EUROPEAN TELECOMMUNICATION STANDARD

ETS 300 371

November 1994

Source: ETSI TC-TM

Reference: DE/TM-02208

ICS: 33.080

Key words: PDH, NE, information model

Transmission and Multiplexing (TM); Plesiochronous Digital Hierarchy (PDH) information model for the Network Element (NE) view

ETSI

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Contents

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Foreword

This European Telecommunication Standard (ETS) was produced by the Transmission and Multiplexing (TM) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS describes the information model for Network Elements (NEs), which use the Plesiochronous Digital Hierarchy (PDH) multiplexing structure.

Transposition dates	
Date of latest announcement of this ETS (doa):	28 February 1995
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 August 1995
Date of withdrawal of any conflicting National Standard (dow):	31 August 1995

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1 Scope

This European Telecommunication Standard (ETS) defines the information model to be used at the interface between Network Elements (NEs) and management systems, for the management of equipment which use the Plesiochronous Digital Hierarchy (PDH).

This ETS defines:

- the information model for network elements using PDH multiplexing, including PDH interfaces of Synchronous Digital Hierarchy (SDH) network elements.

This ETS does not define:

- the protocol stack to be used for message communication;
- the network level management processes;
- the application contexts;
- the conformance requirements to be met by an implementation of this information model;
- information models for other systems or equipment.

The information model defined in this ETS (and the corresponding message set) is concerned with the management of NEs, the equipment by which they are implemented and the functions contained within them. More precisely, it applies to an equipment domain visible at the element manager to element interface and is only concerned with information available within that domain. Information proper to the domain of a network level management process is not included within this model.

2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] ETS 300 337: "Transmission and Multiplexing (TM); Generic frame structures for the transport of various signals (including Asynchronous Transfer Mode (ATM) cells) at the CCITT Recommendation G.702 hierarchical rates of 2 048 kbit/s, 34 368 kbit/s and 139 264 kbit/s".

[2] CCITT Recommendation G.702 (1988): "Digital hierarchy bit rates".

[3] CCITT Recommendation M.3100 (1992): "Generic network information model".

[4] CCITT Recommendation X.721 (1992): "Information technology - Open Systems Interconnection - Structure of Management Information: Definition of management information".

3 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

AIS	Alarm Indication Signal
AP	Access Point
ASN.1	Abstract Syntax Notation One
ATM	Asynchronous Transfer Mode
CMIP	Common Management Information Protocol
CMIS	Common Management Information Service
CP	Connection Point
CTP	Connection Termination Point
EBER	Excessive Bit Error Ratio
FERF	Far End Receive Failure
LOF	Loss Of Frame
LOS	Loss Of Signal
NE	Network Element
OS	Operation System
OSI	Open System Interconnection
PDH	Plesiochronous Digital Hierarchy
Pkg	Package
PPA	Plesiochronous Physical Adaptation
PPI	Plesiochronous Physical Interface
PPT	Plesiochronous Physical Termination
RAI	Remote Alarm Indication
RDN	Relative Distinguished Name
SDH	Synchronous Digital Hierarchy
Snk	Sink
Src	Source
STM-N	Synchronous Transport Module N
TMN	Telecommunications Management Network
TP	Termination Point
TTP	Trail Termination Point
VC-n	Virtual Container n

4 Registration supporting Abstract Syntax Notation One (ASN.1) for ETS 300 371

```
ASN1TypeModule {ccitt(0) identified-organization(4) etsi(0) ets(371) informationModel(0)
asn1Module(2) asn1TypeModule(0)}
DEFINITIONS IMPLICIT TAGS                   ::= BEGIN
-- EXPORTS everything
eTS300371 OBJECT IDENTIFIER                 ::= {ccitt(0) identified-organization(4) etsi(0)
ets(371)
informationModel(0)}
etsObjectClass OBJECT IDENTIFIER            ::= {eTS300371 managedObjectClass(3)}
etsPackage OBJECT IDENTIFIER                ::= {eTS300371 package(4)}
etsNameBinding OBJECT IDENTIFIER            ::= {eTS300371 nameBinding(6)}
etsAttribute OBJECT IDENTIFIER              ::= {eTS300371 attribute(7)}
etsAction OBJECT IDENTIFIER                 ::= {eTS300371 action(9)}
etsNotification OBJECT IDENTIFIER           ::= {eTS300371 notification(10)}
END
```

5 PDH fragment

This clause provides managed objects required to model PDH interfaces.

5.1 Object classes definitions

5.1.1 Electrical PDH physical interface

This subclause describes the object classes required to model the PDH physical interface.

NOTE: Whether these require attributes to model more features (e.g. PDH level, line code, etc.) is for further study.

```
pPITTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM "CCITT Recommendation M.3100: 1992":trailTerminationPointBidirectional,
                                                 pPITTPSink,
                                                 pPITTPSource;
REGISTERED AS {etsObjectClass 1};


pPITTPSink MANAGED OBJECT CLASS
DERIVED FROM "CCITT Recommendation Recommendation M.3100:1992":trailTerminationPointSink;
CHARACTERIZED BY
       "CCITT Recommendation Recommendation M.3100:1992":administrativeOperationalStatesPackage,
       "CCITT Recommendation Recommendation M.3100:1992":createDeleteNotificationsPackage,
       "CCITT Recommendation Recommendation M.3100:1992":stateChangeNotificationPackage,
       "CCITT Recommendation Recommendation M.3100:1992":tmnCommunicationsAlarmInformationPkg,
       pPITTPSinkPkg PACKAGE
              BEHAVIOUR
              pPITTPSinkBehaviourPkg BEHAVIOUR
              DEFINED AS
              "This managed object class represents the point where the incoming interface
              signal is converted into an internal logic level and the timing is recovered from
              the line signal.
              The upStream connectivity pointer is NULL for an instance of this class.
              A communicationsAlarm notification shall be issued if a Loss of Signal (LOS) is
              detected. The probableCause parameter of the notification shall indicate LOS.
              The operational state is disabled if a LOS is detected";;
       ATTRIBUTES
       pPITTPId                    GET;;;
REGISTERED AS {etsObjectClass 2};


pPITTPSource MANAGED OBJECT CLASS
DERIVED FROM "CCITT Recommendation M.3100:1992":trailTerminationPointSource;
CHARACTERIZED BY
       "CCITT Recommendation M.3100:1992":createDeleteNotificationsPackage,
       pPITTPSourcePkg PACKAGE
              BEHAVIOUR
              pPITTPSourceBehaviourPkg BEHAVIOUR
                       DEFINED AS
                       "This managed object class represents the point where the internal logic
                       level and the timing is converted into a line signal.
                       The downStream connectivity pointer is NULL for an instance of this
                       class.";;
       ATTRIBUTES
       pPITTPId                    GET;;;
REGISTERED AS {etsObjectClass 3};
```

5.1.2 European PDH Alarm Indication Signal (AIS) trail termination point

This generic object class represents a particular case of termination point used in a managed element where no connectivity at respective level is provided. Instances of this object class are used when, in one layer, no flexibility is provided, but a direct adaptation to client is present.

The sink object class includes the AIS monitoring function of a respective Connection Termination Point (CTP) which is not instantiated where no connectivity on the respective level is provided. A communicationsAlarm notification shall be issued if an AIS is detected. The probableCause parameter of the notification shall indicate AIS.

