



Focus Group: Artificial Intelligence-Based Decision Support System (AI-DSS)

OCTOBER 27, 2020

RM3P Focus Group: Artificial Intelligence-Based Decision Support System (AI-DSS)

Thank you for attending! This event will begin in:



For best audio experience:

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- Mute yourself when not speaking
- Put your cell phone on silent

We will be with you shortly!

Welcome Message



Hari Sripathi

RM3P Executive Committee Member,
Virginia Department of Transportation (VDOT)
Director, Office of Strategic Innovation

Welcome

- Thank you for attending!
- This focus group is intended to be collaborative – we want to hear from you.
- You can provide your input by:
 - Responding to the polling questions
 - Participating in the discussions
 - Sending any feedback you have after the event to the team (via WebEx polling or using the contact information provided)



Candice Gibson,
RM3P Deputy Program Manager
and Focus Group Emcee

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A screenshot of a WebEx polling interface. The window title is "Polling". It shows "Time elapsed: 0:06" and "Time limit: 5:00". The poll question is "1. For the new product, what is your favourite colour?". There are three radio button options: "A. Red", "B. Blue", and "C. White". A red arrow points to a "Submit" button at the bottom right of the interface.

Polling Question 1:

What is your expectation for today's meeting?

(Select all that apply.)

- Better understand the RM3P Decision Support System 9/24 (38%)
- Better understand the expectations of my role within the RM3P Decision Support System 7/24 (29%)
- Better understand how my agency's operations might change 3/24 (12%)
- Provide feedback to the Decision Support System 1/24 (4%)
- No Response 4/24 (17%)



The Data-Exchange Platform (DEP) will be a reliable, continuously updated, cloud-based data storage and exchange system. It will be used by regional partners and third-party providers to capture, process, and exchange information on real-time and historic multi-modal travel conditions. This platform will feed necessary data to other RM3P program elements and disseminate value-added and full-grown data produced by these elements.

AI-Based Decision Support System



The AI-Based Decision Support System (AI-DSS) will help predict the impact of disruptions to the transportation network and provide coordinated response options to agencies. The automated tool for operators will use travel data to monitor emerging conditions and recommend plans for coordinated, multi-agency responses to congestion, incidents, and events.

Multi-Modal Analytical Planner

The Multi-Modal Analytical Planner (MMAP) will be a collaboration tool for transportation service providers to pinpoint unmet needs in the transportation network. This highly interactive tool will enable mobility providers to study the impacts of "what-if" scenarios and better plan for travel demand by identifying underserved areas, especially during disruptive events.



Commuter Parking Information System



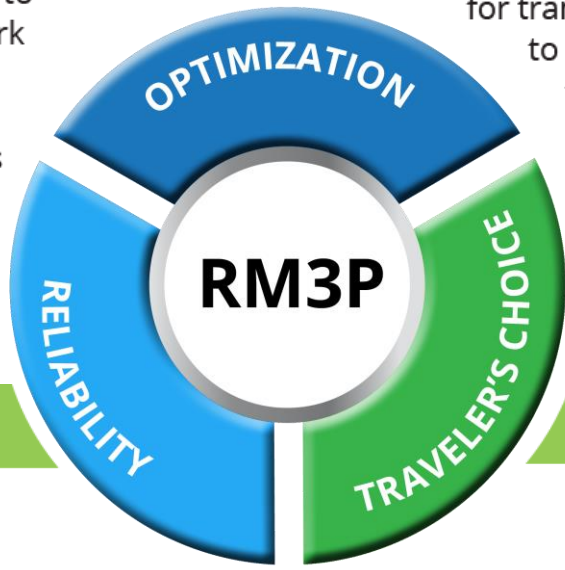
The Commuter Parking Information System (CPIS) will entail a real-time, app-based parking availability information system that provides reliable information about parking space availability at lots serving bus, vanpool, and carpool commuters.

Dynamic Incentivization

Dynamic Incentivization (DI) will be a data-driven system offering the public incentives to modify their travel choices and behaviors in response to real-time travel conditions. The incentives will be offered by regional agencies and third-party providers.



Presenting: Amy McElwain, RM3P Program Manager



Let's see how DSS could be used for collaborative responses to incidents.



[View Animated Video](#)

AI-Based Decision Support System (DSS)

Regional Multi-Modal Mobility Program



Introduction to the AI-DSS Guidance Team

Liaison:
Candice Gibson, VDOT



Liaison:
Mena Lockwood, VDOT



Consultant Team Lead:
Kevin Miller, Kapsch



AI-Based Decision Support System (AI-DSS) Guidance Team Members

Norvel Cooksey, VDOT

Gregory Edwards,
WMATA

Ken Earnest, VDOT

Gregory Finch,
Virginia State Police

Taran Hutchinson, MATOC

Joseph Warner, VDOT

Neil C. Johnson,
Virginia State Police

Sanhita Lahiri, VDOT

Joshua Nicholas,
Arlington County

Polling Question 2:

What do you think is the most important DSS element for your agency?

(Select one)

- Multi-modal Response Plans 7/26 (27%)
- Prediction of congestion 2/26 (8%)
- Prediction of incidents 3/26 (12%)
- Calibrated model for what-if analysis 0/26 (0%)
- Better communication and understanding of the regional transportation system 9/26 (35%)
- No Response 5/26 (19%)

Panel Discussion: About the AI-Based Decision Support System

Moderator:
Candice
Gibson,
VDOT



Joshua
Nicholas,
Arlington
County



Sanhita
Lahiri,
VDOT



Taran
Hutchinson,
MATOC



Polling Question 3:

What do you see as the largest benefit to your agency that DSS will provide?

(Select one)

A. Larger view of the regional transportation network	4/26	(15%)
B. Better coordination for responding to events	13/26	(50%)
C. Consistency on responses	0/26	(0%)
D. Measuring the performance of the regional transportation network	4/26	(15%)
E. Other (type answer into the chat or speak-up)	1/26	(4%)
No Answer	4/26	(15%)

Chat Response: "Optimizing solution – choosing the best response for conditions"

Discussion



Facilitator: Mena Lockwood,
AI-Based Decision Support System Liaison

ARTIFICIAL INTELLIGENCE-BASED DECISION SUPPORT SYSTEM

What are the organizational/systemic barriers to implementing the AI-BASED DECISION SUPPORT SYSTEM?

Institutional buy-in

- Trust in decision making process of DSS, especially if a black box approach like machine learning is used.
- Procurement of the Decision Support System, challenging to integrate into the budget (for localities)
- Private sector participation & level of incentive to participate (e.g., Uber/TNCs, private transit services)
- Time of day variations in signal timing - many considerations
- Transit response capability varies - ability to respond depends on location and availability of drivers and fleet (+ level coordination between providers?)

Data sharing?
Agencies need to share response plans

Security
(concern of IT stakeholders) - access/sharing challenge

Control of operations/ systems
between participants (maintain local control if locality isn't available to authorize response)

Lack of resources
- Many localities would need personnel and additional resources to purchase by all (e.g., Vienna, Herndon)

Private sector (toll authority)
- need for coordination

Legacy signal system
- makes integration with new technology very difficult (e.g., City of Fairfax)

Patchwork of different systems
each operates differently (requires understanding of multiple systems, consistent terminology)

SUPPORT / RESOURCES NEEDED



Candice Gibson, Liaison, VDOT



Mena Lockwood, Liaison, VDOT

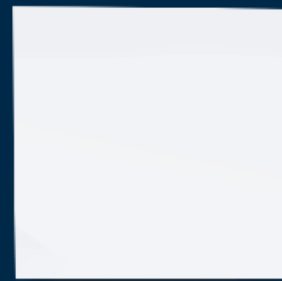


Kevin Miller, Lead, Kapsch

SOLUTIONS

- MOUs to institutionalize
- Challenge: achieve buy-in to decision-making process - establish upfront
- Changing mindset about types of traffic - traffic affects everyone
- Statewide or regional procurement?
- Build on existing trust/relationships
- Operators need authority to implement changes
- Institutionalize - continuity in process/ leadership to maintain trust
- Collaborative exercises to iron out challenges - better preparation, build relationships
- Documentation for machine learning - improvement through experience
- Sharing results of DSS to build trust and confidence in its benefits

OTHER IDEAS





Five-Minute
Break!

00:00:00

Polling Question 4:

What is the biggest challenge to the success of RM3P?

(Select one)

- | | | |
|--|-------|--------|
| A. Institutional buy-in | 14/24 | (58%) |
| B. Lack of trust in new technology | 1/24 | (4%) |
| C. Funding | 0/24 | (0%) |
| D. Current systems can't be modified to support new operations | 1/24 | (4%) |
| E. Transportation network is too complex to manage cooperatively | 3/24 | (13%) |
| F. Other (type answer into the chat or speak-up) | 1/24 | (4%) |
| No Answer | 4/24 | (17%) |

What's next for RM3P and the AI-Based Decision Support System (DSS)?

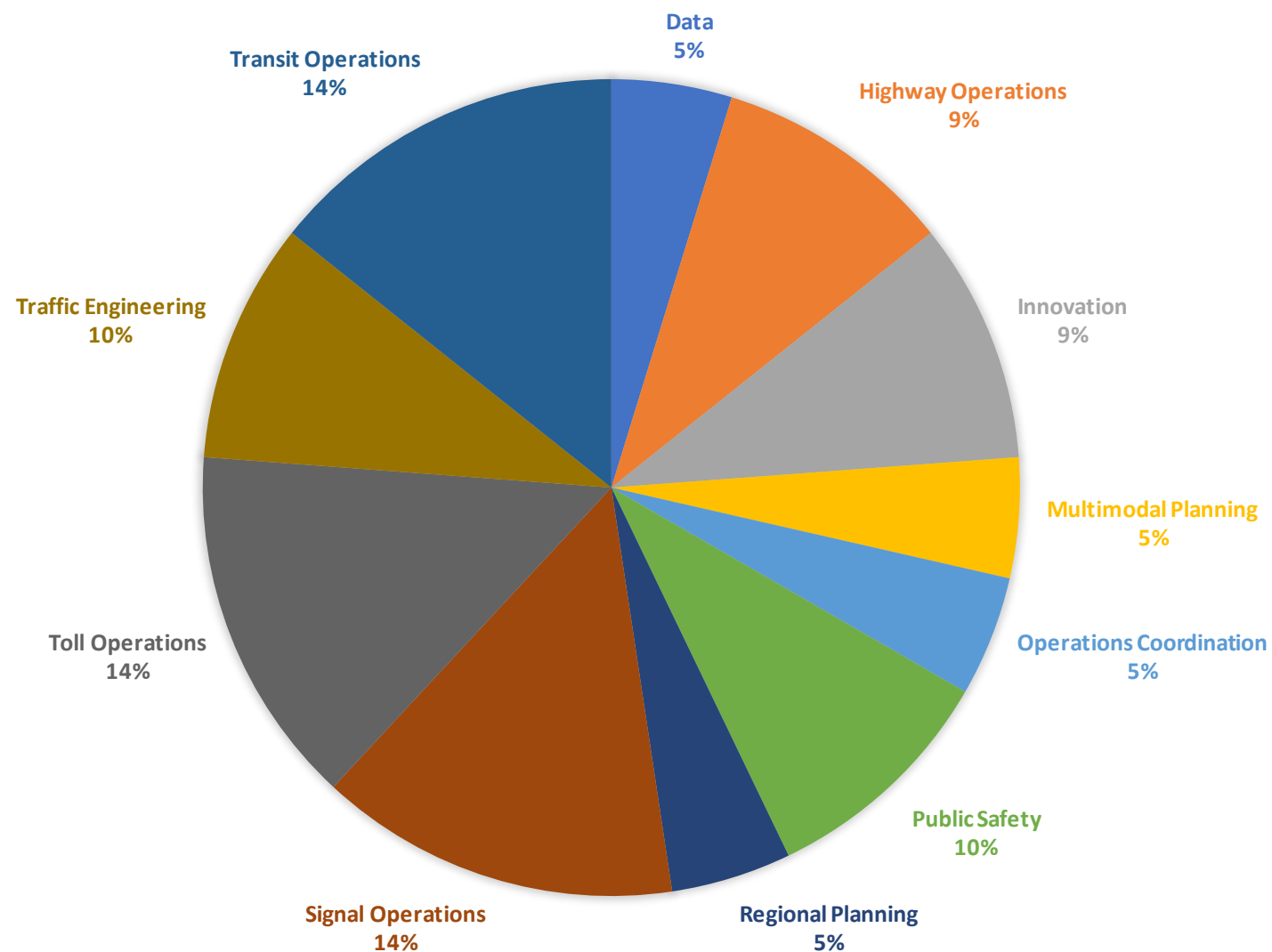


Candice Gibson,
RM3P Deputy PM &
AI-DSS Liaison



Kevin Miller,
AI-DSS Lead

AI-DSS REPRESENTATION BY AGENCY TYPE



*Artificial Intelligence-
Based Decision Support
System (AI-DSS)
Focus Group:
Participation by Agency*



Thank you for attending!

