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ISO/IEC JTC1/SGFS

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Title: Second Working Draft of ISO/IEC/TR 10000-3:

Information Technology - Framework and Taxonomy of International Standardized Profiles - Part 3: Principles and Taxonomy for Open System Environment Profiles.

Source: Editor, TR 10000-3

Date: March 1993

Status: This second working draft provides for the extension of scope of SGFS to include profiles for the Open System Environment based on the output of the SGFS meeting in December 1992.

Action: For review and development at the SGFS Authorized Subgroup meeting, June1993.

Editor's Note: This is the second draft. In Succeding drafts changes will be shown by means of highlighting for additions. **[Editor's comments are in bold text in square brackets].**

For ease of discussion and subsequent editing, the presentation of the text has been simplified to single column font. Line numbers have been added.

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) together form a system for worldwide standardization as a whole. National bodies that are members of ISO or IEC participate in the development of International Standards and Technical Reports through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The main task of a technical committee is to prepare International Standards but in exceptional circumstances, the publication of a Technical Report of one of the following types may be proposed:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/IEC/TR 10000, which is a Technical Report of type 3, was prepared by the Special Group on Functional Standardization of ISO/IEC JTC 1, *Information technology*.

The structure of ISO/IEC/TR 10000 is as follows:

- Part 1: General Principles and Framework
- Part 2: Principles and Taxonomy for OSI Profiles
- Part 3: Principles and Taxonomy for OSE Profiles
- Other parts to be defined as necessary.

Introduction

The context of Functional Standardization is one part of the overall field of IT standardization activities covering

- Base Standards, which define fundamentals and generalized procedures. They provide an infrastructure that can be used by a variety of applications, each of which can make its own selection from the options offered by them.

- Profiles, which define combinations of base standards used to provide specific functions. Profiles identify, where applicable, the use of particular subsets or options available in the base standards, and provide a basis for the development of uniform, internationally recognized, conformance tests.

- Registration Mechanisms, which provide the means to specify detailed parameterization within the framework of the base standards or Profiles.

Within ISO/IEC JTC 1, the process of Functional Standardization is concerned with the methodology of defining Profiles, and their publication in documents called "International Standardized Profiles" (ISPs).

In addition to ISO/IEC/TR 10000, the secretariat of the Special Group on Functional Standardization maintains a standing document (SD-4) entitled "Directory of ISPs and Profiles contained therein" This is a factual record of which ISPs exist, or are in preparation, together with an executive summary of each Profile. It is subject to regular updating by the Secretariat of ISO/IEC JTC 1/SGFS.

Information Technology - Framework and Taxonomy of International Standardized Profiles -

Part 3:

Principles and Taxonomy for Open System Environment Profiles

TECHNICAL REPORT © ISO/IEC **ISO/IEC/WDTR 10000-3**

1 Scope

This part of ISO/IEC/TR 10000 provides a context for functional standardization in support of Open System Environments (OSE). It defines the basic OSE objectives and concepts, and defines an approach and format for OSE Profiles specified by International Standardized Profiles. This text gives guidance to organizations proposing Draft OSE International Standardized Profiles, on the nature and content of the documents.

The OSE is defined as a comprehensive set of interfaces, services, and supporting formats, plus user aspects, for interoperability and/or portability of applications, data, or people, as specified by information technology standards and profiles. This document defines the scope of the OSE and the basis on which it is partitioned into Generic Environments, for which Profiles can be constructed, and defines elements common to many OSE environments.

Application Environment Profiles are those OSE profiles which specify a complete and coherent subset of the Open System Environment necessary to support a class of applications. Each profile is created to satisfy a clearly specified set of user requirements.
A taxonomy, or structured classification, of OSE profiles is provided in clause 7 of this document. The purpose of this taxonomy is to provide a labeling scheme to identify profiles and to indicate by their place in the structure, their functional relationship to each other. The taxonomy also indicates the basis on which other functional profiles (including OSI) and new functions are referenced and utilized.

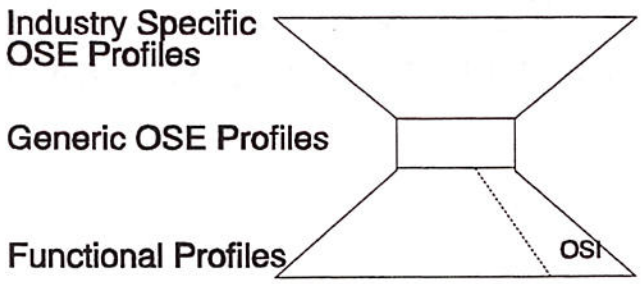

Figure 1 Classes of Profiles

A small set of generic OSE profiles will be defined to support the creation of what may be a substantial number of OSE profiles created to support specific industries. These generic profiles will also draw on and support the definition of functional profiles such as OSI profiles.

ISO/IEC/TR 10000 is applicable to all International Standardized Profiles of ISO and IEC. Its primary focus is the area of competence of ISO/IEC JTC1, but by mutual agreement with JTC1, other Technical Committees may undertake similar functional standardization activities leading to the inclusion of additional material in this Technical Report.

2 Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC/TR 10000. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO/IEC/TR 10000 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

[Ed. Note: List of standards to be updated to match the documents referenced normatively in this part of TR 10000]

ISO/IEC 9646-1: 1991, *Information technology - OSI conformance testing methodology and framework - Part 1: General Concepts.*
(Corresponds to CCITT X.290)

ISO/IEC 9646-2: 1991, *Information technology - OSI conformance testing methodology and framework - Part 2: Abstract test suite specification.*
(Corresponds to CCITT X.291)

ISO/IEC 9834-1: ....[1], *Information technology - Open Systems Interconnection - Procedures for the operation of OSI registration authorities - Part 1: General procedures (Corresponds to CCITT X.660)*

ISO/IEC JTC1 N1335, 1 May 91 "TSG-1: Standards Necessary to Define Interfaces for Application Portability (IAP) - Final Report",

ISO/IEC/TR 10000-2: ....[1)] *Information technology - Framework and taxonomy of International Standardized Profiles - Part 2: Principles and taxonomy. for OSI Profiles.*

ISO/IEC/TR 10000-3: ....[1)] *Information technology - Framework and taxonomy of International Standardized Profiles - Part 3: Principles and taxonomy for OSE profiles..*

ISO/IEC TR 10183: ...., *Information processing - Text and Office Systems; Office Document Architecture (ODA) and interchange format - Technical Report on ISO 8613 Implementation Testing -*
Part 1: Testing Methodology [1)]
Part 2: Framework for Abstract Test Cases [1)]

IEC/ISO Directives Part 3:1989, *Drafting and presentation of International Standards*

A number of other ISO Standards and CCITT Recommendations are quoted in examples which do not constitute provisions of this part of ISO/IEC/TR 10000. They are listed in an annex.

