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LEADING ON THE INTERNATIONAL STAGE:

A SYNTHESIS REPORT OF U.S. PARTICIPATION IN THE WORLD ROAD
ASSOCIATION DURING THE 2008–2011 AND 2012–2015 CYCLES



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EXECUTIVE SUMMARY

Founded in 1909, the World Road Association (WRA) is a network of road administrations from more than 120 countries that convene to share roadway-oriented research, practices, and technologies.

The United States was a founding member of the WRA, and increased its participation significantly in the 2008–2011 and 2012–2015 cycles: organizing, hosting, and attending events, and leading and contributing to a number of publications and strategic initiatives. The Federal Highway Administration (FHWA) leads and coordinates U.S. participation in the WRA, providing the head of the U.S. delegation—the First Delegate—to the WRA. FHWA appoints U.S. delegates to Technical Committees (TCs) and Task Forces (TFs) and representatives to the World Road Congresses and International Winter Road Congresses. The American Association of State Highway and Transportation Officials (AASHTO) has served as the U.S. National Committee to the WRA since 2011, sharing responsibility with FHWA for disseminating WRA products, organizing local activities, and supporting delegates' participation. In the 2008–2011 and 2012–2015 cycles, the United States was well represented on TCs and TFs. U.S. delegates to the WRA also played key roles in multiple flagship products, including the development of the *Road Safety Manual*, which was recently acknowledged in United Nations (UN) Resolution A/70/L.44 as an important international effort aligned with the UN Decade of Action for Road Safety.¹ In both cycles, more than 30 U.S. transportation professionals from FHWA, State Departments of Transportation (DOTs), and academia and the private sector represented the United States.

FHWA intends to continue the deliberate, consistent, and active posture that has defined our participation over the last two cycles.

— Walter C. “Butch” Waidelich, Jr.

EXECUTIVE DIRECTOR, FHWA, AND FIRST DELEGATE TO THE WRA



[The WRA] provides substantial value for AASHTO and its members. AASHTO is a platform for States to share best practices and learn from each other. The WRA expands that philosophy internationally and allows us to learn from other countries and help guide and advance the U.S. in new areas.

— Bud Wright

EXECUTIVE DIRECTOR, AASHTO, AND
CHAIR, U.S. NATIONAL COMMITTEE TO THE WRA

This report has two key objectives: (1) to document the outcomes of WRA participation during the past two cycles, and (2) to identify strategies to increase the benefits to the domestic transportation community of U.S. participation in the WRA. The report's two main chapters address these respective objectives. The report concludes with a list of short- and long-term recommendations for increasing the benefits. The findings are based heavily on a series of 25 discussions conducted with current and former WRA representatives, mainly from the three agencies that support U.S. participation in the WRA: FHWA, AASHTO, and the Transportation Research Board (TRB). Appendix A contains information on the methodology employed to develop this report. Appendix B contains brief summaries of select WRA publications referenced in this report.

U.S. participation in the WRA over the past two cycles has resulted in highly positive outcomes. The interviews showed that U.S. representatives and their organizations gained professional benefits from their participation. U.S. delegates gathered information about policy and analysis practices through WRA participation that they subsequently employed in their work. U.S.

¹ For more information, see http://www.piarc.org/ressources/documents/11338_UN_GA_resolution-54-255-en.pdf





delegates used information gathered from WRA TCs to advise the U.S. Congress on legislation related to performance management and asset management. U.S. delegates to the WRA also used information gathered and lessons learned to implement new technologies and procedures to enhance responses to winter maintenance events and thereby save agency resources.



I have seen firsthand the benefits of mutual learning through participation in the WRA. The more invested FHWA is in long-term and continuous participation in the WRA, the higher the return on that investment will be. There is a significant amount of untapped potential for the U.S. to continue shape the WRA agenda to advance the interests the U.S. shares with partner countries.”

– Jeff Paniati

FORMER EXECUTIVE DIRECTOR, FHWA AND CURRENT EXECUTIVE DIRECTOR, INSTITUTE FOR TRANSPORTATION ENGINEERS (ITE)

The research conducted to develop this report enabled identification of several opportunities to multiply the value of participation in the WRA to the domestic transportation community of practitioners and policymakers, potentially at all levels of government. Strategies for increasing the benefits are heavily reliant on increasing dissemination of WRA information and products. Key strategies for improving dissemination include using social media and earned media, such as encouraging trade publications or other outlets to cover WRA activities, and taking advantage of existing opportunities, such as conferences and webinars, to share WRA products and knowledge gathered. Conferences and webinars are particularly well suited to sharing technical information in a targeted manner. Providing additional support to U.S. representatives to the WRA, who participate in WRA activities in addition to their regular duties as transportation professionals, can come in a number of forms, including more consistently connecting outgoing representatives with incoming representatives, strengthening connections between WRA TC representatives from the United States and their domestic counterparts (e.g., AASHTO Standing Committees, TRB committees and subcommittees), and working with U.S. delegates to support enhanced dissemination (e.g., through the development of, and support for,

publication-specific dissemination plans). Increased participation in the WRA has proven to have a high level of value to the U.S. transportation community. In addition to identifying the benefits of U.S. participation in the WRA, this report identifies steps that can be taken to improve dissemination in order to ensure an even wider audience benefits from U.S. engagement with the WRA. ■



[The WRA] gives us resources and broadens our own people’s perspectives. This is particularly important now. Having a broad perspective allows us to be more creative.”

– King Gee

DIRECTOR OF ENGINEERING AND TECHNICAL SERVICES, AASHTO, AND U.S. NATIONAL COMMITTEE SECRETARY



King Gee Presenting at the World Congress in Seoul, South Korea

SOURCE: FHWA



Having a marketing message is important. We worked on that with the Snow and Ice Databook with some folks at the [WRA General Secretariat] office. They developed a marketing plan for the Databook ... and I promoted it every opportunity I had. I believe the same can be done with other publications.”

– Rick Nelson

SICOP COORDINATOR, AASHTO

INTRODUCTION

PURPOSE AND ORGANIZATION OF THE REPORT

In recent years, U.S. engagement with the World Road Association (WRA) has increased significantly. U.S. delegates to the WRA have led strategic and technical initiatives and committees, and contributed heavily to publications and events.

This report has two key objectives. The first is to identify the outcomes that have been achieved through U.S. participation in the WRA during the 2008–2011 and 2012–2015 cycles. The second is to identify opportunities for delegates and sponsoring agencies—the Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO), and the Transportation Research Board (TRB)—to increase awareness of U.S. participation in the WRA, and identify and pursue opportunities to maximize the value of engagement with the WRA. As the WRA enters the 2016–2019 cycle, it is an opportune time for examining what has been accomplished and how the United States can build on successes and lessons learned to increase the benefits of engagement with the WRA to the broader U.S. transportation community. The report's two main chapters address each of these purposes. The chapter on outcomes discusses the results and benefits from U.S. participation, with subsections focusing on strategic direction setting at the WRA, practices and lessons learned transferred to the U.S. transportation community, relationship building, and other benefits. The chapter on opportunities provides strategies for enhancing the benefits of WRA participation, with subsections focusing on prospects for increasing awareness and dissemination of WRA products, expectation setting and support for U.S. delegates to WRA Technical Committees (TCs), and opportunities to improve engagement at the WRA's World and Winter Congresses and other events.

The report is based largely on the findings from a series of 25 interviews with current and former U.S. delegates to the WRA, as well as a review of existing WRA publications. Appendix A contains information on the methodology employed to develop this report. Appendix B contains brief summaries of a select list of WRA publications referenced in this report.

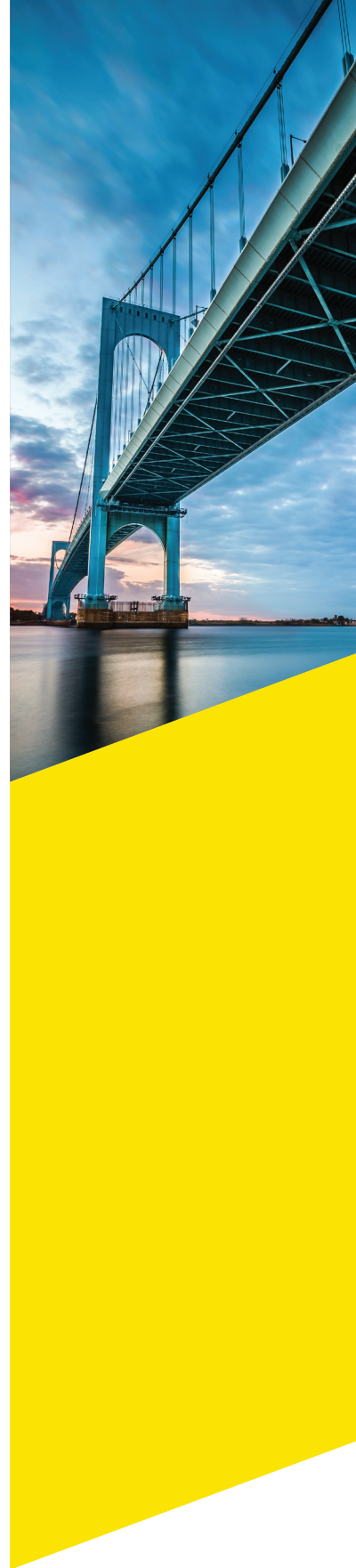
BACKGROUND INFORMATION ON THE WORLD ROAD ASSOCIATION AND U.S. PARTICIPATION

The WRA² is a member organization of road administrations from more than 120 countries that come together to share information regarding roadway-oriented research and practices. The WRA was founded in 1909, following the first International Road Congress held in Paris in 1908. The WRA has consultative status to the United Nations Economic and Social Council and is headquartered in Paris, France.

The WRA's vision states that “the Association will be the world leader in the exchange of knowledge on roads and road transport policy and practices within an integrated sustainable transport context.” To achieve this vision, the WRA creates and coordinates TCs and organizes quadrennial World Road Congresses and Winter Road Congresses, as well as other technical meetings and seminars. The WRA's TCs publish many technical reports and manuals, and the organization issues a quarterly magazine called *Routes/Roads*.

The WRA's leadership bodies include a Council, an Executive Committee, and three Commissions. The Council, which meets annually, has the ultimate governance responsibility for the organization, and is composed of delegates from member countries. Each member country is led by a First Delegate. The Council elects the Officers, the General Secretariat,

² The WRA is often referred to by the acronym PIARC, which is derived from the organization's original English name: the Permanent International Association of Road Congresses. In French, the organization was initially known as the Association Internationale Permanente des Congrès de la Route, or AIPCR, and today is most commonly referred to in French as the Association Mondiale de la Route.





and members of the Executive Committee. The Executive Committee receives management authority through delegation of that authority by the Council. The Executive Committee, in practice, is the main governing entity of the organization, and is supported by three Commissions: Finance, Communications, and Strategic Planning. The General Secretariat provides the WRA's staff function; its paid staff provide secretarial services for the leadership bodies and services to the TCs. In addition to the leadership bodies, the WRA has National Committees (NCs) in 37 member countries, which contribute to the dissemination of the organization's products, organize local activities such as meetings, and undertake some membership and administrative services in their respective countries.

The WRA operates on a 4-year cycle with a Strategic Plan comprised of Strategic Themes. These themes are the broad fields of activities defined in the WRA's Strategic Plan; each is overseen by a Strategic Theme Coordinator. In the 2016–2019 cycle, the WRA has 18 TCs, which are established for specific topics, each nested under one of the five Strategic Themes in the Strategic Plan. Each TC is led by a Chair, and has English-, French-, and Spanish-speaking Secretaries. The TCs develop programs of meetings and products to facilitate information exchange and technology transfer in their respective areas. When TCs undertake multiple activities, they often assign working groups to lead each of them.

The WRA uses Task Forces, Regional Working Groups, and Special Projects as well. Task Forces (TFs), a concept introduced in the 2012–2015 cycle, are more time limited and have narrower mandates to foster the exploration of critical issues, including through the shorter term development of products. Regional Working Groups and Special Projects complement the organization's structure and allow for engagement of external partners to develop meaningful products. Special Projects, also introduced during the 2012–2015 cycle, involve the completion of specific work products during a relatively short time frame, giving the WRA the ability to address critical issues identified by members. Special Projects are developed by

consultant teams working under the direction of delegates to the WRA.

