such as India, are able to address remaining concerns around security and reliability.

### Provision of Specific Functional Skills

In addition to developing globally-oriented specialists, we see opportunities to encourage MNCs to locate certain functions in Australia—whether the MNC performs these functions ‘in-house’ or outsources them to local specialists.

Most, if not all, MNCs that generate significant Australian revenues have Australian-based marketing, distribution and support service functions that serve the local market. A number of software and hardware MNCs such as IBM, Oracle and Symantec have extended their presence in Australia beyond this and carry out functions such as R&D and high-end technical support for the Asia-Pacific region and/or their global organisation. MNCs in IT Services, as they move from a local delivery model to one in which specific functions are provided by specialist hubs, have chosen to locate regional or global high-end development, product services and outsourcing hubs in Australia. Local specialists could also be able to build attractive businesses by focusing on specific stages in the ICT value chain, such as R&D.

For MNCs, the advantages of locating in Australia include access to a talented group of local practitioners as well as competitive labour costs relative to other developed countries. The advantages for Australia are local employment, increased industry presence and additional opportunities for local suppliers.

We see at least four areas of opportunity for the Australian ICT industry to encourage broader MNC presence and build functional specialists:

- 1. Software R&D—with a focus on high-end applications and systems development.** MNCs are now choosing to locate high-end tasks and low-end tasks in separate geographic locations, reflecting the different capabilities required to effectively perform these functions. High-end

tasks, such as the overall design and coding of high level attributes, rely on strong project management as well as technical skills. Low-end tasks, on the other hand, such as detailed coding, rely on access to low-cost skilled programming labour. Australia is relatively well positioned to deliver against high-end requirements given the quality of its IT graduates. Further, world-class software R&D will underpin the development of globally-oriented software specialists.

- 2. Regional IT Services—technical support for hardware and software MNCs.** Technical support involves those high-end functions that can be carried out remotely but require reliable communications infrastructure and a skilled work force—functions such as virus response, systems monitoring and management, and fault resolution. These functions are increasingly being consolidated into regional hubs. Australia is a relatively attractive location for these functions—it benefits from a multi-lingual workforce, a time zone that complements those of the US and Europe, political stability, and a business culture and practices that are consistent with other developed countries.
- 3. Regional hub for major IT Service MNCs—in high-end services.** In IT Services, as in Software, MNCs are increasingly performing high-end and low-end activities in different locations as it becomes possible to perform many functions remotely. Australia is well positioned to compete in high-end IT Professional Services—for example, in systems design and architecture—as well as in high-end Product Support and Maintenance and Outsourcing Services. It is well positioned because of its IT skill base, reliable telecommunications infrastructure, multi-lingual labour force, competitive labour costs (relative to other developed countries) and time zone.
- 4. Specialised Hardware R&D—with a focus on Networking Equipment and Handsets.** Despite recent setbacks such as Ericsson’s decision to close its local R&D facilities , Australia has an established base of R&D capability in a number of Hardware sub-sectors. These sub-sectors include Networking Equipment and Handsets. Nortel Networks, NEC, Lucent, Alcatel, Motorola and Nokia all have R&D facilities in this market. The local talent pool and labour rates mean Australia is relatively well positioned to compete

with other developed markets for this investment. However, the location of hardware R&D facilities is also influenced by the proximity to a sophisticated customer base that demands tailored and/or technically advanced solutions. The size and sophistication of Australian customers, in particular Telstra and Optus, could attract R&D investment by hardware multinationals. Further, Australia has deep expertise in areas such as photonics which creates opportunities for independent R&D. This R&D can then be commercialised locally or licensed or sold to MNCs as appropriate.

### **The Imperatives: Developing the Foundation for Growth**

Australia does have a local Information and Communications Technology industry and its members are hard at work. But, looking forward, a vibrant and internationally competitive ICT industry will not happen by chance. It is also unlikely to be the result of a public entity or individual business acting alone. Australia needs to be a place where global companies want to invest and where local business leaders are able to build and operate globally competitive enterprises.

Arguably, the ballooning trade deficit in this arena suggests that this is not currently the case—or at least not enough is happening to close the gap. This is either a failure of policy, a failure of industry execution or both. Whatever the case, it highlights that the historic government policy and industry approach have not been sufficient to enable the local industry to overcome the challenges Australia faces in developing this industry. A new approach is required.

