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Identifying JTC1 Standards used to develop a GII Standards Roadmap

This report suggests a methodology by which ISO/IEC JTC1 can identify those standards developed by its SCs that can be used to provide generic services as part of a Global Information Infrastructure (GII).

Overview

What is GII and Why Care?

The Global Information Infrastructure (GII) is seen as a means to economic growth, competitiveness and socio-cultural development. The precise requirements for the global information and infrastructure standards are not yet known. At a minimum it is recognized that the global standards must not impair or restrict the creativity of equipment manufacturers, information providers or service providers, and must provide a realistic and stable base for the envisioned infrastructure.

Definition of GII: The Global Information Infrastructure (GII) is an infrastructure which supports the development, implementation and interoperability of existing and future information services and applications within and across the telecommunications, information technology, consumer electronics and content provision industries. This infrastructure consists of interactive, broadcast and other multimedia delivery mechanisms coupled with capabilities for individuals to securely share, use and manage information, anytime and anywhere, at acceptable cost, quality, levels of security and privacy protection.

Why care? GII will continue to develop regardless of what JTC1 does or does not do. JTC1 investment in GII standards development and integration provides JTC1 greater market relevancy. GII standards are needed to achieve application and people interoperability, cost effectiveness, and a high quality of service. Global specifications are necessary for a timely, successful GII. Common services should be made available which can serve as reusable building blocks for end user applications. JTC1's Special Working Group on GII (SWG-GII) recognizes the overarching impact the GII will have on existing SCs. While not all existing or future programs of work in JTC1 should be assumed to be part of the GII, few SCs, if any, will not be contributing standards for the successful implementation of the GII.

What is JTC1 Doing About GII?

JTC1 Role as facilitator and broker: JTC1 is committed to ensuring delivery of key GII standards. JTC1 will bring standards developers together, seek out agreement on work flow between the different groups. The ultimate goal and role for JTC1 is to ensure that the business needs and user goals for global GII standards are being met in a timely and efficient manner.

SWG-GII Role: The role of SWG-GII is to review the needs in IT Standardization essential to support the GII. SWG-GII must investigate and determine what standards development requirements exist, and indicate where standards or specifications are available from if they exist elsewhere. The key to SWG-GII's role is cooperation, collaboration and team building with all relevant bodies and organizations.

Major SWG-GII Deliverables

GII Roadmap: A strategic, high level overview of the core services and concepts that serve as the foundation necessary to enable the GII as a whole.

GII Standards Roadmap: The GII Standards Roadmap is a plan which identifies fundamental building blocks, and their attruibutes, within the scope, mandate, and expertise of

JTC1. The roadmap is required to satisfy users, developers, and implementers that the goals of the GII are being met as they develop standards in a cooperative and collaborative manner. Such cooperation is seen to be especially important in an environment of converging technologies.

As the GII is in its embryonic stages, SWG-GII believes it premature to prescribe a single roadmap. However, such navigation tools come in varying degrees of granularity. It is intended that this high level "global map" will:

1) Define for the SCs some general principles about GII.
2) Assist the SCs in determining what technologies and services are required to enable the GII.
3) Provide SCs with an opportunity to expand on any portion of the roadmap and contribute to its underlying guidance.
4) Encourage SC collaboration with other organizations (both formal standard setting bodies and consortia) such that their inputs be added to the roadmap.

It is anticipated that, with subsequent technical underpinnings, the roadmap will also provide valuable information to consumers in their quest for services on the GII.

The Role of this Survey

SWG-GII will prepare a set of recommendations on the role of JTC1 in the development of GII Services based on information it receives from subcommittees in response to the survey of existing and proposed standards outlined in this document. The survey will seek to identify areas where duplication of effort exists and SWG-GII will try to recommend methods for selecting standards that do not conflict with one another.

The detailed breakdown of standards development, or referencing of other standards or specifications, is a technical exercise to be conducted, through the direction of JTC1, by technical subcommittees. Subcommittees are strongly recommended to provide representatives for SWG-GII meetings and teleconferences to contribute directly to the survey. Alternative methods for completion of the SWG-GII surveys and submission using electonic mail will be provided by SWG-GII.

Initial Model for GII Standards Categorization

Figure 1 illustrates the initial model being used by SWG-GII to categorize JTC1 standards applicable for SWG. The segmentation in this model is based on three, complementary, categorization methods:

- **Fundamental Building Blocks** (FBBs) that provide a structure for high-level user-to-GII interaction through a common, minimum set of functional concepts which can be requested by users and implemented by a variety of techniques and services transparently. FBBs should allow faster end user application and service development as they will be reusable and have interfaces that are well defined.
- **Generalized Service Categories** that suggest sets of FBBs that might be used to support GII applications
- **Standards Development Organizations** (SDOs) that develop standards that can provide FBBs or services.

