

FAQ for Pre-bid Webinar for SHRP 2 Project S08: Analysis of the SHRP 2 Naturalistic Driving Study Data

On December 13, 2010, SHRP 2 held a webinar to allow prospective bidders on Project S08 to ask questions about the project. Approximately 80 organizations participated. The following is a distillation of the questions that were asked in that webinar. We have limited this posting to those questions that clarify the RFP and provide more information that will guide bidders in proposal preparation. For length and clarity we have combined and shortened some questions.

The SHRP 2 Research Team Builder

(http://www.trb.org/StrategicHighwayResearchProgram2SHRP2/Public/Pages/Research_Team_Builder_177.aspx) lists organizations who are interested in collaborating with others on SHRP 2 research projects. You can view the list to find and contact other organizations, and you can add your organization to the list so that others can find and contact you.

Any further questions should be directed to Ken Campbell, preferably by email (kcampbell@nas.edu). Questions and answers will be posted on the SHRP 2 RFP site until January 4, 2011. No questions will be answered after that date."

General Proposing

Q: When proposals for Phase 1 are submitted, how much detail should proposers include for work to be performed in Phase 2?

A: A broad description of the Phase II tasks is sufficient. The Phase I proposal should include a detailed description.

Q: Do we need to identify all members of the team who would be involved in both phase 1 and 2 in the initial proposal or we can revise/add those details at the end of phase 1?

A: Key members should be identified in your proposals, but they can change for Phase II if needed.

Q: Do you allow international organizations to submit to partner with U.S. groups to submit proposals?

A: International organizations may submit proposals or they can team with U.S. groups. Here are some things to keep in mind if you are an international organization and plan on proposing:

1. Note that you must submit a signed Liability Statement (in the RFP) *with the proposal*.
2. Should you be selected, contracting may be more difficult.
3. Note that you must come to Virginia Tech in Blacksburg if you need to view face video without blurring. VTTI can carry out manual video reductions at your direction and provide the result as an alternative. Travel costs can be included in your budget, but this may be more of a problem if you are outside of the U.S.

Q: Regarding Point 4 in the "General Notes" section page 15: if the research is to take place in an entirely academic setting and we are unable to fulfill these criteria, will this negatively impact the proposer?

A: Proposers may respond that their organization does not have a disadvantaged business enterprise (DBE) program and they will not be penalized.

Q: Can developing more accurate and robust machine vision technologies be the focus of the proposal?

A: No, the objective of the S08 projects is to address the priority safety topics identified in the RFP. Projects that only focus on data processing that might support such an analysis will not be funded without also carrying out the analysis of the safety issue.

Q: Will proposals only using the collected detailed roadway data be considered? Or must the NDS data be used?

A: No, you cannot just use the roadway data.

Number of Proposals

Q: Can a contractor submit more than one proposal?

A: Yes, an individual or group may submit more than one proposal to address different questions or even different priority areas. They will be treated as independent proposals, with each competing for \$100,000 for Phase 1. There is no specific prohibition against one group being awarded more than one S08 project.

Q: Is it better to define a research question in just one of the four topic areas or is overlap on several areas better?

A: We are looking for focused coherent proposals that address specific questions and hypotheses. If a single method/approach readily lends itself to multiple topics, that is fine. If multiple topics require different data or methods or separate analysis, then multiple proposals are more appropriate. Remember that each Phase I project is limited to \$100,000 regardless of how many topics are addressed.

Funding/Budget

Q: How many phase 1 and phase 2 proposal are you hoping to award/fund?

A: For the \$5M total funding, we are expecting to award up to 10 projects.

Q: How can we estimate a budget for VTTI manual coding projects?

A: A VTTI budget is not required for Phase I. The Phase II VTTI budget will be developed with the assistance of VTTI and SHRP 2 staff.

Q: Will there be any negotiation about budget and scope for projects that are approved?

A: Any negotiation will occur during the Phase I preparation of the Phase II budgets

Q: If all S08 Phase I projects are well done, do you plan to fund all of them or do you plan up front to only fund a certain number?

A: If we receive enough good proposals, we may select more Phase I projects than we have funding for Phase II.

Q: For Phase II, do we need to estimate a budget as part of the proposal?

A: Yes, but only broad categories are needed. See Phase II, p. 10 of the RFP.

Vehicles and Manufacturers

Q: Is there a list of vehicles and manufacturers?

A: Yes, there is an eligible vehicle list on the SHRP 2 NDS page: <http://www.shrp2nds.us/>.

Advanced Vehicle Technologies

Q: What types of advanced vehicle technologies (such as ACC, LDWS, etc.) are included in the vehicles? How many vehicles will have each technology? Will there be data on when advanced driver support systems (ADSS) are tripped?

A: We won't know the exact answer to these questions until all the vehicles are in the study. The advanced vehicle technology group is 350 vehicles in the sample design. We anticipate that many of these will have systems to assist lateral control such as lane departure warning systems and systems to assist with longitudinal control such as Adaptive Cruise Control,. There will also be systems that aid in communication such as OnStar and Sync. A few of the baseline sample (1600) may also be equipped with some of these technologies. We expect to record information on these technologies from the vehicle network.