Object classes inherited from this class are labelled according to the European PDH hierarchy (exTP, where:

Table 1

Value of x	Bit rate
0	64 kbit/s
1	2 Mbit/s
2	8 Mbit/s
3	34 Mbit/s
4	140 Mbit/s

NOTE: The possibility of adding conditional packages (present if the equipment supports the features) in order to model the capability to reveal Far End Receive Failure (FERF) and Excessive Bit Error Ratio (EBER) is for further study.

```
ePDHATTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPSink;
CHARACTERIZED BY
ePDHTPSinkPkg PACKAGE
BEHAVIOUR ePDHATTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class includes the AIS monitoring function of a respective
                        CTP which is not instantiated where no connectivity on the respective
                        level is provided.
                        A communicationsAlarm notification shall be issued if an AIS is detected.
                        The probableCause parameter of the notification shall indicate AIS.
                        An instance of this object class is used when, in one layer, no
                        flexibility is provided, but a direct adaptation to client is present.
                        The upStream connectivity pointer attribute value of an instance of this
                        object class is equal to NULL.
                        The operational state is disabled when an AIS is detected.";;;;
REGISTERED AS {etsObjectClass 4};


ePDHATTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPSource;
CHARACTERIZED BY
ePDHTPSourcePkg PACKAGE
BEHAVIOUR ePDHATTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "The downStream connectivity pointer attribute value of an instance of
                        this object class is equal to NULL.";;;;
REGISTERED AS {etsObjectClass 5};


ePDHATTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPBidirectional,
                        ePDHATTPSink,
                        ePDHATTPSource;
REGISTERED AS {etsObjectClass 6};
```

5.1.3 European PDH connection termination point

This subclause describes an object class (sink, source or bidirectional) which represents the model for a generic PDH connection termination point (64 kbit/s, 2 Mbit/s, 8 Mbit/s, 34 Mbit/s and 140 Mbit/s).

Object classes inherited from this class are labelled according to the European PDH hierarchy (exTP, where:

Table 2

Value of x	Bit rate
0	64 kbit/s
1	2 Mbit/s
2	8 Mbit/s
3	34 Mbit/s
4	140 Mbit/s

```
ePDHCTPSink MANAGED OBJECT CLASS
DERIVED FROM "CCITT Recommendation M.3100:1992":connectionTerminationPointSink;
CHARACTERIZED BY
"CCITT Recommendation M.3100:1992":createDeleteNotificationsPackage,
"CCITT Recommendation M.3100:1992":operationalStatePackage,
"CCITT Recommendation M.3100:1992":stateChangeNotificationPackage,
"CCITT Recommendation M.3100:1992":tmnCommunicationsAlarmInformationPkg,
ePDHCTPSinkPkg PACKAGE
                  BEHAVIOUR ePDHCTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class represents the termination of a PDH hierarchy
                        connection. A communicationsAlarm notification shall be issued if an AIS
                        is detected. The probableCause parameter of the notification shall
                        indicate AIS. An instance of this object class shall be used when, in one
                        layer, flexibility is available or when there is no adaptation to client.
                        The operationalState is disabled when an AIS is
                        detected.";;

       ATTRIBUTES
       ePDHCTPId             GET;;;
REGISTERED AS {etsObjectClass 7};


ePDHCTPSource MANAGED OBJECT CLASS
DERIVED FROM "CCITT Recommendation M.3100:1992":connectionTerminationPointSource;
CHARACTERIZED BY
"CCITT Recommendation M.3100:1992":createDeleteNotificationsPackage,
ePDHCTPSourcePkg PACKAGE
BEHAVIOUR
ePDHCTPSourceBehaviourPkg BEHAVIOUR
DEFINED AS
"This object class originates a PDH hierarchy connection.";;

       ATTRIBUTES
       ePDHCTPId             GET;;;
REGISTERED AS {etsObjectClass 8};


ePDHCTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM "CCITT Recommendation M.3100:1992":connectionTerminationPointBidirectional,
              ePDHCTPSink,
              ePDHCTPSource;
REGISTERED AS {etsObjectClass 9};
```

5.1.4 European PDH trail termination point

This subclause describes an object class (sink, source or bidirectional) which represents the model for a generic PDH trail termination point (64 kbit/s, 2 Mbit/s, 8 Mbit/s, 34 Mbit/s and 140 Mbit/s).

Object classes inherited from this class are labelled according to the European PDH hierarchy (exTP, where:

Table 3

Value of x	Bit rate
0	64 kbit/s
1	2 Mbit/s
2	8 Mbit/s
3	34 Mbit/s
4	140 Mbit/s

```
ePDHTTPSink MANAGED OBJECT CLASS
DERIVED FROM "CCITT Recommendation M.3100:1992":trailTerminationPointSink;
CHARACTERIZED BY
       "CCITT Recommendation X.721: 1991":administrativeStatePackage,
       "CCITT Recommendation M.3100:1992":operationalStatePackage,
       "CCITT Recommendation M.3100:1992":createDeleteNotificationsPackage,
       "CCITT Recommendation M.3100:1992":stateChangeNotificationPackage,
       "CCITT Recommendation M.3100:1992":tmnCommunicationsAlarmInformationPkg,
       ePDHTTPSinkPkg PACKAGE
              BEHAVIOUR ePDHTTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class represents the termination of a PDH trail. A
                        communicationsAlarm notification shall be issued if a Loss Of Frame (LOF)
                        is detected. The probableCause parameter of the notification shall
                        indicate LOF.
                        The operationalState is disabled when a LOF is detected.";;
```

```
        ATTRIBUTES
        ePDHTTPId      GET;;;
REGISTERED AS {etsObjectClass 10};


ePDHTTPSource MANAGED OBJECT CLASS
DERIVED FROM "CCITT Recommendation M.3100:1992":trailTerminationPointSource;
CHARACTERIZED BY
        "CCITT Recommendation M.3100:1992":createDeleteNotificationsPackage,
        ePDHTTPSourcePkg PACKAGE
                BEHAVIOUR ePDHTTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a PDH hierarchy trail.";;

        ATTRIBUTES
        ePDHTTPId      GET;;;
REGISTERED AS {etsObjectClass 11};


ePDHTTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM "CCITT Recommendation M.3100:1992":trailTerminationPointBidirectional,
        ePDHTTPSink,
        ePDHTTPSource;
CHARACTERIZED BY
        ePDHTTPBidirectionalPkg PACKAGE
                BEHAVIOUR ePDHTTPBidirectionalBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "A communicationsAlarm notification shall be issued if a Remote Alarm
                        Indication (RAI) is detected. The probableCause parameter of the
                        notification shall indicate RAI. Detection of a RAI has no effect on the
                        operationalState.";;;;
REGISTERED AS {etsObjectClass 12};
```

5.1.5 European PDH TTP's for transport SDH VC's and ATM cells

This generic object class models the PDH trail used to transport SDH VC's and ATM cells and the label Int stands for **interworking**.

```
ePDHIntTTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPSink;
        CHARACTERIZED BY
        ePDHIntTTPSinkPkg      PACKAGE
                BEHAVIOUR ePDHIntTTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a ETS 300 337 trail transporting ATM cells
                        or SDH elements. A communicationsAlarm notification shall be issued if
                        the trail trace received (TR byte) does not match the trail trace
                        expected. The probableCause parameter of the notification shall indicate
                        trail trace mismatch.";;

        ATTRIBUTES
        trTrailTraceExpected          GET-REPLACE,
        trTrailTraceReceived          GET;;;
REGISTERED AS {etsObjectClass 13};


ePDHIntTTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPSource;
        CHARACTERIZED BY
        ePDHIntTTPSourcePkg PACKAGE
                BEHAVIOUR ePDHIntTTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a ETS 300 337 trail transporting ATM cells
                        or SDH elements.";;

        ATTRIBUTES
        trTrailTraceSend                      GET-REPLACE;;;
REGISTERED AS {etsObjectClass 14};


ePDHIntTTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPBidirectional,
                ePDHIntTTPSink,
                ePDHIntTTPSource;
REGISTERED AS {etsObjectClass 15};
```

