ECONOMIC AND SOCIAL COUNCIL

**Nineteenth United Nations Regional Cartographic
Conference for Asia and the Pacific
Bangkok, 29 October – 1 November 2012
Item 6(b) of the provisional agenda
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Geographical information management in addressing national,
regional and global issues.**

New Zealand Country Report

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New Zealand Country Report

For the Nineteenth United Nations Regional
Cartographic Conference for Asia and the Pacific

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Report Summary

This country report for New Zealand is based on the report recently presented at the Second Session of the Committee of Experts on Global Geospatial Information Management (GGIM) in New York in August 2012.

Since the Eighteenth United Nations Regional Cartographic Conference for Asia and Pacific in 2009 New Zealand has devoted significant effort to the establishment of a national spatial data infrastructure (SDI). This work is being led by the New Zealand Geospatial Office (NZGO), and addresses issues of geospatial strategy, governance, data creation, stewardship and publication, and provision of a standards-based interoperable environment within which location-based data and information can be easily shared.

Further background is provided in the New Zealand country report produced for the First Session of the Committee of Experts on Global Geospatial Information Management in Korea in October 2011[1].

This New Zealand country report focuses primarily on 'promoting data sharing, accessibility and dissemination' as a key issue that has seen significant work occur in New Zealand over the last 9-12 months. There is a strong linkage between this and the support that can be given to it through the development of the national SDI. In the context of that issue, the following areas of work are described and discussed below:

• Opening up New Zealand Government data and information
• Auckland spatial planning
• Christchurch Earthquake Rebuild.

Comments are also provided on New Zealand's approach to national fundamental data. This relates to the GGIM Inventory issue of 'Assuring the quality of geospatial information'. New Zealand presented on aspects of this issue at the GGIM Hangzhou Forum in May 2012.[2]

This report concludes by providing links from the GGIM October 2011 country report to further online geospatial examples from New Zealand and provides information again about New Zealand's involvement with regional and international bodies.

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[1] http://ggim.un.org/docs/meetings/Forum2011/CRP%20no.%2018_NZ%20Country%20Report.pdf
[2] http://ggim.un.org/Hangzhou%20forum.html

Opening up New Zealand Government data and information

New Zealand has a strong history of open and transparent government that is internationally recognised. One of the pillars of open and transparent government is open government data and information. New Zealand's Open Government Information and Data Re-use work programme supports this pillar of open and transparent government and is a collaborative programme with users, the open data community, and suppliers. Land Information New Zealand leads the work programme which aligns strongly with, and is a practical example of, the GGIM identified issue of 'data sharing, accessibility and dissemination'. Geospatial data is only one data component of the work programme, although a significant component.

Evidence suggests that opening up government information for re-use has considerable and widespread benefits to government, industry and the public. At the same time, technological and cultural advances also make it cheaper and easier to do.

Declaration on Open and Transparent Government

In August 2011, the New Zealand Cabinet approved 'The Declaration on Open and Transparent Government'. The Declaration states:

Building on New Zealand's democratic tradition, the government commits to actively releasing high value public data (public data refers to non-personal and unclassified data).

The government holds data on behalf of the New Zealand public. We release it to enable the private and community sectors to use it to grow the economy, strengthen our social and cultural fabric, and sustain our environment. We release it to encourage business and community involvement in government decision-making.

Through this commitment New Zealand citizens and businesses can expect a more efficient and accountable public sector, more services tailored to their needs, and a greater level of participation in shaping government decisions.

Releasing government data will help create the conditions that align central, regional and local government programmes and business initiatives.

By actively releasing taxpayer funded data we will assist educational, research, and scientific communities and the public to collaboratively build on existing data to gain new knowledge and apply it.

To support this declaration, the government asserts that the data and information it holds on behalf of the public must be open, trusted and authoritative, well managed, readily available, without charge where possible, and reusable, both legally and technically. Personal and classified data and information must be protected.

