



Intelligent Urban Transport Systems

# HOW TO INTRODUCE & OPTIMIZE A LARGE ELECTRIC BUS FLEET

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Senior Director

Organisers





**40**  
YEARS IN  
THE INDUSTRY

**600**  
EMPLOYEES

**30%**  
RESOURCES  
ON R&D

**MONTRÉAL: INTERNATIONAL HUB FOR AI,  
BIG DATA & TRANSPORT RESEARCH**

# HASTUS CLIENTS

Worldwide



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**300+**

HASTUS installations

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**28**

Countries

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**50+**

Operations with  
fleet over 1 k buses



# CHALLENGES FOR TODAY'S BUS OPERATORS

Changing travel patterns

Shortage of drivers

Energy transition





# A STRATEGIC SHIFT

## Irreversible commitment

Climate change has become a global emergency

States & governments making massive investments

## Thinking differently

Reshaping the way we design transportation networks

Changing the way operations are scheduled & operated

## Innovating for efficiency

Solving new problems

An ideal playing field for optimization & artificial intelligence



# ADOPTION PHASE – DIFFICULT CHOICES TO MAKE

Technology?

Autonomy of buses?

Location & number of chargers?

Which routes to electrify?

Impact on the drivers?



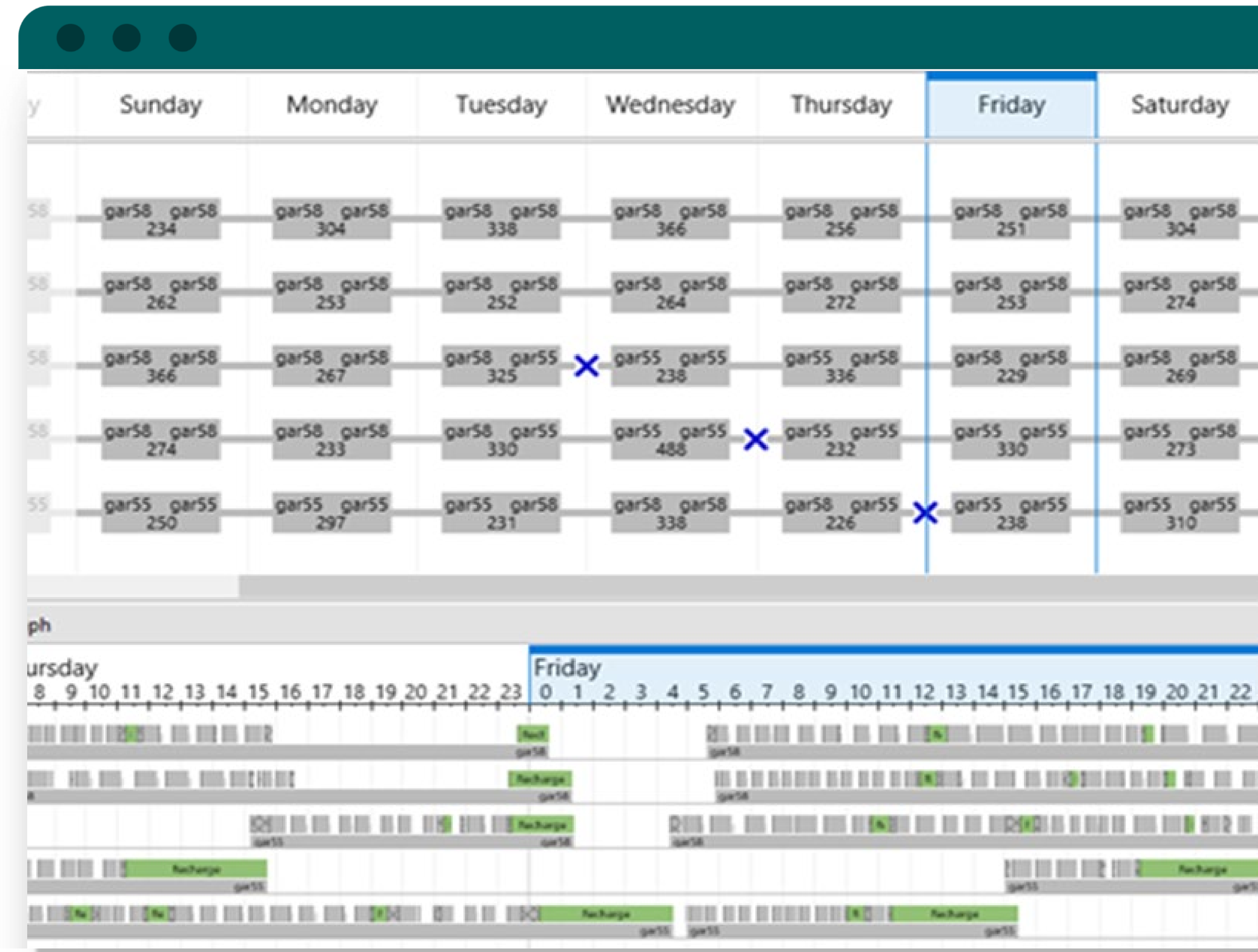


# SCALE-UP PHASE – GRID & CHARGERS ARE LIMITED

Schedule & optimize recharging activities over several days

Optimize energy needs up front

Optimize overnight charging activities





# SCALE-UP PHASE – BUSES AGE DIFFERENTLY

Consider vehicle SOH in  
scheduling & operations  
management

Improve accuracy of recharging  
activities by importing & analysing  
daily vehicle consumption





# SCALE-UP PHASE – MUST REVIEW YARD MANAGEMENT

The dashboard displays a yard layout on the left with columns 5-8 and rows 1-4. A central panel shows a 4x4 grid of vehicle slots (1-4) with icons for vehicle status and charging progress. A 'Vehicle Details' window for vehicle 10101 is open, showing its location as 'Lane 4 - Space 3', current SOC of 28%, and a scheduled 'Washing' activity. A 'Charging Station' panel on the right shows 'Charging station ST1 - 1' is operational, with three connectors (ST1.1, ST1.2, ST1.3) that are currently unavailable. A timeline for 19 March shows the vehicle's current activity (Recharge) starting at 12:10 and ending at 12:40.

