

VDOT INFORMATION SESSION

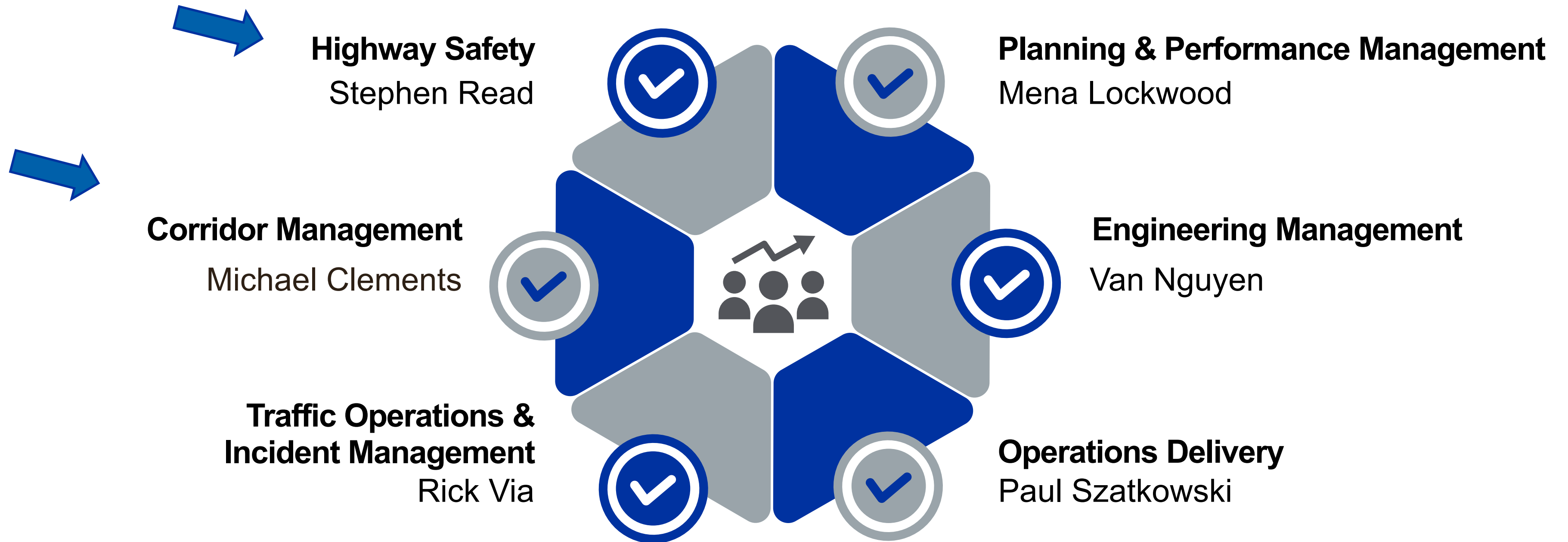
Traffic Operations Division
Operations Technology Division
District Traffic Operations
Office of Strategic Innovation



February 22, 2024

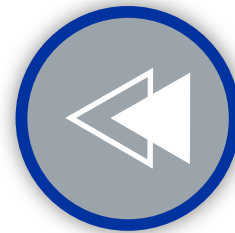


Traffic Operations Division –Administrator Update

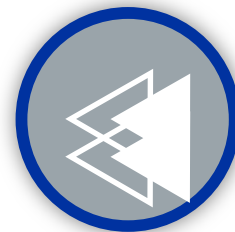


OUTLINE – New Faces, Opportunities & Updates

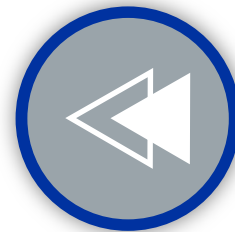
Traffic Operations Division



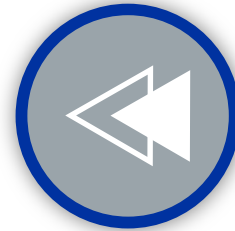
Operations Technology Division



District Operations



Office of Strategic Innovation



TOD Organizational Updates



Rajib Saha, Ph.D, P.E.

Senior Traffic Engineer

Planning and Performance
Management Team

Reports to: Sanhita Lahiri



Rashmi Patel, P.E.

Senior Traffic Engineer

Engineering Management Team

Reports to: Ritchie Robbins



Allan Yue, P.E.

Corridor Systems Integration
Program Manager

Corridor Management Team

Reports to: Michael Clements

VDOT's TRAFFIC OPERATIONS STRATEGIC PLAN - TOSP

1. Leverage **successful agency programs** and initiatives
2. **Explore opportunities** from implementation of the sustainment model
3. Collaborate with new agency-wide initiatives
4. Consider **industry trends influencing** digitization of traffic operations
5. Recognize external drivers

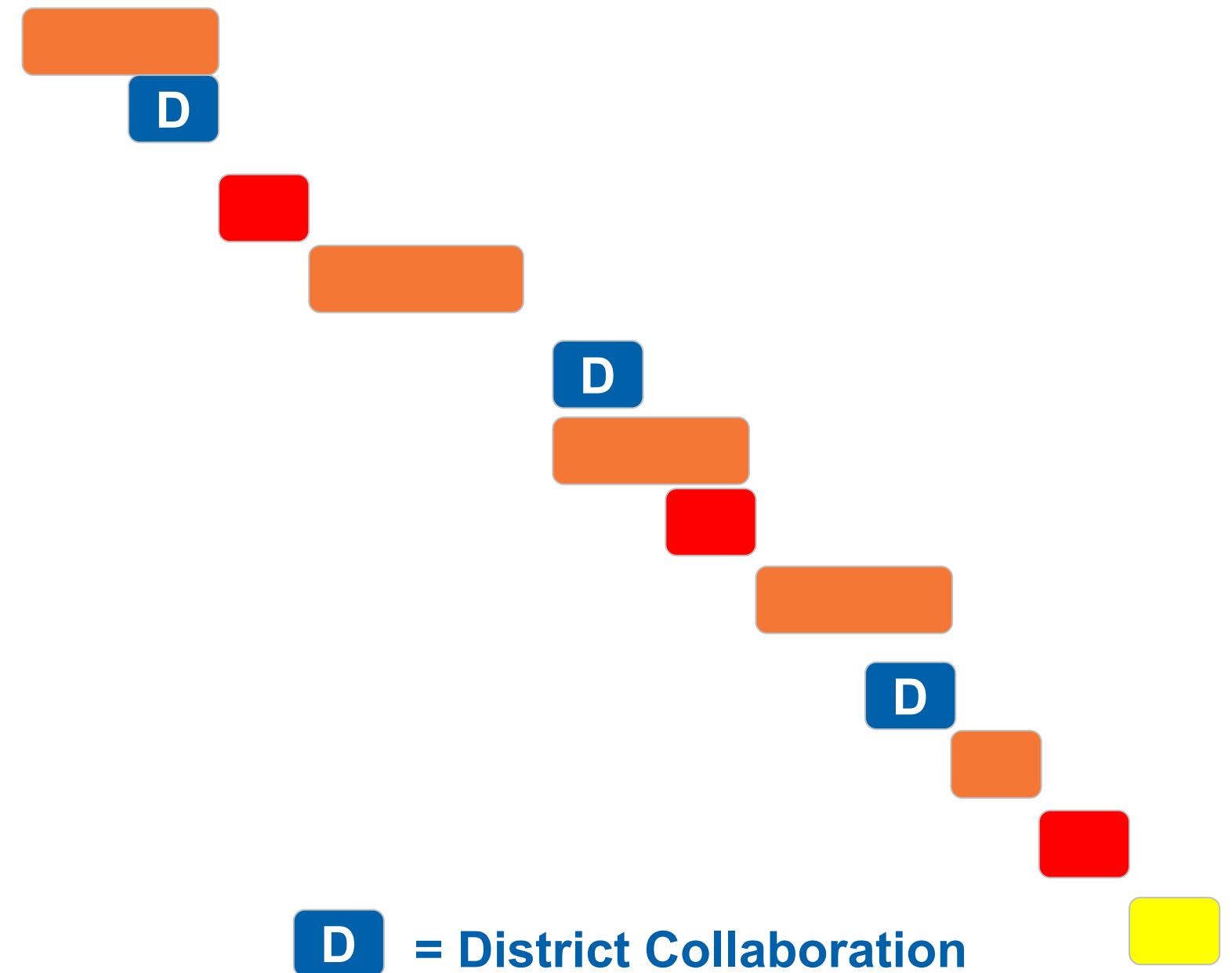
Major Industry Trends / External Influencers

1. Cybersecurity of OT Solutions
2. Workforce Changes
3. Data Management & Analysis
4. Electric Vehicles
5. Connected and Automated Vehicles
6. Artificial Intelligence and Machine Learning
7. Innovative Corridors
8. Freight Operations
9. Emerging Business Models
10. Innovative Service Delivery Partnerships
11. Next Generation of Traveler Information
12. Construction & Maintenance Technologies
13. New Travel Patterns
14. Innovation and Resiliency from Other Industries
15. Federal Trends
16. State Trends
17. Locality Relationships and Coordination
18. Environmental and Climate Impacts Resiliency
19. Build vs. Buy Decision Process
20. Alternate Sources of Power (wind, solar, etc.)

