eMobility Customer Insights

STUDY PORTFOLIO

UScale GmbH
www.uscale.digital

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UScale eMobility

The beginning of a new era

Electromobility offers great opportunities for manufacturers and service providers but is still in its infancy.

What do customers and users expect? What requirements do market participants have to meet in order to win significant shares of the growing market?

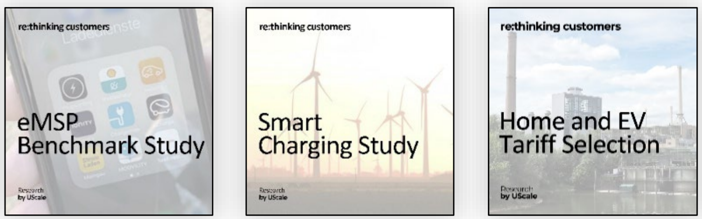
With its own panel of over 7,000 EV drivers, UScale is the only provider of systematic customer studies on all relevant touchpoints along the e-mobile customer journey.

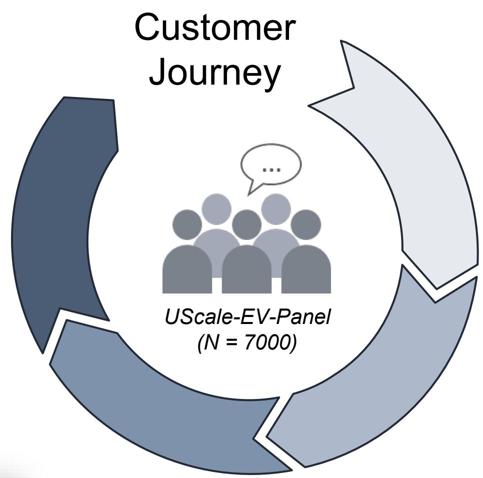
UScale eMobility Focus Studies

Focus studies on all touchpoints*

Orientation Phase

Business Models

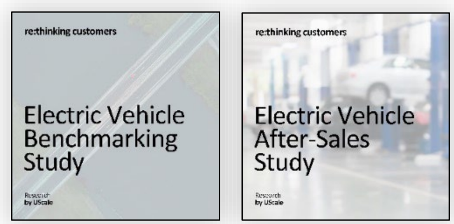




Purchase Phase

Charging

Vehicle Usage Phase



* *All studies are available for DACH markets. Selected studies are available for the EU-Big-5 and USA.*

UScale eMobility Focus Studies

Smart Charging Study

Key data

- Survey: Jan 22, online
- Sample: N = 1830, thereof:
  N = 100 - 200 / Use-Case
  90% Owners
- Markets: 🇩🇪 🇦🇹 🇨🇭

Methodological approach

- Determination of usage drivers and barriers for grid-friendly charging and V2X from the customer's perspective
- Evaluation of the product-market fit of all scenarios according to the pain-gain evaluation method

Added value

- Readiness to use the scenarios according to customer segments.
- Prioritised levers to overcome the relevant barriers to usage.
- USPs for successful marketing of smart charging solutions.

Study Content

Respondents

- Demographic characteristics (including gender, age, place of residence)
- Vehicle driven

Scenarios tested

- Grid-friendly charging @home (with / without PV at detached / apartment houses)
- Grid-friendly charging @work
- Grid-friendly charging @public
- Vehicle-To-Grid @home
- Vehicle-To-Grid @work
- Vehicle-To-Home

Drivers and barriers of the user segments

- General interest and actual willingness to buy and use (per scenario)
- Prioritised drivers and biggest barriers (quant./qual.) (per scenario)

Expectation Cost savings, integration & trust

- Expectation of financial savings in %, interest in alternative incentives
- Expectation re integration
- Trust in vendors

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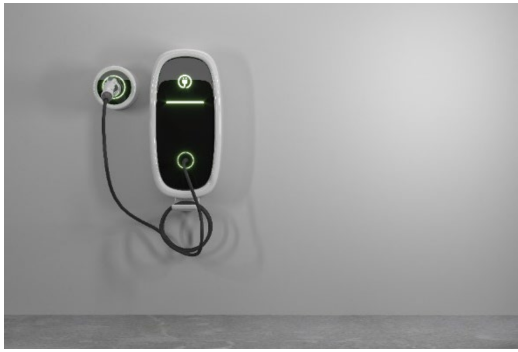
UScale eMobility Focus Studies

Private Charging Retail Study



Key data

- Survey: July 22, online
- Sample: N = 1.155, thereof:
  374 shopper,
  409 orderer,
  372 owner of private
  charging infrastructure
- Markets:

Methodological approach

- The study asks about their experiences in finding a suitable private charging solution.
- Depending on the phase in the purchase process, respondents are asked further questions.

