



# Terms of Reference

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Spatial data standards for New Zealand:  
Current state and future roles

## **Purpose**

This paper describes a project to:

- Assess how spatial data standards for New Zealand are created, used and maintained
- Scope an efficient and effective role for government in spatial data standards.

## **Background and problem being addressed**

The work is a project in the initial phase of the New Zealand Geospatial Strategy work programme approved by the Geospatial Executives Group on 26 September 2008. Spatial data standards provide a systematic framework for ordering, describing and transferring spatial data.

These standards (among other things):

- Model spatial data (so that for instance, features described as "road" , "two lane road" or "bridge" have specific meanings and clear defined relationships to each other)
- Specify metadata (which describe spatial data) so that people and machines can get accurate systematic information about what sets of spatial data actually contain
- Specify how spatial data can be transferred across the internet (so that machines can request and provide spatial data seamlessly).

Some spatial data standards are high level abstract standards and can apply very widely. Some standards from the International Standards Organisation describe how spatial data standards should be constructed or provide high level dictionaries for them. Other standards (which conform to the higher ones) can apply to New Zealand or to a specific domain such as emergency services or earth sciences.

Spatial data standards allow spatial data to be used and consumed more efficiently. It is not clear though whether there is an efficient level of investment in spatial data standards for New Zealand, or exactly where an optimal level of investment would be targeted.

Companies and individuals in New Zealand do contribute to work on spatial data standards, but this contribution is likely to be suboptimal because:

- Many of the benefits of standards are widely spread and are non-rival and non-excludable and essentially public goods
- The transactions costs involved in working on standards may be so great that the activity is thinly spread or poorly coordinated.

Other forms of market failure also mean that too little investment in spatial data standards is made through market or voluntary mechanisms. If there is a case for government involvement in spatial data standards where markets fail, instruments that address that involvement need to be identified and assessed.

In addition, since government holds many of the most important sets of spatial data like topographic, cadastral and hydrographical data, government also needs to consider how it will apply standards to its own spatial data.

Many of the issues about standards can be conceived of in terms of how standards contribute to a spatial data infrastructure. A spatial data infrastructure (SDI) is the collection of technologies, policies, standards and people that allow spatial data to be discovered, accessed and used.

Ideally an SDI allows all people who want to publish, exchange and use spatial data to do so easily and seamlessly. An SDI should meet the needs of many users of spatial data, the public, web developers, government, as well as specialist firms. There have been over 100 initiatives to build SDIs in various jurisdictions. Standards have emerged as a critical factor in whether SDIs succeed.

**The work: scope**

Standards in scope include (but are not limited to); International Standards Organisation (ISO) TC 211 standards, Open Geospatial Consortium (OGC) standards, local implementations of international standards standards, ESA, the ANZLIC metadata profile geospatial standards currently referenced in eGIF, the interface between spatial data standards and generic internet standards.

Processes around spatial data standards in scope include standards formation, representation on bodies that form standards, standards maintenance, applications of international standards, and using implementations to inform the development of spatial data standards support for using spatial data standards.

**Method: how the work will be done**

The work will be done in four phases

1. Data gathering
2. Engagement
3. Analysis
4. Reporting

Note that phase 2 and 3 will occur partly in parallel

Phase	Activity -
1. Data gathering	Mapping: <ul style="list-style-type: none"> <li>• Spatial data standards which exist now or are being developed</li> <li>• The functions that the spatial data standards perform</li> <li>• The organisations responsible for the spatial data standards</li> <li>• Who in New Zealand contributes to the spatial data standards</li> <li>• How spatial data standards are maintained and supported.</li> </ul> Validating the mapping with spatial data standards experts to the point it can be used as the starting point for the engagement phase.

<p>2. Engagement</p>	<p>Develop an engagement plan involving a select group from the spatial information community including for instance:</p> <ul style="list-style-type: none"> <li>• People who currently contribute to standards formation and maintenance and support</li> <li>• Users of geospatial standards, web designers, central and Local govt agencies, CRIs, universities, utilities, major providers of spatial integration services, spatial software vendors, specialist GIS consultants</li> <li>• Government agencies with an interest in the possible role of government, including LINZ, SSC, MED.</li> </ul> <p>There will be an advisory group process involving three meetings with the 12-15 appointed group members.</p> <p>The engagement is intended to elicit:</p> <ul style="list-style-type: none"> <li>• A more accurate complete mapping of: <ul style="list-style-type: none"> <li>▪ Spatial data standards which exist now or are being developed</li> <li>▪ The functions that the spatial data standards perform</li> <li>▪ The organisations responsible for the spatial data standards</li> <li>▪ Who in New Zealand contributes to the spatial data standards</li> <li>▪ How spatial data standards are maintained and supported.</li> </ul> </li> <li>• Views on how the lessons learned in designing and implementing spatial data systems can be fed into standards development</li> <li>• Who can contribute to spatial data standards</li> <li>• Views on how the spatial community can self-organise for work on spatial data standards</li> <li>• The best processes for engaging with users of spatial data standards</li> <li>• Which are the most important developments in spatial data standards</li> <li>• Priorities for work on spatial data standards for New Zealand</li> <li>• Views on what the government's role should be</li> <li>• What spatial data standards and work on them is irrelevant to New Zealand</li> <li>• How much (if any) work on spatial data standards depends on a kind of mutual reciprocity so that work on some spatial data standards (even if not directly relevant) pays off in other areas</li> <li>• Whether there is an increased minimum involvement in spatial data standards work necessary to maintain expertise and engagement in this area.</li> </ul>
<p>3. Analysis</p>	<p>First principles analysis in terms of market failure and instrument choice for government</p> <p>Analogies in how other sectors in New Zealand have dealt with information standards (especially health informatics and education ICT)</p> <p>Approaches to standards in other jurisdictions especially the role of standards in SDIs.</p>

3. Reporting	<p>A report will cover government objectives, problem identification (market failure analysis), current position in New Zealand, international position, and the main options and a preferred option for the role of government (and LINZ) in spatial standards.</p> <p>(The engagement phase will be used to define the current position and refine the options to identify a preferred option for the final report)</p>
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See Annex One for fit with New Zealand Geospatial Strategy, climate and audience, and links with other agencies work.

