

University of Waikato

Draft Digital Strategy 2.0

Submission

May 2008

University of Waikato

Private Bag 3105

Hamilton

Email: adamsonk@waikato.ac.nz

Introduction

On achieving our digital potential

Thank you for the opportunity to comment on the Draft Digital Strategy 2.0. The university is supportive of the overall thrust of the Strategy and we are optimistic about the potential for New Zealand becoming a world leader in the area of ICT.

In this submission we have made suggestions for incremental change that we believe will improve the Strategy. These include, for example, full duplex access and a stronger focus on open access to science outcomes. However, the primary contribution we wish to make is to suggest a broadening of the focus of the document from one of ICT consumption to include ICT innovation. The document as it stands, largely omits strategies to improve New Zealand's innovative creation of new and improved ICT technologies. Section 1.1 of the Strategy, for example, talks of New Zealand being a world user in using information and technology while section 6.5 talks of eResearch but not of ICT research.

Being competent and even innovative *users* of ICT technologies is essential to New Zealand achieving its goals as noted in section 1.1 of the Strategy and we do not wish to detract from their importance. But New Zealand can do better than being a world leader in using the technologies created by others. We can *also* create technologies that meet our own unique needs and, sometimes, those of others.

To date, investment in ICT research in New Zealand has been very low. Despite this, ICT is a significant contributor to GDP (5.1%). There is clearly the potential to do much better and we argue for the inclusion of the creation of new ICT technologies as part of the Digital Strategy.

Specific steps we would like to see as part of the strategy include education pathways that recognise the challenges and rewards of digital careers, the recognition and stimulation of the role of universities as creators of ICT knowledge and significant investment in ICT research.

1. Connection

As the strategy has pointed out, no progress can be made in filling our digital potential unless New Zealand continues the deployment of high-speed broadband infrastructure.

1. Faster connection speeds are an important part of the picture with respect to connectivity. Generally speaking, 20Mbps seems like an appropriate target but we argue for significant improvements in speed sooner rather than larger targets later. A target speed for the end-user's connection omits several important aspects of connectivity.
2. Many of the transformations we are looking for (e.g. telecommuting, distance education, richer content provision etc) rely as much on good upload as download. It is essential to have good national connectivity between users. It is the end-to-end bandwidth between users that limits communication not just the end-user connection.

We believe that, as far as the technologies allow, upload speeds must approximate download speeds. Although many NZ ISPs do not rate-limit broadband download speed, they do put a cap on the upload speed, typically 128Kbps. As a result, this is very small bandwidth compared with the download speed and it creates hurdles for many Internet applications. For example, it makes uploading photographs or videos very slow. This kind of upload capping should be removed to improve Internet services.

3. As far as universities and other tertiary institutions are concerned, connectivity needs to be good enough (quality of service) to support video streaming of content, video conferencing, pod casting and voice over IP, to effectively support teaching, learning, administration and research activities.
4. The strategy highlights the importance of open-access urban fibre loops, but the business case for extension of the loops to incorporate primary and secondary schools is very marginal under the existing funding arrangements.
5. The Broadband challenge funding has been successful in supporting the establishment of MUSH networks, but if community benefits are to be fully realised, then additional funding support is required to achieve the desired outcomes. The University strongly recommends that funding for the continued development of MUSH networks be provided.
6. The most expensive telecommunications infrastructure is the hole in the ground in which communications cables are carried. Consequently, the cost related to

University of Waikato/submission

laying new cables is the biggest inhibitor of new and improved connectivity. We would like to see work undertaken to develop dramatically improved public duct infrastructure. All new roadwork, both metropolitan and rural, should, in our opinion, include shared duct space.

7. Wireless has relatively little mention in the document. Wireless can be a useful technology for bridging the gap between the present and the longer term wired future. We recommend the development of a wireless strategy that reduces barriers to wireless deployment including access to public base station locations and the development of protocols for shared spectrum usage.
8. Funding for important network activities is essential for eResearch in New Zealand. For instance, funding for KAREN ends in 2010. Although REANNZ has just awarded more than \$1.6 million to projects from the Government's Capability Build Fund, aimed at developing capability around the use of KAREN, this funding needs to be ongoing. Again, although all universities and Crown Research Institutes have also received funding to develop institution-specific projects to accelerate awareness of KAREN and capability development, projects need to be able to continue beyond 2010. The suggested increases in user charges proposed from 2010 cannot be sustained by the tertiary community.

International experience of the deployment of research and education networks is that there is relatively slow uptake in the initial years of a network's life. There are several reasons for this including the need for a funding cycle to elapse so that new research projects can be developed that use the network. Research confidence that it is safe to develop grant applications that rely on the existence of the network is paramount.