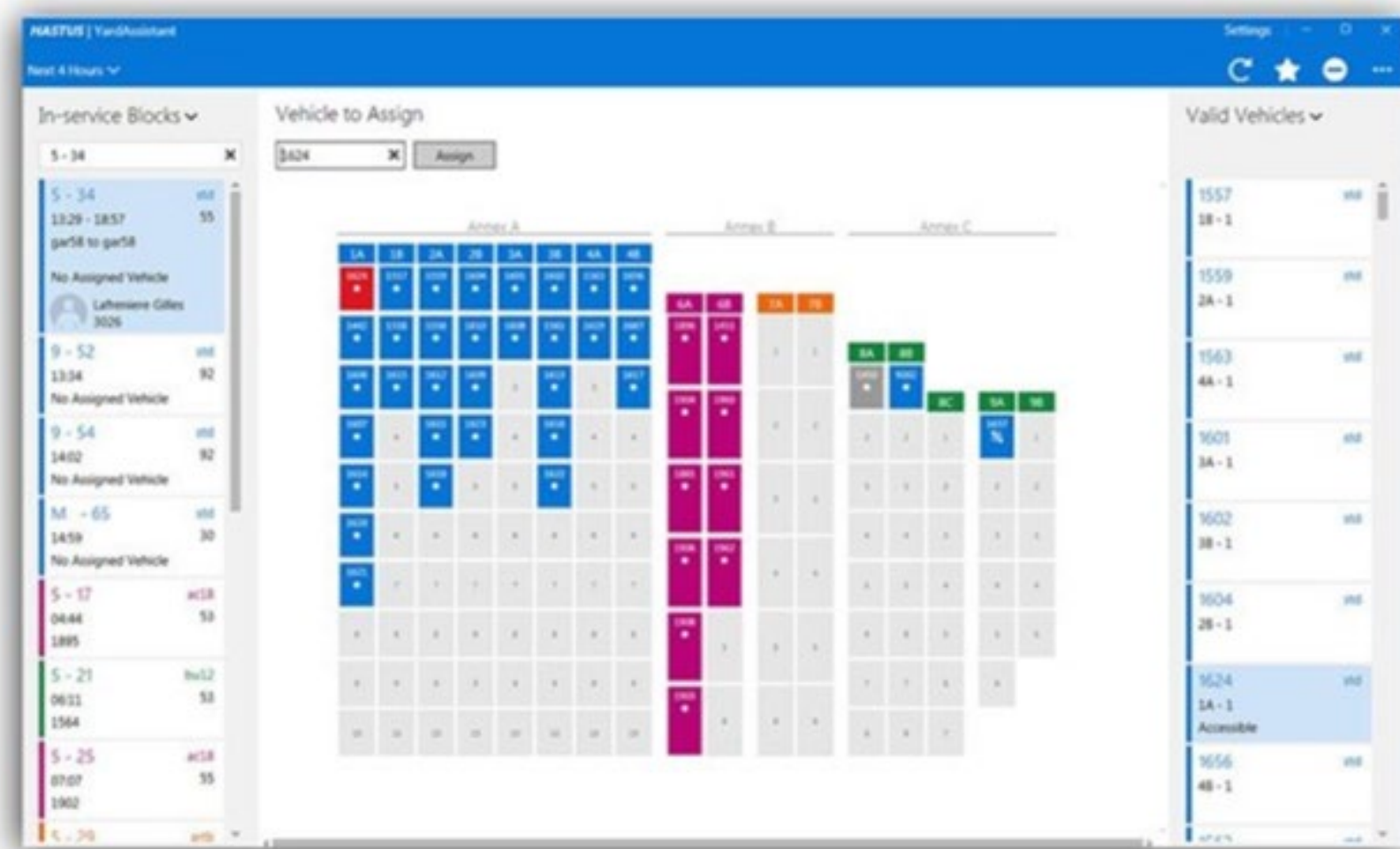


# PRODUCT PARTNERSHIP

Combination of best-in-class products to offer the most advanced e-bus depot-management solution

