Update Regional ITS Architecture & Develop Communications System White Paper

Charlie McCarthy, P.E.
Transportation Systems Engineer

Scott Lee, P.E.
Chief Engineer Technology & Innovation
TranSmart/EJM

Contract Team:

TranSmart/EJM

AECOM

Advanced Technology Task Force – October 3rd, 2019

Objectives

- Convert from Turbo to RAD-IT
- Outreach and Facilitate Regional Architecture Update and Discussion
  - » Capture the NEW Service Packages
  - » Remove outdated references
  - » Pre-Interview Materials

Objectives

- Communications Scan and Whitepaper
  - State-of-Practice and Near-term considerations
- Regional Architecture Revisions
- Maintenance Plan

Status Update

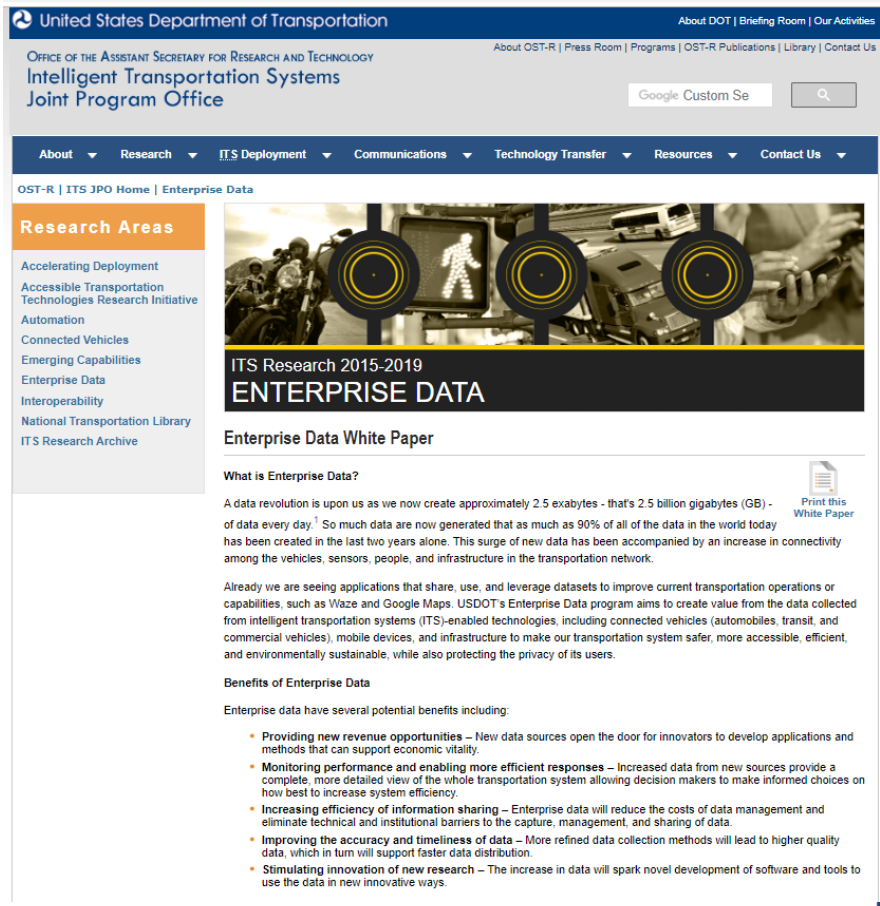
- Interviews are complete – with some follow-up pending
- Communications Whitepaper efforts have resumed
- RAD-IT updates have commenced
- Project Inventories are on-going
- Stakeholders were very engaged going into the interviews

Interview Outcomes and Themes

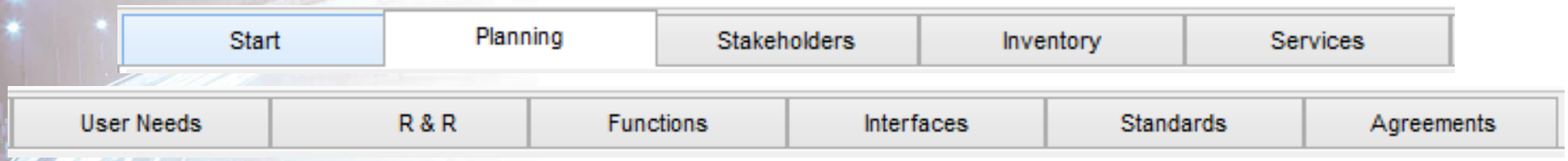
- TSMO and Data Driven Operations were notable
- Integration of Signal Operations is a focus
- Communications Backbone build-outs are an on-going activity
- ATIS is part of most projects vs. being stand alone projects
- Event/Incident Data is an on-going priority
- Private Sector Data is adding to regional capabilities
- CAV is understood to be coming, but planning for it is a relatively high-level activity at this time