During the 2008–2011 cycle, the Strategic Themes were:

- Sustainability for the Road Transport Systems (four TCs)
- Improving Provision of Services (five TCs)
- Safety of the Road System (four TCs)
- Quality of Road Infrastructure (four TCs and three Sub-Committees)

For the 2012–2015 cycle, the Strategic Themes and respective committees were:

- Management and Performance (five TCs)
- Access and Mobility (five TCs)
- Safety (three TCs and two TFs)
- Infrastructure (four TCs)

For the 2016–2019 cycle³, the Strategic Themes and their respective committees are:

- Management and Finance (three TCs and two TFs)
- Access and Mobility (four TCs and one TF)
- Safety (two TCs and one TF)
- Infrastructure (5 TCs)
- Climate Change, Environment, and Disasters (3 TCs)

In addition, the 2016–2019 cycle will have two Regional Working Groups: Geometric and Structural Design Standards for African Highway Networks and Updating of Standards for Rural Roads.

Every 4 years, the WRA sponsors two types of Congresses: the World Road Association Congress and the International Winter Road Congress. Both meet in a member country to enable members to share techniques and experiences in the field of road infrastructures and road transport, and to showcase the key accomplishments and findings of its TCs.

The United States has been involved in the WRA to varying degrees throughout the WRA's 100-year history, apart from its withdrawal during the Cold War. FHWA provides the U.S. First Delegate to the WRA, and leads coordination of U.S. participation in the WRA, while AASHTO has served as the U.S. NC to the WRA since 2011. TRB provides additional support for U.S. participation in the WRA. TRB

³ The 2016–2019 Strategic Themes identified for the cycle include "an elevation of environment-related issues based on [its] emerg[ence] as a key concern within the membership."



Jeff Paniati Presenting at the 2015 World Congress in Seoul, South Korea
 SOURCE: FHWA

more limitedly, academia and the private sector. The United States had representatives on TCs in all strategic themes during both cycles, many of whom held leadership positions within their Committees.⁴ Through their participation, U.S. representatives led development of publications and presentations for the WRA, including flagship products and publications such as the *Road Safety Manual* (RSM) and the International Climate Adaptation Framework for Road Infrastructure. A full list of U.S. participants and select publications are available in Appendix B. ■

has a memorandum of understanding (MOU) with the WRA, which calls on the two organizations to work together to further their shared objective of advancing the state of the practice in roadway transportation. WRA NCs are generally responsible for contributing to domestic dissemination of WRA products; organizing local activities such as meetings, conference, and seminars; and undertaking membership and administrative services. FHWA coordinates the participation of Federal staff, while AASHTO coordinates the participation of State Departments of Transportation (DOTs). FHWA's Office of International Programs serves as the support mechanism for FHWA's Executive Director, who serves as the U.S. First Delegate, provides support and technical assistance for TC and TF members as needed, and serves as the primary point of contact for the NC and the WRA's General Secretariat. In both the 2008–2011 and 2012–2015 cycles, FHWA's then Executive Director, Jeff Paniati, served as the U.S. First Delegate and as a member of the Executive Committee of the WRA. Paniati also served as the Strategic Theme Coordinator for Safety in the 2008–2011 cycle and as the Chair of the Strategic Planning Commission in the 2012–2015 cycle.

During the 2008–2011 and 2012–2015 cycles, the United States was well represented on the WRA's governing and technical bodies, and led or participated in the production of some of the WRA's flagship products and Special Projects. In each cycle, the United States was represented by more than 30 professionals from FHWA, State DOTs, and,

⁴ Some U.S. representatives to the WRA are "corresponding members" rather than "full members," which means that they participate in the research activities of the TC via virtual correspondence, but are not required to travel to TC meetings. Having corresponding member representatives is a way to keep apprised of the activities of all TCs, including those in which full participation is not possible.



OUTCOMES FROM U.S. PARTICIPATION IN THE WRA

DURING THE 2008–2011 AND 2012–2015 CYCLES

OVERVIEW AND CONTEXT

Intended to be the world's leading organization in the exchange of knowledge and technology transfer related to roadway transportation, the WRA covers a vast range of topics and serves as a resource for developed countries with advanced road networks and developing countries alike. As such, U.S. participation satisfies two roles. First, the WRA provides an opportunity for the United States to build relationships with, and learn from, nations that employ advanced technologies and practices, particularly in areas of strategic interest to the United States. Second, participation in the WRA allows U.S. representatives to share experiences and technical knowledge with other countries that can benefit from it. The WRA dedicates significant resources to ensuring consistent participation from, and providing a valuable service to, developing countries.⁵ Committee meetings and other events are sometimes held in developing countries, and WRA products are often developed with the needs of developing countries in mind. Using and building upon the experiences and expertise of developed countries gives developing countries an opportunity to “leapfrog” forward in building and modernizing their road networks.

Participation in the WRA has resulted in highly positive outcomes for U.S. delegates and their organizations. Interviewees noted personal and professional benefits from their participation, as well as benefits to other professional groups with which

they are involved. These outcomes, organized by topic area, are discussed in the following sections.

OUTCOMES OF U.S. PARTICIPATION

STRATEGIC DIRECTION SETTING

Participation in the WRA by U.S. delegates with domestic leadership positions has allowed the United States to influence the activities and research agenda of the WRA to focus on topics of high strategic importance and interest to the U.S. transportation community. This influence means that the WRA is conducting research and developing products that will help professionals within the United States advance the state of the practice domestically. U.S. strategic influence is evident in a variety of ways, and is perhaps most prominently seen in the Strategic Plan for the 2016–2019 cycle.

During the 2012–2015 cycle, two U.S. delegates participated on the Strategic Planning Commission. Jeff Paniati, then FHWA Executive Director, chaired the Commission and Ian Saunders, then Director of the FHWA Office of International Programs, was a member. The Strategic Planning Commission serves as the WRA's “think tank,” setting the tone and direction for each cycle. The primary task of the Commission is to develop the Strategic Plan for the following cycle. As a result of having two U.S. representatives playing an active role in the

WRA veteran representatives Connie Yew, Senior Advisor for Transportation Performance Management in FHWA's Office of Infrastructure; Rick Nelson, AASHTO's Snow and Ice Pooled Fund Cooperative Program Coordinator; and Michael Griffith, Director of FHWA's Office of Safety Technologies, all noted using their TC leadership positions to influence the development of the work plans for upcoming cycles. Having TC leadership roles enabled all three to push for U.S. interests to be on the agenda in upcoming cycles.

⁵ Special funds are used to support participation of delegates from some developing countries, particularly countries in which gross domestic product per capita is below approximately \$3,500.





2012–2015 cycle, U.S. interests are well represented in the 2016–2019 Strategic Plan. For example, the new Strategic Theme—Climate Change, Environment, and Disasters—is one that is of particular interest and high investment in the United States, and was added to the Strategic Plan. Freight is another issue of key current strategic importance to the United States; it is also represented in the Strategic Plan. In addition to the representation of U.S. interests in the Strategic Themes and TCs in the 2016–2019 Strategic Plan, as a result of activities undertaken during the 2012–2015 cycle, the 2016–2019 Strategic Plan calls for the creation of two TFs that are of particular interest to the United States: Innovative Financing and Infrastructure Security. Two U.S. delegates will sit on the new TFs. Generally speaking, U.S. delegates work on TCs that either align with U.S. strategic interests and/or provide opportunities for the United States to share its expertise. The same notion is true for U.S. involvement with Special Projects.

U.S. involvement in the Strategic Planning Commission during the 2012–2015 cycle was particularly influential in encouraging the WRA to prioritize strategic communication in the 2016–2019 Strategic Plan, based on the recognition that WRA-developed products should be adequately disseminated given their potential, noted by many interviewees, to benefit transportation practitioners. The 2016–2019 Strategic Plan also recognizes that the WRA can significantly expand on its successes by using various communications tools and strategies to reach and engage broader and/or new audiences. Specifically, the Strategic Plan emphasizes **Responsiveness: Strategic Activities** (“the selection and pursuit of topics and working formats that provide unquestioned value”) and **Reach: Strategic Communication** (“renewed emphasis on communications, embedding it as an important issue at all levels of the organization, to better ensure that the information the Association produces serves its purpose with desired audiences”).

The Strategic Plan’s other key innovations from previous cycles include:

- The Strategic Plan strengthens the WRA’s capabilities to **maintain and update its more successful products**, such as the RSM, the Winter Road Congress, and the outputs of the Technical Committee on Tunnel Operations.



Michael Griffith Presenting the RSM at the 2015 World Congress in Seoul, South Korea

SOURCE: FHWA

- TFs are allowed **more flexibility to complete work in 2-year activity cycles** in order to increase their capabilities to cover new topics and analyze their future relevance for roads.
- **Special Projects are explicitly recognized as powerful tools to address relevant topics** and produce, in short periods of time, useful reports and information for member countries.
- **Regional WGs are created to address topics of particular interest to certain regions**, especially those with many developing countries.

As suggested above, U.S. representatives encouraged the WRA to make larger investments in “flagship” products, like the RSM, whose development was led by Michael Griffith, Director of the FHWA Office of Safety Technologies, and the International Climate Change Adaptation Framework for Road Infrastructure, overseen by April Marchese, Director of the FHWA Office of Natural Environment, and other TC members. These two publications were developed by hired consultants working under the direction of delegate leaders largely because of significant involvement from the United States. Their development follows the model employed by TRB in its cooperative programs of having a panel of experts set an agenda and oversee the development of a product by contractors. It is also similar to the model used by FHWA of hiring consultants to develop specific products, such as guidebooks, while teams of Federal staff oversee the work.



PRACTICES AND LESSONS LEARNED TRANSFERRED TO THE U.S. TRANSPORTATION COMMUNITY AS A RESULT OF WRA PARTICIPATION

Knowledge gathering is a key goal and outcome of U.S. participation in the WRA. Participation on WRA committees results in increased awareness of practices and lessons learned from other countries. It allows the United States to benchmark its own practices, provide expertise in some areas, and learn from foreign experts in others. Rick Nelson, a member of the Winter Services Technical Committee in the 2008–2011 and 2012–2015 cycles, current Snow and Ice Pooled Fund Cooperative Program (SICOP) Coordinator for AASHTO, and former Nevada DOT official, noted that in his field, Europe was far ahead of the United States in deploying new technologies in the 1990s. However, in significant part through WRA and Winter Congress participation, the United States has closed the knowledge gap and begun to employ many of the practices learned through WRA participation and WRA products. The following two sections describe policy and analysis practices, as well as implementation practices and tools learned through the WRA.

Policy and Analysis Practices

Participation in the WRA exposes TC and TF members to the policies and practices of other countries and provides an opportunity to learn from others in areas in which the United States is less advanced. Through the WRA, U.S. experts' knowledge in the areas of performance management, asset management, and economic analysis, in particular, have grown substantially.

Historically, the United States' understanding and implementation of asset management principles lagged behind some countries, such as the United Kingdom, Australia, and New Zealand. However, participation in the WRA provided experts in the United States with the opportunity to connect with these experts. Steve Gaj, a member of the Management of Road Assets Technical Committee in both the 2008–2011 and 2012–2015 cycles and Asset Management Team Leader in FHWA's Office of Asset Management, Pavements, and Construction, noted that during his first cycle of

The Moving Ahead for Progress in the 21st Century Act (MAP-21) required States, for the first time, to develop asset management plans. Congress implemented this requirement based on an understanding of the cost and performance benefits effective asset management can bring. Steve Gaj, team leader with the FHWA Office of Asset Management, played an important role in demonstrating those benefits to Congress, based on experience and knowledge he gathered through participation in the WRA. In Gaj's communications with the Senate Committee on Environment and Public Works, he was able to cite information from foreign experts he met through WRA regarding the development of asset management plans, life cycle planning, and asset valuation. His understanding of the cost and performance benefits brought by effective asset management were valuable in supporting Congress's decision to include the new requirement in MAP-21 for States to develop asset management plans. Gaj says, "Learning from the experiences of other countries has enabled the United States to avoid reinventing the wheel and to understand the nuances associated with asset management." According to FHWA, the investment in transportation assets owned and operated by public agencies in the United States is more than \$1.75 trillion. Therefore, the monetary savings that can be realized through implementation of effective asset management business processes and practices—many of which are already used by private companies and utilities in other sectors to save money—is immense.