3 Definitions

For the purposes of this part of ISO/IEC/TR 10000, the following definitions apply-

3.1 Terms defined in ISO/IEC/TR 10000-3

3.1.1 Application (general):
[Practical] employment of means.
Bringing [of something] to bear upon a particular case.
putting to practical use. [OED]

NOTE: When the term is used for a more specific concept, the term should be qualified.

3.1.2 Application (information processing): The use of capabilities (services/facilities) provided by an information system specific to the satisfaction of a set of user requirements. [TSG-1]

NOTE: These capabilities include hardware, software and data.

3.1.3 Application Environment Profile (AEP): An OSE profile which specifies a complete and coherent subset of the Open System Environment, necessary to support a class of applications.

3.1.4 Functional Profile: An OSE Profile defining a function which is an identifiable element of the Open System Environment.

3.1.5 Generic Application Environment Profile: An Application Environment Profile which is not specific to a particular community of use.

3.1.6 Generic Function Profile: A Functional Profile which is not specific to a particular community of use,

3.1.7 Industry Specific Application Environment Profile: An Application Environment Profile which deals with specific industry requirements.

3.1.8 Industry Specific Functional Profile: A Functional Profile which deals with specific industry requirements.

NOTE: All of these definitions reference, explicitly of implicitly, the definition of Open System Environment.

3.1.9 Application Platform: A set of resources on which an application will run. [TSG-1]

3.1.10 Application portability: See: Portability (application). [TSG-1]

3.1.11 Application Program interface (API): The interface between the application software and the application platform, across which services are provided.

3.1.12 Application software: Software specific to the solution of an application problem. [ISO 2382-20]

3.1.13 Base Standard: An approved International Standard, or CCITT Recommendation which is used in the definition of a Profile. [ISO TR 10000-1]

3.1.14 Conformance: See: Conformity. [Webster]

3.1.15 Conformity: Fulfilment by a product, process or service of all requirements specified. [ISO/IEC/GUIDE2]

3.1.16 Domain (general): Sphere, field or province of thought, knowledge, activity .[OED]

NOTE: When the term is used for a more specific concept, the term should be qualified.

3.1.17 Environment (of information system): That part of the real world containing the users which exchange messages with the information system. [ISO TR 9007]

3.1.18 Function: Special activity or purpose of a person or thing. [OED]

NOTE: When the term is used for a more specific concept, the term should be qualified.

3.1.19 Interface: 1) A surface forming a common boundry between adjacent regions. 2) a point at which independant systems or diverse group interact. [Webster]

3.1.20 International Standardized Profile (ISP): An internationally agreed-to, harmonized document which identifies a standard or group of standards, together with options and parameters, necessary to accomplish a function or set of functions. [ISO TR 10000-1]

3.1.21 Interoperability: The ability of two or more systems to exchange information and to mutually use the information that has been exchanged. [IEEE 729]

3.1.22 Open System Environment: The comprehensive set of interfaces, services, and supporting formats for interoperability and/or for portability of applications, data or people, as specified by information technology standards and profiles.

3.1.23 Portability (Software): The ease with which software can be transferred from one information processing system to another. [TSG-1]

3.1.24 Portability (application): The ease with which an application can be transferred from one application platform to another. [TSG-1]

3.1.25 Portability (of a program): The capability of a program to be executed on various types of data processing systems without converting it to a different language and with little or no modification. [ISO 2382-1]

3.1.26 Profile (for ISO standardization): A set of one or more base standards, and, where applicable, the identification of chosen classes, subsets, options and parameters of those base standards, necessary for accomplishing a particular function. [ISO TR 10000-1]

NOTE: An International Standardized Profile includes the specification of one or more Profiles.

3.1.27 Software: All or part of the programs, procedures, rules and associated documentation of a data processing system. [ISO 2382-1]

NOTE: Software is an intellectual creation that is independent of the medium on which it is recorded.

3.1.28 Software Portability: See: Portability (Software).

3.1.29 Standardization: Activity of establishing, with regard to actual or potential problems, provisions for common and repeated use, aimed at the achievement of the optimum degree of order in a given context.

NOTES 1. In particular, the activity consists of the processes of formulating, issuing and implementing standards.
2. Important benefits of standardization are improvement of the suitability of products, processes and services for their intended purposes, prevention of barriers to trade and facilitation of technological cooperation. [ISO/IEC/GUIDE2]

3.1.30 System:
A set of connected things, parts, elements working together in a regular relation.
A set of connected things, parts, or elements working together to achieve a common objective.
Ordered set of ideas, concepts, principles. [OED]

NOTE: When the term is used for a more specific concept, the term should be qualified.

3.1.31 System Program: An application independent program that supports the running of application programs. [TSG-1]

3.1.32 System Software: Application independent software that supports the running of application software. [ISO 2382-1]

3.1.33 User (system): Any person or anything that issues commands or messages to an information processing system or receives messages from the information processing system (e.g., procurement).
[ISO 2382-1]

3.1.34 User Requirements (general): A desire, need or constraint expressed by persons or organization to apply information technology to an identified user problem. [TSG-1]

3.1.35 User Requirements (portability): A desire, need or constraint for application portability expressed by persons or organizations. [TSG-1]

4 Abbreviations

[Ed. Note: To be updated with terms actually used in this part of TR 10000]

AEP Application Environment Profile

ISP International Standardized Profile

OSE Open System Environment

5 OSE Concepts

5.1 OSE Objectives

The following objectives are key in establishing an Open System Environment. The concepts defined are those required to clearly state the objectives, and to define the standards and profiles required to satisfy them.

5.1.1 Application Software Portability at the Source Code Level

A comprehensive and consistent set of source code level specifications enables porting of application software (which is expressed in user terms) among application platform implementations. Portability of other application software representations are secondary user objectives.

5.1.2 Application Software Interoperability

Communications services and format specifications would enable two application software entities to exchange and make mutual use of data. These specifications should provide for situations where the communicating entities are running on the same or different platforms. Where different platforms are assumed, the specifications should accomodate either homogeneous or heterogeneous platform inplementations.

5.1.3 User Portability

People should be able to interact with a wide range of application platform implementations without retraining. Variations in interaction methods which are not based on functional differences or unique requirements are counter- productive.

5.1.4 Management and Security Interoperability

OSE specifications of application platforms allow interoperation for management and security purposes between either homogeneous or heterogeneous platform implementations.

5.1.5 Accomodation of Standards

The OSE and OSE profiles should promote the use of existing standards, and should accomodate imminent and new information technology standards as they become available. The OSE and OSE profiles must evolve as standards emerge and as the technology and requirements change.

5.1.6 Accomodation of New Technology

Even though OSE standards should be decoupled from the underlying technology as much as possible, some connection will always be necessary. An element of judgement is therefore required in selecting among base standards..

5.1.7 Application Platform Scalability

Where similar services are required and provided on different types of application platforms (for example, workstations and supercomputers) the same standards should be applied to each if possible.