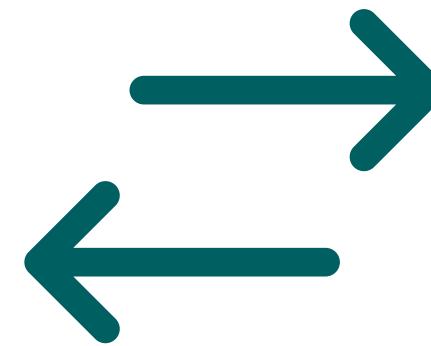
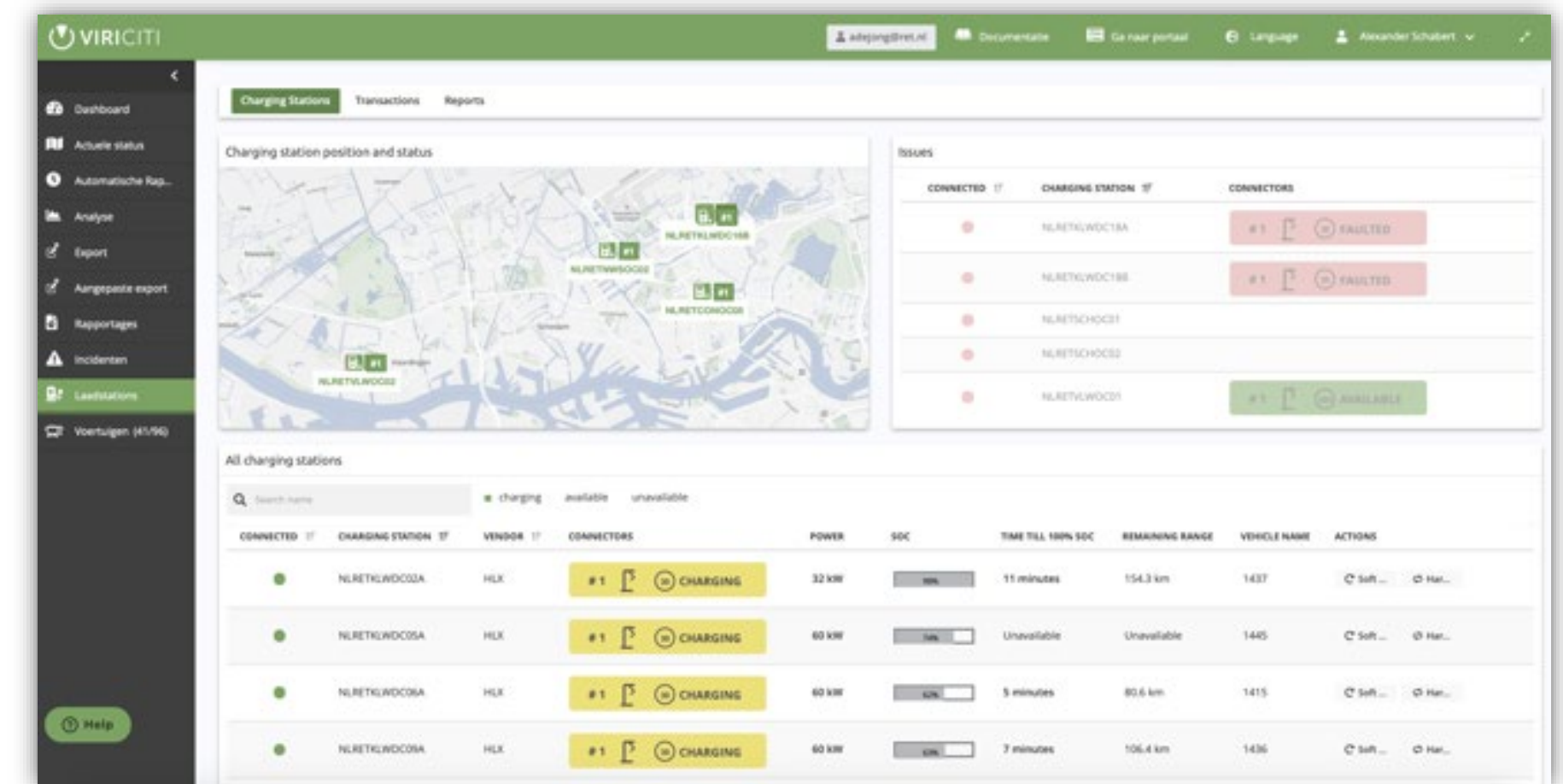
## HASTUS-DailyVehicle

Depot-management system to manage in-depot processes, from vehicle parking to block assignments



## ViriCiti Charging-Station Monitoring & Smart Charging

Real-time charging-station monitoring combined with smart-charging capabilities to plan & steer the charging process







# BENEFITS OF HASTUS E-BUS SOLUTIONS

01.

Help on-time  
deployment of  
vehicles

03.

Increase  
maintenance-  
activity recurrence

05.

Better service-  
maintenance  
balance

02.

Reduce  
unnecessary  
vehicle  
movements

04.

Extend battery life

06.

