



THE DIGITAL STRATEGY 2.0 THE DIGITAL STRATEGY 2.0

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## **ACKNOWLEDGEMENT**

Many interest groups, individuals and government agencies have contributed to the development of the *Digital Strategy 2.0*. Special thanks go to the Digital Strategy Advisory Group, the Digital Strategy Steering Group, the Digital Development Council, speakers and participants at the Digital Future Summit 2.0 and participants in the stakeholder workshops.

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ISBN 978-0-478-31645-2 (Print)  
ISBN 978-0-478-31646-9 (HTML)  
ISBN 978-0-478-31647-6 (PDF)



This book is printed on Sapphire Laser Offset, an environmentally responsible paper manufactured using pulp harvested from sustainable well managed forests and bleached using an Elemental Chlorine Free process. All inks used in this document are vegetable based and sealers water based.

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→ Visit [www.digitalstrategy.govt.nz](http://www.digitalstrategy.govt.nz) for a list of references, case studies and information about the initiatives in this Strategy.

## MINISTER'S FOREWORD



Digital technologies have transformed our lives in recent years. Digital literacy has grown exponentially, and digital devices have proliferated – personal computers, mobile phones, laptops and mobile wireless devices.

Our business and personal lives now depend on digital gateways for communication, information and entertainment. New, flexible mobile and remote technologies allow us to work from home or the beach, videoconference back to the New Zealand office from New York, or get a health check-up remotely. Underpinning these changes are sophisticated software, a more interactive web and the growing convergence of telecommunications, broadcasting and the internet.

Digital Strategy 2.0 responds to this new, rich, interactive environment. **We understand that widespread, high-speed broadband is essential for New Zealand to participate in the contemporary world – and we will deliver it.** We also recognise that connection alone is not enough – if we are to thrive, we need a digitally skilled population, online security and access to and support for New Zealand content.

This Strategy goes beyond looking at the factors that enable digital development. Our vision of the future is that **New Zealanders should be leaders in the digital world and use digital technologies, skills and opportunities to contribute to a prosperous, sustainable and vibrant society.** No country has more to gain from the 'death of distance' than New Zealand. Digital Strategy 2.0 maps out the steps towards this vision. Three core ideas underpin this Strategy:

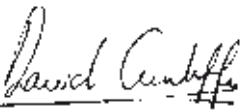
**Unleashing the full potential of the interactive ubiquitous web.** This means ensuring open access connection networks, open standards that allow different devices and networks to interconnect and as much open access to content as possible. We are committed to making sure that all future networks co-funded by government are based on open access principles. We are also committed to opening up access to national historic, scientific and geospatial information where possible.

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**Using digital technologies to drive productivity and economic growth.** Digital technologies offer New Zealand the opportunity to improve our productivity and our connectedness to the rest of the world. This Strategy focuses on spreading awareness of the potential of digital technologies and on providing the skilled people and secure environment that businesses need to be able to take full advantage of the technology. In addition, we are boosting funding for research and development and providing support for high-potential digital firms.

**Bringing everyone on the journey.** The new, interactive digital environment puts the user more in control. We can't afford for any New Zealanders to be left out. Being digital is easy if you can afford a laptop and a broadband connection – much tougher if you cannot even afford a phone. We are determined to break down the digital divide. The Community Partnership Fund, Aotearoa People's Network and regional broadband partnerships already recognise this. The Digital Development Council and Forum now provide a means to link and support local digital champions and ideas across New Zealand. Starting from what we have already achieved, this Strategy provides the framework to scale up good ideas into national treasures.

Digital Strategy 2.0 calls on New Zealanders to explore the opportunities and tackle the shared challenges of digital development – to become leaders in the digital world. The future belongs to us all.



**Hon David Cunliffe**

Minister for Communications and Information Technology

28 August 2008



## FOREWORD FROM THE CHAIR OF THE DIGITAL DEVELOPMENT COUNCIL

Now is the time for action if New Zealand is to capitalise on the profound changes and opportunities offered by ICT and digital technologies.

Historically, this country has spawned innovation of all sorts, produced world champions and, at times, influenced world affairs. But size and distance have often conspired against us, and we have been seen – by ourselves and others – as small, remote and sometimes irrelevant.

Today, climate change and energy uncertainty mean that we face a radically changing future. The digital revolution can be a tipping point for our nation. We can embrace it and use the dynamic convergence of technologies to help fulfil our personal, social and economic objectives, or we can just muddle through – a beautiful, quaint microcosm of how life used to be.

Digital Strategy 2.0 offers us an opportunity to gain the tools to increase our economic and social capital. The Strategy's high-level vision and framework signpost the path we must take – but, precisely because it is high-level, it also offers many challenges.

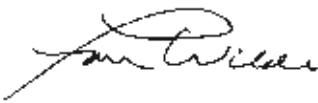
This Strategy cannot be delivered by government alone. Government leadership is certainly required, and the commitment it has shown in developing the Strategy is more than just symbolic, but this must be matched by action from all quarters.

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To achieve New Zealand's digital potential, we need positive responses and collaboration from the business and community sectors, whānau and individuals throughout the country. New Zealand already has many 'digital champions' – but we must also include people who do not currently see digital technology as central to their endeavours.

The Digital Development Council, which the government has facilitated, will play a key role in this work. So will the Digital Development Forum, being convened later this year. Neither of these can be just a talkfest. The Forum must identify clear and achievable strategic priorities, and the Council needs an aggressive work programme involving diverse stakeholders to move the Strategy forward.

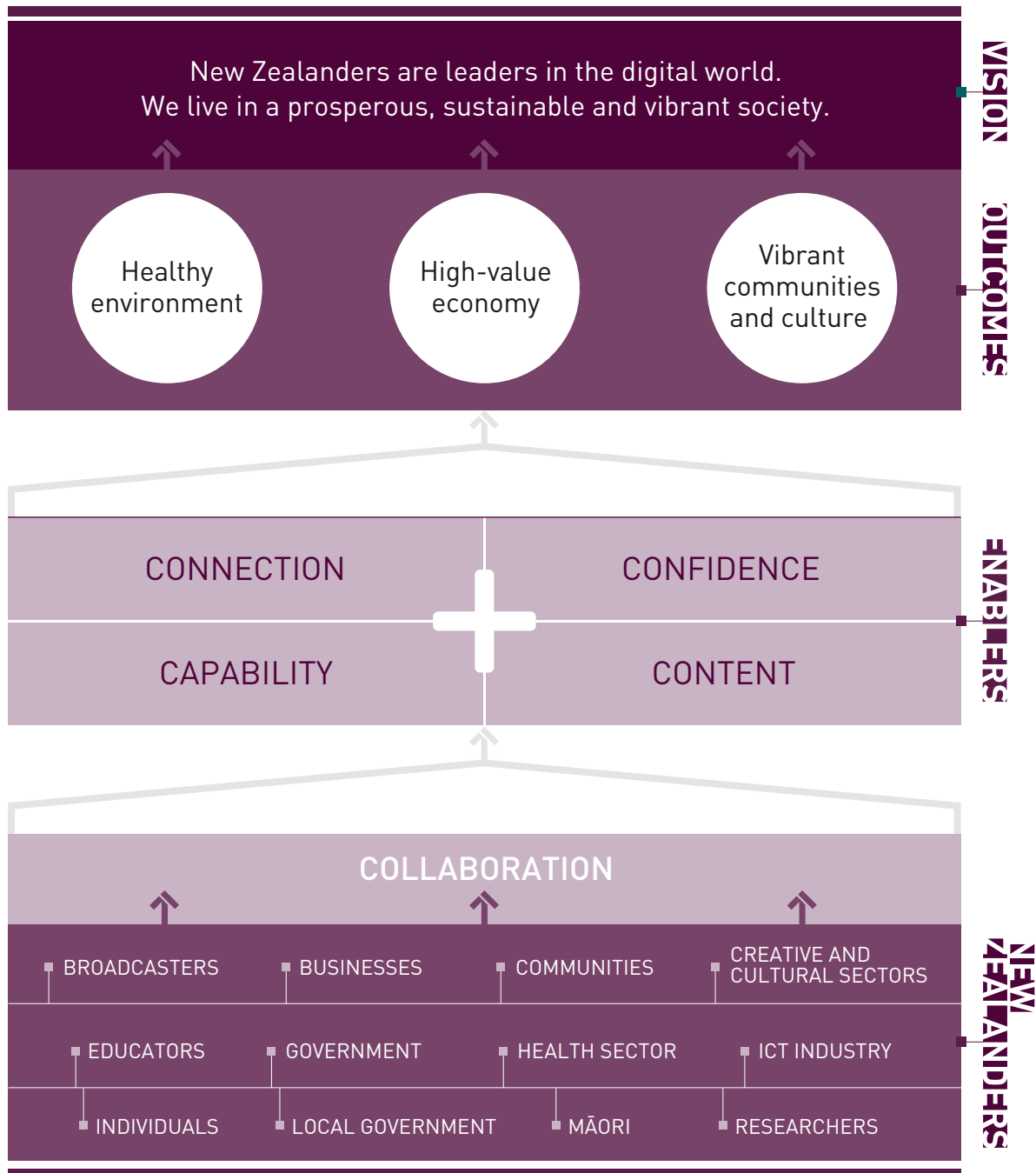
The OECD Secretary-General recently noted that policies affecting the internet can no longer be seen as narrow sectoral policies about telecommunications – they are now mainstream economic policies. Digital Strategy 2.0 gives us an opportunity to make digital technologies a central part not just of mainstream economic endeavours, but also of our cultural and community life.



**Hon Fran Wilde**

Chair, Digital Development Council

# THE DIGITAL STRATEGY 2.0



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# RESPONDING TO THE DIGITAL REVOLUTION

In 2008, the digital world is both ordinary – it affects all aspects of our lives – and extraordinary – it offers revolutionary possibilities in all areas.

The 2005 Digital Strategy talked about connecting to each other and the information we need for our everyday lives. Connection is still important, but this Strategy looks beyond it, to the creativity and opportunities for collaboration unleashed by the interactive, participatory digital world.

People are the bedrock of Digital Strategy 2.0. New technologies foster innovation, but it is people – entrepreneurs, researchers, creatives and people working to make a difference in communities – who are the real source of creativity. No sphere of activity is untouched by the digital revolution – businesses, researchers, Māori, communities, artists, educators, health workers and many others all engage with the digital world as they carry out their day to day activities. Digital Strategy 2.0 lays down a challenge for all stakeholders to work together, to make New Zealanders leaders in the digital world and create a prosperous, sustainable and vibrant society. Collaboration will be critical to achieving this vision.

Government's<sup>1</sup> core role is to provide the basics that enable creativity, innovation and collaboration – fast, accessible broadband, a digitally skilled population, secure infrastructure and support for and access to New Zealand content. Government also has a role in supporting businesses and communities to be creative and innovative in the digital world – for example, by supporting digital content firms to grow, or encouraging environmentally friendly solutions like teleworking.

In addition to the national-level actions in this Strategy, local authorities around the country are assisting digital development through a range of activities, from supporting broadband deployment to implementing e-government initiatives. *Councils in the Digital Age*, published by Local Government New Zealand in 2008, outlines many of these initiatives.<sup>2</sup>

We now have a national framework for collaboration in place, through the Digital Development Council and Forum.<sup>3</sup> The Forum is open to any group with an interest in digital development. It will set the direction and priorities for the work programme of the Digital Development Council. The Forum and Council will be important collaboration partners with government in implementing Digital Strategy 2.0.

