



VALERANN

**HARNESSING
THE POWER OF AI
FOR ROAD SAFETY**



Road safety refers to the measures, practices, and policies designed to **prevent road users.....from being injured or killed in traffic accidents.**

It encompasses various aspects, such as infrastructure design, traffic laws, vehicle safety standards, driver behavior, public education, and emergency response, aimed at minimizing the risks and severity of road accidents...

ChatGPT



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THE VISION

**Use data to create the biggest improvement
in road safety since the seat belt.**



PREVENT
Incidents

RESPOND
Sooner

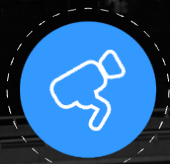
MITIGATE
Effectively



TRAFFIC RELATED DATA


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Cameras



Connected
vehicles



Navigation
apps



Phone
calls



Social media



Sensors



Loops



OVERWHELMING VOLUME OF DATA



1M

Vehicle Counts



50M

Object Detected



10M

Vehicle data points



1K

Mentions



50K

Weather data points



100 s

Phone Calls



3K

Traffic-related events



AI – CONNECTING THE DOTS



60M
DATA POINTS

PREDICT RISKS

**DETECT
INCIDENTS
SOONER**

**RESPOND
MORE
EFFECTIVELY**

HUNDREDS OF RISK FACTORS



• Sun Glare • Ice • Rain • Wind



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• Time Of Day • Time Of Week

• Sight Distance •
• Slope •
• Curvature •
• Quality Of Curve •

• Paved Shoulder - Right •
• Roadside Object - Right •
• Roadside Distance - Right •
• Crash Barrier - Right •

• % Heavy Vehicles •
• Speed •
• Traffic Flow •

• Paved Shoulder - Left •
• Roadside Object - Left •
• Roadside Distance - Left •
• Crash Barrier - Left •

Speed Control

• Street Lights •
• Edge Of Carriageway •
• Rumble Strip •
• Parking Area •
• Service Area •
• Pedestrian Fencing •

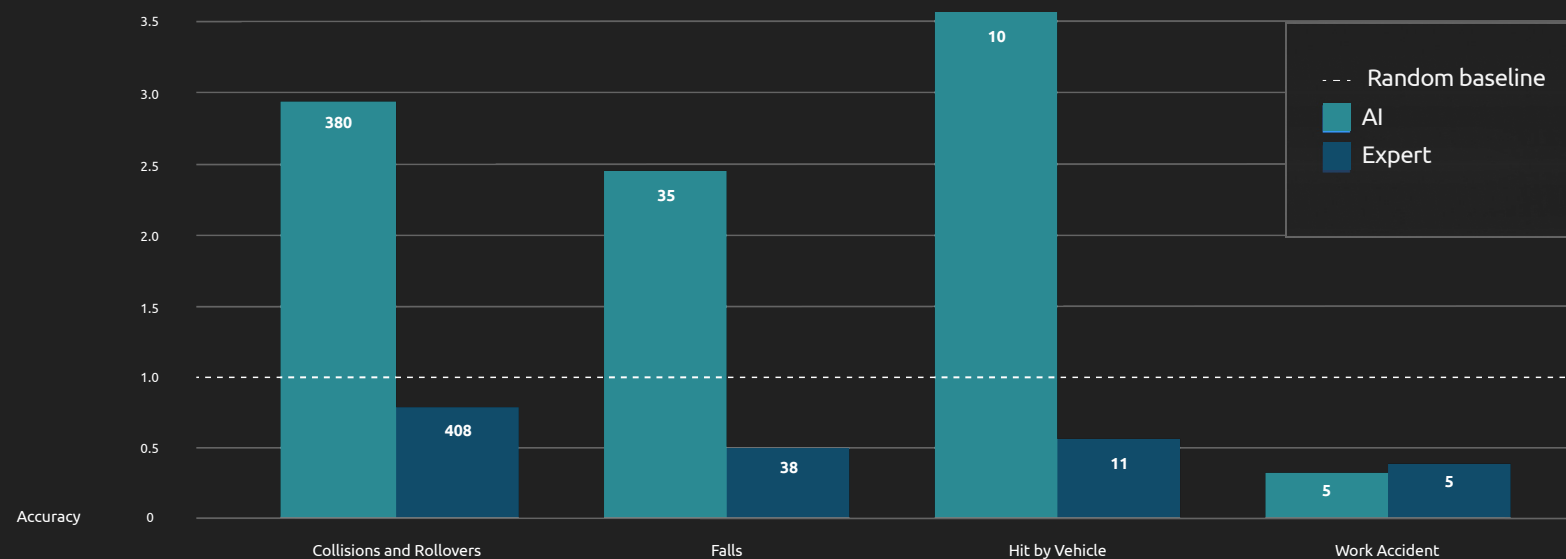
• Lane Width •
• Number Of Lanes •
• Road Condition •
• Friction Coefficient •

