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Title

Information Processing Systems - International Standardized Profiles - Part 1: Taxonomy Framework

Reference Language Version: ☒ **English** ☐ **French**

Introductory Note

SOURCE: Editor - Framework: ISO/IEC JTC 1 Special Group on Functional Standardization, Working Group on Taxonomy

STATUS Second Proposed Draft Part 1 of the Technical Report TR 10000. According to Resolution C of the May 1988 Tokyo meeting of the Special Group on Functional Standardization. (as documented in SG-FS N58), SG-FS P-members were requested to indicate by September 16, 1988, to the SG-FS convener and secretariat, whether further processing of this Part 1 at DTR level was acceptable. The response showed that this was not the case, and therefore it is now being balloted as a second PDTR.

This Taxonomy Framework and Directory of Profiles has been produced in response to Resolution 6 of the Special Group on Functional Standardization, Eindhoven, March 1987.

The first draft (TC 97 FSTG N11 and N12) was produced following the Washington meeting of the Taxonomy Group (June 1987). The second draft (TC 97 SG-FS N27) was created by amendment of the first draft, according to editing instructions in Resolution 1 of the Taxonomy Group meeting, Ottawa, November 1987. This third draft was created by amendment of the second draft. according to the editing instructions of the above meeting of SG-FS, as documented in FSTG N87. A preliminary draft of this text was circulated to meeting participants on 30th June 1988, and comments received by the Editor were taken into account as far as possible in the second draft circulated on 19th August 1988. An editor's report is provided in document SG-FS N55. Only minor typographical errors have been corrected in creating this definitive PDTR text.

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Foreword

This Technical Report is produced by the Special Group on Functional Standardization of ISO/IEC JTC 1. This Group includes ISO/IEC Member Bodies, and A- and S-liaison organizations. The S-liaison organizations are designated OSI User Groups who are concerned with the process of Functional Standardization, and have contributed to the production of this Technical Report. These are:

- Corporation for Open Systems (COS)
- World Federation of MAP/TOP User Groups
- Promoting Conference for Open Systems Interconnection (POSI)
- Standards Promotion and Application Group (SPAG)

The structure of this Technical Report is as follows:

Part 1: Taxonomy Framework

Part 2: Taxonomy Update, ISP Approval, and Maintenance Procedures

Part 3: The Taxonomy of Profiles

Part 4: Directory of Profiles and ISPs

Reference should be made to Part 2 for an indication of the different procedures applicable to the approval and amendment of Parts 3 and 4 of this Technical Report. The key differences are summarised below:

Parts 1 and 2 are subject to normal ballot and amendment procedures for a Technical Report Type 3.

Part 3 is a classified list of Profiles maintained by the Special Group on Functional Standardization. Amendments to the Taxonomy are agreed by its Taxonomy Group, and revisions to Part 3 are then agreed by the Special Group members at a regular meeting, unless a JTC 1 ballot has been specifically requested.

Part 4 is a list of Profiles for which an ISP exists, or is in preparation, together with a summary description of the scope, scenario, and model for each Profile. This is a factual record of the current situation, and is subject to updating by the Secretariat of the Special Group.

In Part 1, Annex A is an integral part of the Technical Report, and is binding on submitters of ISPs. Annex B is illustrative, and has no binding significance.

Introduction

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

Base Standards, defining 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, defining combinations of base standards to provide specific functions. They standardize the use of particular options available in the base standards, and provide a basis for the development of uniform, internationally recognized, system tests.

Registration Mechanisms, providing the means to specify detailed parameterization within the framework of the base standards.

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

1. Scope

This Technical Report defines the concept of Profiles, as documented in International Standardized Profiles, and gives guidance to organizations making proposals for Draft International Standardized Profiles, on the nature and content of the documents they are producing.

The body of this Part of the Technical Report outlines concepts of Profiles, the general Taxonomy (or Classification Scheme), and the format and content of ISPs. Annex A gives details of the format and content of ISPs as required by JTC 1. Annex B gives examples of the ways in which Profile definitions are incorporated in ISPs for publication. See the Foreword for the scope of the other Parts.

This Technical Report is applicable to Profiles in the area of competence of JTC 1, and within this, priority consideration has been given to Profiles in the OSI area, i.e. those which specify OSI base standards, and those expected to be used in conjunction with them. In addition, as a lower priority, it is also applicable to Profiles specifying the use of other JTC 1 base standards, for example:

- Open Distributed Processing;
- the representation of information or objects on storage media (as opposed to the current limitation to use with communications protocols);
- logical and physical storage structures.

However, it is recognized that the scope of the concept of Profiles may ultimately be wider than that of JTC1. Examples of other areas to which the concept may eventually be extended by other Technical Committees are:

- interchange formats defined for particular application areas (e.g. trade data interchange formats in TC 154);
- protocols used in particular application areas (e.g. banking protocols in TC 68, industrial automation protocols in TC 184), which may also specify particular uses of the more generic Profiles included in this Taxonomy.

2. References

The following documents are referenced within this Technical Report, and provide additional background information.

ISO 7498	Information Processing Systems - Open Systems Interconnection - Basic Reference Model (Corresponds to X.200)
ISO 9646-1	OSI Conformance Testing Methodology and Framework - Part 1: General Concepts (Corresponds to X.290 Part 1)
ISO 9646-2	OSI Conformance Testing Methodology and Framework - Part 2: Abstract Test Suite Specification (Corresponds to X.290 Part 2)
ISO:	Rules for the drafting and presentation of International Standards (ISBN 92-67-01042-5 First Edition 1986)

A number of other ISO Standards and CCITT Recommendations are quoted in the examples given in this Technical Report, but they are not essential for understanding it, and they are not listed here.

3. Definitions

For the purposes of this Technical Report, the following definitions apply:-

3.1 Terms defined in this Technical Report

3.1.1 International Standardized Profile

An internationally agreed-to, harmonized document which identifies a group of standards, together with options and parameters, necessary to accomplish a function or set of functions.

3.1.2 Profile

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.

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

3.1.3 ISP Implementation Conformance Statement

A statement made by the supplier of a system claimed to conform to an ISP, stating the capabilities and options which have been implemented, and all optional features which have been omitted.

3.1.4 Group

A set of profiles that are compatible, in the sense that a system implementing one Profile from a Group can interwork, according to OSI, with another system implementing a different Profile from the same Group, in terms of the operation of the protocols specified within those Profiles.

3.1.5 Base Standard

A published Standard (International Standard, CCITT Recommendation, or, in exceptional circumstances, a national or regional standard) which is referenced within an ISP.

NOTE - See also Clause 6.1 for indication of circumstances under which Base Standards other than those from ISO/IEC and CCITT may be referenced.

