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INTERNATIONAL STANDARD

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1994-12-15

AMENDMENT 2
1998-12-15

Information technology — Open Systems Interconnection — Presentation service definition

AMENDMENT 2: Nested connections functional unit

Technologies de l'information — Interconnexion de systèmes ouverts (OSI) — Définition du service de présentation

AMENDEMENT 2: Unité fonctionnelle de connexions nichée

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Amendment 2 to ISO/IEC 8822:1994 was prepared by ITU-T (as ITU-T Rec. X.216/Amd.2) and was adopted, under a special "fast-track procedure", by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC. The identical text is published as ITU-T Rec. X.216/Amd.2.

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INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – PRESENTATION SERVICE DEFINITION

AMENDMENT 2
Nested connections functional unit

1) Subclause 2.1

Add the following reference in numerical order:

– ITU-T Recommendation X.215 (1995)/Amd.2 (1997) | ISO/IEC 8326:1996/Amd.2:1988, *Information technology – Open Systems Interconnection – Session service definition – Amendment 2: Nested connections functional unit.*

2) New subclause 3.4.20

Add a new subclause 3.4.20 as follows:

3.4.20 nested presentation connection: A presentation connection which is logically embedded within an existing presentation connection.

3) New subclause 6.2.7

Add a new subclause 6.2.7 as follows:

6.2.7 An application entity specification requiring a presentation connection may require the establishment of a new presentation connection end-point for a new presentation connection, or may require the establishment of a nested presentation connection end-point within the connection end-point for an existing (outer-level or nested) presentation connection. The issuing of a P-CONNECT request at a nested presentation connection end-point establishes a nested presentation connection. Nested presentation connections are entirely independent in relation to services provided directly by the presentation layer, but have some dependencies (specified in ITU-T Rec. X.215 | ISO/IEC 8326) in relation to services passed through from the session layer. Nested presentation connections can only be established if the immediately enclosing presentation connection has agreed the use of the nested connections functional unit.

4) Subclause 6.3

Add a new paragraph at the end of this subclause:

There is a one-to-one correspondence between presentation connection end-points and session connection end-points, and the nesting structure (if any) within an outer-level session connection end-point is identical to the nesting structure within the corresponding presentation connection end-point.

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5) Subclause 7.1

Add a new paragraph at the end of this subclause as follows:

This service may be invoked at an outer-level presentation connection end-point to establish a new outer-level presentation connection, or may be invoked at a nested presentation connection end-point to establish a nested presentation connection.

6) Subclause 8.2

In this subclause in both the introductory sentence of item a), *and in the sentence after the list, add* and ITU-T Rec. X.215/Amd.2 | ISO/IEC 8326/Amd.2, *after reference to* ITU-T Rec. X.215 | ISO/IEC 8326.

Add at the end of the list in a) *a new item:*

– the nested connection functional unit.

7) Clause 10

Change Table 2 by adding User Summary *at the end of the list of parameters for* P-CONNECT request, P-CONNECT indication *and* P-CONNECT response/confirm.

8) Subclause 10.2

Add to the end of the first sentence of this subclause:

... or to establish a nested presentation connection between them.

9) Subclause 10.2.1

Change Table 3 to replace all M *entries with* C *entries for the* Calling-presentation-address, Called-presentation-address, *and* Responding-presentation-address.

10) Subclauses 10.2.1.1 through 10.2.1.3

Add a new second paragraph to 10.2.1.1 through 10.2.1.3 as follows:

This parameter shall be present when an outer-level presentation connection is being established, and shall be absent when a nested presentation connection is being established.

11) Clause 11

Add new items c) *and* d) *to the third paragraph of this clause:*

c) Services invoked on any presentation connection within the same outer-level connection are sequenced with respect to each other and with respect to services on that outer-level connection.

d) Services on presentation connections within a nested set do not disrupt services on other presentation connections within the set, except that services on a nested presentation connection may by disrupted by any of the services listed in 11.5.4 which are invoked on any of the enclosing presentation connections.

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INTERNATIONAL STANDARD

ISO/IEC 8822

Second edition
1994-12-15

AMENDMENT 1
1998-10-01

Information technology — Open Systems Interconnection — Presentation service definition

AMENDMENT 1: Efficiency enhancements

Technologies de l'information — Interconnexion de systèmes ouverts (OSI) — Définition du service de présentation

AMENDEMENT 1: Améliorations d'efficacité

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In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Amendment 1 to ISO/IEC 8822:1994 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 33, *Distributed application services*, in collaboration with ITU-T. The identical text is published as ITU-T Rec. X.216/Amd.1.

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INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – PRESENTATION SERVICE DEFINITION

AMENDMENT 1
Efficiency enhancements

1) Subclause 2.1

Insert the following references by numerical order:

- ITU-T Recommendation X.215 (1995)/Amd.1 (1997) | ISO/IEC 8326:1996/Amd.1:1998, *Information technology – Open Systems Interconnection – Session Service definition – Amendment 1: Efficiency enhancements.*
- ITU-T Rec. X.227 (1995)/Amd.1 (1996) | ISO/IEC 8650-1:1996/Amd.1:1997, *Information technology – Open Systems Interconnection – Connection-oriented protocol for the association control service element: Protocol specification – Amendment 1: Incorporation of extensibility markers.*

2) Subclause 8.2

Modify item a) *as shown below, with the additional text underlined:*

a) **session functional units**, as defined in ITU-T Rec. X.215 | ISO/IEC 8326 and ITU-T Rec. X.215/Amd.1 | ISO/IEC 8326/Amd.1, comprising:

- the kernel functional unit;
- the half-duplex functional unit;
- the duplex functional unit;
- the expedited data functional unit;
- the minor synchronize functional unit;
- the symmetric synchronize functional unit;
- the data separation functional unit;
- the major synchronize functional unit;
- the resynchronize functional unit;
- the activity management functional unit;
- the negotiated release functional unit;
- the capability data functional unit;
- the exceptions functional unit;
- the typed data functional unit;
- the no-orderly-release functional unit.

The selection of session functional units which may be made is subject to the constraints imposed by the session-service, see ITU-T Rec. X.215 | ISO/IEC 8326 and ITU-T Rec. X.215/Amd. 1 | ISO/IEC 8326/Amd.1.

NOTE – The decision on which session functional units are to be used is made during presentation-connection establishment.

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3) Clause 10

In Table 2 (Presentation service primitives), *add* User Summary *at the end of the list of parameters for* P-CONNECT request, P-CONNECT indication *and* P-CONNECT response/confirm.

4) Subclause 10.2.1

In Table 3 (P-CONNECT service), *add a row after User data:*

Parameter name	Request	Indication	Response	Confirm
User Summary	U	C(=)	U	C(=)

5) Subclause 10.2.1.11

Add the following text (underlined) at the end of the existing subclause, as shown below:

This parameter provides the PS-user with access to the Session requirements parameter of the Session service and is described for that parameter in ITU-T Rec. X.215 | ISO/IEC 8326 and ITU-T Rec. X.215/Amd.1 | ISO/IEC 8326/Amd.1.

6) New subclause 10.2.1.15 *bis*

Add the following new subclause:

10.2.1.15 *bis* User Summary is a parameter that summarizes the semantic content of the User data, by reference to an Upper-layer context specification.

7) Subclause 10.2.2.1

Add at the end of this subclause:

If the User Summary parameter is present, the presentation-service-provider may or may not convey the semantics of the User data parameter by conveying the User Summary parameter to the responding PS-user, rather than the User data parameter itself.

NOTE – If the PS-provider does not convey the User Summary parameter, or the responding PS-user is unable to interpret the User Summary parameter, the User Data parameter itself will be conveyed. (This may involve a second protocol exchange.)

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Descriptors: data processing, information interchange, network interconnection, open systems interconnection, presentation layer, communication procedure, control procedures.

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INTERNATIONAL STANDARD

ISO/IEC 8822

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1994-12-15

Information technology — Open Systems Interconnection — Presentation service definition

Technologies de l'information — Interconnexion de systèmes ouverts — Définition du service de présentation

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International Standard ISO/IEC 8822 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology,* Subcommittee SC 21, *Open systems interconnection, data management and open distributed processing,* in collaboration with ITU-T. The identical text is published as ITU-T Recommendation X.216.

This second edition cancels and replaces the first edition (ISO 8822:1988), and is a consolidation of the first edition, Amendment 1:1991 and Amendment 5:1992.

Annexes A and B form an integral part of this International Standard. Annex C is for information only.

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Introduction

This ITU-T Recommendation | International Standard is one of a set of ITU-T Recommendations | International Standards, produced to facilitate the interconnection of information processing systems. It is related to other ITU-T Recommendations | International Standards in the set as defined by the Reference Model for Open Systems Interconnection (ITU-T Rec. X.200 | ISO/IEC 7498). The Reference Model subdivides the area of standardization for interconnection into a series of layers of specification, each of manageable size.

The aim of Open Systems Interconnection is to allow, with a minimum of technical agreement outside the interconnection standards, the interconnection of information processing systems

- from different manufacturers;
- under different managements;
- of different levels of complexity;
- of different ages.

This ITU-T Recommendation | International Standard defines the service available to entities within the Application Layer of the Reference Model.

This ITU-T Recommendation | International Standard recognizes that application-entities may wish to intercommunicate for a wide variety of reasons. While not all systems will share a common method of representing the information they wish to intercommunicate, they will be agreed about the subject matter of their communication and the meanings to be assigned to that information. The presentation-service provides the proper means of transferring information so that the semantics are preserved during the transfer.

It is recognized that, with respect to presentation quality of service (QOS) described in clause 9, work is still in progress to provide an integrated treatment of QOS across all of the layers of the OSI Reference Model and to ensure that the individual treatments in each layer satisfy overall QOS objectives in a consistent manner. As a consequence, an addendum may be added to this ITU-T Recommendation | International Standard at a later time which reflects further QOS developments and integration.

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INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – PRESENTATION SERVICE DEFINITION

1 Scope

1.1 This ITU-T Recommendation | International Standard defines (in an abstract way) the externally visible service provided by the OSI Presentation Layer in terms of

a) the primitive actions and events at the user/service boundary;

b) the parameter data associated with each primitive action and event;

c) the relationship between, and the valid sequences of, those actions and events.

1.2 The service defined in this ITU-T Recommendation | International Standard is the connection-oriented service which is provided by the OSI connection-oriented presentation protocol and the the connectionless service which is provided by the OSI connectionless presentation protocol, each in conjunction with the OSI session-service.

The connection-oriented presentation service defined in this ITU-T Recommendation | International Standard may be used by an OSI application protocol defined for connection-oriented transmission. The connectionless presentation service defined in this ITU-T Recommendation | International Standard may be used by an OSI application protocol defined for connectionless transmission.

1.3 This ITU-T Recommendation | International Standard does not specify individual implementations or products, nor does it constrain the implementation of entities and interfaces within a computer system. There is, therefore, no conformance to this ITU-T Recommendation | International Standard.

2 Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this ITU-T Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on this ITU-T Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent editions of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The ITU-T Secretariat maintains a list of currently valid ITU-T Recommendations.