5.1.8 Distributed System Scalability

The number and variety of application platform types included in any large distributed system should not be limited by any structural aspects of OSE concepts or profiles.

5.1.9 Implementation Transparency

The OSE interface specifications and profiles should be defined in such a way as to hide the mechanism used to implement the service. The complexity of the implementation hidden from the service user behind ther interface, and is therefore "transparent" to the user. From the application software perspective, this reduces the size and cost of the application program, and is the basis for technology migration.

5.1.10 Support Clear Statement of User Requirements

A clear identification of the specific user requirements satisfied by a profile serves to guide and focus the development of a profile, and to apply it appropriately. Profile production is an extremely expensive process. With limited resource available for development and evolution of OSE standards, this allows the standards community to focus on activities which are most useful.

5.1.11 Software Reuse

The investment that has been made in existing software needs to be protected. Reuse is the best method available for cost avoidance.

5.2 Framework Concepts

The relationship among user requirements, technology building blocks which implement those requirements, and the specifications which characterize those building blocks may be described by relating three frameworks. Each framework reflects a different view of the same functionality: the first from the user view, the second from the technology view, and the third from the perspective of the standards community.

5.2.1 OSE Frameworks

The OSE Framework for User Requirements (FUR) provides a consistent context for user organizations to state their particular requirements for information systems. This may be used to define the requirements and priorities for OSE specifications.

The OSE Framework for Technical Integration (FTI) provides a context for translating unambiguous expressions of user requirements into technology based solutions. These solutions are defined in terms of interface, service, and data format specifications.

The OSE Framework for Technical Specifications (FTS) provides a context for selecting interface, service, and data format specifications to satisfy specific requirements. The framework for technical specifications should be structured yet flexible enough to accomodate the variety of OSE profiles identified as a result of actual profiling experiences.

It is important to maintain the consistancy among these frameworks. This is accomplished by definition of an OSE reference model. The model defines those concepts and terminology which are common to all of the frameworks, providing the desired consistancy.

SGFS profiles should be considered as populating the Framework for Technical Specifications. It is helpful, however, to understand the coordination required to assure delivery of effective profiles

5.2.2 Building Blocks, Interfaces, Services, and Specifications

An interface is a boundary between two (or more) entities and may be referenced in the definition of a relationship between them. A service is a capability which a service provider entity makes available to a service user entity at the interface between those two entities. An interface specification is a document which specifies how a particular service is invoked at a specific interface. This implies that where either:

- a specific service is available at multiple interfaces, or
- multiple services are available at a single interface,

separate specifications may be needed for each service/interface pair.

Note that while the meaning of and relationships among these three terms may seem intuitive, they are often used interchangably. This has led to considerable confusion at times, since they are quite different concepts. The importance of unambiguous terminology is clear when discussions rely on the concept of specifications defined in satisfaction of the requirement for a service at an interface.

Open Systems depend on the fact that solutions can be created by combining parts of the system from different sources. A Building Block is an implementation which provides services. The mechanism which implements those services is hidden behind an interface. The building block is characterized by the behavior at it's interfaces, and interaction with the building block is defined by it's interface specifications.

5.3 OSE Interfaces and Services

Two types of interfaces that are defined to satisfy OSE objectives listed in clause 5.1. These include:

[ISO/IEC JTC1 N1335]

- The Application Program Interface (API) is the "internal" interface between application software and the application platform;
- The Platform External Interface (PEI) is the "external" interface between application platform and the external world.

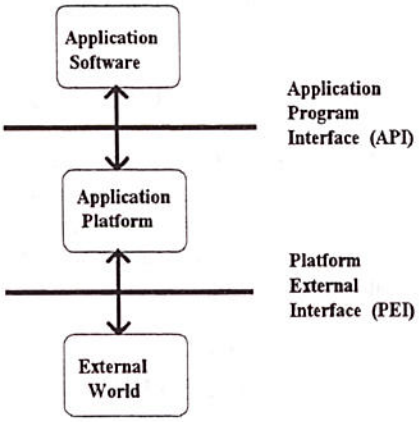

Figure 2 OSE Entities and Interfaces

Note that the relationships depicted in figure 2 could be represented in a number of ways. Clear identification of the key interfaces and entities is the objective of this dicussion rather than a selection of a particular graphical representation.

OSE specifications in support of application program objectives are found on these interfaces. For purposes of this guide, standards address only interfaces between entities, as well as services and supporting formats offered across those interfaces. The interface specification defines a convention adopted to represent the function offered across the interface in both directions. Note that no set of standards can, by itself, assure portability of specific applications. Applications must be properly engineered with an explicit portability objective in order to achieve it.

The Reference Model is not a layered model. The application platform provides services to a variety of users across both platform interfaces. A human being invokes the platform services at the Platform External Interface. A programer invokes application platform services at the API by writing source code, which accesses the service when compiled and executed.

In a distributed environment multiple application platforms may interact by way of a communication mechanism external to the platforms. Application platforms interact with the communication PEI, as in figure 2. When an application software entity requests

communication with another entity on a different platform, the request is made at the API. The implementation of the application platform translates these API requests into appropriate action at the PEI.

Communication occurs between application platforms via external entities that implement the data transport function. These can use a wide variety of implementation methods and protocols, providing access to distributed data and services via the network.

Distributed Systems are manifest in this model primarily through the use of the distributed system network services API. As such, a perceived Application Platform may in factr be comprised of several (or many) individual application platforms. However, in the distributed environment, they operate and are viewed as a single entity by the using applications. Within this extended application platform are the embedded network services necessary for the elements of a distributed environment to function.

5.3.1 OSE Building Blocks

Figure 3 expands figure 2 to illustrate the component elements in the (1) application software, (2) application platform, and (3) platform external environment. These are not layers of functionality as described in other types of reference models, such as in the Open Systems Interconnection Reference Model (OSI RM). In effect, the elements are more closely akin to system components. The three classes of OSE reference model entities are described in the following:

a) **Application Software** - Most users consider application software to be the computing element supporting their particular business needs (e.g., the payroll, accounting, spreadsheets, and other systems that provide information to the users in the course of conducting business). The application software includes data, documentation, and training, as well as programs.

b) **Application Platform** - The application platform is composed of the collection of hardware and software components that provide the system services used by application programs. Application platforms facilitate portable application programs through services accessed by application programming interfaces (API) that make the specific characteristics of the platform transparent to the application. The application platform components include the hardware and software that interface directly with the hardware (i.e., the hardware drivers) in supporting the application software.

c) **Platform External Environment** - The platform external environment consists of those system elements which are external to the application software and the application platform (e.g.,systems and services executing on, or provided by, other platforms or peripheral device).

5.3.2 Application Program Interface (API) Concepts

Definition of a clear interface between the application software and application portability is fundamental to enabling application portability. The scope of services which are provided at the API may be defined in two groups as follows:

- Services which provide application software (and therefore the programmer) access to or control of some operations which may have an effect at application platform external interface. This includes access to human user interaction services, information storage and retrieval services, and services which enable communications between application software entities.