Communications Whitepaper Outline

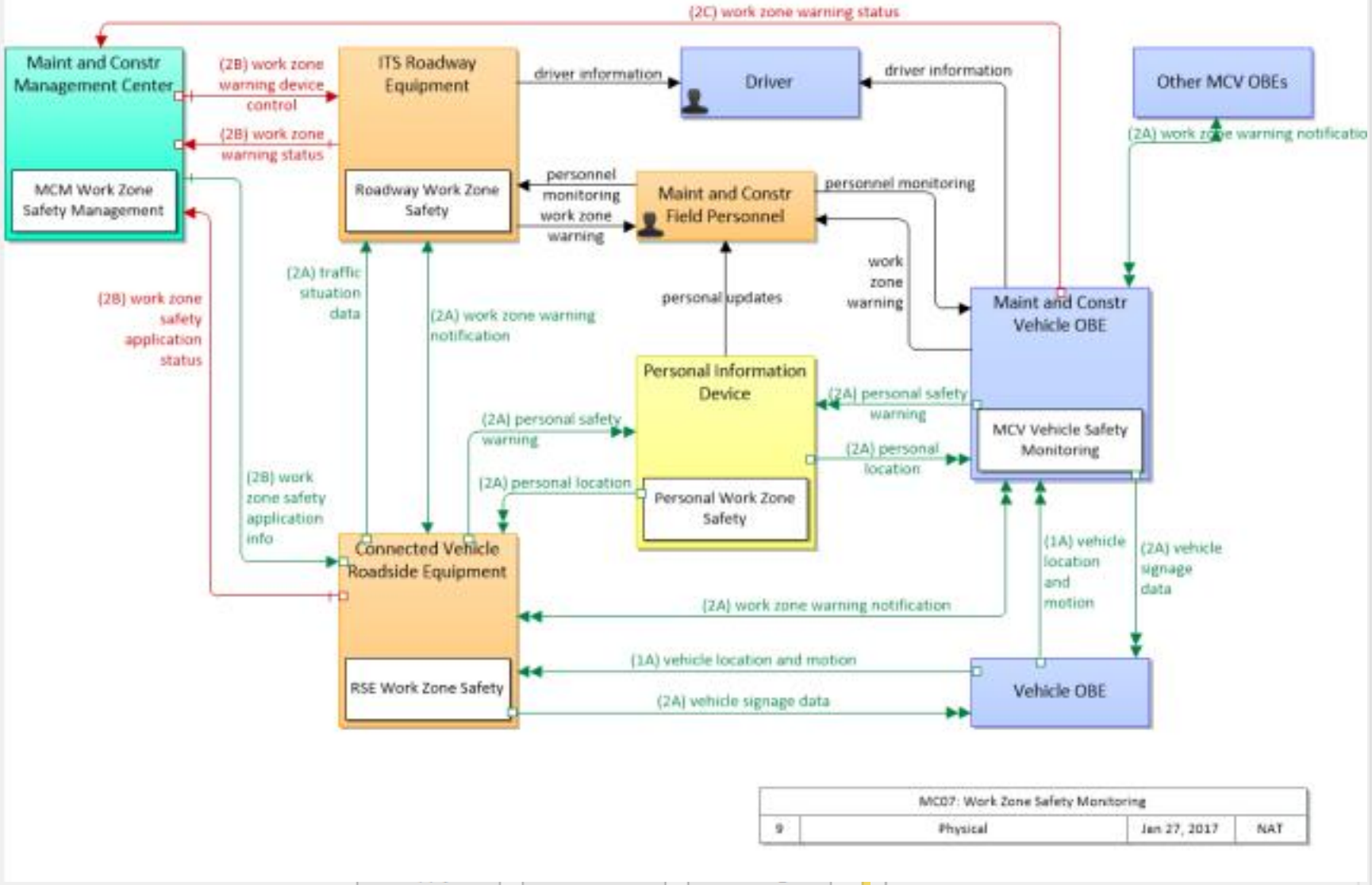
- Regional State of the Practice
- National Perspectives
- Comm Infrastructure Buildout
- Security
- Throughput
- Public and Private Sector Relationships – Data and Infrastructure
- Connected and Autonomous Vehicle Influence



RAD-IT: 'Planning' Support



- Planning tab supports tiered objectives
- Tied to Service Packages and Projects in database
- Preloaded examples available
  - » Eases SP selection process
  - » https://local.iteris.com/arc-it/html/archuse/goals.html
- Previous NE IL Architecture left this section blank
- Mobility Implementation Matrix
  - » 'Strategy' and 'Action'


