



# MDOT I-94 Truck Parking Information and Management System

# TPIMS



# The Challenge

- Up to 30% of traffic along I-94 in Southwest Michigan is commercial traffic
- Commercial vehicles routinely parked on ramps and along the interstate creating safety issues
- Significant percentage of trucks stop spaces are empty or under utilized
- ~40% of drivers spend over 1 hour finding parking during mandatory rest period
- Driver distraction major concern



# The Solution

## Project Goal

- Deliver reliable, real-time parking availability information to truck drivers to make well informed decisions benefiting safety and efficiency

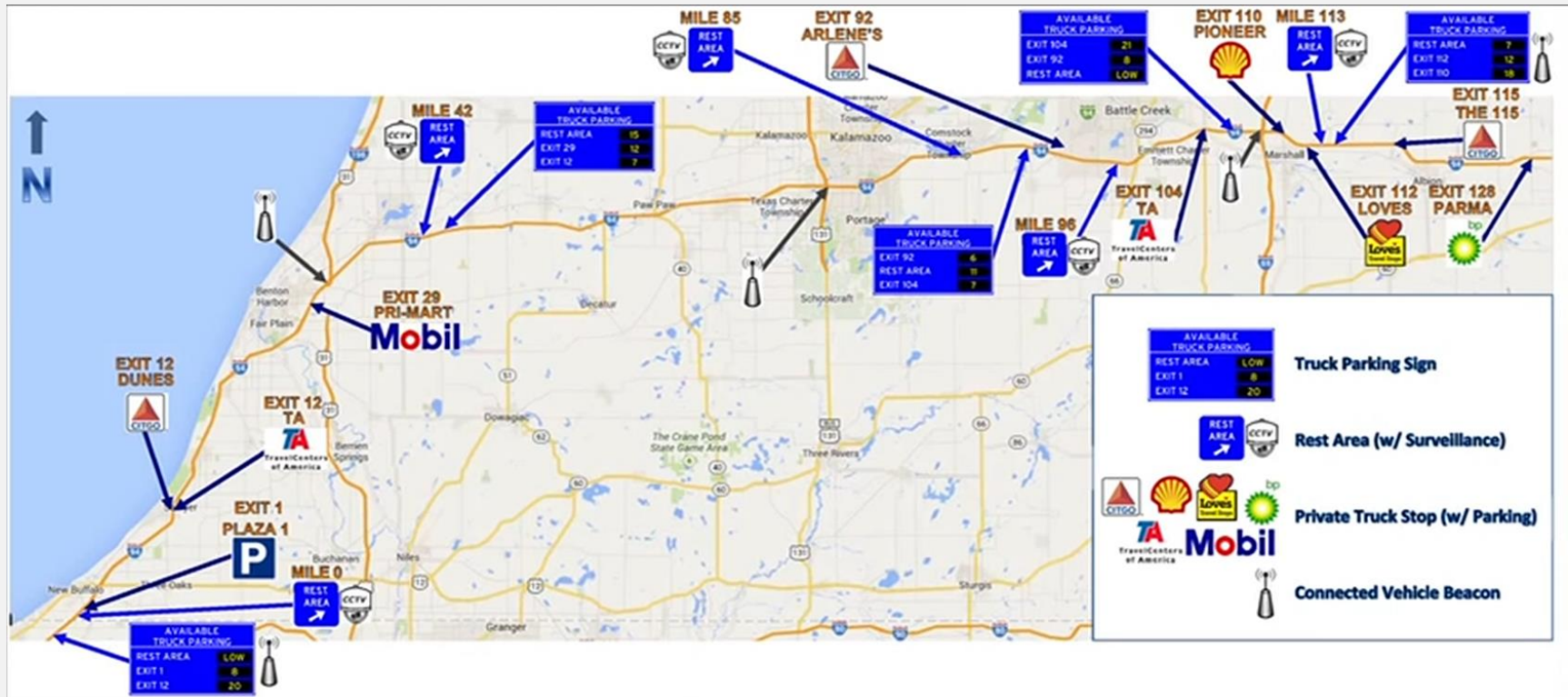
## Details

- Use speech to text to minimize driver distraction
- Provide information via multiple platforms
  - Roadside signs
  - Websites
  - Smartphone applications
  - Connected Vehicle
  - Ultimately 3<sup>rd</sup> party hardware/applications





