UNITED STATES
DEPARTMENT OF TRANSPORTATION

Applications for the Environment: Real-Time Information Synthesis (AERIS) - Overview

Broad Agency Announcement (BAA) Foundational Research

Fall/Winter Webinar Series - Webinar #1

September 14, 2011

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AERIS

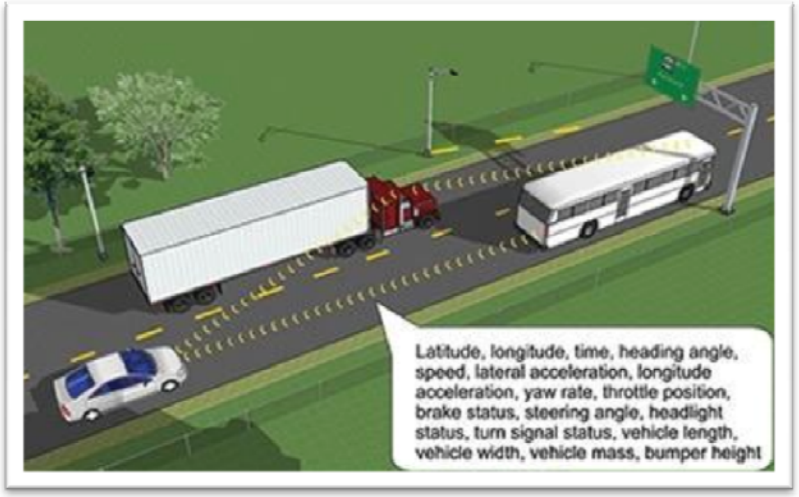
Overview

- What is Connected Vehicle Research?
- Transportation and the Environment
- AERIS Research Program
- BAA Research Projects
- AERIS Fall/Winter Webinar Series

What is Connected Vehicle Research?

Connected vehicle research is a suite of technologies and applications that use wireless communications to provide connectivity:

- Among vehicles of all types
- Among vehicles and roadway infrastructure
- Among vehicles, infrastructure, and wireless consumer devices



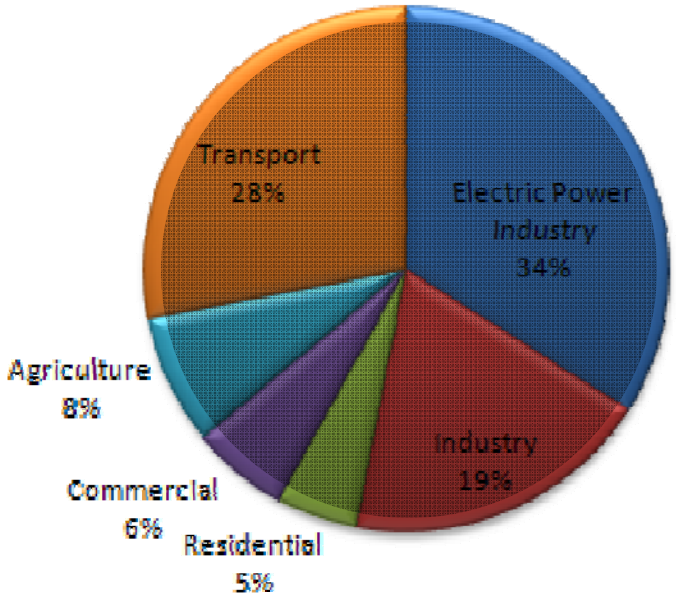
Why Is Connected Vehicle Research Needed?

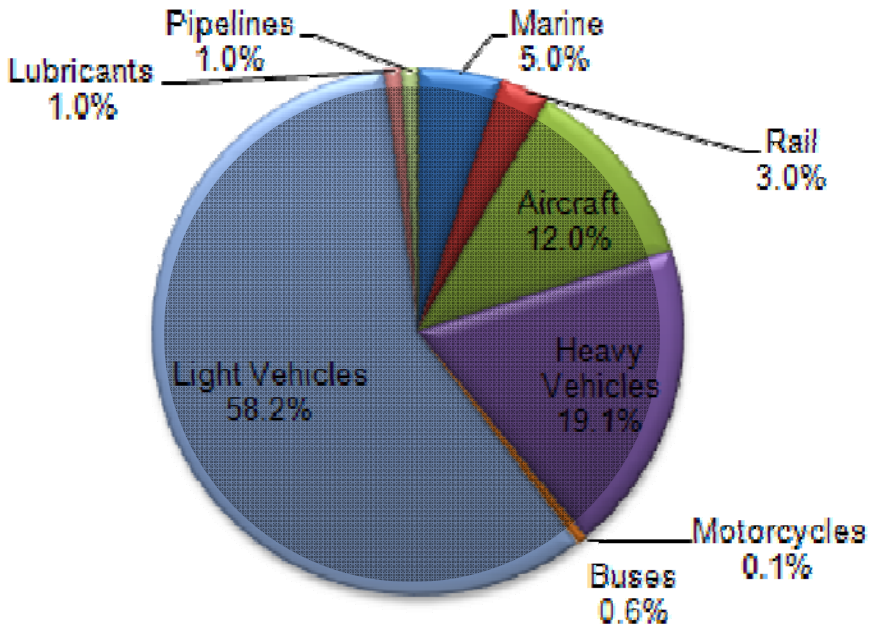
- USDOT connected vehicle research aims to tackle some of the biggest challenges in the surface transportation industry in the areas of safety, mobility, and environment
  - **Safety** | In 2009, there were 5.5 million crashes, resulting in 33,808 fatalities and 2.2 million injuries. Motor vehicle crashes are the leading cause of death for people ages 3 through 34.
  - **Mobility** | U.S. highway users waste 4.8 billion hours a year stuck in traffic – nearly one full work week (or vacation week) for every traveler. The overall cost (based on wasted fuel and lost productivity) reached $115 billion in 2009 – more than $808 for every U.S. traveler. Delays in truck operations alone resulted in $33 billion in wasted fuel and lost productivity.
  - **Environment** | The total amount of wasted fuel topped 3.9 billion gallons in 2009 according to the Texas Transportation Institute.

