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# e-Government Interoperability Framework

Part Two: Technical Policies and Specifications

Version 5.0
25th April 2003

# e-government

e-GIF

e-GOVERNMENT
INTEROPERABILITY
FRAMEWORK

VERSION 5

April 2003

# Contents

# 1   Introduction

1.1      This section of the e-GIF defines the minimum[1] set of technical policies and specifications that conform to the policies defined in Part 1.

1.2      The current specification for the e-GIF is given below and covers the areas of interconnectivity, data integration, content management and access. Each area is presented in two parts: in the first the key technical policies are defined for technical standards to meet, while the second comprises a table containing the specification and includes version numbers and notes. Government is, however, committed to ensuring that these technical policies and specifications are kept aligned to the changing requirements of the public sector and to the evolution of the market and technology. Please consult the web site for the latest version of the e-GIF specification at http://www.govtalk.gov.uk/schemasstandards/egif.asp

1.3      Where the specification required is not the latest published version, the version number is quoted e.g. 1.3. Otherwise a reference URL for the specification is quoted.

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[1] Additional specifications may be necessary to support certain requirements; for example the NHS may use DICOM .

# 2   Changes from previous version

The main changes from the previous version 4 of the e-GIF that this version addresses are:

- updated specifications for mailbox access, see Table 1
- updated guidance on IPv6 , see 4.4
- guidance on real time messaging, see 4.6
- guidance on wireless LANs, see 4.5
- guidance on evolving ISO schema standards, see 5.1.2
- updated information on extended programming languages, see Table 5
- updated specifications for mobile phone information access, see Table 6
- specifications for smart cards, see Table 9
- guidance on the use of DTDs, see 8.6

# 3   Issues under review

## 3.1   Issues under review for future versions

- specifications for Video Conferencing and IP Telephony; standards and conforming products are still maturing
- specifications for Voice (XML and IP); standards and conforming products are still maturing
- mandating standards and specifying best practice for Web Services
- mandating standards for Xforms
- selection of specific business area related specifications
- guidance on Semantic Web
- mandating ISO / IEC standards for XML schema languages
- persistent identifiers; DOIs, RFIDs etc.
- specifications for smart phones.

# 4   Interconnection

## 4.1   Interconnection: technical policies

The technical policies for systems interconnection are:

4.1.1   departments are to interconnect using IPv4 and plan for migration to IPv6 in due course. See notes on migration to IPv6 below

4.1.2   interfaces for e-mail systems are to conform to the SMTP/MIME for message transport and POP3 for mailbox retrieval.  Within government, the norm will be to use the intrinsic security provided by the GSI to ensure e-mail confidentiality  Outside the GSI and other secure government networks, S/MIME V3 should be used for secure messaging security unless security requirements dictate otherwise

4.1.3   departments which are connected to the GSI are to use the GSI Directory schema in accordance with CWC Technical Note # 1, Ver 4.1, July 2001 (http://support.gsi.gov.uk/techdoc.htm ), except for WEB based transactions over SOAP when UDDI is to be used

4.1.4   future WEB based services are to be based on SOAP, UDDI and WSDL

4.1.5   projects are to follow the UK Government domain naming policy http://www.e-envoy.gov.uk/domain.htm

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

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

4.1.8   restart and recovery facilities of FTP are to be used when transferring very large files

4.1.9   web based technology is to be used in applications that previously used Terminal Emulation whenever possible [2].

## 4.2   Interconnection: specifications

The UK Government specifications for interconnectivity are:

## Table 1        Specifications for interconnectivity

| Component | Specification |
| --- | --- |
| Hypertext transfer protocols | RFC 2616, Upgrade mechanism in HTTP/1.1 to initiate Transport Layer Security (TLS) over an existing TCP connection. |
| E-mail transport (see 4.3) | E-mail products that support interfaces that conform to the SMTP/MIME for message transfer. This includes RFC 2821; RFC 2822; RFC 2045; RFC 2046; RFC 2646; RFC 2047; RFC 2231; RFC 2048; RFC 3023; RFC 2049. |

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[2] Products exist which 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.

| | |
|---|---|
| | NB. E-mail attachments may conform to the file types for browsers and viewers as defined for the specific delivery channel, see 7.3 |
| E-mail content security | S/MIME V3 shall be used where appropriate for pan government messaging security unless security requirements dictate otherwise. This includes RFC 2630 to RFC 2633. |
| Mailbox access (see 4.3) | Unless security requirements dictate otherwise, e-mail products that provide mail access facilities shall as a minimum conform to POP3 for remote mailbox access. This includes RFC 1939, RFC 1957 and RFC 2449. Where additional mail facilities are required, unless security requirements dictate otherwise, e-mail products that provide advanced mail access facilities shall conform to IMAP for remote mailbox access. This includes RFC 2060, RFC 2342 and RFC 2971 |
| Secure mailbox access | Mailbox access over insecure networks shall use HTTPS, conforming to the Transport security standards listed below. This includes RFC 2595 when using TLS with **IMAP**, POP3 and ACAP to access mailbox. |
| Directory | Directory X.500 core schema as defined in CWC Technical Note # 1, Ver 4.1, July 2001 ( ). LDAP V3 is to be used for general purpose directory user access. |
| Domain name services | DNS (RFC 1035)<br>The UK Government domain naming guidelines are at http://www.ogc.gov.uk/naming/domains.html . GSI domain-naming follows these guidelines as far as possible. GSI e-mail addressing specifications are defined in GNC Technical Notice 2/2001 (Domain Names, DNS and E-mail Addressing). |
| File transfer protocols | FTP (RFC 959) (with restart and recovery) and HTTP (RFC 2616) for file transfer. |
| Newsgroup services | NNTP (RFC 977) where required, subject to security constraints. |
| LAN/WAN interworking | IPv4 (RFC 791) |
| Security | Central government departments should refer to the Manual of Protective Security.<br>Other parts of the public sector should refer to the e-Government Strategy Framework and guidelines on Security at http://www.e-envoy.gov.uk/oee/oee.nsf/sections/frameworks-top/$file/frameworksindex.htm |
| *The following specifications are to be used to meet the requirements of the IAG Security Framework where appropriate.* | |
| IP security | IP-SEC (RFC 2402/2404) |
| IP encapsulation security | ESP (RFC 2406) |
| Transport security | SSL v3/TLS (RFC 2246) |
| *Certain e-government information is 'sensitive' in that it might contain personal or commercially confidential information, but it does not fall within the definitions of government classified information. For the protection of such information, e.g. data and private keys, the following specifications are advised:* | |
| Encryption algorithms | 3DES, AES, Blowfish |
| For signing | RSA , DSA |
| For key transport | RSA , DSA |

| For hashing | SHA-1, MD5 |
|---|---|
| *The above is not exhaustive and is intended as a guide. For advice on specific implementations or specific algorithms please contact the Office of the e-Envoy at security@e-envoy.gov.uk* | |
| Transport | TCP (RFC 793)<br>UDP (RFC 768) where required, subject to security constraints |

Note: Copies of the IETF RFCs can be found at http://www.ietf.org/rfc.html

### 4.3 E-mail

**E-mail transport**
E-mail transport is defined as the interface between two e-mail systems:



**Mailbox access**
Mailbox access is defined as the interface between an e-mail client and e-mail server:



**Migration to IPv6**

4.4 The e-GIF policy is for a gradual migration to IPv6, maintaining coexistence with IPv4. However, our advice is to begin to plan for IPv6 integration in advance of any actual deployment, and to build the need for co-existence of IPv4 and IPv6 into current procurements.