3.2 Terms defined in ISO 9646-1

This Technical Report uses the following terms defined in ISO 9646-1:

a) Conformance testing

b) Conforming implementation

c) Dynamic conformance requirements

d) Protocol Implementation Conformance Statement (PICS)

e) PICS proforma

f) Static conformance requirements

4. Abbreviations

ISP	International Standardized Profile
ISPICS	ISP Implementation Conformance Statement
PICS	Protocol Implementation Conformance Statement
A-Profile	Application Profile (requiring Connection-mode Transport Service)
B-Profile	Application Profile (requiring Connectionless-mode Transport Service)
F-Profile	Interchange Format and Representation Profile
R-Profile	Relay Profile
T-Profile	Transport Profile (providing Connection-mode Transport Service)
U-Profile	Transport Profile (providing Connectionless-mode Transport Service)
VTE-Profile	Virtual Terminal Environment Profile

5. Purpose of Profiles

Profiles define combinations of base standards for the purpose of:

- identifying the base standards, together with appropriate classes, subsets, options and parameters, necessary to accomplish identified functions for such purposes as interoperability;
- providing a system of referencing the various uses of base standards which is meaningful to users and suppliers alike;
- 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 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 as identified by the above objectives. There are various names given to their work (such as Profiles, Functional Standards, Implementation Agreements, Specifications) and various approaches to the scope of the profiles and to the style in which they are documented. This Taxonomy of International Standardized Profiles is being developed by ISO/IEC JTC 1 in order to cre-

ate a common classification scheme, and documentation scope and style, into which the work of such Functional Standardization bodies can be submitted, along with corresponding work from the members and subcommittees of JTC 1.

It is not sufficient, however, just to create a framework of this sort, and to accept into it any Profiles from such contributors. Interoperability, and product development and procurement, need to be seen on a global, and not just on a regional or sectional scale. Therefore an objective of JTC 1 is to create the climate for the production of harmonized Profiles, where agreement is reached in the contributory bodies before proposals reach JTC 1.

One of the most important roles for an International Standardized Profile is to serve as the basis for the development (by organizations other than ISO/IEC) of internationally recognized tests and test centres. ISPs are produced not simply to "legitimize" a particular choice of base standards and options, but to promote real system interoperability. The development and widespread acceptance of tests based on ISPs is crucial to the successful realization of this goal.

NOTE - The remainder of this Technical Report is concerned with the concepts and structures of Profiles as they apply to the use of standards which are in the area of competence of JTC 1, and primarily as they apply to the use of OSI and OSI-related standards. This means:

- *Profiles for the use of protocol standards for systems interoperability, which correspond to the seven layers of the Basic Reference Model for OSI (ISO 7498);*
- *Profiles for the use of standards which define the format and content of the data that is carried between end systems by means of the OSI protocols.*

6. Concept of a Profile

The concept of a Profile, which fulfils the purposes defined in clause 5, is considered 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 therefore 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 must be satisfied by Profiles defined in ISPs.

6.1 The relationship to base standards

Base standards specify single layer or multilayer procedures and formats that facilitate the exchange of information between systems. They provide options, anticipating the needs of a variety of applications and taking into account different capabilities of real systems and networks.

Profiles promote 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. As few as possible of these base standard options shall remain as options of a Profile, and interoperability shall be preserved between systems implementing different selections of such options.

An approved ISP shall only reference approved base standards. These may include regional or national standards which cover such topics as physical connectors, electrical characteristics, safety, etc. However, it is not expected that such regional or national standards will occur (in OSI terms) at or above the protocol level which defines the Logical Link Control or Data Link Control in the Data Link Layer.

If the development of a Profile leads to the identification of a need for modifications of or additions to the requirements currently in the base standards, it is necessary to liaise with the relevant subcommittee in order to correct the deficiency through the normal defect reporting and amendment procedures, or through the introduction of a New Work Item.

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 The relationship to Registration Authorities

Profiles may need to make reference to objects such as abstract syntaxes, document types, VTE-profiles and control objects, etc, which consist of lists of parameters and their values. The specifications of such objects are intended to be maintained by Registration Authorities under agreed registration mechanisms. Profiles shall reference these objects by their registered identifiers where they exist, and shall not attempt to list individual parameters.

Where registration mechanisms are not yet set up, objects of this kind shall in the meantime be maintained in an informative annex to either the base standard or the ISP which defines the Profile.

Where a Profile corresponds to an object type which is capable of being registered, then the Profile identifier should be so registered. The ability to use one Profile in conjunction with another (for example, an F-profile in conjunction with an A-profile) may depend on the registered identifier of the Profile being known. The process of gaining approval for an ISP confers a higher degree of international acceptability on the object than that given by simple registration.

6.3 Principles of Profile Content

6.3.1 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.

It follows that a Profile:

a) shall leave open as few as possible of the options in the base standards to which it refers, in order to maximise the probability that implementations of the Profile can interoperate;

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 standard(s) 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.

6.3.2 Principles of OSI Profile Content

An OSI Profile specifies the application of one or more OSI base standards in support of a specific requirement for communication between systems. It does not require any departure from the structure defined by the Basic Reference Model for OSI, nor does it define the total OSI functionality of a system, but only that part relevant to the function being defined.

6.3.3 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 of its purpose;

b) an illustration of the scenario within which the function is applicable; where a Profile is a member of a Group (clause 7.2 and Part 3, Clause 4.3), the scenario includes reference to the possibilities for interoperation that this provides (see also Annex A.4.2);

c) reference to a single set of base standards, including precise identification of the actual texts of the base standards being used and of any approved amendments of them, and to any other relevant source documents;

d) specifications of the application of each referenced base standard, 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;

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

Interoperable systems can perform different but complementary roles (e.g. an initiator-responder or a master-slave relationship). In such a situation 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 and Annex A provide information on the way in which a Profile shall be defined in an ISP.

6.4 The meaning of conformance to a Profile

6.4.1 Profiles for OSI

The concepts of static conformance, dynamic conformance and Protocol Implementation Conformance Statements (see ISO 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.

A Profile shall address the following two topics:

- static conformance requirements (details as given in 6.6);
- dynamic conformance requirements (details as given in 6.7);

These requirements are stated in an ISP Implementation Conformance Statement (ISPICS), using an ISPICS Proforma (details as given in 8.4)

In order to conform to a Profile, a system shall perform correctly all the capabilities defined in the ISPICS as mandatory (and, where applicable, as conditional), and also any options which it claims to include.

But a system may have the ability of operating according to several Profiles which make use of different capabilities of the same base standards, and of negotiating between such different uses.

Therefore, during the dynamic conformance tests, when initiating operation according to a Profile, a system shall not propose those options which the ISPICS defines as excluded, non-applicable, or optional and not implemented. This does not preclude a system from passing the static conformance tests when it has implemented these options, nor from passing the dynamic conformance tests if it accepts such options when proposed.

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. This includes the testing of any options of the Profile which are claimed to be included in the implementation, and also testing for the absence of any non-conformant dynamic behaviour.

6.4.2 Other Profiles

Methods for applying the concept of ISPICS to Profiles such as those defining Interchange Formats and Representation are for further study.