## THE NEW DIGITAL WORLD

In the past, most people used the web to find information from static websites (Web 1.0). Creating web pages and other digital content was a specialist activity. Faster connections and user-friendly interfaces have changed this. Web 2.0 means more people are making content as well as consuming it – contributing to blogs, using online collaboration tools like wikis to create new ways of working, sharing experiences on social networking sites, or providing direct feedback as customers to improve product design and services.

<sup>1</sup> In this Strategy, 'government' refers to both central and local government.

<sup>2</sup> [www.digitalcommunities.org.nz](http://www.digitalcommunities.org.nz)

<sup>3</sup> See Appendix 2 for more information about the Digital Development Council and Forum.

This explosion of user-generated content is one part of the magic of the new digital world. The other part is the power of *lots of people*. The greater the number of people using the web, the greater the number of possible connections and feedback loops, leading to an exponential increase in the cross-fertilisation of ideas and innovation. In developed countries, access to the web is becoming ubiquitous: always on, always on the move, from anywhere, all the time. This speeds up business processes and adds both opportunities and challenges to our daily lives.

The next iteration of the digital world will be even more transformative. In the future, an interactive web will link not just computers, but other critical infrastructure such as buildings, transport systems and the energy grid. This 'internet of things' will allow us to transform the ways we use resources, travel, communicate with each other, learn and earn a living.

Connecting New Zealanders to each other and the world, and making new and emerging digital technologies available to New Zealanders, is critical to our ability to succeed in this transformative future.

## A STEP CHANGE IN BROADBAND PERFORMANCE

The 2005 Digital Strategy was premised on broadband – as we knew it then. The new, interactive digital world is hungry for bandwidth, requiring high upload and download speeds. To meet this need, Digital Strategy 2.0 aims for a step change in broadband performance. **In the next five years, the government is committed to delivering fibre-to-the-premise connections to businesses and public institutions (such as secondary schools, tertiary and research institutes, hospitals and libraries) in major centres, and significantly increased bandwidth connections throughout the entire country.** This will enable speeds of a gigabit or more. For each of us, at home or on the move, connection speeds 20 to 100 times faster than today will be the norm within a few years. The government won't allow limited bandwidth, or competition bottlenecks, to constrain ideas and innovation.

Openness is a central principle of Digital Strategy 2.0. **Any network sponsored by government has to conform to open access principles.** Open access means multiple connection providers can use the infrastructure to offer services to consumers. This open access to New Zealand's core digital infrastructure promotes choice for consumers and will encourage better service and higher connection speeds.

Change is already happening. In the last two years, we have had the ninth highest percentage increase of broadband uptake among member countries of the Organisation for Economic Cooperation and Development (OECD) and, in the last year, the sixth highest. The last three years have seen a complete shake-up of telecommunications regulation, to create a regime that encourages competition and investment. In all, the private sector has committed \$2.5 billion in investment to 2012. The message from the sector is loud and clear: 'We will invest and compete if the regulatory conditions remain stable.'

The government will invest at least \$500 million into broadband infrastructure over the next five years, a down-payment on a ten-year plan to get fast broadband to New Zealand homes and businesses. \$340 million of this investment was announced as the first stage of the Broadband Investment Fund (BIF). This Fund will co-invest in urban and rural broadband and will help deliver an additional international cable. In addition to the BIF investment, \$160 million will be invested in broadband across the health and education sectors over the next five years, lifting productivity and effectiveness. For example, **by 2012 all educational institutions will have access to a high-speed National Education Network, transforming the way our children learn.** Libraries, schools and researchers will be connected, allowing them to enrich their content and assisting them to collaborate. Likewise, major health institutions will be connected to enable real time telemedicine and patient-centred e-health care.

This Strategy recognises the convergence of broadcasting, telecommunications and the IT sectors. That's why we have been progressing **a major review of digital broadcasting regulation.** Over the next two years, the government will ensure that conditions are in place for innovation to flourish across these converging sectors. The effectiveness of current institutional arrangements will be considered, and any bottlenecks that affect access to content and digital networks and platforms addressed.

## TRANSFORMING OUR ECONOMY

Given the step change in broadband performance, we can predict an environment in which businesses, application developers, exporters of digital services and home consumers have access to all the connectivity they need. The question then is, to what end?

The challenge is to harness the power of the new digital world to create an innovative, high-income knowledge-based economy that will generate prosperity for all New Zealanders into the 21st century.

A high-speed digital infrastructure makes no sense without innovative content and applications to fill it. Digital production means content creators and providers can use digital networks to reformat, package, disseminate and sell their work locally and internationally, reaching consumers directly. **Creating high-value content – for ourselves and for export – is an area where New Zealanders can lead the digital world. This Strategy proposes a Digital Content Innovation Cluster.** This will boost New Zealand's production of applications in areas such as e-learning, e-health and online gaming, helping drive demand for widespread broadband connection. It will also enhance the productivity and competitiveness of important export industries, such as food and beverages and farming, by creating digital solutions tailored to their needs and to local conditions.

Improved productivity is key to transforming our economy. Low capital productivity is often due to inadequate investment in technology and innovation, while low labour productivity often results from inflexible work practices, including inadequate use of digital technology. **Investment in digital technology is needed to improve New Zealand's productivity.** But it is not just getting the right technology that will improve productivity and economic performance. We need to change attitudes and build world-leading capability in the smart use of technology.

Decision-makers in our businesses and organisations need to be aware of available solutions and think about how to use digital technology to increase productivity. Over the next two years, the Digital Development Council will lead a new initiative, **Connected New Zealand, which will support small and medium enterprises to invest in and use digital technologies to increase productivity.** Digital development teams and champions will work with businesses and not-for-profit organisations to create local-level plans for lifting productivity through broadband and digital technology, including by boosting digital skills and use of digital content in the workplace.

If we increase productivity across the economy, we can use the wealth generated to achieve our shared social and environmental goals – including better health and education, smarter, environmentally friendly production techniques and better public transport. A competitive standard of living and a high level of public services and environmental protection helps us retain skilled New Zealanders and attract new migrants, including the skilled information and communications technology (ICT) practitioners we need for digital development.

## BRINGING EVERYONE ON THE JOURNEY

The benefits of the digital world should be available to all. We can not afford to leave any New Zealanders behind on this journey. The government's commitment, in collaboration with local champions and the Digital Development Council, is **to link and share knowledge and information across a national network offering inclusive access to the internet.**

This Strategy contains **a commitment to rollout a national network of digital hubs**, building on the successful start made by the Aotearoa People's Network, which provides computers, training, mentoring and internet access in public libraries. These hubs are a key part of the Strategy's **commitment to digital literacy** – giving New Zealanders the skills and confidence to use digital technologies. For some communities, a marae, a computer clubhouse in a school or a scheme that puts computers in homes may be the best starting point for providing inclusive access to the digital world.

This national network will also provide 'community kete' – platforms for communities to create and store their own, locally relevant content. These kete will be based on open standards, so their content can link into the **Digital New Zealand** programme. Digital New Zealand aims to make New Zealand content – including from government, libraries and community and cultural groups – easy to find and use. The programme will digitise non-digital content, collect and cache existing digital content and build smart, freely available search and discovery tools.

The internet and the digital world bring not just opportunities, but also threats. **Funding for NetSafe, a world-leading not-for-profit organisation that works to keep users safe online, is being increased.**

Digital Strategy 2.0 acknowledges that Māori digital development – to support Māori cultural, community, economic and environmental goals – is important for New Zealand as a whole. As tangata whenua of New Zealand, Māori have a special place in the digital world. Māori create digital content with unique mātauranga, tikanga and kaupapa. This differentiates New Zealand from any other country and is globally valuable. Māori also make up a significant and growing proportion of our workforce – so it is increasingly important that Māori are included in, and participate in, the digital world.

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## TRANSFORMING GOVERNMENT

Government is in the information business – a business that is changing dramatically. The bureaucracy built for the industrial age needs to be transformed to meet the needs of the information age, with new models better suited to the requirements of the 21st century.

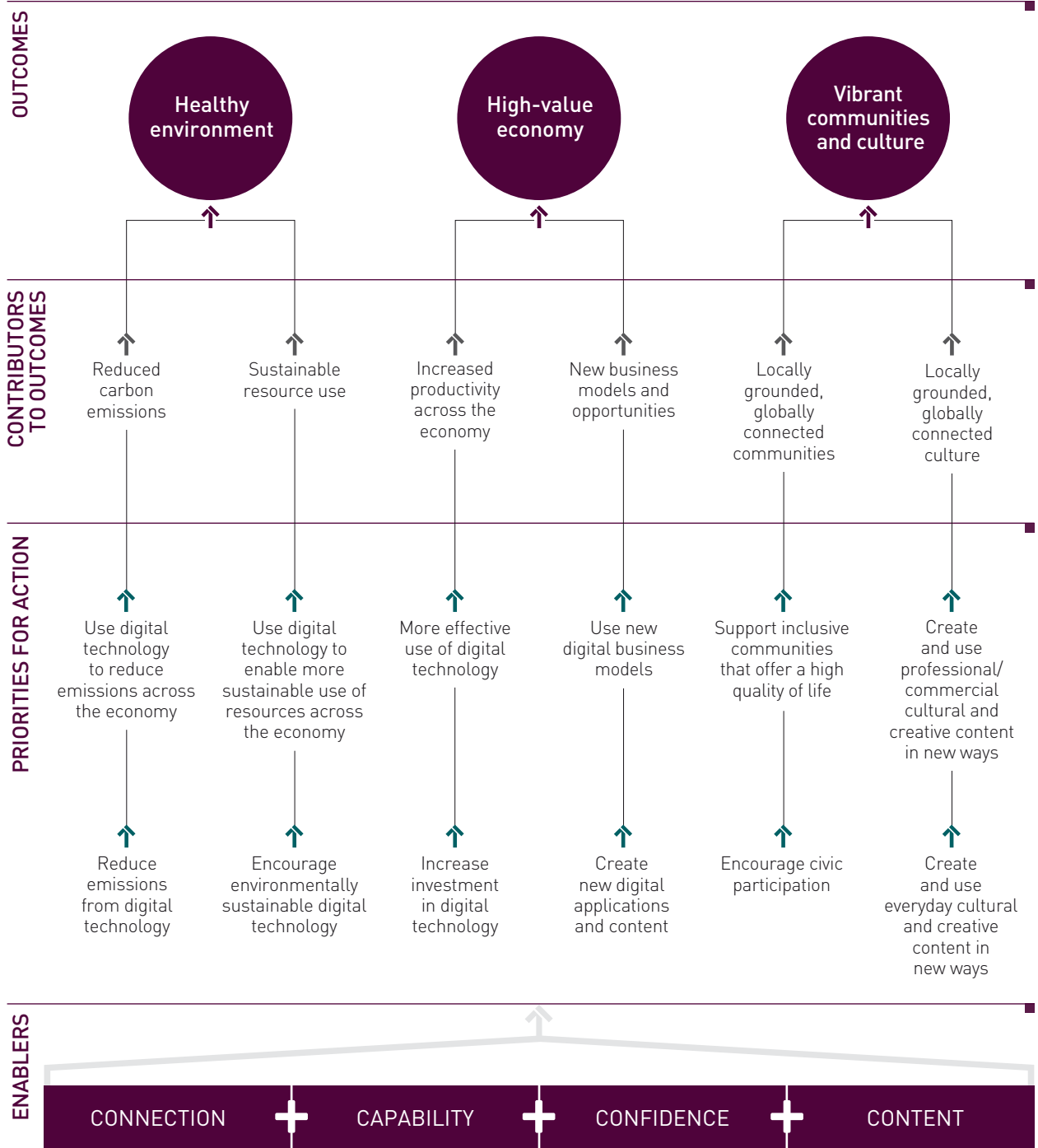
The government is committed to making public information accessible to everyone.<sup>4</sup> Information should be available in the way you want it, when you want it.

