ITS Alaska 2024

iTHEIA Traffic Data Collection – Video-Based AI Counting and Classification Systems

Sept. 17, 2024

QUARTERHILL

FURTHER. FASTER. SMARTER.

ITS Alaska 2024

Attendees and outline

Introduction

Video-Based AI Traffic Count/Class Overview

North America Case Studies

Site Installation Video

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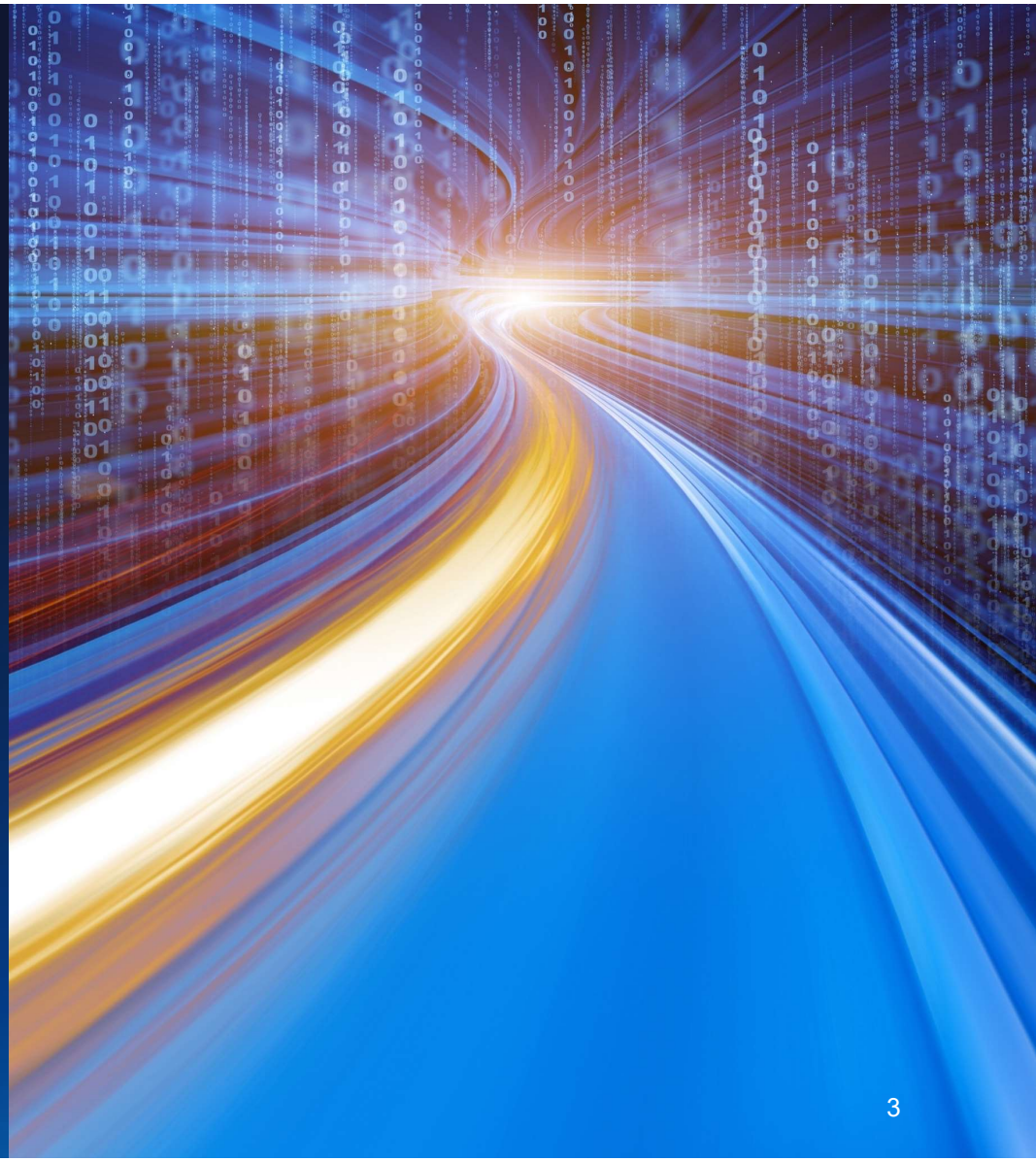
QUARTERHILL

ETC | international road dynamics | redfox id

Icoms | SENSORLINE | VDS

Quarterhill is thrilled to announce the integration of cutting-edge technologies from ETC, IRD, Redfox, Icoms, SensorLine, and VDS, propelling us towards our goal of pioneering world-class transportation and technology solutions!



