

*A User Comment Draft Amendment of AASHTO, ITE, and NEMA*

# NTCIP 1401 v01.03

## Amendment 1 b

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### Transit Communications Interface Profiles

Part of the NTCIP

### Standard on Common Public Transportation (CPT) Objects

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**October 2002**

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## 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:

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### 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 1997 to 1999, this document was referenced as ITE ST-ITS-TCIP-CPT and/or NEMA TS 3.TCIP-CPT. However, to provide an organized numbering scheme for the NTCIP, this document is now referenced as NTCIP 1401. The technical specification of NTCIP 1401 is identical to the former reference, except as noted in the development history:

TCIP documents version 0.1. Distributed in September 1997 for public review.

TCIP-CPT Recommended Standard version 1.0, February 20, 1998, changed to version 1.1, July 31, 1998. Revisions included: Former section numbers 2.1, 4.3, 5.1, and 5.2.

NTCIP 1401 version 97.01.01, July 31, 1998. Approved by AASHTO in July 1999, approved by ITE in October 1999, and approved by NEMA in February 2000.

NTCIP 1401 v01.02, March 1, 2001. Incremented version number and updated date; added and revised front matter; updated references to NTCIP and NEMA document numbers in References Clause; updated references to ITE document numbers; inserted introduction text in Section on Requirements; deleted Annex A Comment Form; and inserted Introduction text in Annex on the ASN.1 Script.

Draft NTCIP 1401 v01.03 Amendment 1, August 2002. Updated version 01.02 according to the changes contained in this document.

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## **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 1403:2002 Amendment 1, *Transit Communications Interface Profile, Standard on Passenger Information 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.

draft NTCIP 1405:2002 Amendment 1, *Transit Communications Interface Profile, Standard on Spatial Representation Objects*, version 1.03 Amendment 1, August, 2002.

draft NTCIP 1406:2002 Amendment 1, *Transit Communications Interface Profile, Standard on Control Center Objects*, version 1.03 Amendment 1, August, 2002.

draft NTCIP 1407:2002 Amendment 1, *Transit Communications Interface Profile, Standard on On-Board Objects*, version 1.03 Amendment 1, August, 2002.

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

SAE J1587 – Joint SAE/TMC Recommended Practice for Electronic Data Interchange Between Microcomputer Systems in Heavy Duty Vehicle Applications, February 2002.

### **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

### 2.4 SUBTYPE DEFINITIONS

#### 2.4.2 Date and Time Subtypes

*-- Modified date time value domain to be consistent with IEEE 1489:1999.*

DATETIME ::= ULONG

Where DATETIME is based on GPS time, where according to IEEE 1489:1999, GPS time “is a specific point .. in a calendar day expressed in terms of seconds since midnight on the night of 5 January 1980/morning of 6 January 1980. GPS may differ from UTC as UTC is corrected periodically with an integer number of leap seconds.”

*-- Modified subtype definition for SCHTIME to be consistent with definition.*

SCHTIME ::= LONG



**Section 3**  
**CONCEPT OF OPERATIONS**

-- *Changed Section name to Concept of Operations*



## Section 4 REQUIREMENTS

### 4.1 COMMON PUBLIC TRANSPORTATION DATA DICTIONARY

#### CPT\_FrequencyBandType\_cd

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

<b>Descriptive Name</b>	CPT_FrequencyBandType_cd
<b>Representation class term</b>	code

#### CPT\_Mode\_cd/NTD

(1) *Added the following:*

- PR- Personal rapid transit\**
- WT-Water Taxi\**
- TC - Taxi Cabs\**
- HB-Hybrid Bus\**