- Services provided directly by the application platform, such as time services, execution control, and exception handling.

The API is the boundary across which application software uses facilities of a programming language to invoke services. These facilities may include procedures or operations, shared data objects and resolution of identifiers. API specifications document services available at the interface between the application software and application platform, and access methods for invoking those services.

The services provided at the API may be partitioned into the following categories:

1) Human/Computer Interaction Services
2) Information Interchange Services
3) Communication services
4) Internal System Services

API specifications take the form of one of the following:

- programming language specifications;
- language independant API specifications;
- language specific API specifications;

Programming language specifications are descriptions of general purpose languages used by programmers to define the sequence of operations to be executed by application program. These languages include those defined within the program of work of SC22, including for example, Fortran, Ada, and C.

Language independant API specifications are descriptions of services in terms of abstract syntax and abstract data types.

Language specific API specifications are descriptions of services in terms of the syantax and data types of a specific programming language. These specifications are used by programmers writing in a particular programming language, to invoke services provided by the application platform. These specifications are often refered to as "language bindings".

Note that an invocation of a service may in fact be provided by another application software entity. The relationships between similarly named services provided at the API and the PEI are not simple one-to-one relationships. For example a data storage service interface may provide and application with transparent access to a remote file via networks services. In this case the completion of the data storage service provided at the API is dependent upon, and can be thought of as having been "translated" into communication services at the PEI.

Language independant API specifications are primarily useful in defining services, and as a reference for assuring consistency across different language bindings to similar services.

However, one or more language bindings to a specific langauge (for example COBOL or C) must also exist.

5.3.3 Platform External Interface (PEI) Concepts

The PEI contains three interfaces: Human User Interface, the Information Services interface, and the Communication Services Interface.

The Human User Interface PEI is the boundary across which physical interaction between a person and information technology takes place. The Information Services PEI defines a boundry across which external, persistant storage is provided, where only the format and syntax is required to be specified for data portability and interoperability. The Communications PEI provides access to services for interaction between internal applications software entities and application platform external entities.

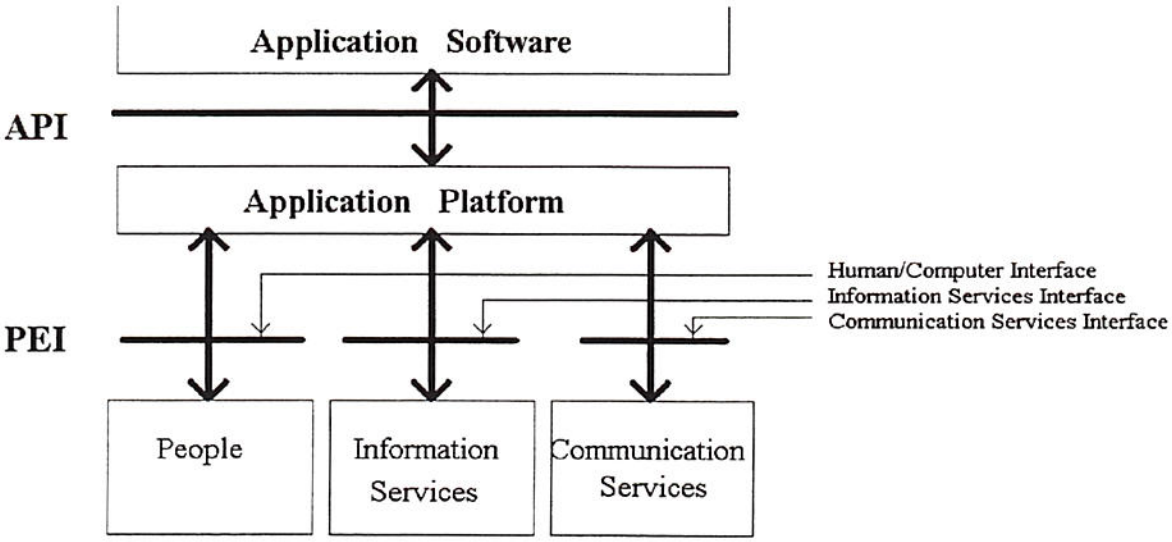

Figure 3 OSE Reference Entities

5.4 User Requirements and "Gaps"

A profile provides a clear identification of the specific user requirements which are satisfied by the profile. Occasionally, satisfaction of some of these requirements requires a base standard which is not available. This is defined as a "gap" in available standards. These gaps cannot be "filled" within ISPs via citation of specifications other than standards.

One purpose of indentifying gaps in profiles is to define areas of needed standards activities. Gaps should be identified by describing the missing functionality, not by identifying the non-standard solution which may include more or less functionality than is necessary and/or may describe n arbitrary or overly restrictive solution. Examples of any documents that address the missing functionality may be identified to assist in the development of these new standards.

6 OSE Profile Concepts

OSE Profiles are specified in order to fulfil the purposes defined in clause 5.2. The concept of an OSE Profile is considered in this clause first in an abstract sense, with particular emphasis on the significance of the claim of conformance to a Profile. This concept of an individual Profile is then extended to include defining its relationship to other Profiles, i.e. the concept of a Taxonomy of Profiles, and its place within it. Finally, since a Profile has to have a concrete existence in order for it to be used effectively, these conceptual aspects are related to a formal documentation system.

Clauses 6 and 7 concentrate on defining the concept and taxonomy of the Profiles, independently of the way they are documented in ISPs. Clause 8 defines the actual documentation scheme and shows how there is not necessarily one separate document (ISP) for each Profile definition.

Profiles are related to Base Standards, to Registration Mechanisms, and to Conformance Tests of the systems which implement them. The practical implications of these relationships are developed in the following sub-clauses, some of which specify requirements that shall be satisfied by Profiles defined in ISPs.

6.1 The purpose of OSE profiles

Profiles define combinations of base standards for the purpose of

- identifying the base standards, together with appropriate classes, subsets, options and parameters, which are necessary to accomplish identified functions for application portability and interoperability;
- providing a system of referencing the various uses of base standards which is meaningful to both users and suppliers;
- providing a means to enhance the availability for procurement of consistent implementations of functionally defined groups of base standards, which are expected to be the major components of real application systems;
- promoting uniformity in the development of conformance tests for systems that implement the functions associated with the Profiles.

Various bodies throughout the world are undertaking work, in either regional or topic-oriented groups, in the area of Functional Standardization. Various names are given to the results of this work (such as Profiles, Functional Standards, Implementation Agreements, Specifications) and various approaches are being taken to the scope of the Profiles and to the style in which they are documented. This Framework of International Standardized Profiles has been developed by ISO/IEC JTC 1 in order to create a common classification scheme, (The Taxonomy) and a common documentation scope and style, into which the work of Functional Standardization

bodies can be submitted, along with corresponding work from the members technical committees and subcommittees of ISO and IEC JTC 1.