Transportation and the Environment

Surface transportation has a significant impact on the environment:

- 3.9 billion gallons of wasted fuel each year
- Transport sector accounts for 28% of GHG emissions in the US
- Vehicles represent almost 80% of the transport sector GHG





Source: EPA. *Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1990 to 2006.* 2008.

AERIS Research Objectives

- **Vision** | Cleaner Air through Smarter Transportation
- **Objectives** | Investigate whether it is possible and feasible to:
  - Generate/capture environmentally-relevant real-time transportation data (from vehicles and the system)
  - Use this environmental data to create actionable information that can be used by system users and operators to facilitate “green” transportation choices for all modes
  - Assess whether doing these things yields good enough environmental benefits to justify further investment by the USDOT

TRANSFORMATIVE and INNOVATIVE

The AERIS Program

AERIS

- Five Years, Six "Tracks"
- Multimodal Approach
- Working with Data Capture and Management Program and Dynamic Mobility Applications Program

Track 1: Foundation	Track 2: Identification	Track 3: Analysis	Track 4: Recommend	Track 5: Policy	Track 6: Stakeholders
Establish the foundation by reviewing the state of the practice	Identify initial candidate strategies, scenarios and applications that appear to improve decisions by public agencies and travelers	Analyze and evaluate candidate strategies, scenarios and applications that make sense for further development and evaluation	Recommend strategies, scenarios and applications	Develop the facts and evidence needed to inform and respond to possible future policy and regulatory issues/needs	Engage stakeholders and foster technology transfer

Track 1: Establish the Foundation

AERIS State-of-the-Practice Assessments

- Applications for AERIS State of the Practice Assessment
- State of the Practice Assessment of Techniques for Evaluating the Environmental Impacts of ITS Deployment
- State of the Practice Assessment of Behavioral and Activity-Based Modeling
- State of the Practice Assessment of Environmental Models
- State of the Practice Assessment of Technology to Enable Environmental Data Acquisition

All reports are now complete and will be publicly available soon

Track 1: Establish the Foundation

Broad Agency Announcement (BAA) Research Projects

- **Purpose of Issuing the BAA:**
  - To expand knowledge of and experience with implementation of ITS applications to improve environmental performance by leveraging partners' research results and investments

- **Objectives of BAA Research:**
  - Foster innovative research on ITS applications that improve environmental performance, and possibly develop new applications
  - Promote capture and management of real-time data that are relevant to environmental applications development and performance measurement
  - Support development and enhancement of evaluation techniques, performance measurement, and technologies to capture environmentally-relevant data

BAA Research Partners

1. An Evaluation of Likely Environmental Benefits of Lowest Fuel Consumption Route Guidance in the Buffalo-Niagara Metropolitan Area | University at Buffalo
2. Developing and Evaluating Intelligent Eco-Drive Application | Virginia Tech
3. Developing Eco-Adaptive Signalized Intersection Algorithms | Virginia Tech
4. Preliminary System Development Plan for an AERIS Data Capture and Management System | Mixon Hill
5. Eco-ITS | University of California – Riverside (UCR)
6. Assessment, Fusion, and Modeling of Commercial Vehicle Engine Control Unit Data | Calmar Telematics and UCR
7. Engaging the International Community | University of California Partners for Advanced Transit and Highways (PATH) Program

AERIS Fall/Winter Webinar Series

- **AERIS Broad Agency Announcement Foundational Research: Webinar #1**

  Wednesday, September 14, 2011 *1:00 p.m. ET*

- **AERIS State-of-the-Practice Modeling Assessments Webinar**

  Wednesday, October 5, 2011 *1:00 p.m. ET*

- **AERIS Broad Agency Announcement Foundational Research: Webinar #2**

  Wednesday, November 9, 2011 *1:00 p.m. ET*

- **AERIS Broad Agency Announcement Foundational Research: Webinar #3**

  Wednesday, December 14, 2011 *1:00 p.m. ET*

Today's Webinar

- Engaging the International Community: Research on ITS Applications to Improve Environmental Performance
  - Steve Shladover, *PATH*
- Preliminary System Development Plan for an AERIS Data Capture and Management System
  - Dan Berler, *Mixon Hill*
- Assessment, Fusion, and Modeling of Commercial Vehicle Engine Control Unit Data
  - Kanok Boriboonsomsin, *UCR*

Contact Information

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http://www.its.dot.gov/aeris/index.htm