



Regional Multi-Modal Mobility Program

FHWA Cohort on ATDM

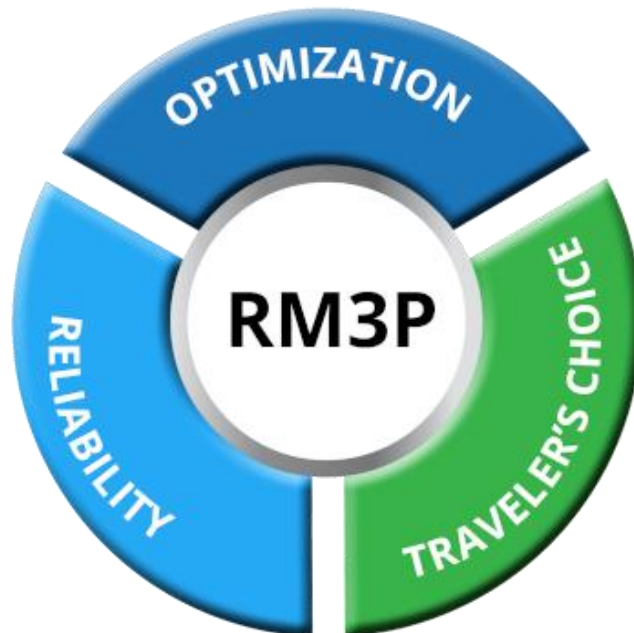
JAN. 31, 2023

Regional Multi-Modal Mobility Program (RM3P)



RM3P's Mission

Leverage the collaborative use of real-time data to improve travel safety, reliability, and mobility; give the public effective tools to make better informed travel choices.



Optimize transportation system performance by improving the efficiency of agency responses to travel disruptions.

Support on-demand, multi-modal trip choices for travelers.

Enhance travel time reliability.