New Zealand expects and deserves government that responds to their needs and is open to their ideas. New Zealanders are not interested in which government organisation delivers which programme. Joined-up services – the right information in the right place at the right time – will deliver convenient, personalised and privacy-enhancing solutions.

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<sup>4</sup> Government will respect privacy considerations, data protection and intellectual property requirements where relevant, but, where possible, will address these issues in the new environment, such as through Creative Commons licences.

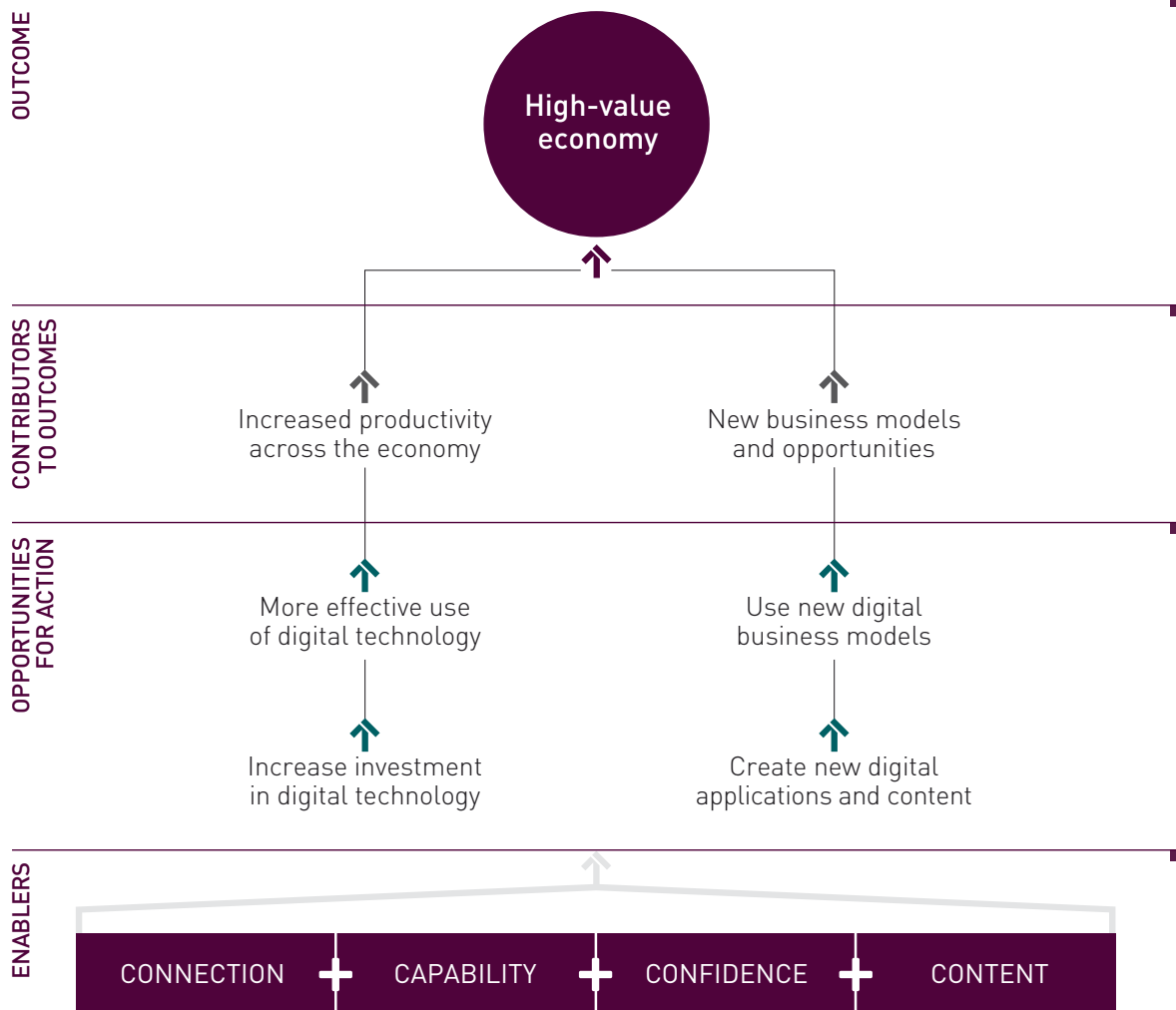
# CREATING A PROSPEROUS, SUSTAINABLE AND VIBRANT SOCIETY – SMARTER THROUGH DIGITAL



# THE ECONOMY

Digital technologies mean a fundamental change in the ways we do business and the kinds of business we do. We need to exploit the potential of the digital world to foster entrepreneurship, creativity and innovation in our areas of strength and specialisation. We also need to seek out the best ideas and solutions on offer from the rest of the world and ensure we use digital technology to increase productivity across our economy.

## SMARTER THROUGH DIGITAL: THE ECONOMY



## THE ECONOMY

New Zealand's economic performance is held back by our low productivity.<sup>5</sup> New Zealand has comparatively low rates of capital investment and low rates of output per worker. We are all working harder and longer, but not necessarily smarter, than people in most other OECD countries. Increasing our productivity will generate more wealth and increase our international competitiveness, so we can improve our standard of living and achieve our social and environmental goals.

Factors that affect productivity include effective investment in capital and skills, global connectedness, innovation, research and development, infrastructure and regulatory policy.<sup>6</sup> Increasing productivity is also about changing attitudes. This Strategy addresses infrastructure and regulation in the 'connection' section and skills in the 'capability' section.<sup>7</sup>

This section focuses on investment in, and use of, digital technology to increase productivity across the economy. It looks at encouraging enterprises to explore new digital businesses and business models by supporting access to new markets and international partners, innovation, and research and development.

### INCREASING PRODUCTIVITY ACROSS THE ECONOMY

Decision-makers in our businesses and organisations need to be aware of available solutions and think about how to use digital technology to increase productivity. This means both investing in technology and using it effectively. Under the **Connected New Zealand initiative**, led by the Digital Development Council, digital development teams and champions will work with small and medium enterprises – businesses and not-for-profit groups, including voluntary, community, cultural, health and education organisations – to create local-level plans for using broadband and digital technology to improve productivity.

Research is vital to keep New Zealand at the forefront of digital innovation – it generates knowledge and products for firms to take to the world. The Ministry of Research, Science and Technology has **increased investment in high-technology platforms** from 2008 onwards.

Research and development will leverage off industries where we already lead the world and which will remain the mainstay of our economy in the future, such as farming and food. There is huge potential for New Zealand to create innovative digital solutions to increase productivity, efficiency and environmental sustainability in these sectors – solutions that can be shared with and adapted by other sectors of our economy and sold internationally.

Sometimes, New Zealanders can create a new solution that exactly fits our circumstances. But often we benefit by being fast followers, taking the best technologies and ideas from around the world and adapting them to our needs. This is much easier if our firms are digitally connected, as international solutions are just a mouse click away.

5 Economic development indicators 2007. [www.med.govt.nz](http://www.med.govt.nz)

6 *Productivity perspectives: a New Zealand perspective*. Business NZ, 2006.

7 See Appendix 3, 'Supporting productivity in Digital Strategy 2.0', for a summary of initiatives in the Strategy that contribute to enhancing productivity.



## EXPLORING NEW DIGITAL BUSINESS OPPORTUNITIES AND MODELS

Internet users are hungry for content and applications – for entertainment, to improve business productivity and to make communication and collaboration easier. New Zealanders can lead the world in creating high-value content. There is strong support from firms, researchers, economic development agencies, local authorities, training providers and government agencies for a **New Zealand Digital Content Innovation Cluster**. This will encourage collaboration and networking, and support specific projects from leading firms, researchers and educational institutes. It will boost local production of broadband applications in areas such as e-learning, e-health and online gaming, helping to drive demand for widespread broadband connection.

Digital connectivity improves access to knowledge about international markets. It creates faster, cheaper connections to customers and suppliers, and new sales and marketing channels that are independent of distance. Taking strategic positions in international value chains, once the preserve of large companies, is now within the grasp of capable and nimble New Zealand firms.

The Growth Services Fund, and other New Zealand Trade and Enterprise initiatives, such as the Beachheads Networking and Mentoring Programme, provide tailored support for high-potential firms, including firms that sell digital content or applications, to engage with international markets and increase global connectedness. Such support could range from planning and executing a strategy for entering a new market, to enhancing management capability to plan for and pursue internationalisation.

Digital firms in New Zealand can face difficulties accessing finance to support expansion into offshore markets. This is being addressed through programmes such as the Seed Co-investment Fund, the Venture Investment Fund and the Large Budget Screen Production Grant.

→ Visit [www.digitalstrategy.govt.nz](http://www.digitalstrategy.govt.nz) for case studies about digital business, e-research, and using digital technologies to increase workplace productivity.

## GOVERNMENT INVESTMENT IN DIGITAL TECHNOLOGY

Government investment in digital technology will make it easier for citizens, business and other groups to interact with government and will increase the effectiveness and efficiency of activities, in the 'back office' and in frontline areas like health and education. This investment will also encourage innovation, as new procurement guidelines allow local firms that create applications for government to sell and develop these further.

By 2020, through e-government<sup>8</sup> and the redesign of government services, people's engagement with the government will have been transformed through increasing and innovative use of network technologies. New Zealanders expect, and deserve, 24/7 government that responds to their needs and is open to their ideas. Government will provide secure, personalised interaction between government and individuals, and open up authoritative data sources for others to use, while protecting privacy and the security of information.

8 E-government in New Zealand [www.e.govt.nz](http://www.e.govt.nz)

## THE ECONOMY

In the future, each New Zealander will go to one secure site that will have all their personal information and a record of their interactions with government services. People will be able to enter recent changes, keeping track of their own history and keeping all parties up-to-date and accountable. This authoritative data will also be available as appropriate to health providers, schools, universities, researchers, community groups, local businesses and others to build applications and provide services that meet the needs of different groups.

In health, 'being smarter through digital' means improving the quality and flow of information, getting the right information to the right person at the right time. People's health information will be available to them and will follow them on their journey through the health system. This will improve the quality of decision-making, not only by clinicians, funders and policy-makers, but also by individuals, who will be able to access their personal health information.

In education, the vision for the future is one of networks, connectivity and community. High-quality information will be stored digitally and shared safely and securely across the sector, giving educators and learners better access to digital content, resources and services.

→ Visit [www.digitalstrategy.govt.nz](http://www.digitalstrategy.govt.nz) for case studies about using digital technologies to deliver 21st century health and education services.

