Standard Development Report
for the
Advanced Transportation Controller
Application Programming Interface
Standard

November 9, 2010

The following Standard Development Report (SDR) is made in accordance with the Institute of Transportation Engineers (ITE) procedures for the Advanced Transportation Controller Application Programming Interface Standard.
1 LATEST VERSION OF THE DRAFT PROPOSED STANDARD

Appendix I contains Recommended Standard ATC API Standard Version 02.16, Application Programming Interface (API) Standard for the Advanced Transportation Controller (ATC) (also known as API Standard v02.16 or API Standard Version 2). The previously approved version of this standard was API Standard v02.06b (also known as API Standard Version 1).

2 SUMMARY STATUS

ATC API Standard Version 02.16 has been accepted as a Recommended Standard of the ATC Joint Committee (JC). The standard is complete with user needs, software requirements and a detailed specification of the interface. It is being distributed to the members of the Institute of Transportation Engineers (ITE), the American Association of State Highway and Transportation Officials (AASHTO), and the National Electrical Manufacturers Association (NEMA) for formal balloting and approval. After all three standards development organizations (SDOs) have individually approved the document it will be considered a Jointly Approved Standard and published.

3 STATUS REPORT

In developing the previously approved standard, API Standard v02.06b, it was apparent that a uniform interface to set, manage and view system-wide parameters was needed for ATC controller units. At that time, such an effort was considered out of scope for the API project. The API Standard Version 2 Project completes this task identifying the user needs, establishing the requirements and defining the design content for an ATC configuration interface.

The Version 2 standard defines five configuration utility applications and a Configuration Menu in which to select them. The Configuration Menu is extensible so that utility programs can be developed in the future and added in a manner consistent with the API standard. Five configuration utility applications that are to be included with each API implementation are defined: “System Time,” “Ethernet Configuration,” “Enable/Disable System Services,” “Linux/API Information” and “Host EEPROM Information.”

On April 8, 2010, the API Working Group (WG) submitted API Standard v02.12 to the ATC JC for review. The ATC JC approved the document for distribution through the SDOs as a User Comment Draft (UCD) on April 22, 2010. Comments received during the user comment period were adjudicated by the API WG and the API Standard was updated accordingly. On August 5, 2010, the API WG submitted the revised API Standard v02.15 to the ATC JC for review. On August 19, 2010, API Standard v02.16 was accepted as a Recommended Standard of the ATC Joint Committee by a vote of the JC (12 yeas, 0 nays). The minor version number of the standard was changed to reflect the change to Recommend Standard status.

4 TIMELINE

<table>
<thead>
<tr>
<th>Number</th>
<th>Event Description</th>
<th>Date/Time Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Decision Made and Effort Announced</td>
<td>November 2008.</td>
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<tr>
<td>2</td>
<td>Committee Formed</td>
<td>December 2008. API WG reinitiated for API Standard v02 effort.</td>
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<tr>
<td>3</td>
<td>Committee Develops Draft Proposed Standard</td>
<td>January 2009. API WG begins development effort on API Standard v02.</td>
</tr>
<tr>
<td>5</td>
<td>Standard Review Panel Ballots Draft</td>
<td>April 2010. WG ballots and sends a Proposed User Comment Draft API Standard v02 to Joint</td>
</tr>
</tbody>
</table>
5 COMMENTS LISTING

The adjudicated user comments from the distribution of User Comment Draft ATC API Standard v02.12, Application Programming Interface (API) Standard for the Advanced Transportation Controller (ATC) are found in Appendix II. ATC API Standard Version 02.16 was created based on the comments received on version 02.12.

6 COMMITTEE OBJECTIVES

The objectives of the API WG are to define software facilities and a programmatic interface that, when combined with the operating system (O/S) defined in the ATC Controller Standard, forms a universal interface for application programs designed to run on ATC controllers. This interface allows application programs to be written so that they may run on any ATC controller unit regardless of the manufacturer. It also defines a software environment that allows multiple application programs to be interoperable on a single controller unit by sharing the fixed resources of the controller. The sharable fixed resources managed by the API software include the controller’s front panel and field input/output (I/O) devices.

7 COMMITTEE MEMBERS

This standard has been developed under the oversight of the ATC JC which is made up of representatives from AASHTO, ITE, and NEMA. The work in developing this standard was performed by the API Working Group, a technical subcommittee of the ATC JC.

