Australia’s Strategy: towards an Information Society

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*I am enough of an artist to draw freely upon my imagination. Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world.* —Albert Einstein

**Purpose of the paper**

This paper is about the strategy Australia has been following as it develops as a 21st century information society, focusing on learnings from the last twenty years. Some of what we have learnt may be of use to others, to smaller economies and to regional economies within a larger economy, such as Shanghai. The observations made in this paper are an offering of helps made in friendship, not a series of lessons from a teacher to a pupil. Each country has much to learn from others and much to offer to others, as we all strive to develop the future we want for our children and grandchildren.

The paper discusses briefly Australia’s position, the assumptions on which future directions are being decided, the paramount importance of competitiveness. Then the paper proposes objectives for government, within a strategic framework, and canvasses what government can and ought to do in each of four areas of focus. Finally, the paper proposes a model of government best suited to an information economy, potentially applicable within a broad range of economies.

Let us start with a brief summary of Australia’s position in the global economy.

**Australia’s place in the world**

Australia has a prosperous capitalist economy, on par with the larger European economies. It is a large country, with surface landmass totalling 7,617,930 km2. Its population is not large, having reached approximately 20 million in 2004. Its GDP is $525.5 billion (2002 est.) and its GDP per capita is $26,900 (2002 est.). GDP growth rates have been brisk through the 1990s, ranging between 3 and 4.5% per annum. Australia’s population is relatively young, but population growth is now driven primarily by immigration.

The bulk of employment is in the services sector — services 73%, industry 22%, agriculture 5% (1997 est.), as is the bulk of GDP — agriculture 3%, industry 26%, services 71% (2001 est.). In many respects, Australia is already an information economy if by that we mean that the greater proportion of its wealth is generated by exploiting non-physical resources.

We live in a globalised economy, characterized by the growing importance of information as the raw material for value creation and by the diminishing importance of distance as a barrier to market. The speed of change is increasing and the rules governing value creation and competitiveness are under challenge.
These challenges are especially great for small to medium economies outside powerful trading blocs, of which Australia is one. However, similar levels of threat may arise for regional economies within larger economies or trading blocs. Australia cannot compete on scale in manufacturing or in services industries with the European Union, the USA, Japan or China. This will also be true in respect of countries such as India or Korea, as they continue to grow in sophistication and to develop their huge potential.

Over the next 25 years, the Internet (mark 1 and the coming mark 2) and the accompanying communications revolution will aggregate economic and intellectual capital to levels of concentration that will surpass our already high concentrations. Moreover, economic cycles and product (and services) lifecycles will continue to shorten, placing ever-greater demands on a country’s capacity to innovate and to commercialize.

If Australia cannot compete, we will lose jobs, export markets and our best brains, to the point that we will become a consumer market supported by primary industries and tourism - and no more – prey to transnational interests and at risk of destroying our environment by over-exploitation.

The corresponding and equally great threat is that, if Australia is unable to compete, then its people may want to again withdraw into an isolationist, protectionist shell, within which a long lingering decline would surely ensue. The example of Argentina is there for us as a salutary lesson. At the dawn of the 20th century, Argentina was one of the wealthiest countries on the planet; at the end of the 20th century, it was a stagnant economy, with a continuing risk of losing its grip on democratic, civilian government.

However, there is a way forward for small to medium economies, such as Australia, forward to a prosperous, fair, sustainable and exciting century of achievement, realising the potential inherent to economies that are participating in a globalised information-based economy. The future I have in mind realises the promises of the technologists, rather than the fears of the deep ecologists, and extracts the best from capitalism, rather than ameliorating its worst effects. This is especially important to small to mid-size economies, such as Australia, Sweden, Chile, Malaysia or the Netherlands, for example. These are countries that will have to rely on innovation and inventiveness, rather than scale and power, and where fairness and equity will be essential ingredients of social and political stability in challenging times. If any one of these ingredients turns out to be missing or in inadequate supply, the long-term viability of the economy would be threatened. The way forward is to continue to increase international competitiveness.

Understanding and measuring competitiveness

By competitiveness I mean the overall economic performance of the nation, including productivity, the ability to export its goods and services, and the standard of living enjoyed by all – rather than a few. The best indicator of competitiveness available is perhaps the pair of indices developed and monitored by Michael Porter, under the auspices of the World Economic Forum. The indices report on business competitiveness (“BCI”) and on growth competitiveness (“GCI”).