This initial model is an attempt to categorize, using a 2-dimensional matrix approach, currently available and planned standards into a limited set of identifiable services/functions.

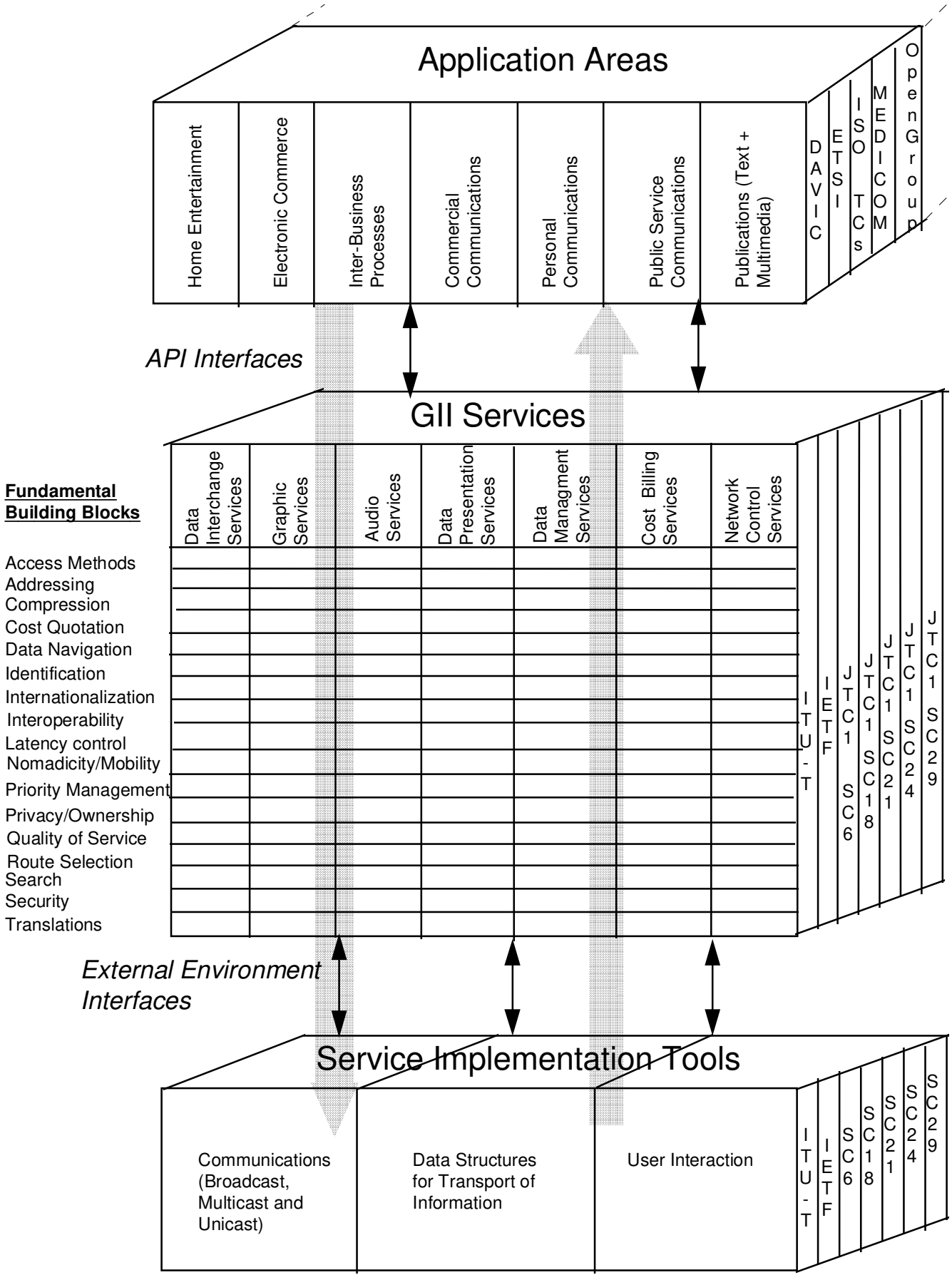

Figure 1: Basic model

Application Areas

Typically applications that utilize GII services are developed by industry-specific technical committees and consortia who select sets of applicable standards that suit the key business needs of a well-defined user community. The top box in Figure 1 generalizes this activity in terms of a few generalized user communites. As the development of application specific approaches is outside the scope of SWG-GII this box is not intended to fully reflect the diverse range of applications currently being developed, or the range of organizations currently working in this area. It simply indicates the type of application areas using the GII services whose role is explained in this document.

