

Office of the Secretary of Transportation

Solving for Safety Visualization Challenge Solver Solicitation

DOT-OST-2018-0081

AGENCY: Bureau of Transportation Statistics, Office of the Secretary of Transportation

ACTION: Notice

SUMMARY: The U.S. Department of Transportation (USDOT) is launching the Solving for Safety Visualization Challenge to incentivize the use of safety data in the development of innovative analytical visualization tools that will reveal insights into serious crashes and improve understanding of transportation safety. The Challenge serves as a platform to capture the imaginations of technology and data firms, transportation stakeholders, and state and local agencies to unlock their creativity, and empower them to develop innovative new data visualization tools that can help improve road and rail user safety, to benefit all transportation users.

The Challenge is open to individuals and teams (Solvers) from the business and research communities, including technology companies, analytics firms, transportation carriers, industry associations, research institutions, universities, mapping and visualization providers. Solvers will compete for cash prizes that will be awarded throughout the multi-stage Challenge. The Challenge prize purse is \$350,000, with four semi-finalists competing for a portion of the \$100,000 interim prize and two final-stage Solvers competing for a portion of the \$250,000 final prize.

The Challenge will begin on June 14, 2018. After the launch, USDOT will accept Stage I submissions up to 11:59 pm EDT on July 31, 2018. A panel of judges will review team submissions and announce Stage I finalists in August 2018.

FOR FUTURE INFORMATION CONTACT: For more information, and to register your intent to compete individually or as part of a team, visit www.transportation.gov/Solve4Safety.

SUPPLEMENTAL INFORMATION:

Problem

In 2017, motor vehicle traffic crashes resulted in an estimated 37,150 fatalities.¹ Comprehensively, crashes are a societal harm that cost the Nation over \$800 billion annually in lives lost or injured, as well as lost work productivity and property damage.² When the cost of serious crashes is put into context, the weight of this issue becomes much more grave and the need for an innovative, non-traditional approach becomes apparent. Safety is USDOT's number one priority, and we are committed to reducing the incidence of serious and fatal injuries on our roadways.

The USDOT's transportation safety programs have decades of research and design behind them and have proven effective in reducing injuries and fatalities by 40% between 1990 and 2011. In recent years, these advances have leveled off, and new insights and strategies are required to make further advances.

¹ <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812542>

² <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812451>

Traditional factors do not fully explain the causes of the recent significant increase in traffic fatalities. Increases in driving are one factor; however, the rate of fatalities per 100 million vehicle miles traveled (VMT) also increased from 1.08 fatalities per 100 million VMT in 2014 to an estimated 1.17 in 2017.¹ Economic conditions, gasoline prices, weather and other factors are also correlated with increased traffic fatalities.

USDOT seeks to reverse the current trend, rapidly detect changes that indicate unsafe conditions, and reduce transportation-related fatalities and serious injuries across the transportation system. The Department is pursuing data-informed decision-making to help strategically prioritize and address transportation safety risks. One pillar of this approach is data visualization. USDOT seeks clear, compelling data visualization tools that make data analysis and insights accessible to policy-makers, transportation providers and the public who make safety choices every day.

Challenge

Currently transportation decision makers have a limited number of analytical visualization tools available that reveal insights, and even fewer focused on safety and prevention of serious crashes. A new opportunity lies in the rapid growth and advancement in technology and analytics markets combined with the volume and variety of transportation and other data now collected by the public and private sectors.

For this reason, Solving for Safety Visualization Challenge is looking for the best innovators from the business and research communities, including technology companies, analytics firms, transportation carriers, industry associations, research institutions, universities, mapping and visualization providers, to tackle this challenge. Analytical visualization tools can

cast new light on the data to reveal insights not seen through tabular analysis. The Challenge has been created to advance the use of safety data visualizations for answering analytical questions related to surface transportation system safety.

In this challenge, Solvers will compete for cash prizes by developing innovative analytical visualization tools to gain insights into fatalities and serious injuries on the U.S. road and rail systems that policymakers, providers, and operators can use to inform the development of safety solutions.

Challenge Solvers will choose to develop one of two types of analytical visualization tools:

Discover Insights Tools which analyze data to reveal patterns and trends, and use compelling visualizations to explain what is happening, understand the meaning behind the data, and draw conclusions. These tools often combine disparate data sets and allow a user to ask a question and search for answers visually.