2.1 Identical Recommendations | International Standards

- ITU-T Recommendation X.215 (1994) | ISO/IEC 8326:—[2], *Information technology – Open Systems Interconnection – Session service definition.*
- ITU-T Recommendation X.680 (1994) | ISO/IEC 8824-1:—[1], *Information technology – Open Systems Interconnection – Abstract Syntax Notation One (ASN.1): Specification of basic notation.*
- ITU-T Recommendation X.226 (1994) | ISO/IEC 8823:1994, *Information technology – Open Systems Interconnection – Connection oriented presentation protocol: Protocol specification.*
- ITU-T Recommendation X.200 (1994) | ISO/IEC 7498-1:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: The basic model.*
- ITU-T Recommendation X.236 | ISO/IEC 9576-1: ...[1], *Information technology – Open Systems Interconnection – Connectionless presentation protocol specification.*
- ITU-T Recommendation X.660 (1992) | ISO/IEC 9834-1:1993, *Information technology – Open Systems Interconnection – Procedures for the operation of OSI registration authorities: General procedures.*

1) Presently at the stage of draft.

2) Under revision. To be published.

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2.2 Paired Recommendations | International Standards equivalent in technical content

- CCITT Recommendation X.210 (1988), *Open Systems Interconnection layer service definition conventions.*

  ISO/TR 8509, *Information processing systems – Open Systems Interconnection – Service conventions.*

- CCITT Recommendation X.650 (1992, *Open Systems Interconnection (OSI) – Reference Model for naming and addressing.*

  ISO 7498-3:1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 3: Naming and addressing.*

2.3 Additional references

- CCITT Recommendation X.410 (1984), *Message Handling Systems: Remote Operations and Reliable Transfer Server.*

3 Definitions

For the purposes of this ITU-T Recommendation | International Standard, the following definitions apply.

3.1 Basic Reference Model definitions

This ITU-T Recommendation | International Standard is based on the concepts developed in ITU-T Rec. X.200 | ISO/IEC 7498 and makes use of the following terms defined in it:

a) application-entity;

b) application-protocol-control-information;

c) presentation-connection;

d) presentation-entity;

e) Presentation Layer;

f) presentation-service;

g) presentation-service-access-point;

h) presentation-service-data-unit;

i) session-connection;

j) session-service;

k) transfer syntax;

l) concrete syntax;

m) real open system;

n) (N)-connectionless-mode transmission.

NOTE – The abbreviations in clause 4 apply to some of these terms.

3.2 Service conventions definitions

This ITU-T Recommendation | International Standard makes use of the following terms defined in CCITT Rec. X.210 | ISO/TR 8509 as they apply in the Presentation Layer:

a) service-user;

b) service-provider;

c) service primitive;

d) request;

e) indication;

f) response;

g) confirm;

h) non-confirmed-service;

i) confirmed-service;

j) provider-initiated-service.

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3.3 Naming and Addressing definitions

This ITU-T Recommendation | International Standard makes use of the following terms defined in ITU-T Rec. X.650 | ISO/IEC 7498-3:

a) calling-presentation-address;

b) called-presentation-address;

c) responding-presentation-address.

3.4 Presentation-service definitions

For the purposes of this ITU-T Recommendation | International Standard, the following definitions apply:

3.4.1 destructive: A service is destructive if its invocation may cause loss of undelivered data of other service primitives.

3.4.2 non-destructive: A service is non-destructive if its invocation does not cause the loss of data.

3.4.3 abstract syntax: The specification of Application Layer data or application-protocol-control-information by using notation rules which are independent of the encoding technique used to represent them.

3.4.4 abstract syntax name: A name which unambiguously identifies an abstract syntax.

3.4.5 transfer syntax name: A name which unambiguously identifies either a transfer syntax or a set of rules for generating a transfer syntax from a given abstract syntax.

3.4.6 presentation data value: The unit of information specified in an abstract syntax, which is transferred by the presentation-service.

3.4.7 presentation context: An association of an abstract syntax with a transfer syntax.

NOTES

1 From the viewpoint of the presentation-service-user, a presentation context represents an environment in which the presentation data values of the abstract syntax can be transferred (as a bitstring) without ambiguity.

2 Where the abstract syntax permits it, a presentation data value may contain embedded fields, each of which carries a presentation data value from a (possibly different) abstract syntax.

3 From the viewpoint of the presentation-service-user, a presentation context represents a specific use of an abstract syntax. Multiple presentation contexts may be defined for the same abstract syntax (with the same or different transfer syntaxes); presentation data values transmitted in these separate presentation contexts are also delivered in these separate presentation contexts.

3.4.8 defined context set: A set of presentation contexts that has been defined by agreement between all three parties to a communication, i.e. the presentation-service-provider and two presentation-service-users.

NOTE – The inclusion of a presentation context in the defined context set implies that its abstract syntax is acceptable to both presentation-service-users and that the cooperating presentation-entities have agreed on an acceptable transfer syntax for that presentation context.

3.4.9 inter-activity defined context set: A set of presentation contexts which is defined for a presentation-connection when the (session) activity management functional unit is selected. It initially takes the value of the defined context set at presentation-connection establishment, and is further modified only by P-ALTER-CONTEXT service primitives issued outside of activities.

3.4.10 default context: The default context is a presentation context which is always known to the presentation-service-provider and two presentation-service-users for a given presentation-connection or p-connectionless-mode transmission. It is the presentation context which always applies to the User data parameter of the P-EXPEDITED-DATA service primitives. It applies to the User data parameters of other service primitives only when the defined context set is empty.

NOTE – The use of an implied default context can arise when no name for default context is specified.

3.4.11 functional unit: A logical grouping of services defined by this ITU-T Recommendation | International Standard for the purpose of

- negotiation during the presentation-connection establishment, for use on the presentation-connection;
- referencing by other standards.

3.4.12 disrupt: A service procedure is disrupted by another service if the second service results in service primitives of the first service not being used as specified for the procedure of the first service.

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3.4.13 X.410-1984 mode: A restricted mode of operation of the Presentation Layer, which is used to allow interworking with a system that conforms to CCITT Recommendation X.410 (1984).

3.4.14 normal mode: The mode of operation of the Presentation Layer, which provides the full facilities of the presentation-service.

3.4.15 initiator: The presentation-entity or presentation-service-user that initiates the presentation-connection establishment.

3.4.16 responder: The presentation-entity or presentation-service-user that responds to a presentation-connection establishment proposal.

3.4.17 requestor: The presentation-entity or presentation-service-user that initiates a particular action.

3.4.18 acceptor: The presentation-entity or presentation-service-user that accepts a particular action.

3.4.19 presentation context identification: The identification of a specific presentation context at the conceptual service boundary.

4 Abbreviations

For the purposes of this ITU-T Recommendation | International Standard, the following abbreviations apply:

ASN.1	Abstract Syntax Notation One (see ITU-T Rec. X.680 | ISO/IEC 8824)
DCS	Defined Context Set
PCEP	Presentation-connection-end-point
PS	Presentation-service
PSAP	Presentation-service-access-point
PS-user	Presentation-service-user
SS	Session-service

5 Conventions

This ITU-T Recommendation | International Standard uses the descriptive conventions defined in CCITT Rec. X.210 | ISO/TR 8509.

SECTION 1 – GENERAL

6 Overview of the presentation service

6.1 Purpose

The Presentation Layer is concerned with the representation of information in transit between open systems (see ITU-T Rec. X.200 | ISO/IEC 7498) using connection-oriented or connectionless-mode transmission.

6.2 Relationship to Application Layer

NOTE – The Presentation Layer view of the Application Layer is described below.

6.2.1 An application protocol is specified in terms of the transfer of presentation data values between application-entities (PS-users), using the User data parameter of presentation-service primitives.

6.2.2 A set of presentation data value definitions associated with an application protocol constitutes an abstract syntax. For two application-entities to communicate successfully they must have an agreement on the set of abstract syntaxes they intend to use. During the course of communication they may decide to modify this agreement. As a consequence, the set of abstract syntaxes in use may be changed.

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6.2.3 The abstract syntax specification identifies the information content of the set of presentation data values. It does not identify the transfer syntax to be used while presentation data values are transferred between presentation-entities, nor is it concerned with the local representation of presentation data values.

6.2.4 The Presentation Layer exists to ensure that the information content of presentation data values is preserved during transfer. It is the responsibility of cooperating application-entities to determine the set of abstract syntaxes they employ in their communication and inform the presentation-entities of this agreement. Knowing the set of abstract syntaxes to be used by the application-entities, the presentation-entities are responsible for selecting mutually acceptable transfer syntaxes that preserve the information content of presentation data values.

NOTE – Presentation-entities have no role in determining the set of abstract syntaxes to be used by application-entities.

6.2.5 For connectionless-mode transmission, the abstract syntaxes used are determined by the sending application-entity. For successful communication to take place, these must be acceptable to the receiving application-entity.

6.2.6 For connectionless-mode transmission, the presentation-entities do not negotiate transfer syntaxes. The transfer syntaxes used are determined by the sending application-entity. For successful communication to take place, these must be acceptable to the receiving application-entity. The abstract syntaxes and the associated transfer syntaxes may be explicitly stated in the "Presentation context definition list" parameter as a user option.

6.3 Relationship to Session Layer

Presentation-entities support protocols that enhance the OSI session-service in order to provide a presentation-service with the facilities described in ITU-T Rec. X.200 | ISO/IEC 7498. The PS-user is provided with access to the session-service which permits full use to be made of that service. This includes negotiation of and access to the session functional units. The role of the Presentation Layer in providing this access includes representation of presentation data values in the User data parameters of session-service primitives.

NOTE – It is not the function of the Presentation Layer to provide dialogue control and data transfer functions additional to those provided by the session-service.

6.4 Features of the Presentation Layer

The Presentation Layer has two functions it carries out on behalf of PS-users:

a) negotiation of transfer syntaxes;

b) transformation to and from transfer syntax.

The function of transfer syntax negotiation is supported by presentation protocols; it provides presentation context definition facilities. Transformation of syntax is a function contained within a presentation-entity and has no impact on presentation protocol design. For connectionless-mode transmission, the sending presentation-entity selects the transfer syntaxes. No transfer syntax negotiation occurs.

NOTES

1 It is outside the scope of the presentation-service and presentation protocol standards to constrain or specify the abstract and transfer syntaxes supported by a particular open system. The syntaxes supported by an open system depend upon the nature of the applications in which it is involved.

2 In any real open system, presentation data values will have a local concrete syntax. Transformation to and from transfer syntax is from and to that local concrete syntax.

6.5 Negotiation of syntax

Negotiation of transfer syntax takes place between two presentation-entities when a PS-user provides the name of an abstract syntax for which a transfer syntax is required. The result of a successful negotiation is the association of the named abstract syntax with a compatible transfer syntax; such an association constitutes a presentation context. From the viewpoint of the PS-user, a presentation context represents a specific distinct use of an abstract syntax.

In general, there need not be a unique combination of abstract syntax and transfer syntax. It may be possible to represent a specific abstract syntax by one or more transfer syntaxes; also it may be possible to use one transfer syntax to represent more than one abstract syntax.

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6.6 Information transfer

6.6.1 User information is carried in User data parameters of presentation-service primitives. Each User data parameter contains one or more presentation data values. The order of these presentation data values is retained in transfer.

6.6.2 A presentation data value may be structured such that it contains nested presentation data values from other presentation contexts if this is supported by the abstract syntax in use for the presentation context.

NOTE – The structure of User data parameters of presentation-service primitives cannot be more explicitly defined at the service level. Any interface in a real open system (if such an interface exists) will define a concrete form.

6.7 Presentation context definition

6.7.1 The presentation-service provides facilities for the definition of presentation contexts that match the information transfer requirements of its users. One or more presentation context definitions fully describe the information transfer requirements of users of a presentation-connection.

6.7.2 There are three services by which presentation contexts may be defined. These are the P-CONNECT, P-ALTER-CONTEXT and the P-UNIT-DATA services. The P-ALTER-CONTEXT service also provides for the deletion of presentation contexts which are no longer required.