PLEASE LEAVE THE TEAM WITH ANY ADDITIONAL COMMENTS THROUGH THE CHAT
OR EMAIL US!

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Focus Group: Dynamic Incentivization

OCTOBER 27, 2020

RM3P Focus Group: Dynamic Incentivization

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Welcome Messages



Cathy McGhee

RM3P Executive Committee Chair &
Virginia Department of Transportation
(VDOT) Director of Research and Innovation



Monica Backmon

RM3P Executive Committee Vice Chair &
Executive Director of the Northern Virginia
Transportation Authority (NVTA)

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Candice Gibson,
RM3P Deputy Program Manager
and Focus Group Emcee

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Polling Question 1:

Name an incentive that would persuade you to try a commuting option that you have never tried before.
(Short text answer)

- Steak Dinner
- Try it for Free
- Free Ride
- Free Transit Rides
- Monetary Incentives
- Discount
- Free and Clear Instruction with Schedule
- Money
- Shorter Commute
- Wi-Fi and Access to Parking to Stop and Work
- Faster Travel Time
- E-Zpass Credit
- OK with Employer if Late



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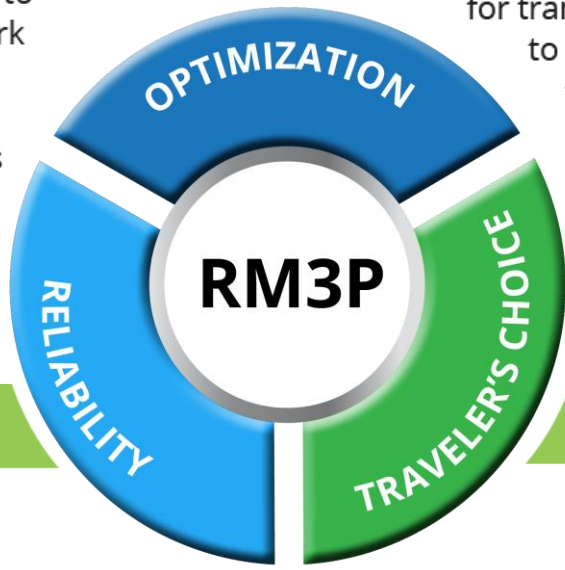
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Presenting: Amy McElwain, RM3P Program Manager



Let's see how Dynamic Incentivization could contribute to incident management and assist our commuters to try something new.



[View Animated Video](#)

Dynamic Incentivization

Regional Multi-Modal Mobility Program

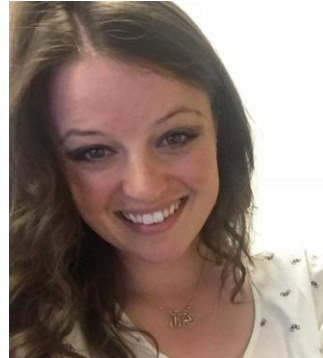


Introduction to the Dynamic Incentivization Guidance Team

Liaison:
Keith Jasper, NVTA



Liaison:
Mackenzie Jarvis, NVTA



Consultant Team Lead:
John Horner, Kapsch



Program Element Guidance Team Members

Chris Arabia, DRPT

Halie Mitchell, VDOT

Nicholas Ramfos, MWCOG

Ronit Dancis, Tysons
Partnership

Gabe Ortiz, DRPT

Joe Stainsby, Vanpool
Alliance

Polling Question 2:

Where do you perceive there to be room for improvement in TDM in Northern Virginia?
(Select all that apply.)

- | | |
|--|-------------|
| A. More responsiveness to real-time situations | 10/24 (42%) |
| B. More customizable strategies | 4/24 (17%) |
| C. Better metrics for monitoring impact/ROI | 3/24 (13%) |
| D. Consolidation of resources for commuters | 5/24 (21%) |
| No Answer | 2/24 (8%) |

Panel Discussion: About Dynamic Incentivization

Moderator:
Mackenzie
Jarvis, NVTA



Chris Arabia,
DRPT



Ronit Dancis,
Tysons Partnership



Polling Question 3:

Which of the following is the biggest obstacle which may prevent the dynamic incentivization program from successfully changing traveler behavior?
(*Select one*)

- | | |
|---|-------------|
| A. Lack of adoption by the public | 5/26 (19%) |
| B. Long-term financial unsustainability | 2/26 (8%) |
| C. Lack of transportation options other than single occupancy vehicle | 7/26 (27%) |
| D. Lack of data to identify when and where dynamic incentives should be offered | 1/26 (4%) |
| E. Budget does not allow incentives high enough to change behavior | 2/26 (8%) |
| F. Lack of public awareness of the incentive program | 3/26 (12%) |
| G. Reluctant to give up driving alone due to virus concern | 2/26 (8%) |
| No Answer | 4/26 (15%) |

Discussion



Facilitator: Keith Jasper, NVTA,
Dynamic Incentivization Liaison

DYNAMIC INCENTIVIZATION

What are the organizational or systemic barriers to implementing DYNAMIC INCENTIVIZATION?

- Incentives - need to be motivating but sustainable to maintain - hard to be persuasive to people with resources/ choices
- Employer buy-in (e.g., telework, delayed arrival)
- Lack of cross-jurisdictional travel options (& many providers)
- Logistics/ effort of establishing a vanpool
- Capacity & crowding on transit (influencing travel choices, esp. with COVID-19)
- Data availability
- Effort of recording trips could limit participation
- Lack of awareness/ public adoption
- Lack of time-competitive and/or one-seat travel options
- Uncertainty related to pandemic trajectory
- Concerns with transit safety due to pandemic
- Data availability or willingness to share data (e.g., from private sector)
- Funding due to budget constraints
- Difficulty quantifying benefits makes obtaining funding more difficult
- Concerns about local impacts? (e.g., arterial impacts from redirecting traffic)
- Funding availability for motivating incentives
- Large employers (e.g., military) are not in transit-accessible locations - also privacy concerns

SUPPORT / RESOURCES NEEDED

- Coordinated message, accessible marketing materials for agencies to support marketing campaign
- Recommendations of and/or support from current TDM experts in the region?
- Help connecting RM3P efforts to existing groups in the region
- Sustainable/ reliable funding



Keith Jasper, Liaison, NVTA



Mackenzie Jarvis, Liaison, NVTA

SOLUTIONS

- Coordinated, multi-pronged marketing campaign
- Social media presence
- Provide an array of options to motivate participation
- Build on/ take advantage of behavioral science research
- Partnerships with organizations that help travelers and/or private sector
- Multi-Modal Analytical Planner (RM3P component) may help with cross-jurisdictional service coordination
- App needs to be easy to use, not too overwhelming
- Development-related TDM requirements to fund incentives?
- Campaign must focus on messages that resonate, benefits to user
- Campaign working with existing TDM programs
- Market app as "one-stop shop" - make sure people understand app's flexibility
- Marketing information itself as the incentive - something a user can't obtain him/herself
- Pandemic presents an opportunity to roll out DI (before everyone goes back to driving)
- Identify funding stream/ creative funding solution (challenging now due to economic climate)
- Build on expertise of TDM coordinators in the region
- Sell advertising on app to generate revenue?

OTHER IDEAS

- Time is most the motivating incentive for "choice" travelers
- Coordination required to set up one-stop resource
- Pandemic has made telework a more viable option for more people (opportunity)



John Horner, Lead, Kapsch

Polling Question 4:

Which of the following would be the most effective way to promote public adoption of the incentive program?

(Select one)

- | | |
|---|-------------|
| A. Big, exciting incentives! | 1/25 (4%) |
| B. Coordinated, multi-prong marketing campaign | 9/25 (36%) |
| C. Networking through existing TDM programs | 2/25 (8%) |
| D. Offering services through an app commuters already use | 8/25 (32%) |
| No Answer | 5/25 (20%) |

Polling Question 5:

What should we call the dynamic incentivization program for commuter to understand without explanation?

(Open Text Response)

- FreeStuffVA
- NoVA-GO!
- TravelOptions4U
- Commuter Incentives
- Virginia's Big Ol' Travel Incentivizer
- SkipTheJam is a legitmate option!
- NoVA Commuter Incentives Program (VACIP)

What's next for RM3P and Dynamic Incentivization?

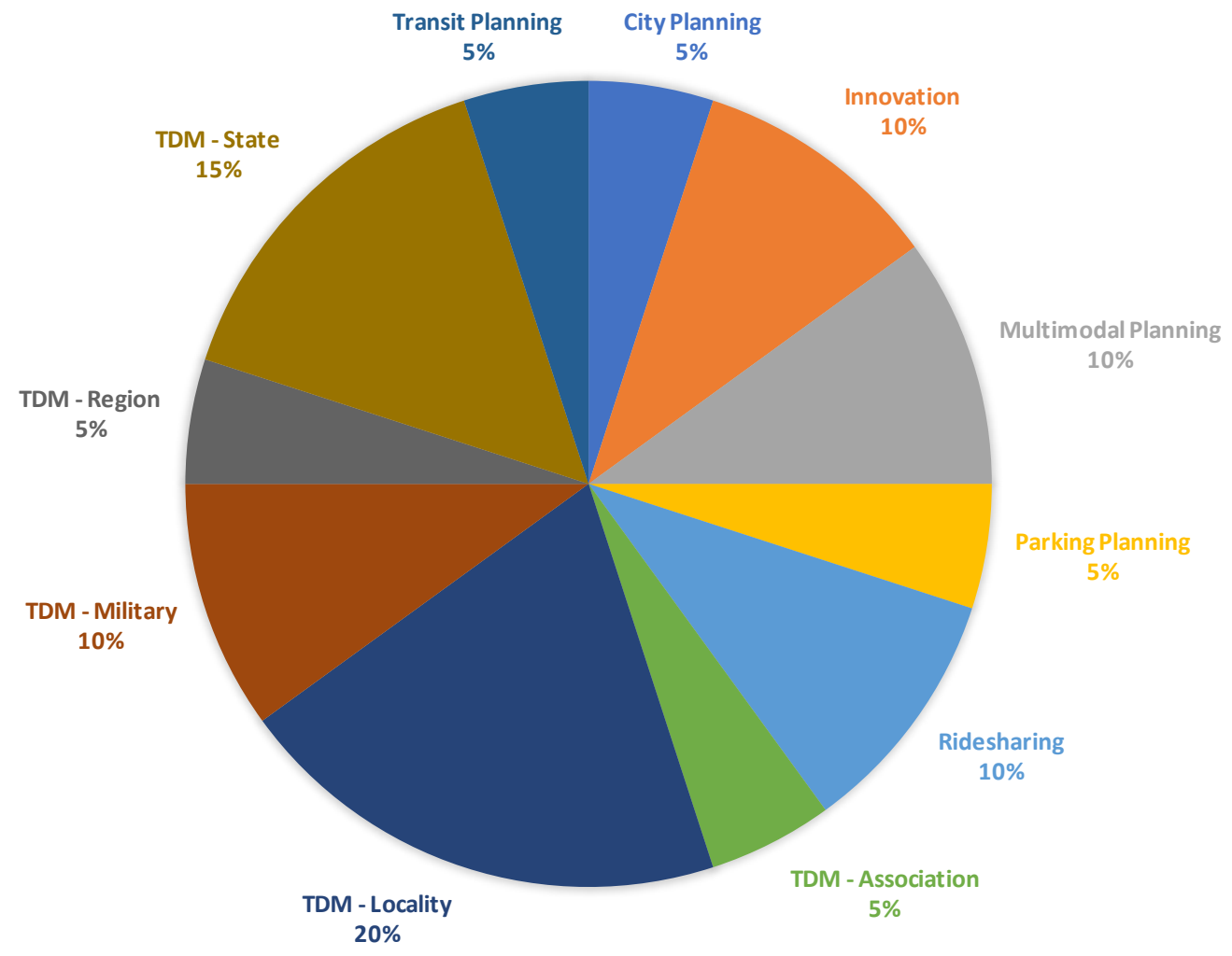


Candice Gibson,
RM3P Deputy Program Manager



John Horner,
Dynamic Incentivization Lead

DI REPRESENTATION BY AGENCY TYPE



*Dynamic Incentivization
(DI) Focus Group:
Participation by Agency*



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Focus Group: Commuter Parking Information System (CPIS)

OCTOBER 28, 2020

RM3P Focus Group: Commuter Parking Information System (CPIS)

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Bill Cuttler

RM3P Executive Committee Member,
VDOT Construction Manager

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Polling Instructions:

- See next slide.



