Meeting Protocols

• Questions will be answered at the end of each presentation

• Ask your question verbally

• Give your name and agency before asking your question (at least the first time)

• Keep your phone muted until asking a question or speaking (press *6 to mute/unmute individual phone lines)

• Do not place call “on hold” as your hold music may be heard by the group

• Call 610-662-5569 for difficulties with the web or audio application.
<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00am to 10:05am</td>
<td>Welcome and Introductions</td>
<td>George Schoener, I-95 Corridor Coalition, Exec. Director</td>
</tr>
<tr>
<td>10:05am to 10:10am</td>
<td>Purpose of this Meeting</td>
<td>John Allen, NJDOT &amp; VPP Suite User Group Chair</td>
</tr>
<tr>
<td>10:10am to 10:30am</td>
<td>Review of VPP Suite Features/Tools/Timeline</td>
<td>Michael Pack, CATT Lab</td>
</tr>
<tr>
<td></td>
<td>- Software development efforts/new functionality since last meeting</td>
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<td></td>
<td>- Multi-year Roadmap of Enhancement Implementation Discussion of</td>
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<td></td>
<td>User Delay Cost (UDC) tool issues</td>
<td></td>
</tr>
<tr>
<td>10:30am to 10:35am</td>
<td>Working Group Update – Bottleneck Algorithm</td>
<td>Michael Pack, CATT Lab</td>
</tr>
<tr>
<td>10:35am to 11:10am</td>
<td>Agency Input Session to learn about what is working and what needs</td>
<td>All</td>
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<tr>
<td></td>
<td>some attention</td>
<td></td>
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<tr>
<td>11:10am to 11:25am</td>
<td>Funding Discussion</td>
<td>Michael Pack, CATT Lab</td>
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<tr>
<td></td>
<td>- O&amp;M Funding</td>
<td></td>
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<td></td>
<td>- New features</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Current funding status and future funding</td>
<td></td>
</tr>
<tr>
<td>11:25am to 11:30am</td>
<td>Next Steps and Meeting Wrap Up</td>
<td>George Schoener, I-95 Corridor Coalition, Exec. Director</td>
</tr>
</tbody>
</table>

**Agenda**

www.I95Coalition.org

September 24, 2014
## Meeting Participants

<table>
<thead>
<tr>
<th>#</th>
<th>Name</th>
<th>Agency</th>
<th>#</th>
<th>Name</th>
<th>Agency</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Gene Glotzbach</td>
<td>Florida DOT</td>
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<td>Ed Stylc</td>
<td>Baltimore Metropolitan Council</td>
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<tr>
<td>2</td>
<td>John Allen</td>
<td>New Jersey DOT</td>
<td>14</td>
<td>Zoe Neaderland</td>
<td>DVRPC</td>
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<td>3</td>
<td>Dennis Motiani</td>
<td>New Jersey DOT</td>
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<td>Jesse Buerk</td>
<td>DVRPC</td>
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<td>4</td>
<td>Amir Ibrahim</td>
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<td>5</td>
<td>Todd Trautz</td>
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<td>Andrew Meese</td>
<td>MWCOG</td>
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<td>Dan Herstine</td>
<td>Rhode Island DOT</td>
<td>18</td>
<td>Sutapa Bhattacharjee</td>
<td>NJTPA</td>
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<td>7</td>
<td>Bill Nordstrom</td>
<td>Rhode Island DOT</td>
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<td>Keith Miller</td>
<td>NJTPA</td>
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<td>8</td>
<td>Deanna Peabody</td>
<td>Rhode Island DOT</td>
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<td>Jo Ann Oerter</td>
<td>Atkins (Florida DOT)</td>
</tr>
<tr>
<td>9</td>
<td>Sanhita Lahiri</td>
<td>Virginia DOT</td>
<td>21</td>
<td>George Schoener</td>
<td>I-95 Corridor Coalition</td>
</tr>
<tr>
<td>10</td>
<td>Ramkumar Venkatanarayana</td>
<td>VA Ctr. for Transportation Innovation &amp; Research</td>
<td>22</td>
<td>Michael Pack</td>
<td>UMD CATT Lab</td>
</tr>
<tr>
<td>11</td>
<td>Rose Lawhorne</td>
<td>Virginia DOT</td>
<td>23</td>
<td>Karen Jehanian</td>
<td>KMJ Consulting (Coalition Support)</td>
</tr>
<tr>
<td>12</td>
<td>Mena Lockwood</td>
<td>Virginia DOT</td>
<td>24</td>
<td>Joanna Reagle</td>
<td>KMJ Consulting (Coalition Support)</td>
</tr>
</tbody>
</table>
Welcome and Introductions

