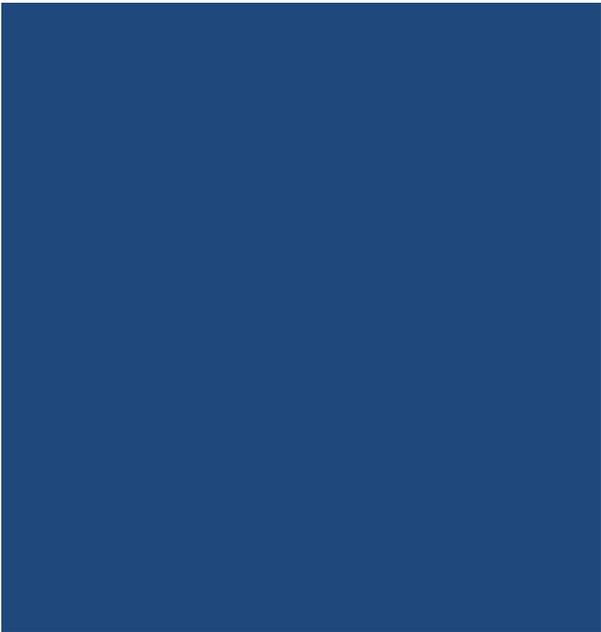


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16 Abstract This report documents the major research activities conducted as part of the Federal Highway Administration (FHWA) Transportation Pooled Fund (TPF) Program project, TPF-5(275) 2014 National Asset Management Conference and Training on Implementation. The Iowa Department of Transportation (Iowa DOT) was the TPF sponsoring agency and 20 other states and the FHWA participated in the project. The project focused on enhancing the understanding and use of transportation asset management by state departments of transportation, assisting with the 2014 Transportation Research Board (TRB) 10th National Conference on Transportation Asset Management, researching TPF members' highest priority areas for the next year, and identifying research needs. The report presents the project objectives, scope of work, and participating states. It provides an overview of the TRB 10 th National Conference on Transportation Asset Management, the TPF member meeting held at the conference, and possible follow-up activities.					
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**2014 National Asset
Management Conference
and Training on
Implementation
Strategies**

Final Report

**Prepared by the
Texas A&M Transportation
Institute, The Texas A&M
University System
for the
Iowa Department of Transportation
and the
Transportation Pooled Fund
TPF-5(275)**

July 2014



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The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the Iowa Department of Transportation or the United States Department of Transportation, Federal Highway Administration.

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Chapter One – Introduction

Katherine F. Turnbull, Texas A&M Transportation Institute

This report documents the major research activities conducted as part of the Federal Highway Administration (FHWA) Transportation Pooled Fund (TPF) Program project, TPF-5(275) 2014 National Asset Management Conference and Training on Implementation. The Iowa Department of Transportation (Iowa DOT) was the TPF sponsoring agency and 20 other states and the FHWA participated in the project. The project focused on enhancing the understanding and use of transportation asset management by state departments of transportation, assisting with the 2014 Transportation Research Board (TRB) 10th National Conference on Transportation Asset Management, researching TPF members' highest priority areas for the next year, and identifying research needs.

This report is divided into four chapters following this introduction. Chapter Two presents the project objectives, the scope of work, and the participating states. An overview of the TRB 10th National Conference on Transportation Asset Management is presented in Chapter Three. Chapter Four highlights the TPF member meetings held at the conference and possible follow-up activities and identified research needs. Chapter Five summarizes the results of the web-based surveys of representatives from the TPF states and the development of the transportation asset management (TAM) taxonomy summary. Three surveys were conducted as part of the project – February 2013 to solicit input for planning the 10th National Asset Management Conference, February and March 2014 to obtain information for the TAM taxonomy summary, and May 2014 to obtain feedback on the conference and to identify asset management priorities for the next year.

The conference summary, prepared as part of this project, is available as a separate document on the TRB website. Most of the PowerPoint slides from the conference are available at <http://onlinepubs.trb.org/onlinepubs/conferences/2014/AssetManagement2014/Program.pdf>. The report from the Chief Executive Officer Peer Exchange held in conjunction with the conference and partially sponsored by the TPF is also available as a separate document on the TRB website.