• Median •
• Central Barrier •
• Center Line Rumble Strips •
• Grade •

AI vs 'EXPERT' LOGIC



HRI vs ERI Model Accuracy by Grouped Accident Type



SIFTING THROUGH DATA



854,000

alerts



±10,000

alerts / day



0,3%

accuracy

ALERT FATIGUE

LONG RESPONSE TIME

60M
DATA POINTS

12 DIFFERENT
SYSTEMS

5,000 ALERTS

852,000

0,3%

DEDUPLICATION

VISION

CAV

ITS/IOT

CROWD
SOURCE

102,000

41%

ALERT FATIGUE

LONG RESPONSE TIME

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5,000 ALERTS

852,000
0,3%

DEDUPLICATION

VISION

CAV

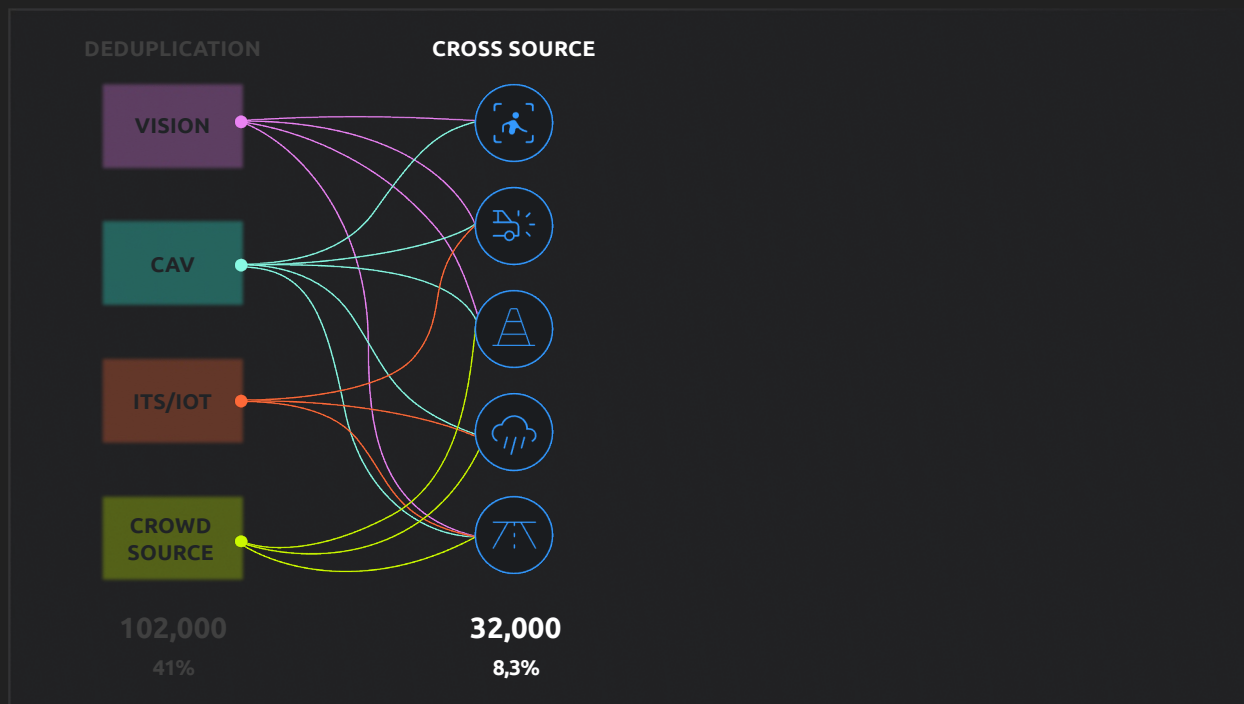
ITS/IOT

CROWD
SOURCE

102,000
41%

CROSS SOURCE

32,000
8,3%



ALERT FATIGUE

LONG RESPONSE TIME

60M
DATA POINTS

12 DIFFERENT
SYSTEMS

5,000 ALERTS