**Wireless LANs**

4.5 There is an increasing business requirement for mobile computing within government to enable more flexible working patterns. Wireless LANs solutions based around the IEEE 802.11 series of standards are well supported in the market place. Existing guidance on the use of wireless technology within government limits wide take-up outside certain well defined situations. With this in mind, CESG, OeE and OGC are together considering the development of a standards based approach to enable wider deployment of wireless within government. Any such standards agreed will be included in future versions of e-GIF. For further advice please contact Harvey.Mattinson@e-envoy.gsi.gov.uk

**Real time messaging**

4.6     Standards for real time messaging are still emerging. Where real time messaging is required the current advice is to conform to the Extensible Messaging and Presence Protocol (xmpp) as defined by the IETF RFC 2778 and other evolving RFCs.


**Web services interoperability**

4.7     The OeE supports the activities of the Web Services Interoperability (WS-I) initiative.  Future versions of e-GIF will mandate standards for Web based services together with best practice guidance on their use; current guidance is to use the following standards:

| | |
|---|---|
| Web service request delivery | SOAP v 1.2, as defined by the W3C, the specifications can be found at http://www.w3.org/TR/soap12-part1/ http://www.w3.org/TR/soap12-part2/<br><br>Guidance on the use of SOAP can be found at http://www.w3.org/TR/soap12-part0/ and http://www.w3.org/TR/xmlp-scenarios/<br><br>See the W3C web site http://www.w3.org for the latest drafts of the SOAP specifications and transport bindings.<br><br>For specific guidance on the use of SOAP messaging with the Government Gateway, see "Developer Guide to Authentication and Authorisation Web Services – Secure and Public" at http://www.govtalk.gov.uk/schemasstandards/egif_document.asp?docnum=716 |
| Web service request registry | UDDI v 3.0 specification  (Universal Description, Discovery  and Integration) defined by UDDI Project, the UDDI specification is managed by the OASIS UDDI TC http://www.oasis-open.org/committees/uddi-spec/index.shtml  The specifications can be found at http://www.uddi.org/specification.html |
| Web service description language | WSDL 1.1, Web Service Description Language as defined by the W3C, the specifications can be found at http://www.w3.org/TR/wsdl |

# 5   Data integration

## 5.1   Data integration: technical policies

5.1.1   The technical policies for systems data integration and transformation are:

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

5.1.2   The XML Schema recommendation of the W3C 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 DSDL Document Schema Definition Languages, 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 W3C XML Schema, for example, when adding local or application specific constraints to existing schemas.

5.1.3   Centrally agreed XML schemas are approved through the UK GovTalk™ processes (see Part 1). To view these go to http://www.govtalk.gov.uk/schemasstandards/xmlschema.asp

## 5.2   Data integration: specifications

5.2.1   The UK Government specifications for data integration and transformation are:

## Table 2   Specifications for data integration

| Component | Specification |
|---|---|
| Data Integration Metadata/Meta Language | XML (Extensible Markup Language) as defined by W3C http://www.w3.org/XML |
| Data Integration Metadata definition | XML schema as defined by W3C, the specifications can be found at XML Schema Part 1: Structures http://www.w3.org/TR/xmlschema-1/structures XML Schema Part 2: Datatypes http://www.w3.org/TR/xmlschema-2/datatypes |

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

| | Government XML schemas, for the latest versions see the GovTalk site at http://www.govtalk.gov.uk/schemasstandards/agreedschema.asp |
|---|---|
| Data transformation | XSL (Extensible Stylesheet Language) as defined by W3C http://www.w3.org/TR/xsl XSL Transformation (XSLT) as defined by W3C http://www.w3.org/TR/xslt |
| Data Modelling and Description Language | UML (Unified Modeling Language) at http://www.omg.org/gettingstarted/specsandprods.htm/ RDF (Resource Description Framework) as defined by W3C http://www.w3.org/TR/REC-rdf-syntax/ |
| Data definition and schema standardisation process | As per UK GovTalk™ processes in Part 1 Government Data Standards, see http://www.govtalk.gov.uk/schemasstandards/eservices.asp |
| Minimum interoperable character set | Transformation Format – 8 bit UTF-8 (RFC 2279), which supports the exchange of the full character set. Individual items in the XML schema may be further restricted in character set on a case by case basis. |
| XML signatures | XML-Signature Syntax and Processing (XMLsig) as defined by W3C http://www.w3.org/TR/2002/REC-xmldsig-core-20020212 |
| XML encryption | XML-Encryption Syntax and Processing (XMLenc) as defined by W3C http://www.w3.org/TR/xmlenc-core/ |
| XML signature and encryption | Decryption Transform for XML Signature as defined by W3C http://www.w3.org/TR/xmlenc-decrypt |
| XML key management where a PKI environment is used | XML-Key Management Specification (XKMS 2.0) as defined by W3C http://www.w3.org/TR/xkms2/ |
| XML security mark-up | (SAML) as defined by OASIS http://www.oasis-open.org/committees/security/index.shtml where a PKI environment is used |

Note: Copies of the W3C specifications can be found at http://www.w3.org/TR
  Copies of the OASIS specifications can be found at http://www.oasis-open.org

**Forms**

5.2.2   Future versions of e-GIF will mandate standards for XML based forms together with best practice guidance on their use; current guidance is to use the XForms 1.0 standards as defined by W3C, see http://www.w3.org/TR/xforms/

**Notes on XML and middleware**

5.2.3
- not all systems are required to be directly XML enabled
- where appropriate it is acceptable to use middleware as illustrated below.

Note: Although the configurations below present potential solutions, the direct XML model should be used unless there is a fundamental reason to use the indirect model..

*Figure 1        Direct XML Model*

*Direct interchange*
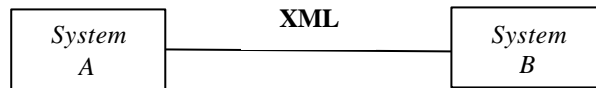


*Figure 2        Interchanges via middleware*
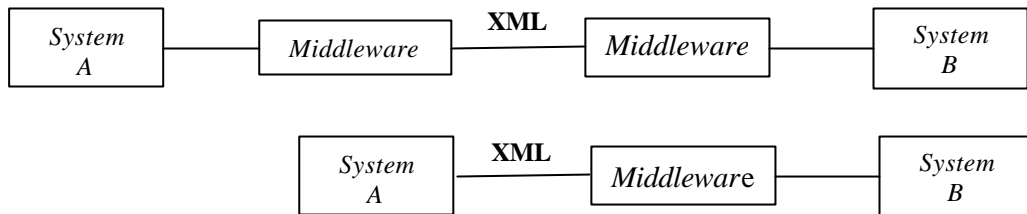
# 6   Content management metadata

## 6.1   Content management metadata: technical policies

The technical policies for content management metadata are:

6.1.1   The adoption and development of the e-GMS, based on the International Dublin Core model, to meet government's information management and retrieval needs

6.1.2   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

6.1.3   The development and maintenance of the GCL (Government Category List).

## Table 3        Specifications for content management metadata

| Component | Specification |
|---|---|
| Content management metadata definition | XML Schema<br>Government XML metadata schema will be held at<br>http://www.govtalk.gov.uk/schemasstandards/xmlschema.asp |
| Content management metadata elements and refinements | e-GMS which incorporates Dublin Core<br>http://www.govtalk.gov.uk/schemasstandards/metadata.asp |
| Subject element, category refinement | GCL (Government Category List)<br>http://www.govtalk.gov.uk/schemasstandards/gcl.asp |
| Data definition | Government Data Standards Catalogue<br>http://www.govtalk.gov.uk/schemasstandards/eservices.asp |

# 7 Access

## 7.1 Access: technical policies

The technical policies for providing access to public sector e-enabled services for use by citizens, businesses or public officials are:

7.1.1 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 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 like transcoders

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

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

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

7.1.5 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

7.1.6 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 as specified in Table 8

7.1.7 Where it is not technically possible to deliver a full service using the limited feature set of Table 8, government information systems can be designed to make use of the full functionality provided by modern computer workstations, see Table 5. In such cases reasonable alternative ways of delivering a more limited service to Table 8 devices should also be provided

7.1.8 When using the Internet as a delivery channel, additional middleware or plug-ins can be used, when necessary, to enhance browser functionality supported by PC and workstations, provided these can be easily downloaded without incurring a licensing fee

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

## 7.2 Access: delivery channels

7.2.1   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 various delivery channels e.g. low function Web browsers, public kiosks, Digital TV, WAP phones etc.

