

A Working Group Draft Standard of the Joint Committee

NTCIP 1408 v. 1.03

-- DRAFT Amendment 1

Transit Communications Interface Profiles

**Part of the National Transportation Communications for
ITS Protocol**

Standard on Fare Collection (FC) Business Area Objects

Draft August 2002

Also referenced as TCIP-FC

This is a draft document, which is distributed for review and comment purposes only. You may reproduce and distribute this document within your organization, but only for the purposes of and only to the extent necessary to facilitate review and comment to the **TCIP WG Chair**. Please ensure that all copies reproduced or distributed bear this legend. This document contains preliminary information that is subject to change.

Published by

American Association of State Highway and Transportation Officials (AASHTO)
444 North Capitol St., N.W., Suite 249
Washington, D.C. 20001

Institute of Transportation Engineers (ITE)
1099 14th Street, N.W., Suite 300 West
Washington, D.C. 20005-3438

National Electrical Manufacturers Association (NEMA)
1300 North 17th Street, Suite 1847
Rosslyn, Virginia 22209-3801

© Copyright 2002 AASHTO / ITE / NEMA. All rights reserved.

© 2002 by the American Association of State Highway and Transportation Officials (AASHTO), the Institute of Transportation Engineers (ITE), and the National Electrical Manufacturers Association (NEMA). All intellectual property rights, including, but not limited to, the rights of reproduction in whole or in part in any form, translation into other languages and display are reserved by the copyright owners under the laws of the United States of America, the Universal Copyright Convention, the Berne Convention, and the International and Pan American Copyright Conventions. Except for the electronic Data Dictionary, do not copy without written permission of either AASHTO, ITE, or NEMA.

FOREWORD

This document uses only metric units.

This document is an NTCIP Information Data Dictionary Standard. Information Data Dictionaries Standards formally express management information in terms of objects (data elements, data frames, and messages) for use within TCIP and NTCIP systems.

The TCIP family of standards addresses Advanced Public Transportation Systems (APTS) data interfaces and related automated transit tools and data. The standards address the business requirements of these APTS data interfaces. In some cases, specialized terms were needed to define general classes of information. For example, different business areas needed to define data elements related to time, date and footnotes. Special, constrained data types were developed so that the transit domain data concepts were consistent across business areas, while specific needs were met. These data types are defined within the TCIP family of standards and in this document.

For more information about NTCIP standards, visit the NTCIP Web Site at <http://www.ntcip.org>. For a hardcopy summary of NTCIP information, contact the NTCIP Coordinator at the address below.

In preparation of this NTCIP document, input of users and other interested parties was sought and evaluated. Inquires, comments, and proposed or recommended revisions should be submitted to:

NTCIP Coordinator
National Electrical Manufacturers Association
1300 North 17th Street, Suite 1847
Rosslyn, Virginia 22209-3801
fax: (703) 841-3331
e-mail: ntcip@nema.org

Approvals

This document will be separately balloted and approved by AASHTO, ITE, and NEMA after recommendation by the Joint Committee on the NTCIP. Each organization is expected to approve this NTCIP Information Data Dictionary Standard as the following standard type, as of the date:

AASHTO – Standard Specification; Month YYYY
ITE – Software Standard; Month YYYY
NEMA – Standard; Month YYYY

History

From 1998 to 1999, this document was referenced as ITE ST-ITS-TCIP-FC and/or NEMA TS 3.TCIP-FC. However, to provide an organized numbering scheme for the NTCIP, this document is now referenced as NTCIP 1408. The technical specification of NTCIP 1408 is identical to the former reference, except as noted in the development history:

ST-ITS-TCIP-FC version 01.0, March 1999. April 1999-Standards Development Report Attachment A listed changes from draft v0.4 to v1.0. May 1999 – User Comment Draft accepted by the Joint Committee on the NTCIP. June 1999 – NTCIP Standards Bulletin B0037 requested user comments on NTCIP 1408.

NTCIP 1408 version 01.00, March 1999. November 1999 – Recommended Standard accepted by the Joint Committee on the NTCIP. February 2000 – No additional changes reported to

v01.00. May 2000 –NTCIP Standards Bulletin B0053 requested ballot to approve. Approved by AASHTO in December 2000, approved by ITE in May 2001, and approved by NEMA in May 2001.

