CONNECTED VEHICLE PILOT
Deployment Program

CV Pilots Open Source Software and the OSADP

Gene McHale, Team Leader
Diane Newton, OSADP Principal Investigator

ITS Joint Program Office
**TODAY’S AGENDA**

- **Purpose of this Technical Assistance Webinar Series**
  - To assist not only the three selected sites, but also other early deployers of connected vehicle technologies to conduct Concept Development activities.

- **Webinar Content**
  - Connected Vehicle Pilot Deployment Program Overview
  - CV Pilots Open Source Software Requirements
  - Using the OSADP
  - Stakeholder Q&A
  - How to Stay Connected

- **Webinar Protocol**
  - Please mute your phone during the entire webinar
  - You are welcome to ask questions via chatbox at the Q&A Section
  - The webinar will be recorded except the Q&A Section
  - The webinar recording and the presentation material will be posted on the CV Pilots website within a week
CV PILOT DEPLOYMENT PROGRAM GOALS

Spur Early CV Tech Deployment
Wirelessly Connected Vehicles
Mobile Devices
Infrastructure

Measure Deployment Benefits
Safety
Mobility
Environment

Resolve Deployment Issues
Technical
Institutional
Financial
Sites Selected – 2015 Awards

ICF/Wyoming

- Reduce the number and severity of adverse weather-related incidents in the I-80 Corridor in order to improve safety and reduce incident-related delays.
- Focused on the needs of commercial vehicle operators in the State of Wyoming.

New York City

- Improve safety and mobility of travelers in New York City through connected vehicle technologies.
- Vehicle to vehicle (V2V) technology installed in up to 10,000 vehicles in Midtown Manhattan, and vehicle to infrastructure (V2I) technology installed along high-accident rate arterials in Manhattan and Central Brooklyn.

Tampa (THEA)

- Alleviate congestion and improve safety during morning commuting hours.
- Deploy a variety of connected vehicle technologies on and in the vicinity of reversible express lanes and three major arterials in downtown Tampa to solve the transportation challenges.
Deployment Schedule

Overall Deployment Schedule
- Phase 1: Concept Development
  - Creates the foundational plan to enable further design and deployment
- Phase 2: Design/Deploy/Test
  - Detailed design and deployment followed by testing to ensure deployment functions as intended (both technically and institutionally)
- Phase 3: Maintain/Operate
  - Focus is on assessing the performance of the deployed system
- Post Pilot Operations (CV tech integrated into operational practice)

Public webinars to share the concept development activities from the three sites
- Concept of Operations Webinar (February – March 2016)
- Performance Measurement Webinar (May – June 2016)
- Deployment Plan Webinar (August 2016)
Why Open Source?

- **Definition**
  - Software that gives users the right to run, copy, distribute, study, change, and improve it as they see it, without having to ask permission from or make fiscal payments to any external group or person. ([http://opensource.org/osd](http://opensource.org/osd))

- **Why USDOT is interested in Open Source**
  - Allow others to build upon USDOT funded development work
  - Provide transparency into developed applications/software
  - Promote collaboration on development activities
  - Facilitate sharing of common code
WHAT IS REQUIRED OF A CV PILOTS APPLICATION

- New code development under CV Pilot must:
  - Be made available through the OSADP
  - Be licensed under an Open Source License (Apache 2.0 preferred)

- Existing applications brought to the pilot deployment need not be made open source
  - However, code related to new interfaces or enhancements added with Pilots funding are expected to be made open source

- At least one application needs to use the Connected Vehicle Security Credential Management System (SCMS)

- Requirements must be derived from the System Requirements Specification (SyRS) document (Task 6)

- Follow software development best practices (traceability, coding standards, unit testing, regression testing, user acceptance, etc.. ). Note: development processes are left to the discretion of the individual Pilots
## Apache 2.0 Open Source License: Overview

### Can
- Download and use for free
- Incorporate software in proprietary package you create
- Make changes without having to resubmit as open source

### Cannot
- Redistribute without proper attribution
  - Use any Trademarks or Logos that may State that the Organization Endorses your Distribution
- Restrict use of the software

### Must
- Include License in any redistribution that includes the software
- Document which files were modified in any New Distribution
OPEN SOURCE IN THE OSADP

- Case 1: New Code, Acceptable Open Source License
- Case 2: New Code, Copyright Transferred to USDOT
- Case 3: New or Modified Code, Signed Contributor License Agreement

- Cases 2&3: The code, if accepted, will be released by USDOT under the Apache 2.0 License
What is the OSADP?

- Purpose: The Open Source Application Development Portal (OSADP) provides web-based access and collaboration on the source code and documentation for innovative, open source transportation applications.