Added value

- Requirements for advisory services and support in the purchase process.
- Understanding the purchase funnel of buyers of private charging infrastructure.

Study Content

Respondents

- Demographic characteristics (gender, age, place of residence, living situation)
- Living situation

Segmentation

- Buyer vs. orderer (charging solution has been ordered but not yet delivered) vs. owner
- Housing situation (detached vs. apartment building)
- Personal interest / involvement in charging technology

Information phase

- Information needs, information sources and information competence of providers
- Information needs not met

Concept and Realisation phase

- Interest in modules, components, features
- Involved partners and their importance for success
- Biggest problems
- Recommendations to the involved participants
- Additionally for apartment houses: authorisation and billing

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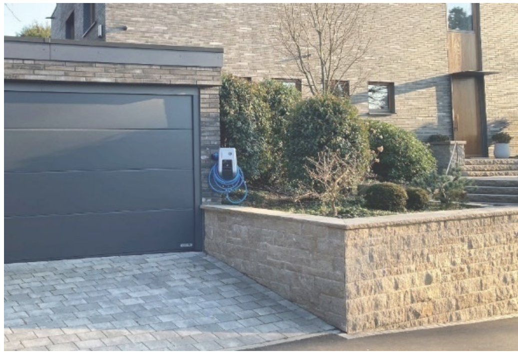
Private Charging Study (Ownership and After-Sales)

incl. Dash-board



Key data

- Survey: June 22, online
- Sample: N = 1.149 owners, davon:
  941 single house dwellers
  208 appartment dwellers
- Markets: /
  in parts for:

Methodological approach

- The study asks about common usage habits and experiences on all aspects of charging at home.
- Problems with the use and combination of own systems with the home infrastructure and the vehicle, and open needs.

Added value

- Actual usage behaviour and customer satisfaction
- Prioritised needs for action as input for specifications of future products
- Sales potential for upgrades

Study Content

Respondents

- Demographic characteristics (including gender, age, place of residence)
- Vehicle usage (including make, model, age, mileage, company car)
- Living conditions, individually available charging technology

Charging behaviour and problems

- Proportions of charging locations: at home, public vs. semi-public (e.g. employer, customer parking) etc.
- Charging management: programming, starting, monitoring, stopping the charging process.
- Charging configuration at home including PV system, energy management, stationary storage, smart home
- Charging problems at home in detail
- Final evaluation: satisfaction with private charging solution, recommendation to manufacturer, preference of different solution in retrospect

After-Sales

- Service needs and experiences with service hotline and software updates
- Final evaluation: Satisfaction with service and service partner

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UScale eMobility Focus Studies

Public Charging Study

incl. Dash-board

Key data

- Survey: July 22, online
- Sample: N = 1.842 EV owners who charge (semi-)public
- Markets: /
  in parts for:

Methodological approach

- The study focuses on public charging on highways, in city centres and residential areas as well as semi-public charging in retail and at work.
- EV drivers report on their usage habits, experiences, problems, wishes and give recommendations to providers.

Added value

- Opportunities and prioritised needs for action for Charge Point Operators, eMSPs, employers, retailers, and IT service providers.
- Identification of further service offerings.

Study Content

Respondents

- Demographic characteristics (including gender, age, place of residence)
- Vehicle usage (including make, model, age, mileage, company car)

Charging behaviour

- Proportions of charging locations: at home, public vs. semi-public (e.g. employers, customer car parks), charging frequency, charging motivation, SoC during charging.
- Criteria for charging decisions on the road, in the city and in residential areas
- Charging problems, problem solving
- Retail charging: criteria for charging decision, influence on shopping time, satisfaction, incentives, recommendations
- Employer charging: Offers is/should, pricing and billing, authorisation, satisfaction, recommendations

Satisfaction charging infrastructure

- Satisfaction with the public infrastructure (locations, capacity utilisation, surroundings, operating problems, charging speed, payment options, etc.)
- Specific needs for expansion of public infrastructure
- Desires for offers during the charging, other recommendations

UScale eMobility Focus Studies

eMSP Loyalty Benchmarking Study

incl. Dash-board

Key data

– Survey: July 22, online
– Sample: N = 1.793 owners
– Markets:

Methodological approach

– Relevant KPIs for market share:
  - Active Use: How many EV drivers *actively* use an eMSP offer?
  - Preferred Use: How many EV drivers use an eMSP offer *most often*?
– Reasons for preferred use and reasons for churn.