852,000
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DEDUPLICATION

VISION

CAV

ITS/IOT

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CROSS SOURCE



32,000
8,3%

CROSS TYPE

Person getting
out of a
broken-down
vehicle

Accident with a
5-minute journey
delay in the rain

19,900
13,7%

ALERT FATIGUE

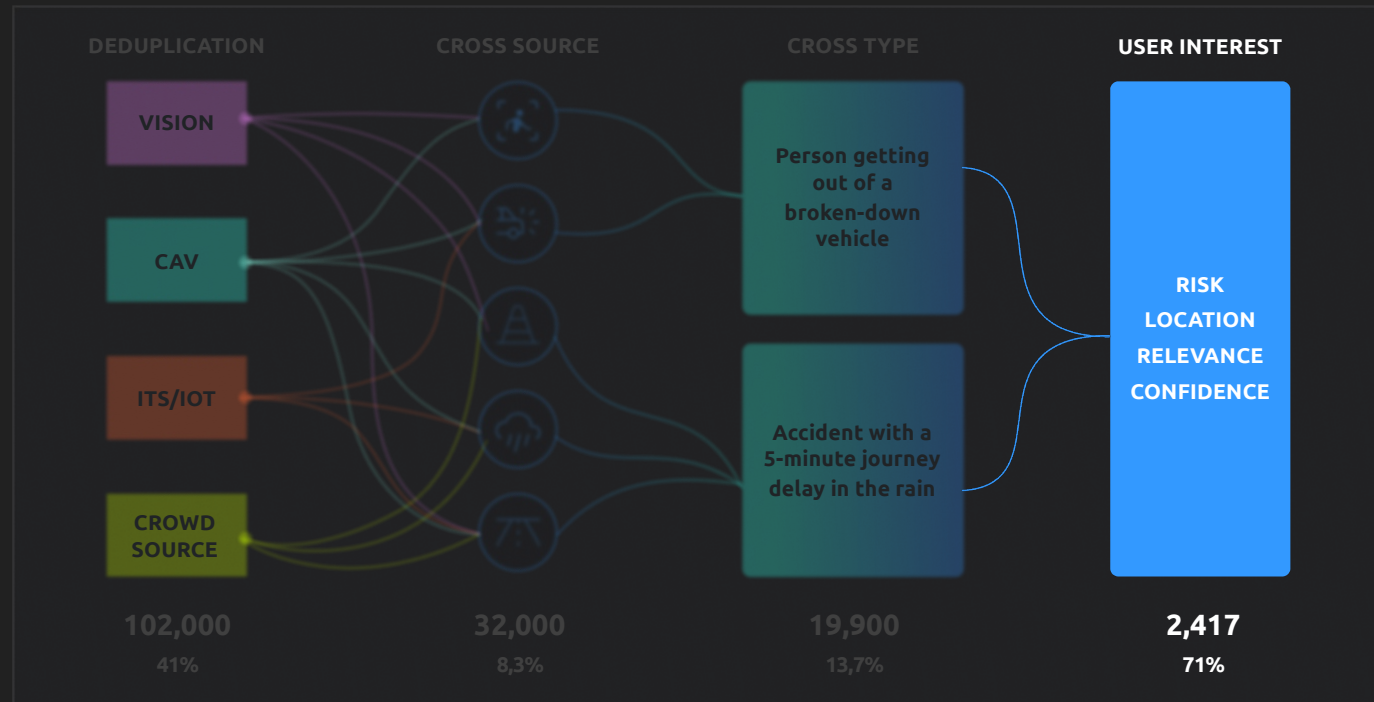
LONG RESPONSE TIME

60M
DATA POINTS

12 DIFFERENT
SYSTEMS

5,000 ALERTS

852,000
0,3%



REDUCING NOISE



Raw Detections

0.3% Useful

11,970 per day

Same Source Deduplication

8.3% Useful

436 per day

All Fused Events

13.7% Useful

235 per day

Shown Fused Events

65% Real Events

per day
29

35%
False Detections

11%
True & Action
Required

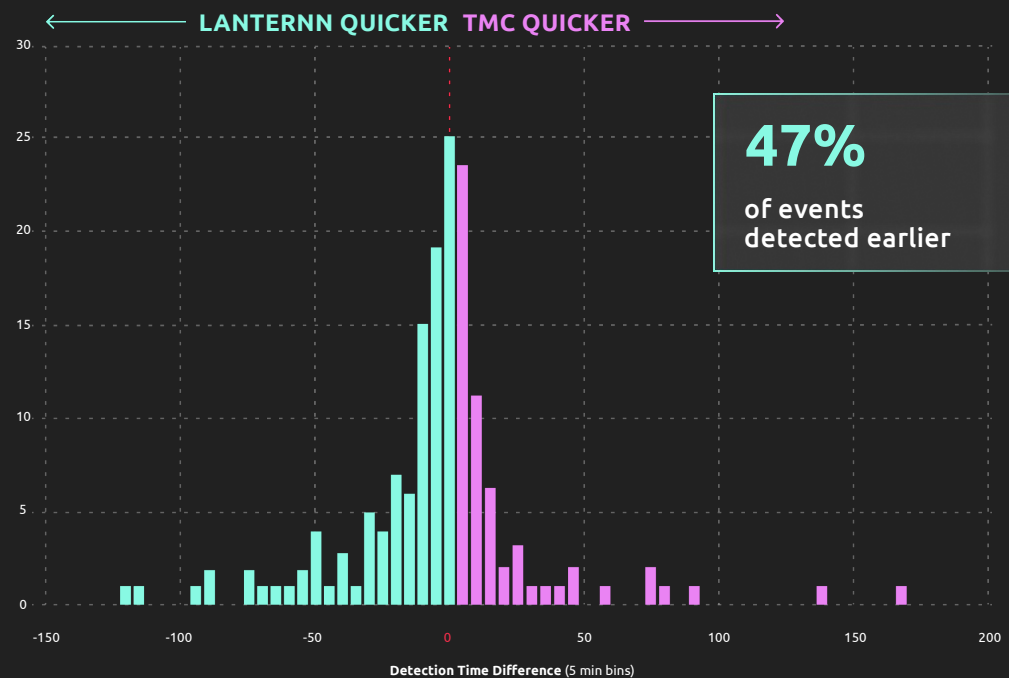
54%
True & No
Action Required

RELEVANT ACTIONABLE INFORMATION IDENTIFIED QUICKER



- **47%** of events were found faster using data fusion (section 1)
- **65%** of events were found faster (section 2)









- **25 minutes** improvement on average for events when detected earlier by Lanternn (section 1)
- **35 minutes** improvement (section 2)



DETECTING INCIDENTS THROUGH DATA FUSION



A FEW DETECTIONS FROM A US CLIENT

	10:34	Stopped vehicle - machine vision
	10:35	Pedestrian on the road - machine vision
	10:38	Congestion - Waze
	10:40	Severe congestion - HERE
	10:45	Pedestrian on the road - Waze
	10:50	Unexpected congestion - loops
	10:58	Stopped vehicle - Waze
	11:08	Pedestrian on the road - Machine Vision

