Parkopedia
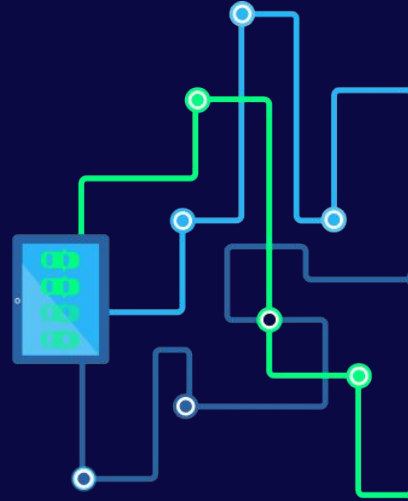
The Pains (and Fixes) of Public Charging an EV in Europe and North America

About Parkopedia

- Founded 2007 - to answer any parking question, anywhere

- Global operations and presence

- A leader in parking and vehicle-centric commerce

- Huge footprint across global OEMs and tier 1s.

Parkopedia

Who we work with

We power cloud-based parking services in millions of connected cars for blue-chip customers globally

Tier 1 suppliers

Auto manufacturers /OEMs

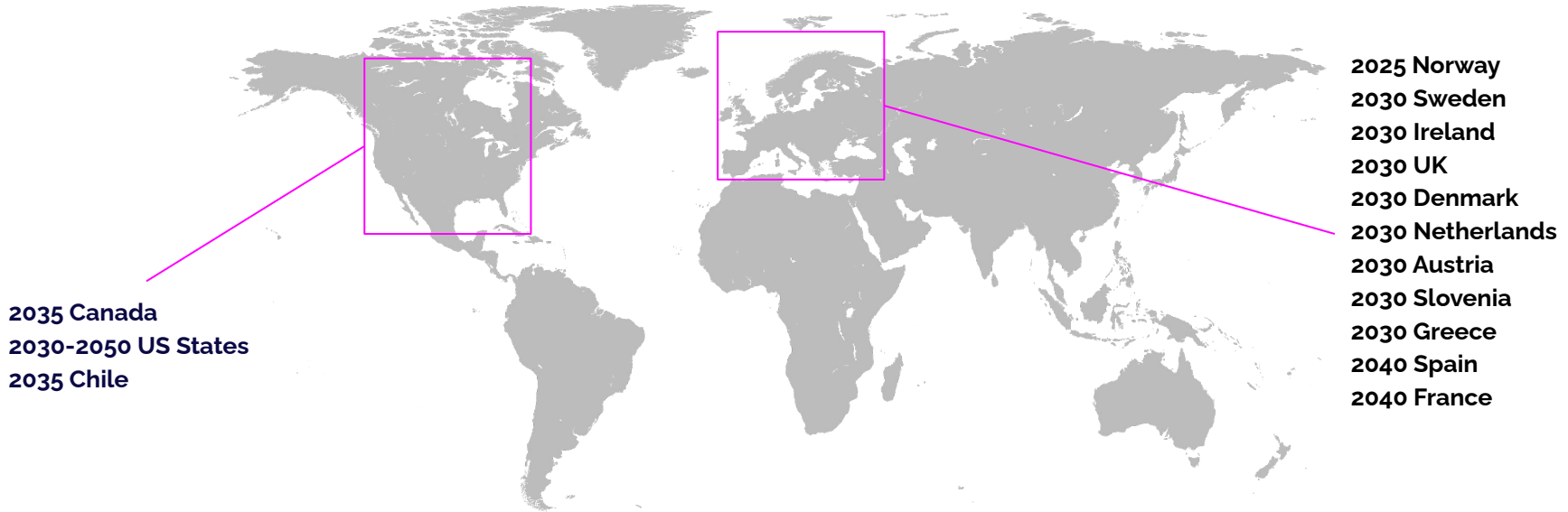## Mapping & navigation providers

Parkopedia

Adam Woolway: Head of EV @ Parkopedia

- >10 years experience in EV industry

- Co-founder Plugsurfing - a leading European eMSP

- Acquired in 2018

- Accelerating Parkopedia's EV ambitions

Parkopedıa

Finally, the EV is Coming - Government Led

Euro & N.Am ICE Vehicle Phase-Out Targets From 2025

2025 Norway
2030 Sweden
2030 Ireland
2030 UK
2030 Denmark
2030 Netherlands
2030 Austria
2030 Slovenia
2030 Greece
2040 Spain
2040 France

2035 Canada
2030-2050 US States
2035 Chile

Parkopedia

The EV is Coming - OEM Led

Selected OEM ICE Phase Out Targets

2025	2030	2035

Jaguar — 2025

Audi, Hyundai, Ford, GM, Volvo, Volkswagen, Mercedes-Benz — 2030

Honda — 2035

2050 Net Zero Targets

- VW
- PSA
- Nissan
- Ford
- Renault
- Honda

Parkopedia

We're about to see a seismic shift in mobility

Involving people who don't even use the word 'mobility'.