## Increasing productivity across the economy: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING/INDICATORS	STATUS
<p><b>Implement Connected New Zealand to support small and medium enterprises (businesses and not-for-profits) to invest in and use digital technology to increase productivity.</b>            Connected New Zealand will create local digital development teams. The teams will raise awareness of the potential of broadband and digital technologies and assist small and medium enterprises, including businesses, not-for-profits and health and education providers, to create a local-level plan for using broadband and digital technology. Options for raising awareness may include activities to showcase the benefits for small and medium enterprises of transacting online with suppliers, government and customers, and programmes to create greater awareness of and access to expert advice on how to create an effective online presence. This programme will be coordinated with the demand aggregation work being undertaken by the State Services Commission, with the Broadband Investment Fund, and with the New Zealand Skills Strategy.</p>	<p>THE DIGITAL DEVELOPMENT COUNCIL, IN PARTNERSHIP WITH THE MINISTRY OF ECONOMIC DEVELOPMENT, THE STATE SERVICES COMMISSION AND THE DEPARTMENT OF LABOUR</p>	<p>Rollout beginning April 2009.</p>	<p><b>New</b>            Funding of \$1.2m has been allocated for 2008–10. Further funding options will be developed to extend this initiative after piloting.</p>
<p><b>Bring all business capability programmes into the digital world</b> by ensuring they include consideration of firms’ digital capability needs and can be accessed online.</p>	<p>NEW ZEALAND TRADE AND ENTERPRISE</p>	<p>2009 onwards.</p>	<p><b>Ongoing</b></p>
<p><b>Review how all government activities that require the management and verification of personal information</b> (for example, issuing a driver licence) are undertaken, to make interaction with government easier and more consistent for the public.</p>	<p>STATE SERVICES COMMISSION</p>	<p>Review completed by the end of 2009.</p>	<p><b>New</b></p>

## THE ECONOMY

ACTIONS	RESPONSIBLE AGENCY	TIMING/INDICATORS	STATUS
<b>Extend the igovt secure online system beyond government</b> to enable people to re-use their verified personal information while protecting their privacy.	STATE SERVICES COMMISSION	By 2010, information will be able to be re-used for some purposes.	<b>Expanded</b>
<b>Embed the ICT Strategic Framework for Education</b> to ensure seamless transfer of information and integration of streamlined processes across educational agencies and providers to improve educational services and outcomes.	EDUCATION AGENCIES	By 2012, the framework will be fully implemented.	<b>Ongoing</b>
<b>Develop and implement a National Education Network.</b> Provide all education participants with access to a range of educational digital services and resources in a safe, secure and integrated environment.	MINISTRY OF EDUCATION	By 2012, every education organisation – from early childhood education centres to universities – will have access to high-speed, reliable broadband.	<b>Ongoing</b>
<b>Connected Health initiative.</b> Improve broadband connectivity between all health providers (public and private) and enable the development of common clinical applications (such as lab tests, ePharmacy, GP notes and health referral applications) and integrated health centres.	MINISTRY OF HEALTH	By 2012, lack of access to fast broadband will not be a barrier to clinical collaboration by health providers.	<b>Expanded</b>

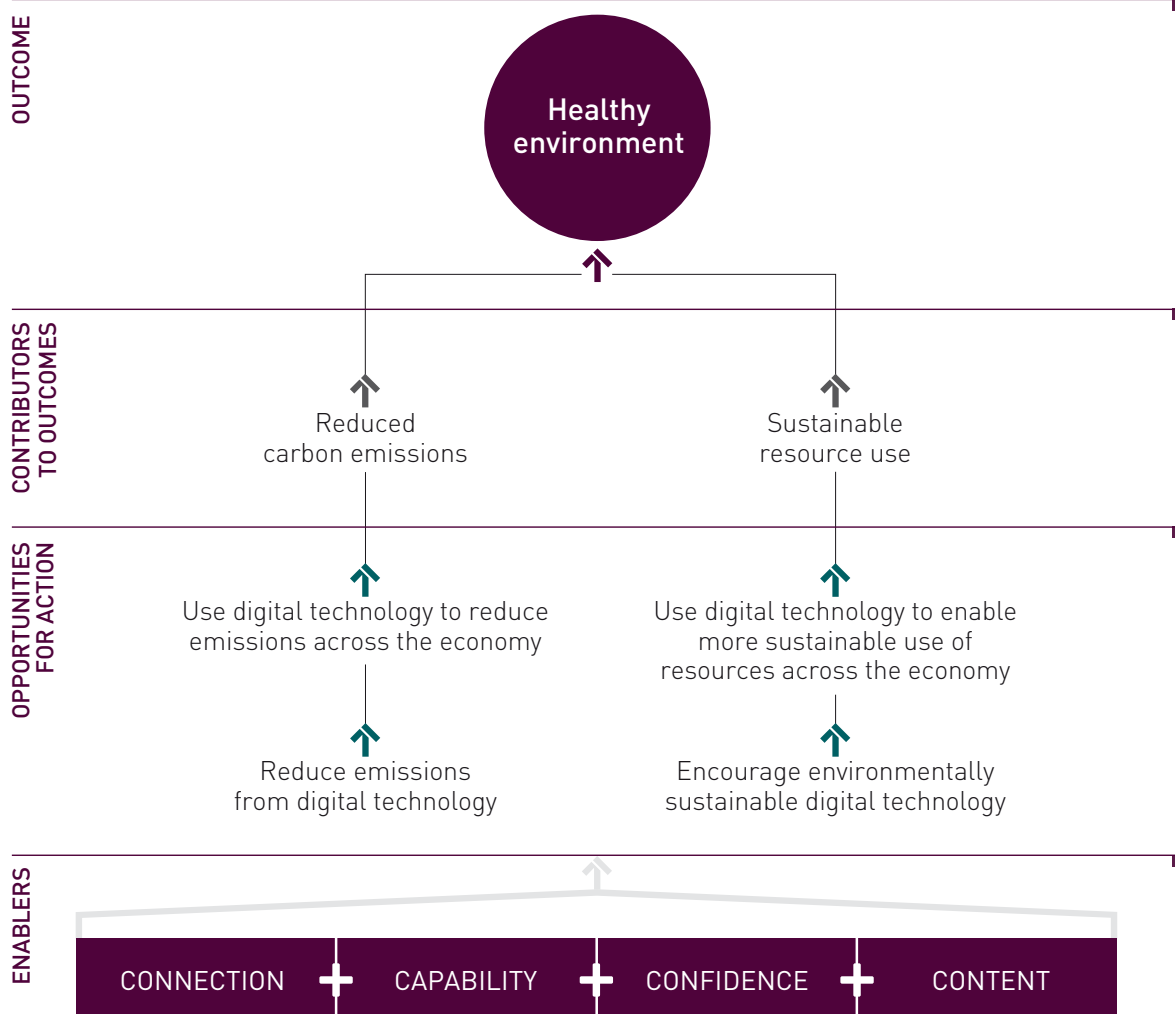
## Supporting the creation of new digital businesses and business models: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING/INDICATORS	STATUS
<p><b>Support for globally competitive firms (including qualifying digital firms)</b> to sell their products and services in overseas markets through enhanced in-market assistance and tailored management from the Growth Services Fund and other New Zealand Trade and Enterprise programmes.</p>	NEW ZEALAND TRADE AND ENTERPRISE	By 2012, digital firms receiving assistance from this fund will have higher sales and export revenue growth compared to other digital firms.	<b>Expanded</b>
<p><b>A New Zealand Digital Content Innovation Cluster</b> to build strong international connections, business capability, new business opportunities and strong links between researchers and firms to support the development of commercial digital content, including broadband applications, in New Zealand.</p>	MINISTRY OF ECONOMIC DEVELOPMENT	2009–19. A detailed design and business case for this cluster will be developed by February 2009, in partnership with key industry groups such as the New Zealand Games, Animation and Visual Effects Trust and the Auckland Creative Digital Content group.	<b>New</b> Funding options to be developed.
<p><b>Research investment in high-technology platforms.</b> Increased investment to build new industries based on current basic research in the areas of high-tech manufacturing, ICT, new materials and sophisticated engineering.</p>	MINISTRY OF RESEARCH, SCIENCE AND TECHNOLOGY	2008 onwards.	<b>Expanded</b> An additional \$24m over four years has been allocated to the New Economy Research Fund (NERF).
<p><b>Support New Zealand businesses to develop innovative digital products for government and on-sale.</b> Procurement guidelines now allow local firms who create applications for government to on-sell and develop these applications further. The Industry Capability Network (New Zealand Trade and Enterprise) will continue to run regional ICT procurement workshops to build the capability of local businesses to sell to government.</p>	MINISTRY OF ECONOMIC DEVELOPMENT, NEW ZEALAND TRADE AND ENTERPRISE	2008 onwards.	<b>Ongoing</b>

# THE ENVIRONMENT

A healthy environment is vital for our shared quality of life and prosperity, in New Zealand and around the planet. Managing our limited natural resources to meet the needs of a growing population, and mitigating and adapting to climate change, are the two compelling environmental challenges for this century. Digital technology can help us do both.

## SMARTER THROUGH DIGITAL: THE ENVIRONMENT



A recent Climate Group and Global e-Sustainability Initiative report, *SMART 2020: Enabling the low carbon economy in the information age*,<sup>9</sup> suggests that digital technologies can contribute to a healthy environment in two main ways: through enabling accurate monitoring and reporting, and through technologies that enable more efficient use of resources.

Digital technology can be used to monitor and report on resource use, energy consumption and carbon emissions across the economy, for example, in transport, energy generation, buildings and ICT itself. This will help us to identify possible innovations or efficiencies and monitor their effects. Innovative and creative digital products and management systems can allow us to transform our lives – including the ways we do business, manufacture products, use water and fertiliser on our farms, and transport items, as well as where and how we live.

However, using energy or resources more efficiently as a result of digital technology may not lead to overall reductions if we use the energy or resources saved by being more efficient in one area to do more in another area. We need both the right technology *and* the right regulatory and policy frameworks, such as limits on total carbon emissions, to ensure a net environmental benefit.

## REDUCING CARBON EMISSIONS

The *SMART 2020* report estimated that, in 2020, wise use of digital technology could reduce the world's carbon emissions by up to 15 per cent below what they would otherwise have been. This could include using teleworking and videoconferencing to reduce travel, improving energy efficiency with digital building management systems that control heating and lighting, and making transport more efficient through smart logistics.

<sup>9</sup> *SMART 2020: Enabling the low carbon economy in the information age*. A report by The Climate Group, commissioned by the Global e-Sustainability Initiative. [www.theclimategroup.org](http://www.theclimategroup.org)

The government is committed to **promoting teleworking in government and businesses.**

The Ministry of Economic Development will lead a programme of work on teleworking that will include identifying benefits and opportunities for teleworking in New Zealand and actions to increase awareness and facilitate take-up. This programme will be coordinated with the Connected New Zealand initiative to reach small and medium enterprises (see page 17). In addition, **government agencies are accelerating their adoption of videoconferencing** and will work to increase use and sharing of these facilities. Increased use of videoconferencing will contribute to achieving the carbon neutral public service goal of six core agencies being carbon neutral by 2012 and all other public service agencies being on a path towards carbon neutrality.

The smart electricity grid of the future will also use digital technologies to monitor, predict and manage demand for electricity, enabling more efficient transmission and better matching of generation to demand. The Electricity Commission has issued **guidelines for smart meter systems**, to encourage open and competitive access to this new metering infrastructure.

## SUSTAINABLE RESOURCE USE

Environmental management systems (EMS) provide a structured basis for businesses to plan, implement and monitor their environmental performance improvements. There is increasing consumer pressure for firms to be able to explain and verify their environmental impacts through an accredited EMS. The Ministry of Economic Development will increase the uptake of EMS among small and medium enterprises by providing **a suite of web-based environmental management tools** for use by businesses in New Zealand.

