

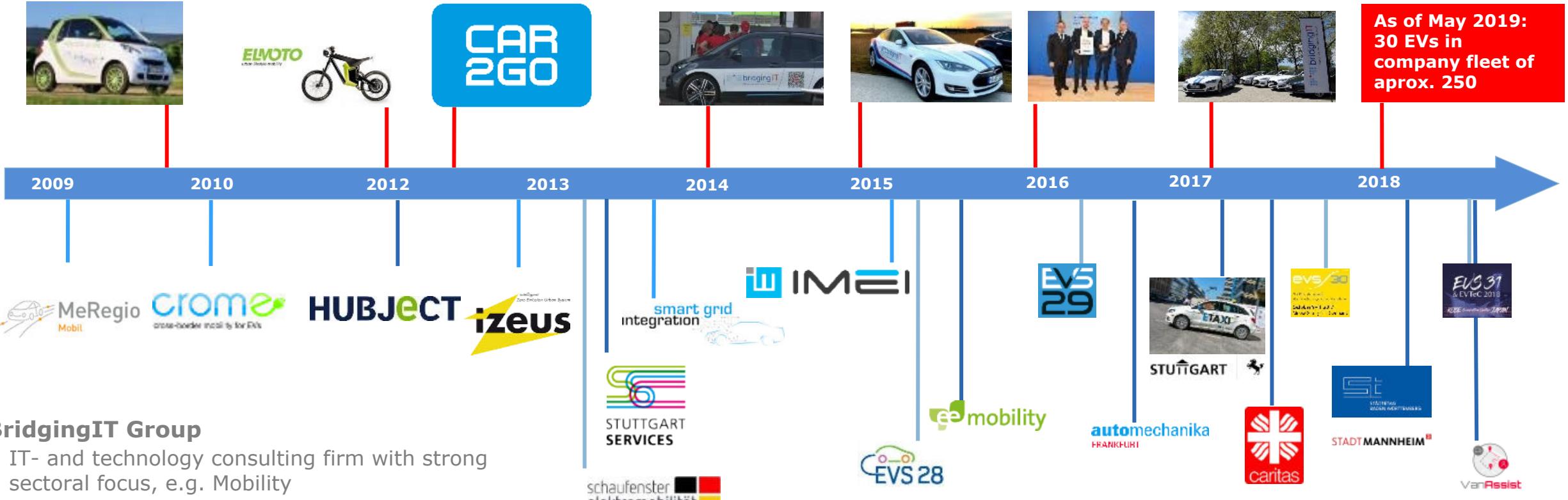
Business potential and impact of the ISO 15118 standard

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Electric mobility@bridgingIT: our first 10 years



BridgingIT Group

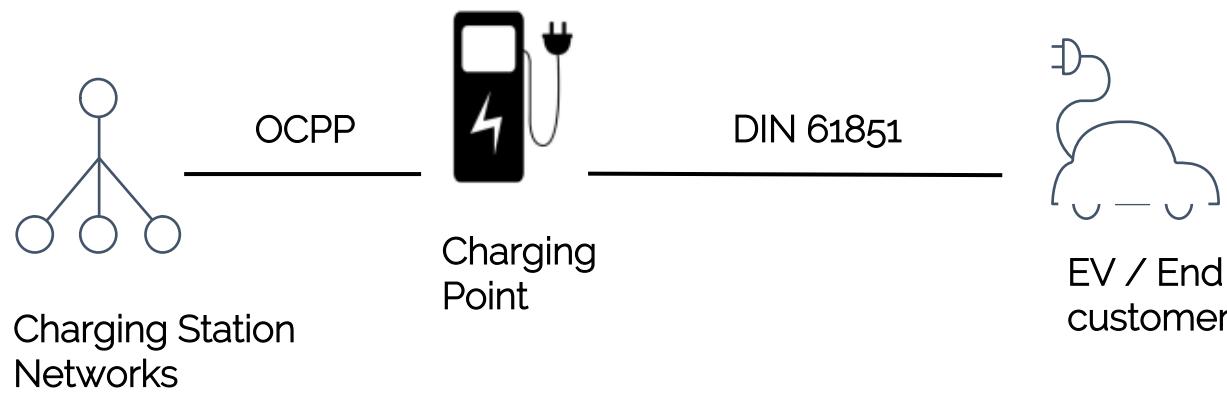
- IT- and technology consulting firm with strong sectoral focus, e.g. Mobility
- Founded in 2008, today over 600 employees, operating from 12 locations in Germany, Switzerland and Czech Republic
- Specialised subsidiaries fastahead, CraftingIT and Heidelberg International