George Schoener
I-95 Corridor Coalition
Purpose of this Webcast

John Allen,
NJDOT & VPP Suite User Group Chair
VPP Suite User Group Goal

Use a collaborative approach to expand and improve the use and benefit of the Suite by:

- **Addressing User Needs**
  - Assistance with software issues
  - Detailed explanation/guidance on using the tools
- **Addressing Developer Needs**
  - Gain feedback on the usability
  - Gather requests for additional functionality
Topics for Today

• **Suite Features/Tools/Timeline Review**
  - Software development efforts/new functionality
  - Multi-year Roadmap of Enhancement Implementation: are we still hitting the key issues?
  - User Delay Cost issues

• **Working Group Update**
  - Bottleneck Algorithm

• **Agency Input Session**
  - What’s working/what needs attention

• **Funding Discussion**
  - O&M Funding/New features/Current funding status and future funding
Review of VPP Suite
Features/Tools/Timeline

Michael L. Pack
CATT Laboratory
|------------------|---------------------------|---------------------------|---------------------------|----------------------------------|
| • 25th/75th/min/max values on all charts | • Hadoop backend work to support future:  
• New bottleneck tracking and ranking algorithm  
• Longer date ranges  
• More TMCs and/or larger geographies  
• Smaller temporal aggregation levels & increased Speed | • Store results of queries from all tools in a “My Reports” list and send emails when reports are ready so users do not have to leave the suite open for long duration queries  
• Scheduling output of Performance Reports and Bottleneck Rankings  
• Congestion Scan enhancement to allow you to join multiple roads together  
• New bottleneck algorithm  
• Longer date ranges and larger TMC sets  
• Incident/event overlays on certain graphics/tables including Bottleneck Ranking  
• VPP Suite Forum  
• Configurable Dashboard display elements  
• FAQ updates  
• Tutorial Updates  
• MULTI-VENDOR INTEGRATION! | • Support MAP-21 reporting requirements including dealing with potential issues related to handling multiple thresholds and target-setting for congestion, variable speeds, averaging, etc.  
• Evaluate which reports could support ignoring low quality data  
• Add enhanced data quality graphics to existing reports  
• Configurable Dashboard display elements | • Experienced Travel Times  
• Graphics to depict % of time at certain speeds (D. Bullock/Purdue PM graphs)  
• CDF Plots  
• New Reliability graphics  
• Use volume data from real-time detectors  
• VPP Suite for detector data  
• Trend Graphics (a la Hans Rosling)  
• Transition away from Flex to support mobile devices and newer web technologies.  
• Integrate Treeversity features/functionality into the VPP Suite for bottleneck trend analysis  
• Trend Map Movie Creator  
• Configurable Dashboard display elements |
| • Provide volume data in UDC table  
• Faster basemap tiles  
• Revamped base map tiles (Possibly July) | • Agency Website Embedded Interactive Trend Maps to support pre-Holiday travel Press Releases  
• Configurable Dashboard-style Displays – backend work  
• UDC-per-interchange chart (Request from SC DOT)  
• Standardize and organize controls within the headers of each existing tool  
• Video output for the trendmap | • Agency Website Embedded Interactive Trend Maps to support pre-Holiday travel Press Releases  
• Configurable Dashboard-style Displays – backend work  
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• Trend Map Movie Creator  
• Configurable Dashboard display elements |

