Services excellence
is the objective of our O&M Signature approach.

VAISALA – RoadAI

***Project Manager*:**
Shanmeng Wei, Eldos Then

Egis themes: Digital Asset management

Team involved: M25

***Target Beneficiaries (Client, Operations, both…)*:** Both

Description of the context (problem to be solved)
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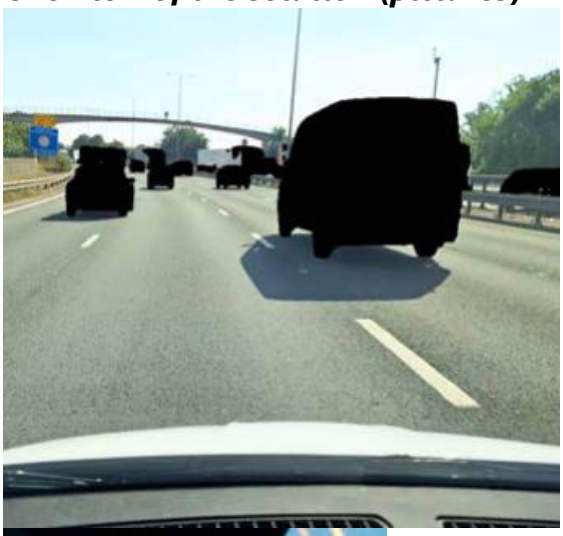
Description of the solution
The need for this project stems from a critical gap in pavement asset understanding between longstop inspections and machine-based inspections. While these inspections provide valuable periodic assessments of the road network, they leave significant intervals where pavement deterioration can progress unnoticed. This gap presents risks to safety, customer experience and the timely, efficient delivery of maintenance interventions.

Environmental factors - such as increasing temperatures, higher instances of extreme rainfall and more frequent freeze-thaw cycles – are making the rate of pavement degradation less predictable. Without a continuous and data-driven approach, the risk of asset failure increases, potentially leading to costly emergency repairs, increased safety hazards and a poor driving experience for our road users.

Technology maturity: High -> (7-8)

Technical prerequisites (to set up the solution)

Overview of the solution (pictures)



Business model

Benefits/Gains:
Following a successful trial, RoadAI was fully integrated into the M25 network, transforming data collection and utilisation. By connecting with Power BI, RoadAI enables real-time trend analysis, predictive maintenance planning and enhanced reporting, leading to:

• Improved safety by identifying and addressing pavement defects before they become hazards.
• Greater operational efficiency through automation, reducing costs and time spent on inspections.
• Enhanced asset longevity by shifting from reactive to proactive maintenance strategies.
• Minimised disruption for road users, ensuring a smoother and safer driving experience.

From April 2024 to January 2025, a significant milestone was achieved in network data collection, with 74,994 km of road network surveyed. This effort resulted in 1,210 hours of high-quality video footage, offering an unprecedented level of coverage and insight into the condition of our asset.

This extensive video capture has introduced an innovative approach to validating pavement defects as part of the AMFP. By leveraging this real-time, visual data, the process of assessing road surface conditions has become more accurate, timely and data-driven, significantly reducing reliance on traditional inspection methods which are often time-consuming and less precise.

Key benefits realised:

Improved decision-making and risk mitigation

- The high-resolution data has enabled more informed decision-making regarding asset renewal priorities.
- This approach helped avoid Paymech charges on two separate incidents, as we were able to demonstrate that appropriate maintenance and risk mitigation measures were in place while awaiting renewal activities.

Enhanced asset validation and maintenance planning

- The availability of near real-time data has greatly improved how pavement defects are identified and validated.

Opportunities for expanded asset insights

- The introduction of beta testing modules within the RoadAI system has opened up opportunities to assess additional asset categories beyond pavements.
- Early trials suggest that the system can provide valuable insights into signs, road markings, studs and road restraint systems, further enhancing our ability to proactively manage and maintain these assets.

Stronger data-driven evidence for investment planning

- With 74,994 km of network coverage and 1,210 hours of video data, we now have a significantly stronger evidence base to support future investment decisions.