TOSP Development Timeline

Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar Apr May

- Develop Framework
- Interview DTODs →
- Commissioner Check-in**
- Industry Trends/Agency Initiatives Impacts to TO
- Review Impacts with Districts (ADAs/Districts) →
- Assemble Initial Impacts and Recommendations
- Commissioner Check-in**
- Finalize impacts and recommendations
- Review Recommendations (ADAs/Districts) →
- Assemble final report
- Commissioner Approval**
- Publish Traffic Operations Strategic Plan



Stakeholder Outreach – ITSVA ANNUAL MEETING May 9th & 10th

Initial VDOT Systemic Safety Infrastructure Plan

8 Proven Countermeasures

Completed 2021

High-visibility Backplates



100% Completed

Up to 15% crash reduction

Completed 2021

Flashing Yellow Arrow



100% Completed

Up to 20% crash reduction

Complete By 2024

Curve Signs




PE:95% & CN:58%

Up to 40% crash reduction

Complete By 2025

Pedestrian Crossings




PE:80% & CN:44%

Up to 56% crash reduction

Complete By 2024

Unsignalized Intersections




PE:91% & CN:54%

Up to 10% crash reduction

Resurfacing Cycle -15Yr

Shoulder Wedge



PE:3.5% & CN: 3%

Note: Shoulder prep funded by Maintenance Resurfacing fund.

Up to 20% crash reduction

Complete By 2030

Centerline Rumble Stripes



PE:62% & CN:58%

Up to 60% crash reduction

Complete By 2030

Edgeline Rumble Strips





PE:44% & CN:36%

Up to 50% crash reduction

Ongoing Virginia Highway Safety Program

Infrastructure Investment Plan Current SYIP (FY25-FY30)

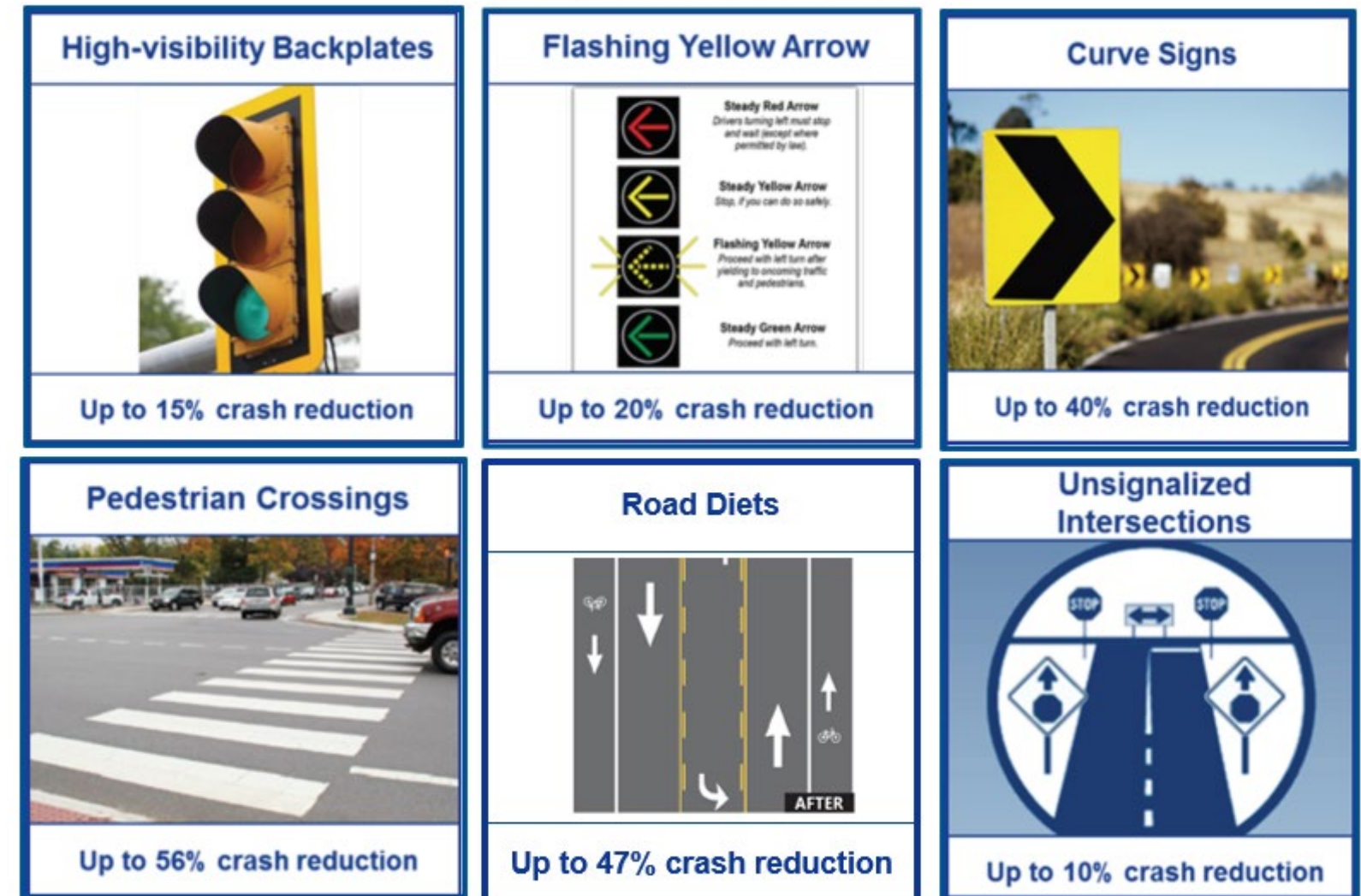
<p>Local Systemic Projects</p> <p>Flashing Yellow High-Visibility Backplates Pedestrian Crossings Curve Signage Unsignalized Intersections Road Diets</p> <p>\$58M Investment</p>	<p>Expanded Safety Programs</p>	<p>New VDOT Pedestrian Crossings</p>  <p>\$20M - Up to 200 locations</p>	<p>Expanded Flashing Yellow Arrow</p>  <p>\$13.5M - Up to 195 locations</p>
		<p>51 Locality Projects \$59.8M in Funding</p>	<p>New Initiatives</p>

Planning to Program New VHSIP Projects

Infrastructure Investment Plan Next SYIP (FY25-FY30)

- **\$50.4M** to fund Locality Systemic Safety Projects.
 - Application Received for: Pedestrian Crossing, Flashing Yellow Arrow, High Visibility Backplates, Unsignalized Intersections, Curve Delineation, Road Diets etc.
- **\$42.0M** to fund New Spot Projects for VDOT only.
 - Application Received For : Roundabout, Shoulder Widening with Rumble Strips, Geometric Improvement and **Collision Warning** at Intersections, Guardrail Improvement, R-Cut, New Traffic Signals and Retiming Existing, Bicycle and Pedestrian Improvement with Sidewalk etc.
- **\$100M** for more systemic projects was approved by CTB for the next SYIP after finalizing the initial list.

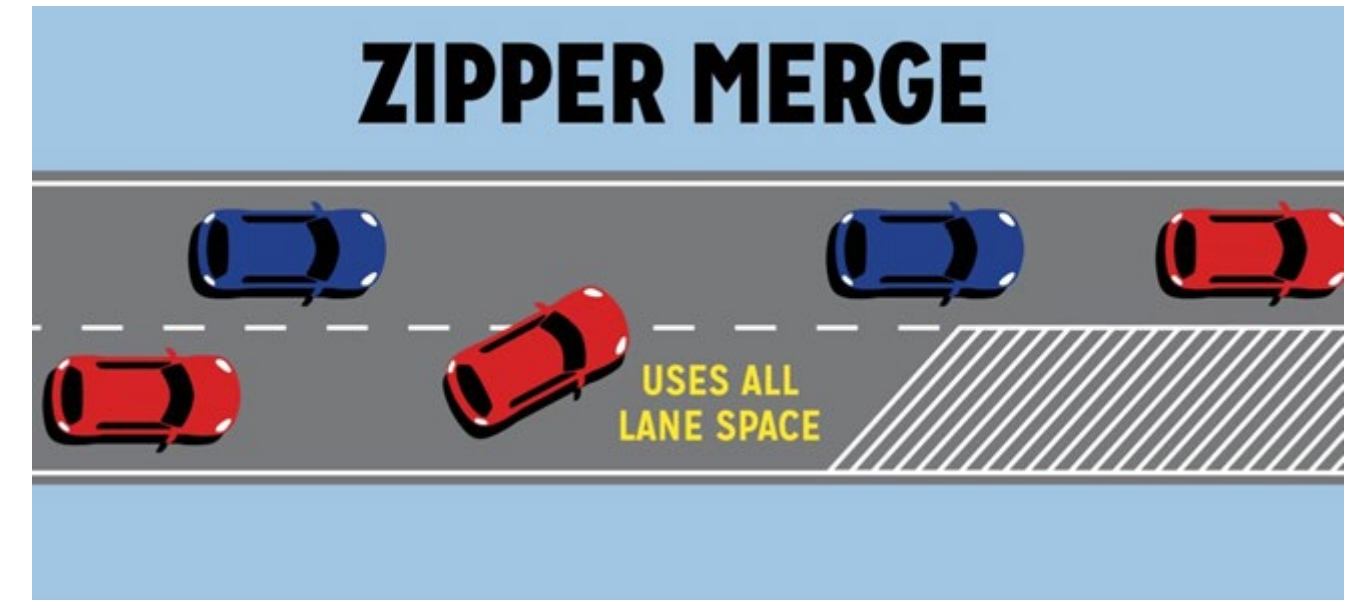
Local Systemic Initiatives



Planning to Program New VHSIP Projects

Current / Upcoming Pilot Testing

- Dynamic Zipper Merge / Queue Warning System
- Digital Speed Limit / Speed Feedback Signs
- Connected Arrow Boards
- Speed Safety Cameras (Photo Enforcement)