NTCIP 1408 v01.01, December 31, 2001. October 2001 – Reformatted for printing: incremented version number and updated date; added and revised front matter; updated references to NTCIP and NEMA document numbers in Clause on References; updated references to ITE document numbers; inserted introduction text in Section on Requirements; deleted Annex A Comment Form; and inserted introduction text in Annex for the ASN.1 Script.

Draft NTCIP 1408 v01.02 Amendment 1, August 2002. Updated references and corrected typographic errors.

If you are not willing to abide by the following copyright statement, return these materials immediately.

Joint AASHTO, ITE, and NEMA
NTCIP Management Information Base, Data Dictionary, and ASN.1 Script
DISTRIBUTION NOTICE

To the extent and in the limited event these materials are distributed by AASHTO/ITE/NEMA in the form of a Data Dictionary and ASN.1 Script (“DD”), AASHTO / ITE / NEMA extends the following permissions:

- (i) you may make and/or distribute unlimited copies (including derivative works) of a Data Dictionary (DD), including copies for commercial distribution, provided that (a) each copy you make and/or distribute contains this Notice;
- (ii) use of the DD is restricted in that the syntax field may be modified only to reflect a more restrictive subrange or enumerated values;
- (iii) the description field may be modified but only to the extent that: (a) only those bit values or enumerated values that are supported are listed; and (b) the more restrictive subrange is expressed.

These materials are delivered “AS IS” without any warranties as to their use or performance.

AASHTO / ITE / NEMA AND THEIR SUPPLIERS DO NOT WARRANT THE PERFORMANCE OR RESULTS YOU MAY OBTAIN BY USING THESE MATERIALS. AASHTO/ITE/NEMA AND THEIR SUPPLIERS MAKE NO WARRANTIES, EXPRESS OR IMPLIED, AS TO NONINFRINGEMENT OF THIRD PARTY RIGHTS, MERCHANTABILITY, OR FITNESS FOR ANY PARTICULAR PURPOSE. IN NO EVENT WILL AASHTO, ITE, OR NEMA OR THEIR SUPPLIERS BE LIABLE TO YOU OR ANY THIRD PARTY FOR ANY CLAIM OR FOR ANY CONSEQUENTIAL, INCIDENTAL, OR SPECIAL DAMAGES, INCLUDING ANY LOST PROFITS OR LOST SAVINGS, ARISING FROM YOUR REPRODUCTION OR USE OF THESE MATERIALS, EVEN IF AN AASHTO, ITE, OR NEMA REPRESENTATIVE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Some states or jurisdictions do not allow the exclusion or limitation of incidental, consequential, or special damages, or the exclusion of implied warranties, so the above limitations may not apply to you.

Use of these materials does not constitute an endorsement or affiliation by or between AASHTO, ITE, or NEMA and you, your company, or your products and services.

Disclaimer

The information in this publication was considered technically sound by the consensus of persons engaged in the development and approval of the document at the time it was developed. Consensus does not necessarily mean that there is unanimous agreement among every person participating in the development of this document.

AASHTO, ITE, and NEMA standards and guideline publications, of which the document contained herein is one, are developed through a voluntary consensus standards development process. This process brings together volunteers and/or seeks out the views of persons who have an interest in the topic covered by this publication. While AASHTO, ITE, and NEMA administer the process and establish rules to promote fairness in the development of consensus, they do not write the document and they do not independently test, evaluate, or verify the accuracy or completeness of any information or the soundness of any judgments contained in their standards and guideline publications.

AASHTO, ITE, and NEMA disclaim liability for any personal injury, property, or other damages of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, application, or reliance on this document. AASHTO, ITE, and NEMA disclaim and make no guaranty or warranty, express or implied, as to the accuracy or completeness of any information published herein, and disclaims and makes no warranty that the information in this document will fulfill any of your particular purposes or needs. AASHTO, ITE, and NEMA do not undertake to guarantee the performance of any individual manufacturer or seller's products or services by virtue of this standard or guide.

