MachineMax

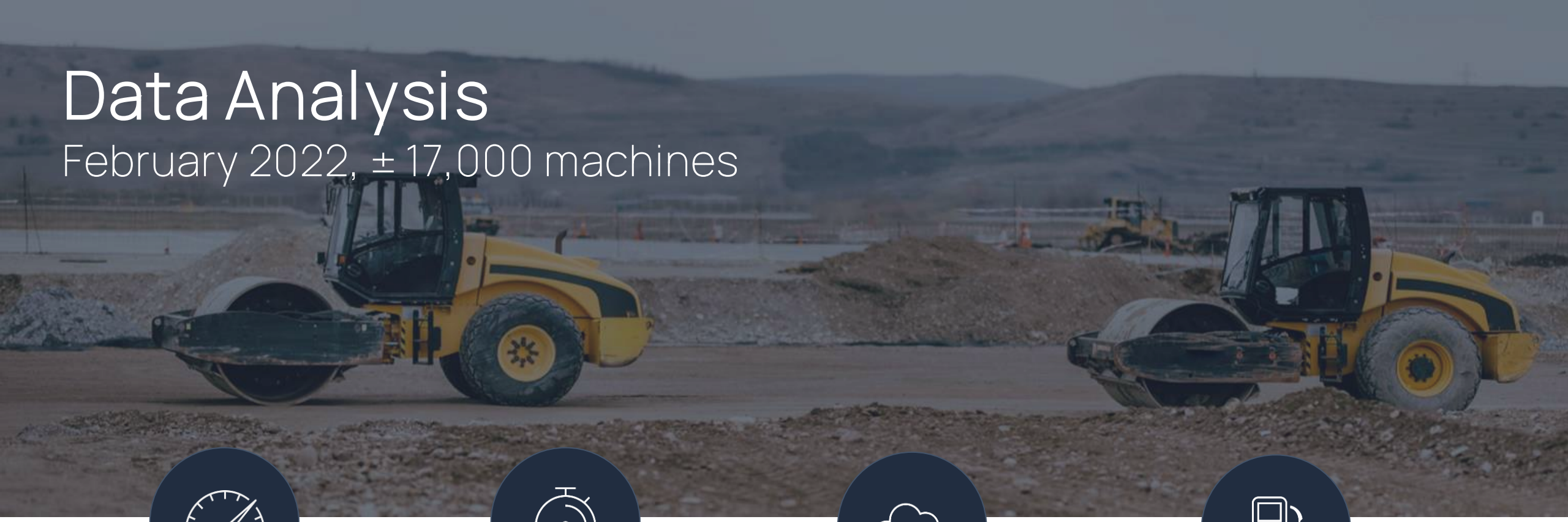
Delivering data to establish & support Net Zero ambitions.