Chapter Two – Project Overview

Katherine F. Turnbull, Texas A&M Transportation Institute

Project Objectives

There continues to be widespread interest among state departments of transportation, transit agencies, and local transportation agencies in developing, implementing, and maintaining asset management programs. The Making Progress in the 21st Century (MAP-21) Act provided requirements related to asset management for the FHWA, the Federal Transit Administration (FTA), state departments of transportation, and transit agencies. The TRB Asset Management Committee and the American Association of State Highway and Transportation Officials (AASHTO) Asset Management Subcommittee have been actively involved in transportation asset management for many years.

TRB, with support from FHWA, AASHTO, TPF states, and other groups has sponsored 10 national conferences on transportation asset management. The 2014 Transportation Asset Management Conference and Training on Implementation Strategies TPF was undertaken to help ensure that transportation agencies had the opportunity to make asset management principles work at their agencies. The project further assisted with the 2014 TRB National Asset Management Conference, promoted the sharing of best practices among state transportation agencies, and identified research needed to address issues and to facilitate the implementation of asset management at state and local transportation agencies.

The 2014 Asset Management Conference and Training on Implementation Strategies TPF had the following three objectives:

- To provide communication and information sharing among member states concerning asset management implementation and discuss research needs and provide ideas to TRB;
- To provide a technology and knowledge exchange forum to enhance the practical knowledge of member states concerning asset management; and
- To enhance the working knowledge of the asset management community.

Project Scope of Work

The project scope of work had three major research tasks, which had widespread interest among state transportation agencies. The Iowa DOT served as the lead state for the TPF and TRB provided assistance with the following tasks.

- Learning Session/Technical Advisory Committee (TAC) Meeting – Coordinate a workshop and TAC meeting for member states to learn about and review issues associated with implementation of asset management. Since member states may be at different stages of implementation, this interaction provides an opportunity to share best practices and strategies for overcoming certain challenges, to discuss recent research on asset management, and to identify research topics of widespread interest among participants.

- Asset Management Conference – Provide a venue for the member states to exchange information on the challenges to asset management implementation. Members will work together to help organize the 2014 TRB Transportation Asset Management Conference, including identifying topics of widespread interest, identifying presentations that address issues facing the member states. Active conference planning participation will enable member states to work with experts in the field, shape the conference program, evaluate their agency’s current capacity in all areas of asset management, and help determine priorities for their agency.
- Training – A post conference webinar on implementation strategies will be held. Additional webinars highlighting conference presentations and discussion topics may also be conducted based on available resources.

Participating States

Participating States
Alaska
Arizona
California
Colorado
Connecticut
Florida
Georgia
Iowa
Louisiana
Michigan
Minnesota
Montana
Nevada
New York
North Carolina
North Dakota
Ohio
Oklahoma
Pennsylvania
South Dakota
Utah

As highlighted in the box to the left, 21 states participated in the 2014 Asset Management Conference and Training on Implementation Strategies TPF. Representatives from these states participated in regular conference calls and meetings to accomplish the objectives and work tasks described previously. Representatives from FHWA also participated in the project.

Chapter Three – Overview of the 10th National Conference on Transportation Asset Management

Katherine F. Turnbull, Texas Transportation Institute

Conference Overview

The 10th National Conference on Transportation Asset Management was held in Miami, FL on April 28-30, 2014. Organized by TRB, the conference featured opening and closing general sessions, 27 breakout sessions focused around six functional tracks, a poster session, and five workshops. In addition, a peer exchange on Aligning Data Systems to Communicate with Decision Markers, an AASHTO Asset Management Subcommittee peer exchange, and other related activities were held in conjunction with the conference.

The 468 participants represented a 40 percent increase from the 2012 9th national conference held in San Diego. Participants came from all 50 states, the District of Columbia, and Puerto Rico, as well as international locations. Participants also came from federal, state, metropolitan, and local transportation and transit agencies, as well as consulting firms, universities and research institutions, and other groups. Table 1 presents the breakdown of participants by agency and organization type.

Table 1. Attendance at 10th National Asset Management Conference by Employer Type

Percent	Number of Attendees	Employer Type
9%	41	Federal
4%	20	MPO or Local
5%	23	Other
32%	149	Private
33%	153	State DOT
8%	37	Transit
5%	24	International
4%	21	University
100%	468	Total

Source: Transportation Research Board.