9. The University is a foundation member of the Hamilton fibre network. Phase I of the build process is about to be completed. The network will provide the infrastructure to support the future development and prosperity of the Hamilton business community. Continued assistance will also required to extend the reach of the open access network, so that the wider community also benefits from this essential development, particularly the integration of the primary and secondary schools into the broadband open access network. Without support this won't happen and the potential fully realised.

2. Confidence

We feel this goal needs to be more ambitious and feel strongly about the following:

1. Students, teachers and lecturers need confidence in participating in media rich online teaching environments. There are significant challenges for many staff keeping current and integrating technology into their teaching and learning processes. The University has established an eLearning unit to support academics with the development of online resources. The Teaching Development unit also provides support the professional development of academic staff. Rather than each Institution approaching the staff literacy issues independently, a national approach to technology in teaching literacy might be more cost effective and enable greater sharing of experiences, learnings and resources.
2. We are concerned about the lack of ICT students participating in tertiary education. The lack of a New Zealand skilled ICT workforce is probably the biggest barrier to a successful digital future, particularly in a time of an international shortage of ICT graduates. We believe there are two main reasons for low participation in tertiary ICT education:
 - There is a very low understanding of what an ICT career involves in schools (and the community in general). In particular, the strong focus on ICT usage (the Internet and word processors) rather than on the intellectual disciplines that underlie ICT leads students to the conclusion that ICT is about effective use of existing products. Whole of curriculum ICT usage is important and more needs to be done with respect to ICT literacy¹ but it should not negate the teaching of ICT as a discipline.
 - The location of ICT teaching in the technology curriculum is inappropriate. It suggests that ICT is less academically challenging than mainstream NCEA subjects. Worse it means those students who are motivated to obtain strong NCEA results *cannot* study ICT. We are excluding our best minds from one of the most important disciplines for our nation's future.

Attempts by tertiary providers to overcome these problems (e.g. the University of Waikato Computer Science Scholarship Programme) are marginalised by their non-mainstream location and the need for good students to focus on NCEA. Probably the single most effective strategy to ensure New Zealand has a healthy digital future would be to create an academically strong mainstream NCEA ICT curriculum.

¹ As far as tertiary institutions are concerned we also need to ensure every student is ICT literate and despite competence with some technology it is still the experience of librarians and lecturers that new students are not very confident in accessing content in various forms and evaluation of sources.

3. Where is the incentive to enable our aging workforce to up skill? We need to think about our young people but we can not afford to ignore the growing need to support our current workforce which is has to cope with increased ICT demands.
4. Mention is made of implementing an action plan to enhance the ability of New Zealand to recruit and retrain overseas migrants. We hope that part of that action plan will be to make the process of hiring suitable overseas professionals easy to navigate.

3. Content

1. Open access to research results in New Zealand is hindered due to commercialisation. The government needs to help reduce the prohibitive copyright barriers that face research repositories by supporting the open access movement. An example would be requiring mandatory deposit of publically funded research in open access repositories.
2. As well as being users of content, universities are creators of heritage, research, teaching and cultural content and it should be recognised that universities are, and have the potential to be, important creators of digital content.
3. The Kiwi Research Information Service (KRIS) provides a valuable role in aiding the harvesting and discovery of digital research materials. However, the role and financial contribution of the individual institutions setting up and maintaining the repositories from which KRIS draws its metadata and content has not been recognised. Support for the repositories themselves will be critical in ensuring the success of this action point.
4. We need to protect our digital content from theft and misuse as more of our previously unpublished material is digitised. Universities have a huge role to play in raising awareness among our staff and students of how important it is to avoid plagiarism and using others material without permission.
5. While we need to protect our digital content from misuse, to facilitate the sharing and using of content, the government also needs to consider promoting open access and the use of creative commons licences.

4. Collaboration

1. Universities are key stakeholders in the provision of research, strategy and education. ICT research should be valued in universities. The strategy is correct in saying that research underpins innovation. Collaboration between tertiary institutions should be encouraged and funded. The government needs to look at strategies to enable universities to truly feel comfortable about working together. Currently there is a culture of competition that has been fuelled and is still being fuelled by the funding models in place. Until commercialisation is not the only way to increase funding we can not have open sharing of research results.
2. University experts often have direct engagement with stakeholders and there is often a level of maturity in the research community for using resources such as KAREN which would be beneficial for collaborative ventures.

5. Conclusion

Although significant investment has been made over the past three years, continued investment is required to realise the vision and enable the transformation of ICT in New Zealand. As we have said, the strategy still appears to be heavily biased on consumption of content, rather than facilitating the production/creation of ICT Technologies that will support the new wave of innovation and economic development for our country. We hope we have offered some ideas about inclusion of these valuable additions to the Strategy.