6.7.3 As presentation contexts are defined they are added to the DCS. The action of presentation context definition makes a presentation context available for immediate use. This enables a PS-user to identify a set of presentation contexts that are required to describe fully the flow of information between PS-users.

6.7.4 If the DCS is empty, then it is still possible to transfer presentation data values in presentation-service User data parameters; in this case all presentation data values are from the default context. Presentation data values are transferred in the default context only when the DCS is empty, or in a P-EXPEDITED-DATA service primitive. The default context may be defined using the presentation-connection establishment service (but may not be redefined by any other presentation service), or may be established by prior agreement. Presentation data values which are transferred using the P-EXPEDITED-DATA service are always from the default context.

6.8 Management of the DCS

If the context management functional unit is not selected, then the DCS will not change during the presentation-connection and the remainder of 6.8 does not apply.

6.8.1 Context management functional unit

6.8.1.1 If the context management functional unit is selected, the DCS may change during the presentation-connection. This is accomplished by using the P-ALTER-CONTEXT service. The Presentation Layer is responsible for ensuring that the DCS is identical at both ends of a presentation-connection; therefore, P-ALTER-CONTEXT is a confirmed-service. However, it is possible for certain destructive services to collide with or overtake the P-ALTER-CONTEXT service.

6.8.1.2 If a P-RESYNCHRONIZE indication service primitive is received while awaiting a P-ALTER-CONTEXT confirm service primitive, then the P-RESYNCHRONIZE service takes precedence and the P-ALTER-CONTEXT service procedure is disrupted. The DCS is indicated to the PS-user. If a P-RESYNCHRONIZE request service primitive is issued while awaiting a P-ALTER-CONTEXT confirm request service primitive, then the P-RESYNCHRONIZE service takes precedence and the P-ALTER-CONTEXT service procedure is disrupted. The DCS is indicated to the PS-user.

6.8.1.3 Interaction of the P-ACTIVITY-INTERRUPT and P-ACTIVITY-DISCARD services with the P-ALTER-CONTEXT service may cause misalignment of the DCS and subsequent transfer of data in a presentation context unknown to one of the PS-users. PS-users can avoid this situation by use of the activity token and appropriate sequencing rules.

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6.8.2 Context restoration functional unit

6.8.2.1 If the PS-user has not selected the session symmetric synchronization functional unit, the PS-user can select the context restoration functional unit. If the context restoration functional unit is not selected, the DCS may only be changed via the P-ALTER-CONTEXT service and the remainder of 6.8 does not apply. If the context restoration functional unit is selected, the presentation-service-provider will remember the DCS at specified points during the presentation-connection. If the PS-user requests a return to one of these points, the DCS will be restored to the one active at that point.

6.8.2.2 A P-RESYNCHRONIZE (restart) or (set) to a point known to the presentation-service-provider will restore the DCS to the one known at that point. If the point specified is lower than those known to the presentation-service-provider, the DCS will be restored to that defined at presentation-connection establishment. If the point specified is higher than the ones known to the presentation-service-provider or if P-RESYNCHRONIZE (abandon) is requested, the DCS will be left unchanged. If an unknown point (i.e. within the range of known points, but not known by the presentation-service-provider) is specified, the presentation-service-provider will indicate this to the PS-user and will not alter the DCS.

6.8.2.3 The DCS outside activities is the inter-activity DCS, which is defined at presentation-connection establishment and modified by any P-ALTER-CONTEXT request service primitive issued outside an activity. When an activity is started, its initial DCS is equal to the inter-activity DCS. Subsequent P-ALTER-CONTEXT request service primitives issued inside the activity alter only the DCS of that activity.

6.8.2.4 A P-ACTIVITY-END, P-ACTIVITY-INTERRUPT or P-ACTIVITY-DISCARD causes the presentation-service-provider to restore the DCS to the inter-activity DCS.

6.8.2.5 A P-ACTIVITY-RESUME will restore the DCS to that of the specified synchronization point in the specified activity (if known by the presentation-service-provider). Since this service is non-confirmed, it is possible to receive data that is in an unknown presentation context. If this happens, a P-P-ABORT indication will be issued to both PS-users.

NOTE – Control of activity identifiers is a concern of the PS-user.

7 Facilities of the service

The presentation-service comprises a number of facilities. Each facility is outlined below and the services which make up each facility are identified in Table 1.

7.1 The connection establishment facility

The connection establishment facility provides a service which allows a PS-user to establish a presentation-connection with another PS-user. The service allows the PS-users to exchange parameters through which they may establish the characteristics of the presentation-connection, in particular:

a) the presentation functional units selected;

b) the initial DCS;

c) the characteristics of the session-connection;

d) the definition of the default context.

7.2 The connection termination facility

The connection termination facility provides services which allow:

a) the orderly release of a presentation-connection by the PS-users in a way which is non-destructive;

b) the termination of a presentation-connection in a way which may be destructive; termination may be initiated by either of the PS-users or by the presentation-service-provider.

7.3 The context management facility

The context management facility provides a service which allows:

a) the addition of presentation contexts to the DCS by agreement among the two PS-users and the presentation-service-provider; an identification is associated with each defined presentation context, but this identification has no significance beyond this presentation-connection;

b) the deletion of presentation contexts from the DCS.

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Table 1 – Summary of presentation facilities, their services and purpose

Name of service	Type of service	Purpose
Connection establishment facility		
P-CONNECT	Confirmed	Connection establishment
Connection termination facility		
P-RELEASE	Confirmed	Connection release
P-U-ABORT	Non-confirmed	User-initiated abort
P-P-ABORT	Provider-initiated	Provider-initiated abort
Context management facility		
P-ALTER-CONTEXT	Confirmed	Context addition and deletion
Information transfer facility		
P-DATA	Non-confirmed	
P-TYPED-DATA	Non-confirmed	(Note)
P-EXPEDITED-DATA	Non-confirmed	
P-CAPABILITY-DATA	Confirmed	
Dialogue control facility		
P-TOKEN-GIVE	Non-confirmed	
P-TOKEN-PLEASE	Non-confirmed	
P-CONTROL-GIVE	Non-confirmed	
P-SYNC-MINOR	Optionally confirmed	(Note)
P-SYNC-MAJOR	Confirmed	
P-RESYNCHRONIZE	Confirmed	
P-U-EXCEPTION-REPORT	Non-confirmed	
P-P-EXCEPTION-REPORT	Provider-initiated	
P-ACTIVITY-START	Non-confirmed	
P-ACTIVITY-RESUME	Non-confirmed	
P-ACTIVITY-END	Confirmed	
P-ACTIVITY-INTERRUPT	Confirmed	
P-ACTIVITY-DISCARD	Confirmed	
Connectionless information transfer facility		
P-UNIT-DATA	Non-confirmed	(Note)

NOTE – The purpose of the presentation service follows that of the corresponding session serivce as specified in ITU-T Rec. X.215 | ISO/IEC 8326.

7.4 The information transfer facility

The information transfer facility provides services which allow PS-users to exchange information over a presentation-connection. The services allow data with token control, data without token control, typed data, capability data and expedited data if corresponding session functional units are selected.

7.5 The dialogue control facility

The dialogue control facility provides services which allow token management, synchronization, resynchronization, exception reporting and activity management, if corresponding session functional units are selected. These services are mapped onto the corresponding session services. This ITU-T Recommendation | International Standard describes them only in respect of their relationships to and effects on other presentation services. The presentation-service, in certain cases, imposes additional constraints on the use of the services which directly invoke the session services; the use of these services also affects the states of the presentation-entities. These session services are more fully described in the Session Service Definition (see ITU-T Rec. X.215 | ISO/IEC 8326).

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7.6 Connectionless Information transfer facility

The connectionless-mode information transfer facility provides services which allow a PS-user to transfer a single presentation service data unit to another PS-user without the need for establishing a connection.

8 Functional units

8.1 Functional units are used by this International Standard for the purpose of identification of PS-user requirements during presentation-connection establishment.

8.2 Two categories of functional units exist

a) **session functional units,** as defined in ITU-T Rec. X.215 | ISO/IEC 8326, comprising:

- the kernel functional unit;
- the half-duplex functional unit;
- the duplex functional unit;
- the expedited data functional unit;
- the minor synchronize functional unit;
- the symmetric synchronize functional unit;
- the data separation functional unit;
- the major synchronize functional unit;
- the resynchronize functional unit;
- the activity management functional unit;
- the negotiated release functional unit;
- the capability data functional unit;
- the exceptions functional unit;
- the typed data functional unit.

The selection of session functional units which may be made is subject to the constraints imposed by the session-service, see ITU-T Rec. X.215 | ISO/IEC 8326.

NOTE – The decision of which session functional units are to be used is made during presentation-connection establishment.

b) **presentation functional units,** corresponding to services provided by the Presentation Layer, and comprising:

- the kernel functional unit;
- the context management functional unit;
- the context restoration functional unit.

8.3 The kernel functional unit is always available and supports information transfer in whatever service primitive User data parameters of those functional units which are selected. The context management functional unit and the context restoration functional unit are optional and their use is negotiable. The context restoration functional unit shall not be selected if the context management functional unit is not selected for use on the presentation-connection.

8.4 When a session functional unit is selected by the PS-users, the corresponding presentation services and functions are made available to the PS-users.

8.5 The P-UNIT-DATA service operates independently of all defined presentation functional units.

9 Quality of Service

The definition of the quality of service concept and associated parameters, as well as the way they are negotiated during the presentation-connection establishment are strictly identical with the concepts, parameters and negotiation mechanisms defined in the Session Service Definition, ITU-T Rec. X.215 | ISO/IEC 8326.

NOTE – Future extensions of this ITU-T Recommendation | International Standard may establish a use of the quality of service parameters in determining the transfer syntax to be used.

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SECTION 2 – DEFINITION OF SERVICE PRIMITIVES

10 Presentation service primitives

This ITU-T Recommendation | International Standard uses the abstract model for a layer service defined in CCITT Rec. X.210 | ISO/TR 8509. The model defines the interactions between the PS-user and the presentation-service-provider which take place at the two PSAPs. Information is passed between the PS-user and the presentation-service-provider by service primitives, which may convey parameters.

Table 2 lists the presentation-service primitives by which information is transferred to and from the PS-user.

The sequencing procedures for all services are specified in clause 11.

NOTE – For all services which carry user data, excluding P-DATA and P-TYPED-DATA, it may not be possible to exchange PS-user data, dependent on the transfer syntax in use and the SS-user data length limitation supported by the underlying session-service. The way in which the PS-user is made aware of this is a local matter.

