

New Zealand E-government Interoperability Framework (NZ e-GIF)

Version 2

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E-government Unit
State Services Commission

1. Foreword

E-government is all about getting better results for people. Better results delivered by government as a whole.

The capability of today's network and communication technology is truly remarkable. The Internet in particular is transforming how we go about our work, how we learn, how we relate to each other. And it is beginning to transform the way government has traditionally delivered the services it provides.

Few people beyond government circles know where the business of one agency begins and another ends. Nor should they have to. Frustrated citizens reaching the head of a queue only to be told they are in the wrong department is something of a comedy classic. But is no laughing matter when it happens to you.

For many New Zealanders, the Internet has meant the end of queues altogether. It has also meant the convenience to do business when and where they choose. Many government departments now have electronic services (e-services) on a par with the best in the private sector, bringing the convenience of Internet banking and online shopping to an ever-increasing range of services across the sector.

One only has to look at the breadth and depth of what is available through the government portal to realise how far government as a whole has moved forward in a relatively short time. The portal itself is a testament to what can be achieved when government acts collaboratively.

The e-GIF is a significant tool to enable agencies to work together electronically in a spirit of collaboration. It allows agencies to focus on the business of integrating their services for people without having to decide on competing technology standards. It also means that New Zealand government as a whole will stay in line with internationally agreed standards and protocols that make the Internet work today and in the future.

The value of the e-GIF lies in its practical application, which in turn depends on the e-GIF remaining relevant to the agencies that apply it. I encourage all agencies to supplement the e-GIF by submitting standards relevant to their sector and which may have wider relevance to the public sector. By doing so the e-GIF will continue to be enhanced as a central repository of agreed e-government standards – an all-of-government asset of considerable value.

Acting Director E-government Unit

OR Chair, e-GIF Management Committee

OR State Services Commissioner

OR Minister of State Services

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2. About the e-GIF

2.1. Purpose

This document is designed to assist agency senior managers, business managers and information technology professionals to make decisions about ICT that will enhance their organisation's ability to work with other agencies in the e-government environment.

2.2. Stewardship

The State Services Commissioner is the Steward of the e-GIF, having accountability (and corresponding decision-making authority) for its ongoing development and management.

The E-government Unit (EGU) of the State Services Commission is the Custodian, with responsibility for the day-to-day operation of the e-GIF under the oversight of the e-GIF Management Committee.

The e-GIF Management Committee comprises public servants from the senior ranks of agencies adopting the e-GIF.

Working groups regularly review the technical aspects of the e-GIF.

All agencies that are required to adopt the e-GIF may participate in its governance and appeal decisions made by the Steward and Management Committee.

2.3. Who to contact

You can contact the custodian at e-gif@ssc.govt.nz.

2.4. History

The original version of the New Zealand e-GIF was based on work done by the [Office of the UK e-Envoy](#) in producing the UK e-GIF, which was first published in 2000. The UK e-GIF was reviewed by working groups comprising agency and vendor representatives during the latter part of 2001.

Version 1 of the NZ e-GIF was published in May 2002 incorporating feedback from some 25 agencies. In June 2002 Cabinet agreed the NZ e-GIF would govern how public sector organisations are to achieve electronic interoperability of their information, technology, and business.

2.5. Current version

The current version of the e-GIF is available at <http://www.e-gif.govt.nz>. All major revisions to the e-GIF supersede earlier revisions.

2.6. Changes from previous version

This version of the e-GIF has been substantially rewritten to clarify the purpose and relevance of the framework to the on-going work of agencies in delivering e-government. The technical

framework has been reclassified to emphasize the interrelationships between the technical standards in a simplified layer model.

This model reinforces an overarching consideration of security in all aspects of agency interoperability. It also shows how e-government components relate to the framework as practical expressions of interoperable e-government.

A standard for government news summaries has been added as a guideline.