WRA participation, FHWA was providing technical assistance information to the Senate Committee on Environment and Public Works. The Senate Committee inquired about asset management and was particularly interested in an asset management framework which would be effective in improving or preserving the condition of the assets and performance of the system. Because of his WRA involvement, Gaj had direct access to foreign experts and foreign asset management plans, which he consulted to provide information to Congress.



Through financial and technical assistance to State and local governments, FHWA is responsible for ensuring that our roads and highways continue to be among the safest and most technologically sound in the world. In support of that goal, our involvement in the WRA is a means to exchange information on innovative road practices with other counterpart agencies while providing us with information on the most recent technical and policy developments in road transportation around the world. ” ”

– Walter C. “Butch” Waidelich, Jr.,
EXECUTIVE DIRECTOR, FHWA

Similarly, participation in the WRA has advanced practices related to economic analysis of transportation projects. In the United States, national-level economic analysis focuses primarily on evaluating costs and benefits using the Highway Economic Requirements Model (HERS) and the National Bridge Investment Analysis System (NBIAS). Through participation in the WRA, U.S. delegates advanced their understanding of ex-post evaluation processes,⁶ which are more prominent in South Korea and Japan. As a member of the Road Transport System Economics and Social Development Technical Committee, Karen White, now Director of the Bureau of Transportation Statistics’ Office of Statistics and Economic Analysis, assisted in the development of a report on ex-post cost-benefit evaluations. The paper discussed the economic analysis practices of road agencies around the world and directly informed White’s work in her previous position at FHWA, in the Office of Policy and Governmental Affairs, on the *Conditions and Performance Report* that is developed for Congress every 2 years. At FHWA, White examined how FHWA could restructure the report by using new tools that could better measure the conditions and needs of the surface transportation system. The work that White conducted through the WRA provided her with an understanding of foreign practices, as well as sharing U.S. best practices. A reimagined Conditions and Performance Report, still under development, may include economic analysis employing elements of the British system of program evaluation, which utilizes a policy-maker designed weighting system for measuring investment impacts. The report is one of U.S. DOT’s most significant opportunities to communicate to Congress and the Nation regarding the State and investment needs of the U.S. transportation system, and is widely cited as, and

is considered to be, a leading source of information on this subject. As such, the ability to use more sophisticated analysis methods to better measure economic impacts in developing the report enables U.S. DOT to create a more sound and compelling case for the need, for example, for investment in the transportation system to support the Nation’s economy. This creates an even more compelling case for more investment. As FHWA Administrator Gregory Nadeau has argued, “every dollar produces results for the American people.”⁷

U.S. delegates also used WRA participation to gather information on sustainability-related policies and practices that have potential to be and, in some cases, have been implemented in the United States. Through work he conducted on the WRA freight committee, Bill Gardner, Director of the Office of Freight & Commercial Vehicle Operations at Minnesota DOT, learned how the United States differs from other countries in the emphasis placed on sustainability practices. He noted that many European countries focus more heavily on sustainability in freight activities vis-a-vis the United States. Abroad, sustainability tends to be the first screen in decision-making, whereas in the United States, it is sometimes considered as an afterthought. Many of the foreign practices Gardner learned about through his work on the freight committee were relevant to his leadership role in developing the Minnesota Statewide Freight Systems Plan. For example, Gardner’s research indicated that some countries integrate freight transportation and land use systems to improve freight mobility and enhance economic development, focusing on preserving freight uses and industrial land. Similarly, a strategy included in Minnesota’s Freight Plan focuses on land use planning and preservation.

⁶ Ex-post evaluations are conducted after a certain period has passed since the completion of a project or program; they focus on evaluating the effectiveness and sustainability of a project. The purpose of an ex-post evaluation is to derive, from past experiences, lessons learned and identify recommendations for planning more effective and efficient projects or programs in the future.

⁷ New Department of Transportation Report on Highway, Transit Conditions Points to Need for More Investment, <https://www.transportation.gov/briefing-room/new-department-transportation-report-highway-transit-conditions-points-need-more>.





Rick Nelson Presenting at a Winter Services Technical Committee Meeting

SOURCE: RICK NELSON



In the 90s, in the winter maintenance field, the U.S. was so far behind Europe, we thought we were ahead. Right now, we are nearly on par in many areas. We have closed the gap because of our participation in the [WRA] Technical Committees. ”

– Rick Nelson,

SICOP COORDINATOR, AASHTO

Implementation-Related Practices and Tools

In addition to policies and analysis practices, U.S. representatives to the WRA have brought to their respective agencies a variety of practices and tools developed and tested abroad. This technology transfer is particularly prevalent with respect to winter maintenance and security.

The United States has gained significant technical knowledge in the winter maintenance field through WRA participation. Deicing and anti-icing practices used in many U.S. cities are a direct result of involvement with the WRA. Gabriel Guevara of FHWA’s Office of Transportation Operations noted that the United States learned about anti-icing through WRA interactions on the Winter Services Technical Committee. While for several decades the United States focused on deicing (i.e., treating roads with salt after a weather incident), European countries practiced anti-icing methods in which they treated roads with a salt brine prior to snow and ice events. Anti-icing is a considerably more environmentally sustainable and uses



Removable Sander Legs Used in Germany

SOURCE: RICK NELSON

approximately one-third the effort in terms of materials, equipment, and labor, which results in millions of dollars in cost savings (vis-à-vis a deicing approach). Because anti-icing uses less salt, pollution due to runoff is reduced and road surfaces do not degrade as quickly, ultimately saving vast amounts of money that would otherwise need to be spent on roadway repairs.⁸

Through his participation on the Winter Services Technical Committee, Rick Nelson, AASHTO’s SICOP Coordinator and former Nevada DOT official, gathered information from Swedish and French WRA delegates about sustainable salting practices. He shared these practices with the SICOP Steering Committee and incorporated sustainability into SICOP’s work program. Through SICOP’s work, information on sustainable salting practices was brought to the attention of the American Public Works Association (APWA). APWA used this information to develop a sustainability checklist, which is heavily used and also influenced the sustainability practice recommendations made by the Salt Institute. The Salt Institute now offers a Safe and Sustainable Snowfighting Award, which recognizes agencies that deal with snow removal in an environmentally and economically conscious manner.

⁸ According to the FHWA Road Weather Management Program, States spend \$2.3 billion annually on winter maintenance, a large portion of which includes materials and labor, as well as millions to repair infrastructure damaged by snow and ice. Incremental improvements therefore have the potential to produce millions in cost savings when widely implemented.

U.S. representatives to the Winter Services Technical Committee, Rick Nelson and Gabriel Guevara, both contributed to the development of the WRA's 2014 *Snow and Ice Databook*. Re-released every 4 years at the WRA's Winter Congress, the Databook is the most comprehensive and widely consulted source of information about international practices in winter maintenance, including materials used, technologies employed, governance structures, and performance tracking. Practitioners and researchers have utilized several editions of the Databook as a key resource in developing reports and plans such as National Cooperative Highway Research Program Project 20-07 Task 329: Alternative Delivery Methods for Winter Operations.⁹ Because of the success of the WRA's *Snow and Ice Databook*, Rick Nelson, who played a key role in developing the U.S. section in the current edition, has considered creating a domestic version of the Databook that could serve as a stand-alone product and be incorporated into the WRA's international version. Well-publicized by the WRA and members of the TC, the *Snow and Ice Databook* has had a significant impact on the U.S. winter maintenance community.

Through WRA participation, U.S. practitioners have learned about and employed techniques to upgrade equipment used to sand roads for winter maintenance activities. While attending a TC meeting abroad, Rick Nelson learned about a relatively common practice in Europe of attaching removable legs to trucks to apply sand to roads, a technology he brought back to Nevada DOT and implemented. With sanding equipment traditionally used in the United States, sanders have to be removed from trucks by winches, which is a somewhat laborious and dangerous process, costing significant time and money. The removed sanders then sit in an equipment yard for several months out of the year, taking up space. The removable legs are much safer and easier to take on and off trucks and are considerably smaller than



Existing Truck Parking Sign in Michigan on I-94

SOURCE: TPIMS TIGER GRANT APPLICATION

traditional sanders, saving Nevada DOT winter maintenance resources.

As a member of the WRA Freight Transport Technical Committee, Bill Gardner, Director of the Office of Freight and Commercial Vehicle Operations at Minnesota DOT (MnDOT), learned about a Dutch system that monitors truck parking availability. Information gained supplemented existing knowledge and experience with such systems. MnDOT later collaborated with the States of Kansas, Kentucky, Indiana, Iowa, Michigan, Ohio, and Wisconsin, several of whom also had previous experience with these systems, to apply for and win a \$25 million Transportation Investment Generating Economic Recovery (TIGER) discretionary grant to implement a Regional Truck Parking Information and Management System (TPIMS). According to the U.S. DOT, "TPIMS will help improve trucker safety [by] using existing technology to distribute information to commercial truck drivers on truck parking capacity and current occupancy through dynamic road signage and other sources." FHWA Administrator Gregory Nadeau called the grant "one of our most innovative TIGER grants ever."¹⁰

Security was another area in which the United States gathered information about international practices through WRA participation. In the United

WRA delegate Bill Gardner of Minnesota DOT supplemented his existing knowledge on truck parking monitoring systems through WRA participation by learning about a Dutch truck parking monitoring system. Minnesota was later part of an eight-State consortium that successfully pursued a \$25 million TIGER grant for a regional Truck Parking Information and Management System. FHWA administrator Gregory Nadeau called the project "one of our most innovative TIGER grants ever."

⁹ References to the Snow and Ice Databook in U.S. reports are listed in Appendix B.

¹⁰ See <https://www.transportation.gov/fastlane/one-tiger-grant-improved-truck-driver-safety-eight-states>.

Tests conducted by the United Kingdom Government of a sand-filled vehicle barrier (beyond its safety containment ability). The FHWA Office of Infrastructure and the John A. Volpe National Transportation Systems Center are interested in cataloguing the effectiveness (or inability) of barriers such as this one to improve vehicle exclusion strategies.

PHOTO COURTESY OF THE UNITED KINGDOM GOVERNMENT AND THE VOLPE CENTER.



States, highway infrastructure security has not been widely studied. Due to the sensitive nature of infrastructure security-related discussions and strategies, face-to-face interactions between countries is often necessary. As a member of the WRA Task Force on Security, Steve Ernst, a structural engineer in FHWA's Office of Bridges and Structures, was able to build relationships with counterparts in the United Kingdom, Italy, France, and others. From counterparts in the United Kingdom, Ernst learned about the use of street barriers that provide protection for facilities from explosive devices. Ernst is now working with the John A. Volpe National Transportation Systems Center to explore implementing similar barrier technologies in the United States.

RELATIONSHIP BUILDING

Many of the U.S. delegates interviewed indicated that their participation in WRA enabled them to develop relationships with counterparts in other countries, who they are now able to contact when they want more information on specific topics, approaches, lessons learned, and technologies—particularly information that goes beyond what one might read in publications. These connections allow for additional collaboration outside of the WRA, not only with TC members, but also with other individuals within their organizations. As multiple U.S. TC members noted, when they have something they want to learn about in another country, they immediately have someone they can call.

Minnesota DOT's Director of the Office of Freight and Commercial Vehicle Operations, Bill Gardner, explained that his WRA participation provided an opportunity to share best practices with freight leaders from across the globe, including both developed and developing countries. "Participating

in the WRA helped me to benchmark our own program for freight planning and implementation," Gardner said. Similarly, Robert Ritter, Safety Programs Team Leader at FHWA and a member of the WRA National Road Safety Policies and Programs TC, noted that his TC was chaired by one of Sweden's Vision Zero experts. Participation in the TC provided Ritter with direct access to a leading expert on a topic important to the United States and enabled him to be a better resource for his country on Vision Zero strategies.

Not only are U.S. representatives able to learn from international experts, they are also able to provide others with information. For example, FHWA's Gabe Guevara shared information on a Maintenance Decision Support System (MDSS) used in winter maintenance in the United States with a committee member from Sweden. MDSS is an American technology that the representative was able to discuss with a foreign colleague, generating interest and goodwill.