This situation presents a unique policy challenge. Policy needs to encourage both local industry development and foreign investment while striking a sensible balance between the two. Policy makers need to understand the unique characteristics of the ICT industry and the emerging global issues and also acknowledge the specific challenges for Australia. In addition, the policy needs to be robust enough to withstand rapid change, but flexible enough to allow meaningful adjustments over time without compromising the overall direction. We believe that the agenda needs to be grounded in 'where and how' Australia can compete in this sector.

However, it is important that this does not become 'just' a policy issue. Local industry needs to acknowledge their role in creating a successful industry and, accordingly, pursue sensible long-term strategies. If there is one thing that is clear from our analysis of the industry over the last 10 years, it is that the success stories are always characterised by a combination of visionary leadership, long-term determination, sensible government policy, effective coordination and cooperation across a range of industry stakeholders, risk-taking by those in the best position to take it—and a lot of hard work. We have also been reminded that many of the great achievements have come against the odds. So, in this report, when we regard certain developments as unlikely, we are still mindful that innovation often finds a way.

While we stress again that it is not the purpose of this report to recommend policy or comment on previous policy, we do believe that there are six important themes to consider:

- 1. Innovation.** Australia will only be successful in the ICT industry to the extent that it drives world-class innovation—such as commercialised R&D. ICT R&D is typically carried out over a medium-term timeframe and usually has uncertain commercial outcomes. Collaboration across adjacent sectors to build scale, and even collaboration among competitors, is sometimes required. A long-term stable policy that considers and promotes broad-based effective collaboration in R&D and commercialisation will be required. Short-term inflexible programs or regular policy changes in this arena won't work.
- 2. Building skills.** Education and training and targeted immigration to build our technical and commercialisation skills will be crucial to our future. We cannot hope to build globally competitive corporations locally nor to serve the interests of global MNCs unless we have outstanding people. Policy makers need to examine tertiary education programs and the current immigration policy to make sure that we are addressing the long-term skill requirements of the industry.
- 3. Building awareness.** Awareness of the strength and capabilities of the local ICT sector is crucial in a number of ways. First, to attract MNC operations and talented people

the world needs to be aware that Australia is a great place to make ICT-related investments and build ICT companies. Second, Australian enterprise customers and the world at large need to be aware of the distinctive capabilities of Australian-based providers in their chosen field. Third, our local Australian companies need to be keenly aware of global developments to be able to spot trends and act on them rather than becoming victim to them. Policy makers and industry can do a lot to build the overall international profile and awareness both of, and for, the Australian industry.

- 4. Focusing activities.** Australian companies will need to think carefully about what they do and how they do it. They will need to develop a sustainable competitive advantage relative to the large MNCs and determine whether to become competitors or partners. In addition to skills, they need to actively specialise—either at an industry or functional level. Further, public and private-sector investors, whether R&D investors or equity-holders, will need to carefully allocate funding to focus on those areas that will most likely be successful. The allocation of scarce resources will always be controversial and, while we believe that the public sector should not seek to ‘tilt the playing field’ to support specific firms, resources should be invested where they are most likely to yield attractive returns.
- 5. Translating ideas into sustainable businesses.** In a financial market of Australia’s size, access to start-up and growth capital and commercialisation skills will always be an issue. Given that a good portion of Australia’s success stories over the next 10 years will probably come from relatively new and small companies, ensuring there is adequate support to help these fledgling companies get started—or make the big breakthrough—will be crucial. This support needs to go beyond venture funding. It also needs to include developing links between the public and private sectors to aid the process of commercialisation.
- 6. Access to global and regional markets.** As we have noted above, we believe it will be increasingly difficult for companies who are focused solely on the Australian market to survive. Therefore, it is crucial that our corporations have access to global, or at least regional, market places from an early stage in their development. Facilitating an

understanding of, and access to, foreign markets either alone or in collaboration with other parties could be a crucial role for industry groups, the public sector or even private entrepreneurs. It is certainly an issue of great importance to the local industry.

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We encourage the Framework for the Future Steering Committee to pick up these challenges to create a long-term policy agenda.

With thoughtful long-term policy, nurturing and hard work, there is no doubt that Australia can build on its existing success and create a distinctive and internationally competitive ICT industry to the benefit of all Australians.