- Objectives:
  - Reusability - promote the reusing of software wherever possible
  - Transparency - application development is transparent and broadly available
  - Provide complete application package
  - Collaborative development - a friendly and collaborative community
OSADP Features

- Application download page
- Information on new applications
- Forums for community discussions
- Resources to use applications
- Developer uploader guide
- FAQ’s
- Platform to test (GitHub) applications before posting
- Application Submittal (e.g., upload, collaboration)
OSADP Architecture

Public Portal
- High-level project information
- Invitation to join community

Community Portal
- Access released source code repository
- Discussion
- Idea exchange
- Feedback
- Comments
- Suggestions
- May become a Github user and join OSADP project

Development Subsystem
- Project Admin
- Technical Review
- Release Process

OSADP Private Repositories
- In-development Apps
- Released Apps

Collaborative App Development Environment

GitHub Authorized Collaborators

Portal Manager

Visitors

Registered Users

Github Users

App
Install / Use
OSADP 2.0

**Public Portal**
- High-level project information
- Invitation to join community

**Community Portal**
- Discussion
- Idea exchange
- Feedback
- Comments
- Suggestions
- Become a Github user and request access to a private project

**sono**

**GitHub**

**Development Subsystem**
- Project Admin
- Technical Review
- Release Process

**OSADP Private Repositories**
- In-development Apps
  - R1
  - R2
  - R3
  - R.n

**Collaborative App Development Environment**

**Deployment Process**

**Registered Users**

**Portal Manager**

**Provisioning**

**Community**

**Staging**
Current OSADP Applications

- Total Number of Applications: 39
- DMA Applications
  - MMITSS, FRATIS, INFLO, CACC (CARMA 1.0), R.E.S.C.U.M.E., IDTO
- Non-Field Applications
  - Performance Measure Application, TCA, Co-Pilot, P-ODE, CACC-VISSIM, BDEM-CAV, BSMDE Measures Estimation, VEDM, Road Weather Perf. Measures
- Data Applications
  - SPaT, RSD, CV-DSRC message parser
- Non-DMA Commercial Vehicle Applications
  - C-TIP, SRI
Owners: City of Moreno Valley, CA and LACMTA

Description: Anonymous Wireless Address Matching, and is a generic term for Bluetooth- or WiFi- based travel time data collection systems. The OpenAWAM uses field devices, called nodes, running Linux software, to collect Bluetooth addresses and pass the data over an agency-owned data telecommunication network to a central computer.

Collaboration Opportunity:
- Contributing sections of code
- Testing and obtaining user feedback
- Identifying new use cases, or validating use cases currently in development
- Proposing other areas to collaborate and apply your skills
Applications Coming Soon

- FHWA ITS JPO Mobility Challenge:
  - SmarTrAC
  - CloudThink Motion Logger
- Pikalert® Vehicle Data Translator (VDT)/Enhanced Maintenance Decision Support System (EMDSS)
- Connected, Longitudinally Automated Lane Change
How to Download Applications

- You must be a registered user to download application on the OSADP
- Applications available for download can be accessed on the ‘applications/download’ page
- All applications download directly to your machine
Application Upload Process

- **Upload Request**
  - Terms and conditions
  - Access Request Form

- **Required files:**
  - Source code or assets
  - README.txt gives user a brief summary of the open source package
  - RELEASE-NOTES.txt describes incremental difference of this release and associated instructions
  - LICENSE.txt declares the license that this open source is released under
  - ATTRIBUTION.txt acknowledges or gives credits to individuals, a group, or an organization that have contributed to the open source

- **Optional:**
  - User guide and/or Instructions
  - Project Documentation (Final Reports or Systems Engineering documentation)
Using GitHub

- GitHub is the staging environment for the OSADP
  - GitHub is a stable, proven, popular, affordable and provides a flexible infrastructure for open source software collaboration and staging/vetting

- The OSADP uses private repositories on GitHub
  - Uploader must be a registered GitHub user
  - OSADP administrator will invite uploader to access repository to upload code
  - Uploader uses GitHub application to add code from their computer to repository
  - Uploaders can then access application source code and perform updates in the repository
  - OSADP administrator will vet and approve application before release onto the OSADP
Please keep your phone muted

Please use chatbox to ask questions

Questions will be answered in the order in which they were received

This Q&A section will not be recorded, nor posted to the website
Contact for CV Pilots Program: Kate Hartman, Program Manager
Kate.hartman@dot.gov

Join us for the Getting Ready for Deployment Series

- Discover more about the 2015 CV Pilot Sites
- Learn the Essential Steps to CV Deployment
- Engage in Technical Discussion

February 2016 Webinars

Technical Assistance Webinars

- 2/1/2016, 11:00 – 12:30 pm EST
  Preparing a Privacy Concept for Connected Vehicle Deployments

- 2/9/2016, 2:00 – 3:00 pm EST
  Preparing a Performance Measurement Plan for Connected Vehicle Deployments

- 2/10/2016, 2:30 – 4:00 pm EST
  SCMS Proof-of-Concept Interface Requirements for Connected Vehicle Deployments

Public ConOps Webinars

- 2/5/2016, 1:00 – 2:00 pm EST: ICF/Wyoming
- 2/8/2016, 2:00 – 3:00 pm EST: Tampa (THEA)

Please visit the CV pilots website for the recording and the briefing material of the previous webinars.