On-going Research

- Autonomous Truck Mounted Attenuators (TMA)
- Worker Smart Vests (geo-fencing)



2024 Legislative Update



Speed Limits

SB 336
SB 535
HB 1071
HB 144



Tow Trucks

HB 1073
SB 94



Safety

SJR 19



Bike / Ped

HB 1077
HB 1266
HB 657

TSMO Strategy Screening (TSMOSS)

- ▶ **Objective:**
 - Proactive response
 - Leverage innovation with optimal Return on Investment
- ▶ **Prioritize using network screening:**
 - Appropriate TSMO strategy for a location
 - Optimal Performance Measure and Strategy Benefit

– Consistent Methodology to Screen and identify:

- Safety
- Congestion
- Reliability

– Repeatable process for:

- Integrating with Projects from other Programs
- Funding Applications

**Detailed Evaluation after Screening*

1. Group similar performing segments into Corridor Sections
2. Calculate Performance Measures
3. Calculate Performance Score
4. Assign Benefit Score to strategies
5. Combine Performance & Benefit scores
6. Develop List of Optimal Strategies

**Currently Methodology is for Interstates*

Team:

- Katie Felton
- Sanhita Lahiri
- Simona Babiceanu
- Mena Lockwood
- Mike Fontaine
- Paul Szatkowski

TSMOSS Visualizations - Power BI

Power BI PBI-VDOT-OpsAnalyti...

TSMOSS Visualizations



Pages

Performance Measures

Performance Scores

Scoring

Score Maps

File Export Share

Performance & Strategy Scoring Map & Projects

Select Strategy:

Queue Warning

Select scoring by:

- District
- RuralUrban
- Statewide

Select District:

- Bristol
- Culpeper
- Fredericksburg
- Hampton Roads
- Northern Virginia
- Richmond
- Salem
- Staunton

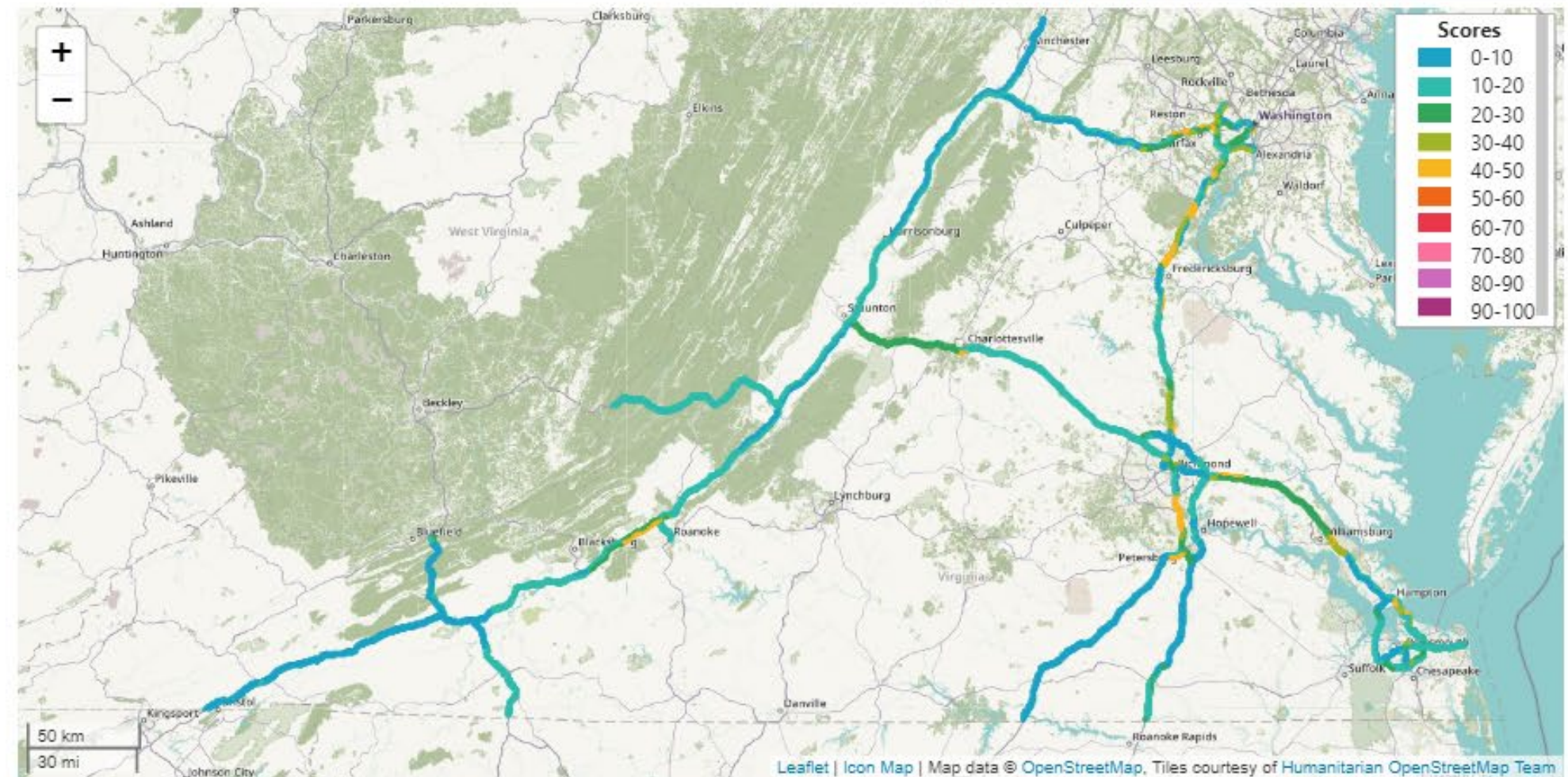
Click to Deselect...

Click map segment to filter table and view scores

5	2
Crash Score	Safety Benefit
5	3
Inc Score	Inc Management Benefit
5	1
Delay Score	Congestion Benefit
5	0
Reliability Score	Reliability Benefit

Click map segment to filter table and view projects

I-195N 0-1			
UPC	Project Type	Length (mi)	Completion Date
101595	Added Capacity	23.80	Jul 2022
102437	Added Capacity	0.63	Mar 2018
103320	Added Capacity	1.17	Mar 2021
104905	Added Capacity	5.33	Jun 2019
105510	Added Capacity	13.44	Sep 2024
106665	Added Capacity	28.32	Nov 2022



<https://app.powerbigov.us/groups/5acf6690-951c-4baa-bc94-af9d2ffbbb2e/reports/2fd24ed6-8195-4eb1-87dc-4471e5448eb4/ReportSection6b6260a4bdd01f4095a8>

TSMOSS Visualizations - Power BI

Power BI PBI-VDOT-OpsAnalyti...

TSMOSS Visualizations



Pages

Performance Measures

Performance Scores

Scoring

Score Maps

File Export Share

Performance & Strategy Scoring

Select District:

- Bristol
- Fredericksburg
- Northern Virginia
- Salem
- Culpeper
- Hampton Roads
- Richmond**
- Staunton

Select scoring by:

- District
- RuralUrban
- Statewide

Select Reliability Measure:

- 1.5 < TTI80 <= 2.5
- 2.5 < TTI80**



Strategy	BENEFIT BY STRATEGY			
	Safety	Inc Mgmt	Delay	Reliability
Aggressive Incident Clearance	2	3	2	2
Dynamic Merge Control	2	2	1	2
Dynamic Rerouting	1	3	1	2
Queue Warning	2	3	1	0
Ramp Flow Control	2	2	3	2
Special Event Management	1	3	2	2
Temporary Shoulder Use	0	0	3	3
Traveler Information Systems	1	3	2	2
Truck Lane Restrictions	0	1	1	2
Variable Speed Limits	3	1	1	2

District	Area Type	Location	Aggressive Incident Clearance	Dynamic Merge Control	Dynamic Rerouting	Queue Warning	Ramp Flow Control	Special Event Management	Temporary Shoulder Use	Traveler Information Systems	Truck Lane Restrictions	Variable Speed Limits
Richmond	Rural	I-64E 200.3-202.0	30	38	42	32	48	47	33	47	23	33
		I-64E 202.6-224	30	23	22	23	30	25	15	25	10	25
		I-64W 148.1-176.8	18	15	13	13	18	15	10	15	7	17
		I-64W 199.6-202.8	28	22	18	20	32	23	20	23	10	25
		I-64W 202.8-210	68	53	53	48	67	60	40	60	28	53
		I-64W 210-224.2	30	23	22	23	30	25	15	25	10	25
		I-85N 0.6-63.6	15	12	12	10	15	13	10	13	7	12
		I-85S 0-63.4	15	12	12	10	15	13	10	13	7	12
I-95N 100-101.7	35	25	27	27	35	32	20	32	13	23		