6.5 Conformance requirements of Profiles

The conformance requirements of a Profile shall relate to the conformance requirements in the base standards, in the following ways, as described in ISO 9646-2:

a) **Mandatory requirements**: these are of two types:
- mandatory requirements in the base standards which shall also be mandatory in the Profile;
- static or dynamic options in the base standards which the Profile makes mandatory.

b) **Conditional requirements**: these shall be observed when the conditions set out in the relevant base standard apply.

c) **Options**: these are static or dynamic options in the base standard which remain optional in the Profile; they may be selected to suit the implementation so long as any requirements on which the options depend or which depend on the option are observed. It is left to each implementation whether to support them or not, and no implementation should expect that other implementations will support them.

d) **Excluded options**: these are dynamic options in the base standards that the Profile requires to be specifically excluded from its dynamic behaviour. [1]

e) **Non-applicable options**: these are static or dynamic options in the base standards that are not pertinent to the Profile.

See clause 8.4 for the way in which these types of conformance requirements are handled in the ISP Implementation Conformance Statement (ISPICS).

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1 NOTE - Exclusion of options is an exceptional case which has to be carefully performed on the basis of specific Profile requirements.

These relationships can be summarised in the following table:

6.6

Base Standard	Profile	Testing Type
Mandatory	Mandatory	Static and dynamic
Conditional	Conditional	Static and dynamic
Option	Mandatory	Static and dynamic
	Conditional	Static and dynamic
	Option	Static and dynamic
	Excluded Option	Dynamic *
	Non-applicable Option	Dynamic *

* Test that a system does not propose this option.

Table 1: Summary of conformance relationships

Static Conformance

6.6.1 General

The choices of protocol options made in a Profile's static 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 shall be specified in full in the ISP as defined in Clause 6.5.

6.6.2 Structure

The statement of static 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 static conformance requirements referring both to the base standard static conformance requirements and to the choices made for the Profile (details as given in 6.5).

See clause 8, and especially Figure 2, for the way in which these requirements are reflected in the IS-PICS Proforma.

6.6.3 Sending/Receiving Asymmetry

Static conformance requirements may be different in respect of sending and receiving, or initiating and responding. This asymmetry may apply at any level of detail, from the capability of an implementation to initiate or respond to a connection, to the capability of receiving and correctly interpreting a wider range of parameter encodings than those used for sending.

Many base standards specifically identify only the connection initiate-respond asymmetry under static conformance in the conformance clause. There is a need to make it clear in the Profile either that there is no asymmetry, or, if there are asymmetrical requirements, what they are.

6.7 Dynamic conformance

Given the implementation choices made in the ISP Implementation Conformance Statement, the dynamic conformance requirements for a system are mostly already specified by the referenced base standards. Hence, a Profile shall specify dynamic conformance requirements by reference to those base standards, together with any further constraining requirements necessary to fulfil the stated purposes of the Profile.

7. The Taxonomy of International Standardized 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. It is also the case that the sub-committee structure of JTC 1 provides some clear pointers to where the boundaries between classes of Profiles should be made. These conceptual boundaries often coincide with real boundaries within implementations of real systems. (For example, the Taxonomy of OSI Profiles makes a distinction between classes at the Transport Service Definition, a boundary which corresponds to that between the respective scopes of SC6 and SC21).

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 subclasses 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.

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. Part 3 of this Technical Report provides the detail of this system; only the main principles and primary classifications as they relate to OSI are used in this clause for illustrative purposes

7.2 Main Elements of the Taxonomy of Profiles for OSI

In order to decouple representation of information or objects from communications protocol support, and application-related protocol from subnetwork types, OSI and OSI-related Profiles are currently divided into the following classes:

- F - Interchange Format and Representation Profiles.
- A - Application Profiles using Connection-mode Transport Service (i.e. using T-Profiles)
- B - Application Profiles using Connectionless-mode Transport Service (i.e. using U-Profiles)
- T - Connection-mode Transport Profiles, related to subnetwork type.
- U - Connectionless-mode Transport Profiles, related to subnetwork type.
- R - Relay functions between T- or U-Profiles

Other classes or sub-classes may be required, particularly when the Taxonomy is extended beyond the current OSI-orientation.

T- and U-Profiles are further subdivided into Groups. A Group is a set of Profiles that are compatible, in the sense that a system implementing one Profile from a Group can interwork, according to OSI, with another system implementing a different Profile from the same Group, in terms of the operation of the protocols specified within those Profiles. This Group concept, though potentially of general applicability, is currently only used for defining sub-classes of T- and U-Profiles, as shown in Part 3.

The distinction between A-/B-Profiles and F-Profiles is that of the difference between the communications protocol support, and the format characteristics and representation of the information which is communicated

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.

7.3 Relationships between Profiles for OSI

The schematic illustration in Figure 1 brings together examples of the relationships which exist between OSI Profiles, particularly the three main subdivisions of the Taxonomy, and the combinations which can be made between Profiles from different classes.

