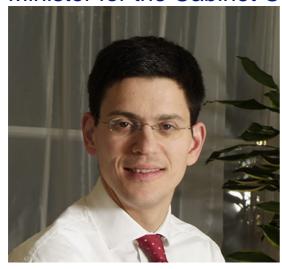**Cabinet**Office

e-Government Unit

e-Government Interoperability Framework
Version 6.1

18 March 2005

Ministerial message

Foreword by David Miliband MP
Minister for the Cabinet Office

The e-Government Interoperability Framework is at the heart of our strategy for ensuring IT supports the business transformation of government. This transformation is about delivering better, more efficient public services. The e-Government Unit contributes to this through frameworks like the e-GIF and also by supporting joined-up service delivery, sharing best practice and putting the citizen at the centre of our work.

The e-GIF was first published in September 2001 and has gone from strength to strength. There are now facilities to help public and private sector organisations ensure that their systems are e-GIF compliant, and that their people have the necessary knowledge and skills to enable systems to work together.

I have been encouraged by the way the influence and acceptance of the e-GIF has grown over time. The value of interoperable systems, and the benefits of the standards-based approach exemplified in the e-GIF, are becoming widely recognised by the private sector. This has led to calls to adopt the policy, or a similar tool, to further increase efficiency and enable new and exciting services to be developed across different sectors.

Contents

Executive summary

Better public services tailored to the needs of the citizen and business, require the seamless flow of information across government. The e-Government Interoperability Framework (e-GIF) sets out the government's technical policies and specifications[1] for achieving interoperability and Information and Communication Technology (ICT) systems coherence across the public sector. The e-GIF defines the essential prerequisites for joined-up and web-enabled government.

Adherence to the e-GIF policies and specifications is mandatory. They set the underlying infrastructure, freeing up public sector organisations so that they can concentrate on serving the customer through building value-added information and services. It will be for the organisations themselves to consider how their business processes can become more effective by taking advantage of the opportunities provided by increased interoperability.

The main thrust of the e-GIF is to adopt the Internet and World Wide Web specifications for all government systems. Throughout this section, use of the term 'system' is taken to include its interfaces. There is a strategic decision to adopt XML and XSL as the core standards for data integration and management. This includes the definition and central provision of XML schemas for use throughout the public sector. The e-GIF only adopts specifications that are well supported in the market place. It is a pragmatic strategy that aims to reduce cost and risk for government systems while aligning them to the global Internet revolution.

The e-GIF also sets out policies for establishing and implementing metadata across the public sector. The e-Government Metadata Standard (e-GMS) will help citizens find government information and resources more easily.

Stipulating policies and specifications is not enough in itself. Successful implementation will mean the provision of support, best-practice guidance, toolkits and centrally agreed schemas. To provide this, the Government has launched the GovTalk website. This is a Cabinet Office-led, joint government and industry facility for generating and agreeing XML schemas for use throughout the public sector. Schemas can be found at http://www.govtalk.gov.uk/schemasstandards/xmlschema.asp. GovTalk is also used for wide consultation on a number of other e-Government frameworks and documents.

The site also provides best-practice guidance, Frequently Asked Questions (FAQs), and advice on training and toolkits, and outlines the management processes.

The aims of the e-GIF will not be achieved overnight. The strategy needs to be managed as a long-term, ongoing initiative and must therefore be supported by robust processes. These processes, including the roles and responsibilities of key stakeholders, committees, management and working groups, are outlined in the document.

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[1] The term 'specifications' used in the document includes standards approved by recognised standardising bodies. Where the specification refers to such a standard and alternatives are being offered as part of procurement, then purchasers are obliged by EC law to consider such alternatives provided they offer equivalent functionality.

It is also essential to ensure that the e-GIF remains up to date, aligned to the requirements of all stakeholders and able to embrace the potential of new technology and market developments. The e-GIF introduces an Internet-based change-management process which has been designed to engage and serve the stakeholder community in a dynamic way and bring in innovations from industry on a global basis.
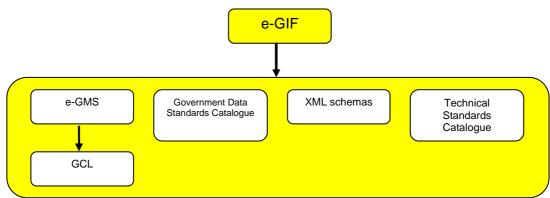
Section 1 Policy and scope

1.1 Modern joined-up government demands joined-up ICT systems. Interoperable systems working in a seamless and coherent way across the public sector hold the key to providing better services, tailored to the needs of the citizen and business and at a lower cost.

1.2 Clearly defined policies and specifications for interoperability and information management are also key to staying connected to the outside world and aligned to the global information revolution. The e-GIF provides these.

1.3 Government information resources are not only of value in themselves. They are valuable economic assets, the fuel of the knowledge economy. By making sure the information we hold can be readily located and passed between the public and private sectors, taking account of privacy and security obligations, we can help to make the most of this asset, thereby driving and stimulating our economy.

About the e-GIF architecture

1.4 The e-GIF architecture contains:

- the Framework, which covers high-level policy statements, technical policies and management, implementation and compliance regimes

- the e-GIF registry, which covers the e-Government Metadata Standard (e-GMS) and Government Category List (GCL), the Government Data Standards Catalogue (GDSC), XML schemas and the Technical Standards Catalogue (TSC) (previously e-GIF Part 2: Technical policies and specifications).

e-GIF architecture

1.5 The e-GIF defines the minimum set of technical policies and specifications governing information flows across government and the public sector. These

cover interconnectivity, data integration, content management metadata and e-services access. The government is committed to ensuring that these policies and specifications are kept aligned to the changing requirements of the public sector and to the evolution of the market and technology, so please consult the website for the latest version of the e-GIF registry at
http://www.govtalk.gov.uk/schemasstandards/egif.asp?page=1&order=title

Key policies

1.6   These are the key policy decisions that have shaped the e-GIF:

- alignment with the Internet: the universal adoption of common specifications used on the Internet and World Wide Web for all public sector information systems
- adoption of XML as the primary standard for data integration and data management for all public sector systems
- adoption of the browser as the key interface: all public sector information systems are to be accessible through browser-based technology; other interfaces are permitted but only in addition to browser-based ones
- the addition of metadata to government information resources
- the development and adoption of the e-GMS, based on the international Dublin Core model (ISO 15836)
- the development and maintenance of the GCL
- adherence to the e-GIF is mandated throughout the public sector; Section 6 provides more detail
- interfaces between government information systems and intermediaries providing e-Government services shall conform to the standards in the e-GIF. Interfaces between intermediaries and the public are outside the scope of the e-GIF.