Measurable improvements

- Inspection efficiency: Traditional methods required significant time investment, however the shift to video-based validation has streamlined the process, making it faster and more efficient.
- Operational scalability: The use of AI-driven data analysis has set the foundation for expanding similar methodologies to other asset classes, thereby increasing the overall effectiveness of asset management strategies.

Business model: Costs & time Savings
Comments:

Investment costs (Implementation and Run costs):
Comments: BAU cost

Partner: Third party developed

***Intellectual property*: Connect Plus M25**

Next steps

Actions: Insert your information here
Solution declared in Innovation hub (link):
No

Next Generation Concrete Surfacing (NGCS)

***Project Manager*:**
Shanmeng Wei, Eldos Then

Egis themes: Others

Team involved: M25

***Target Beneficiaries (Client, Operations, both…)*:** Client

Description of the context (problem to be solved)
Under Schedule 9 of our contract, all new and resurfaced carriageways forming part of the project road are required to have low noise surfacing installed. In response, a strategy has been developed specifically for exposed pavement quality concrete (PQC), based on national standards, best practice guidance and the principles set out in the concrete pavement maintenance manual (CPMM).

Over time, joint deterioration between concrete bays has led to widening gaps. As vehicle tyres strike the edges of these bays, it creates a phenomenon known as 'tyre slap' – a form of intermittent noise that contributes significantly to noise pollution. This issue has resulted in a growing number of complaints from both local residents and road users.

The primary aims of the project are to:

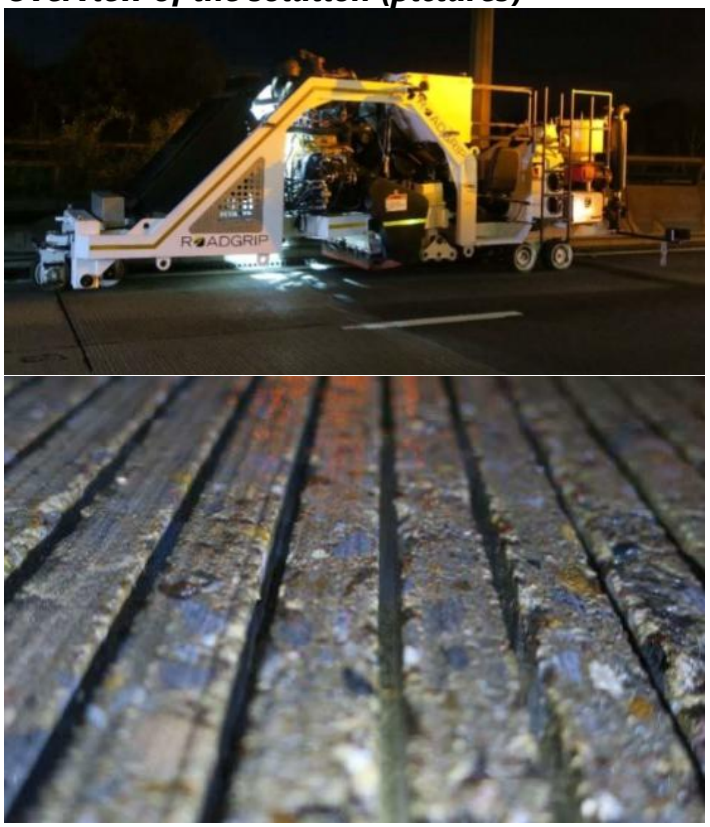
- Improve ride quality for vehicles, reducing vibrations and enhancing user comfort.
- Reduce noise levels, particularly within designated noise important areas (NIAs), in compliance with low noise surfacing obligations and to improve community satisfaction.
- Extend asset life by proactively addressing structural deterioration through appropriate joint maintenance techniques.

Description of the solution

Technology maturity: Medium -> (4-6)

Technical prerequisites (to set up the solution)

Overview of the solution (pictures)



Business model

Benefits/Gains:
In contract year 16, we delivered a significant phase of our concrete road strategy between junctions 10 and 11. This aligned with National Highways' imperatives and the requirements of schedule 9 of the DBFO contract, which mandate the installation of low noise surfacing on new or resurfaced carriageways.

