

Open and standard APIs in the electric Mobility as Service (eMaaS) ecosystem

J. Roberto Reyes García
09-October-2019

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OF TWENTE.

About me

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ELECTRIC MOBILITY EUROPE



About me

University of Twente – Department of Design, Production and Management
Systems Engineering and Multidisciplinary Design (SEMD) Group || Electric Mobility Research
Team



Junior
Researcher

**J. Roberto Reyes
García**

Researcher on Reference Architectures for Data-
driven systems and Electric Mobility Systems

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	Associate Professor	Dr. Ir. Maarten Bonnema	Chair of SEMD and Project Supervisor
	PostDoc Researcher	Dr. Ir. Steven Haveman	Lead Researcher - Systems Engineering and Systems Modeling Research
	Junior Researcher	Marlise Westerhof, MSc	Researcher on User Centered Design Research of Electric Mobility Systems
	Junior Researcher	J. Roberto Reyes García	Researcher on Reference Architectures for Data-driven systems and Electric Mobility Systems

About our project

The eMaaS project:

Develops and stimulates an open ecosystem for eco-friendly Mobility as a Service



About our project



The eMaaS project:

Develops and stimulates an open ecosystem for eco-friendly Mobility as a Service



Our Goals:

- Support large scale adoption of EVs through new business models
- Connect EV sharing services to other eco-friendly modes of mobility
- Put users at the centre and provide easily accessible solutions



eMaaS project partners

Sweden

MoveAbout Sweden



Netherlands

GoodMoovs

University of Twente



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Germany

[ui!] urban institute



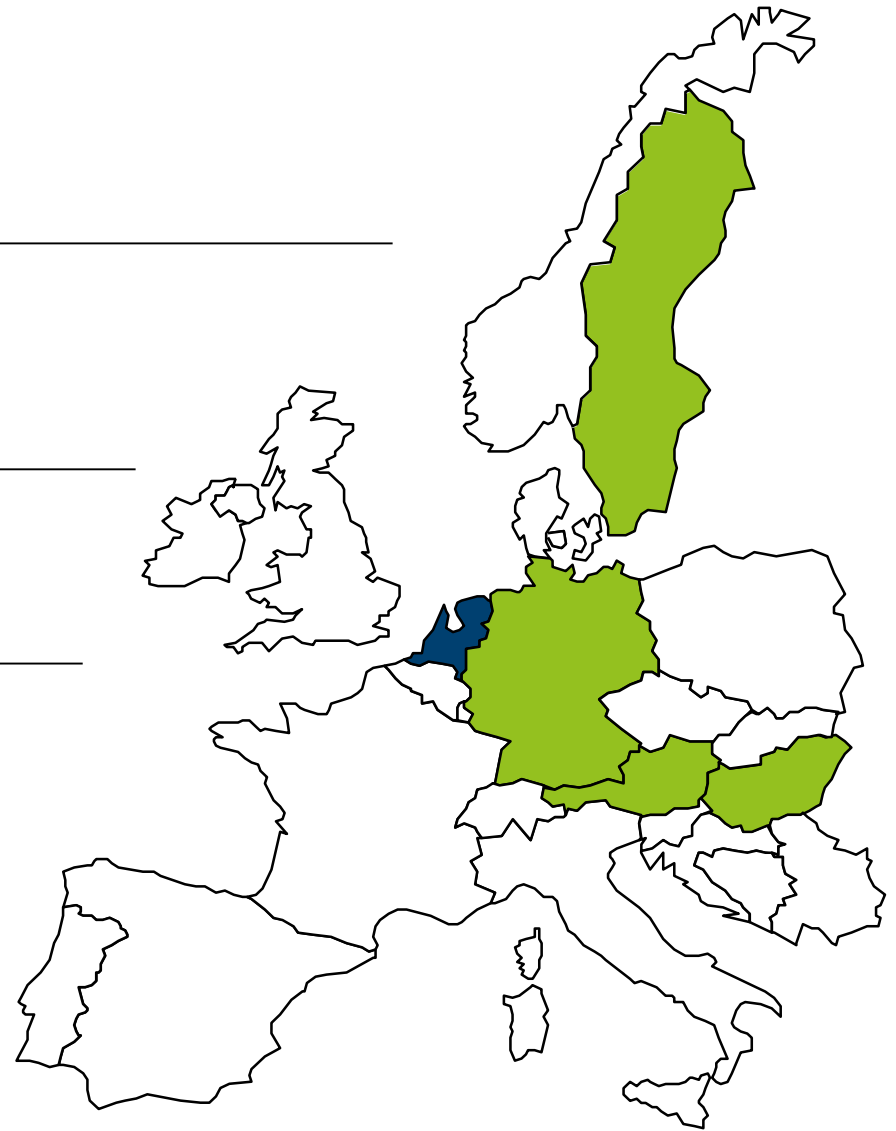
Austria

MoveAbout Austria



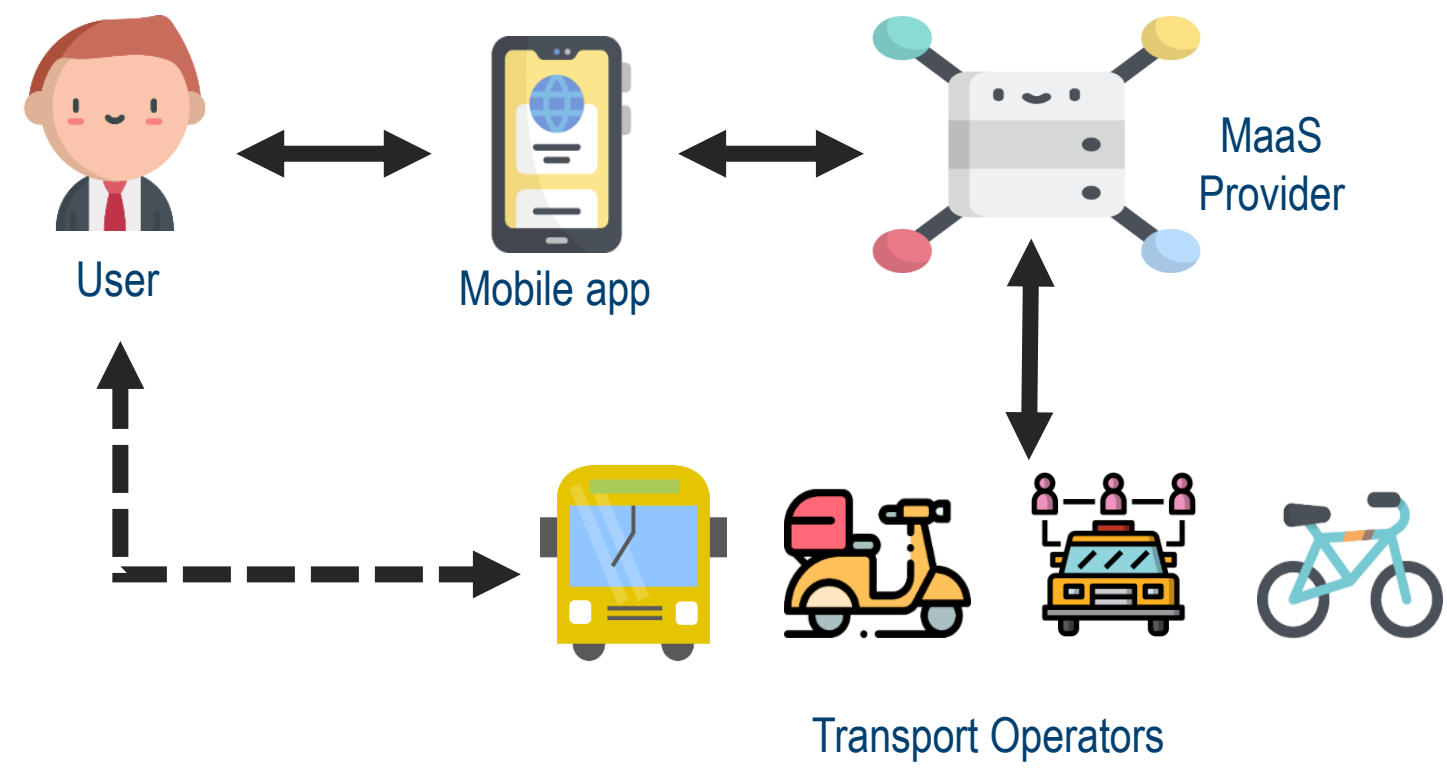
Hungary

[ui!] urban institute Hungary Zrt.



What is (e)MaaS?