The conference opening session features Mr. Jason Bittner, Cambridge Systematics, Inc., and the Conference Planning Committee Chair; Mr. Brian Blancher, Florida Department of Transportation; Mr. Michael Hancock, Kentucky Transportation Cabinet, and President of AASHTO; Mr. Greg Nadeau, FHWA; Dorval Carter, FTA; and Mr. Kevin Walsh, Massachusetts Department of Transportation. The six function tracks included 27 breakout sessions with 113 presentations. Table 2 presents the general attendance by tracks. The six tracks and the track leaders were:

- Establishing, Using, and Monitoring Asset Management Plans

- Michael Bridges, Louisiana Department of Transportation and Development, Track Leader
- Implementing Within and Across Organizations
Katie Zimmerman, Applied Pavement Technologies, Inc., Track Leader
 - Tools and Technology to Assist Decision Making
Matthew H. Hardy, American Association of State Highway and Transportation Officials, Track Leader
 - Performance Measures for Asset Management
Matthew Haubrich, Iowa DOT, and Tim Lattner, Florida Department of Transportation, Track Leaders
 - Transit State of Good Repair
Laura J. Zale, Southeastern Pennsylvania Transit Authority, Track Leader
 - Adaption to Extreme Weather Events and Climate Change
Robert Kafalenos, FHWA, Track Leader

Table 2. 10th National Asset Management Conference Program Tracks

Tracks	Total Attendance	Average	Sessions
Implementation Within and Across Organizations	378	95	4
Transit State of Good Repair	378	63	5
Establishing, Using, and Monitoring Asset Management Plans	341	85	4
Tools and Technology to Assist Decision Making	289	72	4
Performance Measures for Asset Management	257	64	4
Adaptation to Extreme Weather Events and Climate Change	236	39	6

Source: Transportation Research Board.

The closing session featured the conference planning committee chair and the track leaders highlighting common topics, challenges, and opportunities emerging from the presentations and discussions in the breakout sessions. The summaries were organized around the topics of data and information; organization issues; culture, climate, and change; risk: assessment, management, mitigation, and understanding; and telling the story: communication and collaboration.

A separate conference summary was prepared as part of the TPF and presents key elements from the conference. Highlights from speakers in the opening session are presented first, followed by an overview of the topics covered in the breakout sessions. The summary concludes with a list of the common topics, challenges, and opportunities discussed in the closing session. The conference summary is available on the TRB website. The PowerPoint

presentations used by speakers are available at [http://onlinepubs.trb.org/onlinepubs/conferences/2014/Asset Management2014/Program.pdf](http://onlinepubs.trb.org/onlinepubs/conferences/2014/Asset%20Management2014/Program.pdf).

Chapter Four – Pooled Fund Study Member Meetings

Jason Bittner, Cambridge Systematics, Inc.

Katherine F. Turnbull, Texas A&M Transportation Institute

Introduction

Three meetings of the TPF members were held during the 10th National Transportation Asset Management Conference in Miami, Florida April 28-30, 2014. The first meeting was held on April 28, prior to the opening session of the conference. The second meeting occurred in the evening of April 29. The third meeting was held on April 30 after the conference closing session. The meetings, which were facilitated by Jason Bittner, Cambridge Systematics, Inc., and chair of the Conference Planning Committee, provided opportunities for interaction among TPF members and discussion of key topics from the conference and future activities.

Major topics addressed during the first meeting included a review by Matt Haubrich, Iowa DOT, of the 2013 pre-conference survey and an overview of the Asset Management Conference and the functional tracks by Jason Bittner and the track leaders. A new TPF to support a Transportation Asset Management Workshop for state departments of transportation to be held in conjunction with the 2015 TRB Transportation Systems Performance Management and Data Conference in Denver was also discussed.

The second meeting focused on updates from the six conference track leaders. Each track leader summarized the major topics covered in the track breakout sessions during the first full day, key issues, and potential future activities. The third meeting included a brainstorming discussion focusing on the following four themes highlighted by the track leaders in the conference closing session. Meeting participants identified priority action items related to the four topics, including research needs, outreach, and technology transfer activities. The list of TPF members attending the meetings is provided in Appendix A. The four themes were:

- Data and information;
- Organizational issues: culture, climate and change;
- Risk: assessment, management, mitigation, and understanding; and
- Telling the story: communication and collaboration.

