



Traveling with peace of mind with an affordable EV + Grid Services

June 2020













Mission & Business

- → Enable mass market EV adoption
- → Optimise the use of natural resources
 - → Reduce CO2 impact and cost

Batteries as a Service

- Traveling with peace of mind with an affordable EV
- Grid Services
- Mobile charging









Problem

Traveling with peace of mind in an affordable EV?





Not capable of traveling with peace of mind





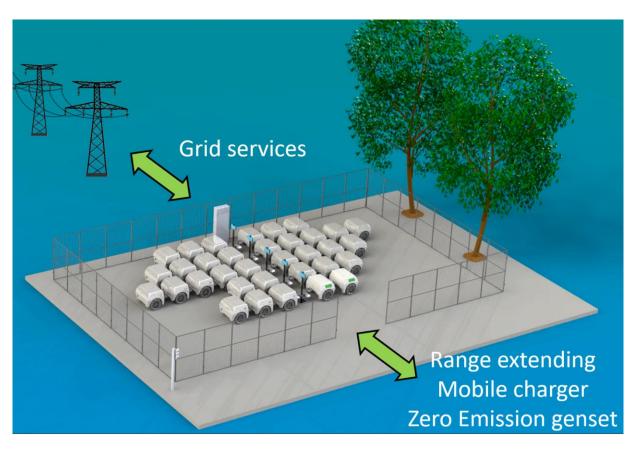
Not for the mass market Large carbon footprint







Solution



Better using batteries: Batteries as a Service

A 60 kWh powerbank on-demand

- No payload impact
- Pay per use
- Seamless to use and drive (see links to video)
 - Self pairing with the car
 - Self steering when backing
 - Equivalent to 1,8MW net charging power
- Grid services when stationary





Value proposition



EP Tender €90 6h15 Paris-Bordeaux: 600 km 50 kWh EV

Break-even value of time: 7,44€/hour

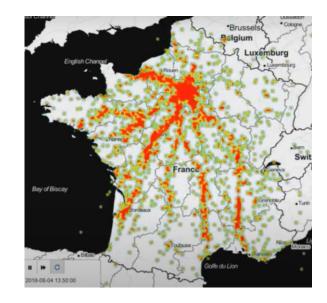
Fast charging €72

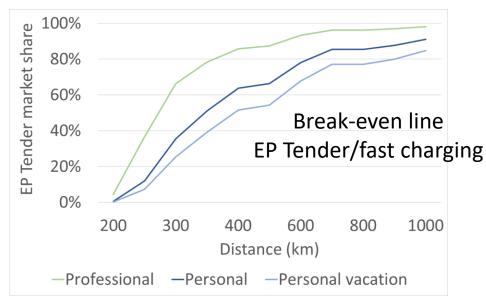
8h40



Microsimulation with:

