

AGENDA

- Project Goals
- Operational Concept
- System Schematic
- ATMS Components
- Real-Time Modeling
- Traffic Signals
- Project Status
- Brief System Review
- Q&A



SMART TRAFFIC ROUTING WITH EFFICIENT & EFFECTIVE TRAFFIC SYSTEMS (STREETS)

December
2023



PROJECT GOALS

- **Provide a better and more balanced utilization of the City of Dubuque's roadway network infrastructure**
 - Through utilization of the existing and new ITS infrastructure
 - Applying strategies to dynamically address transportation demand and supply.
 - The system includes five major components
 - (1) Travel Demand Model (TDM)
 - (2) Real-time Traffic Model (RTM)
 - (3) Intelligent traffic signal control
 - (4) An automated Decision Support System (DSS)
 - (5) Advanced Traveler Information System (ATIS)



OPERATIONAL CONCEPT

- Balance traffic
 - Leverage use of real-time travel times
 - Full DMS and combination signs
 - Automated Travel time displayed continuously
- Optimize signal timing
 - Normal operation and unusual conditions
- Manage travel demand
 - Responsive web design

A1 (EB)

**CONGESTION
AHEAD
USE US 52**

A-2 (EB)

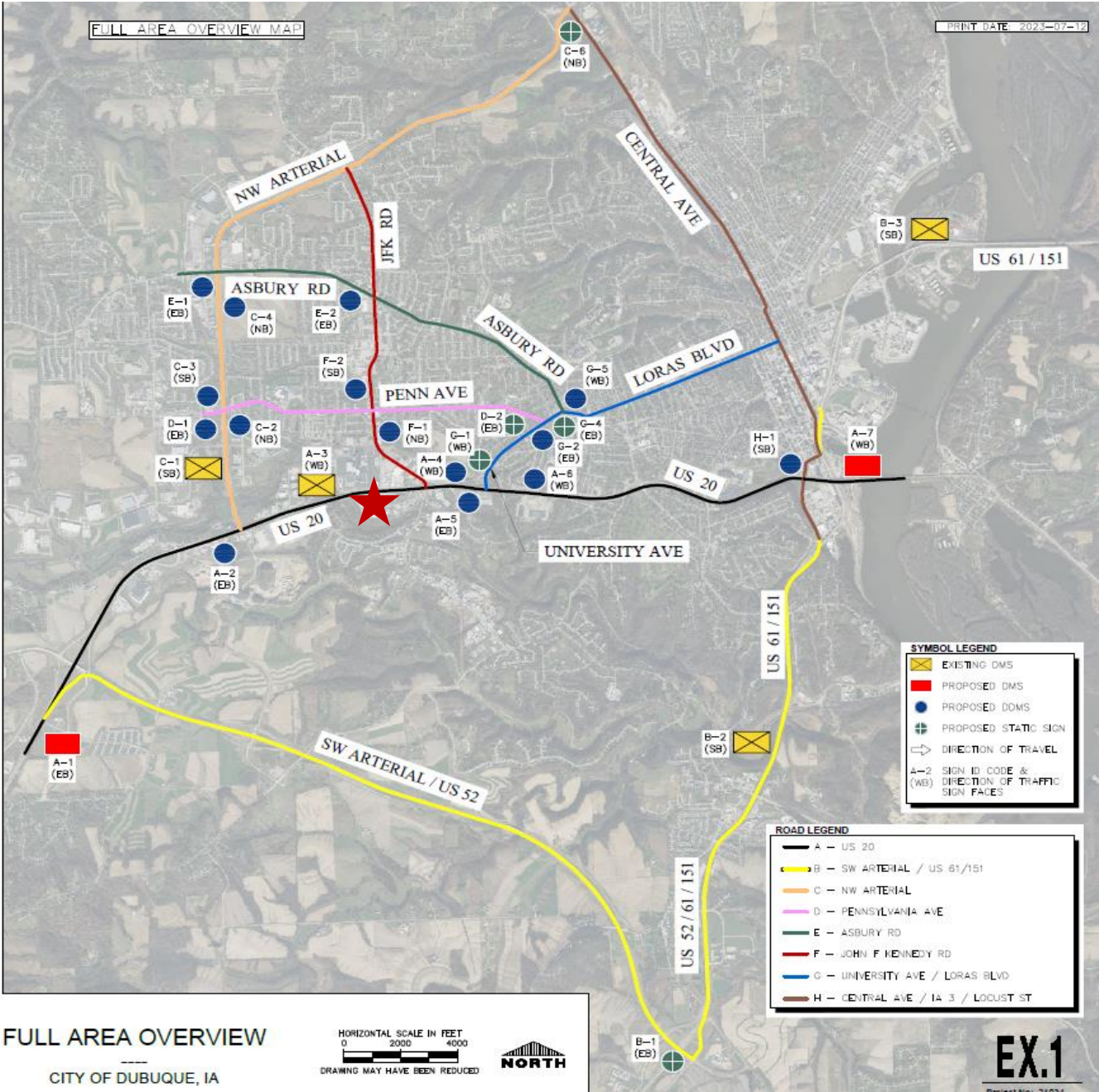
Downtown Via
US 20 ↑ 21

NW Arterial ← 17

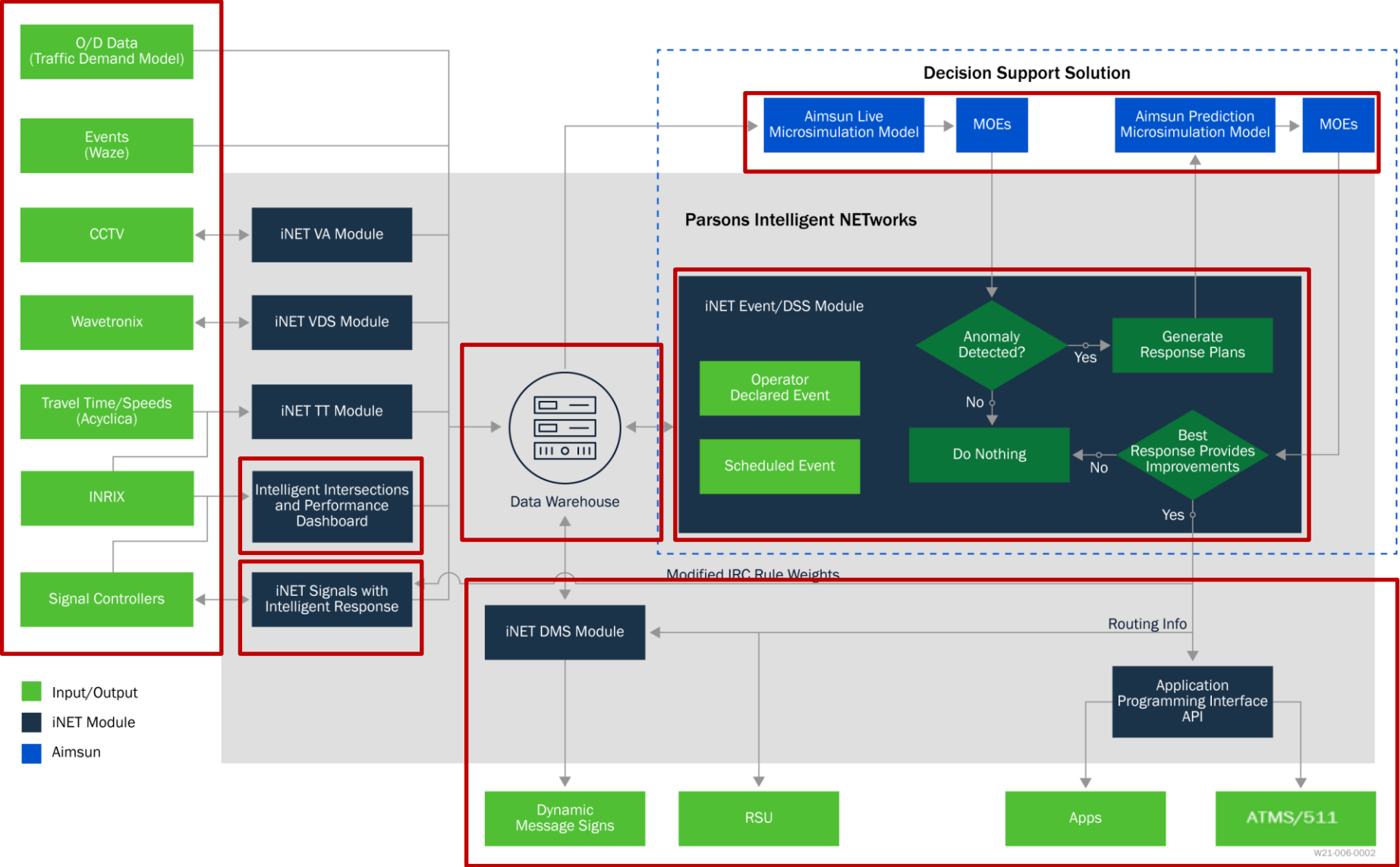
C-2 (NB)