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1 According to Paul Strassmann, one per cent of companies own over eighty per cent of the world’s knowledge capital.
Each index is made up of components. The BCI includes a rating for the overall environment in the country and a rating for company operations and strategy. The GCI includes ratings for technology, public institutions and the macroeconomic environment. The GCI analyses the potential of an economy to attain sustained economic growth over the medium and long term. The index is founded on three central components: the macroeconomic environment, the quality of public institutions, and technology. The BCI, formerly the Microeconomic Competitiveness Index, identifies the factors that underpin high current productivity and economic performance, as measured by the level of GDP per person. It reflects microeconomic fundamentals, with one subindex that focuses on company sophistication and another on the quality of the business environment.

Australia’s competitive position

In 2003 Australia was in eleventh position in the BCI and in tenth on the GCI. It did well in the sub-component of the BCI related to quality of the national business environment (seventh place), but not so well against the company operations and strategy ranking (eighteenth place).

As for the GCI, Australia performed relatively poorly against the technology index (nineteenth place), did much better against the public institutions index (fourth place) and almost as well against the macroeconomic environment index (seventh place). On this basis, it seems that Australia is well placed to carry on for some years at its present pace, but that may not be enough, as other countries strive to increase their capacity to compete. The Australian Government recognises that there are forces at play in Australian society driven by powerful long-term trends, such as urbanisation and the deterioration of the natural environment. To account for these forces, Australia’s information economy strategy must be interwoven with geopolitical and internal social and cultural realities.

To retain Australia’s competitive advantage in these circumstances will require effort by government focused on clear objectives, derived from an analysis of Australia’s circumstances based on these assumptions:

- We are in a fluid environment, characterised by rapidly changing technologies, shifting priorities and fluid boundaries.
- We operate on global markets, requiring global rules and mechanisms.
- Organisations must be highly flexible and adaptable.
- Individuals must be highly flexible and adaptable.
- Regional and local communities can be a powerful source of social and economic stability.
- Governments in Australia want everyone to take full advantage of online information and communication technologies and services.
- Governments in Australia want to maximise opportunities for all Australians to participate.
- Governments in Australia want to take responsibility for leadership in key areas.
Governments in Australia want to work within a market based environment and will respond to market gaps or failures.

Governments in Australia expect that the benefits of regulatory frameworks outweigh the costs. Regulation is a weapon of last resort.

The requirement for financial resources to support government activity should be kept to the minimum required for success.

**Objectives and a strategy for government**

From these assumptions, objectives at three levels can be derived for government in Australia:

First level objective: increase Australia’s economic and social wellbeing, by improving the competitiveness of Australian industry, as measured by return on investment (“ROI”).

Second level objective: maximize the potential of information and communication technologies to transform the Australian economy, by increasing productivity, productive capacity and quality.

Third level objective: optimize use of information and communication technologies (“ICT”), transforming the operations of government, at all levels, so as to enable a broader, faster and deeper process of transformation of the Australian economy.

To achieve these objectives, the overall strategic aim is for the government to enable innovation by providing leadership and by acting as a catalyst for positive change. The key words for government strategy formulation are connectivity, interoperability, predictability and security. These are areas of focus for government activity.

**Developing areas of focus**

In developing and implementing public policy we must know what drives change and we must be able to measure success or failure quickly, to refine constantly our direction and our chosen means to build the future.

Shaping or developing any aspect of a modern economy is not purely an economic exercise. Success depends also on social, cultural and political factors – a complex set of factors that orthodox economists classify as externalities. Analyzing these factors demonstrates how they link with the traditional factors of production in ways that are not obvious. Let us now examine briefly each suggested area of focus.

**Scale v connectivity**

Connectivity is of vital importance in an information economy, to enable speed and ease of connection, to create a space for entrepreneurship and the ingredients for social cohesion – and to overcome disadvantages due to lack of scale.

In a globalised information economy size (or scale) is important, but not determinative, as the number of connections and the ease of connectivity provide an alternative route to success. This is a significant
observation, as, given these parameters, Australia may be able to compete with any economy, regardless of its size. Then, a successful information economy needs content appropriate to its economic and cultural needs; content that is dynamic and responsive. It has been estimated that next generation broadband could produce economic benefits of $12 billion to $30 billion per annum to Australia. This assumes that broadband is adopted as universally as the telephone over the next 25 years. A policy of encouraging widespread broadband adoption could deliver accelerated economic value within years rather than decades.