7.2.2   Transcoding services, as an example of personalisation technologies, 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, markup languages, device and network parameters and user preferences.

7.2.3   Personalisation technologies may also be used to support groups such as ethnic minorities, or 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
http://www.envoy.gov.uk/oee/oee.nsf/sections/webguidelines-top/$file/webguidelines.htm

7.2.4   A government channels policy framework was published in September 2002, see
http://www.e-envoy.gov.uk/oee/oee.nsf/sections/frameworks-top/$file/frameworksindex.htm Content management techniques, personalisation technologies and transcoding should be used to support the various delivery channels defined in the framework.

## 7.3 Access: specifications

## Table 4       Specifications for information access – DTV Internet

7.3.1   When the Internet is accessed via DTV, then the standards defined below are to be supported.

| Basic Component | Specification |
|---|---|
| Hypertext interchange formats | HTML v3.2 |
| Document file types | Plain/Formatted Text as (.txt) files<br>Hypertext documents as (.htm) files |
| Spreadsheet file types | Hypertext documents as (.htm) files |
| Presentation file types | Hypertext documents as (.htm) files |
| Character sets and alphabets | UNICODE<br>ISO/IEC 10646-1:2000<br>Transformation Format for 16 planes of group 00 (UTF-16) |
| Graphical/still image information exchange specifications | Joint Photographic Experts Group /ISO10918 (.jpg)<br>Graphics Interchange Format (.gif)<br>Portable Network Graphics (.png) |
| Scripting | ECMA 262 Script |

| | |
|---|---|
| *Note. The standards for Digital TV Media are still maturing; listed below are specific DTV standards under consideration for the e-GIF.* | |
| Format | MHEG-5 |
| Content movement | MHP Multimedia Home Platform ETSI TS 102 812 |

## Table 5 Specifications for information access – Computer Workstations

7.3.2 When the service requires the facilities of a modern computer workstation, then the standards defined below are to be supported. For older, less powerful workstations or alternative devices, see Table 8.

| Basic Component | Specification |
|---|---|
| Hypertext interchange formats | Those parts of HTML v4.01 and XHTML v1.0 commonly implemented by Netscape Navigator v4 or later, and MS Internet Explorer v4 or later, plus their interoperable extensions |
| Document file types | Rich Text Format as (.rtf) files<br>Plain/Formatted Text as (.txt) files<br>Hypertext documents as (.htm) files<br>Adobe Acrobat as (.pdf) minimum viewer version 4<br>Microsoft Word viewer/reader (.doc), minimum support Word97 format.<br>Lotus Notes Web Access (.nsf). |
| Spreadsheet file types | Hypertext documents as (.htm) files<br>Delimited files as (.csv) files |
| Presentation file types | Hypertext documents as (.htm) files |
| Character sets and alphabets | UNICODE<br>ISO/IEC 10646-1:2000<br>Transformation Format for 16 planes of group 00 (UTF-16) |
| Graphical/still image information exchange specifications | Joint Photographic Experts Group /ISO 10918 (.jpg)<br>Graphics Interchange Format (.gif)<br>Portable Network Graphics (.png). For images that will not tolerate information loss use Tag Image File format (.tif)<br>When highly compressed imaging is required use Enhanced Compressed Wavelet (.ecw) |
| Scripting | ECMA 262 Script |
| Vector graphics | Scalable Vector Graphics (.svg)<br>Vector Markup Language (vml) |
| Moving image and audio/visual information exchange specifications | Moving Picture Experts Group (.mpg)<br>MPEG-1/ISO 11172<br>Conversion is provided by most mainstream packages |
| Audio/video streaming data | RealAudio/RealVideo (.ra, .ram, .rm, .rmm)<br>Shockwave (.swf)<br>Windows media formats (.asf, .wma, .wmv )<br>Apple Quicktime (.avi, .mov, .qt)<br>Waveform Audio File Format (.wav)<br>8μ Law |

| | |
|---|---|
| | H263 |
| Animation | Macromedia Flash (.swf)<br>Apple Quicktime (.avi, .mov, .qt)<br>Macromedia Shockwave (.swf) |
| Extended programming | Any suitable programming language or technology may be used when extended programming facilities at the browser are absolutely necessary, subject to the other provisions and policy requirements of the e-GIF, e.g. free downloads of plug-ins |
| General purpose files and compression | File types (.zip), (.gz), (.tgz) and (.tar) |

7.3.3    The specifications for the delivery of services to the citizen via mobile phones are dependent upon the evolution and availability of new technologies like 3G. If there is a need for current service provision via mobile phone then the WAP Specification Suite published by the WAP Forum is appropriate.

7.3.4    The OeE is undertaking a wider mobile communications study and the outcome of this will be reflected in future versions of this framework.

 7.3.5    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.

## Table 6        Specifications for information access – Mobile Phones

| Component | Specification |
|---|---|
| WAP specifications | The specifications to be used are defined by  the WAP Forum, see www.wapforum.org/what/technical.htm |
| GPRS | The General Packet Radio Service specifications as defined by European Telecommunications Standard Institute (ETSI) for Mobile Stations including: EN No: 301 113,  301 344,  301 347 and TS 101 297, 101 351, see www.etsi.org |
| SMS | The Short Message Service specifications as defined by European Telecommunications Standards Institute (ETSI) for Mobile Stations including: ETS 300 536, 537, ETS 300 559, ETS 300 560, see www.etsi.org |
| MMS | The Multimedia Messaging Service specifications as defined by European Telecommunications Standards Institute (ETSI) for Mobile Stations including: TS 122 140, TS 123 140, TS 126 140, see www.etsi.org |

## Table 7        Specifications for information access – Games Consoles

| Component | Specification |
|---|---|
| Hypertext interchange formats | HTML v3.2 |
| Document file types | Plain/Formatted Text as (.txt) files |

| | Hypertext documents as (.htm) files |
|---|---|
| Spreadsheet file types | Hypertext documents as (.htm) files |
| Presentation file types | Hypertext documents as (.htm) files |
| Character sets and alphabets | UNICODE<br>ISO/IEC 10646-1:2000<br>Transformation Format for 16 planes of group 00 (UTF-16) |
| Graphical/still image information exchange specifications | Joint Photographic Experts Group /ISO 10918 (.jpg)<br>Graphics Interchange Format (.gif)<br>Portable Network Graphics (.png) |
| Scripting | ECMA 262 Script |

## Table 8 Specifications for information access – PDA and other devices

7.3.6 These specifications are for access channels with more restricted facilities. If a service requires the facilities of a more sophisticated access device such as a modern PC or Apple Mac, reasonable alternative ways of delivering a more limited service should be provided following the standards defined below.

| Component | Specification |
|---|---|
| Hypertext interchange formats | HTML v3.2 |
| Document file types | Rich Text Format as (.rtf ) files<br>Plain/Formatted Text as (.txt) files<br>Hypertext documents as (.htm) files |
| Spreadsheet file types | Hypertext documents as (.htm) files |
| Presentation file types | Hypertext documents as (.htm) files |
| Character sets and alphabets | UNICODE<br>ISO/IEC 10646-1:2000<br>Transformation Format for 16 planes of group 00 (UTF-16) |
| Graphical/still image information exchange specifications | Joint Photographic Experts Group /ISO 10918 (.jpg)<br>Graphics Interchange Format (.gif)<br>Portable Network Graphics (.png) |
| Scripting | ECMA 262 Script |

