

e-Bike Sharing – From Lisbon to the World

FCUL – Sistemas Sustentáveis de Energia

Why Bike-Sharing

Mobility Trends



54 % of World Population lives in urban areas



66 % in **2050** / **+ 2** inhabitants per second



1/3 of traffic in City Center is due to cars searching for parking
(ACCESS Magazine, University of California, Center on Economic Competitiveness)



23 hours » Average time that a car is parked during a day



< 20 km/h average speed of individual transport

(e)Bike-Sharing Advantages



In average people get to the destination **4 x** faster by bike than by foot



By bike you can cover a distance **15 x** bigger than by foot



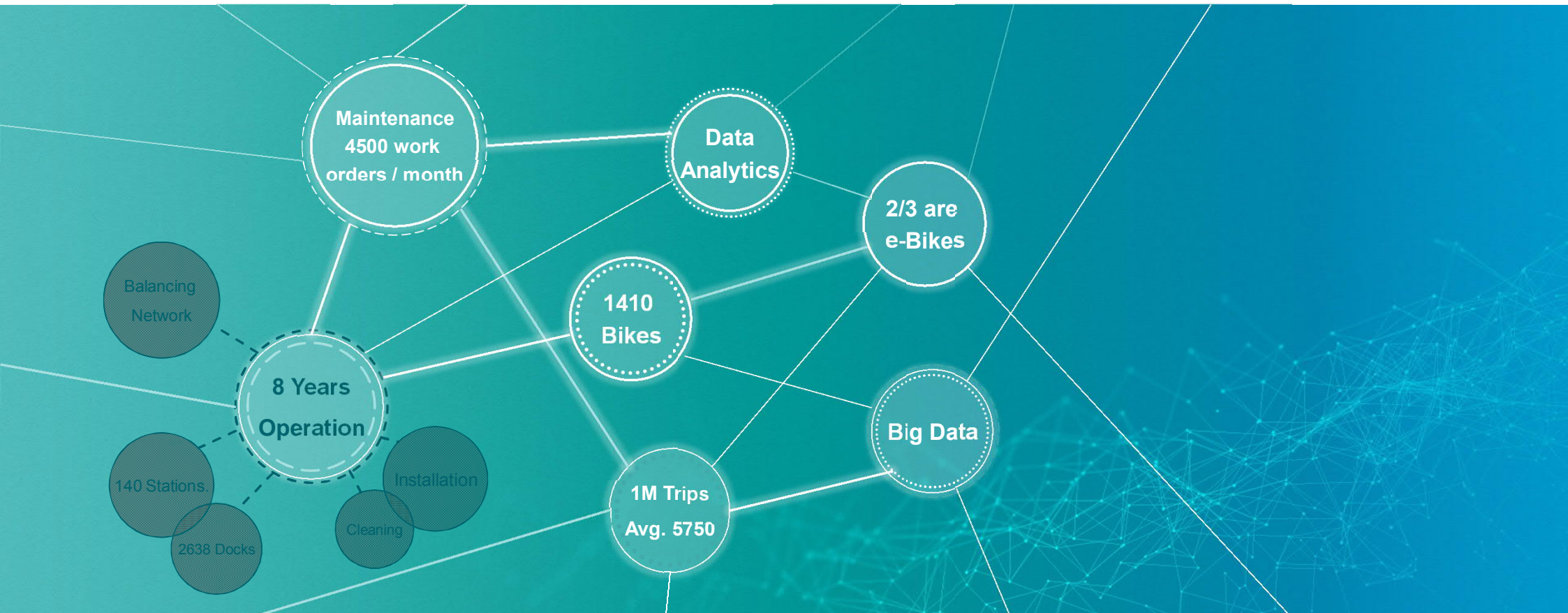
Bikes need **10 x** less space than cars for transporting the same number of people

A public event in Lisbon, featuring a row of bicycles with green balloons and a crowd of people in front of a historic building. The bicycles are arranged in a line, and the balloons are bright green. The crowd consists of people of various ages, some taking photos. The building in the background is a grand, classical structure with ornate details and a large arched entrance. The scene is set on a paved street with a sidewalk.

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Something new in Lisbon

Gira Bike Sharing | Key Stats



State-of-the-art technology for (e)bikes and stations



Bikes:

- 250W electrical drive in front wheel's hub
- 25.8 kg
- Embedded GPS location device
- Lithium-ion battery

Stations:

- RFID identification of attached bikes
- Intelligent charging management
- Secure 4G connections to the Internet for communication with the central system

An efficient, reliable and connected system...