Application Program Interfaces

Information is passed between applications and services via clearly defined Application Program Interfaces (APIs). Whilst some APIs are defined in JTC1 standards it is not the intention of this survey to identify existing or proposed APIs.

GII Services

As stated in the overview, the main aim of the initial model is to help SWG-GII to identify and categorize JTC1 standards that could be used to provide services to applications that use GII for information interchange. This is the area indicated in the central area of Figure 1, which is segmented in three dimensions:

- in terms of Fundamental Building Blocks (FBBs). SWG-GII provides the following list of FBBs as a starting point for SCs:

  ⇒ **Access Methods** for requesting and reserving system resources

  ⇒ **Addressing** for identifying entities to receive or provide information, including group directories, directory navigation and dynamic routing

  ⇒ **Compression** for specifying the level and method of compression to be applied to data being transmitted between hetereogeneous networks and applications

  ⇒ **Cost Quotation** for informing consumers of the costs associated with services requested, and methods by which payment can be made

  ⇒ **Data Navigation** for moving from one source of information to other, related, sources of information

  ⇒ **Identification** for identifying objects and data entities to be transmitted via GII as a belonging to a specific type, set or sequence of information

  ⇒ **Internationalization** for customising applications for the generation of text in specific languages, for identifying the language of data and the sources of alternative versions of the same information for users who cannot understand the proffered language.

  ⇒ **Interoperability** for testing service interoperability

  ⇒ **Latency Control** for controlling the maximum length of time it may take a message to travel from source to destination

  Note: Consumers must have a common way to specify the maximum acceptable delay in transmission, the "immediate" versus "as available" request for retrieval/supply of information, and how deterministic the delivery mechanism must be.

  ⇒ **Nomadicity/Mobility** for retaining access to services that are not available in the local environment due to user mobility in time or space

⇒ **Priority Management** for prioritizing a request with respect to all other requests

⇒ **Privacy/Ownership** for ensuring that data transmitted via GII cannot be read or copied by those not intended to receive the data, including facilities for encryption, watermarking, copyright and IPR protection.

⇒ **Quality of Service** for the identification of levels of functionality acceptable to the user

⇒ **Route Selection** for user control of networks/routes used to reach the destination

⇒ **Search** for requesting and defining ways of looking for information via the GII

⇒ **Security** for defining, in a graded fashion, the levels of security to be used, across all networks, applications and content, during transmission via the GII

Note: Basic security services (authentication, non-repudiation, etc.) will be provided at each level in a graded fashion. The actual implementation of security levels is transparent to the consumer, and may differ across networks.

⇒ **Translations** for requesting translation of data from the format it is currently in to a form that can be accepted by the requestor.

Note: SCs are encouraged to supplement or improve this list based on interactions with consumers and users

- in terms of an initial set of shared GII services. SWG-GII provides the following list of service categories as a starting point for SCs:

⇒ **Data Interchange Services** for transferring textual and related data using GII facilities

⇒ **Graphic Services** for the interchange of still and moving images

⇒ **Audio Services** for the interchange or generation of audio data

⇒ **Data Presentation Services** that can be used to present data interchanged using GII facilities to users

⇒ **Data Management Services** for controlling the storage and recovery of data using GII facilities

⇒ **Cost Billing Services** for recording costs incurred in using GII facilities and recovering such costs from users

⇒ **Network Control Services** for recording parameters to be used to control transmission of data across one or more networks.

Note: SCs are encouraged to supplement or improve this list based on interactions with consumers and users

- in terms of the committees responsible for developing standardized FBBs
  Note: Only a few of the many possible committees can be illustrated in the diagram.

External Environment Interfaces

GII services are only relevant if they can be implemented within GII networks. The SWG-GII model has adopted the concept of External Environment Interfaces as the method for describing the format in which data is passed between GII services and service providers. Such interfaces are outside the scope of SWG-GII and are not, therefore, covered in the current stage of this survey.