The New Zealand Cabinet has directed public service and non-public service departments and encouraged State Services agencies to commit to releasing high value public data actively for re-use, in accordance with the Declaration (above) and Principles (below), and in accordance with the New Zealand Government Open Access Licensing (NZGOAL) framework review and release process.[3]

Cabinet has also directed Chief Executives to submit their plans to actively release public data to portfolio Ministers for approval. The Data and Information Re-use Chief Executives Steering Group will report the aggregate plans annually to Cabinet.

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[3] http://ict.govt.nz/guidance-and-resources/information-and-data/nzgoal

The Minister of Local Government has also written to local authorities and Local Government New Zealand informing the local government sector of the decisions above and encouraging councils, where they consider it appropriate, to take a similar approach.

Principles for Managing Data and Information held by the NZ Government

On 8 August 2011, in addition to approving the Declaration on Open and Transparent Government, government approved new principles for managing the data and information it holds.

The principles below have been developed to ensure high quality management of the information the government holds on the behalf of the public. In summary, government data and information should be open, readily available, well managed, reasonably priced and re-usable unless there are necessary reasons for its protection. Personal and classified information will remain protected. Government data and information should also be trusted and authoritative.

Principles for Managing Data and Information held by the New Zealand Government, approved by Cabinet on 8 August 2011	
Principle	Description
Open	Data and information held by government should be open for public access unless grounds for refusal or limitations exist under the Official Information Act or other government policy. In such cases they should be protected.
Protected	Personal, confidential and classified data and information are protected.
Readily Available	Open data and information are released proactively and without discrimination. They are discoverable and accessible and released online.
Trusted and Authoritative	Data and information support the purposes for which they were collected and are accurate, relevant, timely, consistent and without bias in that context. Where possible there is an identified authoritative single source.
Well Managed	Data and information held and owned by government: – effectively belong to the New Zealand public – are a core strategic asset held by government as a steward on behalf of the public; and – should only be collected or generated for specified public policy, operational business, or legislative purposes. Agencies are stewards of government-held data and information and must provide and require good practices which manage the data and information over their life-cycle, including catering for technological obsolescence and long-term preservation and access. Good practices also include collaborating with other agencies and the public, facilitating access, strengthening awareness, and supporting international cooperation. Agency custodians must implement these practices on a day-to-day basis.
Reasonably Priced	Use and re-use of government held data and information is expected to be free. Charging for access is discouraged. Pricing to cover the costs of dissemination is only appropriate where it can be clearly demonstrated that this pricing will not act as a barrier to the use or re-use of the data. If a charge is applied for access to data, it should be

		transparent, consistent, reasonable and the same cost to all requestors.

	Reusable	Data and information released can be discovered, shared, used and re-used over time and through technology change. Copyright works are licensed for re-use and open access to and re-use of non-copyright materials is enabled, in accordance with the New Zealand Government Open Access and Licensing framework.
		
		Data and information are released:
		  – at source, with the highest possible level of granularity
		  – in re-usable, machine-readable format
		  – with appropriate metadata; and
		  – in aggregate or modified forms if they cannot be released in their original state.
		
		Data and information released in proprietary formats are also released in open, non-proprietary formats.
		Digital rights technologies are not imposed on materials made available for re-use.

In June 2012 Cabinet approved the release of the first Report on Adoption of the Declaration on Open and Transparent Government.[4]

Key findings are that businesses are starting to re-use government public data innovatively by creating new smartphone applications, mashing up open government data from multiple departments and the private sector, and using open data web services to reduce cost and processing. They are also partnering with government to host and deliver government data.

Government departments and businesses are also working in new ways to share data, for example, the land zone and technical category data released publicly to assist with the Canterbury earthquake recovery.