Simulation Tools which assist in decision-making by visualizing data, mathematical, and statistical models to identify issues, determine correlations, and assign probabilities with a degree of accuracy. Developed using existing models and data, including those provided by USDOT and Innovation Agents, this type of tool will allow users to visualize the outputs of model simulations and scenarios, highlighting the different conditions and the results of sensitivity and parametric analysis to visually assist in decision-making.

USDOT is looking for Solvers to bring novel concepts and perspectives to existing models and data to develop analytical visualization tools that provide life-saving insights and solutions for transportation safety. Solvers should use innovation and creativity to further define the tools. Tools can range from dashboards using disparate data sets, to spatial analysis via maps, virtual or

augmented reality scenarios, image and image analysis, social media mining and beyond. The tools can be powered by models and data provided by USDOT, Challenge Innovation Agents and/or resources to which Solvers have access to through their organizations, partners, and other sources. See www.transportation.gov/solve4safety for a sample list of datasets and tools.

Challenge Solvers will develop analytical visualization tools to complement existing USDOT projects while addressing one or more of the following safety focus areas:

1. **Vulnerable System Users** – these include non-motorized road users, such as pedestrians and cyclists, as well as motorcyclists and persons with disabilities or reduced mobility and orientation, such as those with declining vision and hearing. Ongoing work at USDOT has identified those who are more at risk on the road system, but beyond the police reports and behavior research, pieces of the story that can improve how we protect these users are still missing. Example questions Solvers might address:

- Between 2013 and 2016 there was a 25-percent increase in pedestrians killed in traffic crashes.³ A disproportionate share of these pedestrian fatalities involved males, occurred in urban locations, and took place after dark. How can data visualization tools support decision-makers in learning from the relationships among various contributory crash risk factors that are specific to their communities?
- A Crash Modification Factor (CMF) is a multiplicative factor that indicates the proportion of crashes that would be expected after implementing a countermeasure. Examples of countermeasures include installing a traffic signal, increasing the width of

³ <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812246>

road edge lines, and installing a median barrier. We have proven that different countermeasures work, and we know the CMFs for each countermeasure, but how could we help decision makers choose among appropriate countermeasures?

2. **Conflict Points Impacts** – these are locations where user paths intersect, including road intersections and rail grade crossings. Conflict points are categorized as crossing, merging (or joining) and diverging (or separating). We’re investigating which conflict points correlate most with motor vehicle crashes, but we don’t fully understand the difference between near-misses and impacts at these points. Example questions Solvers might address:

- Much of the nation is built around the railroad system. By developing around this infrastructure, we have unintentionally created conflict points that users are drawn to, often putting communities at greatest risk. How can data visualization tools better support urban planners identifying which grade crossings are more prone to accidents and the best risk reduction strategies to employ?
- In the United States, over the last several years an average of one-quarter of traffic fatalities and roughly half of all traffic injuries are attributed to intersections.⁴ Strategies to address roadway intersection safety are diverse: they are often engineering-based, including geometric design and application of traffic control devices (such as signs, markings and signals) and with a foundation in human factors. Quite often, it is a combination of these strategies that is needed to truly solve a problem. How can we visually compare the safety impacts of traditional signals, roundabouts, and protected left turns?

⁴ <https://safety.fhwa.dot.gov/intersection/>

3. **High Risk Factors** – these include young drivers, impaired drivers, drowsy drivers, older drivers, and speeding drivers. We’ve identified high risk factors, but we don’t have complete insights on the role of spatial and temporal exposures. Example questions Solvers might address:

- There is a misalignment between human behavior and judgment, and roadway and vehicle design. New, young drivers have a higher crash risk than any other age group. How can data visualization tools support and educate people to improve their driving behaviors?
- In 2015, alcohol-impaired driving fatalities accounted for 29 percent of the total motor vehicle traffic fatalities. How can data visualization tools support first responders’ on-site interventions?

Challenge Solvers will also focus their analytical visualization tools by designing them for use by one of the following audiences:

Policy makers and influencers – these are people in Federal, State, and local government agencies, associations, and industry bodies. They attempt to reduce transportation-related fatalities and serious injuries by analyzing safety data to identify safety risks and recommending a series of strategies, incentives or disincentives using personnel, funding, or laws and regulations to address them.

