



The National Communications Infrastructure Challenge: Does the Solution Fit?

AS8015 provides key guidance for National Infrastructure decisions.
Its principles raise some interesting questions.

A Topic for Further Debate

Much has been said and written in recent weeks regarding the prospective sale of Telstra. Extensive debate has focused on demand for, and seemingly uninspiring delivery of broadband services and internet access – not just to the bush, but to many prospective users. Australia is said to lag much of the world. Examples are cited of nations that have greater penetration and orders-of-magnitude higher performance on their broadband services. Outside major centres, there is ongoing concern over delivery of contemporary services with acceptable levels of service, performance, reliability and price. For some, the issues relate not just to advanced technologies: basic telephone services have problems too! It has been alleged that Telstra has under-invested in infrastructure.

A multi-billion dollar fund is proposed, ostensibly to pay for the rollout of broadband and other services to the bush. There have been propositions that Telstra be divided into wholesale and retail units. Political support for the complete sale has been found. Are these arrangements appropriate? Will they deliver what Australia needs?

One forum at the Australian Institute of Company Directors conference in May 2005 discussed: "The Internet – is it starting to pay its way"? The forum understood the Internet as broad based public communications infrastructure, analogous to the roads and rail networks. It recognised that business cases for investment in such infrastructure often requires a big picture, long term view, and that individual elements treated in isolation may have significant pay-pack periods. This was contrasted with the view that telecommunications companies appear to front-load charges for early adopters in an effort to reduce the pay-back period. This approach delays take-up, and skews the business cases for investment. It encourages persistence with outdated and unreliable infrastructure in an effort to increase its economic contribution once retail pricing falls to acceptable levels.

The Internet and broadband access are aspects of Australia's National Communications Infrastructure (NCI). Australia's security and prosperity depends on effective, efficient communications - the backbone of which is a National Communications Infrastructure that provides the right balance of accessibility, functionality, cost, performance, reliability, security and resilience. Is our NCI in good shape? Is it delivering what we need now, and in the future? If not, what do we do to fix it?

The investment model for the Australia's NCI is fundamentally different to the model applied to other infrastructure, such as roads and rail networks. The NCI has not, since the creation of Telstra as a separate enterprise, been government funded. We have the curious situation where a major retailer (Telstra), operating in a competitive environment, has owned and operated much of the NCI. It has necessarily been controlled by regulation to provide open access to the NCI, reducing the need for competitors to invest in separate, parallel infrastructure. But some competitors have invested heavily in base infrastructure, which has become part of the NCI. Driven by competitive pressures and business imperatives, these investments have focused on high demand areas and thus may have created imbalance in the NCI.

A framework for asking (the right) questions

Is the current approach suitable for planning and managing Australia's National Communications Infrastructure?

The Australian Standard for Corporate Governance of Information and Communication Technology (AS8015:2005) provides a useful frame of reference for evaluating the situation and the directions that have been set to date. AS8015 is addressed to the directors of all Australian organisations, and those who advise them. It provides essential guidance for the decision making processes that determine how an organisation makes efficient, effective and acceptable use of ICT. It embraces both the usage and the supply of ICT for the organisation. AS8015 provides six key principles that should be used to guide decision making. The principles describe a "thinking model", from which questions emerge about the current situation and proposed changes.

Consider Australia as an organisation: the government is its board of directors; the economy and social fabric comprise its business; the telcos, from Telstra to the smallest reseller are its communications technology suppliers.

Who sets the agenda?

AS8015 tells us to assign responsibility for ICT appropriately. The subtext makes it clear that responsibility generally should not be assigned to the ICT supplier. In most cases, the business, or usage end of the organisation should be responsible, because this is where the intent to use ICT is formulated and realised. In the

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case of the NCI, the community determines how, when and why it uses ICT capabilities in both private and business contexts. The providers should respond to the demand in commercially pragmatic ways. As the representatives of the "organisation", the government is responsible for understanding the demand, and articulating the agenda for how ICT – and particularly communications technology – is used in the Australian Nation. This agenda should then be communicated to the relevant service providers.

At one level, this is what is happening. The government is telling the telcos, and particularly Telstra what Australia wants. The requirement is not negotiable. Recalcitrance will be met with regulation to enforce compliance.

Historically, Telstra has had primary responsibility for funding the delivery the NCI – even in a competitive environment. It should not be surprising that Telstra probably sees itself as being in charge of the Australian agenda for the use of communications technology. But is this arrangement tenable for the future?

What is the right role for Telstra, other telcos and infrastructure providers in setting the agenda for Australia's NCI? Should we view them as experts in their field, providing advice regarding what is practicable, and possible? How much autonomy should they have in formulating their own plans? And if they are not responsible for setting the agenda, how much of that agenda should we expect them to fund directly?

