



# The connected fleet

## Digital Fleet Management

Airport & Municipal Days 2024 | September 4-5, 2024  
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# The connected fleet

Why do I need it?

What is the actual status of my fleet?

Where are my vehicles?

How many are in operation, how many stand still?

What are my vehicles doing?

Are there any malfunctions?

How cost-efficient is my fleet?

How much consumables did my vehicles use?

How much power are my vehicles using?

How can I reduce unscheduled downtime?

Can that vehicle make another run?

How effective is my fleet?

Has the work been done according to plan?

Have all areas been covered?

What is the best route for my vehicles?

How can my operations improve?

Digital Fleet Management helps you answer those (and many more) questions

# The connected fleet

## What is a Connected Fleet?

### Telematics

- Track & Trace your vehicles
- Actual and historical operational insights
- Performance of the engine/eDrive
  - Maintenance planning
  - Reporting
  - Invoicing

**Helps the Fleet Manager take better decisions**

### Driver Assistance Systems

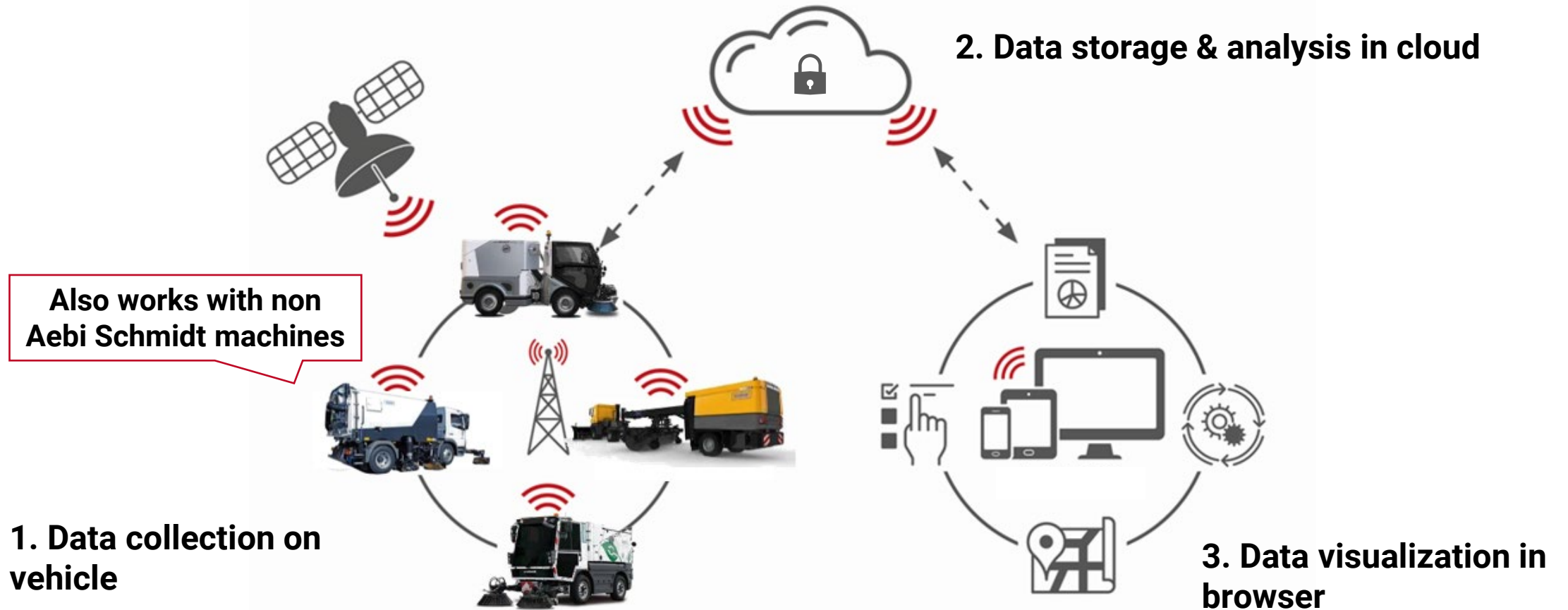
- Fast operating of routes, even unknown ones
- Optimal focus on driving or sweeping operations (safety)
- Automated spreading parameters (winter)
- Driver feedback messages

**Helps the Driver to improve the quality of his work**



# It's all about data

Collect, store, analyse and visualize



# The connected fleet

## Key topics



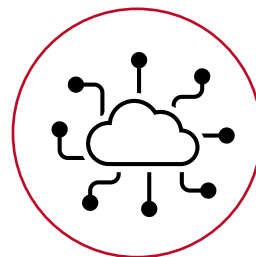
### Sustainability & Circular Economy

- **Electrification program** – supporting your battery driven fleet
- Decrease use of **power & consumables** with **driver assistance systems**
- Increase **machine lifetime with remote diagnostics & support.**
- Green IT philosophy