Downtown Via → 15

NW Arterial /
Asbury Rd ↑ 19



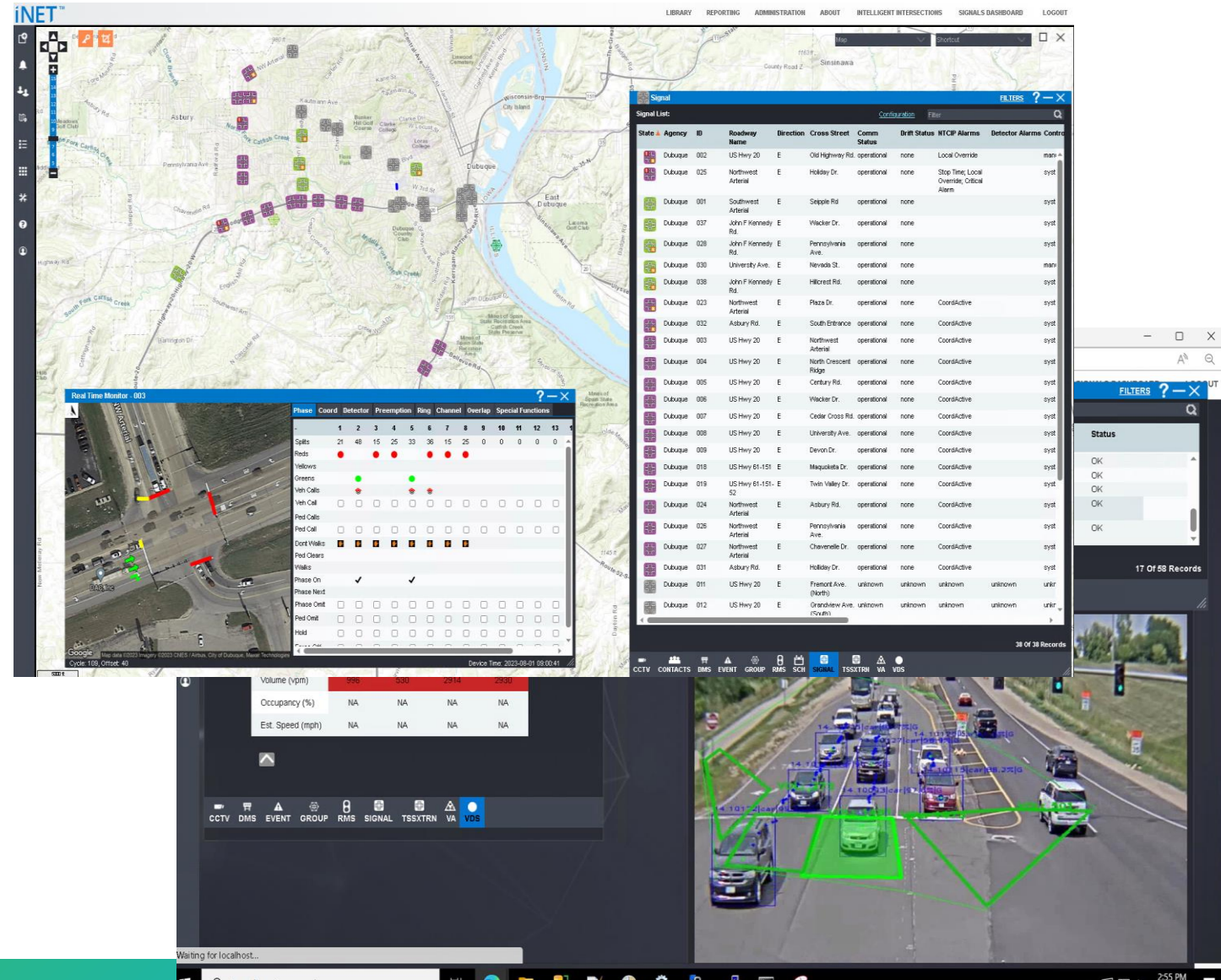
SYSTEM SCHEMATIC



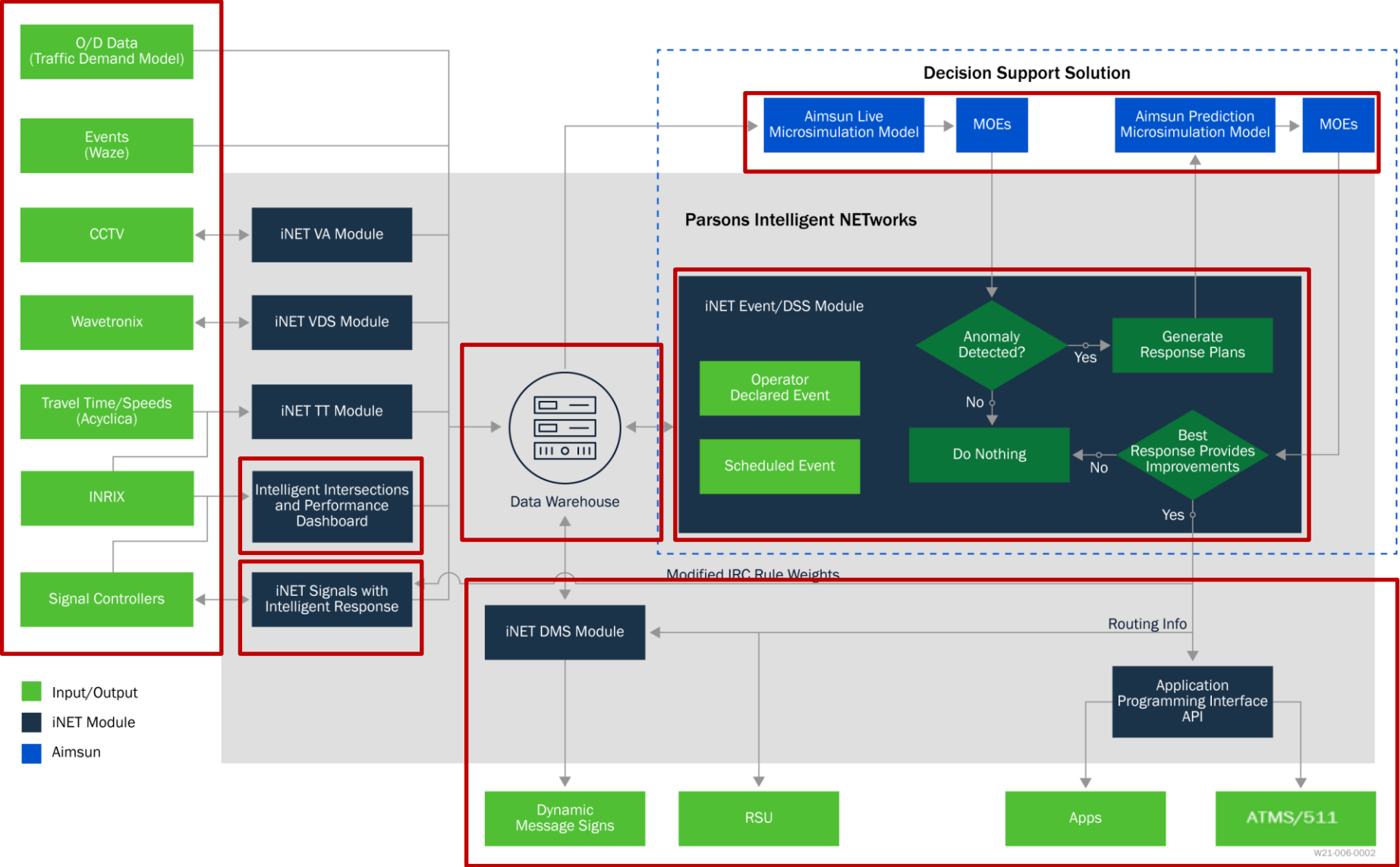
ADVANCED TRAFFIC MANAGEMENT SYSTEM COMPONENTS

- ATMS Components

- Map-based monitoring and control