Candice Gibson,
RM3P Deputy Program Manager
and Focus Group Emcee



Mackenzie Jarvis, NVTA, RM3P
Dynamic Incentivization Liaison
and Polling Operator

Connecting to Poll Everywhere

- We will be conducting polls using Poll Everywhere software
- To connect, please navigate to Pollev.com/fitp300 either in a separate web browser window, or on your cell phone
- Please enter your full name when prompted to enter your “screen name” – this way, we can get back to you after today’s meetings regarding any questions or comments you raise in response to the poll questions
- Please accept any requests from the website asking you to accept cookies. You can choose to accept or not accept the notifications.
- You will see a sample polling question on the screen once you have entered the platform. Please fill out the sample question!

Welcome to fitp300's presentation!

Introduce yourself
Enter the screen name you would like to appear alongside your responses.

Continue

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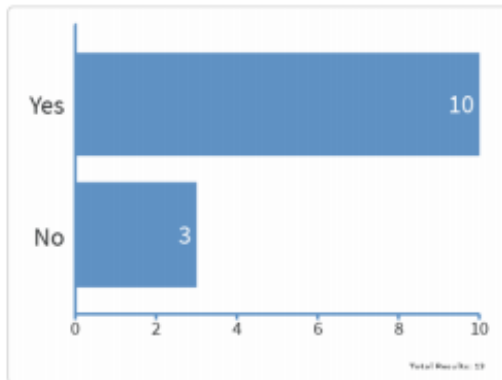
Agree Dismiss

Which of the following are RM3P colors? You can select multiple options.
You can respond 6 times. Each option may only be selected once.

- Gray
- Red
- Yellow
- Blue
- Green
- Purple

Polling Question 1:

Have you ever been late to an appointment because you could not find parking?



Response options

Yes

No

Count Percentage

10 77%

3 23%



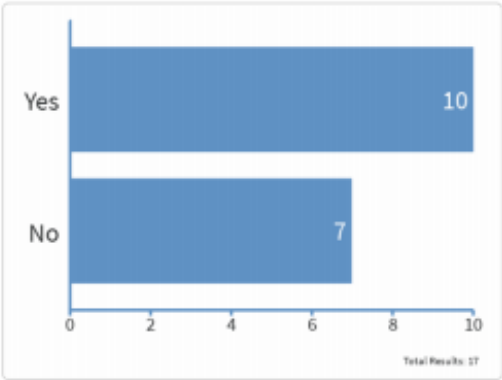
Engagement

13

Responses

Polling Question 2:

Have you ever parked illegally because you couldn't find a parking spot?



Response options

Yes

No

Count Percentage

10 **59%**

7 41%



Engagement

17

Responses



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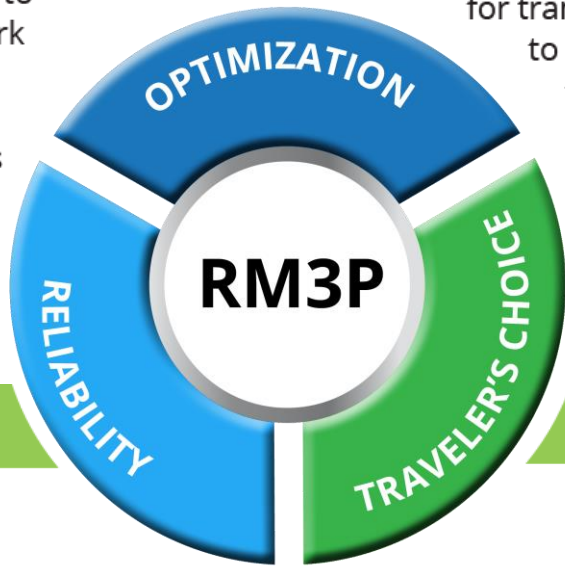
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Presenting: Amy McElwain, RM3P Program Manager



Let's see how parking information could help commuters



[View Animated Video](#)

Commuter Parking Information System

Regional Multi-Modal Mobility Program



Introduction to the CPIS Guidance Team

Liaison:
Amy McElwain, VDOT



Liaison: Stephen Crim,
Arlington County



Consultant Team Lead:
Imran Inamdar, Kapsch



Commuter Parking Information System (CPIS) Guidance Team Members

Belinda Barrett, WMATA

Scott Cowherd, VDOT

Phil Rogers, WMATA

Scott Gross, Loudoun County

Christine Hoeffner, VRE

Linda LaSut, VDOT

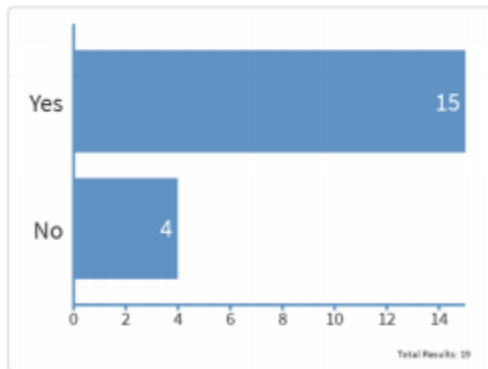
Heidi Mitter, VDOT

Olivia Mobayed, VDOT

Sonali, Soneji, VRE

Polling Question 3:

Do you think there is sufficient commuter parking capacity in the region but commuters do not know where the spaces are available?



Response options

Yes

No

Count Percentage

15 79%

4 21%



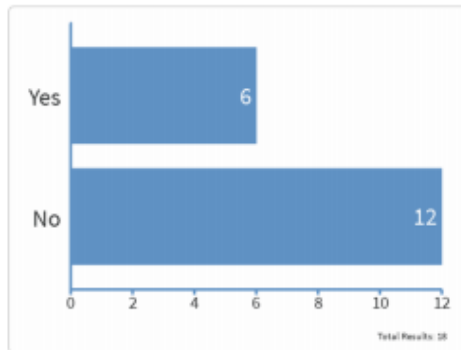
Engagement

19

Responses

Polling Question 4:

With approximately 35,000 commuter parking users in the region, are the spaces in the right place and in areas where people want to park?



Response options

Yes

No

Count Percentage

6 33%

12 67%



Engagement

18

Responses

Panel Discussion: About the Commuter Parking Information System

Moderator: Amy
McElwain, VDOT



Stephen Crim,
Arlington County

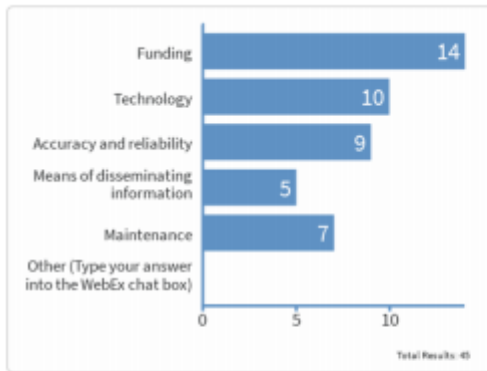


Heidi Mitter, VDOT



Polling Question 5:

Based on your experience, what are the challenges (institutional and/or technical) to collecting and disseminating parking information? (Select all that apply)



Response options

Count Percentage

Funding

14 31%

Technology

10 22%

Accuracy and reliability

9 20%

Means of disseminating information

5 11%

Maintenance

7 16%

Other (Type your answer into the WebEx chat box)

0 0%

71%

Engagement

45

Responses

Discussion



Facilitator: Stephen Crim,
Commuter Parking Information System Liaison

What are the organizational/systemic barriers to implementing the COMMUTER PARKING INFORMATION SYSTEM?

Disseminating data	Economies of scale for smaller organizations - esp. if small # of spaces managed	Funding for sensors (expensive)	Level of detail needed about parking availability (ROI for #s/detail vs. red/yellow/green)	Margin of error associated with some technologies	Maintenance of CPIS infrastructure	Need information on other modes/options available from each lot
Lack of incentives for non-driving trips	Many lots are leased, not owned	Lack of information about alternative parking options (e.g., if a garage is full)	Many different sources (apps, websites, etc.) of parking info (makes it harder to find info)	Lack of data standards for parking data (makes aggregation harder)	Policy/legal constraints on what can be charged and ability to offer reservations for parking for some public parking facilities	Spillover parking complaints/issues

SUPPORT / RESOURCES NEEDED

Support for joint procurement/bulk purchases	Leadership by larger agencies to move CPIS forward		
Guidance on data standards?	Expertise/technical assistance to smaller organizations	Continued collaboration and information-sharing (e.g., sharing findings from current projects) - esp. cross-jurisdictional	

SOLUTIONS

Joint procurement	Incorporate parking info. technology cost into cost of a larger (parking) project	Pricing to manage demand by location/proximity	Law enforcement may have technology that could be used for CPIS	Reservation system? (requires more detailed info about # of spots available)	Dynamic Incentivization (RM3P element)	AI- and video-based systems becoming more advanced (e.g., on I-95)
Communicate need for parking as strategy for enhancing transit ridership	Provide information on other modes/options available from parking locations	Transit stop and service change to accommodate demand (spillover solution)	Static data may also inform CPIS	Infrastructure-free solutions (opportunity to pilot)	Centralized data exchange platform (RM3P element)	Guidelines for sharing data with RM3P

OTHER IDEAS

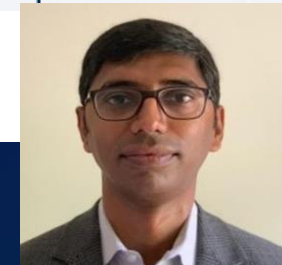
Garages vs. surface lots - different challenges (e.g., maintenance)	Some are actively considering CPIS solutions for I-66 and/or other projects in the region	VDOT is currently exploring parking data collection, infrastructure-light solutions	Opportunity to see how new garages on Silver Line relieve congestion at Wiehle Ave garage
Parking counting done by some	PWC currently exploring technologies for a garage project	VDOT assessment of P&R lots (same as above?)	Corridor studies are examining the issue (e.g., I-95, I-66)



Amy McElwain,
Liaison, VDOT



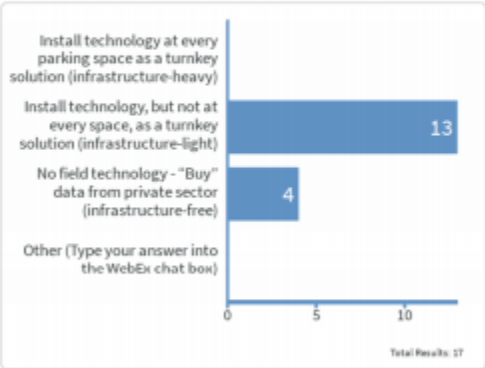
Stephen Crim,
Liaison, Arlington County



Imran Inamdar,
Lead, Kapsch

Polling Question 6:

What do you think is a potential solution to collect real-time parking information? (Select one)



Response options

- Install technology at every parking space as a turnkey solution (infrastructure-heavy)
- Install technology, but not at every space, as a turnkey solution (infrastructure-light)**
- No field technology - "Buy" data from private sector (infrastructure-free)
- Other (Type your answer into the WebEx chat box)

Count	Percentage
0	0%
13	76%
4	24%
0	0%

71%

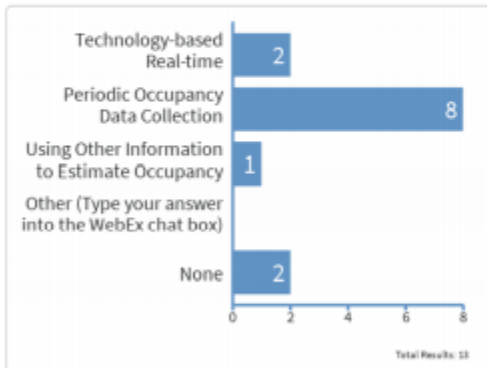
Engagement

17

Responses

Polling Question 7:

Does your agency collect parking occupancy information? (Select one)



Response options

Technology-based Real-time

Periodic Occupancy Data Collection

Using Other Information to Estimate Occupancy

Other (Type your answer into the WebEx chat box)

None

Count Percentage

2 15%

8 62%

1 8%

0 0%

2 15%



Engagement

13

Responses

What's next for RM3P and the Commuter Parking Information System (CPIS)?