As the Director of the Bureau of Structures for Wisconsin DOT, Scot Becker used connections he formed through participation in the WRA Road Bridges Technical Committee to get advice from a range of experts when a bridge in his State started to sink; this helped him determine how it could be repaired. Similarly, he was able to obtain specifications from other countries that provided valuable information about strategies used to prevent bridge deck degradation. He used some of these strategies in Wisconsin, resulting in cost savings for his agency and State taxpayers.





The Road Network Operations and Intelligent Transportation Systems (RNO-ITS) Guide is a flagship product developed by the WRA with considerable support and input from U.S. delegates including James Pol. The Guide is an interactive resource that guides practitioners on the effective use of ITS and RNO. As a leading country in employing ITS and RNO to enhance system performance, the United States is well represented in the Guide. The Guide is available at <http://rno-its.piarc.org/en>.



Participation in the WRA enables U.S. delegates to interact not only with counterparts from governments abroad but also with private sector and academic representatives who participate (a practice more common abroad). As such, U.S. TC members gain exposure to, and are able to build relationships with, foreign experts who they may not have otherwise met through agreements that U.S. DOT makes to collaborate with public agencies abroad. James Pol, who served on the Road Network Operations TC for the 2011–2015 cycle during his tenure at the U.S. DOT Intelligent Transportation Systems Joint Program Office (ITS-JPO), noted that WRA participation allowed him to interact with a broad array of international actors. ITS-JPO has a trilateral agreement in place with equivalent agencies in the European Union and Japan to share research; however, members of Pol's WRA TC were largely from the private sector and academia, meaning that Pol was able to forge relationships with actors outside of the government sphere and gain access to additional information and perspectives.

OTHER BENEFITS

Additional positive outcomes of U.S. participation in the WRA include streamlined international engagement with multiple countries; increased

employee satisfaction and engagement; and a mechanism to help give back to the worldwide transportation community, which is consistent with national principles of service.

Efficiencies Achieved

Working with and learning from other countries is of great value to the United States, which is what leads U.S. DOT and FHWA to undertake a variety of engagements with foreign transportation agencies. For example, FHWA's Office of International Programs runs a Global Technology Exchange Program and an International Visitors Program, both of which help the United States maintain continuous contact with foreign counterparts who can provide valuable information and strengthen relationships. As former FHWA Executive Director Jeff Paniati noted, participation in the WRA, in particular, provides an opportunity to streamline international engagement for FHWA. While bilateral engagements with other countries are conducted because of their strategic value and return on the investment of time and resources, WRA participation can complement these activities and enable FHWA to achieve efficiencies in engaging with partner countries, in some cases. WRA participation is a way to engage efficiently with many countries in instances in which bilateral engagements are not possible due to resource limitations.



April Marchese presenting at the 2015 World Road Congress on the International Climate Change Adaptation Framework for Road Infrastructure

SOURCE: COURTESY AND COPYRIGHT OF THE KOREA ORGANIZING COMMITTEE

Increased Employee Satisfaction and Engagement

In addition to providing efficiencies, participation in the WRA positively influences employees' job satisfaction. As Paniati noted, the opportunity to be involved in the WRA is a strong retention tool for employees. Participation in the WRA keeps ambitious employees feeling challenged or "fresh" and "gives them something to give back to," which can make their jobs more rewarding, increase their loyalty to the organization, and reduce turnover. Michael Griffith, Director of FHWA's Office of Safety Technologies, illustrated this point in his interview. Griffith noted that after 27 years of service with U.S. DOT, working with the WRA is extremely rewarding and makes him "excited about going to work each day." As the Director of FHWA's Office of Safety Technologies, Griffith works to save lives in the United States. Through his participation in the WRA, he is able to extend his reach further to more than 120 additional countries. Beth Alicandri, FHWA Associate Administrator for Safety, noted that she felt rewarded and reenergized in her job as a



The more invested FHWA is in long-term and continuous participation in the WRA, the higher the return on that investment will be. There is a significant amount of untapped potential for the U.S. to continue shape the WRA agenda to advance the interests the U.S. shares with partner countries.

– Jeff Paniati,

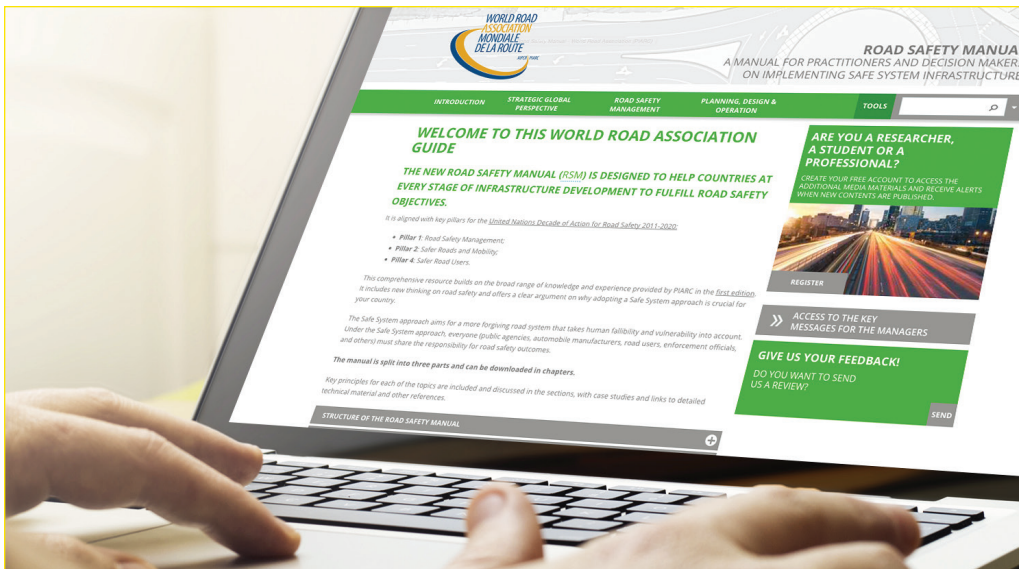
FORMER EXECUTIVE DIRECTOR, FHWA AND CURRENT EXECUTIVE DIRECTOR, INSTITUTE FOR TRANSPORTATION ENGINEERS (ITE)

Federal employee after being given the opportunity to provide technical assistance to transportation officials in West Africa to help them understand implementable actions they could take to save lives. Many other interviewees made similar comments regarding the sense of purpose and pride they felt from the opportunity to participate in the WRA. On a purely strategic level, providing employees with opportunities that increase their motivation and performance produces benefits such as reduced turnover and retained institutional knowledge for the Federal Government, which ultimately benefits taxpayers and the traveling public.

Support for National Principles of Service

As noted above, U.S. participation in the WRA provides a service to other countries, including developing countries, with whom the United States has strategic relationships. The ability for other countries to learn from U.S. experts on how to implement transportation practices that can save lives, improve economic conditions and opportunities, and increase resiliency is a way to engage with and support partner countries that is consistent with U.S. national principles of service. While most interviewees cited participation in the WRA as an opportunity to network with their foreign

Through his work on the National Road Safety Policy and Programs Technical Committee, FHWA's Robert Ritter chaired the Land Use and Safety Working Group and developed a report on how land use decisions impact highway safety. In developing countries, roads are often constructed between towns or cities with relatively little consideration given to the impacts on areas and populations in between the two cities. As a result, minimally planned highway communities emerge, resulting in safety hazards. The report provides readers with an overview of basic planning principles and potential solutions to the safety problems associated with highway-oriented communities. These solutions include Access Management and Complete Streets initiatives. Through the report, the United States shared planning and safety expertise to help other countries.



A comprehensive, state-of-the-art reference document and living tool that can assist in fulfilling key objectives, the WRA Road Safety Manual (RSM) is an update to the first edition published in 2003. The new RSM highlights effective management and policy frameworks and technical references, and provides guidance on interventions to achieve results. The RSM highlights the practices of high-income countries and discusses how safety professionals in lower and middle-income countries can address safety issues. It is available at <http://roadsafety.piarc.org/en>.

counterparts and learn from others, the majority also noted that participation in the WRA enabled them to give back to the international transportation community.

As a world leader in many areas of roadway transportation, it is a strategic goal of the United States to help other countries, including key allies, and extend American principles and priorities beyond our domestic borders. As Ian Saunders, then Director of FHWA's Office of International Programs, noted, one of the U.S. DOT's highest priorities is safety, and the ability to save lives abroad is consistent with national diplomatic and strategic principles. The RSM, whose development was led by the United States, is a prime example of the use of WRA participation to promote these principles. As Saunders stated, by funneling U.S. knowledge into the RSM, FHWA was able to reach more than 120 additional countries and have a broad impact. And on a strategic level, helping other countries improve their transportation systems in areas of strength for the United States makes these countries more likely to share information that can benefit the United States in return. ■



Investing in products like the Road Safety Manual is strategic for multiple reasons. First, the Manual contains information about other countries' practices that could be employed by U.S. practitioners. Second, helping other countries understand what makes the U.S. a leader in transportation, fulfills our responsibility to help others and creates opportunities to translate leadership into business opportunities for U.S. companies. ”

– Jeff Paniati

FORMER EXECUTIVE DIRECTOR, FHWA AND CURRENT EXECUTIVE DIRECTOR, INSTITUTE OF TRANSPORTATION ENGINEERS (ITE)



FHWA intends to continue the deliberate, consistent, and active posture that has defined our participation over the last two cycles. ”

– Walter C. “Butch” Waidelich

JR., EXECUTIVE DIRECTOR, FHWA

OPPORTUNITIES TO INCREASE THE VALUE OF WRA PARTICIPATION FOR THE U.S. TRANSPORTATION COMMUNITY



Relatively few transportation professionals are aware of the WRA. Marketing will be key in overcoming this obstacle.

Neil Pedersen

EXECUTIVE DIRECTOR, TRB

The interviews and research indicate that the benefits of WRA participation are significant and that there is potential for enhancing these benefits. Budgetary limitations and sometimes strict travel guidelines for both FHWA and State governments in the United States have limited the amount of in-person WRA participation that can be supported. Similarly, guidelines on how public funds can be spent can make it difficult for the United States to host WRA meetings. For these reasons, it is difficult to overstate the need to ensure dissemination of the information learned and gathered from WRA participation, and the high-quality products developed by the WRA, often with significant U.S. involvement. There are a number of ways in which these benefits can be multiplied through the employment of existing and new dissemination opportunities. This section is divided into three topics: awareness and dissemination opportunities, continued expectation setting and support for U.S. delegates to the WRA, and improving engagement at World Congresses and other events.

AWARENESS AND DISSEMINATION OPPORTUNITIES

The interviews overwhelmingly indicated that U.S. WRA representatives are committed to innovation and they value U.S. participation in the WRA. The United States strives to select appropriate representatives to chair and participate in the WRA's corporate and technical bodies, and these individuals embrace the opportunity to learn from other countries and share new-found knowledge

with peers. Delegates from the United States are collaborating with other experts in their fields to produce high-quality reports on issues that are relevant to the United States. The greatest challenge still facing AASHTO, as the NC, is disseminating the findings contained in WRA products and information gathered through WRA participation to practitioners and policymakers back home. FHWA and TRB support this dissemination, but the responsibility lies primarily with the NC. Universally, U.S. delegates have competing demands on their time and, in some cases, lack clearly presented, formal dissemination opportunities, which can limit the outreach they are able to do.

The information in this section is designed to offer guidance on how to leverage opportunities to enhance the value of U.S. participation in the WRA. Specifically, the goal is to develop communication and outreach strategies that:

- Raise awareness of U.S. participation in the WRA, and its value, among transportation experts at the Federal, State, local, and/or Tribal levels to create a higher return on investment for participating.
- Improve communications among technical activities within the WRA, FHWA, AASHTO, TRB, and other stakeholders, including professional organizations.
- Expand communication channels and make information sharing easier and timelier.
- Showcase publications and other products to broader internal and external audiences.

These objectives can be achieved through a combination of internal and external communications





strategies and tactics. Internal communications refer to communications within an organization, among its members and constituents. External communications refer to any communications and outreach to journalists and the general public.

The following are some specific recommendations and tactics to support the above-stated communications goals. All of these tactics are scalable, which means there are opportunities to increase the level of effort and outreach. Understanding that resources may initially be limited, there are ways to start small and grow as organizations find their “rhythm,” and cooperation among organizations improves.

Create an earned media and social media plan to highlight noteworthy events and activities.