Brainstorming Discussion

Meeting participants brainstormed issues, opportunities, research needs, and outreach activities in each of these four areas. The initial topics identified by participants are presented next, along with a brief summary of the key items discussed. The topics identified as priorities by participants through a voting process are presented at the end of the section.

Each section below describes the primary items developed for each theme area.

Data and Information

The following topics were identified by TPF participants related to data and information.

- Smart Data and Data Use
 - Understanding data quality
 - Relevance to decision making (possible synthesis)
 - Information technology (IT) demonstration (conference/workshop)
 - Value of data and business cost (data briefing books/what questions cannot be answered)
 - Data governance and skill sets needed
 - Communicating data to the public
- Data Partnership Models
- Cross Systems Data Requirements
 - Format and definition
- Freight Values
- Developing relationships with other industry sectors
- Return on Investment Case Studies for Data (possible National Cooperative Highway Research Program [NCHRP] quick response)

Data issues and data needs represented a major focus of discussion by TPF members. Much of the discussion focused on exploring the concept of “Smart Data,” including understanding what makes data better for decision making and the relevance of different data sets to overall decision making. Interest was expressed in revisiting previous demonstrations aligning data collection equipment to known values, as well as understanding available data partnership models.

Two topics were identified as priorities. The first was the development of a guide to data and asset management. The second was developing case studies demonstrating the return on investment for data programs. Both were suggested as possible NCHRP projects.

Organizational Issues: Culture, Climate, and Change

The following organizational issues were identified during the brainstorming discussion.

- Ensuring leadership in transportation asset management (TAM) (possible session topic)
- Leadership course elements
 - Identify syllabus and insert TAM
- IT in State DOTs
 - Structure in organization (power)
 - How do other agencies incorporate IT issues
 - What does a CEO need from IT to implement TAM (possible peer exchange topic for FHWA)
- Skill sets needed for TAM

Participants identified several opportunities to provide additional information for managing the institutional changes necessary to encourage asset management implementation. Obtaining a better understanding of the workforce skill sets needed for asset management was identified as a need. It was suggested that an NCHRP quick response project would be appropriate to help identify these skill sets.

Other discussion items included recognizing the importance of engaging top level executives, such as scheduling a conference session at the AASHTO Annual Meeting, and leadership courses related to managing assets. While not selected as a priority item, there was some discussion and interest in developing a synthesis or peer exchange on how IT influences the implementation of TAM within an agency, including the placement of IT in the organization, examining how other agencies use IT, and identify what a chief executive needs to know to lead TAM.

Risk: Assessment, Management, Mitigation, and Understanding

Two possible items related to risk were identified during the brainstorming discussion. These items focused on how to incorporate an understanding of economic risks in TAM. Participants suggested that offering the National Highway Institute (NHI) training course on the topic would be beneficial, as would conducting a series of webinars.

Participants discussed the need for more information on incorporating risk into TAM and transportation asset management plans (TAMPs). Training on the topic through the NHI course or a series of webinars was suggested.

Telling the Story: Communication and Collaboration

Participants discussed the need to better communicate the benefits of TAM to policy makers and the public during the brainstorming session. The following methods were suggested to enhance communication and outreach.

- Workshop on Communicating the Value of TAM
- Guide for TAM Communication
- Videos (such as the Expert Task Group video)
- Establish an Asset Management Social Network
- Develop a Crosswalk to Communication for TAM (use infographics approach)

Participants identified developing and conducting a workshop on communicating the benefits of asset management and developing a TAM social network as priorities. Participants noted the importance of communication, both internal and external, to achieve greater awareness and understanding of the intent of asset management approaches.

Developing a guide to data needed for TAM, including the collection of data, costs, and associated information was identified as a high priority by participants. This project was suggested for consideration for an NCHRP project. Developing a NCHRP problem statement was identified as the next step.

Developing case studies detailing the return on investment for data was also ranked high by participants. The ability to quantify the benefits of data collection and analysis within the agencies was noted as important. Participants suggested that this topic might also be appropriate for consideration as an NCHRP project.

Assessing the workforce skill sets needed for TAM was also suggested as a potential NCHRP project. This project could examine existing skill sets and track back through educational and early career development opportunities within the transportation disciplines.

The following seven topics were rated highest among participants for future action.

- Develop a comprehensive data guide for asset management;
- Document case studies related to good data practices;
- Define and understand workforce skill sets needed for TAM implementation;
- Ensure a better understanding of risk and its application to asset management;
- Organize a workshop on communicating the value of TAM;
- Disseminate and collect strategies for engaging the chief executives of an agency; and
- Develop a TAM social network.