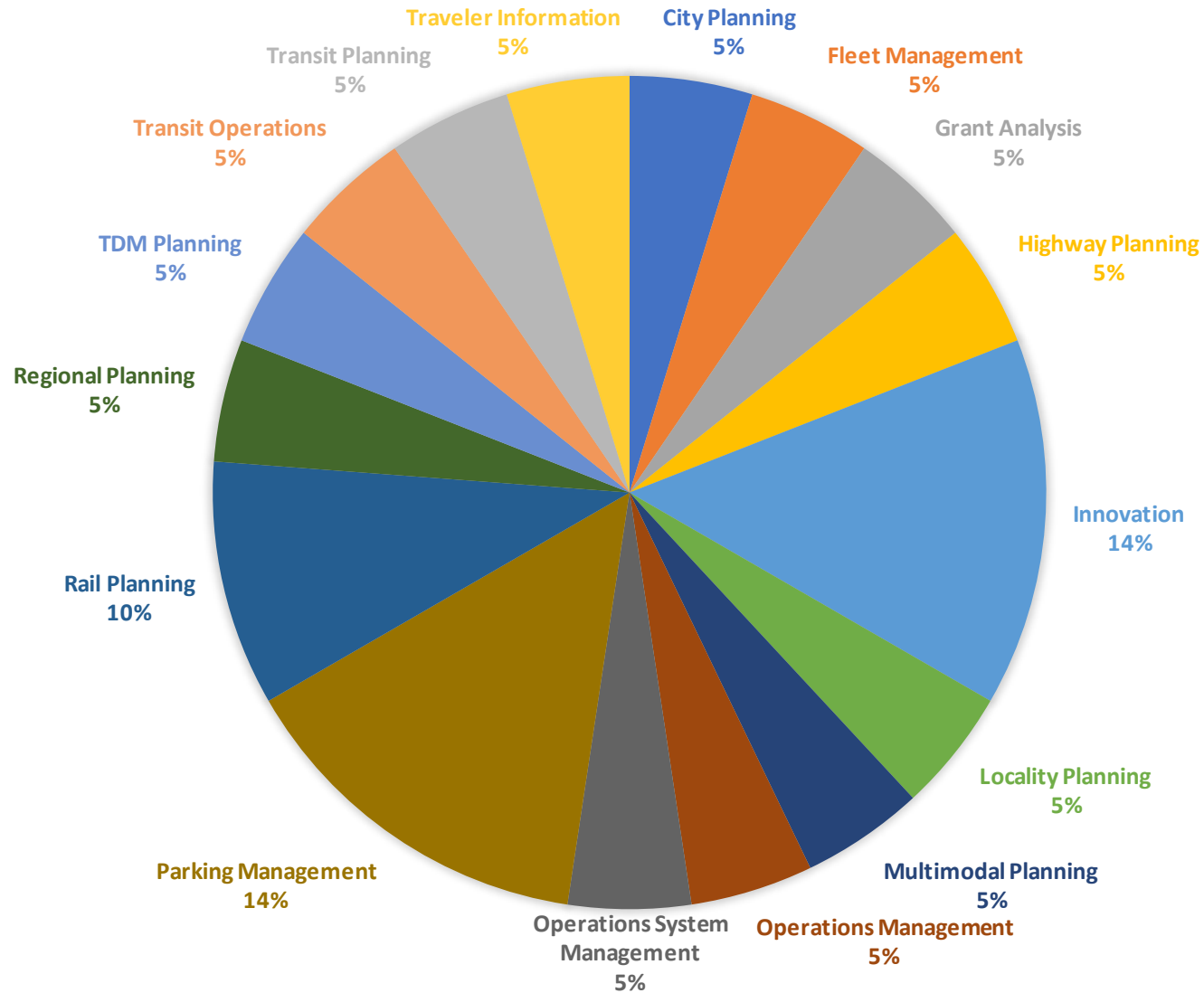


Candice Gibson,
RM3P Deputy Program Manager



Imran Inamdar,
CPIS Lead

CPIS REPRESENTATION BY AGENCY TYPE



Commuter Parking Information System (CPIS) Focus Group: Participation by Agency



Thank you for attending!

PLEASE LEAVE THE TEAM WITH ANY ADDITIONAL COMMENTS THROUGH THE CHAT
OR EMAIL US!

RM3P@VDOT.VIRGINIA.GOV



Focus Group: Multi-Modal Analytical Planner (MMAP)

OCTOBER 28, 2020



RM3P Focus Group: Multi-Modal Analytical Planner (MMAP)

Thank you for attending! This event will begin in:



For best audio experience:

- Use headphones
- Mute yourself when not speaking
- Put your cell phone on silent

We will be with you shortly!

Welcome Message



Jennifer DeBruhl

RM3P Executive Committee Member,
Chief of Public Transportation, Virginia Department of
Rail and Public Transportation

Welcome

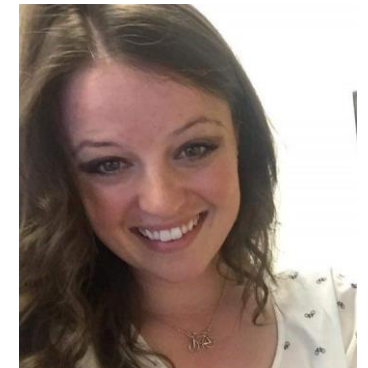
- Thank you for attending!
- This focus group is intended to be collaborative – we want to hear from you.
- You can provide your input by:
 - Responding to the polling questions
 - Participating in the discussions
 - Sending any feedback you have after the event to the team (via WebEx polling or using the contact information provided)

Polling Instructions:

- See next slide.



Candice Gibson,
RM3P Deputy Program Manager
and Focus Group Emcee



Mackenzie Jarvis, NVTA, RM3P
Dynamic Incentivization Liaison
and Polling Operator

Connecting to Poll Everywhere

- We will be conducting polls using Poll Everywhere software
- To connect, please navigate to Pollev.com/fitp300 either in a separate web browser window, or on your cell phone
- Please enter your full name when prompted to enter your “screen name” – this way, we can get back to you after today’s meetings regarding any questions or comments you raise in response to the poll questions
- Please accept any requests from the website asking you to accept cookies. You can choose to accept or not accept the notifications.
- You will see a sample polling question on the screen once you have entered the platform. Please fill out the sample question!

Welcome to fitp300's presentation!

Introduce yourself
Enter the screen name you would like to appear alongside your responses.

Continue

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Agree Dismiss

Which of the following are RM3P colors? You can select multiple options.
You can respond 6 times. Each option may only be selected once.

- Gray
- Red
- Yellow
- Blue
- Green
- Purple

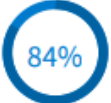
Polling Question 1:

Name an event (special event, construction or maintenance, weather) which had a major impact on transportation for your agency or jurisdiction.

“COVID-19,
Metro
Summer
Summer”
Total Results: 18

Responses

- Major Hurricanes
- Closure of a major access point to DC.
- I-66 ITB construction
- When the Pope visited DC, COVID-19, DC sporting events, SNOW
- Vienna Metro Station shutdown
- Covid!
- N/A
- snowmageddon
- Safetrack
- COVID-19, Metro Summer Shutdown
- Inaugurations
- Winter storm caused "evacuation" due to OPM's decision.
- Platform Improvement Project
- Platform Improvement Project
- Metrorail station platform reconstruction project.
- WMATA Platform Reconstruction
- World Series
- Memorial Day Parade



Engagement

18

Responses



The Data-Exchange Platform (DEP) will be a reliable, continuously updated, cloud-based data storage and exchange system. It will be used by regional partners and third-party providers to capture, process, and exchange information on real-time and historic multi-modal travel conditions. This platform will feed necessary data to other RM3P program elements and disseminate value-added and full-grown data produced by these elements.

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Multi-Modal Analytical Planner

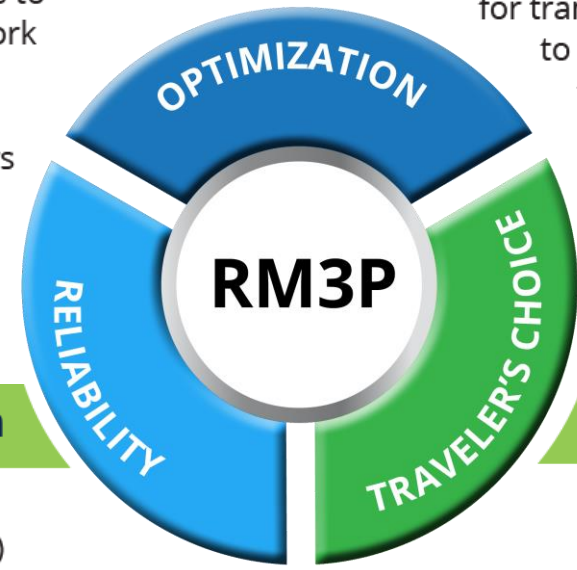
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The Commuter Parking Information System (CPIS) will entail a real-time, app-based parking availability information system that provides reliable information about parking space availability at lots serving bus, vanpool, and carpool commuters.



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Dynamic Incentivization (DI) will be a data-driven system offering the public incentives to modify their travel choices and behaviors in response to real-time travel conditions. The incentives will be offered by regional agencies and third-party providers.



Presenting: Amy McElwain, RM3P Program Manager

Let's see how MMAP could help planners from several agencies collaborate in making service changes!



[View Animated Video](#)

Multi-Modal Analytical Planner

Regional Multi-Modal Mobility Program



Introduction to the MMAP Guidance Team

Liaison:
Tiffany Dubinsky, DRPT



Liaison:
Clinton Edwards, DRPT



Consultant Team Lead:
John Horner, Kapsch



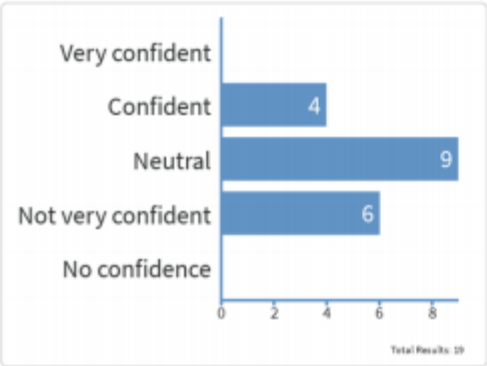
Multi-Modal Analytical Planner (MMAP) Guidance Team Members

Charley Dingboom, WMATA
Martin Barna, City of Alexandria (DASH)
Patricia Happ, NVTC

Dinah Girma, NVTC
Joy Himes, OmniRide
Joe McAndrew, GW Partnership

Polling Question 2:

How confident are you that you have a thorough and complete understanding of gaps in transportation service coverage within your agency or jurisdiction? (Select one)



Response options

Very confident

Confident

Neutral

Not very confident

No confidence

Count	Percentage
0	0%
4	21%
9	47%
6	32%
0	0%

100% Engagement

19 Responses

Panel Discussion: About the Multi-Modal Analytical Planner

Moderator:
Alanna McKeeman,
Foursquare ITP



Charley Dingboom,
WMATA



Martin Barna,
Alexandria DASH



Polling Question 3:

What are the barriers you currently face in identifying gaps in your service?

“Resources”

“Lack of adequate/comprehensive data for all modes”

“Understanding what other providers are doing in response to changing conditions”

Total Results: 15

Responses

- Inconsistent data assumption
- data availability, fusing/lining up different sources together
- Data quality, limited availability or access to data
- Understanding what other providers are doing in response to changing conditions
- Customer survey data
- Hard to predict commuter's transportation needs - when there are events.
- Resources
 - Long lead time between gap occurring and when it becomes noticeable/recognized by service planners.
 - Incomplete data, lack of trained staff to collect data
 - not knowing where gaps in other systems overlapping with mine are
 - Data, specifically transit service data for multiple providers
 - Lack of adequate/comprehensive data for all modes
 - Not having data from non-transit mobility providers



Engagement

15

Responses

Discussion



Facilitator: Tiffany Dubinsky,
Multi-Modal Analytical Planner Liaison

What are the organizational/systemic barriers to implementing the MULTI-MODAL ANALYTICAL PLANNER?

