



## TRB Annual Meeting 2020 Workshop #1030:

# Vision, Concepts, and Capabilities for the Next Generation of Traffic Management Systems (TMSs)

January 12, 2020 | 9:00 am – Noon

Washington Convention Center, Salon B, Washington DC

This workshop will feature a highly interactive, breakout-session to discuss successful practices, available resources, and topics agencies should consider when:

- **Developing a vision** for a next-gen TMS, which describes a desired future state—in this case, articulating the improved performance and the new abilities a transportation agency will have (in terms of how they *detect, analyze, and react* to various conditions).
- **Developing a concept of operations**, which describes how the TMS will be used, and identifies the fundamental needs of all stakeholders involved in the lifecycle of the system (from design to implementation, to maintenance and upgrading, etc.). A ConOps is essential to success, as it serves as the repository of needs and helps ensure that all aspects of implementation, maintenance, and upgrades support those needs.
- **Identifying key capabilities** needed for a next-gen TMS to meet the needs identified in a ConOps for the agency, other systems or stakeholders.

Transitioning to the next generation of TMSs will require agencies to make decisions to upgrade or replace the entire system, modify or replace components (e.g., software platform), technologies, and/or some or all of their field devices. To make these decisions, agencies will need a clear vision, a concept of operations, an understanding of the desired capabilities, and resources to be available to develop and support the next generation of their TMSs. This will also enable agencies to make informed decisions about what options to consider and priorities to place on different investments in: emerging technologies; innovative methods; automate functions or tasks; actively managing and operating traffic; and sharing and using emerging sources of information.

**The following committees and organizations are workshop sponsors:** TRB Freeway Operations Committee [AHB20]; TRB Regional Transportation Systems Management & Operations Committee [AHB10]; TRB Artificial Intelligence and Advanced Computing Applications Committee [ABJ70]; TRB Traffic Signal Systems Committee [AHB25]; TRB Intelligent Transportation Systems Committee [AHB15]; TRB Active Traffic Management Joint Subcommittee [AHB20-5]; European Association of Operators of Toll Road Infrastructures (ASECAP); and International Bridge, Tunnel and Turnpike Association (IBTTA).

**Workshop Resources and Results:** Background information (e.g., resources, recommended practices, issues to consider) to support participants in the breakout-session, and the summary of the feedback provided will be available on the TRB Freeway Operations Committee website: <https://sites.google.com/view/trbfreewayops-ahb20>

### ISSUES TO ADDRESS

- *New functions or services*
- *Automated operation*
- *Improved ability to modify components or platforms (e.g., software, computing, data)*
- *Different technologies, designs, and architectures*
- *Processing, using, and sharing emerging sources of data*
- *How to integrate a vision, concept of operations, and key capabilities in planning, designing and developing the next generation of TMSs*

### OUTCOMES

*Identify:*

- *Successful practices*
- *Existing resources to use*
- *Issues agencies should consider*

**REMOTE ACCESS (WebEx):** Click [here](#), or copy and paste: <https://hntb.webex.com/join/mjunakhntb.com>

**Phone Number:** +1-855-797-9485, **Access Code:** 746 417 691. For an international phone number, email: [Evan.Sullivan@dot.gov](mailto:Evan.Sullivan@dot.gov) or click on this link: [Global call-in numbers](#). **WebEx Operator:** Matt Junak

## AGENDA

- 9:00 AM Welcome: Introductions, Workshop Purpose, and Desired Outcomes**  
Jon Obenberger, FHWA
- 9:05 AM Session 1: Developing a Vision, Concept of Operations, and Capabilities for the Next Generation of TMSs—What Issues and Challenges Should Agencies Consider?**  
Moderator: Bill Halkias (Attica Tollway Operations Authority; IBTTA)  
Description: The first speaker will provide the context for next-generation of TMSs and frame the three presentations that will follow, which will cover topics to be discussed in the breakout session. Speakers will clarify the meaning and intent of each topic and briefly introduce the information compiled that will be discussed in Session 2.  
Outcomes: Clear, shared understanding of the potential capabilities of the next generation of TMSs; clarified meaning/intent of each topic; and additions to “sample” list of issues to consider  
Topics and Speakers:
- 1) “Framing the Next Generation of TMSs,” Les Jacobson (WSP)
  - 2) “Preparing a Vision for a Next-Gen TMS,” Phil Masters (Parsons)
  - 3) “Developing a Concept of Operations for a Next-Gen TMS,” Peter Marshall, (Siemens)
  - 4) “Key Capabilities of Next-Generation TMSs,” Dan Lukasik, (Parsons)
- 9:55 AM Session 2: Breakout Session—Identify Issues to Consider, Successful Practices, and Resources to Use**  
Moderator: Susanna Zammataro (International Road Federation – Geneva)  
Description: This will be a breakout session, where attendees will join tables addressing one of three topics: (1) Preparing a Vision for a Next-Gen TMS; (2) Developing a Concept of Operations for a Next-Gen TMS; or (3) Identifying Key Capabilities of a Next-Gen TMS. For each of these topics, groups should review and add to the information provided for the three discussion items: issues agencies should consider, successful practices (e.g., agency name and/or report); and existing resources to use.  
Outcomes: Lists of issues to consider, successful practices, and resources
- 11:00 AM Session 3: Discuss Breakout Session Results**  
Moderator: Lisa Burgess (Kimley-Horn; TRB Active Traffic Management Joint Subcommittee)  
Description: The moderator will ask each table to highlight three items they identified to add to each of the three lists of information they reviewed and discussed for the topic specific for their breakout table. After all four tables reporting on a single topic have reported out, the moderator will ask for questions and feedback (including any additional issues that should be considered) from the audience on that topic.  
Outcomes: List of priority issues, successful practices, and resources from each of the three breakout-session topics to consider in the action planning for the Next-Gen TMS: 1) Preparing a Vision; (2) Developing a Concept of Operations; or (3) Identifying Key Capabilities Needed.
- 11:40 AM Action Planning: Identify Topics for Research or Industry Consideration & Collaboration**  
Moderator: Doug Gettman (Kimley-Horn, TRB Traffic Signal Systems Committee)  
Description: The moderator will: summarize highlights from Session 3; help translate outcomes of the workshop into actions—by leading a discussion to identify topics for future research and collaboration; and give participants an opportunity to provide feedback on these topics or suggest other actions.
- 11:50 AM Immediate Next Steps & Sponsors’ Perspectives**  
Moderator: Beverly Kuhn (TRB Freeway Operations Committee)  
Speakers: Catherine McGhee (TRB Regional Systems Management and Operations Committee)  
Sherif Ishak (TRB Artificial Intelligence and Advanced Computing Applications Committee)  
Susan Langdon (TRB Traffic Signal System Committee)  
Matt Junak (TRB Intelligent Transportation Systems Committee)  
Dan Lukasik and Lisa Burgess (TRB Active Traffic Management Joint Subcommittee)  
Malika Seddi (ASECAP)  
Emanuela Stocchi (IBTTA)
- Noon Adjourn**