“The VPP works with a “traffic probe data marketplace” first created in 2008. Three highly qualified vendors (HERE, INRIX and TomTom) were selected by a team of agency members to provide data to agencies at a cost that was negotiated by the Corridor. The data is subjected to rigorous validation for reliability. In addition, all data, regardless of vendor, is available to each of the participating agencies providing a truly shared effort.”

“The use of the marketplace results in a savings of 55 - 62% per lane mile from free market pricing” depending on vendor.
Agenda

(Technical) Validation Program Status Update

- 2018 Status – Year in Review
- 2019 Status - Next six months
- Technical Process Change Request
- Quarterly Report Formatting Update

(Marketing) Program Status Update

- New Ancillary Products (Inrix, HERE, TomTom)
- Website Update
- Data Use Sharing Agreement

(Contracting) Finance Update

Process Change
Quick Start Sheet
New RFP
State Contracts
## Technical

- **2018 Validations Year in Review**
- **Completed Reports**

<table>
<thead>
<tr>
<th>State</th>
<th>Route</th>
<th>Month Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Georgia</td>
<td>I-75</td>
<td>February</td>
</tr>
<tr>
<td>New Jersey</td>
<td>US 1/ US 9</td>
<td>April</td>
</tr>
<tr>
<td>Maryland</td>
<td>US 40</td>
<td>June</td>
</tr>
<tr>
<td>North Carolina</td>
<td>NC 55</td>
<td>September</td>
</tr>
</tbody>
</table>

[https://i95coalition.org/projects/vehicle-probe-project/](https://i95coalition.org/projects/vehicle-probe-project/)
Technical
✓ 2019 Planned Validations
✓ Six month look out

<table>
<thead>
<tr>
<th>State</th>
<th>Route</th>
<th>Planned Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Georgia</td>
<td>SR 21/80</td>
<td>February</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>US-22</td>
<td>April</td>
</tr>
<tr>
<td>New Jersey</td>
<td>TBD</td>
<td>Spring</td>
</tr>
<tr>
<td>Arterial Report Update</td>
<td>N/A</td>
<td>June</td>
</tr>
</tbody>
</table>
The arterial report would provide an update to an original report published in 2015 (see [www.i95coalition.org](http://www.i95coalition.org)) under the VPP section which investigated the quality of INRIX probe data on arterials based on a number of separate validation efforts.

The update on the report would focus on tracking trends in both traditional validation metrics and slowdown metrics since 2015, and additionally include results for two additional probe vendors (HERE and TomTom).
Technical
✓ Major Steps in the Data Validation Program

- We need State locations defined in order to start.
- TrafficCast sets out sensors & collects data
- Data is sent to UMD for processing
- Probe Vendors provide data to UMD
- UMD publishes the final report

Deployment Planning
Bluetooth Data Collection
Bluetooth Data Processing
Probe Data Processing
Report Production

Comments
- Many people / jurisdictions involved
- Iterative process
- Slight changes in sensor placement due to mounting considerations
- Define validation paths based on final sensor locations
- Filter, aggregate, and evaluate data
- Vendor TMC definitions differ slightly
- Path <-> vendor-specific TMC mapping
- Calculate equivalent path speeds
- Quantify probe data performance under a variety of conditions

Room for improvement!

December 17, 2018
Goal: Compare vendor speeds to observed ground truth speeds on the same road segments

Challenges:
- Vendor segments (TMC-based) not the same as validation segments (defined by sensor locations)
  - Need to calculate “equivalent vendor speed” on validation segment
- Vendors already have slightly different TMC segment definitions (see below)
- Vendors now have more spatially granular data available level (e.g., XD, sub-TMC)
Technical
✓ Probe Data Processing Step
✓ Improvement Opportunity

Proposed Solution: Ask vendors to report speeds on validation segment geometry
• Note: we will not share ground-truth re-identification data with vendors until after the evaluation