Service Implementation Tools

It is important that SWG-GII identify how GII service specifications could be implemented within a GII network. The SWG-GII survey will, therefore, seek to identify standards that can be used to implement GII services. Three main classifications of tools have been identified:

- Communication Services utilizing Standardized FBBs. SWG-GII provides the following

  list of service categories as a starting point for SCs:

  ⇒ **General Connectionless Broadcast** to send self-contained units of data to all destinations within a given population using a single transmission

  ⇒ **Controlled Connectionless Multicast** to send self-contained units of data to a predefined set of destinations

  ⇒ **Connectionless Unicast** to send self-contained units of data to a single destination

  ⇒ **Connection Oriented Broadcast** to an undefined set of destinations that involves setting up a connection, sending data, and clearing the connection

  ⇒ **Connection Oriented Multicast** to a defined set of destinations that involves setting up a connection, sending data, and clearing the connection

  ⇒ **Connection Oriented Unicast** to a single destination that involves setting up a connection, sending data, and clearing the connection

  ⇒ **Network Management Services** for managing the transmission of data across one or more networks.

- Standardized Data Structures for Transport of Information. SWG-GII provides the following list of service categories as a starting point for SCs:

  ⇒ **Tape-based Services** for interchanging data on magnetic tapes

  ⇒ **Magnetic Disk-based Services** for interchanging data on magnetic disks

  ⇒ **Optical Disk-based Services** for interchanging data on optical disks

  ⇒ **Paper-based Services** for interchanging data in printed format

  ⇒ **Other Physical Exchange Methods** for interchanging data using techniques not otherwise defined within this document

- Standardized User Interaction Mechanisms. SWG-GII provides the following list of service categories as a starting point for SCs:

  ⇒ **Services using Numeric-only Pads** to input data using only numeric keys

  ⇒ **Services using Alphanumeric Keyboards** to input data on a keyboard that allows letters and punctuation, as well as numbers, to be entered

  ⇒ **Services using Customized Keysets** to input data, using keysets that include keys with application dependent functions

  ⇒ **Pen-based Services** for input of data using an electronic pen

  ⇒ **Touch-based Services** for data input using touch screens or touch pads

  ⇒ **Voice-based Services** based on voice command, dictation and audio rendition of output.

The bottom three boxes of Figure 1 represent these three groupings.

The SWG-GII Survey Forms

Figures 2 to 5 provide a set of forms that can be used to record the potential GII roles of current and planned standards activities. This section explains how these forms should be completed by SC representatives. Detailed instructions for completing each form are provided with each figure. A version of each form with example standards listed in appropriate sectors is provided in Annex B.

GII Services

Standards that are potentialfundamental building blocks for GII Services should be identified using the form shown in Figure 2. The SC completing the form shall be clearly identified by replacing the two dots at the end of the form title with the SC number. The SC shall attach to the form a listing, of the type provided for the ISO catalogue and JTC1 status reports, that clearly associates the full title of each referenced standard with the number used to identify it in the form.

When completing the form only the number of the relevant standard, draft standard, committee or working draft needs to be noted within the form. As an aid to comprehension this can be qualified (in brackets) by the acronym by which the standard is commonly referred, e.g. IS 10918 (JPEG) or DIS 10743 (SMDL).

Standards that support more than one fundamental building block, or which are relevant for more than one service, should be listed in each relevant box. Where different parts of a standard support different FBBs or services a part number should be specified using the standard ISO notation, e.g. IS 13818-3.

When identifying where standards should be referenced care should be taken to ensure that the standard conforms with the definitions of both the relevant FBB row and the relevant services column given in this document. Where doubt as to the categorization exists an asterisk (*) should be entered immediately after the standard number/acronym.

Where it is clear that a standard provides FBB(s) that conform to one or more of the sets identified in the list, but for a service that could not, at even a stretch of imagination, be assigned to one of the listed service categories, SCs may use the last column, or add extra columns to the form, providing they formally define the scope of the service in terms that can be added to this report.

Where SCs feel that a separate, generalized, category of fundamental building blocks is required to clearly identify what their standards could offer to the GII community, they can recommend an extension to the list of FBB categories at the next SWG-GII meeting. It is recommended, however, that SCs wishing to do this ensure that their point of view is adequately represented at the meeting to ensure that the SWG-GII does not misinterpret the impact of the proposed change.

Currently Available and Planned Standards for Implementing GII Services from JTC1 SC..

