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

Broad Agency Announcement (BAA) Foundational Research

Fall/Winter Webinar Series - Webinar #1

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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

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

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

### Track 1: Foundation
Establish the foundation by reviewing the state of the practice

### Track 2: Identification
Identify initial candidate strategies, scenarios and applications that appear to improve decisions by public agencies and travelers

### Track 3: Analysis
Analyze and evaluate candidate strategies, scenarios and applications that make sense for further development and evaluation

### Track 4: Recommend
Recommend strategies, scenarios and applications

### Track 5: Policy
Develop the facts and evidence needed to inform and respond to possible future policy and regulatory issues/needs

### Track 6: Stakeholders
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
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