Table 2 – Presentation service primitives

Service primitive	Parameter
P-CONNECT request	Calling-presentation-address Called-presentation-address Presentation context definition list Default context name Quality of service Presentation requirements Mode Session requirements Initial synchronization point serial number Initial assignment of tokens Session connection identifier User data
P-CONNECT indication	Calling-presentation-address Called-presentation-address Presentation context definition list Presentation context definition result list Default context name Quality of service Presentation requirements Mode Session requirements Initial synchronization point serial number Initial assignment of tokens Session connection identifier User data
P-CONNECT response/confirm	Responding-presentation-address Presentation context definition result list Default context result Quality of service Presentation requirements Session requirements Initial synchronization point serial number Initial assignment of tokens Session connection identifier Result User data
P-RELEASE request/indication	User data
P-RELEASE response/confirm	Result User data
P-U-ABORT request/indication	User data
P-P-ABORT indication	Provider reason

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Table 2 – Presentation service primitives (*continued*)

Service primitive	Parameter
P-ALTER-CONTEXT request	Presentation context addition list Presentation context deletion list User data
P-ALTER-CONTEXT indication	Presentation context addition list Presentation context deletion list Presentation context addition result list User data
P-ALTER-CONTEXT response/confirm	Presentation context addition result list Presentation context deletion result list User data
P-DATA request/indication	User data
P-TYPED-DATA request/indication	User data
P-EXPEDITED-DATA request/indication	User data
P-CAPABILITY-DATA request/indication/response/confirm	User data
P-TOKEN-GIVE request/indication	Tokens User data
P-TOKEN-PLEASE request/indication	Tokens User data
P-CONTROL-GIVE request/indication	User data
P-SYNC-MINOR request/indication	Type Synchronization point serial number User data
P-SYNC-MINOR response/confirm	Synchronization point serial number User data
P-SYNC-MAJOR request/indication	Synchronization point serial number User data
P-SYNC-MAJOR response/confirm	User data
P-RESYNCHRONIZE request	Resynchronize type Synchronization point serial number Tokens User data
P-RESYNCHRONIZE indication	Resynchronize type Synchronization point serial number Tokens Presentation context identification list User data
P-RESYNCHRONIZE response	Synchronization point serial number Tokens User data
P-RESYNCHRONIZE confirm	Synchronization point serial number Tokens Presentation context identification list User data
P-U-EXCEPTION-REPORT request/indication	Reason User data
P-P-EXCEPTION-REPORT indication	Reason
P-ACTIVITY-START request/indication	Activity identifier User data

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Table 2 – Presentation service primitives (*end*)

Service primitive	Parameter
P-ACTIVITY-RESUME request/indication	Activity identifier Old activity identifier Synchronization point serial number Old session connection identifier User data
P-ACTIVITY-END request/indication	Synchronization point serial number User data
P-ACTIVITY-END response/confirm	User data
P-ACTIVITY-INTERRUPT request/indication	Reason User data
P-ACTIVITY-INTERRUPT response/confirm	User data
P-ACTIVITY-DISCARD request/indication	Reason User data
P-ACTIVITY-DISCARD response/confirm	User data
P-UNIT-DATA request	Calling-presentation-address Called-presentation-address Presentation context definition list Quality of service User data
P-UNIT-DATA indication	Calling-presentation-address Called-presentation-address Presentation context definition list User data

10.1 User data parameters

The information in the User data parameters of the P-EXPEDITED-DATA request and indication service primitives shall always be one or more presentation data values from the default context. The information in the User data parameters of all other presentation-service primitives shall be one or more presentation data values from presentation contexts determined by the rules governing the DCS. Any embedded presentation data values shall be from presentation contexts determined by these rules. These rules are:

a) If the DCS is empty and d) does not apply, then each presentation data value (including any embedded presentation data values) shall be from the default context.

b) If the DCS is not empty and no procedure is in progress which can amend the contents of the DCS, then each presentation data value (including any embedded presentation data values) shall be from a presentation context of the DCS.

c) If the procedure for the service primitive containing the User data parameter amends the DCS, then each presentation data value (including any embedded presentation data values) shall be from a presentation context of the DCS which results from this amendment, or from the default context if this amendment leaves the DCS empty.

d) If a confirm service primitive is awaited which will confirm a proposed amendment to the DCS, then each presentation data value (including any embedded presentation data values) shall be from a presentation context of the DCS which was not proposed for deletion from the DCS. If this leaves no presentation contexts available, then there shall be no User data parameter in the service primitive.

10.2 P-CONNECT service

This service is used to bring two identified PS-users into communication. Its successful use results in a presentation-connection, with an initial DCS, being established between them. This presentation-connection is available for their subsequent communication. This is a non-destructive service.

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10.2.1 Structure

NOTE – There may be a session-service data size dependent limitation on this presentation service. This may prevent the delivery of the P-CONNECT indication and/or confirm service primitives.

The structure of the service primitives is shown in Table 3.

Table 3 – P-CONNECT service

Parameter name	Request	Indication	Response	Confirm
Calling-presentation-address	M	M		
Called-presentation-address	M	M		
Responding-presentation-address			M	M
Presentation context definition list	U	C(=)		
Presentation context definition result list		C	C	C(=)
Default context name	U	C(=)		
Default context result (Note)			C	C(=)
Quality of service	S	S	S	S
Presentation requirements	U	C	U	C(=)
Mode	M	M(=)		
Session requirements	S	S	S	S
Initial synchronization point serial number	S	S	S	S
Initial assignment of tokens	S	S	S	S
Session connection identifier	S	S	S	S
User data	U	C(=)	U	C(=)
Result (Note)			M	M(=)

M	Presence of the parameter is mandatory
U	Presence of the parameter is a user option
C	Presence of the parameter is conditional
S	Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)
(=)	When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left
Blank	The parameter is not present

NOTE – When the presentation-connection establishment request is rejected by the presentation-service-provider, the value of this parameter is provider-generated.

10.2.1.1 Calling-presentation-address

This is a presentation-address (see ITU-T Rec. X.650 | ISO/IEC 7498-3).

10.2.1.2 Called-presentation-address

This is a presentation-address (see ITU-T Rec. X.650 | ISO/IEC 7498-3).

10.2.1.3 Responding-presentation-address

This is a presentation-address (see ITU-T Rec. X.650 | ISO/IEC 7498-3).

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10.2.1.4 Presentation context definition list

This parameter is present when the PS-user requires to place one or more presentation contexts in the DCS at the time of presentation-connection establishment. It consists of a list containing one or more items; each item contains two components, a presentation context identification and an abstract syntax name.

The presentation context identification components of this parameter exist to distinguish presentation contexts in communication between the PS-user and the local presentation-entity. The unambiguous identification of the presentation context to be established is required. The way this is achieved in a real open system is an implementation matter.

NOTE – A separate presentation context is associated with each abstract syntax name in the list of names in the Presentation context definition list parameter. If the same name occurs more than once, a separate and distinctly identified presentation context is generated for each occurrence.

10.2.1.5 Presentation context definition result list

This parameter indicates the acceptance or rejection of each of the presentation context definitions proposed in the Presentation context definition list parameter; it shall be present only if the Presentation context definition list parameter is present on the request and indication service primitives. The parameter takes the form of a list of result values; there is a one to one correspondence between these list elements and the contents of the presentation context definition list parameter. Each result value represents either "acceptance", "user-rejection" or "provider-rejection". The values of the elements in this parameter are assigned by the presentation-service-provider on the indication service primitive and by the PS-user on the response service primitive.

When present in the indication service primitive, this parameter is used to identify to the responding PS-user, those proposed presentation context definitions which cannot be supported by the presentation-service-provider, by assigning the value "provider-rejection" to the appropriate list element. All other elements are assigned the value "acceptance", and the responding PS-user is restricted to modifying the value of only these accepted elements.

Values of this parameter in the response service primitive are delivered unchanged in the confirm service primitive.

10.2.1.6 Default context name

This parameter is present when the PS-user requires to identify explicitly the abstract syntax supported by the default context. It identifies an abstract syntax name.

10.2.1.7 Default context result

This parameter is provided by the responding PS-user or the presentation-service-provider. It indicates acceptance or rejection of a proposed default context, and is present if, and only if, the default context name parameter was present on the request and indication service primitives. On the response service primitive, it shall take the value "acceptance" or "user-rejection" as selected by the PS-user. On the confirm service primitive, it shall take the value from the response service primitive, or the value "provider-rejection" if the proposed default context is refused by the presentation-service-provider.

10.2.1.8 Quality of service

This parameter provides the PS-user with access to the Quality of service parameter of the session-service and is as described for that parameter in ITU-T Rec. X.215 | ISO/IEC 8326.

10.2.1.9 Presentation requirements

This parameter is present when the PS-user requires to select optional functional units of the presentation-service.

10.2.1.10 Mode

This parameter indicates the mode of operation of the Presentation Layer. It takes the value either "normal" or "X.410-1984". If the value is "normal", the mode of operation of the Presentation Layer is the normal mode. If the value is "X.410-1984", the mode of operation of the Presentation Layer is the X.410-1984 mode. In this mode of operation, the following restrictions apply:

a) the following parameters shall be absent in the P-CONNECT request service primitive: Presentation context definition list, Default context name, and Presentation requirements;

b) restrictions apply to the User data parameters of certain presentation-service primitives; these are listed in Annex A.

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10.2.1.11 Session requirements

This parameter provides the PS-user with access to the Session requirements parameter of the session-service and is as described for that parameter in ITU-T Rec. X.215 | ISO/IEC 8326.

10.2.1.12 Initial synchronization point serial number

This parameter provides the PS-user with access to the Initial synchronization point serial number parameter of the session-service and is as described for that parameter in ITU-T Rec. X.215 | ISO/IEC 8326.

10.2.1.13 Initial assignment of tokens

This parameter provides the PS-user with access to the Initial assignment of tokens parameter of the session-service and is as described for that parameter in ITU-T Rec. X.215 | ISO/IEC 8326.

10.2.1.14 Session connection identifier

This parameter provides the PS-user with access to the Session connection identifier parameter of the session-service and is as described for that parameter in ITU-T Rec. X.215 | ISO/IEC 8326.

10.2.1.15 User data

On all P-CONNECT service primitives, this parameter is one or more presentation data values (including any embedded presentation data values) from presentation contexts proposed in the Presentation context definition list parameter, if present; if the Presentation context definition list parameter is not present, then the User data parameter is one or more presentation data values from the proposed default context (either implicitly or explicitly defined in the P-CONNECT request).

10.2.1.16 Result

This parameter is provided by the responding PS-user or presentation-service-provider. It indicates the result of using the P-CONNECT service. The value of this parameter is one of:

a) acceptance;

b) user-rejection;

c) provider-rejection.

The reasons for rejection of the presentation-connection are to be defined.[1)]

10.2.2 Connection procedure

10.2.2.1 The presentation-service-provider conveys the Calling-presentation-address, Called-presentation-address, Mode, Initial synchronization point serial number, Initial assignment of tokens, Session connection identifier, and User data parameters unchanged from the initiating to the responding PS-user. The presentation-service-provider conveys the Responding-presentation-address, Initial synchronization point serial number, Initial assignment of tokens, Session connection identifier, and User data parameters unchanged from the responding to the initiating PS-user.

10.2.2.2 The connection characteristics specified by the Presentation requirements, Session requirements and Quality of service parameters are subject to agreement between the PS-users and the presentation-service-provider. This agreement is achieved by a negotiation mechanism in which the presentation-service-provider reserves the right to modify the values of these parameters specified in a request service primitive prior to their delivery in an indication service primitive. The values of these parameters in a response service primitive are delivered unchanged in a confirm service primitive and subject to the conditions below:

a) For the Presentation requirements and Session requirements parameters, the PS-user shall not select a functional unit in the response service primitive which was not selected in the indication service primitive.

b) The values of the Quality of service parameter are subject to the negotiation rules specified in ITU-T Rec. X.215 | ISO/IEC 8326.

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1) It is recognized that, with respect to reason values, work is still in progress to provide an integrated treatment across all the layers of the OSI Reference Model. As a consequence, an addendum may be added to this ITU-T Recommendation | International Standard at a later time which reflects further developments and integration.

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10.2.2.3 The Presentation context definition list parameter is optional in the P-CONNECT request service primitive; in its absence, the DCS is empty. When this parameter is present, the presentation contexts it specifies are available for use in the User data parameter; in its absence, only the default context is available for use.

