

# **ITE Programs Update**

**System Management & Operations**

**ITS Standards**

**Connected and Autonomous Vehicles**

**ITS Maryland Annual Conference and  
Regional Traffic Signal Forum**

**November, 6, 2014**

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# ITE Engagement

- National Operations Center of Excellence
- V2I Deployment Coalition
- Connected Vehicles
  - Connected Vehicle Task Force
  - Management and Operations/ITS Council  
Ad hoc Committee on Connected  
Vehicle/Autonomous Vehicle Outreach
- ITS Standards
- Cybersecurity



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# National Operations Center of Excellence

- A “center” of excellence is commonly defined as “a team, a shared facility or an entity that provides leadership, best practices, research, support and/or training for a focus area”
- The Center will provide a single point of contact for the TSM&O community to provide access to a wide range of resources related to best practices, training and skill development, technical assistance, communities of practice
- The Center provides opportunities to engage in TSM&O related activities including webinars, peer exchanges, workshops and conferences



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# National Operations Center of Excellence

## Evolution

- April 2013 NCHRP 20-7 (298) Audience, scope, and business models
- Board of Directors Resolution-from AASHTO SSOM
- AASHTO/ITE/ITS America MOU for the web portal development
- Business Plan NCHRP 20-07 (352B)
- Implementation Working Group
- AASHTO/ITE/ITS America MOU for the NOCoE
- AASHTO Approval
- FHWA Cooperative Agreement
- Executive Director Selection
- Staffing & Startup



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# National Operations Center of Excellence

- Host an actively managed web portal with a suite of services provided by full-time staff:
  - Strong search engine
  - Knowledge database
  - Cross citation of best practices
  - Social media connections
  - Moderated forums
  - Links to other websites
  - Comprehensive Calendar



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# National Operations Center of Excellence

- Technical Services Program
  - Platform for Peer Exchanges or a Peer-to-Peer Program
  - HELP desk or “Live Librarian” or Ask an Expert
  - Best Practices & Project and Product Showcases
  - E-newsletter
  - Webinars grounded in on-demand topics
  - Connection to the Operations Academy & Training
  - Linkages to resources across all platforms – Federal, State, and Local DOTs, academia, research centers, industry, associations



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# V2I Deployment Coalition

Active participation in:

- V2I Deployment Coalition
- AASHTO Executive Leadership Team
- AASHTO Connected Vehicle Roadmap
- TRB Cyber Security Subcommittee



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# V2I Deployment Coalition

Collaboration between AASHTO, ITE, ITSA and USDOT to establish the V2I DC capable of assuming an expanded role to include comprehensive outreach to and feedback from all transportation modes and system owner/operators.

V2I DC activities would include but not limited to:

- Gathering input through periodic open meetings on deployment issues through webinars and peer exchanges
- Fostering public sector participation
- Providing support for V2I deployment planning
- Performing gap filling research activities
- Providing a peer exchange platform for public, private, industry, academia and other agency partners
- Providing leadership in the development and implementation of standards.



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# V2I Deployment Coalition

- Collaborate with FHWA on 2015 connected vehicle deployment guidance
- Promote collaboration among USDOT, owner/operator associations, AASTHO, and trade & professional associations
- Support the development of second phase Connected Vehicle Footprint Analysis
- The Vehicle-to-Infrastructure Deployment Coalition Chair and Connected Vehicle Executive Leadership Team Chair to provide executive input to other Federal, State, and local transportation groups associated with V2I technology deployment.



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# Connected Vehicle Task Force

- Role: provides comment, review and input to major areas of the connected vehicle program. Updates to keep community up to date
  - NHTSA decision on V2V
  - FHWA 2015 V2I deployment guidance development
  - Updates on DSRC, V2V and AASHTO Footprint analysis
- Representation:
  - Public and Private sectors, co-chair from each
- Relationships
  - AASHTO, ITS America, NACE, TRB, SAE, IEEE
- Supported thru ITS-JPO



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# Connected Vehicle Task Force

- 2014 Focus Areas
  - Cyber and infrastructure security
  - Applications for C.V. common interface environment
  - Roadside unit specifications and standards



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# ITE CV/AV Outreach

Management and Operations/ITS Council  
Ad hoc Committee on Connected  
Vehicle/Autonomous Vehicle Outreach  
developed [presentation](#) to:

- Increase awareness
- Lead in to discussion panels at ITE District and Section Meetings
- Outreach to wider transportation and decision-maker community



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# ITE CV/AV Outreach

ITE hosted conference sessions:

- Connected and Autonomous Vehicles – Urban Myths, Social Truths and Controversy Held in “ignite” session format --- 20 slides shown for 20 seconds each (August 2014)
- Plenary address by Andrew Chatham, Principal Software Engineer, Google Self-Driving Cars (March 2014)
- Connected Vehicle and Infrastructure Cybersecurity session (March 2014)



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# ITS Standards Program Elements

- Development
  - Advanced Traffic Controller
  - ITS Cabinet
  - ATC Application Programming Interface
  - Strategic 2-Year Planning:
    - Connected Vehicle Roadside Equipment
    - Network Security
  - NTCIP 1202 v3
  - NTCIP 1204 v4.03
  - ATC 5401



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# ITS Standards Program Elements

- ITS Standards Maintenance
- Professional Capacity Building
  - 37 courses developed, more coming
  - 10 Transit ITS courses in development
  - Both Systems Engineering and Non-Systems Engineering curriculum in path in initial courses
  - Available here: [www.pcb.its.dot.gov/stds\\_training.aspx](http://www.pcb.its.dot.gov/stds_training.aspx)
- Intelligent Transportation Systems ePrimer
  - <http://www.pcb.its.dot.gov/ePrimer.aspx>