District	Area Type	Location	Aggressive Incident Clearance	Dynamic Merge Control	Dynamic Rerouting	Queue Warning	Ramp Flow Control	Special Event Management	Temporary Shoulder Use	Traveler Information Systems	Truck Lane Restrictions	Variable Speed Limits
Richmond	Rural	I-95N 86.5-90.1	72	55	57	47	72	65	50	65	33	53

<https://app.powerbigov.us/groups/5acf6690-951c-4baa-bc94-af9d2ffbbb2e/reports/2fd24ed6-8195-4eb1-87dc-4471e5448eb4/ReportSection6b6260a4bdd01f4095a8>

CORRIDOR MANAGEMENT



Mike
Clements

Corridor Systems Integration



Allan Yue

Ops Sys
Specialist
Vacant

Signals & Arterial Systems



Matt Bonacci



Steve Damron

Eng Sr Supv Signals
Vacant

Traveler Information

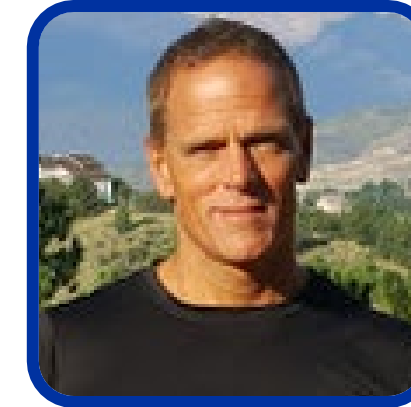


Crystal Underwood



Russ Brickey

Engineering Studies



Mike Nichols



Brian King

CORRIDOR MANAGEMENT

Corridor Systems Integration

- Detour Routes
- Locality & 3rd Party Agreements (Signals)
- Standard Operating Procedures (SOPs)
- System Optimization
- Integrated Corridor Management
- System Architectures
- Systems Engineering

Signals & Arterial Systems

- Traffic Signals Operations
- Controllers (ATC)
- Cabinets (ATCC) & Digital Locks
- Central Signal System (KITS)
- Automated Traffic Signal Performance Metrics (ATSPM)
- Signal Maintenance
- Network Plan for Communications

Traveler Information

- 511 Services
- Traveler Information Enhancements
- TVD Services Transition
- Incident Responder App
- SmarterRoads Data Portal
- 3rd Party Navigation Apps Coordination

Engineering Studies

- Speed Management
- School Zones
- Truck Restrictions & Truck Routes
- Parking
- Residential Traffic Programs

Operations Delivery

Reporting

- VDOT Freeway Operations Annual Report (external website)
- *VDOT Freeway Operations Quarterly Report* (in 2024)
- Annual Uses of ITTF Funds (General Assembly Library)

Unique Operations Programs

- *Parking Programs: Commuter Parking Information System, Dynamic Pricing*
- HOV / HOT Lanes
- Lighting Energy Reduction

Projects

- Grants, IOEP, ITTF, *Resiliency*

GRANTS



Traffic Operations is the VDOT leader of the FHWA ATTAIN & SMART grant programs.

Traffic Operations supports the VDOT leaders for the FHWA PROTECT & AID grant programs.

2023 Activities Status

- ATTAIN: I-81 Actionable Real-Time Information for the Safety of Travelers (ARTIST) – Submitted application. Recommended, but not Awarded
- SMART: Signal Technology for Advanced Multimodal Performance (STAMP) - Awaiting results
- PROTECT: Modernizing Operations for Virginia's Evacuation Resilience (MOVER) - Awaiting results
- AID: No applications submitted

GRANTS

Process

1. *Traffic Operations Review Board* (Scope and Program Needs/Outcomes)
2. *Funding Review* (Grant Match)
3. *Executive Team Review* (*Office of the Secretary*)
4. *Grant Development*: Scope, Schedule, Project Delivery, Cost-Benefits Analysis, Letters of Support

2024 Activities Status

- **ATTAIN**: Planned Submittal
- **SMART**: Open

Interstate Operations Enhancement Program

- A new round of Corridor Studies may begin in 2025.
- Corridor Studies are led by VDOT's Transportation Mobility Planning Division with support from the Traffic Operations Division.

Corridor	Total Projects / Programs	Completed Projects / Programs	Active Projects	Recent Notable Activities
I-81	5	5	0	
I-95	17	7	10	VSL, SSP, TRIP, Work Zone Data, CCTV (partial)
I-64	13	2	11	
I-66	4	0	4	
I-77	4	4	0	TRIP
I-85	5	1	4	
I-295	4	1	3	

Innovation Technology Transportation Fund

- ▶ Requirements defined in Code of Virginia Section 33.2-1531
 - No research projects
 - No evaluation projects

▶ ~ \$25M/Year



Active Projects as of October 31, 2023

57
Active
Projects

\$151M
Active
Projects Value

Completed Projects January 2023 - October 2023

20
Completed
Projects

ITTF Focus Areas



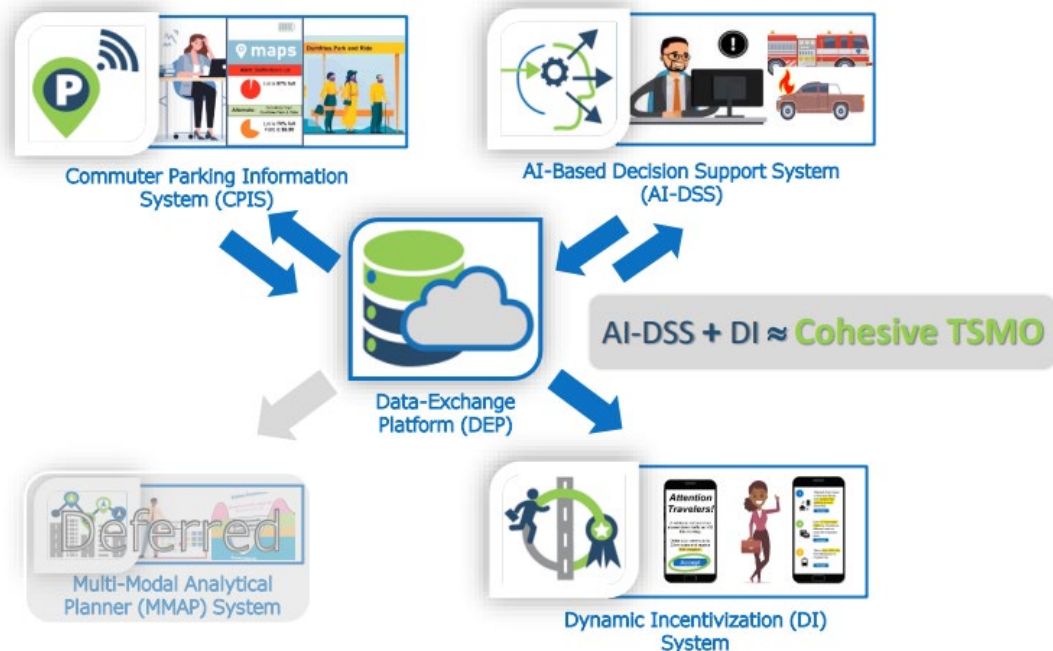
Project Status Summary

The duration of each project state varies on its complexity. A simple ITTF project may be completed within a year. Complex projects may take multiple years to scope, design and install.



Innovation Technology Transportation Fund

Notable Activities

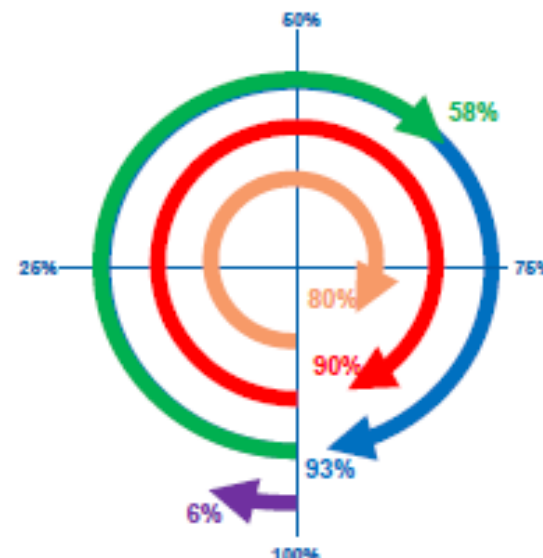


RM3P Data Exchange Platform (completed)

ATSPM Advancement (8 projects)

