



Intelligent Work Zones on Traffic Critical Projects

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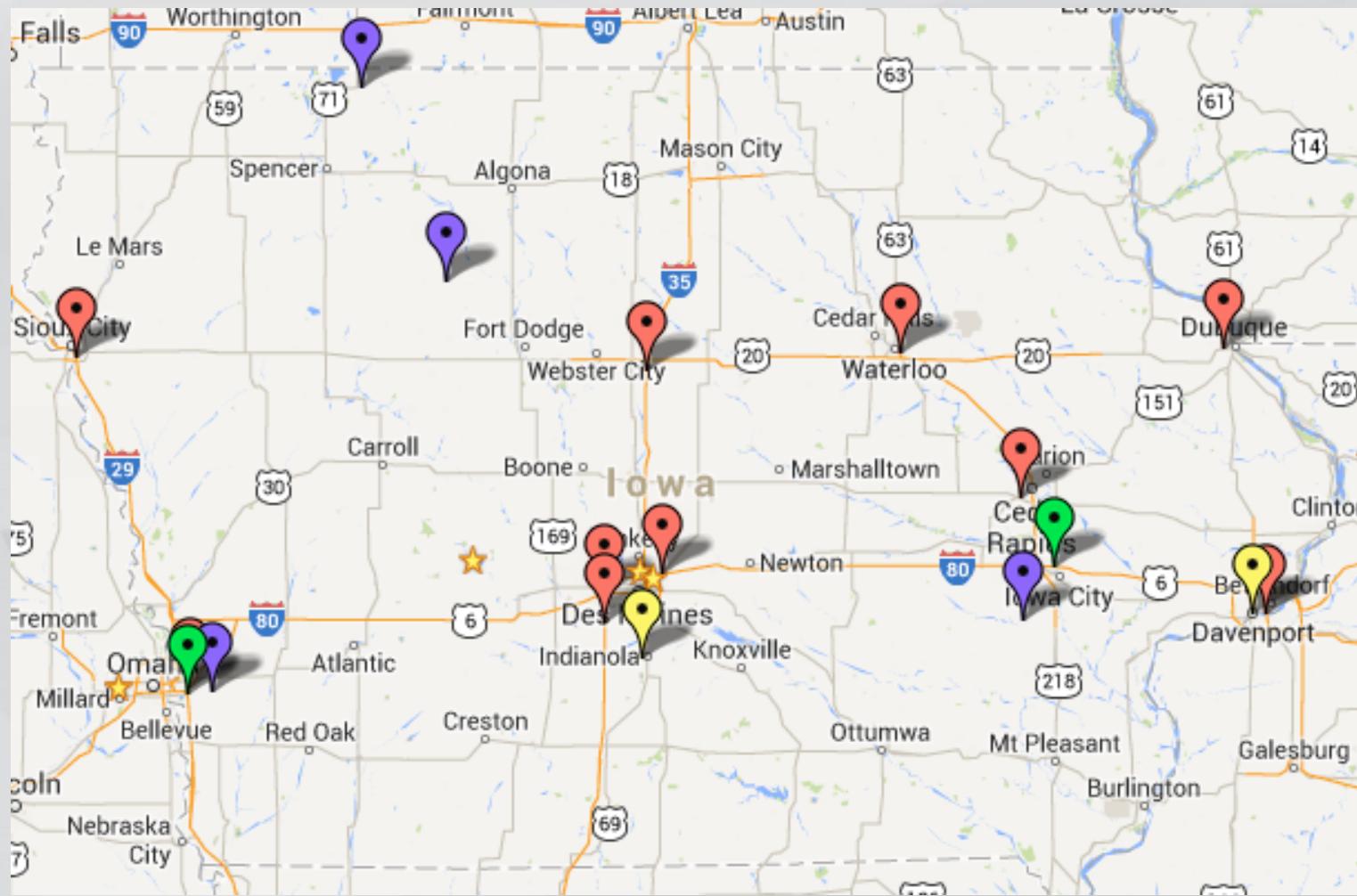


“Traffic Critical Projects”

- Iowa DOT Management, Winter 2014
- Projects that can repeatedly or quickly lead to significant travel delays
- Proactive approach using ITS



2014 Proposed IWZ Locations (18 projects)



Resources

- Statewide TOC
- ATMS Software
- Communication Networks
- Existing ITS Devices



Resources:

Iowa Statewide Traffic Operations Center (TOC)



- Ames
- 24/7



Resources:

Iowa Statewide Traffic Operations Center (TOC)