Fundamental Building Blocks	Data Interchange Services	Graphics Services	Audio Services	Data Presentation Services	Data Management Services	Cost Recovery Billing Services	Network Control Services	SC Specific Service
Access methods								
Addressing								
Compression								
Cost quotation								
Data navigation								
Identification								
Internationalization								
Interoperability								
Latency control								
Nomadicity/Mobility								
Priority control								
Privacy/Ownership								
Quality of service								
Route selection								
Search								
Security								
Translation								
SC Specific FBB								

Figure 2: Form for identifying standards that provide features relating to GII Services

GII Communication Services

Standards that can use information provided by the fundamental building blocks for GII Services to implement communication networks that are appropriate for GII should be identified using the form shown in Figure 3. The SC completing the form shall be clearly identified by replacing the two dots at the end of the form title with the SC number. The SC shall attach to the form a listing, of the type provided for the ISO catalogue and JTC1 status reports, that clearly associates the full title of each referenced standard with the number used to identify it in the form.

When completing the form only the number of the relevant standard, draft standard, committee or working draft needs to be noted within the form. As an aid to comprehension this can be qualified (in brackets) by the acronym by which the standard is commonly referred, e.g. IS 10021 (MHS) or ISP 12063 (EDIMG).

Standards that support more than one fundamental building block, or which are relevant for more than one service, should be listed in each relevant box. Where different parts of a standard support different FBBs or services a part number should be specified using the standard ISO notation, e.g. IS 10021-7.

When identifying where standards should be referenced, care should be taken to ensure that the standard conforms with the definitions of both the relevant FBB row and the relevant services column. Where doubt as to the categorization exists an asterisk (*) should be entered immediately after the standard number/acronym.

Where it is clear that a standard provides FBB(s) that conform to one or more of the sets identified in the list, but for a service that could not, at even a stretch of imagination, be assigned to one of the listed service categories, SCs may use the last column, or add extra columns to the form, providing they formally define the scope of the service in terms that can be added to this report.

The FBB categories currently listed in Figure 3 are those developed for GII Services. It is expected that a detailed analysis of communications services will determine that certain of these categories are invalid within a communications environment, and that other classes of FBBs will be identified as being specific to this group of services. Where an SC feels that a separate, generalized, category of fundamental building blocks is required to clearly identify what their standards could offer to the GII community they can recommend an extension to the list of FBB categories at the next SWG-GII meeting. It is recommended, however, that SCs wishing to do this ensure that their point of view is adequately represented at the meeting to ensure that the SWG-GII does not misinterpret the impact of the proposed change.

Currently Available and Planned Standards for GII Communication Services from JTC1 SC...

Fundamental Building Blocks	General Connectionless Broadcast	Controlled Connectionless Multicast	Connectionless Unicast	Connection Oriented Broadcast	Connection Oriented Multicast	Connection Oriented Unicast	Network Management Services	**SC Specific Service**
Access methods								
Addressing								
Compression								
Cost quotation								
Data navigation								
Identification								
Internationalization								
Interoperability								
Latency control								
Nomadicity/Mobility								
Priority control								
Privacy/Ownership								
Quality of service								
Route selection								
Search								
Security								
Translation								
SC Specfic FBB								

Figure 3: Form for identifying standards that provide features relating to GII Communication Services

Data Structures for Transport of Information Services

Standards that can use information provided by the fundamental building blocks for GII Services to provide data transport facilities when GII communication networks that are not appropriate can, if deemed relevant, be identified using the form shown in Figure 4. The SC completing the form shall be clearly identified by replacing the two dots at the end of the form title with the SC number. The SC shall attach to the form a listing, of the type provided for the ISO catalogue and JTC1 status reports, that clearly associates the full title of each referenced standard with the number used to identify it in the form.

When completing the form only the number of the relevant standard, draft standard, committee or working draft needs to be noted within the form. As an aid to comprehension this can be qualified (in brackets) by the acronym by which the standard is commonly referred, e.g. IS 10175 (DPA) or IS 9069 (SDIF).

Standards that support more than one fundamental building block, or which are relevant for more than one service, should be listed in each relevant box. Where different parts of a standard support different FBBs or services a part number should be specified using the standard ISO notation, e.g. IS 8613-5.

When identifying where standards should be referenced care should be taken to ensure that the standard conforms with the definitions of both the relevant FBB row and the relevant services column. Where doubt as to the categorization exists an asterisk (*) should be entered immediately after the standard number/acronym.

Where it is clear that a standard provides FBB(s) that conform to one or more of the sets identified in the list, but for a service that could not, at even a stretch of imagination, be assigned to one of the listed service categories, SCs may use the last column, or add extra columns to the form, providing they formally define the scope of the service in terms that can be added to this report.

