



Tracking and Fusing Diverse Risk Factors to Drive a SAFER Future

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Combined Risk Factors Create a Very Risky Scenario: Contextual Risk



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Nauto: AI-Powered Fleet Management Solution Improving Driver Safety

AI on the Edge / In-Vehicle

Flexible Deployment Options

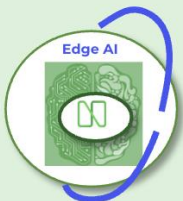


Aftermarket



Integrated

Real-Time AI-Based Risk Assessment



Detect 91% of risks e.g.

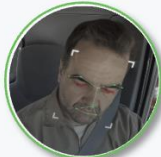
- Distracted driving
- Drowsiness
- Speeding
- Rear-end collisions
- Pedestrian collisions
- Intersection collisions

Collision Prediction



Alerts driver **BEFORE** collision

Correct Risky Behavior



In-cabin alerts reduce up to **80% of severe risks** within 1-2 weeks

Collision & near miss data

AI in the Cloud



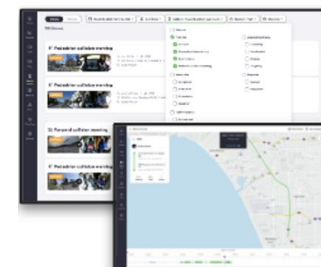
PUSH NOTIFICATIONS

MOBILE APPS

VEHICLE COCKPIT



INSIGHTS & ANALYTICS



DASHBOARDS

Nauto's Impact on Safety Metrics

- 84%

Reduction in severe distractions (>6 seconds at 35mph+)*

- 69%

Lower collision rate per million miles pre vs. post-deployment of Nauto in vehicle AI alerts*

*Based on customer case study for a nationwide deployment

Vertical	Reductions in Severe Distractions	Reductions in CPMM pre vs. post Nauto
Last Mile Delivery	84%	69%
Food & Bev	82%	57%
Utilities	60%	55%
Services	60%	46%

What Conditions Create the Highest Collision Risk?

Only Nauto's AI can detect both individual and combined complex behaviors that are exponentially **more likely to cause collisions**

Drowsy + Looking Down =
Increase risk of hitting
stationary object by **26X**



Drowsy = Increase
risk of intersection
collision by **6X**

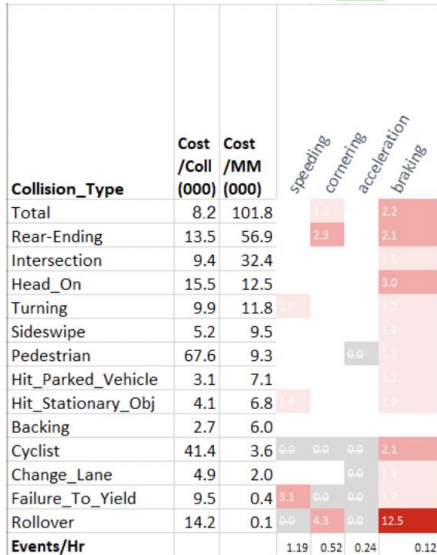


Cellphone Use + Hard Braking = Failure to
yield collisions is
469X more likely

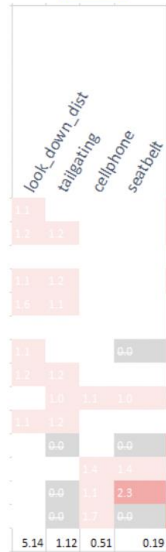
Nauto's Advantage - Unique Understanding of Collision Risk

