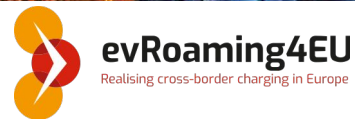




Standards for EV roaming – the bigger picture

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Standards for EV roaming – the bigger picture

Outline

- Research on interoperability in the evRoaming4EU project
- Future scenarios towards interoperability
- EV roaming and open standards

Research on interoperability in evRoaming4EU

- D6.1. Comparative analysis of standardized protocols for EV roaming
- D6.2 Achieving interoperability in EV roaming: Pathways to harmonization
- D6.3 Design principles for an ‘ideal’ EV roaming protocol.



Standards? It is all about coordination...

Literature, interviews with 38 roaming experts, visited events

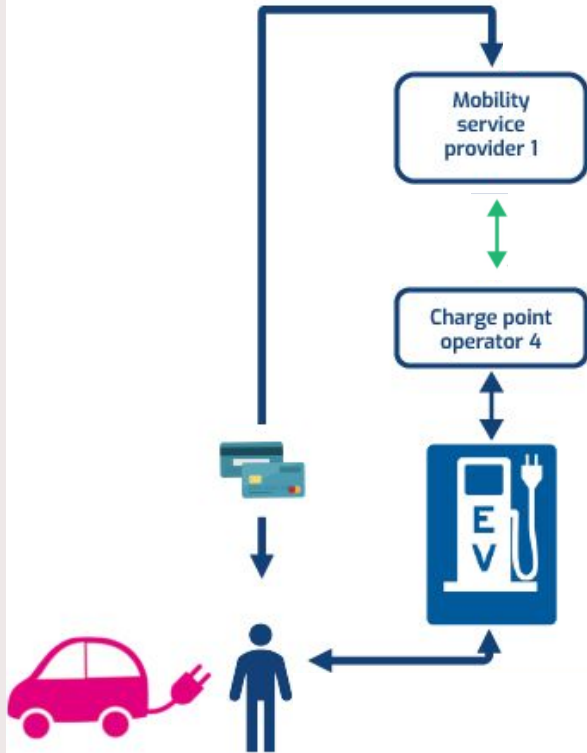
Future scenarios towards interoperability

- Desire for seamless roaming

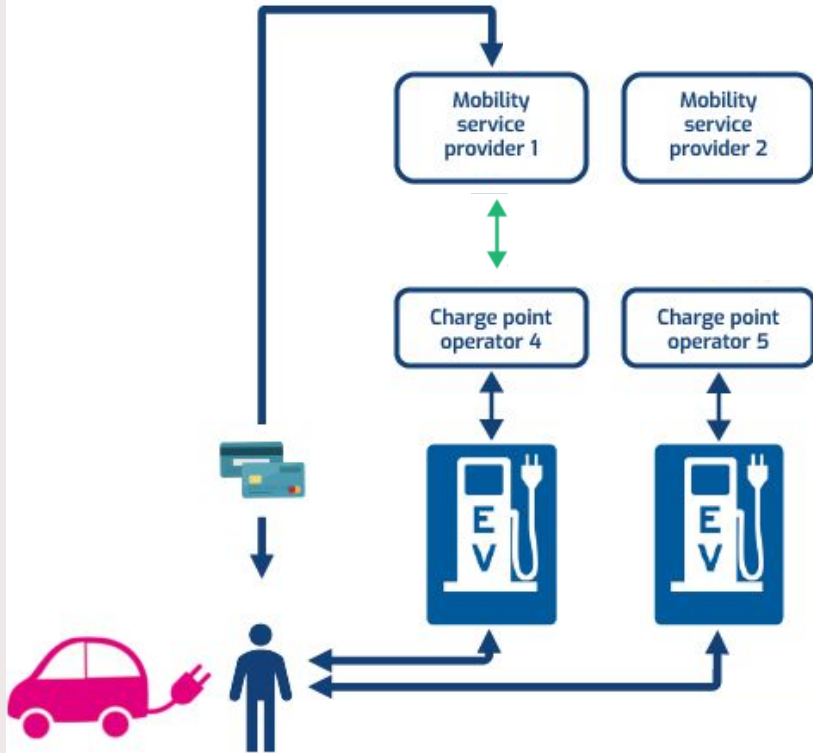
“a user (EV driver) can charge at any public charge station, regardless of which CPO operates that charge station and regardless of which MSP the user has selected for mobility services and payment.”