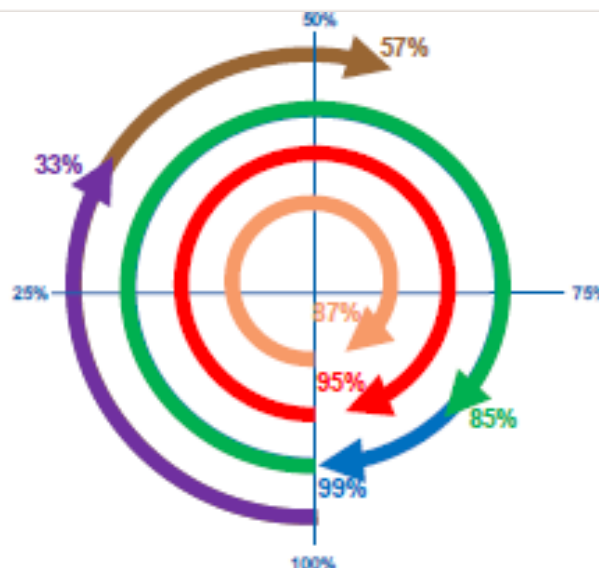
3,137 Traffic Signals Statewide

- High Speed Communications (2506 – 80%)
- ATC / D4 Migration (2808 – 90%)
- KITS Deployment (Configured – 2915 – 93%)
- KITS Deployment (Live – 1829 – 58%)
- ATSPM (Active – 196 – 6%)



3,153 Traffic Signals Statewide

- High Speed Communications (2738 – 87%)
- ATC / D4 Migration (2999 – 95%)
- KITS Configured (3116 – 99%)
- KITS Live (2685 – 85%)
- ATSPM Configured (1795 – 57%)
- ATSPM Active (1049 – 33%)

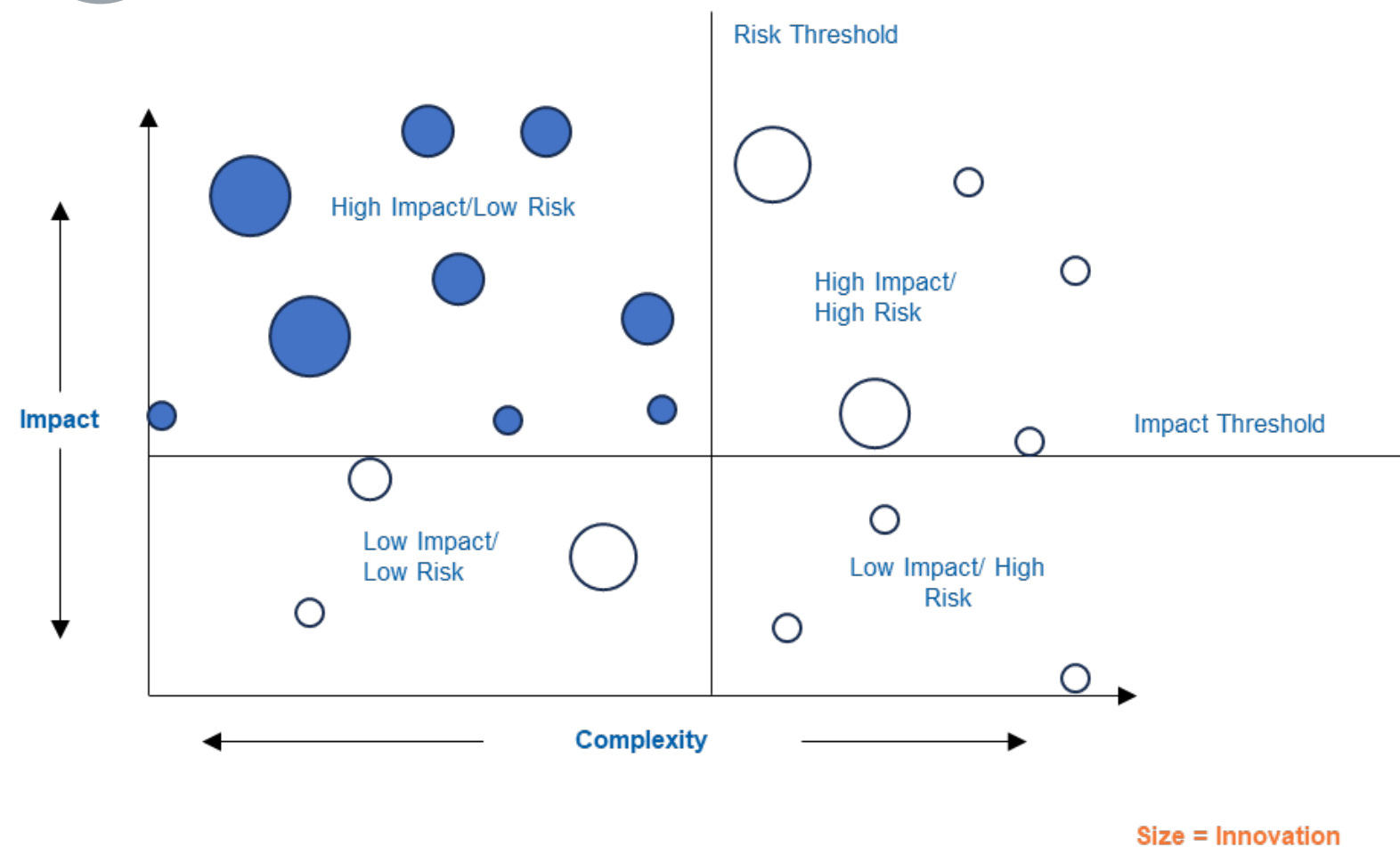


External Projects

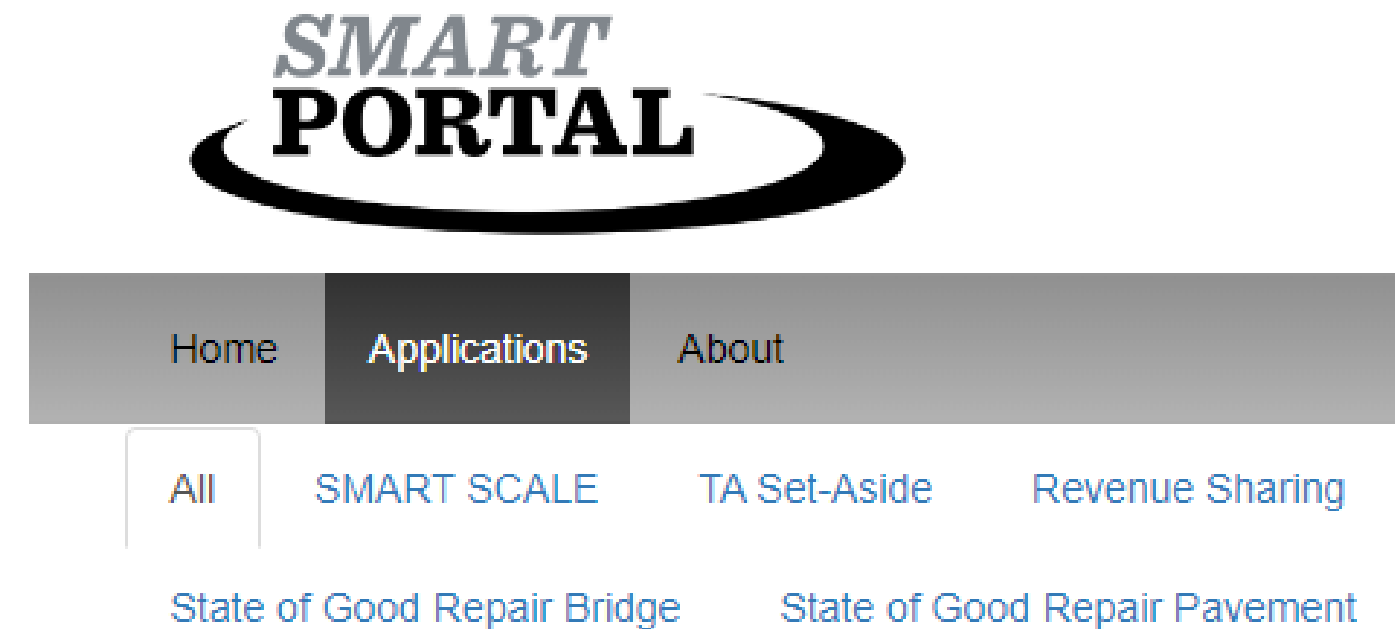
- Completed Microtransit Demonstration Projects
- Implementing Dynamic Price Parking (Arlington County)

Innovation Technology Transportation Fund 2024 Enhancements

1. New Scoring Method for Proposed ITTF



2. Accept External Applications via the Smart Portal



Operations Technology Division Administrator Update

Last year...