Providers/Operators – these are people in business and government who build and operate the transportation system. These include vehicle and equipment manufacturers, trucking and rail companies, state and local departments of transportation, law enforcement, and emergency services. They attempt to influence the reduction of

transportation-related fatalities and serious injuries by analyzing safety data and designing equipment and facilities, performing system diagnostics, evaluating safety effectiveness, and developing operations, countermeasures and techniques to reduce fatalities and serious injuries for users of the transportation system.

Public – these are people who use the transportation system or live in the United States. These include motor vehicle drivers, motor vehicle passengers, bicyclists and pedestrians. They have an interest in protecting themselves and others in the community who use the transportation system.

All ideas will compete against the full pool of entries regardless of the type of tool, safety focus area or audience being proposed.

The Challenge invites creative minds from across the Nation to reveal these missing links. The business and research communities have the unique set of skills and creativity to step up and revolutionize transportation safety. The transportation safety community has welcomed innovation, but will benefit further from the perspective and skills of other subject areas. To foster new, novel, and innovative analytical visualization tools, USDOT is looking for Solvers and data from a variety of sectors. The USDOT encourages the participation of Solvers from outside the traditional transportation safety arena who will bring innovative methods, procedures, techniques, and strategies when developing solutions. The USDOT also has an interest in stimulating the integration of new or private sector data sources into the Solvers' analytical visualization tools.

The USDOT Solving for Safety Visualization Challenge can act as an engine in driving serious crash reduction. By incentivizing innovation, USDOT will attract the best Solvers from

around the nation to come up with new tools for visualizing the risks of serious crashes. As with other government competitions, the USDOT Solving for Safety Visualization Challenge aims to create a vibrant community of thinkers and doers who drive revolutionary innovation.

Technology has already changed how most of us get around. Let's leverage it to change how we view transportation safety.

Stages and Prizes

The Challenge consists of three stages. Individuals/teams (Solvers) will compete for an overall prize purse of \$350,000. Four semi-finalists will compete for a portion of the \$100,000 interim prize and two final stage Solvers will compete for a portion of the \$250,000 final prize.

Stage I, Ideations: In Stage I, all Solvers participating in the Challenge will develop ideas for an analytical visualization tool. Four Stage I semi-finalists will be invited to Stage II as semi-finalists to develop their ideations into proofs of concept and compete for a cash prize. If a selectee declines to participate in the next stage, an alternate may be selected.

Stage II, Concepts: In Stage II, the four semi-finalists from Stage I will develop their ideations into proofs of concept (i.e., detailed system designs and prototypes) for an analytical visualization tool. The four semi-finalists will compete for part of a \$100,000 prize purse for their proofs of concept. Based on review of the Stage II submissions by the judges, two of the four semi-finalists will also advance to Stage III as finalists. An additional semi-finalist may also receive an honorable mention, but not advance to Stage III. If a selectee declines to participate in the next stage, an alternate may be selected.

•**Stage III, Tools:** In Stage III, the two finalists from Stage II will further develop their proofs of concept into full working analytical visualization tools. The two finalists will compete for a \$250,000 prize purse, with each receiving a minimum of \$50,000. The Stage III prize purse will be awarded to the winners based on the judges' review of the Stage III submissions.

Eligible Challenge Participants

Eligible Solvers are individuals or teams from the business and research communities in the United States or US territory. This includes but is not limited to organizations such as: technology companies, analytics firms, transportation carriers, industry associations, research institutions, universities, mapping and visualization providers. Teams are encouraged to organize themselves in a manner that best fits meeting the Challenge.

Challenge Authority

USDOT will be carrying out this challenge prize competition under the authority of 15 U.S.C. 3719.

Challenge Innovation Agents

Challenge Innovation Agents are companies and organizations interested in providing real-world knowledge, guidance, insight, issues, and data to Solvers, especially those new to the transportation safety space. USDOT will provide a public listing of all organizations and companies who identify as Challenge Innovation Agents. This listing will provide a brief description and contact information for each Innovation Agent to assist Solvers that are interested in talking to or partnering with Innovation Agents for the Challenge. USDOT will list two types of Challenge Innovation Agents: Technical Assistance and Data.