Avg. increase in collision likelihood due to risk factors

Telematics
Single behaviors, relatively low risk
6%



AI Dashcams
Single driver behaviors, low-moderate risk
10%

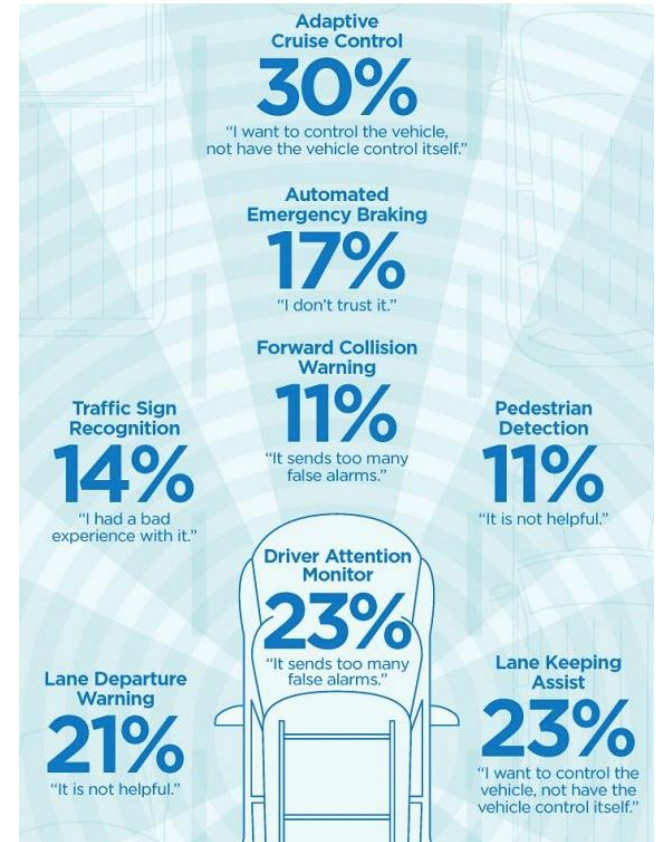


Nauto AI Video Safety
Riskiest single driver behaviors (i.e. drowsy) + unique high-risk combination behaviors
50%



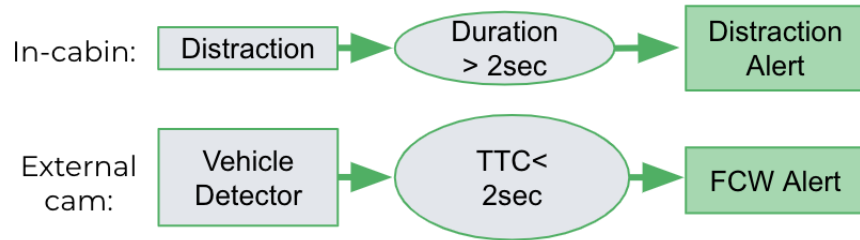
Problem | Limitations of Single Factor Risk Detection

- Single risk factors do not always represent a high level of risk and often represent unremarkable situations
- Alerting on them doesn't do much for safety and annoys the user which defeats the purpose of ensuring safety



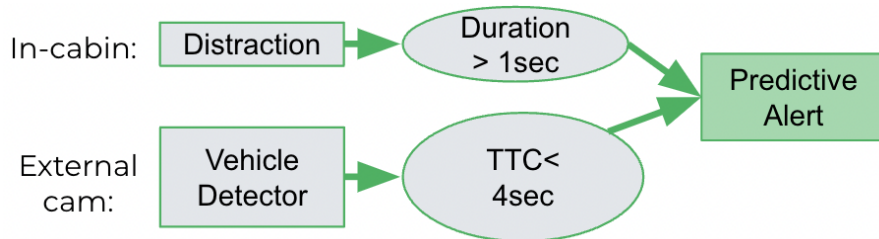
Nauto AI Feature Progression

Standalone AI features



- **Predefined, static, individual** thresholds
- Algos work in **isolation**
- **Risk combination/context** is ignored
- **Linear** risk escalation until threshold is reached

