Case Studies

VALERANN

Table of Contents

VALERANN

European Private Concession

Europe │ Motorway concession operator │ ≈80,000 AADV │ 40 km pilot section

CHALLENGE

A European motorway operator manages a high-volume interurban corridor with mixed traffic conditions and variable sensor coverage. Incident detection relied on a combination of CCTV monitoring, emergency calls, patrol reports, and an incident management system. While effective for major incidents, this approach left gaps in early detection and placed a high cognitive load on operators. The control center also used various disconnected tools, which slowed operator triage and increased costs for the concession.

The operator sought to increase detection coverage and speed without overwhelming staff with false or duplicate alerts, without replacing existing ITS investments. They also sought a way to consolidate their existing tooling into a single pane-of-glass.

Increase actionable incident detection	Reduce detection and response time	Consolidate legacy monitoring tools

"The most important thing is reliability. The alerts are fast, trustworthy, and do not overload operators. That allows decisions to follow without delay and reduces the risk of secondary incidents."

– Traffic Control Center Supervisor

IMPACT

During a two-month operational pilot, the platform improved both detection quantity and quality. By fusing multiple data sources and filtering noise before alerts reached operators, the system surfaced more relevant events and frequently did so earlier than legacy detection methods.

Key outcomes:

≈97.5%
мean lead time of

мean lead time of
23 min
against legacy detection methods

≈86.6%
true-positive rate

with operator engagement reaching
≈80%

European Private Concession

SOLUTION

The operator deployed the system on a 40 km motorway section managed from a central traffic control center. The deployment integrated:

- PTZ and fixed CCTV with Valerann and edge CV detections
- PTZ patrol capabilities, with panoramic masking and detection
- Crowd-sourced traffic data
- Commercial map and traffic feeds
- Weather and atypical speed analytics

Approximately 50,000 daily raw data points were fused and reduced to ≈23 operator alerts per day, each cross-validated across sources. Alerts were enriched with contextual data and historical video for rapid verification. This allowed consolidation of many separate tools that were slowing triage and increasing costs for the control center.

Operators evaluated and acted on events directly within the system, with engagement increasing steadily as confidence grew. Many verified incidents identified by the platform were not present in existing incident logs, indicating genuine detection uplift rather than duplication.

OUTLOOK

Extrapolated to a wider ≈600 km network, the pilot results indicate potential for:

≈240	≈36	Reduced
additional actionable incidents per day	incidents per day detected earlier than current processes	manual monitoring effort, and further consolidation of tooling costs

European Private Concession

Europe | Motorway concession operator | ≈70,000 AADV | 24 km pilot section

CHALLENGE

A European motorway operator faced significant challenges from operator alert fatigue, due to a high volume of automated system alarms. Many were not critical or actionable, often going ignored by the control center. The challenge was to reduce noise while retaining detection coverage, speed and accuracy, to improve operator engagement, response times, and safety outcomes for the road.

Reduce operator fatigue by minimizing false alarms

Increase actionable incident detection (quantity and quality)

Improve speed of response for high-priority incidents like accidents

> **With Lanternn, the operators trust the alerts. The system often provides the earliest warning of accidents on the road, even in areas without cameras. When an alert comes in, we always pay attention.**
>
> – Traffic Control Center Analyst

IMPACT

During the pilot, Lanternn drastically reduced the number of alarms operators needed to process while keeping a high detection rate. By combining multiple data sources and dynamically filtering out irrelevant reports, the system allowed operators to focus on actionable events, improving overall safety, efficiency, and speed.

During the pilot, Lanternn achieved:

85.5%
true positive rates (based on operator assessment)

filtering out
97%
noise

42
additional valid events raised daily (equivalent to 3× the prior volume of valid events)

12-min
lead time on detection of accidents and collisions

100%
operator engagement

SOLUTION

Lanternn was deployed across a 24 km section of the motorway, integrating data from multiple sources:

- CCTV cameras (static and PTZ)
- Valerann CV AID (automatic incident detection) for stopped vehicles and hazard lights
- Crowd-sourced traffic data
- Weather data integration

The system processed over 2,000 daily raw detections, which were filtered to ~60 actionable events per day, achieving a 97% reduction in noise. By fusing data from multiple sources, Lanternn ensured that only the most relevant incidents were shown.