It is not sufficient, however, just to create a framework of this sort. Product development and procurement need to be seen on a global, and not just on a regional or sectional scale. Therefore an objective of ISO/IEC JTC 1 is to create the climate for the production of harmonized Profiles, where a wide measure of agreement is reached before proposals are submitted to ISO/IEC JTC 1.

One of the most important roles for an International Standardized Profile is to serve as the basis for the establishment of internationally recognized conformance test suites and test laboratories. ISPs are produced not simply to "legitimize" a particular choice of base standards and options, but to promote real system interoperability and application portability. The development and widespread acceptance of conformance testing based on ISPs is crucial to the successful realization of this goal.

6.1.1 Functional Profiles and Application Environment Profiles

Within the set of OSE profiles a distinction is made between Functional Profiles and Application Environment Profiles (AEPs).

A Functional Profile specifies a function that is an identifiable element of the OSE. The specification is normally made in terms of one base standard or of a number of intimately related base standards.

An AEP specifies a complete and coherent subset of the OSE necessary to support a class of applications. It specifies the behaviour to be observed at the interfaces of the Application Platform on which the class of applications can run.

6.2 The relationship to base standards

6.2.1 Reduction of options

Base standards which specify procedures, interfaces and formats, provide options, anticipating the needs of a variety of applications and taking into account different capabilities of real systems and networks.

Profiles promote portability and interoperability by defining how to use a combination of base standards for a given function and environment. In addition to the selection of base standards, a choice is made of permitted options for each base standard and of suitable values for parameters left unspecified in the base standard.

Profiles shall not contradict base standards but shall make specific choices where options and ranges of values are available. The choice of the base standard options should be restricted so as to maximise the probability of achieving the objective of the Profile; for example interworking between systems, or porting an application between systems, where the systems have implemented different selections of options of the Profile.

6.2.2 Normative References

An approved ISP shall make normative reference only to base standards or other ISPs.

In exceptional circumstances, described below, normative reference may be made to ISO/IEC Technical Reports. Such reference, which requires that the following conditions are met, shall be justified on a case-by-case basis:

- no base standard addressing the requirements is available, but a Technical Report is;
- the use is identified and discussed in the Explanatory Report which accompanies the proposed draft for an ISP, justifying that use;
- the JTC1 body responsible for that Technial Report agrees that a normative reference is an appropriate use of that Technical Report;
- the National Bodies approve this usage in the draft ISP ballot.

NOTE - Entry of a Profile into the Taxonomy may occur before the referenced base standards are all stable and approved. In these circumstances, regional or sectional bodies may make use of interim or preliminary draft versions of Profiles in their own controlled environment.

6.2.3 Informative References

It may be useful to make informative reference to other documents in the process of defining a Profile. Any such reference shall be placed in an informative annex to the ISP, or in a separate, non-normative, part of a multi-part ISP. The usage shall be justified on a case-by-case basis. Approval of an ISP by ISO/IEC members does not change the status of any documents referenced by it.

For example:

a) reference may be made to applicable regional or national standards for such details as:

- physical connectors
- electrical characteristics
- safety requirements
- character repertoires

Such reference to regional or national standards, shall be either as a consequence of the lack of appropriate functionality in International Standards, or because of the existence of national or regional regulatory requirements. It shall be accompanied by details of the body responsible for the distribution and maintenance of the standard.

b) the need to define some aspect of the required functionality of a Profile where suitable base standards or ISPs do not yet exist. Informative reference to the missing material may be made, including, where appropriate, a pointer to the existence of a non-normative specification.

This should only be done where the missing functionality is a relatively small proportion of the total Profile. Where larger sections of functionality are missing, it would be preferable to redefine the scope of the Profile in the Taxonomy to match available base standards, and to insert in the Taxonomy a placeholder for a future, more extensive, Profile.

In such cases, where the development of an ISP may indicate the need to modify or to add to the requirements specified in a base standard, or to create new base standards, it is necessary for the ISP developer to liaise with the standards group responsible for that base standard so that the required changes may be made through established methods such as defect reporting, amendment procedures, or the introduction of new work.

6.3 The relationship to Registration Authorities

The base standards referenced in Profiles may include definitions of object types such as abstract syntaxes, document types, Virtual Terminal Environments and control objects, which require registration. Profiles specifications shall specifically define the use of such objects (i.e. indicate whether they are included in the specification or not).

Where such an object is already registered the Profile specification shall refer to it using the registered name. Where the definition of the object allows, the Profile specification may define particular parameter values.

Where such an object is not already registered and an international registration authority exists, then the necessary registration action shall be taken in accordance with the provisions of the authority.

Where such an object is not already registered and an international registration authority does not exist, and the object type falls within the scope of one of the classes of Profile defined in a taxonomy in this Technical Report and is covered by the provisions of ISO/IEC 9834, then an ISP may act as the registration authority. The ISP concerned may be the ISP in which the Object is used or a multi-part ISP may be used as the registration authority. In this case, the provisions of this part of ISO/IEC TR 10000, of ISO/IEC 9834-1, and of any other part or parts of ISO/IEC 9834 that concern this type of information object, shall all be applicable.

Where registration mechanisms are not yet set up, objects of this kind shall in the meantime be maintained in an informative annex to the ISP which defines the Profile. Entry of an object into such an annex does not imply registration.

NOTE - It is for further study whether a Profile could create the requirement to register a type of object that is not already accommodated by the Registration Authority mechanism for the base standards referenced.

6.4 Principles of Profile Content

6.4.1 General Principles

A Profile makes explicit the relationships between a set of base standards used together (relationships which are implicit in the definitions of the base standards themselves), and may also specify particular details of each base standard being used.

A Profile may refer to other International Standardized Profiles in order to make use of the functions and interfaces already defined by them, and thus limit its own direct reference to base standards.

It follows that a Profile:

a) shall restrict the choice of base standard options to the extent necessary to maximise the probability of achieving the objective of the Profile; for example interworking between systems, or porting an application between systems, where the systems have implemented different selections of options of the Profile. Thus a Profile may retain base standard options as options of the Profile provided that they do not affect interworking or portability.

b) shall not specify any requirements that would contradict or cause non-conformance to the base standards to which it refers;

c) may contain conformance requirements which are more specific and limited in scope than those of the base standards to which it refers. Whilst the capabilities and behaviour specified in a Profile will always be valid in terms of the base standards, a Profile may exclude some valid optional capabilities and optional behaviour permitted in those base standards.

Thus conformance to a Profile implies by definition conformance to the set of base standards which it references. However, conformance to that set of base standards does not necessarily imply conformance to the Profile.