Memberships

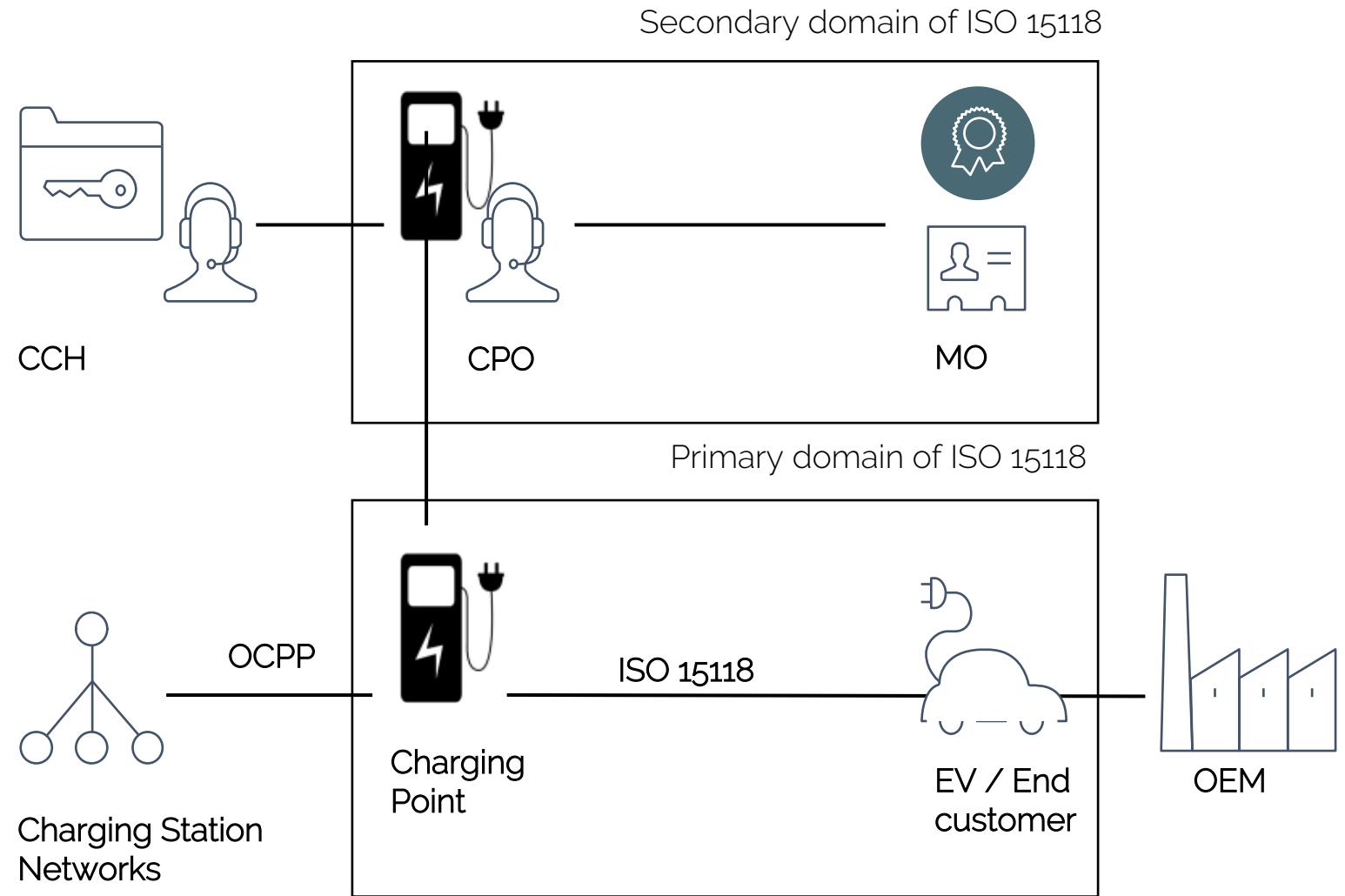


A story of unfulfilled potential and missed opportunities:

- a seamless, user-friendly and “digitalized” customer experience - missing in public charging domain
- Smart Charging – grid stabilisation (hence avoiding of costs) – in its infancy
- harvesting additional “convenience” revenues (in other words benefiting from “the scarcity of resources”) – sadly neglected

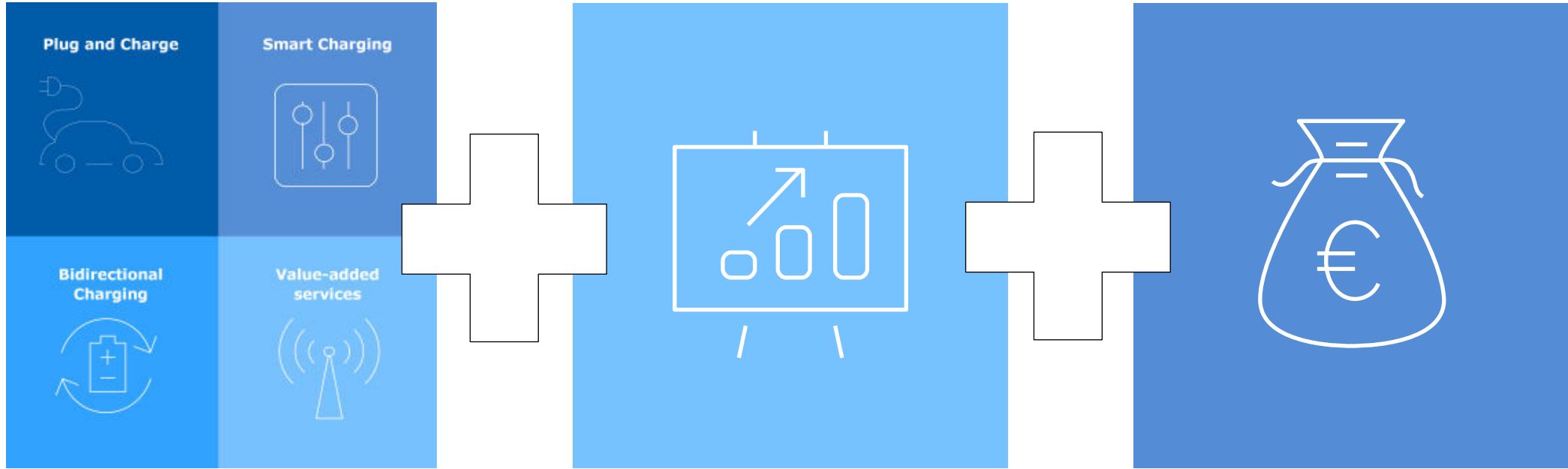


The Architecture of the ISO 15118 Landscape

