

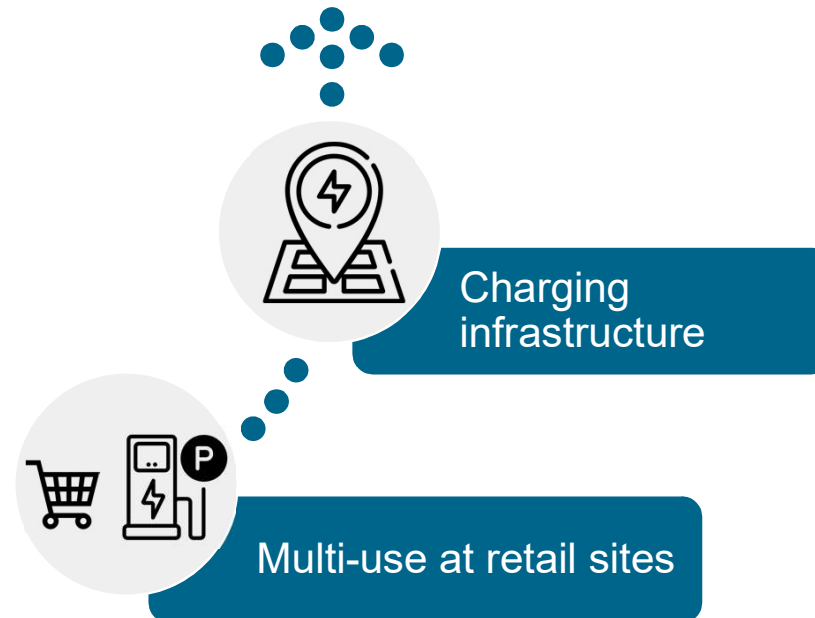


Potential of multi-use charging infrastructure at retail sites for commercial vehicle fleets in Berlin

Electric vehicles in Germany



Germany's Goal: 15 million electric vehicles by 2030



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Project Retail4Multi-Use



- This research evolves around the governmentally-funded project „**Retail4Multi-Use**“
- Specifically: sharing charging infrastructure at retail sites with **commercial vehicle fleets**



Funded by:



on the basis of a decision
by the German Bundestag

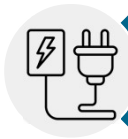
Research questions:

- What is the potential of this multi-use concept?
- What needs to be done to realize this idea?

Key topics



spatio-temporal patterns of Berlin's commercial traffic



charging demand




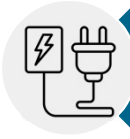


needs and preferences of the involved user groups



multi-use solution in practice

Key topics

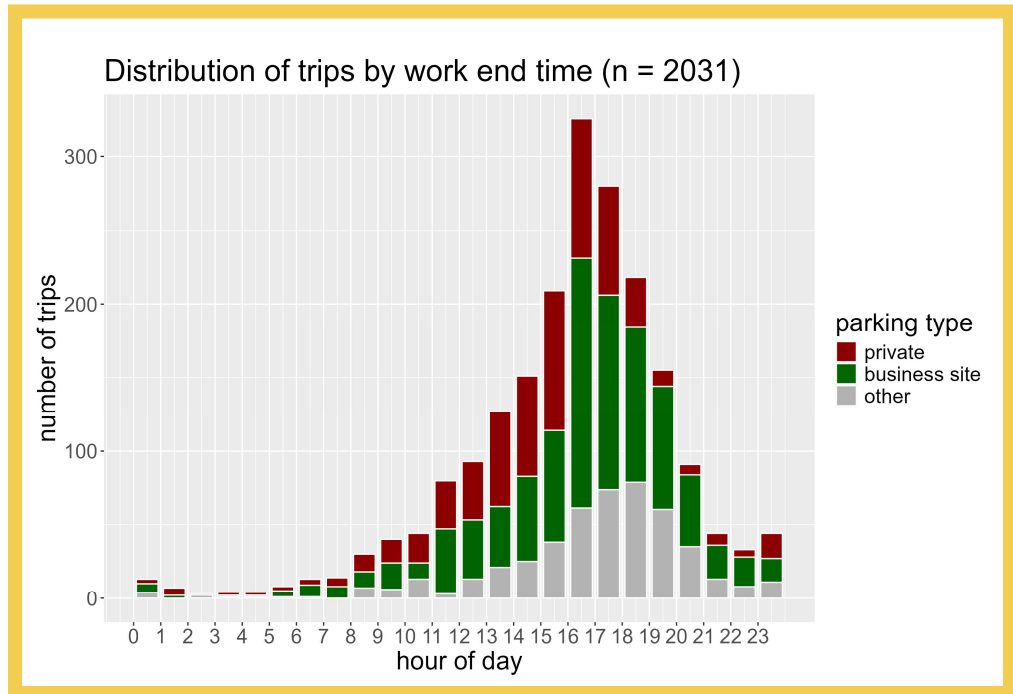


-  **spatio-temporal patterns** of Berlin's commercial traffic
-  **charging demand**
-  **needs and preferences** of the involved user groups
-  **multi-use solution** in practice

