



O&M

Innovation Mag

1st Edition

*'Innovation distinguishes between
a leader and a follower.'*

Steve Jobs



Editorial

Dear all,

We are pleased to share the first edition of the Egis O&M Innovation Report. In this report, you will find an overview of how Egis, as an operator of strategic infrastructures, is innovating and being recognized around the world. You will also discover an "innovation market watch" section, presenting products and services available on the market that are innovative and could be relevant for our activities.

The information presented in this report is based on the innovation reports shared twice a year by the general managers of our O&M companies, complemented by feedback from our expert community and our ongoing market watch.

The aim of this report is to provide you with a clear overview of what Egis, as an operator, is doing in terms of innovation across its international O&M network.

Finally, by sharing this report, we hope to foster a culture of innovation and cross-fertilization across all our subsidiaries, leveraging these insights to continuously improve the way we work.

Enjoy!

Camille GASTERI

O&M Signature
Services excellence

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Operations Innovations Overview - 2025



01

Global map Innovations & Best practices

***Based on the Innovation Reports shared
by the Road O&M co***

In this section you will find innovative initiatives tested, developed or implemented on all our **road** O&M network.

From Europe to Latin America and Oceania, Egis teams have implemented cutting-edge solutions to enhance **health and safety**, improve **Operational Excellence** and **promote sustainability**. These achievements are the result of a strategy that leverage advanced technologies such as Artificial Intelligence, IoT, and data-driven platforms to transform infrastructure and mobility.

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2025 innovations map overview:

- Passive Exoskeleton, an ergonomic revolution for field teams and Dibond Recycle Panels (Germany)
- Digitalization, renewable energy, and drone inspections (Portugal)
- Sludge reuse for construction and AI-driven inspections (Australia)
- Electric patrols and drone-based monitoring (Mexico)...

Global impact

Key benefits delivered

Financial benefits

Continuous improvement and innovation brings positive return on investment:

- **\$6.6 million** cost reduction over 7 years for FHE with Jet Fans Inspection System
- **1 year ROI** for Waagner Biro with the Technical Competency Center
- **Annual saving of 250k€** vs 193k€ investment for EIMK with Secondary Power Supply implementation

Qualitative benefits

In addition to the financial benefits, these projects bring also environmental benefits, showcasing the potential for innovation to drive both economic and sustainable growth.



Measuring **impact or ROI** is essential to **show the value delivered by innovation**. This is a common shortcoming in the reports provided, and we need to offer more assistance to ensure it becomes a routine practice.

 Our champion in ROI calculation is currently Kazakhstan, with a model of report.



Improving Health & Safety



GERMANY – Autobahn+ Services

Passive exoskeletons

These mechanical devices reduce strain from lifting and bent posture.



Benefits: This minimizes manual handling of heavy equipment, thereby improving working conditions and lowering the risk of injury for agents.

Impact: This innovation can be integrated with weather and visibility sensors for automated activation, further enhancing safety and operational efficiency



Rumble Strip & Rumble Strip Handling Machine

Placed 100 meters ahead of a worksite, these plastic rods provide an extra layer of warning alongside traditional signage. They are designed to be driven over by all vehicles. A specialized machine handles the automatic installation and removal of the rumble strips.

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Benefits: The system improves safety during installation and removal, reducing worker exposure to traffic hazards.

Impact: Automating this process reduces physical strain and injury risk for employees, promoting better occupational health and potentially lowering sick leave, while also saving time and resources.



POLAND - Via4

Warning Message Transmitter

This communication tool for drivers use directional antennas and low-power transmitters to broadcast safety messages at work sites, increasing driver awareness and safety near road works.

Benefits: It supports safer road maintenance operations by alerting oncoming vehicles, protecting both workers and road users.

Impact: This innovation contributes to overall traffic safety and operational efficiency on motorways.



Improving | Health & Safety

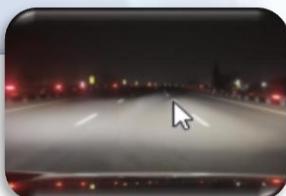
KAZAKHSTAN- EIMK

Laser Beacon System for Fog-Prone Areas



Fog on motorways greatly reduces visibility, making it hard for drivers to see the road edge and stay safely within their lane. Laser beacons project a continuous or pulsed laser line into/along guardrails in foggy conditions, helping drivers maintain lane discipline.