**Notes**

1. The above roadmap represents milestone goals for the CATT Lab development team. Achieving each milestone is dependent on a number of variables—some of which are outside of the control of the CATT Lab.
2. Achievement of these goals is dependent on aggressive hiring strategies.
3. MAP-21 reporting goals will be highly dependent on the finalization of FHWA rule-making and complexity of the measures.
4. Dates are based off of rough estimates of levels of effort. As each project officially begins, timelines and budgets may need to be adjusted accordingly.
5. MCOM/I-95 Funding may not be sufficient to cover 100% of above mentioned functionality.
6. I-95 User Group timely input and consensus building is critical.
7. Items in **RED** are considered riskier but necessary investments with significant cost and more unknowns and/or external dependencies.
Summer Progress
Volume Display Option in User Delay Cost (UDC)
### Volume Display Option in UDC Tables

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Display</th>
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<tbody>
<tr>
<td>All</td>
<td>Volume</td>
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<th>1 AM</th>
<th>2 AM</th>
<th>3 AM</th>
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<th>6 AM</th>
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<td>477</td>
<td>894</td>
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<td>841</td>
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<td>1,226</td>
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<td>2,941</td>
<td>3,78</td>
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</tbody>
</table>

**Delay cost:**
- Total: $152.1
- Per vehicle: $0.33
- Per person: $0.28

**Hours of delay:**
- Person-hours: 4.82 hours
- Vehicle-hours: 4.06 hours
- Per vehicle: 0.01 hours

**Volume:**
- Passenger: 363 vph
- Commercial: 121 vph

**Data validity:** 100.00%

*Click the table cell to see links to congestion scans.*

---

*Thursday, January 2, 2014 2:00 AM*

**Delay cost:**
- Total: $152.1
- Per vehicle: $0.33
- Per person: $0.28

**Hours of delay:**
- Person-hours: 4.82 hours
- Vehicle-hours: 4.06 hours
- Per vehicle: 0.01 hours

**Volume:**
- Passenger: 363 vph
- Commercial: 121 vph

**Data validity:** 100.00%

*Click the table cell to see links to congestion scans.*
25\textsuperscript{th}/75\textsuperscript{th} & 5\textsuperscript{th}/95\textsuperscript{th} Percentiles
Line Chart Percentiles
Dashboard Percentiles

MD-295 NORTHBOUND @ I-495/I-95

Direction: Northbound

TMC Code: 110+04269 Length of segment: 1.82 miles
Current speed: 23 MPH
Reference speed: 63 MPH

Date Sep 21, 2014 8:17 PM
Speed: 37 MPH
Historic average speed: 60 MPH
Travel time index: 1.7
Travel time: 2m 57s
25/75%: 58 MPH - 61 MPH
5/95%: 51 MPH - 64 MPH

Generate congestion scan
Export raw data

Updated Sep 21, 2014 8:26 PM (1m 16s ago)
Dashboard Percentiles

I-270 S @ I-270

Show graphs: ☑ Queue over time ☐ Travel Time Index of maximum

Queue: 29 miles

Queue over time

Date Sep 17, 2014 8:26 AM
Queue: 22 miles
Average queue: 13 miles
Travel Time Index: 2.23
Bottleneck average TTI: 1.76
Historic average TTI: 1.41
5/95%: 0.98 - 2.88
25/75%: 1.14 - 1.89

Started: Sep 17, 2014 5:42 AM
Ended: Sep 17, 2014 9:12 AM

Generate congestion scan
Dashboard Percentiles

Travel Time Index: 1.39

Travel Time Index of maximum queue length

Queue: 12 miles
Average queue: 13 miles
Travel Time Index: 1.68
Bottleneck average TTI: 1.76
Historic average TTI: 1.16
5/95%: 0.96 - 2.43
25/75%: 1.02 - 1.45

Started: Sep 17, 2014 5:42 AM
Ended: Sep 17, 2014 9:12 AM
The "Open report as" button has been renamed to "Switch to". It will allow you to switch to a different tool in the suite with the same data you are viewing in the current tool.

