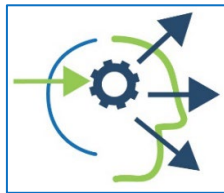




AI-Based Decision Support System (AI-DSS)



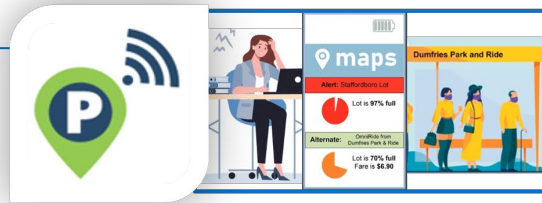
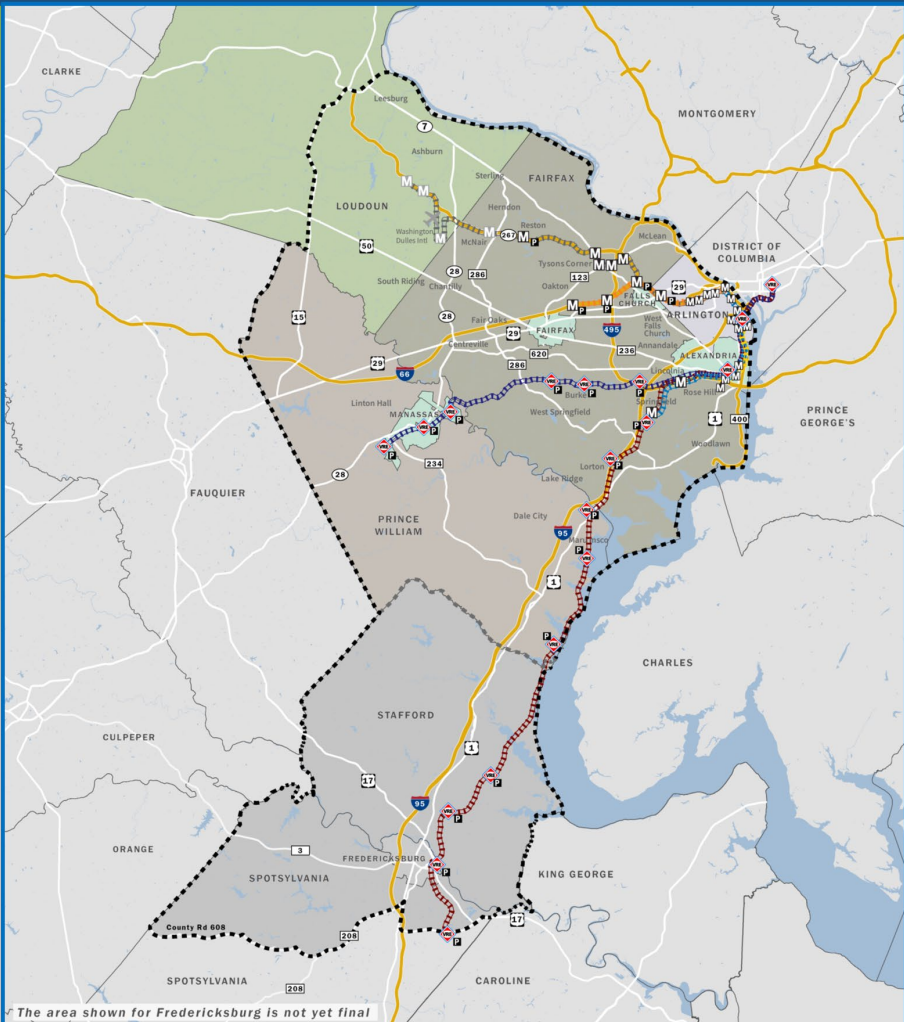
Systems Performance, Operations, and Technology Subcommittee



Artificial Intelligence - Based Decision Support System

Candice Gibson, VDOT

Virginia Regional Multi-Modal Mobility Program (RM3P)



Commuter Parking Information System (CPIS)

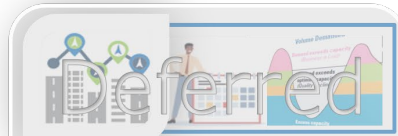


AI-Based Decision Support System (AI-DSS)