5.1.6 140 Mbit/s object classes

```
e4ATTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPSink;
```

```
CHARACTERIZED BY
        e4ATTPSinkPkg PACKAGE
                BEHAVIOUR e4ATTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a CCITT Recommendation G.702 140 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 16};


e4ATTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPSource;
CHARACTERIZED BY
        e4ATTPSourcePkg PACKAGE
                BEHAVIOUR e4ATTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a CCITT Recommendation G.702 140 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 17};


e4ATTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPBidirectional,
                e4ATTPSink,
                e4ATTPSource;
REGISTERED AS {etsObjectClass 18};


e4CTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHCTPSink;
CHARACTERIZED BY
        e4CTPSinkPkg PACKAGE
                BEHAVIOUR e4CTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a CCITT Recommendation G.702 140 Mbit/s
                        connection.";;;;
REGISTERED AS {etsObjectClass 19};


e4CTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHCTPSource;
CHARACTERIZED BY
        e4CTPSourcePkg PACKAGE
                BEHAVIOUR e4CTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a CCITT Recommendation G.702 140 Mbit/s
                        connection.";;;;
REGISTERED AS {etsObjectClass 20};


e4CTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHCTPBidirectional,
                e4CTPSink,
                e4CTPSource;
REGISTERED AS {etsObjectClass 21};


e4TTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPSink;
CHARACTERIZED BY
        e4TTPSinkPkg PACKAGE
                BEHAVIOUR e4TTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a CCITT Recommendation G.702 140 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 22};


e4TTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPSource;
CHARACTERIZED BY
        e4TTPSourcePkg PACKAGE
                BEHAVIOUR e4TTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a CCITT Recommendation G.702 140 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 23};


e4TTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPBidirectional,
                e4TTPSink,
                e4TTPSource;
REGISTERED AS {etsObjectClass 24};
```

```
e4IntTTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHIntTTPSink;
CHARACTERIZED BY
        e4IntTTPSinkPkg PACKAGE
                BEHAVIOUR e4IntTTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a ETS 300 337 140 Mbit/s trail transporting
                        ATM cells or SDH elements.";;;;

REGISTERED AS {etsObjectClass 25};


e4IntTTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHIntTTPSource;
CHARACTERIZED BY
        e4IntTTPSourcePkg PACKAGE
                BEHAVIOUR e4IntTTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a ETS 300 337 140 Mbit/s trail transporting
                        ATM cells or SDH elements.";;;;

REGISTERED AS {etsObjectClass 26};


e4IntTTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHIntTTPBidirectional,
                e4IntTTPSink,
                e4IntTTPSource;
REGISTERED AS {etsObjectClass 27};
```

5.1.7 34 Mbit/s object classes

```
e3ATTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPSink;
CHARACTERIZED BY
        e3ATTPSinkPkg PACKAGE
                BEHAVIOUR e3ATTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a CCITT Recommendation G.702 34 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 28};


e3ATTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPSource;
CHARACTERIZED BY
        e3ATTPSourcePkg PACKAGE
                BEHAVIOUR e3ATTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a CCITT Recommendation G.702 34 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 29};


e3ATTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPBidirectional,
                e3ATTPSink,
                e3ATTPSource;
REGISTERED AS {etsObjectClass 30};


e3CTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHCTPSink;
CHARACTERIZED BY
        e3CTPSinkPkg PACKAGE
                BEHAVIOUR e3CTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a CCITT Recommendation G.702 34 Mbit/s
                        connection.";;;;
REGISTERED AS {etsObjectClass 31};


e3CTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHCTPSource;
CHARACTERIZED BY
        e3CTPSourcePkg PACKAGE
                BEHAVIOUR e3CTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a CCITT Recommendation G.702 34 Mbit/s
                        connection.";;;;
REGISTERED AS {etsObjectClass 32};
```

```
e3CTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHCTPBidirectional,
               e3CTPSink,
               e3CTPSource;
REGISTERED AS {etsObjectClass 33};


e3TTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPSink;
CHARACTERIZED BY
        e3TTPSinkPkg PACKAGE
                BEHAVIOUR e3TTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a CCITT Recommendation G.702 34 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 34};


e3TTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPSource;
CHARACTERIZED BY
        e3TTPSourcePkg PACKAGE
                BEHAVIOUR e3TTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a CCITT Recommendation G.702 34 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 35};


e3TTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPBidirectional,
               e3TTPSink,
               e3TTPSource;
REGISTERED AS {etsObjectClass 36};


e3IntTTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHIntTTPSink;
CHARACTERIZED BY
        e3IntTTPSinkPkg PACKAGE
                BEHAVIOUR e3IntTTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a ETS 300 337 34 Mbit/s trail transporting
                        ATM cells or SDH elements.";;;;

REGISTERED AS {etsObjectClass 37};


e3IntTTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHIntTTPSource;
CHARACTERIZED BY
        e3IntTTPSourcePkg PACKAGE
                BEHAVIOUR e3IntTTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a ETS 300 337 34 Mbit/s trail transporting
                        ATM cells or SDH elements.";;;;

REGISTERED AS {etsObjectClass 38};


e3IntTTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHIntTTPBidirectional,
               e3IntTTPSink,
               e3IntTTPSource;
REGISTERED AS {etsObjectClass 39};
```

5.1.8 8 Mbit/s object classes

```
e2ATTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPSink;
CHARACTERIZED BY
        e2ATTPSinkPkg PACKAGE
                BEHAVIOUR e2ATTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a CCITT Recommendation G.702 8 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 40};
```

```
e2ATTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPSource;
CHARACTERIZED BY
        e2ATTPSourcePkg PACKAGE
                BEHAVIOUR e2ATTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a CCITT Recommendation G.702 8 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 41};


e2ATTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPBidirectional,
                e2ATTPSink,
                e2ATTPSource;
REGISTERED AS {etsObjectClass 42};


e2CTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHCTPSink;
CHARACTERIZED BY
        e2CTPSinkPkg PACKAGE
                BEHAVIOUR e2CTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a CCITT Recommendation G.702 8 Mbit/s
                        connection.";;;;
REGISTERED AS {etsObjectClass 43};


e2CTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHCTPSource;
CHARACTERIZED BY
        e2CTPSourcePkg PACKAGE
                BEHAVIOUR e2CTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a CCITT Recommendation G.702 8 Mbit/s
                        connection.";;;;
REGISTERED AS {etsObjectClass 44};


e2CTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHCTPBidirectional,
                e2CTPSink,
                e2CTPSource;
REGISTERED AS {etsObjectClass 45};


e2TTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPSink;
CHARACTERIZED BY
        e2TTPSinkPkg PACKAGE
                BEHAVIOUR e2TTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a CCITT Recommendation G.702 8 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 46};


e2TTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPSource;
CHARACTERIZED BY
        e2TTPSourcePkg PACKAGE
                BEHAVIOUR e2TTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a CCITT Recommendation G.702 8 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 47};


e2TTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPBidirectional,
                e2TTPSink,
                e2TTPSource;
REGISTERED AS {etsObjectClass 48};
```

5.1.9 2 Mbit/s object classes

```
e1ATTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPSink;
CHARACTERIZED BY
        e1ATTPSinkPkg PACKAGE
                BEHAVIOUR e1ATTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a CCITT Recommendation G.702 2 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 49};


e1ATTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPSource;
CHARACTERIZED BY
        e1ATTPSourcePkg PACKAGE
                BEHAVIOUR e1ATTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a CCITT Recommendation G.702 2 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 50};

e1ATTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHATTPBidirectional,
                e1ATTPSink,
                e1ATTPSource;
REGISTERED AS {etsObjectClass 51};


e1CTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHCTPSink;
CHARACTERIZED BY
        e1CTPSinkPkg PACKAGE
                BEHAVIOUR e1CTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a CCITT Recommendation G.702 2 Mbit/s
                        connection.";;;;
REGISTERED AS {etsObjectClass 52};


e1CTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHCTPSource;
CHARACTERIZED BY
        e1CTPSourcePkg PACKAGE
                BEHAVIOUR e1CTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a CCITT Recommendation G.702 2 Mbit/s
                        connection.";;;;
REGISTERED AS {etsObjectClass 53};


e1CTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHCTPBidirectional,
                e1CTPSink,
                e1CTPSource;
REGISTERED AS {etsObjectClass 54};


e1TTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPSink;
CHARACTERIZED BY
        e1TTPSinkPkg PACKAGE
                BEHAVIOUR e1TTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class terminates a CCITT Recommendation G.702 2 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 55};


e1TTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPSource;
CHARACTERIZED BY
        e1TTPSourcePkg PACKAGE
                BEHAVIOUR e1TTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "This object class originates a CCITT Recommendation G.702 2 Mbit/s
                        trail.";;;;
REGISTERED AS {etsObjectClass 56};
```

```
e1TTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPBidirectional,
               e1TTPSink,
               e1TTPSource;
REGISTERED AS {etsObjectClass 57};
```