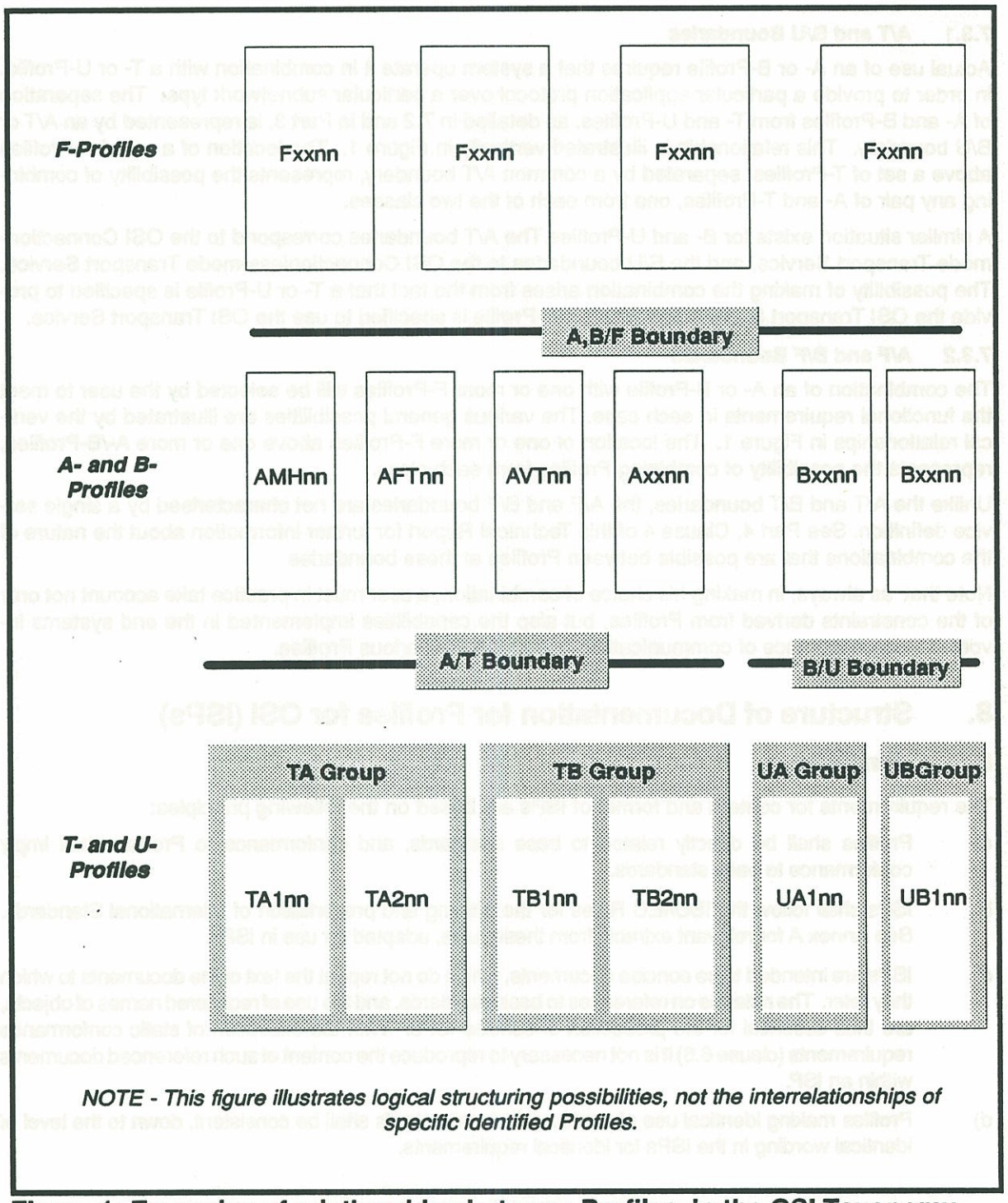

Figure 1: Examples of relationships between Profiles in the OSI Taxonomy

7.3.1 A/T and B/U Boundaries

Actual use of an A- or B-Profile requires that a system operate it in combination with a T- or U-Profile, in order to provide a particular application protocol over a particular subnetwork type. The separation of A- and B-Profiles from T- and U-Profiles, as detailed in 7.2 and in Part 3, is represented by an A/T or B/U boundary. This relationship is illustrated vertically in Figure 1. The location of a set of A-Profiles above a set of T-Profiles, separated by a common A/T boundary, represents the possibility of combining any pair of A- and T-Profiles, one from each of the two classes.

A similar situation exists for B- and U-Profiles.The A/T boundaries correspond to the OSI Connection-mode Transport Service, and the B/U boundaries to the OSI Connectionless-mode Transport Service. The possibility of making the combination arises from the fact that a T- or U-Profile is specified to provide the OSI Transport Service and an A- or B-Profile is specified to use the OSI Transport Service.

7.3.2 A/F and B/F Boundaries

The combination of an A- or B-Profile with one or more F-Profiles will be selected by the user to meet the functional requirements in each case. The various general possibilities are illustrated by the vertical relationships in Figure 1. The location of one or more F-Profiles above one or more A-/B-Profiles, represents the possibility of combining Profiles from each class.

Unlike the A/T and B/T boundaries, the A/F and B/F boundaries are not characterised by a single service definition. See Part 4, Clause 4 of this Technical Report for further information about the nature of the combinations that are possible between Profiles at these boundaries

Note that as always, in making his choice of combination, a user must in practice take account not only of the constraints derived from Profiles, but also the capabilities implemented in the end systems involved in each instance of communication, to support the various Profiles.

8. Structure of Documentation for Profiles for OSI (ISPs)

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 ISO/IEC 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, and the use of registered names of objects, are thus essential for the production of concise ISPs. With the exception of static conformance requirements (clause 6.6) it is not necessary to reproduce the content of such referenced documents within an ISP.

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, and in detail in Part 3, The Taxonomy) 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 Proforma 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 Standards, where each part is capable of being separately written, submitted to JTC 1, and approved.

The following rules apply to multi-part ISPs:

a) A multi-part ISP shall define either one complete Profile or a related set of Profiles.

b) Each distinct Profile in a multi-part ISP shall have a definition which is contained in a single part. This definition may be made, in whole or in part, by reference to other parts of the same multi-part ISP, or to parts of other ISPs.

c) Other parts of a multi-part ISP need not contain complete Profiles, but such parts shall not be smaller in scope than the use of a single base standard.

NOTE - The extent to which Rule (c) can be applied is for further study.

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.

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 standardisation 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 the future.

This system of multi-part ISPs is particularly useful for documenting the set of Tx-profiles which form a Group, since the common elements of each Profile, which ensure the interworking characteristics of the Group, can be written as a single Part of such a multi-part ISP. Also, where the Profiles defined in separate Groups include the same usage of certain base standards, there may be advantage in defining those Groups in a single multi-part ISP.

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

8.3 Structure of ISPs

The document structure for an ISP is as outlined in Table 2. This structure represents the sum of the conceptual requirements for the definition of an individual Profile given in clause 6. Where an ISP is divided into several parts, each part shall follow the same format, but with appropriate variations in the contents of its clauses.

8.4

	FOREWORD
	INTRODUCTION
1.	SCOPE
2.	REFERENCES
3.	DEFINITIONS
4.	ABBREVIATIONS
5.	POSITION OF PROFILE WITHIN THE TAXONOMY
6.....	Clauses defining requirements related to each base standard (Note 2)
NORMATIVE ANNEX A. ISP Implementation Conformance Statement Proforma	
INFORMATIVE ANNEXES containing explanatory and/or tutorial material, as required.	
NOTES.	
1.	*Further information concerning the content of the sections listed above is given in Annex A, which is based on the ISO/IEC Rules for the Drafting and Presentation of International Standards.*
2.	*Where possible, these details shall be presented in a tabular form, consistent with the layout of the referenced standard, and not duplicating the representation required by the ISPICS Proforma*

Table 2: Outline structure of an ISP

The ISP Implementation Conformance Statement (ISPICS)

8.4.1 The PICS Concept

It is essential that both the supplier and the user of an OSI product have clear and identical views of the properties of that product. For that reason (among others), the concept of a Protocol Implementation Conformance Statement (PICS) has been created for use in the base standards (ISO 9646, Parts 1 and 2).

A PICS is a statement made by the supplier in which it is declared whether or not each permitted option has been implemented and if a choice of values is offered, the values that are supported.

It is expected that PICS proformas will be provided in all base standards.

8.4.2 The ISPICS Concept

The concept of an implementation conformance statement shall also be used for Profiles, and an ISP Implementation Conformance Statement (ISPICS) proforma shall be provided for each Profile in an ISP. It shall follow the structure of the static conformance requirements, presenting:

a) the general options of the Profile as a whole;

b) a list of protocols selected and combined in the Profile;

c) for each of these protocols, a section of the ISPICS proforma, based on the PICS proforma of the referenced base standard in question, with its entries enabled, disabled, or pre-selected according to the Profile's choices (see Figure 2).

When filled in by the supplier of a system implementing the Profile, the ISPICS proforma becomes an ISPICS, stating the system's conformance to the mandatory and optional features of the Profile, and, via tham, its conformance to the selected features of the referenced base standards.

NOTES

1 An ISPICS proforma shall contain no tutorial material, but may include explanations of the types mentioned in clause 8.4.3.

2 If no PICS proforma is available in a base standard, an interim section of the proforma should be provided in an urgently-needed ISP. As soon as a proforma is published by ISO or CCITT, the interim proforma should be replaced by the published proforma.

8.4.3 ISPICS Proforma Contents

Detailed practical advice on how to specify conformance requirements is given in ISO 9646 Parts 1 and 2. In particular, Part 2 gives requirements and guidance for writers of protocol standards, including information on how to deal with incomplete static conformance requirements in base standards.