In the United States studies have estimated that widespread, highspeed broadband access could increase US GDP by US$500 billion by 2006 and that building and using a robust, nationwide network will expand US employment by an estimated 1.2 million new and permanent jobs.

Broadband technologies make a range of networked communications possible, many of which are not apparent using first generation internet technologies. The ‘always-on’ network effect will also change business and user behaviour and revolutionise the way content and services are delivered and managed. Innovative use of broadband connectivity will be critical to Australia’s ability to participate and compete in the global economy.

As Thomas Friedman has said: “Jobs, knowledge use and economic growth will gravitate to those societies that are the most connected, with the most networks and the broadest amount of bandwidth - because these countries find it easiest to amass, deploy and share knowledge in order to design, invent, manufacture, sell, provide services, communicate, educate and entertain. Connectivity is now productivity.”

Interoperability

Interoperability is needed to cut costs, to generate synergy and to accelerate the process that brings innovations to market. Interoperability is the ability to transfer and use information in a uniform and efficient manner across organisations and information technology systems. It underpins the level of benefits accruing to enterprises, government and the wider economy through e-commerce. Interoperability is an integral part of the Australian Government’s service delivery model, as shown at Figure 1.

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Interoperability within government and across the Australian Economy will be achieved by focusing on the web browser. The web browser is the key human interface for access to online services. Making the best possible use of the Internet entails the universal adoption of common specifications used on the Internet and World Wide Web for all public sector information systems. Data exchange will be achieved through the development of common XML schema based on existing Australian standards where appropriate.

The required standards are shown in Figure 2, together with their “owners”.

**Predictability**

Predictability is essential to give industry, communities, families and individuals the level of confidence needed to plan, to invest, to commit to long-term priorities. History suggests that commerce depends on a range of externalities before it takes holds and develops in a particular society. For example, without insurance and the law of contract (whether the common law or the Napoleonic version), the mercantilist societies of Europe, on which modern capitalism is built, would not have been possible. This is true of the information economy also. Without the trust that is placed in contractual instruments, large transactions would be possible, but would remain infrequent or would be hedged with such caution that entrepreneurial activity would be stifled. If individuals and enterprises lack trust in a system, that system will remain
unused or underused or even be stillborn, as happened with the Australia card proposal in the 1980s. There are signs that this is what is happening with e-commerce today. Individuals and enterprises have not developed the level of trust in existing systems and processes that is required to unleash the full force of commercial initiative that exists in Australia. This is despite significant initiatives undertaken by the Commonwealth Government and by the private sector, such as Project Angus or the development of digital signatures.

![Figure 2: Interoperability and service layers](image)

Government has a unique role in developing an efficient, flexible and adaptive regulatory framework, where significant reliance is placed on appropriate standards to guide behaviour. Government also has a role in aligning education and training with future needs. In such an environment, the complex web of factors required for e-commerce to take hold may crystallise more easily.

**Enabling people to feel secure**

Confidence, trust and security are powerful online enablers. The Australian Government is working to build public trust and confidence in going online, and addressing barriers to consumer confidence in ecommerce and other areas of online content and activity. Society must have the confidence to go about its business without fear, fear of terrorism, of deficient infrastructure, of breakdowns of major components of
the financial system, of the weakening of the rule of law.

If communities, enterprises and individuals perceive that the globalised information economy is not serving their particular needs or if they perceive that the benefits flowing from that economy are distributed in a grossly unfair manner, the acceptance and trust in the new technologies will wither. And the national economy and community life will also wither.

To avoid this, we need to know what communities, enterprises and individuals need, what they want, and what they expect. If there is congruence of needs, wants and expectations, it is more likely that there will be greater confidence in the information economy and in its tools. We need a level of confidence such that people and enterprises will feel safe in making investment decisions and in using those tools.

Developing a successful and sustainable information economy requires a social as well as a political consensus as a prerequisite. Then, a mechanism to integrate private and public interests is essential for the maintenance of that consensus. The problems emerging in the industry deregulation process illustrate how a painfully constructed consensus for change can quickly dissipate when the pain of change starts to affect private interests.