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# Cybersecurity

- Vulnerabilities in:

- Advanced Traveler Information Systems
- Field Devices
- Center-to-Field Networks
- TMCs

(examples in article by Ed Fok, FHWA; July 2013 ITE Journal)



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# Cybersecurity

## Opportunities :

- Assessment of threats to your system
- Take advantage of available self assessment tools to gain better visibility of your vulnerability to cyber threats.
  - Cybersecurity Evaluation Tool (CSET) is available from [http://www.us-cert.gov/control\\_systems/csetdownload.html](http://www.us-cert.gov/control_systems/csetdownload.html)
  - Active participation in the Multi-State Information Sharing and Analysis Center (MS-ISAC) MS-ISAC is a division of the not-for-profit Center for Internet Security



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# Cybersecurity

## Opportunities :

- Improve communication between operators at the state and local transportation agencies and national-level cybersecurity experts at DHS
- [Example DHS Control System Security Program (CSSP) Industrial Control Systems Joint Working Group for operators of critical infrastructure]
- Consider the recommendations in *The Roadmap to Secure Control Systems in the Transportation Sector* as a way to institutionalize improved practices that can lead to increased resiliency in the transportation system.



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# Save the Date

2015 Annual Meeting and Exhibit  
August 2-5

Westin Diplomat, Hollywood, FL



2015 Technical Conference  
October 28-31

Westin La Paloma, Tucson, AZ



ITE Webinars / Workshops [www.ite.org/calendar](http://www.ite.org/calendar)

- Traffic Signal Program Management
- Risk Management
- Urban Street Design



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# ITS Standards Professional Capacity Building Program

## Year 3 Course Development

Sequence#	Course Name
C201	Introduction to the Simple Network Management Protocol (SNMP) and its Applications in the Field Devices Based on NTCIP Standards (L)
C202	Introduction to the Application Level Protocols for Center-to-Center Communication System Interface Implementation (NTCIP 2306 XML) (L)
I 231	Vehicle-to-Infrastructure (V2I) ITS Standards for Project Managers
I241	Vehicle-to-Vehicle (V2V) ITS Standards for Project Managers
T203a	How to Develop Test Cases for ITS Standards Test Plan
T203b	How to Develop Test Cases for ITS Standards Test Plan
T204a	How to Develop Test Procedures for ITS Standards Test Plan
T204b	How to Develop Test Procedures for ITS Standards Test Plan
A307a	Understanding User Needs for ATC Version 6 Controller (Non-SEP Path)
A307b	Specifying Requirements for ATC Version 6 Controller (Non-SEP Path)
A334a	Understanding User Needs for 1207 RM Std v2 (A334a)
A334b	Specifying Requirements for 1207 RM Std (A334b)
T334	Applying your test plan to the 1207 RM Std v2
T312	Applying your test plan to the 1209 TSS Std v2
A315b	Specifying Requirements for Actuated Traffic Signal Controllers (ASC) Based on NTCIP 1202 Standard (LO 3 & 6), B1



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# ITS Standards Professional Capacity Building Program

- Transit Course Development
  - Introduction to Transit ITS Standards
  - TCIP Part 1
  - TCIP Part 2
  - Traveler Information, Part 1
  - Traveler Information, Part 2
  - Transit Management, Part 1
  - Transit Management, Part 2
  - Electronic Payment Systems
  - Transit Signal Priority (Arterial Management)
  - Connected Vehicle/Emerging Technologies



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# ITS Standards Program

- ITS Standards:
  - Development
  - ITS Standards Maintenance
  - Professional Capacity Building
  - Intelligent Transportation Systems ePrimer
- ITE is a Standards Development Organization in partnership with AASHTO and NEMA



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# ITS Standards Development

- Advanced Traffic Controller Working Group
  - ATC 5202 Model 2070 Controller Standard v03 (Published)
  - ATC Standard 5.2b (Published, at 5-Year Review)
  - ATC 5201 ATC Standard v06.xx (Comment Disposition)
- ITS Cabinet Working Group
  - ITS Cabinet Standard v01.02.15 (Published, Superseded)
  - ITS Cabinet Standard v01.02.17b (Published)
  - ITS Cabinet Standard v2.0 (Requirements complete, in Design)



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# ITS Standards Development

- ATC Application Programming Interface Working Group
  - API for ATC Version 1 (Published, Superseded)
  - API for ATC Version 2 (Published)
  - API Reference Implementation (Requirements complete, in Design)
- Strategic 2-Year Planning:
  - Connected Vehicle Roadside Equipment
  - Network Security



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# ITS Standards Development

- NTCIP 1202 v3

Data messaging protocol for adaptive control (Ex. SPaT data)

- NTCIP 1204 v4.03

Environmental Sensor Stations and linkage to Clarus

- ATC 5401

Reference project to test software for compliance with ATC API

- Available at: [www.ite.org/standards](http://www.ite.org/standards)



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# ITS Standards Maintenance

- Maintains published ATC, TMDD, and NTCIP standards
- Driven by any one or combination of the needs, as necessary, to keep standards current with
  - Lessons learned from deployment
  - On-going technology upgrades
  - Maintaining support for existing users
  - Interoperability with other standards and their interfaces.



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# ITS Standards Professional Capacity Building Program

ITE has developed 37 course modules for ITS JPO in the Year 1 and 2 of the program

- Both Systems Engineering and Non-Systems Engineering curriculum in path in initial courses
- Available here:  
[www.pcb.its.dot.gov/stds\\_training.aspx](http://www.pcb.its.dot.gov/stds_training.aspx)



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