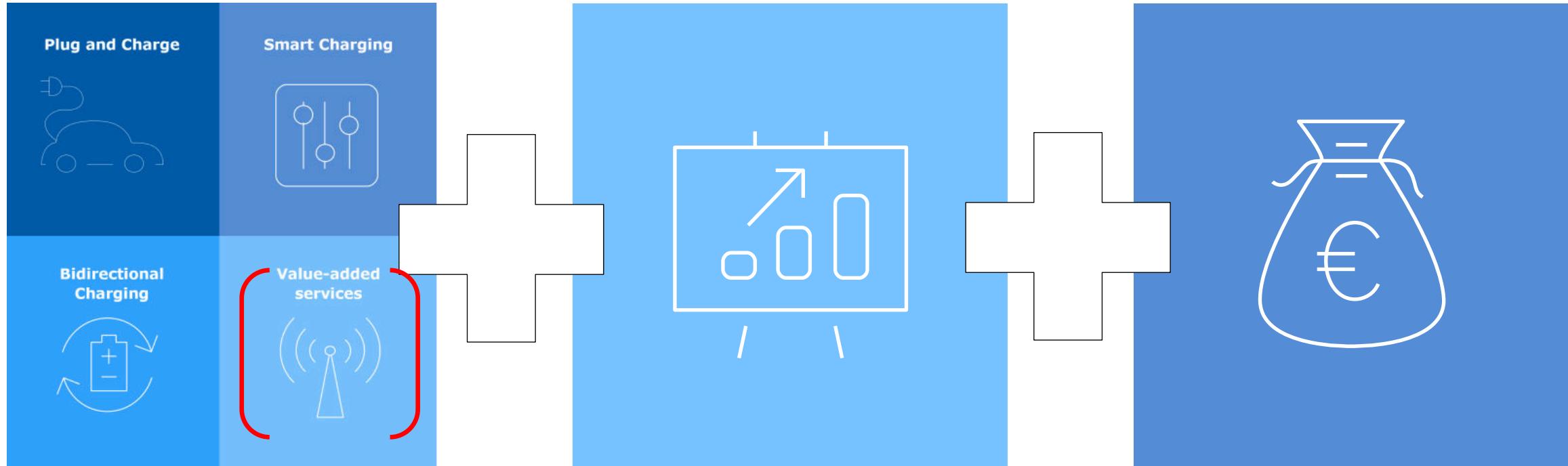


MO: The mobility operator / CPO: Charge Point Operator / CCH: Contract Clearing House

Methodology



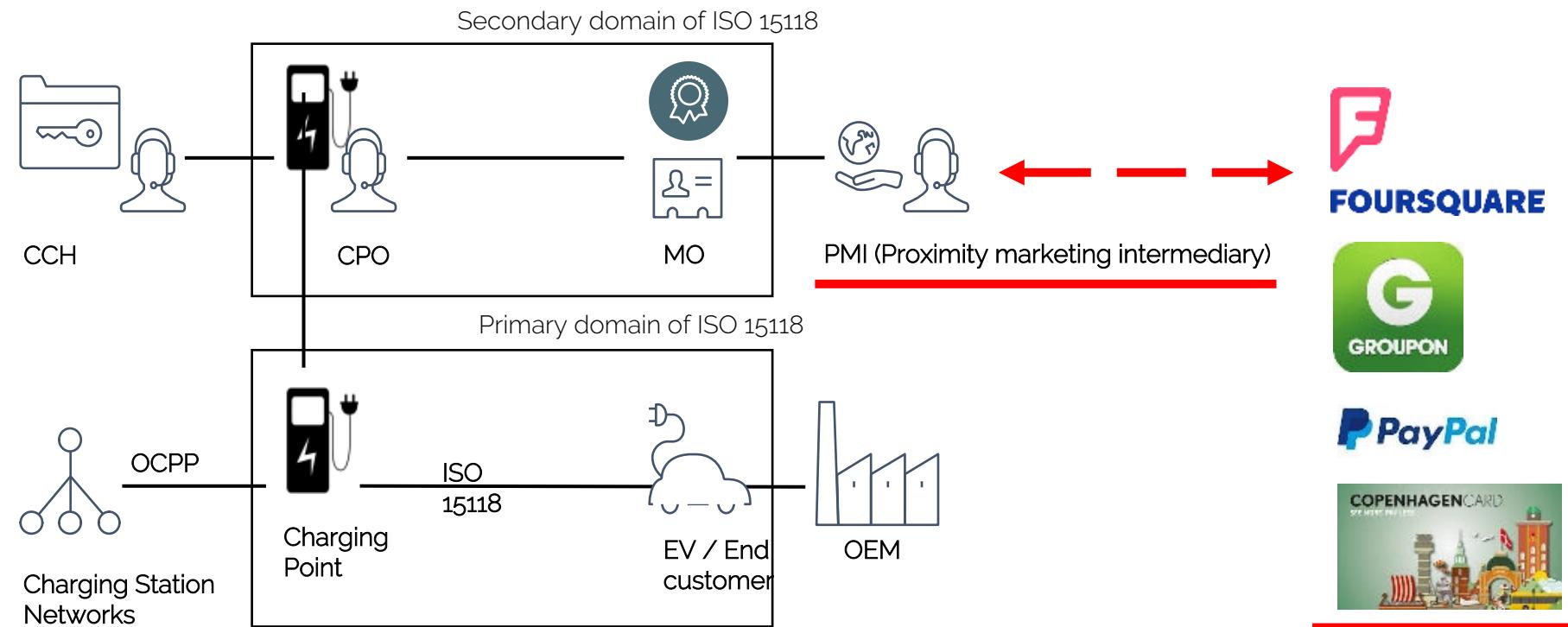
- The logic behind the selection of the use case
- Estimations and projections about the basic data
- Calculation of estimated revenues, also in relation to charging business