OUTLOOK

Extrapolating these results to the full ~240 km network, Lanternn could:

raise	of which	save over
≈574	**≈412**	**11 h**
alerts per day	new, actionable events per day would be identified	per day in operator time by reducing manual monitoring and increasing automated prioritization

CONCLUSION

Lanternn not only addresses operator alert fatigue but also improves efficiency in incident detection and response. By filtering out noise and delivering only the most relevant alerts, Lanternn helps operators to act with greater speed and accuracy, reducing response times and improving road safety.

TII

| Ireland | National operator | 100,000 AADV | 44 miles |

CHALLENGE

Transport Infrastructure Ireland is the national operator for all toll roads and motorways in the Republic of Ireland. TII's network of motorways spans over 700 miles long, and its highway and rural network is roughly 10 times as large.

TII has invested heavily into detection capabilities on time motorway, but still lacked visibility in the majority of its network. RGTII wanted to expedite detection and response in its motorway network, while also enabling detection of safety events in the part's of its network that do not enjoy direct camera coverage.

"

"We had a collision on our motorway and Lanternn picked it up. Literally within 3 minutes of it happening we had the whole thing dealt with because of Lanternn"

– Motorway Operations Control Center Manager, TII

| Monitor entire network | Increase detection rate | Decrease detection time |

IMPACT

Using Lanternn by Valerann™, the TII team were able to detect up to 40% additional true and relevant safety events per day.

50% of events detected, were detected by Lanternn on average 25 minutes earlier than by using traditional methods. Importantly, Valerann provided equitable improvements in operations in areas with and in areas without CCTV coverage

100% of the road coverage

+40% increase actionable detections

25 min decrease detection time

SOLUTION

TII together with Valerann deployed Lanternn by Valerann™ into the Motorway Operations Control Centre (MOCC), covering two motorways - the M1 north of Dublin and the M6 connecting Dublin to Cork. The M1 is a busy artery with over 100,000 AADV and dense CCTV coverage, while the M6 is a rural motorway with roughly 30,000 AADV and no CCTV. The total area covered was about 50 miles.

The system integrated with 30 CCTV cameras, HERE, TomTom, Waze, Inrix and Google maps, as well as weather data. The system used machine vision, data fusion and AI to sift through over 11,000 data points a day and surface on average only the 35 most relevant events to the control center. The alerts were coupled with contextual data and historical video footage for rapid validation.

US DoT
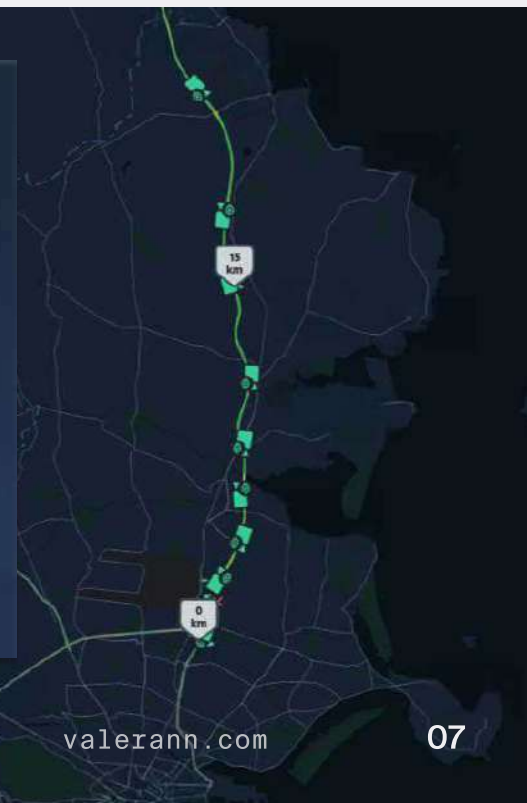
| USA | DoT | 75,000 AADV | 100 miles |

CHALLENGE

A state DoT in North East manages one of the most dangerous highways in the USA. The motorway is over 100 miles long, and serves roughly 60,000 journeys per day.