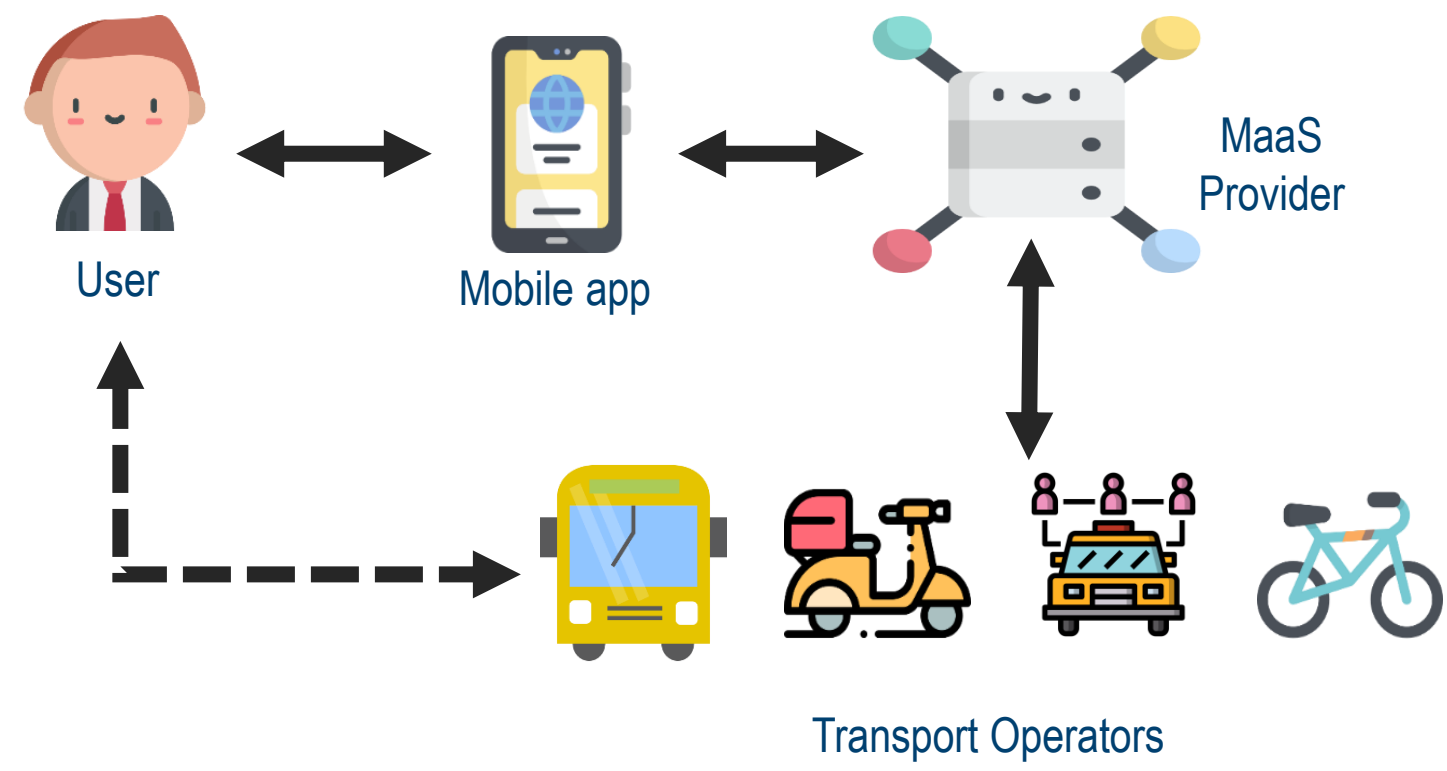
Basic Mobility as a Service ecosystem



* Icons from *flaticon.com*

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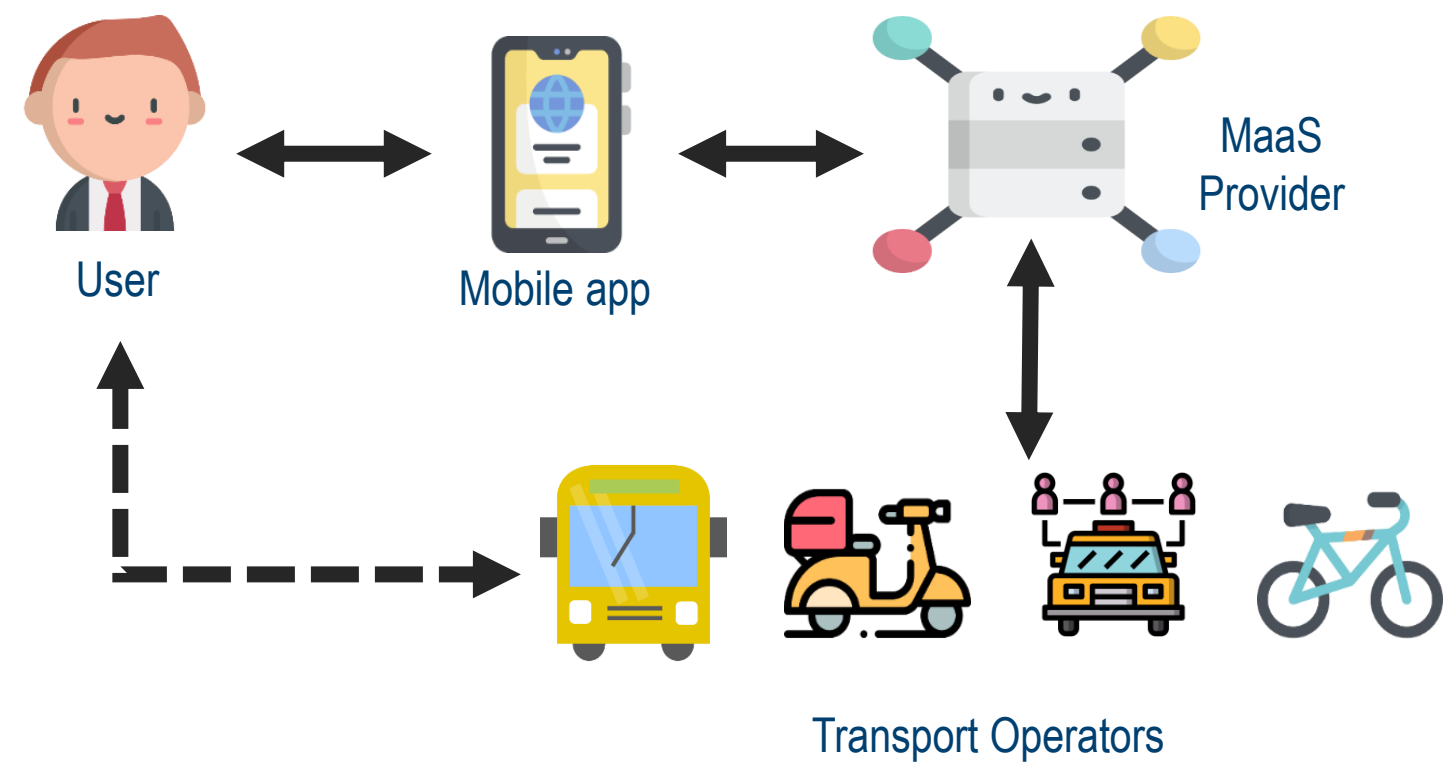


eMaaS = MaaS + EVs ?

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Basic Mobility as a Service ecosystem



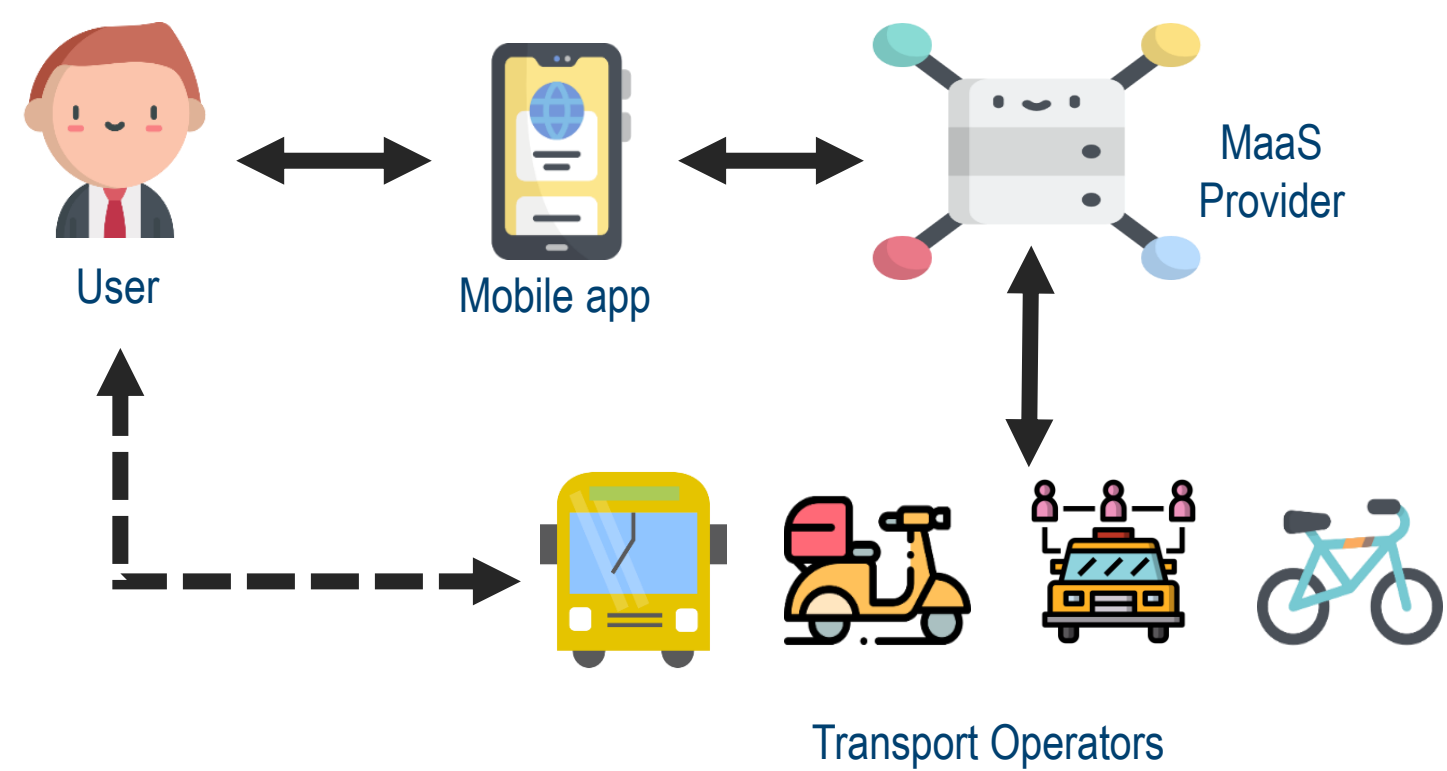
eMaaS = MaaS + EVs ? ❌

The complementary goal of eMaaS, when compared to MaaS, is to provide users the possibility to go from A to B in an **eco-friendly** way. Therefore, **eMaaS** is meant to be **shared** and **electric**

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What is (e)MaaS?