Data	Merging/conflation of different data sources (related to data standards)	Need for tool to have visualization capabilities	Transit agencies can't currently access Streetlight data - can for data be cost prohibitive	Fast pace of responding to incidents	Library of key contacts - would need to be kept up to date	Staff availability to focus on responses/response planning
Lack of data - data may not even exist	Data standards lacking for some modes/services	Data quality (and need to define quality thresholds)	Data on equity (e.g., disability status, ramp locations)	TNC (Uber/Lyft) data not always available	Not knowing who has the needed information	Needs vary by agency and practitioner

SUPPORT / RESOURCES NEEDED

High quality CAD/AVL (vehicle location) data	Staff resources	Training in how to use MMAP tool
Origin-Destination data for planning	NVTC can support with staff time	

SOLUTIONS

Sharing Streetlight data (MPOs and local planners can currently access through VDOT/OIPI)	Policy changes to require TNCs to share data	MCDOT's flex service (Via) - opportunity to use data from this service/pilot to inform planning	Opportunity to obtain and use data from private sources (such as navigation apps/roadway data collection systems). E.g., how are they routing drivers?	Build on relationships and existing collaboration to ensure institutional supports are in place for MMAP
Use TNC data - not just generally but to understand impacts of special events	Evaluate universe of available data to identify and prioritize data needs	Potential data sources: Streetlight, TNCs, Inrix/HERE, TomTom, Wejo, GBFS, MDS (micromobility), open route service data (Evaluate which ones are already available, which are still needed)	Engage additional interested parties	Library of key contacts for data/information

OTHER IDEAS

Importance of considering equity (e.g., consider MWCOG equity emphasis areas)	Tools: TBEST, Remix, Tableau, PowerBI	User friendliness/interface important
Evaluate how iterative and/or interactive MMAP needs to be (in both short and long term)	Want visualization capabilities to support communications (e.g., with decision makers)	MMAP can support agencies in many ways, including grant applications



Tiffany Dubinsky, Liaison, DRPT



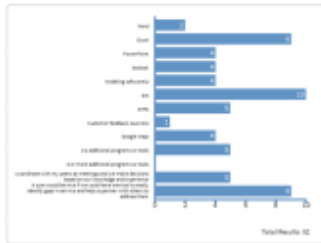
Clinton Edwards, Liaison, DRPT



John Horner, Lead, Kapsch

Polling Question 4

Which tools and/or programs do you currently use to coordinate services changes with neighboring jurisdictions or agencies? (Select all that apply)



Response options	Count	Percentage
Word	2	3%
Excel	9	15%
PowerPoint	4	6%
Outlook	4	6%
Modeling software(s)	4	6%
GIS	10	16%
GTFS	5	8%
Customer feedback source(s)	1	2%
Google Maps	4	6%
1-2 additional programs or tools	5	8%
3 or more additional programs or tools	0	0%
I coordinate with my peers at meetings and we make decisions based on our knowledge and experience	5	8%
It sure would be nice if we could have one tool to easily identify gaps in service and help us partner with others to address them	9	15%

74%
Engagement

62
Responses

Polling Question 5:

What will be the biggest benefit to your agency or jurisdiction from the MMAP?

"N/A"

"Optimize our limited resource and meet customers' needs"

"Avoiding

Responses

- Data Visibility
- Improved regional coordination - not just telling each other what we're doing, but having a coordinated decision-making process
- Help NVTC stop bothering individual transit agencies all the time for data
- get better overall view of transportation network status and improved service to travelling public
- regional coordination Avoiding missed opportunities
- Better planning/decision-making
- Optimize our limited resource and meet customers' needs
- Improve the quality of service we can provide to customers and make transit a more appealing travel mode!
- A central location for data I normally would have to visit multiple sources for
- A more comprehensive view of where gaps in transit coverage occur throughout the region.
- Access to other agencies/jurisdictions data, visualization options N/A



Engagement

14

Responses

What's next for RM3P and the Multi-Modal Analytical Planner?

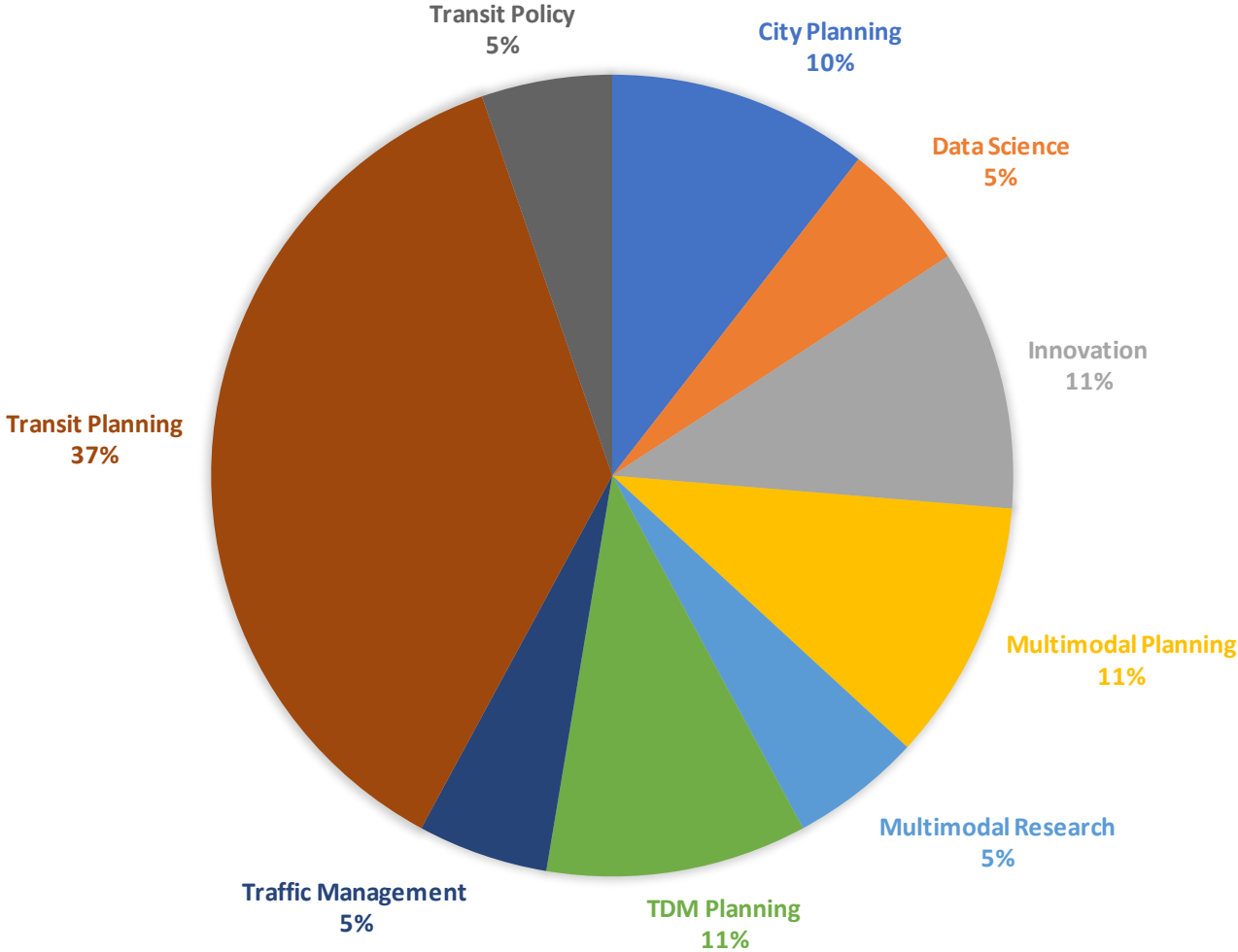


Candice Gibson,
RM3P Deputy Program Manager



John Horner,
Multi-Modal Analytical Planner Lead

MMAP REPRESENTATION BY AGENCY TYPE



*Multi-Modal Analytical
Planner (MMAP)
Focus Group:
Participation by Agency*



Thank you for attending!

PLEASE LEAVE THE TEAM WITH ANY ADDITIONAL COMMENTS THROUGH THE CHAT
OR EMAIL US!

RM3P@VDOT.VIRGINIA.GOV



Stakeholder Advisory Group (SAG) Summit

OCTOBER 29, 2020



RM3P Stakeholder Advisory Group Summit

Thank you for attending! This event will begin in:



For best audio experience:

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- Put your cell phone on silent

We will be with you shortly!

Welcome Messages



Cathy McGhee
RM3P Executive Committee Chair &
Virginia Department of Transportation
(VDOT) Director of Research and Innovation



Monica Backmon
RM3P Executive Committee Vice Chair &
Executive Director of the Northern Virginia
Transportation Authority (NVTA)

Welcome

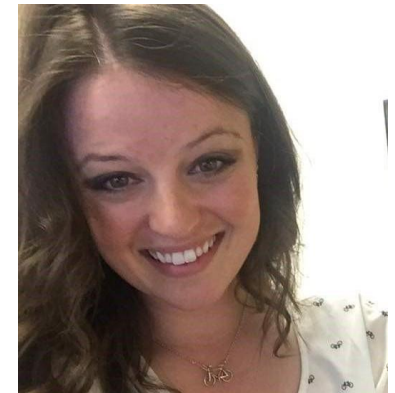
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Polling Instructions:

- See next slide.



Candice Gibson,
RM3P Deputy Program Manager
and Summit Emcee



Mackenzie Jarvis, NVTA, RM3P
Dynamic Incentivization Liaison
and Polling Operator

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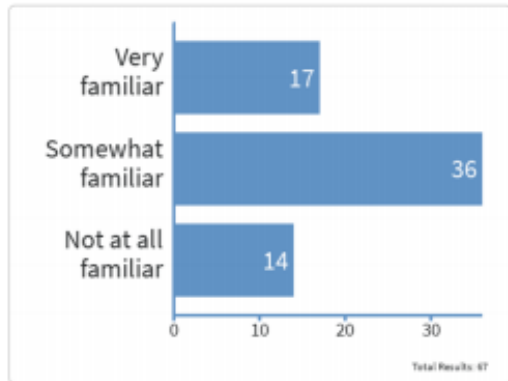
Agree Dismiss

Which of the following are RM3P colors? You can select multiple options.
You can respond 6 times. Each option may only be selected once.

- Gray
- Red
- Yellow
- Blue
- Green
- Purple

Polling Question 1:

How familiar are you with RM3P?



Response options

Very familiar

Somewhat familiar

Not at all familiar

Count Percentage

17 25%

36 54%

14 21%



Engagement

67

Responses



The Data-Exchange Platform (DEP) will be a reliable, continuously updated, cloud-based data storage and exchange system. It will be used by regional partners and third-party providers to capture, process, and exchange information on real-time and historic multi-modal travel conditions. This platform will feed necessary data to other RM3P program elements and disseminate value-added and full-grown data produced by these elements.