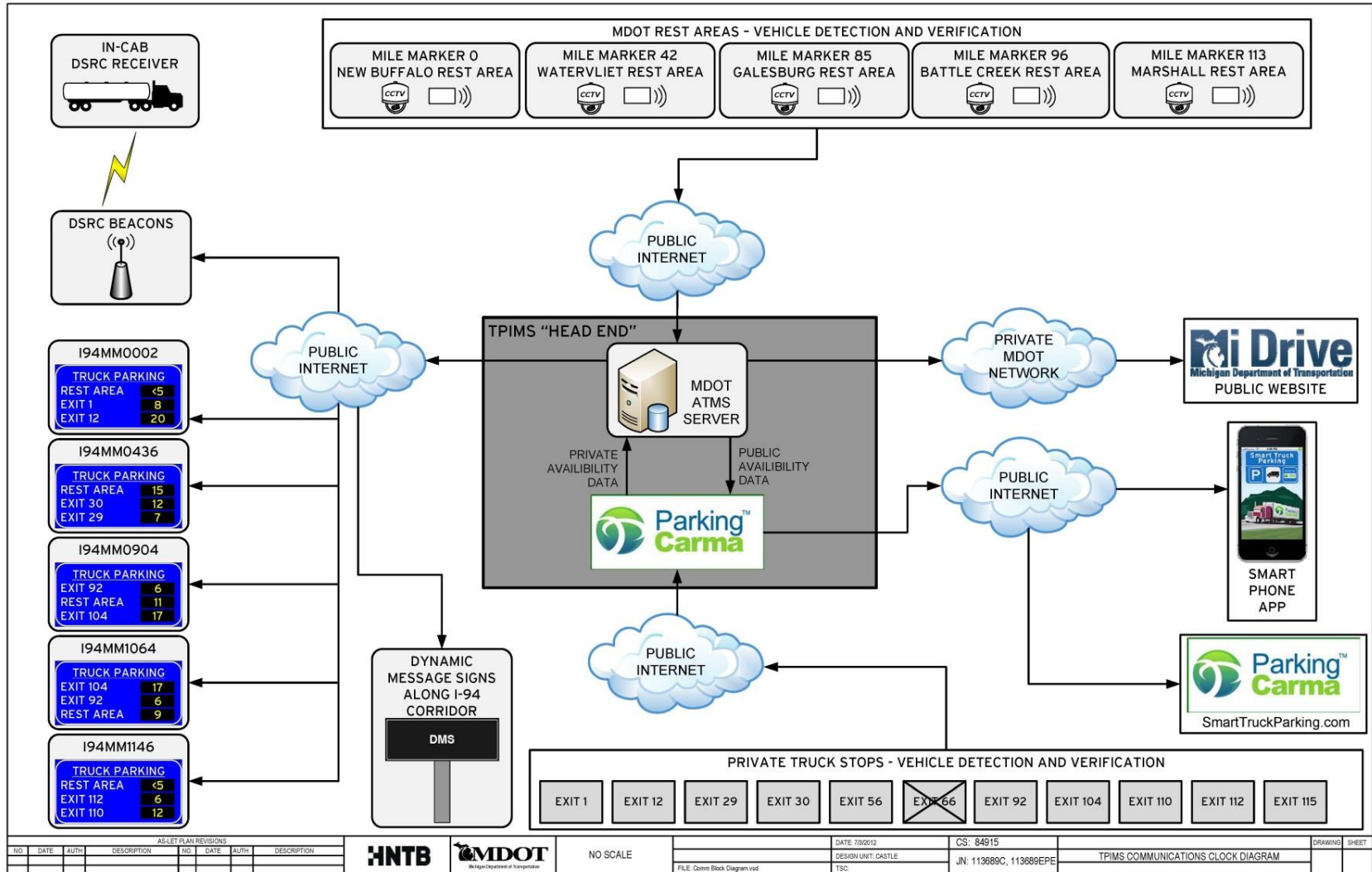
# Corridor Overview



- 5 Rest Stops
- 7 Private Truck Stops
- 5 Variable Message Signs
- 5 Connected Vehicle Beacons

