



U.S. Department of
Transportation



Intelligent Transportation Systems Standards Fact Sheet

NTCIP 1406

August 2002

Transit Communications Interface Profiles (TCIP) On-Board Objects Business Area Standard

Overview

The Transit Communications Interface Profiles (TCIP) is a family of standards that specifies the rules and terms for the automated exchange information in transit applications such as operations, maintenance, planning, management, and customer services. TCIP standards define the information and information-transfer requirements among public transportation vehicles (PTVs), transit management centers (TrMCs), other transit facilities, and ITS centers. TCIP standards also identify mechanical and electrical interfaces (physical layer) and methods for ensuring data integrity (data-link layer), specify required message sets, and provide a common set of conformance requirements.

This standard, **NTCIP 1406, TCIP On-Board Objects Business Area Standard**, describes the semantics (descriptions of words and symbols) and formats of objects (e.g., data elements) and messages for on-board systems applicable to non-rail PTVs, specifically buses.

The NTCIP family of standards is a joint project of the following standards development organizations:

**American Association of State Highway and
Transportation Officials (AASHTO)**

Institute of Transportation Engineers (ITE)

**National Electrical Manufacturers Association
(NEMA)**

(Contact information is shown at the end of this fact sheet)

To obtain a copy of this standard, please contact:
Global Engineering Documents
Web site: <http://global.ihs.com>

Publication Date: January 2002

What is this standard for?

This standard covers the data needs of the TCIP functions related to on-board bus applications. This includes all data needed for communication between on-board components within the public transportation vehicle and between on-board components and other transit applications. The data objects defined in this specification are critical to transit agencies because they provide dynamic information on locations and operating status of PTVs for vehicle performance monitoring and transit operations.

This document covers only the on-board data element and message definitions for bus components. TCIP Control Center Objects Business Area Standard (NTCIP 1407) covers the data elements and messages for the control center business area and the dialogues between the on-board (mobile) and control center (fixed) business areas. Definitions for on-board rail components are not included in this standard.

Who uses it?

This standard is intended for use by transit managers, software vendors and procurement personnel involved in the specification, selection, procurement, installation, operation, or maintenance of electronic transit applications for in-vehicle applications.

How is it used?

This standard provides a list of objects (data elements) and messages necessary for conducting control center or transit management operations. It must be used in conjunction with the TCIP Framework Standard (NTCIP 1400). The TCIP Framework Standard organizes the information and data transfer requirements among public transportation vehicles, transit management centers, transit facilities, and other ITS centers. The Framework Standard also identifies physical and data link communication requirements, develops required message sets, and establishes a liaison between the Institute of Transportation Engineers (ITE) and other standards development organizations (SDOs).

Related documents

ISO/IEC 8824: 1994 – Abstract Syntax Notation One (ASN.1)

IEEE Std 1473-1999 – Standard for Communications Protocol on Trains

IEEE Std 1474.1-1999 – Standard for Communications-Based Train Control (CBTC) Performance and Functional Requirements

IEEE Std 1475-1999 – Standard for the Functioning of and Interfaces among Propulsion, Friction Brake and Train-borne Control Master Control on Rapid Rail Transit Vehicles

IEEE Std 1476-2000 – Standard for Passenger Train Auxiliary Power Systems Interfaces

IEEE Std 1477-1998 – Standard for Passenger Information System for Rail Transit Vehicles

IEEE P1477.1 -- Draft Standard for Passenger Information System for Rail Transit Vehicles - Logical Interfaces

IEEE P1478 -- Draft Environmental Standards for Rail Transit Equipment

IEEE P1482 -- Draft Standard for Rail Vehicle Monitoring and Diagnostic Systems

IEEE Std 1482.1-1999 – Standard for Rail Transit Vehicle Event Recorders

IEEE Std 1483-2000 – Standard for Verification of Vital Functions in Processor-Based Systems Used in Rail Transit Control

[IEEE Std 1488-2000 – Trial Use Standard for Message Set Template for Intelligent Transportation Systems](#)

[IEEE Std 1489-1999 – Standard for Data Dictionaries for Intelligent Transportation Systems](#)

[NTCIP 1400 -- Transit Communications Interface Profiles \(TCIP\) Framework Standard](#)

[NTCIP 1401 -- Transit Communications Interface Profiles \(TCIP\) Common Public Transportation \(CPT\) Objects](#)

[NTCIP 1405 -- Transit Communications Interface Profiles \(TCIP\) Spatial Representation \(SP\) Business Area Standard](#)

[NTCIP 1407 -- Transit Communications Interface Profiles \(TCIP\) Control Center \(CC\) Business Area Standard](#)

SAE J1455 – Joint SAE/TMC Recommended Environmental Practices for Electronic Equipment Design (Heavy-Duty Trucks)

SAE J1587 – Joint SAE/TMC Recommended Practice for Electronic Data Interchange between Microcomputer Systems in Heavy Duty Vehicle Applications

[SAE J1708 – Serial Data Communications between Microcomputer Systems in Heavy-Duty Vehicle Applications](#)

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