RM3P Overview

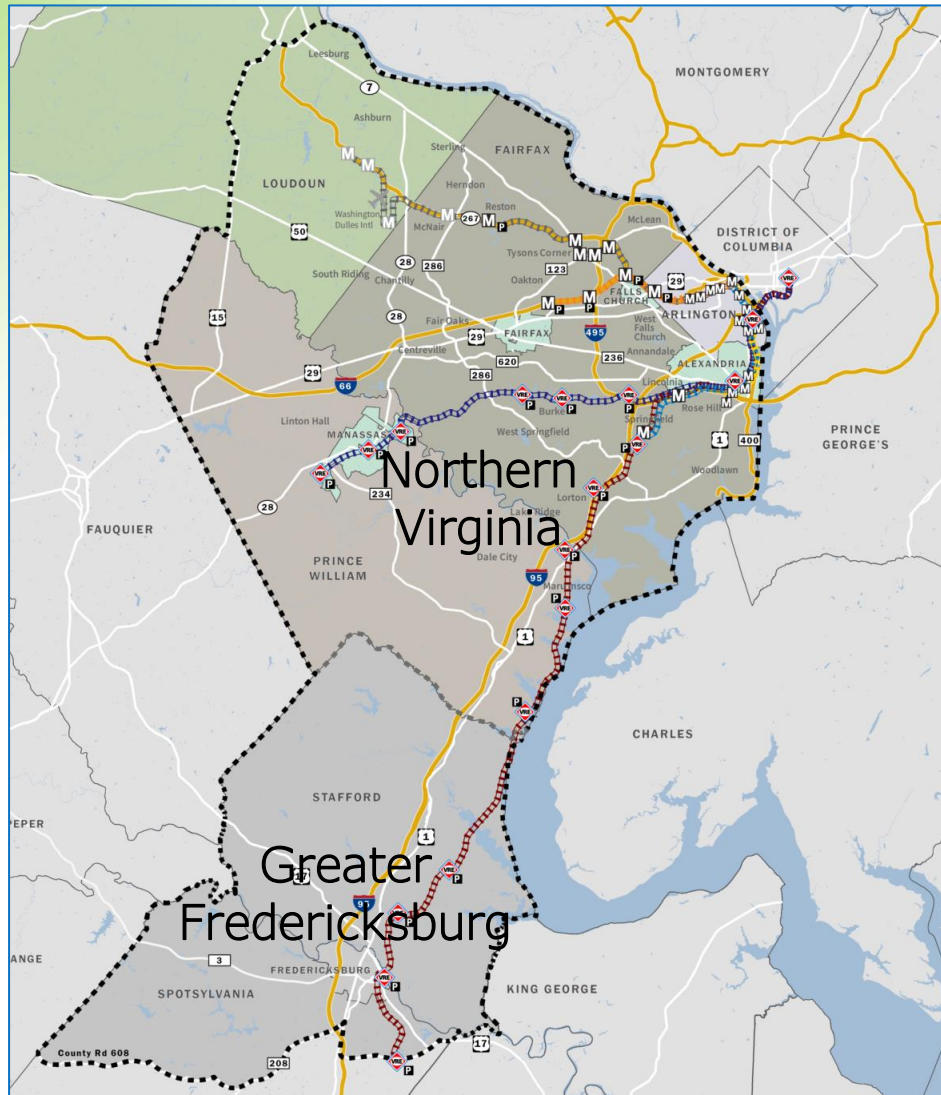
Regional ICM/RM3P

- ❑ Based on two VDOT ICM studies (I-95 & I-66/Dulles Toll Road).
- ❑ Supported by the Northern Virginia Transportation Authority (NVTA).
 - ❑ Responsible for project planning and funding in Northern Virginia,
 - ❑ Identified ICM as key to meeting the vision of *TransAction*, its long-range strategic plan.
- ❑ Funded by both NVTA and VDOT.*
- ❑ Led by VDOT, NVTA, and the Virginia Department of Rail and Public Transportation (DRPT).
- ❑ Obtained ATCMTD grant to expand selected RM3P functions southward to greater Fredericksburg.

* The Innovation and Technology Transportation Fund is funded by the Virginia General Assembly.

Regional agency partners and stakeholders actively guided and shaped plans for RM3P service delivery and the framework for cooperative agreements.

RM3P Overview: Geographic Boundaries



This *data-driven, multi-modal* mobility program is comprised of 4 active projects:

■ Data-Exchange Platform (DEP)



■ Artificial Intelligence-Based Decision Support System (AI-DSS)



■ Dynamic Incentivization (DI)



■ Commuter Parking Information System (CPIS)



Data-Exchange Platform (DEP)