**Main output: The Final Report**

The main output of the work is a report with 7 sections: purpose, government objectives, problem identification, current position, international position, main options, and preferred option.

PURPOSE

The purpose of the report is to consider and advise on the overall geospatial standards regime with an emphasis on what the regime should be and specifics about roles and responsibilities. It will provide an overview and structure for specific actions in relation to specific standards – how and to what degree government might get involved to adopt or adapt existing geospatial standards, develop new geospatial standards, and then maintain those geospatial standards, for national and international use.

GOVERNMENT OBJECTIVES

This section will set out the elements of the Geospatial Strategy that are reliant on spatial standards to achieve the outcomes identified.

PROBLEM IDENTIFICATION

This section will contain the results of research on market failure relating to geospatial standards that provide the rationale for government intervention.

CURRENT POSITION

This section will set out the current arrangements to adopt, adapt, develop, and maintain geospatial standards across government and the geospatial information community in New Zealand.

INTERNATIONAL POSITION

This section will set out the arrangements used in the United Kingdom, Australia, and the United States of America to deal with meeting government objectives in the geospatial standards area, specifically any involvement in adopting, adapting, developing, and maintaining national and international geospatial standards.

## OPTIONS FOR A ROLE FOR GOVERNMENT

This section will describe the main options available for government's role in the geospatial standards area, specifically the adoption, adaptation, development, and maintenance of geospatial standards.

## PREFERRED OPTION

This section will set out the preferred option for government involvement in the adoption, adaptation, development, and maintenance of geospatial standards. The role of government will be cast in terms of interventions (eg provide, coordinate, promulgate, regulate) and will provide an overview of the resources needed to carry out the role (eg quantum and expertise).

## Reference Group

Reference Group	Karen Burns, Senior Technical Analyst, SSC Brendon Whiteman, Director NZGO Gavin Treadgold, Kestrel Group Greg Drummond, Acting Manager for Business Engagement, LINZ Rob Warner, General Manager, Strategic Development and Innovation Centre, Standards New Zealand Craig Mitchell, Subject Matter Project Manager, Business Solutions Team, Statistics New Zealand
Project Manager	NZGO

## Working on the project

NZGO staff and contractors will deliver the project.

## Timing

A high level timeline appears below.

Project Timing	
Date	Activity/Deliverable
Start 4 March 2009	
Complete by 31 March 2009	Identify and invite advisory group members
Complete by Tuesday 31 March 2009	Research & draft papers for 3 engagement meetings
Complete by Friday 8 May 2009	Run 3 advisory group meetings (8 April, 22 April, 8 May)
Complete by 15 May 2009	Draft report
Complete by Friday 22 May 2009	Finalise & release report

## Annex One

### Fit with New Zealand Geospatial Strategy, climate and audience, and links with other agencies work

#### FIT WITH NEW ZEALAND GEOSPATIAL STRATEGY

Spatial data standards are central to achieving the goals of the New Zealand Geospatial Strategy

#### 4.3 Key principles:

The key principle that has been identified to guide decision-making for achieving the vision in relation to spatial data standards is:

- Geospatial information is collected once to agreed standards to enable use by many.

The data goals also depend on standards goal 5.3

- Ensure the capture, preservation and maintenance of fundamental (priority) geospatial datasets, and set guidelines for non-fundamental geospatial data

The submission by Local Government New Zealand and the E-Local Government Strategy Project Team said "This is a priority intervention. It will promote greater use of geospatial information by agencies and the community, and this will help build greater awareness of (and support for) improved data management including the application of common standards."

The access goal in relation to spatial data standards is:

#### 5.4 Access Goal

Ensure that government geospatial information and services can be readily discovered, appraised and accessed. Actions under that goal are:

- a) Develop and maintain metadata in accordance with an agreed geospatial metadata standard, and align with international standards.
- b) Make fundamental geospatial datasets discoverable and accessible according to agreed policies and standards.
- c) Encourage public agencies to make their non-fundamental datasets discoverable and accessible according to best practice policies and standards.

#### CLIMATE AND AUDIENCE

This work is likely to be well received by the spatial information community in New Zealand. Feedback to NZGO consistently suggests that the community wants more leadership from government in the area of spatial data standards.

The work is specifically configured around two audiences:

- The spatial information community many of whom are familiar with the relevant spatial data standards
- Managers in key agencies. These people are less interested in the detail of spatial data standards and are more concerned with how spatial data standards are relevant to their agencies' function.

LINKS WITH OTHER AGENCIES WORK

The project outlined in this paper has close relationships with other agencies and initiatives, as outlined below:

<b>Initiatives and agencies</b>	<b>Relationship</b>
Digital Continuity Strategy Archives New Zealand	This relationship is critical as 'real-time' standards as addressed in this project need to be consistent with archiving standards to ensure ongoing access
eGIF (e-government interoperability framework)	Several geospatial standards are referred to in eGIF though some are not currently maintained. The work will help to inform how these and related issues can be addressed in eGIF
Standards New Zealand	Standards New Zealand is reassessing how it engages with agencies over information management standards. The work described in this paper would both benefit from, and possibly inform that reassessment
LINZ	LINZ is likely to initiate further action on the scope of its role in spatial data following the release of the report