- 4 million trips
- 350 000 individuals
 m<ppy



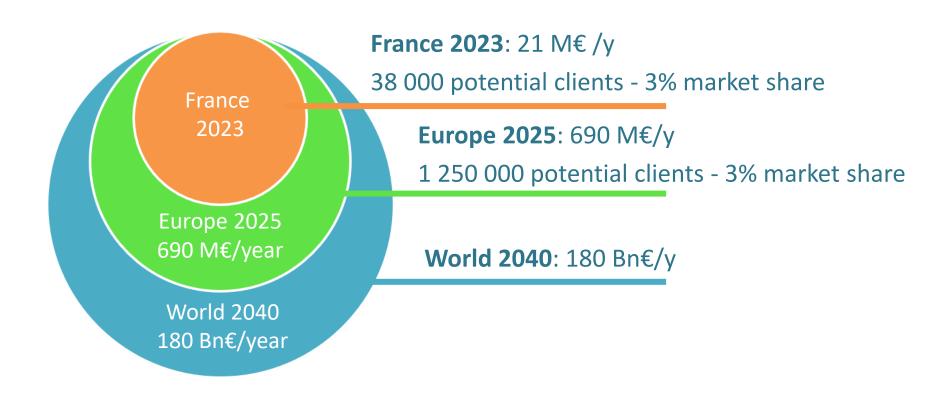








Market Opportunity and Risks

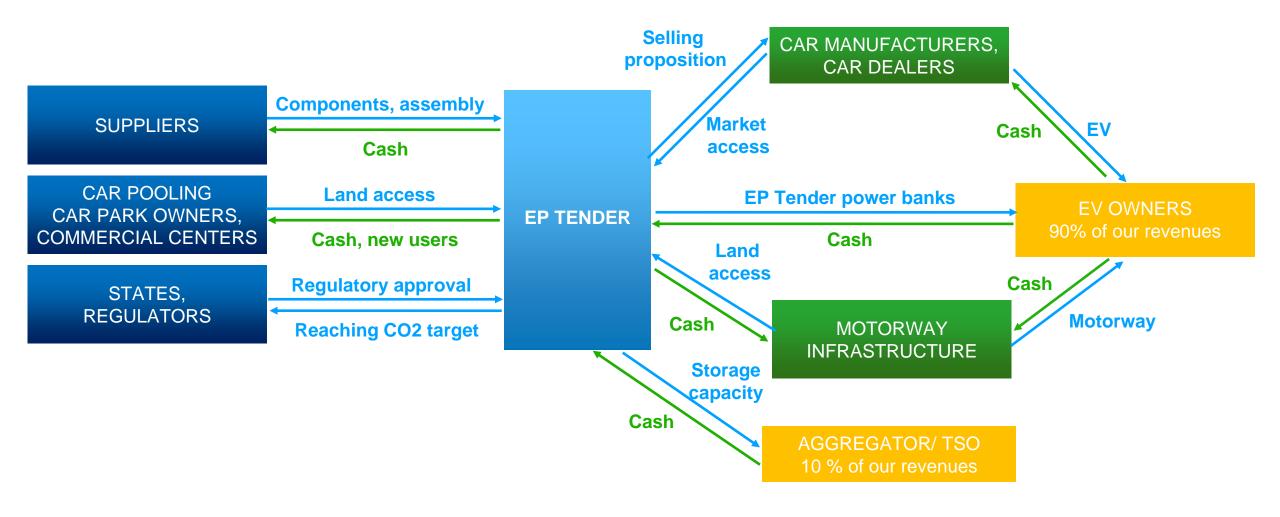








Business Model – EP Tender providing value 93% of the time!









Current ecosystem













































Infrastructure

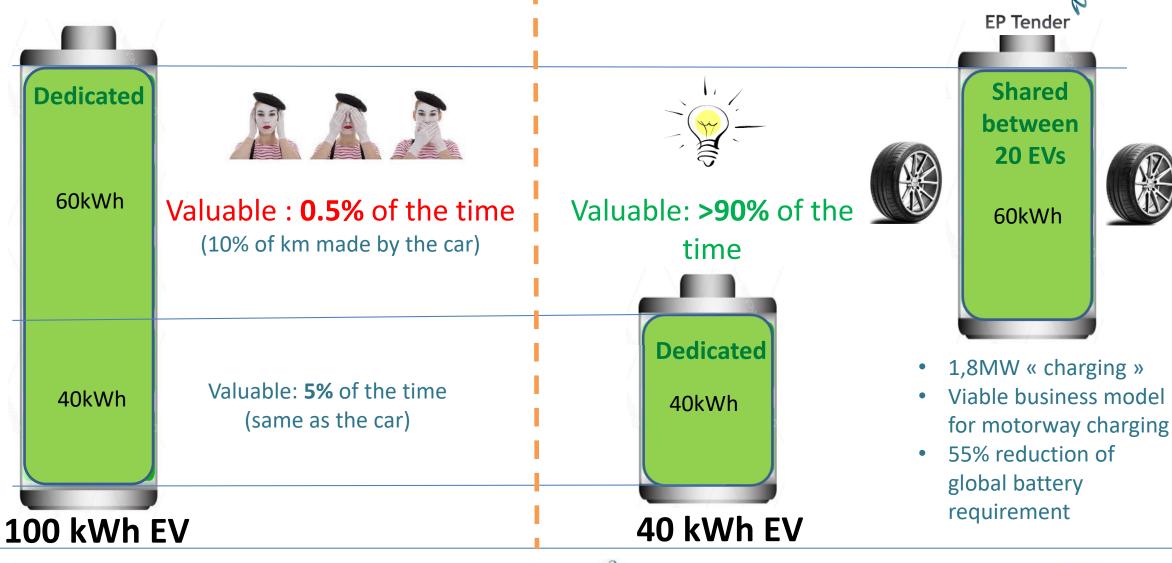






Brute force: ever larger battery

Finesse: Batteries as a Service









Brute force: ever larger battery

Finesse: Batteries as a Service





95 kWh battery 82 000€ 100 kW charging



Renault Zoé + EP Tender

50 kWh + [60 kWh] battery 30 000€ 1 800 kW charging

Seamless user experience International patent







Delivering the Green Deal

Battery	CO2 Footprint	Time to market	Required investment	Technology risk	User cost reduction	User acceptance	Value for money
Use it better	-55%	2022	€€ Millions	Low	-55%	To be validated	Immediate
Better make it	-50%	2025	€€ Billions	Low	0%	High	Medium term
Make it better	-25%	2030	€€€ Billions	High	-40%	High	Long term
Total	-83%	2030	€€€ Billions	Medium	-73%	High	Medium term