Eoghan Simpson

MACHINEMAX

Data Analysis

February 2022, ± 17,000 machines

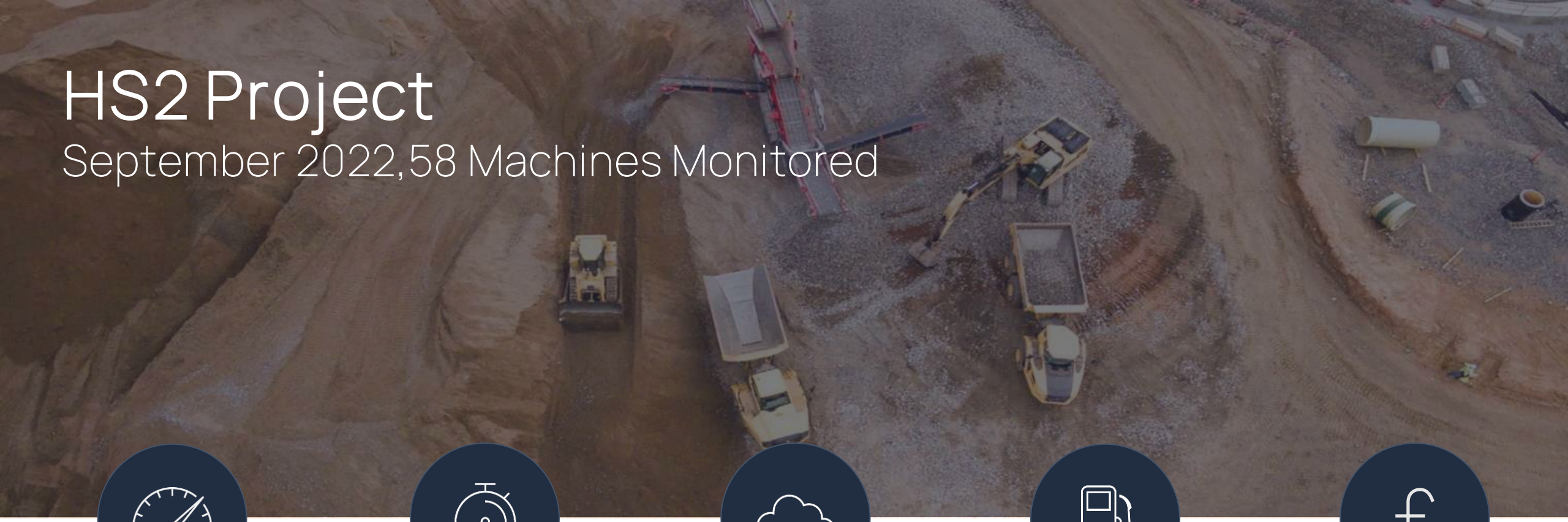


Average utilisation
4.5 hours / day

Average idle time
45% of operating hours

± 3,200 tonnes of CO2 emitted

± 1.23million litres of fuel burned



HS2 Project

September 2022,58 Machines Monitored

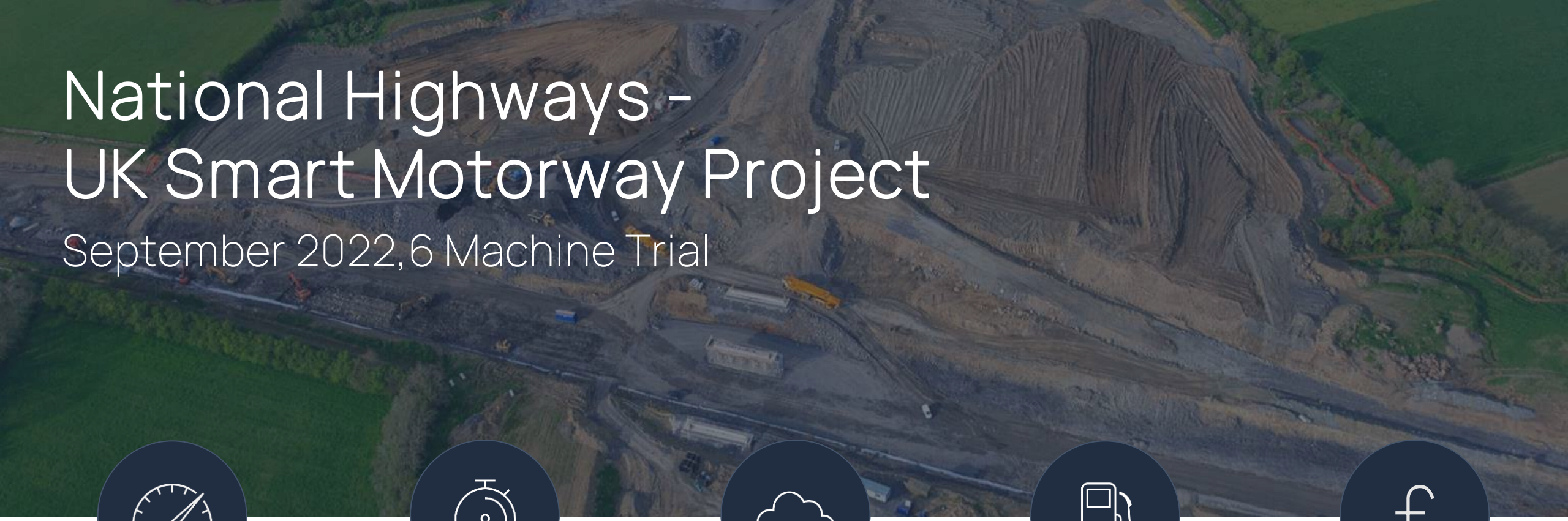
Average utilisation
4-hours / day

1,703 idling hours
in 1 month

17 tonnes of CO2 from
idling in 1 month
204 tonnes per annum

± 6,812 litres of fuel
burned idling in 1 month
81,744 litres per annum

£8,515 idling fuel cost
in 1 month
£102,180 per year



National Highways - UK Smart Motorway Project

September 2022, 6 Machine Trial

Average machine utilisation = 20%

Average idle time ± 33% of operating hours

± 3.5 tonnes of CO_2 from idling in 1 month
42 tonnes per annum

± 1,396 litres of fuel burned idling in a month, 16,752 litres per annum

£1,745 fuel burned idling in a month, £20,940 per annum

Typical data challenges

- Fragmented & siloed data
- Multiple data owners & stakeholders
- Different inputs & outputs