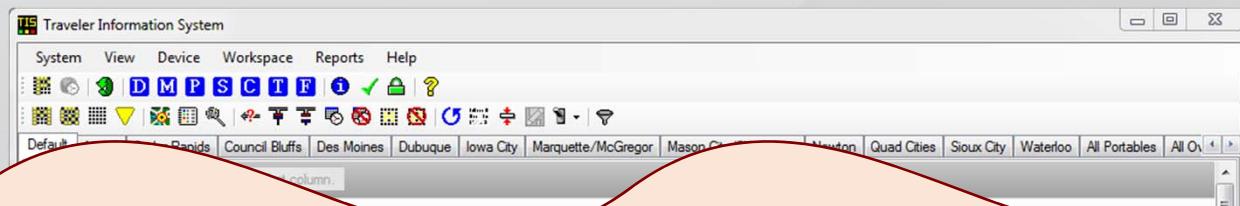


- TransSuite ATMS
- Camera, Sensor and DMS Management



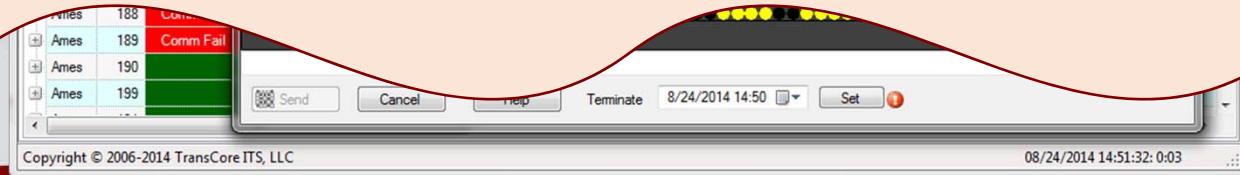
Resources:

Central Control of Permanent and Portable DMS



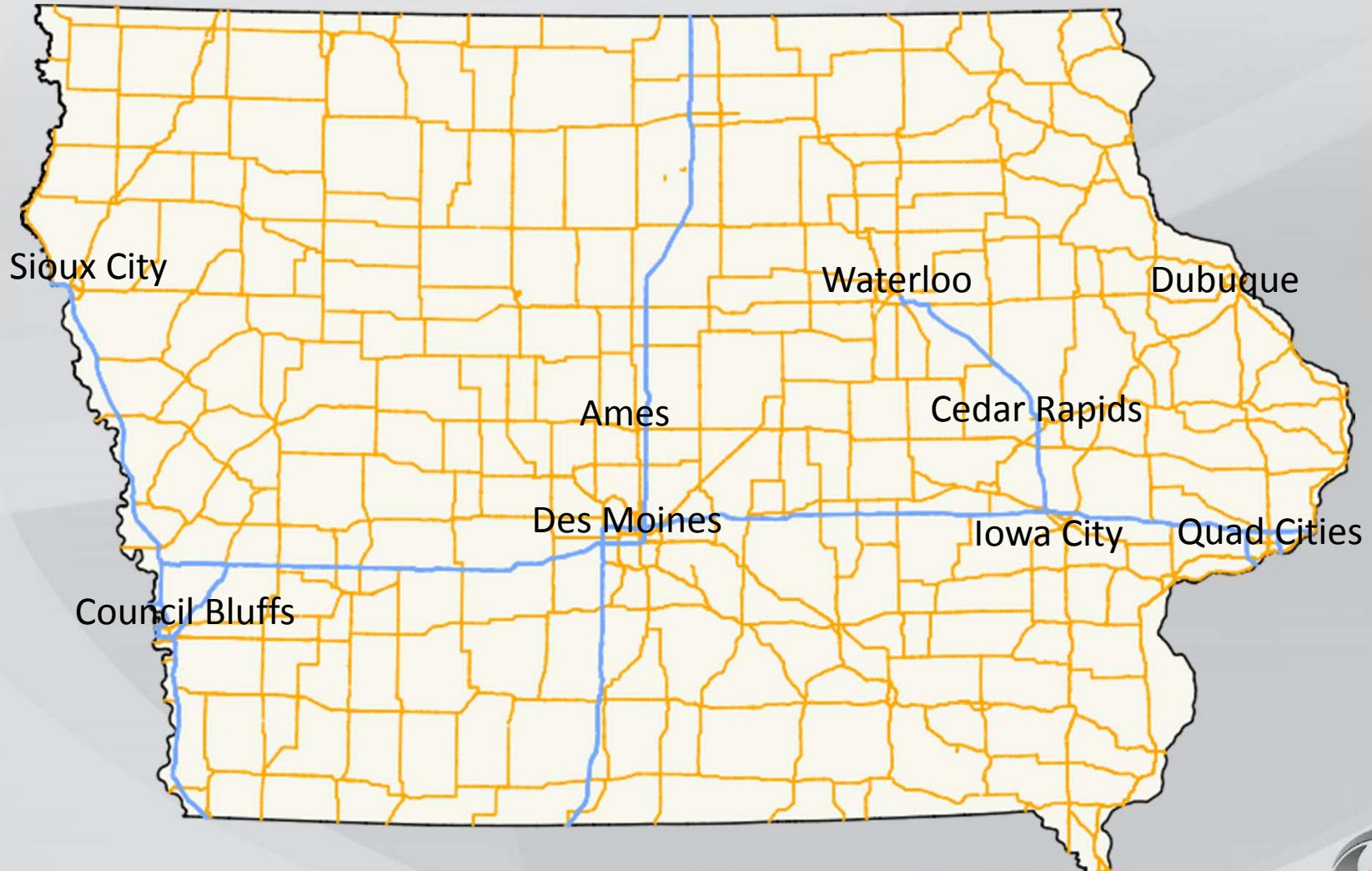
2013

Added the ability to control
Portable DMS provided by
Traffic Control Contractors



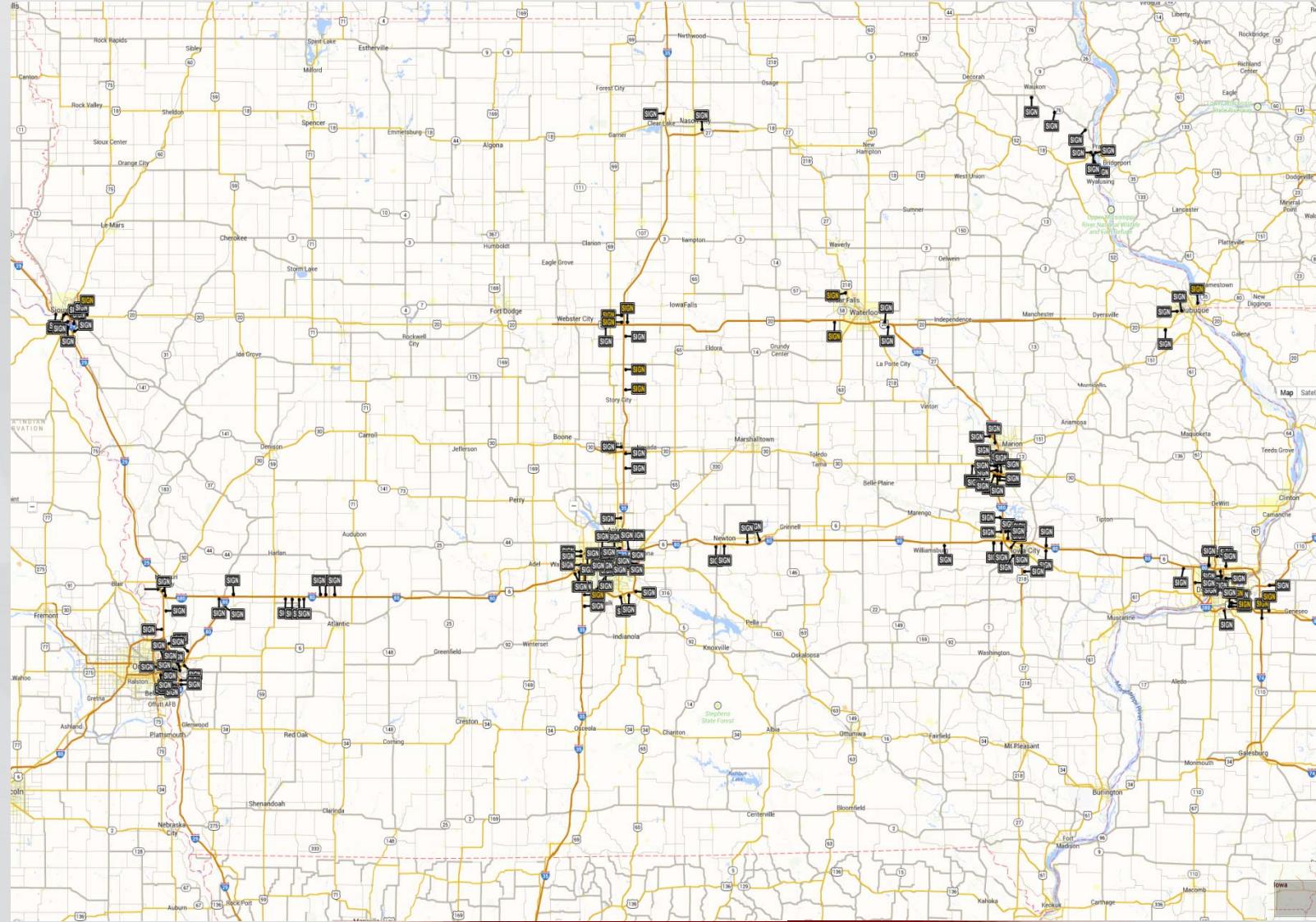
Resources: Iowa

9 “Metro” Areas (over 50,000 pop.)