2.7. Issues under review

At the time of writing, there are a number of standards being developed or considered for adoption into the e-GIF. These include:

- Secure Mail, which allows agencies to use the Internet to contact New Zealanders with greater security than with normal email
- Geospatial Metadata which is a consistent way of describing geospatial data holdings
- Archival Metadata which is necessary for marking data sets to be preserved for the public record, and may become the subject of regulation under the next Archives Act.

In addition, the e-GIF framework and contents are subject to regular review by the custodian and management committee.

The e-GIF Strategic Development Plan, called the *e-GIF Roadmap*, is available on the e-GIF website at www.e-gif.govt.nz.

2.8. What to read

We recommend the e-GIF be read by

- Senior managers (sections 1, 3 and 4)
- Business managers (sections 1 and 3-7 in particular)
- Technical managers (sections 5-9 in particular)
- Implementers and vendors (sections 5, 8 and 9 in particular)

3. E-government

3.1. About this section

This section briefly describes the overarching goals of e-government. Further information can be found in the [latest version of the e-government strategy](#).

3.2. Outcomes

The e-government programme seeks the following outcomes:

Convenience and Satisfaction: *Services provided anytime, anyhow, anywhere*

People will have a choice of channels to government information and services that are convenient, easy to use and deliver what is wanted.

Integration and Efficiency: *Services that are integrated, customer-centric and efficient*

Information and services will be integrated, packaged, and presented to minimise cost and improve results for people, businesses, and providers.

Participation: *Participation in government*

People will be better informed and better able to participate in government.

By interoperating agencies can

- provide services and information electronically in the way that people want (convenience and satisfaction)
- work together electronically acting more like a single enterprise than a collection of individual agencies (integration and efficiency)
- make information available to people in ways that help them to participate in the processes of government (participation)

4. About interoperability

4.1. About this section

This section describes what interoperability means and why it is relevant to the delivery of the Government's vision for e-government.

4.2. What is interoperability?

Interoperability means:

“The ability of government organisations to share information and integrate information and business processes by use of common standards.”

[New Zealand E-government Strategy](#), Dec 2001

In the e-government context, interoperability relates specifically to the electronic systems that support business processes

- between agencies and
- between government and people and business.

This does not mean that a central agency is simply dictating common systems and processes. Interoperability can be achieved by the application of a framework of policies, standards and guidelines, that leave decisions about specific hardware and software solutions open for individual agencies or clusters of agencies to resolve.

This document sets out the framework.

4.3. Why interoperate?

4.3.1. Improving the public face of government

People access government services largely out of need rather than choice. Their needs are seldom confined to the business of a single agency. Rather, people typically have to deal with several agencies to achieve their goals or meet their obligations.

One of the aims of the e-government programme is to make it easier for people to deal with multiple agencies by making good use of information and communications technologies (ICT). By making ICT systems and the processes they support interoperate, people will find it easier to do business with government as a whole. This does not mean that everyone has to be online to get the benefits of interoperability. If agency ICT is interoperating effectively, people dealing with public servants face-to-face or on the phone will get better service.

4.3.2. Improving agency use of ICT

The adoption of common technical standards for ICT mean that agencies can focus more on the business outcomes the systems are designed to support, than what may be technical choices that have little impact on service delivery.

Common technical standards also mean that the collection of ICT systems across government is of more value as a whole than the sum of its parts. Disparate systems that cannot work together are only of value in and of themselves.

The adoption of common technical standards also means that, across government, knowledge of these technologies will be concentrated rather than spread more thinly across numerous alternative and often proprietary technologies.

4.3.3. Operating in a global environment

The Internet, and the value that it can deliver to government and people, relies on an agreed standards-based approach. By using the same standards-based approach agencies in a small way support the infrastructure of technologies that they increasingly rely on to deliver services and conduct the business of government.

The adoption of common standards also helps governments in various jurisdictions to interoperate. This becomes important when dealing with matters that can only be handled in a regional and global way.

5. Application of the e-GIF

5.1. About this section

This section covers the requirements for agencies to adopt the e-GIF.