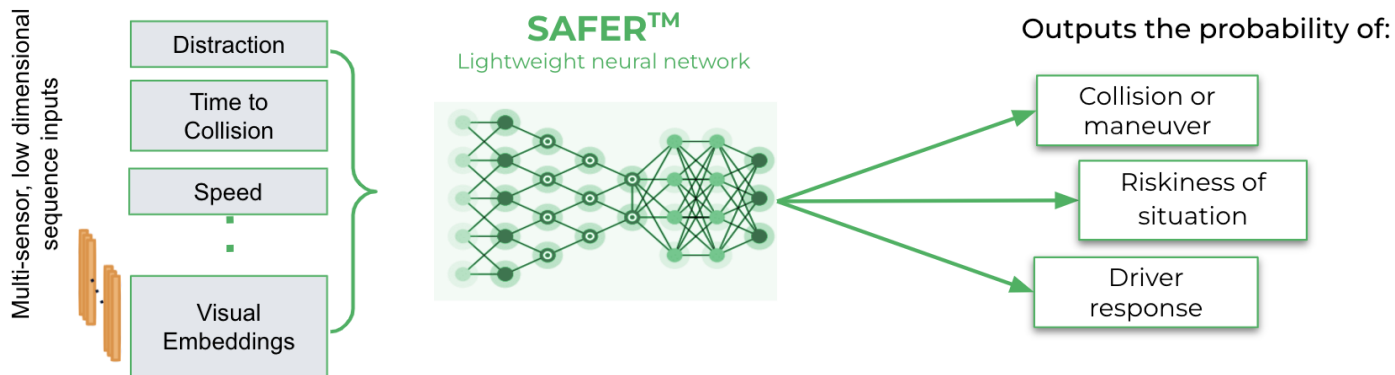
Fused/Combo features



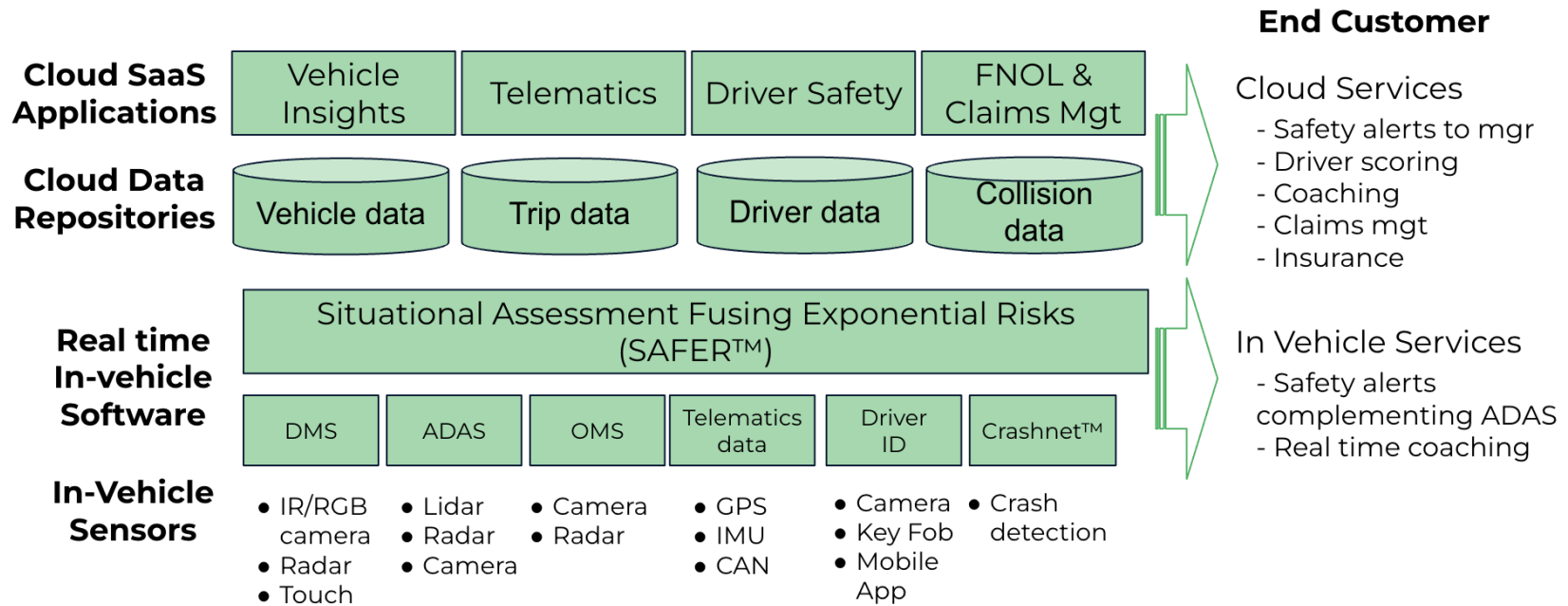
- **Combines** risk factors
- Understands **contextual** risk
- Allows more **reaction time** when distracted