Earned media (sometimes called “free” media) is publicity that is generated by reaching out to (or “pitch”) journalists to persuade them to cover a story. Earned media coverage, such as an article in a newspaper or industry publication, or a story on televised news, offers third-party validation for the issue. While this kind of media exposure is relatively low cost, there is no guarantee of placement. The challenge is having newsworthy information and convincing editors and producers that this information is important to their readers and viewers. The good news is that there are some very good stories to tell within the U.S. WRA community.

Knowing which reporters to call to “pitch” an idea requires a bit of research, but such research is not

Metrics for Traditional Media:

- Number of print articles, TV and radio stories, blogs, etc.
- Outlet circulation numbers (if available)

Metrics for Social Media Include Numbers of:

- Hashtags used
- Facebook shares
- Tweets
- Videos posted
- Retweets
- Images posted
- Facebook likes

particularly difficult. A simple Internet search can yield all the necessary information, including:

- Knowing which outlets—often niche outlets—cover the issues relevant to the WRA’s various TCs and other bodies
- Identifying the reporters who cover these beats and building relationships with them
- Understanding what topics reporters are covering
- Taking note of trends and connecting WRA activities to them.

Below are some potential trade publications that may be interested in covering WRA-related story ideas (depending on the topic):

Social media is another inexpensive external communications tactic and a powerful tool to raise awareness and create buzz around an issue. According to a 2015 study from the Pew Research Center, “some 38 percent of those on Twitter use the site daily, a figure that is statistically unchanged

NAME OF MAGAZINE	TOPICS COVERED
<i>Asphalt</i>	Civil engineering, asphalt, roads and highways
<i>Engineering News-Record (ENR)</i>	Engineering industry, industry news, building and construction, roads and highways
<i>Highway Builder</i>	Building and construction, civil engineering, roads and highways
<i>Pavement Maintenance & Reconstruction</i>	Building and construction, civil engineering, commercial development, roads and highways
<i>Public Roads</i>	Federal Government, transportation, State and local government, roads and highways
<i>Roads & Bridges</i>	Transportation, building and construction, civil engineering, roads and highways

from the 36 percent who did in 2014. Facebook continues to have the most engaged users—70 percent log on daily, including 43 percent who do so several times a day.” Based on these findings, one can make a strong case for using Twitter and Facebook as a way to share information and engage stakeholders.

In order to determine which news outlets, organizations or industry influencers are the most effective social media platforms, do an Internet search to:

- Know what social media platforms the WRA, AASHTO, FHWA, TRB, and other stakeholders rely on to share information.
- Understand their followers and reviewing the social media content being shared.
- Understand or developing a social media content workflow.

Look at the entire 4-year cycle, identify long- and short-term outreach and communication goals (a strategy already being pursued within the WRA) and mark key milestones that warrant promotion and marketing. The WRA operates on 4-year working cycles, which, in the past, have made timely dissemination of publications and results challenging and, in some cases, have reduced their value. One reason for this is the lack of awareness among domestic organizations of what is happening at the WRA, which could prevent potential duplication of efforts and/or encourage collaboration and information gathering from practitioners beyond the group of U.S. delegates. Even if a report takes 4 years to develop, there may be value in publicizing the fact that it is being developed to domestic groups, as they may also be able to contribute information, ultimately improving the quality of WRA products. Another reason relates to the fast pace of change in technology in some areas (or other changes), which makes the ability to develop products more quickly, or to develop deliverables in smaller “chunks,” more important. The good news is that the WRA has made publishing results midway through the cycle a priority; this will help maintain momentum and enthusiasm for its longer term work. U.S. delegates are encouraged to use their leadership positions to identify opportunities to employ interim milestones and other strategies to “stay on the radar” of the U.S. transportation community. Ian Sanders, Former Director of International Programs at FHWA, noted



Having a marketing message is important. We worked on that with the Snow and Ice Databook with some folks at the [WRA General Secretariat] office. They developed a marketing plan for the Databook ... and I promoted it every opportunity I had. I believe the same can be done with other publications.”

– Rick Nelson

SICOP COORDINATOR, AASHTO

that as the WRA invests more resources into bigger products, it becomes equally, if not more, important to invest resources into marketing these products. Promotion plans for each publication will vary based on the production schedule and area of expertise. A master calendar can help U.S. sponsoring agencies and their constituents (e.g., AASHTO Standing Committee chairpersons) to track periodic milestones that promotion will be built around.

Spotlight member achievements. Given the high-quality work being done by U.S. delegates to the WRA, and the organizations they support, there are opportunities to highlight individual and organizational achievements throughout the cycle. An example of this is from Minnesota. As discussed above, Bill Gardner, Director of the Office of Freight & Commercial Vehicle Operations at Minnesota DOT, noted that “one of our committee members, from Switzerland, presented information on freight mobility projects in Europe. One of these projects was a Dutch truck parking availability information system [and] Gardner followed up with him to learn more. This knowledge encouraged Gardner to support additional testing and development of such systems. Subsequently, Minnesota was part of an eight-State consortium that won a TIGER grant to implement a Truck Parking Information System (TPIMS). This is a tremendous success story of individual leadership, international collaboration, and how involvement in the WRA directly benefited a State DOT. There are a number of ways to recognize this success, for example:

- Post a story on the NC website/homepage featuring the committee member from Switzerland and Bill Gardner.
- Encourage the WRA to cover the story on its website as well.

- Feature this story on the Minnesota DOT website, as well as the websites of the other State DOTs involved in the TPIMS project.
- Encourage FHWA division offices to promote this story through earned and social media channels.
- Pitch the story to local/statewide media outlets in Minnesota and the other seven States.

In order to track these kinds of accomplishments, the NC and/or FHWA can create a “story bank,” which is essentially a collection of unique stories. Each individual or organization would be vetted and have its own profile in a database. These stories can be used for strategic dissemination throughout the year, and the WRA and AASHTO can also enlist these people to serve as spokespersons, advisors, mentors, and so forth. In the longer term, the NC could consider creating a program that recognizes the contributions of WRA delegates, or the domestic practitioners they support, to furthering the state of the practice in the United States as a result of WRA participation, thus encouraging WRA representatives to actively support dissemination.

Take advantage of conferences and other events in the United States to disseminate information.

Conferences are an excellent way for transportation professionals to network and share information. Some U.S. delegates to the WRA are already using conferences as venues to share information about international practices, and the NC and FHWA should strongly encourage and support replication of this practice universally. For example, Rick Nelson has used SICOP meetings and conferences to share winter maintenance information from other countries he learned about through the WRA. NC representatives have recognized that AASHTO’s Standing Committee structure is, in many ways, well aligned with the WRA’s, and that there is tremendous value to ensuring there is an AASHTO member participating in the WRA and reporting back to the Standing Committee on information learned from WRA participation. The NC has begun to increasingly prioritize forming these connections and ensuring international practice information “gets on the agenda” at meetings, and this should continue and be encouraged by FHWA and other partners. King Gee, AASHTO Director of Engineering and Technical Services and the U.S. National Committee Secretary, noted that he requested all AASHTO Standing Committees include a WRA agenda item during their regular meetings so that

Top 10 Ways Delegates Can Share Information about WRA Products or Participation

1. *Tweet about your WRA experience and include pictures to intrigue followers.*
2. *Share information about your experiences or knowledge gathered on your LinkedIn profile and with your LinkedIn network.*
3. *Submit an article or column for placement in your organization’s newsletter or on your website.*
4. *Submit a guest column in a professional organization’s magazine or newsletter that caters to your industry.*
5. *Present on a WRA product on which you worked at TRB or another conference.*
6. *Reach out to other domestic professionals and international contacts you make through WRA participation to share information.*
7. *Work with the Office of International Programs and/or the National Committee to develop a dissemination plan for a WRA product you helped develop or think will interest practitioners in the U.S.*
8. *Investigate outside-the-box organizations that might be interested (ITE, NACO, ITS-America, etc.) in learning about and sharing your findings.*
9. *Hold a brown bag within your own organization to share your experience and newfound knowledge.*
10. *Host a webinar, perhaps with international counterparts, and invite both speakers’ networks to participate and share ideas.*

WRA TC representatives can report on the work being done. He also noted that the WRA should be an agenda item on AASHTO’s yearly meetings with State DOT chief executive officers. This type of reporting can be especially beneficial in spreading the word to an array of transportation professionals in the United States.

There are also opportunities to present in sessions, facilitate workshops, or host a booth at domestic events where information can be shared. When other countries employ policies, practices, or technologies that have significant promise for



implementation in the United States, U.S. WRA delegates could work with their counterparts in these countries, through the relationships they have built, to explore whether presentation materials already exist that they could present to domestic audiences. In this scenario, the WRA delegate would effectively serve as an ambassador to potentially facilitate new connections between U.S. and foreign practitioners. AASHTO, U.S. DOT, and other organizations already host booths at conferences; they could be encouraged to add a special section or even simply a poster that explains the benefits of WRA participation and showcases examples.

By developing criteria for selecting which conferences to prioritize, WRA and the U.S. Delegates can optimize their exposure without overtaxing staff capacity. Some criteria for consideration might include:

- Projected attendance
- Diversity of anticipated attendees
- Whether the event will have a broad or relatively niche audience
- Geographic diversity of attendees
- Cost to host a booth
- Personnel availability to adequately staff the booth and/or ability to secure volunteers to support staff at the booth
- Sufficient time for promotion

Below is a sample list of national organizations whose conferences could be key opportunities for presenting and getting the word out about WRA products and information gathered. Many hold several national-scale events throughout the year, so dissemination opportunities are numerous and, where appropriate, can be strategically targeted to reach professionals working in niche areas. All of these organizations can also be targeted for earned media strategies, including those as simple as seeking announcements regarding WRA publications or WRA-related webinars to be included in newsletters.

- American Association of State Highway and Transportation Officials (AASHTO)
- Transportation Research Board (TRB)
- National Association of City Transportation Officials (NACTO)



There are many potential opportunities for additional organizations in the U.S. to partner with U.S. delegates to the WRA to collaboratively disseminate WRA products and information, including to practitioners at the local government level. ”

– Jeff Paniati

FORMER EXECUTIVE DIRECTOR, FHWA AND CURRENT EXECUTIVE DIRECTOR, INSTITUTE OF TRANSPORTATION ENGINEERS (ITE)

Metrics for Conferences Include Numbers of:

- Video conferences and web meetings
- Webinars (recorded and available online)
- Virtual “brown-bag lunches”
- Video reports
- Speaker series
- Facebook posts
- Tweets
- LinkedIn posts
- Newsletters
- Blog articles

- Association of Metropolitan Planning Organizations (AMPO)
- National Association of Regional Councils (NARC)
- Intelligent Transportation Society of America (ITS America)
- Institute of Transportation Engineers (ITE)
- American Planning Association (APA)
- National Association of Counties (NACO)
- National Congress of American Indians (NCAI)⁹ Intertribal Transportation Association (ITA)
- National League of Cities (NLC)
- National Association of Development Organizations (NADO)
- U.S. Conference of Mayors (U.S. Mayors)
- International City/County Management Association (ICMA)
- Construction Management Association of America (CMAA)
- American Society of Civil Engineers (ASCE)
- Transportation for America (T4A)
- Smart Growth America (SGA)
- Congress for New Urbanism (CNU)

Expand communication channels. Email is an important way to share information quickly.

⁹ NCAI considers the condition of Indian Reservation Roads to be a key issue and has been closely monitoring transportation issues by forming a joint task force with the Intertribal Transportation Association.

¹⁰ Source: McKinsey Global Institute.

¹¹ Source: Email Statistics Report 2015–2019, The Radicati Group, Inc.

Many people, however, are inundated with email and become overwhelmed. In fact, the average worker spends nearly one-third of his or her time reading and answering emails each week¹², and the average number of emails sent and received per day is 122 per worker¹³. So, while email is still a key communications tool, it is important to share information through other channels. It is also important for people to be able to get their information how and when they want it. See the side box for other ways to share information.