All government departments are moving to incorporate the Declaration into their core business. All have assigned senior staff to lead this work and none reported insurmountable barriers to adopting the Declaration.
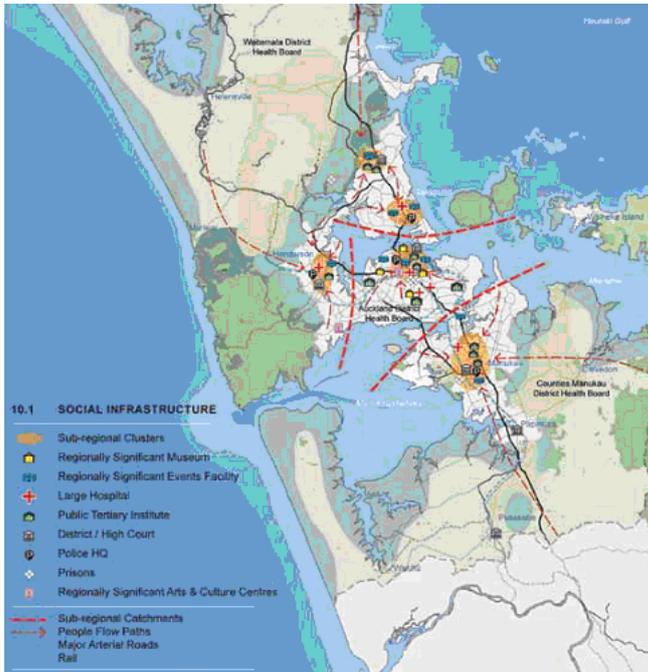

Auckland spatial planning

Spatial data describes the location and names of features beneath, on or above the earth's surface. It is digital data that has a location, can be shown in the form of an electronic or paper map, and is able to be referenced with other spatial data.

Being able to connect different digital datasets by mapping their location provides a key part of any evidence base for spatial planning and analysis purposes, to inform better decision-making and plan implementation.

New Zealand's National Infrastructure Plan subdivides infrastructure into the major sectors of: transport, telecommunications, energy, water and social infrastructure. Spatial data supports planning, decision-making and implementation in all of these sectors. One example where spatial data supports Social Infrastructure is the Auckland Spatial Plan which the Auckland Council adopted the on 29 March 2012.

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[4] http://ict.govt.nz/programme/opening-government-data-and-information/2012-report-adoption-declaration

10.1 SOCIAL INFRASTRUCTURE

- Sub-regional Clusters
- Regionally Significant Museum
- Regionally Significant Events Facility
- Large Hospital
- Public Tertiary Institute
- District / High Court
- Police HQ
- Prisons
- Regionally Significant Arts & Culture Centres
- Sub-regional Catchments
- People Flow Paths
- Major Arterial Roads
- Rail

Gathering relevant spatial data as part of a robust evidence base for the plan's development, consultation and decision-making phases required a collaborative effort from central and local government as well as other organisations.

Land Information New Zealand coordinated the input of central government spatial data for use in the Auckland Spatial Plan. For instance, the Ministry of Health provided location data for hospitals and medical practices as well as for proposed integrated family healthcare centres and their catchments. District Health Board survey data was also supplied giving health related statistics for Board area populations.

The Auckland Spatial Plan references the following goals, opportunities and success indicators from the National Infrastructure Plan which relate to the provision of social infrastructure:

- that central and local government are well coordinated and exploit synergies in the building and delivery of services
- that central government consider the broader strategic outcomes sought from the management of and investment in social infrastructure assets, including a spatial and network dimension
- that spatial coordination of government investment, including co-location of services (particularly in Auckland), is increased.

The practical implementation of the GGIM identified issue of 'sharing, accessibility and dissemination of spatial data' has been essential, and will continue to be essential, in supporting Auckland Spatial Plan social infrastructure work where spatial dimension and spatial coordination are key drivers.

The implementation phase of the Auckland Spatial Plan will use many mechanisms. One of the key mechanisms will be a unitary plan that will replace the existing district and regional plans from the former city, district and regional councils. The unitary plan will contain guidance and rules about how land can be used and developed. It will be an online plan only and is proposed to contain over 120 layers of spatial data. Some of this spatial data will be needed from central government - through online web services using spatial standards that make such data more accessible and interoperable.