The Solution | Holistic, Real-time Risk Fusion

- **SAFER™** - Situational Assessment Fusing Exponential Risk
- Real-time, multi-signal model that predicts future collision probability & real-time, holistic “risk” several seconds ahead using a time-series matrix leveraging existing detectors
- Suppresses individual alerts in low-risk cases
- Triggers real-time alerts in high-risk cases when individual RTA would not trigger



Nauto Helps Accelerate Building Services Platforms & Revenue

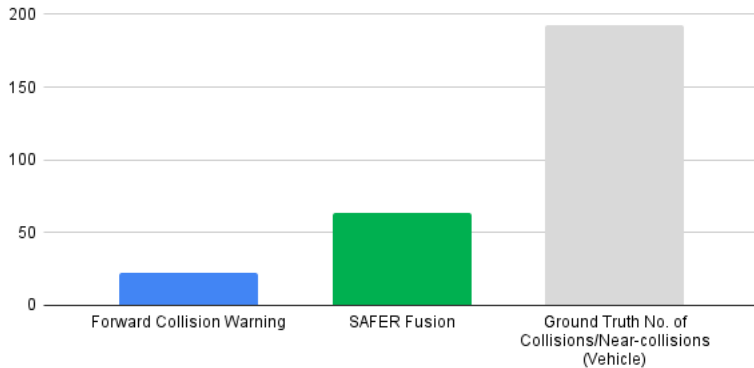


FNOL – First Notice of Loss
 OMS – Occupant Monitoring System
 DMS – Driver Monitoring System
 ADAS – Advanced Driver-assistance System

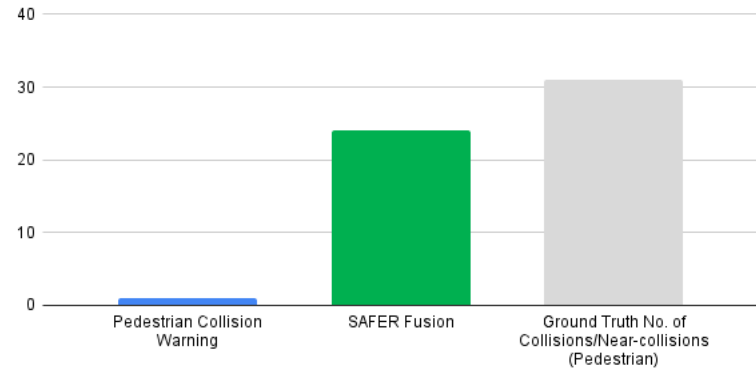
SAFER Benefits

- **SAFER** alerted **24x** times more compared to **Pedestrian Collision Warning** for all collision/near-collision events with pedestrians & **3x** times more compared to **Forward Collision Warning** for collision/near-collision with vehicles

One month of Nauto production fleet data (collisions/near-collisions with vehicles)



Six months of Nauto production fleet data (collisions/near-collisions with pedestrians)