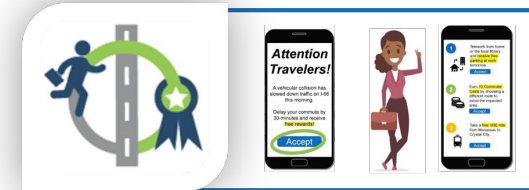


Data-Exchange Platform (DEP)

AI-DSS + DI ≈ **Cohesive TSMO**



Multi-Modal Analytical Planner (MMAP) System



Dynamic Incentivization (DI) System

Amy T. McElwain
Program Manager

VDOT Office of Strategic Innovation
Visit us at: RM3PVirginia.org



CONCEPT

- ❖ Empowering Commuters
- ❖ Real-Time Information Sharing
- ❖ Rapid Response to Changing Conditions
- ❖ Structured Decision-Making
- ❖ Multi-Modalism
- ❖ Innovative Technology
- ❖ Incentivizing Positive Traveler Behavior
- ❖ Agile Development

MISSION

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



Travel Decisions Powered by Data



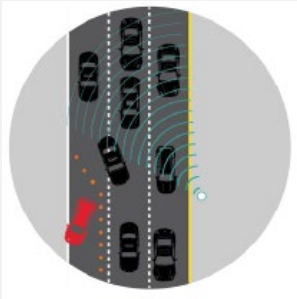
Optimization, Reliability, Traveler's Choice

AI-Based Decision Support System (AI-DSS)

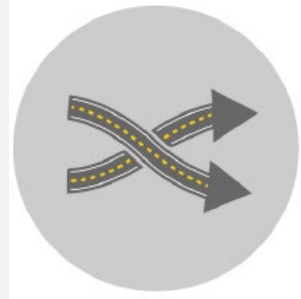


The AI-DSS is a tool for transportation operators that will use travel data to monitor emerging conditions and recommend plans for **coordinated, multi-agency multi-modal responses** to congestion, incidents, and events.

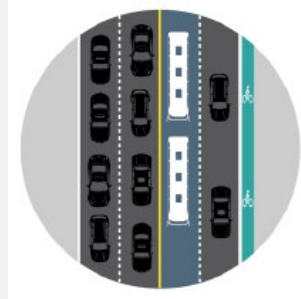
AI-DSS Response Measures:



Traffic & Incident Management



Traffic Re-Routing



Mode-Shift Incentivization

The AI-DSS will help predict disruptions to the transportation network and provide coordinated response options to agencies.

AI-DSS Key Highlights



Software-as-a-Service (SaaS)

Predict congestion

Functionality to evaluate current travel conditions

Make recommendations on the actions to be taken **optimally** to respond to the **transportation disruptions** and the **impact of those disruptions** in the region.