5.2. Understanding the environment

5.2.1. E-government strategy

The e-government strategy is periodically reviewed and updated. The current version of the strategy can be found at <http://www.e-government.govt.nz/programme/strategy.asp>.

5.2.2. Policy Framework for Government-held Information

All aspects of the [Policy Framework for Government-held Information](#) apply to data and information that is shared, exchanged, or otherwise used or managed, under the specifications or coverage of the e-GIF.

This requirement extends to the e-GIF itself.

5.2.3. Privacy Act 1993

The development and application of the e-GIF must comply with the Privacy Act.

5.2.4. Security in the Government Sector

The development and application of the e-GIF must comply with [Security in the Government Sector](#).

5.2.5. Information Systems and Data Management Policies and Standards

While the e-GIF applies when agencies share information, technology and business processes, the Information Systems and Data Management Policies and Standards provide good practice guidance for internal aspects of agency information and technology management:

- <http://www.e-government.govt.nz/docs/data-management-policies/>
- <http://www.e-government.govt.nz/docs/is-policies-standards/>
- <http://www.e-government.govt.nz/docs/data-management-standards/>

5.3. Application

Cabinet has made use of the e-GIF mandatory for all Public Service departments, the New Zealand Police, the New Zealand Defence Force, the Parliamentary Counsel Office, the Parliamentary Service, the Office of the Clerk and the New Zealand Security Intelligence Service from 1 July 2002.

The benefits of the e-GIF are not specific to the Public Service or central government, however. Cabinet has encouraged organisations in the wider State sector to adopt the e-GIF, and invited local authorities to also adopt it.

The e-GIF is open to use by non-government organisations, the business community, and the public. It is also open to use by other jurisdictions.

5.4. Scope of e-GIF

Current information systems, software applications, or electronic data/information resources do not need to immediately comply with the NZ e-GIF.

Any new information system, software application, or electronic data/information resource (or current instances of these being redeveloped or replaced); or systems for interfacing with the same; must comply with the e-GIF except in instances where:

- it is certain that interoperability will never be a requirement; or
- the current version of the e-GIF does not, and could not, include policies, standards or guidelines concerning the technologies the agency needs (not wants) to employ; or
- an alternative approach to achieving interoperability (e.g. EDI) is justified.

5.5. Exemptions

Where an agency believes there are grounds for exemption from the e-GIF, it must:

- conclusively demonstrate, to the satisfaction of the e-GIF Steward where the current version of the e-GIF cannot meet requirements, or why an alternative approach to achieving interoperability is justified; and
- where sensible, contribute to the updating of the e-GIF.

Where an exemption is approved it will only apply to a specific information system, software application, data/information resource or business process; not to the agency's entire information and technology environment and/or business processes.

5.5.1. Special provisions

Specialist systems employed by, or sponsored by, the security and intelligence agencies are automatically exempted where it is not appropriate to comply with the e-GIF.

5.6. Transition Issues

The adoption of the e-GIF must allow for a sensible transition. Recognising this, on 13 June 2002 Cabinet agreed that current information systems, software applications, or electronic data/information resources do not need to immediately comply with the NZ e-GIF.

6. Developing the e-GIF

6.1. About this section

This section covers the process for contributing to and extending the e-GIF.

6.2. Principles for developing the framework

A number of guiding principles for the long-term development of the e-GIF will be included in a *Roadmap for the e-GIF*. For more information about the *Roadmap*, contact e-gif@ssc.govt.nz.

6.3. How to extend the e-GIF

The custodian and steward of the e-GIF encourage agencies to submit technical standards, especially schemas, that have been developed for specific agency business needs or for the needs of several agencies in a sector or area of business.

Inclusion in the framework ensures that such standards are widely recognised in the New Zealand public sector and can be applied, where appropriate, to meet business needs elsewhere in the sector.

The governance processes put in place for the e-GIF aim to balance the collective interest of government as a whole with the interests of individual agencies and their stakeholders. Where this is not possible collective interest should be given the greater priority.