1.7   The selection of e-GIF specifications has been driven by:

- interoperability – only specifications that are relevant to systems' interconnectivity, data integration, e-services access and content management metadata are specified
- market support – the specifications selected are widely supported by the market, and are likely to reduce the cost and risk of government information systems
- scalability – specifications selected have the capacity to be scaled to satisfy changed demands made on the system, such as changes in data volumes, number of transactions or number of users
- openness – the specifications are documented and available to the public
- international standards – preference will be given to standards with the broadest remit, so appropriate international standards will take preference over EU standards, and EU standards will take preference over UK standards.

Changes from previous version

1.8   This version is an update and does not contain any policy changes from version 6.0. It reflects the change from 'Office of the e-Envoy' to 'e-Government

Unit', the formation of the new CIO Council, and the change from UK online to Directgov. The e-Services Development Framework is no longer listed, as the e-Government Unit has decided not to develop this further; the original is still available on GovTalk. Similarly the e-Champions are no longer listed, as this group no longer operates. It also updates and clarifies the roles of the devolved administrations. As no policies were changed, this version did not undergo a public consultation procedure.

Scope

1.9   The e-GIF covers the exchange of information between government systems and the interactions between:

- UK Government and citizens
- UK Government and intermediaries
- UK Government and businesses (worldwide)
- UK Government organisations
- UK Government and other governments (UK/EC, UK/US, etc.).

1.10   It is recognised that compliance with the e-GIF cannot be imposed on citizens, businesses and foreign governments, but the UK Government will make it clear to all that this is their preferred method of interface.

1.11   'UK Government' includes central government departments and their agencies, local government, and the wider public sector, e.g. non-departmental public bodies (NDPBs) and the National Health Service (NHS). The devolved administrations are covered through the mechanisms described below.

1.12   **Scotland:** the Scottish Executive is a voluntary partner of the e-GIF and plays an active role in the Interoperability Working Group. The Executive ensures that UK government standards aimed at enabling interoperability are also used in Scotland, in order to advance the Modernising Government agenda and improve public service delivery. The e-GIF is implemented in Scotland via the Scottish Executive's Openscotland Information Age Framework (OSIAF): http://www.scotland.gov.uk/Topics/Government/Open-scotland/19913/21664

1.13   The OSIAF embraces and expands on the e-GIF so that Scottish public-sector services are interoperable within the UK. Standards emerging from the Scottish public sector can also be included in the OSIAF and, where appropriate, in the e-GIF.

1.14   The framework is relevant to the Scottish Executive and its agencies, NDPBs, the National Health Service in Scotland (NHSiS), local government, and the wider public and voluntary sectors as voluntary partners.

1.15   **Northern Ireland:** Northern Ireland has shown its commitment to the e-GIF by establishing an e-Government Technical Standards Group. The group is responsible for championing the e-GIF within the public sector in Northern Ireland. It also provides a mechanism for the Northern Irish public sector to contribute to and influence the development of the e-GIF standards.

1.16   **Wales:** the Welsh Assembly Government is a voluntary partner of the e-GIF. Cymru Ar-lein is the Welsh Assembly Government's ICT strategy and the Cymru Ar-lein team is responsible for disseminating e-GIF and other standards

within the public sector in Wales. Cymru Ar-lein is able to provide a mechanism for the public service in Wales to contribute to and influence the development of the e-GIF standards.

1.17   In line with the Memorandum of Understanding between the UK Government and the devolved administrations, all parties are committed to the principles of good communication with each other. In order to aid the exchange of information and enable each administration to operate effectively, the administrations will aim to provide each other with as full and open as possible access to information. These exchanges may be subject to restrictions or requirements, such as those relating to confidentiality or freedom of information.

1.18   The e-GIF specifications are mandated on all new systems that fall within the scope defined in paragraph 1.9 above. In order to take advantage of services being provided through Directgov (www.direct.gov.uk), the Government Gateway, the Knowledge Network or other systems which are part of electronic service delivery targets, legacy systems will need to comply with these specifications. For systems that fall outside the scope and mandate, the e-GIF is recommended in all public sector procurements and in major upgrades to other departmental legacy systems. Guidance on complying with this mandate is given at Section 6.

1.19   The e-GIF does not standardise the appearance of information on the human interface, which can be provided by various user channels, e.g. Internet, public kiosks, digital TV, WAP phones. The e-GIF standardises interchange requirements for the delivery of data to such interfaces and tools for the management of the presentation of such data.

1.20   The technical policies for interoperability across the public sector cover four key areas: interconnection, data integration, content management metadata and e-services access. This is the minimum set necessary to support the range of transactions and services provided by government and to integrate information systems within government. Technical policies are outlined at Section 2.

Relationships with other initiatives

1.21   The e-GIF is one of a series of policy frameworks which also covers security, confidentiality and channels. See
http://www.govtalk.gov.uk/policydocs/policydocs.asp

1.22   The e-GIF also informs the Open Source Software (OSS) policy published in 2004, see
http://www.govtalk.gov.uk/policydocs/consult_subject_document.asp?docnum=905

1.23   On the international scene, the e-GIF and e-GMS have attracted considerable attention and are being considered by the EU IDA (Interchange of Data between Administrations) programme as bases for European standards.

Your involvement

1.24   Continual engagement of all our stakeholders (listed at Section 6) in the development and implementation of the e-GIF is a fundamental policy objective. Government departments and their agencies, NDPBs, local government, the NHS, industry and the citizen are all encouraged to comment and suggest ways of improving the strategy and to provide support and implementation of the e-GIF. Our preferred way is through the Internet on the dedicated GovTalk website. Please go to http://www.govtalk.gov.uk to join in the discussion forum or make your input into 'Request for Proposals' and 'Request for Comments' (RFC section).

Section 2 Technical policies

2.1   This section outlines the detailed technical policies for interconnection, data integration, content management metadata and e-services access. This section was previously in e-GIF Part 2: Technical policies and specifications. Technical policies for business areas are also included.