*\* Not included in NTD*

(2) *Added web reference to NTD*

<b>Representation layout</b>	CPT-Mode ::= IA5String {AG CC CR DR FB HR IP JT LR MB MO PB TB TR VP OR DM PR WT TC HB MM} (SIZE(1..2))
<b>Value Domain</b>	NTD (see <a href="http://www.ntdprogram.com">www.ntdprogram.com</a> )
<b>Valid value rule</b>	AG- Automated Guideway CC- Cable Car CR- Commuter Rail DR- Demand Responsive FB- FerryBoat HR- Heavy Rail IP- Inclined Plane JT- Jitney LR- Light Rail MB- Bus MO- Monorail PB- Publico TB- Trolleybus TR- Aerial Tramway VP- Vanpool OR- Other DM- Dual Mode* PR- Personal rapid transit* WT-Water Taxi* TC - Taxi Cabs* HB-Hybrid Bus* MM-Multimodal* <i>* Not included in National Transit Database</i>

### **CPT\_OperatorBaselD\_id**

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

**Descriptive Name** CPT\_OperatorBaselD\_id  
**Representation class term** identifier

### **CPT\_OperatorID\_id**

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

**Descriptive Name** CPT\_OperatorID\_id  
**Representation class term** identifier

### **CPT\_OrganizationalUnitID\_id**

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

**Descriptive Name** CPT\_OrganizationalUnitID\_id  
**Representation class term** identifier

### **CPT\_PadType\_cd**

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

**Representation layout** CPT-PadType ::= INTEGER  
{ dirt (1),  
concreteWithNoWalk (2), -- no connection to a sidewalk  
concreteStructure (3), -- part of a structure  
concreteSidewalk (4), -- part of a sidewalk  
asphaltShoulder (5), -- shoulder of a road  
asphaltSeparte (6), -- separate from a road or sidewalk  
brick (7),  
wood (8)  
-- 9-149 reserved  
-- 150-255 local use  
} (0..255)

**Valid value rule** 1- Dirt  
2- Concrete, not connected to a sidewalk  
3- Concrete, part of a structure  
4- Concrete, part of a sidewalk  
5- Asphalt, shoulder of a road  
6- Asphalt, separate from a road or sidewalk  
7- Brick  
8- Wood  
9-149 Reserved  
150-255 Local use

### **CPT\_PlatformType\_cd**

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

**Representation layout** CPT-PlatformType ::= INTEGER{  
woodLow (1),  
woodHigh (2),  
concretePad (3),  
concreteHigh (4)  
-- 5-149 reserved

-- 150-255 local use  
} (0..255)

**Valid value rule**

- 1-Wood low
- 2- Wood high
- 3- Concrete pad
- 4- Concrete high
- 5- 149 Reserved
- 150-255 Local use

### CPT\_PriorityAttribute\_cd

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

**Representation layout**

```
CPT-PriorityAttribute ::= INTEGER{
severityLevel (1),
proximity (2),
volume (3),
time (4), -- time of month/day of week/day/time of day
devicesEffectd (5),
contractual (6),
infrastructural (7), -- critical infrastructure
safety (8),
revenue (9),
disruptionToService (10)
-- 11-149 reserved
-- 150-255 local use
} (0..255)
```

**Valid value rule**

- 1- Severity Level
- 2- Location/proximity of support to event
- 3- Volume (usage)
- 4- Time of month/day of week/day/time of day
- 5- Number of devices effected
- 6- Contractual issues
- 7- Critical infrastructure
- 8- Safety
- 9- Revenue
- 10- Disruption to service
- 11-149 Reserved
- 150-255 Local use

### CPT\_PTVehicleTypeDescription\_cd/NTD

(1) *Corrected typo in ASN.1 name.*

**ASN1 name** CPT-PTVehicleTypeDescription

### CPT\_PTVehicleAttribute\_cd

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

**Representation layout**

```
CPT-PTVehicleAttribute ::= INTEGER{
bikeRack (1), -- Bike rack
camera (2), -- Surveillance camera
tieDown (3), -- Wheel chair tie-down
lift (4), -- Lift, wheel chair
skiRack (5), -- Ski rack
surfboardRack (6), -- Surfboard rack
concession (7), -- Food service/ concession
restroom (8), -- Restroom
farebox (9), -- Farebox
pos (10), -- Point of sale
```

```
change (11) -- Change (for POS)
  -- 12-149 reserved
  -- 150-255 local use
} (0..255)
```