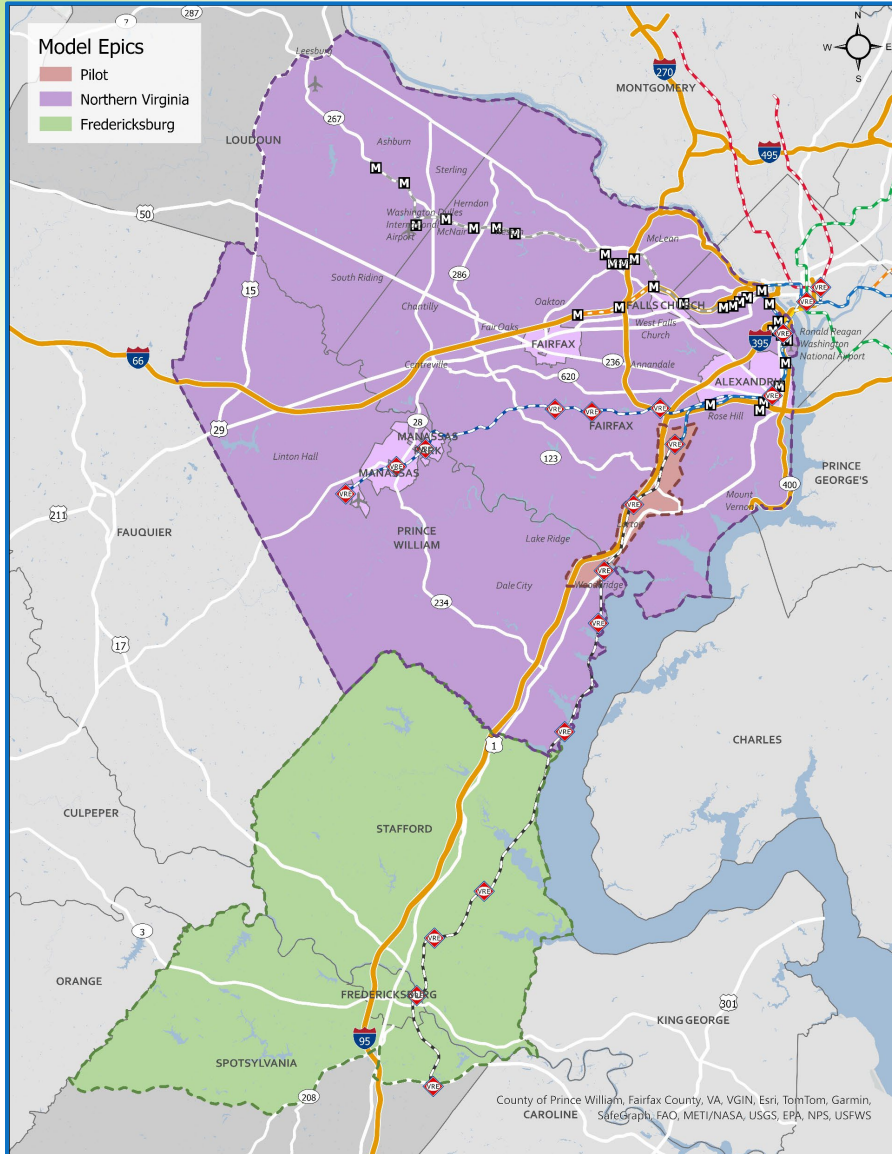
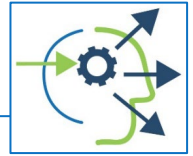
Leveraging real-time and historical **data** from:

- RM3P Data-Exchange Platform (DEP)
- Additional data

Help transportation agency operators **make informed decisions** in managing:

- Recurring, and
- Non-recurring congestion that affects their respective transportation networks
 - Transit
 - Arterial
 - Freeway conditions
 - Parking availability

AI-DSS Progression Plan



I-95 Polygon Area

South of Springfield Interchange through Lorton, Occoquan, and Woodbridge extending from I-95 Exits 158 to 169A.

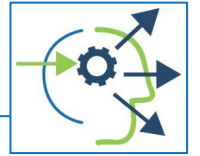


Core System Development
Winter 2024/2025

Deployment to NoVA
Fall 2025

Deployment to Metropolitan Fredericksburg
Winter 2025/2026

AI-DSS Key Functions



Rules Engine

Rules and logic to select multi-modal response plans based on current and future incident and congestion conditions.

Response Plans

KPI thresholds and data to trigger alerts and recommend response plans to agencies.

Prediction Engine

Predict occurrence and impact of incidents, congestion, commuter parking availability, and transit next stop.

Modeling Engine

A tool to build offline (but also online, real-time simulation models) to assess the impacts of events and response plans.

Graphical User Interface

An online interactive application that agencies can log in to view maps, alerts, response plans, data visualizations and dashboards, etc.

Early Adopter Program

■ Early Adopter Program:

- A small group of adopters representing key stakeholders in the EPIC 3 pilot area

■ Roles and Responsibilities include:

- Help **finalize system views** for their respective agency
- **Support System Acceptance Testing (SAT)** with emphasis on User Experience Testing
- **Use the AI-DSS** in a limited way post Epic 3 deployment to validate it meets their respective agency needs
- **Advocate for the system** to their respective agency during full-scale rollout in 2025
- **Provide feedback** to project team on process and system progress
- **Recommend improvements** to user experience.

■ Early Adopter Team:

- VDOT TOC
- VDOT Signals
- VDOT Executive
- PRTC/OmniRide
- Fairfax Connector
- MATOC

Q & A Discussion





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Thank You!

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