Does the plan fit the need?

Principle 2 in AS8015 tells us to "Plan ICT to best support the organisation". To do so of course requires that we understand what the organisation needs. It goes without saying that one of Australia's greatest limiting factors is the tyranny of distance and a small population base. For over a century the nation has been striving to overcome this tyranny. Progress has been limited by resource constraints and imagination – yet we have seen much innovation. Years ago, the School of the Air was an example of innovation using fledgling technology.

Modern communications technology has potential to shrink the distances between people and communities to virtually zero. With pervasive, reliable, effective communications, Australians should gain significant benefits in all fields of interest and endeavour. The need and the opportunity are obvious – but are the plans aligned to the need? History suggests that the plans were not aligned. Are they still off the mark?

It's easy to see that Australia needs a powerful, accessible, reliable and economic NCI. But Australia also needs to avoid the pitfalls of patchy coverage, unnecessary duplication, unnecessary divergence in standards, and short-term thinking. We need to ask whether, in making the telcos responsible for the NCI, we have created the conditions that drive inappropriate behaviours on infrastructure investment. Do we have problems getting appropriate services to isolated communities? Do we have problems with accessing technologies because prior technology decisions were manifestly inappropriate? If the answer to these questions is yes (as is the case), perhaps we need to look more closely at how the plans are made. Australia's plan should fit Australia's need. Who can prepare it? What capabilities should it provide?

A question of validity

AS8015 Principle 3 exhorts that we "acquire ICT validly" – for the right reasons, in the right manner. Among other things, we should consider validity in terms of the longevity and flexibility of the investment, contrasted against the prospects for lock-out of future opportunities. Will it be a good investment in the future? Will it be able to evolve as new technologies come on stream, and will it prove economically viable?

In the context of the nation's needs, validity of an investment cannot be assessed on simple financial grounds. Some required services are, in isolation, uneconomic. But when taken in the context of the greater need, these same services will be eminently justified. The same can be said about the revenue and repayment models. High initial prices may serve to ease the pain of initial rollout of new technology – but will inhibit takeup and may well increase the time taken to reach break-even. Lowering prices over the longer term may not make up for the slow initial take-up. Reasons include the probability that the buyer resistance to initial high prices may limit the deployment of technology in the first place. And with the pace of technology change, delay in opening a service to the mass market through lower prices may mean that there is little effective life in the technology to drive the required return on the investment.

Which brings us to the broadband question again. Is medium bandwidth the only requirement? What about mobility? Is there a trade-off between the two? Are fixed wire and cable solutions sufficient, or should Australia be going for wireless technology solutions as its backbone?



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Managing technology evolution is a vital aspect of validity. ICT infrastructure providers should question technology decisions in terms of the conflicts and obstacles that may emerge, and longevity of the investments. There can be no doubt that Australia has suffered through telecommunications technology conflicts – especially those relating to local exchanges. Will we now ask the right questions to avoid similar situations in future?

Standards of performance

Compared with some nations, Australia has been blessed by historically excellent reliability in its NCI. But examples abound of substandard service and performance. Growing demand and heightened expectations mean that what was once adequate may now be unsatisfactory.

AS8015 says that organisations should “ensure that ICT performs well, whenever required”.

The principle begs the question of what performance is actually required. It's at this hurdle we find ourselves unable to find a compelling statement. Large telecommunications users have, for many years, operated with strict definitions of performance, availability and time to correct problems. Management systems have been established to ensure that problems are resolved when required, and to enable proactive problem prevention. But what of our broader and increasingly essential public NCI? Where are the standards of performance, availability and service defined? And more importantly, where are they measured? Are the standards adequate? What has been missed in defining expectations? When problems occur, what standards apply to resolution of the problems?

NCI providers should provide relevant and timely information about service levels and faults. When breakdowns occur, information about likely repair timeframes should be published. All faults reported by consumers should be recorded in problem management systems, so that individual follow-up can be conducted, and to enable rapid identification of widespread problems based on problem reporting patterns.

Do problem reporting and management processes for Australia's NCI meet expectations? What should happen if NCI operators fail to meet expectations regarding service performance, reliability and problem resolution? Are higher standards necessary? If so, how do we ensure that the higher standards are delivered consistently?

Compliance with rules

AS8015 continues with Principle 5: “Ensure (that the use of) ICT conforms with formal rules”. Formal rules are an integral aspect of communications environments. Communications systems interoperate because standards are established to ensure that they can work, and so that their behaviour is predictable. But standards are only one form of rules. What other rules should apply to Australia's NCI?

Formal rules include legal and regulatory controls and policies. Australia has robust competition and consumer protection rules which apply to telecommunications – though it can be difficult at times to see how these are applied. Are more explicit and specific rules necessary? If yes, what aspects of the NCI should be addressed? Should Australia establish clear rules regarding matters such as reliability, serviceability, performance and problem resolution? And if such rules are set, who should set them, and who should monitor and enforce them?