(2C) work zone warning status
Maint and Constr Management Center
(2B) work zone warning device control
(2B) work zone warning status
ITS Roadway Equipment
driver information
Driver
driver information
Other MCV OBEs
(2A) work zone warning notificatio
MCM Work Zone Safety Management
Roadway Work Zone Safety
personnel monitoring work zone warning
Maint and Constr Field Personnel
personnel monitoring
(2A) traffic situation data
(2A) work zone warning notification
personal updates
work zone warning
Maint and Constr Vehicle OBE
(2B) work zone safety application status
Personal Information Device
(2A) personal safety warning
(2A) personal safety warning
(2A) personal location
MCV Vehicle Safety Monitoring
(2A) personal location
Personal Work Zone Safety
(2B) work zone safety application info
Connected Vehicle Roadside Equipment
(1A) vehicle location and motion
(2A) vehicle signage data
(2A) work zone warning notification
(1A) vehicle location and motion
RSE Work Zone Safety
Vehicle OBE
(2A) vehicle signage data
MC07: Work Zone Safety Monitoring
9
Physical
Jan 27, 2017
NAT

RAD-IT SPs: Traffic Management

Included in NE IL

- TM01: Infrastructure-Based Traffic Surveillance
- TM02: Vehicle-Based Traffic Surveillance
- TM03: Traffic Signal Control
- TM05: Traffic Metering
- TM06: Traffic Information Dissemination
- TM07: Regional Traffic Management
- TM08: Traffic Incident Management System
- TM09: Integrated Decision Support and Demand Management
- TM10: Electronic Toll Collection
- TM11: Road Use Charging
- TM12: Dynamic Roadway Warning
- TM13: Standard Railroad Grade Crossing
- TM14: Advanced Railroad Grade Crossing
- TM15: Railroad Operations Coordination
- TM16: Reversible Lane Management
- TM17: Speed Warning and Enforcement
- TM18: Drawbridge Management
- TM19: Roadway Closure Management
- TM20: Variable Speed Limits
- TM22: Dynamic Lane Management and Shoulder Use

All Available in ARC-IT

TM01	Infrastructure-Based Traffic Surveillance
TM02	Vehicle-Based Traffic Surveillance
TM03	Traffic Signal Control
TM04	Connected Vehicle Traffic Signal System
TM05	Traffic Metering
TM06	Traffic Information Dissemination
TM07	Regional Traffic Management
TM08	Traffic Incident Management System
TM09	Integrated Decision Support and Demand Management
TM10	Electronic Toll Collection
TM11	Road Use Charging
TM12	Dynamic Roadway Warning
TM13	Standard Railroad Grade Crossing
TM14	Advanced Railroad Grade Crossing
TM15	Railroad Operations Coordination
TM16	Reversible Lane Management
TM17	Speed Warning and Enforcement
TM18	Drawbridge Management
TM19	Roadway Closure Management
TM20	Variable Speed Limits
TM21	Speed Harmonization
TM22	Dynamic Lane Management and Shoulder Use
TM23	Border Management Systems

RAD-IT SPs: Vehicle Safety

Included in NE IL

Service Package Attributes

ID: VS13

Status (Region): Planned

Name: Intersection Safety Warning and Collision Avoidance

Description: This service package enables a connected vehicle approaching an instrumented signalized intersection to receive information from

All Available in ARC-IT

VS01	Autonomous Vehicle Safety Systems
VS02	V2V Basic Safety
VS03	Situational Awareness
VS04	V2V Special Vehicle Alert
VS05	Curve Speed Warning
VS06	Stop Sign Gap Assist
VS07	Road Weather Motorist Alert and Warning
VS08	Queue Warning
VS09	Reduced Speed Zone Warning / Lane Closure

VS10	Restricted Lane Warnings
VS11	Oversize Vehicle Warning
VS12	Pedestrian and Cyclist Safety
VS13	Intersection Safety Warning and Collision Avoidance
VS14	Cooperative Adaptive Cruise Control
VS15	Infrastructure Enhanced Cooperative Adaptive Cruise Control
VS16	Automated Vehicle Operations
VS17	Traffic Code Dissemination

Next Steps

- Updates to RAD-IT will be on-going
  - » We will be asking the Stakeholders to review projects in the update for accuracy
- Reminder to provide new projects to the team
- Complete the Comm White Paper
- I-290 Con Ops Coordination with IDOT
- Update Architecture Maintenance Plan

Overarching Reference

https://local.iteris.com/arc-it/index.html

Contact Information

Claire Bozic
Senior Analyst

Chicago Metropolitan Agency for Planning (CMAP)
233 South Wacker Drive, suite 800
Chicago IL 60606
www.cmap.illinois.gov

cbozic@cmap.illinois.gov

Charlie McCarthy, P.E.
Transportation Systems Engineer

Scott Lee, P.E.
Chief Engineer
Innovation and Technology

TranSmart/EJM Corporation
1431 Opus Place, Suite 110
Downers Grove, IL 60515
www.transmartinc.com

cmccarthy@transmartinc.com
slee@transmartinc.com