Spatio-temporal patterns of Berlin's commercial vehicles



- Analysis of travel patterns regarding:
 - Starting and end time
 - Parking duration
 - Type of origin and destination
 - Travel distance



Key findings:

- Most vehicles are parked between 6 p.m. and 6 a.m.
- 88% are driven less than 150km per day → charging once a day is sufficient

Key topics



spatio-temporal patterns of Berlin's commercial traffic



charging demand

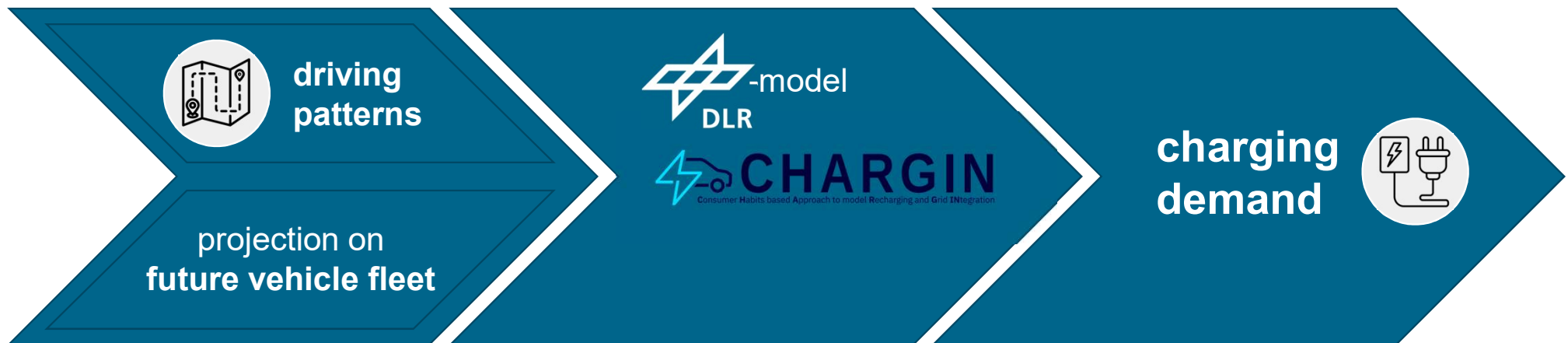


needs and preferences of the involved user groups



multi-use solution in practice

Calculation of future charging demand


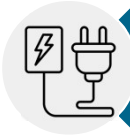




Potential of multi-use (*preliminary results*):

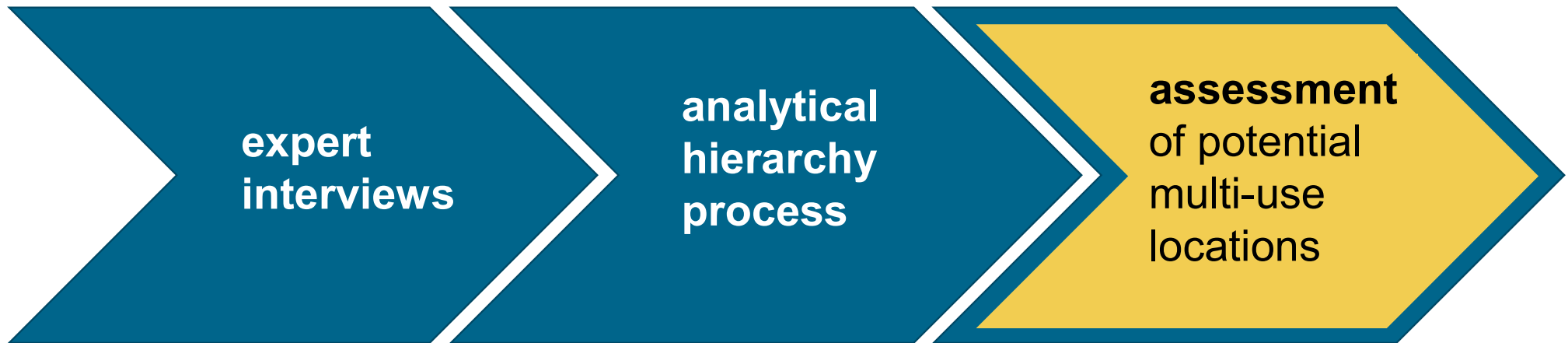
- **Reduction of projected charging infrastructure** at commercial premises of up to **25%**
- Shift from up to 133MWh per day to charging infrastructure at retail sites
- **Utilization** at retail charging stations can be **increased by 70%**