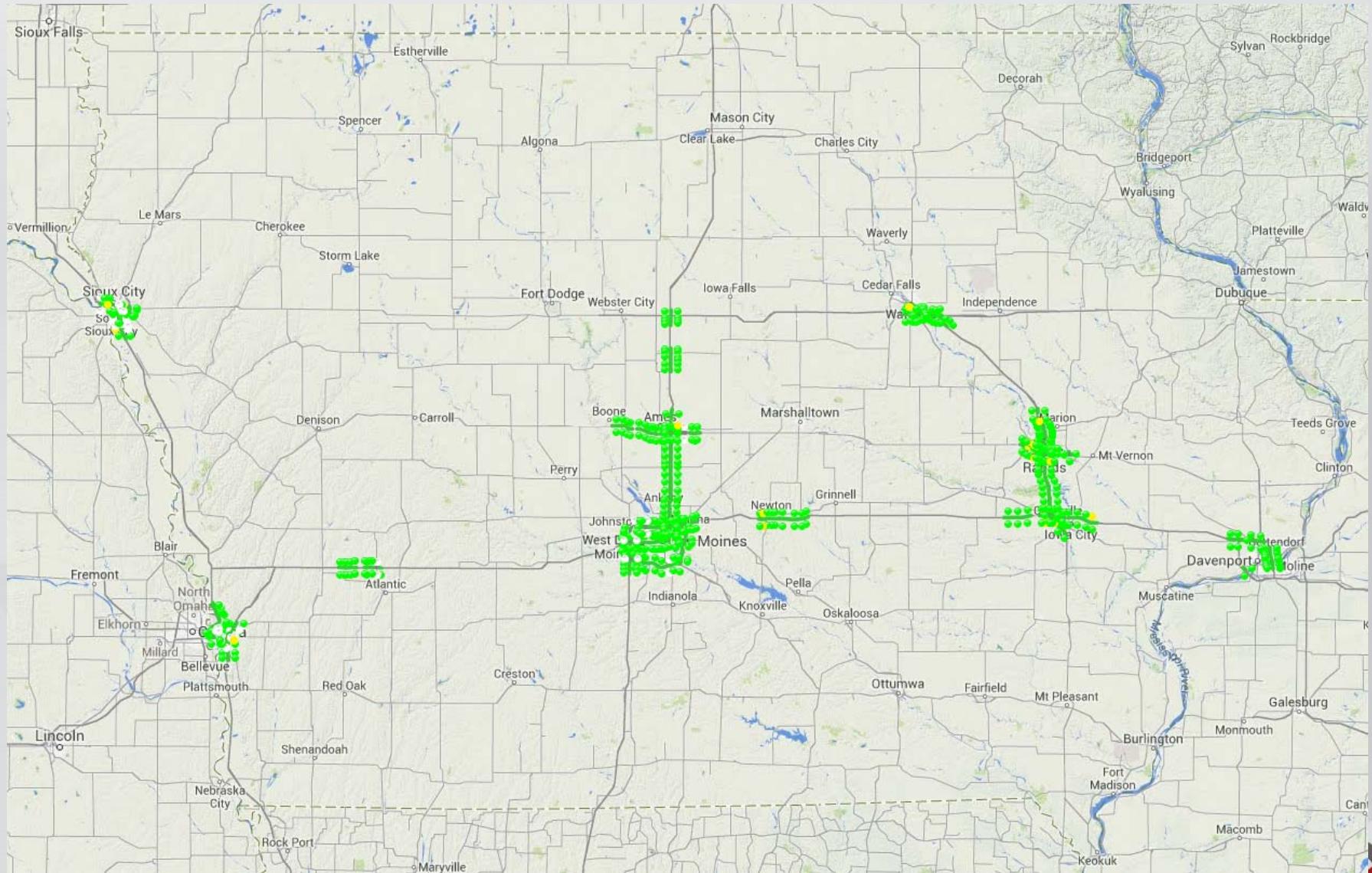


Resources:

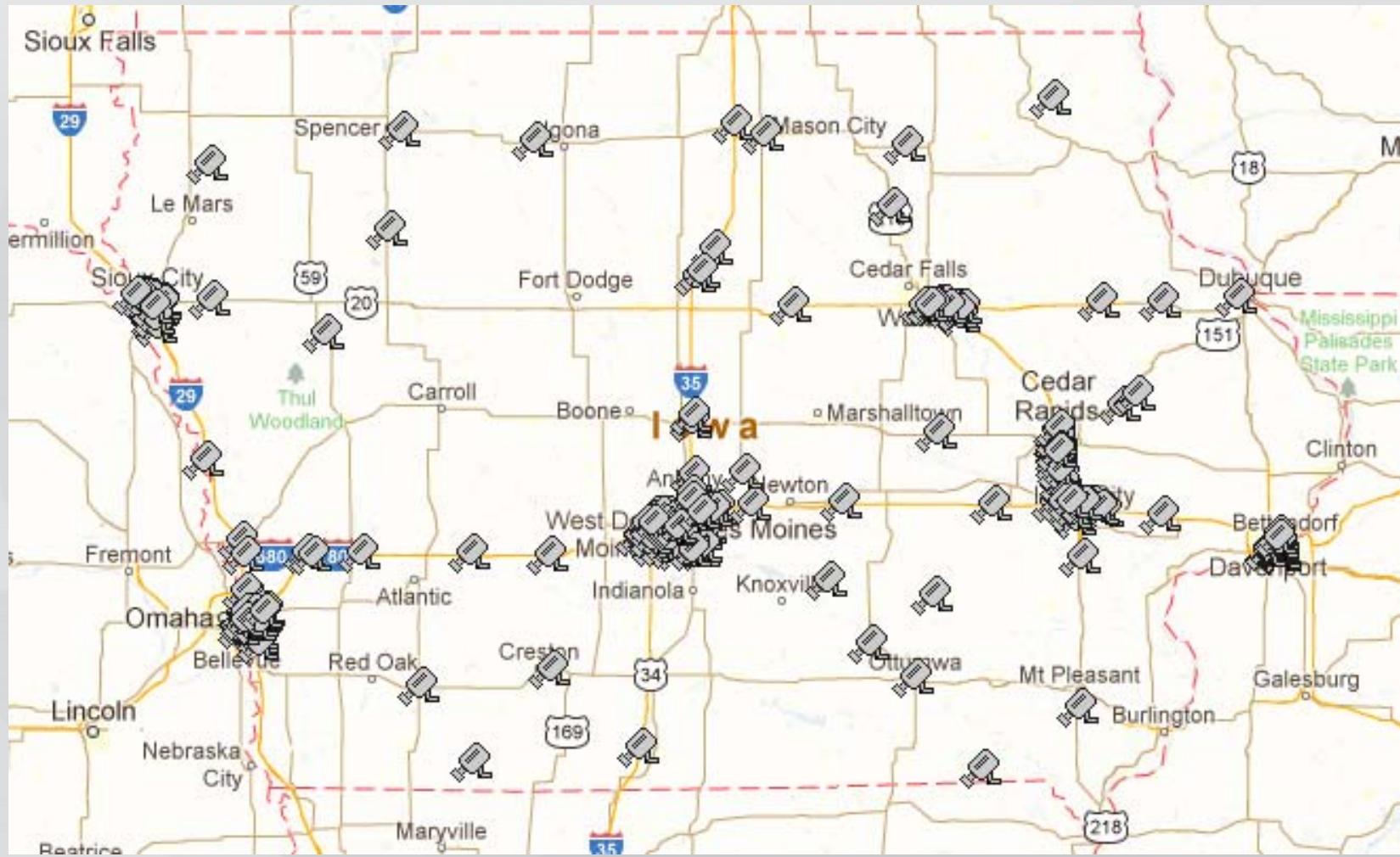
Statewide DMS Network



Resources: Traffic Sensors



Resources: 300+ Cameras



Proposed Solutions

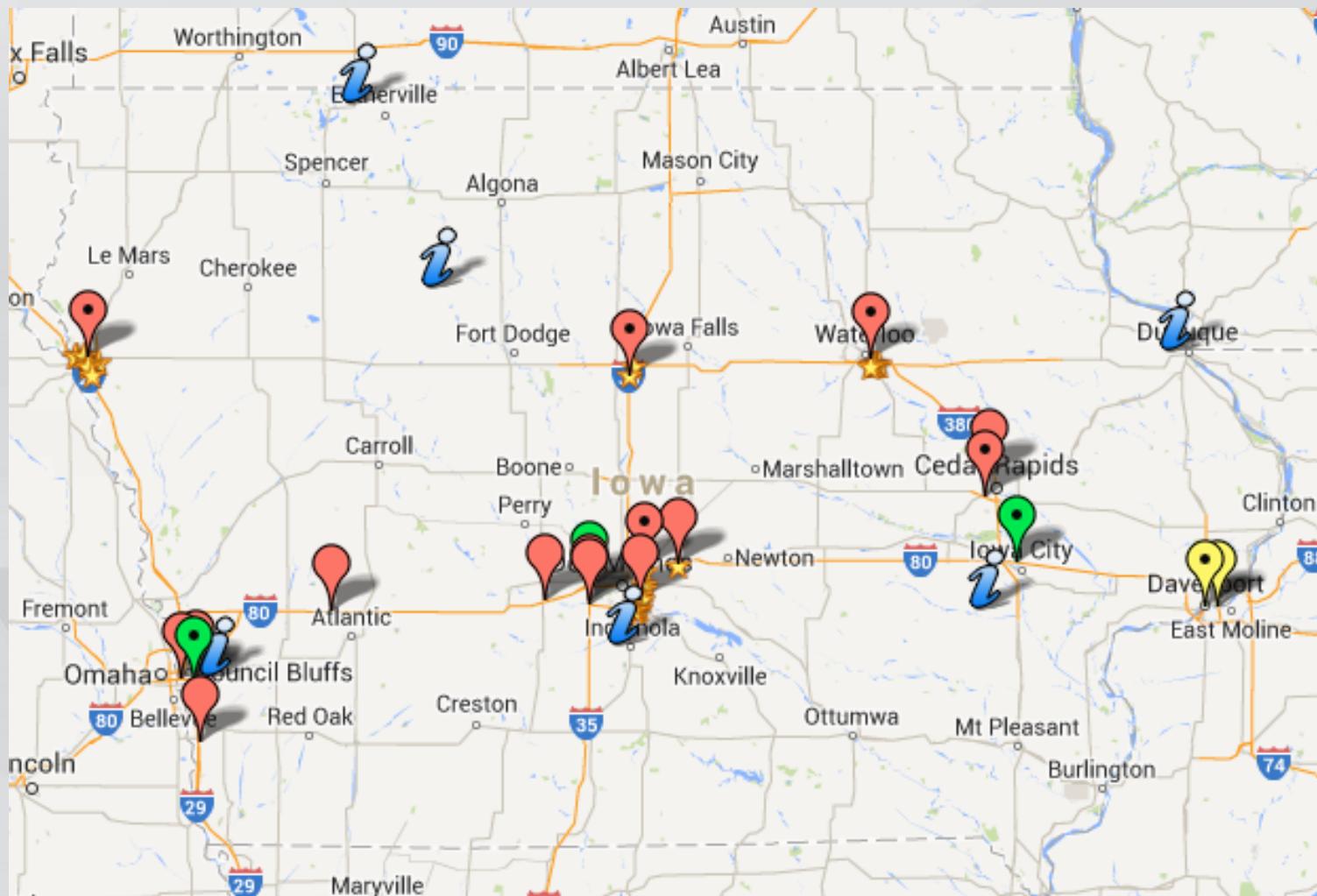
- TOC Monitoring with Traffic Sensors and Cameras
- Automated Queue Detection and Warning Systems with DMS
- Traffic Signal Preemptions



Solutions Looking for Problems



2014 Actual IWZ Locations (from 18, down to 11)



Early Decisions

- Sensor Types?
 - Wavetronix Side-fire Radar
- Communications?
 - DMS = Cell modems
 - Sensors = DOT Wireless Radios...
 - Cameras = DOT Wireless Radios



Early Decisions

- Method of Payment?
 - Deployment/Integration (per device)
 - Operation (per day)
 - Relocation (per DOT request)
- Number of Contracts?
 - Up to 3, by region
 - Selected 1 for all three regions



Early Questions

- System Monitoring Specifications?
 - Combination of DOT, IWZ Vendor and ITS Maintenance Vendor
- Duration of Contract?
 - One year with options up to 3 years



2014 Contract

- Assistance from SRF in writing contract and managing projects
- Qualifications and Cost-based selection
 - Street Smart Rentals out of Minnesota
- Integration Support from TransCore