In publishing and making this document available, AASHTO, ITE, and NEMA are not undertaking to render professional or other services for or on behalf of any person or entity, nor are AASHTO, ITE, and NEMA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances. Information and other standards on the topic covered by this publication may be available from other sources, which the user may wish to consult for additional views or information not covered by this publication.

AASHTO, ITE, and NEMA have no power, nor do they undertake to police or enforce compliance with the contents of this document. AASHTO, ITE, and NEMA do not certify, test, or inspect products, designs, or installations for safety or health purposes. Any certification or other statement of compliance with any health or safety-related information in this document shall not be attributable to AASHTO, ITE, or NEMA and is solely the responsibility of the certifier or maker of the statement.

NTCIP is a trademark of AASHTO / ITE / NEMA.

Section 1 GENERAL

1.2.1 Normative References

-- *Updated the publications information for Normative References*

draft NTCIP 1400:2002 Amendment 1, *Transit Communications Interface Profile Framework*, version 1.05 Amendment 1.

draft NTCIP 1401:2002 Amendment 1, *Transit Communications Interface Profile, Standard on Common Public Transportation Objects*, version 1.03 Amendment 1, August, 2002.

draft NTCIP 1404:2002 Amendment 1, *Transit Communications Interface Profile, Standard on Scheduling and Runcutting Objects*, version 1.03 Amendment 1, August, 2002.

ISO/IEC 8824:1998, *Abstract Syntax Notation One (ASN.1)*

1.2.2 Informative References

-- *Updated the publications information for Informative References*

IEEE Std 1489-1999, *IEEE Standard for Data Dictionaries for Intelligent Transportation Systems*. 27 October 1999.

IEEE Std 1488-2000, *IEEE Trial-Use Standard for Message Set Template for Intelligent Transportation Systems*. 13 July 2000.

Section 2
TERMINOLOGY

-- no changes

Section 3
CONCEPT OF OPERATIONS

-- Modified section name to Concept of Operations

Section 4 REQUIREMENTS

4.1 FARE COLLECTION DATA DICTIONARY

FC_AccountID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_AccountID_id
Representation class term identifier

FC_BadCardID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_BadCardID_id
Representation class term identifier

FC_ComponentErrorType_cd

(1) *Removed error codes from code list.*

Representation layout fc-ComponentErrorType-ID OBJECT IDENTIFIER ::= { fccd 5 }
fc-ComponentErrorType TCIP-CLASS ::= {
FC-ComponentErrorType IDENTIFIED BY fc-ComponentErrorType-ID
WITH DESCRIPTION "A type of error that may occur in a component, subassembly or
piece of
equipment in a fare processing unit. "
FC-ComponentErrorType ::= INTEGER {
bill-accept (1), -- bill accept
bill-count (2), -- bill count
bill-escrow (3), -- bill escrow
bill-operation (4), -- bill operation
bill-stacker (5), -- bill stacker
card-read-1 (6), -- card read (1st try)
card-read-2 (7), -- card read (2nd try)
card-read-3 (8), -- card read (3rd try)
card-reject (9), -- card reject
card-write (10), -- card write
coin-accept (11), -- coin accept
coin-count (12), -- coin count
coin-operation (13), -- coin operation
power-loss (14), -- power loss
feed (15), -- feed
transport (16), -- transport
printer (17) -- printer
-- 18-149 reserved
-- 150-255 local use
} (0..255)

Valid value rule

- 1- bill accept
- 2- bill count
- 3- bill escrow
- 4- bill operation
- 5- bill stacker
- 6- card read (1st try)
- 7- card read (2nd try)
- 8- card read (3rd try)
- 9- card reject
- 10- card write
- 11- coin accept
- 12- coin count
- 13- coin operation
- 14- power loss
- 15- feed
- 16- transport
- 17- printer
- 18-149 reserved
- 150-255 local use

codes 150-246 shall be associated with fcEquipmentErrorTypeDescription

FC_ComponentErrorTypeID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_ComponentErrorTypeID_id
Representation class term identifier

FC_ComponentEventID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_ComponentEventID_id
Representation class term identifier

