



# **THE UK ELECTRONIC GOVERNMENT INTEROPERABILITY FRAMEWORK (E-GIF)**

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## Introduction

The UK Government produces, maintains and publishes vast quantities of information on a whole range of aspects of life in the United Kingdom. In the past this information has been made available haphazardly, conforming to differing standards across different parts of the public sector. Interaction and sharing of data across departments has become both difficult and costly. By standardizing the way information is exchanged ease of access can be improved, costs are reduced and public services effectively improve.

The technical centrepiece of UK Government policy for electronically integrating the public sector is known as e-GIF. The electronic Government Interoperability Framework (e-GIF) defines the necessary policies and technical specifications governing information flow across government and the public sector. The e-GIF initiative is coordinated by the Office of the e-Envoy under the supervision of the Cabinet Office. The framework has been specified to cover:

- ❑ Interconnectivity
- ❑ Data Integration
- ❑ e-services Access (ukonline etc.)
- ❑ Content Management

The main focus of the framework is to adopt the Internet and World Wide Web specifications, and apply them to government systems. The framework is specifically designed to cover the exchange of information between government systems and interactions between:

- ❑ UK Government and citizens
- ❑ UK Government and businesses
- ❑ UK Government organizations
- ❑ UK Government and other governments (the European Community, US etc.)

In this context, the term 'UK Government' includes central government departments, local government, the wider public sector (e.g. non-departmental public bodies), devolved administrations such as voluntary partners and the National Health Service.

Compliance with the framework is mandatory for all public sector developments involving IT systems (new and/or legacy) that contribute to e-service delivery and/or interact with other systems. Compliance is also recommended for all other public sector IT systems (mostly internal administration legacy systems).

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The Government wants all public sector systems to comply with e-GIF by 2005. Failure to comply can have serious consequences, such as funding refusal and project cancellation.

### **Main Features of e-GIF**

The key features of e-GIF are:

- ❑ Adoption of Internet and World Wide Web standards
- ❑ Use of XML as the primary means for data integration and presentation
- ❑ Use of a browser as the key interface to the system (other interfaces are permitted but only in addition to browser based ones)
- ❑ Use of metadata for content management
- ❑ Adoption of the e-Government Metadata Standard (e-GMS), based on the Dublin Core for metadata
- ❑ Use of Government Data Standards Catalogue (GDSC)
- ❑ Development and maintenance of the GCL (Government Category List)

Although e-GIF standardizes the interchange requirements for the delivery of data to a whole host of human interfaces (Internet, WAP, Digital TV etc.), it does not standardize the appearance of information on the interface.

Currently the main focus is on defining the standards to be used to exchange information (e.g. XML) and the definition of a metadata standard (e-GMS). Several focus groups have been established to manage each individual component. Open consultation is provided via the govTalk website allowing industry experts and the general public to have their say on the direction of standards.

In the case of XML, a specialist group, Government Schema Group, has been established to manage the acceptance, publication and subsequent change requests for all XML schema needed to support interoperability. The Government Schema Group also provides the set of design rules to be used by the XML schema developers in an e-GIF compliant system. Once a schema has been submitted by a specialist group or by open submission to the GSG and has been accepted, it is placed on the govTalk web site for public discussion. After a successful consultation period, the XML schema is then formally accepted and added to the repository on the govTalk website. Where appropriate new applications and modified legacy systems should make use of an accepted XML schema.

The use of metadata for content management and search facilitation raised the requirement for a government standard to provide true interoperability. Developed by the Office of the e-Envoy in consultation with central and local government organizations, e-Government Metadata Standard (e-GMS) defines the structure and rules governing metadata used in the public sector. The e-GMS is based on the internationally recognized Dublin Core standard with additions and refinements to meet the needs of the public sector. In simple terms, it consists of a set of permitted categories and sub categories available for use in content management. It is a standard that constantly evolves as needs arise and encoding schemes become available. e-GMS has been developed and maintained to the following principles:

- ❑ It will be independent of software, application or project
- ❑ It will comply with existing government standards such as the Government Data Standards Catalogue
- ❑ A balance will be struck between stability and extensibility
- ❑ It must meet the information retrieval and management needs of government

A recent addition to e-GIF is the e-Services development framework. This provides a structure for developing standards for electronic data interchange and messaging services. The framework aims to implement interoperability, and has the following benefits:

- ❑ Reduction in data duplication and hence data entry
- ❑ Risk reduction through re-use of technical patterns and components
- ❑ Simplified system integration
- ❑ Reduced maintenance costs

A copy of the e-GIF specification can be obtained from the govTalk website ([www.govtalk.gov.uk](http://www.govtalk.gov.uk)). The specification comes in two parts; the first part outlines the framework, management process and compliance policies; the second part is concerned with the technical policies and detailed specifications.

## An Evolving Framework

Inevitably the e-GIF specifications will change, and will have to evolve rapidly when required. The first version of e-GIF was published in September 2000 and at the time of writing this edition of this technical supplement (October 2004), it is already in its sixth iteration.