The FBB categories currently listed in Figure 4 are those developed for GII Services. It is expected that a detailed analysis of physical data transfer services will determine that certain of these categories are invalid within such environments, and that other classes of FBBs will be identified as being specific to this group of services. Where an SC feels that a separate, generalized, category of fundamental building blocks is required to clearly identify what their standards could offer to the GII community they can recommend an extension to the list of FBB categories at the next SWG-GII meeting. It is recommended, however, that SCs wishing to do this ensure that their point of view is adequately represented at the meeting to ensure that the SWG-GII does not misinterpret the impact of the proposed change.

Note: It is not expected that many of the fields in this form will ever be completed.

Currently Available and Planned Standards for Physical Transfer of Information from JTC1 SC..

Fundamental Building Blocks	Tape-based Service	Magnetic Disk-based Services	Optical Disk-based Services	Paper-based Services	Other Physical Exchange Methods	**SC Specific Service**
Access methods						
Addressing						
Compression						
Cost quotation						
Data navigation						
Identification						
Internationalization						
Interoperability						
Latency control						
Nomadicity/Mobility						
Privacy/Ownership						
Quality of service						
Search						
Security						
Translation						
SC Specific FBB						

Figure 4: Form for identifying standards that provide features relating to Data Structures for Transport of Information

User Interaction Services

Standards that can use to input information required by the fundamental building blocks for GII Services to invoke data transport facilities via GII communication networks can, if deemed relevant, be identified using the form shown in Figure 5. The SC completing the form shall be clearly identified by replacing the two dots at the end of the form title with the SC number. The SC shall attach to the form a listing, of the type provided for the ISO catalogue and JTC1 status reports, that clearly associates the full title of each referenced standard with the number used to identify it in the form.

When completing the form only the number of the relevant standard, draft standard, committee or working draft needs to be noted within the form. As an aid to comprehension this can be qualified (in brackets) by the acronym by which the standard is commonly referred, e.g. IS 9995 (Keyboards) or IS 14755 (UCS input).

Standards that support more than one fundamental building block, or which are relevant for more than one service, should be listed in each relevant box. Where different parts of a standard support different FBBs or services a part number should be specified using the standard ISO notation, e.g. IS 9995-2.

When identifying where standards should be referenced care should be taken to ensure that the standard conforms with the definitions of both the relevant FBB row and the relevant services column. Where doubt as to the categorization exists an asterisk (*) should be entered immediately after the standard number/acronym.

Where it is clear that a standard provides FBB(s) that conform to one or more of the sets identified in the list, but for a service that could not, at even a stretch of imagination, be assigned to one of the listed service categories, SCs may use the last column, or add additional columns to the form, providing they formally define the scope of the service in terms that can be added to this report.

The FBB categories currently listed in Figure 5 are those identified by SWG-GII for GII Services. It is expected that a detailed analysis of user interaction services will determine that certain of these categories are invalid, and that other classes of FBBs will be identified as being specific to this group of services. Where an SC feels that a separate, generalized, category of fundamental building blocks is required to clearly identify what their standards could offer to the GII community they can recommend an extension to the list of FBB categories at the next SWG-GII meeting. It is recommended, however, that SCs wishing to do this ensure that their point of view is adequately represented at the meeting to ensure that the SWG-GII does not misinterpret the impact of the proposed change.

Note: It is not expected that many of the fields in this form will ever be completed.

Currently Available and Planned Standards for User Interaction from JTC1 SC...

Fundamental Building Blocks	Services using Numeric-only Pad	Services using Alphanumeric Keyboard	Services using Customized Keysets	Pen-based Services	Touch-based Services	**SC Specific Service**
Access methods						
Addressing						
Data navigation						
Identification						
Internationalzation						
Interoperability						
Latency control						
Nomadicity/Mobility						
Priority control						
Privacy/Ownership						
Quality of service						
Search						
Security						
Translation						
SC Specific FBB						

Figure 5: Form for identifying standards that provide features relating to User Interaction with GII Services