5.1.10 64 kbit/s object classes

```
e0CTPSink MANAGED OBJECT CLASS
DERIVED FROM "CCITT Recommendation M.3100:1992":connectionTerminationPointSink;
CHARACTERIZED BY
        "CCITT Recommendation M.3100:1992":createDeleteNotificationsPackage,
        "CCITT Recommendation M.3100:1992":operationalStatePackage,
        "CCITT Recommendation M.3100:1992":stateChangeNotificationPackage,

        e0CTPSinkPkg PACKAGE
                BEHAVIOUR e0CTPSinkBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "An instance of this object class terminates a 64 kbit/s connection.
                        Where additional features are requested and supported by the equipment,
                        appropriate subclassing is recommended (e.g. where monitoring is
                        required, the tmnCommunicationsAlarmInformationPkg should be included)";;

        ATTRIBUTES
        e0CTPId                 GET;;;
REGISTERED AS {etsObjectClass 58};


e0CTPSource MANAGED OBJECT CLASS
DERIVED FROM "CCITT Recommendation M.3100:1992":connectionTerminationPointSource;
CHARACTERIZED BY
        "CCITT Recommendation M.3100:1992":createDeleteNotificationsPackage,
        e0CTPSourcePkg PACKAGE
                BEHAVIOUR e0CTPSourceBehaviourPkg BEHAVIOUR
                        DEFINED AS
                        "An instance of this object class originates a 64 kbit/s connection.";;

        ATTRIBUTES
        e0CTPId                 GET;;;
REGISTERED AS {etsObjectClass 59};


e0CTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM "CCITT Recommendation M.3100:1992":connectionTerminationPointBidirectional,
               e0CTPSink,
               e0CTPSource;
REGISTERED AS {etsObjectClass 60};
```

5.2 Attributes definitions

```
pPITTPId ATTRIBUTE
WITH ATTRIBUTE SYNTAX  ASN1DefinedTypesModule1.NameType;
MATCHES FOR EQUALITY;
        BEHAVIOUR
        pPITTPIdBehaviour BEHAVIOUR
        DEFINED AS
        "This attribute is used as a Relative Distinguished Name (RDN) for naming instances of the
        pPITTP object classes.";;;;
REGISTERED AS {etsAttribute 1};

ePDHCTPId ATTRIBUTE
WITH ATTRIBUTE SYNTAX  ASN1DefinedTypesModule1.NameType;
MATCHES FOR EQUALITY;
        BEHAVIOUR
        ePDHCTPIdBehaviour BEHAVIOUR
        DEFINED AS
        "This attribute is used as a RDN for naming instances of the ePDHCTP object classes.";;;;
REGISTERED AS {etsAttribute 2};


ePDHTTPId ATTRIBUTE
WITH ATTRIBUTE SYNTAX  ASN1DefinedTypesModule1.NameType;
MATCHES FOR EQUALITY;
        BEHAVIOUR
        ePDHTTPIdBehaviour BEHAVIOUR
        DEFINED AS
        "This attribute is used as a RDN for naming instances of the ePDHTTP object classes.";;;;
REGISTERED AS {etsAttribute 3};
```

```
trTrailTraceExpected ATTRIBUTE
WITH ATTRIBUTE SYNTAX  ASN1DefinedTypesModule1.TrailTrace;
MATCHES FOR EQUALITY;
        BEHAVIOUR
        trTrailTraceExpectedBehaviour BEHAVIOUR
        DEFINED AS
        "This attribute is used to specify the value of the expected TR byte PDH trail trace 16
        bytes message for instances of the e3IntTTP and e4IntTTP object class.";;;;
REGISTERED AS {etsAttribute 4};


trTrailTraceReceive ATTRIBUTE
WITH ATTRIBUTE SYNTAX  ASN1DefinedTypesModule1.TrailTrace;
MATCHES FOR EQUALITY;
        BEHAVIOUR
        trTrailTraceReceiveBehaviour BEHAVIOUR
        DEFINED AS
        "This attribute is used to know the value of the incoming TR byte PDH trail trace 16 bytes
        message for instances of the e3IntTTP and e4IntTTP object class.";;;;
REGISTERED AS {etsAttribute 5};


trTrailTraceSend ATTRIBUTE
WITH ATTRIBUTE SYNTAX  ASN1DefinedTypesModule1.TrailTrace;
MATCHES FOR EQUALITY;
        BEHAVIOUR
        trTrailTraceSendBehaviour BEHAVIOUR
        DEFINED AS
        "This attribute is used to specify the value of the outgoing TR byte PDH trail trace 16
        bytes message for instances of the e3IntTTP and eg4IntTTP object class.";;;;
REGISTERED AS {etsAttribute 6};


e0CTPId ATTRIBUTE
WITH ATTRIBUTE SYNTAX  ASN1DefinedTypesModule1.NameType;
MATCHES FOR EQUALITY;
        BEHAVIOUR
        e0CTPIdBehaviour BEHAVIOUR
        DEFINED AS
        "This attribute is used as a RDN for naming instances of the e0CTP object classes.";;;;
REGISTERED AS {etsAttribute 7};
```