AI POWERED DATA SYSTEM

iTHEIA™ AI Video-Based Traffic Classification System

Artificial Intelligence (AI) powered traffic data system is the first to meet state-level data reporting requirements.

DOT evaluations on a high-traffic, four lane road have shown **>98% accuracy** for counting & classification standard FHWA 13-class schemes

The driving need

iTHEIA™ provides transportation professionals with a cutting-edge, efficient data collection tool:

- **Essential Traffic Data**: Provides a wide range of critical data including volume, classification by type, lane usage, speed, plus images and timestamps for in-depth traffic analysis.
- **Flexibility in Deployment**: Offers both portable and permanent installation options for both short and long-term studies.
- **Non-Intrusive Installation**: No road closure, minimized risk to workers and no traffic disruption.
- **Customizable Data Export Options**: Easy integration with existing traffic management systems.
- **Simplified Setup and Remote Configuration**: Easy installation using existing infrastructure and remote system configuration to reduce setup time and logistical challenges.
- **Saved Images for Verification**: Enhances data validity and enables detailed review of traffic incidents or anomalies, supporting thorough traffic studies and planning.

AI-POWERED DATA SYSTEM

iTHEIA™ AI Video-Based Traffic Classification System

FHWA 13-Class data collection

Non-intrusive solution reduces maintenance and improves safety

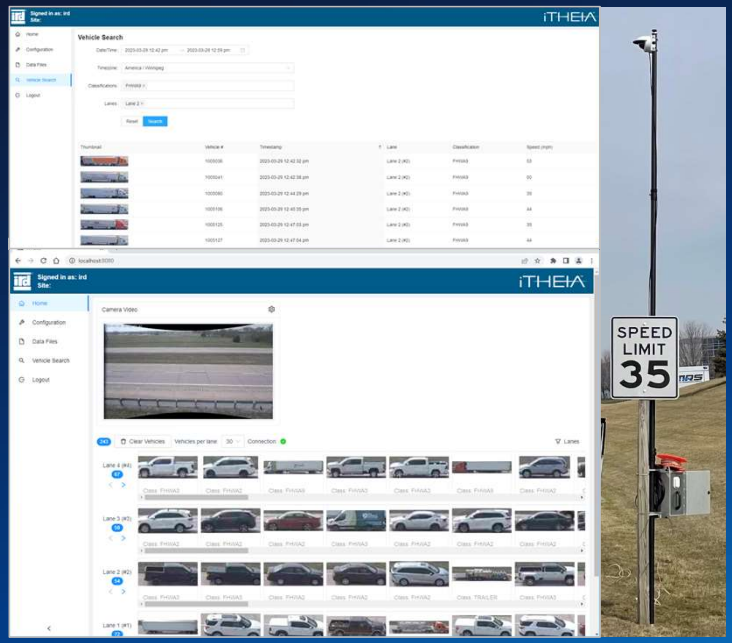