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Multi-Modal Analytical Planner

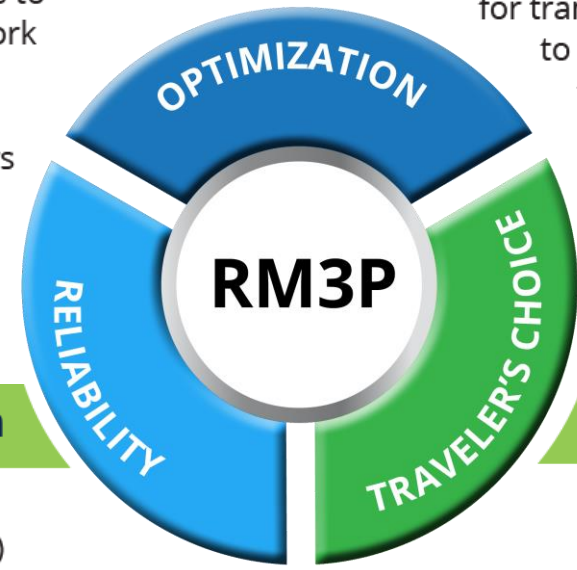
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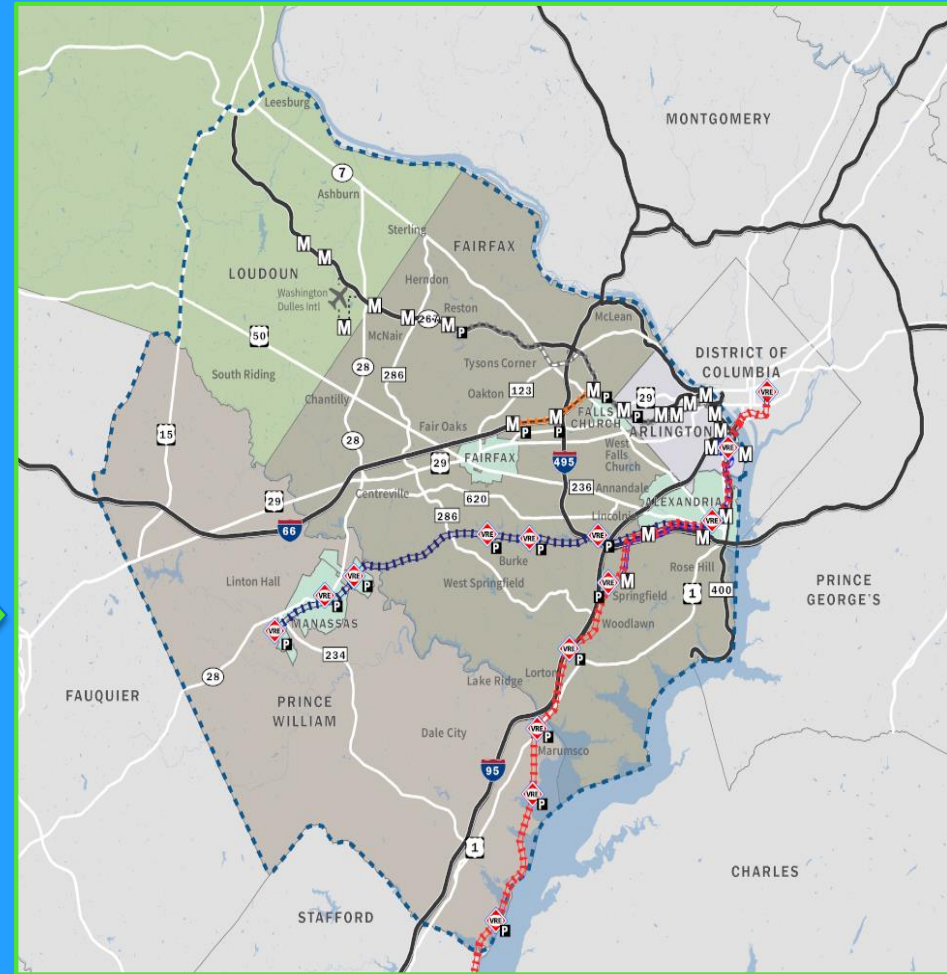
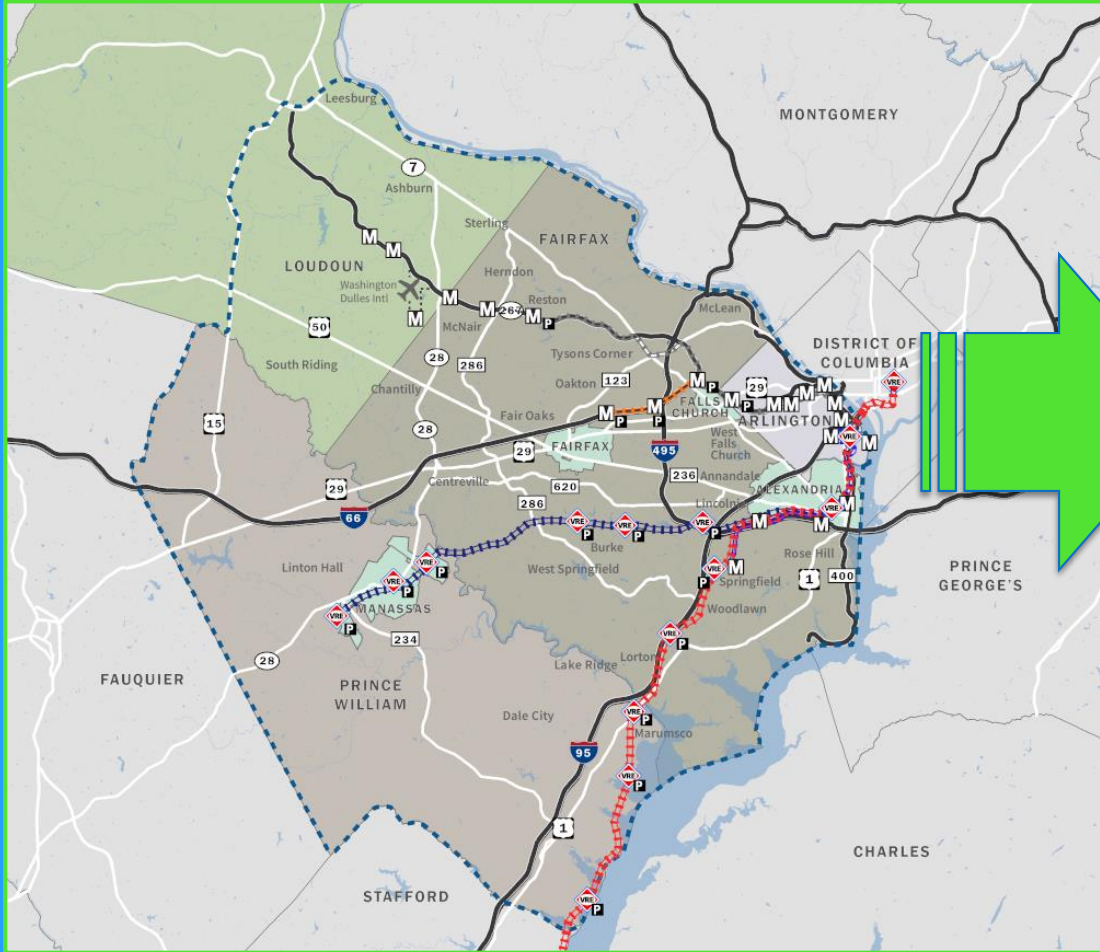
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Presenting: Amy McElwain, RM3P Program Manager

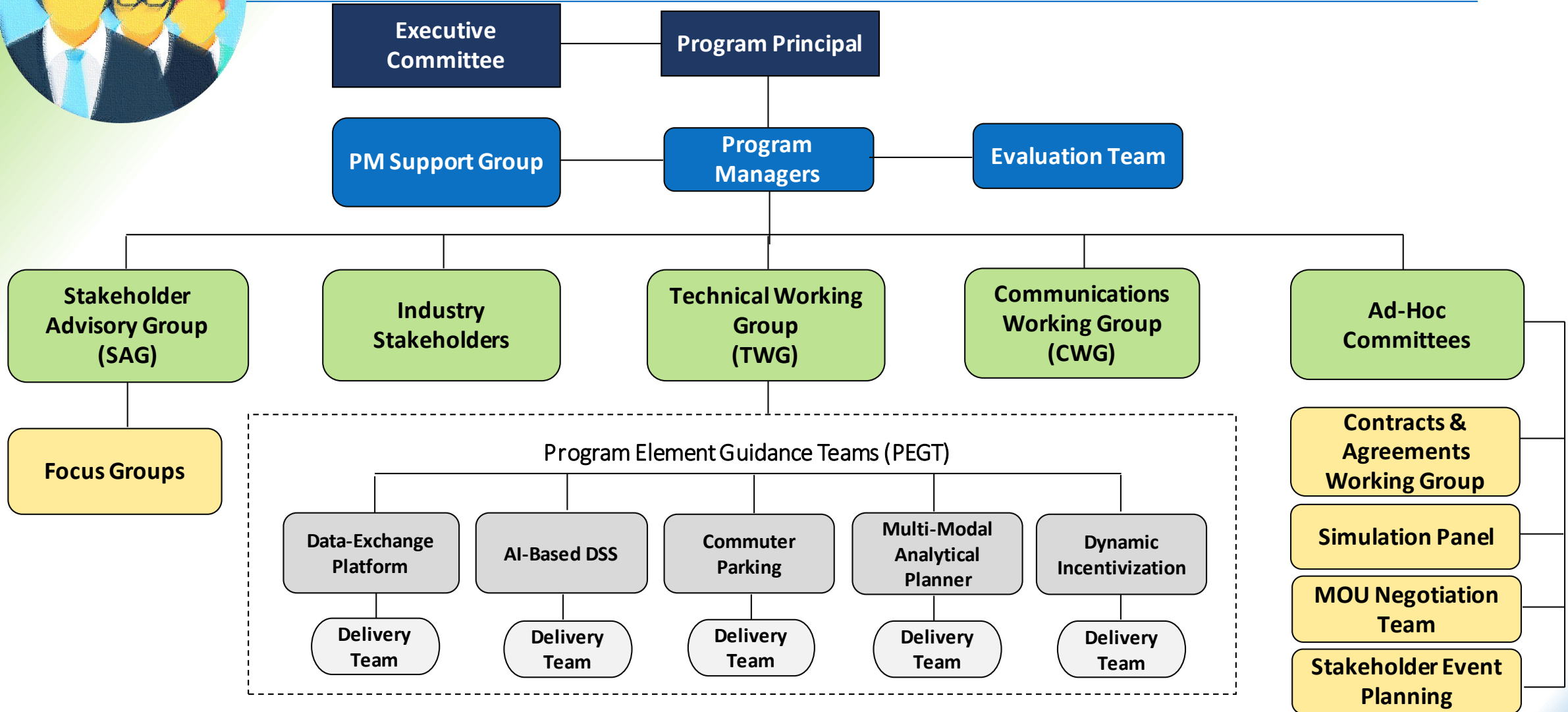
RM3P Boundary



*Expansion.
Thanks to the
ATCMTD grant*



The Team



Strategic Guidance for RM3P



Cathy McGhee
Director of Research
and Innovation, VDOT



Monica Backmon
Executive Director, NVTA



Jennifer DeBruhl
Chief of Public
Transportation, DRPT



Bob Osmond
Chief of Tech & Business
Strategy, VDOT



Kevin Gregg
Chief of Maintenance &
Operations, VDOT



Hari Sripathi
Director of Innovation, VDOT



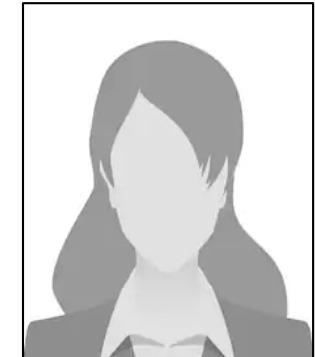
Bill Cuttler
Construction
Manager, VDOT



Marcie Parker
Fredericksburg District
Engineer, VDOT



Iris Vaughan
ITS/Operations/LPA
Engineer, FHWA



Linda Millsaps
Executive Director,
FAMPO

Anticipated Benefits



Coordinated responses to travel disruptions



Improved safety



Collaborative planning



More reliable commutes



Enhanced connections



Incentives for individual travelers



Focus Group Summaries

Focus Group Findings

Artificial Intelligence-Based Decision Support System

Kevin Miller

Commuter Parking Information System

Imran Inamdar

Multi-Modal Analytical Planner

John Horner

Dynamic Incentivization

John Horner

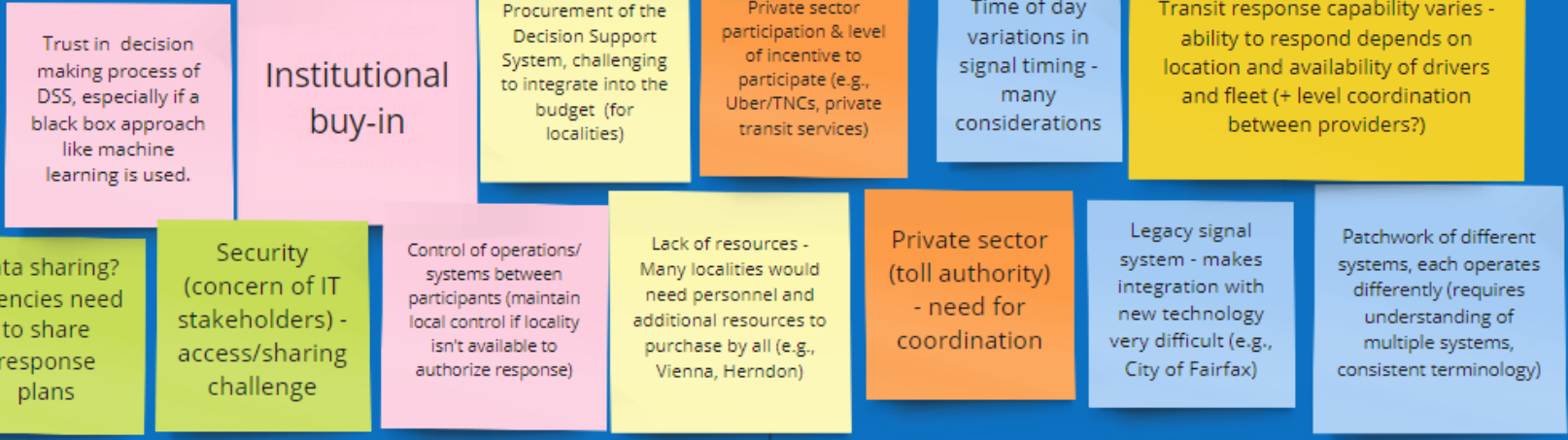
Cross-Cutting Themes

Nu Rosenbohm



ARTIFICIAL INTELLIGENCE-BASED DECISION SUPPORT SYSTEM

What are the organizational/systemic barriers to implementing the AI-BASED DECISION SUPPORT SYSTEM?