5.3 Name bindings definitions

```
pPITTPSink-managedElement NAME BINDING
        SUBORDINATE OBJECT CLASS pPITTPSink AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         managedElement AND SUBCLASSES;
        WITH ATTRIBUTE                pPITTPId;
                BEHAVIOUR pPITTPSink-managedElement BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 1};


pPITTPSource-managedElement NAME BINDING
        SUBORDINATE OBJECT CLASS pPITTPSource AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         managedElement AND SUBCLASSES;
        WITH ATTRIBUTE                pPITTPId;
                BEHAVIOUR pPITTPSource-managedElement BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 2};


ePDHTTPSink-managedElement NAME BINDING
        SUBORDINATE OBJECT CLASS ePDHTTPSink AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         managedElement AND SUBCLASSES;
        WITH ATTRIBUTE                ePDHTTPId;
                BEHAVIOUR ePDHTTPSink-managedElement BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 3};
```

```
ePDHTTPSource-managedElement NAME BINDING
        SUBORDINATE OBJECT CLASS ePDHTTPSource AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         managedElement AND SUBCLASSES;
        WITH ATTRIBUTE                ePDHTTPID;
                BEHAVIOUR ePDHCTPSource-managedElement BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 4};


ePDHCTPSink-pPITTPSink NAME BINDING
        SUBORDINATE OBJECT CLASS ePDHCTPSink AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         pPITTPSink AND SUBCLASSES;
        WITH ATTRIBUTE                ePDHCTPId;
                BEHAVIOUR ePDHCTPSink-pPITTPSink BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 5};


ePDHCTPSource-pPITTPSource NAME BINDING
        SUBORDINATE OBJECT CLASS ePDHCTPSource AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         pPITTPSource AND SUBCLASSES;
        WITH ATTRIBUTE                ePDHCTPId;
                BEHAVIOUR ePDHCTPSource-pPITTPSource BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 6};


e0CTPSink-pPITTPSink NAME BINDING
        SUBORDINATE OBJECT CLASS e0CTPSink AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         pPITTPSink AND SUBCLASSES;
        WITH ATTRIBUTE                e0CTPId;
                BEHAVIOUR e0CTPSink-pPITTPSink BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 7};


e0CTPSource-pPITTPSource NAME BINDING
        SUBORDINATE OBJECT CLASS e0CTPSource AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         pPPITTPSource AND SUBCLASSES;
        WITH ATTRIBUTE                e0CTPId;
                BEHAVIOUR e0CTPSource-pPITTPSource BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 8};


ePDHCTPSink-ePDHTTPSink NAME BINDING
        SUBORDINATE OBJECT CLASS ePDHCTPSink AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         ePDHTTPSink AND SUBCLASSES;
        WITH ATTRIBUTE                ePDHCTPId;
                BEHAVIOUR ePDHCTPSink-ePDHTTPSink BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 9};
```

```
ePDHCTPSource-ePDHTTPSource NAME BINDING
        SUBORDINATE OBJECT CLASS ePDHCTPSource AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         ePDHTTPSource AND SUBCLASSES;
        WITH ATTRIBUTE                ePDHCTPId;
                BEHAVIOUR ePDHCTPSource-ePDHTTPSource BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 10};


e0CTPSink-e1TTPSink NAME BINDING
        SUBORDINATE OBJECT CLASS e0CTPSink AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         e1TTPSink AND SUBCLASSES;
        WITH ATTRIBUTE                e0CTPId;
                BEHAVIOUR e0CTPSink-e1TTPSink BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 11};


e0CTPSource-e1TTPSource NAME BINDING
        SUBORDINATE OBJECT CLASS e0CTPSource AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         e1TTPSource AND SUBCLASSES;
        WITH ATTRIBUTE                e0CTPId;
                BEHAVIOUR e0CTPSource-e1TTPSource BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 12};


ePDHATTPSink-pPITTPSink NAME BINDING
        SUBORDINATE OBJECT CLASS ePDHATTPSink AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         pPITTPSink AND SUBCLASSES;
        WITH ATTRIBUTE                ePDHTTPId;
                BEHAVIOUR ePDHATTPSink-pPITTPSink BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 13};


ePDHATTPSource-pPITTPSource NAME BINDING
        SUBORDINATE OBJECT CLASS ePDHATTPSource AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         pPITTPSource AND SUBCLASSES;
        WITH ATTRIBUTE                ePDHTTPId;
                BEHAVIOUR ePDHATTPSink-pPITTPSource BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 14};


e0CTPSink-e1ATTPSink NAME BINDING
        SUBORDINATE OBJECT CLASS e0CTPSink AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         e1ATTPSink AND SUBCLASSES;
        WITH ATTRIBUTE                e0CTPId;
                BEHAVIOUR e0CTPSink-e1ATTPSink BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of
                        the equipment.";;
REGISTERED AS {etsNameBinding 15};
```

```
e0CTPSource-e1ATTPSource NAME BINDING
        SUBORDINATE OBJECT CLASS e0CTPSource AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         e1ATTPSource AND SUBCLASSES;
        WITH ATTRIBUTE                e0CTPId;
                BEHAVIOUR e0CTPSource-e1ATTPSource BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 16};


e3ATTPSink-e4ATTPSink NAME BINDING
        SUBORDINATE OBJECT CLASS e3ATTPSink AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         e4ATTPSink AND SUBCLASSES;
        WITH ATTRIBUTE                ePDHTTPId;
                BEHAVIOUR e3ATTPSink-e4ATTPSink BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 17};


e3ATTPSource-e4ATTPSource NAME BINDING
        SUBORDINATE OBJECT CLASS e3ATTPSource AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         e4ATTPSource AND SUBCLASSES;
        WITH ATTRIBUTE                ePDHTTPId;
                BEHAVIOUR e3ATTPSource-e4ATTPSource BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 18};


e2ATTPSink-e3ATTPSink NAME BINDING
        SUBORDINATE OBJECT CLASS e2ATTPSink AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         e3ATTPSink AND SUBCLASSES;
        WITH ATTRIBUTE                ePDHTTPId;
                BEHAVIOUR e2ATTPSink-e3ATTPSink BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 19};


e2ATTPSource-e3ATTPSource NAME BINDING
        SUBORDINATE OBJECT CLASS e2ATTPSource AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         e3ATTPSource AND SUBCLASSES;
        WITH ATTRIBUTE                ePDHTTPId;
                BEHAVIOUR e2ATTPSource-e3ATTPSource BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 20};


e1ATTPSink-e2ATTPSink NAME BINDING
        SUBORDINATE OBJECT CLASS      e1ATTPSink AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         e2ATTPSink AND SUBCLASSES;
        WITH ATTRIBUTE                ePDHTTPId;
                BEHAVIOUR e1ATTPSink-e2ATTPSink BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 21};
```

```
e1ATTPSource-e2ATTPSource NAME BINDING
        SUBORDINATE OBJECT CLASS e1ATTPSource AND SUBCLASSES;
        NAMED BY
        SUPERIOR OBJECT CLASS         e2ATTPSource;
        WITH ATTRIBUTE                ePDHTTPId;
                BEHAVIOUR e1ATTPSource-e2ATTPSource BEHAVIOUR
                        DEFINED AS
                        "The subordinate managed object may be automatically instantiated when
                        the superior managed object is instantiated, according to the make-up and
                        mode of operation of the equipment.";;
REGISTERED AS {etsNameBinding 22};
```

5.4 ASN.1 definitions

```
ASN1DefinedTypesModule1 {ccitt(0) identified-organization(4) etsi(0) ets(371) informationModel(0)
asn1Module(2) asn1DefinedTypesModule1(1)}
DEFINITIONS IMPLICIT TAGS ::=
BEGIN
-- EXPORTS everything
IMPORTS

NameType FROM ASN1DefinedTypesModule {ccitt(0) recommendation(0) m(13) m3100(3100)
informationModel(0)
asn1Module(2) asn1DefinedTypesModule(0)};

TrailTrace ::= CHOICE {
        null           NULL,
        pathtrace      [1]     GraphicString
                    }

END -- end of ASN1DefinedTypesModule
```