The following list of items to be included, derived from ISO 9646-2, is as relevant to an ISPICS Proforma as to a PICS Proforma:

a) definitions of special symbols, abbreviations, special terms and appropriate references;

b) explicit instructions for completing and interpreting the ISPICS proforma;

c) clear indication of the preferred data types for responses (e.g. number bases, string types, octets, bits, seconds, minutes, etc).

d) provision for mentioning any mandatory feature that has not been implemented, with the appropriate rationale;

one or more tables (or other kinds of form as necessary) to be completed to state the capabilities of the implementation in detail, including:

- identifier and name of the feature, PDU type, timer, parameter, and other capabilities;

- wherever feasible, a column giving the relevant clause references to the ISP and/or relevant base standard;

- a column stating whether each feature is mandatory, conditional, or optional in the base standard, and the permitted range of values, if appropriate; if the feature is conditional, then

a suitable notation is required for indicating the conditions under which the feature becomes mandatory;

- a similar column stating the choices made in the profile definition, including whether the feature is excluded or not applicable;

- a column to be filled in to state whether and with what values each feature has been implemented.

NOTE - In completing the ISPICS proforma for a particular Profile, an implementer is not making statements about the total capability of the system concerned, only about that part of it involved in supporting operation according to the Profile. Thus, features of a referenced base standard which are recorded as "excluded" or "not applicable" in the context of one Profile, may in fact be supportable by the system, but in the context of another Profile.

8.4.4 ISPICS Proforma Structure

The resulting schematic structure of an ISPICS Proforma is as illustrated in Figure 2. The layout of the columns of the component PICS Proforma is only illustrative. In practice, each PICS Proforma will be copied from the referenced Base Standards. Further examples are given in ISO 9646-2 Annex C of the types of layout which may be used, but no single design has been defined. See 6.5 in this Technical Report for further information about the permitted relationships between feature types in base standard PICS, and in ISP Implementation Conformance Statements.

General Options

List of Base Standards

Base Standard Features				***Profile Features***		
Ident-fier	***Feature***	***Clause of Base Std***	***Type or Range***	***Clause of ISP***	***Type or Range***	***Implemented?***
1.1	Function 1	6.2	M	6.1	m	[....]
1.2	Function 2	6.4.5	O	6.1	o	[....]
2.1	Function 3	7.3	O	7.1	x	[....]
2.2	Function 4	7.3	O	7.1	-	[....]
3.1.1	Function 5	7.5	O	7.2	m	[....]
3.1.2	Function 6	7.5	C: v2	7.2	c:v2	[....]
3.1.3	Parameter 1	7.5.1	1-10	7.2	5	[....]
3.1.4	Parameter 2	7.5.2	free	7.2	32 or 64	[....]

PICS Proforma of Base Standard

Profile's choices

Implementation Choices

Feature Types (see clause 6.5 for further details)

M Mandatory in the base standard
C Conditional in the base standard (with predicate)
O Optional in the base standard

m Mandatory in the Profile
c Conditional in the Profile
o Optional in the Profile
x Excluded from the Profile
- Not applicable in the Profile

Figure 2: The construction of an ISPICS Proforma

ANNEX A. RULES FOR THE DRAFTING AND PRESENTATION OF INTERNATIONAL STANDARDIZED PROFILES

A.1. Introduction

Clause 8 of this Technical Report gives a general specification of the structure required for a Profile Definition. It follows the ISO/IEC Rules for the Drafting and Presentation of International Standards as far as is relevant, and this Annex contains extracts from the appropriate clauses of that Document with modification and comment relating to their use in ISPs. References to clauses of the ISO/IEC Rules document are of the form "Rules x.y.z" . The contents of this Annex are binding on the submitters of ISPs.

Throughout this Annex, which is concerned strictly with documentation content and layout, reference is made to ISPs. As is made clear in Clause 8, an ISP, or part thereof, may contain a whole Profile definition, or part of one or more Profile Definitions. The wording of this Annex assumes that it is describing an undivided ISP which defines one Profile in its entirety. Its application to the other cases is easily deduced. Note however that each part of a multii-part ISP shall use the same format as far as is appropriate.

A.2. General Arrangement (Rules 2.1)

The elements which together form an ISP are classified into three groups:

- preliminary elements are those elements that identify the ISP, introduce its content, and explain its background, its development and its relationship with other standards and ISPs;
- normative elements are those elements setting out the provisions with which it is necessary to comply in order to be able to claim conformity with the ISP;
- supplementary elements are those elements that provide additional information intended to assist the understanding or use of the ISP.

These groups of elements are described in the following clauses.

Notes integrated in the text (see A.6.3) may be part of any element except the title page, the title and footnotes.

A.3. Preliminary Elements

A.3.1 Title Page (Rules 2.2.1)

The title page is prepared in a standard format by the Central Office of the IEC or the Central Secretariat of the ISO as appropriate.

The reference number is allocated by the Central Office of the IEC or the Central Secretariat of the ISO as appropriate.

A.3.2 Contents (Rules 2.2.2)

The Contents is an optional preliminary element, but is necessary if it enables an overall view of the ISP to be obtained, and facilitates its consultation. The contents list should normally list only the clauses and the annexes. All the elements listed shall be cited with their full titles.

A.3.3 Foreword (Rules 2.2.3)

The foreword shall appear in every ISP; it consists of a general part giving information relating to the organization responsible, and to International Standards in general, and a specific part giving as many of the following as are appropriate:

- an indication of the organization or committee which prepared the ISP; information regarding the approval of the ISP;
- a statement that the ISP cancels or replaces other documents in whole or in part;
- a statement of significant technical changes from the previous edition;
- a statement of which annexes are normative and which are informative.

A.3.4 Introduction (Rules 2.2.4)

The introduction shall appear in every ISP; it gives specific information about the process used to draft the ISP, and about the degree of international harmonization that it has received. It is based on the Explanatory Report provided by the originating organization when it submits the proposed draft ISP (pdISP) for approval.

A.4. General Normative Elements

A.4.1 Title (Rules 2.3.1)

The wording of the title shall be established with the greatest care; while being as concise as possible, it shall indicate, without ambiguity, the subject matter of the ISP in such a way as to distinguish it from that of any other ISP or International Standard, without going into unnecessary detail. Any necessary additional particulars shall be given in the Scope.

The title shall be composed of the following three elements:

a) **an introductory element:**

"Information Processing Systems"

indicating ISO/IECJTC1 as the originating Technical Committee.

b) **an identification element:**

"International Standardized Profile(s) XXXnnn"

indicating by the identifier XXXnnn the place in the Taxonomy which this Profile occupies.

NOTE - If an ISP (single or multi-part) defines more than one Profile, this element may either enumerate all Profile Identifiers, or use the convention of "n" for a variable number; e.g. "TBnn" or "AFT1n". (No need for a variable letter "X" is foreseen)

c) **a main element** indicating the subject matter of the ISP, as recorded in the Directory of ISPs in Annex A. For a multi-part ISP, this element shall be subdivided into a general title element common to all parts, and a specific title element for each part; where necessary, this specific element may include the identifier of an individual Profile.