2.2   For the latest technical specifications for these policies, see the TSC, which also contains a glossary of abbreviations and acronyms used in the e-GIF.

Interconnection

Technical policies for interconnection cover the following:

2.3   Within government, the norm will be to use the intrinsic security provided by the Government Secure Intranet (GSI) to ensure email confidentiality. Unless security requirements dictate otherwise, outside the GSI and other secure government networks one of the following shall be used: S/MIME or secure mail transport and secure mail access standards protected using at least 128 bit TLS/SSL connections.

2.4   Departments that are connected to the GSI are to use the GSI Notice 1/2003 Information GSI Directory Schema http://www.govtalk.gov.uk/schemasstandards/egif_document.asp?docnum=827 except for Web-based transactions over SOAP when UDDI is to be used.

2.5   When Web services are used, they shall be based on SOAP and WSDL specifications.

2.6   Projects are to follow the UK Government domain naming policy http://www.cabinetoffice.gov.uk/e-government/domain

2.7   DNS is to be used for Internet/intranet domain name to IP address resolution.

2.8   FTP should be used where file transfer is necessary within government intranets.

2.9   Restart and recovery facilities of FTP are to be used when transferring very large files.

2.10   Web-based technology is to be used in applications that previously used Terminal Emulation whenever possible[2].

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[2] Products exist that can provide browser access to legacy systems without having to change those systems; typically, these products can provide either direct access to the legacy screens or complete replacement GUIs. Regard should be given to any security implications arising from their use.

Intermediaries

2.11　The e-GIF policy for the interface between intermediaries and government systems is to conform to the Web service interface standards being developed by the WS-I initiative and the Organisation for the Advancement of Structured Information Standards (OASIS).

Migration to IPv6

2.12　The e-GIF policy is for a gradual migration to IPv6, maintaining coexistence with IPv4. Our advice for new procurements is to support coexistence of IPv4 and IPv6 networks and to procure dual IPv4 and IPv6-enabled products when it is cost effective to do so.

Wireless LANs

2.13　There is an increasing business requirement for mobile computing within government to enable more flexible working patterns. Wireless LAN solutions based around the IEEE 802.11 series of standards are well supported in the market place. A useful technical background on the WLAN vulnerabilities and means of mitigating their impact is NISCC Technical Note 04/02, see http://www.uniras.gov.uk/. Existing guidance on the use of wireless technology within government limits wide take-up outside certain well defined situations. With this in mind, CESG, e-Government Unit and Open Geospatial Consortium (OGC) are together considering the development of a standards-based approach to enable wider deployment of wireless within government. IP-SEC can be used for wireless LANs for government information of the lowest protective marking (Restricted), providing implementation, configuration and operation are in accordance with CESG's Manual V. For further advice please contact Harvey Mattinson
Harvey.Mattinson@cabinet-office.x.gsi.gov.uk

Relevant specifications for interconnection and Web services:

- Interconnectivity, Table 1
  http://www.govtalk.gov.uk/egif/interconnection.asp#table1
- Web services, Table 2
  http://www.govtalk.gov.uk/egif/interconnection.asp#table2

Data integration

2.14　The technical policies for systems data integration and transformation cover:

- XML and XML schemas for data integration[3]
- UML, RDF and XML for data modelling and description language
- XSL for data transformation.

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[3] Legacy systems that are tightly integrated or systems that are internal to departments (such as batch processing systems) may use other processing environments.

2.15 The W3C's XML schema recommendation will be the main schema language used for XML-based products and services. ISO/IEC are currently defining standards for XML schema languages (ISO/IEC 19757 Document Schema Definition Languages (DSDL), see http://www.dsdl.org/), and future versions of the e-GIF will mandate these and provide guidance for their use. In the meantime, Schematron (see http://www.ascc.net/xml/resource/schematron/schematron.html) may be used to supplement the W3C XML schema, for example when adding local or application-specific constraints to existing schemas.

2.16 Centrally agreed XML schemas are approved through the GovTalk processes. To view these, go to http://www.govtalk.gov.uk/schemasstandards/xmlschema.asp

Forms

2.17 An XML output shall be provided for forms data entry.

2.18 Future versions of e-GIF will mandate standards for XML-based forms with best-practice guidance on their use: current guidance is to require forms data to be exchanged using XML.

Relevant specifications for data integration:

- Table 3 http://www.govtalk.gov.uk/egif/dataintegration.asp#table3

Content management metadata

2.19 The technical policies for content management metadata cover:

- the adoption and development of the e-GMS, based on the international Dublin Core model, to meet the government's information management and retrieval needs
- the e-GMS is a 'superset' of metadata elements and refinements, and it is unlikely that any single system will require all of them. Organisations are therefore encouraged to develop sector and system-specific standards, removing elements that are not required and adding local constraints
- the development and maintenance of the GCL.

Relevant specifications for content management:

- Table 4 http://www.govtalk.gov.uk/egif/contentmment.asp#table4

Identifiers

2.20 Identifiers shall be used that are appropriate to the business needs.

2.21 Persistent identifiers shall conform to the ANSI/NISO Z39.84 standard http://www.niso.org/

Relevant specifications for identifiers:

- Table 5 http://www.govtalk.gov.uk/egif/contentmment.asp#table5

e-services access and channels

The technical policies for providing direct access to public sector e-enabled services for use by citizens, businesses and public officials are detailed in paragraphs 2.23 to 2.32.

2.22 Government information systems providing e-Government services will:

- be designed so that they are accessible through browser-based technology; other interfaces are permitted in addition to browser-based ones
- aim to provide such services to the user (citizen and business) via a range of delivery channels and devices
- be designed so that the information content of e-Government services can be defined independently of any specific delivery channel
- be designed so that the essential information of a service is accessible to the citizen via delivery channels with limited capability where appropriate, using personalisation technologies such as transcoders.

2.23 Government information systems will be designed to meet UK legislation and to support channels that provide accessibility for disabled people, members of ethnic minorities and those at risk of social/digital exclusion.

2.24 For e-Government services aimed at the citizen, government information systems will be designed to be accessible via multiple channels to suit the specific needs of the citizen.

2.25 When government information systems claim to support a particular delivery channel, then conformance to the listed specifications for that channel is mandatory.

2.26 All government information systems providing e-Government services will be capable of supporting the Internet as a delivery channel, either directly or via third-party services.