Note: The map extract above is from the Auckland Spatial Plan

Christchurch Earthquake Rebuild

On 22 February 2011, a magnitude 6.3 earthquake occurred in Christchurch. Extensive areas of the central business district and suburbs suffered significant damage to infrastructure - transport, telecommunications, energy, water. Geospatial data sharing and accessibility among local councils, government agencies and utility companies has been key to ensuring the infrastructure rebuild happens efficiently and effectively.

The Alliance forming the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) is responsible for the rebuild of the road network for Christchurch. This is in conjunction

with the 3 main water networks (Water Mains, Waste Water & Storm Water). A large majority of these networks fall within the road corridor so the co-ordination of the work across these networks is a high priority.

The initial work carried out by the GIS team in SCIRT was to process all the damage registers that capture all damages on these networks.

Transport

The GIS extracts below show the damage points from the Council Road Asset Management system (RAMM), and then the SCIRT condition criteria against the road centreline is included to provide inputs into the project prioritisation work. Due to the scale of the rebuild efforts, the processing and visualisation of these registers and subsequent analysis is a critical part of the Alliance needs.

Damage points & assessment (roads)   Field photos from assessment work
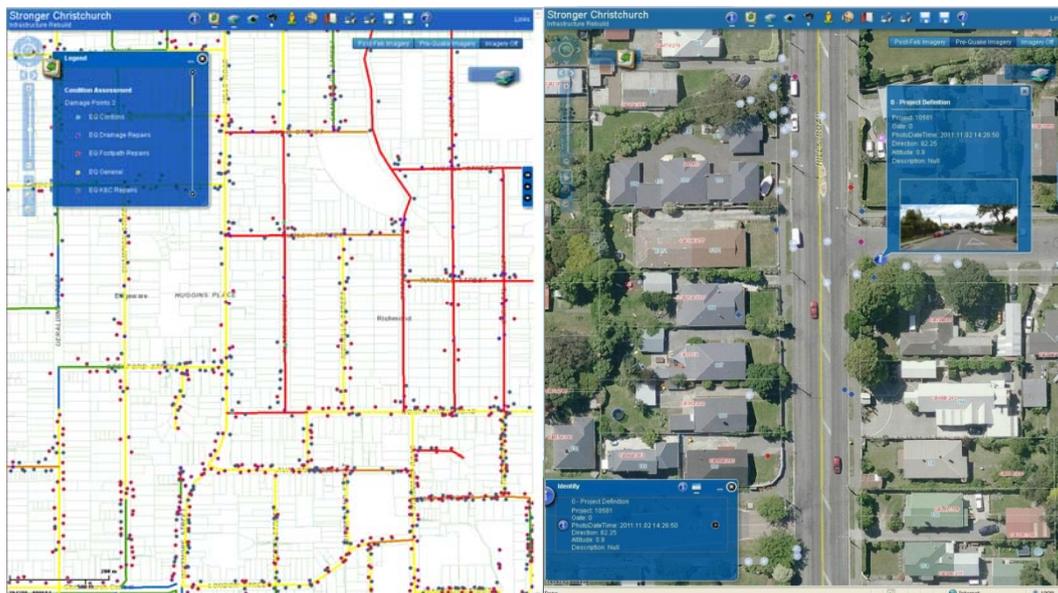
Multi criteria analysis city wide   Concept and detailed design view
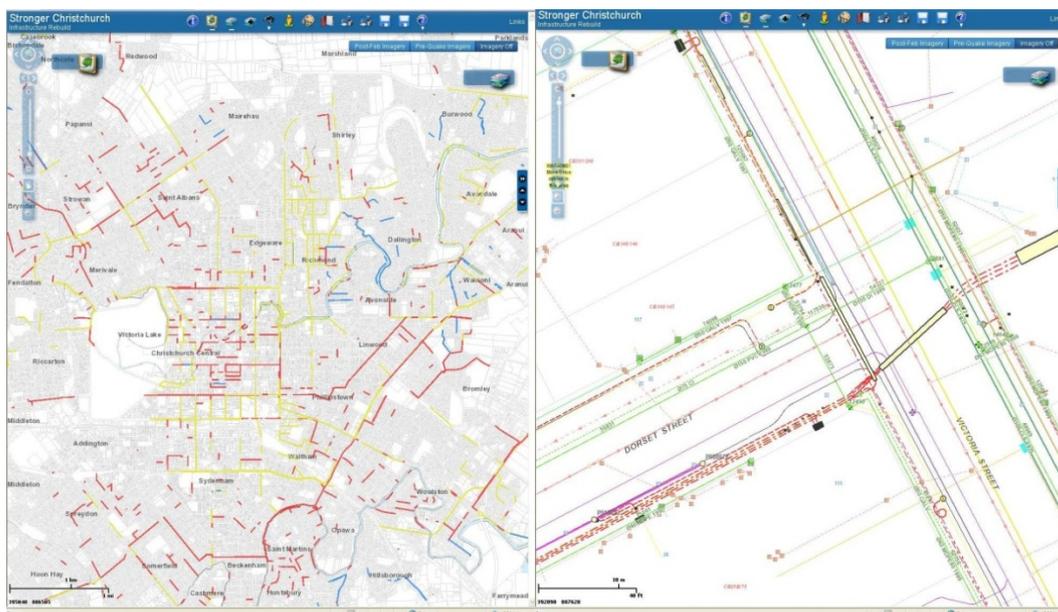
In summary:

- managing the damage registers and connecting to spatial features (road centreline)
- roads are just one of the inputs into Multi criteria analysis (MCA) to prioritise project areas
- the GIS provides a detailed view of all underground infrastructure in the road corridor
- GIS system provides all property data associated with the road corridor
- GIS Systems supplies project areas to the traffic management and planning sections of SCIRT.

Telecoms

The Alliance works alongside the various Telecommunications organisations in Christchurch, and the Alliance construction partners have a number of forums to ensure works being carried out across the city are co-ordinated with these organisations. The GIS team have agreements in place with all the Telecommunication organisations to hold their asset data and present with the SCIRT online spatial system. The team is currently working to obtain the Telecommunication organisation's work programs to inform the overall rebuild program.

Telecommunications infrastructure

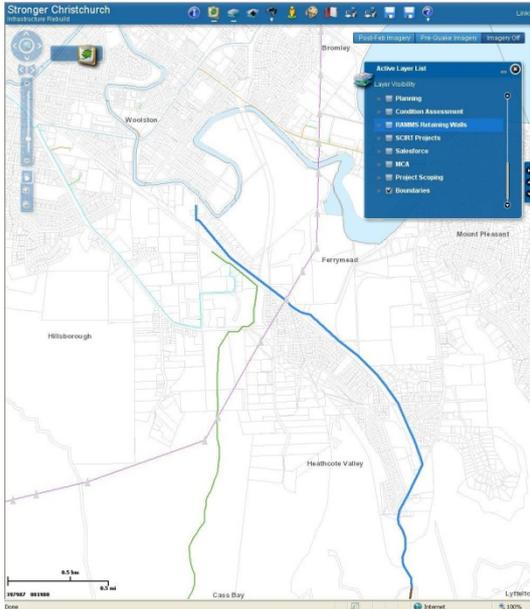Projects identified over infrastructure

In summary:

- regular telecommunications spatial (GIS) data supplied to SCIRT under agreements
- processed and available to project team for planning and design work
- used when carrying out concept & detailed design works
- used to help co-ordinate the sharing of trench works for all the networks
- working on single operating picture for forward works programs.