## Table 9       Specifications for access – Smart Cards

| Component | Specification | e-GIF status A= *Adopted* R= *Recommended* U= *Under review* F= *Future consideration* | Applicable to | Notes |
|---|---|---|---|---|
| Data definition | Definitions - Government Data Standards Catalogue, http://www.govtalk.gov.uk/schemasstandards/eservices.asp, provides data definitions and XML Schema fragments. | A | All | |
| | **ISO/IEC 7816-6** Identification cards Integrated circuit(s) cards with contacts Part 6: Inter industry data elements | R | All | |
| | **ISO/IEC 7812-1** Identification cards Identification of issuers Part 1: Numbering system | R | All | |
| | **ISO 9992-2** Financial transaction cards Messages between the integrated circuit card and the card accepting device Part 2: Functions, messages (commands and responses), data elements and structures | U | All | |
| | **EN 1546-3** Identification Card Systems - Inter-sector Electronic Purse - Part 3: Data elements and interchanges | U | All | The current edition was published in July 1999 |
| | **EN 1546-4** Identification Card Systems - Inter-sector Electronic Purse - Part 4: Data objects | | | The current edition was published in August 1999 |
| | **eEurope:** secure networks and smart cards **CWA 13987** Smart Card Systems - Interoperable Citizen Services - User Related Information (based on DISTINCT) Part 1: Definition of User Related Information. | U | All | Currently under review |

| Component | Specification | e-GIF status A= *Adopted* R= *Recommended* U= *Under review* F= *Future consideration* | Applicable to | Notes |
|---|---|---|---|---|
| | **CEN ENV1545**-1, which defines the codification of data elements used for public transport (such as the date, time, validation event, transport contract, etc.).<br><br>**CEN ENV1545-2** - Identification card systems: Surface transport applications: Payment related data elements<br><br>**CEN ENV1545-3**<br><br>Part 3 Tachograph related data elements;<br><br>**CEN ENV1545-4**<br>Part 4 Driving licence related data elements;<br>**CEN ENV1545-5**<br>Part 5 Freight identification related data elements;<br>**CEN ENV1545-6**<br>Part 6 Vehicle related data elements. | U | Transport applications | Need to assess overlap with Government Data Standards Catalogue, and existing transport schemas |

| Component | Specification | e-GIF status A= *Adopted* R= *Recommended* U= *Under review* F= *Future consideration* | Applicable to | Notes |
|---|---|---|---|---|
| Applications including multi-applications | **ISO/IEC 7816-4** Identification cards Part 4: Inter-industry commands for interchange | R | Integrated circuit(s) cards with contacts | This sets out the file structures, secure messaging for file access, card application startup, and logical channels for use where the card can have more than one virtual communications channel active. Application specific commands are not described, and therefore the standard treats command codes as application specific where they are not defined in this part. |
| | **ISO/IEC 7816-5** Identification cards Part 5: Numbering system and registration procedure for application identifiers | | | A register of smart card issuers is kept by KTAS in Denmark and used for application selection through the use of unique issuer/application identifier combinations. |
| | **ISO/IEC 7816-7** Part 7: Inter industry commands for Structured Card Query Language (SCQL); **ISO/IEC 7816-11** Part 11: Framework for dynamic handling of multiple applications in integrated circuits cards | | | The current edition was published in June 1994. There is also an amendment ISO/IEC 7816-5/AM1 *Registered application provider identifiers (RIDs)* which was published in December 1996. |
| | **ISO/IEC 7813** Identification cards, Financial transaction cards | R | Financial cards | |
| | **ISO/IEC 7812-2** Identification cards Identification of issuers Part 2: Application and registration procedures | R | All | |
| | **ISO/IEC 15693-4** Identification cards Contactless integrated circuit(s) cards Vicinity cards {Vicinity integrated circuit(s) cards (VICC)} Part 4: Registration of applications/issuers. | R | Vicinity integrated circuit(s) cards | |

| Component | Specification | e-GIF status<br>**A**= *Adopted*<br>**R**= *Recommended*<br>**U**= *Under review*<br>**F**= *Future consideration* | | Notes |
|---|---|---|---|---|
| | | | **Applicable to** | |
| | **EN 1332-1:1999** Identification card systems - Man-machine interface - Part 1: Design principles for the user interface<br>**EN 1332-4:1999** Identification card systems - Man-machine interface - Part 4: Coding of user requirements for people with special needs | R | All | |
| | **Integrated Transport Smartcard Organisation**<br>**ITSO /1000-1** Overview and Business Model<br>**ITSO /1000-2** ITSO Card Data Structure<br>**ITSO /1000-3b** ITSO Terminal Specification<br>**ITSO /1000-4b** Back Office Systems<br>**ITSO /1000-5** Card Format and Data Records – Sub Part 1 – Data Definitions and Card Entities<br>**ITSO /1000-5** Card Format and Data Records – Sub Part 2 – Message Data<br>**ITSO /1000-6** ITSO Security Application Module Overview<br>**ITSO /1000-7** ITSO Confidentiality | R | Public transport smart cards | These standards are Crown copyright and have been developed for use in the public transport sector, Applications developed using these standards can reside on multi-application cards. Some elements of these standards could be used in areas other than transport. |

| Component | Specification | e-GIF status<br>**A**= *Adopted*<br>**R**= *Recommended*<br>**U**= *Under review*<br>**F**= *Future consideration* | | Notes |
|---|---|---|---|---|
| | | | **Applicable to** | |
| Electrical | **ISO/IEC 7816-10**Identification cards -- Integrated circuit(s) cards with contacts – Part 10: Electronic signals and answer to reset for synchronous cards.<br>**ISO/IEC 7816--12**<br>Part 12: USB Interface | R | Integrated circuit(s) cards with contacts | |
| | **ISO/IEC 14443-2** Identification cards - Contactless integrated circuit(s) cards - Proximity cards - Part 2: Radio frequency power and signal interface | R | Proximity integrated circuit cards | This part defines the radio frequency interface, and contains two quite different modulation techniques (Types A and B) for data communication between card and terminal. Type A is based on the Philips Mifare technology (widely licensed to other manufacturers). Type B is a new concept. These two types run in parallel through this part of the standard and through part 3. In addition, some Type A specific items appear in part 4. |
| | **ISO/IEC 10536-3** Identification cards Contactless integrated circuit(s) cards {Close coupling integrated circuit(s) cards (CICC)}<br>Part 3: Electronic signals and reset procedures | U | Close coupling integrated circuit(s) cards | |
| | **ISO/IEC 15693-2** Identification cards Contactless integrated circuit(s) cards Vicinity cards {Vicinity integrated circuit(s) cards (VICC)}<br>Part 2: Air interface and initialisation; | R | Vicinity contactless integrated circuit(s) cards | |