Locations

Projects

Owners

FINNING CAT · Collins · LYNCH · WALTERS · FLANNERY

OEMS

Bobcat · JOHN DEERE · CAT · VOLVO · KOMATSU · JCB · HYUNDAI · MITSUBISHI MOTORS · NEW HOLLAND AGRICULTURE · thyssenkrupp · LiuGong

Models

Connectivity

LoRaWAN · 5G · 4G · Bluetooth · 3G · 2G

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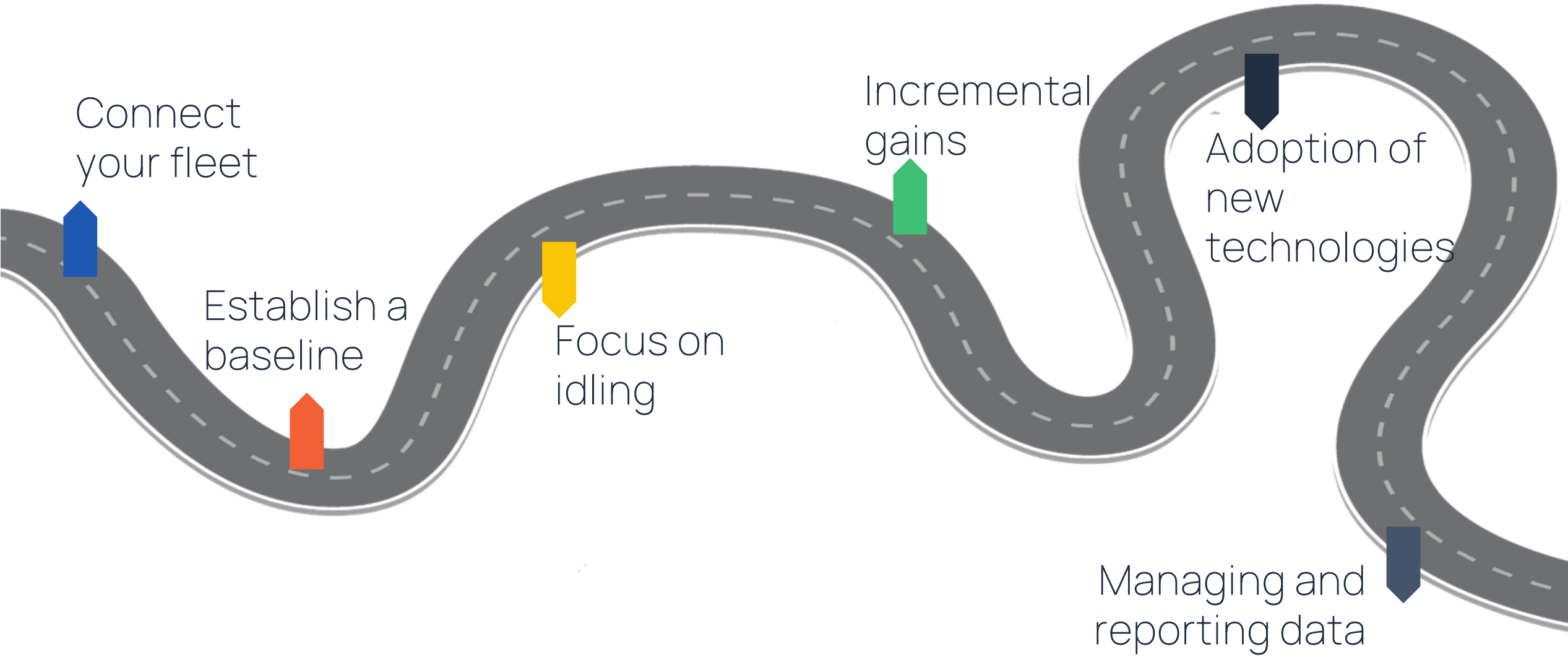
Implications of fragmented data