Technical Assistance (T.A.) Innovation Agents can provide interested Solvers with knowledge, guidance, insight and issues related to transportation safety. T.A. Innovation Agents may be able to provide technical assistance related to key safety issues impacting their members or employees, transportation safety techniques, transportation system characteristics, users and operations, approaches from other industries and sectors.

Data Innovation Agents can provide interested Solvers with access to data or analytic techniques that can be used in the analytical visualization tools. Use of a wide variety of disparate data is encouraged to gain insights into reducing fatalities and serious injuries on the U.S. road and rail systems.

Challenge Innovation Agents will have the opportunity to explain their expertise and capacity to interested Solvers who will be designing tools that can prove useful in furthering the Innovation Agents or other user's efforts to reduce fatalities and serious injuries. Innovation Agents providing data access will benefit from national recognition and highlight of their data asset, and the exploration and testing of their data by Solvers for use by the transportation safety community.

Solvers are encouraged to seek support from Innovation Agents to strengthen their individual/team expertise. Innovation Agents may register their support throughout the Challenge by signing up at www.transportation.gov/Solve4Safety. A list of current Innovation Agents will be updated on the official Challenge website. The Challenge will host a webinar to facilitate Solver-Innovation Agent relationship building.

Eligibility Rules for Participating in the Competition

To be eligible to win a prize under this Challenge, an individual or entity—

- (1) Shall register to participate in the Competition under the rules promulgated by the USDOT Bureau of Transportation Statistics;
- (2) Shall comply with all the requirements under this announcement and any subsequently announced rules for the competition;
- (3) In the case of a private entity, shall be incorporated in and maintain a primary place of business in the United States or US territory, and in the case of an individual, whether participating singly or in a group, shall be a citizen or permanent resident of the United States or US territory;
- (4) Shall not be a USDOT employee; and
- (5) Shall not be another federal entity or federal employee acting within the scope of their employment (all non-USDOT federal employees must consult with their agency Ethics Official to determine whether the federal ethics rules will limit or prohibit the acceptance of a cash prize stemming from a federally sponsored prize competition);

In addition, these two restrictions apply to recipients of other federal funds:

- (1) Federal grantees may not use federal funds to develop submissions unless consistent with the purpose of their grant award; and
- (2) Federal contractors may not use federal funds from a contract to develop prize competition applications or to fund efforts in support of a prize competition submission;

An individual or entity shall not be deemed ineligible because the individual or entity used federal facilities or consulted with federal employees or USDOT Challenge Innovation

Agents during a competition if the facilities and employees are made available to all individuals and entities participating in the competition on an equitable basis.

Participants must also agree to assume all risks and waive claims against the federal government and its related entities, except in the case of willful misconduct, for any injury, death, damage, or loss of property, revenue, or profits, whether direct, indirect, or consequential, arising from my participation in this prize competition, whether the injury, death, damage, or loss arises through negligence or otherwise.

Participants must also agree to indemnify the Federal Government against third party claims for damages arising from or related to Challenge activities.

If any potential finalist is found to be ineligible, has not complied with the Official Rules, Terms and Conditions, or declines the cash prize for any reason prior to award, an alternate finalist may be selected. If any potential winner is found to be ineligible, has not complied with the Official Rules, Terms & Conditions, or declines the cash prize for any reason prior to award, an alternate winner may be selected. Please refer to the Official Rules, Terms & Conditions for further details.

Cash prizes awarded under this challenge will be paid to the individual or Team Lead directly by USDOT through electronic funds transfer. Finalists and winner(s) will be responsible for any applicable local, state, and federal taxes and reporting that may be required under applicable tax laws.