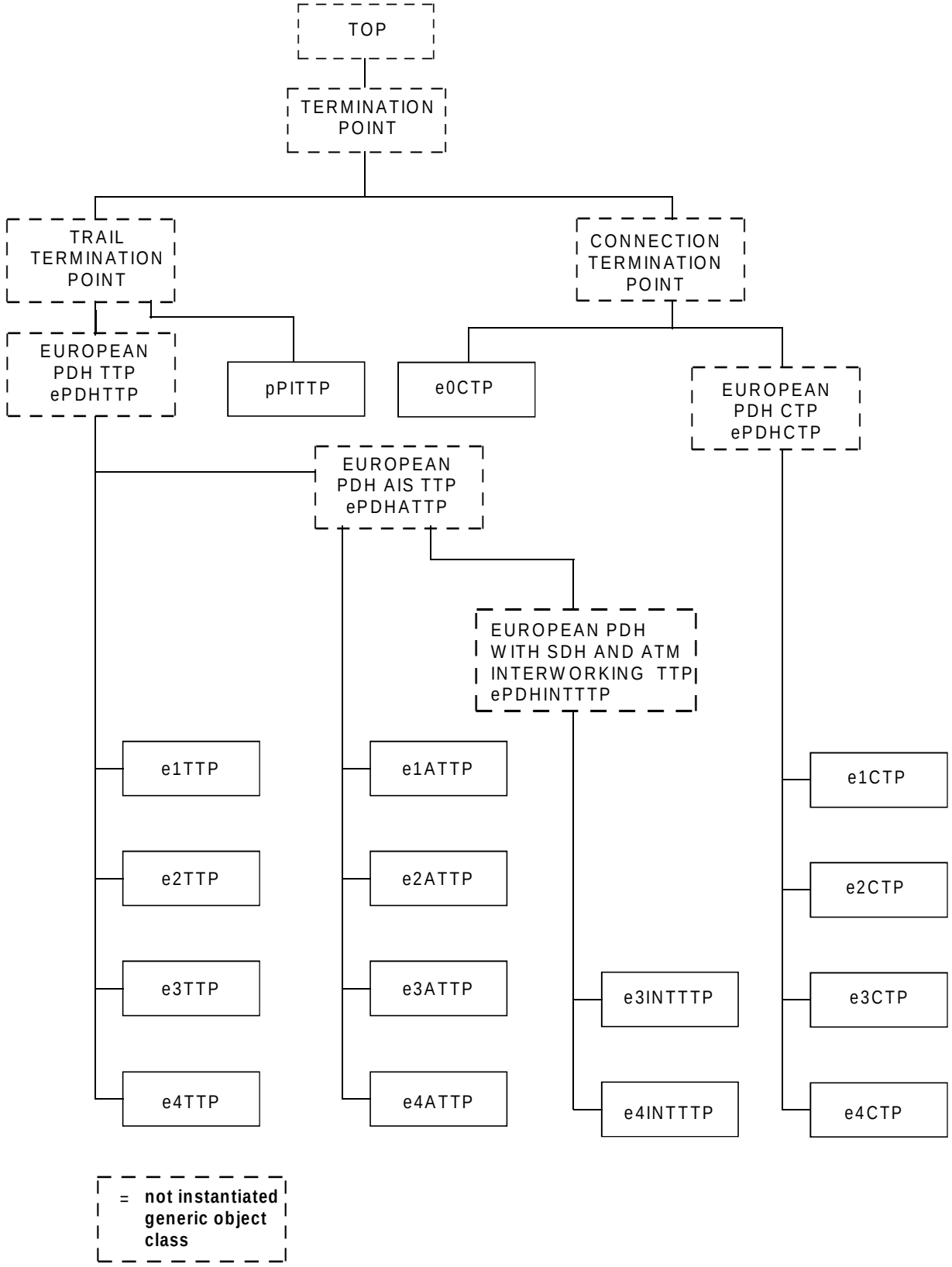

Figure 1: PDH transport object inheritance (all PDH objects may be source, sink or bidirectional)