Reduce personnel  
training



# LEADING E-BUS OPERATORS USING HASTUS



**Qbuzz**

**164**

ELECTRIC BUSES

**KEOLIS**

**246**

ELECTRIC BUSES

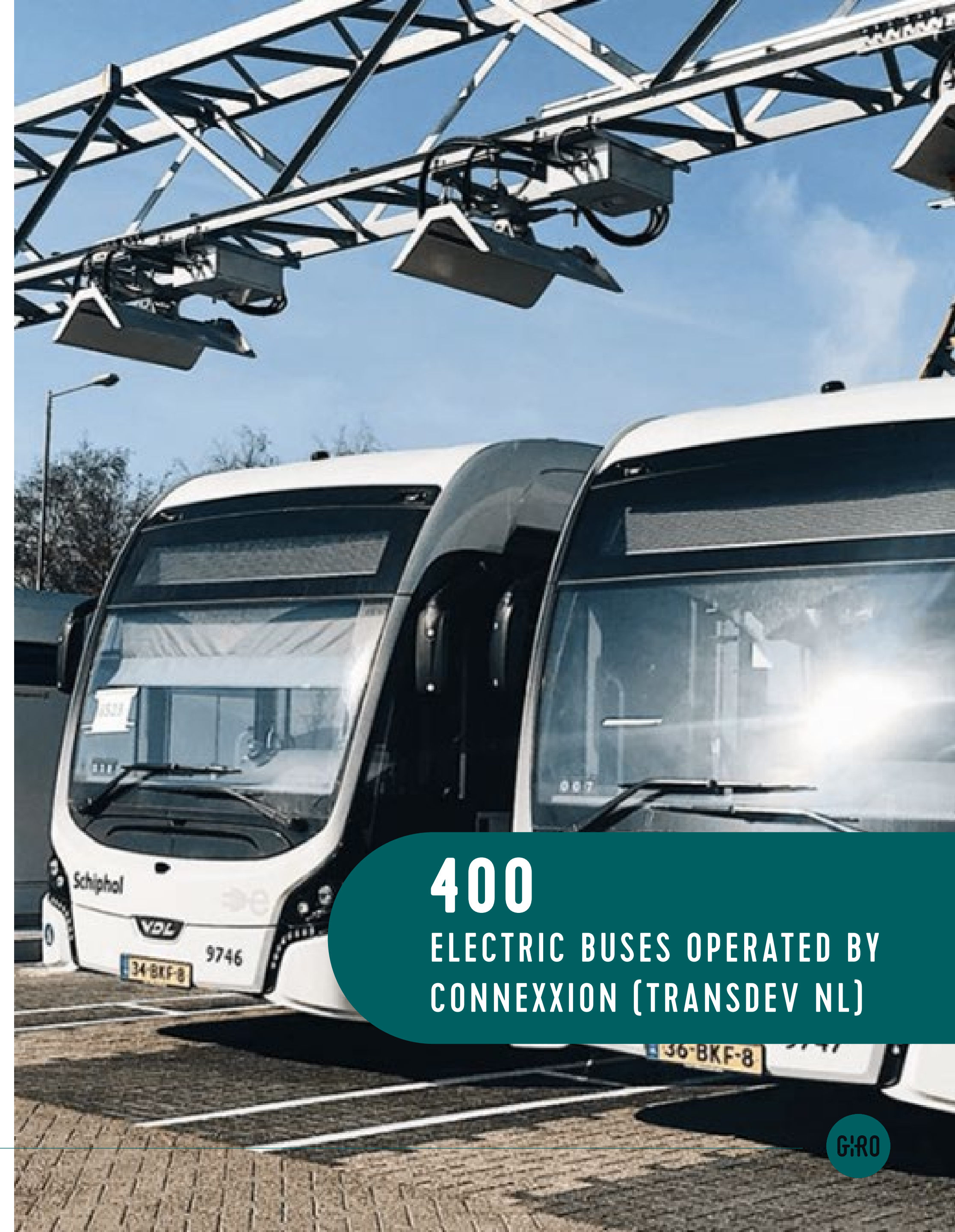




# IN THE WORDS OF ONE CLIENT

“ After collaborating closely with **GIRO** to improve the module to manage electric buses, we at Connexion/Transdev NL are intensively using **HASTUS** to plan and schedule over **200** electric buses currently in operation. At the same time we are preparing the implementation of the next **250** electric buses in the next couple of years. All in all, the solutions from HASTUS are very robust and efficient, and not only to the satisfaction of ourselves as PTO, but also of our PTA’s in the Netherlands”

**Bart Bonekamp, Manager Service Planning at Connexion**



**400**  
ELECTRIC BUSES OPERATED BY  
CONNEXION (TRANSDEV NL)

GIRO



DRIVEN

BY

EFFICIENCY

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