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National Transportation Communications for ITS Protocol

Infrastructure Standards Security Assessment (ISSA)

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- U.S. Department of Transportation

Foreword

NTCIP 9014, an NTCIP technical report, reviews NTCIP implementation of SNMPv1 in the NTCIP family of Standards, and identifies a path forward toward SNMP v3 implementation.

The following keywords apply to this document: AASHTO, ITE, NEMA, NTCIP, SNMP, security, migration,

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Approvals

NTCIP 9014 v01 was separately balloted and approved by the NTCIP Joint Committee.

AASHTO—Standard Specification; [month, year]
ITE—Software Standard; [month, year]
NEMA—Standard; July 2021

History

In 1992, the NEMA 3TS Transportation Management Systems and Associated Control Devices Section began the effort to develop NTCIP. Under the guidance of the Federal Highway Administration’s NTCIP

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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 ITS network.

In September 1996, an agreement was executed among AASHTO, ITE, and NEMA to jointly develop, approve, and maintain the NTCIP Standards. In 2019, the Base Standards and Protocols 2 (BSP2) Working Group was tasked with the effort to develop NTCIP 9014.

Compatibility of Versions

To distinguish NTCIP 9014 (as published) from its previous drafts, NTCIP 9014 also includes NTCIP 9014 v01.XX on each page header. All NTCIP Standards Publications have a major and minor version number for configuration management. The version number SYNTAX is "v00.00a," with the major version number before the period and the minor version number and edition letter (if any) after the period.

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General

1.1 Scope

The National Transportation Communications for ITS Protocol (NTCIP) Standards have been developed to provide for the interoperability of ITS systems and devices. NTCIP Standards define common data definitions and open protocols ("open" meaning available to everyone to use) that create a system environment that can be expanded and adapted with multiple types of field equipment from multiple manufacturers. The first NTCIP Standards were published in the 1990s.

The United States Department of Transportation's (USDOT's) Architecture Reference for Cooperative and Intelligent Transportation (ARC-IT) organizes communications into five link types: center-to-center (C2C), center-to-field (C2F), field-to-field (F2F), wide-area wireless, and short-range wireless. See Figure 1.

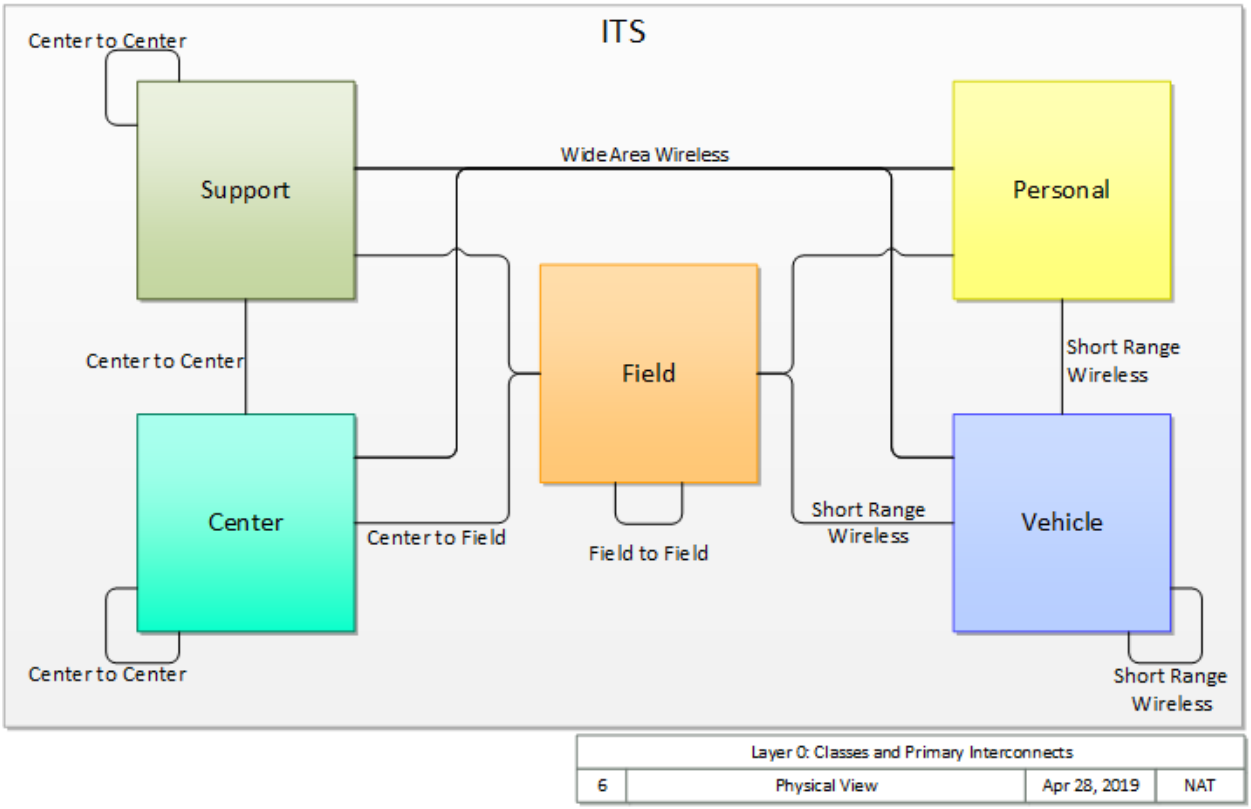

Figure 1 Layer 0 of ARC-IT v9.0 Physical View

NTCIP addresses three of the five link types as follows:

a) C2C, where communications are typically between transportation and back-office systems located in fixed locations (centers);
b) C2F, where communications are between 'central systems' and transportation field devices located on or near roadways; and
c) F2F, where communications are between transportation field devices located on or near roadways.

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