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eMaaS = MaaS + EVs ? ❌

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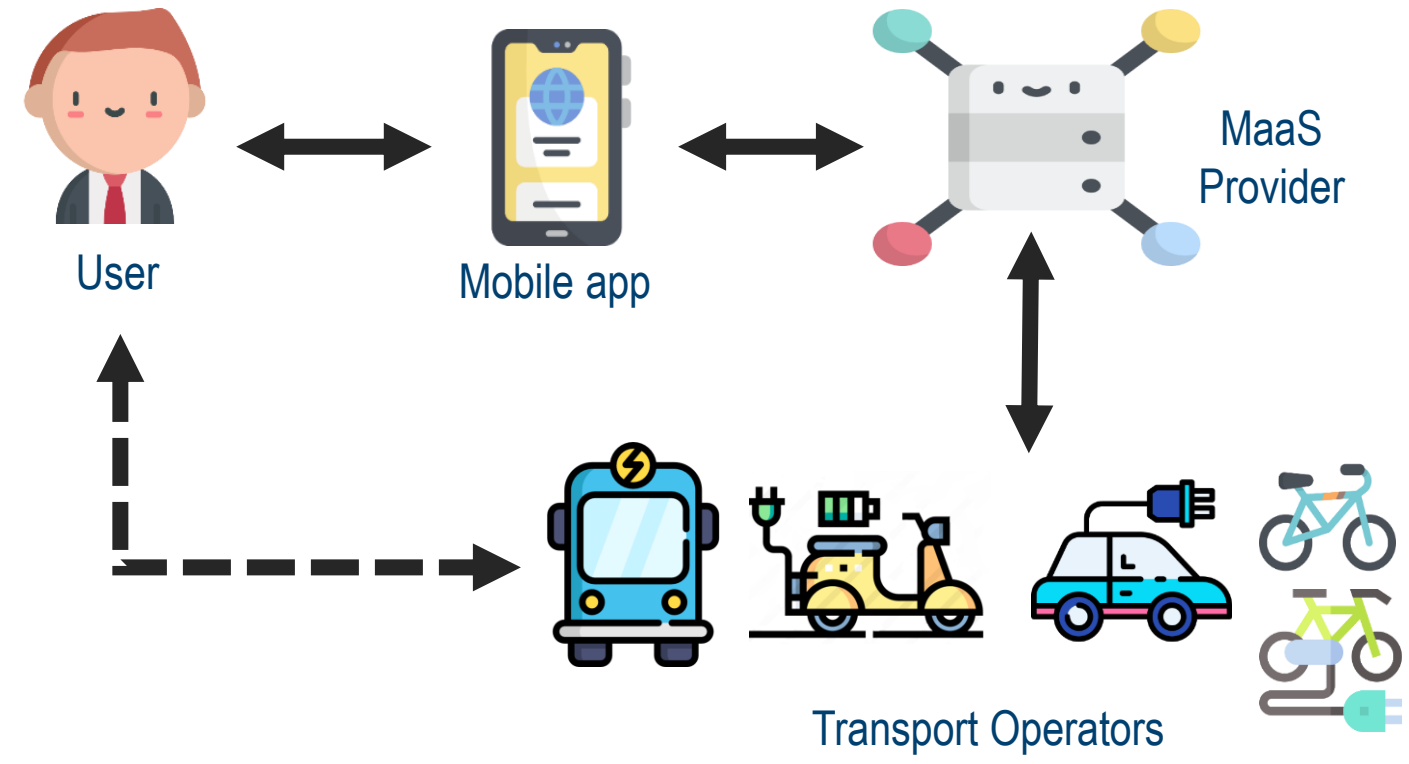
eMaaS = MaaS + SeMS + EMS ✅

eMaaS = electric Mobility as a Service
 MaaS = Mobility as a Service
 EMS = Electric Mobility Systems
 SeMS = Shared electric Mobility Services

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eMaaS — Actors & Connections

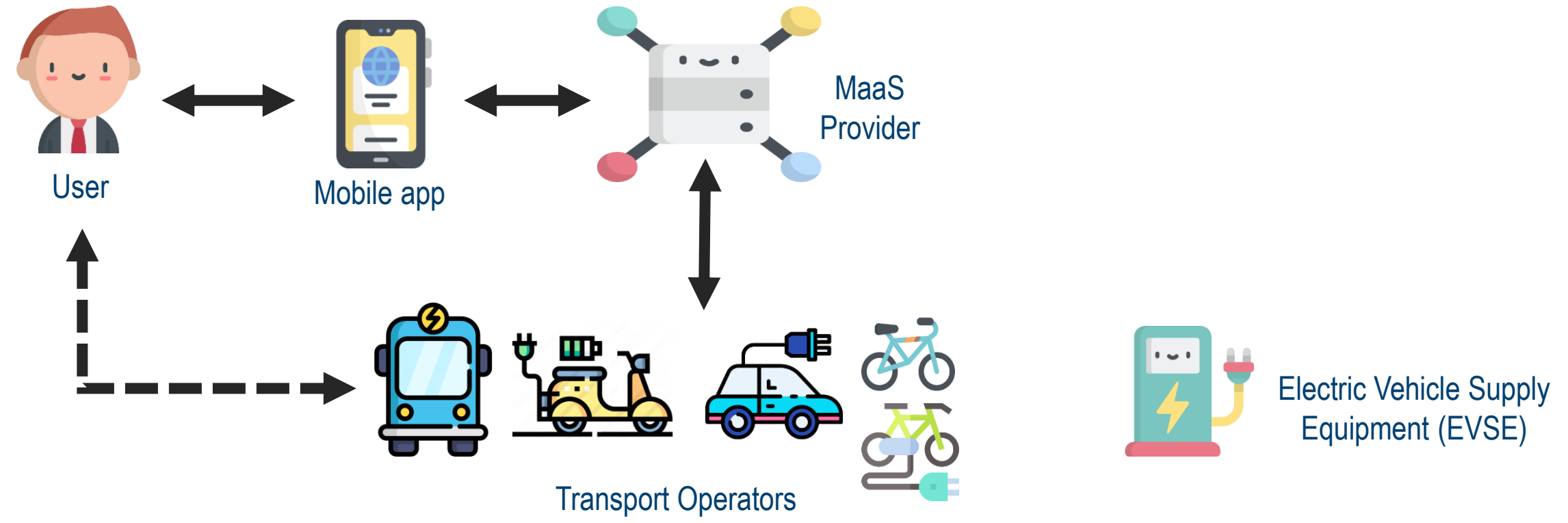
Basic (electric) Mobility as a Service ecosystem