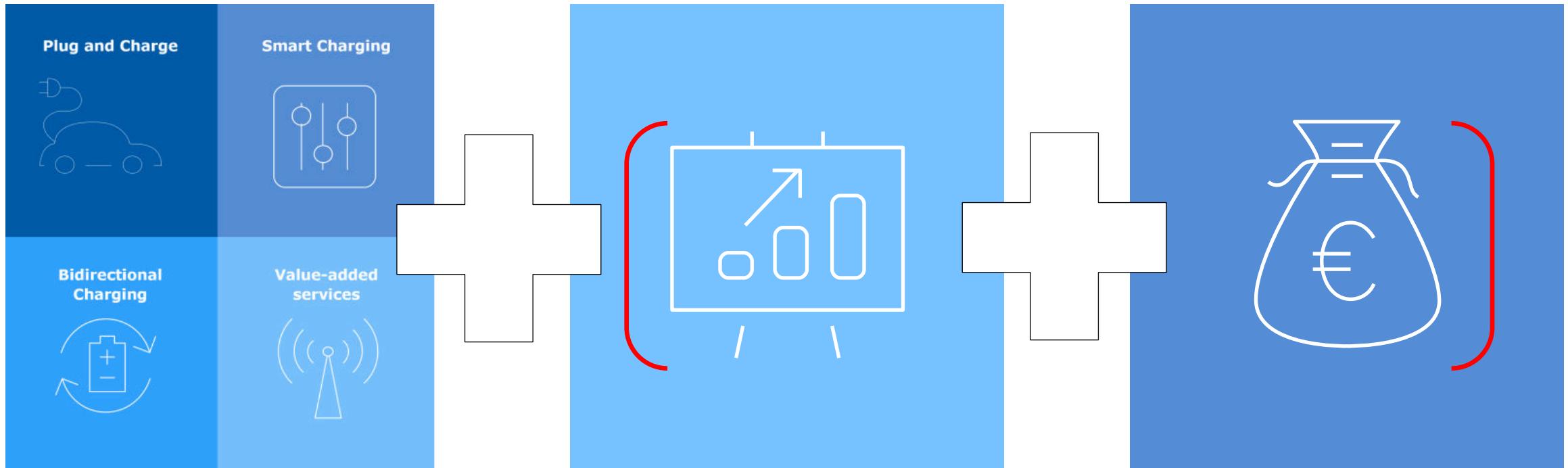


Business Potential and Impact of the ISO 15118 Standard

The focus of the paper

- The business potential ISO 15118 through new (much needed) revenue streams
- Multi-channel reservation services
- Proximity-marketing or loyalty schemes, e.g. in cooperation with the retail domain in urban areas
- Additional revenues essential to offset investments and ensure long term sustainability of charging infrastructure





Determining the average number of charging sessions

The overview of selected EVs, their respective ranges and the calculated number of charging circles and estimated n.o. EVs and charging sessions

Model	Range under real-life conditions (ADAC, Km)	Range - adjusted (Km)	Number of charging circles in year
Hyundai Ioniq Elektro Style	211,0	171,0	77,5
VW e-Golf	201,0	161,0	82,3
BMW i3 (94 Ah)	188,0	148,0	89,5
Smart Fortwo Coupé EQ Prime	112,0	82,0	161,6
Hyundai Kona Elektro (64 kWh) Trend	375,0	335,0	39,6
Opel Ampera-e First Edition	342,0	302,0	43,9
Renault Zoe Intens	243,0	203,0	65,3
Nissan Leaf I Acenta (30 kWh)	159,0	119,0	111,3
Nissan Leaf II Acenta	201,0	161,0	82,3
Tesla Model S P90D	393,0	353,0	37,5
Tesla Model X 100D	451,0	411,0	32,2
Nissan e-NV200 Evalia	167,0	127,0	104,3
Average values per vehicle	253,6	214,4	77,3

	2018	2025	2030
Number of EVs in Germany	509.663	4.980.739	10.541.992
Number of EVs in Stuttgart Region	3.325	32.490	68.767
N.o. Charging sessions per vehicles p.a.	77	59	48
N.o. charging sessions in Stuttgart Region p.a.	256.911	1.931.301	3.270.160

Use Case 1 – Reservation of Charging Slots

The outlay of revenues from Use Case 1, "Reservation", based on a sample for Stuttgart Region, Germany