Potential Benefits:
• Apples-to-apples comparison across vendors (all would report at the same granularity)
• More transparency (vendors would directly report speeds on the segments for which they will be evaluated)
• Easier for vendors to identify areas of weakness and improve their algorithms
• Speed up the validation process!
<table>
<thead>
<tr>
<th><strong>Technical</strong></th>
<th><strong>Quarterly Reporting</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>October 2018 Quarterly I-95 Corridor Coalition VPP Validation Status Report</strong></td>
<td></td>
</tr>
<tr>
<td><strong>January, April, July, October</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Every state will be on the same page</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Using the PennDOT template</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Provided via email from Kathy Frankle</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>July</strong></th>
<th><strong>August</strong></th>
<th><strong>September</strong></th>
<th><strong>October</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The Maryland report was finalized and uploaded to the I-95 Corridor Coalition website.</td>
<td>Bluetooth data from North Carolina was processed and probe vendors were contacted for speed data.</td>
<td>Investigation and planning began for potential sensor locations for deployments in Pennsylvania and Georgia.</td>
<td>Boltaxx data from Wisconsin was processed and probe vendors were contacted for speed data.</td>
</tr>
</tbody>
</table>
Marketing
✓ New Ancillary Briefs
✓ HERE * INRIX * TomTom

Modifications to current contracts:

✓ Inrix in place
✓ HERE awaiting pricing for modules
✓ TomTom – mods and pricing almost complete

**These Options are added as part of Task 1 in the Work Plan /MOU now.**
INRIX’s VPP contract includes negotiated pricing for core real-time traffic data services and five additional Ancillary Products available as separate options independent of the core service. These prices are the best available from INRIX for these services, discounted from standard pricing for Coalition members. Core services are scaled by road mileage and type, with a large discount for statewide coverage. Ancillary products vary in pricing based on population of state/region to be covered – all immediately available.

The Inrix “Core Bundle” – What is included with your probe data procurement?

- An agency selects and funds road coverage based on pre-agreed pricing.
- Any Coalition member agency with an executed VPP Data Use Agreement (DUA) gets access to the multiple real-time data services for all licensed roads, updated every minute, for ATMS and ATIS/511 integration:
  - Segment-based Speeds/Travel Times
  - Configurable Dynamic Traffic Maps
  - Incidents, including formatted congestion/queue information

- All real-time data licensed above can be archived.
- Staff/support contractors for all Coalition members with an executed VPP DUA can use for free the INRIX VPP Traffic Monitoring Site (http://i95.inrix.com) which is designed for operations center use, auto-refreshing real-time traffic conditions across the entire US.

NEW ANCILLARY PRODUCTS

- HELP (Highway Emergency Link Platform) uses mobile Wireless Emergency Alerting (WEA) to establish two-way communication between agencies and people who are stranded in a trapped queue.
- Dangerous Slowdowns API delivers safety-focused alerts to augment current data or a stand-alone option for rural state.
- Trip Reports offers GPS breadcrumb data for complete trips to, from or through a region of interest to support transportation/freight planning and project assessment.
- XD Segment Traffic Archive Data Downloader provides a cost-effective option to archived speed/travel time data at a fraction of real-time data fees.
- National Performance Management Research Data Set (NPMRDS) Extensions offers additional datasets to extend and expand the utility of the dataset available from USDOT required for federal performance measures reporting.

From the outset of VPP, the Coalition has supported a ‘one agency pays, all agencies can use’ model. Any member agency (including affiliate members) of the Coalition, neighboring agencies and partner agencies can access an INRIX, HERE or TomTom dataset licensed through the I-95 CC VPP Marketplace with no additional fees, so long as they have an executed VPP Data Use Agreement. Contractors/consultants working for any member agency with an executed DUA that ties back to that member agency can also use this same data at no additional cost.

For more information, Contact Denise Markow, dmarkow@i95coalition.org
HERE Speed Limits – Split Traffic Reporting
HOV Non-Barrier Separated Lanes – Hazard Warnings
Automated Road Closure Detection – iPeMS Analytics

Here's VPP contract includes negotiated pricing for core real-time traffic data services and additional Ancillary Products available as separate options independent of the core service. These prices are the best available from HERE for these services, discounted from standard pricing for Coalition members. Core services are scaled by road mileage and type, with a large discount for statewide coverage.