The highway saw over 2,000 crashes in a 3-year period and wanted to increase safety by improving risk detection and expediting incident response. The DoT had 100 cameras throughout the highway, but was looking for a solution that would give it complete coverage of the road, to allow detection of risks along the entire corridor.

"

"We now have a clearer picture of what's happening on our roadways in a much timelier fashion."

– TMC Manager, a US DoT

Improved incident detection

Reduce reliance on ITS for detection

IMPACT

Using Lanternn by Valerann™, the TII team were able to detect up to 40% additional true and relevant safety events per day.

50% of events detected, were detected by Lanternn on average 25 minutes earlier than by using traditional methods. Importantly, Valerann provided equitable improvements in operations in areas with and in areas without CCTV coverage

Accurately detects
incidents even in areas without CCTV

+50% increase in actionable detections

SOLUTION

The DoT together with Valerann deployed Lanternn by Valerann™ into the district's Control Centre. The system monitored the entire 100-mile corridor. The system integrated with the CCTV cameras, Waze, HERE and Google maps, as well as weather data.

The system used machine vision, data fusion and AI to sift through over 20,000 data points a day and surface only the 50 most relevant events to the control center. The alerts were coupled with contextual data and historical video footage for rapid validation. The system was compared to other incident detection capabilities, to estimate both accuracy and ability to detect novel incidents.

Lima Expresa – A Vinci Motorway

Peru | Toll Road operator | 200,000 AADV | 32 miles

CHALLENGE

A Lima Expresa is Peru's busiest motorway; cutting through the heart of Lima the road sees over 200,000 journeys a day. The operator is in charge of managing, maintaining and operating the road, its 1.5-mile tunnel and multiple toll facilities. The TMC (Traffic Control Center) was managed by an outdated ATMS, that received little to no support.

Detection of incidents on the motorway was done entirely by manual review of CCTV and patrol vehicles. The company was looking to improve the safety and efficiency in its asset through a combination of system upgrades and deployment of AI to improve incident detection and response.

| Monitor entire network | Increase detection rate | Decrease detection time |

> "Now we have the certainty that, as soon as something happens, we get that information"
>
> – Francisco Chenguayen, Control Center Manager, Lima Expresa

IMPACT

Lanternn by Valerann™ replaced all ATMS systems in Lima within 5 months without any loss of data or operational capability. Using LbV Lima Expresa team was able to detect and initiate a response to over 95% of all incidents within 5 minutes. This was done despite reducing operational staffing by 25% in the control center and patrol staff. The improvements in detection and response led to a 14% decrease in accidents with KSIs.

5 min
of the road coverage

operational KPIs were being met with
25%
less resources

accidents with KSIs reduced by
14%

Lima Expresa – A Vinci Motorway

SOLUTION

Lima Expresa together with Valerann deployed the full ATMS version of Lanternn by Valerann™ into the Lima TMC. The system monitored the entire motorway, including its 4KM tunnel. The total area covered is 30 miles.

The system integrated with 30 CCTV cameras, Waze, Inrix and Google maps, as well as weather data. The system used machine vision, data fusion and AI to sift through over 20,000 data points a day and surface only the 110 most relevant events to the control center. The alerts were coupled with contextual data and historical video footage for rapid validation. The system connected to all VMS/DMS, patrol and maintenance vehicles, allowing for automated response workflows such as message setting, patrol and emergency vehicle dispatch, and internal communications.