Added value

– Benchmarking of the most important provider (groups) in the eMSP market.
– Reasons for loyalty and churn.
– Basis for strategy discussion on the differentiation of eMSP offers in the competition.

Study Content

Respondents

– Demographic characteristics (including gender, age, place of residence)
– Vehicle usage, charging behaviour (@home, @public, @work)

Clustering according to provider groups

– Energy supplier
– Roaming charging services
– OEM services
– Directories

Usage preferences

– Market shares: actively used vs. preferably used charging services
– Reasons for preferred use (loyalty) per provider group
– Causes for switching / churn per provider group
– Historical comparison
– Charging app features used

Payment and tariffs

– Payment options used vs. desired
– Tariff models, variable tariffs, bonus programs, charging+parking

UScale eMobility Focus Studies

Public Charging Payment Study

Key data

- Survey: June 21, online
- Sample: N = 418 EV owners (> 100 for each payment method)
- Markets: 

Methodological approach

- Drivers and barriers of acceptance from the customer's perspective for five most common payment methods.

Added value

- Acceptance and willingness to use for different customer segments.
- Prioritised levers for overcoming the relevant usage barriers.
- USPs for successful marketing of payment options at public charging stations.

Study Content

Respondents

- Demographic characteristics (including gender, age, place of residence)
- Vehicle usage, charging behaviour (@home, @public, @work)

Evaluated payment methods

- Payment with charging app
- Payment with charging card or RFID Chip
- Payment with Plug & Charge
- Direct (ad-hoc) payment with credit- or debit card
- Direct (ad-hoc) payment with smartphone (e.g. Apple or Google Pay)

Drivers and barriers for user segments

- General acceptance and actual willingness to use (per payment method)
- Prioritised drivers and biggest barriers (quant/qual) (per payment method)

Ranking payment methods

- Overall satisfaction paying at public charging points
- Ratings of the different payment methods in comparison and by customer segment

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UScale eMobility Focus Studies

EV Retail Benchmarking Study

incl. Dash-board

Key data

- Survey: Mai 22, online
- Sample: N = ca. 2.248, thereof:
  > 390 buyer
  > 1858 owner
- Markets:

Methodological approach

- EV buyers are asked about their experience of buying a vehicle:
  - Information gathering
  - Purchase process
  - Handover and follow-up

Added value

- KPIs for relevant retail processes
- Own brand performance against competitors (benchmarking)
- Requirements for the design and optimisation of brand websites, sales processes (consultation, test drive, contracts, etc.)
- Input for dealer trainings

Study Content

Respondents

- Demographic characteristics (including gender, age, place of residence)
- Vehicle usage (including make, model, age, mileage, company car)

Segmentation

- Buyers vs. owners (differentiated by ordered and holding period </> 12 months)
- Vehicle brands

Orientation and information phase

- Motivation to switch to eMobility, decision criteria brand and model
- Information and advisory needs vs. competence of car manufacturers, importers, and car dealers

Purchase and post-purchase phase (satisfaction, needs)

- Purchase funnel: brand-specific interest (cross-shopping, brand loyalty)
- Manufacturer websites (lead management in multi-channel retail)
- Sales advice, test drives, test charging, configuration, etc.
- Financing, insurance, charging contract, subsidies
- Vehicle handover and follow-up
- NPS brand retailers and ratings on all process steps

UScale eMobility Focus Studies

EV Benchmarking Study

incl. Dash-board

Key data

- Survey: April 22, online
- Sample: N = 3.346 owners
- Markets: /

Methodological approach

- The study asks about the use, frequency of use and reasons for non-use of EV-specific features.
- EV drivers report on their habits, problems with use, their assessment of the maturity of the concepts and give recommendations for further development.