### Operational Quality

- Safeguarding and improving the **quality of the operational work**
- Safeguarding the **quality of the machines**
- **Reducing the Total Cost of Ownership**
- **Plan, control & learn**



### Data-Driven Decision Making

- Data Exchange to and from 3<sup>rd</sup> parties
- Advanced **reporting & analysis** capabilities on all data captured
- Predictive maintenance
- **Automatic litter detection**



### Cybersecurity & Privacy

- **Encrypted communication** between machine and cloud
- **Secured authentication**
- ISO 27001 certification
- **Fine-grained** user & company permissions
- MFA, SSO
- Anonymization of personal data

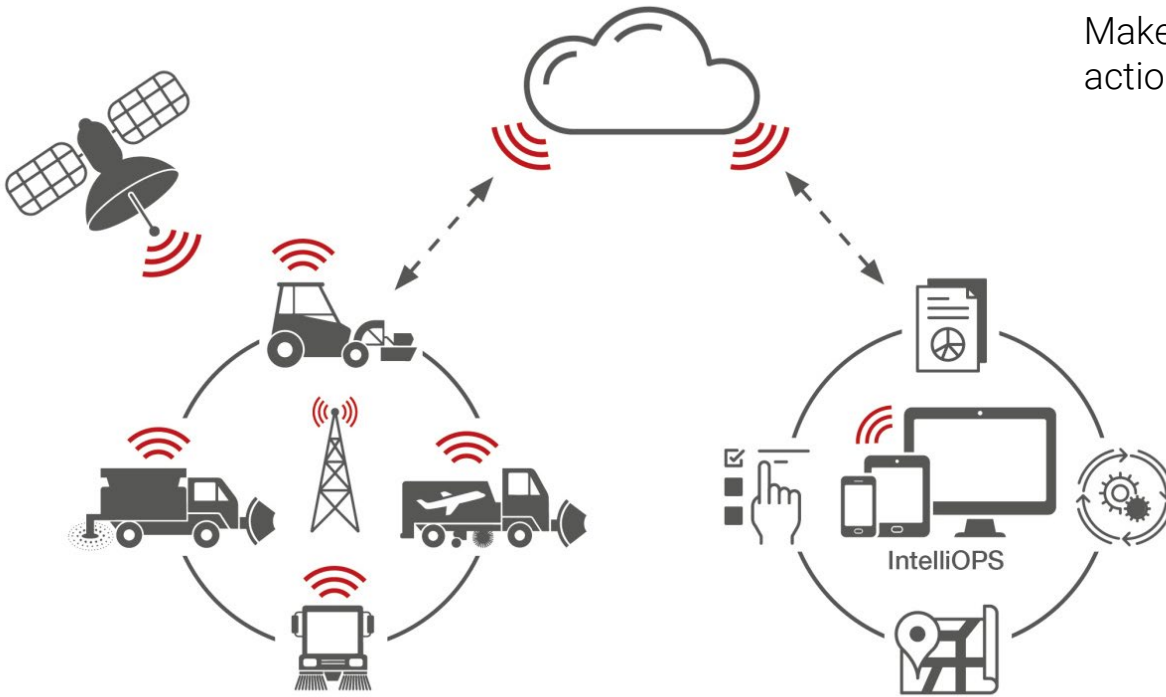


# IntelliOPS

Aebi Schmidt's telematics platform

# IntelliOPS: Aebi Schmidt's telematics platform

Your cloud-based gateway to access your data and applications



## Plan & monitor

Make key operational processes – like route planning and action planning - more efficient; **compare plans with reality**

## Control & influence

Always **keep the overview**, monitor what is happening in real time and, if necessary, **intervene from a distance** in the process directly.

## Report & document

Automatically ensure documentation of your performance and **reporting** to clients and other stakeholders.

## Analyse & optimize

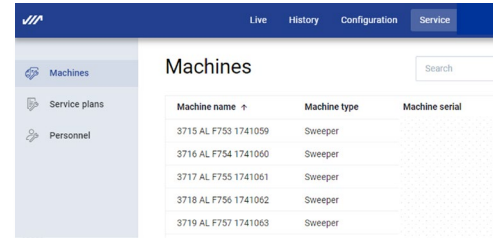
Analyse your operations and fleet performance; **continuously optimise processes**, identify and realise saving potentials.

