

TRB Standing Committee on Intelligent Transportation Systems (ACP 15)

Triennial Strategic Plan: 2024-2026

January 3, 2024



NATIONAL Sciences
ACADEMIES Engineering
Medicine



TRB Intelligent Transportation Systems (ITS) Committee (ACP 15)

The Committee's 3-year Strategic Plan consists of the following three sections:

- **Focus and Outlook:** This section provides an outlook on how the Committee's mission and scope fit the key policies, technologies, innovative methods, and research that is influencing ITS within the context of systems managing and operating traffic on the surface transportation system.
- **Committee Plan, Initiatives, and Key Activities:** This section outlines the Committee's strategic goals and supporting ongoing activities over the upcoming three-year period (2024-2026).
- **Committee Information and Resources:** This section reviews current information on the committee and partnering TRB Committees and organizations.

Focus and Outlook

Committee Mission: The *mission* of the Standing Committee on ITS is to provide leadership, counsel, and serve as the TRB focal point with identifying research needs, promoting priorities for proposed research, improvements to current practices, implementing promising results, promoting innovative methods, sharing information, and collaborating with other organizations or industry groups supporting ITS.

Committee Scope: The ITS Committee is concerned with ITS systems-level issues. Such issues include conceptual system planning and design, integration of technologies and approaches from various sub-disciplines within ITS, applications to all modes of ground transportation and to facilitate intermodal integration, and evaluation of the overall impacts of ITS on the developers, users, and operators of all parts of the ground transportation system. Activities focus on the broad planning, policy, economic, social, technological, and institutional aspects of the development and implementation of ITS. The Committee also facilitates coordination of ITS- related issues with other standing committees of TRB.

The ITS Committee's scope and supporting efforts will strive to:

- Promote the need to identify, propose, and advance ITS research,
- Provide counsel on ITS and evolving practices; and
- Raise awareness and facilitate the sharing of information on promising results and industry practices.

The ITS Committee provides leadership, counsel, and serves as the TRB focal point with identifying research needs, promoting priorities for proposed research, improvements to current practices, and collaborating with other organizations or industry groups supporting ITS. These efforts will engage and partner with other TRB standing committees and industry groups responsible for or interested in the ITS systems-level planning, implementation, management, operation, maintenance, evaluation, or integrating of information shared between systems, users (e.g., connected and automated vehicles, travelers using connected devices, emergency responders using connected devices), and consideration of all travelers to improve safety, mobility, environmental, and equity of travel on the surface transportation system. The Committee will place a priority on advancing activities involving the following four areas in 2024-2026:

- 1) digital infrastructure to share roadway transportation information.
- 2) ITS devices and systems sharing and using information.
- 3) planning for the next generation of agencies' traffic management systems.
- 4) other emerging issues and practices.



Key Drivers: The Committee’s scope and priority activities address current and evolving drivers of change which may include needs of users, challenges agencies are facing, trends in industry, developments in technology, implications of policies, and environmental considerations. Examples of key drivers of relevant the ITS Committee in the coming three-year period include, but are not limited to:

- Preparing for and using data from emerging sources, third-party service providers, connected and automated vehicles, and connected travelers.
- Supporting the active management, operation, and sharing of multi-modal information on the conditions, services, and equitable options for travel on the surface transportation system.
- Expanding, evolving, and planning to enhance the capabilities, services, and performance of the next generation of agencies traffic management systems.
- Planning, designing, deploying, and facilitating systems to enhance the cooperation and communication among owners (e.g., agencies) and operators (e.g., service providers) within metropolitan areas, regions, states, or nationally.
- Advancing research and sharing information on the capabilities and opportunities to incorporate new and evolving technologies and methods.

Committee Strategic Plan: The Committee activities and efforts working in partnership with other TRB committees and organizations over the upcoming three-year period (2024-2026) will be pursued in support of CHIEVING the following five strategic goals of the ITS Committee:

Goal 1: *Identify future research needs, proposals, and priorities* for emerging ITS related topics.

Goal 2: Identify, develop, and *facilitate advancing ITS research with partner organizations*.

Goal 3: *Review current ITS research and practices* (e.g., technical resources, standards, research).

Goal 4: *Promote sharing ITS related practices and research during TRB events* (e.g., annual, mid-year, symposiums, webinars) with other Committees and practitioners.

Goal 5: *Facilitate sharing ITS related practices and research* (e.g., other TRB Committees, AASHTO CTSO and ITS Work Group, NOCoE, ITS America, ERTICO, IRF, IBTTA, ASECAP, ITE).