Example:

Information Processing Systems - International Standardized Profiles AFTnn - File Transfer, Access and Management - Part 1: AFT11 - Simple (unstructured) File Transfer.

A.4.2 Scope (Rules 2.3.2)

This element shall appear at the beginning of every ISP, to define without ambiguity the purpose, subject matter of the Profile(s) and the aspect(s) covered, thereby indicating the limits of applicability of the ISP or particular parts of it. It shall not contain requirements.

This element shall include (where appropriate) the "scenario" of the Profile - an illustration of the environment within which it is applicable. This shows in a simplified graphic form the OSI system which is covered by this Profile, and other typical systems/subnetworks with which this OSI system shall be capable of interworking (see also clause 6.3.3(b)).

A.4.3 Normative References (Rules 2.3.3)

This element shall give a list of normative documents (in most cases International Standards, ISPs, or CCITT Recommendations) with their titles and publication dates, to which reference is made in the text in such a way as to make them indispensable for the application of the ISP. Where published errata or amendments to base standards are relevant to the definition of the Profile, then they shall be explicitly referenced here.

Reference shall also be made to this Technical Report 10000 on International Standardized Profiles.

The list shall be introduced by the following wording:

"The following documents contain provisions which, through reference in this text, constitute provisions of this International Standardized Profile. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this International Standardized Profile are warned against automatically applying any more recent editions of the documents listed below, since the nature of references made by ISPs to such documents, is that they may be specific to a particular edition. Members of IEC and ISO maintain registers of currently valid International Standards and ISPs, and CCITT maintains published editions of its current Recommendations."

The list shall not include the following:

- documents that are not publicly available;
- documents to which only informative reference is made;
- documents which have merely served as references in the preparation of the ISP.

Such documents can be listed in an informative annex (see A.6.1) entitled "Bibliography".

A.5. Technical Normative Elements

A.5.1 Definitions (Rules 2.4.1)

This is an optional element giving definitions necessary for the understanding of certain terms used in the ISP. The definitions shall be introduced by the following wording:

"For the purposes of this International Standardized Profile, the following definitions apply."

Rules for the drafting and presentation of terms and definitions are given in Rules, Annex A.

In most cases, an ISP can indicate that all terms used are defined in the referenced base standards, and in such a case, they shall not be repeated within the ISP.

A.5.2 Symbols and Abbreviations (Rules 2.4.2)

This is an optional element giving a list of the symbols and abbreviations necessary for the understanding of the ISP.

In most cases, an ISP can indicate that all abbreviations used are defined in the referenced base standards, and in such a case, they shall not be repeated within the ISP.

A.5.3 Position within the Taxonomy

This element shall appear in every ISP or Part of an ISP, to relate the Profile(s) it defines to the Taxonomy of Profiles published as Part 3 of this Technical Report. The element shall include the following:

- the identifier(s) and title(s) of the Profile(s) defined within the ISP;
- the identifiers and titles of other Profiles with which the Profile(s) defined in the ISP may be combined at an A/T or B/U boundary (see 7.3.1) or an A/F or B/F boundary (see 7.3.2). These possible combinations can be represented in terms of a Class, Subclass, or Group of Profiles.

A.5.4 Requirements

This element includes clauses relating to the use made of each of the main base standards referenced in the Profile definition. The content and layout of these clauses is not defined, but can be tailored to the type of material which has to be specified in each case.

The information given shall not repeat the text of the base standards, but shall define the choices made in the Profile of classes, subsets, options and ranges of parameter values. It shall be in the form of static and dynamic conformance requirements, and may where appropriate be given in tabular form. Preference shall be given to recording as much as possible of this information once and once only in the ISPICS Proforma in an annex to the ISP.

See clauses 6 and 8 for more detail concerning the nature of the content required in this element of an ISP.

A.5.5 Test Methods (Rules 2.4.5)

The possibility of including detail of testing methods and test cases for ISPs is for further study.

NOTE - The conformance test suites should be standardized separately from the ISPs. It is recommended that single-layer embedded test methods are used as the basis for conformance test suites applicable to testing conformance of systems to ISPs. Each such conformance test suite standard should focus on testing conformance to a particular protocol, with options and parameter values selected to cover the requirements of one or more profiles (in one or more ISPs). If more than one profile is covered by a single test suite then the test suite should clearly identify which test cases are relevant to which profiles.

A.5.6 Normative Annexes (Rules 2.4.8)

Normative annexes are integral sections of the ISP which, for reasons of convenience, are placed after all other normative elements. The fact that an annex is normative (as opposed to informative - see A.6.1) shall be made clear by the way in which it is referred to in the text, by a statement to this effect in the foreword (see A.3.3) and by an indication at the head of the annex itself.

The first normative annex shall be the ISP Implementation Conformance Statement (ISPICS) Proforma - see clause 8.4. If a Profile is defined by reference to parts of this or other ISPs, then its ISPICS Pro-

forma is similarly distributed among those parts of ISPs. The ISPICS proforma is normally constructed from copies of the PICS proformas of the referenced base standards.

A.6. Supplementary Elements

A.6.1 Informative Annexes (Rules 2.5.1)

Informative annexes give additional information, and are placed after the normative elements of an ISP. They shall not contain requirements. The fact that an annex is informative (as opposed to normative - see A.5.6) shall be made clear by the way in which it is referred to in the text, by a statement to this effect in the foreword (see A.3.3) and by an indication at the head of the annex itself.

A.6.2 Footnotes (Rules 2.5.2)

Footnotes give additional information, but their use shall be kept to a minimum. They shall not contain requirements.

A.6.3 Notes integrated in the text (Rules 2.5.3)

Notes integrated in the text of an ISP may be used only for giving information which is essential to the understanding of the document. They shall not contain requirements.

A.6.4 Notes to tables and figures (Rules 2.5.4)

Notes to tables and to figures shall be treated independently from footnotes (see A.6.2) and notes integrated in the text (see A.6.3). They shall be located within the frame of the relevant table or immediately above the title of the relevant figure. A separate numbering sequence shall be used for each table and each figure. Such notes may contain requirements.

A.7. Editorial and Layout Information

Further information on layout of text, tables, figures, and footnotes is given in other sections of the Rules, which shall be applied by editors of ISPs. Information is also given in Rules Annex C on verbal forms to be used in drafting statements of requirements, recommendations, permissions, and possibilities, which shall also apply to ISPs.

ANNEX B. EXAMPLES OF MULTI-PART ISP STRUCTURE

B.1. Introduction

This Annex illustrates first, the general concept of multi-part ISPs, as defined in clause 8.2, secondly, how the concept can be applied to the definition of A-, B-, and F-Profiles, and finally how it can be applied to T- and U-profiles, demonstrating its relevance not only to the structure of an ISP for Profiles which make up a Group, but also to the definition of Profiles based on the same subnetwork or technology, but in different Groups.

B.2. General example of multi-part ISPs

The rules given in Clause 8.2 result in the situation which can be illustrated in general terms in Figure B.1.

Assume that multi-part ISP 999 is to cover the definition of Profiles ***X*** and ***Y*** and ***Z***, each of which refers to the same base standards ***p*** and ***q*** in exactly the same way, but in combination with different base standards.

