



Certified for CV Pilots

Testing, Certification, and the Goal of Interoperability

April, 2015

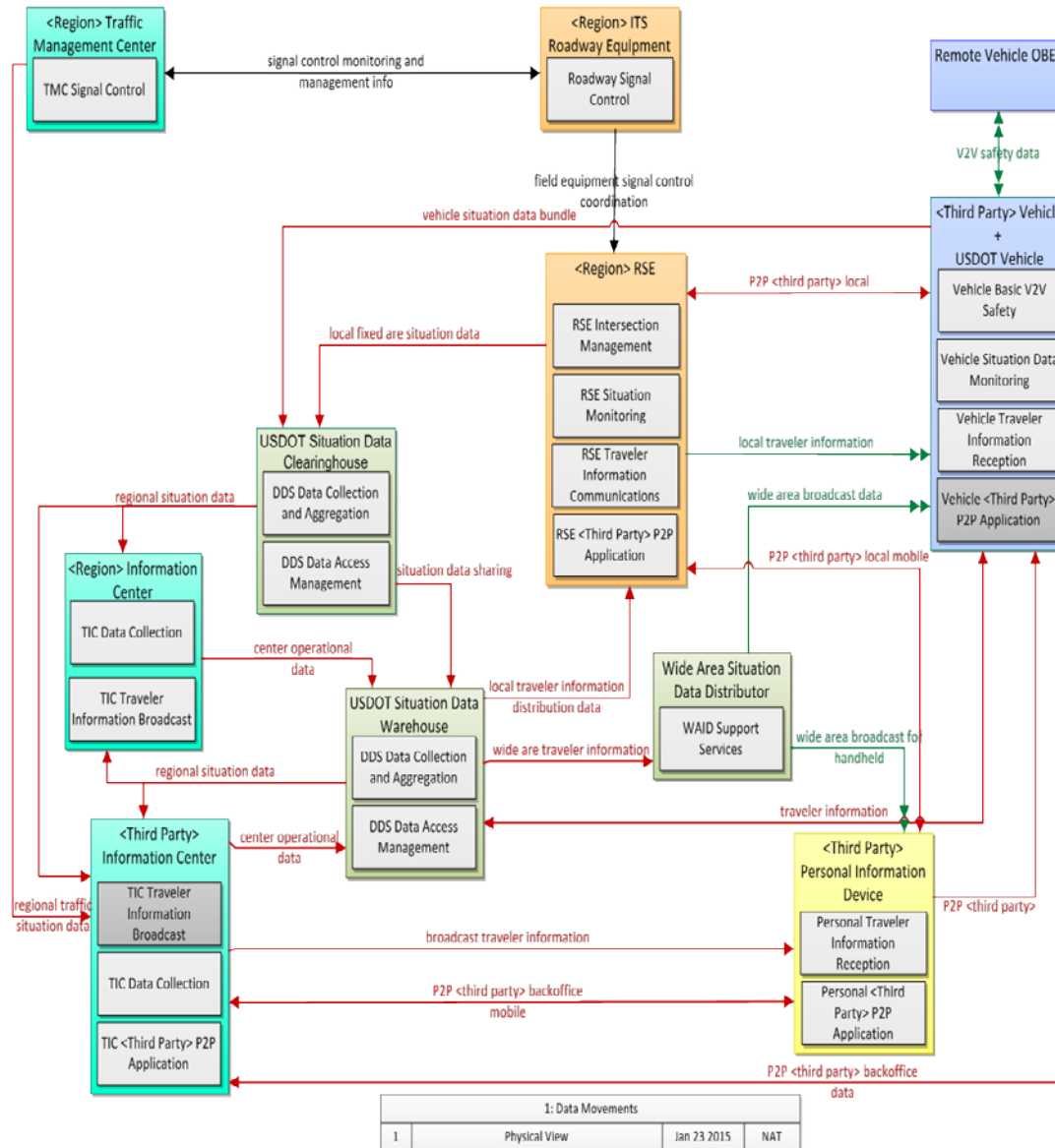
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Intelligent Transportation Systems Joint Program Office
(ITS JPO)
U.S. Department of Transportation (USDOT)