In business, we set rules to limit risk and to promote performance. Rules begin with high level policies, and there should be a traceable structure through which the intent and context of rules can be understood. Among many other things, rules in business limit scope for poor decisions. What rules do we need to limit the scope for poor decisions in design and delivery of Australia's NCI? Would better rules, or better application of the rules have helped us avoid today's constraints in the roll-out of DSL based broadband?

Many organisations now recognise the importance of managing the architecture of their infrastructure (frequently referred to as Enterprise Architecture). Rules or standards are established to prevent un-necessary and costly diversity in the infrastructure, and to promote effective inter-working of components. Architecture managers monitor technology evolution, and establish new rules to manage transition from one state to the next. They ensure that the infrastructure remains open to future developments and minimise the disruption that may be associated with transition from one set of standards to the next.

Who are the real architects of Australia's NCI? Are they setting the standards appropriately, and are these standards being observed? Do the standards provide for timely transition to future technologies?



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Accounting for the human factors

Technology that is deployed without consideration of the people who will use it rarely delivers the anticipated benefits. The final principle in AS8015 reminds us to identify and think about “the people in the process”. When we think about the NCI, there are many people in the process, with diverse interests and characteristics.

Australia has a long history of seeing the benefit in, and adopting new technologies. As a nation, we are hungry for tools that will enhance our social and working lives. In some areas, we have been global leaders in developing and deploying technologies that benefit us in our unique environment. As an egalitarian society, we expect important services to be available to all – at a fair cost. We expect competence, integrity and fair play in the management of both government and industry. We are sensitive to price – we won't buy something that we perceive as being too expensive. Nor do we accept second-class offerings – what we buy must work properly, reliably, and for a good time. Once we have adopted a technology, we want to extract maximum value from it, while also being eager to step up to higher levels of functionality. We abandon an outdated technology with initial reluctance, and then we literally dump it. Witness the transition from VCR to DVD, from film to digital camera, and the surge in mobile phones that double as go-anywhere cameras.

On the national scale, the human factors principle also applies to human organisations, including businesses and communities. While large business is well known and well served, the backbone of Australia's economy is the small-to-medium enterprise. More than ever, these businesses need ubiquitous, flexible, reliable, high performance, secure and economical telecommunications. And while big business has concentrated into major commercial and industrial centres, smaller business is widely distributed, and is the mainstay of rural Australia.

We operate a competitive telecommunications market, with numerous small, medium and large operators playing in a range of niche and broad market sectors. Regulation and intensive scrutiny has been used to date in an effort to establish and maintain a level playing field – against a backdrop of strident protest from organisations that believe they are being treated unfairly.

In an individual context, people who use technology are not necessarily technology experts – and nor should they be expected to be experts. To be ubiquitous, technology needs also to be straight-forward and easily managed. And when the technology goes wrong, as it inevitably will, the approach taken to identifying and solving the real problem needs to be aligned to the reality of the people and circumstances in which the problem has occurred.

Businesses and people are mobile – and becoming more mobile. Australia is near the top of the world's mobile phone-per-capita rankings. We want to communicate wherever we are, whenever we desire. Does this expectation extend to our needs for other forms of communication?

Looking at our NCI, we need to ask ourselves whether we are getting what we expect, and whether the proposed changes in the landscape will improve or degrade our position. Do the planners of the current and future generations of the NCI really understand the people in the process – the individuals, the businesses, the charities, the government agencies and the telco companies? Are the solutions that are being put to us now relevant to the Australia of yesterday, today or tomorrow? Will Australians keep using old technology just because it's there? Will they be satisfied with current technology, and if so, for how long? Will they take the time and make the investment to maximise the value to themselves in the technologies that are being deployed, or will they wait for something easier? Will they adopt a “DIY” approach, or do they want more turnkey style solutions where they simply use, and do not have to know or manage any of the technical detail?

Where to from here?

Australia's world leading standard for corporate governance of ICT provides a sound basis on which to enquire about the proposed sale and possible sub-division of Telstra in the context of the national agenda for effective, efficient and acceptable use of telecommunications. Infonomics cannot answer all of the questions we have raised here. We doubt that there are definite, universally agreed answers on many of the points. Nor do we believe that we have raised all of the questions that need to be answered. That exercise requires more effort, and wider engagement – as does the formulation of the answers.

Thus, we are left with one overarching governance question – one that perhaps we should ask our most senior director of telecommunications – Senator Helen Coonan. Senator, in the light of the guidance given to Australia by its national standards setting agency, are the plans and controls for Australia's NCI sufficiently well developed to support any proposed change in the status-quo?