2.27 When using the Internet as a delivery channel, government information systems will be designed so that as much information as possible can be accessed and manipulated from minimal functionality browsers.

2.28 Where it is not technically possible to deliver a full service using the limited features of minimal functionality browsers, government information systems can be designed to make use of the full functionality provided by modern computer workstations. In such cases, reasonable alternative ways of delivering a more limited service via minimal functionality browsers should also be provided.

2.29 When using the Internet as a delivery channel, additional middleware or plug-ins can be used when necessary, provided these can be easily downloaded via a browser and without incurring a licensing fee.

2.30 Government information systems will be designed to provide protection against the security risks of connection to the Internet, including the ability to protect against the vulnerability of downloading executable content code that is not authenticated.

2.31 Access standards to e-Government services provided via intermediaries are the responsibility of the intermediaries.

Relevant specifications for e-services access:

- access using modern computer workstations, Table 6
  http://www.govtalk.gov.uk/egif/infoaccess.asp#table6
- access using minimal functionality browsers, Table 7
  http://www.govtalk.gov.uk/egif/infoaccess.asp#table7
- access using mobile phones without minimal functionality browsers, Table 8
  http://www.govtalk.gov.uk/egif/infoaccess.asp#table8

Delivery channels

2.32 The full range of services to be delivered to the citizen will dictate the specifications required. Content management techniques and personalisation technologies can be used to support service delivery, e.g. low-function Web browsers, public kiosks, digital TV, Wi-Fi devices, smart phones as defined in the TSC: specifications for other channels
http://www.govtalk.gov.uk/egif/infoaccess.asp#table7

2.33 Transcoding services, as an example of a personalisation technology, can deliver Web content to a variety of destination environments within greatly reduced timescales and at significantly reduced cost. The principle is that transcoding can be used to dynamically filter, convert and reformat Web content to match the requirements and display capabilities of the destination device. Transcoding technology is server-side software that modifies Web page content based on data protocols, mark-up languages, device and network parameters and user preferences.

2.34 Personalisation technologies may also be used to support groups such as ethnic minorities and visually impaired or blind people (e.g. by using text translation, larger fonts and graphics, audio, etc., via a transcoder). Such aspects are covered by the 'Guidelines for UK government websites', see www.cabinetoffice.gov.uk/e-government/webguidelines

2.35 A government channels policy framework was published in September 2002, see
http://www.govtalk.gov.uk/policydocs/consult_subject_document.asp?docnum=629. Content management techniques, personalisation technologies and transcoding should be used to support the various delivery channels defined in the framework.

2.36 e-services access and channels policies cover:

- *computer workstations*
- *other channels, such as kiosks, PDAs, smart phones and iDTV*
- *mobile phones* – the issues of security relating to transactions undertaken through mobile phones are complex and depend on emerging industry specifications. Work in this area will be undertaken in due course. In the meantime, the lack of specifications does not imply that security issues can be ignored. Decisions will need to be made on a case-by-case basis depending on the nature of the transaction in question
- *Video Conferencing Systems over IP* – many government projects require video conferencing facilities, and multimedia conferencing services with integrated real-time sound, video and data services using a variety of terminals are evolving in the marketplace. Many of the standards for multimedia conferencing are being developed under the general voice over IP (VoIP) activity in the IETF and ITU. Future versions of the e-GIF will refine the specifications required with market-led product developments
- *Voice over IP (VoIP) systems*
- *smart cards* – many government projects are either piloting or intending to use smart cards in the future. Multiple standards exist for both smart cards and terminal devices such as card readers. Projects should select smart cards that support the standards listed in the TSC. Future versions of the e-GIF will refine the required specifications in line with market developments. Best-practice guidance for smart cards is to be produced by the Office of the Deputy Prime Minister (ODPM), and such guidance will be reflected in future versions of the e-GIF. Security requirements implemented according to the smart card specifications may not meet the security policy of particular government projects. It is recommended that central government departments should refer to the Manual of Protective Security. Other parts of the public sector should refer to the Security: e-Government Strategy Framework Policy and Guidelines at http://www.govtalk.gov.uk/policydocs/consult_subject_document.asp?docnum=649 before invoking compliance to the smart card specifications in any contract.

Links to relevant specifications for e-services and channels:

- video Conferencing Systems over IP, Table 9
  http://www.govtalk.gov.uk/egif/infoaccess.asp#table9
- voice over IP (VoIP) systems, Table 10
  http://www.govtalk.gov.uk/egif/infoaccess.asp#table10
- smart cards – data definition, Table 11a
  http://www.govtalk.gov.uk/egif/infoaccess.asp#table11a
- smart cards – applications including multi-applications, Table 11b
  http://www.govtalk.gov.uk/egif/infoaccess.asp#table11b
- smart cards – electrical, Table 11c
  http://www.govtalk.gov.uk/egif/infoaccess.asp#table11c
- smart cards – communication protocols, Table 11d
  http://www.govtalk.gov.uk/egif/infoaccess.asp#table11d
- smart cards – physical, Table 11e
  http://www.govtalk.gov.uk/egif/infoaccess.asp#table11e
- smart cards – security, Table 11f
  http://www.govtalk.gov.uk/egif/infoaccess.asp#table11f

- smart cards – terminal infrastructure, Table 11g
  http://www.govtalk.gov.uk/egif/infoaccess.asp#table11g
- specifications for smart card travel documents, Table 12
  http://www.govtalk.gov.uk/egif/infoaccess.asp#table12

2.37 The list of specifications defined for smart card security is not exhaustive and is dynamic in nature. Additional standards with a security implication for smart cards can be found in 'Security Standards for Smartcards, Issue 1.1, December 2003', namely CC, ETSI, FIPS and EMVCo, which is located on GovTalk, see http://www.govtalk.gov.uk/schemasstandards/egif_document.asp?docnum=839 Furthermore, 'NIST IT 6887 – 2003 Edition, GSC-ISS, Version 2.1' is an architectural model for interchangeable smart card service provider modules. The lifecycle security October 2003 guidelines paper for project managers can also be found on GovTalk, see http://www.govtalk.gov.uk/schemasstandards/egif_document.asp?docnum=824

Standards for business areas

2.38 There are various standards bodies, business communities and other groups working on XML-based and other specifications for the exchange of specific content-related information. They fall into two broad classes: one represents particular business objects, such as invoices or resumés; the other class defines a transaction, for example the submission of an invoice or a deposit into a particular account. Some specifications focus on common business objects and some on standardising complex transactions. Further, some proposed specifications include a single schema for a single business object, while others are frameworks that propose rules and structure for classes of schemas and may include more than 100 individual schemas.