# IntelliOPS: Aebi Schmidt's telematics platform

## Modules & functionalities

### Asset Management

- Overview of all your machines, locations and roles



Machine name	Machine type	Machine serial
3715 AL F753 1741059	Sweeper	
3716 AL F754 1741060	Sweeper	
3717 AL F755 1741061	Sweeper	
3718 AL F756 1741062	Sweeper	
3719 AL F757 1741063	Sweeper	

Where are my vehicles?

How many vehicles do we have for bicycle lanes?

### Monitoring

- Monitoring the live activities of your machines and look back in history



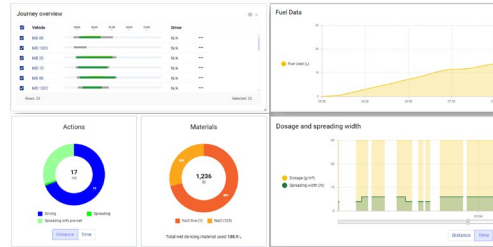
What are my vehicles doing now?

Can that vehicle make another run?

What were my vehicles doing one week ago?

### Analysis & Reporting

- Reporting on operations & performance



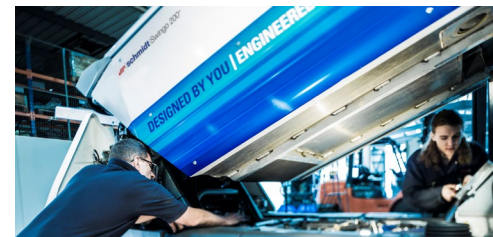
How much power are my vehicles using?

How much consumables did my vehicles use?

Has the work been done according to plan?

### Maintenance

- Service triggers to indicate that vehicle needs service
- Live view of warnings & errors
- Alert system for critical errors



How "fit" are my vehicles?

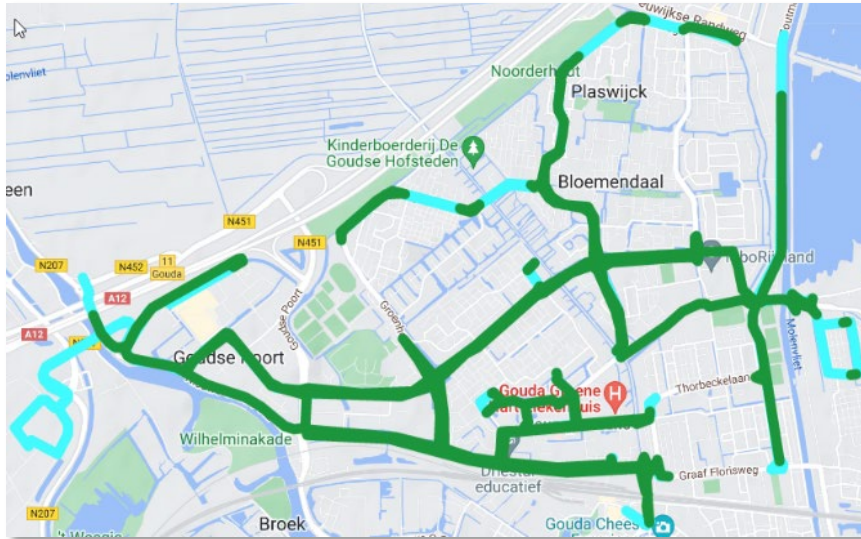
Which vehicles are up for maintenance soon?



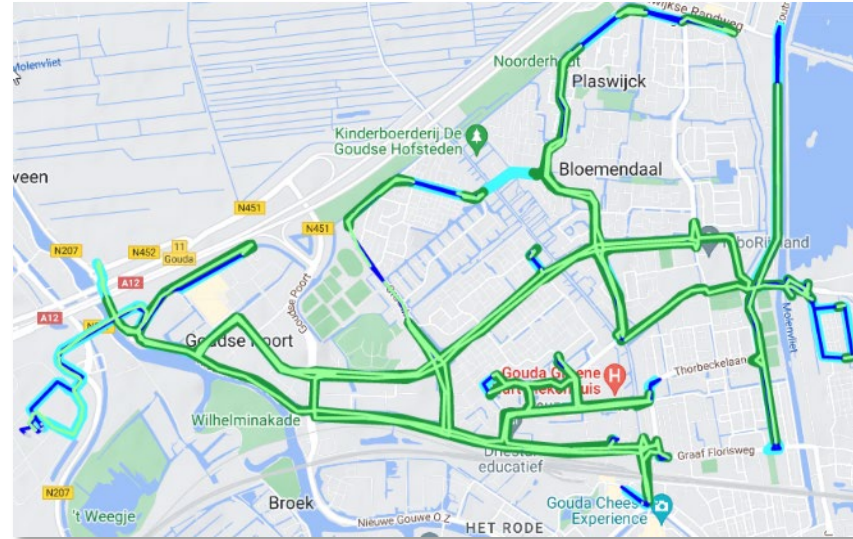
# IntelliOPS: Aebi Schmidt's telematics platform