Limited visibility resulting in the following questions being asked

	Do we have the **right number of** machines and how do I decrease my capex / hire spend?
	Where are in the inefficiencies within the **load & haul cycles** and how do I optimise them?
	What is the existing **fleet CO2 baseline** and how do we improve?
	Is my machine performance related to the **operators** and what areas do we need to focus on?
	How do we improve equipment related **safety incidents**?
	How do I provide the right **fleet reports** to the right people at the right time?
	How do I **decrease opex** related costs across the fleet such as fuel & maintenance?
	How do I get notified about **equipment related inefficiencies** as and when they are happening so that I can take immediate action?

Using data to underpin decision making



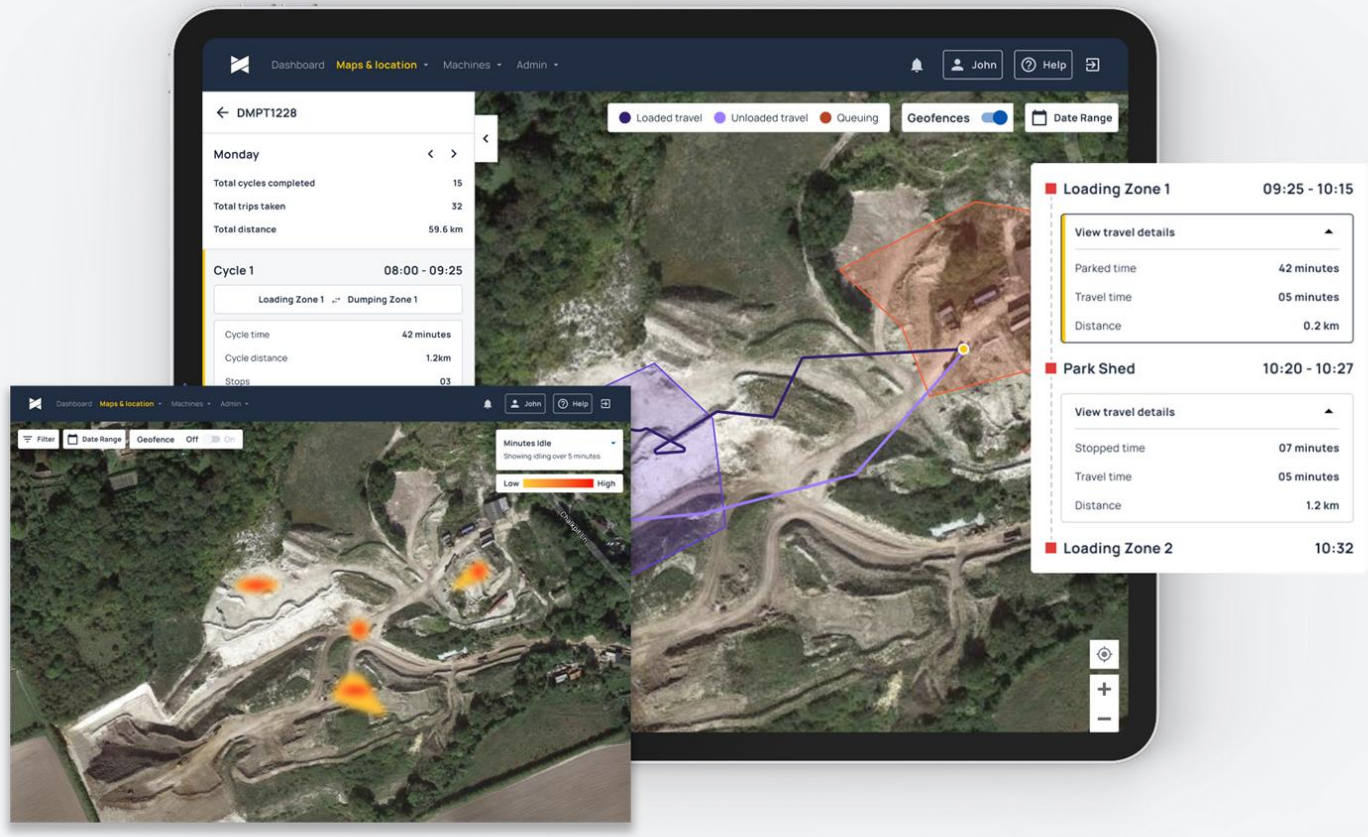
Connect your fleet & establish a baseline