2010s EV Driver

Affluent

2nd Cars

Private Parking

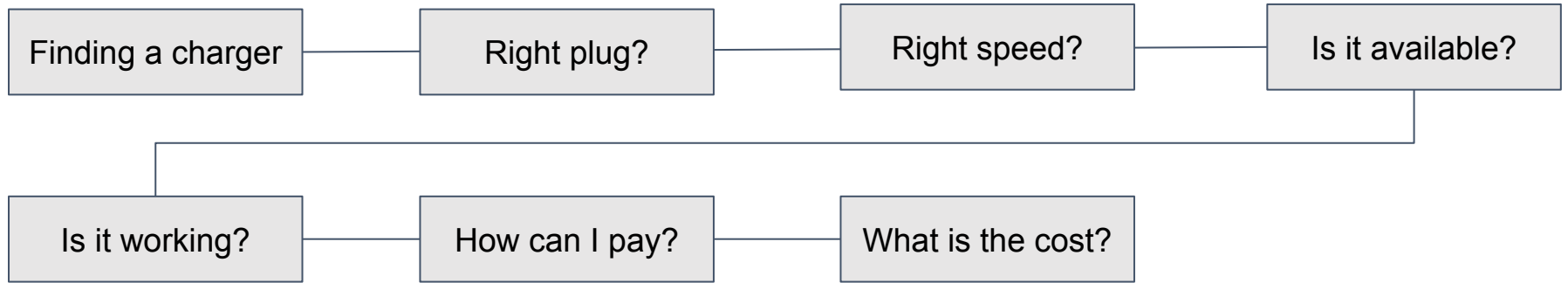Tech-Savvy/Pioneers

2020s EV Driver
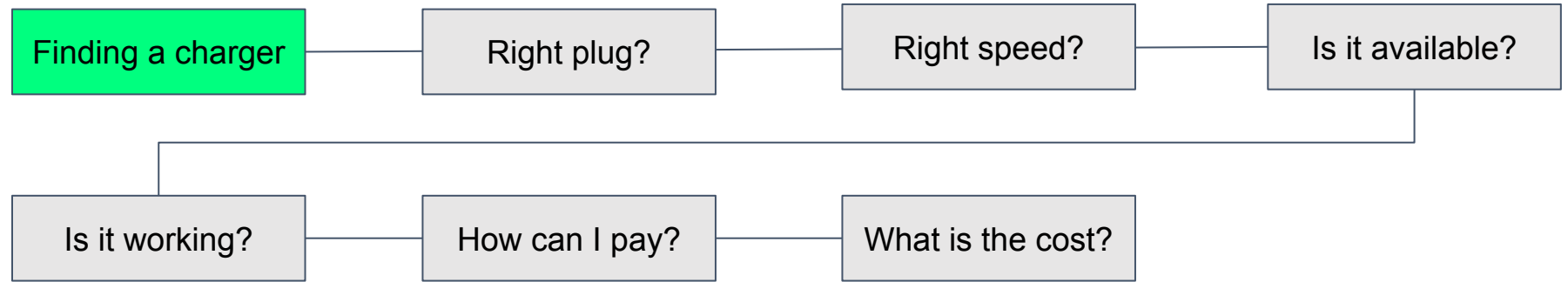
All Car Owners

Main cars

On-street parking

Mass-Market

Parkopedia

The Problem: Charging a Car is a Nightmare

Potential Problems in EV Driver User Journey for Public Charging

Finding a charger	Right plug?	Right speed?	Is it available?

Is it working?	How can I pay?	What is the cost?

Parkopedia

The Problem: Charging a Car is a Nightmare

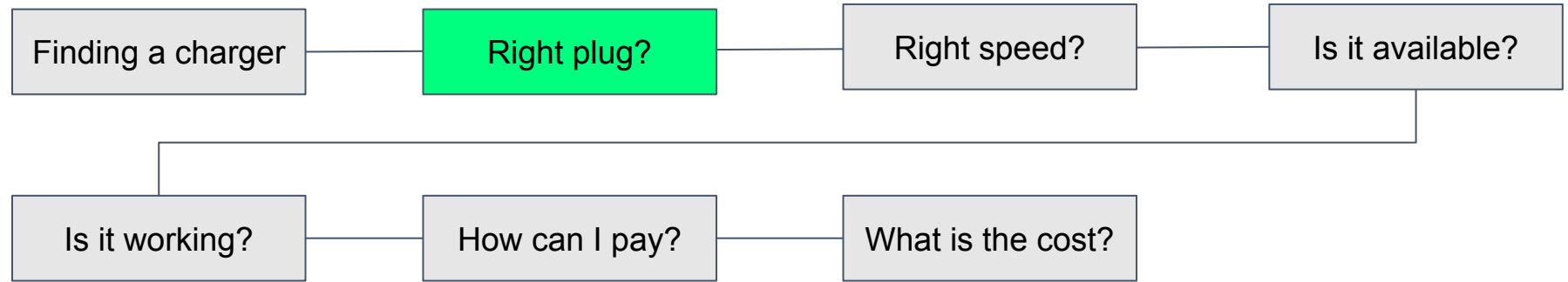## Potential Problems in EV Driver User Journey for Public Charging

Finding a charger	→	Right plug?	→	Right speed?	→	Is it available?

Is it working?	→	How can I pay?	→	What is the cost?

- Charging points can be small & discreet
- Often GPS Coordinates provided are wrong
- Not all charging points are for members of public

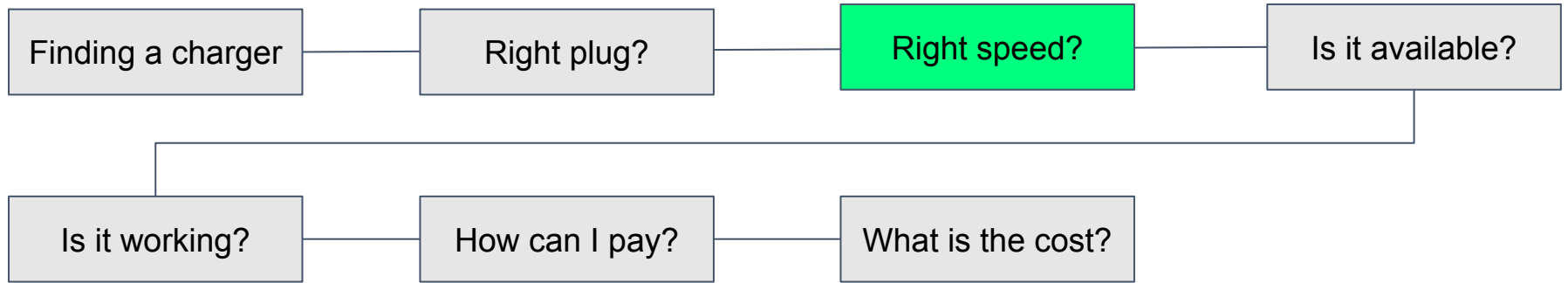Parkopedia

The Problem: Charging a Car is a Nightmare

Potential Problems in EV Driver User Journey for Public Charging

Finding a charger	Right plug?	Right speed?	Is it available?