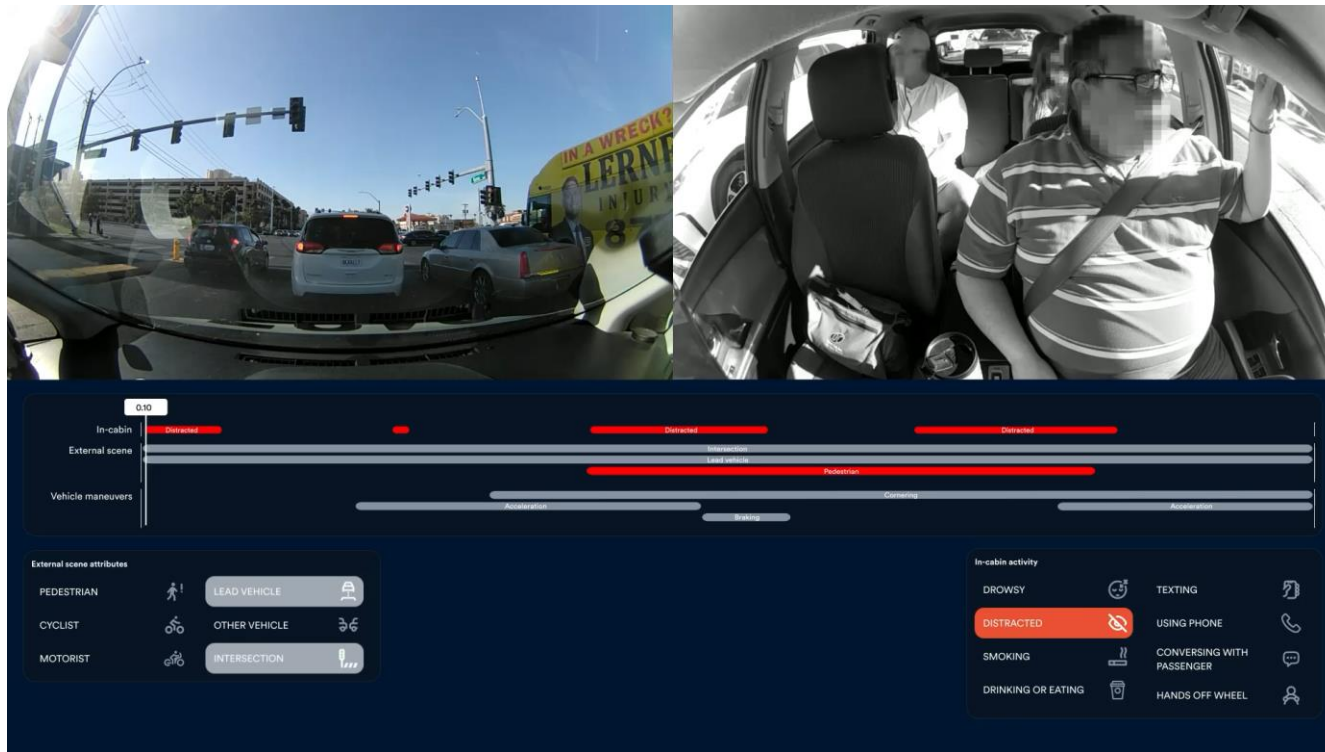


Single Factor Alerting in an Uneventful Scenario

The dashboard interface displays a timeline starting at 0.03 seconds. The 'In-cabin' section shows four red bars labeled 'Distracted'. The 'External scene' and 'Vehicle maneuvers' sections are currently empty. Below the timeline, there are three main panels:

- External scene attributes:** Includes icons for PEDESTRIAN, CYCLIST, MOTORIST, LEAD VEHICLE, OTHER VEHICLE, and INTERSECTION.
- Alert detection:** Shows a warning icon and the text 'No SAFER alert'.
- In-cabin activity:** Lists activities such as DROWSY, DISTRACTED, SMOKING, DRINKING OR EATING, TEXTING, USING PHONE, CONVERSING WITH PASSENGER, and HANDS OFF WHEEL.

Near-collision Scenario with Vehicle at Low Speed while Crossing Intersection



SAFER Deployment & Impact

- Can be deployed as:
 - Aftermarket solution
 - Direct OEM integration as SDK
- Deployment timeline:
 - V1 deployed in **800** fleets across US, Japan, and Europe
 - Enhanced version will be deployed in **H2 2023**
- ROI:
 - Example: Fleets with **\$5000** of loss/vehicle/year see a reduction by **50%** or more i.e., **\$2500** gross savings/vehicle
 - Typical payback time is **~4.5-8 months**
 - Additional savings with enhanced version of SAFER

Safer Fleets & Safer Roads for ALL

- Challenges ensuring safety in the automotive space:
 - Tier 1 automotive companies work on narrow functions – i.e., driver monitoring only, or only FCW, not fusion and situation as a whole
 - AV companies are stuck on the last 5% of the problem before it can drive under general conditions, it's the RARE HARD collision situations that are blocking AVs now - unprotected left turns, construction sites, complex intersections, etc.
- This idea of fusing situational elements and learning from what humans pay attention to can be translated to other complex AI challenges – solving the long tail problem
- ChatGPT moment for Driver Safety!

Survey on Driver Distrust of Single Factor Detectors:

<https://gmauthority.com/blog/2020/06/survey-shows-many-drivers-turn-off-advanced-safety-features-in-their-vehicle/>

The 100-Car Naturalistic Driving Study by NHTSA:

<https://www.nhtsa.gov/sites/nhtsa.gov/files/100carmain.pdf>

Nauto Website:

<https://www.nauto.com/>