6.4. Process for submitting a new standard

The e-GIF is regularly reviewed and updated by issuing a revised version of this document. Extensions to the e-GIF can be suggested at any time, however. This should be done by contacting e-gif@ssc.govt.nz in the first instance.

Proposed extensions will be reviewed by working groups that advise the e-GIF custodian. The custodian makes recommendations to the e-GIF steward, via the e-GIF Management Committee.

Agencies that are required to adopt the e-GIF may appeal decisions with to the Management Committee.

7. Interoperability in practice

7.1. About this section

This section covers matters of concern when agencies interoperate in practice.

7.2. Governance of shared inputs

Agencies interoperate

- to make better use of ICT within government
- to deliver an integrated service directly to people or business.

In both cases collaborating agencies jointly provide inputs and must allocate the decision-making rights accordingly. Guidance on how to go about allocating decision-making rights is available from the E-government Unit.

7.3. Joint management of initiatives

7.3.1. Project management

Before committing significant expenditure on an initiative involving more than one agency, those involved should agree and put in place appropriate project management processes (see [Guidelines for Managing and Monitoring Major IT Projects](#))

7.3.2. Operational management

There should be some form of agreement for on-going operation of any initiative involving more than one agency. The content of the agreement will depend on the nature of the initiative undertaken, but the following areas need to be considered:

- Roles and responsibilities of each agency
- Processes undertaken by each agency and the required service levels
- Performance measurement for each agency's service and problem resolution
- Data quality and problem resolution
- Cost recovery between agencies.

8. Technical framework

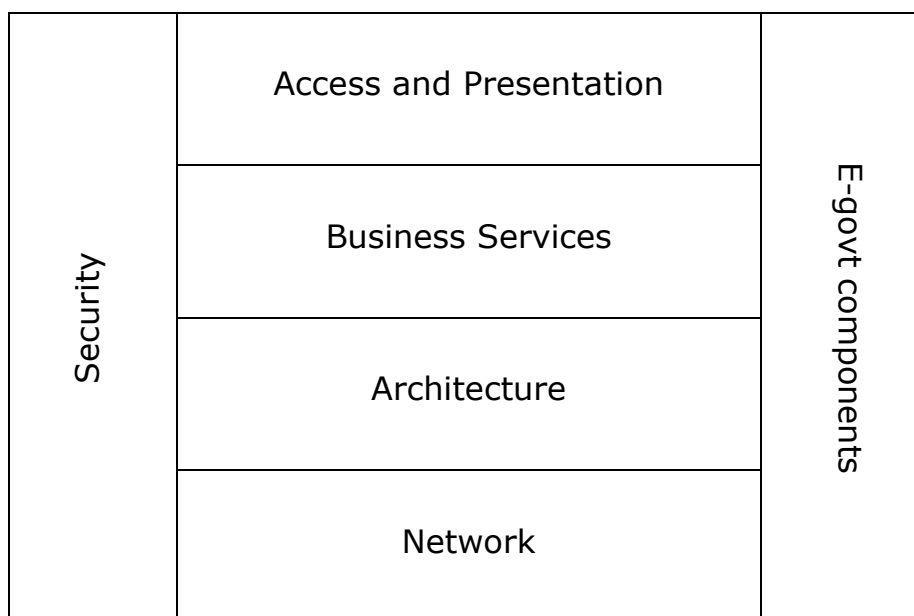
8.1. About this section

This section sets out a layer model that helps to classify the standards listed in the following section.

8.2. Layer Model

Layer models are widely used to classify functions within IT systems. The intent is to simplify systems by segregating system functions into levels and disentangling the complexity and variations of each level. Components normally communicate only with others at neighbouring levels, and in standardised ways.

The model for this version of the e-GIF is below.



e-GIF v2 Layer Model

The components of this model are:

Network – This layer covers details of data transport such as network protocols. This is crucial area for interoperability. Without agreement on networking standards it is hard or impossible to make systems communicate. The e-GIF uses a subset of the widely proven Internet protocol suite.