## Focus: Ride Route Comparison

### Reference route



### Overlay ride and route



Will become available for Street Cleaning Machines in 2025

# IntelliOPS: Aebi Schmidt's telematics platform

## Focus: Ride Route Comparison

Map Layers

Route Presentation

☒ Route Verification

☒ Not covered

☒ Not treated

☒ Low dosage (error)

☒ Low dosage (warning)

☒ High dosage (error)

☒ High dosage (warning)

☒ Treated where not required

☒ Not driven

☒ Correctly done

☐ Journey

☐ Route


☐ Areas

A map of Gouda, Netherlands, showing a green route. The route is marked with various icons: green checkmarks for 'Correctly done', red Xs for 'Not covered', red minus signs for 'Not treated', red hearts for 'Low dosage (error)', orange hearts for 'High dosage (error)', orange circles for 'Treated where not required', and grey Xs for 'Not driven'. The map includes labels for various locations such as Plaswijck, Bloemendaal, Goudse Hofsteden, Goudse Poort, Goudse Vort, Wilhelminakade, Broek, Nieuwe Gouwe O.Z., HET RODE, Gouda Chees Experience, Graaf Flonsweg, Thorbeckelaan, Moenvliet, and Gouda. Road numbers like N207, N451, and A12 are also visible.

Will become available for Street Cleaning Machines in 2025

The connected fleet – Driver Assistance and Digital Fleet Management  
Airport & Municipal Days 2024 | September 4-5, 2024

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group

# IntelliOPS: Aebi Schmidt's telematics platform

## Benefits

### Winter Service

### Street Cleaning

#### Legal compliance & accountability

proof that you have conducted the work



#### Reduce costs

Less consumables used (salt/brine in Winter), less fuel consumed, less km driven



#### Minimize downtime

optimize maintenance planning (street cleaning) & remotely analyze malfunctions



#### Increased operational efficiency

Comparing planned operations to actual operations – better planning, better training of drivers



Expected 2025

# **Driver Assistance Systems**

Aebi Schmidt's broad range of options and tools

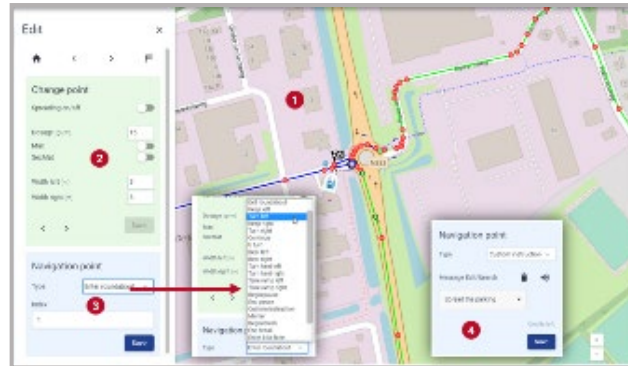
# Driver Assistance Systems

Winter maintenance: Digital products can reduce the CO<sub>2</sub> footprint due to reduced fuel and salt usage significantly

## Optimization of Routes



### Route Manager



### Functionality

#### Online module in IntelliOPS

- Create and optimize reference routes
- Define required activities along the routes
- Send routes wireless from platform to vehicle

### Benefits

- ✓ Saving fuel by optimised routing
- ✓ Salt savings due to optimised routes
- ✓ Easy transfer of route to vehicle over the air

## Optimization of Spreading



### Route Assistant



### Navigation and automated spreading

- Navigation along selected route
- Automatic adjustment of dosage & width based on GPS position along selected route
- Driver provides feedback from vehicle to platform

- ✓ Up to 30 % salt saved with automated spreading
- ✓ Operator can concentrate on driving
- ✓ Inexperienced operators are supported with routing and spreading operations



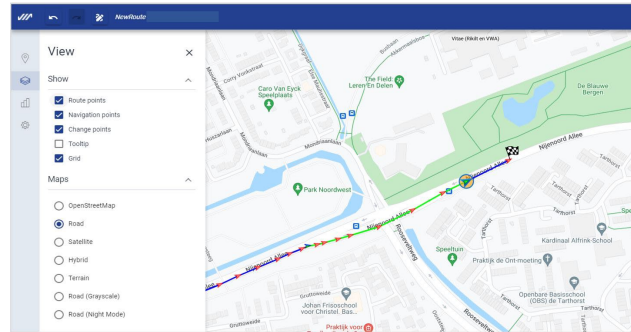
# Driver Assistance Systems

Street Cleaning: Digital products can reduce the CO<sub>2</sub> footprint due to reduced fuel usage significantly