- Many stakeholders struggle with multitude of standards and associated uncertainty
- We derived 6 scenarios from literature and discussed them with stakeholders

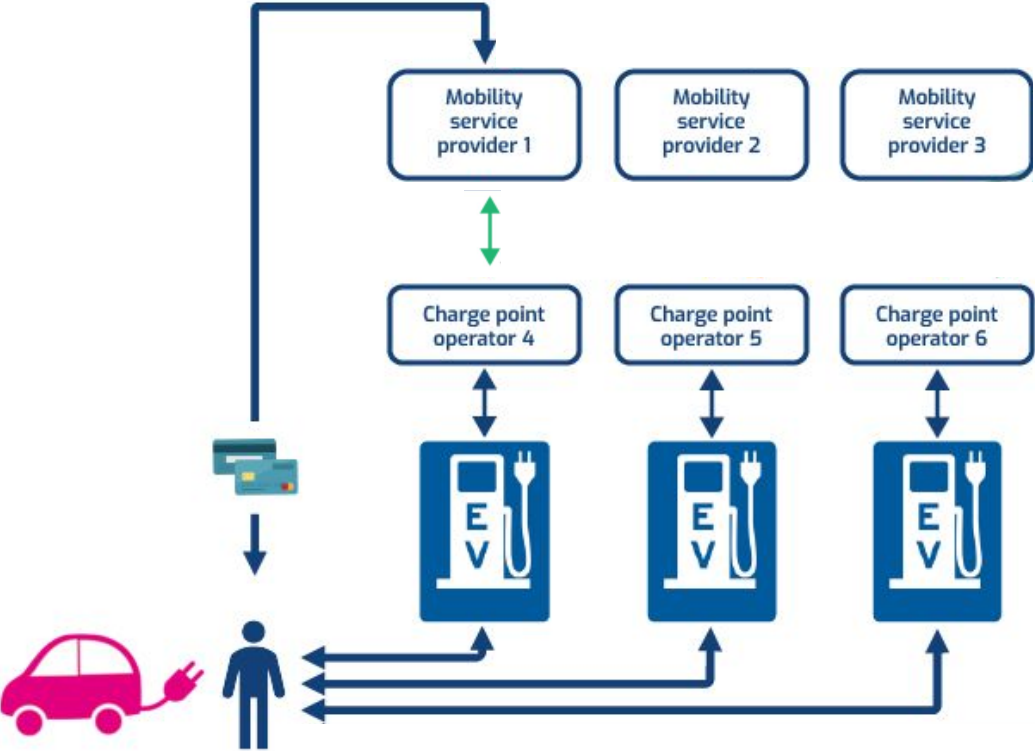
Baseline



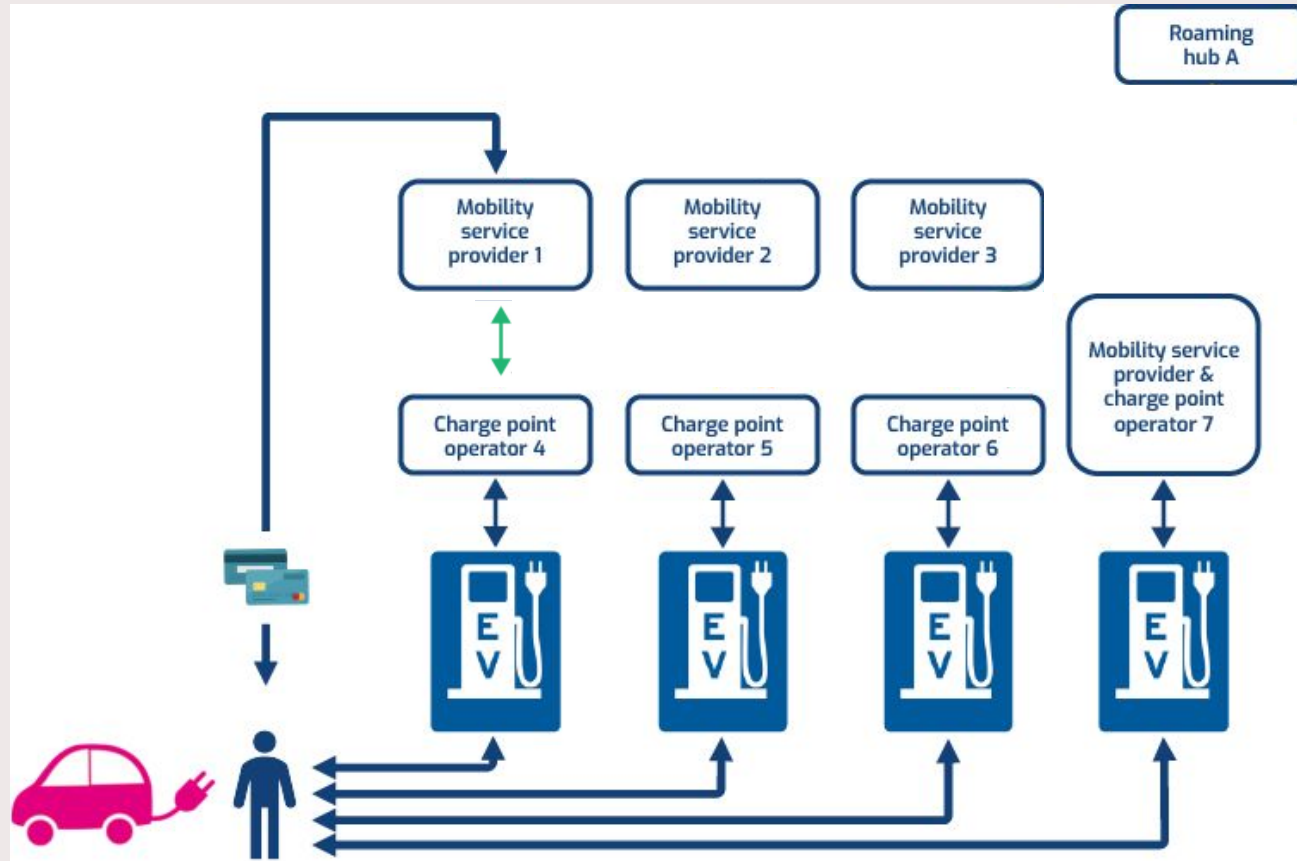
Baseline