Annex A: JTC1 Subcommittees

SC 1 Vocabulary	SC 2 Coded Character Sets	SC 6 Telecommunications and Information Exchange between Systems	SC 7 Software Engineering	SC 11 Flexible magnetic media for Digital Data Interchange
SC 14 Data Element Principles		SC 17 Identification Cards and related devices	SC 18à•ocument Processing and related communication	SC 21 OSI, Data Management and Open Distributed Processing
SC 22 Programming Languages, their environments and System Software Interfaces	SC 23 Optical Disk Cartridges for Information Interchange	SC 24 Computer Graphics and Image processing	SC 25 Interconnection of Information Technology Equipment	SC 26 Microprocessor Systems
SC 27 Information Technology Security Techniques	SC 28 Office Equipment	SC 29 Coding of Audio, Picture, Multimedia and Hypermedia Information	SC 30 Open-edi	SC 31 Automatic ID and Data Capture Techniques (tbc)
SGFS Functional Standardization	SWG-CA Conformity Assessment	SWG-GII Global Information Infrastructure	SWG-RA Registration Authorities	SPRG Strategic Planning

Fig A.1: ISO/IEC JTC 1 Technical Sub-Committees and Special Working Groups
(shaded cells indicate inputs to or participation in SWG-GII work)

Annex B: Examples of Standards that could provide GII FBBs

This annex suggests a range of JTC1 standards that might provide relevant FBBs for GII. It is based on analysis of existing JTC1 standards by members of SWG-GII, rather than input from SCs. It is expected that experts in SCs will suggest better categorizations of this list.

A few example standards from the following SC's have been used to populate the following examples of completed forms:

- SC2 Coded Character Sets
- SC18 Document Processing and Related Communications
- SC21 OSI, Data Management and Open Distributed Processing
- SC29 Coding of Audio, Picture, Multimedia and Hypermedia Information

A list of the standards referenced in this annex is provided in Figure B.1.

Standard No	**Acronym**	**Formal Title**
IS 3791		*Office machines and data processing equipment -- Keyboard layouts for numeric applications*
IS 3792		*Adding machines -- Layour of function keyboard*
IS 8879	SGML	*Information processing -- Text and office systems -- Standard Generalized Markup Language (SGML)*
IS 9069	SDIF	*Information technology -- SGML support facilities -- SGML Document Interchange Format (SDIF)*
IS 9070		*Information technology -- SGML support facilities -- Registration procedures for public text owner identifiers*
IS 9541	Fonts	*Information technology -- Font information interchange*
IS 9594		*Information technology - Open Systems Interconnection - The Directory*
IS 9995		*Information technology -- Keyboard layouts for text and office systems*
IS 10021	MHS	*Information technology -- Message Handling Systems (MHS)*
IS 10175	DPA	*Information technology -- Document Printing Application (DPA)*
IS 10179	DSSSL	*Information technology -- Text composition -- Document Style Semantics and Specification Language (DSSSL)*
IS 10180	SPDL	*Information technology -- Text composition -- Standard Page Description Language (DSSSL)*
TR 10183		*Information technology -- Open Document Architecture (ODA) and interchange format -- Testing methodology and abstract cases - Implementation testing methodology*
ISP 10611		*Information technology -- International Standardized Profiles AMH1n -- Message Handling Systems -- Common Messaging*
IS 10646	UCS	*Information technology -- Universal Multiple-octet Coded Character Set (UCS)*

IS 10740		*Information technology -- Referenced data transfer*
IS 10741		*Information technology -- User system interfaces -- Dialogue interaction*
DIS 10743	SMDL	*Information technology -- Document processing and related communication -- Standard Music Description Language (SMDL)*
IS 10744	HyTime	*Information technology -- Hypermedia/Time-based Structuring Language (HyTime)*
IS 10918	JPEG	*Information technology -- Digital compression and coding of continuous-tone still images*
DIS 11581		*Information technology -- User system interfaces -- Icon symbols and functions*
ISP 12062		*Information technology -- International Standardized Profiles AMH2n -- Message Handling Systems -- Interpersonal Messaging*
CD 13240	SMSL	*Information technology -- Standard Multimedia Scripting Language*
CD 13250		*Information technology -- Document processing and related communications -- Topic Map Navigation*
IS 13522	MHEG	*Information technology -- Coding of multimedia and hypermedia information*
IS 13714		*Information technology -- Document processing and related communication -- User interface to telephone-based services -- Voice messaging applications*
IS 13818	MPEG2	*Information technology -- Generic coding of moving pictures and associated audio information*
IS 14362		*Information technology - Test methods for measuring conformance to Open Systems Interconnection (OSI) and abstract data manipulation -- Application Program Interface (API)*
IS 14392		*Information technology -- Directory services -- Application Program interface (API)*
IS 14393		*Information technology -- Test methods for measuring conformance to directory services*
IS 14754		*Information technology -- Pen-based interfaces*
IS 14755		*Information technology -- Input methods to enter characters from the repetoire of ISO/IEC 10646 with the help of a keyboard or other input/output devices*