## Optimization of Routes



### Route Manager



#### Functionality

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## Optimization of Street Cleaning



### Route Instructor



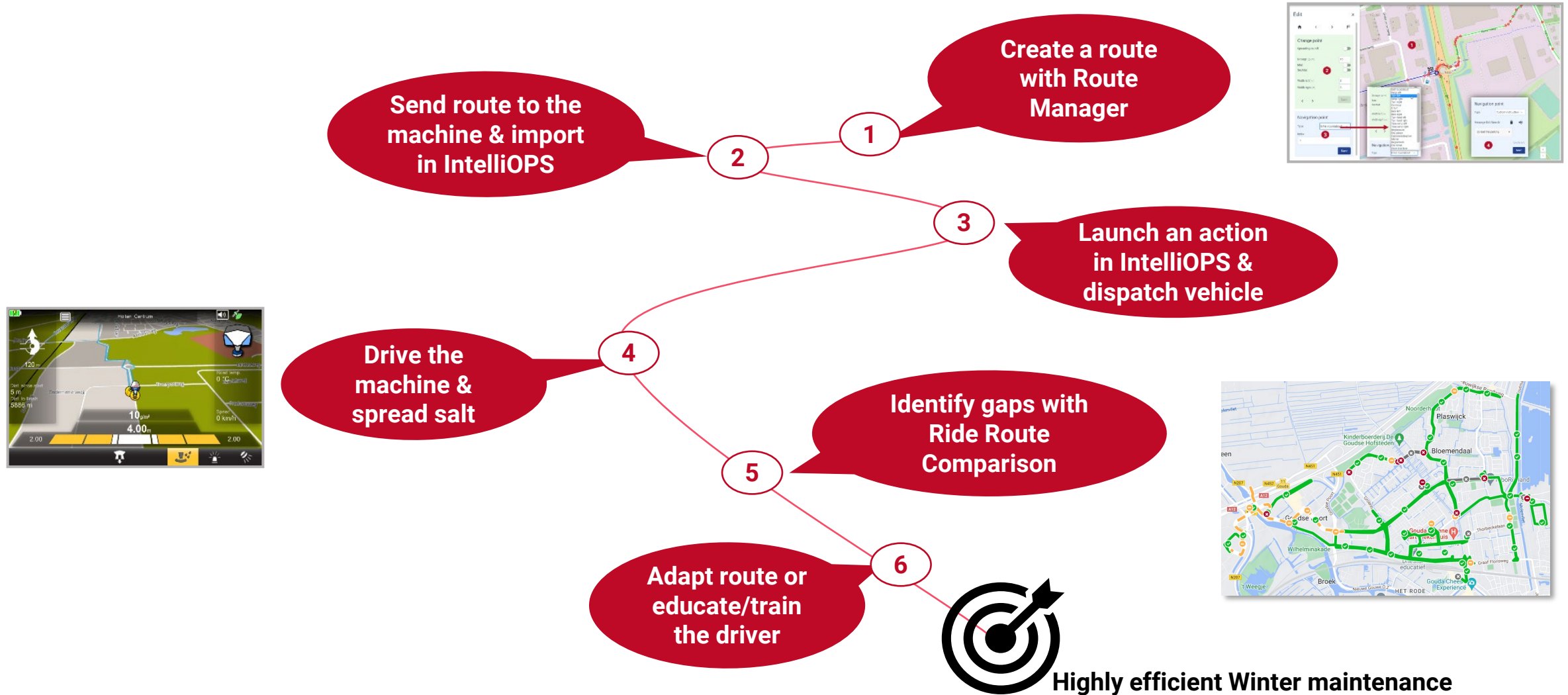
#### Navigation functionality

- Navigation along selected route
- Suggested activities (e.g. cleaning) for operator via audio feedback
- Driver provides feedback from vehicle to platform

- ✓ Operator can concentrate on driving & sweeping
- ✓ Inexperienced operators are supported with routing and sweeping operations

# Driver Assistance Systems & Telematics

Journey towards efficient Winter maintenance





# IntelliOPS

Remote Diagnostics

# IntelliOPS | Remote Diagnostics

## Why Maintenance Alerts and Remote Monitoring?



### Your responsibilities

- Keep highways, airports and cities accessible, safe and clean in all seasons
- Increasingly in a sustainable way, for people, the environment and the climate.