ISP 999-1 references base standards ***p*** and ***q***, and contains text which is common to the definition of all three Profiles ***X***, ***Y*** and ***Z***.

ISP 999-2 references base standards ***r*** and ***s***, and contains text which is common to Profiles ***X*** and ***Y***.

ISP 999-3 references base standard ***t***, as used in Profile ***Z***, and also in some other ISP not described in this example.

ISP 999-4 defines Profile ***X*** by reference to ISP 999-1 and ISP 999-2.

ISP 999-5 defines Profile ***Y*** by reference to ISP 999-1, ISP 999-2, and with additional reference to base standard ***u*** which is only used in this way by this Profile.

ISP 999-6 defines Profile ***Z*** by reference to ISP 999-1, ISP 999-3, and ISP 777-9 (a part of some other ISP not described in this example).

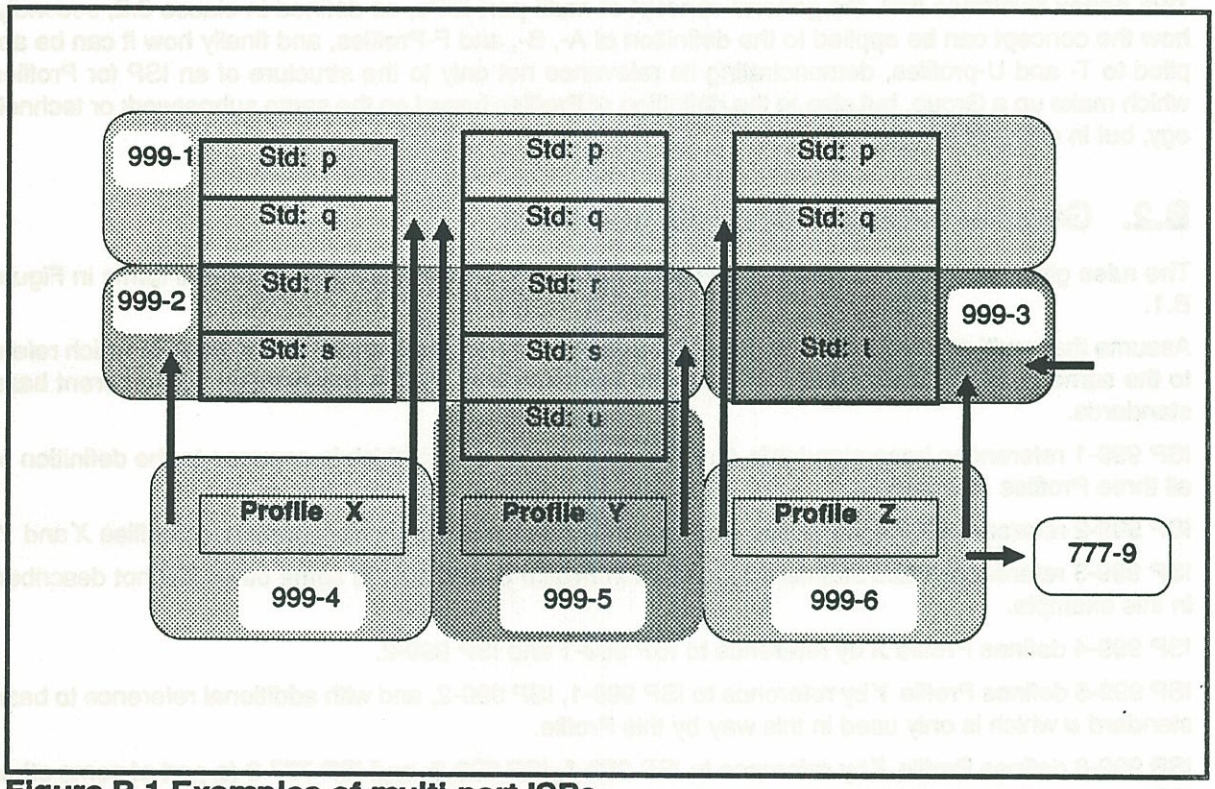

Figure B.1 Examples of multi-part ISPs

B.3. Examples for A-/B- and F-Profiles

B.3.1 Use with the A-/B-Profiles

In the present stage of development of application standards, a very few "paradigms" permit generation of a very rich set of Profiles covering the vast majority of current needs for OSI-based applications.

B.3.1.1 AMH - MHS Profiles

No advantage has been taken of the use of common text sections in the MHS (1984) Profiles so far created in regional work. But MHS (1988) Profiles will be better integrated with the OSI upper layer standards (use of ACSE, true Presentation, etc) so opportunities exist for identifying such common text. However there are significant differences between MHS usage and usage by other applications (e.g. in its selection of Session functional units) so these opportunities are limited.

B.3.1.2 AFT - FTAM Profiles

It seems that at least considerable parts of the "lower Upper Layers" (Session, Presentation, ACSE) will be common to all the AFT Profiles, which should be built upon a common basis. There will also be commonality between different AFT Profiles in their use of ISO 8571 which will be recognized by the cre-

ation of separate parts of ISPs. However FTAM as a whole remains a particular usage of the OSI upper layers, and it seems probable that there will be at most limited scope for ISP parts common to AFT Profiles and other A-/B-Profiles.

B.3.1.3 "Remote Operations" Profiles

Here the situation is very different. A common usage of Session, Presentation, ACSE and ROSE should permit support of a whole range of applications, notably Directory, "P3" and "P7"; in fact all applications which use the "Remote Operations Services". This paradigm is proposed by SC18 and ECMA for the support for office services, and is also expected to be used for OSI management protocols.

It seems therefore not only that such a common ISP part may be used with advantage to define the common elements of several Profiles, but that this would be a "productive" usage in that many future applications may be built on the same platform. In this case the "Remote Operations Services" described by the ISP part would play an analogous role, vis-a-vis the supported applications, as does the Connection-mode Transport service as the basis for the A-Profiles.

B.3.1.4 ATP - Transaction Processing Profiles

The situation is similar to the above in that the "lower Upper Layers" offer a well-defined service to higher "applications". In this case it is explicit that the applications may be "user-defined", i.e. not defined by ISO. This would give rise to "user defined" Profiles all based on the unique TP ISP part. However the TP service is also available for standard OSI application development.

For instance, it has been proposed that "Remote Database Access" be based on this platform. Although it is not within the scope of this Technical Report to determine the precise protocol stacks needed to support RDA, it is noted that the RDA profile is expected to use a common ISP part for its "lower" layers.

B.3.2 ASN.1

The case of ASN.1 requires special treatment. It is used in all A-/B-Profiles. Since any implementation supporting many Profiles will wish to use common routines for handling ASN.1, common usage should be encouraged between all Profiles. It would be unfortunate if different Profiles set different limits, choices etc. on ASN.1 usage without real justification. Performance aspects should also be considered. The definition of an ASN.1 ISP part seems therefore highly desirable.

B.3.3 Naming and Addressing

As it is particularly important that the rules for Naming and Addressing be homogeneous for all application Profiles (from ACSE down), it is proposed that this be another area where the use of common ISP parts might be appropriate, and should be the subject of further study.