6.4.2 Main elements of a Profile Definition

The definition of a Profile shall comprise the following elements:

a) a concise definition of the scope of the function for which the Profile is defined, and the user requirements which it will satisfy;

b) an illustration of the scenario within which the function is applicable, giving, where applicable, a diagrammatic representation of the systems, applications and interfaces which are relevant;

c) normative reference to a single set of base standards or ISPs, including precise identification of the actual texts of the base standards or ISPs being used and of any approved amendments and technical corrigenda (errata), conformance to which is identified as potentially having an impact on achieving interoperation using the Profile;

d) informative reference to any other relevant source documents;

e) specifications of the application of each referenced base standard or ISP, covering recommendations on the choice of classes or subsets, and on the selection of options, ranges of parameter values, etc, and reference to registered objects;

f) a statement defining the requirements to be observed by systems claiming conformance to the Profile, including any remaining permitted options of the referenced base standards or ISPs, which thus become options of the Profile.

Where systems can perform different but complementary roles (e.g. an initiator-responder, a client-server, or a master-slave relationship), the Profile shall identify the separate roles which may be adopted by a system, and these shall be stated as either mandatory requirements or options of the Profile, as appropriate.

NOTE - Clause 8 provides information on the way in which a Profile shall be defined in an ISP.

Different classes of OSE Profiles, corresponding to the major divisions of the Taxonomy, may have unique aspects to their definition. For example, an OSI Profile specifies the application of one or more OSI base standards in support of a specific requirement for interworking between systems. While it adheres to the structure defined by the Basic Reference Model for OSI, it does not define the total OSI functionality of a system, but only that part relevant to the function being defined.

6.5 The Meaning of Conformance to a Profile

6.5.1 General

A Profile shall be defined in such a way that testing of an implementation of it can be carried out in the most complete way possible, given the available testing methodologies.

The concept of a conformance point is an interface point declared in a standard as a point at which behaviour may be observed for the purposes of conformance testing.

These requirements are stated in an ISP Implementation Conformance Statement (ISPICS), using the PICS Proformas of the referenced base standards and an ISPICS Requirements List (IPRL - details as given in 8.4).

NOTE - Where such PICS proformas do not exist in a base standard, the appropriate means of stating implementation conformance shall be used.

In order to conform to a Profile, a system shall perform correctly all the capabilities defined in the ISPICS as mandatory and also any options of the ISP which it claims to include. Conformance to a base standard in this context is conformance to a particular identified publication of a referenced base standard as defined in 6.3.2 (c), irrespective of however many additional technical corrigenda to it may have been published.

But a system may have the ability to operate according to several Profiles which make use of different capabilities of the same base standards, and either to negotiate between such different uses, or to be configured appropriately.

6.5.2 OSI Profiles

The concepts of static conformance, dynamic conformance and Protocol Implementation Conformance Statements (see ISO/IEC 9646 parts 1 and 2) are incorporated in the concept of Profiles.

In the context of OSI, a real system is said to exhibit conformance if it complies with the requirements of applicable OSI standards in its communication with other real systems.

Since OSI standards form a set of inter-related standards which combine to define behaviour of open systems in their communication, it is necessary to express conformance of real systems with reference to this set.

NOTE - ISO/IEC 9646 is under development to include the subject of testing concepts and methodology for such Profiles, and will be referenced from this Technical Report when these extensions have been completed. In the mean time, nothing in this Technical Report shall be taken to contradict statements made in subsequently published ISO/IEC standards.

6.5.3 Profiles for Interchange Formats and Representation

The concept of static conformance (as given in 6.6) shall be applied to Interchange Format and Representation Profiles.

Interchange Format and Representation Profiles should if appropriate include an IPRL based on a PICS-style proforma, which may vary from the PICS defined in ISO/IEC 9646 Parts 1 and 2.

In the case of Profiles for Office Document Architecture, conformance centres on the requirements for valid ODA data streams. The conformance methodology for ODA data streams (defined in ISO/IEC 8613-1) is differentiated from the implementation testing methodology (defined in ISO/IEC TR 10183), which deals with the way that data streams are generated and received.

Other sub-classes of Interchange Format and Representation Profiles will similarly have specific definitions of conformance methodology.

6.5.4 OSE and Application Environment Profiles

An approach to conformance which addresses the full OSE scope is an issue which will require further study.

Considerable work has been done in JTC1 SC21/WG1 on the extension of ISO/IEC 9646 to address profile conformance. The extension towards Interoperability testing which is occurring for OSI Profiles will also have some relevance to OSE, including an element of proving practical portability of implementations.

JTC1 SC22/WG15 has produced a test methodology for API specifications which is based on Test Assertions. This work primarily supports the conformance of individual base standards, and is in the preliminary stages of addressing profile conformance.

A full integration of these two techniques would be a significant advance in conformance testing. Major additional test concepts and work would be required to address the full scope of OSE conformance, although this can be expected to take some time.

Clear definitions of conformance and testability are essential for standards API specifications. Not all required functions can be effectively tested. However, where possible, test methods should be readily derivable from the standard. The following statements will apply:

- API specifications shall specify the mapping between conformance levels defined by the API standard and conformance levels defined by the standards defining the associated programming language and service.

- The "conformance clauses" and conformance requirements specified in standard API specifications shall distinguish between the requirements on conforming service implementations and those on conforming applications.

- API conformance requirements shall include sufficient level of specificity that verification test methods can be derived.

- The use of API specification methods that support the use of automated test procedures should be encouraged.

6.6 Categories of Conformance requirements for OSE Profiles

The conformance requirements of a Profile shall relate to the conformance requirements in the base standards in the following ways.

a) **Mandatory requirements in the base standards**: these shall remain mandatory in the Profile.

b) **Conditional requirements in the base standards**: these shall remain conditional in the Profile with the exception that if the condition always evaluates to True or False given the requirements of the Profile, then the status can be changed to the result obtained. (See clause C.4 for additional information).

c) **Optional requirements in the base standards**: these may be changed in various ways within the profile:

- Mandatory: support may be made mandatory.
- Optional: support may remain optional.
- Out of Scope: optional requirements which are not relevant to the Profile. For example, functional units of layer (n-1) which are unused by layer (n) in the context of the Profile.
- Conditional: optional requirements may be made conditional within the Profile.
- Excluded: the use of an optional feature may be prohibited in the context of the Profile. This should only be used to restrict the dynamic behaviour in terms of the transmission of protocol elements.

NOTE - Exclusion of an optional feature in a base standard should be done only with great care. An example of an appropriate situation would be when use of an optional feature would lead directly to future interoperability problems.

d) **Non-applicable features in the base standards**: (i.e. those that are logically impossible, according to the base standard) these shall remain non-applicable in the Profile.

e) **Excluded requirements in the base standards**: these shall remain excluded in the Profile.

Conformance statements that relate to the profile as a whole are expected for any multi-standard profile.

6.7 Format of Conformance Statements

6.7.1 General

The choices of options made in a Profile's conformance requirements are specific to that Profile and provide added value to the base standards.