Added value

- Satisfaction and maturity of current EV specific concepts
- Need for action for specifications of future model years and vehicle generations

Study Content

Respondents

- Demographic characteristics (including gender, age, place of residence)
- Vehicle usage (including make, model, age, mileage, company car, Income)

Segmentation

- Vehicle brands

Driving-related features (use, problems, concept maturity)

- Driving: Range, ECO mode, recuperation, driving and function noises.
- Displays: SoC, remaining range, energy flow, other displays, etc.
- Navigation: Features used, route and charge planning, search for charging stations.
- Charging: Charging performance, charging settings, charging management (start, monitoring, stop), charging problems, accommodation of charging cable, position of charging port
- Heating, air conditioning, pre-conditioning

Remote/connect app (use, problems, concept maturity)

- Installation, registration, updates
- Functions used, frequencies, reasons for non-use, operating and other problems

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EV After-Sales Benchmarking Study

incl. Dash-board

Key data

- Survey: June 22, online
- Sample: N = 2.005
- Markets:

Methodological approach

- EV owners are asked about their experience during the usage period:
  - Workshop visits for service and repair
  - Software updates
  - Service hotline
  - Digital services
  - Battery checks

Added value

- KPIs for relevant after-sales processes
- Own brand performance against competitors (benchmarking)
- Requirements for the design and optimisation of after-sales processes
- Input for dealer trainings

Study Content

Respondents

- Demographic characteristics (including gender, age, place of residence)
- Vehicle usage (including make, model, age, mileage, company car)

Segmentation

- Vehicle brands
- Service preferences

Usage phase

- Service and repair needs, workshop visits
- Service processes: preferred contact and handling
- Experience with software updates (OTA)
- Experience with the service hotline
- Usage of digital non-fremium services, thoughts on data protection
- Relevance of battery checks

Overall satisfaction After-Sales service

- NPS workshop of car brand
- Evaluation of software update processes and of service hotline

UScale eMobility Focus Studies

EV Persona Adopter Study

Next release:
Oct 2022

Key data

- Survey: Q2/2021, online
- Sample: N = 9,000 (for 5 countries)
- Markets: 

Methodological approach

- Determination of the EV adoption probability of new segments with respect to
  - psychographic characteristics
  - personal life situations
  - Powertrain preferences
  - Vehicle ownership and usage preferences

Added value

- Segmentation of European car buyers according to their EV adoption probability
- Next buyers' expectations on products and equipment
- Basis for successfully addressing the next accessible EV buyer segments

Study Content

Respondents

- Demographic characteristics, housing and work situation, educational background, income, values, beliefs, attitude
- Vehicle age, use and class,
  proximity to next vehicle purchase (1, 1-2, 2-3, 3-5 years).
- Personal mobility behaviour

Segmentation

- Comprehensible, intuitive persona profiles that convey the mind-sets of the next EV buyer segments in Europe
- Personal EV motivation and likelihood of adoption
- Attitudes and values

Access to the Data Dashboard Portal

- Subscribers have full access rights to query the dataset via an online portal and can retrieve their own (cross-)tabulations and graphs

CRM Database Merger

- Subscribers have the option to map EV forward personas to their own customer data according to the referenced postal codes

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EV Marketing Study

Key data

– Survey: March 20, online
– Sample: N > 1,100 (Purchase Intention < 12 months)
– Markets:

Methodological approach

– Using quantitative and qualitative methods, the main drivers and barriers of current car buyers are identified.
– 50% each of the sample are BEVs and PHEVs.

Added value

– USPs for addressing the target group that can be reached
– Willingness to buy BEV and PHEV of different buyer segments
– Purchase barriers for BEVs and PHEVs that need to be addressed and solved on websites and in retail outlets

Study Content

Respondents

– Demographic characteristics (including gender, age, place of residence, parking situation)
– Vehicle usage (including make, model, age, mileage, company car)

Segmentation

– Rejecters: *"EV is out of question".*
– Procrastinator: *"EV is not an option yet."*
– Undecided: *"I am still not sure."*
– Buyer:: *"I am specifically looking for an EV."*

Prioritisation

– Detailed and prioritised evaluation of drivers for the purchase decision
– Detailed and prioritised assessment of barriers against the purchase decision

Assessment of today's EV drivers

– Purchase reasons of EV drivers
– Criteria for the selection of the EV
– Interest in second-hand and concerns about battery shelf life

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Charging Persona Study

Key data

– Survey: Aug 21, online
– Sample: N = 2100 EV owners
– Markets: 🇩🇪 🇦🇹 🇨🇭

Methodological approach

– Determination of current driving and charging behaviour, expectations and criteria for decision on charging behaviour.
– Factor and cluster analysis.
– Derivation of personas.