Activities on some of these topics were initiated after the conference. A TAM social network has been established using the website LinkedIn as a platform: <https://www.linkedin.com/groups/US-Transportation-Asset-Managment-6715178>. A “New DOT” skills workshop is being planned for the 2015 TRB Annual Meeting.

Chapter Five – Surveys and Taxonomy Summary

Matthew Haubrich, Iowa Department of Transportation

Katherine F. Turnbull, Texas A&M Transportation Institute

Pre-Conference Survey

A web-based survey of TPF members was conducted in February 2013 to solicit input for planning the 10th National Transportation Asset Management Conference and to identify topics for consideration by the TPF. At the time of the survey, 18 states were participating in the TPF. Representatives from 15 states responded to the survey.

The top four areas of interest identified by the survey respondents were MAP-21 asset management plans, risk management, MAP-21 performance measures, and implementing TAM. Other topics rated of interest by participants included organizational issues, communicating TAM results, data management and stewardship, and cross-asset allocation. The survey results were used by the conference planning committee to help identify functional tracks, sessions, and speakers.

Researchers from the Center for Transportation Research and Education at Iowa State University (ISU) assisted with the survey. They also conducted a literature review to identify recent studies, reports, and articles on TAM and TAMPs for use in organizing the 2014 conference. In addition, ISU researchers assisted with the review of abstracts submitted for presentations at the conference.

Survey on TAM Implementation and Taxonomy Summary

A web-based survey of TPF members was conducted in February and March 2014 to obtain information on the TAM organizational structure, programming process and funding sources, performance expectations, and data infrastructure. Information from 18 states was obtained through the survey.

The results were used to develop the TAM Taxonomy Summary, which is available on the TPF website. The summary highlights the internal and external organizational structure for TAM at the 18 state departments of transportation. Information is presented on the role of the agency executive leadership in TAM, the internal TAM governance structure, and interaction with districts/regions. The availability of dedicated funding for specific project categories is presented. All but two states reported having performance measures related to asset condition or system performance, but most do not have targets for asset management associated with those performance measures. Information on the data infrastructure supporting TAM at state departments of transportation is also provided. Researchers from ISU assisted with the survey and the development of the Taxonomy Summary.

Post-Conference Survey

A web-based survey using SurveyMonkey was distributed after the conference to the 150 representatives from state departments of transportation attending the 10th National Conference on Asset Management. The survey was available on-line from May 5 through May 21, 2014. A

total of 52 responses were received, accounting for a response rate of approximately 35 percent. The survey included the following three questions to help plan for future conferences and to identify asset management topics of interest to state departments of transportation.

- What was the most important information that you gained from the conference?
- What would have made the conference even more valuable to you?
- What are the top three topic areas that will be your highest priority within the next year?

What was the most important information that you gained from the conference?

The 52 responses received to this question were grouped into the five major categories shown in Figure 1. Some of the responses fit more than one category, so the percentages add up to more than 100. Approximately 70 percent of the respondents indicated that networking and peer-to-peer learning was the important aspect of the conference. Obtaining information on specific topics and on the status of MAP-21 regulations were the next most important categories.

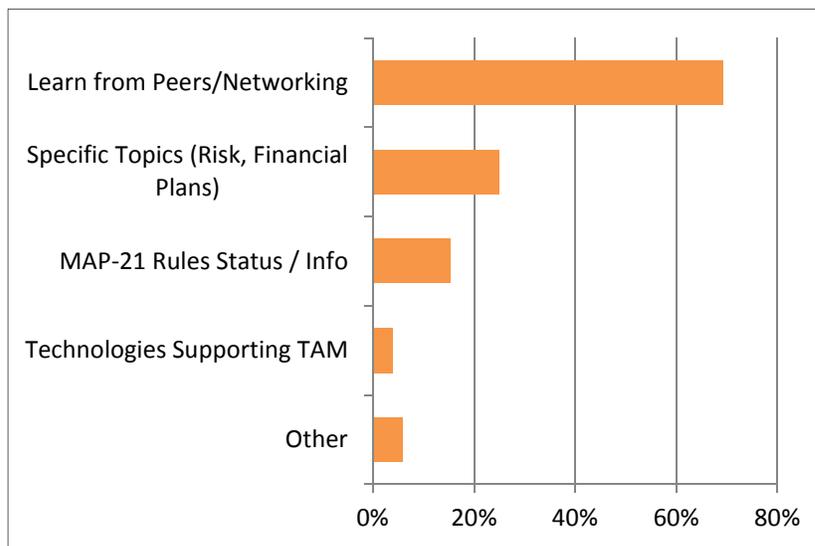


Figure 1. What was the most important information that you gained from the conference?