### Your needs

- Machines that are technically sound and fit for purpose
- A capable workforce that can respond to changing situations
- Safeguarding and improving the quality of the work and the quality of the machines
- Reporting on the operations performed

### How do you control the quality of machines?

- Timely and adequate maintenance
- Quick and effective response to malfunctions
- Early pick-up of signals for emerging malfunctions



# IntelliOPS | Remote Diagnostics

## Maintenance planning. How does it work?

For sweepers and airport machines timely email notifications are sent out based on triggers from the machines or from expert maintenance schedules





## Remote Diagnostics Product Service

Monitoring

Maintenance Planning

### Machine Insights

Receive daily alerts for upcoming, imminent, or overdue service based on triggers from your vehicles. Proactive maintenance empowers you to plan with precision.

### Engine Insights

Receive daily alerts for upcoming, imminent, or overdue service based on engine run hours. Proactive maintenance empowers you to plan with precision.

### Fleet wide monitoring

Get the overview of your entire fleets scheduling status, including all Aebi Schmidt vehicles.

### Instant notifications

Receive daily email notifications for all service signals.

## Remote Diagnostics System Impressions

Machine type	Linked Serviceplan	Engine run hours	Next maintenance	Broadcast list
Sweeper	500 - 10000 uur	4483	4500 hours <span>Due</span>	Onderhoudsnotificaties
Sweeper	500 - 10000 uur	4225	4000 hours <span>Overdue</span>	Onderhoudsnotificaties

 **aebi schmidt** | IntelliOPS

Dear Sir / Madam,

Based on the service schedule as set in IntelliOPS, the following machine is overdue for maintenance.