**Valid value rule**

- 1- Bike rack
- 2- Surveillance camera
- 3- Wheel chair tie-down
- 4- Lift
- 5- Ski rack
- 6- Surfboard rack
- 7- Food service/concession
- 8- Restroom
- 9- Fare box
- 10- POS
- 11- Change (for POS)
- 12- 149 Reserved
- 150-255 Local Use

**CPT\_PTVehicleID\_id**

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

<b>Descriptive Name</b>	CPT_PTVehicleID_id
<b>Representation class term</b>	identifier

**CPT\_PTVehicleType\_cd**

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

**Representation layout**

```
CPT-PTVehicleType ::= INTEGER{
twentyfiveRevenue (1), -- 25' Revenue
thirtyRevenue (2), -- 30' Revenue
fortyRevenue (3), -- 40' Revenue
articulated (4), -- Articulated
cng (5), -- CNG
lng (6), -- LNG
supervisor (7), -- Supervisor
police (8), -- Police
towTruck (9), -- Tow truck
shelterService (10), -- Shelter service truck
van (11), -- Van
passengerVehicle (12), -- Passenger vehicle
lightRail (13), -- Light rail car
commuterRail (14), -- Commuter rail car
heavyRail (15) -- Heavy rail car
  -- 16-149 reserved
  -- 150-255 local use
} (0..255)
```

**Valid value rule**

- 1- 25' Revenue
- 2- 30' Revenue
- 3- 40' Revenue
- 4- Articulated
- 5- CNG
- 6- LNG
- 7- Supervisor
- 8- Police
- 9- Tow truck
- 10- Shelter service truck
- 11- Van
- 12- Passenger vehicle
- 13- Light rail car
- 14- Commuter rail car
- 15- Heavy rail car



16-149 Reserved  
150-255 Local Use

If codes 150-255 are used, they must be defined in CPT-PTVehicleTypeDescription data element.

### **CPT\_RadioZoneID\_id**

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

**Descriptive Name** CPT\_RadioZoneID\_id  
**Representation class term** identifier

### **CPT\_ChannelAttribute\_cd**

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

**Representation layout** CPT-ChannelAttribute ::= INTEGER{  
trunk (1),  
conventional (2),  
full (3),  
half (4),  
quarter (5),  
digital (6),  
analog (7),  
voice (8),  
data (9)  
-- 10-149 reserved  
-- 150-255 local use  
} (0..255)

**Valid value rule** 1- Trunk  
2- Conventional  
3- Full  
4- Half  
5- Quarter  
6-Digital  
7- Analog  
8- Voice  
9- Data  
10-149 Reserved  
150-255 Local use

### **CPT\_ChannelID\_id**

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

**Descriptive Name** CPT\_ChannelID\_id  
**Representation class term** identifier

### **CPT\_DayofWeek\_cd**

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

**Representation layout** CPT-DayofWeek ::= INTEGER  
{ sunday (1),  
monday (2),  
tuesday (3),  
wednesday (4),  
thursday (5),

```
friday (6),  
saturday (7)  
-- 8-149 reserved  
-- 150-255 local use  
} (0..255)
```

**Valid value rule**

- 1- Sunday
- 2- Monday
- 3- Tuesday
- 4- Wednesday
- 5- Thursday
- 6- Friday
- 7- Saturday
- 8-255 Reserved (not used)

### **CPT\_EmployeeID\_id**

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

**Descriptive Name** CPT\_EmployeeID\_id  
**Representation class term** identifier

### **CPT\_EmployeeJobCategory\_cd**

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

**Representation layout** CPT-EmployeeJobCategory ::= INTEGER  
{ fullTimeOperator (1),  
partTimeOperator (2),  
conductor (3),  
engineer (4),  
maintenance (5),  
supervisor (6), -- also manager  
revenueCollector (7),  
dispatcher (8)  
-- 9-99 reserved  
-- 100-65535 local use  
} (0..65535)

**Valid value rule**

- 1- Full time operator
- 2- Part time operator
- 3- Conductor
- 4- Engineer
- 5- Maintenance
- 6- Supervisor/manager
- 7- Revenue collector
- 8- Dispatcher
- 9-99 Reserved
- 100-65535 Local use

If codes 100-65535 (local use) are used, then CPT-EmployeeJobCategoryDesc should contain a detailed description of the job title.

