



Vision AI Data Delivering Vision Zero Outcomes in Work Zones

Turning the few seconds that decide a work-zone intrusion into structured data that prevents the next one.

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There is no routine day in a roadside work zone

Crews work feet from live traffic, and every layer of risk compounds the others. These are the conditions the NY Thruway Authority set out to engineer down.



Distracted drivers



Excessive speeds



Crews feet from live traffic



High-noise environment



Reduced visibility



Limited reaction time

Digitizing a work zone is not the same as protecting it

Plenty of tools put a work zone on a map. Far fewer change what happens to the worker in the next two seconds. That gap is where Vision AI data earns its place.



Detect

See the intrusion the instant it happens, on the truck, in real time.



Protect

Warn the worker in milliseconds, with enough time to move.



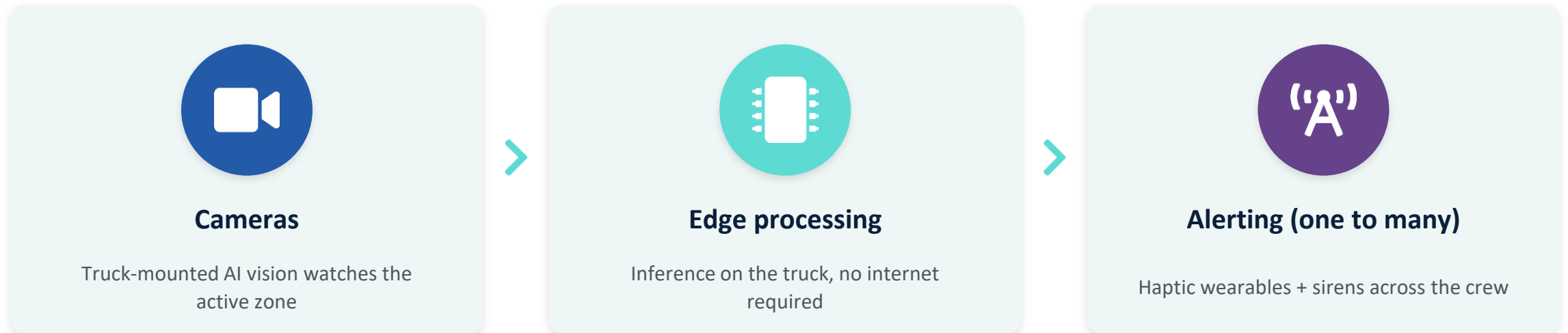
Prevent

Turn every event into data that reshapes the next deployment.

Detect and protect keep today's crew safe. Prevent is what moves the agency toward Vision Zero.

ClearWorkZone: protection that rides on the truck

AI-powered cameras and edge devices mounted on work-zone trucks detect unauthorized vehicle entries and warn crews instantly through wearable haptic devices and mounted sirens.



2,000+ ft

tested alert range

Milliseconds

alert latency

Seconds

to come online at power-on

No internet

no complex setup

Every intrusion becomes a structured record

The alert protects the worker now. The data it captures is what makes the next deployment safer.



Time of event



Vehicle type



Intrusion type: side, partial, full



Approach speed and distance



Worker movement



Zone configuration



Root-cause analysis



Alert-propagation latency



Zero-setup deployment: the system finds its own zone

An automated zone-detection model identifies the work area on its own at power-on. The crew deploys without drawing boundaries, and operators can adjust if needed.



Removes a setup step
on every single deployment



Cuts field configuration time
crews start protected, faster

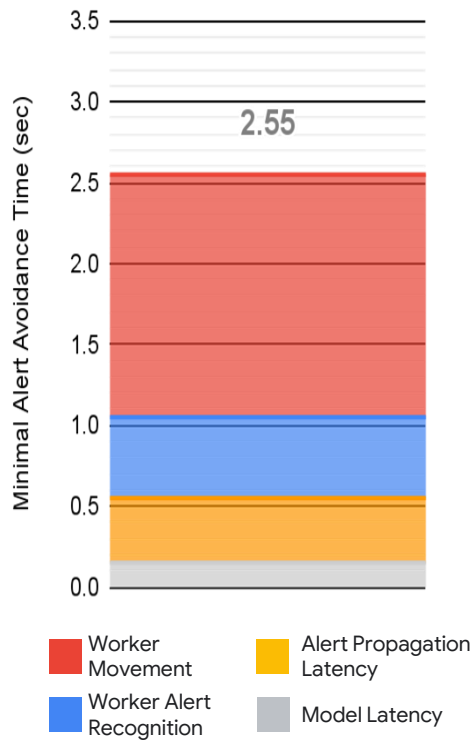


Eliminates crew-to-crew variability
zone boundaries are consistent every time



The 2.55-second safety threshold

2.55 seconds is the minimum a worker needs to recognize and respond to an alert. Detecting at 500+ feet keeps warning time above that floor across every realistic speed.