| Component | Specification | e-GIF status<br>**A**= *Adopted*<br>**R**= *Recommended*<br>**U**= *Under review*<br>**F**= *Future consideration* | | Notes |
|---|---|---|---|---|
| | | | **Applicable to** | |
| Communications Protocols | **ISO/IEC 7816-3** Identification cards Part 3: Electronic signals and transmission protocols | R | Integrated circuit(s) cards with contacts | |
| | **ISO/IEC 14443-3** Identification cards - Contactless integrated circuit(s) cards - Proximity cards - Part 3: Initialisation and anticollision<br><br><br><br><br>**ISO/IEC 14443-4** Identification cards - Contactless integrated circuit(s) cards - Proximity cards - Part 4: Transmission protocols | R | Proximity integrated circuit cards | This part continues the Type A and Type B duopoly, defining card initialisation, anti-collision procedures and basic communications protocols. Anti-collision procedures are the methods used to identify and select one card when several cards are active within the RF field of the terminal.<br><br>This contains higher level (message level) data transmission protocol information, equivalent to ISO/IEC 7816's T=1 protocol, and is a bridge across to ISO 7816-4. For Type A cards only, ISO/IEC 14443-4 includes a protocol initialisation procedure. |
| | **ISO/IEC 15693-3**, Identification cards - Contactless integrated circuit(s) cards - Vicinity cards - Part 3: Anti-collision and transmission protocol | R | Vicinity contactless integrated circuit cards | |
| | **ISO 8583** Financial transaction card originated message – interchange message specification | U | All | |
| | **ISO 9992-1** Financial transaction cards Messages between the integrated circuit card and the card accepting device Part 1: Concepts and structures; **ISO 9992-2** Part 2: Functions, messages (commands and responses), data elements and structures. | U | All | |
| | **ISO 10202-2** Financial transaction cards Security architecture of financial transaction systems using integrated circuit cards Part 2: Transaction process; **ISO 10202-6** Part 6: Cardholder verification | R | All | |

| Component | Specification | e-GIF status<br>**A=** *Adopted*<br>**R=** *Recommended*<br>**U=** *Under review*<br>**F=** *Future consideration* | | Notes |
|---|---|---|---|---|
| | | | **Applicable to** | |
| | **ISO/IEC 10536-4** Identification cards Contactless integrated circuit(s) cards {Close coupling integrated circuit(s) cards (CICC)} Part 4: Answer to reset and transmission protocols. | U | Close coupling integrated circuit(s) cards | |

| Component | Specification | e-GIF status<br>**A**= *Adopted*<br>**R**= *Recommended*<br>**U**= *Under review*<br>**F**= *Future consideration* | Applicable to | Notes |
|---|---|---|---|---|
| Physical - Physical and interface standards cover the card's dimensions; location and layout of contacts. | **Physical characteristics**<br>**ISO/IEC 7810** Identification cards | R | All contact and combination cards | To ensure that they can be read in a standard reader, all cards should be in ID-1 format as defined in this standard. |
| | **Embossing**<br><br>**ISO/IEC 7811-1** Identification cards Recording technique –<br>Part 1: Embossing.<br>**ISO/IEC 7811-3** Identification cards Recording technique –<br>Part 3: Location of embossed characters on standard ID-1 cards. | R | Any card where embossing is required. | Embossing should be in the standard location as defined for the benefit of the visually impaired and for interoperability reasons and should conform to the standard in other respects such as height and depth of embossing. It should be noted, however, that not all smart card readers can accept embossed cards; the decision to emboss should be taken with care.<br><br>Note: ISO/IEC 7811-3 will be incorporated into ISO/IEC 7811-1 from the next edition. |
| | **ISO/IEC 7816-1** Identification cards Part 1: Physical characteristics<br><br>**ISO/IEC 7816-2** Identification cards - Integrated circuit(s) cards with contacts – Part 2: Dimensions and location of the contacts | R | Integrated circuit(s) cards with contacts | This part supplements ISO/IEC 7810, setting out the particular physical characteristics of IC cards with contacts.<br><br>This part has been revised recently to reduce some of its options, especially in the area of embossing (which has been shown to be detrimental to embedded silicon) and phasing out of the original (French) contact positions. |
| | **ISO/IEC 14443-1** Identification cards - Contactless integrated circuit(s) cards - Proximity cards - Part 1: Physical characteristics | R | Proximity integrated circuit cards | This part supplements the physical characteristics defined in ISO/IEC 7810 |
| | **ISO/IEC 15693-1** Identification cards - Contactless integrated circuit(s) cards - Vicinity cards - Part 1: Physical characteristics This part of **ISO/IEC 15693** was published on 2000-07-15 | R | Vicinity contactless integrated circuit cards | This part of **ISO/IEC 15693** was published on 2000-07-15 |

| Component | Specification | e-GIF status<br>**A**= *Adopted*<br>**R**= *Recommended*<br>**U**= *Under review*<br>**F**= *Future consideration* | Applicable to | Notes |
|---|---|---|---|---|
| | **ISO/IEC 10536-1** Identification cards Contactless integrated circuit(s) cards<br>• Part 1: Physical characteristics;<br>• **ISO/IEC 10536-2**<br>• Part 2: Dimensions and locations of coupling areas; | U | Close coupling integrated circuit(s) cards | |
| | **Tactile identifiers**<br><br>**BS EN 1332-2** Identification card systems – Man-machine interface – Part 2: Dimensions and location – a tactile identifier for ID-1 cards | U | Where embossing is not used and there is a requirement for the user to present the card in a particular orientation, a tactile identifier should be provided as an aid to those with impaired vision. | Certain card personalization equipment, unless modified, may have difficulty processing cards with tactile identifiers of the 'notch' type. Agreement must therefore be reached with the personalization service provider to use such cards. |

| Component | Specification | e-GIF status<br>**A**= *Adopted*<br>**R**= *Recommended*<br>**U**= *Under review*<br>**F**= *Future consideration* | | Notes |
|---|---|---|---|---|
| | | | **Applicable to** | |
| Security | **ISO/IEC 7816-8**  Identification cards -- Integrated circuit(s) cards with contacts<br><br>Part 8: Security inter industry commands<br>**ISO/IEC 7816-9**<br>Part 9: Additional inter industry commands and security attributes<br><br>**ISO/IEC 7816-11** Identification cards -- Integrated circuit(s) cards with contacts -- Part 11: Personal verfication through biometric methods.<br>**ISO/IEC 7816-15** Identification cards -- Integrated circuit(s) cards with contacts -- Part 15: Cryptographic token information in IC cards. | R | Integrated circuit(s) cards with contacts | |
| | **ISO 10202** Financial transaction cards Security architecture of financial transaction systems using integrated circuit cards<br>Part 1: Card life cycle;<br>Part 2: General principles and overview;<br>Part 3: Cryptographic key relationships;<br>Part 4: Secure application modules;<br>Part 5: Use of algorithms;<br>Part 6: Cardholder verification;<br>Part 7: Key management | U | All | |
| | **eEurope: secure networks and smart cards**<br>**CWA 14355** Guidelines for the implementation of Secure Signature-Creation Devices<br>**CWA 14170** Security Requirements for Signature Creation Systems<br>**CWA 14169** Secure Signature-Creation Devices, version 'EAL 4+'<br>**CWA 14168** Secure Signature-Creation Devices, version 'EAL 4'<br>**CWA 14167** Security Requirements for Trustworthy Systems Managing Certificates for Electronic Signatures<br><br>Part 1: System Security Requirements<br><br>Part 2 Cryptographic Module for CSP Signing Operations - Protection Profile (MCSO-PP) | U | All | |

| Component | Specifications | e-GIF Status A= Adopted R= Recommended U= Under Review F= Future consideration | | Notes |
|---|---|---|---|---|
| | | | Applicable to | |
| Terminal Infrastructure | **EN 1332-3:1999** Identification card systems - Man-machine interface - Part 3: Key pads | R | All | |
| | **PC/SC Standards**<br><br>**Consortium standards**<br>**PC/SC Workgroup**<br>Interoperability Specification for ICCs and Personal Computer Systems<br>• Part 1. Introduction and Architecture Overview<br>• Part 2. Interface Requirements for Compatible IC Cards and Interface Devices<br>• Part 3. Requirements for PC-Connected Interface Devices<br>• Part 4. IFD Design Considerations and Reference Design Information<br>• Part 5. ICC Resource Manager Definition<br>• Part 6. ICC Service Provider Interface Definition<br>• Part 7. Application Domain/Developer Design Considerations<br>• Part 8. Recommendation for Implementation of Security and Privacy ICC Devices | U | All | For terminal equipment via personal computer systems. |

# 8   Specifications for business areas

8.1     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 resumes, 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 a hundred individual schemas.

