SmartPark Research Project Update

ITS America 2013 Annual Meeting, Session SS03

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Federal Motor Carrier Safety Administration
April 22, 2013
Outline

- Purpose
- Phase I
- Test Site
- Performance Requirements
- Test Results
- Phase II
Purpose

- To demonstrate a fully automated solution for providing truck parking availability information to truckers on the road
  - Phase I – to evaluate technologies that can automatically measure truck parking space availability in a rest area
  - Phase II – to disseminate truck parking space availability information in real time to truck drivers and to evaluate overall benefits
Phase I

- In 2011, FMCSA initiated Phase I to evaluate new vehicle detection sensors – Doppler radar combined with either light curtain or laser scan.

- In prior testing, magnetic and camera-based sensors could not accurately distinguish vehicle types or trailer dropoffs and pick ups.

- New Phase I sensors produce a top or side profile from which software can detect a hitch.
Test Site Location – Athens, TN

Test Site at Mile Marker 45 on I-75 northbound
Test Site Characteristics

- Site is paved
- Truck parking clearly separated from car parking
- One ingress and one egress, both controlled
- 44 delineated, marked spaces for trucks
- Designed so trucks can easily pull-in & pull-out
Test Site Ingress – Technology Array

- Overhead Scanner
- Side Scanner
- Light curtain scanner
- Doppler radar
Test Site Egress – Technology Array

- Overhead Scanner
- Side Scanner
- Doppler radar
Sensor Data Verification with CCTV

- Egress Detector Array
- Ingress Detector Array

CCTV No., Location, and Orientation
## Performance Requirements

<table>
<thead>
<tr>
<th>Requirement Identification</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>PR1 – Accuracy</strong></td>
<td>System shall maintain the parking area occupancy count at ≥ 95% accuracy.</td>
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<tr>
<td><strong>PR2 – Classification Consistency</strong></td>
<td>Ingress and egress detectors must be consistent in classification with each other at ≥ 95%.</td>
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<tr>
<td><strong>PR3 – Uptime for System</strong></td>
<td>System shall provide parking availability information at a minimum of 99.5% of the time.</td>
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# Phase I Test Results

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Gannett-Fleming</th>
<th>Independent Assessment</th>
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</thead>
<tbody>
<tr>
<td>Descriptor</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>PR1 – Accuracy</td>
<td>≥ 95</td>
<td>98.3%</td>
</tr>
<tr>
<td>PR2 – Classification</td>
<td>≥ 95</td>
<td>97.4%</td>
</tr>
<tr>
<td>PR3 – Uptime for System</td>
<td>≥ 99.5</td>
<td>100%</td>
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- **Gannett-Fleming**: 11/18-11/21 in 2012, N=459, overhead scans
- **Independent Assessment**: 12/10-12/13 in 2012, N=1340, side scans
Phase II

- Field test to evaluate benefits of measuring and providing dynamic parking information to truck drivers in real time

Tasks (6/22/2013 – 11/21/2014)

1. Disseminating truck parking availability information
2. Linking two adjacent truck parking rest areas
3. Adding reservation capability to system
4. Recruiting participating fleets and other partners
5. Conducting field test
6. Documenting field test results and assessing benefits
7. Developing a technology transition/business plan
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