2.39 Specifications generated by these groups are at a wide range of maturity levels. While some are now mature specifications, they must be widely supported by implementations in the market and be the clear market leader for the transaction type before they are included in the e-GIF.

2.40 The standards listed in the TSC are designed to meet specific business areas' requirements. The specifications are at various levels of maturity and the list is not exhaustive. Ad hoc working groups are being set up to study maturing business-specific specifications with the view to making recommendations as to their applicability and inclusion into future versions of the TSC.

Business areas include:

- business object documents
- content syndication and synchronisation
- defence
- e-commerce
- e-Government
- e-learning
- e-news
- e-voting
- finance
- geospatial data
- health

- health and community care
- human resources management
- legal document management
- logistics
- purchasing
- virtual reality
- Web services
- workflow.

Relevant specifications for business areas:

- miscellaneous, Table 13
  http://www.govtalk.gov.uk/egif/specifications.asp#table13
- e-learning, Table 14 http://www.govtalk.gov.uk/egif/business.asp#table14
- e-health, Table 15 http://www.govtalk.gov.uk/egif/business.asp#table15
- finance, Table 16 http://www.govtalk.gov.uk/egif/business.asp#table16
- commerce, purchasing and logistics, Table 17
  http://www.govtalk.gov.uk/egif/business.asp#table17
- workflow and Web services, Table 18
  http://www.govtalk.gov.uk/egif/business.asp#table18

2.41 There are, or will be, vertical international market schemas that contain fragments that will conflict with standards or schemas laid down in the e-GIF. For example, ebXML uses the international address standard whereas the UK has its own address standard. Where this happens, it makes sense to use the vertical international standards in their entirety without trying to unpick them and substitute any UK specifications. However, departments need to be conscious that when they are exchanging data within UK government sectors they will have to do so using the UK specifications, so some mapping may become necessary. As the e-GIF follows international standards wherever possible, this should not become a serious problem.

2.42 It is recommended that any organisation considering adopting one of the listed standards not yet marked as 'Adopted' should consult the appropriate working group before proceeding. The contact details for all e-GIF working groups can be found on GovTalk. Not all standards under consideration will become 'Adopted'.

2.43 The design aim within the e-GIF is to use XML schemas for all new specifications where possible. However, DTDs are permitted when they are included in existing specifications supported by the market and implemented in legacy systems.

Section 3 Implementation support

3.1　This section covers the processes by which the e-GIF and the tools needed to implement it will be developed, applied and maintained.

Priorities

3.2　Although the e-Government Unit will eventually provide XML schemas for all services, the programme for delivering schemas and agreeing further interoperability specifications will be primarily driven by the needs of citizen and business-facing services. Priority will be given to schemas that serve the requirements of services or processes that are generic across many public sector organisations. Facilitation of new, joined-up services and interorganisational process developments will also be given precedence.

XML schema production

3.3　A primary role of the Interoperability Working Group is to promote the production and management of the XML schemas necessary to support data interoperability.

3.4　XML schemas will be developed by specialist groups (see Government Schemas Group below) or by open submission to the GovTalk website. The Government Schemas Group will manage the acceptance, publication and any subsequent change requests for the schema. XML schemas that have been accepted by the group will be published at http://www.govtalk.gov.uk/schemasstandards/schemalibrary.asp and are open for anyone to make comments.

3.5　The Government Schemas Group sets the design rules to be used by the XML schema developers and will use these to validate schemas proposed for publication. These rules can be found at http://www.govtalk.gov.uk/schemasstandards/eservices.asp. The rules include compliance with W3C specifications.

3.6　The Government Schemas Group will track international XML specifications development through links with standards organisations such as W3C and OASIS. These links will provide provisional schemas, which will be taken as one of the inputs for government-wide consultation and adoption if appropriate as described in the TSC.

e-Government Metadata Standard

3.7　Developed by the e-Government Unit in consultation with central and local government organisations, the e-GMS defines the structure and rules governing metadata used by the public sector. This standardisation is essential if data is to be truly interoperable, and if citizens are to be able to find government information and services without a knowledge of the structure of government and the allocation of responsibilities within it.

3.8 The e-GMS is based on ISO 15836 (Dublin Core) but has additional elements and refinements to meet the specialist needs of the public sector. It will be developed further as needs arise and encoding schemes become available. It can be found at
http://www.govtalk.gov.uk/schemasstandards/metadata.asp?page=1&order=title

3.9 The e-GMS will be developed further and maintained according to the following principles. Some of these are necessarily contradictory, and it will be the task of the Metadata Working Group to ensure a practical balance is maintained between conflicting requirements.

3.9.1 It will be independent. It will not be software, application or project-based.

3.9.2 It will be simple to use by those with widely varying experience of preparing resource descriptions.

3.9.3 It will be compliant with other UK Government standards and policies, such as the GDSC.

3.9.4 It will be compliant with international standards. Preference will be given to standards with the broadest remit, so appropriate international standards will take preference over EU standards, and EU standards will take preference over UK standards.

3.9.5 It will be stable. Changes to a standard that will become embedded in all information systems will require considerable effort, time and resources to implement.

3.9.6 It will be extensible. Additional element refinements can be added where it can be shown that these are essential. A balance will need to be struck between the need for extensibility and the need for stability.

3.9.7 It will be inclusive, taking into account the many existing content management metadata schemes, with the aim of minimising the need to rework existing products.

3.9.8 Above all, it will meet the information retrieval and management needs of government.

www.govtalk.gov.uk

3.10 The GovTalk website, http://www.govtalk.gov.uk, forms a fundamental part of the e-GIF implementation strategy. It supports the whole initiative and incorporates the management processes so that government can consult and take decisions using the power and speed of the Internet.

3.11 GovTalk provides implementation support through the production of centrally agreed, freely available XML schemas that can be re-used throughout the public sector to reduce the costs and risks of developing data interchange systems. The website will be used to seek proposals for schemas, publish them for comment and receive requests for changes to them. The site is designed to encourage widespread participation in the development of the

schema set and is completely open for the submission of proposals and comments to encourage innovation from the public sector and industry.