FC_ComponentEventType_cd

(1) *The error codes shall be removed from the code list.*

Representation layout

```
FC-ComponentEventType ::= INTEGER {  
voltage-dropout (1), -- voltage dropout  
voltage-restored (2), -- voltage restored  
probe-started (3), -- probe started  
probe-completed (4), -- probe completed  
cashbox-removed (5), -- cashbox removed  
cashbox-restored (6), -- cashbox restored  
cashbox-door-timeout (7), -- cashbox door timeout  
cashbox-opened-is (8), -- cashbox opened in service  
insufficient-fare (9), -- insufficient fare accepted  
coinbox-75-full (10), -- coinbox 75% full  
coinbox-full (11), -- coinbox full  
currencybox-75-full (12), -- currency box 75% full  
currencybox-under-75 (13), -- currency box less than 75% full  
currencybox-full (14), -- currency box full  
cardpassbox-75-full (15), -- card/pass box 75% full  
cardpassbox-under-75 (16), -- card/pass box less than 75% full  
cardpassbox-full (17), -- card/pass box full  
coin-dejam (18), -- coin de-jam operated  
farebox-manual-bypass (19), -- farebox set in manual bypass
```

farebox-automatic (20), -- farebox reset to automatic mode
pass-jam (21), -- pass/transfer jam
pass-jam-cleared (22), -- pass/transfer jam cleared
pass-currency-jam (23), -- pass currency jam
maintenance-access-is (24), -- maintenance access - in service
maintenance-access-oos (25), --maintenance access - out of service
alarm-module-failure (26), -- alarm module failure
battery-failure (27), -- battery failure
battery-low (28), -- battery low
cardcapturebin-75-full (29), -- card capture bin 75% full
cardcapturebin-full (30), --card capture bin full
card-stock-1-low (31), -- Fare card stock type 1 is low
card-stock-1-out (32), -- Fare card stock type 1 is out
card-stock-2-low (33), -- Fare card stock type 2 is low
card-stock-2-out (34), -- Fare card stock type 2 is out

Valid value rule

card-stock-3-low (35), -- Fare card stock type 3 is low 1- voltage dropout
card-stock-3-out (36), -- Fare card stock type 3 is out 2- voltage restored
card-stock-4-low (37), -- Fare card stock type 4 is low 3- probe started
card-stock-4-out (38), -- Fare card stock type 4 is out 4- probe completed
card-stock-5-low (39), -- Fare card stock type 5 is low 5- cashbox removed
card-stock-5-out (40), -- Fare card stock type 5 is out 6- cashbox restored
card-stock-6-low (41), -- Fare card stock type 6 is low 7- cashbox door timeout
card-stock-6-out (42), -- Fare card stock type 6 is out 8- cashbox opened in service
clock-error (43), -- Equipment controller board clock error 9- insufficient fare accepted
coin-acceptor-fault (44), -- Coin acceptor fault 10- coin box 75% full
communications-loss (45), -- Loss of communications with local devices 11- coin box full
maintenance-door-open (46), -- Maintenance door open 12- currency box 75% full
maintenance-door-closed (47), -- Maintenance door closed 13- currency box less than
75% full
motion-sensor-alarm-on (48), -- Motion sensor alarm triggered 14- currency box full
power-reset (49), -- Power reset 15- card/pass box 75% full
communications-lost (50),
-- Local station communications lost 16- card/pass box less than 75% full
receipt-low (51), -- Receipt low 17- card/pass box full
receipt-out (52), -- Receipt out 18- coin de-jam operated
credit-debit-failure (53), -- credit/debit failure (out of service) 19- fare box set in manual
bypass
gate-failure (54), -- gate failure (turnstile and parking) 20- fare box reset to automatic mode
banknote-validation-failure (55) -- bank note validation failure 21- pass/transfer jam
-- 56 - 65399 reserved 22- pass/transfer jam cleared
-- 65400 - 65535 local use 23- pass currency jam
} (0.65535) 24- maintenance access- in service
25- maintenance access- out of service
26- alarm module failure
27- battery failure
28- battery low
29- card capture bin 75% full
30- card capture bin full
31- Fare card stock type 1 is low
32- Fare card stock type 1 is out
33- Fare card stock type 2 is low
34- Fare card stock type 2 is out
35- Fare card stock type 3 is low
36- Fare card stock type 3 is out
37- Fare card stock type 4 is low
38- Fare card stock type 4 is out
39- Fare card stock type 5 is low
40- Fare card stock type 5 is out
41- Fare card stock type 6 is low
42- Fare card stock type 6 is out
43- Equipment controller board clock error
44- Coin acceptor fault
45- Loss of communications with local devices
46- Maintenance door open
47- Maintenance door closed
48- Motion sensor alarm triggered
49- Power reset
50- Local station communications lost