The choices are not, therefore, arbitrary but need to be consistent with the purpose of the Profile and consistent across all base standards referenced by it.

In order to avoid ambiguity between the Profiles and the base standards, the static conformance requirements of a Profile shall be specified, where possible, by reference to the conformance requirements of the referenced base standards (see 8.4.3).

6.7.2 Structure

The statement of conformance requirements shall be structured as follows:

a) An overview of major subsets or implementation categories which provides an overall rationale for the more detailed selection of classes and options made in the Profile.

b) The major conformance requirements which relate to these subsets or implementation categories.

c) For each base standard selected in the Profile, a set of conformance requirements referring both to the base standard conformance requirements and to the choices made for the Profile (details as given in 6.5).

7 Taxonomy of OSE Profiles

7.1 Nature and Purpose of the Taxonomy

The Taxonomy is the structure and classification within which Profiles will fit. It gives a first-level specification of Profiles, including any determined technical constraints due to their position in the structure, it classifies them and it specifies a number of relationships between them.

The process of drafting and approving ISPs requires a technical framework within which to operate. ISPs will, in general, be written, evaluated and used by experts in specific areas of standardization. There is therefore a prima facie case for identifying classes of Profiles which correspond to these main areas of expertise.

Having defined such classes, there is then a need to make further subdivisions, related to the inherent real-world divisions of functionality which are supported by the base standards concerned. These sub-classes correspond to functional elements which are meaningful to both users and suppliers; they correspond to points where choices are made, such as whether or not to use/offer a particular subset of an application service, or which communications sub-network environment is to be accessed, or what types of portability need to be provided by a system.

In defining the elements of the taxonomy, a major source of determining factors can be provided by analysis of user requirements. Grouping together elements of functionality into a Profile should correspond to identifiable, real-world, units of application or system design.

The granularity of the Taxonomy is important from the point of view of satisfying the requirement for common methods of interworking using Profiles; too many nearly-similar Profiles within a sub-class of the Taxonomy will increase the likelihood that users will be unable to agree on a single Profile choice to interwork successfully; too few Profiles may lead to the provision of so many options to a Profile that it accomplishes little in the way of selection and simplification.

The Taxonomy therefore provides a structure within which these choices can be made and recorded, and the embodiment of the Taxonomy is the structured identifier system. ISO/IEC/TR 10000-2 provides the detail of this system.

7.2 OSE Taxonomy Description

This clause contains the Taxonomy of OSE Profiles as is currently envisioned. It should be noted however that the entries have only an informative nature, and that further user and supplier consultation is required before they can be regarded as correct and usable.

This taxonomy must be capable of providing the means of categorising all conceivable profiles within the intended scope of Open Systems. In addition, the profile development methodology must support the content requirements of all such profiles.

This taxonomy must be based on an analytical examination of the functions which meet the real requirements of users.

This taxonomy is concerned with Generic AEP profiles, which form the basis for subsequent definition, by users or by other standardisation groups, of specific profiles (e.g. a generic workstation profile can be used as basis for a financial institution's workstation). Hence this limits the scope of this taxonomy.

P OSE Profiles

POB Base Environment Profiles

POB1 Generic Base Environment
POB2 .... (to be extended if necessary)

POE Generic Environment Profiles

POE1 Work Station Environments
POE10 Terminal Environment
POE11 Personal Workstation Environment
POE12 Professional Workstation Environment
POE2 Utility Server Environments
POE20 Electronic Message Serving Environment
POE21 Directory Serving Environment
POE22 Access Control Serving Environment
POE3 Information Server Environments
POE30 DBMS Serving Environment
POE31 Document Serving Environment
POE4 Transaction Processing Environments
POE40 Simple TP Environment
POE41 Enhanced TP Environment
POE5 Real Time Environments
POE50 Real Time Environment, seconds
POE51 Real Time Environment, milli-seconds
POE6 Super Computing Environments

Note: Such a profile taxonomy can be applied to stand-alone environments, communicating environments as well as to distributed environments. It may also be subject to extension by means of the addition of Attributes.

8 Structure of Documentation for Profiles

8.1 Principles

The requirements for content and format of ISPs are based on the following principles:

a) Profiles shall be directly related to base standards, and conformance to Profiles shall imply conformance to base standards.

b) ISPs shall follow the IEC/ISO Rules for the drafting and presentation of International Standards. See Annex A for relevant extracts from these rules, adapted for use in ISPs.

c) ISPs are intended to be concise documents, which do not repeat the text of the documents to which they refer. The reliance on references to base standards, their PICS proformas (in the case of OSI Profiles), and the use of registered names of objects, are thus essential for the production of concise ISPs.

d) Profiles making identical use of particular base standards shall be consistent, down to the level of identical wording in the ISPs for identical requirements.

8.2 Multi-part ISPs

Many Profiles will be documented and published as individual ISPs. However, where close relationships exist between two or more Profiles (for example those relationships documented in general terms in clause 7 of this part of ISO/IEC TR 10000, and in detail in subsequent parts Part 2), a more appropriate technique can be used.

The need for common text between related Profiles is essential to ensure consistency and interworking, to avoid unnecessary duplication of text, and to aid writers and reviewers of ISPs. Items of common text comprise the definition of a distinct section of a Profile, together with that part of the ISPICS Requirements List relating to the use of one or more base standards by that section of the Profile.

An ISP can be produced in a number of separate parts, on the analogy of multi-part International Standards, where each part is capable of being separately written, submitted to an ISO/IEC Technical Committee, and approved.

A single-part ISP, or one part of a multi-part ISP, shall not contain the definition of more than one Profile.

The following rules apply to multi-part ISPs:

a) A multi-part ISP shall contain the definition of a complete Profile or of a related set of Profiles.

b) A part of a multi-part ISP may contain a section of the definition of one or more Profiles.

c) Where a multi-part ISP covers more than one Profile, the part structure shall permit each Profile to be the subject of a separate ISP ballot; i.e. its constituent Profiles shall be clearly identifiable, and the multi-part structure shall ensure that this can be accomplished.

d) Wherever possible, the references made from one part to another should be to complete parts. However, controlled use of one-way references to clauses of other parts is permitted in order to obtain a reasonable multi-part structure.

Because there may also be potential disadvantages from over-use of the multi-part ISP capability, such as difficulties in gaining approval for a complex linked set of parts, or reduction of the content of a part to a small amount of text, considerable care should be taken with its use.

See annex B for further more detailed illustrations of the way in which multi-part ISPs can be constructed and used.

NOTES

1 When a section of text appears in several Profiles, then possibilities exist for sharing the corresponding code (etc.) for the implementation of several Profiles, and the tests applicable to the use of the referenced base standards will be applicable to the testing of several Profiles.

2 It follows that it is in the interests of the implementers of OSI to promote the identification of common sections of text as parts of ISPs, but even more to promote, in future standardization and Profile work, the use of already defined parts of ISPs, so that Profiles fall into a few "common moulds". In particular, this allows implementation of a part of an ISP with confidence that it may be used in the implementation of Profiles as yet undefined, so that products are open to future development.