Connect your fleet

Establish a baseline

Focus on idling

Incremental gains



Load count

100

Route analysis

Stop 01:00 - 01:05

Time travelling 00h 04m

Distance 1.2 km

Payload

320 t

Shift hours

07 08 09 10 11 12 13 14 15 16 17 18 19

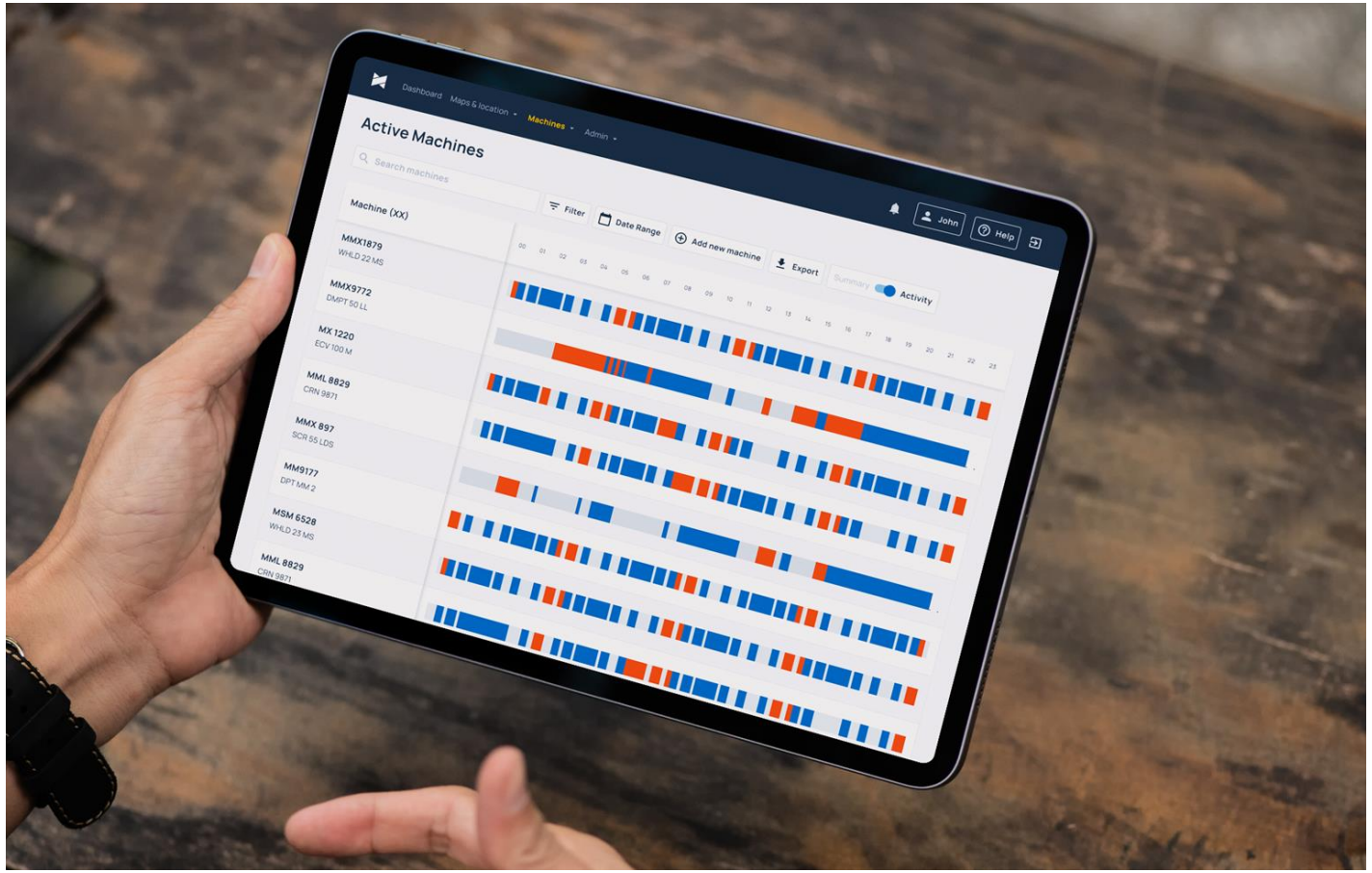