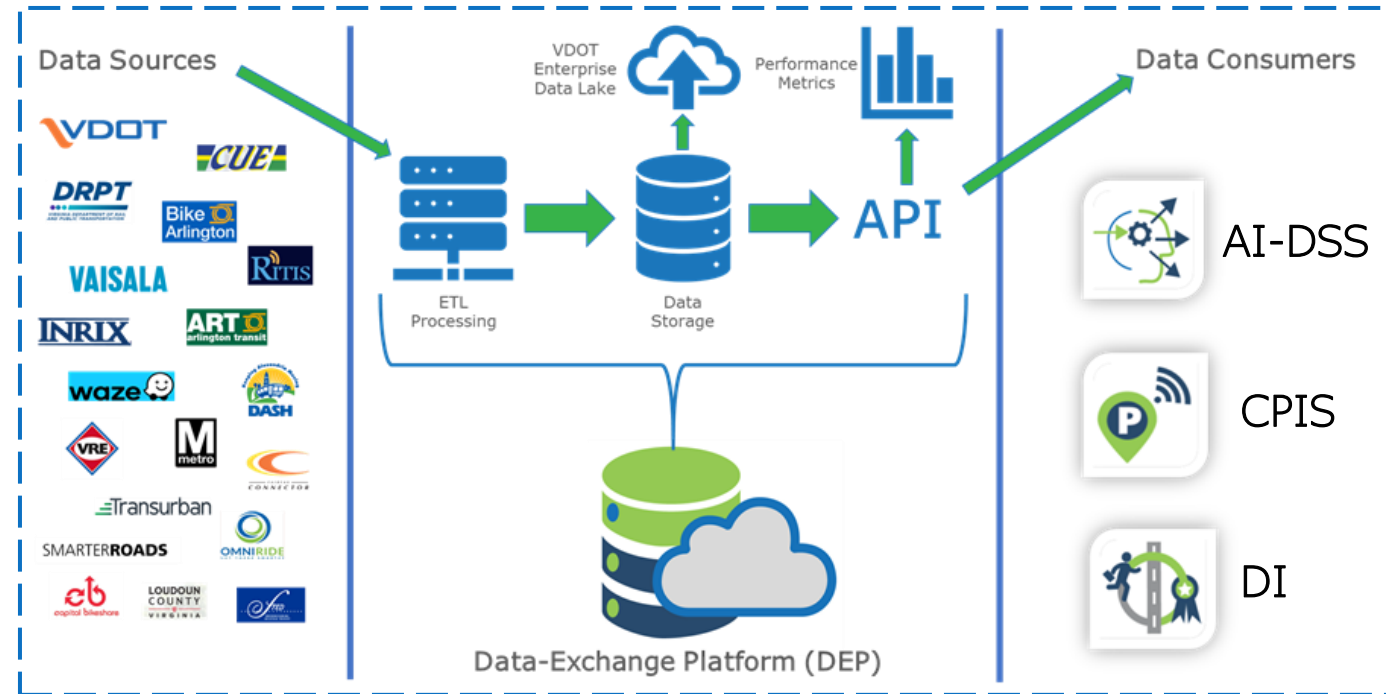
Description

Data Storage: Reliable, continuously updated, cloud-based data storage & exchange system. Capture, process, & exchange information.

Type of Data: Historic and real-time, multi-modal travel condition data.

Who will utilize DEP: Regional partners, the other three RM3P program elements (one-stop shop that can be scalable statewide), and third-party providers.

The RM3P Foundation



<https://RM3P.RITIS.Org/>

AI-Based Decision Support System (AI-DSS)



The Heart of RM3P

Description

Travel Data: Monitor **emerging** conditions.

Artificial Intelligence: **Predict** the occurrence and impact of disruptions to the transportation network.

Data-Informed Plans: Solve **multi-modal** transportation challenges by providing **coordinated incident response** options to transportation agencies in the region.

Objectives

Improve **effectiveness** of real-time integrated transportation information.

Reduce **congestion** by improving mobility and travel time; and enhancing travel time reliability.

Improve **safety** by reducing traffic crashes.

Shift from **reactive** to **proactive** operations for optimized response time and performance.



Raul is alerted by the RM3P AI-Based Decision Support System of the fire blocking I-95 Exit 169.



State police arrive at the scene with recommendations from the DSS to close the exit ramp.

Exit 169 A-B

EXIT RAMP CLOSED
MM 169
USE CAUTION



It's time for the next shift and for Raul to head home. The DSS makes it easy for him to pass along critical info to the next operator.

The DSS helped coordinate two emergency response situations tonight. We had **consistent messaging between multiple departments and agencies** and were able to **quickly adjust transit service and traffic flow**.

A multi-agency collaborative response to keep the public safe. **Mission accomplished!**



Travel Decisions Powered by Data

<https://vimeo.com/471156287>

Dynamic Incentivization (DI)



Challenge

Traditional Travel Demand Management (TDM) Program: Commit long-term, ad-hoc not accommodated.

What is missing: How to get people to switch modes, routes, time of travel when there are disruptions to the transportation network.

What is challenging: How to sustain the program.

Our Solution

Next-Gen TDM: Real-time & dynamic ad-hoc incentives.

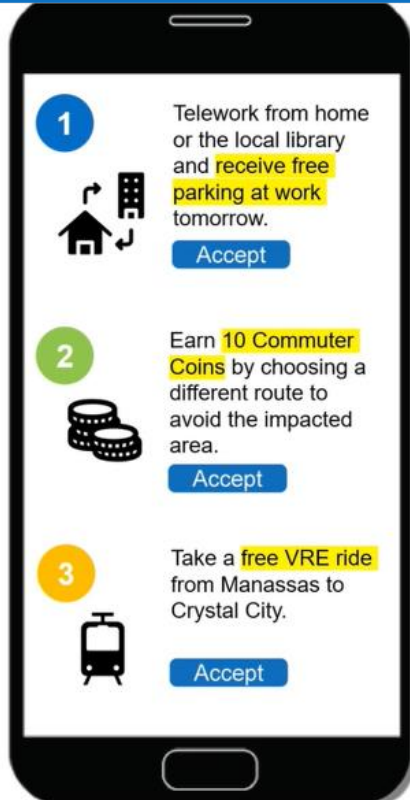
Include Traditional TDM via challenges & loyalty incentive programs.

Game Changer: Combine TDM and Corridor Management.

Open Backend: More App choices for travelers.

Sustainability: Focus on financial sustainable business model during procurement.