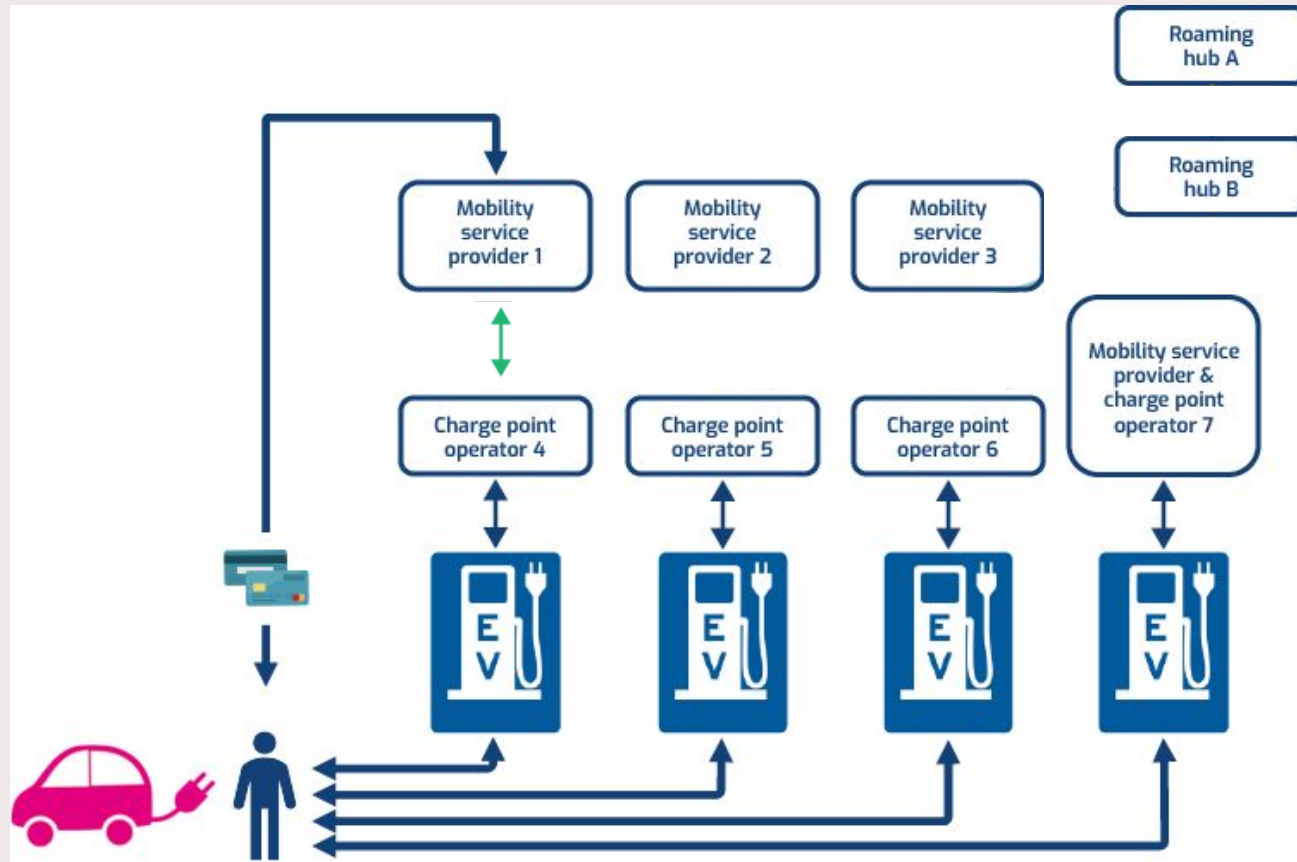
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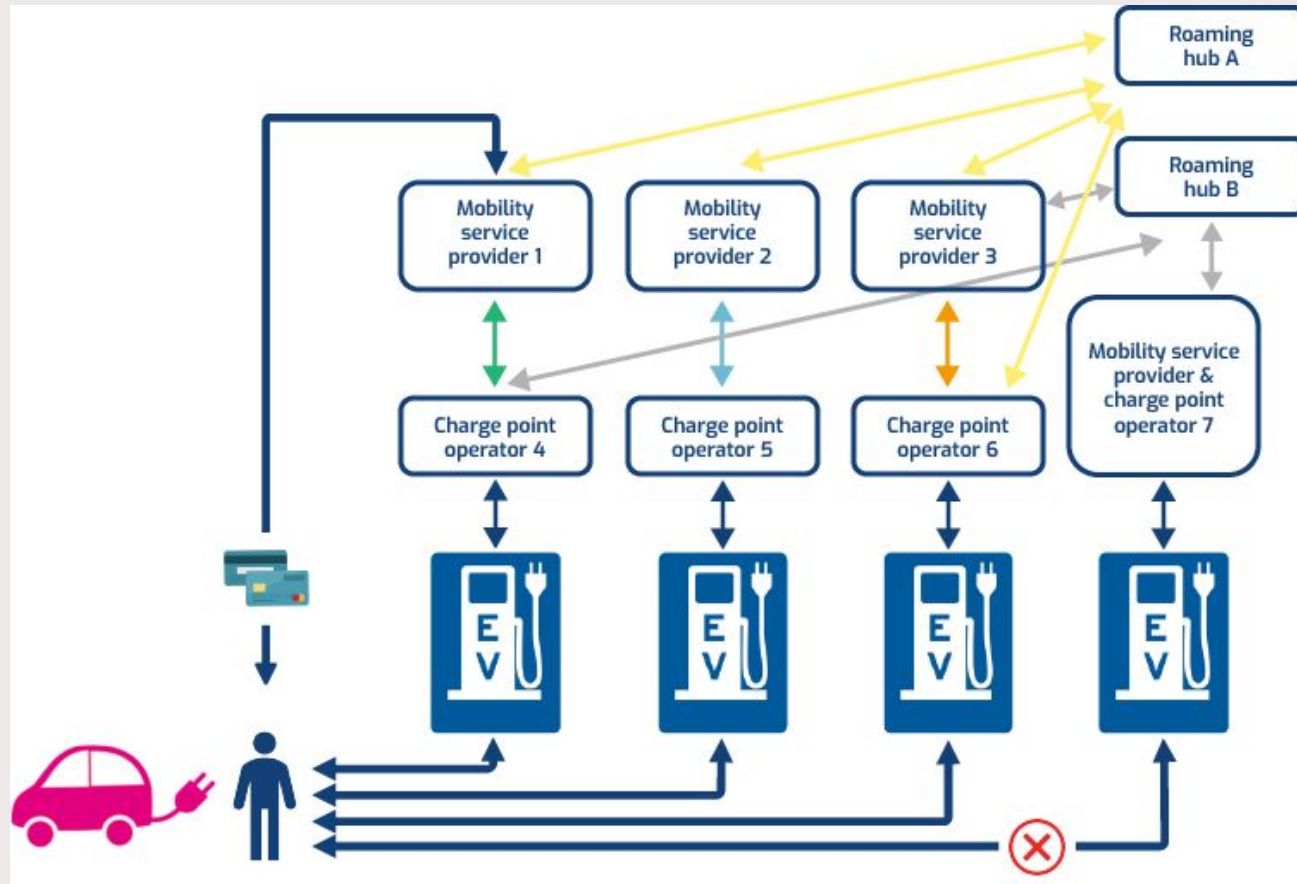