- **Benefits:** Reduces the likelihood of accidents in foggy conditions by ensuring drivers can follow a clear guidance line.
- **Note:** This innovation can be integrated with weather and visibility sensors for automated activation, further enhancing safety and operational efficiency



Solar-Powered LED Flashing Cat-Eye Reflectors on Guardrails

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They enhance driver visibility and road delineation during low-light conditions such as night-time, fog, and winter weather.

- **Benefits:** They improve safety for drivers and reduce accident risks.
- **Impact:** These reflectors are solar-powered, requiring no external power source and operating automatically, at minimal maintenance costs.

PORUGAL - ERO Portugal



Work Alone App (eSafeMe PRO)

This mobile application for isolated workers issues alerts for falls, immobilization, or SOS situations, automatically notifying predefined contacts and enabling rapid emergency response.

- **Benefits:** Enhancing Safety for Isolated Workers and enabling rapid emergency response.
- **Impact:** By safeguarding isolated workers, the app helps maintain continuous operations, especially during night shifts, weekends, and holidays.



Animal Deterrents

Mirror and ultrasonic deterrents were installed to prevent wildlife from entering the motorway.

- **Benefits:** This reduced accident risks for both animals and drivers, improving overall road safety and protecting wildlife.

Improving | Operational Excellence



UK – ERO UK

Next Generation Concrete Surfacing (NGCS)

The NGCS project proactively maintains concrete joints, the project extended the lifespan of the asset and addressed structural deterioration, also lowering noise pollution issues.

- Benefits:** Ride quality was enhanced by reducing vibrations, thereby improving comfort for road users.
- Impact:** Post-NGCS installation, SCRIM survey results for Lane 1 showed a 50% improvement. PFT testing indicated a 23% increase in high-speed friction. Surface texture depth increased from 1.1 mm to 1.5 mm, improving grip and draiAmbient measurements showed nighttime noise reductions of -1.8 dB (westbound) and -3.6 dB (eastbound) near NIA 1286 (West Byfleet). In-car noise testing reported reductions of 7–11 dB..nage.



GERMANY – Autobahn+ Services

Netwake – Vehicle data used to enhance winter maintenance

The objective is to enable real-time detection of slippery road surfaces, optimizing winter maintenance operations and reducing both salt and fuel consumption.

- Benefits:** Estimated \$6.6m cost reduction over 7 years, improved safety, and increased data traceability.
- Impact:** Improved driving performance and better-timed maintenance interventions result in lower maintenance and repair costs for vehicles, as well as reduced operational expenses due to less frequent and more targeted use of materials.



Mechanical Gully Cleaner

This automated device allows gully to be cleaned by just one operator from the cab.

- Benefits:** reduced physical strain and increases occupational safety by minimizing exposure to traffic and manual lifting of heavy gully traps
- Impact:** the mechanical cleaner increases daily output and reduces the number of personnel required for the task, leading to lower operational costs.

Improving | Operational Excellence



Australia - Fulton Hogan Egis

Automate inspection of Jet fans in tunnel

JFIS: A purpose-built solution combining rugged hardware and AI software for automated inspection of jet fans, reducing manual climbing risks and improving data accuracy.

- **Benefits:** Expected \$6.6m cost reduction over 7 years, improved safety, and increased data traceability.
- **Impact:** Replacement of outsourced subcontractor services with an in-house solution, reducing costs and improving efficiency.

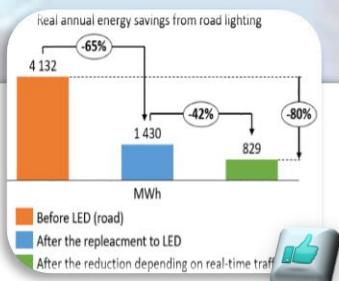


Austria - Egis Operations Austria

Hydraulic quick-change systems

These systems allowed for seamless transitions between summer and winter operations. This innovation resulted in a substantial reduction in changeover time, decreasing from approximately 1.5 hours to just 15 minutes.

- **Benefits:** Vehicles can be prepared and handed over more efficiently, mitigating issues related to driving and rest times.
- **Impact:** Faster changeovers mean less labor time and more efficient use of maintenance resources, potentially lowering operational costs.