SUPPORT / RESOURCES NEEDED



Candice Gibson, Liaison, VDOT



Mena Lockwood, Liaison, VDOT

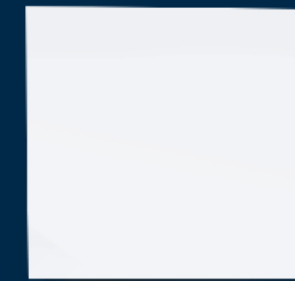


Kevin Miller, Lead, Kapsch

SOLUTIONS



OTHER IDEAS



What are the organizational/systemic barriers to implementing the COMMUTER PARKING INFORMATION SYSTEM?

Disseminating data	Economies of scale for smaller organizations - esp. if small # of spaces managed	Funding for sensors (expensive)	Level of detail needed about parking availability (ROI for #s/detail vs. red/yellow/green)	Margin of error associated with some technologies	Maintenance of CPIS infrastructure	Need information on other modes/options available from each lot
Lack of incentives for non-driving trips	Many lots are leased, not owned	Lack of information about alternative parking options (e.g., if a garage is full)	Many different sources (apps, websites, etc.) of parking info (makes it harder to find info)	Lack of data standards for parking data (makes aggregation harder)	Policy/legal constraints on what can be charged and ability to offer reservations for parking for some public parking facilities	Spillover parking complaints/issues

SUPPORT / RESOURCES NEEDED

Support for joint procurement/bulk purchases	Leadership by larger agencies to move CPIS forward		
Guidance on data standards?	Expertise/technical assistance to smaller organizations	Continued collaboration and information-sharing (e.g., sharing findings from current projects) - esp. cross-jurisdictional	

SOLUTIONS

Joint procurement	Incorporate parking info. technology cost into cost of a larger (parking) project	Pricing to manage demand by location/proximity	Law enforcement may have technology that could be used for CPIS	Reservation system? (requires more detailed info about # of spots available)	Dynamic Incentivization (RM3P element)	AI- and video-based systems becoming more advanced (e.g., on I-95)
Communicate need for parking as strategy for enhancing transit ridership	Provide information on other modes/options available from parking locations	Transit stop and service change to accommodate demand (spillover solution)	Static data may also inform CPIS	Infrastructure-free solutions (opportunity to pilot)	Centralized data exchange platform (RM3P element)	Guidelines for sharing data with RM3P

OTHER IDEAS

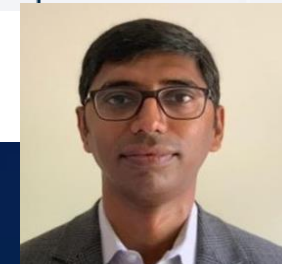
Garages vs. surface lots - different challenges (e.g., maintenance)	Some are actively considering CPIS solutions for I-66 and/or other projects in the region	VDOT is currently exploring parking data collection, infrastructure-light solutions	Opportunity to see how new garages on Silver Line relieve congestion at Wiehle Ave garage
Parking counting done by some	PWC currently exploring technologies for a garage project	VDOT assessment of P&R lots (same as above?)	Corridor studies are examining the issue (e.g., I-95, I-66)



Amy McElwain,
Liaison, VDOT



Stephen Crim,
Liaison, Arlington County



Imran Inamdhar,
Lead, Kapsch

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High quality CAD/AVL (vehicle location) data	Staff resources	Training in how to use MMAP tool
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SOLUTIONS

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OTHER IDEAS

Importance of considering equity (e.g., consider MWCOG equity emphasis areas)	Tools: TBEST, Remix, Tableau, PowerBI	User friendliness/ interface important
Evaluate how iterative and/or interactive MMAP needs to be (in both short and long term)	Want visualization capabilities to support communications (e.g., with decision makers)	MMAP can support agencies in many ways, including grant applications



Tiffany Dubinsky, Liaison, DRPT



Clinton Edwards, Liaison, DRPT



John Horner, Lead, Kapsch

DYNAMIC INCENTIVIZATION

What are the organizational or systemic barriers to implementing DYNAMIC INCENTIVIZATION?

- Incentives - need to be motivating but sustainable to maintain - hard to be persuasive to people with resources/ choices
- Employer buy-in (e.g., telework, delayed arrival)
- Lack of cross-jurisdictional travel options (& many providers)
- Logistics/ effort of establishing a vanpool
- Capacity & crowding on transit (influencing travel choices, esp. with COVID-19)
- Data availability
- Effort of recording trips could limit participation
- Lack of awareness/ public adoption
- Lack of time-competitive and/or one-seat travel options
- Uncertainty related to pandemic trajectory
- Concerns with transit safety due to pandemic
- Data availability or willingness to share data (e.g., from private sector)
- Funding due to budget constraints
- Difficulty quantifying benefits makes obtaining funding more difficult
- Concerns about local impacts? (e.g., arterial impacts from redirecting traffic)
- Funding availability for motivating incentives
- Large employers (e.g., military) are not in transit-accessible locations - also privacy concerns

SUPPORT / RESOURCES NEEDED

- Coordinated message, accessible marketing materials for agencies to support marketing campaign
- Recommendations of and/or support from current TDM experts in the region?
- Help connecting RM3P efforts to existing groups in the region
- Sustainable/ reliable funding



Keith Jasper, Liaison, NVTA



Mackenzie Jarvis, Liaison, NVTA

SOLUTIONS

- Coordinated, multi-pronged marketing campaign
- Campaign must focus on messages that resonate, benefits to user
- Social media presence
- Campaign working with existing TDM programs
- Provide an array of options to motivate participation
- Market app as "one-stop shop" - make sure people understand app's flexibility
- Build on/ take advantage of behavioral science research
- Partnerships with organizations that help travelers and/or private sector
- Marketing information itself as the incentive - something a user can't obtain him/herself
- Multi-Modal Analytical Planner (RM3P component) may help with cross-jurisdictional service coordination
- Pandemic presents an opportunity to roll out DI (before everyone goes back to driving)
- App needs to be easy to use, not too overwhelming
- Identify funding stream/ creative funding solution (challenging now due to economic climate)
- Development-related TDM requirements to fund incentives?
- Sell advertising on app to generate revenue?
- Build on expertise of TDM coordinators in the region

OTHER IDEAS

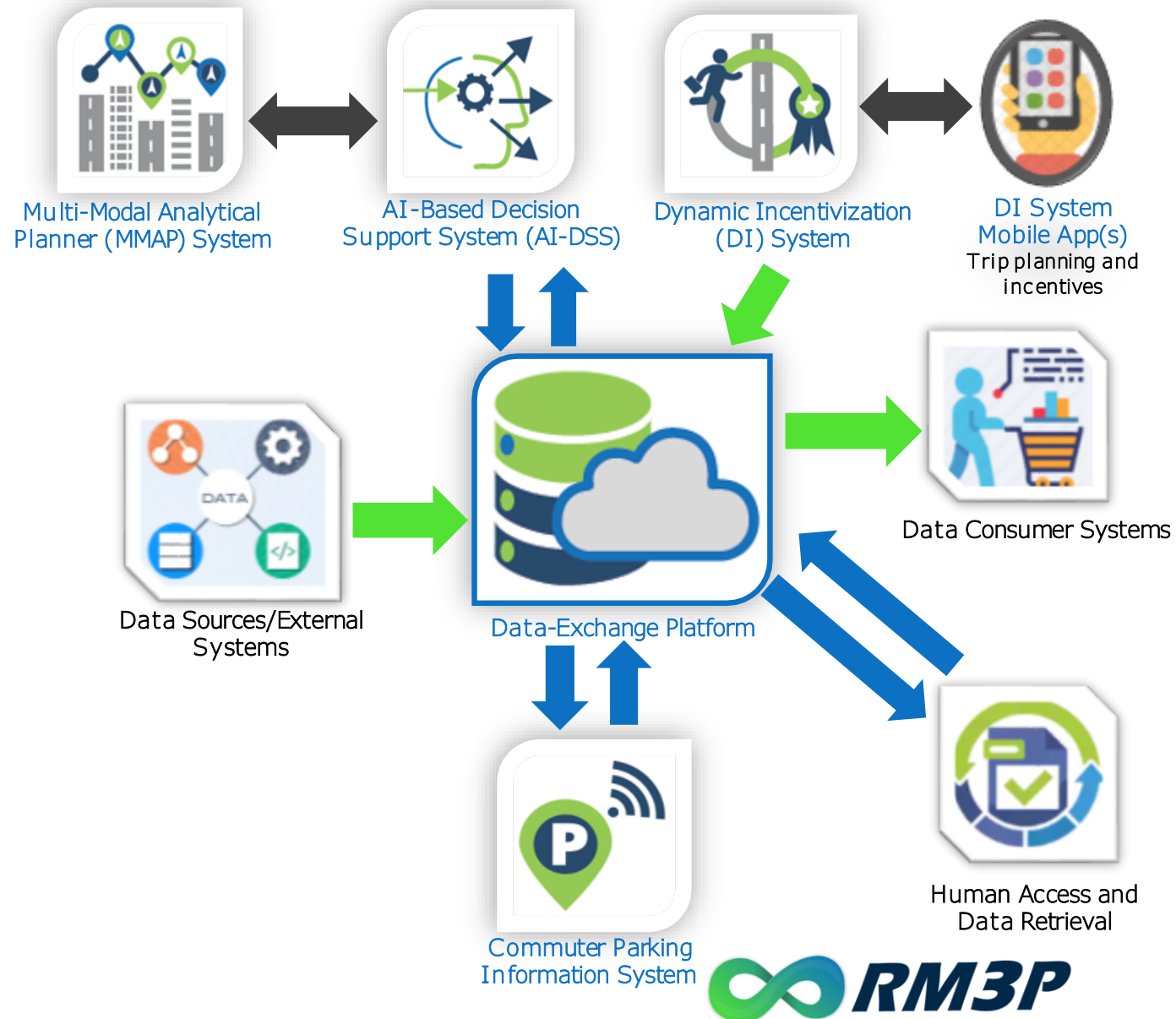
- Time is most the motivating incentive for "choice" travelers
- Pandemic has made telework a more viable option for more people (opportunity)
- Coordination required to set up one-stop resource



John Horner, Lead, Kapsch

Cross-Cutting Themes

- Data-Exchange Platform (DEP) is RM3P's data ingestion, data smoothing, data storage and data distribution system
- Interfaces with all other RM3P systems (AI-Based DSS, Parking, Multi-Modal Analytical Planner, Incentivization) to provide and receive data.
- Interfaces with all data source systems (VDOT ATMS, Transit systems, 3rd Party Data Providers such as INRIX, etc.)
- Interfaces to allow Data Consumer Systems to obtain RM3P data
- Interface to allow Humans to query for RM3P data



Polling Question 2:

In three words or less, what are the biggest logistical challenges you currently face in regional coordination?