If the Presentation context definition list parameter is present in the P-CONNECT request service primitive then it shall also be present in the P-CONNECT indication service primitive if issued, together with the Presentation context definition result list parameter. In this case, the Presentation context definition result list parameter shall also be present in the P-CONNECT response and confirm service primitives.

10.2.2.4 The Default context name parameter is optional in the P-CONNECT request service primitive; if it is absent then the presentation-service-provider assumes that there is prior agreement on the definition of the default context. When present, this parameter specifies the abstract syntax supported by the default context.

If this parameter is present in the P-CONNECT request service primitive but cannot be supported by the presentation-service-provider, then no indication shall be issued and the initiating PS-user will receive a P-CONNECT confirm service primitive with a Default context result parameter value of "provider-rejection" and a Result parameter value of "provider-rejection".

If the presentation-service-provider supports the default context, then an indication shall be issued to the responding PS-user. If in the response and confirm service primitives, the Default context result parameter takes the value "user-rejection", then the Result parameter of these service primitives shall also take the value "user-rejection".

10.2.2.5 If any part of the User data parameter of the P-CONNECT request service primitive cannot be transferred to the responding PS-user, then no indication shall be issued and the initiating PS-user will receive a P-CONNECT confirm service primitive with a Result parameter value of "provider-rejection".

10.2.2.6 If the PS-user issues a P-CONNECT response service primitive with a Result parameter value of "acceptance", then the P-CONNECT confirm service primitive shall be issued with a Result parameter value of "acceptance" and the presentation-connection is established. If the PS-user issues a P-CONNECT response service primitive with a Result parameter value of "user-rejection", then the P-CONNECT confirm service primitive shall be issued with a Result parameter value of "user-rejection" together with any user data which was present on the response service primitive; the presentation-connection is not established. The responding PS-user shall not issue a P-CONNECT response service primitive with a Result parameter value of "acceptance" and a Default context result parameter value of "user-rejection".

10.2.2.7 If a P-CONNECT confirm service primitive is not acceptable to a PS-user, the PS-user may subsequently issue a P-U-ABORT request service primitive.

10.3 P-U-ABORT service

This service can be used by either PS-user to force the release of a presentation-connection at any time and have the peer PS-user informed of this termination. This service has effects which may not be sequenced with respect to preceding service invocations and its invocation is destructive.

10.3.1 Structure

The structure of the component service primitives is shown in Table 4.

Table 4 – P-U-ABORT service

Parameter name	Request	Indication
User data	U	C(=)

U Presence of the parameter is a user option

C Presence of the parameter is conditional

(=) When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left

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10.3.1.1 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service. It can therefore be used for passing user reason information.

NOTE – If presentation data value is received from a proposed but not yet acknowledged presentation context, it is assumed that the P-U-ABORT overtook the acknowledgement. In this case the data is accepted and delivered as though the acknowledgement had been received.

10.4 P-P-ABORT service

This service is the means by which the presentation-service-provider may indicate the termination of the presentation-connection for reasons internal to the presentation-service-provider. This service has effects which may not be sequenced with respect to preceding service invocations and its invocation is destructive.

10.4.1 Structure

The structure of the component service primitives is shown in Table 5.

Table 5 – P-P-ABORT service

Parameter name	Indication
Provider reason	M
M Presence of the parameter is mandatory	

10.4.1.1 Provider reason

This parameter indicates the reason for the termination of the presentation-connection. It is recognized that, with respect to reason values, work is still in progress to provide an integrated treatment across all the layers of the OSI Reference Model. As a consequence, an addendum may be added to this ITU-T Recommendation | International Standard at a later time which reflects further developments and integration.

10.5 P-ALTER-CONTEXT service

NOTE – This service is only available when the context management functional unit has been selected during presentation-connection establishment.

This service provides the following presentation context management facilities:

a) the creation of presentation contexts and their addition to the DCS;

b) the deletion of presentation contexts from the DCS.

This service has effects which are sequenced with respect to preceding service invocations and is non-destructive.

10.5.1 Structure

The structure of the component service primitives is shown in Table 6.

10.5.1.1 Presentation context addition list

This parameter enables presentation context addition requirements to be specified. It takes the form of a list. Each item of the list represents a specification for a presentation context to be created and added to the DCS. An item contains two components, a presentation context identification and an abstract syntax name; these are both provided by the requestor of the service.

The presentation context identification components of this parameter exist to distinguish presentation contexts in communication between the PS-user and the local presentation-entity. The unambiguous identification of the presentation context to be established is required. The way this is achieved in a real open system is an implementation matter.

NOTE – A separate presentation context is associated with each abstract syntax name in the list of names in the Presentation context addition list parameter. If the same name occurs more than once, or has been used in an earlier presentation context addition, a separate and distinctly identified presentation context is generated for each occurrence.

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Table 6 – P-ALTER-CONTEXT service

Parameter name	Request	Indication	Response	Confirm
Presentation context addition list	U	C(=)		
Presentation context deletion list	U	C(=)		
Presentation context addition result list		C	U	C(=)
Presentation context deletion result list			U	C(=)
User data	U	C(=)	U	C(=)

U	Presence of the parameter is a user option
C	Presence of the parameter is conditional
(=)	When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left
Blank	The parameter is not present

10.5.1.2 Presentation context deletion list

This parameter enables presentation context deletion requirements to be specified. It takes the form of a list. Each item in the list is the presentation context identification of a presentation context that is to be removed from the DCS.

10.5.1.3 Presentation context addition result list

This parameter indicates the acceptance or rejection of each of the presentation context additions proposed in the Presentation context addition list parameter; it shall be present only if the Presentation context addition list parameter is present on the request and indication service primitives. The parameter takes the form of a list of result values; there is a one-to-one, order-preserving correspondence between these list elements and the contents of the presentation context addition list. Each result value represents either "acceptance", "user-rejection" or "provider-rejection". The values of the elements in this parameter are assigned by the presentation-service-provider on the indication service primitive and by the PS-user on the response service primitive.

When present in the indication service primitive, this parameter is used to identify to the accepting PS-user, those proposed presentation context additions which cannot be supported by the presentation-service-provider, by assigning the value "provider-rejection" to the appropriate list element. All other elements are assigned the value "acceptance", and the accepting PS-user is restricted to modifying the value of only these accepted elements.

Absence of this parameter is equivalent to acceptance of all proposed presentation context additions. Values of this parameter in the response service primitive are delivered unchanged in the confirm service primitive.

10.5.1.4 Presentation context deletion result list

This parameter indicates the acceptance or rejection of each of the presentation context deletions proposed in the Presentation context deletion list parameter; it shall be present only if the Presentation context deletion list parameter is present on the request and indication service primitives. The parameter takes the form of a list of result values; there is a one-to-one, order-preserving correspondence between these list elements and the contents of the presentation context deletion list. Each result value represents either acceptance or rejection by the PS-user.

Absence of this parameter is equivalent to acceptance of all proposed presentation context deletions. Values of this parameter in the response service primitive are delivered unchanged in the confirm service primitive.

10.5.1.5 User data

This parameter contains presentation data values (including any embedded presentation data values) from presentation contexts of the DCS, or from the default context if the DCS is empty. See 10.5.2.

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10.5.2 Alter context procedure

10.5.2.1 The accepted modifications to the DCS become effective:

a) for the acceptor when issuing the response service primitive;

b) for the requestor upon receiving the confirm service primitive.

A presentation context added to the DCS may be used for presentation data values of the User data parameter in the P-ALTER-CONTEXT response and confirm service primitives. A presentation context removed from the DCS may not be used for presentation data values of the User data parameter in the P-ALTER-CONTEXT response and confirm service primitives.

10.5.2.2 If the DCS is empty prior to invoking the P-ALTER-CONTEXT request service primitive, then the requestor shall use only the default context for the User data parameter. Moreover, while the P-ALTER-CONTEXT confirm service primitive is awaited, the requestor shall not issue presentation-service primitives containing User data parameters other than P-EXPEDITED, P-U-EXCEPTION-REPORT, P-RESYNCHRONIZE or P-U-ABORT.

10.5.2.3 If the DCS becomes empty as a result of the invocation of this service, then the acceptor shall use only the default context for the User data parameter of response and confirm service primitives.

10.6 P-TYPED-DATA service

This service provides the PS-user with access to the S-TYPED-DATA service of the Session Layer as described in the Session Service Definition (ITU-T Rec. X.215 | ISO/IEC 8326). This service has effects which are sequenced with respect to preceding service invocations and is non-destructive.

10.6.1 Structure

The structure of the component service primitives is shown in Table 7.

Table 7 – P-TYPED-DATA service

Parameter name	Request	Indication
User data	M	M(=)
M Presence of the parameter is mandatory (=) When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left		

10.6.1.1 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

10.7 P-DATA service

This service provides the PS-user with access to the S-DATA service of the Session Layer as described in the Session Service Definition (ITU-T Rec. X.215 | ISO/IEC 8326). This service has effects which are sequenced with respect to preceding service invocations and is non-destructive.

10.7.1 Structure

The structure of the component service primitives is shown in Table 8.

10.7.1.1 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

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Table 8 – P-DATA service

Parameter name	Request	Indication
User data	M	M(=)

M Presence of the parameter is mandatory

(=) When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left

10.8 P-RESYNCHRONIZE service

This service provides the PS-user with access to the S-RESYNCHRONIZE session service as described in the Session Service Definition, ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which may not be sequenced with respect to preceding service invocations and is destructive.

10.8.1 Structure

The structure of the component service primitives is shown in Table 9.

Table 9 – P-RESYNCHRONIZE service

Parameter name	Request	Indication	Response	Confirm
Resynchronize type	S	S		
Synchronization point serial number	S	S	S	S
Tokens	S	S	S	S
Presentation context identification list		C	C	
User data	U	C(=)	U	C(=)

U Presence of the parameter is a user option

C Presence of the parameter is conditional

S Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)

(=) When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left

Blank The parameter is not present

10.8.1.1 Resynchronize type

This parameter provides the PS-user with access to the Resynchronize type parameter of the resynchronize session service as described in ITU-T Rec. X.215 | ISO/IEC 8326.

10.8.1.2 Synchronization point serial number

This parameter provides the PS-user with access to the Synchronization point serial number parameter of the resynchronize session service as described in ITU-T Rec. X.215 | ISO/IEC 8326.

10.8.1.3 Tokens

This parameter provides the PS-user with access to the Tokens parameter of the resynchronize session service as described in ITU-T Rec. X.215 | ISO/IEC 8326.

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10.8.1.4 Presentation context identification list

This parameter consists of a list containing zero, one or more items; each item consists of a presentation context identification. This parameter is provided by the presentation-service-provider, see 10.8.2.3.

10.8.1.5 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

10.8.2 Resynchronization procedure

10.8.2.1 The presentation-service-provider conveys the session defined parameters between the PS-users as specified by the session-service.

10.8.2.2 If the context management functional unit is not selected, then the Presentation context identification list parameter is not present. In this case, the contents of the DCS do not vary during the presentation-connection.

10.8.2.3 If the context management functional unit is selected, then the Presentation context identification list parameter is present in the P-RESYNCHRONIZE indication and confirm service primitives. This parameter lists all the presentation contexts that are members of the DCS.

The User data parameter in the P-RESYNCHRONIZE service primitives contains presentation data values from presentation contexts which are members of the DCS at the invocation of the request or response service primitive respectively, but if a P-ALTER-CONTEXT confirm service primitive is awaited, then presentation contexts proposed for deletion may not be used.