The HERE “Core Bundle” What is included with a statewide probe data procurement?

HERE Traffic Service /HERE Real Time Traffic delivers up-to-the-minute information about traffic conditions and incidents. It helps drivers by improving the accuracy of arrival times.

Traffic Analytics: Speed Data and Trip Data is a suite of data products that help enterprise and government customers make informed decisions such as road network performance.

HERE Location Platform (Application Programming Interfaces (APIs) and Software Development Kits (SDKs) for native mobile operating systems) delivers global location based services that can bring location-intelligent products and services to the market. HERE Platform features and functionalities are offered through seven key components: Maps, Geocoder, Direction, Places, Traffic, Transit and Visualization.

ANCILLARY PRODUCTS

HERE Speed Limits on Roadways enables applications to advise users against traffic speed violations or traffic restrictions as it warns users about the maximum permitted speed on a road.

Split Lane Traffic Reporting at Junctions: The advanced algorithm of this GPS-based technology is the first to detect divergent speeds and report traffic conditions on a multiple lane level before a junction.

HERE HOV Non-Barrier Separated Lanes: HERE's new feed provides HOV lane level traffic flows on roads with HOV lanes that are non-barrier separated, these lanes are not physically separate from the standard lanes (for example, separated only by painted lines)

Hazard Warnings – Directly from Connected Vehicle Sensor Data: HERE Hazard Warnings provides information to notify drivers and C-ADAS applications about potential road hazards in real time. The data can be used for the following use case warnings:

- Accident – Broken-down vehicle – Slippery road – Reduced visibility – Heavy Rain – Fog

Automated Road Closure Detection: Using complex artificial intelligence, this service detects unreported closures. In addition, the HERE Incident Management Center validates and corrects closures that road authorities publish.

HERE Reversible Express Lanes: HERE is the only service to report congestion on roads with changeable direction, indicating which way traffic is flowing. This enhancement enables drivers to make more intelligent routing decisions and improves ETAs

Advanced Traffic Analytics Functions w/ iPeMS: New product functionality: (Map Animations & Favorites, Bottlenecks, Incident Integration, Reliability Index Map feature, Congestion Cost Reports, Hyperlocal weather, Regional Dashboards

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For more product information and pricing of Ancillary Products, Contact Denise Markow, dmarkow@i95coalition.org
## Overview of Summary Coverage for Participating States

<table>
<thead>
<tr>
<th>State</th>
<th>Freeway</th>
<th>Arterial</th>
<th>Total Miles</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maine</td>
<td>254</td>
<td>0</td>
<td>254</td>
<td>Coverage on I-95 &amp; I-295</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>215</td>
<td>0</td>
<td>215</td>
<td>Coverage on I-95.93, Spaulding, Everett TPKs</td>
</tr>
<tr>
<td>New Jersey</td>
<td>920</td>
<td>8,476</td>
<td>9,396</td>
<td>State is all-in</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>2,752</td>
<td>20,435</td>
<td>23,167</td>
<td>State is all in.</td>
</tr>
<tr>
<td>Maryland</td>
<td>785</td>
<td>6,284</td>
<td>7,069</td>
<td>All in. Redundant coverage on select corridors</td>
</tr>
<tr>
<td>Virginia</td>
<td>1,571</td>
<td>15,974</td>
<td>17,545</td>
<td>State is all-in</td>
</tr>
<tr>
<td>North Carolina</td>
<td>1,716</td>
<td>12,834</td>
<td>14,550</td>
<td>State is all-in</td>
</tr>
<tr>
<td>South Carolina</td>
<td>979</td>
<td>10,167</td>
<td>11,146</td>
<td>State is all-in</td>
</tr>
<tr>
<td>Georgia</td>
<td>1,411</td>
<td>14,331</td>
<td>15,742</td>
<td>State is all-in</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10,631</td>
<td>88,842</td>
<td>99,473</td>
<td></td>
</tr>
</tbody>
</table>
From the outset of VPP, the Coalition has supported a ‘one agency pays, all agencies can use’ model.

