



US. Department of Transportation  
Federal Motor Carrier Safety Administration

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**Hazardous Materials Safety & Security  
Technology Operational Test  
and  
Untethered Trailer Tracking and Control  
Project Overviews**



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# Hazardous Materials Safety & Security Operational Test Project Goals

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- Demonstrate an approach that uses existing technology to improve the safety and security of HazMat
- Quantify the benefits and costs of this approach



# Project Partners

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- Deployment Team: Battelle
- Evaluation Team: SAIC
- Expert Panel made up of representatives from major associations and other security and counter terrorism experts
- Working Group made up of other Federal agencies
- Motor Carriers
- Shippers
- Manufacturers
- Agencies in 4 states (NY, IL, CA, and TX)

# Technologies

- Communications: Wireless satellite or terrestrial communications (GPS), digital phone without GPS
- Panic buttons (in-dash & wireless)
- Driver authentication (global login & biometric)
- Electronic supply chain manifest (ESCM)
- Intelligent on-board computers (disabling, remote locking, tethered trailer tracking)
- Electronic cargo seals
- Routing and geo-fenced mapping software
- Untethered trailer tracking
- PDA with wireless communication





# Transportation Scenarios

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- 4 scenarios

- Bulk Petroleum
- Bulk Chemicals
- LTL
- Truckload Explosives

- Scenario selection based on:

- Results of the risk/threat assessment
- Desire to look at a cross section of the industry
- Desire to address as many vulnerabilities with technologies as possible



# Public Sector Involvement

- State testing includes
  - Panic alerts
  - Geofence breach
  - Driver verification
  - Vehicle location
  
- “Public Sector Reporting Center Concept”
  - Integration of existing technologies
  - Includes data from satellite tracking, ESCM data, automatic routing of alerts and online access
  - Alerts based on user-specified rules





# Project Status

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- Tests completed in April 2004
  - Estimated 2 million records collected
- Final reports to be completed in September 2004
- Technology Compendium near completion
  - Contains over 150 technology vendors
  - Functionality and cost information is included
- Industry Technology Analysis
  - Final analysis being conducted
  - Looks at deployment and willingness of industry to deploy technologies; security issues and concerns

# Untethered Trailer Tracking and Control System Project Goals

- Develop generic voluntary requirements for an untethered trailer tracking system using as a model a proprietary system that includes specific capabilities
- Test an untethered trailer tracking and control system that meets these requirements and ensures the safety and security of trailers and shipments
- Quantify the costs and benefits
  - Security, Safety, & Efficiency





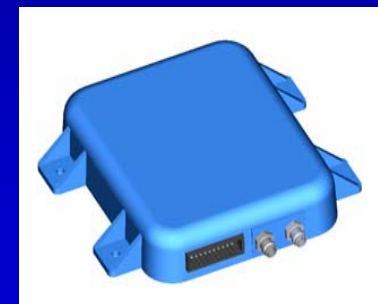
# Project Partners

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- Core Planning and Implementation Team: SAIC
- Commercial Vendor Partner: Qualcomm
- 2 Peer Review Teams
  - Other Federal agencies
  - Industry Stakeholders
- 3 Motor Carriers

# Trailer Mobile Communications & Sensors

- Terrestrial Untethered Trailer Tracking
  - Terrestrial Based System
  - Stealth Based Antennas
- Cargo Sensor
  - Detects the presence of cargo in the trailer (empty/not-empty)
- Door Sensor
  - Monitors for a trailer door (open/closed)



- Security Benefits: Prevents unauthorized access to trailer and cargo  
Provides tracking

# Trailer Based Geo-fencing

- Utilizes on-board geofencing
  - Monitors unauthorized movement of the trailer
  - Notification of a trailer moving outside of its geo-fence
  - Capability to increase the position-polling rate upon geofence violation



- Security Benefits: Prevents theft  
Provides real time alerts



# Route Based Geofencing (additional feature during testing)

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- Utilizing Tractor Communication System
  - Position location tracking w/host based geofencing
  - Route adherence/risk area geofence
  - Tethered/untethered trailer notification
  - Provide timely information to public sector

- Security benefits: Provides information security
  - Allows control of access/route of vehicle
  - Allows relay of timely information to public sector

# Wireless Communications

- Tractor Mobile Communications Terminal (Qualcomm)
  - GPS



- Security Benefits:
  - Improves driver communication capabilities:
    - Visibility into vehicle location
    - Visibility into Hook and Drops
    - Route based geofencing



# Host Software

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- UTT- Provider Hosted Web Applications
  - A map interface with street-level maps for the United States, Canada, and Mexico, cargo event locations, door event locations, historical positions on maps
  - Tractor Identification (trailer number, status, and location)
  - Door status
  - Cargo status
  - Connect/disconnect status (time and position of trailer hook and drop)



# Pilot Test Overview

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- 3 Month Pilot Test
- 3 Scenarios
  - Truckload Dry Van
  - High Value
  - Truckload Explosives
- 3 Carriers
- 75 Trailers



## Project Status – Completion Dates

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- Concept of Operations Completed
- Voluntary Requirements Completed
- System Design June 2004
- Pilot Test January 2005
  - Installations start in August
  - Pilot Test officially starts in October
- Pilot Test Evaluation Report February 2005
- Final Project Report March 2005



The End

Thank you for your attention