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Easy conversion from conventional to e-bike

Mixed structure

Can be app controlled

LCD dashboard

Wi-fi hotspot on docks

Anti-theft fastening components

Modular structure

Embedded GPS location service

Intelligent charging management system

Software powered by AI

More than a means of transport. It is a “sensor of mobility”

...Optimally operated by Operide™ AI Fleet Management

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See
Transparency for operator



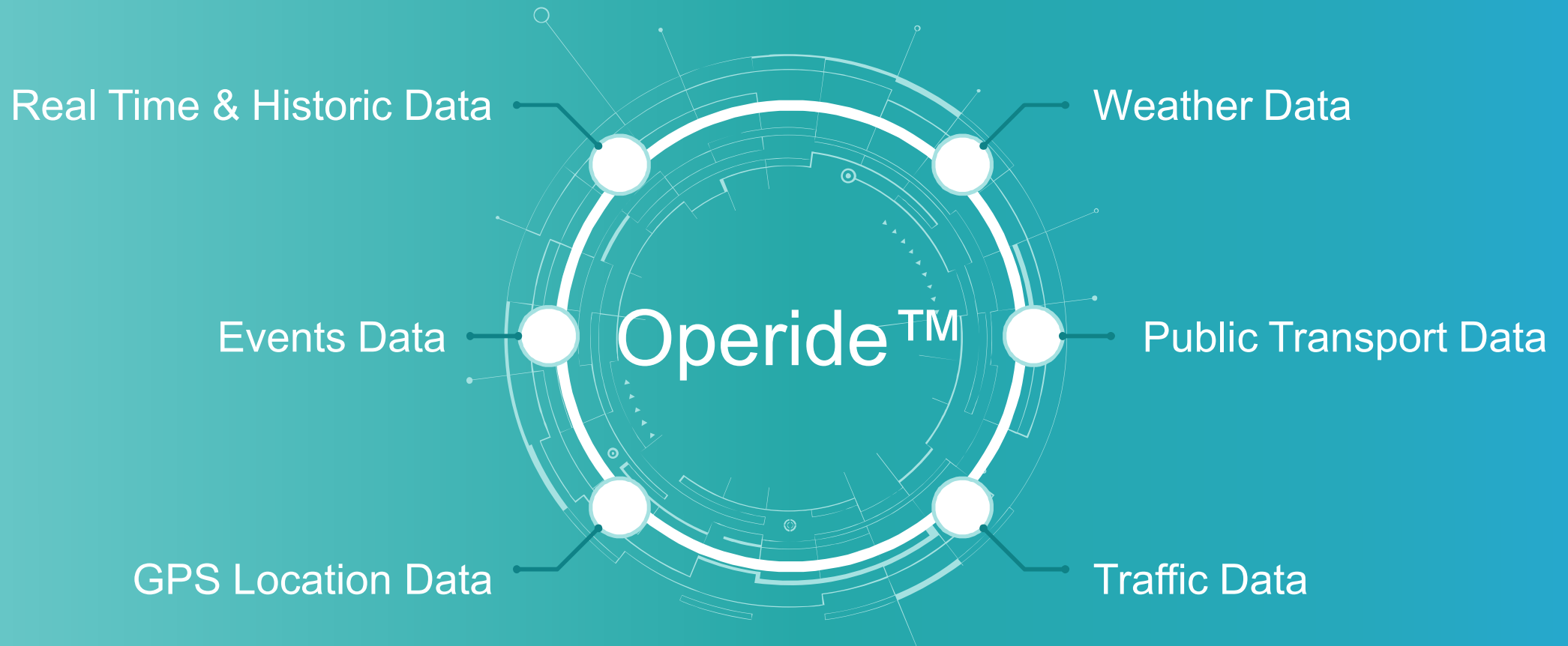
Understand
Prediction of utilization of stations and bikes & integration of additional data sources



Act
Recommendation to optimize performance of system

Data Overview

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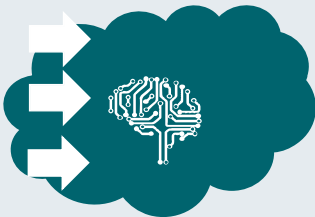