Up to 8 lanes

98% or greater count and classification accuracy of 95% or greater

Edge computing hardware to process video data at the roadside

Portable and permanent options

Battery and solar power options



Highlights - Hardware

Linux operating system, which is more secure than Windows

Industrial-grade computing system

Industry-best scalable non-visible infrared(IR) illumination

NDAA compliant camera

Can use two camera inputs for more accurate results when doing two directions

Highlights - System Software

Data can be viewed as vehicles pass and is available immediately

Database can be searched for a specific vehicle class, lane, or time of day

Easy to set up lane configuration

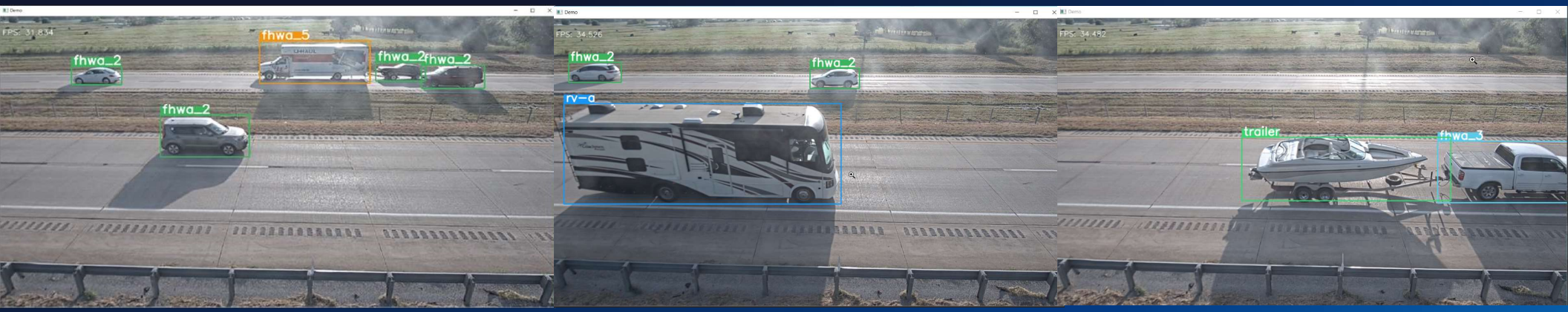
Generates MS2 and CSV files in the roadside unit

Compatible with Quarterhill's Road Reporter II and Autopoll software

Portable: Uses lithium batteries that conform to lithium battery standards and testing

Vehicle configurations and cargo

AI can be trained to recognize specific vehicle configurations and cargo (ex. Boat & Trailer)



PORTABLE & PERMANENT

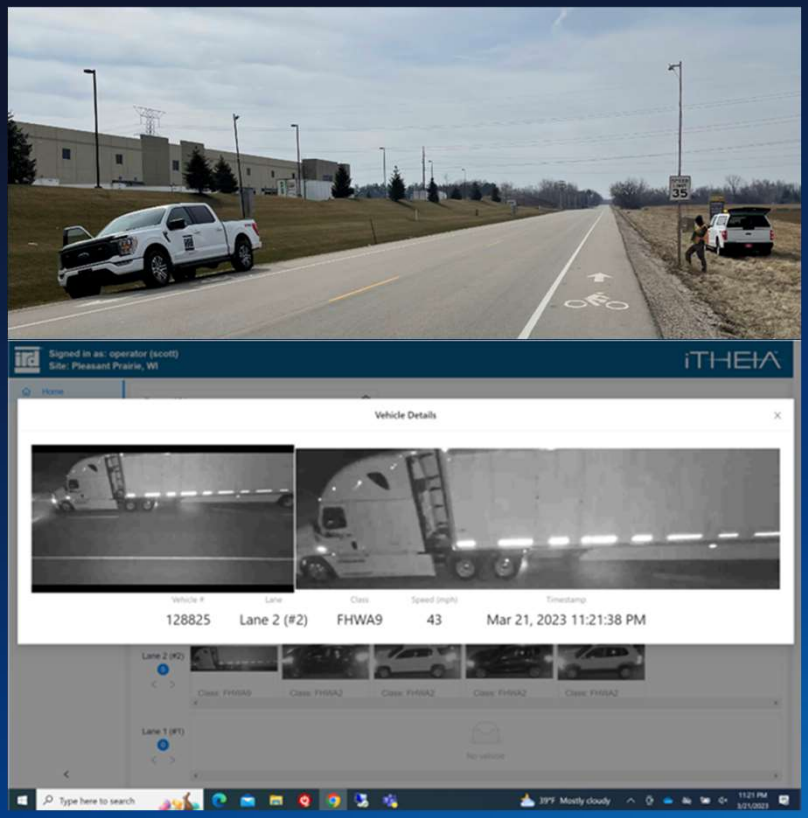
iTHEIA™ Wisconsin (WisDOT)

Starting in 2021, WisDOT has used iTHEIA portable systems daily

WisDOT purchased additional iTHEIA systems to expand their portable count program

WisDOT uses iTHEIA for traffic counts to feed an interactive map for viewing counts

Data from iTHEIA for WisDOT is output in a standard format compatible with a third-party data reporting system