Scot Becker, from Wisconsin DOT, noted that “there is a lot of value in face-to-face discussions.” So while only a small number of people are able to attend WRA Congresses and meetings, technology allows U.S. experts to stay connected to each other and their foreign counterparts through video conferences and webinars. Many interviewees recommended webinars as a good way to share information and stay connected. For example, delegates could convert their report findings into 30- and 60-minute presentations (15- and 20-minute presentations for less content), schedule two or three presentations at different times to accommodate delegates and other interested practitioners and policymakers from around the world, and archive the webinars and presentations to be a resource for future use. Some ways to make the webinars more creative is to encourage representatives from the United States and WRA to co-present; encourage questions; and make it as interactive as possible, including videos and other imagery to make presentations more visually appealing. It will also help if the NC and other groups aggressively promote these webinars to their constituents.

Federal delegates can also set up brown-bag lunches with other Federal partners, including the U.S. DOT and its key stakeholders. Local transportation practitioners could also be included, if appropriate. These meetings can serve one or more purposes:

- Share information with U.S. DOT leadership and decisionmakers.
- Generate interest and enthusiasm for participating in the WRA.
- Brainstorm ways to leverage U.S. involvement.
- Identify liaisons to ensure ongoing communications and coordination.

AASHTO has a number of ways to disseminate information to its members, including promoting information on its website, highlighting special topics in its blog, and sharing information via its social media platforms—which can all be employed in its role as the NC as well. AASHTO has expressed a willingness to use its media presence to promote WRA posts and tweets, events, and products. The WRA’s efforts to increase its strategic communications, in part through an enhanced social media presence, provide new opportunities to advance information dissemination.

Make information available online. And make it easy to find. All report findings, presentations, and so forth need to be posted online in a timely manner (ideally first on the WRA website), and the NC, FHWA, TRB, and other stakeholders can link to the information from their own websites in a way that makes it easy to find. Based on the volume of information, it would be ideal for each of the sponsoring agencies to have a website manager who manages the flow and organization of information to ensure prominent placement. While having a staff person dedicated to this task may not be practicable, WRA-related updates could be scheduled to occur on a weekly or biweekly basis. It will help, too, if sponsoring agencies establish a system to alert members to new postings. For example, the organizations can send out news alerts via email, post teasers on Facebook and Twitter that link to the online content, and feature

“ **Dissemination of WRA information could be stronger yet. AASHTO is looking at ways to make it a higher priority.** ”

– Bud Wright
EXECUTIVE DIRECTOR OF AASHTO

Exporting knowledge: #UKTransportExpertise

Publication of the UK National Committee on the World Road Congress

SOURCE: UK NATIONAL COMMITTEE



new information on their home pages in their carousel. Both AASHTO and FHWA already have webpages devoted to the WRA, yet building out these webpages with additional information and resources could serve to improve dissemination. Beyond linking to the WRA website, these pages could link to relevant publications, a schedule of events, and other NC websites.

Implement and build on the practices of other National Committees. The WRA has NCs in 37 member countries. The NCs contribute to the dissemination of the organization's products; organize local activities such as meetings, conferences, and seminars; and undertake some membership and administrative services in their own countries. While AASHTO only became the NC for the United States in 2011, other countries' NCs have longer histories and established practices that can be emulated to increase the broad knowledge of WRA activities in the United States. AASHTO Executive Director Bud Wright noted, for example, that following the World Congress in Seoul, the United Kingdom's NC released a newsletter highlighting the experiences of TC representatives, including featuring FHWA's Michael Griffith. The newsletter provided an opportunity to share information about the WRA to a broad audience, but also highlighted the hard work of the TC members. The U.S. NC, with input from TC members, could develop a similar newsletter that they post to their website and send out to relevant partner organizations.

Grow existing partnerships. In 2007, TRB and WRA signed an MOU in order to help solidify the relationship between the two organizations. While the MOU is an important first step, expanding its reach would have a broader impact. TRB's connection to AASHTO and various transportation organizations throughout the United States can help extend the reach of U.S. participation in WRA. Additionally, linking TRB conferences and meetings in the United States to WRA TC activities provides a potential opportunity to host WRA meetings and

events. As the new cycle begins, TRB is looking to work even more closely with the NC, FHWA, and the WRA itself to implement actions to further strengthen the mutually beneficial partnership established in the MOU.

CONTINUED EXPECTATION SETTING AND SUPPORT FOR U.S. REPRESENTATIVES TO THE WRA

Interviewees noted that the United States continues to strive to select the best qualified experts to participate in the WRA. This allows the U.S. delegates an opportunity to take on leadership roles within the TCs and working groups, on publications, and through other collaborative efforts, which affords them the opportunity to help shape the direction of the research and publications. These leadership positions are time consuming, so it is important that the NC and FHWA continue to provide ongoing support to delegates throughout the cycle, as many do not have their own support staff.

One way to support the delegates is to help them show the value of attending the WRA World Congress to their organization's leadership. With the Federal Government and nongovernmental organizations scrutinizing all travel costs, it is critically important to demonstrate the return on investment for these trips. As one person noted, there is a stigma with international travel and "people don't see the level of effort that goes in behind the scenes ... they see it as vacation." Documenting the hard work that has been done by U.S. delegates, and the outcomes in which this work has resulted, can help to combat this stigma.

Many of the interviewees emphasized the importance of U.S. representatives knowing the expectations before they go to an overseas conference. Helping the delegates maximize and document the benefits of participation could help



The way the MOU [between TRB and the WRA] is worded, it is more of an opportunity rather than strong language. It uses the word 'may' instead of 'will.' I want to see more 'wills.'

— Neil Pedersen

EXECUTIVE DIRECTOR OF TRB





We have begun to vet the U.S. State representatives to [the WRA] committees through the AASHTO committee chairs, so that (a) they are aware and (b) they have an opportunity to decide who would be the best representative. ”

– King Gee

DIRECTOR OF ENGINEERING AND TECHNICAL SERVICES, AASHTO, AND U.S. NATIONAL COMMITTEE SECRETARY

senior managers understand the value of attending these meetings and conferences. This underlines the importance of ensuring the U.S. representatives are prepared and know the expectations before they go, so they can properly communicate the objectives of each trip. In short, the goals are to:

- Ensure all new representatives (Federal and non-Federal) receive the same level of training and orientation support.
- Provide the U.S. representatives with the necessary tools and resources to be successful.

Below are recommendations that support these goals.

Continue to select the right people to disseminate information more broadly. As noted above, a consistent theme in the interviews was the importance of experts sharing domestically what they learn from other countries. As the NC and FHWA have already recognized, the first step is identifying the right people who are interested and motivated to share the information (e.g., report findings, lessons learned, committee updates) with their leadership and peers. They must also be motivated to commit the time to WRA participation and activities, which involves a significant amount of additional time and energy. By identifying the right contacts at the State DOTs and FHWA, the chances are greater that the information will be shared in a timely manner with the right audience.

Develop an enhanced newcomer’s orientation guide. Many interviewees indicated that they were grateful for the preparation they received to serve as a delegate to the WRA, but that the preparation could have been even more thorough. Creating and regularly updating an orientation guide that uses bullets for key information (for example), and demonstrates them through past examples, will help prepare new members for the WRA World Congress and allow them to make the most of their time at the conference. Specifically, it will offer suggestions on pre-conference reading,

explain the organizational structure and committee dynamics, and define the roles and responsibilities for TC Chairpersons and conference organizers.

Create a “buddy system” where outgoing committee members mentor incoming members.

Randell Iwasaki, the executive director of the Contra Costa Transportation Authority in California, said he would appreciate suggestions on how to prepare for the first meeting, and how and when to speak up and get involved. The current WRA members have a wealth of knowledge to impart to incoming members like Iwasaki. Currently, FHWA does a good job of pairing its delegates internally to help the new delegates prepare and acclimate. This pairing would be beneficial for all new members, particularly the State DOT participants, as these former delegates can provide insights into the organization’s hierarchy, as well as the personal relationships among members, and perhaps even introduce new WRA delegates to continuing TC members and leaders from other countries. These “alumni” can also serve as a sounding board for the new members, offering counsel and sharing lessons learned. This insight from someone who has been in their position can help facilitate a smooth transition.

Develop a template report and a short-term outreach plan to help members share information with the right people quickly when they return from events.

When members return from an overseas conference, they are often overwhelmed with catching up on their day-to-day responsibilities while simultaneously trying to complete all of the necessary follow-up from their trip. Despite the best of intentions, follow-through has sometimes been inconsistent or delayed. One way to ease the reporting burden on delegates after they return from conferences would be to develop a template report that delegates can fill out and/or easily customize in order to both report back on their experience and identify opportunities to disseminate what they have learned quickly.





There is still more we can do to actively engage with technical representatives—in some cases, we can and should take on a more active role to spread their learning from international colleagues to a wider American audience.”

– King Gee

DIRECTOR OF ENGINEERING AND TECHNICAL SERVICES, AASHTO,
AND U.S. NATIONAL COMMITTEE SECRETARY

This would reduce the delegates’ administrative time with regard to creating a report format and instead allow more time for developing a thoughtful report and documenting follow-up opportunities. In addition to asking for basic information such as objectives of the event, the report template should require delegates to identify or brainstorm audiences that would be interested in the information they gathered and upcoming events at which information-sharing could occur, etc.

The post-event reporting process would also be an opportunity to remind delegates about the domestic resources available to them in formulating and following through with outreach plans. For example, FHWA employees seeking opportunities to brainstorm about how they might disseminate information they’ve gathered could contact the Office of International Programs to solicit ideas. Similarly, delegates from State DOTs could reach out to the NC for this purpose. TRB representatives have demonstrated a willingness to discuss opportunities as well.

Help committee members leverage their participation back home. As noted in many of the interviews, people get involved in the WRA because they are interested in a particular topic and they want to share what they learn with their colleagues in the United States. The challenge is that participating in the WRA is above and beyond their normal work responsibilities and is a significant time commitment. They are dealing with multiple priorities and sometimes supervisors who may not be supportive of the time spent on WRA activities. The interviews indicated that U.S. delegates who see WRA participation as a privilege are amenable to working with sponsoring agencies

to identify ways to publicize publications and other deliverable-oriented activities conducted as part of WRA participation.

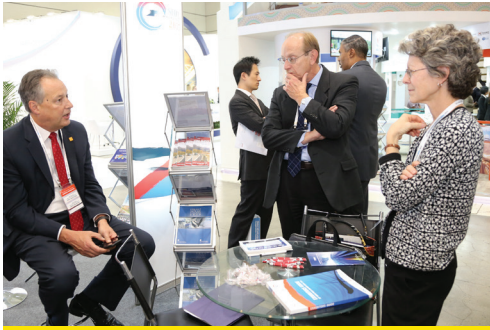
OPPORTUNITIES TO IMPROVE ENGAGEMENT AT WRA WORLD CONGRESSES AND OTHER MEETINGS

To maximize the value of attending World and Winter Congresses and other WRA-related events, the NC and FHWA should continue to work together with their respective WRA delegates to develop topic-specific “conference plans” with strategies and agendas in advance. These plans can include:

- Objectives related to holding meetings (formal or informal) with specific countries or delegates to gather information from those countries whose experiences could inform and streamline domestic activities or initiatives (i.e., take advantage of other countries’ lessons learned)
- Objectives related to the information to be shared with other countries regarding innovative practices that the United States is undertaking
- Identification of key sessions to attend

At least a few months prior to WRA events, ideally, delegates can reach out to domestic colleagues in their subject matter areas (e.g., by email) to collect ideas regarding specific information to be gathered from countries that have information that would be beneficial.¹⁴ This process does not have to be formal; it could consist of, for example, a quick email from a colleague to the delegate, such as “I’ve heard that Sweden has implemented an upgraded system for road weather data collection. Can you try to connect with a Swedish delegate to learn more about how it works and any challenges they may have faced in implementing it?” Ultimately, conference plans can be revisited or referenced during the completion of post-event reporting. Asking delegates to consider whether they achieved their event objectives can be a reflection process that informs their approach to optimizing participation in future WRA events.

¹⁴ Given sensitivities related to international travel of public officials, such communications should subtly emphasize the tremendous time commitment and hard work associated with participating in and attending WRA-related activities and events.



Jeff Paniati, Steve Gaj, and April Marchese converse at the United States booth at the 2015 World Road Congress in Seoul

SOURCE: COURTESY AND COPYRIGHT OF THE KOREA ORGANIZING COMMITTEE

While conference plans can require a handful of hours to prepare, the practice is common in the private sector because it has been shown to enhance the return on investment (i.e., achievement of specific outcomes) of participating in conferences. To ease this burden, the NC and/or FHWA can prepare conference plan templates or checklists that delegates can use, and boilerplate “call for input” emails that they can distribute to solicit ideas for information gathering, as in the example above. At the leadership levels, conference plans can include objectives related to engaging with other countries to propose partnership ideas.

