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FOREWORD

This document uses only metric units.

This publication defines an application profile for communications between management systems. It defines requirements and optional and conditional clauses that are applicable to specific environments for which they are intended. This standard contains one annex, Annex A, which is defined as normative.

This document is also known as AP-DATEX, and during initial development was also referenced as TS 3.DATEX. However, in order to provide a more organized numbering scheme the document is now referenced as NTCIP 2304.

This document is an NTCIP Application Profile. NTCIP Application Profiles define the upper three layers of the ISO seven-layer Open Systems Interconnect (OSI) Reference Model.

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History

The technical specification of this version of NTCIP 2304 is identical to the former version, except as noted in the development history below:

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NTCIP 2304:2002 v01.08. September 2005 – Prepared document for publication.

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Anyone using this document should seek information about the version number that is of interest to them in any given circumstance. The MIB, the PRL, and the PICS should all reference the version number of the standards publication that was the source of the excerpted material.

Compliant systems based on later, or higher, version numbers MAY NOT be compatible with compliant systems based on earlier, or lower, version numbers. Anyone using this document should also consult NTCIP 8004 for specific guidelines on compatibility.

INTRODUCTION

This publication provides a simple NTCIP Application Profile for communications between transportation management systems.

This standard defines requirements that are applicable to all NTCIP environments and it also contains optional and conditional clauses that are applicable to specific environments for which they are intended.

The following keywords apply to this document: AASHTO, ITE, NEMA, NTCIP, application, center, C2C, profile.

The effort to develop NTCIP began in 1992 with the NEMA 3-TS Transportation Management Systems and Associated Control Devices Section. The original effort was in response to a user need for extending the TS 2 Standard for traffic control hardware to include standardized systems communication. Under the guidance of the Federal Highway Administration's (FHWA) NTCIP Steering Group, the NEMA effort was expanded to include the development of communications standards for all transportation field devices that could be used in an Intelligent Transportation Systems (ITS) network. This effort grew to include communications between management systems dealing with transportation. As a result, in July 1996, the NTCIP Steering Group held the first workshop to address center-to-center communication issues.

In September 1996, an agreement was executed among AASHTO, ITE, and NEMA to jointly develop, approve, and maintain NTCIP Standards. One of the first actions of this joint effort was to establish the Center-to-Center Working Group. The first meeting of the C2C WG was in July 1996; the first draft of this standard was developed in December 1997.

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Section 1 GENERAL

1.1 SCOPE

This standard is applicable to communications between any two management subsystems within the Intelligent Transportation Systems (ITS) environment.

This application profile lists the requirements for a traditional approach for data exchange among systems.

1.2 GENERAL

1.2.1 OSI Reference Mode

The OSI Reference Model defines seven layers, each performing a particular role in the transmission of data over a medium. Application profiles define the upper three layers.

The top layer of the OSI seven layer model, the Application Layer, handles issues like network transparency, resource allocation, and problem partitioning. The application layer is concerned with the user's view of the network (e.g. formatting electronic mail messages).¹

The second highest layer in the OSI seven layer model, also known as layer 6 or the Presentation Layer, performs functions such as text compression, code conversion, or format conversion to try to smooth out differences between hosts.²

Layer 5, the Session Layer, handles security and creation of the session.

1.2.2 Scenario

AP-DATEX should be used when there is a connection between two or more ITS management subsystems. An example of this is a traffic operations center connected to a transit operations center. Each subsystem can be viewed as consisting of the following interfaces as shown in Figure 1:

1. Application Interface
2. Operator Interface
3. Communication Interface
4. Database Interface

This standard deals with interface number (3).

¹ Free On-Line Dictionary of Computing. <http://wombat.doc.ic.ac.uk/foldoc/index.html>, 12 January 1995.

² Ibid.