Energy

As with the Telecommunication organisations, the Alliance works alongside the Energy companies and the Alliance construction partners have a number of forums to ensure works being carried out across the city are co-ordinated with these organisations. The GIS team have agreements in place with all the Energy companies to hold their asset data and present with the SCIRT online spatial system.
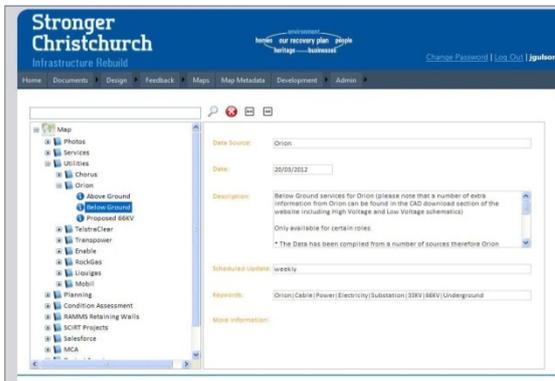
Large power generators infrastructure

Detailed power infrastructure with health & safety notifications

Utilities metadata page

In summary:

- regular power & gas utilities spatial (GIS) data supplied to SCIRT under agreements
- processed and available to project team for planning and design work
- used when carrying out concept & detailed design works
- used to help co-ordinate the sharing of trench works for all the networks
- working on single operating picture for forward works programs
- the GIS system provides additional health and safety messages that come from the utilities.
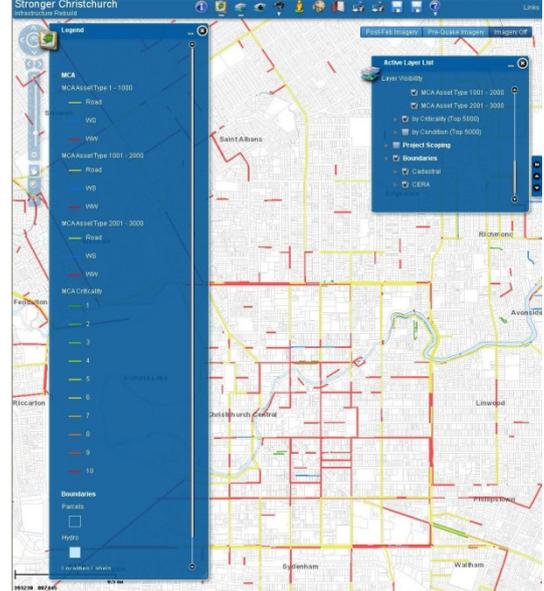
Water

The SCIRT GIS team is involved in all aspects of the Water networks rebuild efforts, from the automation of field assessment data coming into the project to managing the supply of the final as-built data once the network has been built.
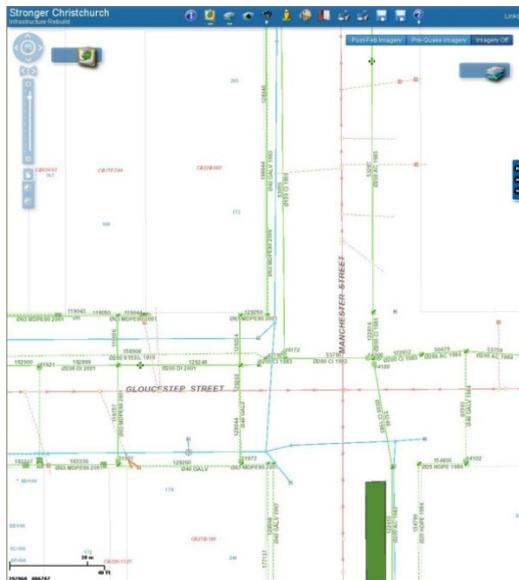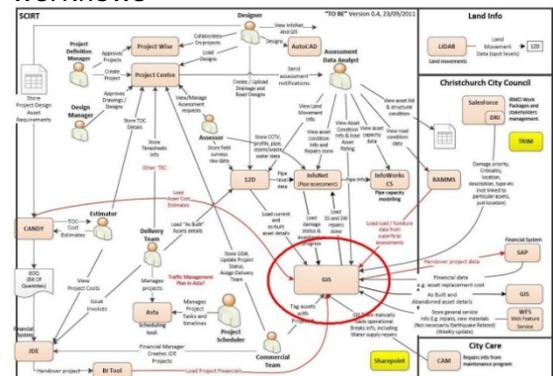
Catchment planning