Baseline



Baseline





Scenario 1: Status quo (fragmentation)

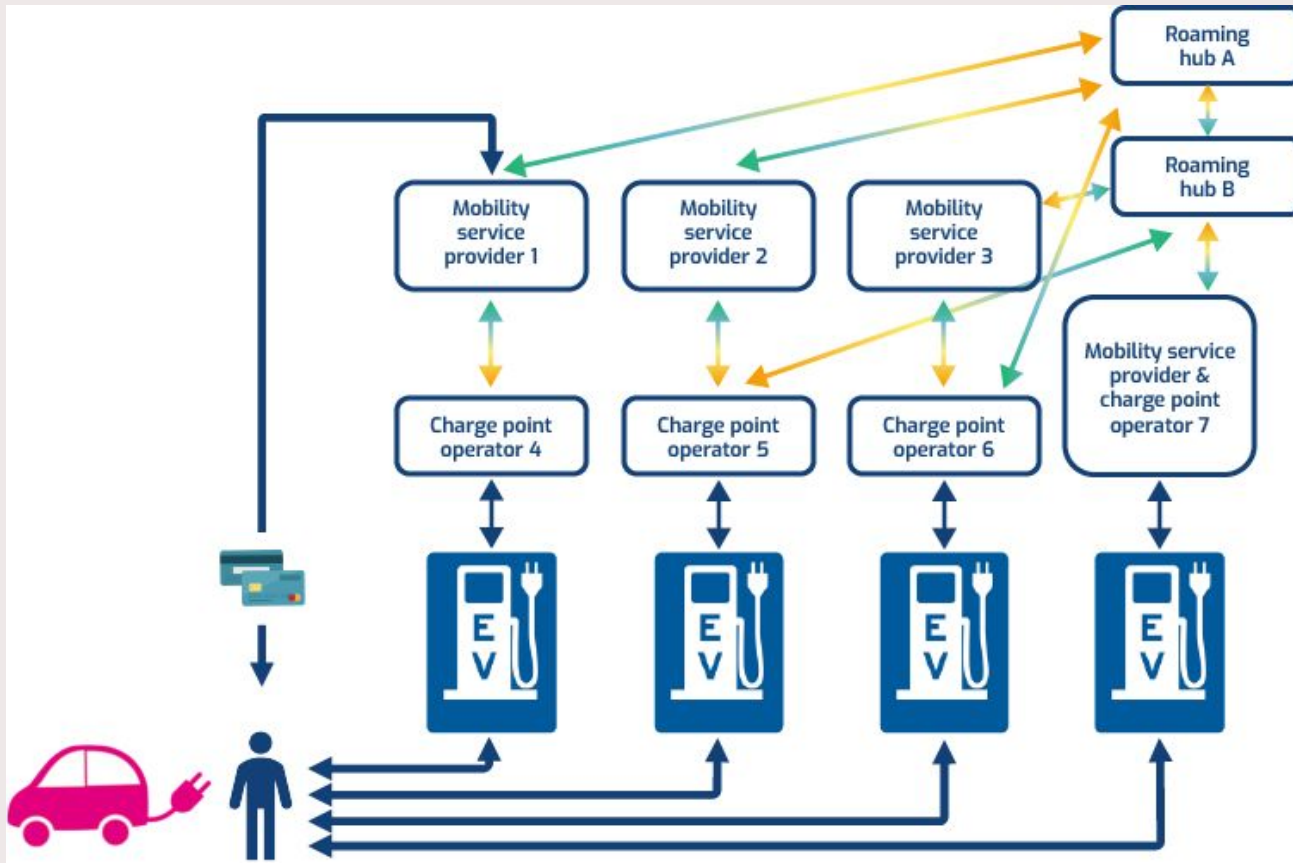
(+) Competition between protocols

(-) Fragmentation of protocols

(-) Significant costs (adopting, double implementation)

(-) No seamless roaming

(-) Uncertainty and 'messy'