Patrol vehicles were given access to the Lanternn mobile app, which assigned tasks and allowed for uploading of information about incidents the patrol was attending. This significantly decreased both detection and response times. All incidents were automatically logged within Lanternn. Lanternn also included functionality to manage shifts and breaks of operational staff.
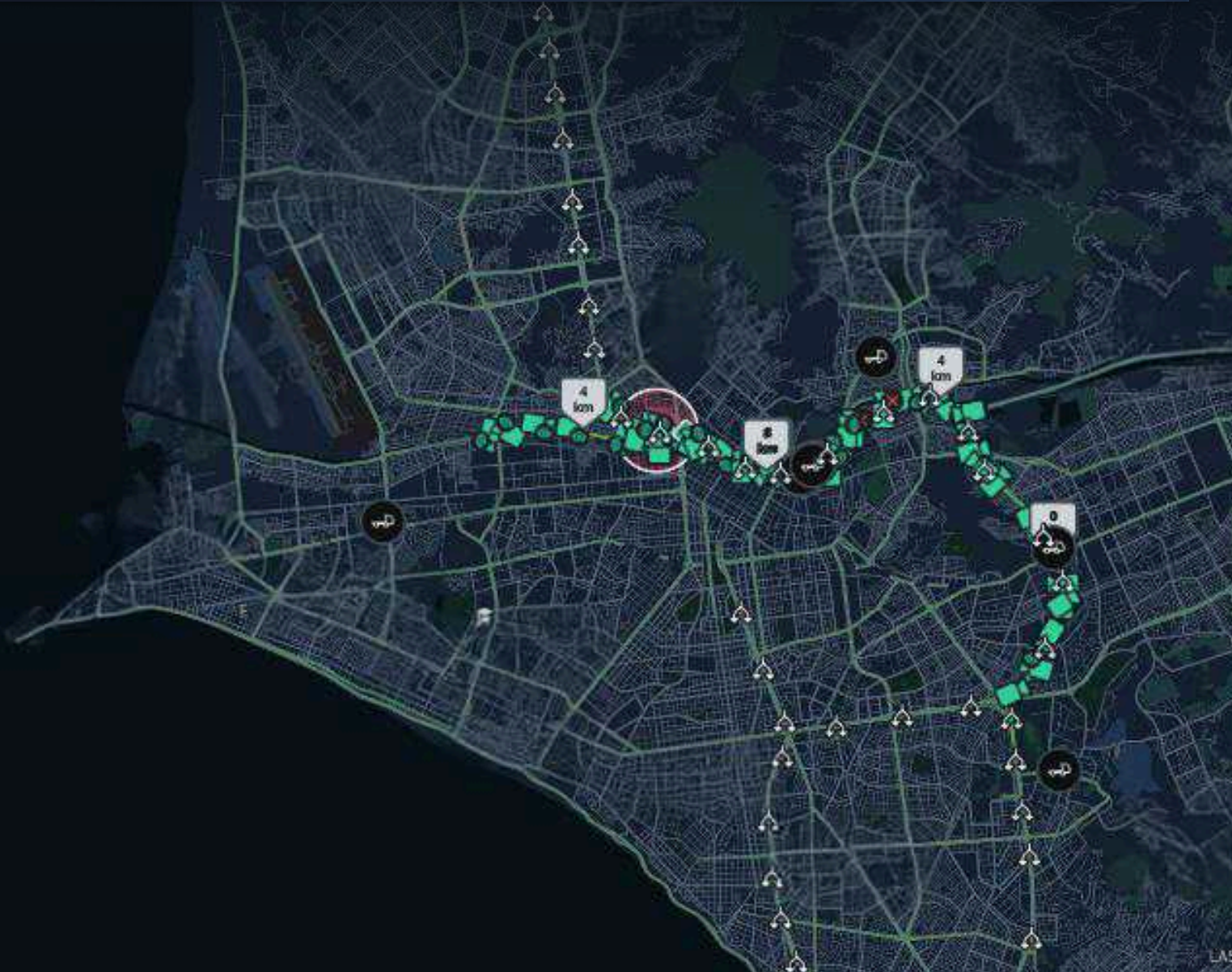
European National Operator DoT

| Europe | DoT | 150,000 AADV | 600 miles |

CHALLENGE

A European national operator managed 3,000 miles of motorway in on the Europe's largest economies. This motorway network caries 30% of the nation's traffic, is monitored by 7 regional operating centers, 30,000 edge devices and 1,000 patrol vehicles. These represent an annual investment of > $300M / year in monitoring and management of its network. The operator suffered many incidents connected to hazards and stopped vehicles and issued a challenge to use technology to improve detection and response to road hazards. The operator tried many types of hazard perception technologies, but found that the complexity, size, and ITS coverage variety on its network meant that a single type of hazard perception was not sufficient. Despite significant investment in ITS, the operator found that it was receiving thousands of alerts / day, the majority of which were either not true or not actionable.

| Improved incident detection | Reduce detection times | Integrate easily with existing systems/processes |

> "Wow, this is impressive; much more than what I expected.
> It enables efficiency as we can detect more, and more accurately."