	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	1.0	0.9	0.8	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
100	1.9	1.7	1.5	1.4	1.2	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.5
150	2.9	2.6	2.3	2.0	1.9	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.8	0.8
200	3.9	3.4	3.0	2.7	2.5	2.3	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.1	1.1	1.0
250	4.9	4.3	3.8	3.4	3.1	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.5	1.4	1.4	1.3
300	5.8	5.1	4.5	4.1	3.7	3.4	3.1	2.9	2.7	2.6	2.4	2.3	2.2	2.0	1.9	1.9	1.8	1.7	1.6	1.6
350	6.8	6.0	5.3	4.8	4.3	4.0	3.7	3.4	3.2	3.0	2.8	2.7	2.5	2.4	2.3	2.2	2.1	2.0	1.9	1.8
400	7.8	6.8	6.1	5.5	5.0	4.5	4.2	3.9	3.6	3.4	3.2	3.0	2.9	2.7	2.6	2.5	2.4	2.3	2.2	2.1
450	8.8	7.7	6.8	6.1	5.6	5.1	4.7	4.4	4.1	3.8	3.6	3.4	3.2	3.1	2.9	2.8	2.7	2.6	2.5	2.4
500	9.7	8.5	7.6	6.8	6.2	5.7	5.2	4.9	4.5	4.3	4.0	3.8	3.6	3.4	3.2	3.1	3.0	2.8	2.7	2.6
550	10.7	9.4	8.3	7.5	6.8	6.3	5.8	5.4	5.0	4.7	4.4	4.2	3.9	3.8	3.6	3.4	3.3	3.1	3.0	2.9
600	11.7	10.2	9.1	8.2	7.4	6.8	6.3	5.8	5.5	5.1	4.8	4.5	4.3	4.1	3.9	3.7	3.6	3.4	3.3	3.1
650	12.7	11.1	9.8	8.9	8.1	7.4	6.8	6.3	5.9	5.5	5.2	4.9	4.7	4.4	4.2	4.0	3.9	3.7	3.5	3.4
700	13.6	11.9	10.6	9.5	8.7	8.0	7.3	6.8	6.4	6.0	5.6	5.3	5.0	4.8	4.5	4.3	4.2	4.0	3.8	3.7
750	14.6	12.8	11.4	10.2	9.3	8.5	7.9	7.3	6.8	6.4	6.0	5.7	5.4	5.1	4.9	4.6	4.4	4.3	4.1	3.9
800	15.6	13.6	12.1	10.9	9.9	9.1	8.4	7.8	7.3	6.8	6.4	6.1	5.7	5.5	5.2	5.0	4.7	4.5	4.4	4.2
850	16.6	14.5	12.9	11.6	10.5	9.7	8.9	8.3	7.7	7.2	6.8	6.4	6.1	5.8	5.5	5.3	5.0	4.8	4.6	4.5
900	17.5	15.3	13.6	12.3	11.2	10.2	9.4	8.8	8.2	7.7	7.2	6.8	6.5	6.1	5.8	5.6	5.3	5.1	4.9	4.7
950	18.5	16.2	14.4	13.0	11.8	10.8	10.0	9.3	8.6	8.1	7.6	7.2	6.8	6.5	6.2	5.9	5.6	5.4	5.2	5.0
1000	19.5	17.0	15.2	13.6	12.4	11.4	10.5	9.7	9.1	8.5	8.0	7.6	7.2	6.8	6.5	6.2	5.9	5.7	5.5	5.2

Why it matters

Speed alone is not the risk.
Late detection is.

At 70 mph a worker needs
~262 ft of warning.

ClearWorkZone detects
nearly 2x farther out.

The same data matures: detection to prediction to forecasting

One feed of intrusion data serves three time horizons, each pushing the agency further upstream of harm.



Detection

Right now

- Vehicle enters or exits the zone
- Worker leaves the safe region
- Speed in the construction zone
- Improper or non-compliant setup



Prediction

Next few seconds to hours

- High-speed approach, early warning
- Worker exposure risk patterns
- Higher risk by time of day



Forecasting

Seasons and policy

- Future intrusion-rate projections
- Zone-compliance trends
- Seasonal and annual risk windows
- Evidence for policy and enforcement

What the data delivers: Vision Zero outcomes



Warning above the threshold, every time

Far-out detection keeps reaction time above 2.55 seconds across speeds.



Evidence-based zone design

Intrusion type and root cause inform safer layouts and staffing.



Risk-timed deployment

Time-of-day and seasonal trends guide when to add protection.



Data for policy and enforcement

Real intrusion and speed data support the case for change.

Each alert protects one worker. The data behind it protects every crew that comes after.

Proven in the real world with the NY Thruway Authority

NYSTA set the principles this work was built to satisfy. The result is a system that protects crews today and generates the data to keep improving.



Maximize existing infrastructure



Dynamic, scalable deployment



Prove it in the real world



Continuous learning and improvement



Build with strong partners



Technology, innovation, collaboration

What to take back to your agency



The intrusion is decided in milli-seconds

2.55 seconds is the floor. Detecting far out is how you stay above it.



Protection rides on the truck

Online in seconds, no internet, no setup. It fits how crews actually work.



Every event becomes data

Time, type, speed, root cause. Safety device and data platform in one.



Data is the Vision Zero engine

Detection protects today; prediction and forecasting prevent tomorrow.



Thank you

Questions and discussion

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