Added value

– Segmentation of EV drivers according to charging behaviour and requirements.
– Basis for the technical design of services for route and charging planning as well as charging technology in the vehicle and the infrastructure.
– Basis for addressing target groups in marketing.

Study Content

Respondents

– Demographic characteristics (including gender, age, place of residence, educational attainment, occupation, income)
– Housing situation (single-, multi-family house, garage, PV system)
– Vehicle financing, company car

Vehicle Usage

– Mileage per year / working day, frequency of long-distance journeys, second car in household
– Current / expected range, current / expected AC/DC charging power

Charging Behavior

– Charging locations, times, motivation, frequency
– Use of charging tariff, selection criteria supplier for charging current, desired charging tariff, selection process
– Charging technology at home, interest in upgrades
– Decision criteria for use of (semi-)public charging infrastructure
– Expectations of route and charging planning
– Expectations of employer charging
– Charging fears
– Detailed description of charging personas based on the above criteria

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Home and EV Tariff Selection

Key data

– Survey: Sep 21, online
– Sample: N = 1.511 EV drivers with charging solution at home
– Markets:

Methodological approach

– Determination of criteria for the selection of the appropriate electricity supplier and tariff
– Factor and cluster analysis
– Derivation of personas for the purchase of domestic and charging electricity at home

Added value

– Segmentation of EV drivers and determination of reachable target group
– Basis for the development of home and traction power offers
– Basis for targeted marketing campaigns

Studieninhalte

Respondents

– Demographic characteristics (including gender, age, place of residence, educational attainment, occupation, income)
– Housing situation (single-, multi-family house, garage, PV system)
– Vehicle usage (mileage yearly / daily, second car in household)
– Charging behavior (locations, frequency and motivation)
– Company car, employer support for charging Dienstwagen

Selection Criteria for Energy Supplier

– Change of energy supplier in connection with EV purchase
– Timing of the change, moments of truth
– Information sources for alternative offers
– Trust in different types of energy electricity suppliers
– Proportion of green energy
– Selection criteria for energy supplier
– Selection criteria for electrivity tariff
– Wishes for customized tariffs

User Segmentation (Persona Building)

– Derivation of 5 personas and differentation according to the aforementioned criteria

USCale eMobility

Our clients

HYUNDAI
Ford
Polestar
BMW
AMG
KIA
SONO MOTORS
HYMER
thüga AKTIENGESELLSCHAFT
Trianel
EnBW
bdew
THE MOBILITY HOUSE
evm
Syna
VATTENFALL
PFALZWERKE Pfalzwerke Gruppe
envia M
Fraunhofer
DREWAG
OLI
SharEnergy.
go-e
ZAPTEC
els spelsberg
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BCG BOSTON CONSULTING GROUP
STIHL®
sevDesk
TÜVRheinland® Genau. Richtig.
Payment
bayern innovativ
AXA
1886VENTURES

…and many more.

GENERAL TERMS AND CONDITIONS FOR THE PROVISION OF STUDY DATA by UScale GmbH (06/2020)

1. **Validity**
   Our terms and conditions shall only apply to entrepreneurs (§ 14 BGB), legal entities under public law and special funds under public law. Deviating or additional conditions of the customer are not binding for us, even if we do not object in individual cases, unless we expressly acknowledge them. In this case, they shall only apply to the respective individual contract.

2. **Conclusion of contract**
   1. Our offers are always subject to confirmation. The customer is bound to its order for two weeks from receipt by us.
   2. We shall only accept orders and changes to orders once we have confirmed them. The receipt of an invoice by the customer and the performance of the service shall be deemed confirmation.

3. **Delivery and Condition of the Study Data**
   1. We deliver the study data in the format agreed in the order confirmation, otherwise in a customary format. The customer must ensure that the technical and actual requirements for accessing and using the study data are met on its side. It is also the customer's responsibility to provide suitable software that enables the study data to be opened, administered and printed out properly.
   2. The study data are statistically collected and evaluated data. The informative value of the study data and their range of variation depend on the size of the sample, its composition and the population. When using the study data, the customer must observe these boundary conditions. On this basis, the study data were researched with reasonable care. However, we cannot warrant that the information in the study data is accurate and complete. Nor do we warrant that the study data are suitable and correct for the concrete needs of the customer.