– Director of Operations, European Network Operator

IMPACT

Within 8 weeks of being deployed, Lanternn's AI was able to significantly improve both detection quality and detection time of incidents. This is especially potent considering the huge investment the operator makes every year into detection and response, showcasing an ability to significantly improve on existing operations using Valerann's AI, or alternatively enjoy significant savings while maintaining similar levels of service. The system is now continuing into operational use on some the Nation's most complex infrastructure.

| reduce noise from data by | detect 54% of incident | detect new and actionable |
| **>99%** | **15 min** faster | **175** events / day |

SOLUTION

The operator together with Valerann deployed Lanternn by Valerann™ on a 600-mile section of its network in the center of the country. The system monitored 5 interconnecting motorways, as well as a ring road around the nation's 2nd largest city. The system integrated with 120 CCTV cameras, over 300 loops, Waze, HERE, INRIX, TomTom and Google maps, as well as weather data. Valerann committed to a tight timeline and delivered this complex system with all the integrations within

8 weeks. The system used machine vision, data fusion and AI to sift through over 750,000 data points a day and surface only the 600 most relevant events to the control center. The alerts were coupled with contextual data and historical video footage for rapid validation. The system was compared to other incident detection capabilities, to estimate both accuracy and ability to detect novel incidents.
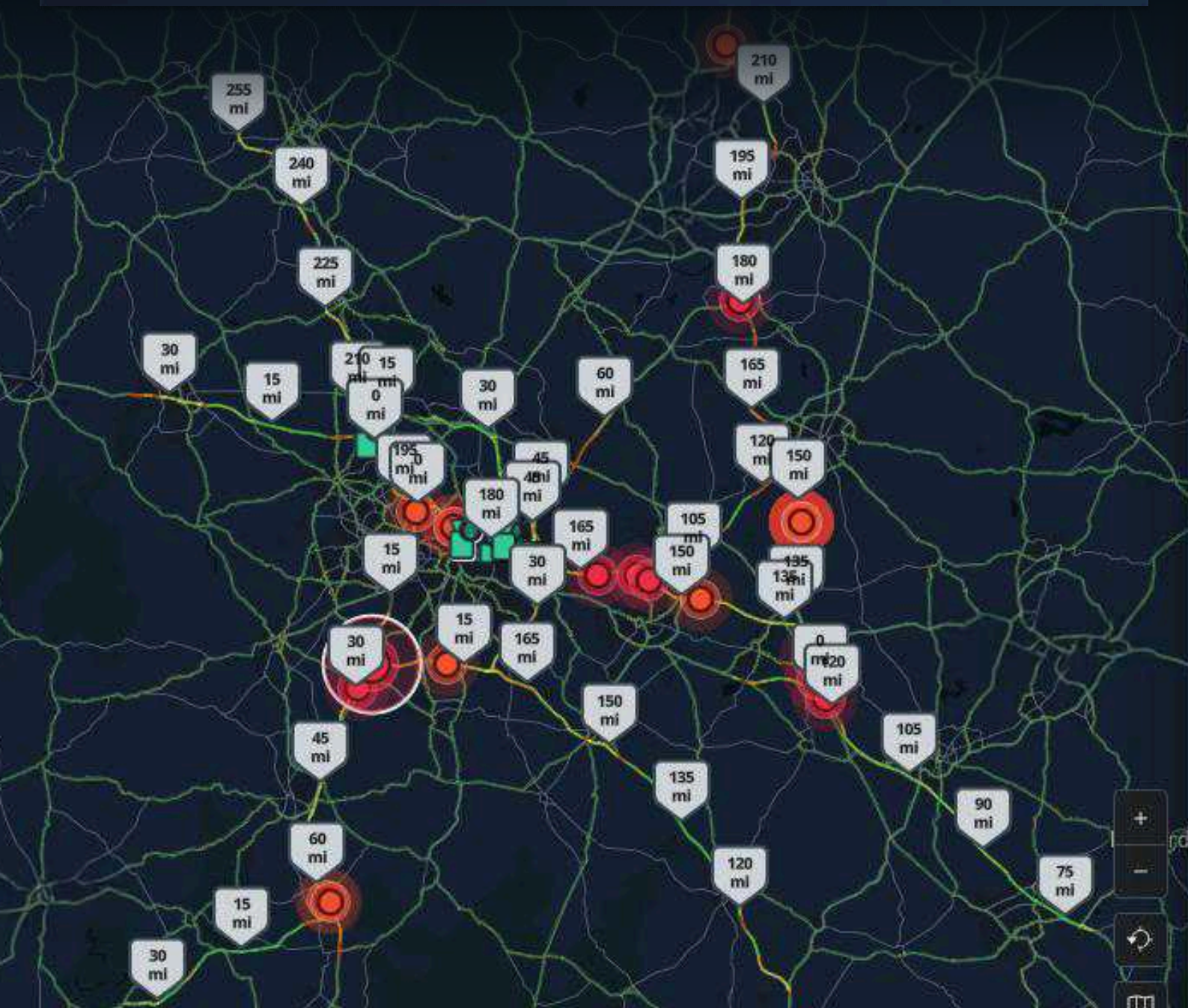
Ruta 27 – A Globalvia Motorway