Travelers contribute to the solution



This morning, while Susan is getting ready to leave for work, she receives a notification that there is a **crash on I-66 that is causing major delays.**



RM3P's Dynamic Incentivization program **offers her some choices.**

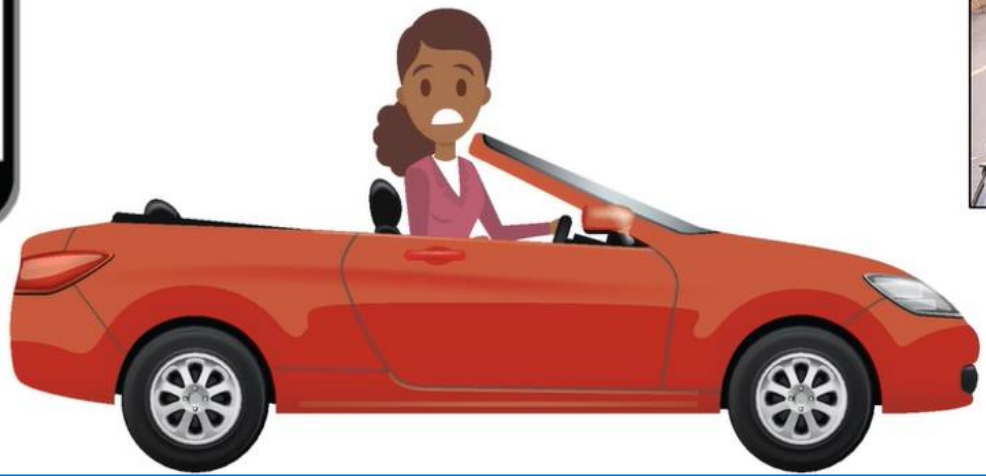


Photo: Randy Santos / Washingtonian

Commuter Parking Information System (CPIS)



Challenges

Keeping up with technology changes.
Highly accurate data: Sensor heavy means cost and maintenance challenges.

Less costly approach: In and out counting – less accurate with operational challenges.

Information in various places:
Commuter parking lot information in different places (e.g., VRE website, WMATA website, VDOT website).

Our Solution

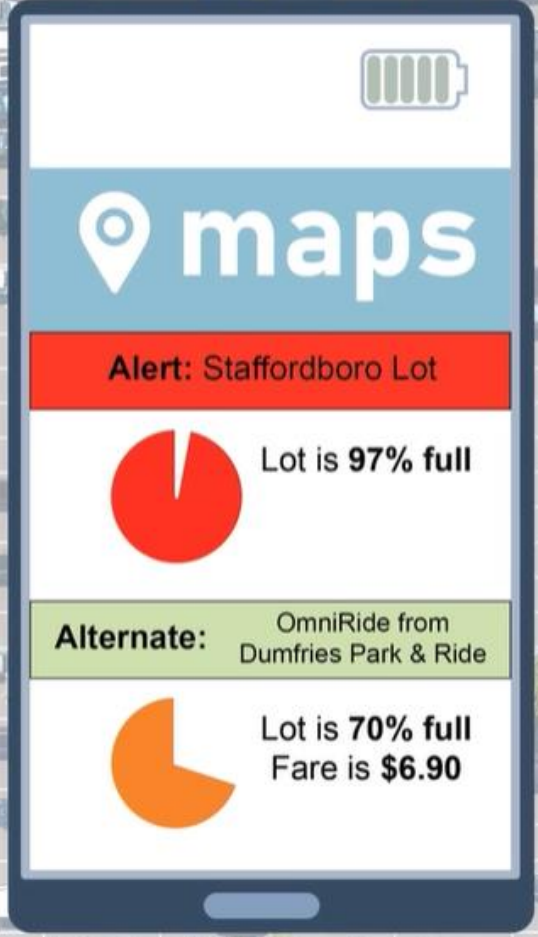
- Procure **data** broad license (real-time occupancy & lot status).
- Encourage **optimal counting methods & minimize technology device installation.**
- **AI-based prediction** on lot availability in near real-time.
- **Data** supports pre-trip planning, pre-departure & enroute applications.
- **Outreach to agencies and 3rd party providers** to share parking information with users.