Figure B.1 Referenced Standards

Currently Available and Planned Standards for Implementing GII Services

Fundamental Building Blocks	Data Interchange Services	Graphics Services	Audio Services	Data Presentation Services	Data Management Services	Cost Recovery Billing Services	Network Control Services
Access methods	IS 10744 (HyTime)		DIS 10743 (SMDL)				IS 10021-4 (MHS MTS)
Addressing	IS 8879 (SGML)		DIS 10743 (SMDL)	IS 10179 (DSSSL)	IS 10744 (HyTime)		IS 9594
Compression		IS 10918 (JPEG) IS 13818 (MPEG2)	IS 13818-3 (MPEG2-Audio)				
Cost quotation							
Data navigation	IS 10744 (HyTime)	IS 13522 (MHEG)	DIS 10743 (SMDL)	CD 13240 (SMSL)	CD 13250		
Identification	IS 9070						IS 10021-5 (MHS-MS)
Internationalization	IS 10646						
Interoperability	TR10183						
Latency control	IS10021-7 (MHS IMS)						
Nomadicity/Mobility	CD10021-10						
Priority control	IS 10021-7 (MHS IMS)						
Privacy/Ownership	IS 10744 (HyTime FSI)	IS 13818-2 DAM1					
Quality of service							
Route selection							
Search	IS 10179 (DSSSL)			IS 10179 (DSSSL/SDQL)			
Security	IS 9594-8						IS 10021
Translation	IS 10179 (DSSSL)			IS 10179 (DSSSL)			

Figure B.2: Example of completed form for identifying standards that provide features relating to GII Services

Currently Available and Planned Standards for GII Communication Services

Fundamental Building Blocks	General Connectionless Broadcast	Controlled Connectionless Multicast	Connectionless Unicast	Connection Oriented Broadcast	Connection Oriented Multicast	Connection Oriented Unicast	Network Management Services
Access methods		IS 14392			IS 14392		ISP 10611
Addressing							
Compression							
Cost quotation							
Data navigation		IS 14392			IS14392		
Identification							
Internationalization							
Interoperability		IS 14393					IS 14362
Latency control							
Nomadicity/Mobility							
Priority control							
Privacy/Ownership			ISP 12062-2				
Quality of service		ISP 10611-1					
Route selection							
Search		IS 14392*			IS 14392*		
Security							
Translation							

Figure B.3: Example of completed form for identifying standards that provide features relating to GII Communication Services

Currently Available and Planned Standards for Physical Transfer of Information

Fundamental Building Blocks	Tape-based Service	Magnetic Disk-based Services	Optical Disk-based Services	Paper-based Services	Other Physical Exchange Methods
Access methods				IS 10175 (DPA)	
Addressing	IS 10744	IS 10740	IS 9069	IS 10179 (DSSSL)	
Compression					
Cost quotation					
Data navigation	IS 10744	IS 10744	IS 10744		
Identification	IS 9070	IS 9070	IS 9070		
Internationalzation				IS 9541 (Fonts)	
Interoperability				IS 10180 (SPDL)	
Latency control					
Nomadicity/Mobility					
Privacy/Ownership	IS 10744	IS 10744	IS 10744		
Quality of service					
Search	IS 10744	IS 10744	IS 10744	IS 10179 (DSSSL/SDQIL)	
Security					
Translation	IS 10179 (DSSSL)	IS 10179 (DSSSL)	IS 10179 (DSSSL)	IS 10179 (DSSSL)	

Figure B.4: Example of completed form for identifying standards that provide features relating to Data Structures for Transport of Information

Currently Available and Planned Standards for User Interaction

Fundamental Building Blocks	Services using Numeric-only Pad	Services using Alphanumeric Keyboard	Services using Customized Keysets	Pen-based Services	Touch-based Services	Voice-based Services
Access methods	IS 3791	IS 14755	IS 13714	IS 14754		
Addressing		IS 9995	IS 13714			
Data navigation	IS 3792	IS 10741	IS 10741			
Identification				IS 14754	IS 11581	IS 13714
Internationaliation		IS 9995				
Interoperability						
Latency control				IS 14754*		
Nomadicity/Mobility						
Priority control						
Privacy/Ownership						
Quality of service				IS 14754		IS 13714
Search						
Security						
Translation						IS 13714*

Figure B5: Example of completed form for identifying standards that provide features relating to User Interaction with GII Services