51- Receipt low
52- Receipt out
53- credit/debit failure (out of service)
54- gate failure (turnstile and parking)
55- bank note validation failure
56-65399 reserved
65400-65535 local use

FC_ComponentID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_ComponentID_id
Representation class term identifier

FC_ComponentStatusType_cd

(1) *The error codes shall be removed from the code list.*

Representation layout FC-ComponentStatusType ::= INTEGER {
in-service (1), -- In-service
out-of-service (2), -- Out of service
maintenance-mode (3), -- Maintenance mode
freewheel-mode (4), -- Freewheel mode (no pay)
diagnostic-mode (5), -- Diagnostic mode
alarm-triggered (6), -- Alarm triggered
gate-entry-only (7), -- Gate mode open for entry only
gate-exit-only (8), -- Gate mode open for exit only
gate-entry-and-exit (9) -- Gate mode open for entry/exit
-- 10-149 reserved
-- 150-255 local use
} (0..255)

Valid value rule 1- In-service
2- Out of service
3- Maintenance mode
4- Freewheel mode (no pay)
5- Diagnostic mode
6- Alarm triggered
7- Gate mode open for entry only
8- Gate mode open for exit only
9- Gate mode open for entry/exit
10-149 reserved
150-255 local use

FC_CountTypeID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_CountTypeID_id
Representation class term identifier

FC_FareCharacterCostIndex_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_FareCharacterCostIndex_id

Representation class term identifier

FC_FareDistanceIndex_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_FareDistanceIndex_id

Representation class term identifier

FC_FareDistanceTableID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_FareDistanceTableID_id

Representation class term identifier

FC_FareDistanceType_cd

(1) *The error codes shall be removed from the code list.*

Representation layout FC-FareDistanceType ::= INTEGER {
line-of-sight (1), -- line of sight
linear (2) -- linear
-- 3-149 reserved
-- 150-255 local use
} (0..255)

Valid value rule 1- line of sight
2- linear
3-149 reserved
150-255 local use

FC_FareExceptionCellIndex_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_FareExceptionCellIndex_id

Representation class term identifier

FC_FareExceptionTableID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_FareExceptionTableID_id

Data type IDENS

Representation class term identifier

FC_FareInstrumentID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_FareInstrumentID_id
Representation class term identifier

FC_FareMediaID_id

(1) The Representative class term (in descriptive name and field) shall be modified to identifier (id).

Descriptive Name FC_FareMediaID-txt_id
Representation class term identifier

FC_FareMediaID_id

(1) The Representative class term (in descriptive name and field) shall be modified to identifier (id).

Descriptive Name FC_FareMediaID-nbr_id
Representation class term identifier

FC_FareMediaOtherID_id

(1) The Representative class term (in descriptive name and field) shall be modified to identifier (id).

Descriptive Name FC_FareMediaOtherID_id
Representation class term identifier

FC_FareTableID_id

(1) The Representative class term (in descriptive name and field) shall be modified to identifier (id).

Descriptive Name FC_FareTableID_id
Representation class term identifier

FC_FareZoneIndex_id

(1) The Representative class term (in descriptive name and field) shall be modified to identifier (id).

Descriptive Name FC_FareZoneIndex_id
Representation class term identifier

FC_FareZoneTableID_id

(1) The Representative class term (in descriptive name and field) shall be modified to identifier (id).

