Leveraging Technology & ITS to Enhance Traffic Incident Management

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A core part of VDOT’s mission to plan, deliver, operate and maintain a world-class transportation system

The Operations Program is focused on the user/driver to maximize system reliability and maintain system access

The Statewide Program consists of statewide policy/planning/guidance and 5 operating regions
  - Transportation Operations Centers (TOC’s) in Hampton Roads, Nova, Richmond, Salem and Staunton

Provides information and situational awareness to VDOT management and public
Transportation Operations Centers (TOCs)

- Five TOCs – one per VDOT Region

- Primary hub for all traffic management and emergency response activities including moveable bridge, tunnel, and reversible travel lane operations

- Houses 24/7 mission critical systems supporting VDOT Operations

- Provides information and situational awareness to VDOT management and public

- Will facilitate future technology initiatives such as Active Traffic Management and Connected Vehicles
VDOT’s Statewide Operations Program
Operations Statistics

- **System Mileage**
  - Interstate – 1,120
  - Primary – 7,996
  - Secondary - 48,809

- **7 Tunnels**

- **11 Moveable Bridges**

- **3 Ferries**

- Each TOC handles 28 to 151 events every day
- Over 2,700 field devices
- Over 338 miles of VDOT fiber
- 50 SSP patrol routes covering 503 miles of Interstate, 30 routes/250 miles are 24/7

**4th Generation Statewide 511 Program**
Phone, Web, Mobile App
Sponsorship/Revenue Generation

<table>
<thead>
<tr>
<th></th>
<th>Incidents*</th>
<th>Weather Events*</th>
<th>Planned Events* (Scheduled)</th>
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<tr>
<td>Total</td>
<td>80,332</td>
<td>210 Parent Events with 1,540 Jurisdiction Sub Events</td>
<td>83,046</td>
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* Source: VA Traffic, 2012
TOC Components

Transportation Operations Center

Advanced Transportation Management System (ATMS)

- Hardware
- Software
- Communications Equipment

Cameras
Message Signs
Portable Message Signs

<table>
<thead>
<tr>
<th>CCTV</th>
<th>DMS</th>
<th>RWIS</th>
<th>HAR</th>
<th>Traffic flow</th>
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<tr>
<td>876</td>
<td>544</td>
<td>62</td>
<td>24</td>
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Five Regions and TOCs
- Northern (Fairfax)
- Eastern (VA Beach)
- Central (Richmond)
- Northwest (Staunton)
- Southwest (Salem)
TOC Integrated ITS Devices

Northwestern Region – I-81 Corridor

Images taken from a TOC Operators Workstation
CAD - Computer Aided Dispatch *VSP (7 Divisions)
PSAP - Public Safety Answering Point Integration

(20) Localities; Hampton Roads, Northern VA, Shenandoah Valley

Image taken from a TOC Operators Workstation
Weather Management – Support Services via Meridian

0 - 23 Hour Precipitation Start Time
Valid: 12 PM - 11 AM EDT Tue, Apr 14

Summary:
Scattered light rain showers will continue to slowly spread northeastward across the state this afternoon with more widespread rain and thunderstorms developing over the southwest by mid-afternoon. Activity over the northwest will then spread southeast across the state throughout the remainder of the afternoon through tonight as an area of low pressure pushes east across the region. Areas of heavy rain will be possible for portions of the south and east, especially this evening and during the overnight hours and into Tuesday morning. Another disturbance will move into the west by late overnight Monday, bringing additional rain across the state Tuesday.
Safety Service Patrol – Piloting Integrated Streaming Video

50 patrol routes total covering 503 miles of Interstate
• 30 of those routes are 24/7 and cover 250 miles

AVL
Automatic Vehicle Location

SSP Operations will be monitored via a web-based application.

Axis Q1604 Mega Pixel 2.8-8mm using (Airlink MP890) modem
Tableau Visual Analytics

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Transportation Video & Data (TVD) Services  VDOT’s 511 Program

http://www.511virginia.org/
VDOT’s New 511 Service - Key Features

511 Phone Service (IVR)
- New voice recognition engine
- Directional recognition
- Travel times

511 Website & Mobile App
- Live streaming video (15 frames/sec)
- Mobile app with live traffic information
- Travel times

Video / Data Sharing
- Free video access through web service
- Includes attribution to VDOT
- Operations data publicly available

Sponsorships
- Sponsorship acknowledgements will be added to 511 signs and Safety Service Patrol (SSP) Vehicles
Real-time Traffic Speeds Displayed for Major Routes
Incident and Workzone Info List

- I-95 S from MM 163.0 to MM 166.6
  Description: On I-95 in the County of Fairfax from mile marker 163 to mile marker 166, motorists can expect potential delays in this area from 05/11/12 at 6:00 AM until 05/11/12 at 7:00 PM due to construction activities. The south right shoulder is a mobile closure. Last updated: Fri 05/11/2012 9:22 AM EDT
  Rte. 641 (Prince William County) at Old Bridge Rd
  Description: On Rte. 641 (Old Bridge Rd) in the County of Prince William from Rte. 241/ON (Prince William County) to Shelhurst Rd, Rte. 23000E (Prince William County), motorists can expect potential delays in this area from 05/11/12 at 5:00 AM until 05/11/12 at 3:00 PM due to maintenance activities. The south split lane is closed. The west left lane is closed. Last updated: Fri 05/11/2012 9:03 AM EDT

- I-95N at MM 161.3
  Description: On I-95N in the County of Fairfax from mile marker 161.3, motorists can expect potential delays in this area from 05/11/12 at 5:00 AM until 05/11/12 at 12:00 PM due to construction activities. The north left lane is closed. Last updated: Fri 05/11/2012 9:22 AM EDT

- US-11 at Richmond Hwy
  Description: On US-1 (Richmond Hwy) in the County of Fairfax from Forest Pk. Rte. 37/18E/W (Fairfax County) to Rte. 381N/S (Fairfax County), motorists can expect potential delays in this area from 05/11/12 at 9:00 AM until 05/11/12 at 1:00 PM due to construction activities. Last updated: Fri 05/11/2012 9:22 AM EDT
Active DMS Messages
Streaming Video Provided for VDOT’s 800+ Cameras
511 Mobile App – New Feature for VDOT

Home Screen

List of Travel Times

Map

Twitter Feed
Transportation Operations Centers and Advanced Transportation Management System Services

Statewide TOC / ATMS Procurement
Major Project Objectives

- Select best industry partners to provide statewide consistency of services
- Obtain innovative services and technology to improve efficiency and safety
- Provide contracting flexibility for new innovations, new deployment and initiatives
- Select strong, innovative, experienced, and financially stable industry partners
- Foster SWAM/DBE involvement
Project Scope and Approach

- **6 Major Service Categories:**
  1. Safety Service Patrol
  2. TOC Floor Operations
  3. ITS Field Maintenance
  4. Statewide ATMS Solution and Technology Support
  5. Program Management and Governance
  6. General Support Services

- **Procured using Competitive Negotiation**

- **Contract - 6 year term with three, 2 year renewals**
  - July 1, 2013 to June 30, 2019

- **Performance Based Contract**
Questions, Comments!

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