8.2     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 within the e-GIF.

8.3     Table 10 is a list of specifications that 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 e-GIF.  For example, the e-procurement Interoperability Working Group is to examine the available XML specifications for e-commerce and e-procurement.

8.4     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.

8.5     It is recommended that any organisation considering adopting one of the standards listed but 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".

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

## Table 10 Specifications for specific business areas

| Industry Standard and Sponsoring Organisation | Areas covered by the standards developed by the organisation | e-GIF status A = Adopted; see notes for applicability R = Recommended for consideration U = Under review by an ad-hoc group F = For future consideration | |
|---|---|---|---|
| | | Status | e-GIF area of applicability |
| UK GovTalk Sponsor: Office of the e-Envoy http://www.govtalk.gov.uk | e-government | A | Mandatory e-GIF schema. |
| XBRL (eXtensible Business Reporting Language) Sponsor: American Institute of Certified Public Accountants. http://www.xbrl.org | Finance | R | Used for financial reporting, has been adopted by the Inland Revenue for XML based forms and corporation tax taxonomy. |
| RIXML Research Information Exchange Markup Language www.rixml.org | Finance | U | Applicability to e-GIF to be studied. A financial content format, essentially financial analysis and reports. |
| MDDL Market Data Definition Language www.mddl.org | Finance | U | Applicability to e-GIF to be studied. Financial markets and report. |
| IFX (Interactive Financial eXchange) Sponsor: The IFX Forum http://www.ifxforum.org/ifxforum.org/index.cfm | Finance | U | Applicability to e-GIF to be studied. A financial transport and exchange format. |
| OFX (Open Financial Exchange) Sponsor: CheckFee, Intuit & Microsoft http://www.ofx.net/ofx/default.asp | Finance | U | Applicability to e-GIF to be studied. Open Financial Exchange is the solution to the financial services industry's need for a simplified way to exchange electronic financial data with consumers and small businesses. |
| FinXML (Financial XML) Sponsor: FinXML Consortium http://www.finxml.com/ | Finance | U | Applicability to e-GIF to be studied. |
| FIXML (Financial Information Exchange Markup Language) Sponsor: FIX Protocol Organization http://www.fixprotocol.org | Finance | U | Applicability to e-GIF to be studied. |
| FpML (Financial Products Markup Language) Sponsor: FpML Organization http://www.fpml.org/ | Finance | U | Applicability to e-GIF to be studied. |
| Legal XML Sponsor: OASIS, http://www.legalxml.org | Legal Document Management | R | Applicability to e-GIF being studied. A content format for legal data. OASIS technical committees for electronic Court Filing, Contracts, Transcripts, Integrated Justice, Legislative Information, and Notorization. |
| SyncML Sponsor: SyncML http://www.syncml.org/ | Content Syndication & Synchronization | F | Applicability to e-GIF to be studied. SyncML is the common language for synchronizing devices and applications over a network. |
| HR-XML (Human Resources XML) Sponsor: HR-XML Consortium http://www.hr-xml.org/channels/home.htm | Human Resource Management | U | Applicability to e-GIF to be studied. To be considered for Human Resources Exchange applications. |

| Industry Standard and Sponsoring Organisation | Areas covered by the standards developed by the organisation | e-GIF status |  |
|---|---|---|---|
|  |  | A = Adopted; see notes for applicability<br>R = Recommended for consideration<br>U = Under review by an ad-hoc group<br>F = For future consideration | |
|  |  | Status | e-GIF area of applicability |
| NewsML<br>http://www.newsml.org/<br>  Sponsor: International Press Telecommunications Council (IPTC).<br>http://www.iptc.org/ | e-news | R | Being considered for statistical data by the Office for National Statistics. |
| CRIS (Common Relational Information Schema)<br>  Sponsor: Machinery Information Open Systems Alliance<br>http://www.mimosa.org/ | Industrial Automation | F | Applicability to e-GIF to be studied. |
| eBIS XML<br>  Sponsor: BASDA (Business Application Software Developers Association)<br>http://www.basda.org/ | e-commerce Purchasing | U | The e-procurement Interoperability Working Group is considering which standard to adopt for government. |
| ebXML (Electronic Business XML)<br>  Sponsor: OASIS.<br>http://oasis-open.org/committees/ebxml-msg/<br>http://www.ebxml.org/ | e-commerce Purchasing Logistics | R | The e-procurement Interoperability Working Group is considering which standard to adopt for government. OASIS ebXML Messaging Services Specification. |
| ebXML Registry Information Model and ebXML Registry Services)<br>  Sponsor: OASIS.<br>http://www.oasis-open.org/committees/regrep/ | e-commerce Purchasing Logistics | R | The e-procurement Interoperability Working Group is considering which standard to adopt for government. |
| ebXML Collaboration Protocol Profiles (CPPs) and Collaboration Protocol Agreements (CPAs).<br>  Sponsor: OASIS.<br>http://www.oasis-open.org/committees/ebxml-cppa/<br>http://www.ebxml.org/ | e-commerce Purchasing Logistics | U | The e-procurement Interoperability Working Group is considering which standard to adopt for government. |
| ebXML (Electronic Business XML)<br>UN/CEFACT ebXML Business Process Specification Schema<br>  Sponsor: UN/CEFACT.<br>http://www.ebtwg.org/<br>http://www.ebxml.org | e-commerce Purchasing Logistics | U | The e-procurement Interoperability Working Group is considering which standard to adopt for government. |
| UN/CEFACT ebXML Core Components Specification<br>  Sponsor: UN/CEFACT.<br>http://www.ebtwg.org/<br>http://www.ebxml.org/ | e-commerce Purchasing Logistics | R | The e-procurement Interoperability Working Group is considering which standard to adopt for government. |
| ebXML (Electronic Business XML)<br>  Sponsor: UN/CEFACT.<br>http://www.ebtwg.org/projects/<br>http://www.ebxml.org/ | e-commerce Purchasing Logistics | U | The e-procurement Interoperability Working Group is considering which standard to adopt for government. |
| UBL (Universal Business Language)<br>  Sponsor : OASIS<br>http://www.oasis-open.org/committees/ubl | e-commerce Purchasing Logistics | R | The e-procurement Interoperability Working Group is considering which standard to adopt for government.<br>[NOTE: xCBL effort at CommerceOne moved to UBL at OASIS] |
| BizTalk<br>  Sponsor: Microsoft<br>http://www.biztalk.org/home/default.asp | e-commerce Purchasing Logistics | U | The e-procurement Interoperability Working Group is considering which standard to adopt for government. |