What would have made the conference even more valuable to you?

Figure 2 presents the major responses on what would have made the conference more valuable. Of the 52 survey respondents, only 45 responded to this question and four (4) of those responses simply indicated that they liked the event with no specific suggestion for improvement. Again, some responses fit into more than one category, and therefore the percentages do not add up to 100.

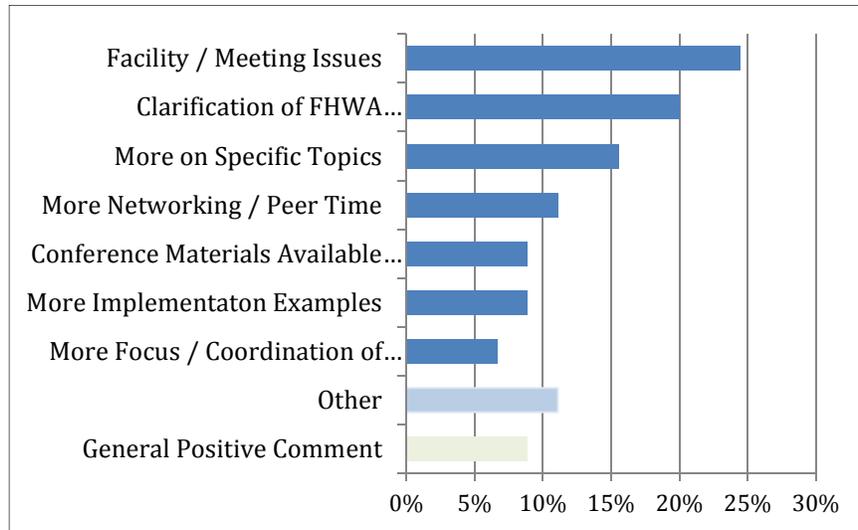


Figure 2. What would have made the conference even more valuable to you?

As illustrated in Figure 2, the most common suggestions focused on the physical facility and meeting organization. Comments ranged from a desire to have the PowerPoint slides available prior to the conference, to the availability of Wi-Fi, to more information about the sessions, topics, and speakers in the program. The second most common suggested improvement related to the availability of guidance from FHWA, particularly on the TAM plan rules. A total of 16 percent of respondents would have liked more information on specific topics, including the anticipated financial plan requirements, risk management, asset valuation, and whole-life costing. A total of 11 percent of the responses indicated that they would have liked more networking opportunities.

What are the top three topic areas that will be your highest priority within the next year?

In the final question respondents were asked to identify their top three priority topic areas within the next year. A total of 50 respondents provided at least one topic area and a total of 135 priority topics were mentioned. These topics were categorized into the 16 categories presented in Figure 3.