Solution Submission Materials

Stage I, Ideation

To be eligible to win a prize under this stage, an individual or entity must submit:

1. A cover page with the following information:

- Team name, participant names, organization (s), and primary point of contact
- Challenge tracks they are solving for:
 - Tools:
 - Discover Insights Tool
 - Simulation Tool
 - Safety Focus Areas:
 - Vulnerable System Users
 - Conflict Points
 - High Risk Factors
 - Tool End-User:
 - Policymakers
 - Providers/Operators
 - Public
- Submission title. Proposed name for your concept.
- Submission description. What is the headline for your idea? Briefly describe your idea, concept and approach. (15 words)

2. Written Summary of the Solution Idea

This includes a detailed description of the proposed solution idea. Summary should discuss in detail the functionality and capabilities of the analytical visualization tool. The Solver must describe, in a high level of technical detail, how the proposed solution will meet each of the Solution Requirements and the Judging Criteria for this stage. The Summary must not exceed the character length of the on-line submission form. The Solver should understand that their submittal will be reviewed by technical experts in transportation safety analysis, data, IT and visualization. If the level of detail is deemed insufficient by the experts, the proposed solution will not be regarded as feasible.

All written work shall be phrased in layperson English language. Geospatial, visualization, statistical and technical terminology, including program coding language, shall not be used without providing an explanation of terms.

Solvers should respond to the judging criteria specified in the Judging Criteria Section.

3. Information on qualifications of your team

Please include a resume or bio of key individual(s) who would be responsible for developing the idea into a proof of concept with a detailed system design and prototype.

If you plan to work with a Technical Assistance or Data Innovation Agent, please indicate which Innovation Agent(s) you are or will be working with and their role in tool development.

4. Appendices

a) Video of Submission Idea

- Provide a link to a 30 second video of solution idea.

b) Additional Assets

- If available, upload or link to additional research abstracts, presentations, data visualizations, or other supporting visual information that may help us better understand your concept. Accepted upload file formats include: .ppt, .pptx, .doc, .docx, .pdf, .jpg, .png (50 MB max).

Note: Stage II and Stage III descriptions are preliminary and will be developed further.

Additional details and submission requirements for Stage II and Stage III will be provided to Solvers advancing to these stages and posted on the Challenge website.

Stage II, Concepts

To be eligible to win a prize under this stage, an individual or entity must be invited to submit a proof of concept with a detailed system design and prototype. Applicants must provide the following as part of the application process.

1) Written summary of the proof of concept with a detailed system design and prototype

Solvers should respond to the judging criteria specified in the Judging Criteria Section.

2) A prototype with a working interactive model of the analytical visualization tool

The prototype must provide an idea of the proposed design, navigation and layout of the tool. It must demonstrate the functionality and verify that the analytical visualization tool idea and concept can be achieved in full development.

3) A ten-minute live, In-person or virtual demo of the prototype

Stage III, Tools

To be eligible to win a prize under this stage, an individual or entity must be invited to submit a full working tool. Applicants must provide the following as part of the application process.

- 1) Perform a thirty-minute live in-person or virtual demo of the working tool**
- 2) Provide a written summary of the analytical visualization tool**

Solvers should respond to the judging criteria specified in the Judging Criteria Section.

- 3) Submit complete documentation of the tool**
- 4) Submit all code and fully functioning software and analytical visualization tool to USDOT**

Judging Criteria

Stage I – Ideation Judging Criteria

These criteria are weighted equally. The evaluation panels will consider each proposal's alignment with each of these criteria and make recommendations to the Under Secretary of Transportation for Policy. The Under Secretary selects as semi-finalists those proposals that best advance the purposes of this competition, as described in this notice.

Criteria Applying To All Tools:

- **Benefits.** Defines a target user or demonstrates the potential for users, should the tool be developed. Takes into consideration inputs from potential users. Details appeal and relevance to target user and describes method to measure benefits. Describes

extent to which the tool expands upon existing safety understanding, generates actionable insights for its proposed target audience, and has the potential for dramatic impacts on transportation safety. Addresses the challenges facing broad adoption, and how could they be overcome.

- **Data.** Identifies data requirements and appropriately handles uncertainty. Describes a new, original idea that integrates data in an unprecedented and novel way or enhances understanding of the data. Explains what risks or challenges exist for accessing and/or using the data, and how could they be overcome. Proposes using cost-effective data. Details an appropriate use of the data for the analytical visualization tool in supporting insight discovery and for the message of the visualization.
- **Technology.** Discusses existing technologies and describes how the proposed tool differs from current technologies. Details the features of the tool and how they can be accessed and understood by the maximum possible number of users. Describes a wide range of accessibility and uptake for target users by using technology that can easily be deployed and maintained. Proposes using cost-effective technologies.
- **Cost to Implement.** Provides a clear schedule for project implementation, monitoring, and evaluation. Includes initial estimates of data input and operating costs and includes five-year maintenance estimates for implementing and potentially scaling the tool. Describes how the benefits of the proposed tool outweigh the costs of end-users obtaining the data, technology, skills and resources necessary to implement and sustain the tool.