As mentioned previously, the Office of the e-Envoy takes the lead role in managing the overall development and maintenance of the e-Government Interoperability Framework. The main responsibilities include:

- ❑ Providing the management infrastructure to support development and maintenance of the framework.
- ❑ Coordinating the development and maintenance of:
  - XML Schemas
  - Government Data Standards Catalogue (GDSC)
  - e-Government Metadata Standard (e-GMS)
  - Government Category List (GCL)
  - Best practice guides
- ❑ Managing the consultation process
- ❑ Managing the specialist groups

In order to evolve effectively the framework must also rely on contributions from the public sector and industry. Also, as e-GIF is fundamentally concerned with interoperability between the public sector, business and citizens, then it must be open to the widest form of consultation that involves all these players. The consultation process will target individuals or organizations that are known to be interested in particular specifications, but will be open to all.

The following mechanisms have been put in place:

- ❑ Establishment of specialist groups.  
A number of specialist groups have been established to manage the individual involvement of the e-GIF components. These bring together experts from both the public and private sector. A full list of the working groups can be found in the e-GIF specification, part one.
- ❑ Consultation through request for comments.  
All draft policies, specifications and XML schemas will be posted on the govTalk website with an invitation for comments from both registered stakeholders and the wider community. All comments received are acknowledged and the outcome will be published on the site. Unsolicited comments are also encouraged.

- ❑ Consultation through request for proposal (RFP).  
From time to time the government may request an innovative solution to problems where no current clear solution exists. Requirements will be posted on the govTalk site in the form of an RFP. The aim is to attract the best solution in the most cost-effective way. If a particular proposal is accepted it will be published on the site. Other instances where a RFP may be required are:
  - ❑ Additions to e-GMS
  - ❑ Modifications to existing XML schemas

Part one of the e-GIF is to be reviewed annually and updated as necessary. Part two will be revised and updated every six months subject to guidance from the government and industry consultation groups.

### **Relation to Other Initiatives**

e-GIF is just one of a number of policy frameworks for the governments electronic strategy. Other frameworks cover such topics as security, confidentiality, authentication and electronic records management. A full list can be found on the Office of e-Envoy web site, under the section “Frameworks and Policies”.

As mentioned previously the e-GIF framework also encompasses the use of e-GMS, GCL and GDSC. e-GIF is also related to the Open Source Software policy published in the summer of 2002 in that for future developments, the UK Government will only use products for interoperability that support open standards and specifications

Internationally, e-GIF and e-GMS have attracted considerable attention and are under consideration by the European Union Interchange of Data between Administrations programme as bases for European standards.

### **Becoming Compliant**

Adherence to the e-GIF is mandatory, but how is a system designed to comply and how is this compliance enforced?

As a high level overview, in order to be compliant a system must:

- ❑ Provide a browser interface
- ❑ Use XML as the primary means for data transfer / integration
- ❑ Use Internet and World Wide Web standards
- ❑ Use metadata for content management

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It is permissible to make use of additional interfaces and equivalent standards. As an example, the vast majority of users of a particular system will use a browser interface for access, however, some organizations will have the additional option of a customized interface for internal administration within the system.

The ultimate test for interoperability is *“the coherent exchange of information and services between systems.”* It must also be possible to *“replace any component or product used within an interface with another of a similar specification while maintaining the functionality of the system”*. To be certain of e-GIF compliancy a system must satisfy these two statements.

On a more detailed level, testing for compliance should be done against the detailed specifications set out in part two of the latest version of e-GIF (currently version 5). This should not be a question of *“Does the system comply with all the policies and specifications?”*, but of *“Does the system contravene any of the policies and specifications?”* These low level tests should be carried out against interconnection, data integration, e-services access and content management.

In addition to the compliance rules stated above, systems are expected to use agreed XML schemas, agreed e-GMS elements and agreed data standards listed in the GDSC. If a new schema, or modifications to an existing schema, are required then the request for proposal procedure is initiated.

New systems should be developed to comply with the version of e-GIF (Parts one and two) in force on the day approval is granted. If there are subsequent changes to the e-GIF specification that may have an impact on development, then an assessment should be made of the cost and benefits of upgrading to the newer specification.

Legacy systems that fall within the e-GIF mandate (e.g. a system linking to ukonline) are required to provide interfaces that comply with the specification. It is recommended that legacy systems that fall outside of the e-GIF scope and mandate (e.g. internal administration systems) should still make an attempt to comply to e-GIF, although this is not mandatory.

As e-GIF is relatively new and continues to evolve, it becomes very difficult, if not impossible, for systems to be fully compliant with the latest e-GIF specification at all times.

A flexible approach is required and the recommendation is that a system in development or an existing system should be changed to adopt the latest standard only if an acceptable business case can be made.