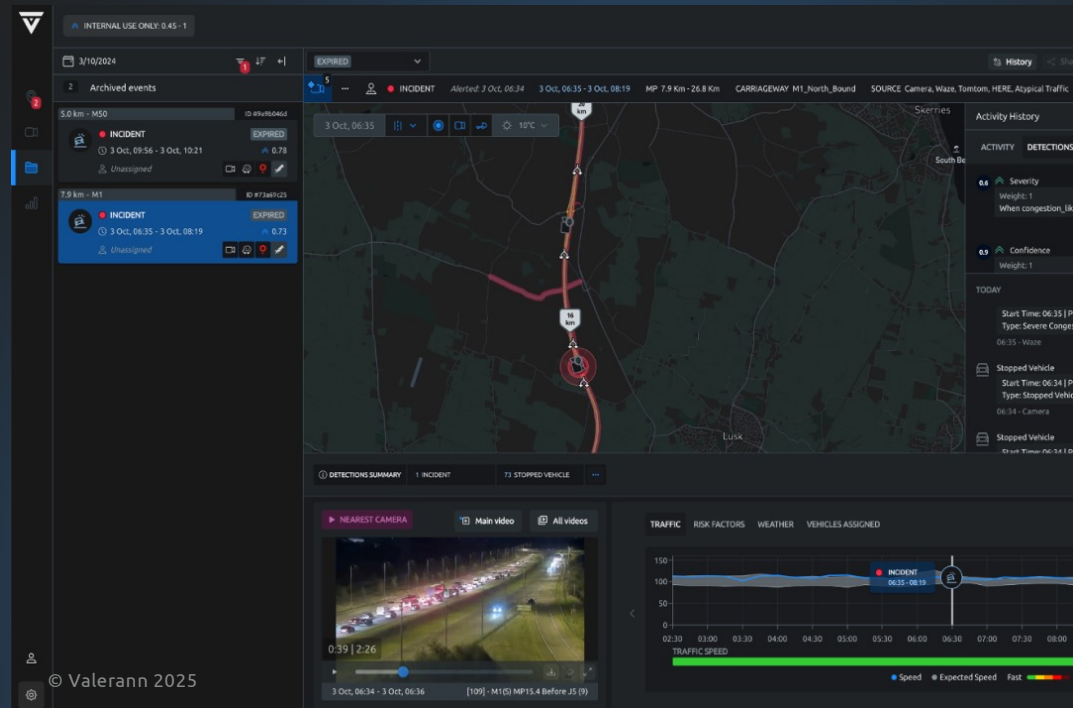


DETECTING INCIDENTS THROUGH DATA FUSION



Multiple vehicle collision

- **134 individual** detections alerts from **5 different sources**
- LbV analyzed and fused them into 1 event
- Alerted user within **1 minute** of collision occurrence
- Without fusion, there would have been too many 'data-related' alerts to manage



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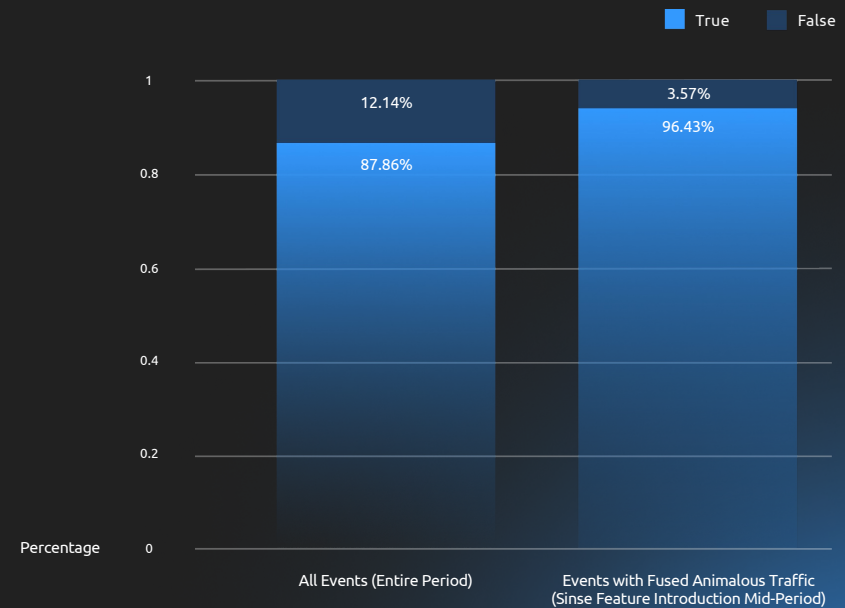
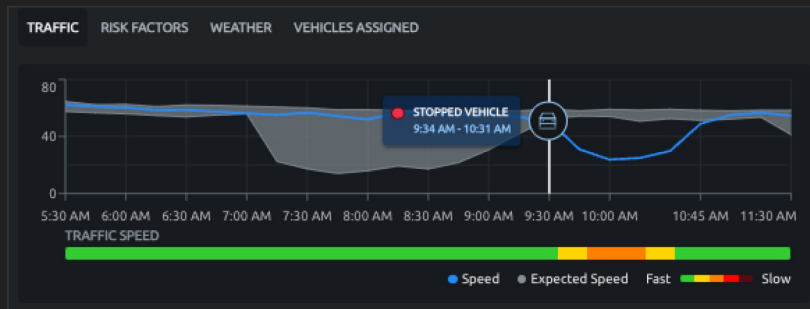


