

Vehicle to Infrastructure Deployment Coalition (V2I DC) Technical Working Group 4 (TWG 4): Guidance Work Plan

July 2015 – June 2016

September 1, 2015

1. Introduction

The Vehicle to Infrastructure Deployment Coalition (V2I DC) Technical Working Group 4 (TWG 4) is focused on assessing the stakeholder impact of the USDOT Deployment Guidance and providing input. TWG 4 will provide review and input to the USDOT Deployment Guidance as a stakeholder group, and will identify gaps and provide recommendations for additional products needed to support the V2I deployment community. This document presents the work plan of activities that will be completed by TWG 4 between July 2015 and June 2016.

2. Overall TWG Work Plan

- **Meeting Frequency.** The TWG members agreed to meet by webinar once per month. The meeting date will be the second Wednesday of each month at 11:00 am Eastern. Meeting dates may be adjusted, as needed, to accommodate outside meetings or events.
- **V2I Deployment Issues to be Addressed.** The TWG members have agreed that Issue 6 and Issue 11 are most urgent to address at this time. The group also plans to make supporting contributions to Issue 1, Issue 7, Issue 9, Issue 13 and Issue 14. Together, these issues will be the primary focus of the group. In addition, the group will provide input to other TWGs working on other issues, specifically in regards to topics that may need to be addressed in future versions of the USDOT Deployment Guidance. These issues and a high-level summary of actions associated with each are presented in [Section 3](#).
- **Work Plan Activities.** TWG 4 members have defined two core activities to advance the V2I issues over the next several months. These core activities are described in [Section 4](#) of the Work Plan, together with tasks to be completed within each activity.
- **Work Plan Schedule.** [Section 5](#) contains a high-level summary of the TWG schedule of activities. In summary, the review of USDOT Deployment Guidance will continue for the duration of the TWG. However, in order to develop action plans for addressing other support needed for V2I deployment, additional tasks have been defined.
- **Description of V2I DC Issues.** The descriptions of each issue being addressed the TWG 4 are included in [Section 6](#) of this document for reference purposes.

3. V2I Deployment Issues to be Addressed

Table 1 represents the set of issues discussed by the V2I DC at the June 4-5 workshop. For each issue, anticipated actions and completion dates are identified. Where an issue is identified with “No action planned”, TWG 4 members have no immediate plans for action but are available to support questions or requests for assistance from other groups to the extent possible. The actions summarized in the table are further described in Section 4 along with specific tasks and deliverables.

Table 1 – Summary of TWG 4 Approach to Select V2I Deployment Issues

| V2I Deployment Issues | Anticipated TWG 4 Actions | Anticipated Completion Date |
|--|--|------------------------------------|
| Issue 1: V2X Applications | <ul style="list-style-type: none"> Identify relevant content from this issue that should be included in the overall outreach in Issue 6 based on TWG 3 findings. | Q1-2016 |
| Issue 2: Complementary Communications to DSRC | <i>No action planned</i> | |
| Issue 3: V2I Data | <i>No action planned</i> | |
| Issue 4: Patents-Intellectual Property | <i>No action planned</i> | |
| Issue 5: Security | <i>No action planned</i> | |
| Issue 6: V2I Outreach | <ul style="list-style-type: none"> Provide input to USDOT on V14 of Deployment Guidance. | Completed 6-29-2015 |
| | <ul style="list-style-type: none"> Identify outreach that may be needed to increase awareness and support of V2I among transportation agencies. | Q3-2015 and Q2-2016 |
| | <ul style="list-style-type: none"> Provide input to USDOT on additional content for next version of Deployment Guidance. | Q4-2015 |
| Issue 7: Understanding the Benefits and Costs of V2I Deployment | <ul style="list-style-type: none"> Identify relevant content related to calculating the benefits and costs of V2I applications based on work by TWG 1 that should be included in overall outreach in Issue 6. | Q2-2016 |
| Issue 8: V2I Standards | <i>No action planned</i> | |
| Issue 9: Understanding V2I Liability Assignment | <ul style="list-style-type: none"> Identify relevant content related to V2I liability assignment that should be included in overall outreach in Issue 6 based on TWG 2 findings. | Q2-2016 |
| Issue 10: V2I Synergies with Other Emerging Technologies | <i>No action planned</i> | |
| Issue 11: V2I Consumer Messaging | <ul style="list-style-type: none"> Develop a description of the type of content and guidelines that are needed to be developed to enable consistent, accurate consumer messaging related to V2I applications. | Q4-2015 |
| Issue 12: V2I Multimodal Applications | <i>No action planned</i> | |
| Issue 13: Infrastructure Processes as V2I Obstacles | <ul style="list-style-type: none"> Identify relevant content related to infrastructure processes based on work | Q1-2016 |

