

Making Highway Surveillance Scalable

Augmenting Human Operators

Reducing Emergency Response Time

Automated Incident Reconstruction and Logging

Guiding Autonomous Vehicles with Google KML

Improving Road Safety and Informing the Public



# IRIS

## Incident Recognition and Intelligence System

The 401 is the busiest highway in the world, supporting over 400K vehicles per day.

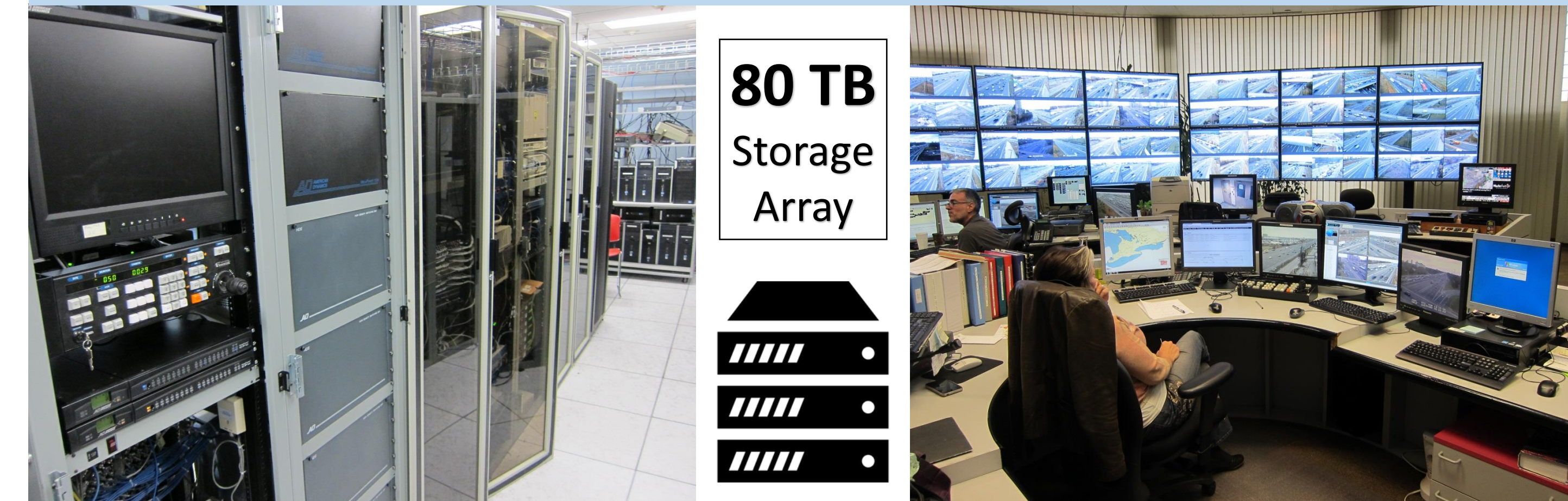
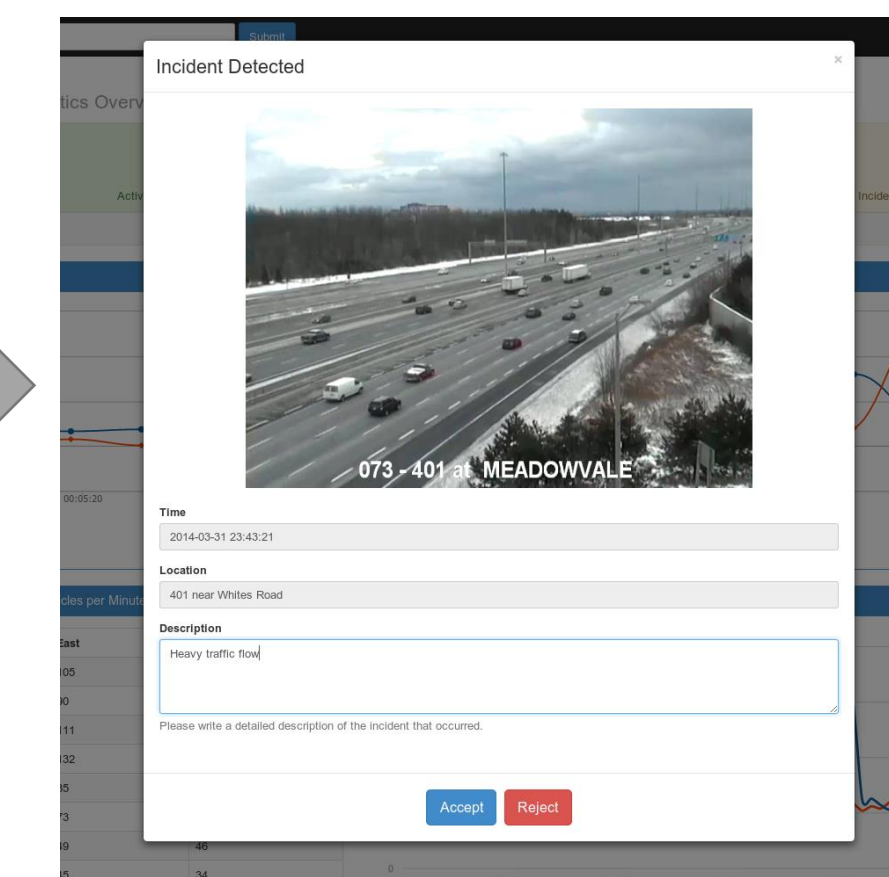
Previously, humans simultaneously monitored 100+ cameras, filed incidents on paper, and organized emergency response. We worked closely with MTO to automate this process.