API Working Group

Ralph W. Boaz, Pillar Consulting
George Chen, Los Angeles Department of Transportation
Jarrid Gross, E-VIEWS Safety Systems
Robert Helliar, Econolite Control Systems
Herasmo Iniguez, California Department of Transportation
Kyle Irvin, Telvent Farradyne
Ron Johnson, Harris County, Texas
Kenneth Montgomery, Georgia Department of Transportation
Peter Ragsdale, Self
Robert Rausch, TransCore
Peter Skweres, Minnesota Department of Transportation
Neal Smith, New York State Department of Transportation
Douglas Tarico, McCain
John Thai, City of Anaheim
Andy Zhang, Wapiti Micro Systems

ATC Joint Committee

Kleinjan Deetlefs, McCain
Scott Evans, Eberle Design
Craig Gardner, Intelight
Dave Holstein, Ohio Department of Transportation
Andrew Mao, Harris County, Texas
Jeff McRae, California Department of Transportation
Dave Miller, Siemens ITS
Kenneth Montgomery, Georgia Department of Transportation
Ray Deer, Peek Traffic
Guillermo Ramos, New York State Department of Transportation
Robert Rausch, TransCore
Ed Seymour, Texas Transportation Institute
Mohamed Talas, New York City Department of Transportation
Douglas Tarico, McCain
John Thai, City of Anaheim
John Wyatt, Intelligent Devices

8 OTHER MATERIAL OF INTEREST

The documents listed below are consistent with those listed within the API Standard. Newer versions with minor revisions may be available.

ATC Controller Standard Revision v5.2b, ATC JC, 26 June 2006. Available from the Institute of Transportation Engineers.

ATC Standard for the Type 2070 Controller v01.05, ATC JC, 29 March 2001. Available from the Institute of Transportation Engineers.

GNU Coding Standards, 8 May 2006. Available from Free Software Foundation, Inc.


9 DECLEARATION REGARDING OTHER KNOWN NATIONAL AND INTERNATIONAL STANDARDS

This statement confirms that other known national and international standards have been examined with regard to harmonization and duplication of content, and no significant conflicts with another known standard have been identified.

10 ABSTRACT OF THE STANDARD

Purpose

The Advanced Transportation Controller (ATC) Standards are intended to provide an open architecture hardware and software platform that can support a wide variety of Intelligent Transportation Systems (ITS) applications including traffic management, safety, security and other applications. The ATC Standards are being developed under the direction of the ATC Joint Committee (JC) which is made up of representatives from the American Association of State Highway and Transportation Officials (AASHTO), the Institute of Transportation Engineers (ITE), and the National Electrical Manufacturers Association (NEMA).

This document defines a software interface for application programs intended to operate on ATC controller units. It has been prepared by the ATC Application Programming Interface (API) Working Group (WG), a technical subcommittee of the ATC JC. It establishes a common understanding of the user needs, requirements, and specification of the interface for:

- The local, state, and federal transportation agencies who specify ATC equipment;
- The software developers, consultants, and manufacturers who develop application programs for ATC equipment;
- The public who benefits in the application programs that run on ATC equipment and directly or indirectly pays for these products.

Overview

The ATC Controller Standard defines a controller that can grow with technology. It is made up of a central processing unit (CPU), an operating system (O/S), memory, external and internal interfaces, and other associated hardware necessary to create an embedded transportation computing platform. The goal of the interface described in this standard is to define a software platform that, when combined with the ATC O/S, forms a universal interface for application programs. This interface allows application programs to be written so that they may run on any ATC controller unit regardless of the manufacturer. It also defines a software environment that allows multiple application programs to be interoperable on a single controller unit by sharing the fixed resources of the controller. The sharable fixed resources supported include the controller’s front panel and field input/output (I/O) devices. The API Standard specifies the interface. Software developed in compliance to the API Standard is known as the ATC...
Application Programming Interface (API). Figure 1 illustrates the layered architecture of the ATC software.

![Diagram of ATC software layered organization]

Figure 1. ATC software layered organization.

**Document Organization**

This standard is made up of four sections, appendixes and an index. Section 1, “Introduction”, provides an overview of the entire document. Section 2, “Overall Description”, provides background information and the user needs for the requirements defined in the subsequent section. Section 3, “Specific Requirements”, defines the requirements that must satisfied by the ATC API. Section 4, “Application Programming Interface”, specifies the ATC API. Appendix A of the standard is a traceability matrix showing the relationship between the user needs, the software requirements and the functions of the ATC API.
APPENDICES
Appendix I

Recommend Standard API Standard v02.16

http://www.ite.org/standards/atcapi/APIStd0216_100819.pdf
Appendix II

Adjudicated User Comments for ATC API Standard v02.12