

MEET IN ASIA PACIFIC FOR THE
WORLD'S LEADING TRANSPORT TECHNOLOGY EVENT

ACTIVATING GLOBAL MOBILITY SOLUTIONS

ITS—ENHANCING LIVEABLE CITIES AND COMMUNITIES



2016
MELBOURNE

23rd World Congress on Intelligent Transport Systems

Melbourne Convention and Exhibition Centre

10–14 October 2016



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Carl K. Andersen

USDOT Federal Highway Administration

Strategy of Practical Implementation of V-I Cooperative Systems for Traffic Accident Avoidance



Outline

- Analyze Crash Data and Assess Benefits
- Validate Initial Concept
- Develop Guidance and Tools to Support Deployment
- Stimulate Connected Vehicle Deployment
 - Connected Vehicle Pilot Deployment
 - Smart City Challenge

- USDOT Contacts



USDOT Working in Collaborative Partnerships



**Pre-crash
Scenarios &
Crash Types
Addressed
Through
Cooperative ITS**



Academia

Source: Thinkstock



**International
Research**

Source: Thinkstock

USDOT Crash Analysis Reports

20th International Technical Conference on the Enhanced Safety of Vehicles Report No. 07-0016

CICAS-V Research on Comprehensive Costs of intersection Crashes

FHWA-HRT-11-040

Crash Data Analysis for Vehicle to Infrastructure Communications for Safety Applications