10.8.2.4 If the context restoration functional unit is selected and the resynchronize type is either "restart" or "set", then the DCS may be restored when the request, indication, and confirm service primitives are invoked, according to the following rules:

a) If the specified synchronization point serial number is less than or equal to the lowest synchronization point serial number that has been used on the presentation-connection and has not been specified in a P-SYNC-MAJOR or P-SYNC-MINOR request or indication service primitive on the current presentation-connection, then the DCS is restored to that immediately after presentation-connection establishment.

b) If the specified synchronization point serial number minus one has been specified in a P-SYNC-MINOR or P-SYNC-MAJOR request or indication service primitive on the current presentation-connection, then the DCS is restored to that which was current at the invocation of the P-SYNC-MINOR or P-SYNC-MAJOR service.

c) If the specified synchronization point serial number is greater than the current synchronization point serial number for either of the PS-users or greater than the lowest synchronization point serial number used on the presentation-connection but is not known to one of the presentation-entities, then the resulting DCS is unchanged.

On completion of this, any previous P-SYNC-MINOR or P-SYNC-MAJOR specifying greater synchronization point serial numbers are disregarded in evaluating future P-RESYNCHRONIZE and P-ACTIVITY-RESUME procedures.

If the activity management functional unit has been selected for use on the presentation-connection, then only the P-SYNC-MAJOR and P-SYNC-MINOR service primitives within the current activity are taken into account.

See also 10.22.2.

10.9 P-ACTIVITY-START service

This service provides the PS-user with access to the S-ACTIVITY-START session service as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which are sequenced with respect to preceding service invocations and is non-destructive.

10.9.1 Structure

The structure of the component service primitives is shown in Table 10.

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Table 10 – P-ACTIVITY-START service

Parameter name	Request	Indication
Activity identifier	S	S
User data	U	C(=)

U Presence of the parameter is a user option

C Presence of the parameter is conditional

S Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)

(=) When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left

10.9.1.1 Activity Identifier

If the context restoration functional unit is selected this parameter shall uniquely identify the activity within the set of previously interrupted activities.

NOTE – If either PS-user can resume an interrupted activity, the Activity identifier parameter value should be different from the Activity identifier parameter values of all interrupted activities which were started by this PS-user.

10.9.1.2 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

10.10 P-ACTIVITY-RESUME service

This service provides the PS-user with access to the S-ACTIVITY-RESUME session service as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which are sequenced with respect to preceding service invocations and is non-destructive.

10.10.1 Structure

The structure of the component service primitives is shown in Table 11.

Table 11 – P-ACTIVITY-RESUME service

Parameter name	Request	Indication
Activity identifier	S	S
Old activity identifier	S	S
Synchronization point serial number	S	S
Old session connection identifier	S	S
User data	U	C(=)

U Presence of the parameter is a user option

C Presence of the parameter is conditional

S Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)

(=) When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left

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10.10.1.1 Activity identifier

This parameter provides the PS-user with access to the Activity identifier parameter of the session activity resume service as described in ITU-T Rec. X.215 | ISO/IEC 8326.

10.10.1.2 Old activity identifier

This parameter provides the PS-user with access to the Old activity identifier parameter of the session activity resume service as described in ITU-T Rec. X.215 | ISO/IEC 8326. This parameter shall uniquely identify the activity within the set of interrupted activities.

10.10.1.3 Synchronization point serial number

This parameter provides the PS-user with access to the Synchronization point serial number parameter of the session activity resume service as described in ITU-T Rec. X.215 | ISO/IEC 8326.

10.10.1.4 Old session connection identifier

This parameter provides the PS-user with access to the Old session connection identifier parameter of the session activity resume service as described in ITU-T Rec. X.215 | ISO/IEC 8326.

10.10.1.5 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

10.10.2 Activity resume procedure

10.10.2.1 The presentation-service-provider conveys the session defined parameters between the PS-users as specified by the session-service.

10.10.2.2 If the context restoration functional unit is not selected then the DCS is unchanged.

10.10.2.3 If the context restoration functional unit is selected then the DCS is specified as follows:

a) If the Old activity identifier parameter is equal to the Activity identifier parameter of an activity interrupted within the presentation-connection, then the DCS is restored to the one at the time that the value of the Synchronization point serial number parameter was specified in a S-SYNC-MINOR or S-SYNC-MAJOR service within the activity.

b) If the value of the Synchronization point serial number parameter had not been so specified within the activity in this presentation-connection, then the DCS is unchanged.

On completion of this, any previously invoked P-SYNC-MINOR or P-SYNC-MAJOR service, specifying greater synchronization point serial numbers are disregarded in evaluating future P-RESYNCHRONIZE and P-ACTIVITY-RESUME procedures.

NOTE – When the context restoration functional unit is selected, use of this non-confirmed-service without protection against crossing with P-DATA or P-TYPED-DATA services may result in a P-P-ABORT due to unreadable User-data. Such collisions may be avoided by strict separation of data exchanged outside of activity from that exchanged within an activity.

10.11 P-ACTIVITY-INTERRUPT service

This service provides the PS-user with access to the S-ACTIVITY-INTERRUPT session service as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which may not be sequenced with respect to preceding service invocations and is destructive.

10.11.1 Structure

The structure of the component service primitives is shown in Table 12.

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Table 12 – P-ACTIVITY-INTERRUPT service

Parameter name	Request	Indication	Response	Confirm
Reason	S	S		
User data	U	C(=)	U	C(=)

U	Presence of the parameter is a user option
C	Presence of the parameter is conditional
S	Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)
(=)	When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left
Blank	The parameter is not present.

10.11.1.1 Reason

This parameter provides the PS-user with access to the Reason parameter of the session activity interrupt service as described in ITU-T Rec. X.215 | ISO/IEC 8326.

10.11.1.2 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

10.11.2 Activity interrupt procedure

10.11.2.1 If the context restoration functional unit is not selected then no action is taken on the DCS.

10.11.2.2 If the context restoration functional unit is selected then the DCS is aligned with the inter-activity DCS on the issuing of the response and confirm service primitives for this service.

10.11.2.3 Any P-ACTIVITY-INTERRUPT service primitive issued outside of an activity shall have no effect on the DCS.

10.12 P-ACTIVITY-DISCARD service

This service provides the PS-user with access to the S-ACTIVITY-DISCARD session service as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which may not be sequenced with respect to preceding service invocations and is destructive.

10.12.1 Structure

The structure of the component service primitives is shown in Table 13.

10.12.1.1 Reason

This parameter provides the PS-user with access to the Reason parameter of the session activity discard service as described in ITU-T Rec. X.215 | ISO/IEC 8326.

10.12.1.2 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

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Table 13 – P-ACTIVITY-DISCARD service

Parameter name	Request	Indication	Response	Confirm
Reason	S	S		
User data	U	C(=)	U	C(=)

U	Presence of the parameter is a user option
C	Presence of the parameter is conditional
S	Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)
(=)	When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left
Blank	The parameter is not present

10.12.2 Activity discard procedure

10.12.2.1 If the context restoration functional unit is not selected then no action is taken on the DCS.

10.12.2.2 If the context restoration functional unit is selected then the DCS is aligned with the inter-activity DCS on the issuing of the response and confirm service primitives for this service.

10.13 P-ACTIVITY-END service

This service provides the PS-user with access to the S-ACTIVITY-END session service as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which are sequenced with respect to preceding service invocations and is non-destructive.

10.13.1 Structure

The structure of the component service primitives is shown in Table 14.

Table 14 – P-ACTIVITY-END service

Parameter name	Request	Indication	Response	Confirm
Synchronization point serial number	S	S		
User data	U	C(=)	U	C(=)

U	Presence of the parameter is a user option
C	Presence of the parameter is conditional
S	Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)
(=)	When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left
Blank	The parameter is not present

10.13.1.1 Synchronization point serial number

This parameter provides the PS-user with access to the Synchronization point serial number parameter of the session activity end service as described in ITU-T Rec. X.215 | ISO/IEC 8326.

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10.13.1.2 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

10.13.2 Activity end procedure

10.13.2.1 The presentation-service-provider conveys the session defined parameters between the PS-users as specified by ITU-T Rec. X.215 | ISO/IEC 8326.

10.13.2.2 If the context restoration functional unit is not selected then no action is taken on the DCS.

10.13.2.3 If the context restoration functional unit is selected then the DCS is aligned with the inter-activity DCS on the issuing of the response and confirm service primitives for this service.

10.14 P-CAPABILITY-DATA service

This service provides the PS-user with access to the S-CAPABILITY-DATA service of the Session Layer as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which are sequenced with respect to preceding service invocations and is non-destructive.

10.14.1 Structure

The structure of the component service primitives is shown in Table 15.

Table 15 – P-CAPABILITY-DATA service

Parameter name	Request	Indication	Response	Confirm
User data	U	C(=)	U	C(=)

U Presence of the parameter is a user option

C Presence of the parameter is conditional

(=) When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left

10.14.1.1 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

10.15 P-CONTROL-GIVE service

This service provides the PS-user with access to the S-CONTROL-GIVE service of the Session Layer as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which are sequenced with respect to preceding service invocations and is non-destructive.

10.15.1 Structure

The structure of the component service primitives is shown in Table 16.

10.15.1.1 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

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Table 16 – P-CONTROL-GIVE service

Parameter name	Request	Indication
User data	U	C(=)
U Presence of the parameter is a user option C Presence of the parameter is conditional (=) When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left		

10.16 P-TOKEN-GIVE service

This service provides the PS-user with access to the S-TOKEN-GIVE service of the Session Layer as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which are sequenced with respect to preceding service indications and is non-destructive.

10.16.1 Structure

The structure of the component service primitives is shown in Table 17.

Table 17 – P-TOKEN-GIVE service

Parameter name	Request	Indication
User data	U	C(=)
U Presence of the parameter is a user option C Presence of the parameter is conditional (=) When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left Blank The parameter is not present		

10.16.1.1 Tokens

This parameter corresponds to the Tokens parameter of the session-service, see ITU-T Rec. X.215 | ISO/IEC 8326.

10.16.1.2 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

10.17 P-TOKEN-PLEASE service

This service provides the PS-user with access to the S-TOKEN-PLEASE service of the Session Layer as described in the ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which are sequenced with respect to preceding service invocations and is non-destructive.

10.17.1 Structure

The structure of the component service primitives is shown in Table 18.

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Table 18 – P-TOKEN-PLEASE service

Parameter name	Request	Indication
Tokens	S	S
User data	U	C(=)

U	Presence of the parameter is a user option
C	Presence of the parameter is conditional
S	Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)
(=)	When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left
Blank	The parameter is not present

10.17.1.1 Tokens

This parameter corresponds to the Tokens parameter of the session-service, see ITU-T Rec. X.215 | ISO/IEC 8326.

10.17.1.2 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

10.18 P-U-EXCEPTION-REPORT service

This service provides the PS-user with access to the S-U-EXCEPTION-REPORT service of the Session Layer as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which are sequenced with respect to preceding service invocations and is destructive.

10.18.1 Structure

The structure of the component service primitives is shown in Table 19.

Table 19 – P-U-EXCEPTION-REPORT service

Parameter Name	Request	Indication
Reason	S	S
User data	U	C(=)

U	Presence of the parameter is a user option
C	Presence of the parameter is conditional
S	Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)
(=)	When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left

10.18.1.1 Reason

This parameter corresponds to the Reason parameter of the session-service, see ITU-T Rec. X.215 | ISO/IEC 8326.

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10.18.1.2 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

10.19 P-P-EXCEPTION REPORT service

This service gives the PS-user visibility to the S-P-EXCEPTION-REPORT service of the Session Layer as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service is destructive.

10.19.1 Structure

The structure of the component service primitive is shown in Table 20.