3.12 The website will also be used to provide help and guidance for XML schema developers. This will include best-practice guidance, case study material, and advice on toolkits to support the production of XML schemas, specifically to help with the conversion of legacy system data.

3.13 It is also now being used for wide consultation on a number of other e-Government frameworks and documents. It is intended to make adoption of the e-GIF policies and specifications simple, attractive and cost effective.

Membership of working groups

3.14 Public and private sector organisations working on UK Government interoperability projects may be invited to become full members of the various working groups mentioned at Section 4. They can attend meetings and take part in decision-making and direction-setting for the groups. The list of full members will change over time as new interoperability projects are started and existing ones are completed. All organisations involved in public sector XML-based projects, and any other specifications forming part of the e-GIF, may become associate members and receive information about new proposals and changes.

3.15 The current membership of the groups can be found at http://www.govtalk.gov.uk/schemasstandards/egif_document.asp?docnum=807

Section 4 Management processes

4.1 The roles and responsibilities of central government and other public sector and industry organisations are outlined below. Whilst this is not meant to be exhaustive, it does indicate the main functions.

e-Government Unit

4.2 The e-Government Unit in the Cabinet Office is the lead authority for implementing and maintaining this framework. In collaboration with departments, local authorities and other public sector bodies, the e-Government Unit will:

- lead the development and maintenance of the e-GIF and provide the management infrastructure to support the processes
- act as the focal point for co-ordinating interoperability efforts throughout government and ensuring a rapid response to government proposals and priorities
- manage co-ordination with other governments and international bodies
- co-ordinate the development and maintenance of:
    - the TSC
    - agreed XML schemas for use throughout government
    - the GDSC
    - the e-GMS
    - the GCL
    - advice on toolkits for interfaces and conversions
    - best-practice guidance
- manage the government and industry-wide consultation process
- manage the http://www.govtalk.gov.uk website
- maintain a register of known users in the public and private sectors
- manage the Government Schemas Group
- manage the Metadata Working Group
- manage the Smart Cards Working Group
- manage the compliance process and ensure that interoperability policies and roles are adhered to
- manage interaction with similar initiatives and specifications bodies elsewhere across the world, including W3C, WS-I, IETF, OASIS, DCMI and others.

Public sector organisations

4.3 The full participation of government departments, their agencies, NDPBs, the NHS, devolved administrations and local authorities is essential to successfully deliver interoperability in the public sector.

Although central direction will be provided where required, much of the action will take place in individual public sector organisations that will need to:

- contribute to the continuous development and improvement of this framework

- ensure that e-GIF compliance is a fundamental part of their organisational e-business and IT strategies
- produce a 'roadmap' for implementing their organisation's conformance with the e-GIF
- work with users of their services or data to identify those services that can usefully be made more widely available
- ensure that they have the skills to define and use the specifications needed for interoperability
- establish a contact who understands the impact of requests for change and can respond within the stated time period
- budget for and supply resources to support the processes
- identify the relevant customer(s) or stakeholders within their organisation and ensure their interests are represented
- take the opportunity to rationalise processes (as a result of increased interoperability) to improve the quality of services and reduce the cost of provision.

Industry

4.4   The e-GIF is based on government working in open partnership with industry and has been developed through close working with our industry partners. It proposes joint working and development of the policies and specifications for interoperability, relying heavily on industry worldwide to comment and to provide innovative solutions. Specifically, the following roles will need to be filled:

- application of the policies and specifications agreed in the e-GIF to systems delivered to the public sector
- participation in the consultation process through the 'Request for Comments' (RFC) and 'Request for Proposals' (RFP) processes
- introduction of innovations in technology and business to continually improve the e-GIF and the delivery of its objectives 'at Internet speed'
- participation in the e-Government Unit's various working groups.

The citizen

4.5   e-Government is essentially about government better serving the needs of the citizen. The e-GIF is an enabling framework for delivering the services seamlessly and coherently. The government welcomes and encourages citizens to provide comments, suggestions and innovations that may help it to improve information access and service delivery. The website http://www.govtalk.gov.uk is available for these consultations.

Senior IT Forum

4.6   Formed to address joint issues associated with the acquisition and implementation of government IT projects, the Senior IT Forum (SITF) is jointly hosted by OGC, the e-Government Unit and Intellect. Membership comprises representatives from government departments and agencies, and IT industry

suppliers with an interest in public sector projects. More information is available from http://www.ogc.gov.uk/index.asp?docid=1001627

Interoperability Working Group

4.7 The Interoperability Working Group produced this document and is responsible for all aspects of the e-GIF, including policies, specifications, implementation and management. Membership of the group is open to all public sector bodies. Additionally, industry members may participate in the group on a permanent or call-off basis.

Government Schema Group

4.8 The primary role of the group is to set the specifications for and co-ordinate the production of, XML schemas for use across the public sector. This group, which reports to the Interoperability Working Group, draws together representatives from across the public and private sectors to develop schemas, and to endorse schemas produced elsewhere in the public sector. Schemas produced and endorsed by this group pass through the e-GIF approval process and are published on GovTalk, where they are available for use by other projects throughout the public sector. This group also develops the GDSC.

Terms of reference for the group can be found at http://www.govtalk.gov.uk

Metadata Working Group

4.9 This group, which reports to the Interoperability Working Group, provides advice and comments on all metadata aspects of the e-GIF, and develops and maintains the e-GMS and the GCL.

Terms of reference for the group can be found at http://www.govtalk.gov.uk/schemasstandards/egif.asp?page=1&order=title

Smart Cards Working Group

4.10 This group, which reports to the Interoperability Working Group, is overseeing the incorporation of smart card standards into the e-GIF.

Other working groups

4.11 Specific working groups are set up for particular projects. Details of any groups and their terms of reference are available on GovTalk.
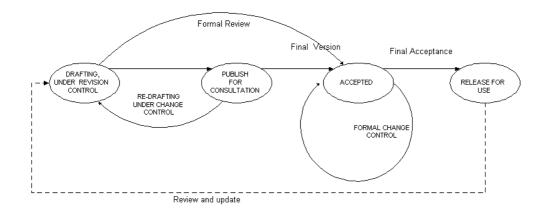
Section 5 Change management

5.1   The e-GIF specifications will inevitably change and will have the capability to change quickly when required. The change management process must ensure that the e-GIF remains up to date and is aligned to the requirements of all stakeholders and to the potential of new technology and market developments. The following paragraphs describe an inclusive Internet-based consultation process that will encourage participation and innovation. They also describe how changes to e-Government resources specifications will be managed.

