

# Update on the Alaska DOT&PF Self Assessment and CAV Deployment Readiness

Presented by:

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# Presentation Overview

- Introduction
- Objective of the study
- USDOT guidelines
- Methodology
- Self-assessment (by dimension)
- Summary of self-assessment
- Potential pilots

# Agency Role

- DOTs and local agencies are the Infrastructure Owner-Operators (IOO)
- IOOs are directly responsible for the V2I and I2V connections, mainly on the “I” side



Image source: [digitaltrends.com](https://www.digitaltrends.com)

# Objective of the Study

- Carry out an assessment of the AKDOT&PF's readiness for CAV implementation
- FHWA, USDOT, has developed guidelines for the assessment
- The first step for Alaska to evaluate future infrastructure and maintenance investments necessary for V2I connections
- Provide a road map related to CAV planning and research activities for AKDOT&PF and local agencies

# USDOT Guidelines

- Guidelines for Applying Capability Maturity Model Analysis to CAV Deployment (2017)
  - Illustrated potential applications of CAV
  - Sensor/infrastructure requirements for each of these applications are also listed
  - Road-side units (RSUs) and dedicated short-range communication (DSRC) requirements vary across applications
- USDOT does not mandate all IOOs to implement CAV infrastructure
- Self assessment on CAV capabilities is required

# USDOT Guidelines

- Lists six dimensions of Traffic Systems Mgmt and Operations (TSMO) Capacity Maturity Model (CMM)
- Three process-oriented
  - Business process
  - Systems & technology
  - Performance measurement
- Three institutional
  - Culture
  - Organization & staffing
  - Collaboration

# USDOT Guidelines

- Define four different levels for each of these dimensions
  - Level 1: *Performed/Exploration* (Basic level)
  - Level 2: *Managed*
  - Level 3: *Integrated*
  - Level 4: *Optimized* (Advanced level)
- Need to determine where IOO stands for each of the six dimensions mentioned
- What steps are required to move from the current stage to the higher stages

# Methodology

- Literature review
  - Check the status of similar states
- Interview with key ITS Engineers
- Self-assessment
  - Finalize surveys
  - Finalize potential participants
    - AKDOT&PF staff, other govt. organizations, ITE members
  - Data collection
    - Emailed participants with links to Qualtrics survey
    - June/July 2020
  - Data analysis
- Report the findings

# Response Rate

Questionnaire	# Received	# Invited
Business Process	34	51
Collaboration	31	52
Culture, Organization, and Staffing	33	61
Performance Measures	32	57
Systems & Technology: Back Office	40	100
Systems & Technology: Field	44	113

# Dimension: Business Process

- Questionnaires covered mainly three aspects:
  - General
  - Transp. Systems Mgmt and Operations (TSMO)
  - CAV-related
- Survey responses showed that preparedness is weaker for TSMO, and CAV
- For “General” the DOT&PF the responses were positive, in general
- The majority were either unsure or doubted the DOT&PF’s preparedness in this dimension
- Level 0, but close to achieving 1

# Dimension: Collaboration

- Respondents identified several barriers and challenges to collaborate
- Necessary to identify new avenues of collaboration
- Basic collaboration already exists
- Results indicated that AKDOT&PF is prepared for CAV deployment
- Level 1 - exploration

# Dimension: Culture, Organization, and Staffing

- Respondents seem to believe that the AKDOT&PF has a culture that
  - promotes organizational improvement
  - policies and procedures that allow for flexible decision-making, and
  - a level of staff expertise that could meet the challenges of CAV deployment with some additional training, support, hiring, or outsourcing.
- Not difficult to find leaders
- Level 1 - exploration

# Dimension: Performance Measures

- Respondents seem to be positive about this dimension
- There are several weaknesses for CAV capabilities,
- Overall positive view
- May need to conduct training and develop new performance measures (CAV-related)
- Not difficult to find leaders
- Level 1 - exploration

# Dimension: Systems & Technology: Back Office

- A weak dimension for the DOT&PF
- A majority responses were unfavorable
- A few respondents offered favorable views
- Initially prepared, but need additional research and training
- Need to acquire new systems
- Not difficult to find leaders
- Level 1 - exploration

# Dimension: Systems & Technology: Field

- One of the weakest dimensions for the DOT&PF
- Responses revealed several weaknesses
- Majority responses were unfavorable
- A few respondents offered favorable views
- Initially prepared, but need to update technology and related aspects
- Need to acquire new systems
- Not difficult to find leaders
- Level 0, but close to Level 1 - exploration

# Summary of Self-Assessment

- Alaska DOT&PF satisfies most of the requirements for Level 1
- Three dimensions require special attention
  - Business process
  - Systems & Technology: Back Office
  - Systems & Technology: Field
- The overall details for Level 1 are
  - Organizational awareness of V2I and related issues,
  - Concept of operations being formulated,
  - V2I pilot being planned or implemented, and
  - Limited expectations of benefits due to project scale.

# Summary of Self-Assessment

- The USDOT guidelines suggest the following requirement to satisfy Level 1
  - Business Processes: Agency is considering or conducting **V2I pilot project(s)** and developing plans for business processes.
  - Collaboration: Informal pilot program arrangements (public-public and public-private)
  - Organization and Staffing, and Culture: Needs for changes in policy, staffing, organization, culture, and legal protections are being identified
  - Performance Measurement: V2I performance measures, data, and analytics being identified.
  - Systems & Technology: Back Office: Agency has developed and deployed **prototype V2I systems** in field and at the TMC.
  - Systems & Technology: Field: Agency has developed and deployed **prototype V2I systems** in field and at the TMC.

# Summary of Self-Assessment

- The common theme in the three weakest dimensions is a V2I pilot
- Still at Level 0 overall due to the lack of a V2I pilot
- If the DOT&PF can develop and deploy a pilot, these dimensions will be satisfied
- Need to identify an appropriate pilot

# Potential Pilots

- Deployment of RSUs for CAV applications
  - Would enable the DOT&PF to conduct tests of proven ITS applications
  - CAV applications
- Enhance Alaska Road Weather Information System (with CAV components)
- Any of these require PPP and dynamic and open business plan
  - CAV applications involve data sharing among partners

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# Questions/Discussion

Thank you!

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