Focus on data – not technology



But on her way to Staffordboro one day, **she gets an alert in her navigation app, which thanks to RM3P is linked to the Commuter Parking Information System.**

It routes her to the OmniRide from the Dumfries Park and Ride, which is currently less crowded than Staffordboro.



Game Changer

Data, Data, & More Data



Dynamic Incentivization

- Empowers commuters to contribute to the solution.
- Next-generation TDM – real-time & dynamic incentives.
- Reinforces positive changes in behavior with **challenges** and **loyalty** incentive programs.
- Applies a data-driven incentivization system to **dynamically manage demand** on the network.



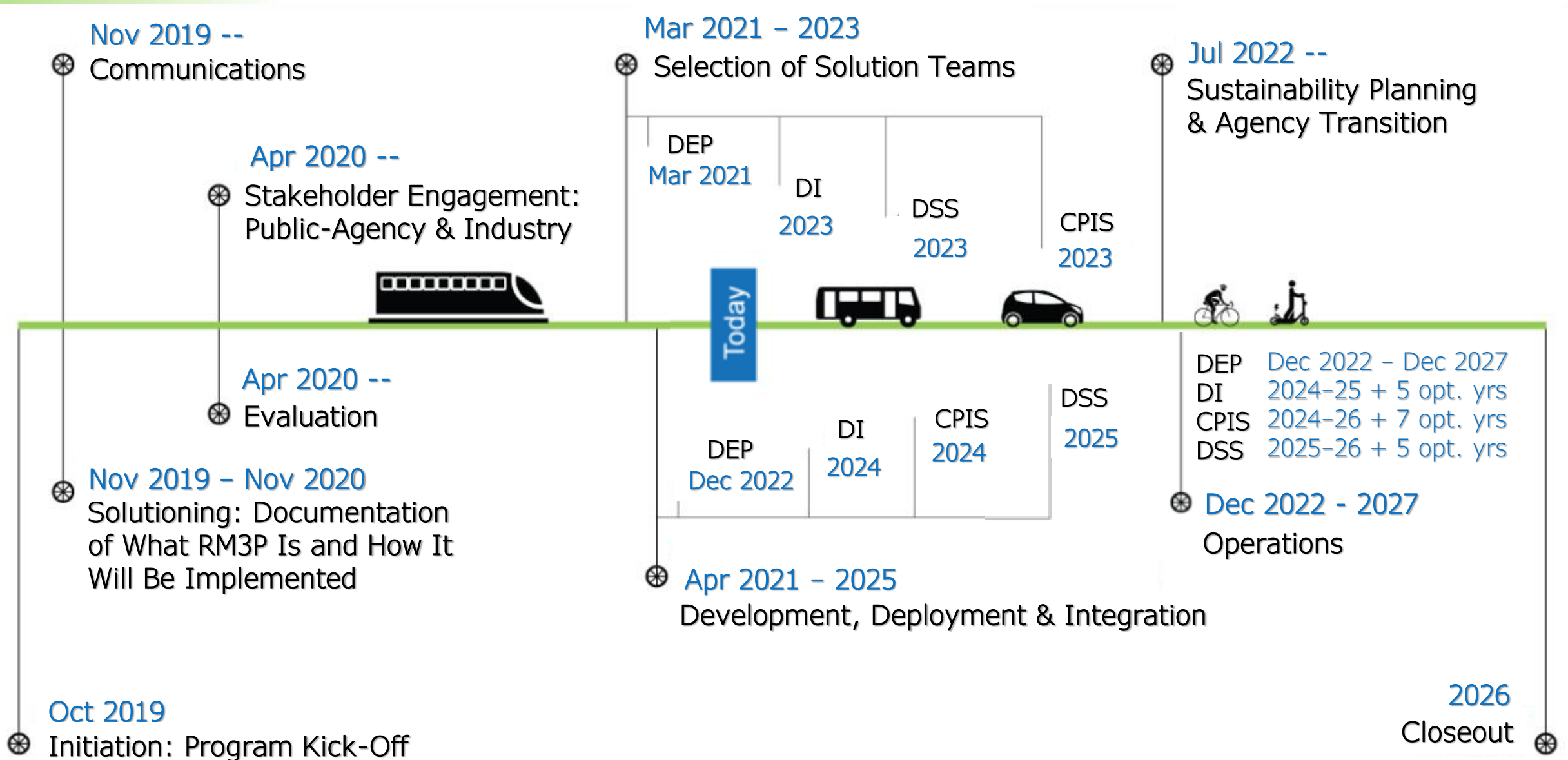
AI-Based Decision Support

- Monitors emerging conditions.
- Predicts the occurrence and impacts of disruptions to the transportation network.
- Provides **coordinated multi-modal response** options to transportation managers.
- Shifts from **reactive to proactive** operations for optimized response time and performance.



