ACHIEVING BETTER COORDINATION BETWEEN OPERATIONS TECHNOLOGY AND INFORMATION TECHNOLOGY
Achieving the missions set out by IT and OT support the realization of a shared vision for Technology

TECHNOLOGY VISION
To be recognized as an industry leader, by leveraging technology to drive value for our transportation stakeholders and the travelling public. Our people, processes, and practices aspire to be world class.

IT MISSION
We keep Virginia moving by proactively partnering with our stakeholders to enable technology solutions that serve as a force multiplier for their work. Because of our contributions, the people of VDOT are able to work better.

OT MISSION
We enhance the quality of life of every traveler in Virginia by efficiently operating the roadway systems with technology solutions and processes that move people and goods safely and effectively.
Numerous factors and advancements in technology are driving the IT/OT convergence.
Field Devices
- Cameras
- Message Boards
- Mobile signs
- Weather Stations
- Traffic Detectors
- Traffic Controllers
- Traffic Signals
- ITS cabinets
- Ramp meters
- HOV gate systems
- HARs
- Overhead detectors
- Fog detection/alert systems
- Tolling gantries
- Tolling technologies
- LPRs

Introns:
- ATMS
- ATM
- Traffic Signals & systems
- Lane Control
- Ramp Metering
- Fog Lights
- Tolling Systems
- Hardware/Software
- Communications Equipment
- Field Devices
- etc.

10,000+ field devices
75,000 ip addresses
6,500 control cabinets
Several hundred servers
Network switches
2 tier-3 data centers
5 communication hubs
4,600 miles of fiber

Various Flavors of Cloud Services

Various Flavors of End User Devices + Hundreds of Applications, Data Services, Networks
Unlike the past, many new technologies fall under both IT and OT, further driving the need for convergence between the two.
OT and IT share many of the same priorities

**IT Themes**
- Maintain credibility with public and legislature
- E-construction
- Mobility
- Modernization
- Support the back office

**OT Themes**
- Statewide vision & standardization
- Network connectivity
- Infrastructure planning
- Funding
- Support real time operations
- Control systems supporting life-safety operations

**Joint Themes**
- Safety
- Cybersecurity
- Operational efficiency
- Situational awareness
- Data / data analytics
- Governance
- Stakeholder relationship management
- Staffing/human capital
- Uptime
- VITA

**VDOT IT - OT Strategic Plan**
### Understanding IT and OT priorities

<table>
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<th>What IT professionals need to know about the TSMO environment and processes</th>
<th>What OT professionals need to know about the IT environment and processes</th>
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<tr>
<td><strong>1.</strong> Risk management is considered more from a safety and operational integrity than technology perspective</td>
<td><strong>1.</strong> IT Governance processes are designed to support operations and must be followed</td>
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| **2.** OT has three main domains that must work together  
   a. Transportation Operations Center data/technology  
   b. Field devices on roadside and intersections  
   c. Communications from the edge device to the TOC, office, public, and external connections | **2.** Project and portfolio management disciplines must be practiced  
**3.** Cybersecurity must be as important as worker/traveler safety  
**4.** Data management practices and standards are designed to simplify analytics, reporting and operations  
**5.** Identity and access management for people and devices must be well understood |
| **3.** TSMO must adhere to MUTCD and Work Area Safety Manual | **6.** Enterprise management services like Active Directory must be implemented  
**7.** Network engineering must consider several factors including security, risk, redundancy, and resiliency |
| **4.** Traffic flow restrictions must be considered while attempting to service a technology component on the road | **8.** Configuration management and change management protocols must be established and practiced  
**9.** System patch management and upkeep must be integrated into routine operations |
| **5.** Roadside issues include:  
   a. Physical access constraints  
   b. Vegetation control  
   c. Rodent and pest control | **10.** Technology asset management processes, obsolescence management, and software license management processes must be documented and practiced  
**11.** IT procurement rules and processes are specific and must be followed |
| **6.** Equipment is hardened industrial controls | **7.** Most technicians need IMSA certification  
**8.** Technologies include:  
   a. Old legacy systems that has limited capabilities but are ultra-reliable  
   b. Include analog, digital, and mixed environments  
   c. Electro-mechanical systems and actuators  
   d. Require specialized training  
| **9.** Often dealing with high voltage 240v/480v circuits | **10.** Technologies include:  
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*VDOT*
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Murali Rao
Director, Technology Strategy & Cybersecurity
Office of Strategic Innovation
Virginia Department of Transportation
Murali.Rao@VDOT.Virginia.gov

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