FHWA and the NC, in some cases, already work with U.S. representatives to World Congresses to prepare presentation materials. If they have not done so already, the sponsoring agencies can develop presentation templates and guidelines that presenters can use if desired.

In collaboration with FHWA, TRB and AASHTO have sponsored booths to represent the United States in the exhibit hall at World Congresses in the past. While the U.S. presence in the exhibit hall is often not as attention grabbing as those of countries

who invest more resources in visual presentation, the U.S. booths have been highly effective venues for sharing information and building connections. To the extent that it is not already being done, U.S. sponsoring agencies should consider using the booth as a venue for holding short, engaging presentations as a way to continue to build on the thought leadership U.S. delegates are already imparting through this venue. In an era of short attention spans, a concise presentation, such as a *pecha kucha*,¹⁵ can be effective in piquing the interest of bystanders to listen in, or can serve as a reason to invite an international colleague to visit the booth at a specific time and possibly make introductions. Given that AASHTO and FHWA already invest in developing videos that showcase innovative and effective projects and initiatives,¹⁶ it makes sense to play these videos at the booth to highlight best practices. Considering the loud and transient environment of an exhibit hall, it may be worthwhile to consider producing a video with little to no voiceover; instead, a short video could rely on strong visuals and subtitles. ■



¹⁵ A concept that originated in Japan, *pecha kucha* (“chit-chat”) presentations have 20 slides that are automatically displayed using a timer, with only 20 seconds per slide. This style forces presenters to get right to the point, concisely conveying messages with engaging visuals. Q&A sessions following the presentation provide an opportunity for interested audience members to ask clarifying questions to gather more information. The use of countdown clocks for these presentations can indicate to potentially interested bystanders, or those passing through, that the time commitment involved in lingering to listen is not significant.

¹⁶ For example, see <https://www.fhwa.dot.gov/innovation/resources/videos/>.

SUMMARY LIST OF RECOMMENDATIONS AND PHASES

The previous chapter outlined a series of strategies that can be employed to enhance the value of U.S. investments in WRA participation. This section provides a brief recap checklist of those practices and recommends sequencing and timelines for implementation. As noted above, many of these activities are scalable and can be employed with various levels of intensity, depending on the available resources.

PHASE 1: PLANNING AND DEVELOPMENT

This subsection contains short-term strategies and tactics that can be implemented within the first year (0–12 months). Many can be employed in tandem.

- Review the Strategic Plan, Plan of Activities, and goals for WRA engagement; identify the publication schedule; and develop a corresponding promotion plan and timeline for high-priority products.
- Create a master calendar and mark key milestones that warrant promotion and marketing.
- Identify opportunities to promote publications, mid-cycle reports, conferences, etc.
- Assess the challenges and opportunities for the WRA, FHWA, AASHTO, TRB, and other key partners to disseminate information to their constituents and wider transportation audiences.
- Encourage the participation of academic representatives who are able to obtain travel funding for WRA participation; this may be done by, for example, linking it to their research.
- Support FHWA, AASHTO, and/or TRB as they continue to thoughtfully consider whether there are opportunities to encourage well-resourced private sector organizations to support the participation of their staff or representatives in the WRA and the subsequent domestic awareness and dissemination.
- Work with the U.S. delegates to identify opportunities to reduce their travel costs when possible, and/or identify ways to host meetings

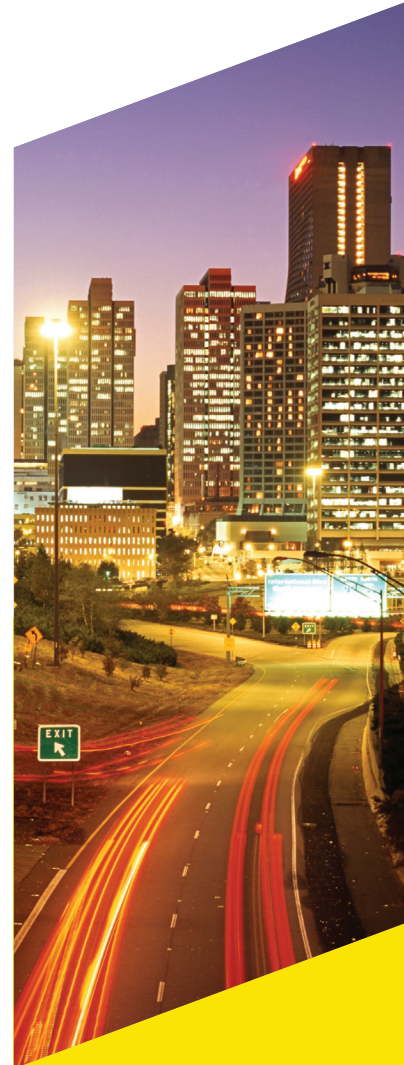
in the United States, possibly in conjunction with domestic conferences, to enhance the ability of U.S. practitioners to participate.

- Develop conference plans and develop support materials (e.g. templates) as needed.
- Develop an earned media and social media outreach plan that includes a media outreach list and recommended social media content.
- Begin reaching out to reporters and editors to build relationships.
- Monitor media coverage and track social media.
- Develop materials and resources as needed.
- Develop a plan to support U.S. delegates' efforts.
- Establish metrics to track activities undertaken; those provided in this report can serve as a starting point.

PHASE 2: IMPLEMENTATION

These strategies will be built out once the planning phase is complete and approved. These long-term strategies and tactics ideally can be implemented over a period of 2–4 years:

- Implement the promotion and information dissemination plan, and be prepared to respond to timely issues and the news of the day.
- Implement the conference plans and strategies.
- Implement the earned media and social media plan. ■



APPENDIX A: METHODOLOGY FOR DEVELOPING THE REPORT

OVERVIEW OF METHODOLOGY

As noted above, the contents of this report, particularly the information regarding benefits and examples from U.S. participation in the WRA, is heavily based on a series of 25 interviews with U.S. representatives to the WRA that were held between December 2015 and March 2016. Interview participants included State and Federal representatives to WRA TCs and TFs, as well as NC and FHWA leadership.

The interview questions used by the research teams are below. In some cases, the questions were further customized to reflect the research team's knowledge of the interviewees' WRA experience.

INTERVIEW QUESTIONS

INTERVIEW QUESTIONS – GENERAL

1. Please tell me about your role in the WRA.
 - a. In which cycle(s) were you involved?
 - b. Please describe the activities in which you participated (e.g., working groups, publications to which you contributed).
2. What was your motivation to become involved in the WRA?
3. How has the time you spent/spend participating in the technical committees, or other WRA-related activities, been beneficial to you or your organization?
4. Are you engaged in other transportation organizations that develop technical products or standards (e.g., TRB, AASHTO)? If yes, do you see a connection between the work developed in that particular group and the work done in the WRA's Technical Committees?
5. How are people in your organization, or in organizations with which you work, using WRA technical products or other publications?
 - a. If they are not using those products, what barriers might there be to using them (e.g., financial, awareness-related, other)?
6. To the best of your knowledge, how have practitioners in transportation organizations used WRA products to implement better practices?
 - a. Please provide specific examples.
 - b. What practices have you/they implemented?
 - c. How did the WRA products motivate implementing them?
 - d. How have those practices improved your/their operations?
7. In your experience and/or with respect to your area of expertise, have differences between developed and developing countries represented at the WRA limited the transferability of lessons learned?
8. For this project, we will be developing recommendations for improving dissemination within the United States of information produced by the WRA's Technical Committees and Task Forces.
 - a. How can the WRA improve dissemination of its work products to the transportation community, including in the United States?

- b. Similarly, how could other entities (such as, but not limited to, FHWA, TRB, and other professional organizations) improve dissemination of WRA products to the transportation community in the United States?
 - c. What topics, in particular, do you think the U.S. transportation community could benefit from learning more about?
9. Is there anything else you think is important for us to know or understand in order to document the benefits of U.S. participation in the WRA and make recommendations about increasing the return on FHWA's investments in WRA participation?

INTERVIEW QUESTIONS – TAILORED FOR SPECIFIC PERSPECTIVES

1. *[For those who attended the World Congress in Seoul in November 2015]*

Regarding your participation in the World Road Congress in Seoul:

- a. What was your goal in attending the World Road Congress in Seoul?
- b. What lessons did you learn from the experience of participating in the Seoul Congress?
- c. What would you do differently next time? Why?
- d. What can U.S. sponsoring agencies (FHWA, AASHTO, and TRB) do differently to enhance/optimize U.S. participation in the World Congress?

2. *[For academic/ private sector representatives]*

Please tell me about your experience as an academic/private sector representative.

- a. How much participation in the Technical Committee did you witness from the academic and private sectors?
- b. Did your role differ in any way from that of the public sector participants? If so, how?
- c. Did you encounter any particular challenges as an academic participant in a Technical Committee? If so, what were they?
- d. If applicable, how did you overcome the challenges?
- e. What can WRA do to improve/increase participation from the academic and private sectors?
- f. What did your organization hope to achieve through your involvement in the WRA?
- g. What value did you/your organization gain from participation?
- h. What lessons did you/your organization take away from the experience?

3. *[For FHWA leadership]*

What was your motivation for championing increased involvement in the WRA over the past two cycles?

4. *[For FHWA leadership]*

What do you see as the key benefits to the U.S. transportation community of investing in the development of products (e.g., the RSM) whose primary intended audience is developing countries?

5. *[For AASHTO]*

How has the designation of AASHTO as the U.S. NC changed its role in the WRA (if at all)?

6. *[For TRB leadership]*

My understanding is that TRB and the WRA signed a Memorandum of Understanding in 2007 that covers cooperation in mutual activities, dissemination of information and research results, and organization of joint participation in selected activities. Regarding the MOU:

- a. In your opinion, how well has it been implemented to date?
- b. Do you have plans to further these activities in the future?
- c. Do you think the inauguration of a new WRA Secretary General presents new opportunities for advancing the goals of the MOU?

APPENDIX B: OVERVIEW OF SELECT WORLD ROAD ASSOCIATION PUBLICATIONS

PUBLICATIONS FROM THE 2008–2011 CYCLE

Title: Intelligent Transportation Systems (ITS) Handbook (2011)

Strategic Theme and Committee: Improving Provision of Services; Technical Committee B.2 Road Network Operations

U.S. Involvement and Contributions: James Pol, FHWA

Primary Audience: National, regional/State, and local governments in developing countries

Secondary Audience: Tribal entities and local governments in the United States

Description: This handbook provides an overview of ITS and how to incorporate it into the highway network. Through case studies, the Handbook highlights the United States, along with 32 other countries. As the Handbook illustrates, ITS provides many advantages but it is not without its challenges.

Title: Risks Associated with Natural Disasters, Climate Change, Man-Made Disasters and Security Threats (2013)¹

Strategic Theme and Committee: Safety of the Road System; Technical Committee C.3 Managing Operational Risks in Road Operations

U.S. Involvement and Contributions: Connie Yew, FHWA

Primary Audience: National, regional/State, and local governments in developing countries, particularly those vulnerable to the effects of climate change, natural and man-made disasters, and/or security threats

Secondary Audience: Tribal entities and local governments in the United States, especially those in low-lying areas and/or those susceptible to the effects of climate change and natural disasters

Link: <http://www.piarc.org/en/order-library/23517-en-International%20climate%20change%20adaptation%20framework%20for%20road%20infrastructure.htm>

Description: The intent of the report is to:

- Describe a methodology for evaluating risks associated with all hazards.
- Highlight practical techniques for managing risks associated with natural disasters.
- Provide a snapshot of efforts in managing climate change risks and the adaptation of transportation infrastructure around the world.
- Propose the transformation of the Risk Management Toolbox developed by the WRA.

The report highlights the American-made Costing Asset Protection: An All-Hazards Guide for Transportation (CAPTA) tool,² as well as the European Risk Management for Roads in a Changing Climate Guidebook and additional examples from North America.