Is it working?	How can I pay?	What is the cost?

- Different cars might need different plug-types
- Do you need CHAdeMO or CCS?
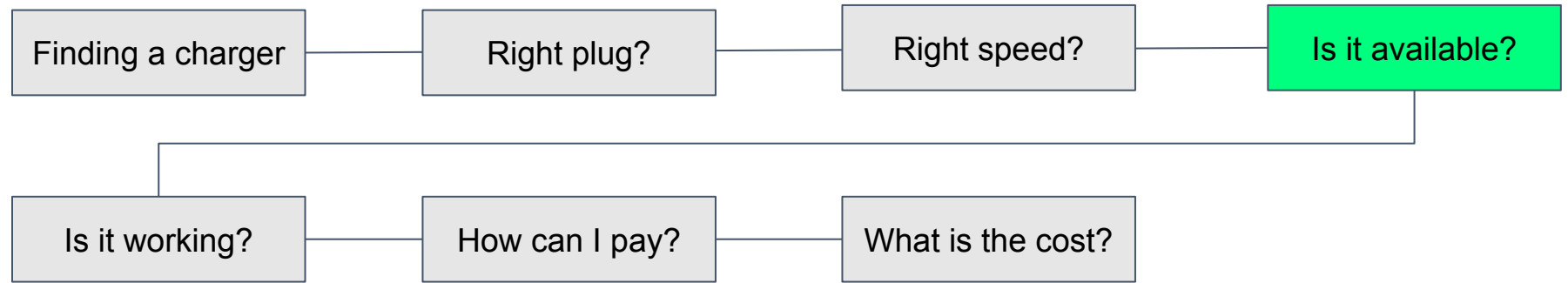
Parkopedia

The Problem: Charging a Car is a Nightmare

Potential Problems in EV Driver User Journey for Public Charging

| Finding a charger | | Right plug? | | Right speed? | | Is it available? |

| Is it working? | | How can I pay? | | What is the cost? |

- AC or DC Charging?
- 3kw or 300kw?
- What is the real speed vs the 'list speed'

Parkopedia

The Problem: Charging a Car is a Nightmare

Potential Problems in EV Driver User Journey for Public Charging

Finding a charger	Right plug?	Right speed?	Is it available?

Is it working?	How can I pay?	What is the cost?

- How 'real-time' is real-time availability data?
- Will it be available in 10 minutes when you get there?
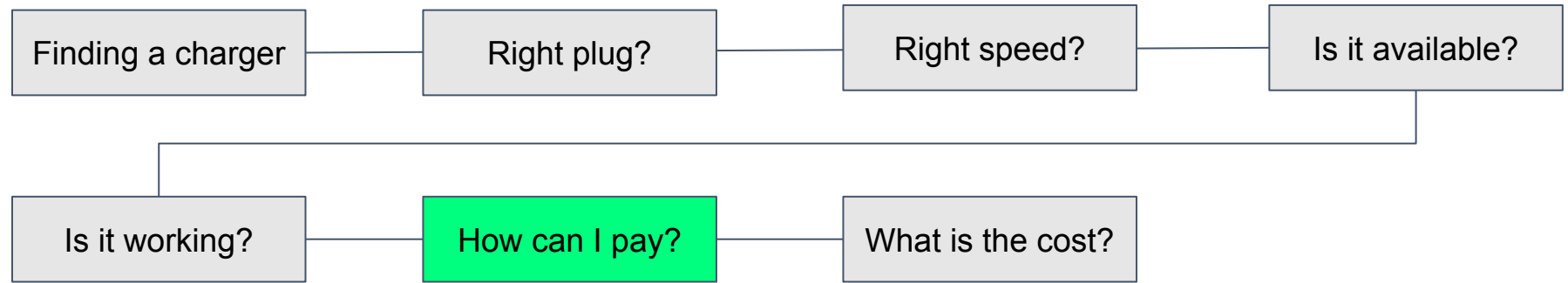- Will it be available tomorrow at 19:00 when you arrive?

Parkopedia

The Problem: Charging a Car is a Nightmare

Potential Problems in EV Driver User Journey for Public Charging

| Finding a charger | Right plug? | Right speed? | Is it available? |

| Is it working? |

Nov 27, 2021, 05:00am EST | 1,912 views

EV Charging Infrastructure Needs To Work, Not Just Be Installed

Forbes

Parkopedia

The Problem: Charging a Car is a Nightmare

Potential Problems in EV Driver User Journey for Public Charging

Finding a charger	Right plug?	Right speed?	Is it available?

Is it working?	How can I pay?	What is the cost?

- Closed-networks mean drivers need multiple apps & RFIDs
- ISO15118?
- Credit Card?
- Fleet billing? Monthly billing?

Parkopedia

The Problem: Charging a Car is a Nightmare

## Potential Problems in EV Driver User Journey for Public Charging
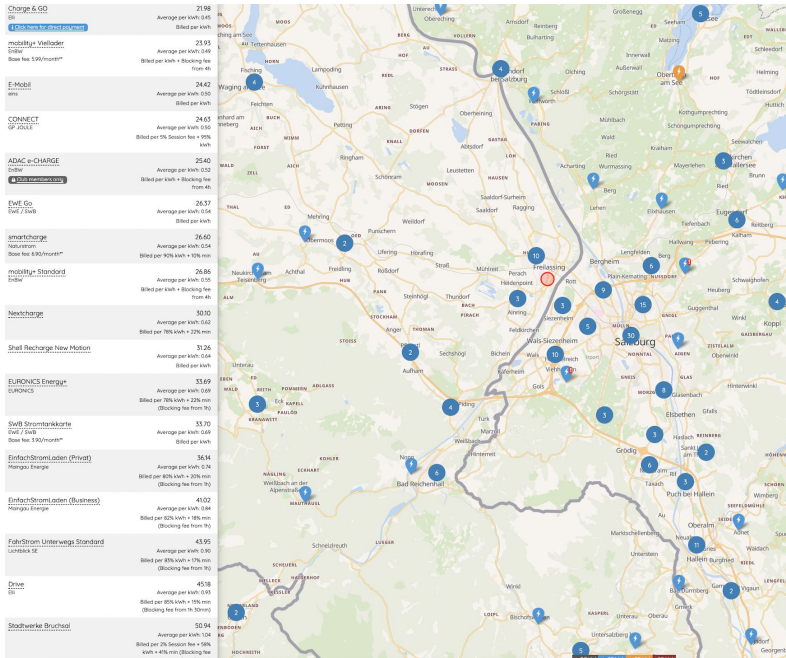
Right speed? — Is it available?