4. **Right of use**
   1. The customer receives the simple, non-exclusive right to permanently use the study data entrusted to the customer as follows:
      a. The customer may only use the study data for its own internal purposes.
      b. The customer is not entitled to modify or otherwise edit the study data.
      c. The customer is not entitled to make the study data publicly accessible on the internet or in any other way. The customer is prohibited from duplicating, reselling or renting the products beyond its own internal purposes.
      d. Copyright notices, trademarks, serial numbers and other identification features on or in the study data referring to us or third parties may not be changed, illegibly mapped or removed by the customer.
      e. When using the study data in expert opinions, reports or other documents prepared by the customer, the customer must ensure that the content of the document does not consist, either in its entirety or to a considerable extent, of a mere transfer of the study data, that the study data is accurately reproduced in the document and that the document contains a clearly recognizable reference to us and the product, including its title and date.
   2. We may extraordinarily terminate the granted right of use if the customer violates these terms of use; as a rule, the customer is to be warned beforehand.
   3. All copyrights, rights of use and other protective rights to the study data shall remain with us. If the customer becomes aware of an infringement or an announced infringement of intellectual property or other of our rights, the customer shall inform us immediately.

5. **Reference**
   1. We may name our customer as a reference customer with representation of his logo, also on our website. For this purpose, the customer grants us a simple, spatially unrestricted, non-transferable right of use with regard to the name and trademark rights required for this purpose. The customer may object at any time with effect for the future.

6. **Terms of payment**
   1. The prices stated in our order confirmation shall apply otherwise our list prices valid at the time of the order shall apply. Our claims are due immediately and payable without deduction in Euro.
   2. The customer shall only have the right to offset if its counterclaim has been legally established or is undisputed. This prohibition of set-off does not apply to a counterclaim due to a defect which is based on the same contractual relationship as our claim. The customer shall only be entitled to exercise a right of retention to the extent that its counterclaim is based on the same contractual relationship.

7. **Liability for damages and reimbursement of expenses**
   1. Our liability for damages and reimbursement of expenses for slight negligence, in particular due to breach of duties arising from the contractual obligation and tort, is excluded, unless we have breached an essential contractual obligation, i.e. an obligation the fulfilment of which is essential for the proper performance of the contract or the observance of which the customer may regularly rely on. In this case, our liability shall be limited to the typical contractual damage, the occurrence of which we had to reckon with when concluding the contract due to the circumstances known to us.
   2. Typical contractual damage shall be damage of a maximum of € 10,000.00.
   3. However, our liability for damages resulting from injury to body, life or health, for intent and gross negligence, for the absence of a guaranteed quality or in accordance with the Product Liability Act is unlimited.
   4. The limitation period for claims of the customer for damages or reimbursement of expenses is one year. The statutory limitation of claims due to intent or gross negligence as well as injury to body or health or due to the Product Liability Act shall remain unaffected.

8. **Final provisions**
   1. German law shall apply to the exclusion of the UN Convention on Contracts for the International Sale of Goods (CISG). If the customer is a merchant, a legal entity under public law or a special fund under public law, the place of jurisdiction for disputes arising from and in connection with this contract shall be our registered office; however, we shall also be entitled to assert claims at the registered office of the customer.
   2. Should individual provisions be or become invalid, this shall not affect the validity of the remaining provisions.

About UScale

- UScale advises manufacturers of vehicles and charging technology, energy suppliers and service providers on the customer-oriented design of offers and the development of KPI systems for customer perception.
- UScale's work is based on customer insights studies on all touchpoints of the e-mobile customer journey and a development framework for product market fit for digital and innovative products.

- UScale is the only provider of a panel specialised in eMobility with over 7,000 panellists in the German-speaking region.
- UScale makes the customer perspective tangible for managers, engineers and IT'ers.
- UScale has extensive industry knowledge of the eMobility ecosystem.
- UScale combines many years of experience with the challenges of corporates with the agility of a start-up.

SCALE YOUR USER
SCALE YOUR BUSINESS

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