Operations Technology Division – Org Updates

6

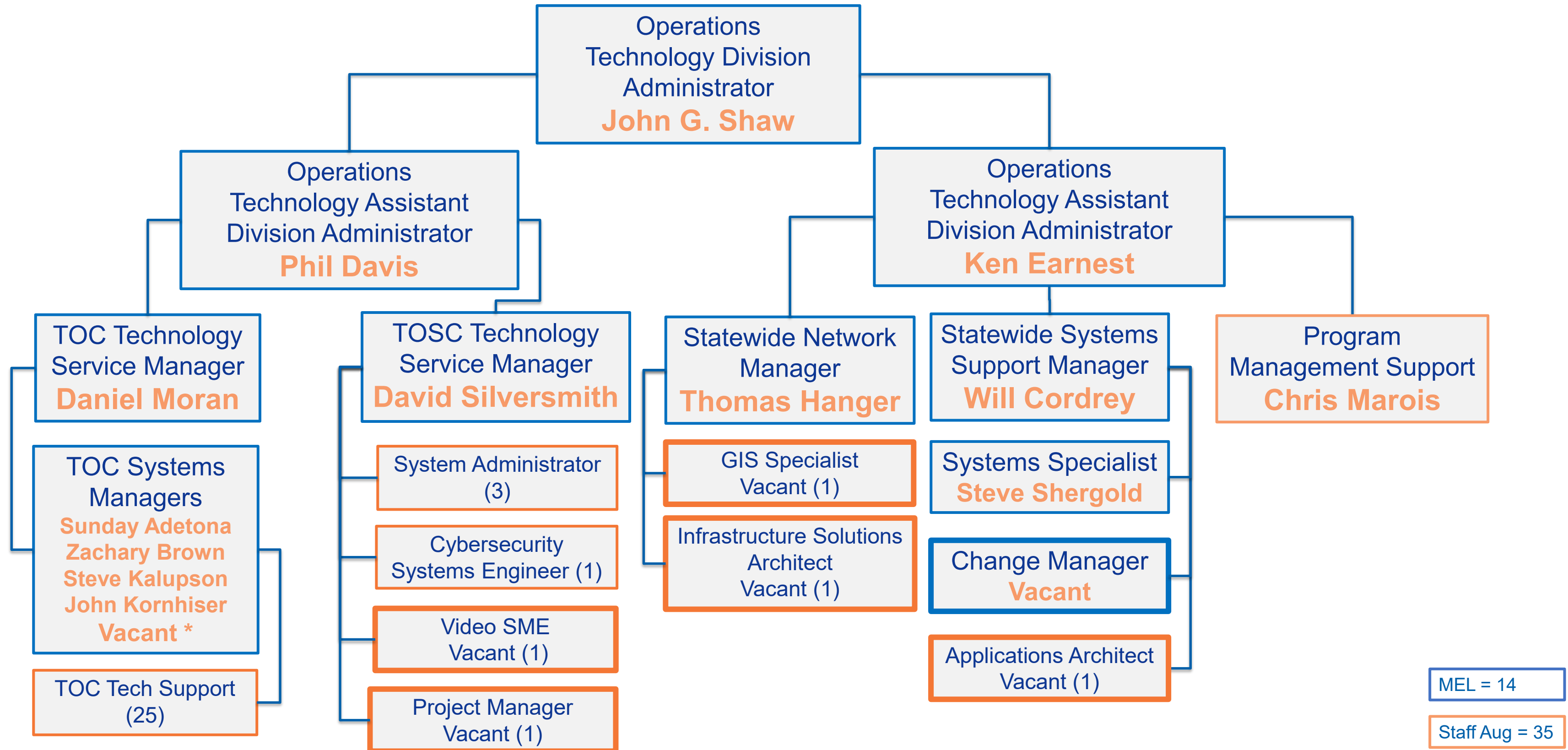


Phil Davis



Ken Earnest

Operations Technology Division Administrator Update



VDOT Operations Technology

▶ What is Operations Technology?

- **Everything that is not traditional IT**
- **Strictly Command and control**
 - **No User Email**
 - **No Open Internet for Users**
 - **Least Privilege 101**

▶ Operations Technology Division

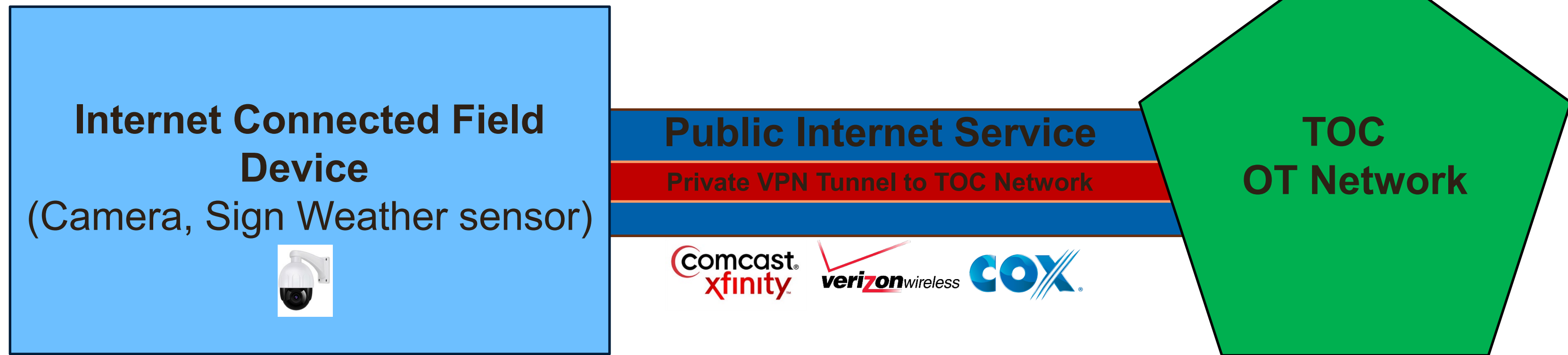
- **Formed in late 2022**
- **VITA Oversight (Delegated authority MOU)**
- **VDOT Office of Information Security**
 - **Cabinet Hardening Security Standards**
 - **OTD approves all new network segment and device types**

Trust No One

- ▶ OTD vets every new proposed device type
- ▶ Leverage investments in Cybersecurity tools
 - What are we looking for?
 - External (back door) connections
 - Unexpected device behavior
 - Known vulnerabilities

VDOT Operations Technology

- Roughly 60% field devices currently connected with fiber
- Leased Internet services for the balance
 - Cost effective if managed properly
 - IP-SEC VPN tunnels are a requirement



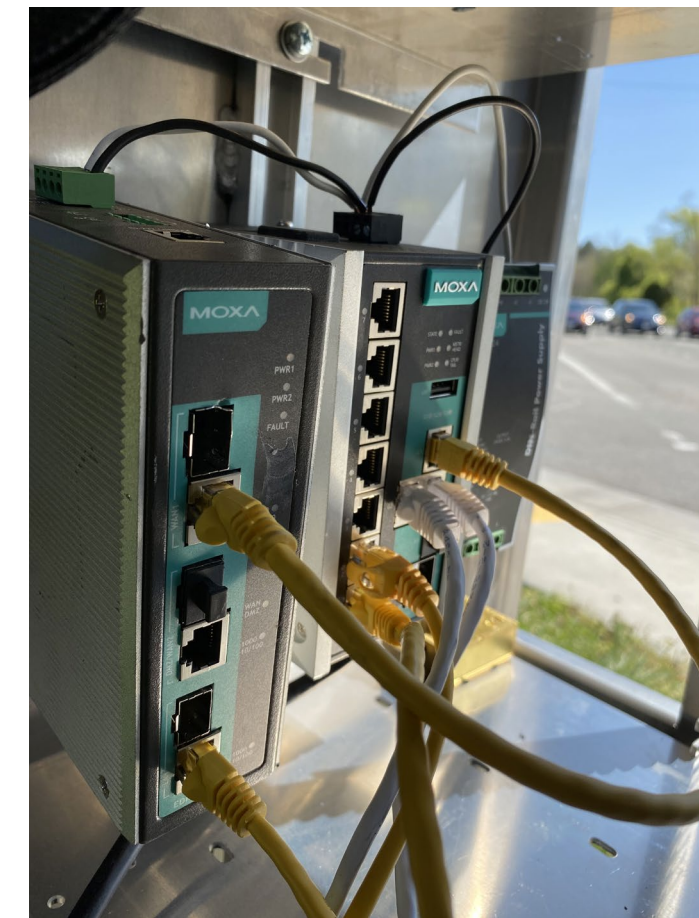
VDOT Operations Technology

▶ Benefits of IP-SEC VPN

- Meets VITA data encryption requirement
- Best practice from NIST
- Prevents loss of data integrity in motion
- Prevents Man in the middle attacks
 - Mature protocol
 - Most modern routers support IP-SEC
 - Simple to deploy
 - No known compromises

▶ Opportunity costs

- Manual effort to create each new tunnel
- 18% overhead to network throughput



DISTRICT OPERATIONS UPDATES & OPPORTUNITIES

ROBB ALEXANDER, RICHMOND DISTRICT TRAFFIC OPERATIONS DIRECTOR
MATT SHILEY, STAUNTON DISTRICT TRAFFIC OPERATIONS DIRECTOR

Key Organizational Updates



Dean Neff

Hampton Roads District Operations
Traffic Operation Program
Administrator (TOPA)



Sunil Gyawali

Richmond District Traffic Operations
Signal and Freeway Operations
Engineer (SFOE)



Kamal Suliman

Northern Virginia District Operations
District Traffic Operations Director
Retiring as of March 1st, 2024



David Routt, Jr

Northern Virginia District Operations
District Operations Maintenance
Manager



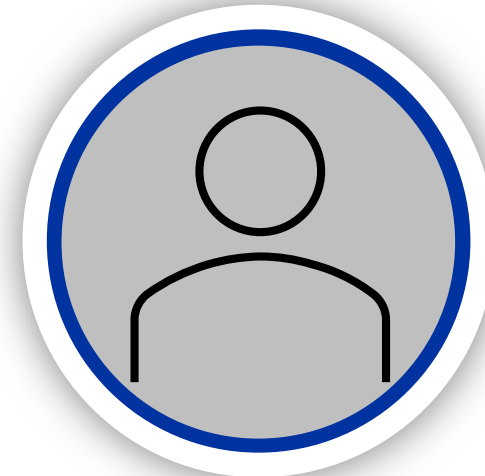
**Siavash Mousavizadeh,
P.E., PTOE**

Northern Virginia District Operations
Assistant District Traffic Engineer



Peter Hedrich

Fredericksburg District Operations
District Traffic Engineer
Retiring as of July 1st, 2024



Floyd "Boots" Ellmore

Fredericksburg District Operations
Incident Management Coordinator



Jizhan Gou, P.E.