Committee Plan, Initiatives, and Key Activities:

The following are the key activities the ITS Committee anticipates pursuing each year in support of achieving these strategic goals and supporting the roles and responsibilities (e.g., TRB Annual Meeting program sessions, meetings) of the ITS Committee:

Goal 1: Identify future research needs, proposals, and priorities for emerging ITS related topics.		
Action	Timeframe	Responsibility
1.1: Solicit feedback and information on emerging ITS topics of possible interest for the Committee to consider sharing information or propose research.	Ongoing	Committee Chair and Communications Team Co-chairs



1.2: Solicit feedback and collaborate with external partners and TRB Committees to identify emerging ITS topics and opportunities to share information.	Ongoing	Committee Chair and Communications Team Co-chairs
1.3: Identify emerging ITS topics to incorporate into ongoing or future planned Committee activities.	Ongoing	Committee Chair and Communications Team Co-chairs
1.4: Identify emerging ITS topics to incorporate into planning for annual and mid-year meeting activities.	Ongoing	Committee Chair and Communications Team Co-chairs

Goal 2: Identify, develop, and facilitate advancing ITS research with partner organizations.

<u>Action</u>	<u>Timeframe</u>	<u>Responsibility</u>
2.1: Identify ITS research needs and priorities with other TRB Committees and external partners.	Ongoing	ITS Committee Teams Co-chairs
2.2: Develop research proposals for ITS research priorities in partnership with other TRB Committees and external partners	Ongoing	ITS Committee Teams Co-chairs
2.3: Submit proposed research priorities into the AASHTO Committee on Transportation System Operations research needs database (e.g., NOCoE website)	Ongoing	Research Team Co-chairs
2.4: Coordinate with other TRB Committees and external partners to obtain support for research proposals and advancing into funding programs.	Ongoing	Research Team Co-chairs
2.5: Provide counsel in response to requests from other TRB Committees and external partners on ITS related issues, research needs, and opportunities.	Ongoing	Committee Chair and ITS Committee Teams Co-chairs

Goal 3: Review current ITS practices, trends, needs, and possible research (e.g., technical resources, current practices, industry or organizations practices or standards, research).

<u>Action</u>	<u>Timeframe</u>	<u>Responsibility</u>
3.1 Facility the review of ITS related papers submitted to TRB for presentation and publication.	Annually	Paper Review Team and Committee Chair
3.2: Support other TRB committees and global partners on ITS issues of mutual interest to identify and advance complimentary research and related activities.	Ongoing	Committee Chair and Communications Team Co-chairs
3.3: Promote the sharing of ITS practices, trends, and research via the Committee’s newsletter, webinars, panel sessions and workshops at industry, TRB, or international meetings or symposia.	Ongoing	Committee Chair and Communications Team Co-chairs
3.4: Promote ITS practices and research via the National Operations Center of Excellence website (e.g., traffic management system portal) and other related sites.	Ongoing	Committee Chair and Communications Team Co-chairs



Goal 4: Promote sharing ITS related practices and research during TRB events (e.g., annual, mid-year symposiums, webinars) with other Committees and practitioners.

<u>Action</u>	<u>Timeframe</u>	<u>Responsibility</u>
4.1: Communicate and share information via TRB listserv to ITS Committee members and friends on current and planned TRB events.	Ongoing	Communications Team and ITS Committee Team Co-chairs
4.2: Plan and conduct committee meetings (e.g., TRB Annual Meeting, mid-year)	Ongoing	Committee Chair and ITS Committee Teams Co-chairs
4.3: Plan, conduct or support ITS related podium sessions, workshops, calls for papers and poster sessions, and other opportunities to share information.	Ongoing	ITS Committee Teams Co-chairs and Committee Chair
4.4: Plan, conduct, or support ITS related symposia (e.g., Automation in Road Transportation (ARTS), International Symposium on Freeway and Tollway Operations (ISFO))	Ongoing	ITS Committee Teams Co-chairs and Committee Chair

Goal 5: Facilitate the sharing of ITS related information, research, and events.

<u>Action</u>	<u>Timeframe</u>	<u>Responsibility</u>
5.1: Communicate and share information via TRB listserv to ITS Committee members and friends.	Ongoing	Committee Team and ITS Committee Team Co-chairs
5.2: Promote Committee members and friends updating their emails on their TRB account and selecting ITS Committee to receive information.	Ongoing	Communications Team and ITS Committee Team Co-chairs
5.3: Develop and update ITS Committee website	Ongoing	Communications Team Co-chairs and Team
5.4: Develop, update, and share information via social media platforms.	Ongoing	Communications Team Co-chairs and Team

Committee Initiatives:

The following are the key initiatives and activities specific teams are pursuing in support of achieving the strategic goals, roles, and responsibilities of the ITS Committee:

• Advancing a Digital Infrastructure to Share Roadway Transportation Information:

Description: Digital infrastructure **supports information exchange** among public and private users and owners and operators of the roadway system. It consists of:

- **Information sensing, communications, processing, and storage** used and located within public roads and at associated centers.