Highway surveillance is a big data problem: 3 TB of video/day from each camera are parallel-processed in real time at 30 frames per second.

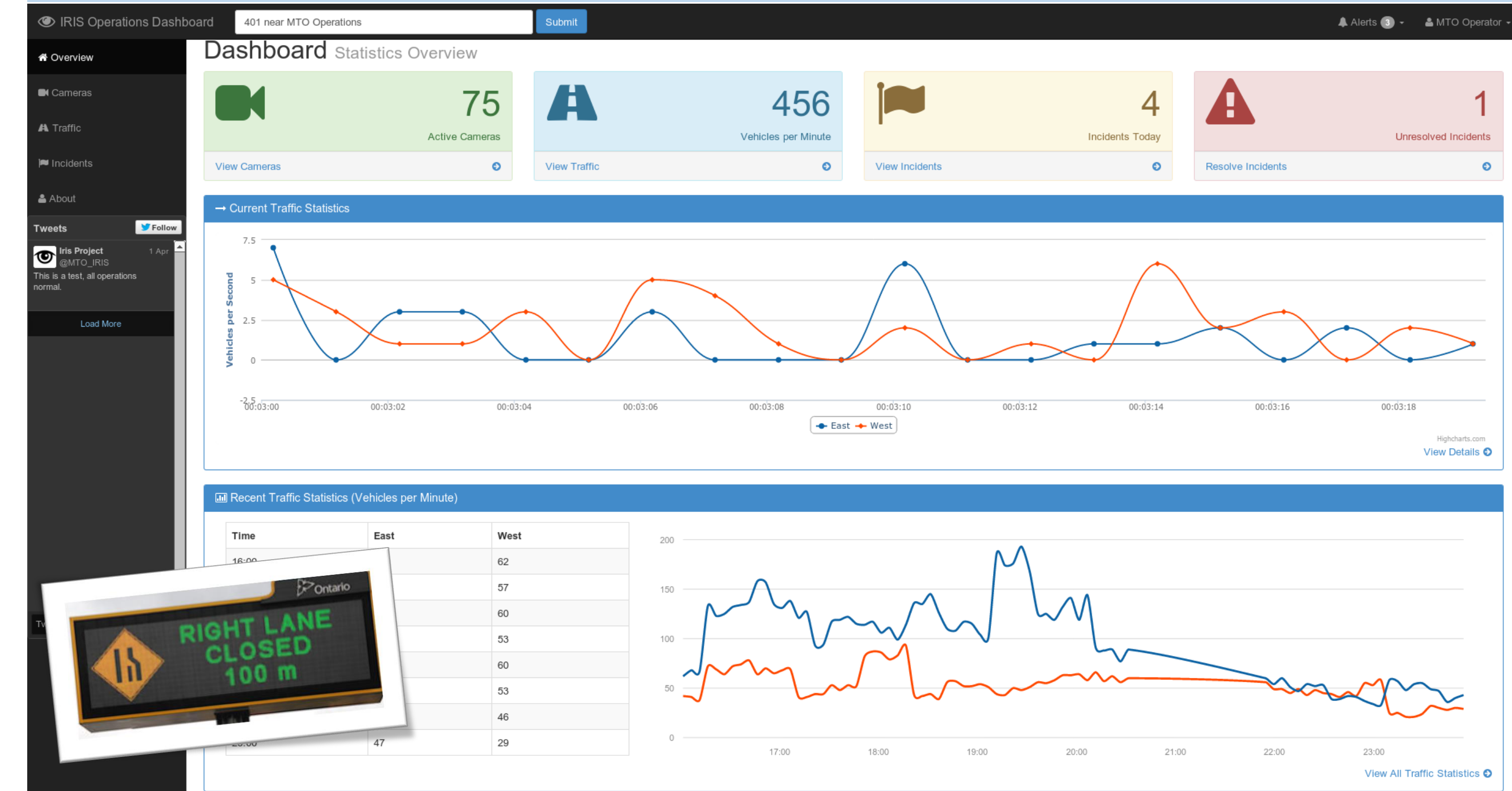
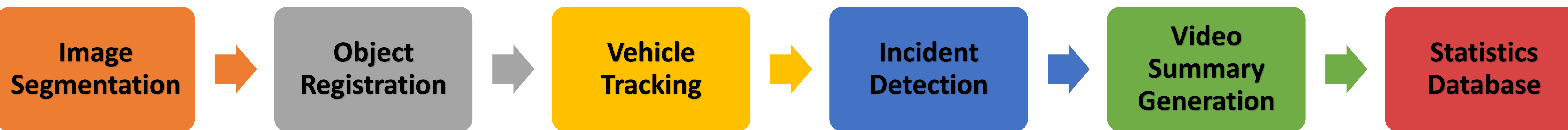
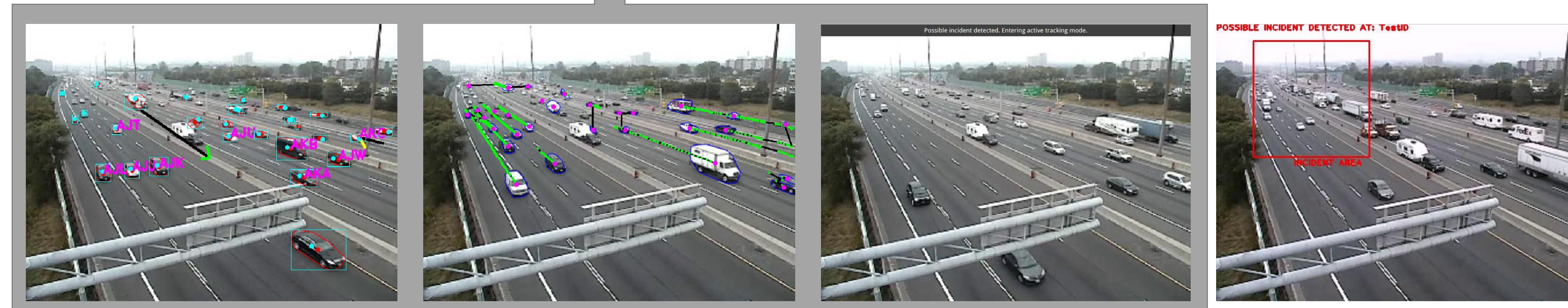
When incidents occur, drivers and autonomous vehicles can be rerouted based on real time dynamic traffic observations, rather than imprecise statistical models.

Time	Location	Description	Replay
2014-03-30 17:28:34	401 near Dixie Road	Stopped vehicle, flat tire.	<a href="#">▶ Replay</a>
2014-03-30 12:39:10	401 near Bayview Avenue	Minor collision, emergency services dispatched.	<a href="#">▶ Replay</a>
2014-03-29 22:26:45	401 near Brimley Road	Stopped vehicle, tow truck on scene.	<a href="#">▶ Replay</a>
2014-03-29 16:48:33	401 near Whites Road	Collision blocking two lanes, emergency services dispatched.	<a href="#">▶ Replay</a>

[View All Events](#)



Computer vision can do the same work as hundreds of human operators, working 24/7 non-stop, letting humans respond to emergencies faster.



A dashboard provides a fully integrated intelligence management system, displaying traffic flow statistics and incident information records. Traffic updates are sent to the public via Twitter and roadside digital signs.

Ordinary computers can't process images like humans can. We make visual understanding possible using machine learning algorithms and artificial intelligence.

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