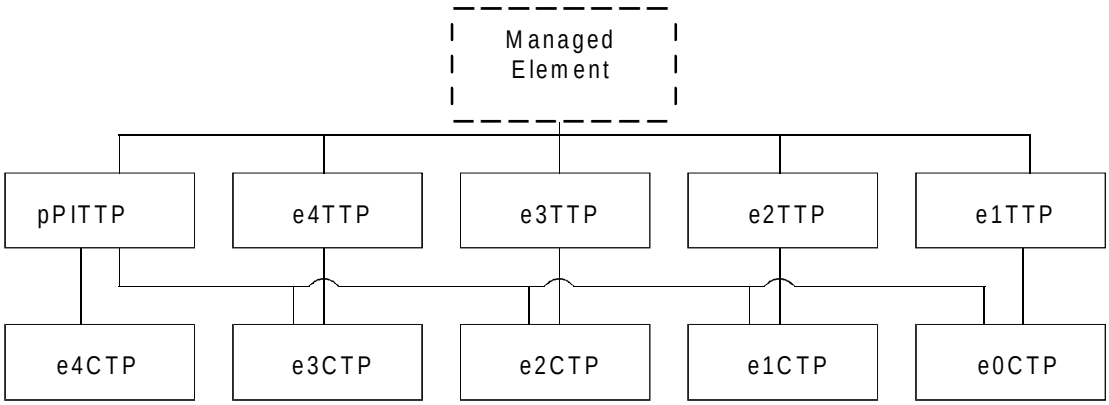

Figure 2: PDH object naming when PDH cross connectivity is available

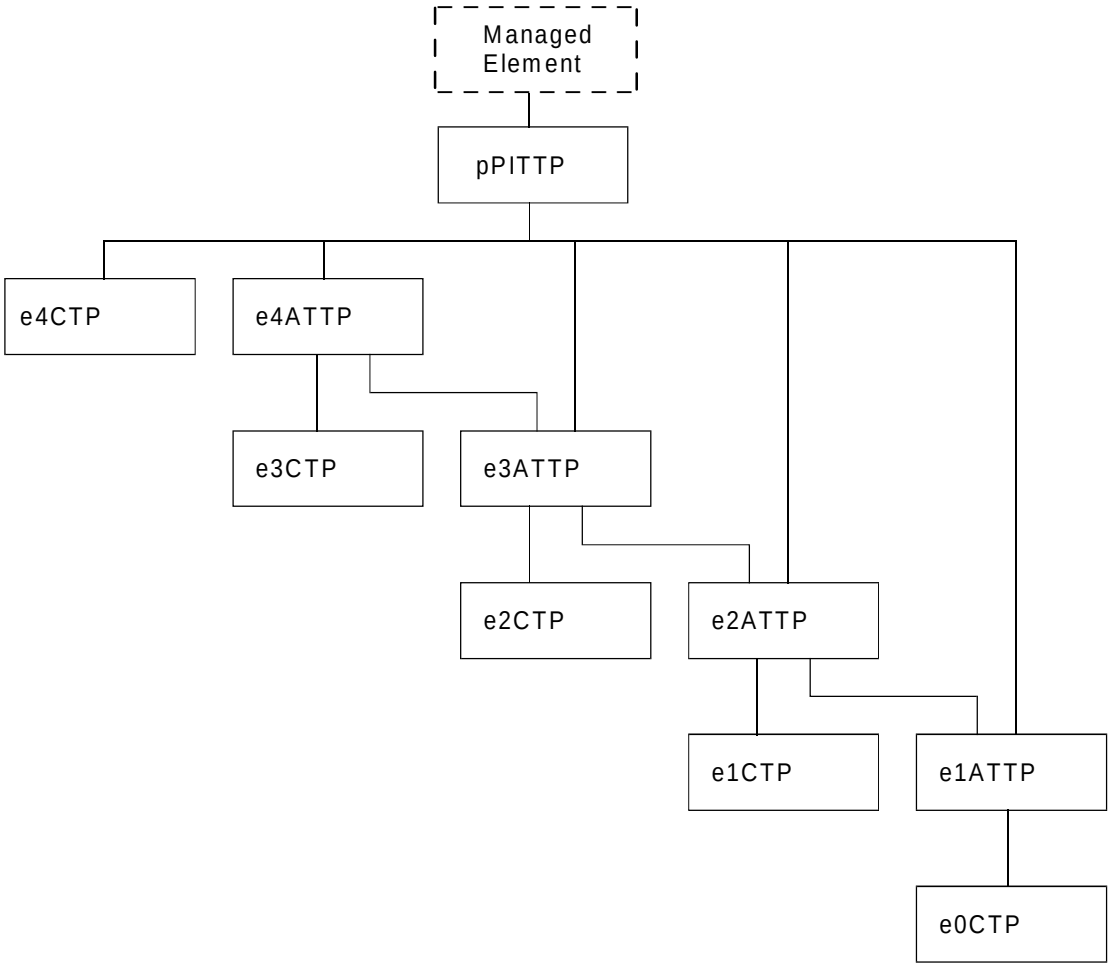

Figure 3: PDH object naming when no PDH cross connectivity is available

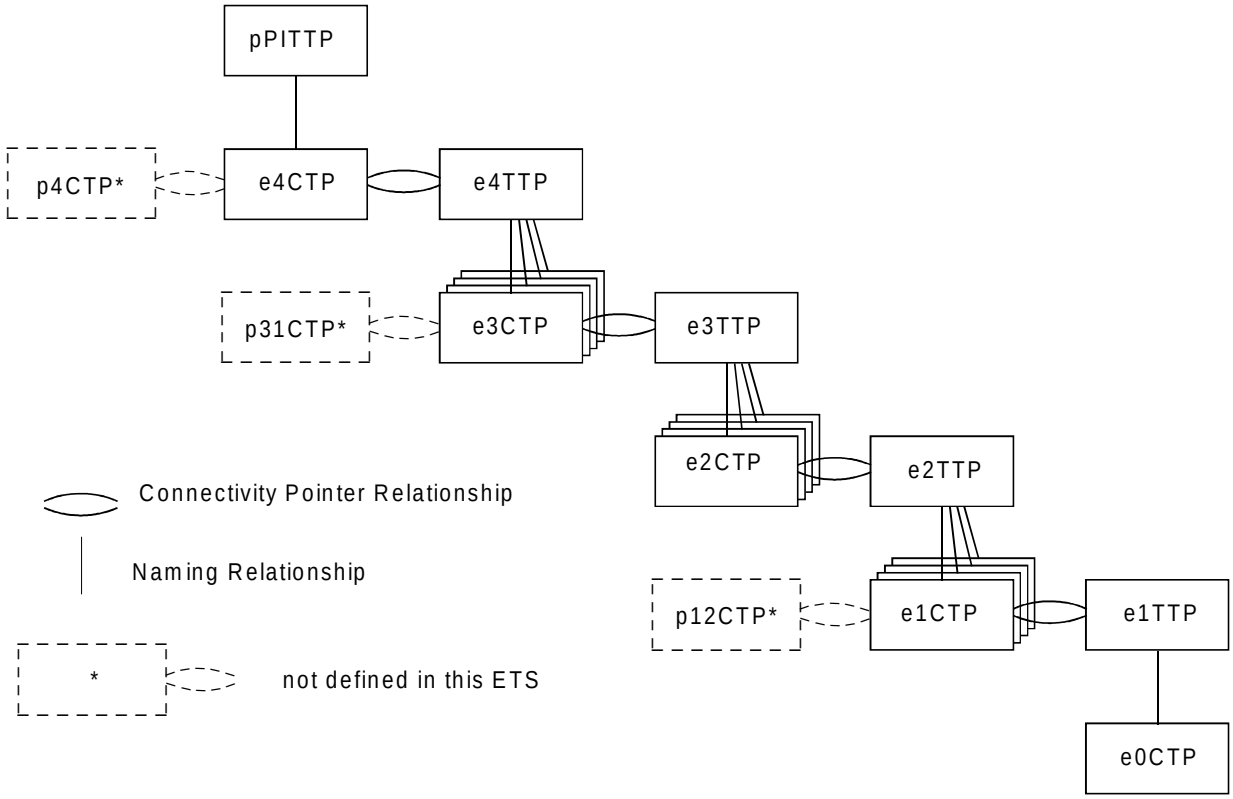

Figure 4: Naming and pointer relationships for PDH and relationship with SDH object classes

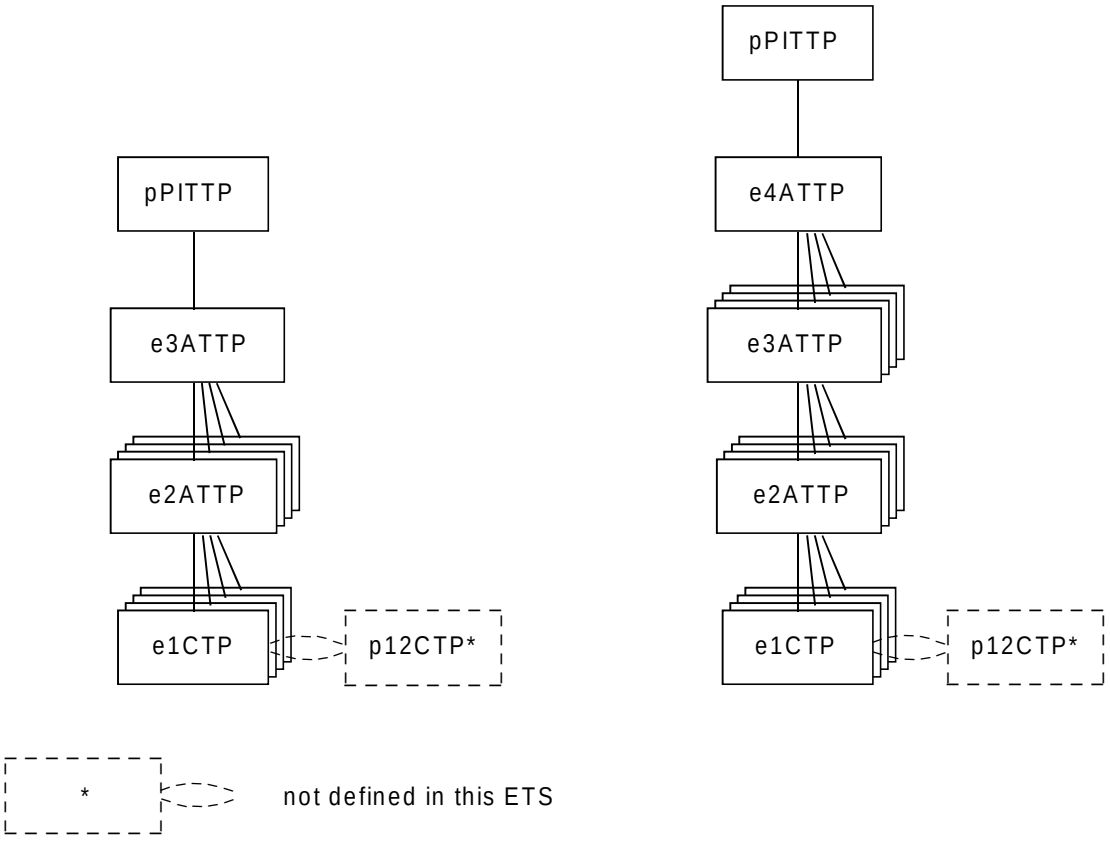

Figure 5: Naming and pointer relationships examples for short version 34/VC-12 and 140/VC-12 transmultiplexer