What is the cost?

- Multiple variables dynamic pricing mean infinite outcomes
- Chargeprice.app showing same charging session costing between €20 and €60!

Parkopedia

Our own Tests Found this to be a Global Issue

- Surveying in global cities unearthed inaccurate charging point data everywhere

- Particular focus: Paris, London, Turin, Florida, Munich

- Charging points missing, access information wrong, charging speeds wrong...

Parkopedia
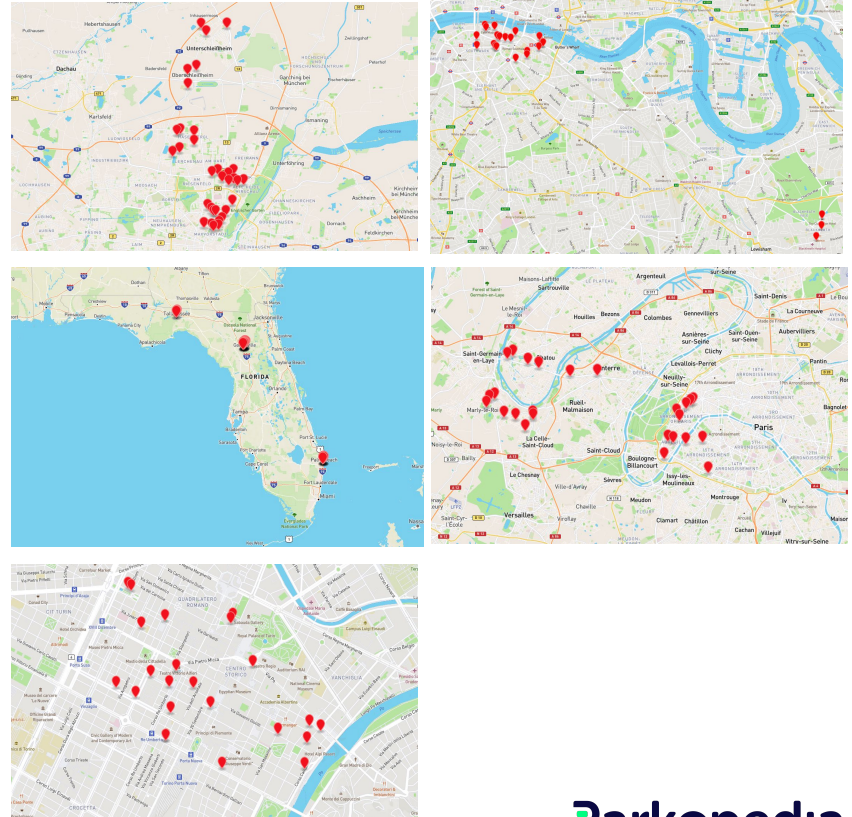
Public EV Charging Pain Points Summary

- **Poor Quality of EV POI Data**
  - **CPOs** focus on becoming EMSPs of their own infrastructure

  - **EMSPs** focus on transactions, not data

  - **Mapping vendors** integrate EV POI sources without verification

- **Fragmentation of Value Chain and Industry Players**
  - **OEMs** have to select a reference EMSP partner for EV Charging

  - **Lack of roaming across** EV charging networks

  - OEMs locked with the **geographic coverage** of the selected EMSP

Parkopedia

And the Situation is about to get much more complex

- 10x increase in infrastructure needed in major markets

- Greater reliance on public charging: longer journeys & less home-charging

- Increase of 'public charging on private ground'

.

Parkopedia

'Public' Charging on Private Ground

Parkopedia

Charging Operators/Retail Car Parks is a Winning Formula

But, Public Charging Points in Private Locations are Complex

- DC Fast charger. Picture taken in Berlin 05.01.22

- Free of charge to use

- ...every EV drivers' dream!

Parkopedia

...Hidden Parking Restrictions...

- Drivers can only charge for 90 minutes...may not be enough for a full battery

Parkopedia

...Hidden Accessibility Restrictions

- Parking barriers and shut on Sundays

- EV POI databases do not reliably give this information

Parkopedia

...and a Bad User Experience that follows

Consumer champions
Motoring

Why was I fined £90 for charging my electric car at Lidl?

A reader asks why they were penalised even though they paid to use the charger

Miles Brignall

Mon 17 Jan 2022 07.00 GMT

457

Lidl's popular charging points ... but don't use when the store is closed. Ph[...] Guardian

ELECTRIC VEHICLE
RAPID CHARGER

- Guardian article from 17.01.22
- Lack of parking data accompanying EV POI led to driver being fined.

EXPRESS

'Unfair' Drivers slapped with £120 private parking fines while charging their EVs

EV OWNERS are being fined up to £120 a time by private parking firms while charging.