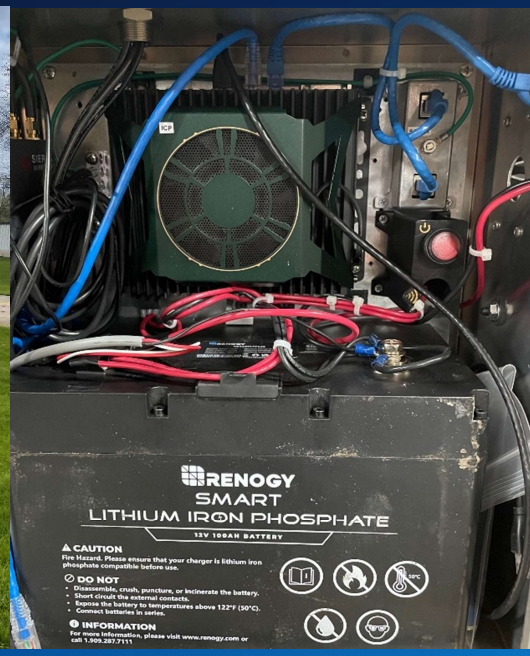


PORTABLE & PERMANENT

iTHEIA™ Wisconsin (WisDOT)

PORTABLE & PERMANENT

iTHEIA™ Portable System



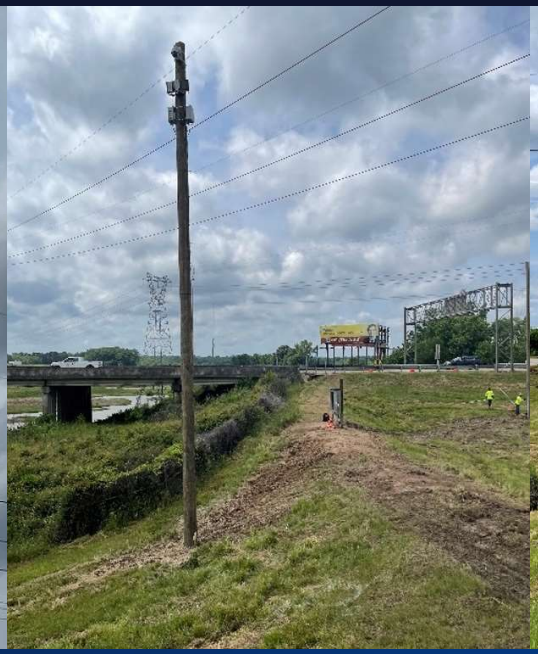
Permanent Installation Milwaukee, WI

iTHEIA™ WISCONSIN DOT

Permanent Installation Madison, WI

iTHEIA™ MISSISSIPPI DOT

8 Lane Install Jackson, MS

iTHEIA™ NY STATE DOT

Traffic monitoring

IRD provides data services to the State of New York, including installation and maintenance of permanent traffic data collection systems

In 2022, the New York State Department of Transportation (NYSDOT) awarded IRD a two-year contract for continued maintenance and new site installation

So far, 20 of the new sites utilize IRD's iTHEIA AI-powered, non-intrusive data collection solution

Objectives include increased safety and cost-effectiveness vs. traditional automated traffic recorders

iTHEIA™

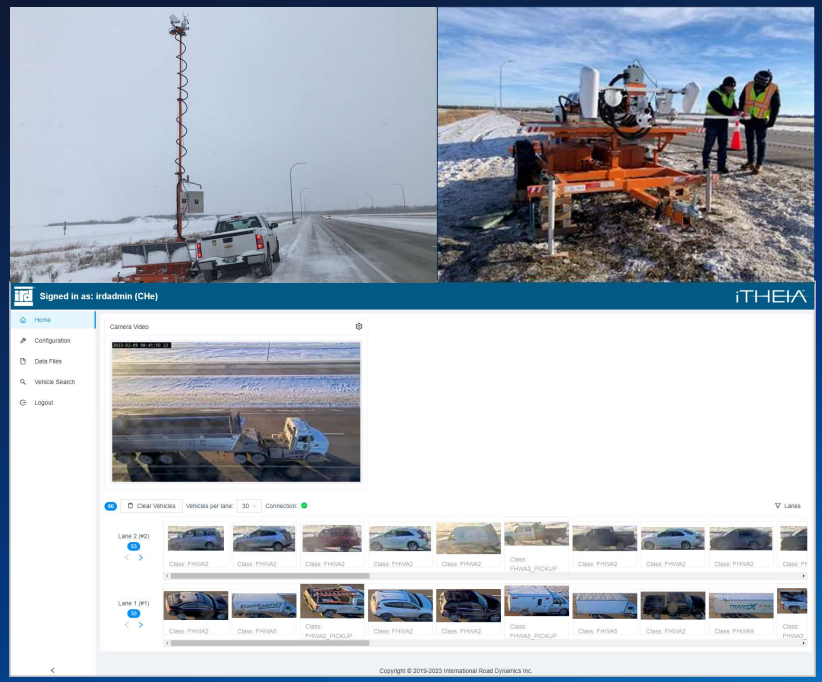
U of M & National Research Council Project