| Costa Rica | | Toll Road | | 200,000 AADV | | 44 miles |

CHALLENGE

Ruta 27 is the busiest motorway in Costa Rica, connecting the Capital of San Jose to the pacific coast. This 50-mile toll road sees as much as 200,000 AADV and 1,000 accidents per year. These incidents caused harm to road users, posed a risk to road workerc who attended them, and would result in congestion and lost revenues. The road operator worked with Valerann to deploy a solution that would help improve safety on the road and help keep traffic flow smooth.

"

"By having early road incidents notification, we are able to shorten our response time."

– Andres Viveros,
Operations Director,
Ruta 27

Decrease accidents

Improve traffic flow

Reduce response times

IMPACT

Using Lanternn by Valerann™, the Ruta 27 team were able to detect up to 80 additional true and relevant safety events per day. Of these, 35% received initial response within 4 minutes.

During system usage traffic flow increased by 6% and accidents with injuries and fatalities decreased by 10% per 100K vehicles.

10%
decreased crashes with KSIs

received initial response < 4 mins
35%
of incidents

SOLUTION

Ruta 27 together with Valerann deployed Lanternn by Valerann™ into the Ruta 27 Control Center. The system integrated with 50 CCTV cameras, patrol vehicles, Google Maps, data from the toll booths, as well as weather data.

The system used machine vision, data fusion and AI to sift through over 20,000 data points a day and surface only the 80 most relevant events to the control center. The alerts were coupled with contextual data and historical video footage for rapid validation. The combination of prioritized alerting and rapid validation was used to expedite response in an effort to prevent crashes and reduce their impact. As part of the effort, Lanternn was integrated with the road's existing ATMS. So, when an incident was validated, operators used automated response workflows, directly from LbV to manage it.
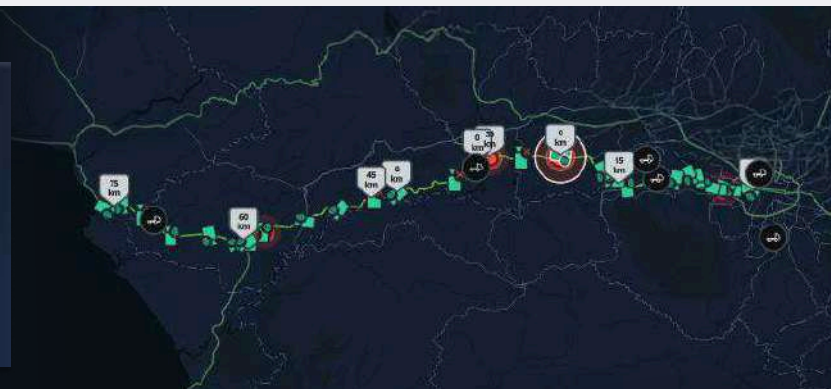
European National Operator

| Europe | National toll operator | 80,000 AADV | 40 miles |

CHALLENGE

A European national operator managed 7,000 miles of motorway in Western Europe. This motorway network covers about 70% of the nation's motorway and is monitored by a central operating centers, 1,4000 edge devices and 200 patrol vehicles. These represent an annual investment of > $50M / year in monitoring and management of its network. The operator has specific KPIs that means that it must detect all risks within 4 hours.