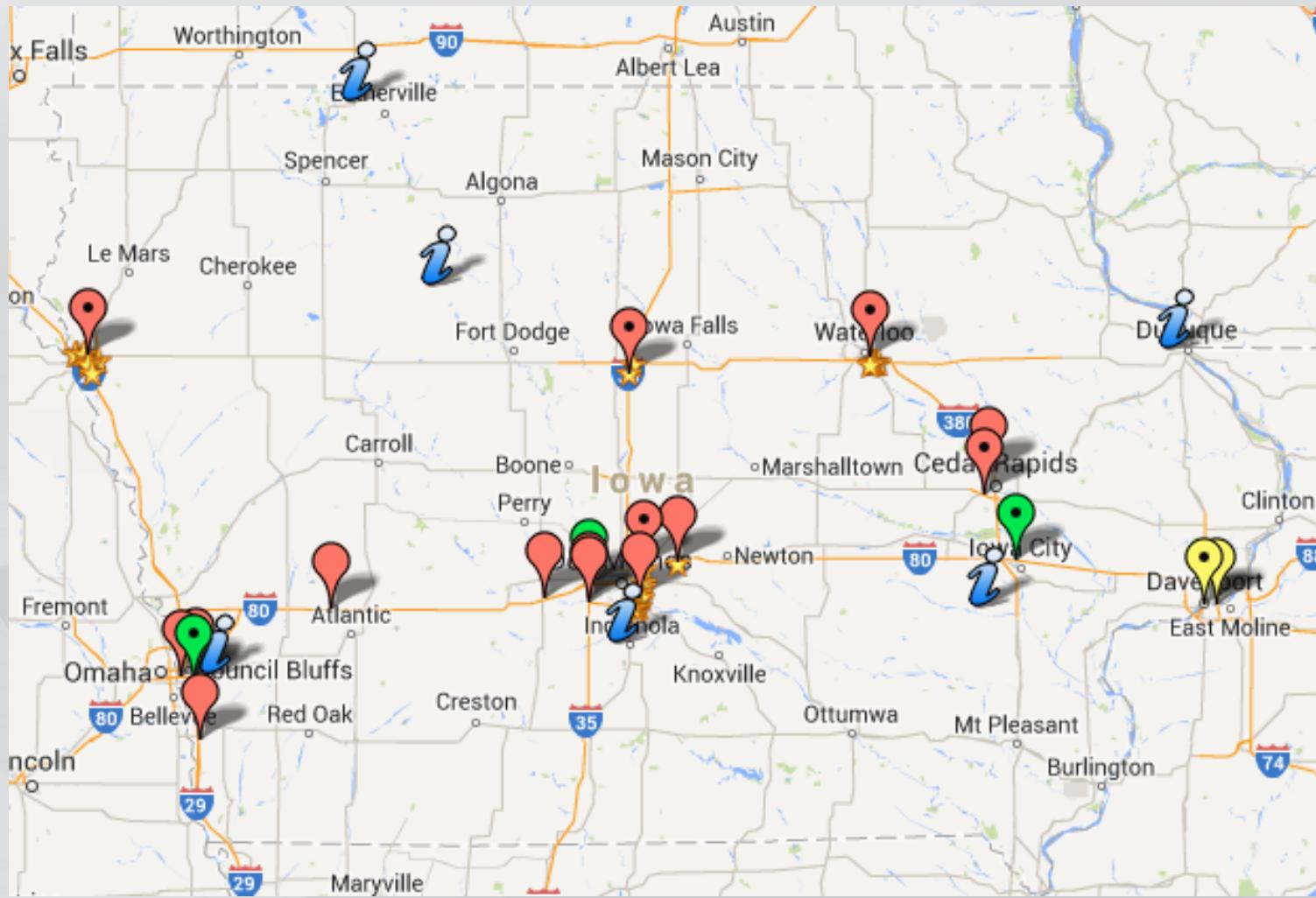


2014 Contract

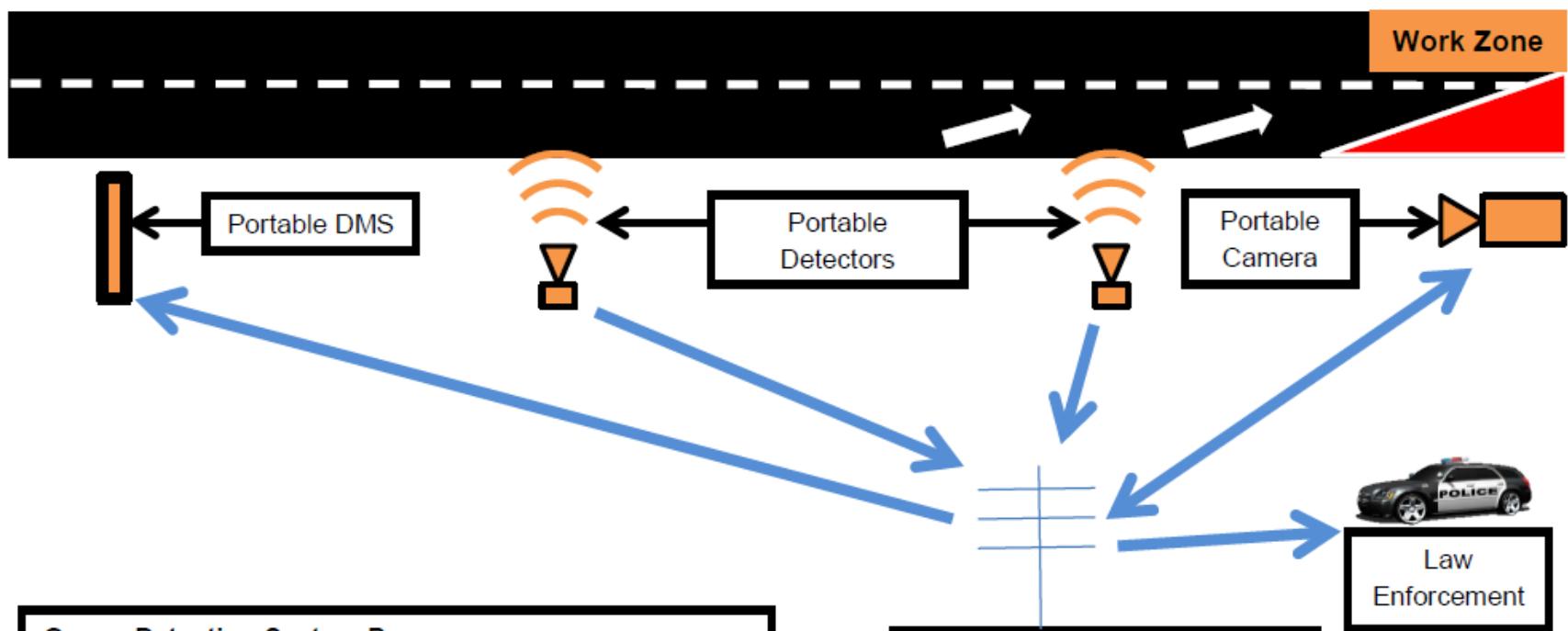
- Selection based on estimated quantities for 11 potential projects
 - Flexibility to add or remove devices and projects
- Currently 14 projects
 - Removed 2, Added 5
 - 56 Sensors, 3 Cameras, 40 DMS