# TPIMS

# System Design



# Data Collection

**All lots use in/out counting**

## **Private Lots**

- Integration via external data feed
- Utilize video detection

## **Rest Areas**

- Direct integration
- Utilize in-ground detection





# Integration

## Data Collected – per lot

- Total Spaces
- Actual Occupancy
- Low Threshold
- Filling/Clearing

## Device Associations

- Which counting devices are associated with which lots
- Which cameras are associated with which lots
- Which Lots are associated with which signs



# Data Collection

- MiDRIVE
  - MDOT driver information website
  - Available to all at <https://mdotnetpublic.state.mi.us/drive/>
- Variable Message Signs
  - Five placed at strategic sites on I-94
- DSRC Connected Vehicle
  - Interface to tablet with text to speech capabilities
  - Placed when enter I-94 corridor where program is supported also at intersections of I-94 and several strategic highways
- Truck Smart Parking Services (TSPS)
  - Smartphone Application for Android and Apple
  - Also Website



# MiDrive



Michigan Department of Transportation

**Aerial View** | **Road View**

**Incidents** (active) (clearing)

**Construction/Lane Closures**  
 (current) (future) (total closure)

**Cameras**  
 (Camera with Weather) (Camera)

**Current Speed**

**Truck Parking**

**Carpool Lots**

**Airports** (public) (passenger)

**Message Signs**

**Snowplows**  
 (Snowplow) (Snowplow with Camera)

**Roadside Parks**

**Rest Areas**

**I-94 @ Galesburg Rest Area - Available**

**Status:** Available  
**Name:** Galesburg Rest Area  
**Route:** I-94  
**Cross Street:** Galesburg Rest Area  
**Open Spaces:** 18  
**Total Spaces:** 39  
**Update Time:** 9/27/2016 8:46:04 AM

# Dynamic Message Signs



# Connected Vehicles /DSRC

- Tablet based user interface
- Trending ↑↓ based upon 30 min

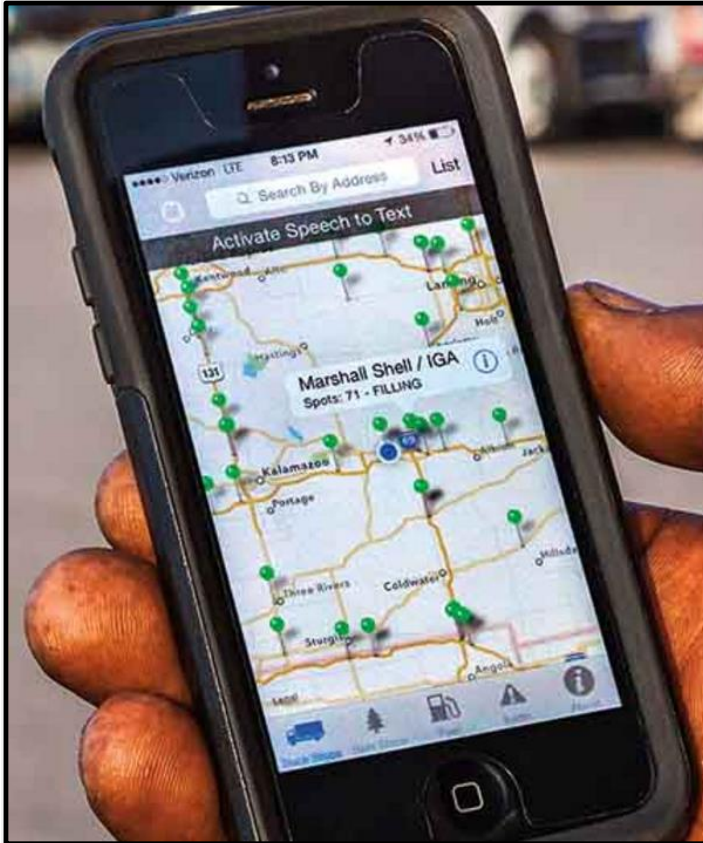
The screenshot displays a tablet interface titled "Parking Information Ahead". It features a table with four columns: Service, Miles, Stalls, and Trend. The data is as follows:

Service	Miles	Stalls	Trend
REST AREA	MILE 1	22	—
[Logo]	EXIT 1	13	—
M	EXIT 12	23	—
TA	EXIT 12	23	↑
[Logo]	EXIT 29	13	—
[Logo]	EXIT 30	22	—
[Logo]	EXIT 56	9	↓
[Logo]	EXIT 92	16	↓
REST AREA	MILE 95	7	—


At the bottom of the screen, a blue bar indicates "Age of data: 0 min". The interface includes standard Android navigation icons at the bottom.



# Truck Smart Parking Services (TSPS)



<http://www.onlineparkingnetwork.net/map>  
<http://www.trucksmartparkingservices.com/>



## LOVE'S TRAVEL STOPS #336

AVAILABILITY **72**

Counted At: Sep 27th, 8:14:45 am -05:00




Photo Taken: Sep 27th, 8:02:23 am -05:00

### ASSOCIATIONS

- Pathway
- NATSO

### CARDS

- American Express
- Bank Debit Card
- Discover
- MasterCard
- Visa

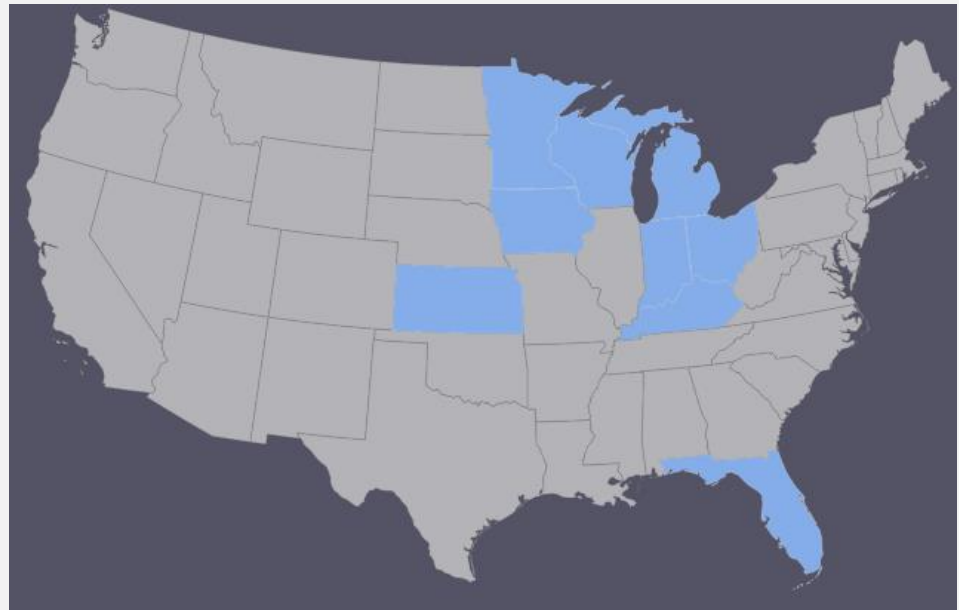
### ENTERTAINMENT

- Game Room



# Current Status

- Indiana, deploying system by 2018
- Other states deploying are Kansas, Kentucky, Iowa, Minnesota, Ohio, Wisconsin and Michigan is expanding
- Florida deploying along I-4 and I-95 corridors
- Travel Centers of America offering TruckSmart Mobile Application
- Talking with AVL/EBOR companies about integrating into their products



# Parties Involved