Fredericksburg District Operations
Signal and Freeway Operations
Engineer (SFOE)

Business Opportunities – Districts

Hampton Roads

- UPC 123794, Jamestown-Scotland Ferry Electronic Throttle Control for Surry, Williamsburg Vessels, \$610K, Fall 2024 Ad
- UPC 124645, District Wide On Call Sign Replacement, \$1M, Summer 2024 Ad
- UPC 124646, District Wide On Call Signal Support, \$2M, Summer 2024 Ad

Northern Virginia

- I95 CIP Detour Rte 1 Communication upgrades Fairfax and Prince William Counties - \$4.3M, Construction Division, Spring 2024 Ad
- Traffic Signal Communications Network Support Services - multi-term (1-year term with option of four 1-year renewals), \$950K/term, ASD, Spring 2024 Ad
- Two Lane Rural Road Traffic Safety Countermeasures - \$1.2M Construction Division, Summer 2024 Ad
- On-Call Districtwide Pavement Marking Retrace Contract – Currently in final term, \$3.4M/term, estimated early 2025 Ad

Business Opportunities – Districts

Fredericksburg

- UPC 118601: On-call pavement marking and marker lens replacement. Currently in last term – Ends August 2024. Expect to advertise replacement contract March 2024
- UPC 124366: Two Lane Rural Road Safety Improvements - \$5.3M Construction Division, Late 2024 Advertisement

Richmond

- Traffic Signal and ITS Construction Roundtable – February 29, 2024
 - \$37.7M to advertise in 2024
- UPC 119760 - I-64 west fiber optic & ITS project – \$7.1M, April 9, 2024 advertisement
- UPC 116726 – I-95 CCTV - \$5.4M - July 9, 2024 advertisement
- UPC 122147 - Rt. 288 Hard Shoulder Running - project total \$39.5M, Fall 2025 advertisement

Key Organizational Updates



Under Recruitment

Staunton District Operations
Operations Technology (OT)
Maintenance Manager (New Position)



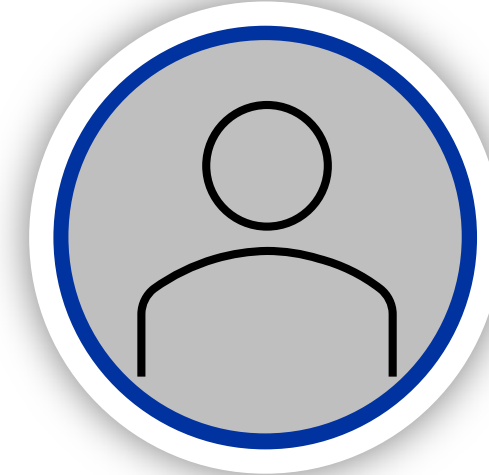
Chris Powell

Culpeper District Operations
Incident Management Coordinator



Chris Stone

Culpeper District Operations
ITS Specialist



Caroline Awua-Mensah

Culpeper District Operations
Operations Project
Management/Delivery



Greg O'Berry

Lynchburg District Operations
Incident Management Coordinator



Under Recruitment

Lynchburg District Operations
District Traffic Engineer



Soon to be Under Recruitment

Lynchburg District Operations
Signal Freeway Operations
Engineer

Key Organizational Updates



Tim Robinson

Bristol District Operations
Signal Freeway Operations
Engineer (SFOE)



Nathan O'Kane, P.E.

Salem District Operations
District Traffic Operations
Manager



Andrew Nichols, Ph.D., P.E.

Salem District Operations
Signal and Freeway Operations
Engineer (SFOE)



Katie McGowan

Salem District Operations
Traffic Operations Center
Manager

Business Opportunities – Districts

Salem

- UPC 120368 - On Call Pavement Markings/Marker Contract
 - Currently in 2nd (1 year) Term - Ends 11/30/2024; Can renew 1 more time for 1 year term

Bristol

- UPC 120541: On-call district wide markings retrace contract; Currently in last term – Ends January 2025. We will be developing a new contract for advertisement soon.
- UPC 119381: On-call district wide ADA curb ramp improvements; Currently in last term – Ends December 2024. We will be developing a new contract for advertisement soon.

Lynchburg

- UPC 119408 - High Water Monitoring System - PE Phase, high water monitoring system for several flood prone areas in our District. Ad early 2025, est.
- UPC 121775 - ATSPM Operations Evaluation - PE Phase, improving travel time by reducing congestion and improving reliability on several corridors in the District. Ad early 2025, est.
- Multiple UPCs – Intersection Control Warning Systems, Flashing Yellow Arrow Installation, Rumble Strips. Ads within the next 12 months.

Business Opportunities – Districts

Staunton

- VDOT Staunton TOC facility expansion; anticipated ad is Fall 2024
- UPC 115128 - Route 55 east; Park-n-Ride metering/vacancy system/CMS - \$1.6 M, Dec 2025 advertisement
- UPC 119659 - Route 340 traffic/ped signal upgrades & system re-timing at 9 intersections - \$1.5 M, 2024/25 advertisement
- UPC 123072 - Districtwide install of FYAs with pole structural mods. - \$1M, 2026 advertisement.
- UPC 119663 - Route 340/522 corridor signals advanced detection upgrades, turn lanes, signs/markings - \$1.6M, 2025/26 advertisement.

Culpeper

- District RPM Maintenance Contract to be advertised late Spring/early Summer 2024
- 3 Signal corridor coordination/ATSPM development projects – Summer/Fall 2024

Combined District Contracts

- UPC 123945 - On Call Regional Signal Contract - Bristol, Lynchburg, and Salem Districts; Salem administered
 - Ad Closes 3/27/2024; 1-year initial term; Can renew 2 more times for 1-year terms
- UPC 120329 - On Call Guardrail Contract - Lynchburg and Salem Districts; Currently in 1st (2 year) Term - Ends 7/31/2024; Can renew 2 more times for 1-year terms; Salem administered

EMERGING TECHNOLOGY INITIATIVES

ITSVA Update

 Hari Sripathi, P.E.

February 22, 2024

Artificial Intelligence and Machine Learning

- **All AI work should conform to Executive Directive 30, VITA policy standard and VITA EA standard.**
- **SB 487 moved to the House**

<https://www.governor.virginia.gov/media/governorvirginiagov/governor-of-virginia/pdf/eo/EO-30.pdf>

<https://www.vita.virginia.gov/artificial-intelligence/>

- **Developing VDOT internal controls and governance policies to conform to the above.**
- **Large Language Models – The next big thing**
- **UVA exploratory project to see the value and understand the boundaries. Testing with 2,000 VTRC reports. UVA report expected in June**
- **Preparing for Microsoft Copilot**
- **Lessons learned will guide the next steps**