Key topics



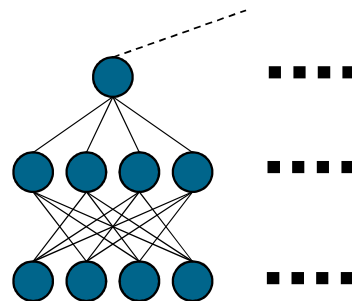
-  **spatio-temporal patterns** of Berlin's commercial traffic
-  **charging demand**
-  **needs and preferences** of the involved user groups
-  **multi-use solution** in practice

Needs and preferences of the involved user groups



On the following topics:

- availability
- location
- safety
- environment
- costs


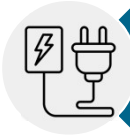




Overall weighting
(only main categories)

availability	32.6%
location	33.6%
safety	15.7%
environment	8.7%
costs	9.4%

Key topics



-  spatio-temporal patterns of Berlin's commercial traffic
-  charging demand
-  needs and preferences of the involved user groups
-  multi-use **solution** in practice

Solution in practice: Matching platform



Localiser

The screenshot displays the 'Digital Atlas' interface. On the left is a sidebar menu with the following items:

- Digital Atlas (Close icon)
- General (+)
- Traffic (+)
- Infrastructure (+)
- Charging locations on private land (+)
- POIs (-)
- Car dealers (1 icon, toggle on)
- Supermarkets (1 icon, toggle on)
- Shopping centres, department stores (1 icon, toggle on)
- Gas stations (1 icon, toggle on)
- Carsharing stations (1 icon, toggle on)

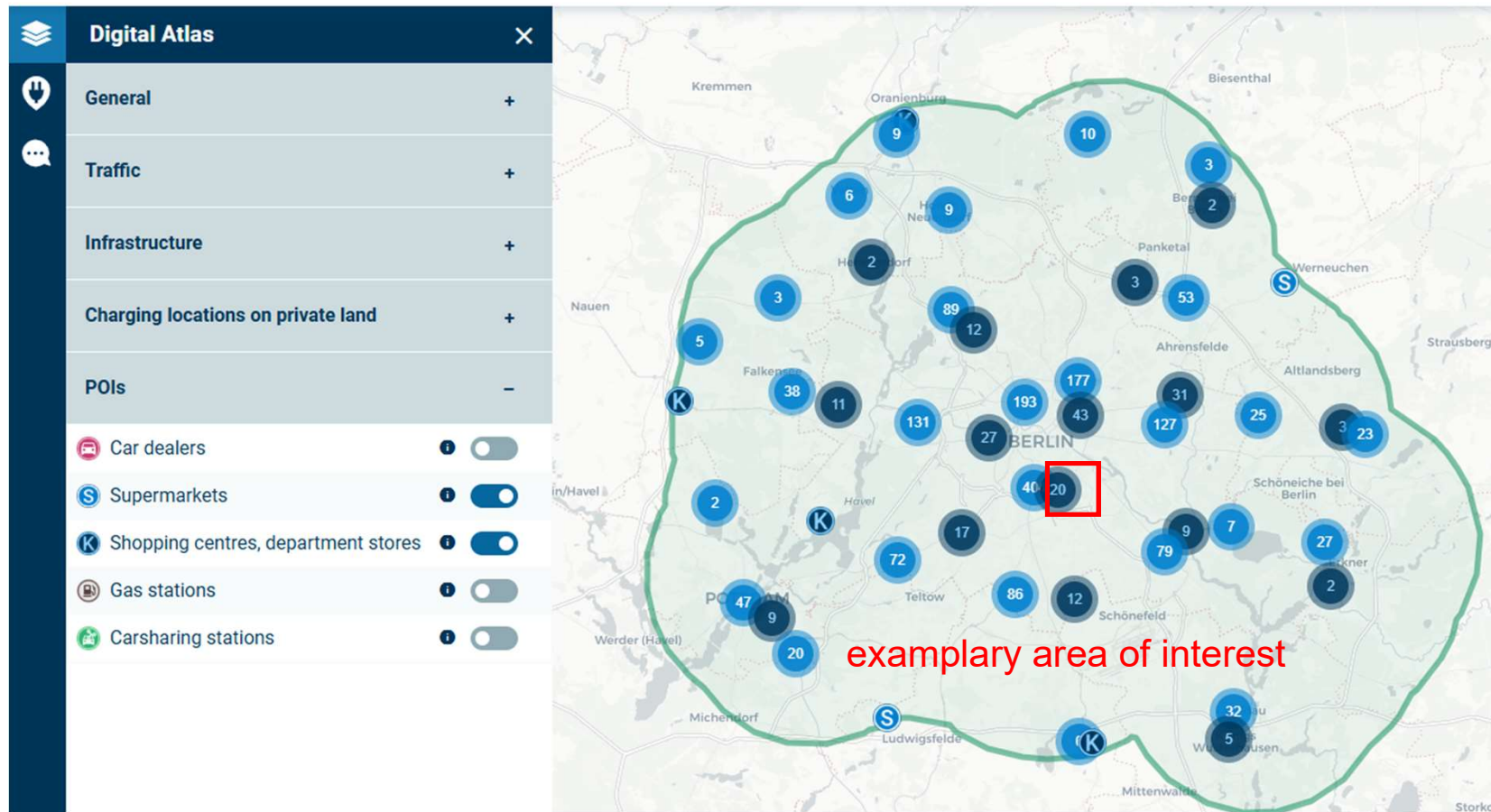
The main map area shows a satellite-style view of the Berlin and Potsdam region. A thick green line outlines a specific area of interest that encompasses parts of both cities. Various locations are labeled on the map, including Kremmen, Oranienburg, Biesenthal, Velten, Hohen Neuendorf, Bernau bei Berlin, Hennigsdorf, Panketal, Werneuchen, Nauen, Ahrensfelde, Altlandsberg, Strausberg, Falkensee, Havel, in/Havel, Schöneiche bei Berlin, Erkner, POTSDAM, Teltow, Schönefeld, Werder (Havel), Michendorf, Ludwigsfelde, Wildau, Königs Wusterhausen, Mittenwalde, and Storkow.