Poland - AESA

Real-time Road Lighting Level Control Based on Traffic

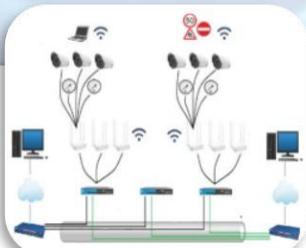
This system dynamically adjusts road lighting levels depending on current traffic, reducing lighting when traffic is below certain thresholds.

- **Benefits:** This innovation positions the Polish team as leaders in smart infrastructure and sustainable road management.
- **Impact:** Significant energy savings were achieved, through a 42% reduction in road lighting energy consumption.

Improving Operational Excellence



PORTUGAL - A24



Local Area Network (LAN) through Motorway

Deployment of a robust, resilient Ethernet-based LAN using existing fiber optic backbone to interconnect technical areas and support data communication for O&M.

- **Benefits:** The LAN facilitates real-time data communication and supports critical operational systems, improving overall efficiency.
- **Impact:** This cost-efficient project leverages the already-installed fiber optic backbone, optimizing resources and reducing the need for new installations.

KAZAKHSTAN - EIMK



Secondary Power Supply for ITS

A backup power system utilizing cell technology to ensure continuous operation of Intelligent Transportation Systems (ITS) equipment during power outages.

- **Benefits:** Reduced maintenance costs, improved system reliability, and enhanced customer satisfaction.
- **Impact:** It has generated a significant return on investment, with **annual savings of €250,000**, representing a **130% return on the initial investment** of €193,000.

UAE – Waagner Biro



Technical Competency Center

A dedicated practical learning area is proposed, where real bridge components are integrated. This allows maintenance crews to practice inspection, repair, and maintenance procedures in a controlled environment before working in the field.

- **Benefits:** This innovation enhances hands-on experience and technical competency.
- **Impact:** with estimated annual savings of €26,500, offsets the one-time investment of the same amount, effectively breaking even within one year. This means that the initiative is likely to become cost-neutral after the first year.



Sustainable Solutions



Austria - Egis Operations

Ecology, land, Biodiversity

A range of initiatives to reduce the company's environmental footprint, including the creation of a "pick me" garden, greening of parking areas, and structural measures to enhance biodiversity.

Benefits: Improved biodiversity, reduced environmental impact, and enhanced public image.

Impact: The initiatives have not only reduced the company's environmental footprint but also improved the well-being of employees and the local community.



Australia - Fulton Hogan Egis

Sludge Reuse for Construction

The Water Treatment Plant byproduct reuse project, transforms sludge waste from treatment processes into non-structural concrete blocks for civil works.

Benefits: Diverts significant volumes of waste from landfill (887 tons already diverted on M6), reducing ecological footprint. A new sustainable material stream for infrastructure projects.

Impact: Establishes a new material stream for non-structural applications, potentially scaling across all WTPs for 100% sludge recycling.



Germany – Autobahn+ Services

Dibond Recyclable Panels

The use of recyclable materials, such as Dibond, to manufacture traffic signs, reducing waste and promoting a more circular economy.

Benefits: Reduced waste, lower environmental impact cutting carbon footprint with 66% less Aluminium

Impact: The innovation has reduced the company's environmental footprint and has the potential to be replicated across the industry.



Sustainable Solutions

Mexico – Egis Infraestructura



EV Patrolling

A pilot project to test the use of electric vehicles for patrolling, aiming to reduce greenhouse gas emissions and operating costs.

- **Benefits:** Reduced emissions, lower operating costs, and improved efficiency.
- **Impact:** The project has shown promising results, with a 73% reduction in operating costs and a significant decrease in CO2 emissions.
- **Expanding fleet electrification across Operations :** **Austria (Bonaventura), Croatia (Zagreb-Macelj), Germany (A8), France (A88, A63), Hungary (M6 Tolna), Ireland (ELS), Portugal (A24).**



Gray Water Recirculation

Golfo Centro project operates off-grid rest areas supplied by daily cistern truck deliveries (about **800,000 liters per month**) and manage an on-site wastewater treatment plant that processes toilet residues and releases treated gray water into the river in compliance with local regulations.

The ambition of Golfo Centro is to divert this gray water into a tank that will be connected to toilets only, so that we use the gray water for flushing, and keep using drinkable water for handwashing.

- **Benefits:** include decreased waste, a smaller environmental footprint, and cost savings estimated at 75% of the drinkable water usage. The return on investment is projected to be **around 18 months**.
- **Note:** The project is presently on hold due to a negative water quality test conducted earlier this year.