Table 20 – P-P-EXCEPTION-REPORT service

Parameter Name	Indication
Reason	S
S Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)	

10.19.1.1 Reason

This parameter corresponds to the Reason parameter of the session-service, see ITU-T Rec. X.215 | ISO/IEC 8326.

10.20 P-EXPEDITED-DATA service

This service provides the PS-user with access to the S-EXPEDITED-DATA service of the Session Layer as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which may not be sequenced with respect to preceding service invocations and is non-destructive.

10.20.1 Structure

The structure of the component service primitives is shown in Table 21.

Table 21 – P-EXPEDITED-DATA service

Parameter name	Request	Indication
User data	M	M(=)
M Presence of the parameter is mandatory (=) When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left		

10.20.1.1 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and are from the default context; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

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10.21 P-SYNC-MINOR service

This service provides the PS-user with access to the S-SYNC-MINOR service of the Session Layer as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which are sequenced with respect to preceding service invocations and is non-destructive.

10.21.1 Structure

The structure of the component service primitives is shown in Table 22.

Table 22 – P-SYNC-MINOR service

Parameter name	Request	Indication	Response	Confirm
Type	S	S		
Synchronization point serial number	S	S	S	S
User data	U	C(=)	U	C(=)

U	Presence of the parameter is a user option
C	Presence of the parameter is conditional
S	Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)
(=)	When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left
Blank	The parameter is not present

10.21.1.1 Type

This parameter corresponds to the Type parameter of the session service, see ITU-T Rec. X.215 | ISO/IEC 8326.

10.21.1.2 Synchronization point serial number

This parameter corresponds to the Synchronization point serial number parameter of the session-service, see ITU-T Rec. X.215 | ISO/IEC 8326.

10.21.1.3 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

10.22 P-SYNC-MAJOR service

This service provides the PS-user with access to the S-SYNC-MAJOR service of the Session Layer as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which are sequenced with respect to preceding service invocations and is non-destructive.

10.22.1 Structure

The structure of the component service primitives is shown in Table 23.

10.22.1.1 Synchronization point serial number

This parameter corresponds to the Synchronization point serial number parameter of the session-service, see ITU-T Rec. X.215 | ISO/IEC 8326.

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Table 23 – P-SYNC-MAJOR service

Parameter name	Request	Indication	Response	Confirm
Synchronization point serial number	S	S		
User data	U	C(=)	U	C(=)

U	Presence of the parameter is a user option
C	Presence of the parameter is conditional
S	Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)
(=)	When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left
Blank	The parameter is not present

10.22.1.2 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

10.22.2 Major-synchronize procedure

Any previous P-SYNC-MINOR and P-SYNC-MAJOR shall be disregarded in evaluating future P-RESYNCHRONIZE and/or P-ACTIVITY-RESUME procedures.

10.23 P-RELEASE service

This service provides the PS-user with access to the S-RELEASE service of the Session Layer as described in ITU-T Rec. X.215 | ISO/IEC 8326. This service has effects which are sequenced with respect to preceding service invocations and is non-destructive.

This service is also used to terminate the presentation-connection in an orderly way.

10.23.1 Structure

The structure of the component service primitives is shown in Table 24.

Table 24 – P-RELEASE service

Parameter name	Request	Indication	Response	Confirm
Result			S	S
User data	U	C(=)	U	C(=)

U	Presence of the parameter is a user option
C	Presence of the parameter is conditional
S	Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)
(=)	When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left
Blank	The parameter is not present

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10.23.1.1 Result

This parameter corresponds to the Result parameter of the session-service, see ITU-T Rec. X.215 | ISO/IEC 8326.

10.23.1.2 User data

The presentation data values (including any embedded presentation data values) in this parameter are passed between PS-users and obey the rules of 10.1; the interpretation of this data is an Application Layer matter. No other significance is attached to this data by the presentation-service.

10.23.2 Release procedure

The presentation-connection is released when the session-connection is released, as described in ITU-T Rec. X.215 | ISO/IEC 8326.

NOTE – The procedures governing the behaviour of the P-RELEASE request, indication, response, and confirm presentation-service primitives correspond to those governing the behaviour described in ITU-T Rec. X.215 | ISO/IEC 8326 for the S-RELEASE request, indication, response and confirm session-service primitives, respectively.

10.24 P-UNIT-DATA service

This service is used to transmit a self-contained presentation-service-data-unit (PSDU) from one PSAP to another PSAP in a single presentation-service-access. The PSDU is self-contained in the sense that all of the information required to deliver the PSDU is presented to the presentation-service-provider, together with the user data to be transmitted, in a single service access.

10.24.1 Structure

The structure of the service primitives is shown in Table 25.

Table 25 – P-UNIT-DATA service

Parameter	Request	Indication
Calling-presentation-address	M	M
Called-presentation-address	M	M
Presentation context definition list	U	C(=)
Quality of service	S	
User data	M	M(=)

M	Presence of the parameter is mandatory
U	Presence of the parameter is a user option
C	Presence of the parameter is conditional
S	Parameter is as required by the session-service primitive which supports this service (see ITU-T Rec. X.215 | ISO/IEC 8326)
(=)	When appended to one of the above, the value of the parameter is equal to the value of the parameter indicated in the column to the left
Blank	The parameter is not present

10.24.1.1 Calling-presentation-address

This is a presentation-address (see ITU-T Rec. X.650 | ISO/IEC 7498-3).

10.24.1.2 Called-presentation-address

This is a presentation-address (see ITU-T Rec. X.650 | ISO/IEC 7498-3).

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10.24.1.3 Presentation context definition list

This parameter is present when the PS-user requires to send presentation data values using one or more presentation contexts supporting named abstract syntaxes. It consists of a list of one or more items; each item contains two components, a presentation context identification and an abstract syntax name.

The presentation context identification components of this parameter exist to distinguish presentation contexts in communication between the PS-users and the local presentation-entity. The unambiguous identification of the presentation context to be established is required. The way this is achieved in a real open system is an implementation matter.

NOTE – A separate presentation context is associated with each abstract syntax name in the list of names in the Presentation context definition list parameter. If the same name occurs more than once, a separate and distinctly identified presentation context is generated for each occurrence.

10.24.1.4 Quality of service

This parameter provides the PS-user with access to the Quality of service parameter of the session-service and is as described for that parameter in ITU-T Rec. X.215 | ISO/IEC 8326.

10.24.1.5 User data

This parameter is composed of one or more presentation data values (including any embedded presentation data values) from presentation contexts defined in the Presentation context definition list parameter, if present. If the Presentation context definition list parameter is not present, then the User data parameter is one or more presentation data values from the default context. The interpretation of this data is an application layer matter. No other significance is attached to the data by the presentation-service.

NOTE – The amount of user data which can be transferred is limited by the "session service" underlying the presentation service provider. See also ITU-T Rec. X.226 | ISO/IEC 8823.

10.24.2 Unit data procedure

10.24.2.1 The presentation-service-provider conveys the Calling-presentation-address, Called-presentation- address, and the User data parameters from the sending to the receiving PS-user.

10.24.2.2 If the presentation-service provider cannot support all the abstract syntaxes used in the user-data parameter of the request primitive, the indication primitive is not issued.

11 Sequences

This clause defines the interrelationships among the facilities and the services of the Presentation Layer.

It specifies for a service (or a group of "similar" services) under which conditions it/they may not be invoked at a particular PCEP, which service procedures are disrupted by the invocation of this/these service and which service invocations will disrupt the procedures of this/these service.

In addition, the following general rules apply:

a) Services may only be invoked if the corresponding functional unit has been selected during presentation-connection establishment. The services of the (session and presentation) kernel functional units are always available.

b) A service invocation is independent of any token unless it is specified otherwise in this clause.

Implicitly all sequencing rules of the session-service will apply, i.e. it is dependent on the mapping to the session-service which additional sequencing rules will apply. This ITU-T Recommendation | International Standard only specifies those sequencing rules which are not already determined by the session-service.

NOTE 1 – In particular, this implies that the P-ALTER-CONTEXT, P-TYPED-DATA, and P-DATA request service primitives should not be invoked if a P-SYNC-MAJOR, P-RESYNCHRONIZE, P-ACTIVITY-INTERRUPT, P-ACTIVITY-END, P-ACTIVITY-DISCARD or P-RELEASE confirm service primitive is awaited.

All sequences of service invocations which are not explicitly prohibited by this clause (and which are not prohibited by the session-service) are permitted and need not be explicitly specified in this clause.

NOTE 2 – The mapping of the presentation-service to the session-service is given in ITU-T Rec. X.226 | ISO/IEC 8823. The session-service (see ITU-T Rec. X.215 | ISO/IEC 8326) imposes sequencing rules which prevent the invocation of the P-ALTER-CONTEXT request or response service primitive while a P-SYNC-MAJOR, P-ACTIVITY-END, P-CAPABILITY-DATA or P-RELEASE confirm service primitive is awaited. Therefore, to avoid deadlock, the requestor of a P-ALTER-CONTEXT request service primitive should respond to a P-SYNC-MAJOR, P-ACTIVITY-END, P-CAPABILITY-DATA or P-RELEASE indication service primitive without awaiting the P-ALTER-CONTEXT confirm service primitive.

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11.1 P-CONNECT service

11.1.1 Type of service

This is a confirmed-service.

11.1.2 Invocation restrictions

This service cannot be invoked on an established presentation-connection.

11.1.3 Disrupted service procedures

This service does not disrupt any presentation-service procedures.

11.1.4 Disrupting services

The procedure of this service can be disrupted by the P-U-ABORT service or the P-P-ABORT service.

11.1.5 Other sequencing information

Simultaneous attempts by both PS-users to establish a presentation-connection are treated independently by the presentation-service-provider. Dependent on the actions of the PS-users, this may result in zero, one or two presentation-connections being established.

11.2 P-U-ABORT service

11.2.1 Type of service

This is a non-confirmed-service.

11.2.2 Invocation restrictions

This service can be invoked at any time by either PS-user.

11.2.3 Disrupted service procedures

This service disrupts all presentation-service procedures. In a collision of the P-P-ABORT service with the invocation of the P-U-ABORT service at one PCEP, the P-P-ABORT indication service primitive is only invoked at the peer PCEP.

In case of a collision between two invocations of the P-U-ABORT service, neither indication service primitive is delivered since the presentation-connection is already terminated at both ends.

11.2.4 Disrupting service

In case of a collision between two invocations of the P-U-ABORT service neither indication service primitive is delivered since the presentation-connection is already terminated at both ends.

In case of a collision of the P-P-ABORT service with the invocation of the P-U-ABORT service, the P-U-ABORT service procedure is disrupted.

11.3 P-P-ABORT service

11.3.1 Type of service

This is a provider-initiated-service.

11.3.2 Invocation restrictions

This service can be invoked at any time by the presentation-service-provider.

11.3.3 Disrupted service procedures

This service disrupts all presentation-service procedures.

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11.3.4 Disrupting service

In case of a collision of the P-P-ABORT service with the invocation of the P-U-ABORT service at one PCEP, the P-P-ABORT indication service primitive is only invoked at the peer PCEP.

11.4 P-ALTER-CONTEXT service

11.4.1 Type of service

This is a confirmed-service.

11.4.2 Invocation restrictions

These services may only be invoked on an established presentation-connection.

A P-ALTER-CONTEXT request service primitive shall not be invoked while awaiting a P-ALTER-CONTEXT confirm service primitive.

11.4.3 Disrupted service procedures

No presentation-service procedure is disrupted by this service.

