

Foster-Miller Completes First Phase of Collision Avoidance Interface for Bus Drivers

IVsource asked **Dr. Jeff Everson** of **Foster-Miller** to provide an update on the research they are doing for the **Federal Transit Administration** under a Phase I **Small Business Innovative Research (SBIR)** grant awarded last fall. **Brian Cronin**, **FTA** project manager, related one salient conclusion at the **ITS America** annual meeting: heads-up displays were not considered feasible for deployment, based on the research results. **IVsource** intends to publish the complete findings when available. Phase II SBIR activities are now being proposed.

In a recent final report, **Foster-Miller, Inc.** presented the methods and findings of a Phase I *Small Business Innovative Research (SBIR)* study that focused on the development of a preliminary driver vehicle interface (DVI) for a transit bus longitudinal and lateral collision avoidance system (CAS).

The project tapped the real-world knowledge, expertise, and direct experience of **Massachusetts Bay Transportation Authority (MBTA)** driving instructors and bus operators, while drawing on past collision warning and avoidance system research for applicable theory and lessons learned. Structured interviews were used, as were informal discussions and a focus group with the MBTA driving instructors and bus operators. Project leaders also employed naturalistic observation and reviewed past collision warning and avoidance system-related technical reports, journal articles, and conference proceedings.

The project was divided into several tasks. The first task involved the characterization of the transit bus operational environment, from which an integrated, idealized model of transit bus

operation was developed to identify crash intervention opportunities for a transit bus CAS. Next, specific crash scenarios were identified that served to pinpoint the types of collisions that the CAS should be designed to prevent. A set of functional requirements for the CAS was eventually produced.

Based on the CAS functional requirements and an understanding of the transit bus operational environment, a set of DVI requirements for a transit bus CAS was developed. Using the findings of a literature review of previous collision warning and avoidance system research, a set of preliminary CAS display designs was generated. Head-up displays (HUDs), among other concepts, were considered for the display of transit bus CAS information.

Foster-Miller has delivered recommendations for future human factors testing and evaluation of the preliminary CAS DVI to FTA.

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