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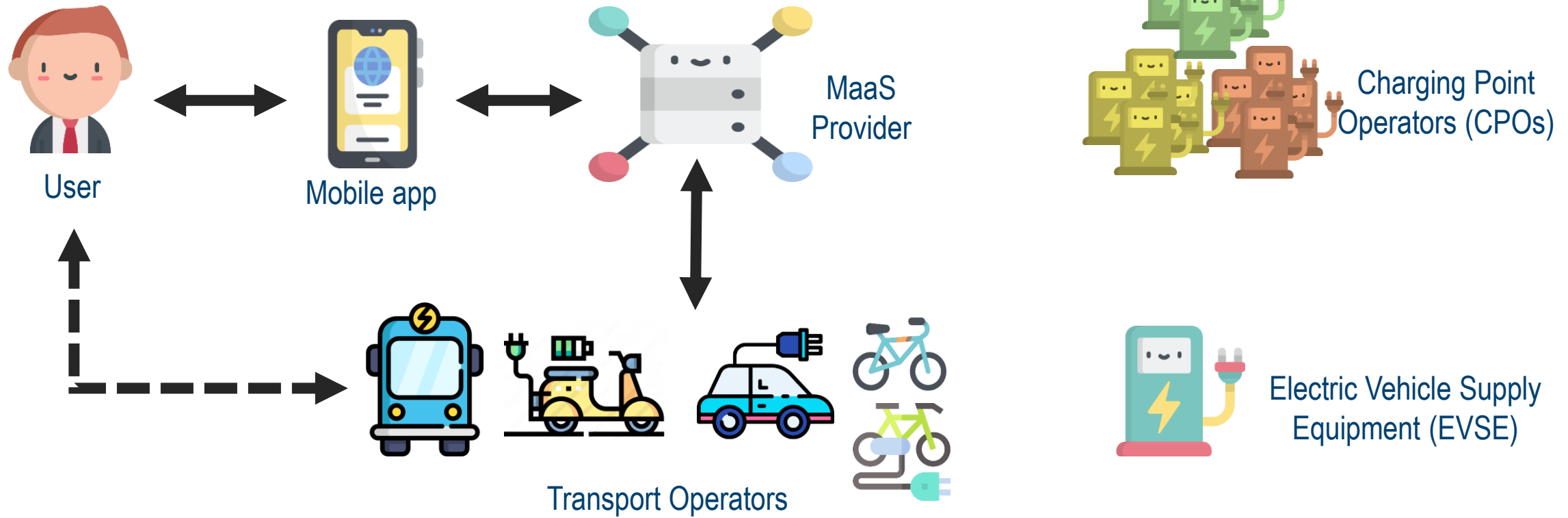
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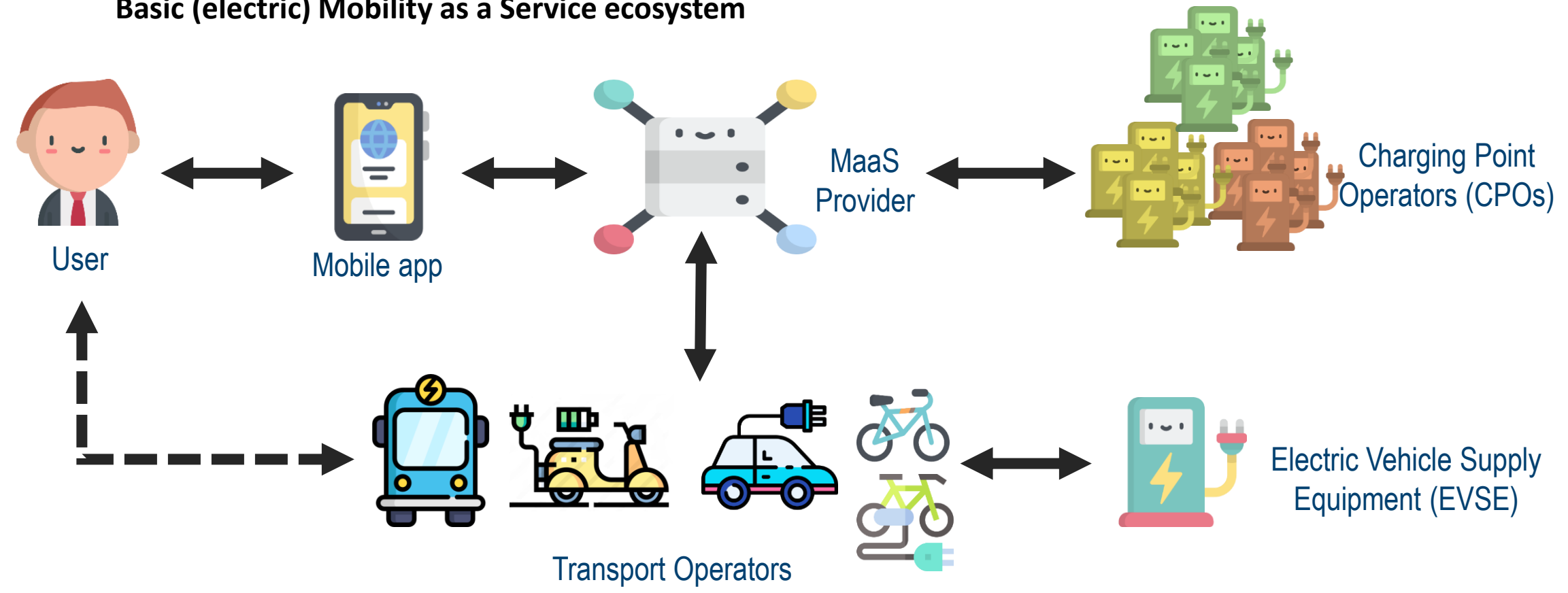
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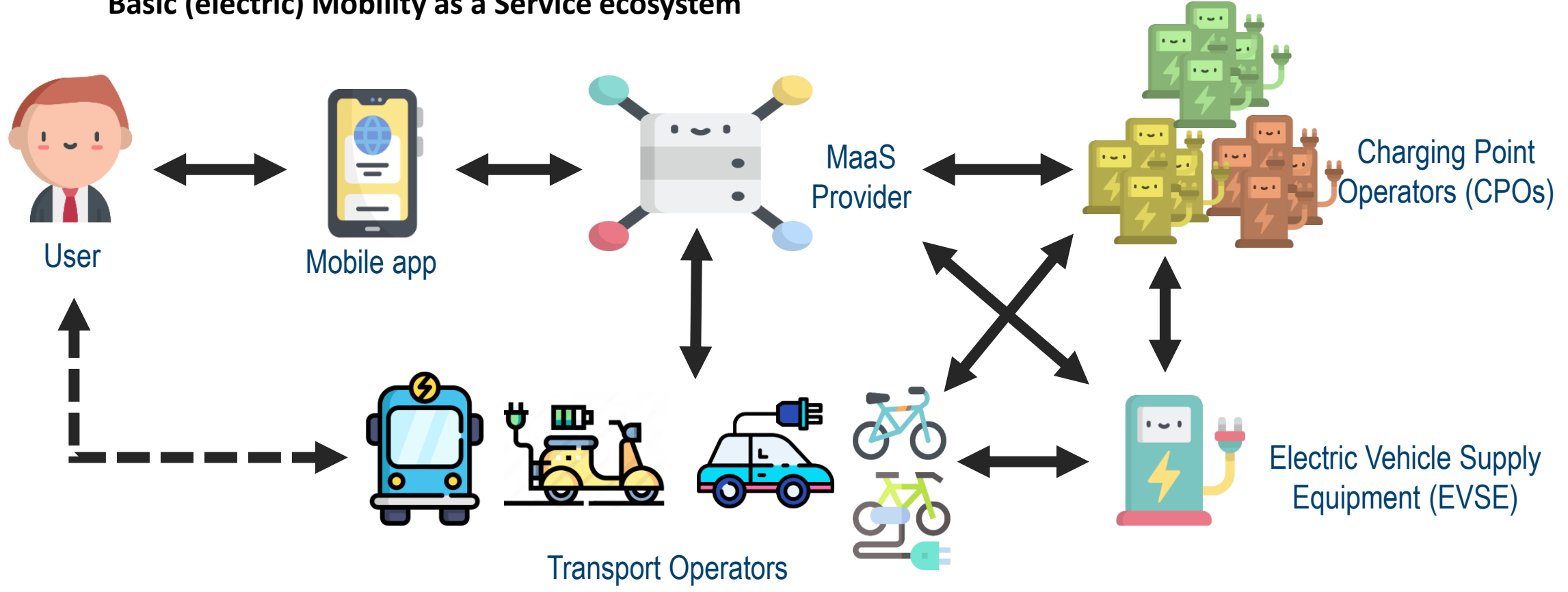
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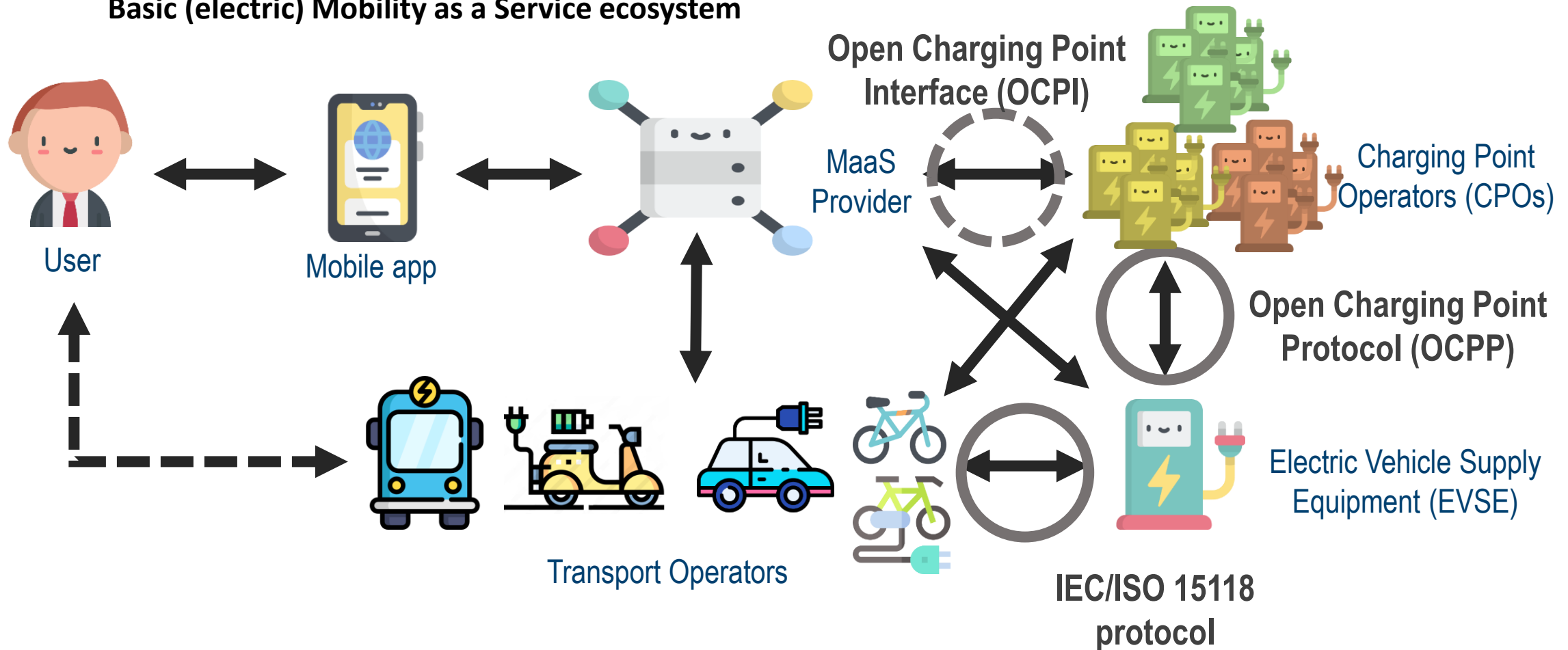