Architecture – This defines the way in which data is represented, at a purely syntactic level. The e-GIF contains the XML standard for marking data elements, and a version of the Unicode standard which allows for representing non-Roman characters such as those with macrons. This layer also covers processes when expressed in purely technical terms.

Business Services – The meaning of the data – how a stream of data is mapped to usable business information. This depends on the type of information being represented. The e-GIF includes, for example, a standard way of representing a name and address as a stream of XML data.

Access and presentation – Standards and guidelines covering how business systems are presented and accessed by users. Much of the content of the Government Web Guidelines fit here.

Security – Security is shown as crossing all layers to reflect the fact it needs to be designed in to a system, not added as a layer on top. The e-GIF contains standards at the various levels designed to offer different levels of security as appropriate. It also refers to a series of standards and policy statements (the NZSITs) which provide advice and direction on the levels of required.

E-government components – These are actual implementations of IT infrastructure made available for use by public sector agencies as part of the EGU Component Architecture initiative.

Two further layers are vital but not shown in the diagram for clarity, as they support all the others. They are **Management** and **Governance**.

9. Technical specifications

9.1. About this section

This section sets out the mandatory and recommended standards required for e-GIF compliance. The abbreviations used in this section are spelt out at the end of the document. There are links in the tables to online resources (usually the standards themselves) that explain more fully what each covers.

9.2. Network

This section covers details of data transport such as network protocols, which is a crucial area for interoperability. Without agreement on networking standards it is hard or impossible to make systems communicate. The e-GIF uses a subset of the widely proven Internet protocol suite.

Component	Mandatory	Recommended
Networks (TCP/IP)	TCP IPv4	IPv6
Directory	LDAP v3	
File Transfer	FTP HTTP 1.1	
Mail Transfer	SMTP	
Registers	EbXML , UDDI	
Structured data description	RDF	
Networking Protocols	TCP/IP (IPv4)	IPv6
Metadata (Discovery)	NZGLS 2.0 NZGLS Thesauri	

9.3. Architecture

Architecture covers the technical description of data and processes.

Component	Mandatory	Recommended
Primary Character Set	UTF – 8 bit encoded	
Graphics File	GIF 89a , JPG , PNG	SVG
Mail Attachment	MIME , S/MIME	
Hypertext	HTML 4.01	
Structured Data	XML 1.0	
Data Transformation	XSLT	
File Compression	ZIP 2.3	
Data Modelling	UML	XMI

9.4. Business Services

Business Services describes the services and data from a business point of view, i.e. mapping the technical components to useful business information.

Component	Mandatory	Recommended
Metadata (Discovery)	NZGLS 2.0 NZGLS Thesauri	
Presentation	GIF 89a , JPG – Open PDF – Locked	PNG , SVG
Schemas	W3C schema definitions	
Structured data description	RDF	
Name and Address	xNAL	
Data Modelling	UML	XMI
Web Services (Description)	SOAP 1.2 , WSDL 1.1	
Modelling (structured data)	SAX	DOM
Geospatial	GML , WFS, WMS	ESA
Registers	EbXML , UDDI	
News Syndication		NZ Government RSS

9.5. Access and Presentation

Standards and guidelines covering how business systems are presented and accessed by users. The Government Web Guidelines fit here.

Component	Mandatory	Recommended
General Text and Graphics	Open: HTML 4.01, GIF 89a , JPG Locked: PDF	PNG , SVG
Geospatial	WMS	
Web design and maintenance		NZ Govt Web Guidelines 2.1
Authentication (<i>see below</i>)		

9.5.1. Authentication

The EGU Authentication project is working towards an all-of-government authentication solution. The form and implementation of this will be subject to Cabinet decision in 2004. Agencies wishing to implement any new systems where authentication of individuals or businesses is necessary must contact the EGU for advice.

9.6. Security

Security is shown as crossing all layers to reflect the fact it needs to be designed in to a system, not added as a layer on top. The e-GIF contains standards at the various levels

designed to offer different levels of security as appropriate. It also refers to a series of standards and policy statements (the NZSITs) which provide advice and direction on the levels of required.