| V2I Deployment Issues | Anticipated TWG 4 Actions | Anticipated Completion Date |
|---|--|-----------------------------|
| | completed by TWG 1 and TWG 3 that should be included in overall outreach in Issue 6. | |
| Issue 14: Federal V2I Policy Statement | <ul style="list-style-type: none"> Identify relevant content related to a Federal V2I policy statement based on work done by TWG 1 that should be included in feedback on the V2I Guidance documents. | Q4-2015 |
| Issue 15: Maintaining V2I Infrastructure | <i>No action planned</i> | |

4. Work Plan Activities

The following activities have been identified for TWG 3 and will serve as the primary focus of the group for the next several months.

Activity #1: Review and provide input on USDOT Deployment Guidance

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|------------------------------|---|
| Issue(s) Addressed | <p>Issue 6: V2I Outreach. Additional outreach and education is needed regarding Connected Vehicle in general and V2I issues in particular for transportation agencies.</p> <p>Issue 7: Understanding the Benefits and Costs of V2I Deployment. Identify an overall approach for how agencies can approach the business model decision will assist these processes and help agencies understand how to prioritize V2I applications and accelerate V2I deployment in accordance with the business plan.</p> <p>Issue 9 Understanding V2I Liability Assignment. This issue will likely involve legal research to formulate guidance for how transportation agencies can begin to prepare to interpret and manage liability assignment.</p> <p>Issue 13: Infrastructure Processes as V2I Obstacles. The V2I industry needs to understand the extent to which existing processes (e.g. MUTCD, environmental reviews) are obstacles to V2I.</p> <p>Issue 14: Federal V2I Policy Statement. The V2I industry needs a strong message from a federal agency encouraging V2I deployment.</p> |
| What's Needed and Why | Stakeholder review of and input on the USDOT Deployment Guidance is needed and the content of that guidance will evolve over time as additional issues develop and experience provides more detailed guidance. |
| Plan of Action | <p>Task 1.1: Review and provide input to USDOT on V14 of Deployment Guidance.</p> <p>Deliverable: TWG 4 members individually submit comments to USDOT via Bob Arnold.</p> <p>Target completion: 6/29/15</p> <p>Task 1.2: Review and provide input to USDOT on next version of Deployment Guidance (expected for release in September 2015).</p> |

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| | <p>Task 1.3: Identify relevant content related to a Federal V2I policy statement based on work done by TWG 1 that should be included in review of the V2I Deployment Guidance.</p> <p>Deliverable: Summary document of TWG 4 guidance comments, as well as TWG 1 input on Federal V2I policy statement, for submission to USDOT.</p> <p>Target completion: 12/31/15</p> <p>Task 1.4: Identify relevant content related to infrastructure processes based on work completed by TWG 1 that should be included in guidance and overall outreach in Issue 6.</p> <p>Deliverable: Summary document of guidance and outreach recommendations related to infrastructure processes from TWG 1, TWG 3 and TWG 4 for submission to USDOT.</p> <p>Target completion: 3/31/16</p> <p>Task 1.5: Identify relevant content related to V2I liability assignment that should be included in guidance and overall outreach in Issue 6 based on TWG 2 findings.</p> <p>Task 1.6: Identify relevant content related to calculating the benefits and costs of V2I applications based on work by TWG 1 and TWG 3 that should be included in guidance and overall outreach in Issue 6.</p> <p>Deliverable: Summary document of guidance and outreach recommendations related to liability and benefits/costs from TWG 1, TWG 2, TWG 3 and TWG 4 for submission to USDOT.</p> <p>Target completion: 6/30/16</p> |
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Activity #2: Review and provide input on outreach available to support V2I deployment