11.4.4 Disrupting services

The procedure of this service can be disrupted by the P-U-ABORT, P-P-ABORT, P-U-EXCEPTION-REPORT, P-P-EXCEPTION-REPORT, P-RESYNCHRONIZE, P-ACTIVITY-INTERRUPT and P-ACTIVITY-DISCARD services.

If the presentation-connection is released, the P-ALTER-CONTEXT service procedure is disrupted.

11.4.5 Other sequencing restrictions

The following collisions of these services may occur P-ALTER-CONTEXT/P-ALTER-CONTEXT. These colliding services are treated independently by the presentation-service-provider.

11.5 P-TYPED-DATA and P-DATA services

11.5.1 Type of service

These are non-confirmed-services.

11.5.2 Invocation restrictions

These services may only be invoked on an established presentation-connection.

The P-DATA service may be subject to data token control.

11.5.3 Disrupted service procedures

No presentation-service procedure is disrupted by these services.

11.5.4 Disrupting services

The procedure of these services may be disrupted by the P-U-ABORT, P-P-ABORT, P-U-EXCEPTION-REPORT, P-RESYNCHRONIZE, P-P-EXCEPTION-REPORT, P-ACTIVITY-INTERRUPT and P-ACTIVITY-DISCARD services.

11.5.5 Context-dependent restrictions

If the DCS is empty when P-ALTER-CONTEXT confirm service primitive is awaited, then these services shall not be invoked.

11.6 P-CAPABILITY-DATA service

11.6.1 Type of service

This is a confirmed-service.

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11.6.2 Invocation restrictions

This service may only be invoked on an established presentation-connection.

The P-CAPABILITY-DATA service is subject to token control imposed by the session-service.

11.6.3 Disrupted service procedures

No presentation-service procedure is disrupted by this service.

11.6.4 Disrupting services

The procedure of this service may be disrupted by the P-U-ABORT, P-P-ABORT, P-U-EXCEPTION-REPORT, P-P-EXCEPTION-REPORT, and P-ACTIVITY-INTERRUPT services.

11.6.5 Context-dependent restrictions

If the DCS is empty when P-ALTER-CONTEXT confirm service primitive is awaited, then this service shall not be invoked.

11.7 P-EXPEDITED-DATA service

11.7.1 Type of service

This service is non-confirmed.

11.7.2 Invocation restrictions

No invocation restrictions beyond those imposed on this service by the session-service (see ITU-T Rec. X.215 | ISO/IEC 8326).

11.7.3 Disrupted service procedures

No presentation-service procedure is disrupted by this service.

11.7.4 Disrupting services

There are no sequencing rules in addition to those described by the session-service.

11.8 P-SYNC-MINOR, P-SYNC-MAJOR, P-RELEASE, P-ACTIVITY-START, P-PLEASE-TOKENS, P-GIVE-TOKENS, P-GIVE-CONTROL, P-ACTIVITY-END and P-ACTIVITY-RESUME services

11.8.1 Types of services

The types of these services are described in ITU-T Rec. X.215 | ISO/IEC 8326.

11.8.2 Invocation restrictions

In addition to the invocation restrictions imposed on these services by the session-service, when the context restoration functional unit has been selected, the following invocation restrictions apply:

P-SYNC-MINOR, P-SYNC-MAJOR, P-ACTIVITY-START, P-ACTIVITY-END and P-ACTIVITY-RESUME request service primitives shall not be invoked if a P-ALTER-CONTEXT confirm service primitive is awaited.

11.8.3 Disrupted service procedures

There are no sequencing rules in addition to those imposed by the session-service.

11.8.4 Disrupting services

There are no sequencing rules in addition to those described by the session-service.

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11.9 P-RESYNCHRONIZE, P-U-EXCEPTION-REPORT, P-P-EXCEPTION-REPORT, P-ACTIVITY-INTERRUPT and P-ACTIVITY-DISCARD services

11.9.1 Types of services

The types of these services are described in ITU-T Rec. X.215 | ISO/IEC 8326.

11.9.2 Disrupted service procedures

In addition to the sequencing rules described by the session-service, these services may disrupt the procedures of the context management and information transfer facilities of the presentation-service.

11.9.3 Disrupting services

There are no sequencing rules in addition to those described by the session-service.

11.10 P-UNIT-DATA service

11.10.1 Type of service

This service is non-confirmed.

11.10.2 Invocation restrictions

This service can be invoked at any time by either PS-user.

11.10.3 Disrupted service procedures

No presentation-service procedure is disrupted by these services.

11.10.4 Disrupting services

The procedure of these services cannot be disrupted by any presentation services.

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Annex A
(Normative)

Restrictions on the Use of the Presentation-service in X.410-1984 Mode
(This annex forms an integral part of this ITU-T Recommendation | International Standard)

The use of the X.410-1984 mode of operation of the Presentation Layer imposes some restrictions on the abstract syntax of presentation data values used in the User data parameters of certain presentation-service primitives.

A.1 P-CONNECT service

The User data parameters of these presentation-service primitives are restricted to a single presentation data value of ASN.1 type SET.

A.2 P-U-ABORT service

The User data parameters of these presentation-service primitives are restricted to a single presentation data value of ASN.1 type SET.

A.3 P-TOKEN-PLEASE service

The User data parameters of these presentation-service primitives are restricted to a single presentation data value of ASN.1 type INTEGER.

A.4 P-DATA service

The User data parameters of these presentation-service primitives are restricted to a single presentation data value of ASN.1 type OCTET STRING.

NOTE – The OCTET STRING value may have been produced by local application of the syntax-matching service (see 7.2.4.1 of ITU-T Rec. X.200 | ISO/IEC 7498) to a value of some other type. Such application is outside of the scope of this ITU-T Recommendation | International Standard.

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Annex B
(Normative)

Registration of Abstract Syntaxes

(This annex forms an integral part of this ITU-T Recommendation | International Standard)

B.1 Introduction

The identification of abstract syntaxes for use on a presentation-connection requires unambiguous naming of abstract syntaxes. This annex specifies the registration procedures for allocating such unambiguous identifiers to defined abstract syntaxes.

B.2 Naming of Abstract Syntaxes

This version of this ITU-T Recommendation | International Standard specifies the registration of abstract syntaxes to support information objects specified in International Standards, and information objects for which some organization has a need for abstract syntax. There is no requirement at this stage for an International Registration Authority for abstract syntaxes.

B.2.1 Registration in ITU-T Recommendations | International Standards

In some cases, the names of abstract syntax specifications are assigned in ITU-T Recommendations | International Standards referencing this ITU-T Recommendation | International Standard. The name shall be defined in accordance with ITU-T Rec. X.660 | ISO/IEC 9834-1, but need not reference ITU-T Rec. X.660 | ISO/IEC 9834-1. An International Registration Authority covering this type of information object is not currently intended.

B.2.2 Registration by some organization which has a need

In other cases, the assignment of names for abstract syntax specifications shall be in accordance with the general procedures and of the form specified in ITU-T Rec. X.660 | ISO/IEC 9834-1.

Organizations wishing to assign such names shall find an appropriate superior in the naming tree of ITU-T Rec. X.660 | ISO/IEC 9834-1 and request that an arc be assigned to them as a registration authority.

NOTE – Such "superiors" include ISO/IEC National Bodies, organizations with International Code Designators assigned in accordance with ISO 6523, telecommunications Administrations and ROAs, and organizations which have been delegated registration authority.

B.3 Form of registration of an abstract syntax

B.3.1 A registration of an abstract syntax shall include at least the following information:

a) the name assigned to the abstract syntax;

b) either the specification of the abstract syntax, or the reference to the document containing the specification.

Example 1 (where ASN.1 has been used so that the pdvs of the abstract syntax are the values of a single ASN.1 type):

"This ITU-T Recommendation | International Standard defines the ssss abstract syntax and assigns the object identifier value oooo to it. The set of presentation data values of the ssss abstract syntax consists of those values, and only those values, which are the possible values of the ASN.1 datatype aaaa, defined in clause cccc of this ITU-T Recommendation | International Standard. The transfer syntax {joint-iso-ccitt asn1 (1) basic-encoding (1)}, defined in ITU-T Rec. X.690 | ISO/IEC 8825, is an associated transfer syntax whose support is mandatory for implementations supporting the ssss abstract syntax."

ssss will be a local name for the abstract syntax, oooo the assigned object identifier, and aaaa the name of a single ASN.1 datatype. The mandated transfer syntax need not be that derived from ASN.1 Basic Encoding Rules. If some other transfer syntax is chosen, then the text should be adjusted accordingly.

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Example 2 (where the specification is an integrated one giving bit patterns and corresponding meanings in a plain language or other arbitrary specification):

"This document specifies the ssss abstract syntax. It is assigned the object identifier oooo by registration with XXXX according to the procedures of ISO/IEC 9834-1. The set of presentation data values of the ssss abstract syntax consists of those values, and only those values, specified below. The bit encodings for those presentation data values, also specified below constitute an associated transfer syntax named tttt, whose support is mandatory for implementations supporting the ssss abstract syntax. This transfer syntax is assigned the object identifier pppp by registration with XXXX according to the procedures of ITU-T Rec. X.660 | ISO/IEC 9834-1. It is (/is not) self-delimiting, for the purposes of ITU-T Rec. X.226 | ISO/IEC 8823-1."

tttt is the local name for the transfer syntax, and pppp the assigned object identifier. The text associated with the transfer syntax is intended to fulfil the requirements of ITU-T Rec. X.226 | ISO/IEC 8823-1 Annex B (Registration of transfer syntax). XXXX is the name of an organization which operates a registration authority according to the procedures of ISO/IEC 9834-1.

B.3.2 An abstract value is said to be **fully specified** if and only if the set of presentation data values that it contains has been unambiguously identified.

NOTE – Such identification may use a formal or semi-formal notation, or may use human-language text.

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Annex C
(Informative)

Corrections and enhancements incorporated in ITU-T Rec. X.216 | ISO/IEC 8822
(This annex does not form an integral part of this ITU-T Recommendation | International Standard)

C.1 ITU-T Recommendations and International Standards are subject to constant review and revision by the ITU-T Study Group and ISO/IEC Technical Committee concerned. This ITU-T Recommendation | International Standard includes corrections of all errors, ambiguities, and inconsistencies (collectively referred to as Defects) identified and approved by ITU-T SG7 | ISO/IEC JTC 1, during the period of publication of the first edition of CCITT Rec. X.216 | ISO 8822 (1988), and the date of publication of this ITU-T Recommendation | International Standard. The OSI presentation service has also been subject to a number of technical extensions, developed as Amendments to CCITT Rec. X.216 | ISO 8822 (1987).

C.2 The corrections incorporated in this ITU-T Recommendation | International Standard arose from the following Defect Reports[1]:

8822/001

8822/002

8822/003

8822/004

8822/005

8822/006

8822/007

C.3 The following amendments are incorporated in this ITU-T Recommendation | International Standard:

ISO/IEC 8822/AM1, Connectionless presentation service

ISO/IEC 8822/AM 2, Unlimited User Data

ISO/IEC 8822/AM 3, Procedures for the registration of abstract syntax

ISO/IEC 8822/AM 4, Symmetric synchronization

ISO/IEC 8822/AM 5, Additional session synchronization functionality

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[1] Copies of Defect Reports are obtainable from ISO/IEC JTC 1 Secretariat, American National Standards Institute, 1430 Broadway, New York, N.Y. 10018, U.S.A.

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ICS 35.100.60

Descriptors: data processing, information interchange, network interconnection, open systems interconnection, presentation layer, communication procedure, control procedures.

Price based on 41 pages

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