Lessons learned from O&M reports

Last year, a major milestone has been reached by sharing the O&M Innovation Process. Objective are to standardize the way Innovation is managed in the O&M Cos, to facilitate cross fertilization and to share best practices.

2026 will be the year of change, helping emerge innovation champions in our O&M cos, adopting tools and methods for succeeding in their innovation journey.

The review of reports has highlighted several key areas that warrant focused support.

Absence of impact or ROI evaluation:

Several projects do not specify CAPEX/OPEX, making ROI evaluation challenging

Need of standardized KPIs: to measure impacts on Safety, CO2 etc

Incomplete technical documentation: some innovations, like the grey water recirculation, lack details on testing and regulatory constraints

Limited visibility of external Partners: too less information shared on partners or suppliers. Names of universities we work with are rarely mentioned

Heterogeneous validation process: project maturity is expressed differently across Operations (idea, test, deployment...)



- Innovation report model:
[O&M Signature_Innovation report Template_vfl.docx](#)
- Innovation process:
[INNOVATION PROCESS - Final version - 16.10.2025.pptx](#)
- Innovation hub:
[Egis Group. Co-create the products and services of tomorrow thanks to our content!](#)



A part of the answer is on the following link

We're continue to enrich the process with new tools to "make your life easier"

Awards

The Lab

Egis Incubator@



02



External Awards



01

Corporate Sustainability Award for Biodiversity Program

Ostend-Bruges Airport



02

Mobility/Transport award related to infrastructure financing

Paris-Beauvais Airport



03

DIGITAL IMPACT AWARD with development and implementation of advanced AI solutions,
Connect Plus Services - London



04

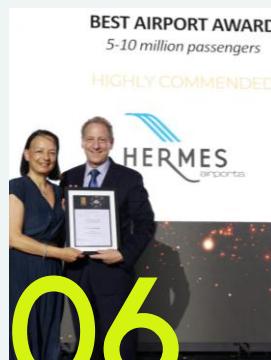
Best Digitalization of a Parking Project or Service for the EVS system developed for the City of Amsterdam
Egis Operations



05

Being awarded for the impressive implementation of an ERP in less than 12 months

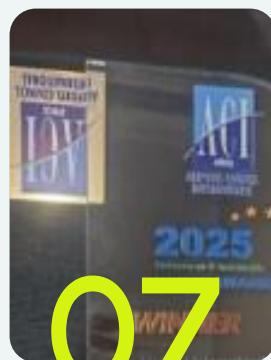
Thema – Thessaloniki metro



06

"Best Airports in Europe" award (category 5 to 10 million passengers)

Larnaka Airport



07

Silver Heart of Safety award: recognition of professional excellence and dedication

Egis Road Operation Croatia



08

Overseas Employer of the Year - Platinum Category & Outstanding Leadership in HR, Wellness and HSE

Hermes - Cyprus

Best INNOVATION AWARD

Internal Awards



PORUGAL - 100% Electric Patrolling "1st Price Energy"

Achieving carbon neutrality by transitioning to electric vehicles. This lowered carbon emissions, with over 58% of kilometers driven by EVs by October 2025.

TÜRKİYE - Solar Panels on Vans "2nd Price Energy"

Solar power energy used during motorway interventions: less fuel, lowers maintenance costs, and reduced carbon footprint (decreased by- 14,85 t of CO₂ per patrol van in 10 months).

IRELAND - Electrification of HGL "3rd Price Energy"

An electric heavy goods vehicle replaced a legacy diesel-powered unit for traffic management duties.



TÜRKİYE - Drone Patrolling "1st Price Innovation"

The Heliplane drone, covers up to 200 km without emissions! An annual reduction in carbon emissions of over 700 tons of CO₂.

PORUGAL - Monitoring with satellite data "2nd Price Innovation"

High-resolution satellite imagery and AI to optimize vegetation management along the motorway.

TÜRKİYE- Pacemaker in Eurasia Tunnel "3rd Price Innovation"

Ingenious lighting implemented on 1,500m of tunnel to improve traffic management. It leads to a drastic decrease of number of incidents.

O&M Incubated Project

Infrastructure and Vegetation Monitoring with Satellite Data

A24 Portugal



Satellite-based monitoring allows to track the evolution of tree health, fall susceptibility (winds), disease and invasive species detection, as well as vegetation detection in the middle of the highway.