Due to the limited ITS coverage, this means it is forced to patrol its entire network every 4 hours; resulting in significant operational costs, while providing a suboptimal service. The operator tried many types of hazard perception technologies, but found that the complexity, size, and ITS coverage variety on its network meant that a single type of hazard perception was not sufficient. The operator was looking to see if a fused detection service could be relied upon instead of patrol.

| Improved incident detection | Reduce detection times | Reduce reliance on patrol for detection |

"After seeing Valerann in action, we hope to put it across our entire network to ensure timely detection of all incidents"

– Head of Technology, European operator

IMPACT

Valerann's system was able to decrease detection time of incidents by 17 minutes, while increasing actionable detection vs. both manual camera review and patrol vehicles. Following a year of successful operational use, the operator is signing a network-wide deployment agreement with Valerann.

| reduce noise from data by	detect 62% of incident	detect new and actionable
>99%	**17 min**	**15%**
	faster	events / day

European National Operator

SOLUTION

The operator together with Valerann deployed Lanternn by Valerann™ one of its busiest motorways, serving the country's capital. The system monitored the motorway, including multiple tunnels and integrated with 30 CCTV cameras, Waze, HERE, INRIX, TomTom and Google maps, as well as weather data.

The system used machine vision, data fusion and AI to sift through over 22,000 data points a day and surface only the 30 most relevant events to the control center.

The system integrated directly to the operator's ATMS, serving alerts and contextual data into the ATMS for easier incident management. The alerts included a link where the operator could find incident contextual data and historical video footage for rapid validation.
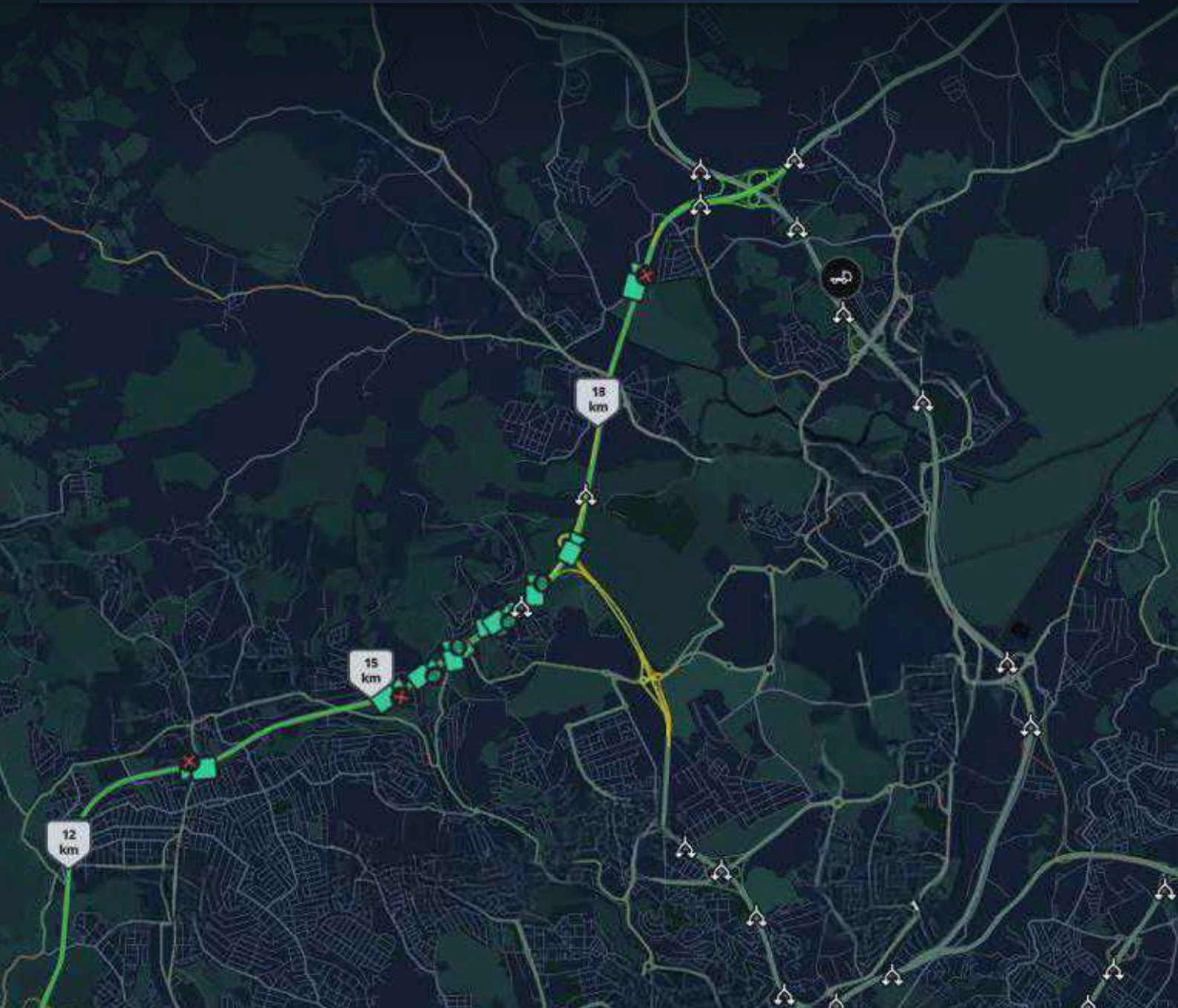
Costa Aruaco – A Globalvia Motorway