	2018	2025	2030
N.o. Charging sessions per vehicles p.a.	77	59	48
N.o. charging sessions in Stuttgart Region p.a.	256.911	1.931.301	3.270.160
on-street charging	133.594	1.004.277	1.700.483
off-street charging (e.g. in parking lots)	102.764	772.521	1.308.064
Reservation fees - on-street charging	0,50 €	0,75 €	1,10 €
Reservation fees - off-street charging	1,00 €	1,50 €	2,20 €
Use Case 1.1 "Reservation"- revenues from on-street charging	33.398 €	753.208 €	1.870.531 €
Reservation rate - on-street parking	50%	55%	60%
Use Case 1.2 "Reservation"- revenues from off-street charging	51.382 €	637.329 €	1.726.644 €
Reservation rate - off-street parking	50%	55%	60%
Total revenue Use Case 1	84.781 €	1.390.538 €	3.597.176 €

Use Case 2- Proximity Marketing

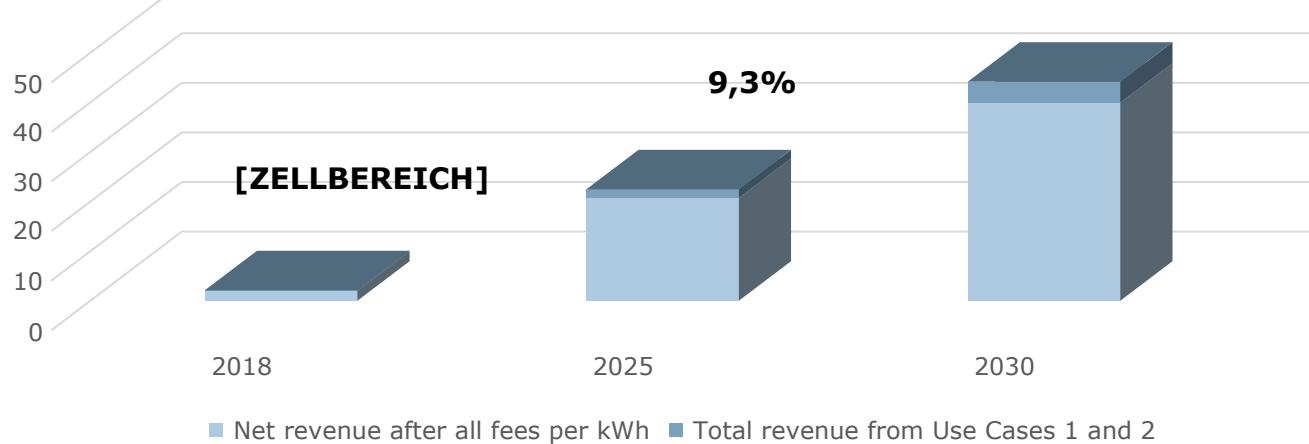
The outlay of revenues from Use Case 2, "Proximity Marketing", based on a sample for Stuttgart Region, Germany

	2018	2025	2030
N.o. customer contacts	70.907	533.039	902.564
Customer consent	30,00%	30,00%	30,00%
Revenue per coupon-ad (€)	0,25 €	0,30 €	0,33 €
Use Case 2.1 - Revenue from displaying of coupon-ads	17.727 €	159.912 €	297.846 €
N.o. coupons	17.727	133.260	225.641
Revenue per coupon (€)	1,00 €	1,20 €	1,32 €
Customer consent for coupons, based on displayed ads	25,00%	25,00%	25,00%
Use Case 2.2. - Revenue from validated coupons	17.727 €	159.912 €	297.846 €
Total revenue Use Case 2	35.454 €	319.824 €	595.692 €

Business Volume in Comparison vs. Electricity Sales – Sample Stuttgart Region

Revenue from value-added services, measured in terms of energy income

11,9%



	2018	2025	2030
Amount of energy per vehicle p.a. (kWh)	3693,8	3693,8	3693,8
Amount of energy for all vehicles p.a. (kWh)	12.280.350,6	120.011.074,4	254.009.654,8
Net revenue after all fees per kWh	1.986.961 €	18.446.902 €	35.139.442 €
Total sales from Use Cases 1 and 2	120.234 €	1.710.361 €	4.192.868 €
Revenue from value-added services wrt. electricity sales	6,1%	9,3%	11,9%



Summing up

- There is more to ISO 15118 than Plug&Charge
- Even estimated on conservative terms, 10% additional business volume wrt. the sale of electricity for charging is to be expected.
- Everything is getting digitally simplified and space becomes a rare commodity, which speaks for value – added services.
- The future possibilities offered by automated driving will only amplify the possibilities.