### **CPT\_FareZoneID\_id**

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

**Descriptive Name** CPT\_FareZoneID\_id  
**Representation class term** identifier

**CPT\_Sex\_cd/ISO/IEC 5218**

(1) *Added comment to the Remarks.*

**Remarks**  
used.

Note: This data element will soon be retired and the ITS data dictionary element will be used.

**CPT\_ShelterID\_id**

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

**Descriptive Name** CPT\_ShelterID\_id  
**Representation class term** identifier

**CPT\_ShelterType\_cd**

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

**Representation layout** CPT-ShelterType ::= INTEGER{  
noShelter (1),  
covered (2),  
open (3),  
enclosed (4)  
-- 5-149 reserved  
-- 150-255 local use  
} (0..255)

**Valid value rule** 1- No shelter  
2- Covered  
3- Open air  
4- Enclosed  
5-149 Reserved  
150-255 Local use

**CPT\_StopPointAttribute\_cd**

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

**Representation layout** CPT-StopPointAttribute ::= INTEGER{  
busShelter (1),  
bikeRack (2),  
concession (3),  
escalator (4),  
elevator (5),  
informationKiosk (6),  
safetyZone (7),  
lighting (8),  
restroom (9), -- public  
telephone (10),  
fareSeller (11), -- fare media sales office/booth  
seating (12),  
surveillance (13), -- camera  
tdd (14), -- telephone for the hearing impaired  
faregate (15), -- turnstile  
informationMonitor (16),

ramp (17), -- wheelchair access  
foodService (18)  
-- 19-149 reserved  
-- 150-255 local use  
} (0..255)

**Valid value rule**

1- Bus Shelter  
2- Bike Rack  
3- Concession  
4- Escalator  
5- Elevator  
6- Information Kiosk  
7- Late night safety zone  
8- Lighting  
9- Public Restroom  
10- Public telephone  
11- Fare media sales office booth  
12- Seating  
13- Surveillance Camera  
14- TDD (telephone and hearing impaired)  
15- Turnstile/Fare gate  
16- Information Monitor  
17- Wheelchair ramp  
18- Food service  
19-149 Reserved  
150-255 Local use

**CPT\_StopPointID\_id**

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

**Descriptive Name** CPT\_StopPointID\_id  
**Representation class term** identifier

**CPT\_StopPointIDLong\_id/NTD**

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

**Descriptive Name** CPT\_StopPointIDLong\_id/NTD  
**Representation class term** identifier

**CPT\_TransferClusterID\_id**

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

**Descriptive Name** CPT\_TransferClusterID\_id  
**Representation class term** identifier

**CPT\_TransitFacilityID\_id**

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

**Descriptive Name** CPT\_TransitFacilityID\_id  
**Representation class term** identifier

**CPT\_TransitFacilityType\_cd**

(1) The error codes were removed from the code list.

**Representation layout**

```
CPT-TransitFacilityType ::= INTEGER{
central (1), -- Central Office
garage (2), -- Garage
operatorBase (3), -- Operator base
busBase (4), -- Bus vehicle base
railBase (5), -- Rail vehicle base
modeVehBase (6), -- Multimodal vehicle base
busMaintenance (7), -- Bus Vehicle maintenance garage
railMaintenance (8), -- Rail Vehicle maintenance garage
modeVehMaintenance (9), -- Multimode vehicle maintenance garage
centralMaintenance (10), -- Central maintenance facility
mow (11), -- Maintenance of Way (MOW)
fareSales (12), -- Fare media sales office
fleetOperations (13), -- Bus fleet operations center
railOperations (14), -- Rail operations center
policeAndEMC (15), -- Transit police and emergency service center
reservationsDR (16), -- Demand-responsive reservations center
dispatchDR (17), -- Demand-Responsive dispatch center
shelter (18), -- Shelter
revenueCollection (19), -- Revenue collection facility
centralWarehouse (20), -- Central warehouse
medical (21), -- Drug testing/medical facility
airport (22), -- Airport
parkingNonRevenuePTV (23), -- Non-revenue PTV parking
parkingEmployee (24), -- employee parking
parkingRevenuePTV (25), -- revenue vehicle parking
parkingCustomer (26), -- customer parking
parkingKandR (27), -- kiss&ride parking
constructionSite (28), -- construction site
propertyVacant (29), -- vacant property
propertyCommercial (30), -- commercial property
propertyRental (31), -- rental property
stationRail (32), -- rail station
port (33), -- slip, port
training (34), -- training center
storage (35) -- Store room/equipment storage
-- 36-149 reserved
-- 150-255 local use
} (0..255)
```