Morning shift

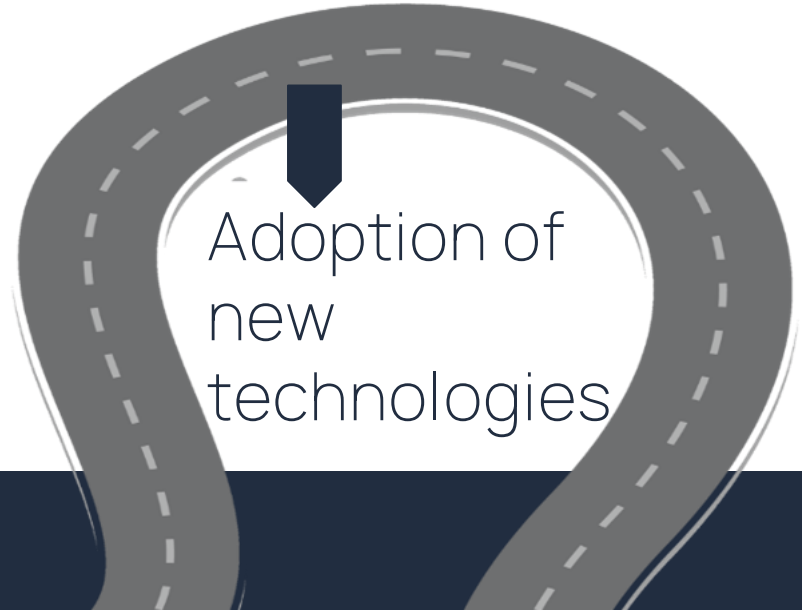
Location

16% productivity increase
10% fuel saving

From an optimised loading cycle

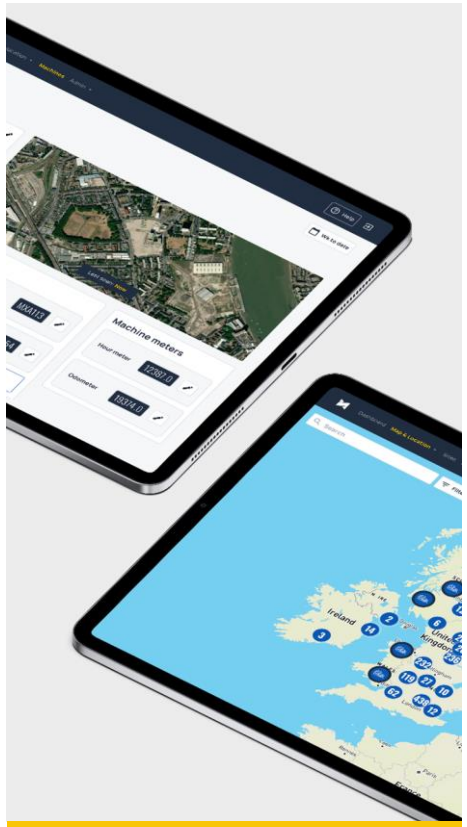
Data & adoption of new technologies



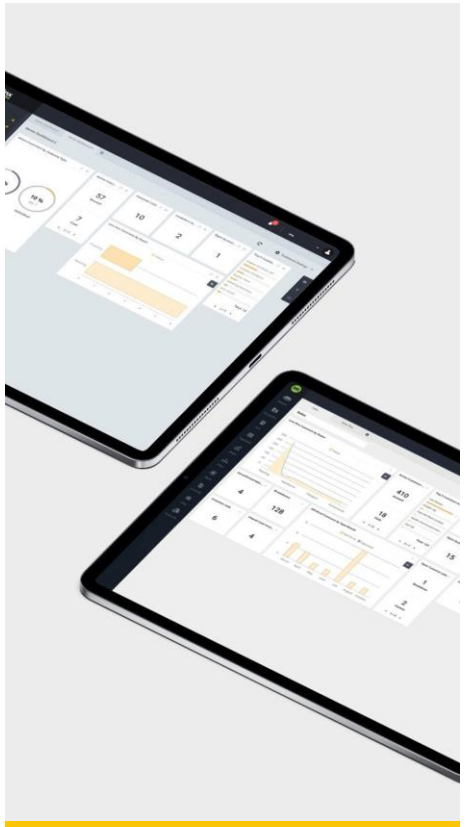


Managing and reporting data