We utilised four full weekend closures at J10 and multiple overnight closures to carry out essential maintenance, including the repair and re-profiling of approximately 400 concrete joints, equivalent to around 7,500 linear metres.

These works were carefully coordinated with our framework contractor and the J10 major project improvement team, allowing us to make best use of planned closures and minimise disruption to road users.

This phase focused on reinstating joint performance and implementing next generation concrete surfacing (NGCS) to address NIAs.

Measured outcomes and benefits

Skid resistance:

- SCRIM survey results for Lane 1 post-NGCS installation showed a 50% improvement, with values of 0.55–0.63, significantly above the investigatory level (IL) of 0.35.
- PFT testing indicated a 23% increase in high-speed friction across the treated area.

Surface texture:

- 3D laser profilometer and volumetric surface macrotexture testing recorded an increase in texture depth from 1.1 mm to 1.5 mm, improving both grip and drainage.

Noise reduction:

- Ambient measurements near NIA 1286 (West Byfleet) showed nighttime reductions of -1.8 dB (westbound) and -3.6 dB (eastbound).
- In-car noise testing (BS 6068:1981) reported reductions of 7 – 11 dB, with a noticeable elimination of joint-related clicking – bringing acoustic comfort close to that of asphalt overlays.

Business model: Costs & time Savings
Comments:

Investment costs (Implementation and Run costs):

Comments:

Partner: Externally developed

***Intellectual property*:** Connect Plus M25

Next steps

Actions: Insert your information here
Solution declared in Innovation hub (link): No

HAAS Alert

***Project Manager*:**
Shanmeng Wei, Eldos Then

Egis themes: Digital Asset management

Team involved: M25

***Target Beneficiaries (Client, Operations, both…)*:** Both

Description of the context (problem to be solved)

M25 wishes to use HAAS Alert for the following purposes:

- **Visibility**: Greater visibility of working vehicles and lone workers (inspectors/tech services) on the network leading to increased health & safety of frontline staff as well as improve customer satisfaction with visibility of network operations.
- **Health & Safety**: Knowing the public has sight of them working on the network will increase safety of our operational staff and reassure them.
- **Driver behaviour**: Improved driver behaviour based on better knowledge of the activities being carried out, leading to a reduction in MOP vs Staff incidents due to better visibility.

Description of the solution
Safety Cloud® by HAAS Alert streams real-time digital alerts to motorists and connected cars through in-vehicle screens and mobile devices, allowing drivers more time to make safe manoeuvres earlier.

It will provide real-time data of our fleet in action to connected vehicles and through apps like Waze and Apple Maps.

Health and safety out on the network will be improved for our people and for our customers, as the solution allows visibility of the activities happening live and giving warning of our vehicle positions in real-time.

For the trial period there will be sixteen units for installation into the trucks with no limit on number of user licenses.

Vehicle locational data is received on servers hosted by HAAS Alert AWS cloud based in Dublin. The data in Dublin is in the AMAZON AWS cloud data centres and they are a 3rd party. For security and safety reasons those physical addresses are not publicly disclosed. HAAS Alert has undergone the System Organization Control (SOC) 2 Audit Type 1 for 2024, which is a security compliance developed by the American Institute of Certified Public Accountants (AICPA). Completing (SOC) 2 Audit Type 1 underscores HAAS Alert's continual commitment to delivering a secure experience. They are ISO/IEC 27001:2022 certified and a certificate issued by Insight Assurance has been provided. No images of vehicles and pedestrians are recorded. Processed data via a dashboard and can be viewed by CPS via an account from HAAS Alert.

Technology maturity: High -> (7-8)

Technical prerequisites (to set up the solution)

Overview of the solution (pictures)

Business model

Benefits/Gains:

Business model: Costs & time Savings
Comments:

Investment costs (Implementation and Run costs):
Comments:

Partner:

***Intellectual property*:**

Results

Next steps

Actions: Insert your information here
Solution declared in Innovation hub (link):
No