We Need to Re-Define the EV Charging User Journey

Parkopedia

For a Mass-Market User Experience, OEMs need to provide Parking AND Charging Data

Parkopedia

We are already Global Leader in Parking
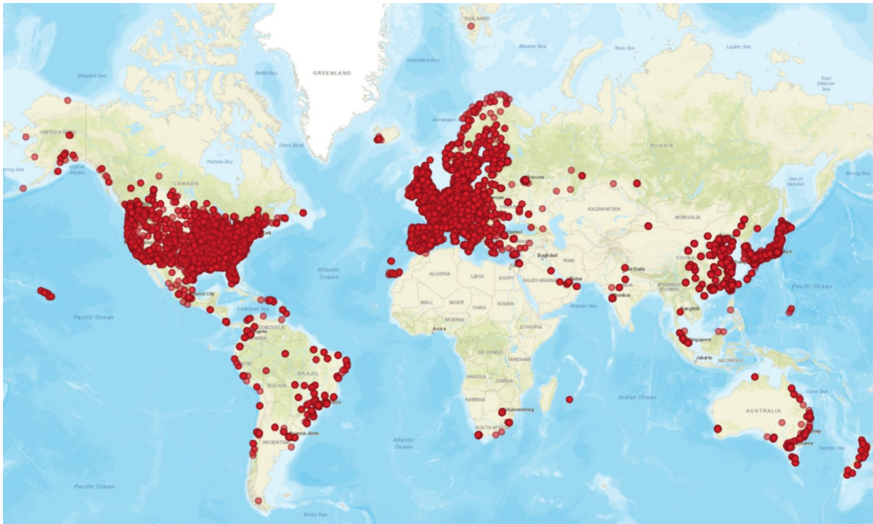
Parkopedia

89 countries

15,000 cities

70 million spaces

Over 1.4 million on-street locations

Over 350k off-street locations

Over 750k locations with dynamic space availability

Over 340k locations with payment capability

28

Parkopedia

Parking Data Coverage

Off-Street

On-Street

Parkopedia

Static Data

350,000 off-street locations

- Basis for off-street bookings and access & pay services

1,400,000 on-street locations

- Basis for payment services and on-street availability information

Detailed information for every location

- Entrance and exits, opening hours, pricing, restrictions, payment types and much more

- Enables contextual parking recommendations

- Enables intelligent parking user experiences of automotive personal assistants

Parkopedia

Dynamic Data
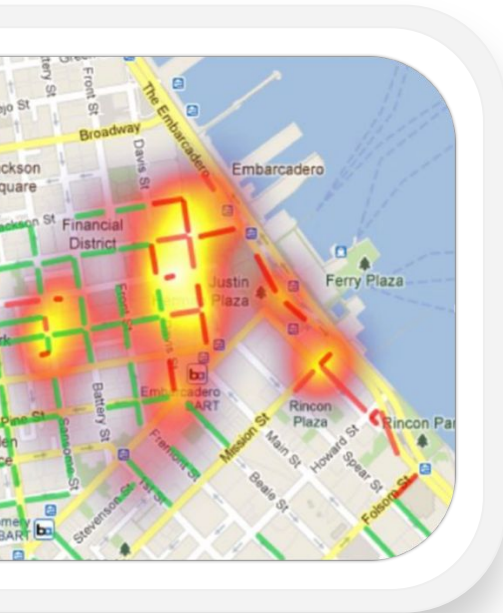
Patented predictive availability technology
- Fusion of floating car data (FCD), transaction data, ultrasonic sensor data (USS) and more

Critical for autonomous parking
- An autonomous car must be able to locate an available parking space without driver assistance

High consumer demand meets poor infrastructure
- Dynamic space availability in over 4,000 cities
- Real-time visibility of parking operator's assets
- Key data for yield and traffic management
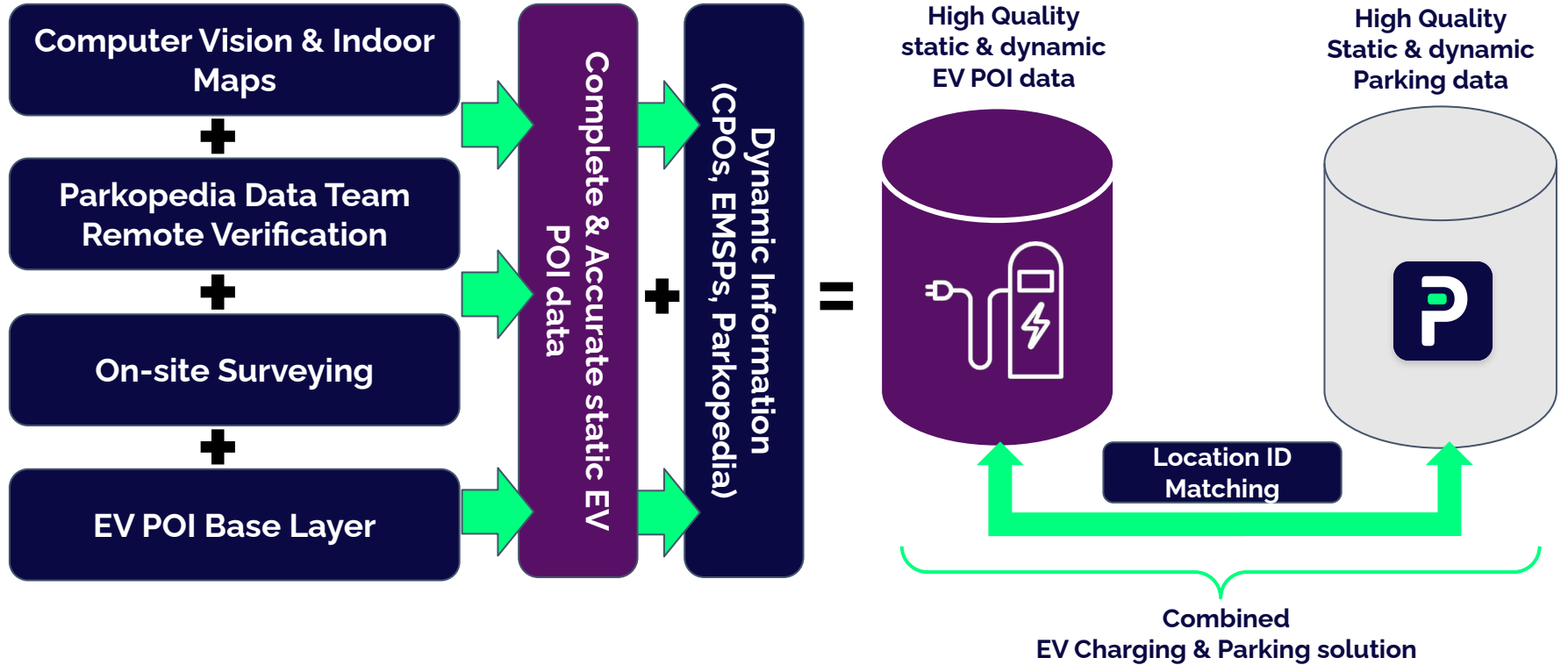- Essential for efficient routing