The project objective is to improve highway transportation infrastructure, reliability, and safety in the Canadian Prairie and Northern Region

Quarterhill and the University of Manitoba developed a leading-edge mobile traffic and weather monitoring system to capture data over 5 years

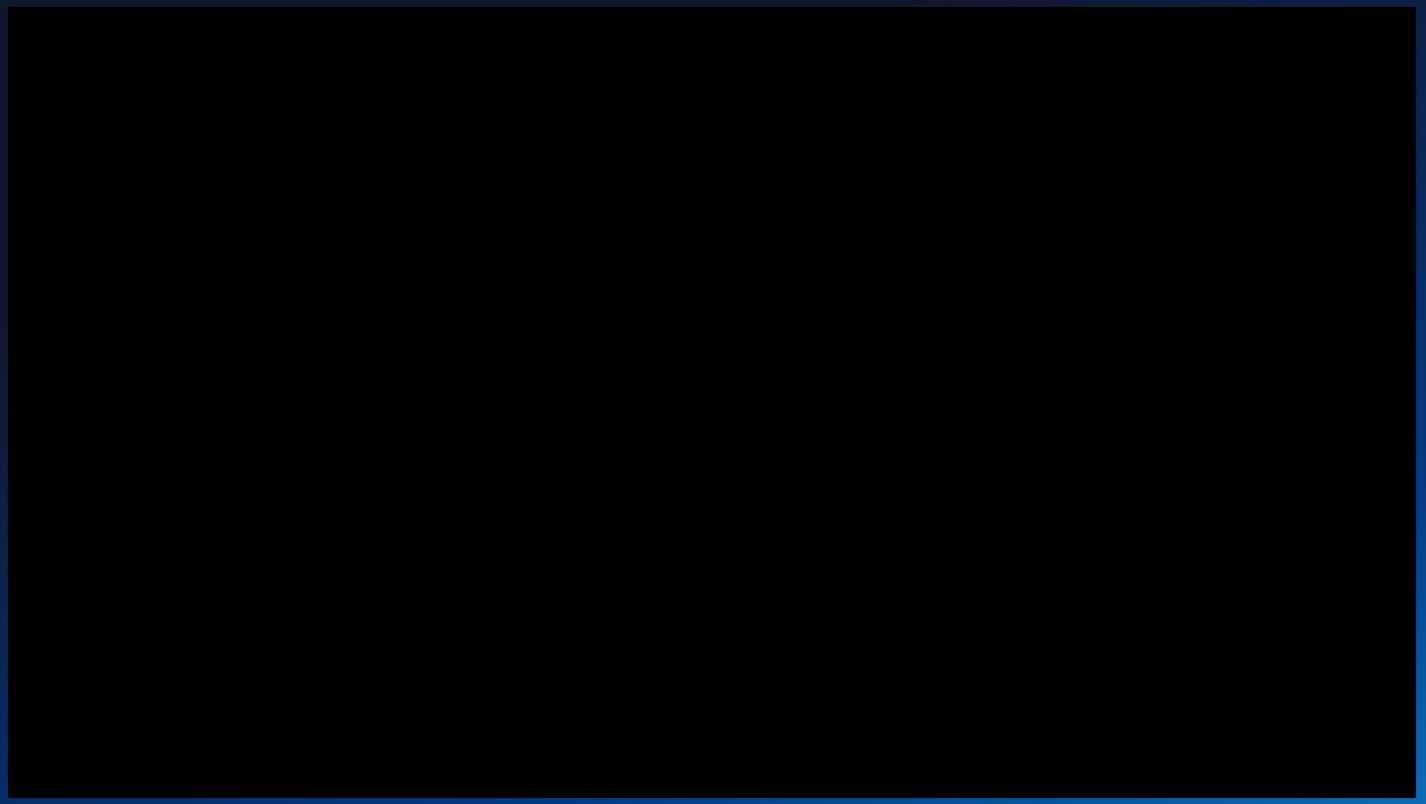
iTHEIA is mounted on a portable solar trailer with a remote weather information system (RWIS)

iTHEIA gathers traffic classification data to support the project and contribute to the NRC data vault



MORE INFORMATION

iTHEIA™ AI Video-Based Traffic Classification System



CONCLUSION

Thank you

Questions?

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