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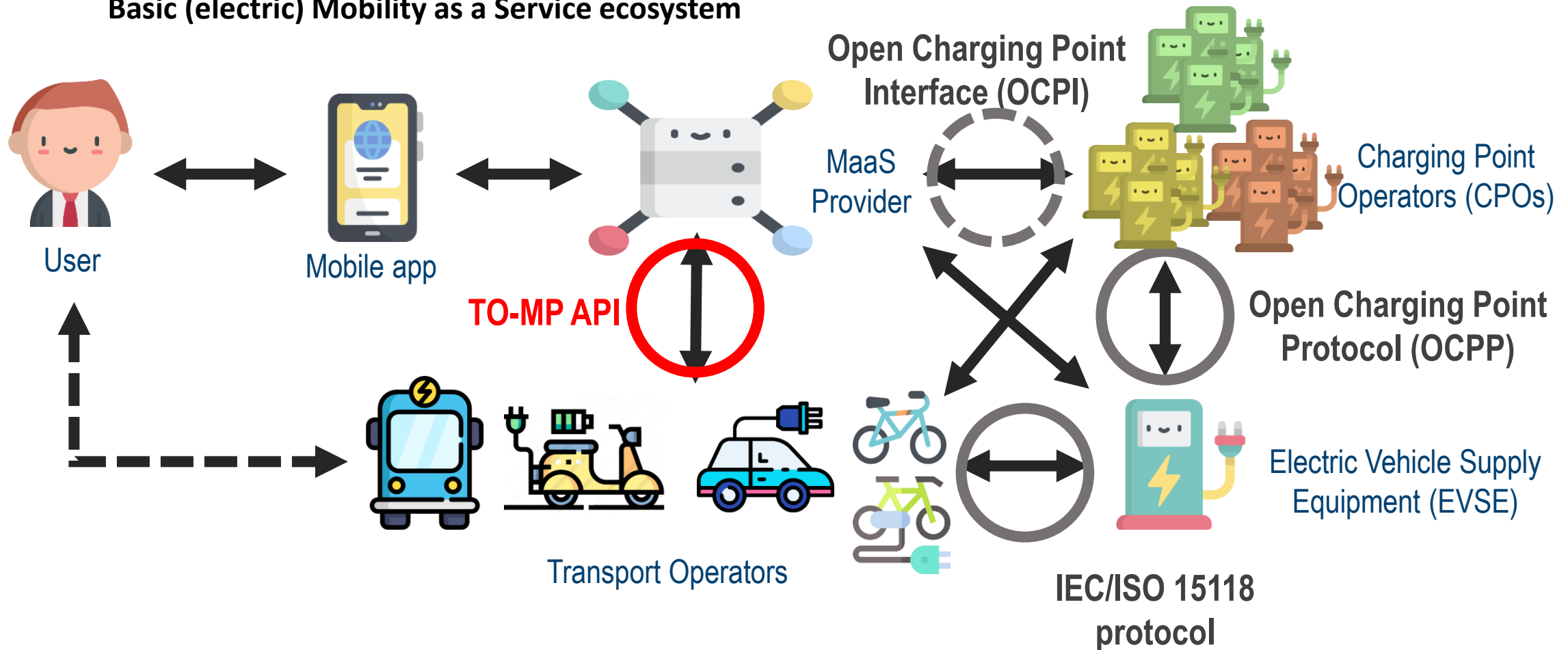
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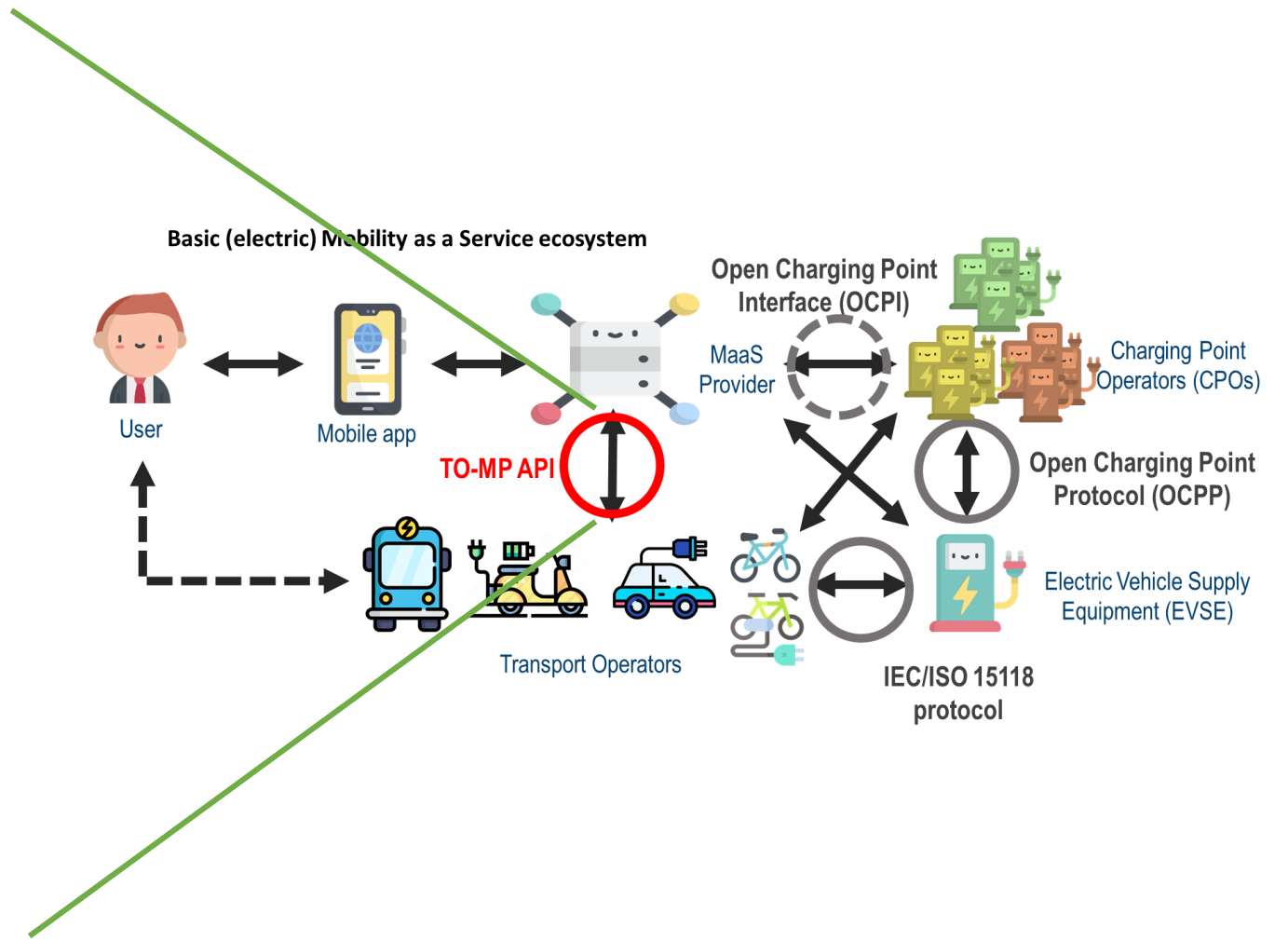
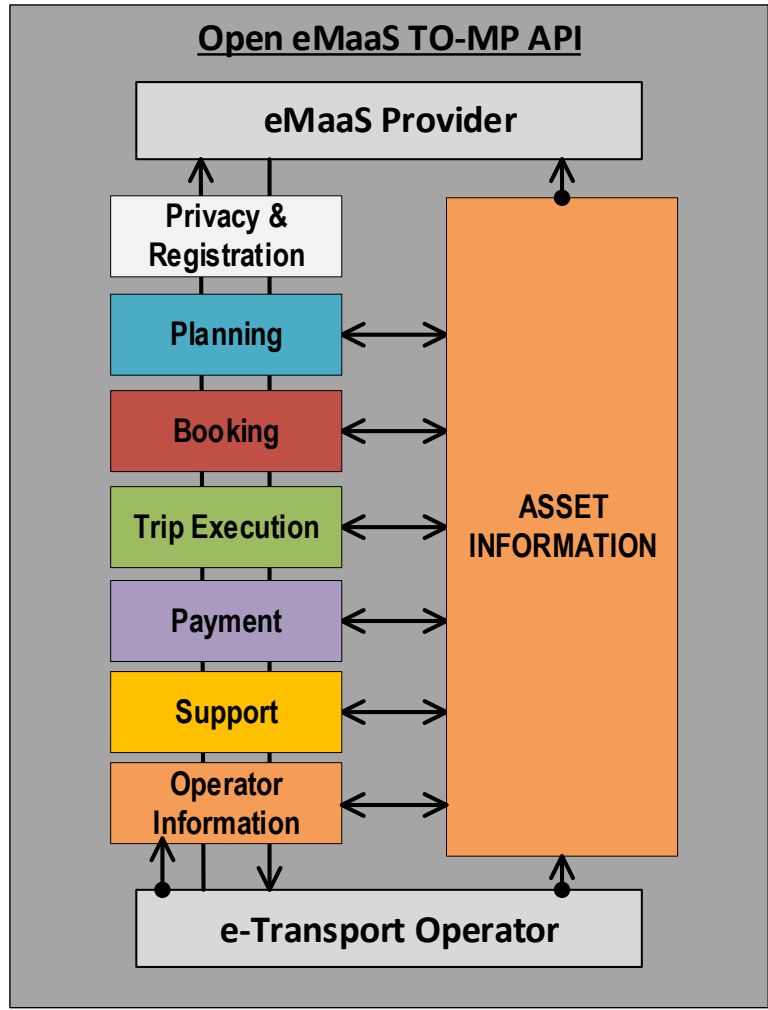
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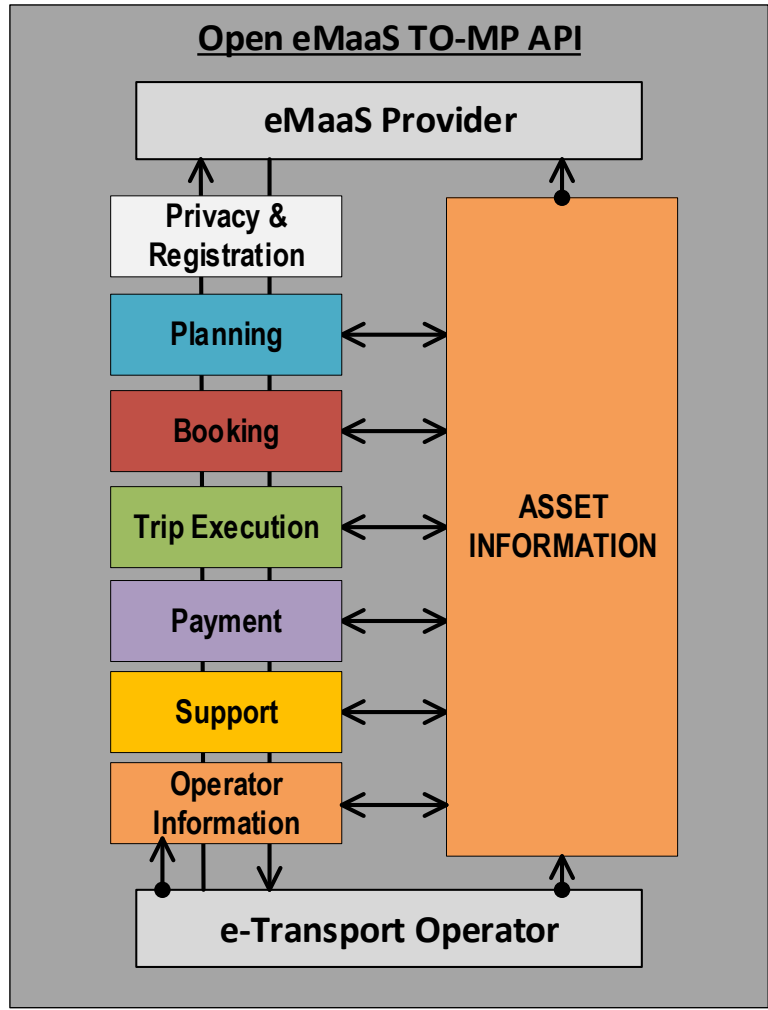