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|------------------------------|---|
| Issue(s) Addressed | <p>Issue 1: V2X Applications. There is a need for prioritization of V2X applications (including multi-modal applications) and common understanding of how OEM and infrastructure applications work together. It is also important to include multimodal aspects in considerations about V2X applications.</p> <p>Issue 6: V2I Outreach. Additional outreach and education is needed regarding Connected Vehicle in general and V2I issues in particular for transportation agencies.</p> <p>Issue 11: V2I Consumer Messaging. This issue will explore common messaging to end consumers that may be used by both public and private sector organizations involved in V2I deployment.</p> |
| What's Needed and Why | <p>There are many public agencies and private companies involved in V2I deployment. All are working to educate each other and the general public (consumer) about Connected Vehicle. The tasks in this activity focus on providing USDOT with feedback on outreach needs for V2I among transportation agencies and consumers.</p> |
| Plan of Action | <p>Task 2.1: Identify outreach that may be needed to increase awareness and support of V2I among transportation agencies. Clarify outreach needs and target audiences.</p> |

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| | <p>Review existing and developing outreach materials assembled by TWG 4. Identify gaps and describe what additional outreach may be needed.</p> <p>Deliverable: Summary document describing outreach needs, audiences and gaps</p> <p>Target completion: 9/30/15</p> <p>Task 2.2: Develop a description of the type of content and guidelines that need to be developed to enable consistent, accurate consumer messaging related to V2I applications.</p> <p>Deliverable: Summary document describing consumer messaging needs</p> <p>Target completion: 12/31/15</p> <p>Task 2.3: Identify relevant content related to V2I applications that should be included in the overall outreach in Issue 6 based on TWG 3 findings.</p> <p>Deliverable: Summary document describing outreach needs associated with V2I applications</p> <p>Target completion: 3/31/16</p> <p>Task 2.4: Repeat actions in Task 2.1.</p> <p>Deliverable: Summary document describing outreach needs, audiences and gaps</p> <p>Target completion: 6/30/16</p> |
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5. Work Plan Schedule

The following schedule identifies the anticipated period of performance for the planned activities and tasks, including planned completion dates.

| Activity | Tasks | July-Sep 2015 | Oct-Dec 2015 | Jan-Mar 2016 | Apr-June 2016 |
|---|--|---------------|--------------|--------------|---------------|
| Activity #1: Review and provide input on USDOT Deployment Guidance | 1.1 Review Deployment Guidance V14 | | | | |
| | 1.2 Review Deployment Guidance V15 | | | | |
| | 1.3 Identify policy statement for guidance | | | | |
| | 1.4 Identify infrastructure processes for guidance | | | | |
| | 1.5 Identify liability for guidance | | | | |

| Activity | Tasks | July-Sep 2015 | Oct-Dec 2015 | Jan-Mar 2016 | Apr-June 2016 |
|---|--|---------------|--------------|--------------|---------------|
| | 1.6 Identify benefits/costs for guidance | | | | |
| Activity #2: Review and provide input on outreach available to support V2I deployment | 2.1 Identify outreach needs | | | | |
| | 2.2 Identify consumer messaging needs | | | | |
| | 2.3 Identify V2I apps for outreach | | | | |
| | 2.4 Repeat 2.1 actions | | | | |

6. Description of V2I Deployment Issues

Previous sections have identified activities and tasks to address the V2I deployment issues that will be addressed by TWG 3. This section includes the current descriptions of those issues for reference purposes. For brevity, only the issues addressed in this work plan are included. The numbering associated with the issues does not imply prioritization.