- Event management
- Travel times
- Automated responses
- DMS control
- Health monitoring of infrastructure
- Full centralized traffic signal control
- Automated Traffic Signal Performance Measures (ATSPM)
- Utilize video analytics
- Real-time modeling integration
- Public website
 - Responsive web design



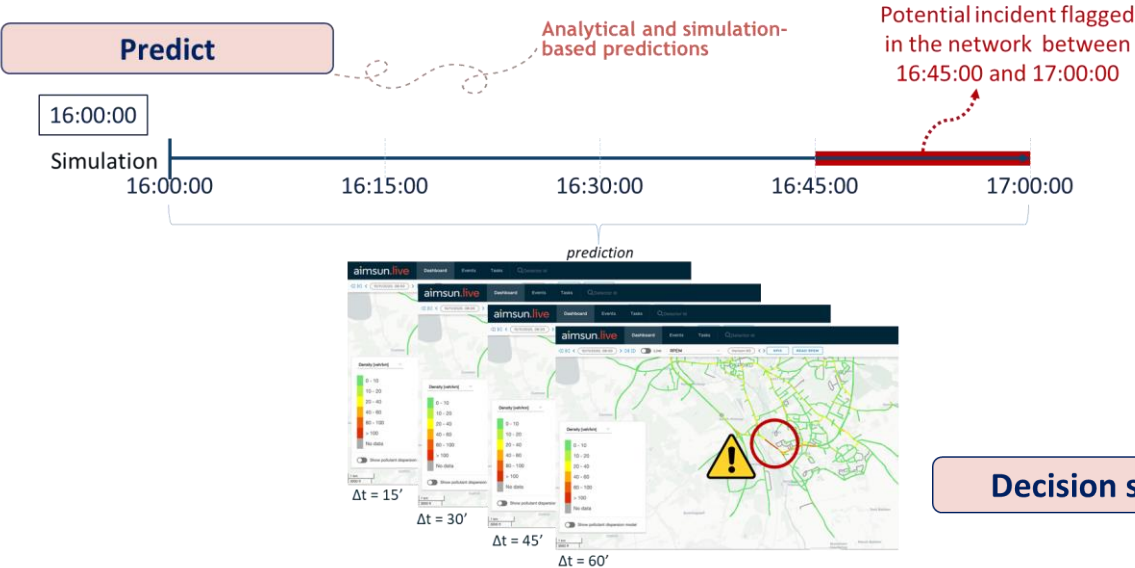
SYSTEM SCHEMATIC



INTEGRATED MODELING HIGHLIGHTS

- The STREETS solution uses Parsons iNET® ATMS integrated with Aimsun Next.