Parkopedia

Parkopedia Metrics

- Parking data in 89 countries
- 15,000 cities worldwide
- 1.4m on-street locations
- 400k off-street locations
- 70 million spaces around the world
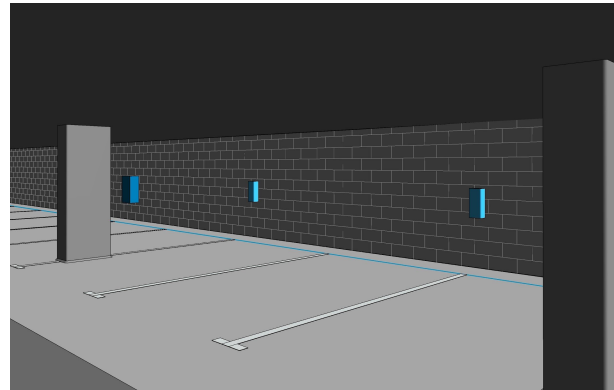- Data is validated and refreshed regularly
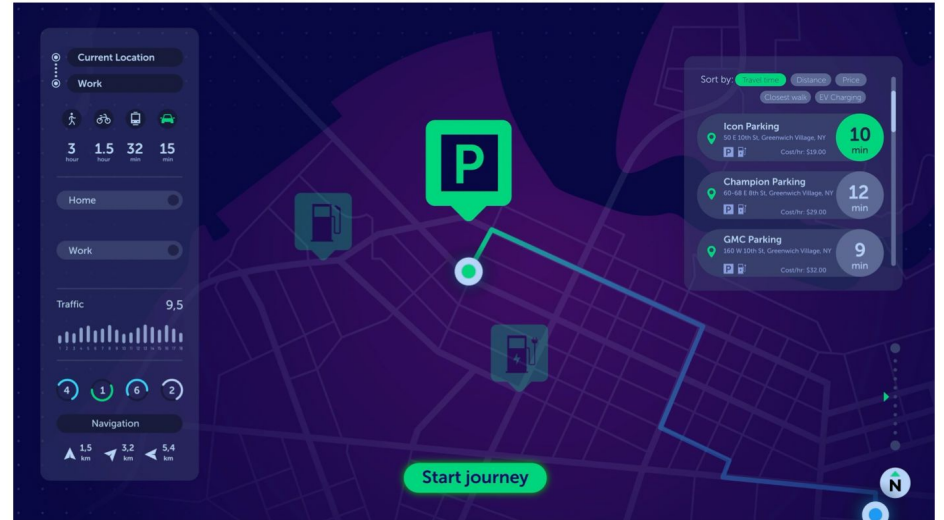
50% All new vehicles built in EU have Parkopedia services installed

Parkopedia

Park & Charge Data - What We Do

Computer Vision & Indoor Maps
+
Parkopedia Data Team Remote Verification
+
On-site Surveying
+
EV POI Base Layer

Complete & Accurate static EV POI data

+

Dynamic Information (CPOs, EMSPs, Parkopedia)

=

High Quality static & dynamic EV POI data

High Quality Static & dynamic Parking data

Location ID Matching

Combined EV Charging & Parking solution

Parkopedia
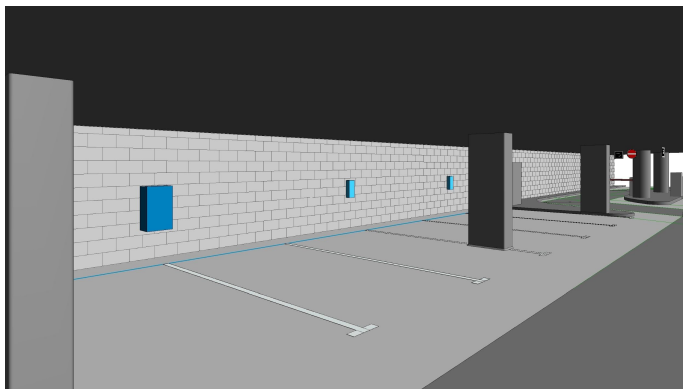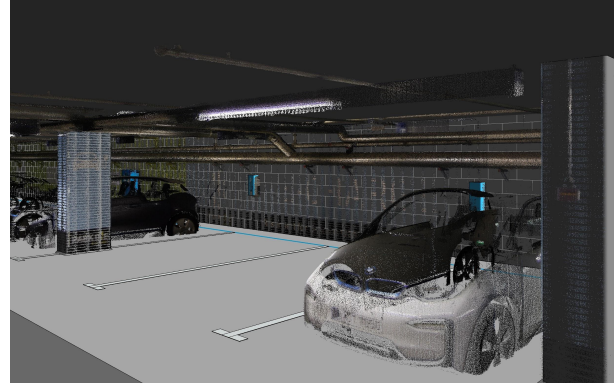
Parkopedia