Scenario 2: Harmonisation of existing protocols

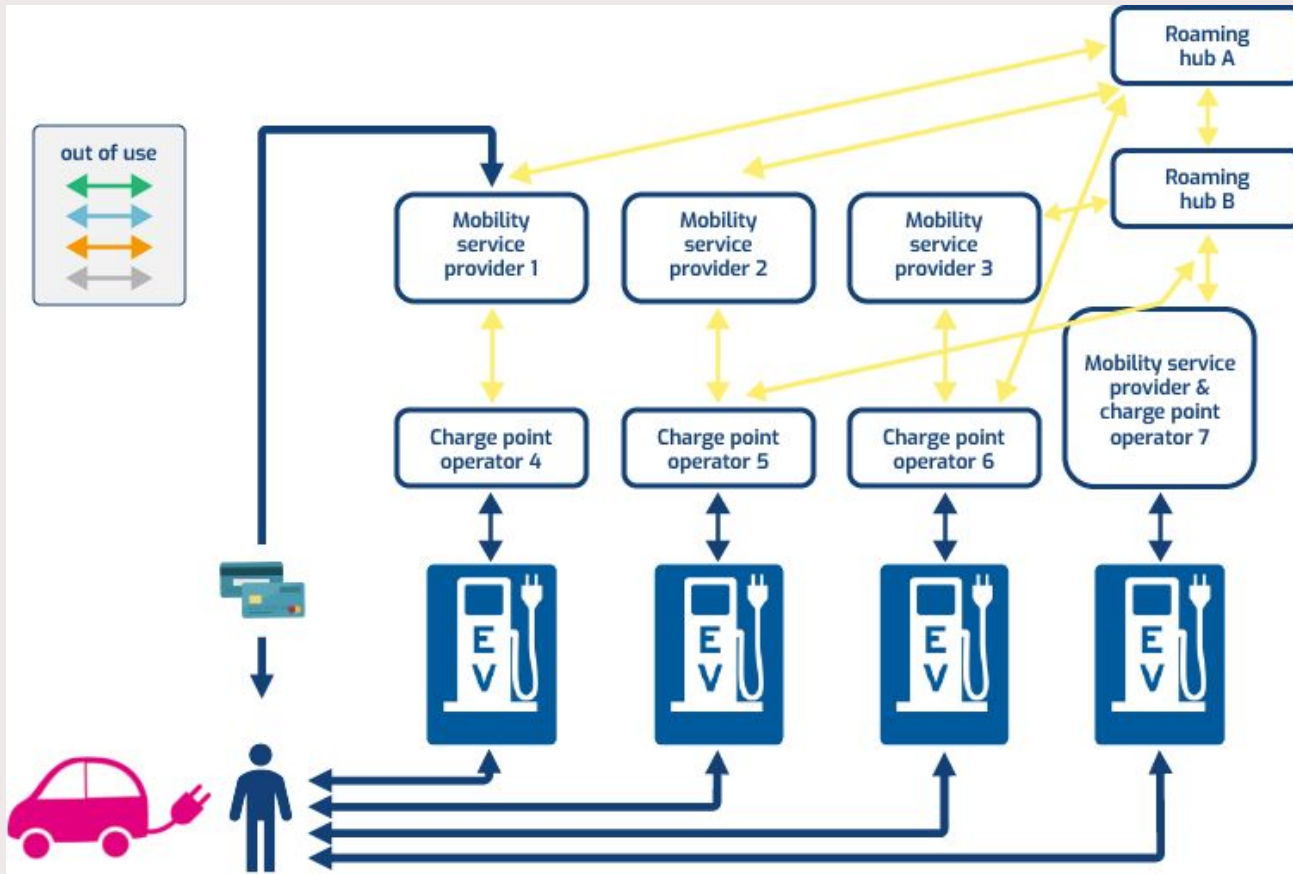
(+) Single standard is advantageous

(+) lower implementation costs

(-) Coordination costs to get here

(?) slower response to new needs

(?) Innovative efforts

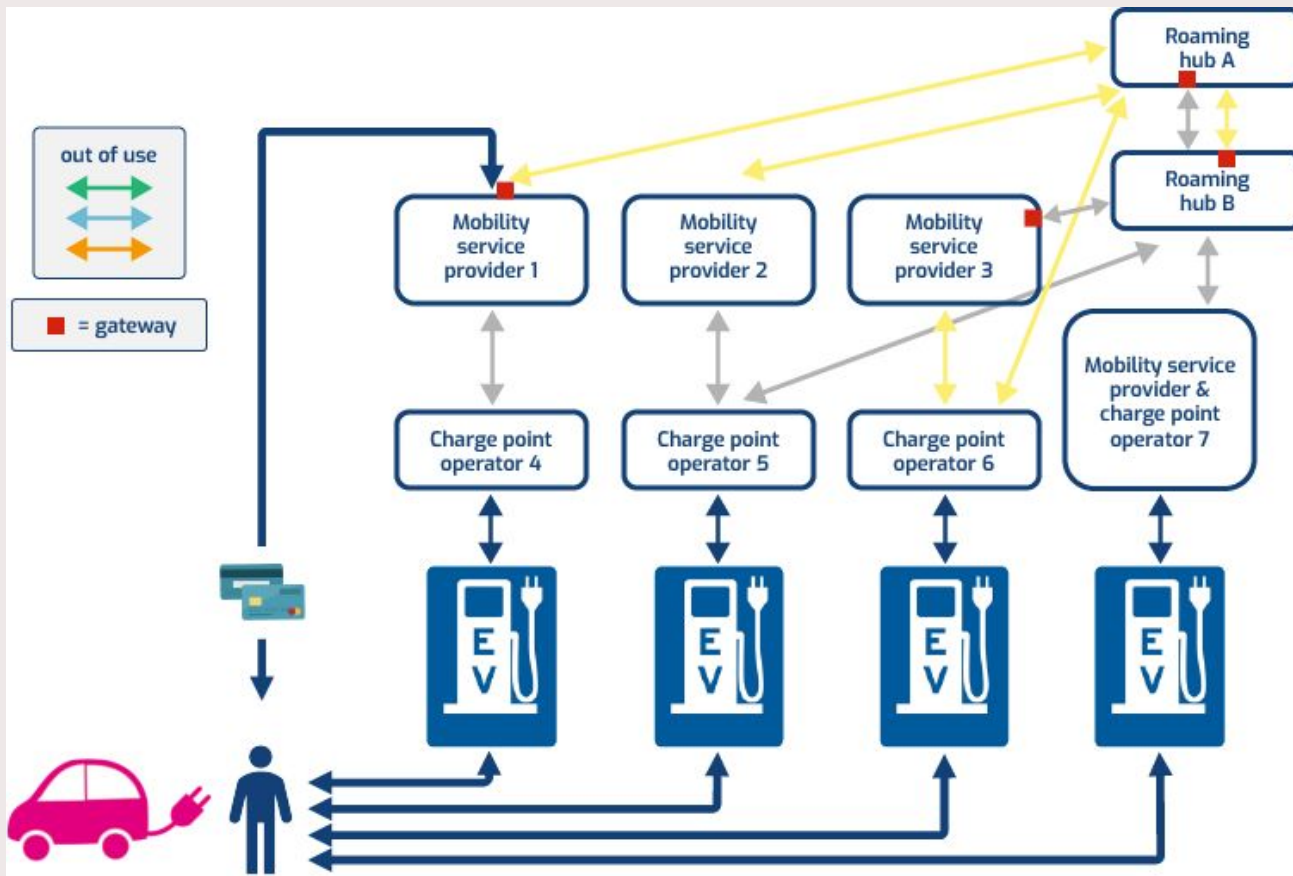


Scenario 3: Standards battle with winning protocol

(+) Full interoperability (seamless roaming)