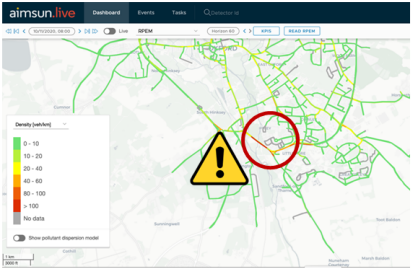
Identify potential issues and anticipate the mitigation actions



Decision support

Simulation-based assessment of different response plans

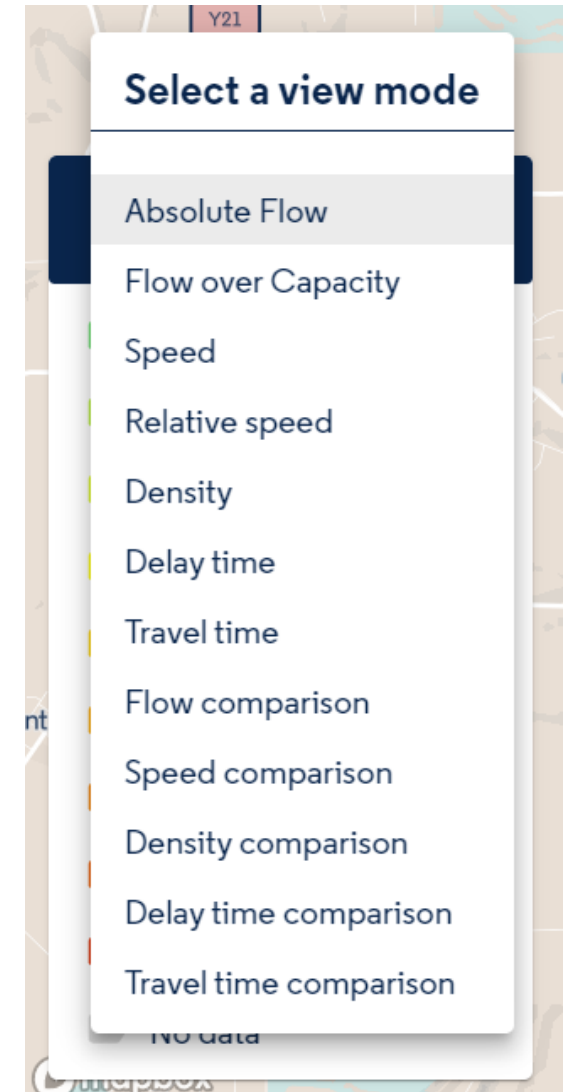
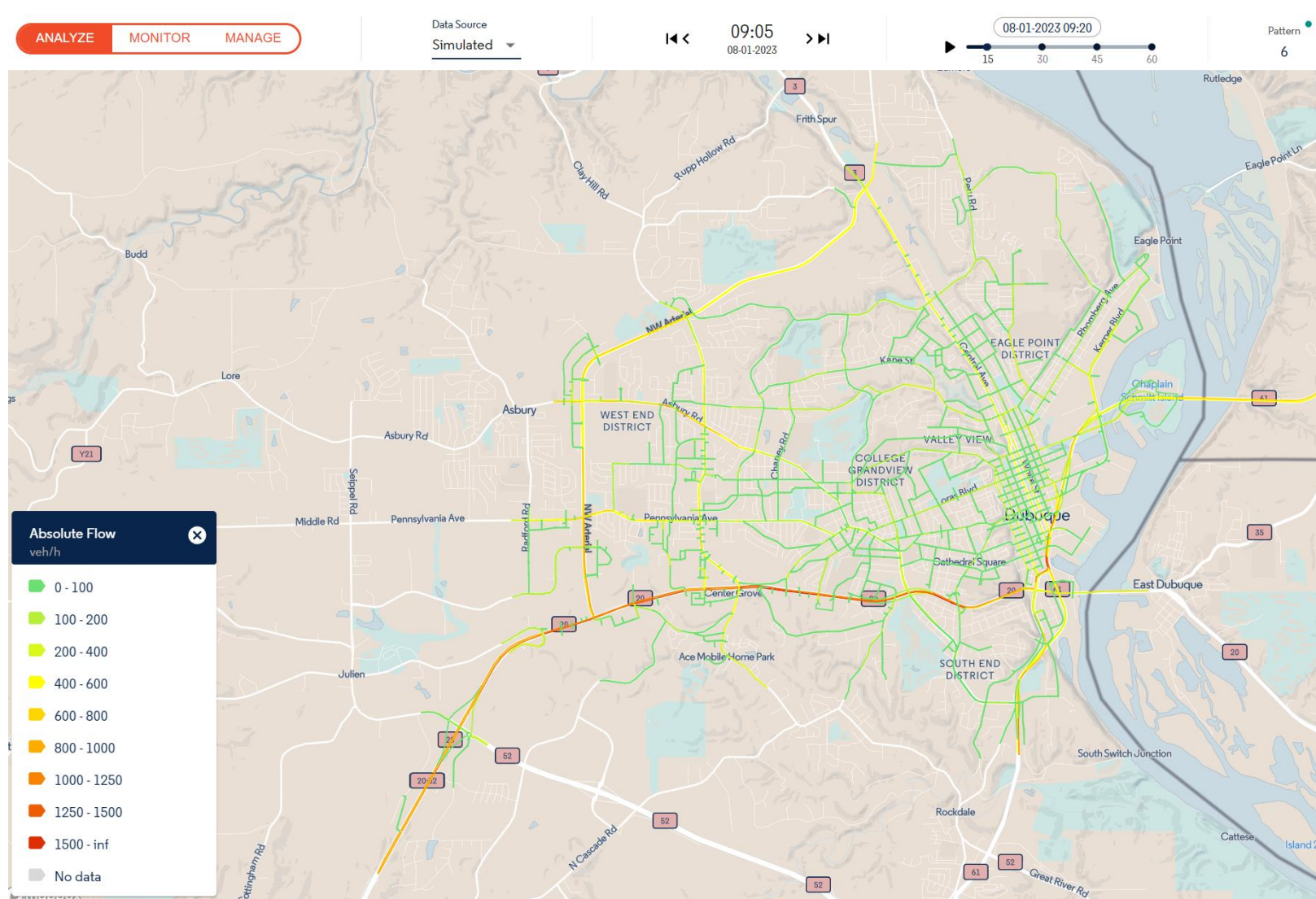
- 2 - Response plan evaluation
- 3 - KPIs and Strategy selection



