# MobilityCorp Logical Data Model

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This document defines the logical data entities for the AI-Enhanced Mobility Platform. It represents core data tables and their primary attributes without implying specific database technology or implementation details.

## 1. ParkingSpot

Stores information about each designated parking location, its geolocation, and current occupancy state.

|  |  |  |
| --- | --- | --- |
| Column | Description | Example |
| ParkingSpotID | Unique identifier for each parking spot | BH-A1 |
| ParkingName | Descriptive name of the parking spot | Berlin Hauptbahnhof |
| Latitude | Geographical latitude | 52.5255 |
| Longitude | Geographical longitude | 13.3697 |
| OccupancyStatus | Indicates whether the spot is occupied or vacant | Occupied |
| VehicleID | Identifier of the vehicle currently occupying the spot (nullable) | ES-GER-00457 |

## 2. Vehicle

Stores metadata and dynamic operational data for each fleet vehicle.

|  |  |  |
| --- | --- | --- |
| Column | Description | Example |
| VehicleID | Unique identifier for each vehicle | ES-GER-00457 |
| VehicleType | Type of vehicle | Electric Scooter |
| Latitude | Current latitude of vehicle | 52.5200 |
| Longitude | Current longitude of vehicle | 13.4050 |
| CurrentChargeLevel | Current battery charge level (%) | 68 |
| LastFullyChargedAt | Timestamp when vehicle was last fully charged | 2025-10-17 03:40 UTC |
| OperationalStatus | Operational state (Active, Maintenance, Disabled) | Active |

## 3. Booking

Records vehicle rental transactions, including scheduled and actual times and durations.

|  |  |  |
| --- | --- | --- |
| Column | Description | Example |
| BookingID | Unique identifier for each booking | BK-2025-0417 |
| VehicleID | Reference to Vehicle entity | ES-GER-00457 |
| UserID | Reference to User entity | U-78945 |
| BookingStartTime | Start date and time of booking | 2025-10-17 08:00 UTC |
| PlannedReturnTime | Scheduled return date and time | 2025-10-17 10:00 UTC |
| ActualReturnTime | Actual return date and time | 2025-10-17 09:45 UTC |
| OriginalDuration | Planned duration of rental (minutes) | 120 |
| ActualDuration | Actual duration of rental (minutes) | 105 |

## 4. ChargingSession

Captures each instance of a vehicle being connected to a charger, including energy and duration metrics.

|  |  |  |
| --- | --- | --- |
| Column | Description | Example |
| ChargingSessionID | Unique identifier for each charging event | CH-2025-0823 |
| VehicleID | Reference to Vehicle entity | ES-GER-00457 |
| ParkingSpotID | Reference to ParkingSpot where charging occurs | BH-A1 |
| StartTime | Timestamp when charging began | 2025-10-17 09:45 UTC |
| EndTime | Timestamp when charging completed | 2025-10-17 11:15 UTC |
| EnergyDeliveredKWh | Total energy transferred during session | 3.8 |

## 5. User

Stores registered customer information necessary for bookings and authentication.

|  |  |  |
| --- | --- | --- |
| Column | Description | Example |
| UserID | Unique identifier for each user | U-78945 |
| FullName | Full name of the user | Alex Müller |
| Email | User email address | alex.muller@example.com |
| PhoneNumber | Registered contact number | +49 170 1234567 |
| PreferredLanguage | Language preference for localization | de-DE |
| PreferredCurrency | Preferred currency for payments | EUR |
| AccountStatus | Current account status (Active, Suspended) | Active |