## THE ENVIRONMENT

Digital technologies can be made more environmentally sustainable and can be used to reduce resource use, energy consumption and carbon emissions. However, we cannot assume that digital technology is necessarily good for the environment. Its manufacture and use is estimated to create two per cent of global carbon emissions.<sup>10</sup> Although ICT is becoming much more energy-efficient, the growing number of devices and users, and the amount of data that needs to be stored, means that total carbon emissions from digital technology will continue to grow. Digital hardware uses large amounts of raw materials in its manufacture, can contain toxic substances, tends to have a short lifespan and is often not recyclable. This has created an international e-waste problem.

Sustainable, energy-efficient, recyclable ICT needs to become a priority. The Energy Efficiency and Conservation Authority is setting **Minimum Energy Performance Standards for ICT** to prevent the least efficient products from being sold. Government is also creating **sustainable ICT procurement guidelines** for its purchases.

An environmentally sustainable society will follow a 'cradle-to-cradle' design and production philosophy. 'Cradle-to-cradle' means that all products are designed to be fully recycled at the end of their lives. Those that cannot be repaired and reused are broken down and their component materials reused. Nothing is ever wasted – everything becomes a resource for future use.

Currently, most items, including ICT products, are not designed in line with these principles. In the meantime, product stewardship can help manage the environmental effects of ICT, including e-waste. Product stewardship encourages everyone involved in the manufacture, use and disposal of a product – producers, brand owners, importers, retailers, consumers and others – to take greater responsibility for its environmental effects throughout its life cycle. The Ministry for the Environment is working with industry on a **product stewardship programme of work for ICT**.

We all need to make environmentally sustainable choices if the digital revolution is to contribute to a healthy environment.

→ Visit [www.digitalstrategy.govt.nz](http://www.digitalstrategy.govt.nz) for case studies about teleworking and using digital technology to monitor drinking water quality.

<sup>10</sup> Mingay, Simon. (2007). *Green IT: A new industry shock-wave*. Sydney, Australia: Gartner Symposium/ITxpo.



## Reduce carbon emissions: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING/INDICATORS	STATUS
<p><b>Increase uptake of teleworking across government and businesses.</b> Identify benefits and opportunities for teleworking in New Zealand and take action to increase awareness and facilitate take-up. This programme will be coordinated with the Connected New Zealand initiative (see page 17).</p>	MINISTRY OF ECONOMIC DEVELOPMENT	2009 onwards. By 2012, a five per cent reduction in the number of total car trips taken between home and work by New Zealanders.	<b>New</b> Additional funding options to be developed.
<p><b>Accelerate the adoption of videoconferencing</b> by government agencies to increase productivity and reduce costs and travel. Agencies will increase their use of videoconferencing and share their facilities with other agencies.</p>	STATE SERVICES COMMISSION	2009. Videoconferencing will contribute to the carbon neutral public service goals of six core agencies being carbon neutral by 2012 and all other public service departments being on a path towards carbon neutrality by 2012.	<b>Expanded</b>
<p><b>Advisory Guidelines for Advanced Meter Infrastructure (AMI) systems.</b> The Electricity Commission has published guidelines detailing the minimum features for advanced metering systems. The guidelines are intended to encourage competitive access to the advanced metering infrastructure.</p>	ELECTRICITY COMMISSION	2008 onwards. By the end of 2009, investigate if regulation is required to rollout smart meters if voluntary guidelines prove inadequate to increase rollout and use.	<b>Ongoing</b>
<p><b>Promote energy-efficient ICT products</b> through Minimum Energy Performance Standards (MEPS), which will stop the least efficient products from entering the market, and through the Energy Star labelling scheme, which will help consumers identify energy-efficient products.</p>	ENERGY EFFICIENCY AND CONSERVATION AUTHORITY	By 2010, Minimum Energy Performance Standards for computers, laptops and monitors will be in place. By 2012, 75 per cent of New Zealanders will be aware of the Energy Star labelling scheme.	<b>Expanded</b>

# THE ENVIRONMENT

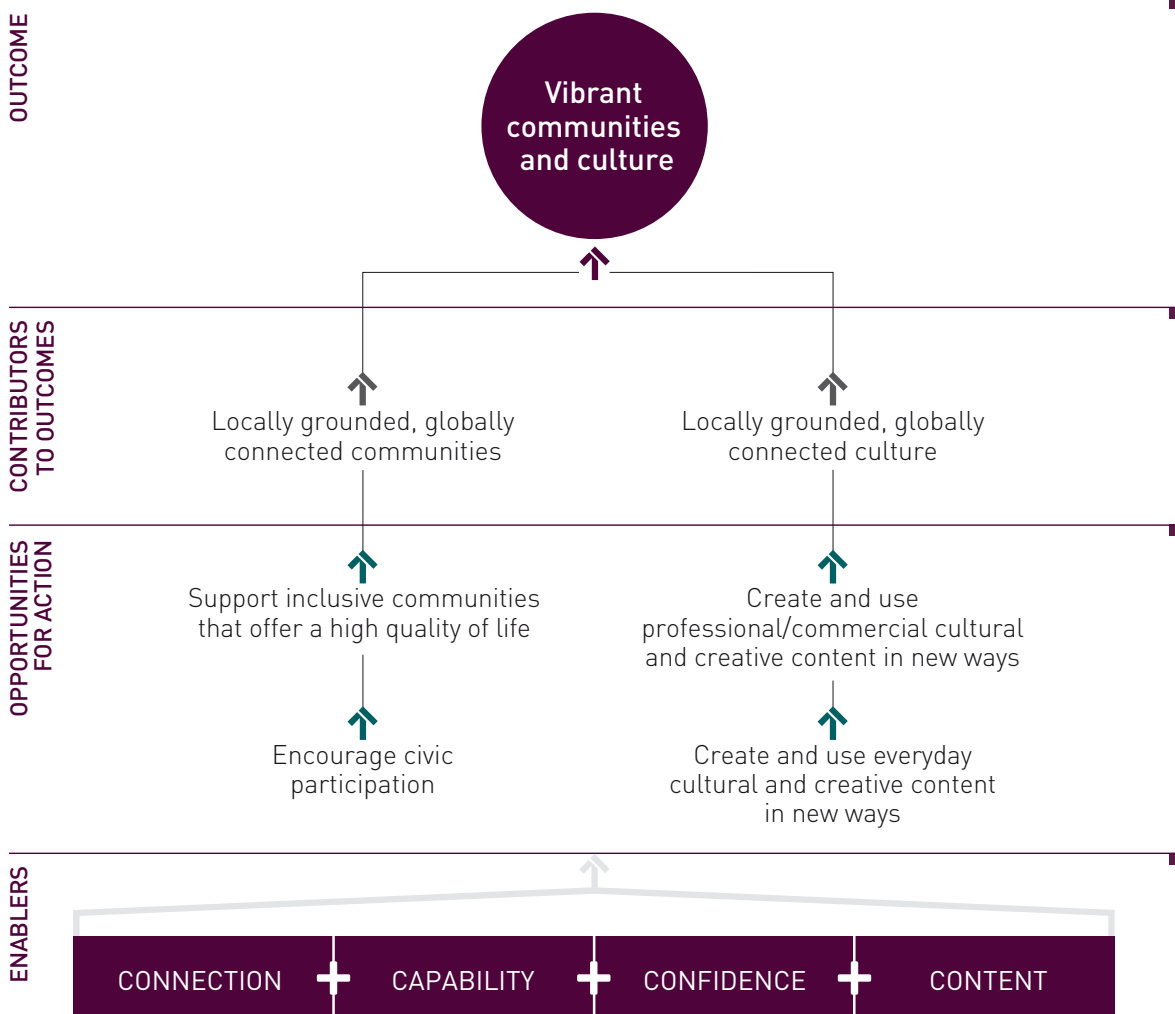
## Sustainable resource use: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING/INDICATORS	STATUS
<p><b>Government will only purchase ICT products and services that meet sustainable procurement guidelines.</b> The Ministry of Economic Development will issue sustainable procurement guidelines for ICT in 2008.</p>	<p>MINISTRY OF ECONOMIC DEVELOPMENT</p>	<p>Sustainable procurement guidelines for ICT published in 2008.</p>	<p><b>New</b></p>
<p><b>Product stewardship programme of work for ICT.</b> This programme of work includes work on recycling and refurbishment good practice guidelines, sustainable procurement guidelines and establishing take-back and recycling schemes for ICT equipment.</p>	<p>MINISTRY FOR THE ENVIRONMENT</p>	<p>By 2009, the Ministry for the Environment will develop and promote good practice guidelines for refurbishing recycled ICT equipment. By 2012, the Ministry for the Environment will accredit two ICT product stewardship schemes.</p>	<p><b>Ongoing</b></p>
<p><b>Increase uptake of environmental management systems by New Zealand enterprises.</b> Develop an online ecolabel directory of all key ecolabels relevant to businesses in New Zealand, an online environmental performance assessment tool for small and medium enterprises and a national, entry-level environmental management system tailored to the needs of businesses in New Zealand.</p>	<p>MINISTRY OF ECONOMIC DEVELOPMENT</p>	<p>Ecolabel directory will be available by September 2008. Online environmental performance tool will be available from early 2009. The national environmental management system will be available from late 2009.</p>	<p><b>Ongoing</b></p>

# COMMUNITIES AND CULTURE

In the past, physical geography often forced us to choose between the local and the global. People in small towns built strong local communities, but didn't have access to the services and employment opportunities of larger centres. New Zealand artists and creatives reflected us back to ourselves, creating a sense of our own place and identity, but we sometimes had limited access to other cultures. The digital world offers a whole new level of communication and interaction, allowing us to create culture and communities that are both locally grounded and globally connected.

## SMARTER THROUGH DIGITAL: COMMUNITIES AND CULTURE



## COMMUNITIES AND CULTURE

Given the advantages of engaging in the digital world, we have a shared responsibility to ensure that all New Zealanders – including those in rural and remote areas, older people and those with disabilities or on lower incomes – can participate.

### SUPPORTING LOCALLY GROUNDED, GLOBALLY CONNECTED COMMUNITIES

A digitally inclusive country requires **a nationwide network of digital hubs** – places where people can access computers and the internet, work together and learn from each other. This has already begun – the Aotearoa People’s Network provides free computers, internet access, training and support, and community initiatives such as Computers in Homes provide computers and subsidised broadband access for families who might otherwise miss out. This base will be expanded by **accelerating the national rollout of the Aotearoa People’s Network** and continuing to work with other stakeholders – community groups, Māori, health providers, educational organisations and others – to explore and implement locally appropriate solutions. As part of the Aotearoa People’s Network, community kete – open-source community content repositories – will provide a creative, civic digital space where citizen-created content and community histories and stories can be deposited and accessed.

Connecting marae as part of the national network of digital hubs enhances the access of hapū and iwi to the digital world and facilitates the creation of Māori digital content, including in te reo. Cyberwhare and other digital hubs also provide a way for hapū and iwi to develop and share digital capability and skills, supporting economic as well as community and cultural goals.

Digital technology can strengthen small communities through linking them to larger centres and to specialised services. Fast broadband, for instance, makes it possible for people based in smaller communities to do jobs based in bigger centres, while web links can provide access to services from the outside world. Videoconferencing already allows teachers to teach specialised classes in remote schools. Initiatives such as telemedicine and the National Education Network (see page 18) will continue to expand the range of services available in communities outside major centres, as well as improving service, effectiveness and efficiency across the country.