- Do Nothing scenario
 - Strategy A (diversion/rerouting)
 - Strategy B (green wave actions)
 - Strategy C (block traffic in non-residential areas)
- Outputs/Emissions/...

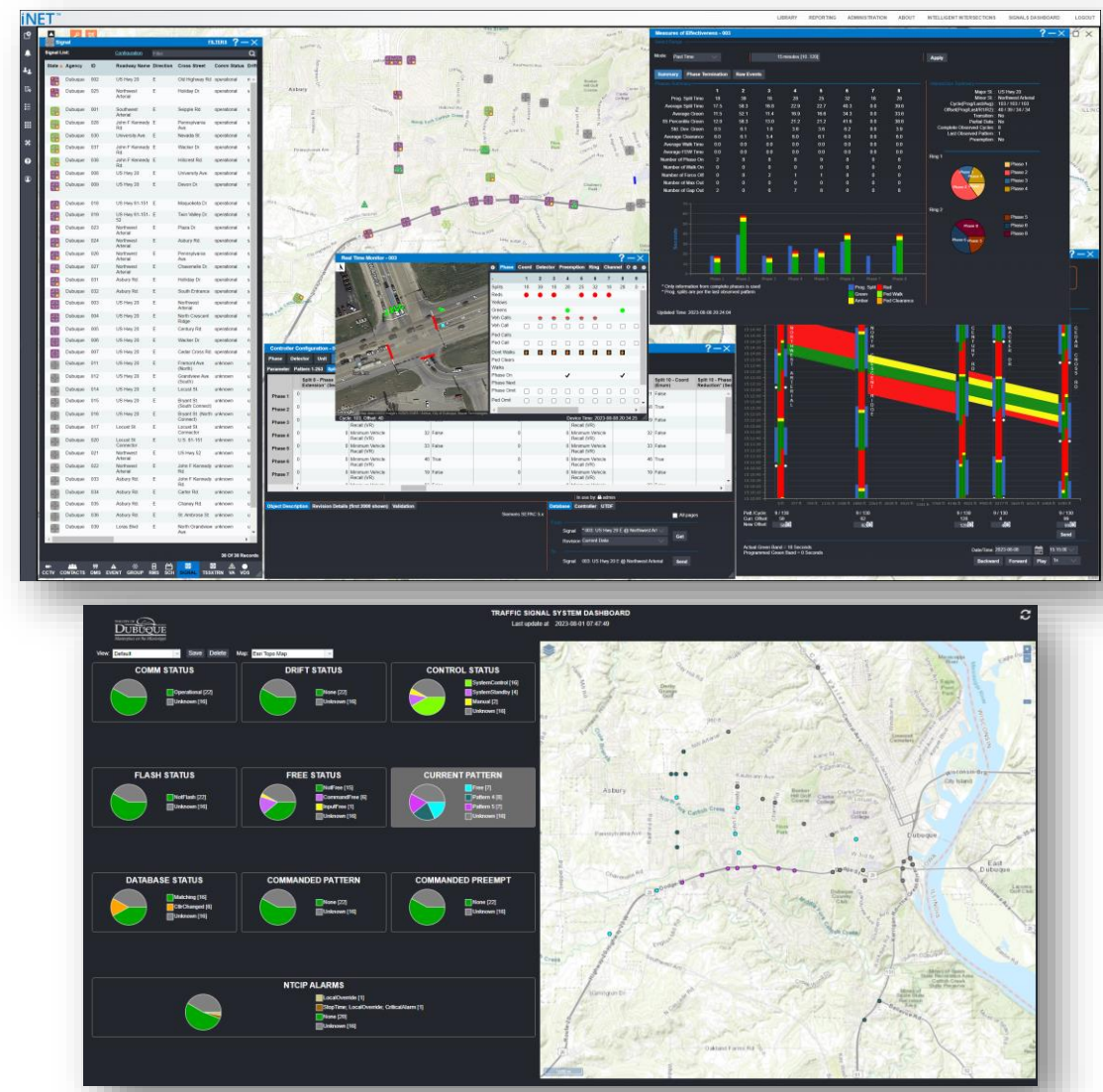
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DUBUQUE AIMSUN GUI – SYSTEM ANALYSIS



FULL-FEATURE CENTRALIZED SIGNAL SYSTEM

- Purpose
 - Status monitoring (operation)
 - Fault monitoring (maintenance)
 - Control (respond)
 - Configuration (remote adjustment)
- Integrated with other iNET modules
 - Activating response plans at traffic signals
- Traffic signal controller agnostics
 - Yunex Traffic (Siemens)
 - Q-Free (Intelight)
 - Swarco (McCain)
 - Econolite



SIGNAL PERFORMANCE MONITORING / RETIMING

- Purpose
 - Signal performance monitoring
 - Signal retiming
- Automated Traffic Signal Performance Measures (ATSPM)
 - High-resolution (10th of second) event logging
 - Provides charts to visualize and review signal operation
- Automated traffic signal retiming
 - Using probe vehicle data - travel time (no physical detection)
 - Continuous signal retiming (improved traffic condition)



PARSONS SCOPE OF WORK STATUS

• Operations and requirements assessment	Complete
• Communications assessment	Complete
• ITS field infrastructure design and installation	Finalizing design
• Base ATMS system deployment	Base in QA
• Model setup and system Integration	Initial model complete
• Interface definition and external interfaces	In progress
• Custom software development	In progress
• ATIS mobile web	In progress
• User acceptance testing	March-April 2024
• Training and documentation	Signal system now, rest February-April
• Maintenance and support	Live system

SYSTEM DEMO