### **Failure to Comply**

Failure of a new system or migrated system to comply with e-GIF will lead to the following courses of action:

- ❑ Compliance with the e-GIF is a criteria used when assessing / evaluating departmental e-Business Strategies; failure to comply can affect future funding
- ❑ New systems that do not comply will not get project approval or funding from the appropriate bodies
- ❑ Systems seeking to link to ukonline or knowledge network will be refused connection
- ❑ Suppliers who do not meet the e-GIF specific requirements will not be successful in tender

It is evident that at all levels - central government, local government and external suppliers - the requirement to comply with the e-GIF standard is essential.

### **How Tessella Can Help - Our Experiences**

Tessella has extensive experience in providing e-GIF compliant systems to UK Government departments. We provided the first e-GIF application for the UK National Archives in September 2002 (PRONOM). PRONOM is a database driven application that stores information on all software products ever used to generate electronic records. The main use of PRONOM is to identify old software products and then plan a suitable migration path. The application achieves e-GIF compliance through:

- ❑ Use of a browser for user interaction
- ❑ Use of XML for request delivery to application
- ❑ Use of XML / XSL for report delivery / presentation

The PRONOM XML schemas have been submitted to the govTalk website and are currently in consultation.

More recently Tessella has developed a Digital Archive with the UK National Archives. This application acts as a repository for all born-digital documents produced by Government departments that are assessed to be of long-term interest to the general public. The requirements for the system were very much

influenced by e-GIF; browser based user interface, use of open standards where possible, XML for data transfer at application interfaces, use of metadata for content management and search purposes and the ability to replace / upgrade components in the future.

In order to comply with the requirements and achieve e-GIF compliance, Tessella chose an architecture built on Open Standards using the Java 2 Enterprise Edition (J2EE) four layer standard. Oracle 9iAS with native XML DB was used for the central database, supplying transaction management, the security framework and audit and searching capabilities. The management tools of the archive are defined by XML, SOAP and JDBC so that they can communicate with each other, with other MIS applications and with the National Archives public online catalogue via an open protocol. Metadata conforming to the latest e-GMS standards was used for content management and all XML schemas were built to the specification laid down by the GSG.

## **Summary**

e-GIF defines the technical policies and specifications governing information flows across the UK Government and the public sector. It encompasses the areas of interconnectivity, data integration, e-services access and content management. It is a continuously evolving framework, with the opportunity for government, public and private organizations to contribute to its development through consultation. e-GIF applies to all new systems and appropriate legacy systems. Failure to comply can have serious ramifications including cancellation of project, refusal of funding, refusal of connection to ukonline and rejection of tender.

Tessella has gained considerable knowledge of e-GIF and has already delivered compliant systems. We would be interested to discuss your e-GIF needs including advice on how to upgrade legacy systems.

## **Further information / Useful links**

### **Tessella**

[www.tessella.com](http://www.tessella.com)

### **GovTalk**

[www.govtalk.gov.uk](http://www.govtalk.gov.uk)

### **Office of e-envoy**

[www.e-envoy.gov.uk](http://www.e-envoy.gov.uk)

### **e-GIF**

[www.govtalk.gov.uk/schemasstandards/egif.asp](http://www.govtalk.gov.uk/schemasstandards/egif.asp)

### **Dublin core metadata initiative**

<http://dublincore.org/>

### **UK Online**

[www.ukonline.gov.uk](http://www.ukonline.gov.uk)

### **UK National Archives**

[www.nationalarchives.gov.uk](http://www.nationalarchives.gov.uk)

### **PRONOM**

[www.tessella.com/Services/CaseStudies/approved/e\\_National%20Archives%20-%20PRONOM.pdf](http://www.tessella.com/Services/CaseStudies/approved/e_National%20Archives%20-%20PRONOM.pdf)

[www.nationalarchives.gov.uk/pronom/](http://www.nationalarchives.gov.uk/pronom/)

### **UK Digital Archive**

[www.tessella.com/Services/CaseStudies/approved/e\\_National%20Archives%20-%20Digital%20Archive.pdf](http://www.tessella.com/Services/CaseStudies/approved/e_National%20Archives%20-%20Digital%20Archive.pdf)

[www.nationalarchives.gov.uk/preservation/digitalarchive/](http://www.nationalarchives.gov.uk/preservation/digitalarchive/)

## Glossary

- e-GMS** e-Government Metadata Standards. Describes in detail the way that metadata should be structured. Based on the Dublin core metadata initiative.
- GCL** Government Category List. Taxonomy for choosing subject metadata for all government departments.
- GDSC** Government Data Standards Catalogue. The agreed XML element descriptions and data standards.
- GSG** Government Schema Group. The specialist group established to deal with all matters XML.
- OeE** Office of e-Envoy. The coordinator for the e-GIF initiative.
- RFC** Request for Comments. The procedure by which comments can be made on additions / modifications to e-GIF
- RFP** Request for Proposals. The procedure by which a proposal for an addition or modification to e-GIF can be raised.

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