Criteria Applying To Only Discover Insights Tool:

- **Insights.** Provides an innovative plan and project narrative that describes how the proposed tool will reveal insights to a solution. Details the tool's unique differentiating factor for reducing serious crashes. Identifies and addresses one or more of the priority safety focus areas. Exemplifies potential for raising awareness about transportation safety and for possible solutions to transportation safety challenges.

Criteria Applying To Only Simulation Tool:

- **Simulation.** Provides an innovative plan and project narrative that describes how the proposed tool will allow users to simulate different conditions from models. Describes the capacity to customize the tool based on different scenarios from models. Details the accuracy and precision the tool will perform at in visualizing a variety of scenarios from models. Identifies and addresses one or more of the priority safety focus areas. Exemplifies potential for raising awareness about transportation safety and for possible solutions to transportation safety challenges.

Note: Stage II and Stage III judging criteria are preliminary. Final judging criteria for Stages II and III will be provided to Solvers advancing to these stages and posted on the Challenge website.

Stage II – Concepts Judging Criteria

- **Technical Approach.** Demonstrates a high-level of technical merit for the proposed approach to accessing and analyzing the data and designing the tool.

- **Design and Desirability.** Demonstrates how the interface and visualization meet the needs of users. Shows how it could simplify their work or inform their decisions and, how will it appeal to them based on intuitive design and ease of use.
- **Analytical Depth.** Considers a variety of data sources and application of an appropriate analysis technique.
- **Technology Transfer Readiness Level and Feasibility.** Demonstrates a reasonable path for implementation and production, and a clear method for validating data with a high degree of confidence backed by credible supporting evidence. Uses technology that USDOT or the public sector can easily deploy. Provides clear breakdown of data input costs and operating and maintenance costs.
- **Scalability.** Offers a plan as to how the system could be expanded to other geographic areas, to different safety data, or to other scenarios of concern for transportation safety. Demonstrates scalability of tool and data.
- **Team.** Demonstrates significant evolution and improvement of the initial Ideation through additional specifics and refinement of concept. Exemplifies the commitment and ability to bring the full working analytical visualization tool design to fruition.

Stage III –Tools Judging Criteria

- **Quality of Methods.** The degree to which the team has shown the research that they have undertaken to lead them to their technology idea, understood the category they have chosen and is a revolutionary way to analyze and visualize that data type.
- **Sustainability.** The extent to which the submission illustrates a plan to maintain consistent long-term access to the Analytical Visualization Tool for local-level or

national-level decision-makers, and adequately addresses potential constraints and possible unintended consequences of the tool's use.

- **Functionality and Technical Effectiveness.** The ability of the final product to provide significant insights or visualize scenario analyses. The level of speed, sensitivity and precision (completeness and usefulness) of the results based on the safety problems posed in the Challenge.
- **Expected Return on Investment.** The benefits of the tool as compared to the data input and operating and maintenance costs for implementing and potentially scaling the tool.

Deadlines for Submitting Proposals

USDOT will accept Stage I Ideation submissions that are received no later than 11:59 p.m. EDT on July 31, 2018.

Confidential and Business Information

Responses to the Challenge solicitation and communication with USDOT are subject to the Freedom of Information Act (FOIA). If the application includes information that the applicant considers to be a trade secret or confidential commercial or financial information, the proposer should do the following: (1) Note on the front cover that the submission “Contains Confidential Business Information (CBI)”; (2) mark each affected page “CBI”; and (3) highlight or otherwise denote the CBI portions. USDOT protects such information from disclosure to the extent allowed under applicable law. In the event USDOT receives a FOIA request for the information, USDOT will follow the procedures described in its FOIA regulations at 49 CFR 7.17. Only information that is ultimately determined to be confidential under that

procedure will be exempt from disclosure under FOIA. USDOT may proactively publish any application information that is not marked as CBI.