Detailed assessment for project scoping

As-built networks for detailed design

GIS key component to the project workflows

In summary:

- SCIRT have a live access to the Christchurch City Council water network GIS asset register
- all conditions of assets are recorded back to the GIS asbuilt asset
- multi criteria analysis has been applied across all three water networks
- all water network asset are associated with 'projects' and are tagged in the projects database for tracking
- all detailed design and as-built (CAD) network data is connected to the GIS
- final as-builts are supplied via the GIS team using web services to Council system.

- GIS team manages all as-builts from the delivery team and carry out analysis over this data for project management purposes.

Note: The above information was provided by SCIRT.

New Zealand approach to national fundamental data

Another UN GGIM Inventory issue is 'assuring the quality of geospatial information' with a subtopic entitled 'articulate the specific role Governments have in providing quality, current and authoritative national geospatial information as a valuable and critical enabler for effective decision-making'. Some comments about the New Zealand approach to national fundamental data are provided below to help inform discussion around this issue.

As stated in the 2011 New Zealand country report, a national spatial data infrastructure (SDI) will give New Zealanders the best possible access to geospatial information held by a wide range of data owners across all industry sectors. It will improve government agencies' collection, management and delivery of geospatial information, thus reducing duplication and increasing cost-efficiencies and economies of scale.

The greatest gains will come from the transformative uses interoperable geospatial data can be put to. For government, combining different types of data more quickly and cheaply will enhance decision-making. In New Zealand's economic sectors, more entrepreneurial use of data will act as a catalyst for greater growth and innovation.

With reference to relevant international work, thirteen national fundamental data themes have been identified as the base building blocks of an effective New Zealand SDI. These are the groups of fundamental datasets that are most regularly used and which will provide greater innovative use of geospatial information in New Zealand. They are:

- the geodetic system, which provides the underlying positioning framework for accurate and complete measurements and location of New Zealand's physical features
- the cadastre, which shows the spatial extent of ownerships of land
- addresses, such as physical and postal addresses
- transportation networks
- geographic names, such as official or recorded place names
- elevation, such as the digital elevation model, which shows ground surface terrain
- imagery, such as satellite and aerial imagery
- administrative units, areas for local and central governance
- hydrology, which is the study of the movement, distribution, and quality of water throughout the Earth
- hydrography, the charting of surface waters
- culture, for example datasets that define built-up areas, fences, and built infrastructure
- vegetation, such as forested areas
- natural features, such as glaciers, geothermal areas, or volcanoes.

As each theme is a grouping of individual datasets, there may be a steward for a theme of datasets but in practice, it's more likely that datasets will have their own stewards. Stewards are responsible for ensuring that appropriate data management policies and standards are developed and maintained on behalf of government, and in keeping with national benefits.

The New Zealand Geospatial Office will support each data steward in their role of applying the relevant standards and licensing to their datasets. Framework data

steward and custodian guidelines have been drafted and are being tested with government agencies Statistics New Zealand and Land Information New Zealand.

Three datasets from the thirteen data themes have been identified as priorities and have received Treasury funding for business case development. The datasets are the cadastre (property boundaries), imagery and road transportation. This work will help develop the rules and responsibilities for data and data owners.