- The **business models, agreements, organizational and institutional arrangements and processes** that support operation of those systems.
- **Enables management of the surface transportation system**, including the pursuit of safety, efficiency, mobility, equity and other objectives of system operators and users.

Cornerstones of Business Case: Societal **Outcomes** may include vehicle-roadway public health within a safe system approach; emergency response & military mobility; goods mobility and supply chain resilience; people and multi-modal transportation; and community accessibility.

Action plan:

1. Ensure representation of the roadway digital infrastructure topic in the 2024 TRB Automated Roadway Transportation Symposium.
2. Partner with the TRB Vehicle-Highway Automation Committee to engage other groups in forming a TRB Joint Subcommittee on Roadway Digital Infrastructure (RDI). Potential Joint Subcommittee activities may include:
 - a) Explore potential for a collaborative research agenda to guide national RDI research and development.
 - b) Define preliminary RDI architectural principles to guide planning for RDI research and development, and to anticipate adaptation of current systems engineering approaches.
3. Identify high priority roadway digital infrastructure research needs to propose to the AASHTO Committee on Transportation System Operations (CTSO) as FY26 NCHRP Problem Statements.

Lead: John Corbin, FHWA, Office of Operations (john.corbin@dot.gov).

Volunteers: Jim Misener, Qualcomm Technologies, Inc.; Brian Simi, Michael Baker; Deepak Gopalakrishna, ICF; Les Jacobson, WSP; Martha Morecock Eddy, Battelle; Zorica Cvijovic, Trihydro Corporation; Valerie Shuman, Shuman Group, LLC; and Shalini Ghosh, WSP.

- **Sharing and Using Information:**

Description: The secure and reliable sharing and using of data and information among ITS systems and devices is foundational to agencies and ITS systems having the necessary capabilities and resources to actively managing and operating the surface transportation system. It consists of:

- Facilitating public agencies and service providers having secure and reliable access to and using data.
- Enabling the sharing and using of data to meet evolving ITS systems vulnerabilities and needs.
- Supporting the connectivity, integration, and sharing of data as vehicles and travelers cross jurisdictional boundaries.
- Collaborating to enable access to information in support of academia conducting ITS related research.

Cornerstones of Business Case: Sharing and using information supports investment; public good; advancement; performance; and risk management.

Action plan:

1. Develop research problem statements.
2. Provide feedback to other organizations on research needs and priorities.
3. Propose and support webinars, workshops, panel, poster sessions for the TRB Annual Meetings.
4. Propose and conduct workshops at other industry events.
5. Identify opportunities to include ITS systems and devices sharing and use of data into future updated to the AASHTO Transportation Operations Manual.



Lead: Murat Omay, FHWA, ITS Program (murat.omay@dot.gov) and Sudhakar Nallamothu, FHWA, Safety and Operations Research and development (s.nallamothu@dot.gov).
Volunteers: Glen Havinoviski, Johnson; Mirmiran and Thompson (JMT); Jeff Jenq, Maricopa Association of Governments; Jeff Varick, Brandmotion, LLC; and Ram Boyapati, Battelle.

• Planning for the Next Generation of Traffic Management Systems

Description: This initiative will explore and identify information on agencies setting a strategic direction for their TMS, planning for improvements to TMSs, and incorporating the future needs for TMSs into agency and regional planning and programming processes. These opportunities may include:

- Assess and establish a baseline of current TMSs capabilities and performance.
- Scope of planning effort (e.g., feasibility study, system implementation), resources needed, analysis to conduct, issues to consider, and elements of plan capturing results.
- Stakeholders to include in process and build support for proposed improvements.
- Support and resources to facilitate process, plan preparation, and improvements.
- Key issues to incorporate from or link to agency or regional plans.
- Data and information (e.g., policies, procedures) to consider in planning.

Cornerstones of Business Case: Agencies typically don't have institutionalized processes to support planning for TMS acquisitions, improvements, or replacement. It's very often done on a one-off or ad-hoc basis. Planning efforts and multi-year plans offer the opportunity for agencies to improve how they prepare for and allocate resources in support of for improving their TMSs or replacing and pursuing the next generation of their TMSs.