The value to the public interest can easily be lost among the multiple private interests that exist in such circumstances. The challenge is to bring about change that satisfies both public and private (or regional or sectoral) objectives and, most importantly, to do it in a way that is perceived to be fair to all those interests. This is where culture intrudes and its influence cannot be ignored.

Managing a range of complex factors over time to maintain a consensus for change and to retain control over direction requires the capacity to integrate the needs of many and a high degree of flexibility. This marriage of integration and flexibility enables an organisation or a country to be responsive to the developing environment and to the changing needs of its constituent parts.

Also, security and predictability are essential if Australia is to attract and retain the level of foreign investment it is likely to need. Our need for investment cannot be satisfied by domestic sources alone.

**Investment issues**

Australia needs investment, local and from offshore, to keep building its productive capacity and to generate innovation, but we must use what we have to best effect, as there is never enough to cover all demands and expectations. In looking at the economy as a whole we risk missing the point. To understand what drives productivity and productivity growth we must understand what is going on in leading industries and segments of industries, distinguishing between production and productivity.

We may produce and export more or less beef year on year, but those figures are saying nothing about tomorrow’s productivity, though they are telling us a lot about production. On the other hand, the level of production in ICT today may tell us quite a bit about productivity tomorrow, as can the extent of use of ICT products. This is because in a globalised information economy ICT industries are an instrument of productivity growth – enhancing innovation - as well as an instrument of production.
Our home grown ICT capacity is an indicator of creativity, innovation and productivity in the global information economy, which means that investment in the ICT industry could be used as a leading indicator of productivity. Moreover, foreign investment in Australia’s ICT industries would serve as an indicator of our perceived level of competitiveness.

A caveat here is that to focus on quantity at the expense of quality would be counterproductive. Massive investment in microchip production would not indicate that Australia is an innovative economy; rather, it might indicate that Australia has become a low cost producer, which in turn might be a sign of falling living standards, rather than a harbinger of prosperity.

To attract investment, to attract the right attention from the markets, to attract and to keep the best minds, we need to project Australia as:

- a connected country, because connectivity is to the information economy what the railways were to the Western frontier of the United States in the 19th century;
- a country where the rate of innovation continuously speeds up as does the speed of commercialisation, clearing away any barriers that stand between a good idea and a prospective purchaser;
- a country that makes wise and ever more efficient use of its intellectual property, of the explicit and implicit knowledge that is held within the minds of its people and in government and private organisations;
- capable of diversifying the productive capacity of its economy so that the proportion of new economy products and services increases and so that the total number of products and services Australia can export increases;
- a country whose people feel safe in the new economy, safe to invest and to use.

The quality of the investment must be high and it must be selective, linking the output from that investment to the overall chain of value creation in Australia, to the infrastructure for innovation, where connectivity and interoperability are the essential underpinnings for success – and where government has a vital role to play.

**Infrastructure for innovation**

Government should not focus on specific industries, should not pick winners or support sectoral interests. Industry policy should be used at the macro level to shape the Australian economy as a whole, as an integrated social, economic and cultural construct. This would not mean that individuals or enterprises would be restricted in what they may choose to do.

However, government should turn its intellectual and research capacity to indicate which line of business contributes to the national wealth and which does not, to identify leading sectors of the economy and to remove barriers that stand in their way.

This would make industry policy an issue of competitive intelligence and of sophisticated measurement, perhaps as a combination of what happens now in the Treasury and in the Productivity Commission, together with the Industry portfolio. The outcome would be the identification of leading sectors of the
economy, which can be used as engines for growth and innovation across the whole economy.

Within the ICT industry itself another outcome would be the emergence of clusters of innovation capable of generating self-sustaining growth. Such clusters can attract other businesses, skilled labour and capital in a cycle of “cumulative causation.” In turn, in a virtuous cycle, these clusters of innovation could potentiate the effectiveness of strategies for development of the leading sectors of the economy.

How is government to give effect to this strategy, in order to achieve the desired objectives? Is this strategy relevant only to Australia or only to economies with a similar character? The next section of the paper deals with these questions.

A model of government in the information age

The strategy and objectives outlined here can be met by developing a process model of government (Figure 3). This model will work in any economy, regardless of its character, or stage of development, where the focus of government is to enable the development of a competitive information society.

By process I mean a sequence of steps, tasks or activities that converts inputs to outputs, starting with policy and ending with delivery of services to the community.