Data Acquisition System (DAS)

Q: Can you please provide more details about the head pose and lane tracking benchmark studies? What sorts of metrics will be specified? Will there be some comparison with "ground truth? Do you know the accuracy of the lane tracking system? Is video image processing expected to be part of the scope of the requested project S08 or is this is already included in the video data collection effort?

A: The scope of work to evaluate the VTTI head pose software, the PERCLOS estimator, and lane tracker software that will run in real time on the DAS is currently being developed and under the supervision of the SHRP 2 TETG for Computer Vision. The evaluation is expected to be completed before

the Phase I work begins. Each program has several outputs. We hope to compare the program outputs to a ground truth over a range of lighting and other conditions that are expected to impact performance. We also plan to assess the utility of the confidence level returned by each program. Program outputs (except PERCLOS) are included at <http://forums.vtti.vt.edu/index.php?/files/category/9-shrp2-naturalistic-driving-study/>. Bidders may also include additional image processing in their proposals.

Q: Regarding eye tracker data, what will the precision be (can we get eye movement, eye glances)?

A: The SHRP 2 NDS does not use any eye-tracking equipment or software. The face video software is intended to determine head pose and not eye gaze.

Q: What is the quality of the video data during night time? How much emphasis should be placed on night time data analysis?

A: The driver face camera has infrared (IR) illumination. The forward scene depends on the vehicle headlights and any existing lighting.

Q: Will the complete path (trajectory) of a participant's travel (the entire GIS trace) be available or will that be suppressed for privacy reasons? If it is suppressed, to what extent?

A: The GPS path is considered restricted data covered by the data access agreement. However, with appropriate safeguards, the entire path could be accessed.

Q: How will the DAS data be linked to the roadway data?

A: The S04A contractor is currently developing methodologies for linking the data. It is anticipated that the GPS data on the DAS will be used to link to the spatial roadway database under development.

Q: Does the instrumented system provide a view of traffic conditions (i.e. neighboring vehicles)?

A: There are limited views of surrounding traffic from the front, driver, and rear cameras. Camera views are included in the data access guidelines. Also, the forward radar is capable of tracking multiple targets. However, no surrogate measure of traffic density has been proposed yet.

Data

Q: If my proposal is not funded, can I still gain access to the data (video, eye movement)?

A: Yes. The data access procedures apply to researchers not funded by SHRP 2 as well.

Q: Will data files regarding driver characteristics, performance on the screening assessments, be available?

A: The driver assessment data will be available shortly after all DAS installations are complete, approximately spring 2011. Additional data from driver assessments for the second group of one-year participants should be available in spring 2012.

Q: I heard reference to de-identified data. Will that limit analysis of in-vehicle behaviors/video coding?

A: The fact that the data must be processed necessarily limits the available information to whatever was extracted before the de-identification process. However, access to de-identified data will have minimum restrictions. Under a data sharing agreement and with appropriate safeguards, the researcher may access or view video to make their own interpretation.

Q: Will the data from the study be the same as the sample available online or might there be changes?

A: The design of the data acquisition system is fixed, so we will not be adding new channels of data. The sample data and data dictionaries are the current drafts and subject to change, especially as we find inconsistencies or errors. Data processing procedures are still under development and could alter the final data format.

Q: Is the face video the only data that requires a visit to VTTI, or are other parts of the data also subject to the same privacy restrictions?

A: Besides the face video, GPS, audio, and the forward video (in some circumstances) will have privacy restrictions. See the Data Access Guide.

Q: Is there a list of derived variables and how they will be arrived at (automated or manual coding, criteria for even flags, etc.)?

A: The data dictionaries on the SHRP 2 NDS Data webpage provide information on currently planned derived variables. See, for example, the dictionary for the trip files. This link is on the Reference page cited in Special Note 4 of the RFP

<http://forums.vtti.vt.edu/index.php?/files/category/9-shrp2-naturalistic-driving-study/>

Q: Do we have data on driver performance or driver state (such as fatigue or drowsiness)?

A: There is a PERCLOS estimator as part of the DAS operating software; this piece of the software package provided by VTTI is early in its development however. See above for information on evaluation of this software.

Q: Is there going to be labeling for each trip indicating whether the primary driver is driving or not?

A: Yes

Q: Is there going to be a way to declassify the GPS position of the beginning and ending of each trip?

A: SHRP 2 does not plan to declassify the GPS by simply removing the beginning and end of the trip. Each application will be reviewed for privacy issues. Various methods may be suitable depending on the intended application.

Q: Will VTTI do any manual coding of the video data?

A: VTTI will produce event files with reduced video data if the S08 contractors need this form of the data and can agree on the variables and coding.

Q: Would traffic data be available? In other words, we have naturalistic driving and infrastructure data, how about matching traffic conditions?