3 The definition of one Profile may include a reference to the definition of another Profile in its totality.

8.3 Structure of OSE Profiles

The document structure for OSE Profiles follows the generic rules defined in TR 10000-1 Annex A, and extensions and more specific descriptions are required in TR 10000-3.

In addition to specifying material, an ISP for an OSE Profile should record the rationale for the technical choices made during the development of the Profile. Capturing this rationale facilitates the use, reuse and maintenance of OSE profiles.

An OSE Profile specification when published as an ISP, shall contain clauses and annexes as follows.

Title
Foreword
Introduction
1 Scope
2 Normative References

3 Definitions
4 Abbreviations
5 Conformance
6 Profile Specification (as many clauses are needed)

Anx A Profile Requirements List
Anx B Profile Structure
Anx C Rationale
Anx D User Requirements (inc architectural constraints)
Anx E Identification of informative references

Title

The title of the OSE Profile, including its Identifier as derived from the OSE Taxonomy, the identifier should be stated here. See TR 10000-1 Anx 4.1

Foreword

As required by TR 10000-1 A.3.1

Introduction

As required by TR 10000-1 A.3.4

Scope

Follow the structure of TR 10000-1 A.4.2.

a) General

This clause documents in user terms the exact objectives for the Profile.

OSE Profiles should include an informative description of the purpose of the profile in general terms, its relation to other profiles and standards, and suitable explanations to facilitate the use of the profile.

This clause should point to Annex C for rationale of development from user requirements.

b) Position within Taxonomy

Reference to the Taxonomy for OSE Generic Profiles in TR 10000-3

c) Scenario

Illustrative representation of the scope of the Profile, including all specified external interfaces (including interoperabiltiy and distributed operation functions) and all specified internal interfaces between building blocks, defined either as functional profiles or as direct reference to base standards. The existence of "gaps" in the specification of the Profile, for which reference to Publicly Accessible Specifications may be appropriate, should also be noted.

Normative References

As required by TR 10000-1 A.4.3

Definitions

As required by TR 10000-1 A.5.1

Abbreviations

As required by TR 10000-1 A.5.2

Conformance

This clause identifies the major types of conformance by which implementations of the Profile can be assessed. A detailed Profile Requirements List in Annex A gives specific information about conformance to each referenced base standard or functional profile.

Conformance Requirements

The OSE Profile shall identify the exact conformance requirements and indicate which of them must be subject to measurement by test technology, and which could be subject to validation by other means.

Conformance Testing

Testing methodologies vary at least according to the five different interface types described in the subsequent clauses. Also, testing of conformance is better understood for services offered by Building Blocks than for services consumed by them.

Profile Specification

The following sections are a complete list of the functionality the OSE profile specifies. This is detailed functionality as seen by the user of the Profile (provider or consumer).

In order to provide the required functionality of the Profile, individual Base Standards or ISPs and relevant options are identified.

If there is no suitable base standard or ISP available to satisfy a technical requirement, the need for new standardisation work can be identified. An OSE Profile should specify the required functionality and may indicate through references the source of possible specifications to meet this need. In no case shall a modified Base Standard or ISP be defined in an OSE Profile.

This specification documents the technical requirements for the interfaces between the building blocks identified in Annex B, as well as to the external environment.

Each interface requirement describes an interface between two building blocks within the Profile, or between a building block and an external entity. External entities are described only in terms of their interaction with the profile. For example, a protocol may provide connectivity to a different system which is not detailed, or an API may be exported for use by applications which are not named.

The interfaces are classified according to the main aspects of openness: Human User Interaction, Data Format, Application Program Interfaces, Protocols.

This classification is further described below. It should be realised that the different categories of interfaces reflect the different levels of details in the interface.

The interface classes and associated requirements follow.

Human/Computer Interaction

These are requirements on an interface between Information Technology and a human being. The requirement deals with the audio-visual and manual aspects of the interface.

Data Formats

These are requirements on BBs that they be able to exchange and process data in a certain representation. The exchange mechanism may be unspecified, or carried out using the following Interface Classes. Data interchange is the context for the Format definitions, including media based interchange.

Application Program Interfaces

These are requirements for a language bindings of the interface (for example, APIs).

Protocols

These are requirements on the mechanism for communication between Building Blocks.

Attributes

Some additional requirements may be added to the Profile to fulfil its objectives. Some of the attributes which could be included in this section are:

- security characteristics
- degree of availability (e.g. non-stop computing)
- national adaptation (localisation)
- responsiveness (e.g. realtime or TP)
- languages and associated bindings
- type of information processed and presented to the user (e.g. windowing, 2D or 3D graphic, multi-media).

Note: Attributes will in most cases have a pervasive influence on a profile and should therefore not be handled as options or parameters to a profile. Rather, their existence should be suitably noted in the Profile title. The detailed treatment of attributes will be studied further during the development of pilot profiles.

Annex A Profile Requirements List

The nature of a PRL for an OSE Profile is to be the subject of further work. The general principles of such requirements lists have been well developed in ISO/IEC DIS 9646-6 for OSI Profiles, and it is expected that relevant material and terminology can be extracted to define a meaningful concept for OSE Profiles. However, as the nature of conformacne statements in referenced base standards for OSE Profiles is not constrained by a document such as ISO/IEC 9646, there is unlikely to be as simple and neat a solution for defining precisely the conformance requirements of an OSE Profile.

Annex B Profile Structure

Lists the building blocks which together support the functionality of the Profile as described in the main text.

Each buildng block is a component of the profile definition; interfaces are the "points of stability" in the Profile, while the implementation of the builidng blocks may evolve independently.

Annex C Rationale

This annex includes the rationale for the breakdown of user requirements into elements of the Profile specification, and the points of stability identified by the interfaces, ideally by pointing to the user requirements/objectives Annex which follows.

Annex D User Requirements

This annex defines the detailed requirements as a list of functions and a list of attributes and architectural constraints.

This section is created at an early stage of the Profile's development, since it forms the rationale for the selection of standards and their options.

Some variations in requirements could be handled by the use of options on requirements, provided that they only affect well contained parts of the profile specification. Options must not seriously affect the openness of the profile. They may apply to functions, attributes or architectural constraints.

This Annex can also specify user required architectural aspects which go beyond the specification of functions and attributes, and can include (for instance):

- preference for certain standards or paradigms
- degree of distribution
- inclusion of existing OSE profiles
- coexistence with legacy environments
- visibility of certain internal interfaces.

Annex E Identification of Informative References.

TR 10000-1 requires all documents referenced within an ISP to be formally identified in an Annex. In the cse of OSE Profiles, such references may include Publicly Accessible Specifications (depending on successful resolution of the "Gaps" Issue 17 (N624).

1. To be published