The "Share" button is replacing the "Hyperlink" button. It will open a menu with the shareable link and, in the case of Trend Map, an embed code. This allows you to share the data set you are viewing with others.

All save features -- exporting to excel, taking screenshots, and saving movies -- can now be found under the "Save as" button.
Trendmap Sharing & Embedding

- Meant for “press” releases and other collaboration.
- Required re-write of
  - Interface
  - Interactivity
  - Storage/hosting
  - Security
UDC Error Correction

- Identified by PennDOT & VDOT
- Two issues:
  - Zero Speed UDC
  - Statewide or multi-corridor (long road) UDC per-person costs
Zero Speed & Low-Speed UDC
Remaining UDC Issue

• Population and per-person UDC for multi-corridor analysis
  – Will be turned into a working group.
  – 8 Faculty Researchers at UMD are working on this in coordination with TTI and other thought leaders.
December Goals
### June ‘14
- 25th/75th/ min/max values on all charts
- Provide volume data in UDC table
- Faster basemap tiles
- Hadoop backend work to support future
  - New bottleneck tracking and ranking algorithm
  - Longer date ranges
  - More TMCs and/or larger geographies
  - Smaller temporal aggregation levels & increased Speed
- Agency Website Embedded Interactive Trend Maps to support pre-Holiday travel Press Releases
- Configurable Dashboard-style Displays – backend work
- UDC-per-interchange chart (Request from SC DOT)
- Standardize and organize controls within the headers of each existing tool
- Video output for trendmap
- Multivendor Integration Issues
- Revamped Basemap tiles

### Aug. ‘14
### Dec. ’14
- Multi-Vendor Integration Issues
- Congestion Scan enhancement to allow you to join multiple roads together
- New bottleneck algorithm
- Longer date ranges and larger TMC sets
- Incident/event overlays on certain graphics/tables including Bottleneck Ranking
- VPP Suite Forum
- 1st round of Configurable Dashboard display elements
- FAQ updates
- Tutorial Updates
- Support MAP-21 reporting requirements including dealing with potential issues related to handling multiple thresholds and target-setting for congestion, variable speeds, averaging, etc.
- Evaluate which reports could support ignoring low quality data
- Add enhanced data quality graphics to existing reports
- Configurable Dashboard display elements
- Store results of queries from all tools in a “My Reports” list and send emails when reports are ready so users do not have to leave the suite open for long duration queries
- Scheduling output of Performance Reports and Bottleneck Rankings

### March ‘15
- Experienced Travel Times
- Graphics to depict % of time at certain speeds (D. Bullock/Purdue PM graphs)
- CDF Plots
- New Reliability graphics
- Use volume data from real-time detectors
- VPP Suite for detector data
- Trend Graphics (a la Hans Rosling)
- Transition away from Flex to support mobile devices and newer web technologies.
- Integrate Treeversity features/functionality into the VPP Suite for bottleneck trend analysis
- Trend Map Movie Creator
- Configurable Dashboard display elements

### TBD
- Experienced Travel Times
- Graphics to depict % of time at certain speeds (D. Bullock/Purdue PM graphs)
- CDF Plots
- New Reliability graphics
- Use volume data from real-time detectors
- VPP Suite for detector data
- Trend Graphics (a la Hans Rosling)
- Transition away from Flex to support mobile devices and newer web technologies.
- Integrate Treeversity features/functionality into the VPP Suite for bottleneck trend analysis
- Trend Map Movie Creator
- Configurable Dashboard display elements
Tutorial Upgrades
It was requested that the art team come up with a new design for the VPP tutorial page. This is currently what the tutorial page looks like:
This is the solution we came up with. Having a side menu that displays video thumbnails, titles and brief summaries of each video. Though not shown in this design, the currently playing video would be highlighted in the side menu.

It was suggested that we include some sort of header to this page so the user can get some context as to where they are.
FAQ Upgrades
The side menu we are suggesting for the tutorial page would also lend itself well to the FAQs page. We could move the top level links to a menu on the side which would in turn open the link content in the main portion of the page. It will utilize space better.

