

**WIRELESS COMMUNICATIONS WITH SUBWAY PASSENGERS**

**AGENCY:** Federal Transit Administration (FTA), DOT

**ACTION:** Notice for Request for Applications (RFA)

**SUMMARY:** FTA is seeking research proposals for an operational test and evaluation of a wireless communication system capable of communicating with passengers aboard transit vehicles located in tunnels. The wireless technology should be capable of transmitting messages among passengers, operators, control center personnel and first responders.

**DATES:** An applicant must submit a proposal electronically to <http://www.grants.gov> by November 12, 2008 for consideration. All potential applicants are advised to begin the <http://www.grants.gov> registration process immediately, if they have not previously submitted Federal assistance applications through <http://www.grants.gov>, in order to be able to meet the deadline. FTA expects to award funds through a cooperative agreement in January 2009. In the event of a system problem or technical difficulty with the application submittal, the applicants should contact the FTA Project Manager for delivery instructions.

**ADDRESSES:** The website <http://www.grants.gov> allows applicant organizations to electronically find and apply for competitive opportunities from all Federal agencies that award Federal assistance. This website is the single access point for over 1000 Federal assistance programs administered by the 26 Federal agencies.

**FOR FURTHER INFORMATION CONTACT:** Technical, program management and administrative questions should be directed to Terrell Williams, Office of Technology (TRI-20), E43-469, Federal Transit Administration, U.S. Department of Transportation, 1200 New Jersey Ave, SE, Washington, D.C. 20590; email address: Terrell.Williams@dot.gov, or by phone at 202-366-0232.

**SUPPLEMENTARY INFORMATION:** A Request for Applications titled 'Subway Train Location Overlay System' is currently posted on <http://www.grants.gov> as opportunity **D2008-STLOS-TRI** and on the FTA website at [http://www.fta.dot.gov/funding/grants\\_financing\\_7829.html](http://www.fta.dot.gov/funding/grants_financing_7829.html). FTA will entertain applications combining these two demonstrations as well as separate applications. The applicant should become familiar with reports from the Transit Cooperative Research Program on emergency communication systems for transit.

**Objectives**

This project will support development, operational testing and evaluation of a wireless communication system capable of communicating with passengers aboard transit vehicles located in tunnels. The wireless technology should be capable of transmitting messages among passengers, operators, control center personnel and first responders.

## Background

During an emergency in a subway, transit riders are instructed by transit authorities to listen for instructions from the train operator over a public announcement system. Should the operator become incapacitated or leave the operating cab, there is no one to communicate with the passengers. In two recent incidents, one on the Chicago Transit Authority (CTA) and another on Bay Area Rapid Transit (BART), passengers self-evacuated trains in a subway while the operator was outside the cab. On BART, a train had stopped short of a smoke incident and the operator was outside the cab walking to the opposite end to reverse the direction of the train. It only takes one nervous passenger to begin a self evacuation.

Once begun, all passengers need to be evacuated; possibly exposing them to more risk than if they stayed on the train. The CTA incident followed a derailment of one car that led to electrical arcing and smoke. While the operator was outside the train investigating, passengers began to self evacuate and the operator did not re-board the train and make announcements. Some patrons reported that they waited on the train while most followed the crowd.

Generally operators outside the cab can communicate with the control center via hand-held radios, but they cannot make announcements to passengers over the train public announcement system.

In its final report, the National Transportation Safety Board (NTSB) recommended that FTA “urge them (rail transit agencies) to examine and improve, as necessary, their ability to communicate with passengers and perform emergency evacuations from their tunnel systems.”

In both the BART and CTA incidents, no serious injuries occurred. However, any such incident has the potential for much more serious consequences. BART funded a study that indicated that technology is currently not in place to allow control center personnel to easily communicate directly with passengers should the train operator not be able to make announcements.

Many rail systems, including BART and the Washington Metropolitan Area Transit Authority (WMATA), have made provisions for limited cellular phone service in their subways. All U.S. subway systems have some form of radio communication capability. Piggybacking on this technology, an opportunity exists to develop wireless internet or some other form of communication that would allow a control center to “push” data to a receiver on a train. A monitor or ribbon display inside the train could receive text typed from the control center. Additionally, stored pre-recorded emergency video or audio could be activated remotely. Existing radio technology that allows a tie in to a train public announcement could be improved to more easily allow remote broadcasts.

FTA’s research activities are authorized by 49 USC 5312, Research, Development, Demonstration, and Deployment Projects. Improving Safety and Emergency Preparedness is one of FTA’s five Strategic Research Goals. Under this goal, FTA has set forth the objective of identifying solutions to improve transit emergency preparedness. Rail transit operations (commuter, heavy and light rail) comprise over 50% of transit service, and many rail transit systems carrying heavy passenger loads operate at least partially in subways.

## **Project Description**

Demonstrate the use of wireless or other technology to provide communication with subway train passengers from a remote location should the train operator be unable to make announcements. Develop or acquire a prototype system and demonstrate and evaluate its use. The researcher would need to partner with a transit system operating trains in a subway environment.

The selected organization shall conduct the following tasks:

- 1) Examine and document the state of practice, internationally, regarding communications with passengers on subway trains from immediately outside the train as well as from more remote locations.
- 2) Identify and elaborate evaluation factors capable of discriminating among available wireless communication systems capable of operating with a high level of reliability in a transit tunnel environment, including availability of commercial off-the-shelf equipment and costs of implementation and operation.
- 3) Identify, select and negotiate enabling agreements with potential transit partners and equipment vendors for operational testing and evaluation of a wireless communication system at one or more demonstration sites.
- 4) Deploy and conduct operational testing of an accurate and reliable wireless technology to demonstrate that it is functionally and operationally capable of communicating with passengers aboard a transit vehicle in a tunnel, operations control center personnel, train operators and first responders.
- 5) Evaluate and document the results of the deployment and operational testing of the wireless communication system.
- 6) Prepare a concise report, suitable for dissemination to broad transit agency constituency, on the costs, benefits, performance and lessons learned in that will be applicable to other subway transit agencies considering implementing such a system.