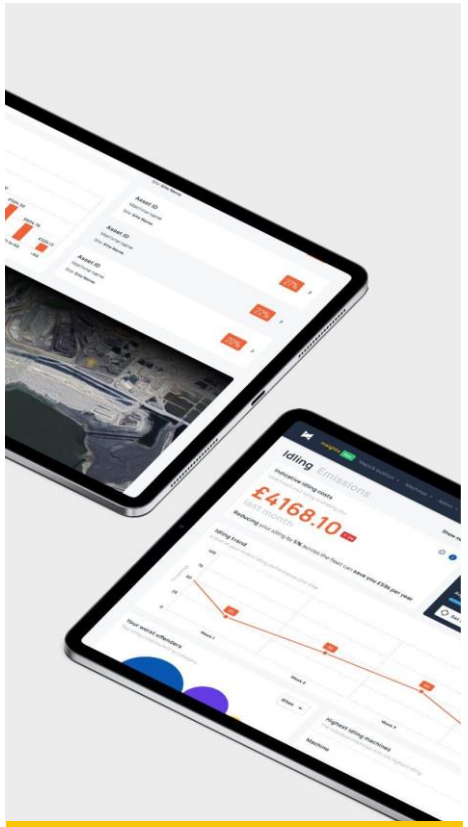
Data that is meaningful, delivered appropriately to engage the user(s).



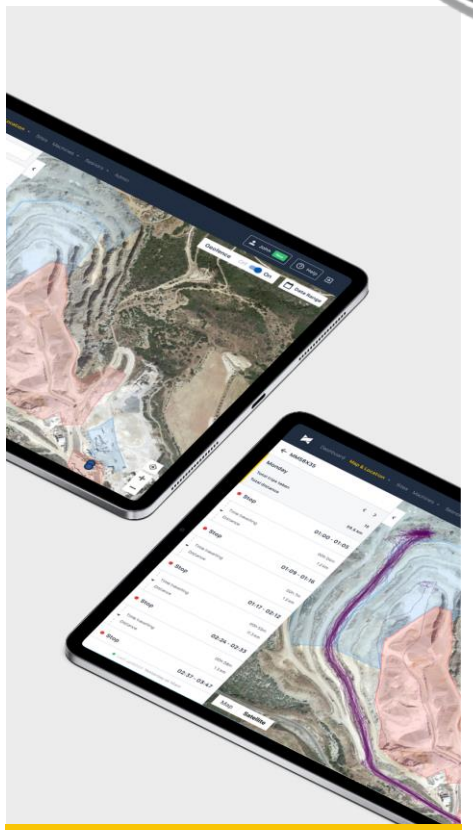
Live alerts / realtime information



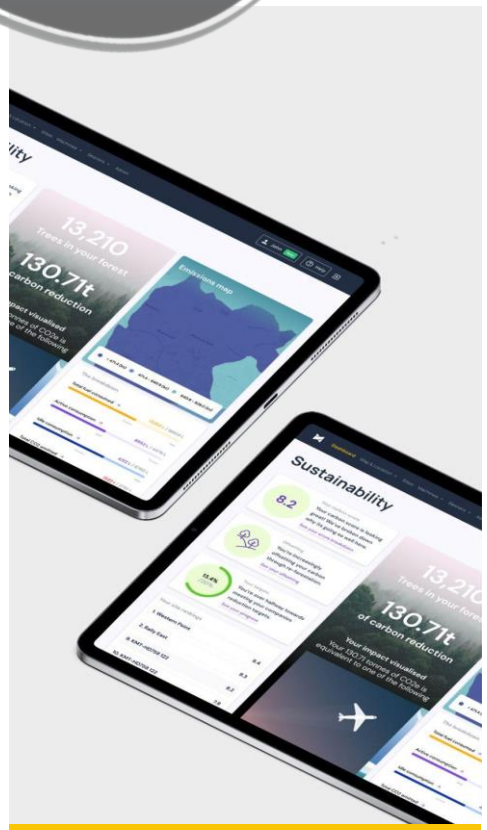
Financial information (billing / invoicing)