2014 Actual IWZ Locations



Queue Detection Systems



Queue Detection System Process:

- 1) Slow traffic detected by portable sensors.
- 2) Sensors communicate to central server to process preprogrammed logic.
- 3) Logic from central server posts automated alert message to portable DMS and sends alert e-mail to TOC.
- 4) TOC verifies slow traffic via portable camera and dispatches appropriate response team, following project's TMP/TIM.



2014 Lessons

- **MANY** steps required for success
 - Coordination with Construction
 - Deployment, Communications, Integration, System verification, Sensor calibration (speeds, volumes, classifications), Sensor monitoring, DMS monitoring
 - Queue detection systems
 - Logic development, implementation, verification, monitoring
 - Inform/educate all stakeholders:
 - TOC, District Staff (management, construction, maintenance), ITS Vendor, Prime contractor, Traffic control subcontractor, TIM staff, ITS Maintenance Contractor, ATMS programmers
- *Start Early!*
- *Have a Good Team!*



2014 Improvements

- Sensors on Cell Modems
- Sensor Data Tracking
- Automated DMS Location Tracking
 - via cell modems
- 511ia.org Integration of Cameras & DMS



Sensor Data Tracking Spreadsheet



511ia.org

Traveler Information

IOWADOT 511 IOWA STATE PATROL

Your 511 (sign in)

Help More 511 Truckers Winter Driving Bordering States' 511 Contact Us

Show List Views >> --- Select Map --- Go Future Info:

There is a closure or blockage on US 65

a red ring around them

--- Current Reports ---

- Closures
- Danger
- Restriction
- Crash

--- Other Reports ---

- Warning
- Lane Closure
- Roadwork
- Info

--- Weather Reports ---

- Weather Warnings

--- Road Conditions ---

- Normal or Wet
- Partially Covered
- Completely Covered
- Impassable
- No Report Available

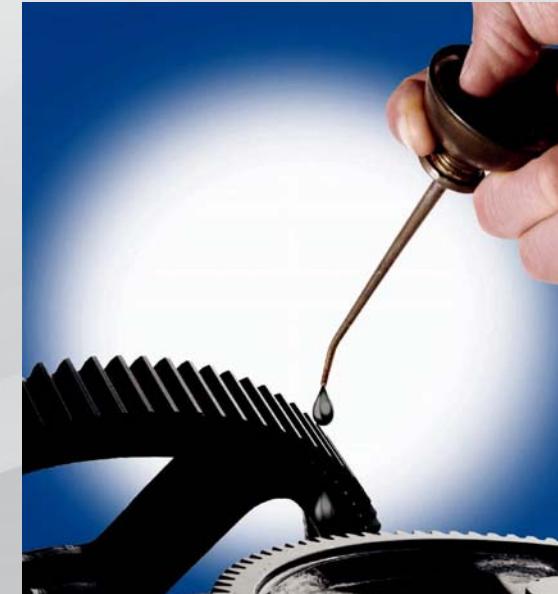
--- Towing Prohibited ---

Map Satellite

Google No Map data ©2014 Google 2 km Terms of Use Report a map error

2015 Traffic Critical Projects

- Much Earlier Start
 - Improved Communication
- Better coordination with TMP/TIM
- Broaden Toolbox with Additional technologies
 - Incorporate 3rd Party Traffic Data (INRIX)
 - Speed management / feedback
 - Trucks entering systems



Questions

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