| Industry Standard and Sponsoring Organisation | Areas covered by the standards developed by the organisation | e-GIF status<br>A = Adopted; see notes for applicability<br>R = Recommended for consideration<br>U = Under review by an ad-hoc group<br>F = For future consideration | |
|---|---|---|---|
| | | Status | e-GIF area of applicability |
| BTP (Business Transactions Protocol)<br>  Sponsor: OASIS<br>http://www.oasis-open.org/committees/btp | e-commerce | U | The e-procurement Interoperability Working Group is considering which standard to adopt for government |
| Controlled Trade Markup Language<br>  Sponsor: OASIS<br>http://www.oasis-open.org/committees/controlled-trade | e-commerce | R | DTI to consider |
| EAN.UCC Simpl-eb Business Message Standards Version 1.0<br>  Sponsor: EAN<br>http://www.ean-int.org/index800.html | e-commerce | U | The e-procurement Interoperability Working Group is considering which standard to adopt for government |
| OAGIS (Open Applications Group Integration Specification)<br>  Sponsor: Open Applications Group, Inc.<br>http://www.openapplications.org/ | Human Resource Management<br>Finance<br>e-commerce<br>Purchasing<br>Logistics | U | The e-procurement Interoperability Working Group is considering which standard to adopt for government |
| Wf-XML (Workflow XML)<br>  Sponsor: Workflow Management Coalition<br>http://www.wfmc.org/ | Workflow | U | Applicability to e-GIF to be studied by Workflow Working Group.<br><br>This schema defines a language used to exchange information among Workflow Management Systems |
| BPML 1.0 (Business Process Modeling Language)<br>http://www.bpmi.org | Workflow | U | Applicability to e-GIF to be studied by Workflow Working Group. |
| WSCI 1.0  (The Web Service Choreography Interface)<br>Sponsor: BEA, Sun, Oracle<br>http://wwws.sun.com/software/xml/developers/wsci/wsci-spec-10.pdf | Workflow | U | A language to describe the flow of messages exchanged by a Web service in the context of a process.<br><br>Applicability to e-GIF to be studied by Workflow Working Group. |
| BPEL4WS 1.0 (Business Process Execution Language for Web Services)<br>Sponsor: IBM, Microsoft, BEA<br>http://www-106.ibm.com/developerworks/webservices/library/ws-bpel/ | Workflow | U | Applicable to peer-to-peer interaction between WSDL services, describing both the process and its partners.<br><br>Applicability to e-GIF to be studied by Workflow Working Group. |
| EML (Election Mark-up Language)<br>  Sponsor: OASIS<br>http://www.oasis-open.org/committees/election | e-Voting | R | Being trialled in UK local government elections. See EML(UK)<br>http://www.govtalk.gov.uk/schemasstandards/agreedschema.asp |
| XLIFF (XML Localization Interchange File Format)<br>  Sponsor: OASIS<br>http://www.oasis-open.org/committees/xliff | Localization | U | |

| Industry Standard and Sponsoring Organisation | Areas covered by the standards developed by the organisation | e-GIF status<br><br>A = Adopted; see notes for applicability<br>R = Recommended for consideration<br>U = Under review by an ad-hoc group<br>F = For future consideration | |
|---|---|---|---|
| | | Status | e-GIF area of applicability |
| IMS Content Packaging (V1.1.2) Information Model<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | R | Recommended for consideration by OeE/DfES e-learning Working Groups |
| IMS Content Packaging (V1.1.2) XML Binding<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | R | Recommended for consideration by OeE/DfES e-learning Working Groups |
| SCORM 1.2 Content Aggregation Model application profile<br>Sponsor: ADL<br>http://www.adlnet.org/index.cfm?flashplugin=1&fuseaction=home | e-learning | U | Under review by OeE/DfES e-learning Working Groups |
| SCORM 1.2 Runtime API application profile<br>Sponsor: ADL<br>http://www.adlnet.org/index.cfm?flashplugin=1&fuseaction=home | e-learning | R | Recommended for consideration by OeE/DfES e-learning Working Groups |
| IEEE 1484.12.1 - 2002 LOM<br>Sponsor: IEEE<br>http://www.ieee.org/ | e-learning | R | Recommended for consideration by OeE/DfES e-learning Working Groups |
| IMS Meta-data (V1.2.1) XML Binding<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | R | Recommended for consideration by OeE/DfES e-learning Working Groups |
| IMS Question and Test Interoperability (V1.2.1) Information Model<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | R | Recommended for consideration by OeE/DfES e-learning Working Groups |
| IMS Question and Test Interoperability (V1.2.1) XML Binding<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | R | Recommended for consideration by OeE/DfES e-learning Working Groups |
| IMS Enterprise (V1.1) Information Model<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | U | Under review by OeE/DfES e-learning Working Groups |

| Industry Standard and Sponsoring Organisation | Areas covered by the standards developed by the organisation | e-GIF status<br><br>A = Adopted; see notes for applicability<br>R = Recommended for consideration<br>U = Under review by an ad-hoc group<br>F = For future consideration | |
|---|---|---|---|
| | | Status | e-GIF area of applicability |
| IMS Enterprise (V1.1) XML Binding<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | U | Under review by OeE/DfES e-learning Working Groups |
| IMS Learner Information Package (V1.0) Information Model<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | R | Recommended for consideration by OeE/DfES e-learning Working Groups |
| IMS Learner Information Package (V1.0) XML Binding<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | U | Under review by OeE/DfES e-learning Working Groups |
| IMS Reusable Definition of Competency or Educational Objective (V1.0)<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | U | Under review by OeE/DfES e-learning Working Groups |
| IMS Digital Repositories (V1.0)<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | U | Under review by OeE/DfES e-learning Working Groups |
| IMS Simple Sequencing (V1.0)<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | U | Under review by OeE/DfES e-learning Working Groups |
| IMS Learning Design (V1.0)<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | U | Under review by OeE/DfES e-learning Working Groups |
| IMS Guidelines for Developing Accessible Learning Applications (V1.0)<br>Sponsor: IMS Global Learning Consortium, Inc.<br>http://www.imsproject.org/ | e-learning | R | Recommended for consideration by OeE/DfES e-learning Working Groups |
| BS7988<br>A code of practice for the use of IT in the delivery of assessments<br>Sponsor: BSI<br>http://www.bsi-global.com/ | e-learning | R | Recommended for consideration by OeE/DfES e-learning Working Groups |

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|---|---|---|---|
| | | Status | e-GIF area of applicability |
| BS8426 A code of practice for e-support in electronic learning systems Sponsor: BSI http://www.bsi-global.com/ | e-learning | F | For future consideration by OeE/DfES e-learning Working Groups |
| BS8419 Interoperability between Metadata Systems used for Learning, Education and Training Sponsor: BSI http://www.bsi-global.com/ | e-learning | F | This is under development and will be considered in the future by OeE/DfES e-learning Working Groups |
| Health Level Seven (HL7) v3 Sponsor: hl7 http://www.hl7.org | Health | R | To be considered by NHS Information Standards Board. |
| NHS Data Dictionary & Manual Version v2 Sponsor: NHS Information Authority http://www.nhsia.nhs.uk/datastandards/pages/ddm/index.htm | Health | R | Contains nationally agreed NHS data standards which are mandatory within the NHS . |
| Schemas supported by the Scottish Health and Community Care XML Steering Group http://www.show.scot.nhs.uk/xml/steeringgrp | Health and community care | R | NHS Scotland for use in Scotland only To be considered by NHS Information Standards Board |
| Draft Extensible (X3D) International Standard Sponsor: web3d and ISO http://www.web3d.org/fs_specifications.htm | Virtual Reality | R | See current draft of ISO/IEC FCD 19775:200x |
| ISO/IEC 14772-1:1997 Sponsor: ISO http://www.web3d.org/technicalinfo/specifications/vrml97/index.htm | Virtual Reality | R | |
| GML (Geography Markup Language) Sponsor: Open GIS Consortium (OGC) http://www.opengis.org/techno/specs.htm | Geospatial data | A | |