And, we provide multi-domain payment for vehicle services

Parkopedia

Single Sign-On powered by Parkopedia

OEM Portal / App

Driver

Single-Sign-On User Registration:
- user data
- payment method
- Agree T&C
- SCA

Necessary User data
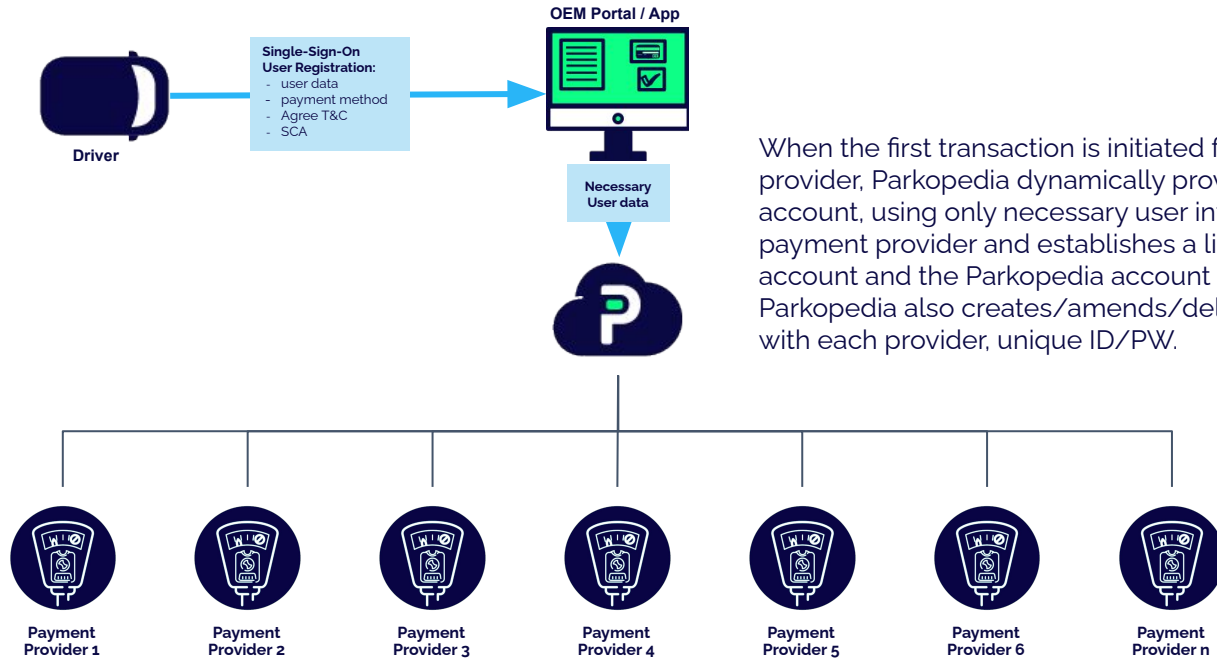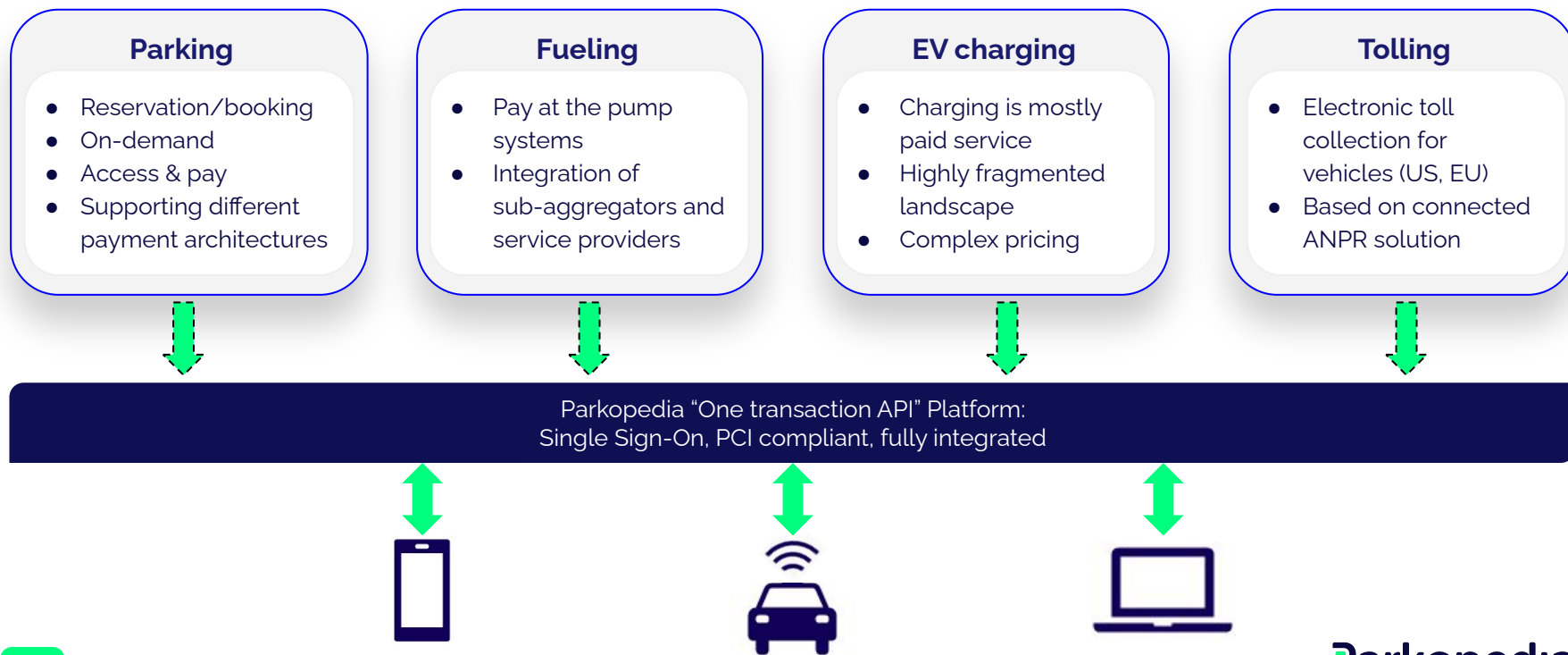
When the first transaction is initiated for a new payment provider, Parkopedia dynamically provisions a user account, using only necessary user information, with the payment provider and establishes a link between the new account and the Parkopedia account registered by an OEM. Parkopedia also creates/amends/deletes user accounts with each provider, unique ID/PW.