Low Earth Orbit Satellite Communications

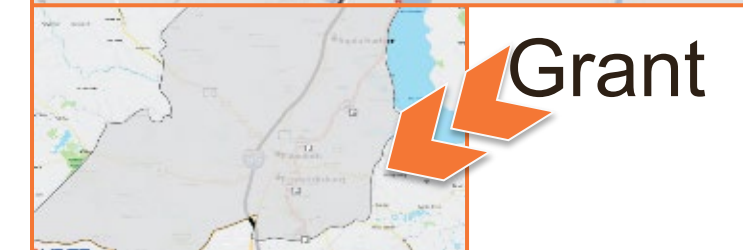
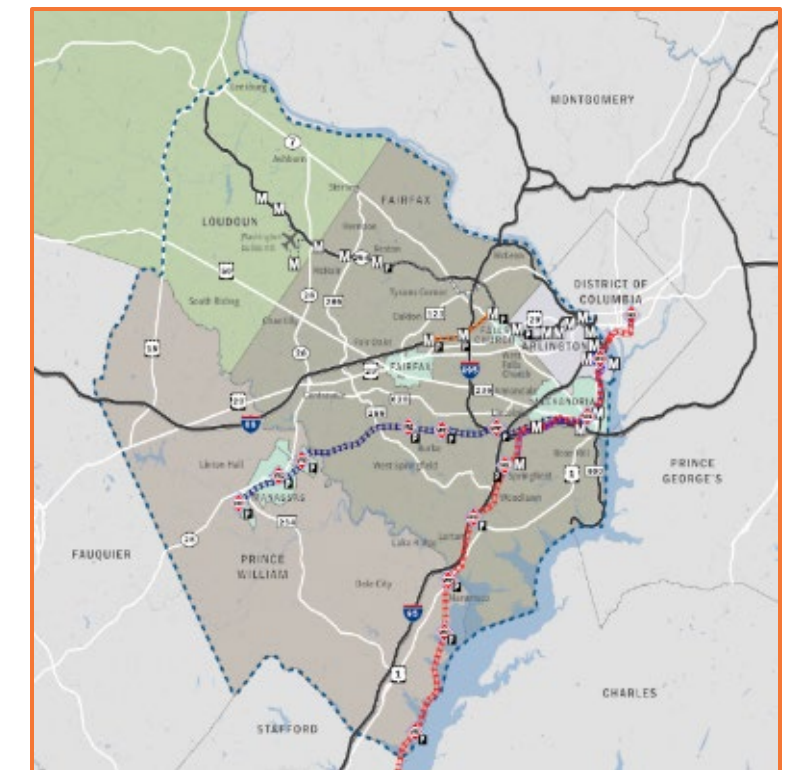
- **Adds significant capabilities to communicate with people and devices in the areas with no cellular or broadband**
- **Both stationary and Mobile options available**
- **A few options have been added to the VITA contract (Starlink, OneWeb and SuperGIG)**
- **Emergency priority option available in the contract**
- **Working with OSSEM and developing a plan for pilot deployment**
- **Need to have a good justification as costs are higher**
- **Lessons learned will guide the next steps**

Regional Multi-Modal Mobility Program (RM3P)

- **Funded via the Innovative Technology and Transportation Fund, ATCMTD grant & I-95 CIP**
- **Collaborative use of real-time data by Virginia's public and private sectors in Northern Virginia**
 - **Improve safety, reliability + mobility**
 - **Provide tools to make more informed travel choices**
 - **Advance four activities**
 - **Data Exchange Platform – Implemented (See rm3p.ritis.org)**
 - **AI Decision Support System – In Development**
 - **AI Commuter Parking System – UNDER PROCUREMENT**
 - **Dynamic Incentivization – UNDER PROCUREMENT**

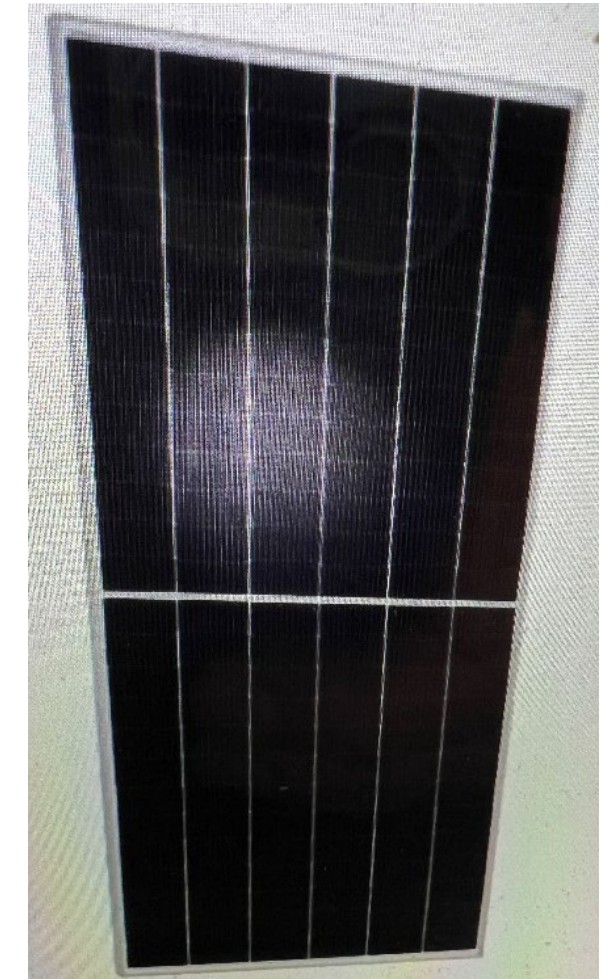


RM3PVirginia.org

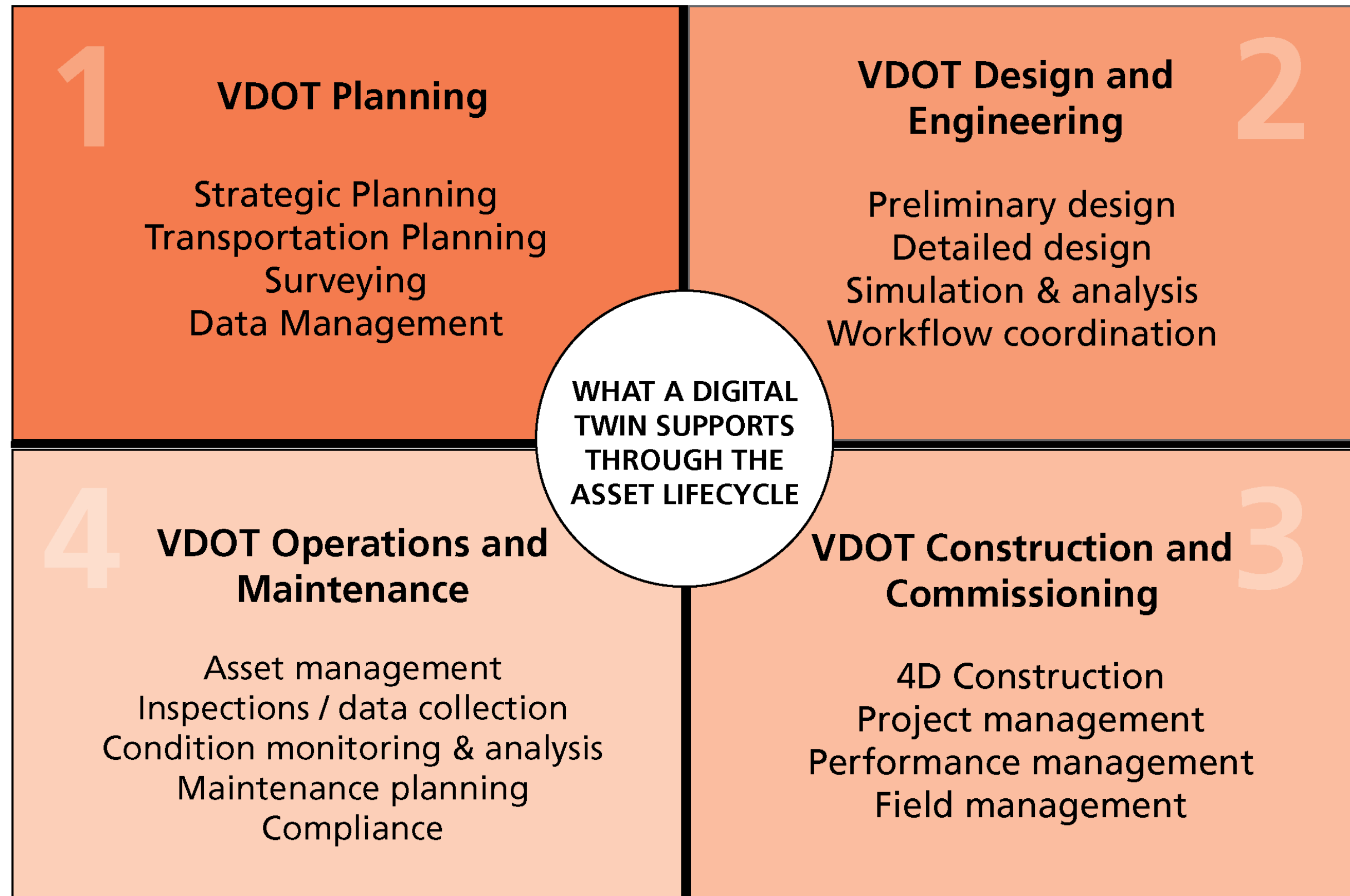


Solar (Backup) powered traffic signal - testing

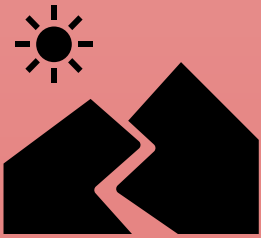




- TOD-OSI-Nova district partnership
- Solar panels and Li-Iron batteries
- Nova district TFO test intersection in Manassas
- Continuously operated on solar majority of the time (exception of snow days)
- Preliminary data shows the battery lasting 32 hours but testing is continuing
- Testing will continue for few more months to cover various scenarios



VDOT's View of Digital Twins



Digital Twins Focus Areas

Environmental	Structure and Bridge	Maintenance	Traffic Operations	Design and Construction
<p>Ensuring resilient infrastructure through informed decisions.</p> 	<p>Developing the scope of the project/work.</p> 	<p>Building a Proof of Concept and developing a roadmap.</p> 	<p>Addressing the fundamentals – data conflation tool.</p> 	<p>Identifying data needs to be transferred to maintenance; build a Proof of Concept; develop a policy to implement; build a roadmap.</p> 

QUESTIONS?