**Valid value rule**

- 1- Central Office
- 2- Garage
- 3- Operator Base
- 4- Bus vehicle base
- 5- Rail vehicle base
- 6- Multimodal vehicle base
- 7- Bus vehicle maintenance garage
- 8- Rail Vehicle maintenance garage
- 9- Multimode vehicle maintenance garage
- 10- Central maintenance facility
- 11- Maintenance of Way (MOW)
- 12- Fare media sales office
- 13- Bus fleet operations center
- 14- Rail operations center
- 15- Transit police and emergency service center.
- 16- Demand-responsive reservations center
- 17- Demand-responsive dispatch center
- 18- Shelter
- 19- Revenue collection facility
- 20- Central warehouse
- 21- Drug testing/medical facility
- 22- Airport
- 23- Non-revenue PTV parking
- 24- Employee parking
- 25- Revenue vehicle parking

- 26- Customer parking
- 27- Kiss & ride parking
- 28- Construction site
- 29- Vacant property
- 30- Commercial property
- 31- Rental property
- 32- Rail station
- 33- Slip, port
- 34- Training center
- 35- Store room/equipment storage
- 36-149 Reserved
- 150-255 Local use

If codes 150-255 are used, then CPT-TransitFacilityDescription should be completed.

**CPT\_VIN\_id/ISO 3779**

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

<b>Descriptive Name</b>	CPT_VIN_id/ISO 3779
<b>Representation class term</b>	identifier

## 4.2 MESSAGE SET

### **CptPriorityTable\_message**

(1) *Message Body:* changed priorityList field from CPT-PriorityLevel to CptPriorityDefinition Type Reference.

**Message body**                    CptPriorityTable ::=SEQUENCE {  
startDate CPT-ActivationDate,  
agency CPT-AgencyID OPTIONAL,  
priorityList SEQUENCE OF CptPriorityDefinition  
}

### **CptPTVehicle\_message**

(1) *Message Body:* Removed field vehType CPT-PTVehicleType OPTIONAL

**Message body**                    CptPTVehicle ::=SEQUENCE {  
vehicleID CPT-PTVehicleID,  
vehicleID-short CC-PTVehicleIDShort OPTIONAL  
vin CPT-VIN OPTIONAL  
seating CPT-PTVSeatingCapacity,  
standing CPT-PTVStandingCapacity,  
wheelChair CPT-PTVWheelChairCapacity,  
vehicleAttributes SEQUENCE OF CPT-PTVehicleAttribute OPTIONAL,  
mode CPT-Mode,  
manufacturer CPT-Manufacturer,  
model CPT-Model,  
modelYear CPT-VehicleModelYear,  
rehabDate CPT-VehicleRehabDate OPTIONAL,  
registration FOOTNOTE OPTIONAL,  
componentList SEQUENCE OF OB-MID OPTIONAL,  
vehTypeDesc CPT-PTVehicleTypeDescription OPTIONAL  
}

### **CptSeverityTable\_message**

(1) *Message Body:* changed priorityList field from CPT-SeverityLevel to CptSeverityDefinition Type Reference.

**Message body**                    CptSeverityTable ::=SEQUENCE {  
startDate CPT-ActivationDate,  
agencyID CPT-AgencyID OPTIONAL,  
levelList SEQUENCE OF CptSeverityDefinition  
}





**Annex B**  
**ASN.1 Script**

**(Informative)**

*-- removed from document*