**157 km network length
520 ha vegetation mapped**

Qualitative benefits

- Verified subcontractor work – geolocated and timestamped evidence
- Improved safety
- Environmental Impact – Reduced CO₂ emissions
- Compliance – continuous documentation supports required reports for authorities
- Data quality – Much higher than standard field photos

Quantitative benefits

- High ROI & operational performance
- Key drivers
- Optimised interventions in steep/fire-risk areas
- Time savings – fewer on-site inspections
- Lower subcontractor costs

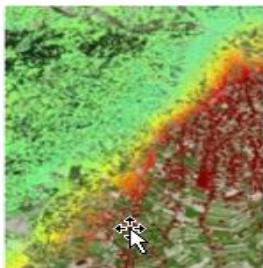
**2026 Financial gains expectation : 45k€
Savings: 12%**

Other functionalities

Flood mapping and risk assessment

Ground motion to monitor structural or terrain shifts

Interference Identifies unauthorized activities



Next steps & roadmap

- POC in our O&M projects in Germany & Philippines
- POC on airports operations
- Analyses of Spotlite vs other market solutions

Watch

& Build



03

Market watch | Report

Process setup in 2025

1

~100 companies met
~21 POC conducted



Partners & Egis ready for POC"ing" !

- Numerico: to help you reduce Ops "intervention time" by better positioning your patrols position in real-time -> Road traffic management
- Transoft with "Asset mapper" for Identification of structural defects, road markings and signage, plus 360° scanning -> Road and Airport
- Floware in "traffic flow management" & "dynamic platform for sharing with SPVs -> Airport, Road
- BusinessOptix AI-powered process intelligence platform that helps map, analyze, and optimize business processes -> Road and Airport
- ZoomShift in HR Management, includes simple Shift Planning, tool processes-> Road
- CSL, a competitive ERP with mobile applications covering financial, HR, accountability, shift -> all activity domains.

2



3

Contracts & References

- AI4InfraMonitoring with VAISALA -> thanks M25 !
- Site Monitoring with Satellite use cases with SPOTLITE, trans BL needs -> thanks A24
- Digitalized Asset (asset modelling) with ALTEIA cross-domain, transversal BL needs -> thanks Corporate !



Contribute to the partner ecosystem building : Market watch process [Smartsheet](#)

A Growing Adoption of AI across Ops



A transversal POC - A63,A2

Vigie Patrol: a solution designed for road incidents real-time detection in absence of cameras, short-term prediction and visualization managed directly from TCC

Benefits expected: quicker responsiveness to incidents, reduces traffic congestion and incidents rates potentially by up to 10%.

POC inconclusive on real-time incident detection due to the slow emergence of V2X market. Waze and other external vehicles data lacked the precision required to meet project objectives.



ROAD AI on M25

AI-driven pavement Inspections.

Continuous pavement condition monitoring using AI video analysis for predictive maintenance

2025: Road AI fully integrated

Next step: connect RoadAI to Power-BI to enable real-time trend analysis and predict maintenance planning

Expanded: Germany, A63 (test)...



A future POC on RAIL (Metro)

PCC IA : Decision support tool in control center leveraging AI predictive models to analyze real-time operations and passenger data...



2025: Thesis analysis, Thessaloniki data identification & map, specifications, benchmark, CIR...

2026: POC opportunity with EIDH or Cap Gemini



Other AI projects

AI & CCTV:

- Detects stopped or slow vehicles in real-time using AI-integrated CCTV analytics (EIMK)
- Help with transactions recovery, categorizing vehicles through plates reading (AESPA) (studied in Mexico)

AI and Robotics:

- automate jet fan inspections, improve safety and manual interventions (M6)



Others AI models:

- Apps for Drivers fatigue & distraction monitoring
- Documents analysis and chatbot services improvement...



Robotiz³d

POC: Captures high-resolution spatial data that enables operators to identify cracks, anomalies, and structural issues with unmatched accuracy.

Automating the traditionally manual process of roadway and asset inspection.

Infrastructure monitoring with its LiDAR-based technology, offering deep volumetric insights and precise defect detection in any weather condition.

O&M Innovation work review



04

Our value proposition

Innovation means applying new ideas, technologies, and methods to enhance the security, efficiency, and sustainability of our operations. It involves continuously seeking better solutions to complex challenges in all areas such as airport, digital mobility, rail, road...

Innovation is not only important to improve our way of doing but also to anticipate the impact of future technologies in our day-to-day activities.