Descriptive Name FC_FareZoneTableID_id
Representation class term identifier

FC_FinanciaTransactionID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_FinanciaTransactionID_id
Representation class term identifier

FC_FinancialTransactionType_cd

(1) *The error codes shall be removed from the code list.*

Representation layout FC-FinancialTransactionType ::= INTEGER {
money-received (1), --Money received
money-dispensed (2), --Money dispensed
electronic-credit (3), --Electronic - credit
electronic-debit (4), --Electronic - debit
smart-card (5), --Smart card
combo (6), --Combo (split payment)
transit-check (7) --Transit check
-- 8-149 reserved
-- 150-255 local use
} (0..255)

Valid value rule
1- Money received
2- Money dispensed
3- Electronic- credit
4- Electronic- debit
5- Smart Card
6- Combo (split payment)
7- Transit check
8-149 reserved
150-255 local use

FC_FISstandard_cd

(1) *The error codes shall be removed from the code list.*

Representation layout FC-FISstandard ::= INTEGER {
none (1), -- none
iso-8583-1995 (2), -- ISO 8583:1993 (parts 1-3)
iso-4909-1987 (3), -- ISO 4909:1987
iso-9992-1990 (4), -- ISO 9992:1990 (parts 1 and 2)
vei-1997 (5) -- VEI:1997
-- tbd
-- 10-149 reserved
-- 150-255 local use
} (0..255)

Valid value rule
1- none
2- ISO 8583:1993 (parts 1-3)
3- ISO 4909:1987
4- ISO 9992:1990 (parts 1 and 2)
5 - VIE: 1997
6-149 reserved
150-255 local use

FC_MonetaryInstrumentTypeID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_MonetaryInstrumentTypeID_id
Representation class term identifier

FC_PassInstrumentID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_PassInstrumentID_id
Representation class term identifier

FC_RideInstrumentID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_RideInstrumentID_id
Representation class term identifier

FC_RiderClassification_cd

(1) *The Representative class term (in descriptive name and field) shall be modified to code (cd).*

Descriptive Name FC_RiderClassification_cd
Representation class term code

FC_SubassemblyType_cd

(1) *The error codes shall be removed from the code list.*

Representation layout FC-SubassemblyType ::= INTEGER {
recycled-coin-hopper (1), --recycled coin hopper
recycled-bill-hopper (2), --recycled bill hopper
change-storage (3), --change storage unit
coin-bill-counter (4), --coin/bill counter
coin-hopper (5), --coin hopper
bill-hopper (6), --bill hopper
coin-bill-hopper (7), --coin/bill hopper
coin-mechanism (8), --coin mechanism
bill-acceptor (9), --bill acceptor
ticket-supply (10) --ticket supply
-- 11- 149 reserved
-- 150 -255 local use
} (0..255)

Valid value rule 1- recycled coin hopper
2- recycled bill hopper
3- change storage unit
4- coin/bill counter
5- coin hopper
6- bill hopper
7- coin/bill hopper
8- coin mechanism
9- bill acceptor
10- ticket supply
11-149 reserved
150-255 local use

FC_TimePeriodIndex_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_TimePeriodIndex_id
Representation class term identifier

FC_TimePeriodTableID_id

(1) *The Representative class term (in descriptive name and field) shall be modified to identifier (id).*

Descriptive Name FC_TimePeriodTableID_id
Representation class term identifier

FC_TransactionResult_cd

(1) *The error codes shall be removed from the code list.*

Representation layout FC-TransactionResult ::= INTEGER {
comment (0), -- comment
successful-transaction (1), -- successful transaction
-- 2-9 reserved
read-error (10), -- read error
-- 11-19 reserved
write-error (20), -- write error
-- 21-29 reserved
verify-error (30), -- verify error
-- 31-39 reserved
validation-status-error (40), -- validation status error
-- 41-49 reserved
status-error (50), -- status error
-- 51-59 reserved
other (60) -- other
-- 61-255 reserved
} (0..255)

Valid value rule 0 -- comment
1-- successful transaction
2--9 reserved
10-- read error
11-19 reserved
20-- write error
21-29 reserved
30-- verify error
31-39 reserved
40-- validation status error
41-49 reserved
50- status error
51-59 reserved
60- other
61-255 reserved

**Annex B
ASN.1 Script**

(Informative)

TBD