A: A feasibility study to address traffic data, traffic control information, incidents, weather, and work zones has been requested for addition to the Project S04A data discovery task. If these data are available they may be included if funding is provided. They are not likely to be available in 2011.

Q: Can you provide an example of the "manual or automated video analysis" that VTTI can provide? Is this actually reviewing videos and extracting data as directed by the contractor?

A: Yes, examples are in the Event File data dictionary at

<http://forums.vtti.vt.edu/index.php?/files/category/9-shrp2-naturalistic-driving-study/>.

Q: How accurate is the in-vehicle GPS data?

A: Typically plus or minus 9-18m

Crashes

Q: How many crashes in the NDS data?

A: We can only estimate and the answer depends on the assumed reporting threshold. Total crashes could be anywhere from 600 to 1200.

Q: Could you comment on availability of detailed crash investigations as part of available data? What is the expected coverage and level of detail?

A: Supplemental crash investigations will address the crash site and the study vehicle and driver. Other drivers and vehicles will not be investigated. The crash data dictionary is at

<http://forums.vtti.vt.edu/index.php?/files/category/9-shrp2-naturalistic-driving-study/>.

Q: What kind of coordination will there be on finding and defining crashes and near-crashes? Does the budget have to include running triggers, going through and finding valid near-crashes, and so forth?

A: The data acquisition system includes a trigger that is expected to flag most collisions. Triggers for near-collisions and any other kinds of surrogates or events will be part of the S08 projects. SHRP 2 would like to identify any common flags/markers where there is some agreement on the definition/implementation early in Phase I, so VTTI can add them to the intake data processing. Otherwise, such triggers are part of each S08 project to develop and apply.

Countermeasures

Q: Will we know when countermeasures are employed at the sites? If yes, do we have before and after data?

A: Data collection on safety campaigns, such as seat belt or alcohol enforcement, or roadway construction or improvements in the NDS sites are not part of the current projects. However, we have requested funding for a feasibility study of the addition of such information in the NDS study sites. Such information is not likely to be available in 2011, but we should know what is planned before the end of Phase I. Before and after data will probably have to be extracted from the NDS based on the date of the treatment/change.

Research Questions

Q: Are proposers limited to the research questions and analysis methods included in previous SHRP 2 reports (Projects S01 and S02)?

A: The RFP provides the best information on the priority research topics (see the introductory slides). However, the formulation of specific research questions and analysis methods is up to the proposers. Specific research questions and methods in the S01 and S02 reports should only serve as examples.

Tech Support

Q: What is the nature of the tech support that VTTI and Iowa will provide? Is it support for the contractors to help them access and use the data?

A: Yes. See Special Note 1 in the RFP

Q: Are we expected to develop software for extracting tracking data from the video tape or will software be provided as part of this project?

A: For the driver face video, software is expected to track the head pose. The forward video will be processed to determine the location of the lane edge. Any other software is the responsibility of the S08 contractor.

Proposal Review

Q: Is there a roster for the proposal review panel that is available to potential bidders? What is the background of individuals to be involved in reviewing proposals: academics, engineers, road administration, others?

A: Rosters of all SHRP 2 committees are on the SHRP 2 website. However, committee members should not be contacted in regard to this RFP.

Roadway Data

Q: Since the Phase I projects are to be complete before the infrastructure data are available, how can we be expected to demonstrate an analysis approach that depends on use of the infrastructure data?

A: Data descriptions are provided in the proposal. These data will be collected under project S04B (Mobile Data Collection). Sample roadway data is expected to be available by October 2011. The availability, or lack, of roadway data will be taken into account in the evaluation of the Phase II plans.

Q: Will geometric design and road functional class data be available as part of the S08 database for analysis?

A: Functional class will be provided with roadway data; see the roadway data descriptions in the RFP.

Q: How many miles of rural two-lane highways are currently or will be available in Phase II?

A: We estimate that a total for 25,000 miles of road will be driven by the mobile roadway data collection contractor in project S04B. Rural roads and road departure are a priority for SHRP 2. The proportion of rural roads varies from 8% to 90% across the six NDS sites. The actual miles of rural roads to be measured in each site have not been determined yet.

Q: Will traffic signal timings be available as part of roadway database?

A: No.

Institutional Review Board (IRB)

Q: If we use the SHRP2 data, why do we need IRB from my institute?

A: Most organizations will require their IRB to review any use of data from human subjects. Given that this project will already be conducted under the oversight of the NAS IRB and the VTTI IRB, it may qualify for an expedited review by the contractor's IRB.

Q: Is full IRB approval needed to start Phase I, or can this be obtained during Phase I, preparatory to Phase II?

A: As per the RFP, IRB approval is Task 1 of Phase I.

Q: If VTTI is providing only de-identified data, is there a purpose for IRB from the contractors' institution?

A: If a contractor is only accessing de-identified data, their own IRB may consider the research exempt. It is possible that the NAS IRB will still want to review these requests.

Future RFPs

Q: Will there be another round of data analysis funding and if so, when do you anticipate that RFP might come out?

A: We anticipate another round with this RFP in March or July of 2011.