Action plan:

1. Conduct workshop at 2024 TRB Annual Meeting "Preparing, Conducting, and Summarizing the Results of TMS Assessments".
2. Conduct webinar highlighting results of workshop "Preparing, Conducting, and Summarizing the Results of TMS Assessments" conducted during 2024 TRB Annual Meeting.
3. Develop problem statement proposals to advance research on TMSs related topics:
 - Software subsystems and software to meet current & evolving TMS needs.
 - Opportunities to enable TMSs sharing agency owned and open source software and tools.
4. Facilitate the sharing of TMS related practices or provide counsel on:
 - Sharing information on the TMS portal on the NOCoE Operations Center website.
 - Support peer-to-peer exchanges or webinars (e.g., TRB, NOCoE, TMC Pooled Fund Study).
 - Facilitate engaging experts in activities involving TMSs of partner organizations or TRB (e.g., review products developed by TMC Pooled Fund Study, NCHRP projects, AASHTO CTSO).
 - Identify opportunities to include TMS related issues and practices into future updates of the AASHTO Transportation Operations Manual.
5. Support the planning for and development of the technical program for the 5th International Symposium on Freeway and Tollway Operations (June, 2025 in Marrakesh, Morocco).

Lead: Pete Marshall, D2 Traffic Technologies (pete.marshall@d2traffic.com).

Volunteers: Jon Obenberger, FHWA (jon.obenberger@dot.gov); Slade Engstrom, Transystems; Jibril Babatunle, Tennessee DOT; Tucker Brown, SWRI; Alejandro Sanchez-Badillo, Battelle; and Zorica Cvijovic, Trihydro.



• Emerging Concepts and Practices

Description and Cornerstones of Business Case: Motivation for considering emerging concepts and practices due to public agencies encountering challenges with new technologies and practices being advanced, limited research and available information, need to separate fact and fiction, and topics may not fit within other committee scopes. This initiative is expected to spur further research and committee focus on emerging concepts and practices through research statements, curated call for papers, increase public/private collaboration, and grow and diversify membership.

Action plan:

1. Establish Liaisons with TRB Committees and organizations (e.g., ITSA, IEEE, NEMA, ITE).
2. Coordinate with other TRB Committees (e.g., ACP20 Freeways Ops Emerging Freeway Operations Issues and Concepts Subcommittee, AP020).
3. Identify ongoing research projects (e.g., reviewing NCHRP projects and identifying research gaps).
4. Develop problem statements and partnerships to sponsor advancing research on emerging concepts.
5. Facilitate the sharing of information and highlight innovative practices (e.g., Committee meetings, website, newsletter, social media, webinars, peer-to-peer exchanges).

Lead: Matt Junak, HNTB (mjunak@hntb.com).

Volunteers: Martha Morecock Eddy, Battelle; Nady Moini, New Jersey Sports and Exposition Authority; Youwen Duan, University of Michigan; and Zorica Cvijovic, Trihydro

• Other ITS Committee Activities:

Action Plan:

1. Advance activities and coordinate efforts in support of cross-cutting ITS related issues with other TRB Operations Section Standing Committees, TRB Joint Subcommittees, and professional associations (Chair and TRB ITS Committee team leaders).
2. Support the TRB Traffic Control Devices Committee's proposal to form a TRB Joint Subcommittee to address work zone traffic operations issues (Chair and TRB ITS Committee team leaders).
3. Recruit new friends and future members to engage and support ITS Committee related activities (Chair and TRB ITS Committee team leaders).
4. Update the ITS Committee's 2024-2025 Triennial Strategic Plan. (Chair and Committee team leaders).
5. Support the African Transportation Research Alliance efforts to advance African surface transportation operations and ITS related research, policies, and practices by bringing transportation professionals together to collaborate and implementation of innovative ITS and transportation operations related research and practices throughout Africa (Chair and ITS Committee team leaders).

Committee Information and Resources:

Teams:

- Digital Infrastructure to Share Roadway Transportation Information: John Corbin
- Sharing and Using Information: Murat Omay and
- Planning for the Next Generation of Traffic Management Systems: Pete Marshall
- Emerging Concepts and Practices: Matt Junak
- Communications: Gunnar Rhone
- Research: James Li and Niloo Parvinashtiani
- TRB Paper Reviews and Publications: Hany Hassan



Membership

- Total Members: 31
- Regular Membership Slots: 20
- International Members: 5
- State DOT Members: 3
- Local or Regional Agencies or Organizations: 4
- Young Members: 0
- Emeritus Members: 3

Communication Methods and Media

The Committee's *Communications and Outreach Team* maintains the following mechanisms to share information with Committee members, friends, other TRB Committees and Councils, partnering organizations, and transportation community:

- Email: MyTRB email listserv.
- Website: <https://www.trbitscommittee.org>.
- LinkedIn: <https://www.linkedin.com/company/trb-its-committee>.