# 9  Appendices

## Appendix A: Abbreviations and Acronyms used in e-GIF

| | |
|---|---|
| 3DES | Treble Data Encryption Standard |
| 3G | Third Generation mobile phones |
| AES | Advance Encryption Algorithm |
| BS | British Standard |
| .csv | Comma Separated Value format |
| DCMI | Dublin Core Metadata Initiative |
| dhtml | Dynamic Hypertext Markup Language |
| DICOM | Digital Imaging and Communications in Medicine |
| DNS | Domain name services |
| DOI | Digital object identifier |
| DSA | Digital Signature Algorithm |
| DTV | Digital Television |
| EC | European Commission |
| ECMA | European Computer Manufacturers Association |
| EGF | Electronic Government Framework |
| e-GIF | e-Government Interoperability Framework |
| e-GMF | e-Government Metadata Framework |
| e-GMS | e-Government Metadata Standard |
| ESP | Encapsulation Security Protocol |
| FAQs | Frequently Asked Questions |
| FTP | File Transfer Protocol |
| .gif | Graphics Interchange Format |
| GCL | Government Category List |
| GDN | Government Data Network |
| GML | Geography Markup Language |
| GNC | GSI Nerve Centre |
| GSI | Government Secure Intranet |
| GUI | Graphic User Interface |
| .gz | GZIP compression file format |
| HTML | Hypertext Markup Language |
| HTTP | Hypertext transfer protocols |
| IAG | Information Age Government |
| IDA | Interchange of Data between Administrations |
| IETF | Internet Engineering Task Force |
| IP | Internet Protocol |
| ISO/IEC | International Standards Organisation |
| JPEG | Joint Photographic Experts Group |
| .jpg | Joint Photographic Experts Group File Format |

| | |
|---|---|
| LAN | Local Area Network |
| LDAP | Lightweight Directory Access Protocol |
| MD5 | Message Digest 5 |
| MIReG | Managing Information Resources for e-Government |
| mp3 | MPEG (Moving Picture Experts Group) Audio Layer 3 |
| MPEG | Moving Picture Experts Group |
| .mpg | Moving Picture Experts Group File Format |
| MS | Microsoft |
| NDPB | Non Departmental Public Body |
| NHS | National Health Service |
| NNTP | Network News Transfer Protocol |
| .nsf | Notes Storage File |
| OASIS | Organization for the Advancement of Structured Information Standards |
| OGC | Open GIS Consortium |
| .pdf | Portable Document Format |
| .png | Portable Network Graphics |
| PDA | Personal Digital Assistant |
| POP | Post Office Protocol |
| RDF | Resource Description Framework |
| RFC | Request for Comments |
| RFID | Radio Frequency Identification |
| RFP | Request for Proposals |
| RSA | Rivest-Shamir-Adleman |
| .rtf | Rich Text Format |
| SHA-1 | Secure Hash Algorithm 1 |
| S/MIME | Secure Multipurpose Internet Mail Extensions |
| SMTP/MIME | Simple Message Transfer Protocol/Multipurpose Internet Mail Extensions |
| SSL | Secure Socket Layer |
| .svg | Scalable Vector Graphics |
| .tar | Tape Archive File Format |
| TCP | Transmission Control Protocol |
| .tif | Tag Image File Format |
| TLS | Transport Layer Security |
| UDDI | Universal Description Discovery and Integration |
| UDP | User Datagram Protocol |
| UN/ECE | United Nations |
| UML | Unified Modeling Language |
| URL | Uniform Resource Locator |
| UTF | Universal Transformation Format |
| VML | Vector Markup Language |
| WAN | Wide Area Network |
| XHTML | Extensible Hypertext Markup Language |
| XML | Extensible Markup Language |
| XSL | Extensible Stylesheet Language |
| WAP | Wireless Access Protocol |
| .wma | Windows Media Audio |
| .wmf | Windows Metafile Format |
| .wmv | Windows Media Video |
| WSDL | Web Services Description Language |
| WS-I | Web Services Interoperability Organisation |
| W3C | World Wide Web Consortium |

## Appendix B: Glossary of Metadata Terms

**Category List** The simplest type of controlled vocabulary is a high-level categorisation (or classification) scheme. At the time of input, one or more categories must be selected from the scheme and added to the document metadata. At the time of seeking information, the user does not have to think of keywords, but simply browses the list of categories and subcategories.

**Content Metadata** A summary of information about the form and content of a resource. The term 'metadata' has been used only in the past 15 years, but has become particularly common with the popularity of the World Wide Web. The underlying concepts have been in use for as long as collections of information have been organised. Of particular interest to this Framework are the facets of metadata intended to support resource discovery and records management. 'Metadata' can also be used to describe more technical aspects of information resources; the type of information needed to transfer information from one type of computer or software application to another. 'Metadata' of this type is covered in the e-GIF.

**DOI (digital object identifier)** A type of persistent identifier. A persistent identifier is a way of permanently attaching a unique code (letters or numbers) to a document or any digital object. If the location or URL changes, then searching for the persistent identifier itself will find the exact object, document or original content.

**Element** One of the items that collectively form a metadata structure. Common elements are 'title', 'creator', 'date' and 'publisher'. Dividing data into elements allows users to carry out more accurate searches by searching on one element only. For instance, when looking for documents by Jennifer Green, searching the 'creator' field only will retrieve items by Jennifer Green only. It avoids items where the word 'green' appears in other contexts, as a subject, location etc.

**Element Refinement** A sub-set of an element, to make the meaning narrower or more specific, e.g. 'Date created', 'Date destroyed' as refinements of 'Date'. A refined element shares the meaning of the unrefined element, but with a more restricted scope. A user who does not understand a specific element refinement term should be able to ignore the refinement and treat the metadata value as if it were the broader element, although this will lose some precision. The definitions of element refinement terms must be freely available.

**Encoding Scheme** A scheme that controls the content, or 'value' of an element or element refinement, in order to clarify the meaning or improve resource discovery. These schemes include controlled vocabularies and formal notations or parsing rules. A value expressed using an encoding scheme will thus be a token selected from a controlled vocabulary (e.g. a term from a classification system or set of subject headings) or a string formatted in accordance with a formal notation (e.g. "2000-01-01" as the standard expression of a date). Encoding schemes are designed to be interpreted by machines or by human readers.

The definitive description of an encoding scheme must be clearly identified and available for use by those attempting to find information as well as those creating the metadata records.

**Field** Commonly used in database applications to describe a space in which data of the same type is entered (e.g. 'title' or 'price'), 'field' is a similar concept to 'element'.

**Information Retrieval** Finding the right information. Good information retrieval methods help ensure users find everything they are looking for, and only what they are looking for.

**Metadata Record** A full set of structured relevant metadata, comprising all relevant elements, describing one information resource. A metadata record can take many forms;

* as part of the main information resource itself, e.g. the metadata of an XML file
* a completely separate record held apart from the information resource itself and even in a different format, e.g. an automated library catalogue
* an electronic file held as an extension of the main resource, e.g. the 'format' files of a Word document

**Qualifier** Term used to refer to both 'Element Refinement' and 'Encoding Schemes'. Use of this term tends to cause confusion, so it is avoided in this document.

**Refinement** See 'Element Refinement'.

**RFID (radio frequency identifier)** An electronic 'label' which transmits metadata to a reader for processing.

**Resource Discovery** Finding the right stuff. See 'Information Retrieval'.

**Sub-element** Term sometimes used to refer to 'Element Refinement'.

**Taxonomy** The science of classification, traditionally used to describe a hierarchical scheme for classifying plants and animals. More recently it has been borrowed to describe a classification scheme for organising networked resources and supporting user-friendly navigation among them. Some taxonomies incorporate thesaurus features to augment the hierarchical structure.

**Thesaurus** A controlled vocabulary designed to support information retrieval by guiding both the person assigning metadata and the searcher to choose the same terms for the same concept. A thesaurus conforming to ISO 2788 (= BS 5723) supports navigation and term selection by showing relationships between terms that are close in meaning.

A thesaurus can help to ensure:

* concepts are described in a consistent manner
* experienced users are easily able to refine their searches to locate information easily
* users do not need to be familiar with technical or local terminology.

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