5.2   'e-Government resources' include the GDSC; the GCL; the TSC; and published XML schemas that are used to define the structure and content of messages between systems.

5.3   XML schemas, and other code-based resources, will be treated as special cases. XML schemas will need to undergo a test programme before being used in an electronic service. Changes to XML schemas will also have to be carefully assessed, as potentially they can have a high impact. Such changes are particularly difficult to manage in large organisations. In some organisations it is estimated that a year is needed to implement a change to a core schema. As a consequence, changes to agreed XML schemas need to be managed carefully, with proper processes in place to ensure that all involved parties to the change are properly consulted and agree to the change. A formal change control procedure will reduce the impact of change on an existing e-service.

5.4   Also, given that the XML schemas carry data that forms part of an organisation's business information exchange processes, there is the potential for mutual dependency between the business processes of a number of organisations encapsulated in the agreed XML schemas.

5.5   XML schemas also have an interdependency with the GDSC, and so changes to both should be carefully co-ordinated.

e-Government resource owner

5.6   Every e-Government resource must have a designated owner (a role or organisation, not a named person). The ownership of the changes should be vested in the organisation(s) that own(s) an e-Government resource. However, the change may not affect just these owning organisation(s), so it is essential that 'user' or peer level organisations have the opportunity to contribute to the change process in a structured and formal way.

Lifetime of an e-Government resource

5.7   As an e-Government resource develops, changes are made informally and work progresses using revision control. The e-Government resource may be published for consultation (see details below). At this stage, the resource should come under formal change control. Full details of the change control procedures are available at
http://www.govtalk.gov.uk/schemasstandards/egif.asp?page=1&order=title

Consultation and innovation

5.8   Some resources, such as the e-GIF, will need to be published for formal consultation. The length and methods of consultation should follow the government guidelines currently in force. However, all assets should be made available for comment by interested parties if they do not undergo formal consultation.

5.9   The overall strategy for transforming government identifies three basic forms of dialogue: public sector to public sector; public sector to business; and public sector to the citizen. If interoperability specifications are to fully support the strategy, then they must be open to the widest form of consultation that involves all these players. The e-GIF consultation process will target organisations that are known to be interested in the specific specifications, having been identified as participants in the service or users of existing specifications, but will be open to all. Unsolicited comments and suggestions will be encouraged over the website.

Request for Comments

5.10   All draft policies, specifications and XML schemas will be posted on GovTalk with a Request for Comments (RFC) on the proposed draft or change. Registered stakeholders will be notified by email of the RFC, but the website offers an invitation to anyone to comment on the draft document. All comments received will be acknowledged and the outcome of the RFC will be published on the site. The consultation process does not preclude unsolicited comments on currently agreed policies and decisions, which are also encouraged.

Request for Proposals

5.11   Whereas the RFC process asks for comments on proposed solutions, the government also requests innovative solutions to problems where the solutions are not clear. In this case, a Request for Proposals (RFP) will be posted on the website, outlining the requirement. The aim is to attract innovation and the most cost-effective solution to the problem, using the worldwide industry and the population base. If a particular proposal is taken forward, this will be published on the site.

Updates to the e-GIF

5.12   The e-GIF will be reviewed annually and updated as necessary.

5.13   The TSC will be revised and updated every six months, subject to a future government strategy for the use of technology in supporting service delivery. Supplementary guidance will be issued between formal updates where this is considered necessary.

5.14   The e-GIF will retain the current numbering sequence: v 4.0, v 5.0, etc. The TSC will start at v 6.0 to match the e-GIF.

5.15   Published issues will be available at
http://www.govtalk.gov.uk/schemasstandards/egif.asp?page=1&order=title

Section 6 Complying with the e-GIF

6.1 The e-GIF policies mandate adherence to the TSC and the e-GMS and this section provides general guidance on what compliance means in that context and how it will be enforced. It is intended to inform all those involved in the development and provision of public sector systems and services of their responsibilities and the timetable for conforming to the e-GIF. Throughout this section, use of the term 'system' is taken to include its interfaces, which are the prime focus of the e-GIF policies and specifications.

6.2 The scope of the e-GIF is set out in paragraphs 1.9–1.20, and also includes those functions within private/commercial organisations that develop and/or deliver licensed government services. However, the prime responsibility for ensuring compliance rests with the government purchasing or licensing authority.

What does complying with the e-GIF mean?

6.3 At the highest level, complying with the e-GIF means:

- providing a browser interface for access
- using XML as the primary means for data integration
- using Internet and World Wide Web standards
- using metadata for content management.

6.4 These four elements are fundamental, but equivalent standards and additional interfaces are permissible. For example, government users will predominantly use a browser interface but may also have the option of Notes client access to an .nsf facility for knowledge management and workflow internally within the Knowledge Network.

6.5 The ultimate test for interoperability is the *coherent exchange of information and services between systems*. If this is achieved, then the system can be regarded as truly interoperable. Furthermore, it must 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 e-GIF compliant, a system should satisfy both these requirements.

6.6 At a detailed level, testing for compliance needs to be done against the policies and specifications listed in the e-GIF. The scope of systems will vary tremendously and the test is therefore not one of

'Does the system comply with all the policies and specifications?'
but
'Does the system contravene any of the policies and specifications?'

6.7 The aspects of the system where the tests need to be applied are:

- interconnection
- data integration
- e-services access
- content management metadata.

6.8   The specifications are set out in the TSC.

Use of XML schemas and data standards

6.9   Systems are expected to use agreed XML schemas and agreed data standards
        listed in the GDSC, both of which are available on GovTalk. Should suitable
        schemas or data standards not be available, or if those available are deemed
        inadequate in some way, the system purchaser/sponsor should invoke the
        RFP/RFC processes immediately.