"An innovation is a new or improved product or business process that differs significantly from the previous products or business processes and that has been made available to potential users (product) or brought into use by the unit (process)."

OECD definition



Objectives:

- Operational safety: safe at work
- Operational excellence: costs and time **savings**
- Infrastructure resilience (climate, decarbonate)
- Create added value in **tenders**
- EGIS brand attractiveness

Support in your innovation journey



2 Main Pillars

1 - Animation of innovation

At the SL O&M we facilitate *cross fertilization* by linking your needs with already tested solutions on our network. We provide **feedback**, analyses, **market watch** and we developed a common **innovation process methodology**.

We also **support your experimentations**, helping to define needs and data structuring, find partners, negotiate prices & contracts frameworks. And finally, we prepare toolkit to be ready to industrialize.

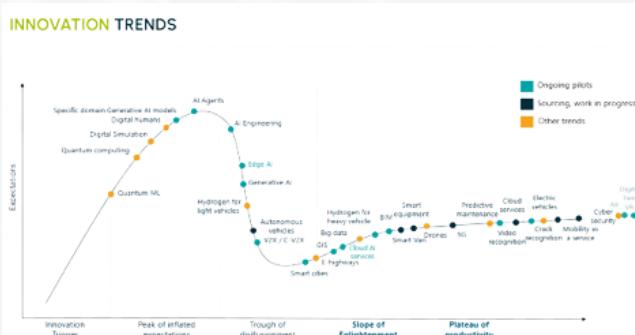
Animation also covers the **organization of innovation workshops** with clients and shareholders (TII in Ireland, Highways UK, Ashghal in Qatar).



Contribution to Egis attractiveness

2 - Strategic innovative projects

At the SL O&M, we work on **being prepared for the future** through **identification of mega trends**, constant market watch analyses, competitor watch, development of white papers and digital maturity evaluation of our subsidiaries.



Innovation best practices

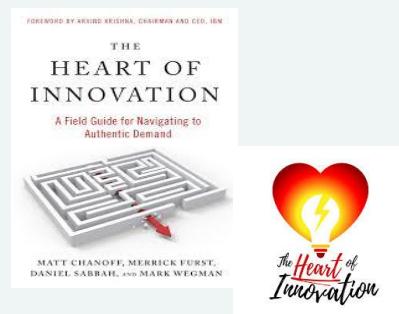
More than just a process, *innovation is a mindset* and involves a constant pursuit of continuous improvement. The following projects have developed best practices to drive profound transformation within their teams: *innovation is not only encouraged but institutionalized.*

POR001, Portugal: The EROP D-TECH initiative is a prime example of continuous innovation. With a focus on digital transformation, the project aims to stay ahead of the curve by continuously monitoring and adapting to new technologies and trends.

GER001, Germany: The Autobahnplus Services GmbH has established a culture of continuous innovation, with a dedicated team responsible for identifying and implementing new ideas. Their approach ensures that innovation is an ongoing process, rather than a one-time event.

KAZ003, Kazakhstan: The management team has implemented a system for continuous monitoring and evaluation of their projects. This allows to identify areas for improvement and make data-driven decisions, ensuring that their innovations remain relevant and effective.

What are the key factors for successful innovation process?



25

1. Experimentation: Being open to taking calculated risks and trying out new ideas, even if they don't always lead to success.

2. Collaboration and best practices sharing: Working together as a community to grow collectively and learn from others..

3. Continuous "Learning" & "Improvement": promoting a culture of innovation through effective process and change management.

Looking ahead to 2026



05

Animating innovation: building collective emulation

The SL O&M support in 2026 will be, as part of the continuous animation of our international O&M network, to:

✓ **Facilitate initiatives replication:**

- Provision of deployment kits, like the Chat Bot / Voice Bot toolkit made available in 2025; in 2026 AI for infra monitoring toolkit will be available, as well as the shift management solution toolkit
- Preparation of white Papers, like the Traffic Control Center of the Future made available in 2025; in 2026 a Prediction White Paper will be available
- and additional benchmarks and market watch: with a particular focus on satellite data application

✓ **Create synergies on projects to enhance value created:** share 27 feedback between O&M Cos, enriched by Group Innovation Support.

These collective efforts are essential to transform local innovations into sustainable and global competitive advantages.