Operide™ – From Predictions to Optimal Rebalancing



1. System & External Data

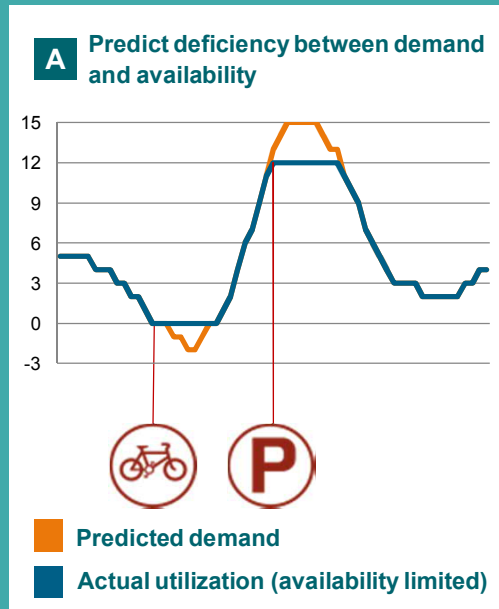
Station
Trip data
GPS
Weather



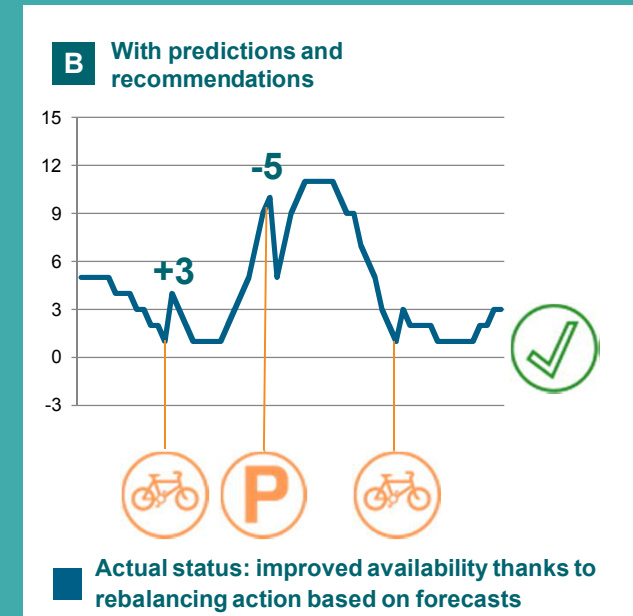
2. System status predictions

3. Recommendations

Predictive model driving optimal rebalancing in space & in time



Stations are failing as predicted, firstly no bikes and then no docks



Our recommendations ensure that bikes and docks are always available. Sometimes, we predict a recovery and in this case no action is required

Operide™ guides the operator to the most critical stations & provides recommendations for balancing the network



- 1 Control Panel**
 - Search, sort and filter for stations of interest
- 2 Map**
 - Color-code draws attention to high-priority / problematic stations
- 3 Station details**
 - Selecting a station shows detailed information (e.g. docks available & in repair)
- 4 Predictions**
 - Predictions of the station status for next 20, 40 and 60 provided to guide which stations are the most critical
- 5 Recommendations**
 - Guidance on what actions to take to improve station status
 - Rebalancing itineraries provided on the map

WheelX powered by SIEMENS Operide™

Displayed Time Period: Now

Search by Station ID or Name

Zone: All Zones Station Type: All Station Types

DEFAULT SORT

ALL PROBLEMATIC FAILING RECOMMENDATIONS

Vans

Add and configure the locations of the vans

Name	Location
Van 1	R. São José 58, 1150-270 Lisboa, Por... Set location on map

Generate Recommendations

Van 1

- Station 305 (Type A) Load 2 bikes
- Station 306 (Type A) Load 2 bikes
- Station 408 (Type A) Load 1 bikes
- Station 417 (Type A) Unload 5 bikes

Details

305 - Av. Liberdade/Rua Barata Salgueiro Station Type: A

Bikes: Available 15, In Repair 0

Docks: Available 1 / 16, In Repair 0 / 16

Predictions

- +20 min
- +40 min
- +60 min

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Map data ©2018 Google, Inst. Geogr. Nacional, Terms of Use, Report a map error

WheelX - Bike Sharing © Siemens AG, 1996 - 2018

How to go faster?