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Solution in practice: Matching platform



LOCALISER



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Solution in practice: Matching platform



LOCALISER

The screenshot displays the 'Digital Atlas' interface. On the left is a sidebar menu with the following sections:

- Digital Atlas** (Close button)
- General** (+)
- Traffic** (+)
- Infrastructure** (+)
- Charging locations on private land** (+)
- POIs** (-)
 - Car dealers (Info icon, Toggle off)
 - Supermarkets (Info icon, Toggle on)
 - Shopping centres, department stores (Info icon, Toggle on)
 - Gas stations (Info icon, Toggle off)
 - Carsharing stations (Info icon, Toggle off)

The main map area shows a city street grid with several blue circular markers containing numbers (e.g., 2, 3, 4, 5, 6, 9, 10) and icons (K, S). The map also shows geographical features like 'Rixdorfer Teich' and 'Hafen Britz Ost'.

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Solution in practice: Matching platform



Localiser

The screenshot displays the 'Digital Atlas' interface. On the left, a sidebar menu lists categories: General, Traffic, Infrastructure, Charging locations on private land, and POIs. Under POIs, there are toggle switches for Car dealers, Supermarkets, Shopping centres, department stores, Gas stations, and Carsharing stations. The main map area shows a city street grid with several blue circular markers containing numbers (e.g., 2, 3, 4, 5, 6, 9, 10). A red circle highlights a gear icon with three faces (happy, neutral, sad) and the text 'score compatibility' below it. A red arrow points from this circle to a specific marker on the map. A red dashed arrow points from the 'score compatibility' text to a red-bordered box labeled 'output match' at the bottom right. A context menu is open over a marker, listing options such as 'Place fleet location', 'Place charging location', 'Create a comment here', 'Accessibility', 'Draw restricted area', 'What is in the vicinity?', 'Where am I?', 'Generate link', 'Clear map', 'Measure distance', 'Route from here', and 'Highway access'.

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Summary



Multi-use of charging infrastructure has the potential of

- Shifting charging demand from business premises to retail sites
- Possibly **reducing 25% of company charging points** needed in the future
- **Increasing utilization** of retail charging infrastructure by **70%**



Overnight-charging emerges as the most viable scenario



Retailers, fleet operators and charging point operators prioritize requirements differently → an **overall evaluation is crucial**



This will be provided in the upcoming **matching platform**

Thank you for your attention!



Potential of multi-use charging infrastructure at retail sites for commercial vehicle fleets in Berlin

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