Contribute to Egis attractiveness

- General Managers Innovation report (MAY + NOV)
- Experts' community (WG) feedback
- Market intelligence
- Support O&M Cos in implementing an innovation process
- Value innovative initiatives



O&M Signature
The challenge

O&M Innovation Letter
(JUNE+ DEC.)



2026 Strategic innovative projects

Infrastructures data structuring and Prediction will mainly drive 2026 innovation projects for the following key reasons:

Explosion of Data Volumes

Amount of data generated by businesses, IoT devices, social platforms, and digital interactions are constantly increasing. Structuring this data efficiently is critical to harnessing its value.

AI and Machine Learning Dependence

Modern AI and machine learning models rely heavily on high-quality, well-structured data. Accurate predictions require robust data structuring as a foundational step.

Increase of Operational performance

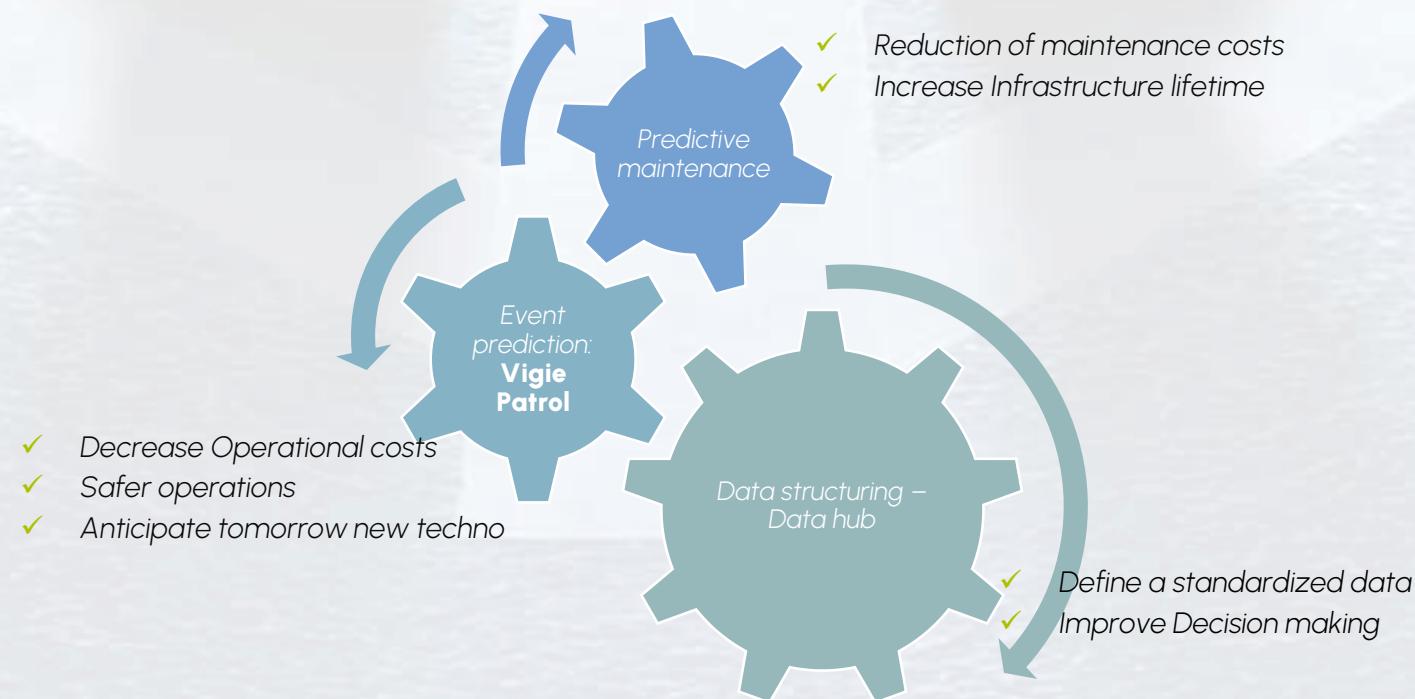
Predictive analytics enables proactive decision-making rather than reactive responses.

Regulatory and Compliance Needs

As data regulations (like GDPR, CCPA) become stricter, properly structured data is necessary for compliance and auditing. Predictive tools also help anticipate and mitigate compliance risks.

Integration with Emerging Technologies

Technologies such as digital twins, edge computing, and augmented reality require both structured data and predictive capabilities to deliver real-time value and insights



Would your O&M Co like to work with us on these 3 strategic projects in 2026?
Your contribution is key to succeed