Payment Provider 1

Payment Provider 2

Payment Provider 3

Payment Provider 4

Payment Provider 5

Payment Provider 6

Payment Provider n

Parkopedia

Multi-domain payment platform

Transaction platform that started with parking is now leveraged in other transaction domains

Parking
- Reservation/booking
- On-demand
- Access & pay
- Supporting different payment architectures

Fueling
- Pay at the pump systems
- Integration of sub-aggregators and service providers

EV charging
- Charging is mostly paid service
- Highly fragmented landscape
- Complex pricing

Tolling
- Electronic toll collection for vehicles (US, EU)
- Based on connected ANPR solution

Parkopedia "One transaction API" Platform:
Single Sign-On, PCI compliant, fully integrated

Parkopedıa

Transactions

World's broadest coverage of
integrated parking transaction services

- We aggregate parking payment and reservation partners and expose global inventory through a single API

- Our transaction integration platform enables cars and mobile devices to initiate and execute parking transactions at scale

- Our integration with 3rd party user accounts secures usability for autonomous parking and other strategic use cases

Example Payments Providers

Example Access & Pay Providers

Example Reservations Providers
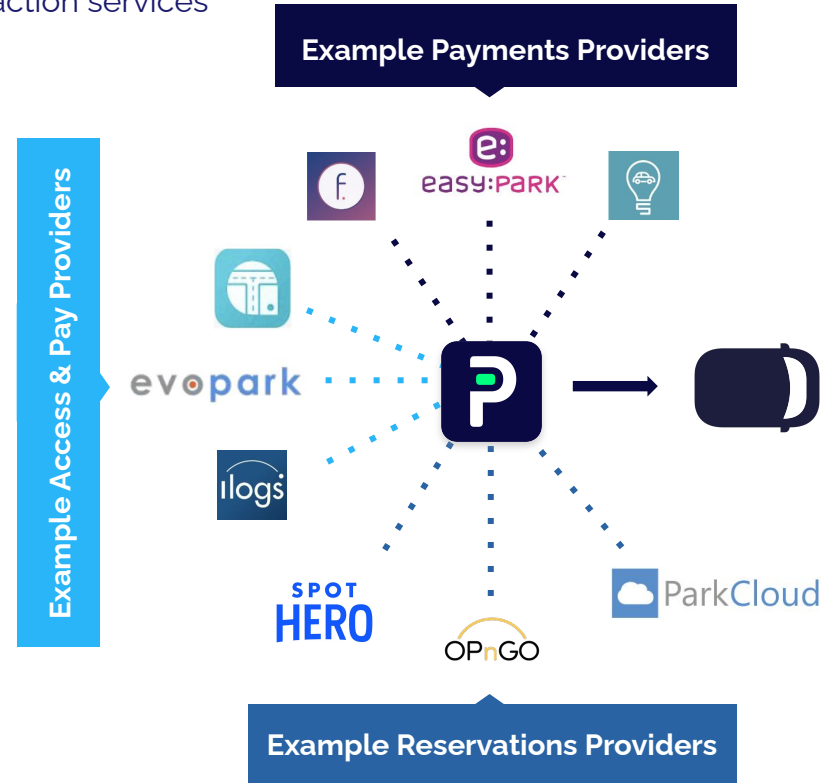
Parkopedia

Transactions as Next Step

Higher Quality Data through EV Transactions

- By partnering with EMSPs on transactions, **Parkopedia gains access to dynamic data** which remains out of reach for traditional EV POI Data Suppliers

- **We aggregate payment partners** and expose a unified higher quality EVSEs inventory through a single API

- Our transaction integration platform will then enable cars and mobile devices **to initiate and execute EV Charging remote sessions transactions at scale**

EV POIs Data
CDRs
Transactions
EMSPs

EV POIs Data
CDRs
CPOs

EV POIs Data
EV POIs Data Suppliers
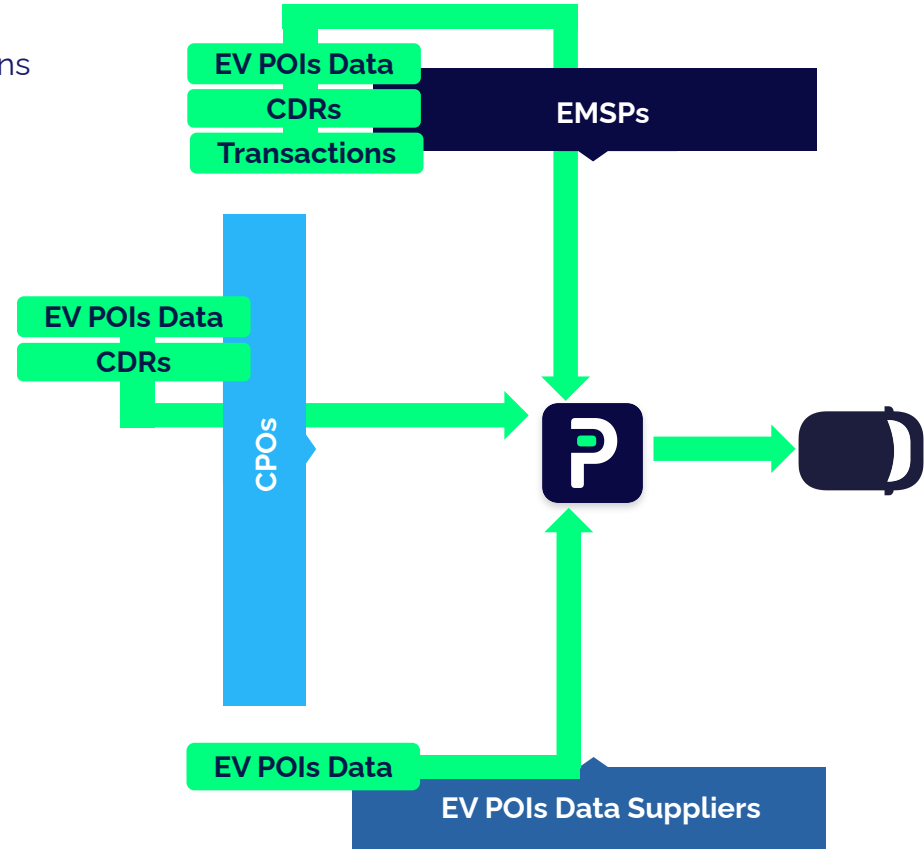
Parkopedia

Contact me

Adam Woolway
Head of EV @ Parkopedia

+491728106005
adam.woolway@parkopedia.com

Parkopedia

Thank you.

Parkopedia