Chile	Toll road	60,000 AADV	80 miles

CHALLENGE

Costa Arauco is a central commuter and freight route in Chile, connecting nation's 2nd largest city of Concepcion to the port of Costa Aruaco. This 80-mile toll road sees 60,000 AADV and suffers from accidents that cause congestion and hurt toll revenues.

The road operator worked with Valerann to deploy a solution that will help improve safety on the road and help keep traffic flow smooth.

"

"I cannot imagine a world where I tell my control centre they can no longer use Valerann."

– Control Center Manager, Costa Arauco

Decrease accidents	Improve traffic flow	Reduce response times

IMPACT

Using Lanternn by Valerann, the Costa Aruaco team was able to transform safety on the road. Combining earlier detection and expedited response the team was able to attend and mitigate more risks earlier. The result was an astonishing 34% reduction in incidents with KSIs.

34%
decreased crashes with KSIs

SOLUTION

Costa Arauco team together with Valerann deployed Lanternn by Valerann™ into the Costa Arauco control center. The system integrated with 30 CCTV cameras, patrol vehicles, google maps, data from the toll booths, as well as weather data. The system used machine vision, data fusion and AI to sift through over 20,000 data points a day and surface only the 80 most relevant events to the control center. The alerts were coupled with contextual data and historical video footage for rapid validation.

The combination of prioritized alerting and rapid validation was used to expedite response in an effort to prevent crashes and reduce their impact. As part of the effort, Lanternn also provided 'light ATMS' capabilities to enable the operator to log information about incidents and communicate directly with Patrol. This way, when an incident was validated, operators could automate response workflows, directly from LbV.

Worldwide Industry Recognition

TOLL EXCELLENCE AWARDS	Excellence in Road Safety AWARDS 2025	INTERTRAFFIC INSPIRATION AWARD 2024
2025	2025	2024
Prince Michael INTERNATIONAL ROAD SAFETY AWARD — Recognising achievement and innovations which will improve road safety	Intelligent Transport Systems UK	CES INNOVATION AWARDS 2020 BEST OF INNOVATION
2024	2024	2020
IRF INTERNATIONAL ROAD FEDERATION	sacyr — Innovation Challenge	Intelligent Transport Systems UK
2022	2023	2023
SOUTH SUMMIT		
2020		

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