Representation, Warranties, and Indemnification:

By entering the Challenge, each applicant represents, warrants and covenants as follows:

- Participant is the sole author, creator, and owner of the Submission;
- The Submission is not the subject of any actual or threatened litigation or claim;
- The Submission does not and will not violate or infringe upon the intellectual property rights, privacy rights, publicity rights, or other legal rights of any third party;
- The Submission does not and will not contain any harmful computer code (sometimes referred to as "malware," "viruses," or "worms"); and
- The Submission, and contestants' use of the Submission, does not and will not violate any applicable laws or regulations, including, without limitation, HIPAA, or applicable export control laws and regulations of the U.S. and other jurisdictions.

Contestants must indemnify, defend, and hold harmless the Federal Government from and against all third-party claims, actions, or proceedings of any kind and from any and all damages, liabilities, costs, and expenses relating to or arising from participant's submission or any breach or alleged breach of any of the representations, warranties, and covenants of participant hereunder. Contestants are financially responsible for claims made by a third party.

USDOT reserves the right to disqualify any submission that it deems, in its discretion, to violate these Official Rules, Terms & Conditions.

Intellectual Property (IP) of Submissions

As part of their acceptance of the Stage I prize, each semi-finalist grants to USDOT and its designees a worldwide, non-exclusive, sub-licensable, transferable, fully paid-up, royalty-free, perpetual, irrevocable right to use, reproduce, distribute, modify, create derivative works, publicly perform, publicly display, digitally perform, make, have made, distribute and import their Stage I submission and other data submitted, in any media now known or hereafter developed, for any purpose whatsoever, commercial or otherwise, without further approval by or payment to the semi-finalist, and represents that he/she/it has the unrestricted right to grant that license. Furthermore, the semi-finalist grants the government and its designees a worldwide, non-exclusive, sub-licensable, transferable, fully paid-up, royalty-free, perpetual, irrevocable, unlimited rights to the government or its designees to apply or utilize the submission, modified submission, or derivative work with other data not owned by the semi-finalist and that all resulting data output is available to the government for unlimited use.

Note: Stage II and Stage III intellectual property terms are preliminary. Final intellectual property terms for Stages II and III will be provided to Solvers advancing to these stages and posted on the Challenge website.

As part of their acceptance of the Stage II cash prize, each Finalist grants to USDOT and its designees a worldwide, non-exclusive, sub-licensable, transferable, fully paid-up, royalty-free, perpetual, irrevocable right to use, reproduce, distribute, modify, create derivative works, publicly perform, publicly display, digitally perform, make, have made, distribute and import their Stage II submission and other data submitted, in any media now known or hereafter developed, for any purpose whatsoever, commercial or otherwise, without further approval by or payment to the Finalist, and represents that he/she/it has the unrestricted right to grant that license. Furthermore, the Finalist grants the government and its designees a worldwide, non-

exclusive, sub-licensable, transferable, fully paid-up, royalty-free, perpetual, irrevocable, unlimited rights to the government or its designees to apply or utilize the submission, modified submission, or derivative work with other data not owned by the Finalist and that all resulting data output is available to the government for unlimited use.

As part of their acceptance of the Stage III cash prize, each Winner grants to USDOT and its designees a worldwide, non-exclusive, sub-licensable, transferable, fully paid-up, royalty-free, perpetual, irrevocable right to use, reproduce, distribute, modify, create derivative works, publicly perform, publicly display, digitally perform, make, have made, distribute and import their Stage III submission and other data submitted, in any media now known or hereafter developed, for any purpose whatsoever, commercial or otherwise, without further approval by or payment to the Winner, and represents that he/she/it has the unrestricted right to grant that license. Furthermore, the Winner grants the government and its designees a worldwide, non-exclusive, sub-licensable, transferable, fully paid-up, royalty-free, perpetual, irrevocable, unlimited rights to the government or its designees to apply or utilize the submission, modified submission, or derivative work with other data not owned by the Finalist and that all resulting data output is available to the government for unlimited use.

For more information, and to register your intent to compete as a Solver or to commit your support of the Challenge as an Innovation Agent, visit www.transportation.gov/Solve4Safety.

Issued on: 6/11/18

A handwritten signature in blue ink, appearing to read "Derek Kan", is written above a horizontal line.

Derek Kan
USDOT Under Secretary for Policy