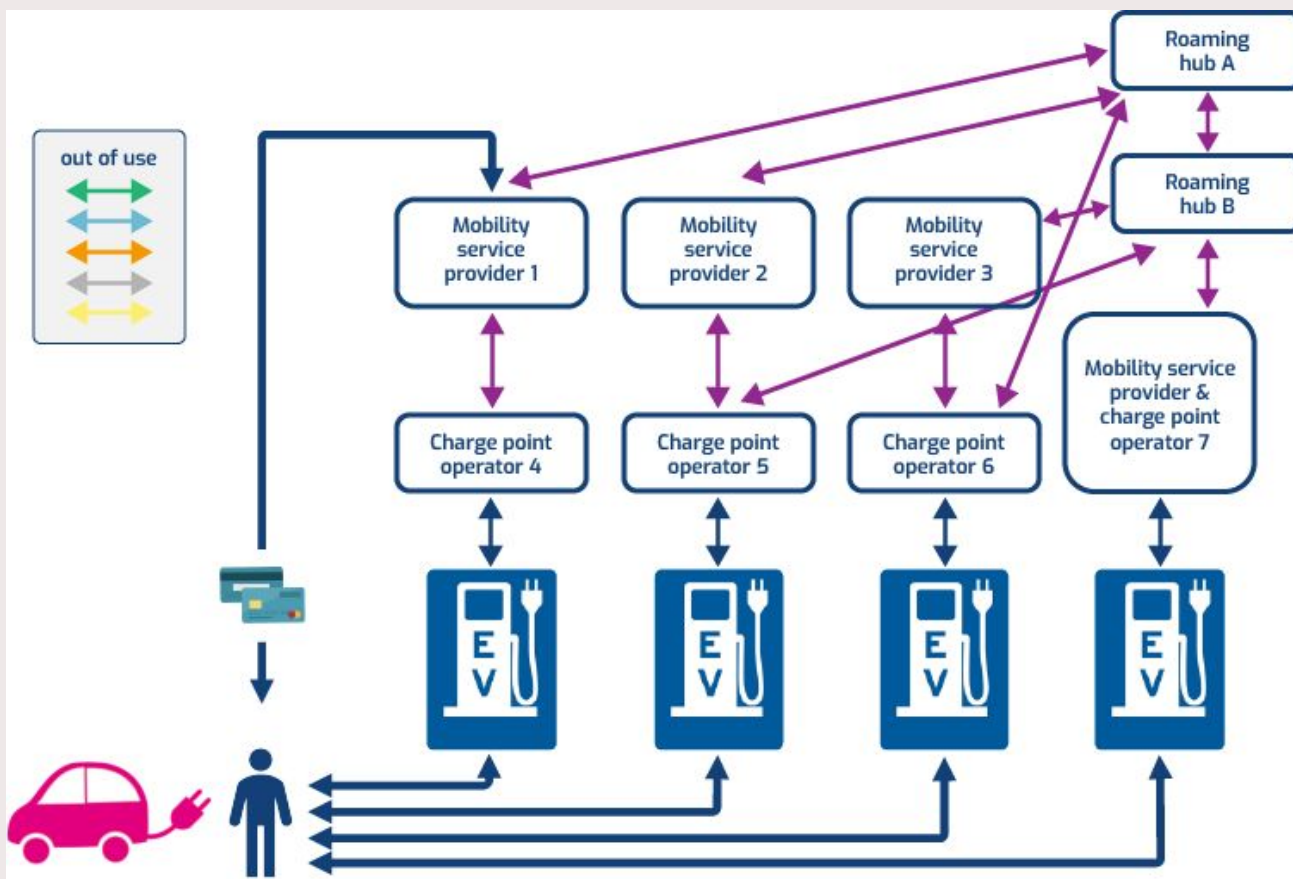
(-) Protocol may be sub-optimal for some

(-) Protocol may not support all business models



Scenario 4: Gateways that connect different protocols

- (+) Reduces risk for monopolies
- (+) Easier to support different contexts (e.g. countries)
- (-) Gateways imply implementation costs
- (-) Gateways imply reduced functionality
- (-) Complicates updating of protocols



Scenario 5: IEC 63199 standard becomes dominant

- (+) Fully open standard
- (+) Full interoperability (seamless roaming)
- (+) Considers needs of all stakeholders worldwide
- (-) Costly to participate
- (-) Risk of domination of specific world region
- (?) Slower development