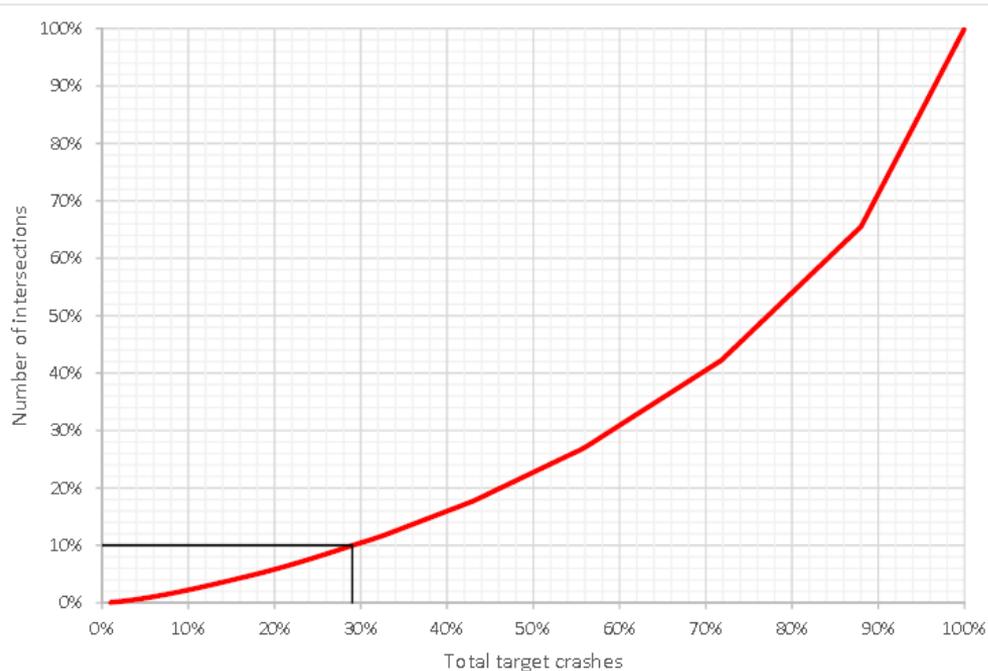
DOT-HS-811-381

Frequency of Target Crashes for IntelliDrive Safety Systems

FHWA-JPO-11-090

AASHTO Connected Vehicle Infrastructure Deployment Analysis

Findings from One Study

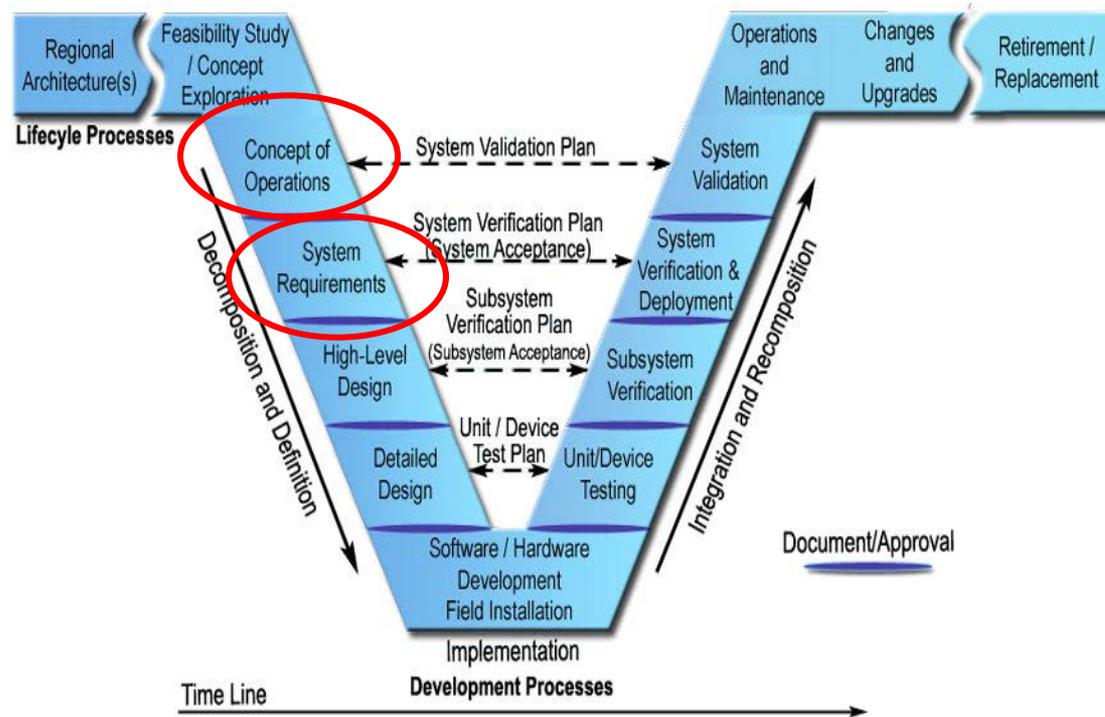


Relationship between Cumulative Number of Signalized Intersections and Cumulative Target Crashes in California

Source: Eccles, K., and Le, T. (Not yet published 2015) HSIS Task Report: Safety-Based Deployment Assistance for Location of V2I Applications – Pilot: Red-Light-Violation Warning Application. FHWA Office of Safety R&D



Systems Engineering Process



Traditional “Vee” Diagram

Systems Engineering documents available at www.ntl.bts.gov



Assessment of Safety Applications

- Conducted technical assessment of prioritized list of safety applications
- Three were chosen for development and testing

	Intersection	Speed	Traffic Anomalies		
Safety Applications Technical Assessment	Stop Sign Gap Assist (SSGA)	Red Light Violation Warning (RLVW)	Curve Speed Warning (CSW)	Reduced Speed Zone / Lane Closure Warning (RSZW/LC)	Spot Weather Information Warning
Application Development Attributes					
• Need for Infrastructure Component	No	Yes	Yes	Yes	No
• Cost of Development, Setup & Maintenance	High	Low/Med	Low	Low/Med	Low
• Additional Benefits to the Drivers	Low	High	High	Med/High	Low/Med
• Scalability and Deployability	Low	High	High	High	Low/Med
Project Development & Testing Impact					
• Vehicle Component	Low	Med	Low	Low	Low
• Infrastructure Component	High	Low/Med	Med	Low/Med	Low/Med

Development and Deployment

- Enabling Technologies
- Application Prototypes
- ITS and CV Standards
- CV Architecture (CVRIA)
- Certification Processes
- Deployment Guidance



Initial Guidance & Tools Development

V2I Deployment Guidance and Products & Tools

(Complete/Pending Publication)

V2I Planning Tools

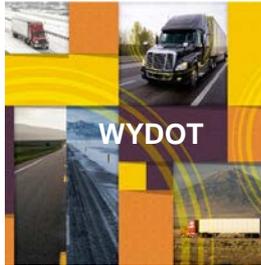
(Complete/Pending Publication)

V2I Benefits Tool Framework

(In Progress)



Connected Vehicle Pilot Deployment



- 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.

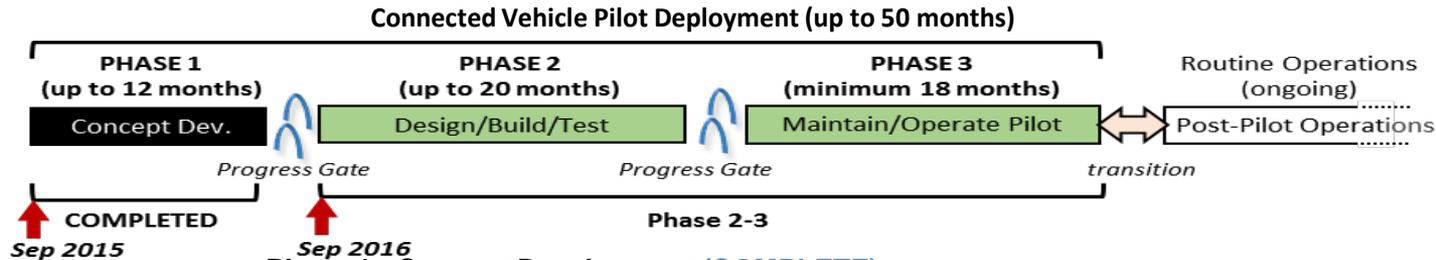


- Improve safety and mobility of travelers in New York City through connected vehicle technologies.
- Vehicle to vehicle (V2V) technology installed in up to 8,000 vehicles in Midtown Manhattan, and vehicle to infrastructure (V2I) technology installed along high-accident rate arterials in Manhattan and Central Brooklyn.