Cohesive Transportation Systems Management and Operations (TSMO)

The Journey



Evaluation Plan

- Program Level and Element Level: System performance and user feedback.
- Performance Measures: Identified by RM3P Evaluation Working Group.
- Data Sources: Generated by development vendors, evaluator-collected data, agency data.

Program

Net effect of the entire RM3P program
15 Metrics

- Overall Benefit-Cost
- Level of Satisfaction
- Change in Mode Shift, Transit Ridership, Parking Utilization, Person and Vehicle Throughput
- Incident Response / Clearance Time
- Change in demand, travel time, reliability, secondary crashes

Element

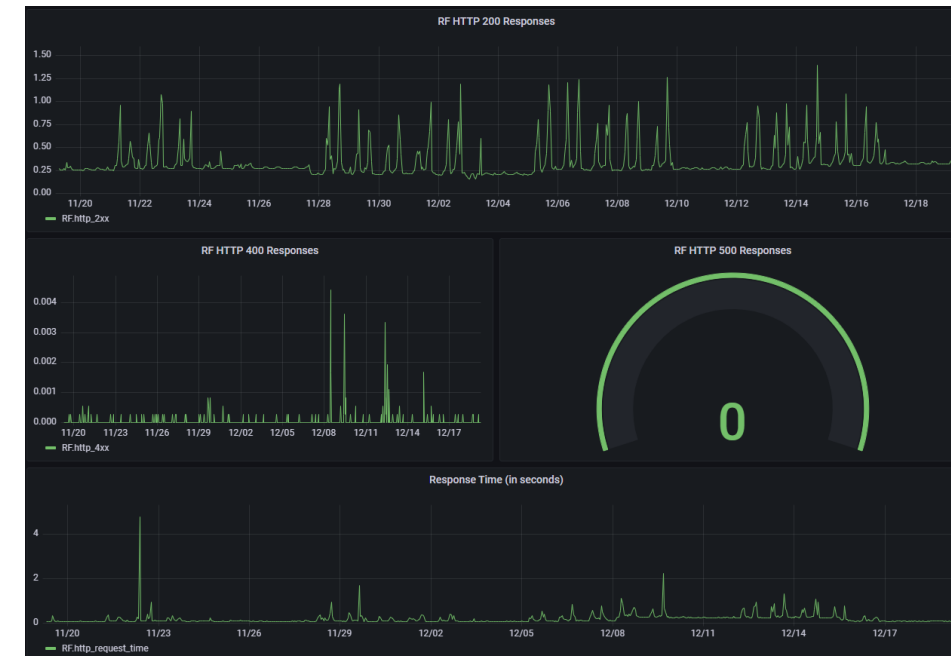
DEP: 6 Metrics

DSS: 13 Metrics

DI: 22 Metrics

CPIS: 9 Metrics

DEP Metrics Dashboard



RM3P Concept Summary

RM3P Mission
Collaborative use of
real-time data to improve
travel safety, reliability, and mobility

- *Multi-Modalism*
- *Innovative Technology*
- *Real-Time Information Sharing*
- *Structured Decision Making*
- *Appropriate Rapid Response to Changing Conditions*
- *Empowering Commuters*
- *Incentivizing Positive Travel Behavior*



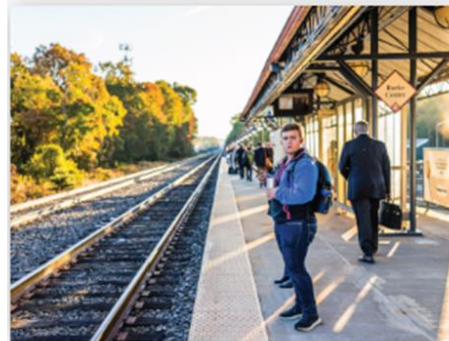
Coordinated responses to travel disruptions



Improved safety



Collaborative planning



More reliable commute



Enhanced connections



Incentives for individual travelers



THANK YOU

RM3PVirginia.org

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