PUBLICATIONS FROM THE 2012–2015 CYCLE BY TOPIC AREA

MANAGEMENT AND PERFORMANCE

Title: Guide to Good Practice Performance Frameworks (2012)

Strategic Theme and Committee: Management and Performance; Technical Committee 1.1 Performance of Road and Transport Administrations

U.S. Involvement and Contributions: Mara Campbell, Missouri DOT; Connie Yew, FHWA

¹ This publication was developed during the 2008–2011 cycle, but was published after the conclusion of the cycle.

² http://www.fhwa.dot.gov/security/emergencymgmt/profcapacitybldg/captool_users_guide.cfm

Primary Audience: Practitioners and policymakers in developing countries, particularly in those without advanced road networks

Description: Drawing on case studies, this report illustrates successful frameworks for capturing and improving the organizational performance of road administrations. Research shows that most mechanisms for capturing organizational performance incorporate the following five themes: (1) a focus on outcome-based reporting, (2) alignment to an appropriate strategic context, (3) a focus on meeting customer and user satisfaction and determining whether service delivery is effective, (4) creation of review mechanisms challenging the information gathered, and (5) communicating performance results. The report also provides additional guidance for agencies to identify gaps in their existing performance frameworks.

Title: International Climate Change Adaptation Framework for Road Infrastructure (2015)

Strategic Theme and Committee: Management and Performance; Technical Committee 1.3 Climate Change and Sustainability

U.S. Involvement and Contributions: April Marchese, FHWA

Primary Audience: National, regional/State, and local governments in developed and developing countries, particularly those susceptible to sea level rise, extreme weather, and/or other impacts of climate change

Description: The purpose of this publication is to guide road authorities through identifying relevant assets and climatic variables for the assessment of adaptation opportunities, identifying and prioritizing risks, developing a robust adaptation response, and integrating assessment findings into decisionmaking processes. The framework provides a life cycle and iterative approach to climate change adaptation. The report includes many case studies from both developed and developing countries on a variety of climate change-related matters.

Title: A Review of Tools for Asset Management (2012–2015 cycle)

Strategic Theme and Committee: Management and Performance; Technical Committee 1.4 Road Transport System Economics and Social Development

U.S. Involvement and Contributions: Karen White, U.S. DOT

Primary Audience: National, regional/State, and local transportation agencies, primarily in developed countries

Description: Benefit-Cost Analysis (BCA) is used by agencies in a fiscally constrained environment to inform infrastructure investment decisions by quantifying and comparing lifetime benefits and costs. This report profiles three analytical tools used in BCA: The World Bank's Highway Development and Management Model (HDM-4), and U.S. DOT's HERS and NBIAS. As discussed in the report, each method of BCA analysis and asset management has its own advantages and shortfalls.

Title: Technical Committee 1.1 Performance of Transport Administrations Technical Report Working Group 3 – Good Governance and Anti-Corruption Measures (2015)

Strategic Theme and Committee: Management and Performance; Technical Committee 1.1 Performance of Road and Transport Administrations

U.S. Involvement and Contributions: Michael Nesbitt and Connie Yew, FHWA

Primary Audience: National, regional/State, and local governments in developing countries

Description: The report describes current situations and key issues affecting institutional integrity, with a focus on the influence of the media and anti-corruption measures in the transport sector. It provides a snapshot of effective benchmarks of integrity laws, policies, and measures; transferable lessons, including the implications of increased scrutiny by the media; and showcases the “Well-Prepared Project” concept,³ which holds that the better a project is prepared, the fewer the risks.

³ The “Well-Prepared Project” concept emerged in the last 10 years through discussions between Multilateral Development Banks (such as the World Bank) and contractors’ and consultants’ associations (such as the Confederation of International Contractors Associations and the International Federation of Consulting Engineers). The concept relies on the idea that the better prepared a project is, the more likely the project is to be accepted and implemented.

Title: Technical Committee 1.1 Performance of Transport Administrations Introductory Report (2015)

Strategic Theme and Committee: Management and Performance; Technical Committee 1.1 Performance of Road and Transport Administrations

U.S. Involvement and Contributions: Mara Campbell, Missouri DOT; Connie Yew, FHWA

Primary Audience: WRA delegates at the Seoul Congress

Secondary Audience: National, regional/State, and local governments in developing countries

Description: This report lays out the work conducted by Technical Committee 1.1 Performance of Transportation Administrations. TC 1.1 conducts research and develops best practices for several work programs, including (1) the evolution of missions and structures of road transport administrations, (2) planning and performance frameworks of road and transport administrations, and (3) good governance and anti-corruption members. This report was used to inform discussions at the Seoul Congress in November 2015.

ACCESS, MOBILITY, AND OPERATIONS

Title: Road Network Operations (RNO) and Intelligent Transport Systems (ITS) Guide (2016)

Strategic Theme and Committee: Access and Mobility; Technical Committee 2.1 Road Network Operations

U.S. Involvement and Contributions: James Pol, FHWA; Adam Hopps, ITS America; Patrick Son, ITS America; Tom Kern, ITS America; David Binkley, Lockheed Martin; Richard Bishop, Bishop Consulting Ltd.

Primary Audience: National, regional/State, and local governments in developing countries

Link: <http://rno-its.piarc.org/en>

Description: Housed in an editable, online format, this guide provides information on the ITS tools and services available for road transport and explains how they can be implemented, using cases studies from around the world. The guide is organized under four broad headings: (1) The Basics, (2) Road Network Operations, (3) Building Blocks, and (4) Emerging Economies. Nested under each heading is information on nine themes: (1) Road Network Operations – The Basics, (2) Intelligent Transport Systems – The Basics, (3) Network Monitoring, (4) Network Operations, (5) Network Control, (6) User Services, (7) Systems and Standards, (8) Planning and Development, and (9) Launching ITS. Within each theme, Guide users can view case studies; link to additional sources; and view related videos, tables, documents, and pictures. In addition to the discussion related to the nine themes, the guide also provides a list of ITS terminology and acronyms.

Title: Framework for Citywide Road Freight Transport Management (2015)

Strategic Theme and Committee: Access and Mobility; Technical Committee 2.3 Freight Transport

U.S. Involvement and Contributions: William Gardner, Minnesota DOT; Teresa Adams, University of Wisconsin-Madison

Primary Audience: Freight planners at a national, regional/State, or local level, primarily in developed countries

Description: The report describes the research and findings about the key frameworks for public sector roads and Road Freight Transport Management (RFTM),⁴ laying out the decisionmaking frameworks that support and guide national, regional, and local freight planning activities that aim to achieve safe, efficient, and environmentally sustainable RFTM systems. The report promotes the use of public-private partnerships within countries to deliver RFTM initiatives and tackle complicated urban freight transport problems. This report builds on a previous report by developing case studies from member countries to establish common characteristics from among the subject responses and utilize the experiences of committee members to understand important institutional factors and principles that support a strategic framework to approach the development of RFTM systems.

⁴ RFTM is a system of tools that is intended to bring social, economic, and environmental success to a society. RFTM measures are policies designed to improve the economic efficiency and safety of freight vehicles. These policies simultaneously aim to reduce freight's associated environmental burdens and improve local quality of life.

Title: *Low Cost Solution for Vehicle Highway Cooperative Systems: Dream or Reality? (2015)*

Strategic Theme and Committee: Access and Mobility; Technical Committee 2.1 Road Network Operations

Primary Audience: National, regional/State, and local governments in developing countries

Secondary Audience: Tribal entities and local governments in the United States

Description: This presentation on the ITS Handbook by Jacques Ehrlich, Technical Committee Chair, emphasizes the possibility of lower cost ITS solutions, which lend themselves well to developing countries that do not necessarily have ITS already in place. At a high level, the objective of a transport/road administration is to make roads efficient, safe, and available. Monitoring presents an opportunity to do so by providing up-to-date information about the state of the road network to public authorities, road network operators, and road users. In the classical approach of network monitoring, the infrastructure plays the role of event detector. However, in new models, the vehicle plays the role of mobile event detector. The two methodologies for collecting data work together to provide better information to users and operators. Four key principles guide infrastructure monitoring: data collection, data aggregation, data analysis, and information delivery. Systems link probe vehicles and roadside equipment to back office centers. While the technologies to make this system work can be costly, both smartphones and the cloud are usable. The less costly management options are effective for everyday network monitoring; however, they are not yet adequate for use in all situations, such as disaster management and environmental assessments. For lower income countries, where high investments on infrastructure are limited and mobile technology is spreading rapidly, monitoring based on probe data vehicles is a promising solution.

Title: *Snow and Ice Databook 2014*

Strategic Theme and Committee: Access and Mobility; Technical Committee 2.4 Winter Maintenance

U.S. Involvement and Contributions: Gabriel Guevara and Paul Pisano, FHWA; Richard Nelson, Nevada DOT

Primary Audience: National, regional/State, and local highway agencies that deal with snow and ice in both developed and developing countries

Description: The Databook provides summaries of winter maintenance practices in several countries around the world, including the United States. The format of the summaries is consistent across each example, with sections on geography, demographics and road network characteristics, potential climatological and meteorological phenomena, road management methods, and research developments. The Databook provides an opportunity for countries to show others their best practices, and provides an opportunity for countries to learn from their peers.

SAFETY

Title: *PIARC Road Safety Manual: A Manual for Practitioners and Decision Makers on Implementing Safe System Infrastructure (2nd Ed., 2015)*

Strategic Theme and Committee: Safety; Technical Committee 3.1 National Road Safety Policy and Program, and Technical Committee 3.2 *Road Safety Manual*

U.S. Involvement and Contributions: Michael Griffith, FHWA

Primary Audience: National, regional/State, and local governments in developing countries

Secondary Audience: Tribal entities and local governments in the United States

Link: <http://roadsafety.piarc.org/en>

Description: A comprehensive, state-of-the-art, international reference document and “living” tool that can assist countries in fulfilling key objectives, the RSM serves as an update to the first edition of the World Road Association RSM (published in 2003). The manual highlights effective management and policy frameworks, technical references, and provides overall guidance on the management of interventions to achieve results. While the Manual highlights the practices of high-income countries, it focuses on how road safety professionals in lower and middle-income countries can address safety issues.

Title: Land Use and Safety: Understanding How Land Use Decisions Impact the Safety of the Transportation System (2015)

Strategic Theme and Committee: Safety; Technical Committee 3.1 Road Safety Policies and Programs

U.S. Involvement and Contributions: Robert Ritter, FHWA; Robert Hull, Utah DOT

Primary Audience: National, regional/State, and local governments in developing countries

Secondary Audience: Tribal entities and local governments in the United States

Description: This report is intended to explain the relationship between land use and transport planning, and the need for determined, thoughtful planning processes to prevent unsafe road conditions from developing. The report examines how land use planning, transportation design, and safety interact in various government settings. Decisionmaking structures in India, Malaysia, South Africa, Sweden, and Quebec, Canada, are examined, specifically identifying how national decisions are communicated and used at different geographic levels. In addition, the report explores tools and techniques, such as traffic calming, road safety audits, complete streets, and access management that improve safety in transportation and land use interactions.

INFRASTRUCTURE

Title: Estimation of Load Carrying Capacity of Bridges Based on Damage and Deficiency (2015)⁵

Strategic Theme and Committee: Infrastructure; Technical Committee 4.3 Roads and Bridges

U.S. Involvement and Contributions: Scot Becker, Wisconsin DOT

Primary Audience: National, regional/State, and local road agencies in developing countries

Secondary Audience: Tribal entities and local governments in the United States that manage bridges

Links: <http://www.piacr.org/en/order-library/23963-en-Estimation%20of%20load%20carrying%20capacity%20of%20bridges%20based%20on%20damage%20and%20deficiency.htm> (full report); <http://routesroadsmag.piacr.org/en/Routes-Roads-Magazine-Issue-367-On-Road-Seoul/2026,Routes-Roads-Magazine-Estimation-Load-Carrying-Capacity-Bridges> (Routes/Roads article)

Description: Developed based on survey responses from 18 countries, this paper discusses the current practice of using bridge inspections and condition indices. The estimation of load-carrying capacity is presented with respect to what triggers an estimation of the load-carrying capacity; the use of routine or visual inspection data; and the use of a special inspection and additional field survey, as well as methods and procedures introducing damage, deterioration, and deficiency into load-carrying capacity calculations.

⁵ There is also a *Roads/Routes* article of the same title that provides an overview of the full publication.