B.3.4 Office Document Format Profiles

FOD Profiles will reference content types which are defined in other F-Profiles. There is thus a possibility for the use of common ISP parts in these cases.

FOD Profiles will specify the use of ODIF (Office Document Interchange Format). However, certain ODA Documents may be interchanged by using ODL (Office Document Language) or SDIF (SGML Document Interchange Format). ODL/SDIF Profiles could reference the appropriate sections of text (ISP parts) in FOD Profiles.

B.3.5 Conclusion

This annex has not illustrated other OSI applications, such as VTP, which have not been investigated. Having been developed without regard for the possibility of a common protocol platform with other applications, the possibility for use of common ISP parts seems limited - at best analogous to the FTAM case. In consequence, defining a common environment for all such OSI applications requires analysis of all possible Profiles. In addition, there is no guarantee that the environment will necessarily be suited to new applications developed in a similar manner.

By contrast, the newer paradigms defined by the "Remote Operations" and "Transactional" models allow full advantage to be taken of common ISP parts, and allow appropriate environments to be defined for the support of future applications.

B.4. Example of T-Profiles

This section is based on current proposals for the creation of ISPs for the Tx-Profile Groups.

Figure B.2 shows a number of ISP parts which form elements of these Groups. This illustration shows how the Group structure used for identifying T-Profiles leads to a modular structure for the definition of the Profiles within a Group, with references to common elements of text. Most of these referenced sections of text are included within the same multi-part ISP, but one case is shown - TA111 - where reference is made to a part of another ISP (ISPppp-6 refers to ISPqqq-2)

The distinctions between the Groups TB, TC, TD and TE (which all use the connection-mode Network Service) are confined to different selections of classes of the Transprot Protocol. So, rather than create four separate parts of ISP qqq for the specification of ISO 8073, and four separate parts for the specification of each Tx111 Profile, these four cases have been combined into single parts ISP qqq-1 and ISP qqq-3. The resulting ISPICS proforma in ISP qqq-1 has separate sets of columns for each Group.

B.4.1 Basic Component of Multi-part ISP for a Group

One type of common ISP part is represented by the definition of Layers 3 and 4, which contains all the information that is common to the Group of TA-profiles. Thus, ISPppp-1 for TA-Profiles defines the Transport and Network Service being provided, the specification (selection of classes and options supported) of the Transport Protocol being used, and the specification of the protocol that is used to provide the Network Service. Similarly, ISPqqq-1 does the same for the Transport layer component of Group TB-TE Profiles.

B.4.2 ISP Parts common to more than one Group

The definitions of layers 1 and 2 for LANs or for X.25 are applicable to Profiles in more than one Group. An example of this occurs with ISPqqq-2, which specifies layers 1 and 2 for X.25 PSDN access, and is referenced by both ISPppp-6 for TA111 and by ISPqqq-3 for TB111 - TE111.

B.4.3 Specifications unique to individual Profiles

Some base standards are used in a unique manner in a Profile (in addition to common usage of other base standards). An example of this type of usage is the specification of ISO 8208 for PSDN access in the connectionless-mode network service inProfile TA111 (ISPppp-6), which differs from its specification for connection-mode access in TB111 - TE111 (ISPqqq-3).

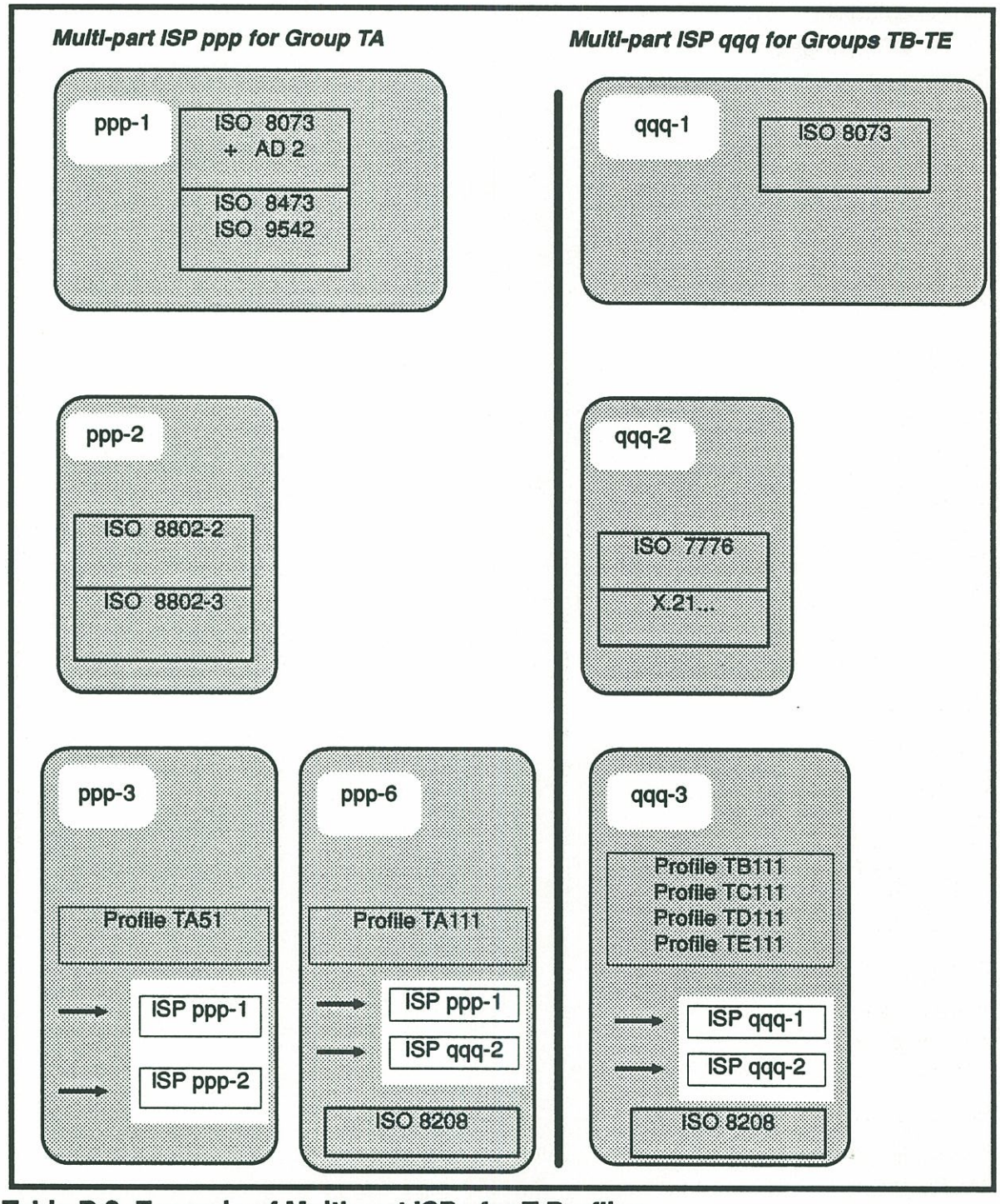

Table B.2 Example of Multi-part ISPs for T-Profiles