Lead: Gunnar Rhone, Pennsylvania DOT (grhone@pa.gov).

Volunteers: Julie Evans; David Ungemah, WSP; Greg Krueger, HNTB; Slade Engstrom, Transystems; Guilherme Leao, Cambridge Systematics; and Hongjae Jeon, University of Illinois.

Research

The Research Team facilitates the coordination and collaboration the identification, development, review, and advancement of research needs and proposals with the ITS Committee, other TRB committees, and industry groups.

Action Plan:

1. Facilitate development, reviews, and Committee prioritization of ITS research problem statement proposals.
2. Identify research needs, proposals, and collaborate with other TRB Committees and possible sponsors.
3. Submit research ideas to AASHTO CTSO Research Work Group research operations (ROPS) database and TRB RNS database as another destination of RNS submission.
4. Facilitate partners supporting and submitting ITS research problem statement proposals into NCHRP annual process to sponsor new research.
5. Facilitate partners (e.g., Traffic Management Center Pooled Fund Study) supporting, sponsoring, or advancing work based on ITS research problem statement proposals.
6. Identify research needs, ongoing, and results to incorporate into Committee activities.
7. Support consideration of ITS research needs in sponsors activities (e.g., AASHTO CTSO and Research Work Group, Pooled Fund Studies (e.g., TMC, TIM)).

Leaders: James Li, Metropolitan Washington Council of Governments (jli@mwkog.org), and Niloo Parvinashtiani, Iteris (nparvin@iteris.com).

Volunteers: Jeff Adler, Kapsch; Shalini Ghosh, WSP; and Nady Moini, New Jersey Sports and Expo Authority.

TRB Paper Reviews and Publications:

Action Plan:

1. Facilitate annual reviews of TRB papers, recommend papers for publication, and presentation.
2. Recruit new ITS Committee members and friends to perform future reviews of papers submitted to TRB.

Lead: Hany Hassan, Louisiana State University (hassan1@lsu.edu).



Committee Chair:

Jon Obenberger, Ph.D., P.E. (jon.obenberger@dot.gov, 202-493-3265), Office of Safety and Operations
Research, Federal Highway Administration

Partnering TRB Committees and Councils

The ITS Committee shares information, collaborates, supports activities, and research related activities in partnership with other TRB committees. This involvement involves joint memberships, participation in meetings, partnering to develop NCHRP research problem statements, conducting jointly sponsored webinars, planning and conducting workshops, facilitating joint meetings, or symposia. The following is a list of the TRB Committees ACP 15 members and friends are actively involved:

- A0020C: International Coordinating Council
- ACP 10: Regional Transportation Systems Management and Operations
- ACP 20: Freeway Operations
- ACP 20(5): Active Traffic Management Joint Subcommittee
- ACP 30: Vehicle-Highway Automation
- ACP 35: Managed Lanes
- ACP 55: Traffic Control Devices
- AED30: Information Systems and Technology Committee
- AED 50: Artificial Intelligence and Advanced Computing Applications
- AME50: Accessible Transportation and Mobility
- AP 020: Innovative Public Transportation Services and Technologies
- AT060: Trucking Industry Research
- TRB Young Professionals in Transportation (YPT)

Partnering Organizations

The ITS Committee shares information, collaborates, supports activities, and research related activities in partnership with other organizations external to TRB. The following is a list of organizations the ITS Committee members and friends are actively involved:

- American Association of State Highway Transportation Officials (AASHTO) Committee on Transportation System Operations (e.g., ITS Work Group, Research Work Group)
- ASCE Transportation & Development Institute
- Chinese Overseas Transportation Association (COTA) Eastern Transportation Coalition
- European Conference of Transport Research Institutes (ECTRI)
- European Association of Operators of Toll Road Infrastructure (ASECAP)
- International Bridge, Tunnel and Turnpike Association (IBTTA)
- Institution of Transportation Engineers (ITE)
- International Road Federation (Geneva, Switzerland)
- ITS America
- ITS Europe (ERTICO) Innovation Platform Traffic Management 2.0 Work Group
- National Operations Center of Excellence (NOCoe) Pooled Fund Studies (e.g., Traffic Management Centers, Managed Lanes, Connected and Automated Vehicles)