Part of living in a free and democratic society is participating in civic life by engaging with local and central government processes and decision-making. E-government<sup>11</sup> will increasingly allow people to feed their views, ideas and information back to government, through formal consultation, or, less formally, through wikis, blogs or online forums. The collective wisdom of the public is valuable – after all, the people who are affected by government policy are in the best position to suggest how to make it better.

The internet has become a place for personal expression, social interaction and political debate. Phenomena like Wikipedia are examples of mass public collaboration, creating a valuable resource through millions of small contributions. The digital world allows people to create many different communities of interest. There are over one billion people connected to the web – even if you are one in a million, you will still find 1,000 other people out there who share your ideas and interests.

11 E-government in New Zealand. [www.e.govt.nz](http://www.e.govt.nz)

This sharing and creation of culture and communities online is a powerful incentive for people to gain skills and confidence in the digital world. They can then use these skills for learning or employment, or feed them back into the community. Community and voluntary sector activities offer another rich opportunity for people to engage with the digital world, to create digital tools and record their stories. An ongoing **Community Partnership Fund** will continue to support digitally-based community activities that develop people's capability and skills to use digital technology and create digital content. The Community Partnership Fund is about innovation and community participation and supports grassroots initiatives that realise community aspirations through digital technology.

## SUPPORTING LOCALLY GROUNDED, GLOBALLY CONNECTED CULTURE

The digital world gives us unprecedented ability to access and share our history, our stories and our taonga with each other and the rest of the world. Content can be created and delivered in new ways, reflecting community voices and transmitting creative expression.

Artists and creative producers contribute to our sense of national identity and enrich our lives. The cultural industries – including publishing, advertising, architecture and the art market – also make a significant economic contribution. Sales of goods and services and other income from cultural industries were \$9.7 billion in 2004.<sup>12</sup> Digital production means content creators and providers can use digital networks to reformat, package, disseminate and commercialise their work beyond national boundaries and direct to consumers. It also makes possible the creation of new kinds of content, such as 'born-digital' arts.

As well as allowing us to create and share more New Zealand content, the digital world also challenges us to ensure that locally produced and public service content continues to be created and made accessible to a wide audience. The government will continue to engage with and support the **production, distribution and archiving of content across new digital platforms**, as well as supporting **digital broadcasting** (see page 34) and the **visibility of New Zealand culture online**.

The digital world offers opportunities for strengthening Māori identity, expressing a Māori world view and communicating in a global context. Digitising mātauranga Māori can be a powerful way to transmit aspects of culture, heritage and identity to future generations and those who have moved away from their rohe. Digital broadcasting has already increased the cultural diversity of television and radio. In 2008, a government-funded digital channel broadcasting in te reo Māori was launched – a Treaty of Waitangi partnership in cyberspace.

→ Visit [www.digitalstrategy.govt.nz](http://www.digitalstrategy.govt.nz) for case studies on multi-media theatre, Web 2.0 technologies for Māori language and marae enhancement, and using digital technologies to improve productivity and services in the heartland.

<sup>12</sup> Cultural indicators for New Zealand 2006. [www.stats.govt.nz](http://www.stats.govt.nz)

# COMMUNITIES AND CULTURE

## Supporting locally grounded, globally connected communities: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING/INDICATORS	STATUS
<p><b>Accelerate the national rollout of the Aotearoa People’s Network</b> to public libraries and marae, to provide digital hubs for communities across New Zealand. The Aotearoa People’s Network aims to provide free access to broadband internet services in public libraries, including a range of web-based tools and services and training. This will also extend the use of the kete open-source software to set up digital repositories for community user-generated content.</p>	NATIONAL LIBRARY OF NEW ZEALAND	<p>2009–11. By 2009, up to 30 open-source community kete repositories will be established. By 2010, the network will be rolled out to 130 libraries and 10 marae.</p>	<p><b>Expanded</b> An additional \$2m has been allocated.</p>
<p><b>Accelerate the implementation of networked technologies by government.</b> Create joined-up services for people to interact with government services online, ensure that interactions using different channels – email, phone, in person – are coordinated and ensure that people only need to provide information to government once. See <i>Transforming the State Services: State of the Development Goals Report</i> (<a href="http://www.ssc.govt.nz">www.ssc.govt.nz</a>).</p>	STATE SERVICES COMMISSION	<p>By 2010, government shared infrastructure is used to deliver user-centred services, and support joint results.</p>	<p><b>Ongoing</b></p>
<p>Scale up successful community digital projects and fund new grassroots/flaxroots projects through an <b>ongoing Community Partnership Fund (CPF)</b>. The CPF supports initiatives that improve people’s capability and skills to use ICT and develop digital content. The CPF is about innovation and community participation, and it supports grassroots initiatives that realise community aspirations through ICT.</p>	DEPARTMENT OF INTERNAL AFFAIRS	<p>2009 onwards.</p>	<p><b>Expanded</b> Funding of \$6m has been allocated for 2008/09. Funding options to be developed for future years.</p>

## Supporting locally grounded, globally connected culture: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING/INDICATORS	STATUS
<b>Support and engage with the production, distribution and archiving of content across new digital platforms.</b>	NEW ZEALAND ON AIR, TE MĀNGAI PĀHO, CREATIVE NEW ZEALAND	2008 onwards.	<b>Ongoing</b>
<b>Screen Production Incentive Fund</b> to support the increased production of medium- and larger-scale New Zealand cultural screen content.	MINISTRY FOR CULTURE AND HERITAGE, NEW ZEALAND FILM COMMISSION	2008–12. Operation and impact of the Screen Production Incentive Fund will be reviewed in 2010.	<b>New</b> Funding of \$53.75m has been allocated.
<b>Increase the online visibility, accessibility and knowledge of New Zealand's history, people, land, culture and society</b> (for example <a href="http://www.nzhistory.net.nz">www.nzhistory.net.nz</a> ; <a href="http://www.teara.govt.nz">www.teara.govt.nz</a> ; <a href="http://www.nzlive.com">www.nzlive.com</a> ).	MINISTRY FOR CULTURE AND HERITAGE	2008 onwards.	<b>Ongoing</b>
<b>NZ OnScreen is launched</b> providing a portal to New Zealand's film and television heritage.	NEW ZEALAND ON AIR	The portal will be launched in 2009.	<b>Ongoing</b>

# CONNECTION

We need widespread broadband to fully access the power of the new digital world. Broadband is necessary to support Next Generation Networks (NGN), which underlie enriched and highly interactive web services.

## GOAL

WIDESPREAD, AFFORDABLE, FAST BROADBAND AND ACCESS TO CONTENT ACROSS MULTIPLE PLATFORMS USING MULTIPLE DEVICES.

## TARGETS

### By 2010:

- New Zealand will rank in the top half of the OECD for broadband uptake, speed and coverage.
- All future networks co-funded by government to be based on open-access principles.

### By 2012:

- 80 per cent of users will have access to broadband connections of 20 Mbps or higher and 90 per cent will have access to 10 Mbps or higher.
- Open-access urban fibre networks will be operating in at least 15 cities and towns.
- Terrestrial broadband coverage for 93–97 per cent of the population, with more affordable satellite solutions for remote locations.
- Additional international cable.
- Plan in place for ensuring the last 3 per cent of users have access to broadband connections of 1 Mbps or higher.

### By 2018:

- 80 per cent of homes or premises will have access to fibre, or equivalent high-bandwidth capable technology.
- 90 per cent of users will have access to broadband connections of 20 Mbps or higher.

## SHARED CHALLENGES

- Map community, business and public sector demand for broadband.
- Invest in widespread, fast, reliable broadband to meet demand from community, business and public sector.
- Investors in infrastructure and internet service providers explore new services and business models that allow them to provide low-cost, fast connection with no caps on data.
- Competitive fixed and mobile broadband markets.
- Provide open access to networks, platforms and content.
- Regulations and institutional structures keep pace with the converging environment.
- Move to a fully digital broadcasting environment.
- Move to Internet Protocol 6 (IPv6) internet addresses.<sup>13</sup>



# CONNECTION CONNECTION CONNECTION



NGNs run over broadband and use Internet Protocol (IP) to send and receive data. An NGN can support many services and applications over the same connection, for example, internet access, voice, EFTPOS, ecommerce, video and games.

In terms of technology, no one solution is future-proof in a fast-moving environment, but fibre-optic cable is the surest long-term option for a core network. Fibre to, or close to, the premise is part of the long-term picture. However, there is a complementary role for a range of technologies that link to the fibre core, including satellite and wireless. Government has adopted a technology-neutral approach to broadband investment, allowing the most appropriate solution to be chosen to connect end users.

Digital Strategy 2.0 aspires to have all homes, businesses, schools, marae and farms connected to high-speed, reliable, affordable broadband within a decade. This requires significant investment from the private sector and government. Recent private investment announcements top \$2.5 billion. The government's contribution through the **Broadband Investment Fund** and investment in the health and education sectors adds a further \$500 million for the next five years, to be matched with at least another \$500 million from private investors.

Widespread broadband also implies equitable access. New Zealanders without a broadband connection are likely to live in rural areas, have lower incomes, or be older. A fast, affordable broadband service for people in rural and remote areas is an important part of delivering a fully networked world. The Telecommunications Service Obligations (TSO) already ensure that a reasonable telephone service is available to users in rural and remote areas, even where this would not be commercially viable. The government is currently reviewing the TSO to assess its role in supporting the provision of a reasonable broadband service for rural and remote users.

Very fast broadband is required to keep New Zealand research leading edge, able to connect with partners offshore and transfer large data sets in real time. This capability is provided by the Kiwi Advanced Research and Education Network (KAREN), at speeds 10,000 times the speed of current home broadband. Without KAREN and its continued development, the New Zealand research sector would be at risk of being left out of international research consortia. Work is currently underway to explore options to extend KAREN to schools, polytechnics and libraries.

As broadcasting, telecommunications and the internet converge, telecommunications and broadcasting companies are changing their business models. For telcos, selling connection alone is no longer viable – quality content is the key to success. For broadcasters, a channel with a single programme schedule is no longer viable – content needs to be created, packaged and distributed across multiple platforms. Government is reviewing the broadcasting regulatory framework to make sure it meets the demands of a converging digital environment. A major objective of the review is to ensure that suitable competition exists in terms of access to broadcasting-like networks and content to promote economic, social and cultural outcomes.

13 Under the current internet protocol, IPv4, only 16 per cent of addresses were unallocated in early 2008, and they are predicted to run out in 2010 or 2011. Convergence requires a transition to the newest internet protocol, IPv6, to enable millions more people around the world to connect to the internet and use broadband, mobile internet and other new services. *Internet address space: economic considerations in the management of IPv4 and in the deployment of IPv6.* www.oecd.org

# CONNECTION

## Facilitate investment in widespread, fast, reliable broadband: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
<b>Broadband Investment Fund (urban, rural, international).</b> (Visit <a href="http://www.digitalstrategy.govt.nz">www.digitalstrategy.govt.nz</a> for details and criteria)	MINISTRY OF ECONOMIC DEVELOPMENT	2008–12.	<b>New</b> Funding of \$340m has been allocated.

### Progress indicators for the Broadband Investment Fund

By 2012:

- 80 per cent of users will have access to broadband connections of 20 Mbps or higher and 90 per cent will have access to 10 Mbps or higher.
- Open-access urban fibre networks operating in at least 15 cities and towns.
- Terrestrial broadband coverage for 93–97 per cent of the population, with more affordable satellite solutions for remote locations.
- Additional international cable.