Issue 1: V2X Applications

There is currently a list of safety and mobility applications that have been developed through a collaborative effort between the auto industry, and public agencies facilitated by USDOT. These efforts have led to concepts of operations and requirements for selected applications, based on the systems engineering process. In addition, the auto industry is in the process of developing applications for their customers. There has also been some limited pilot testing done at the state and local level of selected applications (e.g. signal priority, wrong way driving).

There is a need for prioritization of V2X Applications (including multi-modal applications) and common understanding of how OEM and infrastructure applications work together. It is also important to include multi-modal aspects in considerations about V2X applications.

Issue 6: V2I Outreach

Since the state and local transportation agencies will be directly involved with operating a connected vehicle system there is a sense that they should be more prominently and directly involved with the OEMs and USDOT in developing the system. It is essential for the USDOT to have broad stakeholder input into the Guidance and the program.

Additional outreach and education is needed regarding Connected Vehicle in general and V2I issues in particular for transportation agencies. Topics should include planning and investing for V2I deployments; control, operations and maintenance of V2I applications; adding DSRC devices to

roadside ITS devices; and other physicality related issues that surround a transition to supporting large scale RSE that will be required for V2I applications.

Issue 7: Understanding the Benefits and Costs of V2I Deployment and operations

The potential benefits of V2I applications have been researched and identified through a number of deployment initiatives. Benefits include increased safety, improved mobility, and cost savings to transportation agencies. As transportation agencies begin to plan for long-term sustained deployment of V2I applications, it is inevitable that the need will arise for a business model to emerge and facilitate decision-making. Analyses of the benefits and costs and prioritization of specific applications are just some of the discussions that would fold into an eventual business model. As one example, V2I applications may enable agencies to eliminate existing infrastructure and systems that are costly to maintain. These cost savings will result in financial benefits to help offset V2I costs.

Each transportation agency will face the challenge of prioritizing V2I application deployments and weighing the benefits to the costs. If no additional funding sources are available, V2I application deployments may compete with other infrastructure deployments and operations. Discussing this issue and identifying an overall approach for how agencies can approach the business model decision will assist these processes and help agencies understand how to prioritize V2I applications and accelerate V2I deployment in accordance with the business plan.

Issue 9: Understanding V2I Liability Assignment

While V2I research and pilot deployments have been ongoing for a number of years, there are limited examples of full scale live deployments involving large numbers of participants from the traveling public. For this and other reasons, the V2I industry lacks a deep history of legal proceedings that can serve as precedence to understand how liability is typically assigned. As a result, transportation agencies, drivers, manufacturers and third party data providers would benefit from guidance on how to interpret, understand, and quantify liability and risk exposure related to V2I applications.

This issue will likely involve legal research to formulate guidance for how transportation agencies can begin to prepare to interpret and manage liability assignment.

Issue 11: V2I Consumer Messaging

As V2I applications spread throughout the United States, public education and marketing will become increasingly important. There are potentially a number of issues associated with common marketing messages between public and private marketing campaigns. For example, consumers may not understand the role the public sector plays in the product or service they have purchased. The approach that transportation agencies and vendors take towards marketing could play a large role in managing expectations while generating enthusiasm for new products and services.

This issue should explore common messaging to end consumers that may be used by both public and private sector organizations involved in V2I deployment.

Issue 13: Infrastructure Processes as V2I Obstacles

The next iteration V2I technologies and systems are being invented quickly. There are existing processes, procedures, and/or regulations (e.g. the environmental review process, the MUTCD and established process to add or edit infrastructure uses in the MUTCD) that could be obstacles for a DOT wishing to implement V2I.

The V2I industry needs to understand the extent to which existing processes (e.g. MUTCD, environmental reviews) are obstacles to V2I.

Issue 14: Federal V2I Policy Statement

The recent NHTSA resolution regarding vehicle-to-vehicle communications has helped the V2V industry. Similar strong encouragement from a federal agency to give infrastructure owners and operators a push to deploy V2I would also help V2I. It is recognized that a rulemaking is likely not possible, but perhaps another strong encouragement from a federal agency (e.g. something similar to an “Every Day Counts” EDC model) could be released.

The V2I industry needs a strong message from a federal agency encouraging V2I deployment.