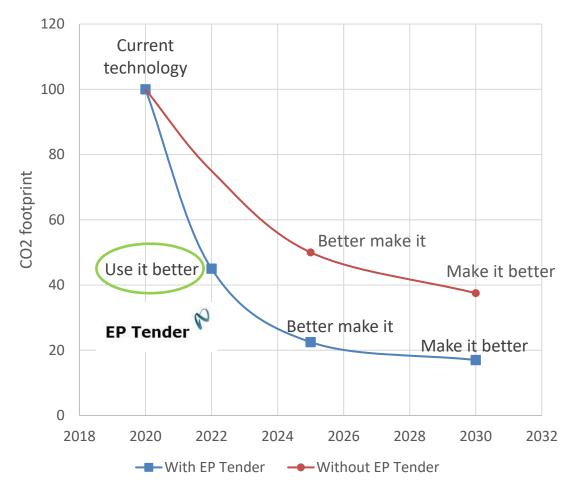






EP Tender's contribution

Battery carbon footprint reduction



Battery TCO reduction

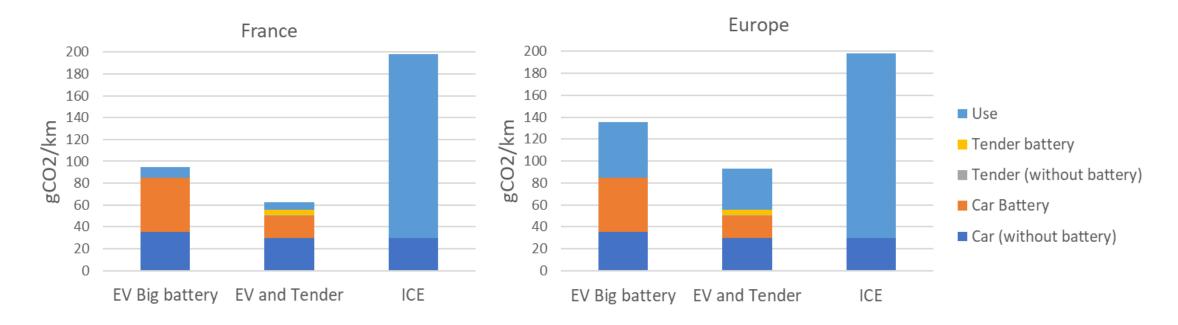








Green Deal



- CO2 savings of 20-50 million tons per year in Europe (15% market share assumption)
- Reduce by 54% the battery quantity
- Facilitate adoption of ULEZ in cities







Commercialisation strategy

2021

Engineering
Manufacturing
Homologating









2022

Pilot users

Field tests

Dissemination

EU type-approval

EV series homologation



















2023

Factory option

Train car dealer sales teams

20 rental points, 110 Tenders, 1200 clients









2024

Expand in Europe
Find local partners
100 rental points, 900
Tenders, 11 000 clients









Team



Jean-Baptiste Segard, CEO, EPFL



Hugo Basset, Data scientist, Ecole Polytechnique, UC Berkeley



Vincent Baudier, Mechanical engineering Arts et Métiers, Georgia Tech



Ahmed Gharsellaoui, Embedded Software, ENET



Jingwei Zhang, Embedded software engineering ESIGELEC



Zied Abidi, Electronics engineering, ENSIT

Advisory board



Johanne Ulrich: Investor & Startup acceleration InnoEnergy



Bertrand Largy: former Renault's Expert Leader Powertrain & Batteries



Philippe Doublet: former Renault's Secretary General R&D



Philippe Chain: EV strategy consultant, formerly at Tesla, Audi, Renault



Gilles Van Eegher: former PSA's head of Europe homologations



Geneviève Houriet-Segard: research engineer of EDHEC Business School





User acceptance?













Closing message

Our mission:

Doing more (range, renewables)

With less (cost, carbon impact, raw materials, travel time)





Frugality, over exuberance!

northvolt

Solid state





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