### Demand aggregation for the state sector.

Coordinate the purchase of broadband services for the state sector, with an initial focus on the health and education sectors. This will encourage private sector investment in broadband infrastructure and deliver better value broadband services. The National Broadband Map will support this initiative. This initiative will be coordinated with the Connected New Zealand programme (see page 17) and the Broadband Investment Fund.

STATE SERVICES COMMISSION

2008–12.

**New**

### Progress indicators for demanding aggregation for the state sector:

- Up to four regional pilots are undertaken during a twelve-month period, starting in October 2008, to include primary and secondary healthcare providers, schools and tertiary education institutions.

# CONNECTION CONNECTION CONNECTION



CONNECTION

ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
<b>Complete the Telecommunications Service Obligations Review.</b>	MINISTRY OF ECONOMIC DEVELOPMENT	2008–09.	Ongoing
<b>Kiwi Advanced Research and Education Network (KAREN).</b> Explore options to better coordinate government investment in KAREN and the Government Shared Network (GSN) with investments in the health and education sectors, to improve the value of public sector broadband services and provide high-speed broadband to educational institutions and local libraries.	MINISTRY OF RESEARCH, SCIENCE AND TECHNOLOGY	2008–09.	Expanded
<b>Improve the local resource consent process to encourage the rollout of broadband infrastructure</b> by introducing National Environmental Standards for telecommunications facilities, and passing the Utilities Access Amendment Bill, to provide network operators with certainty in their engagement with local authorities.	MINISTRY FOR THE ENVIRONMENT	2008–09.	Ongoing
<b>Allocate additional spectrum for wireless broadband access.</b> This will include creating the ability for local/regional operators to share 2.5 GHz spectrum within a managed spectrum park, and allocating 70–90 GHz spectrum, which can support very high-speed data transfer over short distances.	MINISTRY OF ECONOMIC DEVELOPMENT	2008 onwards.	Ongoing

# CONNECTION

## Ensure appropriate access to platforms, networks and content: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
<p><b>The Review of Broadcasting Regulation</b> is considering the appropriateness of current institutional arrangements in a converging digital environment, a competition study to examine access to content and platforms or networks for broadcasting-like channels and services, and options for improving investment in broadcasting infrastructure.</p>	<p>MINISTRY FOR CULTURE AND HERITAGE, MINISTRY OF ECONOMIC DEVELOPMENT</p>	<p>2008–09.</p>	<p><b>Expanded</b> Additional funding of \$300,000 has been allocated to complete the review.</p>
<p><b>Progress indicator for the Review of Broadcasting Regulation:</b> By the end of 2009, final decisions will be made on the institutional arrangements for broadcasting regulation.</p>			
<p><b>Consultation on Next Generation Networks</b> including IP interconnection, interoperability and services.</p>	<p>COMMERCE COMMISSION, MINISTRY OF ECONOMIC DEVELOPMENT</p>	<p>2008 onwards.</p>	<p><b>Ongoing</b></p>
<p><b>Implementation and monitoring of the Telecom Operational Separation Undertakings.</b></p>	<p>COMMERCE COMMISSION</p>	<p>2008 onwards.</p>	<p><b>Ongoing</b></p>

# CONNECTION CONNECTION CONNECTION



## Facilitate the transition to digital broadcasting: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
<p>Analogue switch-off and transition to digital television, including high-definition services.</p>	<p>MINISTRY FOR CULTURE AND HERITAGE, MINISTRY OF ECONOMIC DEVELOPMENT</p>	<p>Planned to be completed by 2015.</p>	<p><b>Expanded</b>                      Funding of \$25m over five years has been allocated to assist with the cost of broadcasting national free-to-air channels. Funding of \$250,000 per annum has been allocated to assist with the overhead costs of a joint (government–industry) steering group.</p>

# CAPABILITY

Digital technologies are constantly changing the way we live, work and play. All New Zealanders will need new skills to participate fully in this digital world. As well as digital literacy and technical ICT skills, our education system needs to engender creativity in all students.

## GOAL

THE DIGITAL SKILLS OF OUR  
POPULATION CREATE A COMPETITIVE  
ADVANTAGE FOR NEW ZEALAND.

## TARGETS

- By 2012, the fill rate for ICT-related jobs increases to 75 per cent.<sup>14</sup>
- By 2012, there has been a 100 per cent increase in the number of graduates entering digital careers.

## SHARED CHALLENGES

- Ensure universal digital literacy.
- Adapt and build on existing models to create grassroots/flaxroots whole-of-community digital capability.
- Strengthen the workforce for the local ICT industry.
- Promote digital careers.
- Provide guidance on industry and community training needs.
- Understand the changing nature of ICT skill shortages.
- Attract and retain highly skilled ICT practitioners in a globally competitive market.
- Equip decision-makers to make smart decisions about investment in and use of digital technology.

<sup>14</sup> The Department of Labour estimated the fill rate for ICT jobs for 2007 as 53 per cent.



ICT practitioners are essential to our digital future. They are highly mobile and are in short supply globally. We need to promote, develop, attract and retain ICT professionals, such as network architects, application developers and security specialists, to perform high-value and creative digital work. We also need technicians to develop and maintain our ICT systems. Without enough skilled ICT practitioners, our digital development will be seriously compromised.

Rapid change means we must regularly re-evaluate our skill needs. The ICT industry, wider business community, education sector and government must work together to ensure our skills are up-to-date and lead the world.

### Ensure universal digital literacy: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
<p><b>Ensure all students leave school digitally literate, through appropriate early childhood, primary and secondary curricula and teaching.</b> (Foundations for Discovery, the e-learning Action Plan for Schools and the New Zealand Curriculum 2007.)</p>	<p>MINISTRY OF EDUCATION</p>	<p>Launched in 2007</p>	<p><b>Expanded</b> An additional \$65.3m has been allocated to schools for ICT investment.</p>
<p><b>Accelerating the rollout of the Aotearoa People's Network and an ongoing Community Partnership Fund.</b></p>	<p>See page 28 for detail about these actions.</p>		

# CAPABILITY

## Strengthen the workforce for the local ICT industry: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
<b>Implement professional standards and qualification equivalency.</b> Work with the New Zealand Computer Society to implement a framework of professional standards and international benchmarks for ICT qualifications.	DEPARTMENT OF LABOUR, MINISTRY OF EDUCATION, MINISTRY OF ECONOMIC DEVELOPMENT, WITH INDUSTRY GROUPS	2009–10.	<b>New</b>
<b>Attract more skilled ICT practitioners to New Zealand.</b> Undertake a series of employer seminars/workshops targeting the ICT industry, to promote immigration as an employment option and highlight the value of employing skilled migrants.	DEPARTMENT OF LABOUR	2008–09.	<b>Expanded</b>
<b>Implement the Digital Technology Guidelines</b> for teaching years 11–13, to ensure that more students leave secondary school with specialist digital technology skills to start them on the ICT practitioner career pathway.	MINISTRY OF EDUCATION	2007–10.	<b>Ongoing</b>
<b>Promote digital careers and skills</b> through the National ICT Skills Collaboration Initiative.	DEPARTMENT OF LABOUR, MINISTRY OF ECONOMIC DEVELOPMENT, MINISTRY OF EDUCATION, CAREER SERVICES, TERTIARY EDUCATION COMMISSION, WITH ICT INDUSTRY AND TRAINING ORGANISATIONS	2008 onwards.	<b>Ongoing</b>





ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
<p><b>Match tertiary courses to industry needs.</b> The Tertiary Education Commission's nationwide stakeholder engagement and regional facilitation processes are ensuring tertiary education organisations work more closely with business, iwi and community to recognise and meet ICT skill needs and sector trends.</p>	<p>TERTIARY EDUCATION COMMISSION, WITH TERTIARY EDUCATION ORGANISATIONS, INDUSTRY, IWI AND COMMUNITY GROUPS</p>	<p>2008–11.</p>	<p>Ongoing</p>
<p><b>New Zealand Skills Strategy</b> includes ongoing work to address skills issues, including in the ICT sector, and the need to better use and develop ICT skills in the workplace. A range of initial partnerships between firms, tertiary institutions and others are being investigated to explore building management and leadership capability in firms. One partnership is likely to involve the ICT sector, with a possible focus on increasing the capability of senior management in small high-tech businesses clustered within a region.</p>	<p>DEPARTMENT OF LABOUR, MINISTRY OF ECONOMIC DEVELOPMENT, INDUSTRY TRAINING FEDERATION</p>	<p>2008–09.</p>	<p>Ongoing</p>

# CONFIDENCE

Businesses, organisations and individuals need to trust digital networks so they can use them with confidence.

## GOAL

**SECURE AND TRUSTED DIGITAL NETWORKS AND UNIVERSAL UNDERSTANDING OF ONLINE SAFETY, SECURITY AND PRIVACY ISSUES.**

## TARGETS

- By 2012, fewer than five per cent of households will experience loss or damage by a virus or other malware.
- By 2012, fewer than one per cent of individuals will be victims of fraudulent ICT activity that results in some loss.
- By 2012, more than 95 per cent of businesses will use basic ICT security measures (virus protection, firewall, anti-spyware software).
- By 2012, fewer than 10 per cent of businesses will experience one or more ICT security attacks.<sup>15</sup>

## SHARED CHALLENGES

- Ensure the security of digital infrastructure and networks.
- Ensure universal awareness of online safety, security and privacy issues.
- Support parents to become confident about how to keep their children safe online.
- Enhance the security of digital information.
- Improve online policing and enforcement of laws relating to privacy and cybercrime.
- Promote understanding about how to manage digital identities and personal information online.

<sup>15</sup> Information about these targets is gathered by Statistics New Zealand and published in the regular *Information and Communication Technology in New Zealand* report.



Users need a high level of assurance that the digital infrastructure and networks are reliable and secure, that private information and sensitive data held online is protected, that their online experience will be safe and secure, and that government law enforcement agencies are well-equipped to combat cybercrime.

As well as providing opportunities, more online access increases children’s vulnerability to online dangers, illegal content and bullying – and exposes businesses to cyberattacks and security breaches. Users need to be aware of safety, security and privacy issues, and take appropriate action to protect themselves.

**Ensure universal awareness of online safety, security and privacy issues: Actions**

ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
<b>Increase support for NetSafe</b> to extend the promotion of its NetBasics website, small business toolkit, parent cybersafety training, and cyberbullying prevention programme.	MINISTRY OF EDUCATION	2008 onwards.	<b>Expanded</b> Funding of \$700,000 has been allocated for 2008/09.
<b>Digital Child Exploitation Filtering System.</b> The Digital Child Exploitation Filtering System is a voluntary system that allows internet service providers to prevent their customers accessing websites that portray children being sexually abused. The system blocks access to websites that are on a list of filtered websites maintained by the Department of Internal Affairs. The system does not record the Internet Protocol (IP) address of the computer of persons seeking to access the websites.	DEPARTMENT OF INTERNAL AFFAIRS	2008 onwards.	<b>Expanded</b>

# CONFIDENCE

## Ensure the security of digital infrastructure and networks: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
<b>Investigate the establishment of an official national Computer Emergency Response Team (CERT)</b> to coordinate defence against and responses to cyberattacks across New Zealand.	INTERNETNZ, MINISTRY OF ECONOMIC DEVELOPMENT	Decision to be made in 2009.	<b>New</b> Funding options may be developed depending on the outcome of the CERT investigation.
<b>Improve New Zealand's cybersecurity threat prevention, detection and response capability for critical infrastructure</b> , including resourcing the Centre for Critical Infrastructure Protection (CCIP).	STATE SERVICES COMMISSION, GOVERNMENT COMMUNICATIONS SECURITY BUREAU	2008 onwards.	<b>Expanded</b> Funding options to be developed.