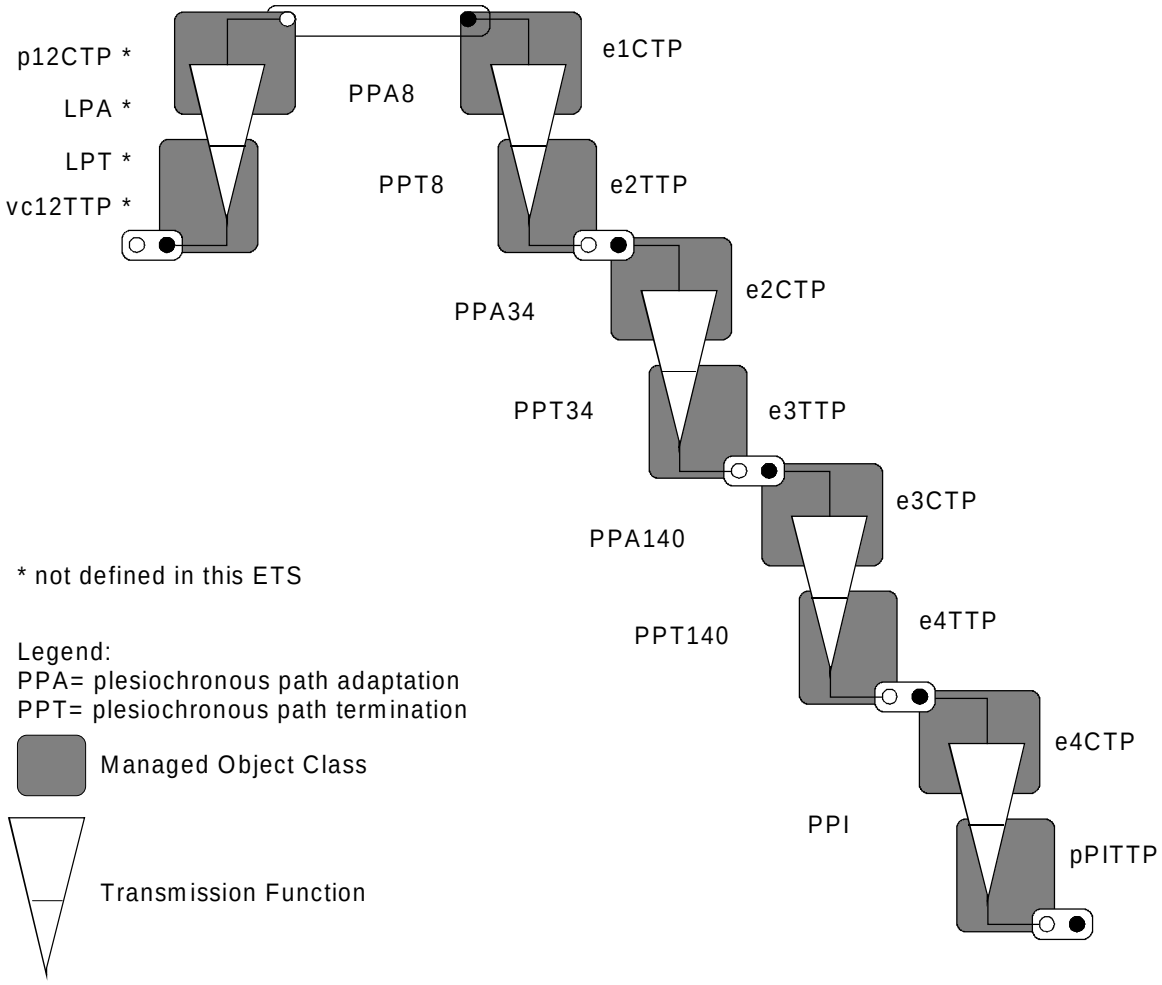

Figure 6: Example for relationship between object classes and transmission functions

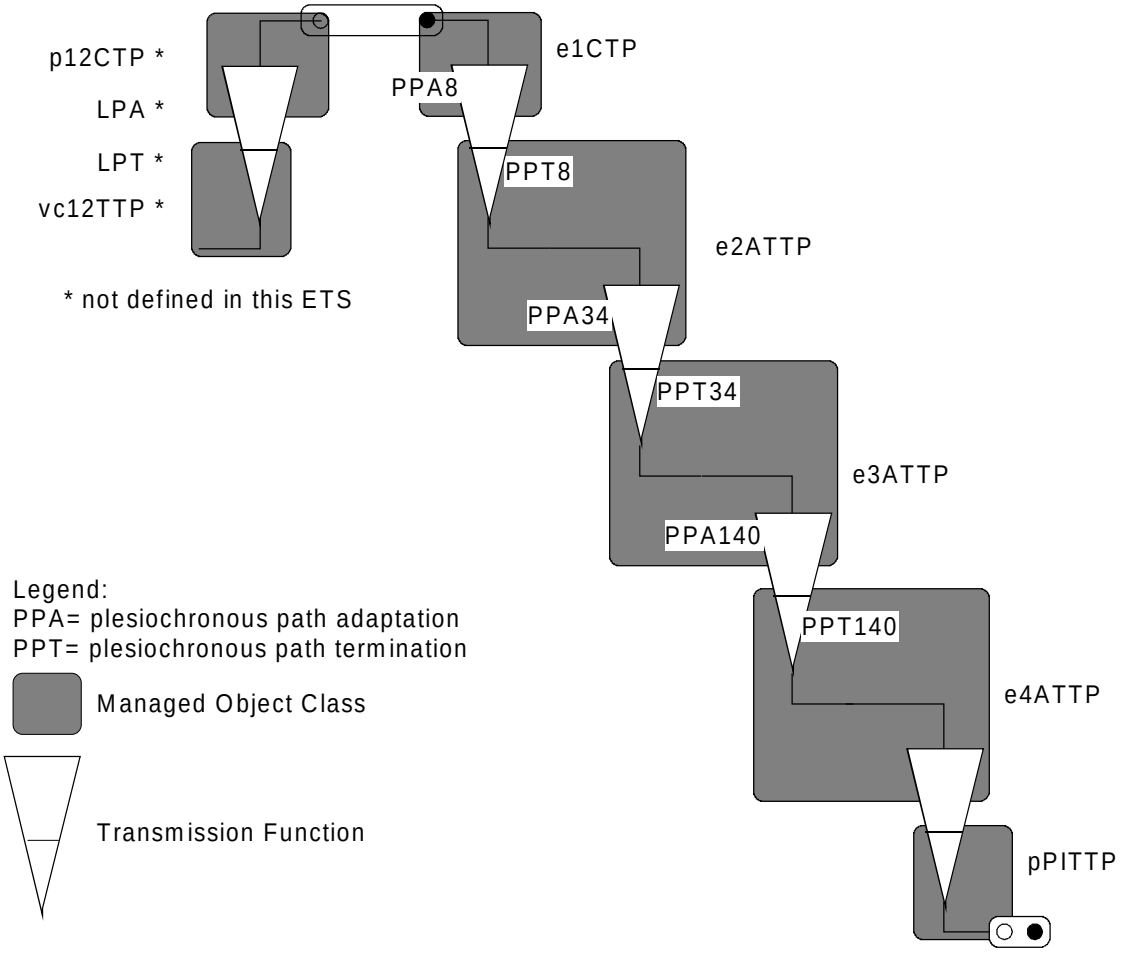

Figure 7: Example for relationship between object classes and transmission functions short version without PDH cross connectivity

Annex A (informative): Bibliography

The following references are given for information.

1) CCITT Recommendation X.701: "Information technology - Open Systems Interconnection - Systems management overview".

2) CCITT Recommendation X.710: "Common management information service definition for CCITT applications".

3) CCITT Recommendation X.711: "Common management information protocol".

4) CCITT Recommendation X.720: "Information technology - Open Systems Interconnection - Structure of management information: Management information model".

5) CCITT Recommendation X.722: "Information technology - Open Systems Interconnection - Structure of management information: Guidelines for the definition of managed objects".

6) CCITT Recommendation X.730: "Information technology - Open Systems Interconnection - Systems management: Object management function".

7) CCITT Recommendation X.731: "Information technology - Open Systems Interconnection - Systems management: State management function".

8) CCITT Recommendation X.733: "Information technology - Open Systems Interconnection - Systems management: Alarm reporting function".

9) CCITT Recommendation X.734: "Information technology - Open Systems Interconnection - Systems management: Event report management function".

10) CCITT Recommendation X.735: "Information technology - Open Systems Interconnection - Systems management: Log control function".

11) CCITT Recommendation G.703: "Information technology - Open Systems Interconnection - PDH interfaces".

12) CCITT Recommendation G.742: "Second order digital multiplex equipment operating at 8448 kbit/s and using positive justification".

13) CCITT Recommendation G.751: "Digital multiplex equipments operating at the third order bit rate of 34 368 kbit/s and the fourth order bit rate of 139 264 kbit/s and using positive justification".

14) ITU-T Recommendation G.773: "Protocol suites for Q Interfaces for management of transmission systems".

15) CCITT Recommendation G.781: "Structure of recommendations on multiplexing equipment for the synchronous digital hierarchy (SDH)".

16) CCITT Recommendation G.782: "Types and general characteristics of synchronous digital hierarchy (SDH) multiplexing equipment".

17) CCITT Recommendation G.783: "Characteristics of synchronous digital hierarchy (SDH) multiplexing equipment functional blocks".

18) CCITT Recommendation G.784: "Synchronous digital hierarchy (SDH) management".

19) ITU-T Recommendation G.803: "Architectures of transmission networks based on the synchronous digital hierarchy".

20) ITU-T Recommendation G.831: "Management capabilities of transmission networks based on the synchronous digital hierarchy".

21) ITU-T Recommendation Q.811: "Lower layers protocol profiles for the Q3 interface".

22) ITU-T Recommendation Q.812: "Upper layers protocol profiles for the Q3 interface".

23) CCITT Recommendation M.3010: "Principles for a telecommunications management network".

24) ITU-T Recommendation M.60: "Maintenance terminology and definitions".

25) ETS 300 417: "Generic functional requirements for SDH transmission equipment".

History

Document history	
November 1994	First Edition
March 1996	Converted into Adobe Acrobat Portable Document Format (PDF)