**Cleango - A00530**

Serial: WSVS261P2H0000000

Company: Big City Cleaning Company

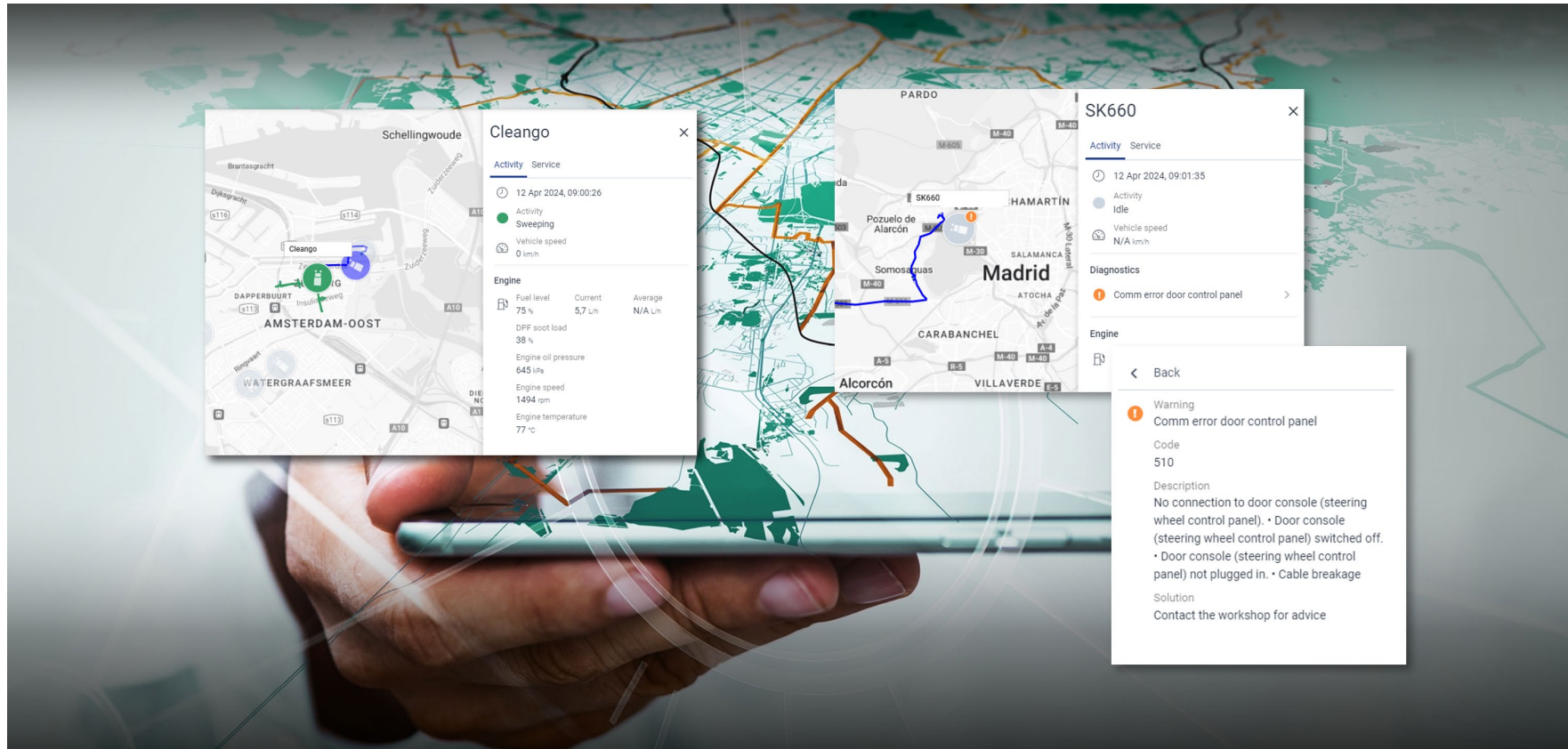
Current operating hours: 4102

Regards,  
Aebi Schmidt

# IntelliOPS | Remote Diagnostics

## Remote Monitoring: What does it look like?

- Diesel engine and battery pack status data is shown live in your browser
- Vehicle malfunctions and follow-up actions are shown live in your browser



## Remote Diagnostics Product Service

### Monitoring

### Maintenance Planning

#### Proactive alerts and analysis

Receive timely warnings to avoid downtime and reduce repair costs.

#### Remote fault analysis

Boost your maintenance efficiency with remote fault analysis, elevating your first-fix ratio. Diagnose issues remotely for swift problem-solving, minimising disruptions and maximising productivity.

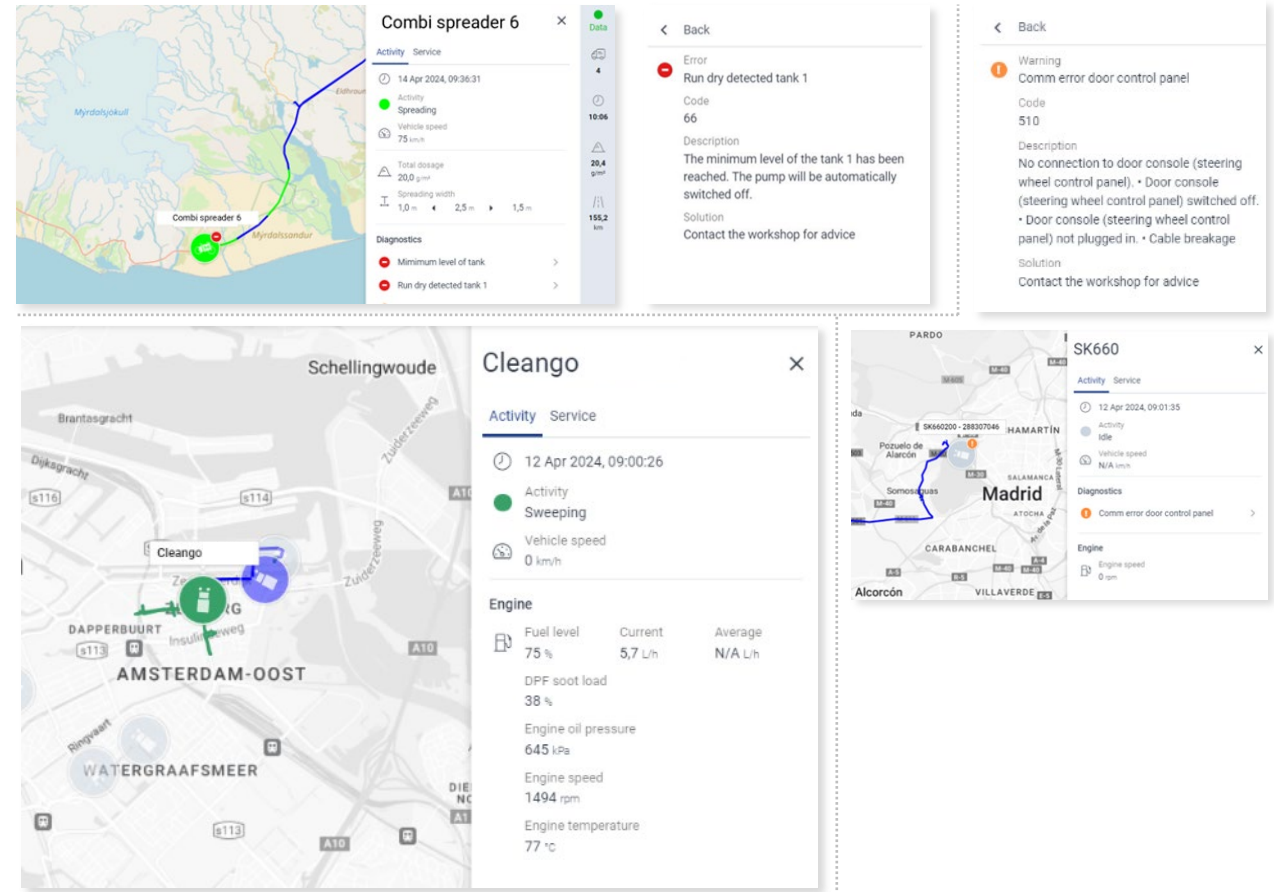
#### Instant notifications

Receive instant email notifications for crucial signals.