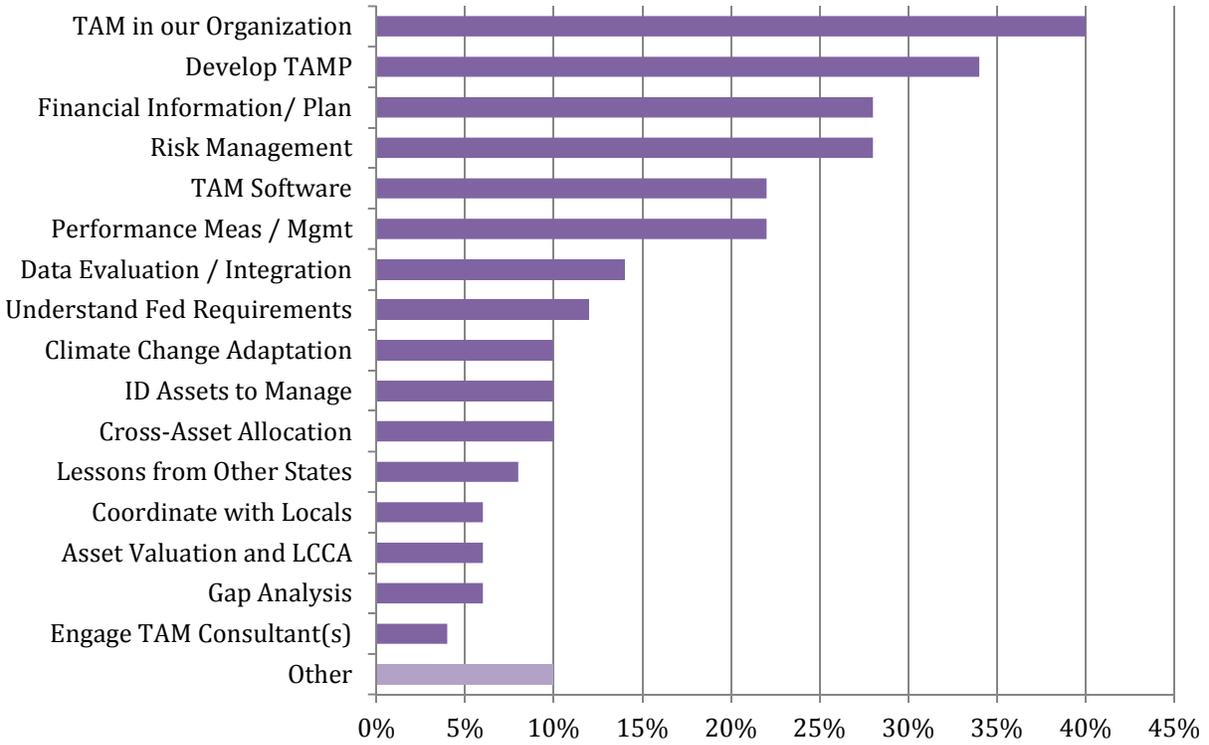


Figure 3. What are the top three topic areas that will be your highest priority within the next year?

The category with the most responses was “TAM in our organization,” with approximately 40 percent of all respondents indicating that this was a priority topic of interest. Developing the TAMPs was the second most frequently mentioned priority, with one-third of the respondents indicating these plans would be a key task in the next year. Over a quarter of respondents indicated a need to focus on financial planning, as well as risk management aspects of TAM in the coming year. Performance measures and management and TAM software procurement and development priorities were mentioned by approximately 20 percent of respondents.

The 16 categories could be grouped into four major themes: 1) organizational alignment to TAM — TAM in organization, lessons learned, and coordination with local agencies; 2) special topics — risk, finance, performance measures, asset valuation, climate change, cross-asset allocation; 3) data, software, and tools — TAM software and data integration; and 4) developing and writing the TAMP — developing TAMPs, understanding federal requirements, gap analysis, and TAM consultants.

Appendix A – TPF Members Attending the TPF Meetings at the 10th National Transportation Asset Management Conference

Morehouse, Carolyn – Alaska	Zainhofsky, Scott – North Dakota
Pavey, Drew – Alaska	Williams, Andrew – Ohio
Nehme, Jean – Arizona	Barna, Jim – Ohio
Omer, Joseph – Arizona	Malave, Luis – Oklahoma
Briseno, Coco – California	Calvillo, Alex – Oklahoma
Patron, Ray – California	Heineman, Richard – Pennsylvania
Malloy, Michelle – Colorado	Bruner, Justin – Pennsylvania
Richrath, Scott – Colorado	Bench-Bresher, Josh – South Dakota
Trio, Jennifer – Connecticut	Schultz, Laurie – South Dakota
Fallon, James – Connecticut	Pope, Cory – Utah
Lattner, Tim – Florida	
Alexander, Angela – Georgia	
Reynolds, Melany – Georgia	
Haubrich, Matthew – Iowa	
Knight, Peggi – Iowa	
Bridges, Michael – Louisiana	
Latino, Vincent – Louisiana	
Vibbert, Ronald – Michigan	
Becker, Kirby – Minnesota	
Nelson, Mark – Minnesota	
De Verniero, Christopher – Montana	
Johnson, Paul – Montana	
Bush, Anita – Nevada	
Larkin-Thomason, Tracy – Nevada	
Brandenburg, Jennifer – North Carolina	
Watkins, Lonnie – North Carolina	
Smith, Jack – North Dakota	