Timetable

6.10   In practice, it is expected that organisations will not be able to participate
        effectively and at minimum cost in future data interchange processes unless
        they comply with the e-GIF specifications. The compliance rules and timetable
        are that:

        •   all new systems that fall within the mandate will provide interfaces that
            conform to the specifications, or equivalents, in the e-GIF by default. They
            may also provide additional interfaces. New systems should be developed
            to comply with the e-GIF specifications in force on the day approval is given
            to the business case (i.e. the latest versions of e-GIF and the TSC). Should
            changes be made to the e-GIF thereafter which impact on the system
            development, then a full assessment should be made of the cost and
            benefit of accommodating the changes before or after the system goes live

        •   legacy systems that fall within the mandate will need to provide interfaces
            that comply with the specifications or equivalents within the following
            timescales:
            •   for systems that are part of meeting Electronic Service Delivery
                targets, the timetable for meeting those targets will be acceptable
            •   for systems that need to link to Directgov and the Knowledge Network,
                the timetable for making those connections will be acceptable
            •   for other legacy systems within the mandate, the interfaces should be
                provided on demand or through replacement.

6.11   Systems that fall outside the scope and mandate will generally be internal
        administration legacy systems, i.e. those that have no interface to external
        customers or connection to external systems. For these systems, it is
        recommended that every opportunity should be taken to comply with the e-GIF,
        e.g. through upgrade or enhancement activity. This may involve commissioning
        additional work from suppliers.

Stakeholders

6.12 The stakeholders who need to know and understand what complying with the e-GIF means are:

6.13 e-business strategists, who should ensure that their e-business strategy mandates compliance with the e-GIF. They should be aware that compliance with the e-GIF will be part of the conformance check for the release of funding by the e-Government Unit and HM Treasury.

6.14 Senior responsible owners/business project managers/sponsors, who are responsible for ensuring that the relevant e-GIF policies and specifications are applied.

6.15 Project approval bodies, including funding officers and Gateway reviewers, who are responsible for ensuring that their approvals process includes a sign-off for e-GIF compliance.

6.16 Government procurement officers, who are responsible for ensuring that compliance with the e-GIF is included in procurement procedures and contracts.

6.17 Suppliers, e.g. software vendors and consultants, who need to be aware that they are required to adopt the e-GIF policies and specifications or equivalents if they wish to supply their products or services to government.

6.18 Project auditors, e.g. departmental auditors, National Audit Office, Audit Commission and parliamentary committees, who need to ensure that their systems audits and reviews include a check for e-GIF compliance.

Compliance responsibilities

6.19 The ultimate responsibility for compliance rests with the system's senior responsible owner or sponsor. Compliance is by self-regulation using normal departmental checking arrangements throughout the system's development lifecycle. It will be for service organisations themselves to consider how their business processes can be changed to be more effective by taking advantage of the opportunities provided by increased interoperability.

6.20 The approval authority and final arbiter on all questions relating to e-GIF compliance is the e-Government Unit (Technology Policy, email govtalk@cabinet-office.gsi.gov.uk), which will provide help in defining departments' internal compliance regimes where required. The e-GIF team will monitor compliance through the Interoperability Working Group and other liaison groups.

Public sector communities

6.21 The compliance rules for these basic specifications apply to all public sector bodies, but the public sector includes identifiable communities that exchange some types of information with their own members. Examples of this are the exchange of detailed clinical documents within the health sector using the DICOM standard, and ISO 23950: 1998: 'Information and documentation –

Information retrieval (Z39.50) – Application service definition and protocol specification for the exchange of bibliographical data between libraries'. Any specialised data interchange specifications must be in addition to, and must not conflict with, the e-GIF interoperability requirements. In particular, the use of such specifications should not be a barrier if there is a possibility of future interchange of the information outside the community.

Maintaining compliance with new versions of the e-GIF

6.22 The e-GIF is relatively new and will evolve for some considerable time as new policies and specifications are adopted and new areas of interoperability addressed. This will make it difficult, if not impossible, for systems to always be fully compliant with the e-GIF. The e-GIF is formally updated regularly (see paragraph 5.12) and, as part of that update cycle, departments will be consulted, through the Interoperability Working Group and the public consultation processes, on the changes to be made in each new version. The e-Government Unit will only introduce new policies and specifications following these full consultations with departments and other stakeholders, and thus will seek to minimise the burden of change on departments while at the same time maintaining the principle of effective and open interoperability.

6.23 A pragmatic approach will need to be taken, and only if an acceptable business case can be made should a new system in development or an existing system be changed to adopt a new standard immediately it becomes mandated. New specifications may have to be introduced when the system is replaced or undergoes a major enhancement, particularly if its interoperability is necessary for the delivery of e-services or joined-up government.

6.24 This could also have an impact on suppliers' contracts, and it will be necessary to ensure that new long-term contracts do not go out of date.

Failure to comply

6.25 If a system fails the test on any of the aspects listed above, then a migration strategy will need to be produced and agreed by the e-Government Unit (Technology Policy). Failing to comply and the absence of an acceptable migration strategy will lead to the following courses of action:

- compliance with the e-GIF is one of the criteria that will be used when assessing/evaluating departmental e-business strategies and deciding on the release of funding by the e-Government Unit and HM Treasury. It should be recognised that failure to comply will make it very hard to produce an effective strategy
- new systems failing to comply with the e-GIF will not get project approval or funding from the appropriate bodies within their organisations
- systems seeking to link to Directgov, the Government Gateway or the Knowledge Network and failing to comply with the e-GIF will be refused connection
- suppliers who are not prepared to meet the e-GIF specific requirements or equivalents (which do not adversely affect functionality) raised in procurements, etc., will not meet the specifications.

6.26 If no metadata is added to online documents, the information can be hard to locate via Directgov or Internet portals and search engines.

Additional guidance

6.27 An e-GIF Compliance Advisory Service is provided by the National Computing Centre. The service provides a structured, web-based commentary about the e-GIF and a self-assessment questionnaire. Full details of the service are available at http://www.egifcompliance.org

6.28 While the above provides general guidance on the e-GIF compliance requirements, many situations will need to be assessed on a case-by-case basis, and detailed questions of compliance in these situations should be addressed to the e-Government Unit (Technology Policy, email govtalk@cabinet-office.gsi.gov.uk). Additional guidance will be made available in the form of best practice, Case Studies and FAQs on the GovTalk website.

6.29 The e-GIF Accreditation Authority helps reduce risk to public sector IT projects by providing a means whereby individuals and teams can obtain recognised e-GIF credentials. Individuals who demonstrate they have the skills needed to develop e-GIF-compliant systems can become certified e-GIF Practitioners. Similarly, teams having the processes that will enable them to deliver e-GIF projects effectively can be accredited. For more details see http://www.egifaccreditation.org