Scenario 6: No roaming but ad hoc local payment

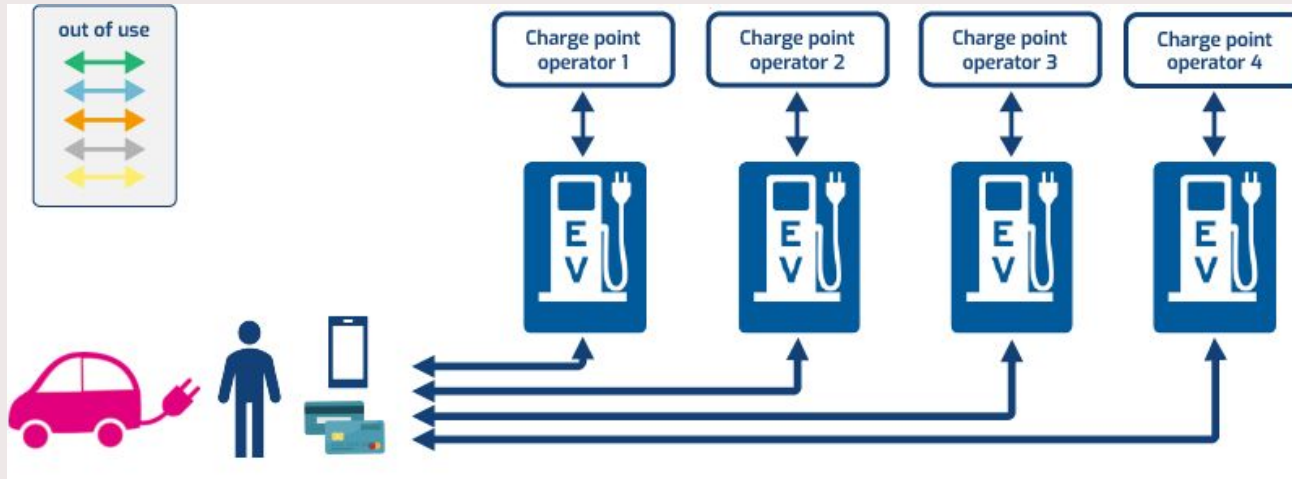
(+) Closer to the current ICE customer experience

(+) No roaming fees and costs

(-) EV is not ICE - need for services and integration

(-) Does not fit trends of MAAS, company car, etc.

(-) APEX and OPEX may be prohibitive



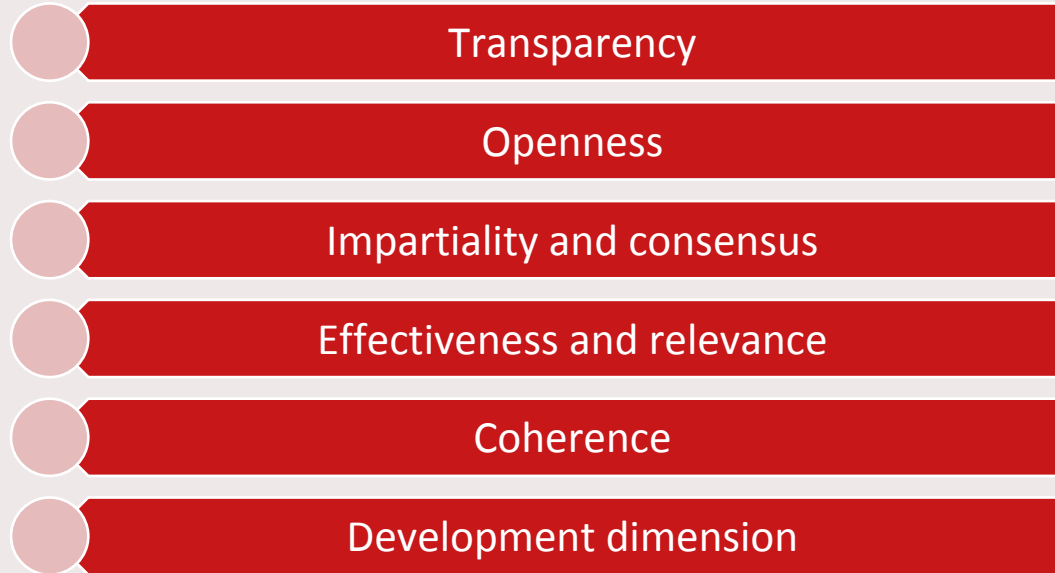
Which scenario is most likely to occur according interviewees?

Scenario 1: Status quo (fragmentation)	Not likely
Scenario 2: Harmonization of existing protocols	Views differ. May happen in limited way, unnoticed
Scenario 3: Standards battle with winning protocol	Majority of interviewees saw this as the most likely scenario.
Scenario 4: Gateways	Quite likely and already happening
Scenario 5: IEC 63199 becomes dominant	Views differ, many note EV roaming is not a global market and differences between regions
Scenario 6: No roaming (ad hoc)	Not seen likely by respondents. But may happen if few users roam and costs remain high

EV roaming and open standards

- Almost everyone in EV roaming uses the term 'open'
... but they do not mean the same thing
- Real open standards are important: balance the interests of all stakeholders, government acceptance, procurement rules, etc.
- There are different definitions of open standards. The WTO TBT criteria are, however, increasingly seen as 'the' definition of open standards

EV roaming and open standards



World Trade Organization Committee on Technical Barriers To Trade, document G/TBT/9," 2000.

How do the four main protocols for EV roaming score on the criteria for ‘open standards’?

	OCHP & OCHP Direct	OICP	eMIP	OCPI
Transparency	+	+	0	+
Openness	0	0	-	Current: +/- Future: +
Impartiality and consensus	0	-	-	+/-
Effectiveness and relevance	+	+	+	+
Coherence	+	+	+	+
Development dimension	0	0/-	0/-	0

To finish...

- Vibrant development of EV roaming protocols
- Not clear yet with path to harmonisation, but we see first signals of use of gateways, and many believe eventually there will be a winner protocol
- After period of early development, it is now important that standards adhere to the 'open standards' criteria to gain support from governments and stakeholders at large