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The TO-MP API



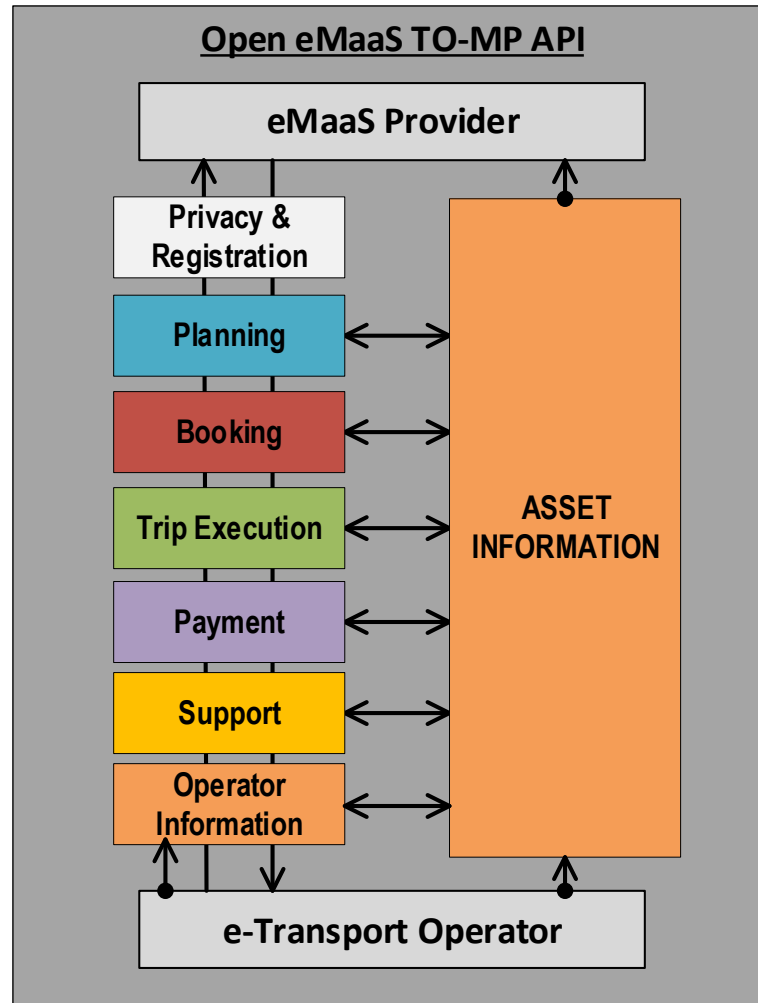
The TO-MP API



Why?

To facilitate access and exchange of information for Transport Operators and MaaS providers

The TO-MP API



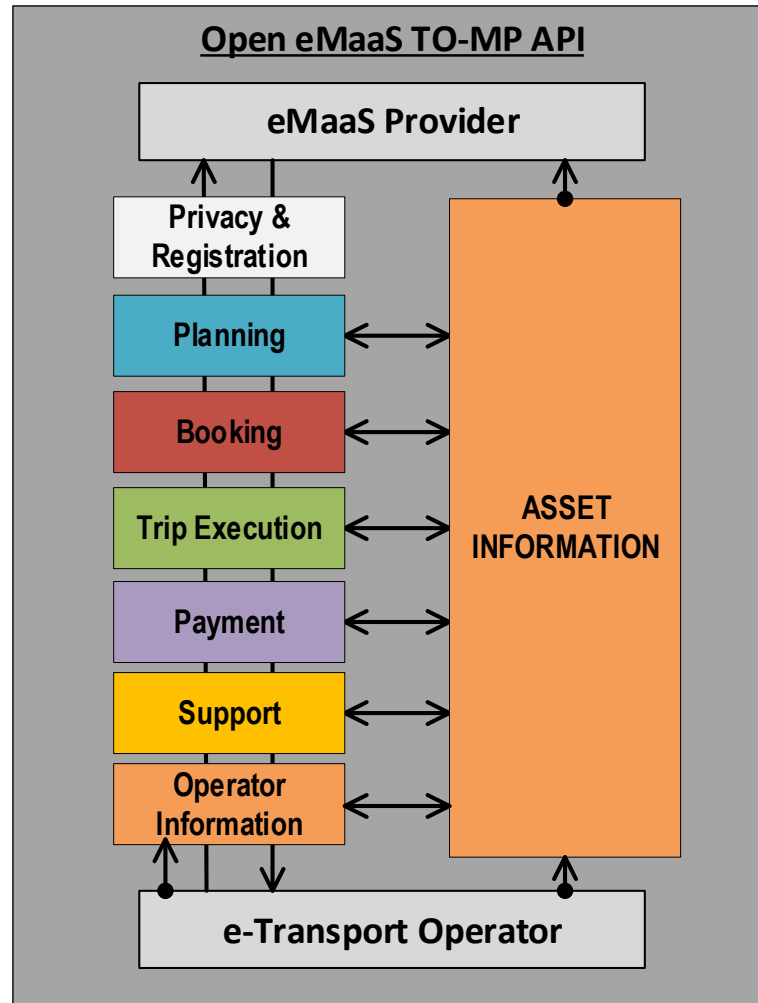
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By whom?

- Initiated by Dutch Ministry of I&WM
- Supported by UT: functional design
- Involvement of PT, shared bike/car operators, MaaS providers and mobility stakeholders

The TO-MP API



Why?

