Acknowledgments

• **Current Project Key Stakeholders**
  – Federal Motor Carrier Safety Administration
  – Tennessee Department of Transportation
Implementation Team

• **Gannett Fleming**
  – PM: Von Lopez-Jacobs, PE
  – Technical Manager: David Krauss
Empowering truckers to increase safety through access to real time parking information
1. Identify technologies capable of delivering accurate, reliable, parking information
2. Conduct successful truck parking information system proof of concept
Project Background

- FMCSA Charge – Ensure Safe CVO Operations
- Truck Driver Fatigue – Ongoing Problem
  - 800 deaths/year
  - 30%-40% of all truck crashes
- Regulations in Place to Limit Hours
- Truck Parking Areas Plentiful (pub + priv)
- Existing Parking Inefficiently Utilized
- 2002 NTSB: *Use ITS to Improve Awareness and Utilization of Truck Parking*
Project Background

• **Truck Parking Fatigue Solution: SmartPark**
  – Truck Parking Information System
  – Varying Dissemination Methods
    ▪ Mobile Application
    ▪ Website
    ▪ Roadside DMS
    ▪ Interactive Voice Response (IVR)
  – Current Deployment: NB Mile 45 I-75 (TN)
  – Next Deployment: NB Mile 23 I-75 (TN)
Getting It Started
SmartPark Overview

- Project Location: I-75 MM 45 in Athens, TN
SmartPark Overview

• Project Location: I-75 MM 23 in Cleveland, TN
SmartPark Overview

• SmartPark Corridor

Phase I site
Phase I DMS
Phase II site
Phase II DMS

Dayton
Riceville
Cleveland
Athens
SmartPark Overview

- **Features:**
  - Detectors
    - Side Scanner
    - Doppler Radar
  - Monitoring Equipment (CCTV)
  - Website and Data Archive
SmartPark Overview

• CCTV Camera Placement and Cones of Vision
SmartPark Overview

- Data Flow
Making It Work
SmartPark Traveler Information

• Dynamic Signage

![Dynamic Signage Example](image-url)
SmartPark Traveler Information

- Dynamic Signage

![Dynamic Signage Image]

I-75 Truck Parking Availability

Mile 23: LIMITED
Mile 45: LOT FULL
SmartPark Traveler Information

• Dynamic Signage

AVAILABLE

LIMITED

LOT FULL
SmartPark Traveler Information

- e-Kiosk

[Images of e-Kiosk interface showing login, estimated parking availability, and options for checking availability and making reservations.]

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SmartPark Traveler Information

- Website – www.smartparkingusa.com

Estimated Parking Availability for Now

Available
Limited
Lot Full

Check Another

Future availability is categorized as High, Medium, or Low. Current availability displayed by clicking the "Now" button is categorized as Available, Limited, and Lot Full. These categories are based on the proportion of available spaces in the lot at the time in question.
SmartPark Traveler Information

- Interactive Voice Response

1-844-SMARTPK
SmartPark Reservation System

• Reservation Concept

SPACES MARKED WITH R
BY RESERVATION ONLY

MAKE A FREE RESERVATION AT www.FMCSASMARTPARK.com
OR DOWNLOAD THE SMARTPARK APP
OR CALL 1800-SMARTPARK
(INsert logo)
SmartPark Management Overview

• Website for Real-Time Monitoring & Management
  – manage.smartparkingusa.com

• Site Features:
  – Live CCTV Camera Views
  – Data Retrieval
  – Reports
  – Corrections
  – Real Time parking Data
SmartPark Management Overview

• Management Website Interface

SmartPark Management System

Lot Occupancy

Data Archive and Display

CCTV Cameras

Parking Lot Data Retrieval Reports

Last Counts
Total Used

10

Spaces Available
34

Corrections
# SmartPark Management Overview

## SmartPark Management System

<table>
<thead>
<tr>
<th>Parking Lot</th>
<th>Data Retrieval</th>
<th>Reports</th>
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<tr>
<td></td>
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### Start Date: 11/14/2012 | End Date: 11/14/2012 | Submit |

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<th>Vehicle ID</th>
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<th>Sensor Mount</th>
<th>Class</th>
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<th>Images</th>
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SmartPark Overview

- **System Outputs:**
  - Timestamp
  - Ingress vs. Egress
  - Unique Vehicle ID
  - Detector Type
  - Detector Mounting Location
  - Class
  - Lot Occupancy

- JPEG Images from the CCTV cameras displaying:
  - All spaces within the lot
  - Ingress detection area
  - Egress detection area

- JPEG profile image of the vehicle generated by the detector
SmartPark Management Overview
## SmartPark Management Overview

### FMCSA SmartPark System Correction Report

**4/1/2014 to 4/15/2014 11:59:00 PM**

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| Positive Corrections|       | 0       | 0       | 0       | 0       | 6       | 27      |
| Negative Corrections|       | 6       | 2       | 0       | 0       | 0       | 0       |
| Total Corrections   |       | 6       | 2       | 0       | 0       | 6       | 27      |
SmartPark Management Overview

FMCSA SmartPark System
Lot Usage Report

Average Lot Usage by Hour of Day

Report Run at 4/15/2014 12:43 PM

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Excellence Delivered As Promised
## SmartPark Management Overview

### FMCSA SmartPark System
**Ingress/Egress Report**

4/1/2014 to 4/15/2014 11:59:00 PM

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SmartPark Performance
SmartPark Performance

• Performance Requirements & Results

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<th>Requirement Identification</th>
<th>Description</th>
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<td>PR1</td>
<td>The system shall maintain the parking area occupancy count to better than 95% accuracy.</td>
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• Operational Impact: Correct system once per day
What Worked Well

• **Hardware:**
  – Laser Scanner\Radar
  – CCTV Cameras
  – Field Computers
  – Fiber Optic Field LANs
  – Static Signs with DMS Insets
  – Cable Modem Communications

• **Software & Systems**
  – Websites
  – Classification System
  – Image Capture
What Didn’t Work As Well

• **Hardware:**
  – T1 Line at MM45
  – Cellular Modems for 2 DMS sites

• **Software & Systems**
  – Interactive Voice Response (see “Siri”!)
  – Phone Apps
  – Reservations
  – Maintenance
• Thanks!
• Questions?

• Contact Info
  – David Krauss
dkrauss@gfnet.com
  – Von López-Jacobs, PE
vlopezjacobs@gfnet.com