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Contractors/consultants working for any member agency with an executed DUA that ties back to that member agency can also use this same data at no additional cost.

“Currently this applies to travel time and speed data only”
The Coalition is looking at two options for future invoicing:

1. **Direct Billing to the Coalition for probe data only.**
   (This is the same process as what is done with membership dues.)

2. Billing through the University contract.
   (This is the current process and includes
   - Task 1 (Probe Data)
   - Task 2 (Validation)
   - Task 3 RITIS platform.

The Coalition is currently in negotiation with the University to reduce the charges associated with current contracting. A decision is expected in January.
Contracting/Finance
Quick Start Sheet Update

So... your agency is interested in obtaining access to the Vehicle Probe Project (VPP) Data?
Now what do you do?

Quick Start Sheet

First, check to see if the roads in which you are interested are covered by the VPP. Contact Kathy Frankle (UMD) at kfrankle@umd.edu to find out.

NOTE: ONCE ANY DATA IS PURCHASED UNDER THE VPP CONTRACT, EVERY MEMBER AGENCY HAS FULL RIGHTS TO ACCESS AND USE IT REGARDLESS OF THEIR LOCATION.

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not a member of the I-95 Corridor Coalition?</td>
<td>Execute a Data Use Agreement to use the Vehicle Probe Project Data</td>
</tr>
<tr>
<td>Your agency first needs to become one.</td>
<td></td>
</tr>
<tr>
<td>Send an e-mail to Trish Hendren requesting membership in the I-95 Corridor Coalition (please copy Patty Reich). Eligibility requirements are provided on the Member Eligibility section of the Coalition website. You will receive a response in less than one week.</td>
<td>Signing the Data Use Agreement (DUA) does NOT commit you to purchasing data – it simply extends the data license to your jurisdiction. Click here for the DUA.</td>
</tr>
<tr>
<td>Dr. Patricia Hendren <a href="mailto:phendren@i95coalition.org">phendren@i95coalition.org</a></td>
<td>Completed DUAs should be submitted to Karen Swick (UMD) at <a href="mailto:kswick@umd.edu">kswick@umd.edu</a>. Processing of DUAs could take up to 2 weeks as multiple legal entities must counter-sign the agreement.</td>
</tr>
<tr>
<td>Patty Reich <a href="mailto:preich1@i95coalition.org">preich1@i95coalition.org</a></td>
<td>Questions regarding VPP contracts or DUAs should be sent to Kathy Frankle.</td>
</tr>
</tbody>
</table>

Please note that Steps 1 & 2 need to be completed only once per organization. Universities and consultants are not eligible for Coalition membership; however, universities and consultants working for a Coalition member on a project requiring access to VPP data may be granted access for that specific project. Please work with your agency to obtain the needed approval and complete ‘Attachment A’ along with the Data Use Agreement.

https://i95coalition.org/projects/vehicle-probe-project/
Contracting/Finance
✓ State Contracts (one year versus multiple years)

<table>
<thead>
<tr>
<th>Single Year Contract</th>
<th>Multiple Year Contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Jersey</td>
<td>Maine</td>
</tr>
<tr>
<td>Maryland</td>
<td>New Hampshire</td>
</tr>
<tr>
<td>Georgia</td>
<td>Pennsylvania</td>
</tr>
<tr>
<td></td>
<td>Penn Turnpike</td>
</tr>
<tr>
<td></td>
<td>North Carolina</td>
</tr>
</tbody>
</table>

Is there an interest in moving to a multiple year contract?
Additional General Info

- RITIS is managed by CATT not I-95 even though the MOU’s contain both. RITIS is typically labeled Task 3.

- Do you want an update on Validation to be incorporated into the PDA/User Group meeting scheduled for this coming January/February?
QUESTIONS??

Thank You