- 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.

Connected Vehicle Pilot Deployment



- **Phase 1: Concept Development (COMPLETE)**
 - Creates the foundational plan to enable further design and deployment
 - Progress Gate: Is the concept ready for deployment?
- **Phase 2: Design/Deploy/Test (CURRENT PHASE- began September 1, 2016)**
 - Detailed design and deployment followed by testing to ensure deployment functions as intended (both technically and institutionally)
 - Progress Gate: Does the system function as planned?
- **Phase 3: Maintain/Operate**
 - Focus is on assessing the performance of the deployed system
- Post Pilot Operations (CV tech integrated into operational practice)

For More Information

- Visit Program Website for Updates: <http://www.its.dot.gov/pilots>
- Contact: Kate Hartman, Program Manager, Kate.hartman@dot.gov

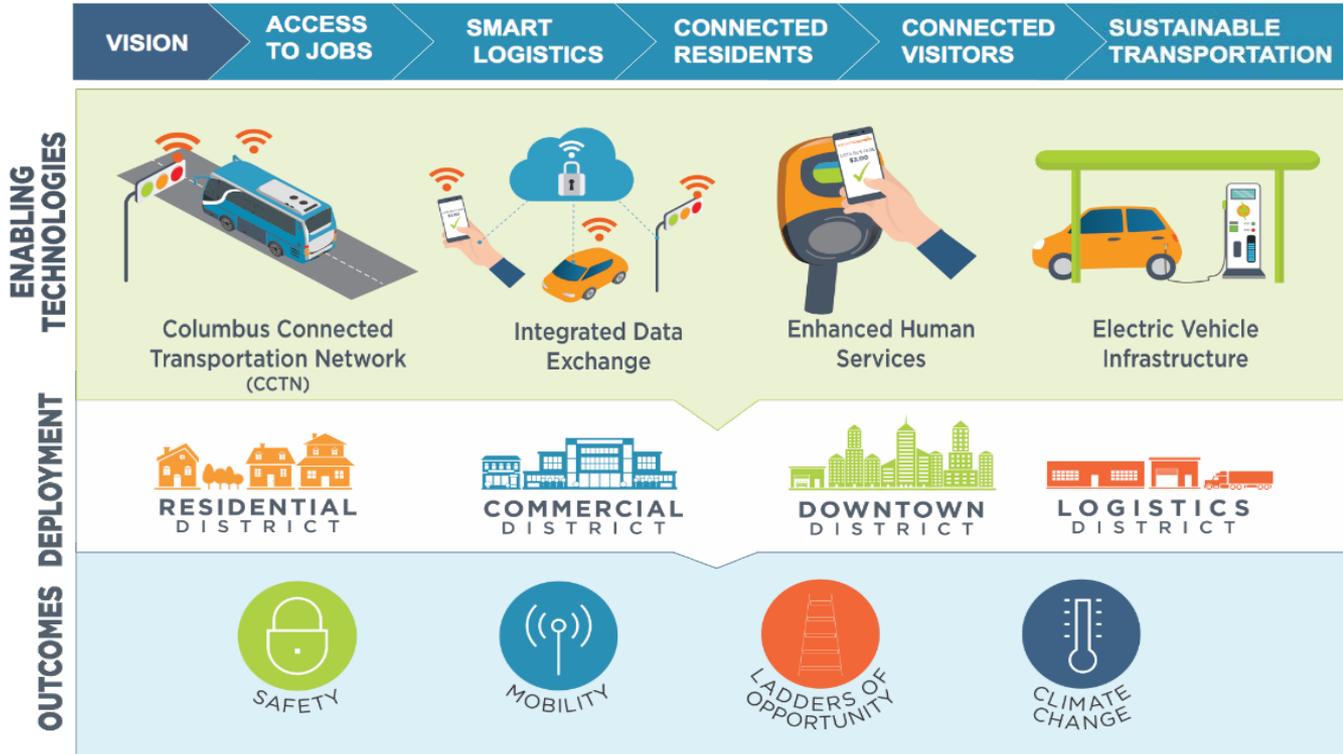


The Smart City Challenge

- Encourage cities to put forward their best and most creative ideas for innovatively addressing the challenges they are facing.
- Demonstrate how advanced data and intelligent transportation systems (ITS) technologies and applications can be used to reduce congestion, keep travelers safe, protect the environment, respond to climate change, connect underserved communities, and support economic vitality.



SMARTCOLUMBUS



Source: SMARTCOLUMBUS



Questions and USDOT Contacts

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 - Smart City Challenge
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