## Enhance the security of digital information: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
<b>Enact the Privacy (Cross-Border Information) Amendment Bill</b> to protect personal information provided from offshore and held in New Zealand.	MINISTRY OF JUSTICE	2008-09.	<b>Ongoing</b>



### Enforce privacy and cybercrime law: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
Implement the APEC Pathfinder initiative to promote international cross-border cooperation amongst privacy enforcement authorities.	OFFICE OF THE PRIVACY COMMISSIONER	2008.	Ongoing
Implement the NZ eCrime Strategy.	NEW ZEALAND POLICE	2008 onwards.	Ongoing

**Progress indicator for the NZ eCrime Strategy:**  
The National Cyber Crime Centre (NC3) will be established in 2009.

# CONTENT

Content is the raw material of creativity and change. As more content becomes available digitally, it increases opportunities for interactivity, cross-fertilisation of ideas and creative endeavour.

## GOAL

UNLOCK THE CREATIVE POTENTIAL OF NEW ZEALAND'S CONTENT, BOTH DIGITAL AND NON-DIGITAL.

## TARGETS

- By 2012, the number and type of users accessing and reusing New Zealand content created or held by public organisations will be measured.

## SHARED CHALLENGES

- Improve the discoverability and usefulness of New Zealand digital content.
- Protect and preserve digital content for long-term access.
- Increase the application and reuse of licensed New Zealand digital content.
- Develop mechanisms to encourage wider access and use of public sector content, including simple and effective licensing arrangements.
- Derive maximum benefit from open-source software and open standards.
- Understand how to appropriately protect and share mātauranga Māori and new Māori content in the digital world.
- Create greater awareness of licensing and intellectual property issues in the digital world.

# CONTENT



CONTENT

Web 2.0's user-generated content gives whole populations a chance at published creativity, as anyone with an internet connection or access to a digital hub can self-publish or remix content. Accessible, diverse content enables research and knowledge innovations and spurs the creation of new devices and applications, driving growth and employment. Among the plethora of user-generated content, we also need to be aware of the value of and potential for reuse of verifiable, reliable information such as that created or held by public entities.

New Zealand content is important. Our home-grown cultural, scientific and public sector content reflects our knowledge, interests and perspectives as a country, while offering something unique for international audiences. This content is valuable: entrepreneurs can turn data and research into commercial opportunities, creatives can draw on our heritage for inspiration, while local communities and policy-makers can use geospatial information to improve town planning.

However, much of this content is hard to find – it is not digital, or it is not easily accessible via standard search engines, or the entities that hold it have not made it easily available. All public entities need to consider how to make it easy for others to find and use their information. This will mean digitising important New Zealand content, creating standards, building archival and search tools so users can find and use the material and opening up access to content that has been generated or funded by public entities.

There are special issues in dealing with mātauranga Māori – the body of Māori traditional knowledge. These include control of the use of and access to certain kinds of knowledge once it has been digitised and ensuring that knowledge is treated appropriately when it is shared and moved outside its cultural context.

Digital Strategy 2.0 draws on New Zealand's internationally recognised Digital Content Strategy, and builds on the challenges and actions presented in that document.

# CONTENTS

## Expand digital access to public sector and publicly held content: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
<b>Implement large-scale digitisation</b> by using the Digital New Zealand framework to coordinate and prioritise the digitisation of significant and important publicly held content for reuse.	NATIONAL LIBRARY OF NEW ZEALAND	2009–11.	<b>New</b> Funding options to be developed.
<b>Accelerate the implementation of the New Zealand Geospatial Strategy</b> by joining up New Zealand's geospatial resources so people can access and benefit from the wealth of existing geospatial information for free or at minimal cost.	NEW ZEALAND GEOSPATIAL OFFICE (LAND INFORMATION NEW ZEALAND)	2008 onwards.	<b>Expanded</b> Funding options to be developed.
<b>Implement the e-research programme</b> to improve the ability of researchers to access New Zealand's publicly funded research.	MINISTRY OF RESEARCH, SCIENCE AND TECHNOLOGY	2008–10.	<b>Expanded</b> Funding of \$4.2m has been allocated.
<b>Progress indicator for the e-research programme:</b> Open access to New Zealand's publicly funded research by 2010.			
<b>Review the policy framework for government-held information</b> to make sure that the principles and implementation of the framework support increasing opportunities for individuals, communities, businesses and government itself to use and reuse reliable public sector information to support New Zealand's economic transformation agenda in the 21st century.	STATE SERVICES COMMISSION	2008–10.	<b>Ongoing</b>
<b>Progress indicator for review of policy framework for government-held information:</b> By 2010, decisions on licensing government-held information for reuse will be made.			



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**Improve the discovery and usefulness of New Zealand digital content: Actions**

ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
<p><b>Use the Digital New Zealand programme to collect together important New Zealand digital content</b> – for example, content from libraries, community groups and public sector organisations – that may not currently be easy to find using standard online search engines. The programme will also build smart search and discovery tools and make them freely available for the public. Taken together, these initiatives will mean that important New Zealand content is much easier to find and use.</p>	<p>NATIONAL LIBRARY OF NEW ZEALAND</p>	<p>2008–12.</p>	<p>Ongoing</p>

**Progress indicator for Digital New Zealand:**  
 By 2010, search and discovery tools will be in public use.

# CONTENTS

## Protect and preserve digital content for long-term access: Actions

ACTIONS	RESPONSIBLE AGENCY	TIMING	STATUS
<p><b>Intellectual and cultural property workplan.</b> Orphan works review. Raise general awareness about the issues for creators and users of intellectual property in the digital world. Examine issues related to the needs and aspirations of Māori to protect and promote mātauranga Māori.</p>	MINISTRY OF ECONOMIC DEVELOPMENT	2008 onwards.	Ongoing
<p><b>Launch the Digital Continuity Strategy</b> to ensure that electronic public records are appropriately maintained by government agencies and are accessible as public archives for as long as they are needed.</p>	ARCHIVES NEW ZEALAND	2009.	Ongoing
<p><b>Complete the National Digital Heritage Archive</b> to collect, preserve, store and enable access to New Zealand-published born-digital content.</p>	NATIONAL LIBRARY OF NEW ZEALAND	Operational by 2010.	Ongoing
<p><b>Review audiovisual archiving arrangements.</b> Review of institutional arrangements for the preservation of audiovisual content, including agency functions and responsibilities for archiving.</p>	MINISTRY FOR CULTURE AND HERITAGE	2008.	Ongoing
<p><b>Review the Copyright Act every five years.</b></p>	MINISTRY OF ECONOMIC DEVELOPMENT	Next review will be 2011.	Ongoing

# APPENDIX 1: MONITORING AND EVALUATION FRAMEWORK

## MONITORING PROGRESS TOWARDS ACHIEVING OUR CONNECTION, CAPABILITY, CONFIDENCE AND CONTENT GOALS

Each of the four enablers – connection, capability, confidence and content – is accompanied by high-level targets. These targets will help measure the progress we all make towards achieving the goals.

Where applicable, the government actions that support the four enablers have time-bound progress indicators attached to them. These provide accountability about the timeframe and purpose of government actions.

The Ministry of Economic Development will update and report on progress against these targets and indicators every two years, starting in 2010.

## GATHERING BASELINE INFORMATION ABOUT DIGITAL DEVELOPMENT IN NEW ZEALAND

Digital Strategy 2.0 moves beyond looking at establishing the necessary enablers for a digital world towards opportunities for action, where digital development can contribute to a prosperous, sustainable and vibrant society.

There are a range of indicators that can be used to monitor our progress towards a prosperous, sustainable and vibrant society. However, there is not currently enough useful baseline information that is directly relevant to New Zealand to confidently evaluate the effect of the Strategy on high-level outcomes.

Over the next 18 months, the Ministry of Economic Development will research and write the first digital development baseline monitoring report. This will create an effective monitoring and evaluation framework to inform future policy and priorities in the area of digital development.

The baseline monitoring report and other evaluation initiatives will be undertaken by the Ministry of Economic Development in conjunction with the Digital Strategy Steering Group and the Digital Development Council.

## APPENDIX 2: THE DIGITAL DEVELOPMENT COUNCIL AND FORUM

In May 2008 the Digital Development Council was established. The Council will set up the Digital Development Forum by September 2008. These two bodies make up the Digital Development Group, which is charged with creating and implementing initiatives to advance digital development throughout the country. It will be an important partner with government to guide the implementation of Digital Strategy 2.0.

The Forum will bring together a range of organisations with a common interest in digital development, including ICT users, professionals and suppliers; representatives of wider business interests; local government; Māori; environmental groups; and community, voluntary and cultural groups. The Forum will set priorities, engage with Ministers and nominate future members to the Council (after 12 months). It will provide strategic advice and direction to the Council and government on digital matters.

The Digital Development Council is the operational arm of the Digital Development Group. It has an independent chair, Fran Wilde, and 10 members representing organisations and sectors with an interest in New Zealand's digital development.<sup>16</sup> The initial membership has been appointed, but, in future, the Council members will be elected by the Forum. The Council will engage with the Forum on strategic priorities and seek funding from government and other sources for a work programme to implement these strategic priorities.

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<sup>16</sup> Telecommunications Users Association of New Zealand, InternetNZ, New Zealand Computer Society, Women in IT Group, 2020 Communications Trust, Local Government New Zealand, Business New Zealand and Te Huarahi Tika Trust, as well as representatives from the ICT industry and the community and voluntary sector, who have not yet been formally appointed.

## APPENDIX 3: SUPPORTING PRODUCTIVITY IN DIGITAL STRATEGY 2.0

The table below shows issues impacting productivity identified in *Productivity perspectives: a New Zealand perspective*<sup>17</sup> and where each issue is addressed in Digital Strategy 2.0.

ISSUE	PRIORITIES IN DIGITAL STRATEGY 2.0
<b>Global connectedness through trade and immigration</b>  <b>Innovation</b>  <b>Research and development</b>	Supported by the actions in the section 'Smarter through digital: the economy' (pages 13–19).
<b>Infrastructure</b>	Facilitate investment in widespread, fast, reliable broadband (page 32). Facilitate transition to digital broadcasting (page 35). Ensure the security of digital infrastructure and networks (page 42).
<b>Human elements – skills, education, governance and managerial capability</b>	Ensure universal digital literacy (page 37). Strengthen the workforce for the local ICT industry (page 38). Ensure universal awareness of online safety, security and privacy issues (page 41).
<b>Secure and transparent property rights</b>	Enhance the security of digital information (page 42). Enforce privacy and cybercrime law (page 43). Protect and preserve digital content for long-term access (page 48).
<b>Regulatory policy</b>	Ensure appropriate access to platforms, networks and content (page 34).

<sup>17</sup> *Productivity perspectives: a New Zealand perspective*.  
Business NZ, 2006.



→ Visit [www.digitalstrategy.govt.nz](http://www.digitalstrategy.govt.nz) for a list of references, case studies and information about the initiatives in this Strategy.



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