CERTIFIED
Interfaces, Devices
for CV Pilots

Unified Implementation of the CVRIA



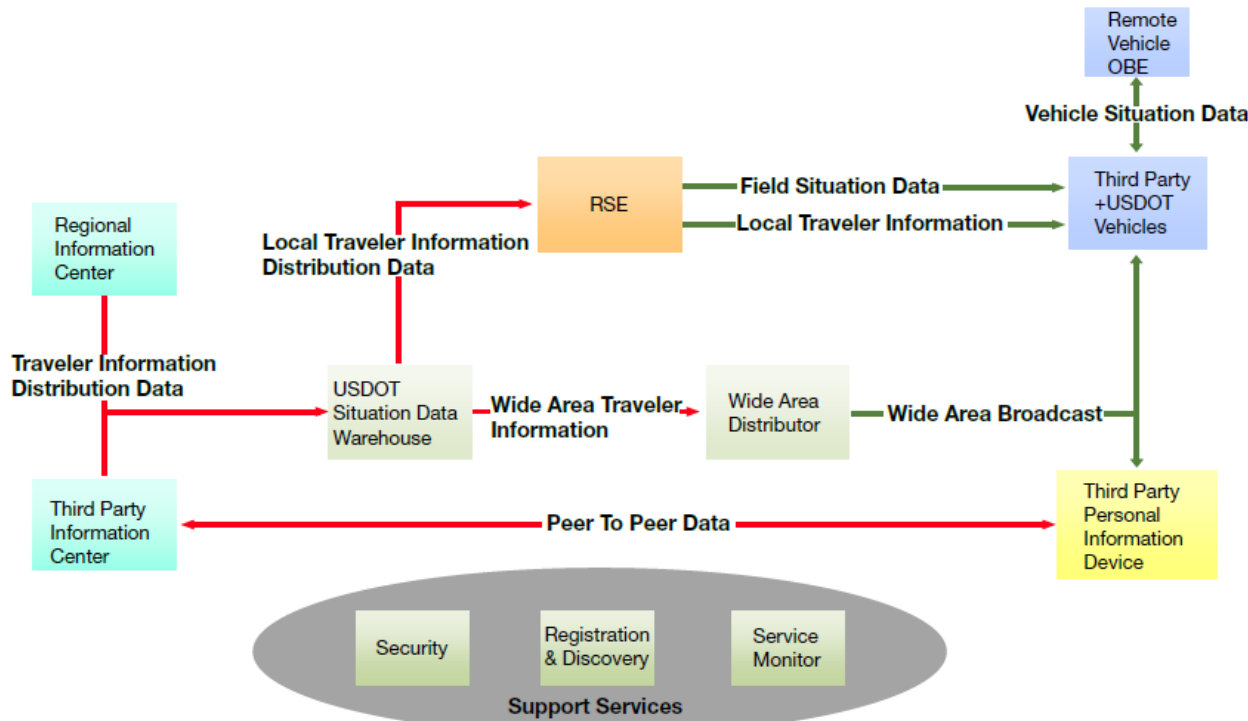
- Connected Vehicle Reference Implementation Architecture (CVRIA)
- Architecture site
<http://standards.its.dot.gov/DevelopmentsActivities/CVReference>
- SET-IT tool site
 - Version 1.0
 - Sample project
<http://www.iteris.com/cvria/html/resources/tools.html>

Expectations for Pilots

- **Three independent** testing entities are developing certification processes for **key information flows** in the system architecture that we will be used to assure **basic interoperability** in CV Pilot installations.
- Candidate processes will be identified and defined in **Q3/2015**.
- Will work with all CV Pilot site operators during their **Design Phase**. By the end of the Design Phase, all of the CV Pilots implementation teams **should be aware of** what specific certification services will be available, and **be encouraged** to use them in their Build Phase.
- Certification processes will be available for self-application, and testing services will be **available** during the CV Pilots Build Phase and Operation Phase from the three testing entities on a **fee-for-service basis**.



Focus on Key Interfaces during Pilots



- **Vehicle Situation Data:** All basic safety messages (BSMs) meet performance requirements
- **Field Situation Data:** All MAPs and signal phase and timing (SPaT) created using the same interpretation
- **Application Protocol Data Units**
 - **Traveler Situation Data:** Use common distribution
 - **SCMS:** Use one system

Information flows for basic system interoperability



Certification Process Steps

- The Certification teams will collectively define (*with input from significant stakeholders*) certification process modules corresponding to **significant, separable system capabilities**
 - **4 key information flows**
 - **15 – 20 certification modules**
- Pilot site designers will select which capabilities will be needed in their installations within guidelines given by the USDOT
- Physical object and application object developers will create devices or software that embodies the desired capabilities
- Those objects will be submitted to members of the Certification teams for **independent evaluation**, or the object maker will **self-apply** the appropriate certification process modules
 - The developer will identify a specific object – hardware version and/or software version
- The member of the Certification team will award a **certification mark**, or the object maker will apply a certification mark to their object
- Users of the object will then be able to obtain **security credentials** from the SCMS



Certification Marks



- Given by an **independent** certification entity
- The objects **meets the requirements** for all of the capabilities the object developer identified when the sample was submitted
- The user can have **confidence** in the performance of the object



- Asserted by the object maker who uses the **jointly-developed** certification processes
- The objects **meets all of the requirements** for all of the capabilities the object developer identified when they make their assertion
- The **user will need to decide** if the object meets their needs

Contact Information

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Danlaw provides connected vehicle telematics solutions and embedded electronics to OEMs and their Tier-1 supply chain.



OmniAir Certification Services (OCS) is a non-profit organization founded by OmniAir to execute independent certification for the intelligent transportation industry.



7Layers is an international group of engineering & test centers having a core competence in wireless technologies.



Certify what?

DSRC 5.9 GHz – WSMP (Vehicle to Vehicle, Vehicle to Infrastructure)

← vehicle location and motion →

Vehicle OBE

Remote Vehicle OBEs

Process Information Layer

SAE J2735 & J2945.1

Encoding Layer

ISO ASN.1 UPER

Facility Layer

Sockets

Session Layer

IEEE 1609.3 WSMP

Transport Layer

IEEE 1609.3 WSMP

Link Layer

IEEE 802.2, IEEE 1609.4

Physical Layer

IEEE 802.11p (5.9 GHz wireless)

Process Information Layer

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Physical Layer

IEEE 802.11p (5.9 GHz wireless)

Security Plane

IEEE 1609.2

Vehicle Situation Data

- Modular Approach
- Modules related to
 - Medium
 - Authentication and transport
 - Authentication and payload
- Not
 - Applications
 - Physical environment