The model comprises five fundamental processes:

There is a body of theory to support this that originates from Nobel Prize winner Gunnar Myrdal.
1. The policy-making or strategic direction setting process, concerned with outcomes and the longer term.

2. The back office process, where programs, services and products are developed and data are processed. The concern here is the cost-efficient production of outputs.

3. The service delivery or fulfilment process, concerned with satisfying client needs and expectations in a cost-effective manner.

4. The capacity building (or empowerment) process, where the measures of success are inclusiveness and awareness at the enterprise, community and individual levels.

5. The process of measurement and evaluation, concerned with ensuring that the appropriate outputs and outcomes have been delivered and with understanding the reasons for any failure of the system, with a view to inform the first four processes – thus gradually improving the capability of the system as a whole.

This is not the place to discuss this model in detail, but it is relevant to the purpose of this paper to focus on the public service, as reform and restructure of the public sector is an issue that transcends national borders.

It is my contention that one of the best (and cheapest) things that governments can do to bring about economic and social progress is to re-engineer the public service.

**Re-engineering the public service (“e-government”)**

The advice from experts is that the next phase of the ICT revolution will centre on (tele)communications and will enable or even force a significant reshaping of all value chains in the economy, particularly in the service sector.

Whole layers of intermediary activities will be reshaped or even removed altogether. This will apply to the public sector as much or even more than in the private sector, given that the business of government is fundamentally about services and relies almost entirely on information and communications.

The effective and comprehensive use of ICT tools will increasingly make it possible to re-engineer business processes so as to focus business processes on delivering end products (or services), rather than intermediate outcomes. At present each agency (or “silo”) has its own objectives and strategy, which do not always align with those of other agencies that contribute to the eventual achievement of a government outcome.

For example, in Australia as many as seven different agencies are part of the process of enabling an unemployed person to remain a viable member of society and of the economy. Yet, while they share responsibility for producing a common outcome, their business processes remain separate, sometimes overlapping, sometimes duplicating, sometimes leaving gaps that ought not to exist.

Similarly, when it comes to policy, the process ought to be common across agencies, including gathering data, analysing data, understanding the present and future environment, identifying and quantifying risks and opportunities and generating options that are more likely than not to bring about a desired future position. Yet, while a common process would deliver greater quality, reliability, and efficiency, each
agency labours to create its own way of doing it, inventing the wheel over and over again and creating artificial barriers to the transfer of ideas, resources and people. The public service of the future could be much smaller and more effective. It should retain control of strategy and of the network of data and information it needs, as well as over security of data, information, installations and intellectual capital. It should source externally the hardware and applications it needs to support its activities and programs and most direct service delivery. It should be focused on outcomes, rather than outputs. It should bring together the best people from within and without its ranks to work on projects to deliver agreed outputs, growing and expanding in size and scope to reflect shifting government priorities. It could be as small as 65% to 70% of its present size in Australia, given current responsibilities – the reduction in other countries could be proportionally greater still. Government infrastructure has been used for nation building in different ways in Australia’s history, with varying success.

It is often argued that government should use its purchasing power to generate industry or economic outcomes or to encourage innovation or to reward good practice…and the list goes on endlessly. The reality is that government in Australia is fragmented across three levels and hundreds of instrumentalities and that different instrumentalities and different levels of government often use their own purchasing power at cross purposes. The signals to business from all this are mixed, at best. Government activities are often of such a scale that they can generate successful patterns of activity or facilitate the emergence of clusters of positive activity. The problem is that there is no direct causal connection that can be mapped and deployed ahead of time.

Wisdom comes only after the event and a pattern that has succeeded once may not be amenable to replication later or elsewhere. The inescapable conclusion is that the infrastructure of government must be made more flexible, more amenable to constant reshaping that is driven by need, rather than by prior intent. The infrastructure of government and the operational infrastructure of business and of our civil society must be made to simultaneously complement and challenge each other, to the benefit of the future. The boundaries between public and private economic and social activity must become even more blurred than they are now, even at the risk of losing their separate identities.

In this convergent world, government would have a very great responsibility, charged with the task of engendering an ideal vision of the future and with fostering cohesive values in a diverse culture. Business would be responsible for generating wealth for all, within that diverse culture and those cohesive values, and civil society would continue to act as the engine for altruism, the guardian of individuality and the repository of our moral and spiritual values.