DETECTING ANOMALIES WITH HISTORICAL TRAFFIC FLOW







AI detects anomalous traffic patterns





And uses it to enhance trust in incident prediction **>96%**



CONNECTING THE DOTS



	21:56	Incident alert - Waze
	22:00	Unexpected congestion
	22:12	Hazard on the road - Waze
		Bridge

	22:04	Movement detected
	22:06	Stopped vehicle - Waze
	22:09	Stopped vehicle - Waze
		Bridge

PREVENTED
suicide attempts

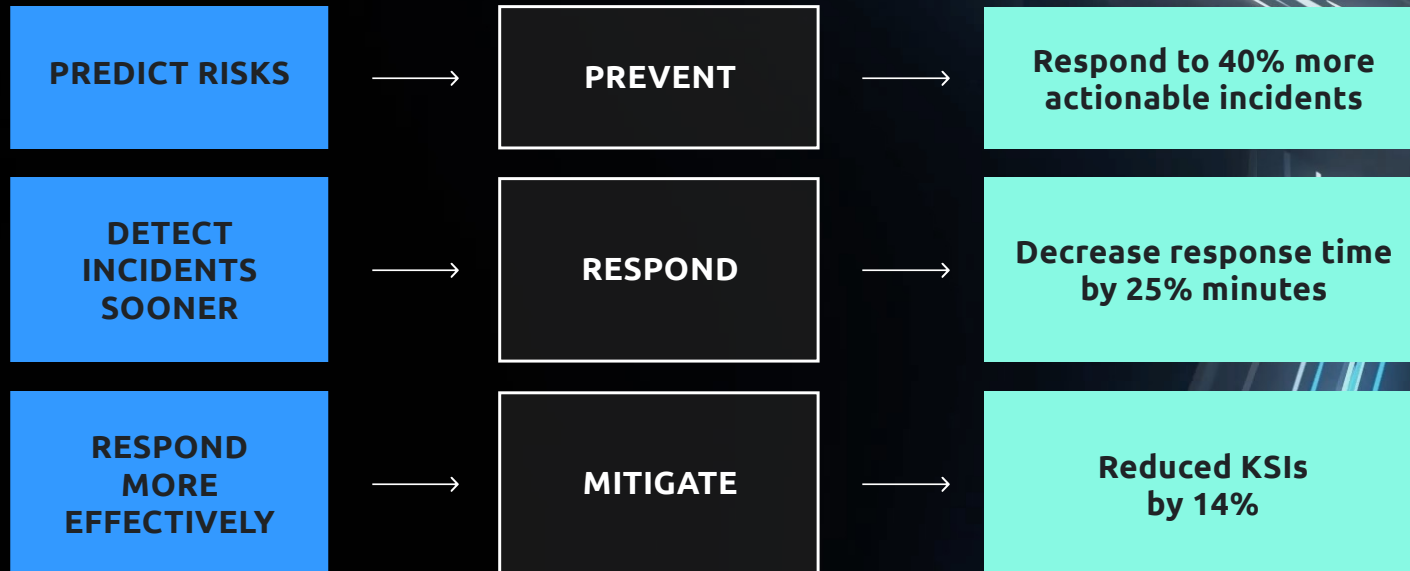
AI - CONNECTING THE DOTS



AI - CONNECTING THE DOTS



AI - CONNECTING THE DOTS





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THANK YOU!

POWERED BY DATA. DRIVEN BY INSIGHT.

Olga Gonzalez
VP Marketing

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