We would also include a header like suggested for the tutorial page.
### CATT Lab Forums

<table>
<thead>
<tr>
<th>Forum</th>
<th>Threads</th>
<th>Posts</th>
<th>Last Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Announcements</td>
<td>3</td>
<td>4</td>
<td>Brown Bag Lunch - Google ...</td>
</tr>
<tr>
<td>Lab News and Happenings</td>
<td>4</td>
<td>5</td>
<td>Weekly Summary - 9/15 - 9...</td>
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<tr>
<td>Technical Discussions and Articles</td>
<td>8</td>
<td>12</td>
<td>The C10H Problem</td>
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<td>Lab Trips and Activities</td>
<td>2</td>
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<td>Go-Kart Night - 9/25/14</td>
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<tr>
<td>General Discussion</td>
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<td>12</td>
<td>CATT Gamer IDs</td>
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</table>

Welcome back, Ivanova. You last visited: Today, 02:52 PM Log Out
Map Tiles

Old

New
Other Things being addressed:
The road shield icons and the state labels are too big as you zoom out
Contributing Agencies Page

[Logos of contributing agencies]
Working Group Update

Michael L. Pack
CATT Laboratory
Agency Input Session
Focus on New Features

Trendmap UI & Embedding
Percentiles on the Dashboard
Percentiles on Performance Charts

Volume Limiting UDC
Volume Displays

Header Tools: sharing, switching, etc.
Funding Discussion

Michael L. Pack
CATT Laboratory

• MAP-21 Prep—watching and waiting
• Funding
Funding Background

- MD SHA
- Coalition Direct
- MCOM I & II
- Michigan DOT
- Missouri DOT
- Ohio DOT
- INRIX
- DHS UASI Funds

> $3.5 Million Investment
Major Expenses

- Storage Costs
- Power & Networking
- Hardware Maintenance
- Software Maintenance (DB admin/bugs/etc.)
- Software Enhancements
- Basemap data
- Account Administration
- Helpdesk

September 24, 2014
Budgets

- Summer VPP Suite Budget = $410k
Budget Moving Forward

• Existing funding will be exhausted by Jan, 2015.
  • ~1500 VPP Suite users in the Coalition will be affected.

<table>
<thead>
<tr>
<th>DOTs</th>
<th>Federal</th>
<th>State</th>
<th>Local</th>
<th>MPOs</th>
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<td>52%</td>
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<td>6%</td>
<td>9%</td>
<td>7%</td>
<td>12%</td>
<td>2%</td>
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</tbody>
</table>
Budget Moving Forward

Keeping the Suite Alive:

• Per-state annual O&M contribution with:
  – Modest continued growth = $110k/state
  – Bare-bones, zero enhancements = $81k/state

• Both options assume each of the existing state agencies currently procuring data and using the suite would contribute. If not, then costs would need to be revised and/or services would be cut-off.
What’s not Covered in the annual O&M (add-on costs)

The $110k/year would NOT cover things like:

– Major Enhancements like
  • XD or Sub-TMC Data Integration
– System Redundancy
– Use Prioritization
– Significant agency-specific data integration
– Major hardware refreshes (every 3-years)
Why Continue Funding?

- Reduces agency costs & increases abilities
- Resources (and costs) shared among all agencies
- We can do more as a team than as individual agencies
- All algorithms are open/transparent
- Agencies provide input on methodologies
- Agency guided feature prioritization
- Data Agnostic
- Developers are engaged in MAP-21
- Dedicated interdisciplinary team of graphic artists, UX specialists, transportation faculty, IT staff, and software developers.
Next Steps & Meeting Wrap Up

George Schoener
I-95 Corridor Coalition

Next User Group Meeting:
Wednesday, January 7, 2015  10AM – 11:30AM
Contact Information

George Schoener
I-95 Corridor Coalition
703.389.9281
gescoener@comcast.net

Joanna Reagle
I-95 Corridor Coalition Support
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NJ DOT & Chair VPP Suite User Group
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VPP Suite questions/feedback
vpp-support@ritis.org

September 24, 2014
Thank You
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