- agreements Agency participation/engagement data
- Traffic incident management activities
- Sustaining stakeholder engagement Sufficient participation
- Regional significance consensus Shared-parking property boundaries
- consistent data availability Difficult - collaborate virtually
- data & communications priorities bureaucracy Staff resources
- Coordinated contract vehicles situational awareness, agreements, data
- Time to coordinate Assigning responsibilities Competing interests
- policy, interstate data coordination, customer awareness
- anti-collaboration territorialism coordination Access
- information spread out culture change data not available
- Collaboration The number of partners procurement
- Staffing, funding, technology Communications, funding structure
- Time and resources Cross organizational communication
- Digital data sharing data sharing Inter-jurisdictional coordination



- Regional data collection staffing management buy in
- Agency staff capacity Consistent technology Bureaucratic Layers
- Funding Getting my organization to agree Data sharing resources
- Data sharing Communication Politicians Timely Data Availability
- Timeliness, "red tape" Responsiveness
- communication cooperation collaboration Time sharing information
- funding call multiple people Local politics N/A
- Appropriate contacts Regional significance consensus silos
- internal priorities Technology Current information

Responses

- regional cooperation coordination Funding data-sharing
- consensus change responsibilities Funding
- Locality coordination communications Local politics
- Timely responses Car Dependency Update to date communications
- Lack of data Communication channels Large region
- Parochialism, lack of data, large region data quality
- competing priorities Funding time Budget, Buy-in
- No regional requirements lack of resource capacity
- inter-regional collaboration data-sharing Resistance to Change
- Regional significance consensus Complexity Time, Capacity, Intent

66%

Engagement

96

Responses

Panel Discussion

Lead Facilitator: Joel Ticatch
RM3P Consultant Program Manager



Facilitator: Amy McElwain
RM3P Program Manager



From your perspective, what does collaboration look like?

Coordination with MD and DC - Including addressing interstate policy and operational guidance

Hands-on exercises to get familiar with technologies and build relationships

Involving the right people

Collaborative discussions on data standards (so they can be incorporated into decisions)

Collaborative learning from past experiences to improve and further strengthen relationships

Collaboration on incident management

What do you need from RM3P to enable your participation?

Guidance (documentation) on types of data sought and desired format(s) for that data

More information about how MMAP will be used by agencies

Set realistic and clear expectations for outcomes and for all parties involved from the planning and coordination side.

Develop data privacy policy

Information about technologies that will be needed to interface with RM3P systems

Metrics on desired outcomes with respect to VMT reduction and/or mode shift

How can your organization support RM3P?

Provide data (e.g., from adaptive signal systems)

Coordination with DC/DDOT on mobility initiative(s)

Requirements for data-sharing in procurement

Incorporate consideration of RM3P activities in planning efforts

Would be great to get localities' input on preferred commercial vehicle routing

What new opportunities does RM3P present?

Guide apps on how to route drivers/AVs to optimize system performance

Effective management of delivery AVs for (un)loading

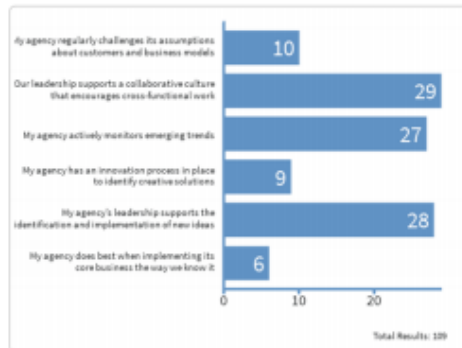
Enhanced active travel demand model

Important to set public expectations at a realistic level

Discussion

Polling Question 3:

RM3P includes quite a few innovative concepts. Which of the following are most applicable to your agency? (Select up to three)



Response options

My agency regularly challenges its assumptions about customers and business models

Count Percentage

10 9%

Our leadership supports a collaborative culture that encourages cross-functional work

29 27%

My agency actively monitors emerging trends

27 25%

My agency has an innovation process in place to identify creative solutions

9 8%

My agency's leadership supports the identification and implementation of new ideas

28 26%

My agency does best when implementing its core business the way we know it

6 6%



Engagement

109

Responses

From your perspective, what will be the greatest challenges to implementing RM3P?

What are potential solutions to these challenges?

Data integrity

Mutual agreement on expectations (among stakeholders)

Compatibility between MMAP (or other RM3P elements) and agency IT requirements

Motivating incentives that are adequate to encourage desired travel behavior changes

Setting clear, agreed-upon, and realistic expectations (among both agencies and the public)

RM3P's independent evaluation team to measure impact and correct course if/as needed to achieve desired outcomes (and make case for funding)

Opportunity to pursue competitive and/or P3 funding?, And/or consider creative funding options

Data privacy

Prompt communication

User fees to create sustainable funding stream

Leverage existing interstate institutions or regulatory framework

Use of performance metrics/results to make the case for more funding

Data security

Changing travel behavior

Data governance despite different jurisdictional legal/regulatory frameworks

Sustained funding (beyond development phase)

Centralized entity that owns/manages data, conducts data QC

Collaboration between roadway and transit agencies/entities

Data sharing

Discussion

Polling Question 4:

Please identify a specific project or program in Northern Virginia or the Washington, DC region that did/does a really good job facilitating regional coordination.

"IncenTrip"

"1) COG activity center coordination of economic development, planning and transportation"

"NVTA"

Total Results: 44

Responses

NCR NET Metro Platform Reconstruction Project

Commuter Choice (66 and I-395) Capital Bikeshare

WMATA's new digital SmarTrip app, positioned as a regional digital mobility solution foundation

MView (Regional CCTV Sharing) Regional Transit Fare Collection

3) VA transportation legislative funding coordination

Regional Funding Programs RITIS

2) Not a transportation one but e99 new gen coordination Transform I-66

NVTC (WMATA Metrorail Platform Project - Transit Service Coordination), NCR Watch Desk (Regional Coordination Dashboard)

NoVa Regional Park Authority Commuter Connections

Silver line metro MATOC

I-66 widening project. Project personnel very good with communications with all stakeholders.



44 Responses

VRE's new mobile app is positioned for regional collaboration

1) COG activity center coordination of economic development, planning and transportation

Capital Bikeshare RM3P Metro Station Shutdown TransAction

I-66 Multi modal solution Capital Bikeshare Commuter Connections

CAV Pilot Project (Fairfax County)

I-495 American Legion Bridge TDM/Transit Study IncenTrip

Metropolitan Area Transportation Operations Coordination (MATOC) Program

Capital Trails Coalition I-66 Commuter Choice Program Mobility wallet

Transportation Alliance RM3P

Metro Platform Improvement Project through Matt Cheng at NVTC

Transform 66 COG - TPB Capital Bikeshare RITIS

Capital Bikeshare RM3P NVTA

What's Next for RM3P?



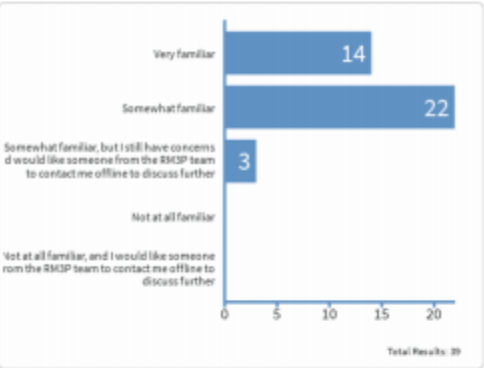
Amy McElwain,
RM3P Program Manager



Joel Ticatch,
RM3P Consultant Program Manager

Polling Question 5:

Now that we have completed this series of focus group and summit meetings, how would you rank your understanding of RM3P?



Response options

Very familiar

Somewhat familiar

Somewhat familiar, but I still have concerns and would like someone from the RM3P team to contact me offline to discuss further

Not at all familiar

Not at all familiar, and I would like someone from the RM3P team to contact me offline to discuss further

Count Percentage

14 36%

22 56%

3 8%

0 0%

0 0%

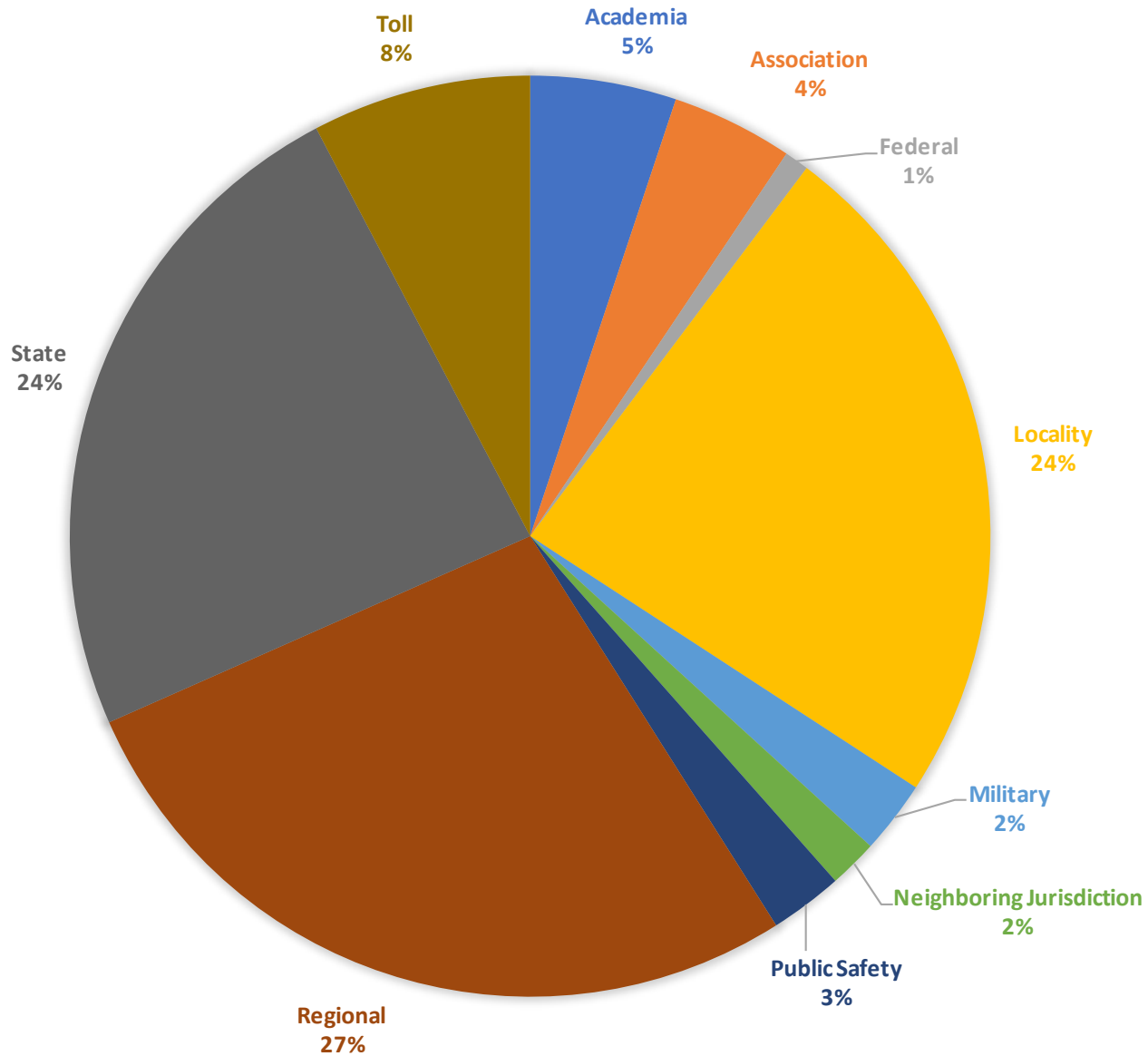


Engagement

39

Responses

SAG SUMMIT AGENCY PARTICIPATION



*RM3P Stakeholder
Advisory Group (SAG)
Summit:
Participation by Agency*



Thank You for Attending!

PLEASE LEAVE THE TEAM WITH ANY ADDITIONAL COMMENTS THROUGH THE POLL

OR CHAT BOX – OR EMAIL US!

RM3P@VDOT.VIRGINIA.GOV