Component	Mandatory	Recommended
Security	GCSB NZSIT's SIGS SSL v3	SEE PKI
Mail Security	S/MIME	SEE MAIL SecureMail as piloted by ACC may prove the recommended way of communicating with customers.

9.7. E-government component architecture

The e-government component architecture comprises a series of actual implementations of useful functions, which are available for re-use by government agencies. These are more fully described elsewhere; however current items are listed below.

Component	Purpose	Description
Autonomy	Search Engine	Metadata and full-text driven searches across Metalogue and whole of government web space or subsets. Agencies and local government can call Autonomy from their own websites and receive results in XML.
Metalogue	Services and Document Description (metadata) Database	A web based repository for metadata, used to drive the Portal.
SEE Mail	Hardened e-Mail	A gateway-gateway crypto layer running over public e-mail improving confidentiality and authentication. Intended for use between government bodies (including local govt)

The following components are under development or being tested:

Component	Purpose	Description
Portal News Feed	News Syndication	Uses NZ Government RSS to accept news items from government agencies for display on the Portal. This can also provide a feed of government news for use on agency web sites.
Authentication	Government to Individual and Government to Business online authentication	This project is still at the design stage and will be implemented only if Cabinet so decides. If so it will consist of standards, procedures and possibly infrastructure. Agencies designing a system with authentication must contact EGU.

10. Abbreviations

DOM	Document Object Model
DNS	Domain Name Server
ebXML	E-business XML
EDI	Electronic data exchange
EGU	The E-government Unit of the State Services Commission
FTP	File Transfer Protocol
GCSB	Government Communication Security Bureau
GIF	Graphical Interchange Format
GML	Geography Markup Language
HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol
LDAP	Lightweight Directory Access Protocol
MIME and S/MIME	Multi-Purpose Internet Mail Extensions and Secure Multi-Purpose Internet Mail Extensions
PKI	Public Key Infrastructure
PNG	Portable Network Graphic
RDF	Resource Description Framework
RSS	Rich Site Summary
SAX	Simple API for XML
S.E.E.TM	Secure Electronic Environment
SOAP	Simple Object Access Protocol
SSC	State Services Commission
SVG	Scalar Vector Graphics
TCP/IP	Transmission Control Protocol / Internet Protocol
UDDI	Universal Description, Discovery and Integration
WFS	Web Feature Server
WMS	Web Map Server
WSDL	Web Services Definition Language

XMI	XML Metadata Interchange
XSL	Extensible Stylesheet Language

11. Governance principles

The following principles underpin the governance of the e-GIF and its operation:

- The e-GIF will align with the E-government Strategy and the recommendations of the Review of the Centre.
- There will be a clear chain of accountability flowing from a Cabinet Minister with appropriate portfolio responsibilities.
- Adequate organisational resources and capabilities must support the governance arrangements.
- The governance arrangements will be consistent with public sector legal requirements.
- The principles of stewardship and custodianship apply, as set out in the Policy Framework of Government-held Information [CAB (98) M 22/27 refers].
- Roles, responsibilities and accountabilities will be clear.
- The governance arrangements will build confidence in, and commitment to, the e-GIF from all its stakeholders.
- With regard to the day-to-day operation of the e-GIF, the governance arrangements will show a close fit with the responsibilities and capabilities of the organisations involved.
- The processes for maintaining, developing and implementing the e-GIF should be inclusive and as consensual as possible.
- The governance arrangements must account for the complexity of e-government stakeholders and operating environments.
- Agencies that are required to adopt the e-GIF will be given the opportunity to participate in its governance.
- Agencies that are required to adopt the e-GIF will have access to a process for raising concerns over decisions made by the Steward or the Management Committee.
- The collective interests of government should be balanced with the interests of individual agencies and their stakeholders. Where this is not possible, the collective interest should be given the greater priority.
- Decision-making processes will be transparent.