#### Basic service information

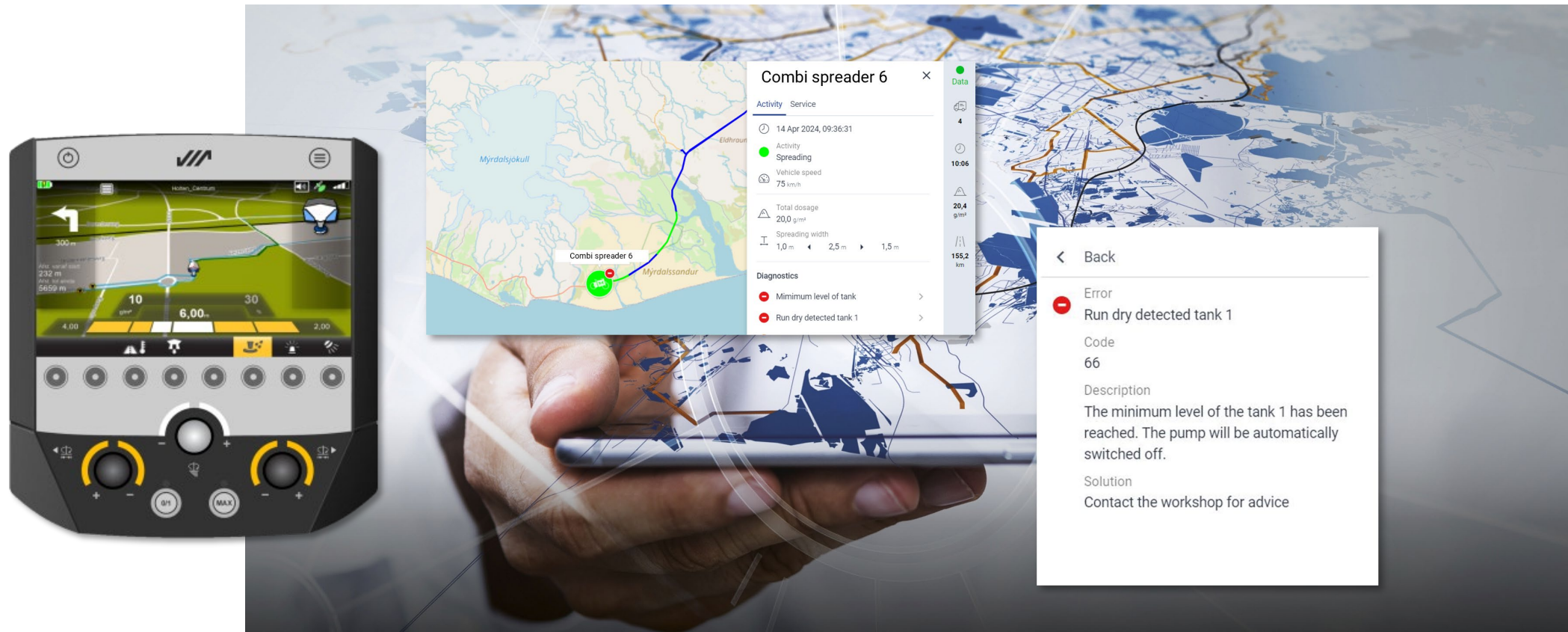
Gain insight into equipment performance with live drive status parameters for electric and diesel drive systems. Stay in control with real-time monitoring and issue identification.

## Remote Diagnostics System Impressions



# IntelliOPS | Remote Diagnostics

## Remote Monitoring (spreaders & sprayers)





# IntelliOPS | Remote Diagnostics

## Benefits



- **Fast and proactive identification of breakdowns**, minimizing costly downtime
- **Increased operational efficiency** through the ability to diagnose and resolve problems remotely
- **Reduced downtime** through faster delivery of needed parts
- **Early warnings** of potential failures provide peace of mind and prevent unexpected costs
- **Maintenance planning** of the entire fleet is **up-to-date**



**Optimal machine performance reduces the TCO, optimizes energy usage and increases control of combustion engine emissions**





Thank you for your time and interest!