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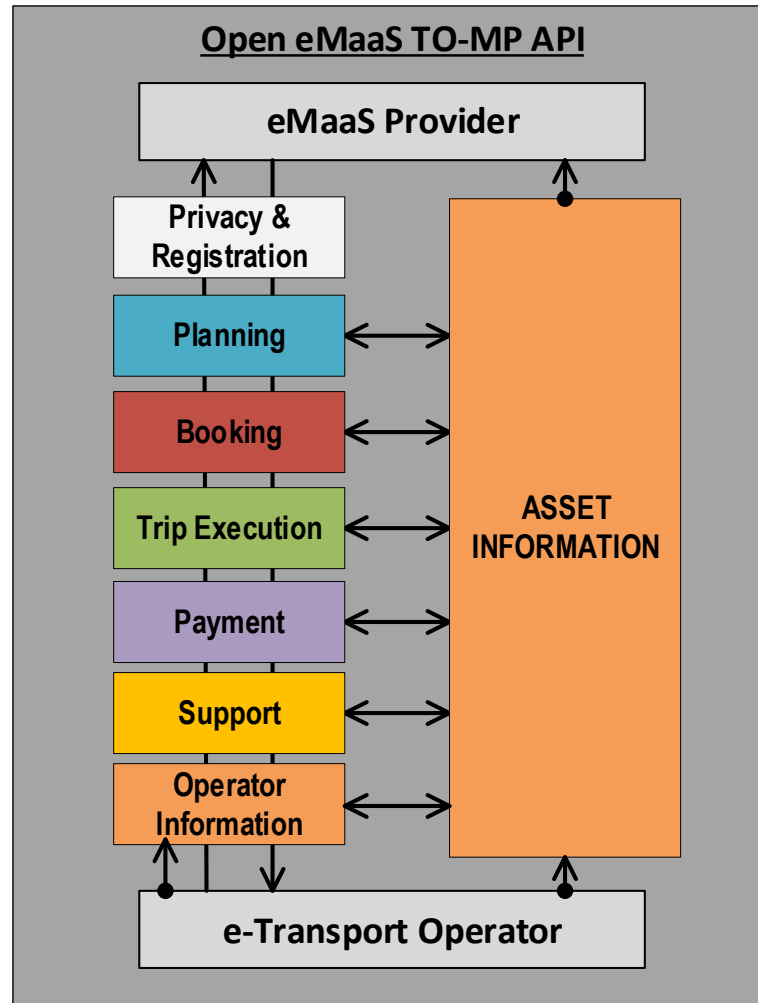
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Application

- 7 large MaaS pilots in NL
- Presented to MaaS Alliance, BeNeLux and Nordrhein Westphalen (DE)

The TO-MP API

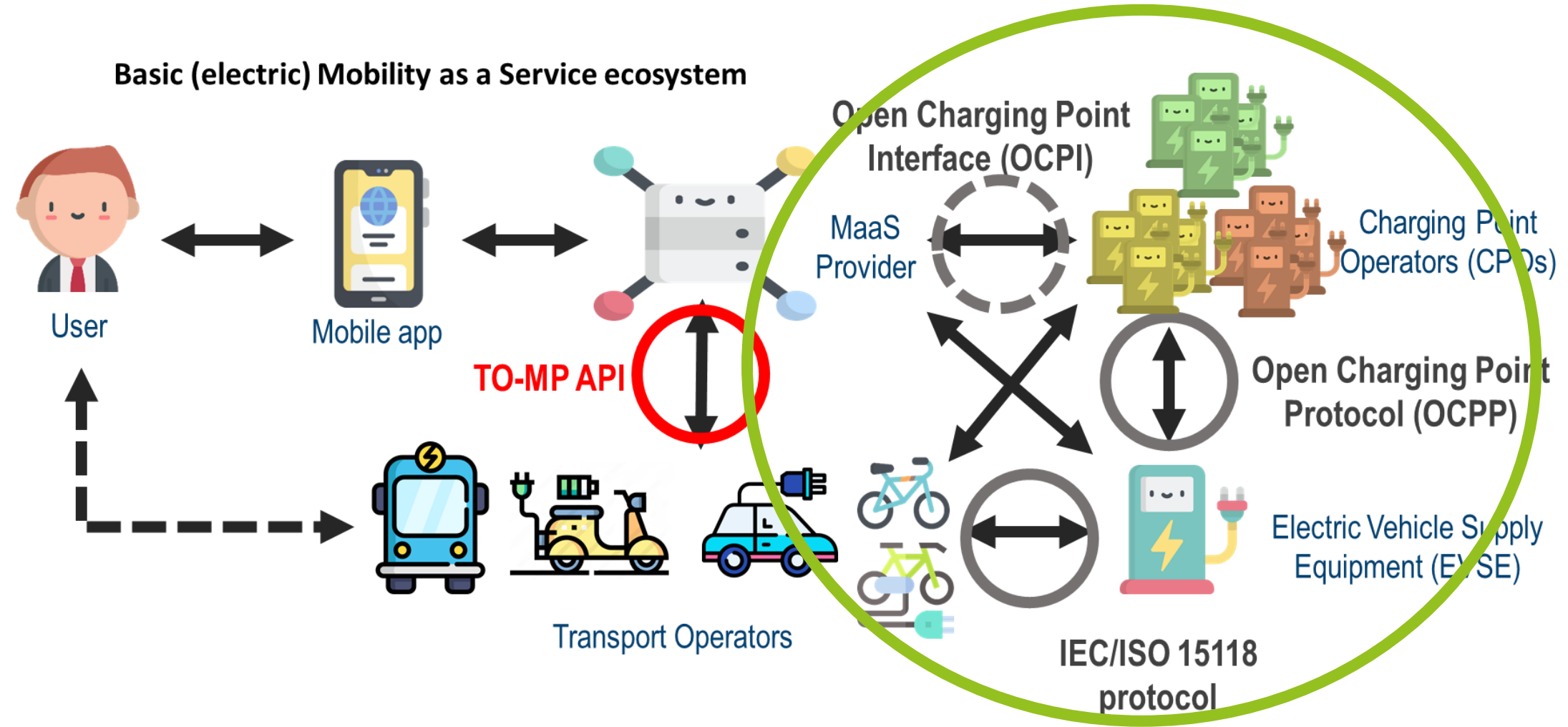


Advantages

- One language for the communication of any kind of TO and MP
- Allows for (inter)national interoperability
- Allows for collaborative research and development
- Large-scale implementation
- Configuration of Front- and Back- ends still under control of each TO and MP