For instance, Land Information New Zealand (LINZ) has the steward role for imagery. Stakeholders have been engaged and are seeing the value of open contract procurement and are working with LINZ on identifying and comparing options for storage and distribution of imagery. The economic value of imagery in New Zealand has been proven through the completion of an economic report.[5]

A business case is also being developed for a bundle of geospatial projects to assist the Canterbury Earthquake Recovery Programme but which will also help accelerate the development of New Zealand's SDI. One of these projects 'property data management framework' will seek to resolve well-known underlying issues in a linked grouping of fundamental datasets in the Canterbury area and establish robust processes that can be applied nationally. The datasets broadly encompass addresses (physical and postal), building, cadastral, title and valuation data.

In addition, New Zealand continues to work with Australia under the ANZLIC umbrella (see below) on aspects of fundamental data theme description and rationalisation.

New Zealand Online Geospatial examples

Examples are provided below of New Zealand online geospatial systems that increasingly include SDI-compliant web services. Many of these systems are implemented by New Zealand geospatial companies, some of whom also operate outside New Zealand.

LINZ Data Service

LRIS – Environment and Land Data from Landcare Research

Auckland City Council viewer

Wellington City Council

Christchurch Recovery viewer

Walking Access Mapping System

New Zealand companies which supply geospatial related services outside New Zealand include:

Beca

Critchlow

GNS Science

Landcare Research

LandZone International

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[5] http://www.linz.govt.nz/topography/national-imagery-coordination

[NIWA](#)

[NZ Aerial Mapping Ltd](#)

[NorthSouth GIS NZ](#)

[Terralink International](#)

[TracMap NZ Ltd](#)

For a list of New Zealand geospatial consultants contact the SIBA Secretary at –
secretary@siba.org.nz

Regional and International Cooperation

New Zealand is a member of the Australia New Zealand Land Information Council (ANZLIC)[6] and is represented on the Council by the Chief Executive of LINZ. ANZLIC is a joint initiative of the Australian and New Zealand Governments, and the State and Territory Governments of Australia.

There can be many barriers to information access such as organisational boundaries between agencies, jurisdictions and nations; lack of consistent information standards; and use of incompatible or inappropriate technologies. ANZLIC is encouraging development of consistent government policies within Australia and New Zealand to minimise these barriers wherever possible, and is working with all government jurisdictions and the private sector to develop policies and guidelines which adopt international best practice which is relevant to conditions found by practitioners and users of spatial information in both countries.

A key ANZLIC initiative is the Australia New Zealand Spatial Marketplace demonstrator (ANZSM). This is a demonstrator which is being built in an open source environment on the OpenGeo suite, and will be an umbrella market place that can link all existing datasets. Other work is carried out by a standing committee of ANZLIC - the Intergovernmental Committee for Surveying and Mapping (ICSM)[7].

A number of New Zealand government agencies and private companies are also members of the Cooperative Research Centre for Spatial Information (CRCSI)[8]. The CRCSI is a joint venture of Australian and New Zealand government, academic and private sector organisations using spatial technologies to solve complex problems of national significance.

New Zealand also contributes to a number of global initiatives and professional associations related to geospatial information:

- International Hydrographic Organisation (IHO)
- International Federation of Surveyors (FIG)
- International Cartographic Association (ICA)
- International Association of Geodesy (IAG)
- Group on Earth Observations (GEO)
- International Society for Digital Earth (ISDE)
- International Standards Organisation (ISO)
- Open Geospatial Consortium (OGC)
- International Steering Committee for Global Mapping (ISCGM)

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[6] http://www.anzlic.org.au/
[7] http://www.icsm.gov.au/
[8] http://www.crcsi.com.au/Home

- United Nations Regional Cartographic Conferences for Asia-Pacific (UN-RCCAP)
- United Nations Group of Experts for Geographic Names (UNGEGN).

Further Information

New Zealand Geospatial Strategy website - www.geospatial.govt.nz

Opening up Government Data and Information -
www.ict.govt.nz/programme/opening-government-data-and-information

Auckland Spatial Plan – www.auckland.govt.nz

Stronger Christchurch Infrastructure Rebuild Team –
www.strongerchristchurch.govt.nz/

New Zealand Geospatial Office contact – nzgo@linz.govt.nz