FTA involvement will include approving key decisions and activities, attending review meetings, commenting on technical reports, maintaining frequent contact with the project manager and redirecting activities if needed. FTA intends to appoint a technical oversight panel, including representatives of government and industry with expert knowledge of rail transit design and operations, communications, safety, and emergency response, to assist in monitoring progress of this project and evaluating the significance of project results.

## **Award Information**

FTA will fund one application under this program. The total available funding is up to \$200,000. Future funding will depend on appropriations. FTA will participate in activities by attending review meetings, commenting on technical reports, maintaining frequent contact with the project manager and approving key decisions and activities, including redirecting activities if needed.

## **Cost Sharing or Matching**

Federal transit funds are available to research projects at up to 100 percent of the project cost. However, cost sharing will be an evaluation criterion.

## **Eligibility Information**

Eligible recipients include State and local government agencies, public and private transit agencies, universities, non-profit organizations, consultants, legally constituted public agencies, operators of public transportation services, and private for-profit organizations. In order to enable the operational testing and evaluation of the subway communication system, at least one partner in the proposed project must operate, or provide sufficient access to, trains in a subway system.

## **Proposal Content**

This announcement includes all of the information that you need to apply. The following forms are available in grants.gov and are required to be completed:

1. SF 424 Mandatory
2. Other Attachments Form

1. SF 424 Mandatory

Most of SF424 is self explanatory. The application should answer the following items as follows:

- 1a – application
- 1b – annual
- 4a – Leave blank
- 4b – 26

2. Other Attachments Form:

1. The application should attach a pre-application (not more than 15 pages in length) as outlined in Chapter II (Item 9.b) of FTA Circular 6100.C: Transit Research and Technology Programs: Application Instructions and Program Management Guidelines. [http://www.fta.dot.gov/laws/circulars/leg\\_reg\\_4121.html](http://www.fta.dot.gov/laws/circulars/leg_reg_4121.html)

This pre-application should also address the seven criteria laid out below in the Application Review Information section. The project budget justification should include identification of any matching funds and their source. The Formal Application described in the Circular is not being requested at this time.

2. The application should attach information on the qualifications of key personnel, including biographies, and documentation of access to trains operating in subways for the operational testing portion of the project.

Anyone intending to apply should initiate the process of registering on <http://www.grants.gov> by November 12, 2008 for consideration. All potential applicants are advised to begin the <http://www.grants.gov> registration process immediately, if they have not previously submitted Federal assistance applications through <http://www.grants.gov>, in order to be able to meet the deadline.

### **Application Review Information**

A review panel will be convened to review each proposal. Project proposals will be evaluated based on the following criteria;

1. Understanding of the problem to be addressed in this project, including knowledge of the capabilities and typical operational performance of various wireless communication systems and how these systems perform in an emergency situation involving a train in a subway. The proposed project must identify critical technological issues facing communication with rail transit passengers in subways and how they will be addressed.
2. Proposed research, which includes the applicability of the proposed research to meeting the requirements for real-time emergency communication with passengers in subway trains, the creative application of off-the-shelf hardware and software in a manner likely to prove successful during operational testing; the relationship of the research proposed in this project to other completed or ongoing research; expected results, and the uniqueness of the research approach.
3. Qualifications of key personnel, which includes knowledge of, and prior experience with, subway transit operations, in both routine and emergency situations, and hardware and software systems for wireless communications in tunnels.
4. Technical Management Plan, which includes the management approach for planning, scheduling, administering, coordinating and conducting the work effort and evaluating and documenting the results. Of particular importance will be the portion of the plan describing operational testing of the selected wireless passenger communication system.
5. Past performance on activities relevant to the proposed work.
6. Cost and Cost Sharing.
7. Plan for evaluation and data collection. The proposal must address how success will be measured (e.g., system performance targets and metrics).

### **Award administration Information**

The anticipated notification date for successful applications is the January 2009. Following receipt of the notification letter, the successful entities will be required to submit the Formal Application as outlined in Chapter II (Items 10-25) of FTA Circular 6100.C: Transit Research and Technology Programs: Application Instructions and Program Management Guidelines, [http://www.fta.dot.gov/laws/circulars/leg\\_reg\\_4121.html](http://www.fta.dot.gov/laws/circulars/leg_reg_4121.html) through the FTA Transportation Electronic Award Management (TEAM) system website.

Before FTA may award Federal financial assistance through a Federal cooperative agreement, the applicant must submit all certifications and assurances pertaining to itself and its project as required by Federal laws and regulations. Since Federal fiscal year 1995, FTA has been consolidating the various certifications and assurances that may be required of its awardees and the projects into a single document published in the Federal Register. Fiscal year 2008 Annual List of Certifications and Assurances for FTA Grants and Cooperative Agreements and guidelines is published in the Federal Register and posted on the FTA Web site at : [http://www.fta.dot.gov/funding/apply/grants\\_financing\\_7411.html](http://www.fta.dot.gov/funding/apply/grants_financing_7411.html).

Recipients will be required to manage their projects in accordance with FTA Circular 6100.C: Transit Research and Technology Programs: Application Instructions and Program Management Guidelines. : [http://www.fta.dot.gov/laws/circulars/leg\\_reg\\_4121.html](http://www.fta.dot.gov/laws/circulars/leg_reg_4121.html) This includes requirements on project management and administration including quarterly reporting, financial management, and payment.

FTA will manage the cooperative agreement through the TEAM system website.