Multi-level access



Productivity



ESG / Sustainability Reporting

The impact of using data

Fuel Cost Savings

Through detailed analysis and management of unproductive idling

Carbon Reduction

Through detailed analysis and management of unproductive idling

Productivity Increase

Identifying inefficiencies/bottlenecks and enabling managing decisions to allocate the best machines for the task

Increased Residual Value

Reduction in unproductive use and wear and tear

Improved Service Schedules

Realtime analysis of machine use

Rental Reduction

Through transparency and management of machine utilisation

Improved Procurement Decisions

Through a detailed understanding of machine performance and fuel/carbon efficiency

Increased Utilisation

Optimising use and eliminating unnecessary idle time through real-time transparency of machine performance

Improved Operator Behaviour

Through a detailed understanding of machine performance identifying education and training opportunites

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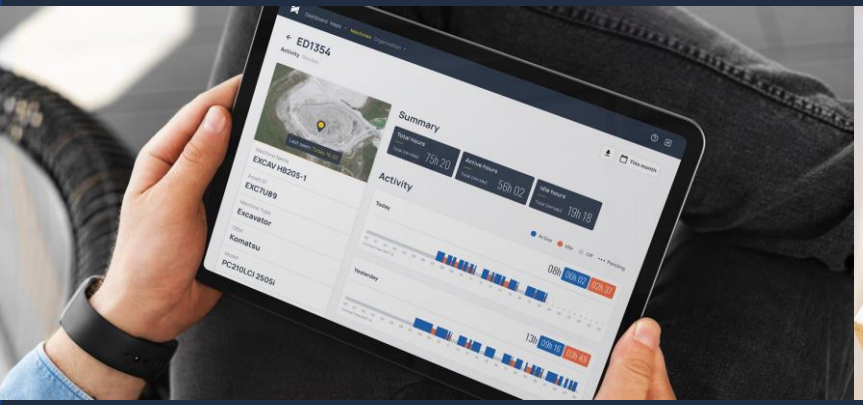

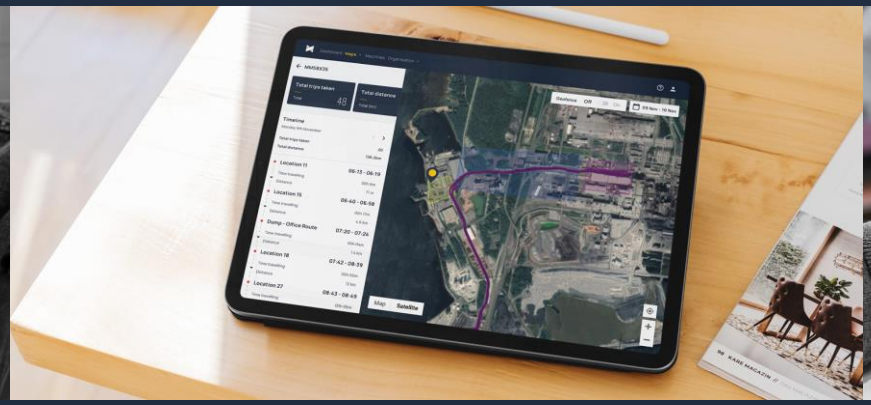

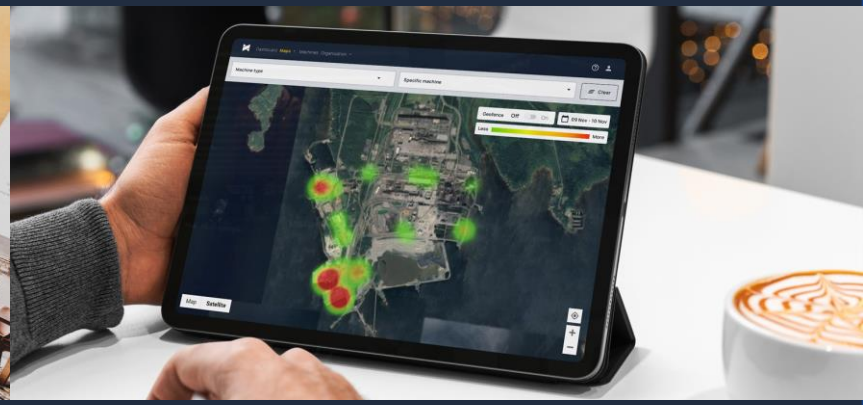

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