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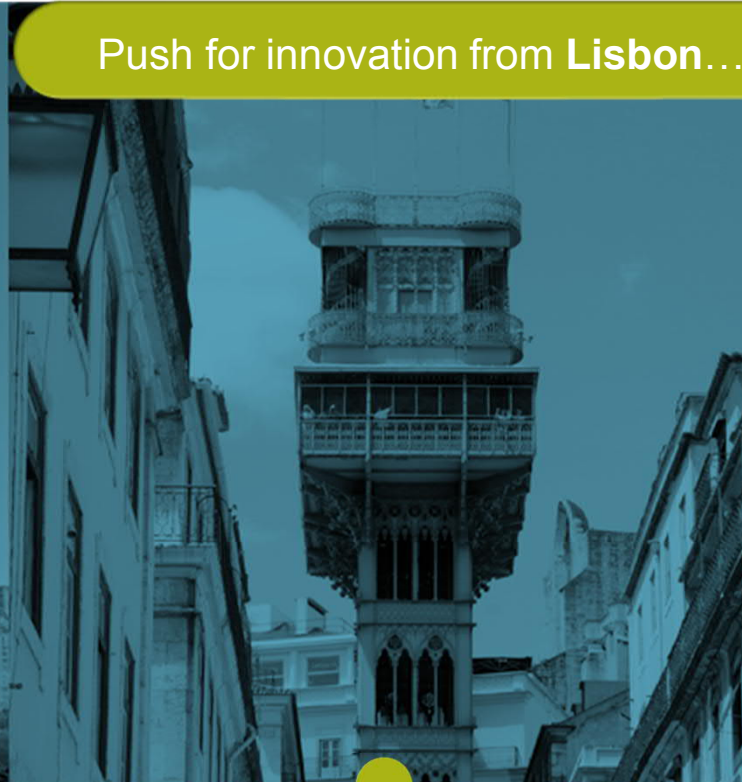
Push for innovation from Lisbon...



Make strong synergies with both the city and with core activities of ITS

Unrestricted © Siemens AG 2018

Page 12



Set the infrastructures standards to higher levels



Get in depth information to develop innovative Big Data solutions and rely on Data Analytics to develop new products

Afonso Pais de Sousa | MO ITS

How to go faster?

Pus ...to the world bon...

Competence Center **WHY?**

Know-how

Experienced partner

An innovative service

Siemens Carbon Neutral by 2030



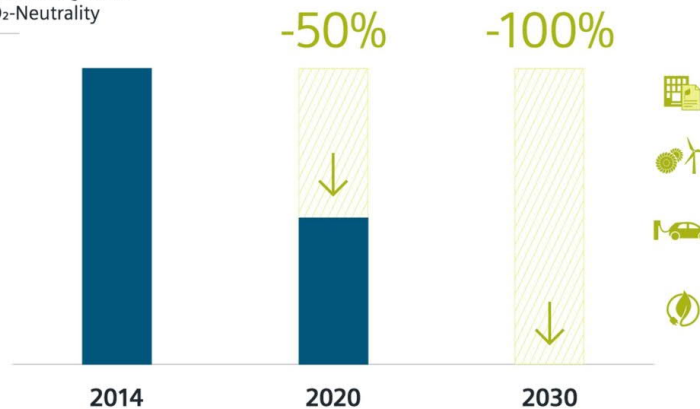
Joe Kaeser, CEO of Siemens AG

To Beat Climate Change, Digitalize the Electrical World

Electrifying the world's infrastructure is the critical next step to de-carbonization. We must consider tactics to speed progress toward this goal

- drives
- CO2 emissions
- employees
- Decarbonization
- corporate responsibility
- eCar
- electro mobility
- infrastructure
- initiatives
- investments

Path to long term CO₂-Neutrality



Bikesharing | Nissan eNV200

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Specs & Fun Facts:

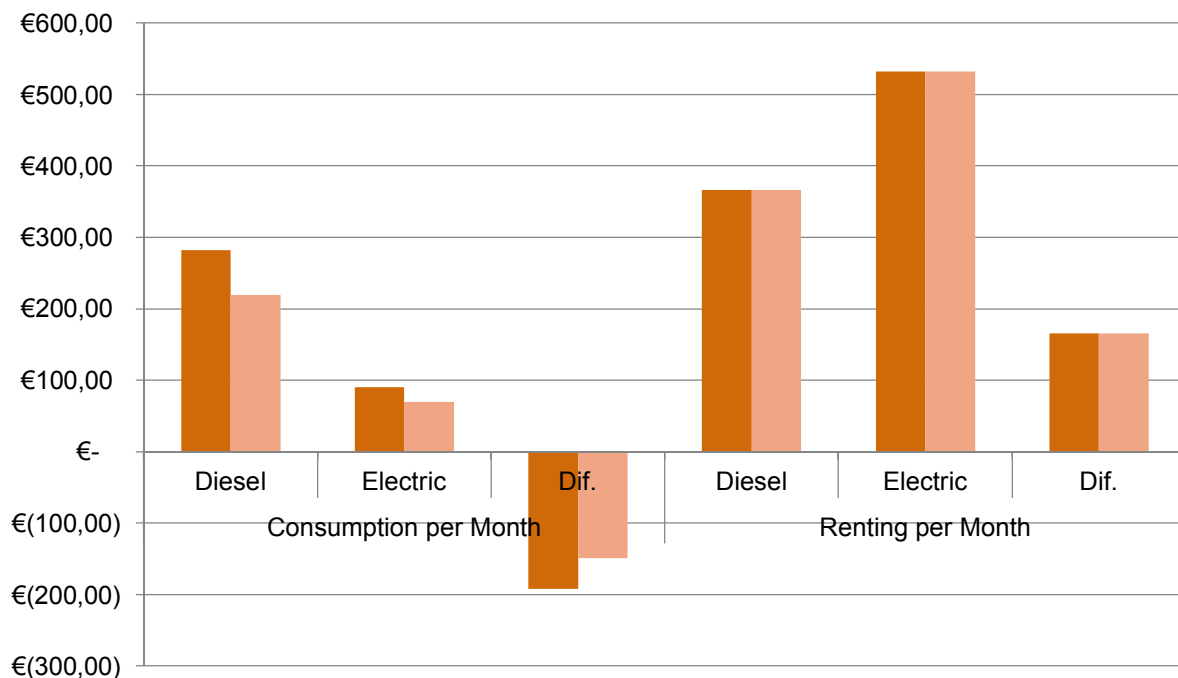
- Battery Capacity: **24KWh**
- Autonomy:
 - **80km** with trailer
 - **120km** without trailer
- **5 e-vehicles** (30k-40k km)
- 1 shift: **60-80 km** -> 1 complete charge (challenge 24/7)
- 5 wall boxes – **5/6 hours to charge**
- 1 Fast Charger (DC) – **1 hour to charge** (40min 80%)
- No need to go to gas pump – **e-chargers in the operation center**



Financial Comparison Diesel vs Electric – Traffic Lights Service



	Consumption (per month)		Renting Fee (per month)		Total per Month	
	Diesel	Electric	Diesel	Electric	Diesel	Electric
Lisbon	281,91 €	89,86 €	366,67 €	532,04 €	648,58 €	621,90 €
Porto	218,98 €	69,80 €	366,67 €	532,04 €	585,65 €	601,84 €



Based on 48 months of each contract (last 7 months estimated based on 41-month trend):

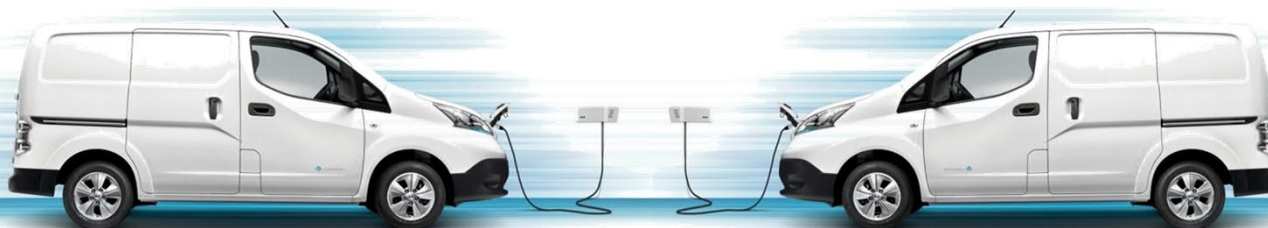
- **Saving per Month (4 vehicles):**
 - 20,98 €
- **Saving 48 months:**
 - 1.007,22 €

■ UTC Service Lisbon
 ■ UTC Service Porto

... but there is more to get out of it!

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- **Free** parking in **any place** in Portuguese Cities (on-street parking)
 - Saving in time of technicians: **1.848€** (per year, 4 teams)
 - Cost reduction in parks and tickets
- **Positive impact in taxes** applied to company's revenues
 - Positive impact in **Siemens' image**
 - Drastic **reduction of emissions** and **noise**
- **Strong synergies** with Bike Sharing contract (e-vehicles mandatory)



Thank You!

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