



Synopsis

Railroad Infrastructure Security

Threat of Terrorism,
Deployment of
Intelligent Transportation Systems

Develop List of ITS Technologies

Evaluation of ITS Technologies

Conclusion

Securing and Protecting America's Railroad Infrastructures: Preventing Terrorism on America's Rail Transportation System

The project will explore the deployment of Intelligent Transportation Systems (ITS) to protect railroad infrastructure from threats of terrorism.

Case Studies Supported: Risk Management

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Other Investigators: Leonard J. Majors (South Carolina State University)

Brief Description:

The protection of passenger and freight rail systems is vital to the nation's welfare. Terrorist attacks on passenger and/or freight rail services can cause severe economic disruption and the loss of life. Railroad infrastructure can be monitored and protected by a broad array of Intelligent Transportation Systems (ITS) technologies. Railroad infrastructure security can be enhanced by sensors and surveillance equipment. This research will assess the cost-benefit of emerging ITS technologies that can be implemented to improve railroad infrastructure security.

Objectives:

This research will analyze the state-of-the-art of ITS technologies that can be implemented to protect passenger and freight rail services from a terrorist attack. The research team will conduct a comprehensive review of emerging ITS technologies applicable to protecting railroad infrastructure; select the most promising technologies; perform analysis of the advantages and disadvantages of each selected technology; and summarize each recommended ITS technology. A key objective is to determine which ITS systems offer cost-effective means for deterring and preventing terrorism and improving rail security.

Interfaces to other Center Projects:



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This research project will interface closely with Dr. Rae Zimmerman's research projects for CREATE on risk analysis and risk management in connection with critical infrastructure protection.

Interfaces to non-Center Projects:

To be determined; contacts with transit and transportation organizations in the New York area will be made to determine appropriate interfaces with non-Center projects.

Major Products and Customers:

Project deliverables will consist of a report that will: (a) analyze the most promising ITS technologies that can be deployed to enhance railroad infrastructure security, (b) evaluate the advantages and disadvantages of each selected ITS technology, and (c) summarize each recommended ITS technology. Customers: DHS, Metropolitan Commuter Rail Systems, Public and Private Freight Rail Systems, New York and New Jersey rail and transportation organizations.

Technical Approach:

The proposed research encompasses a comprehensive review of emerging ITS technologies that can be deployed to address infrastructure security and their adaptability to rail infrastructure. A literature review will be performed to assess how ITS can be applied to railroad infrastructure security, and to assess how Intelligent Transportation Systems have been applied to railroad security in both the United States as well as internationally.

From among the candidate technologies, three will be selected for detailed analysis. Criteria for technology selection will be developed to focus the ITS systems selected to address key areas of rail security. The key areas are surveillance, personnel training and procedures, and improving communication between command centers and field employees.



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The research will also assess the cost of implementing ITS systems as a means for deterring and preventing terrorism and improving rail security. An evaluation framework will be developed for the deployment of the most beneficial ITS technology. The evaluation framework will examine the tradeoffs between ITS technologies and the cost of implementation. Finally, recommendations will be made to indicate the circumstances where ITS projects are likely to have the greatest benefit.

Major Milestones and Dates:

1. Conduct a comprehensive review of the state of rail security and ITS technologies- June 30, 2006
2. Develop an evaluation framework for ITS technologies – July 14, 2006
3. Perform analysis of the advantages and disadvantages of each selected technology, research, and select top three technologies – July 21, 2006
4. Conduct tradeoff analysis of the three selected technologies, and determine the implementation requirements, benefits and costs of implementation – July 28, 2006
5. Conclusions and Recommendation for further study- August 4, 2006
6. Submit Report – August 9, 2006