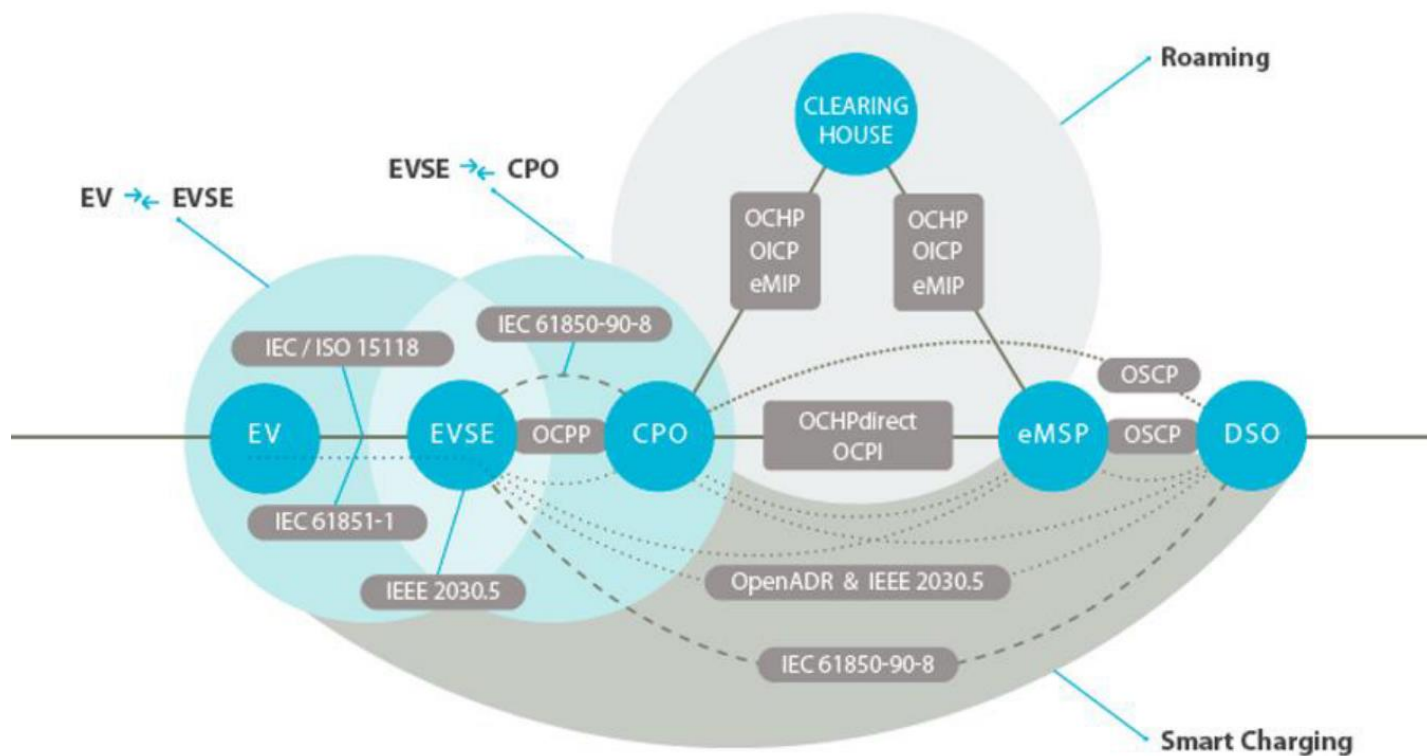
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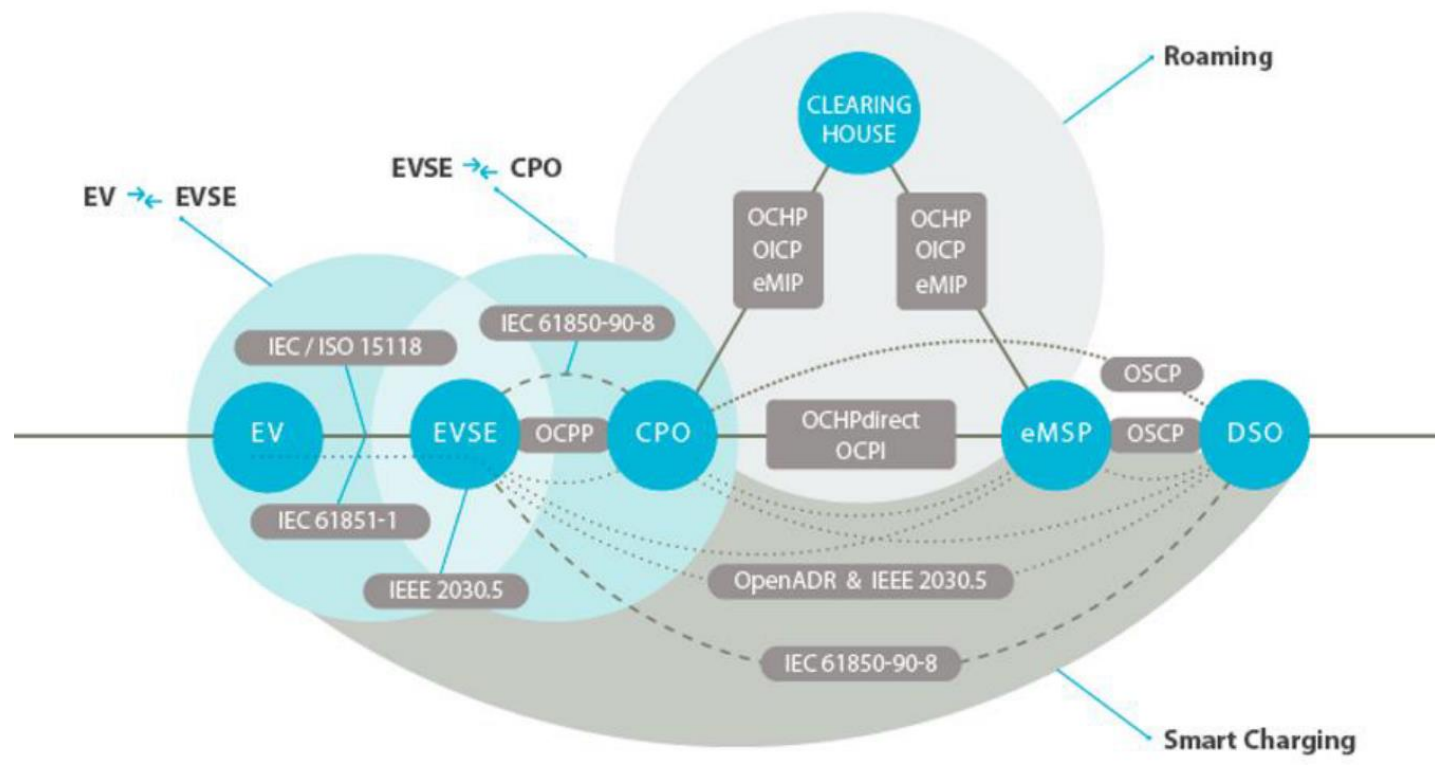


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The relation of open protocols in the EV market



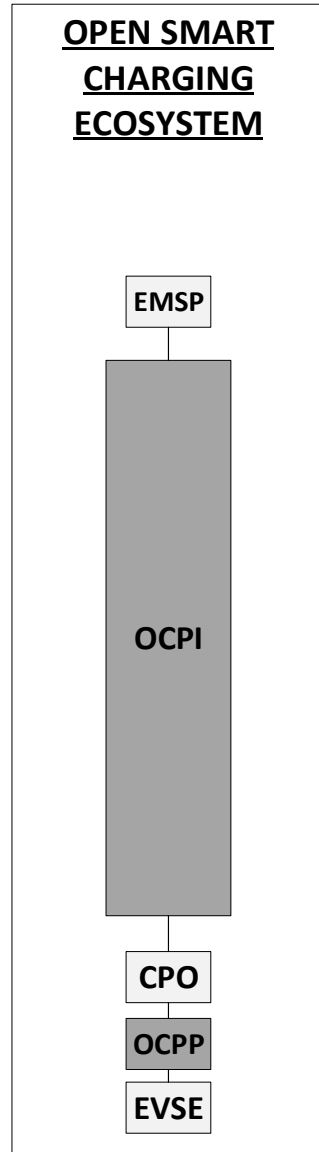
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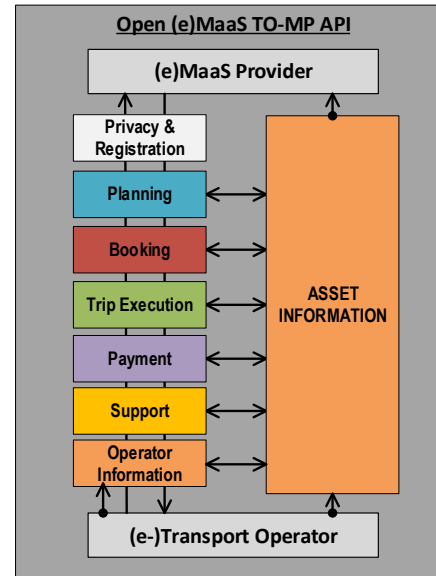
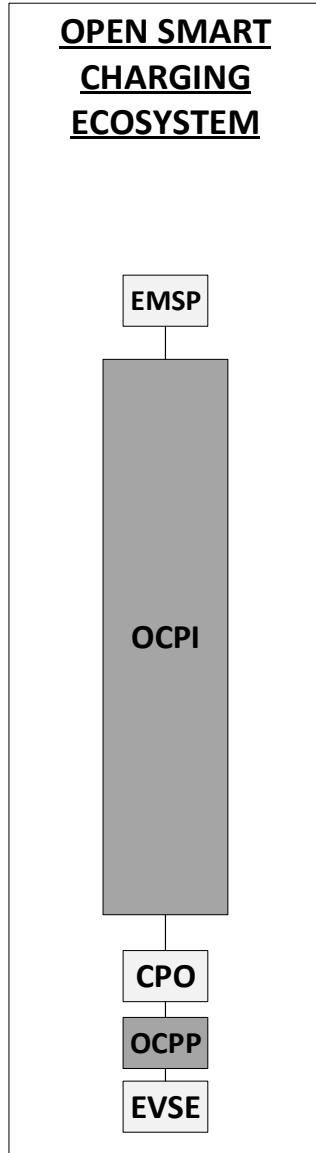
Advantages

- Protocols are free to use and independent
- Charge point hosts are less vulnerable to individual system suppliers
- Only one operating system
- Development costs are reduced
- Allow for (inter)national interoperability
- Facilitate smart charging technologies and applications

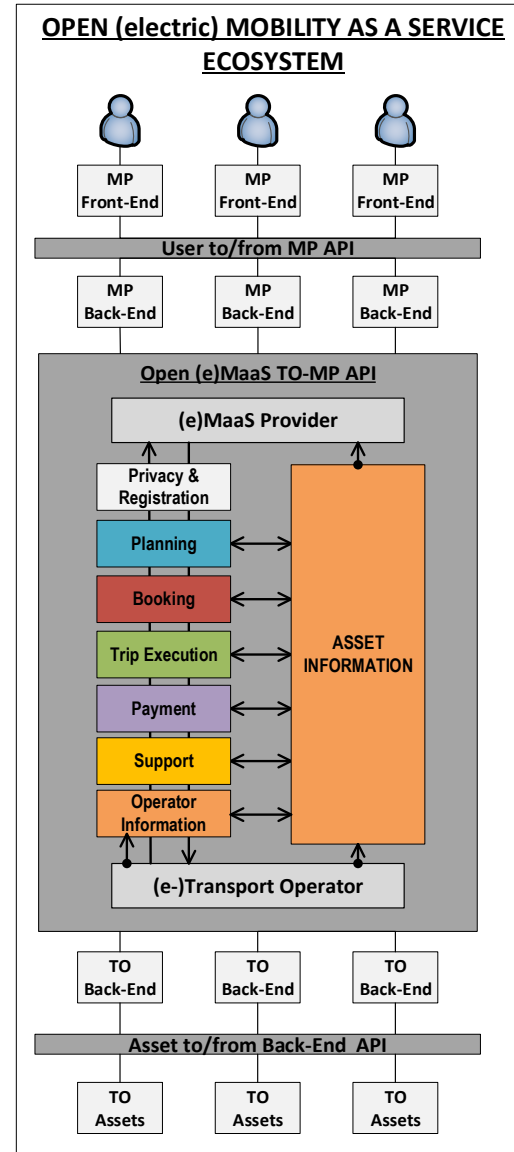
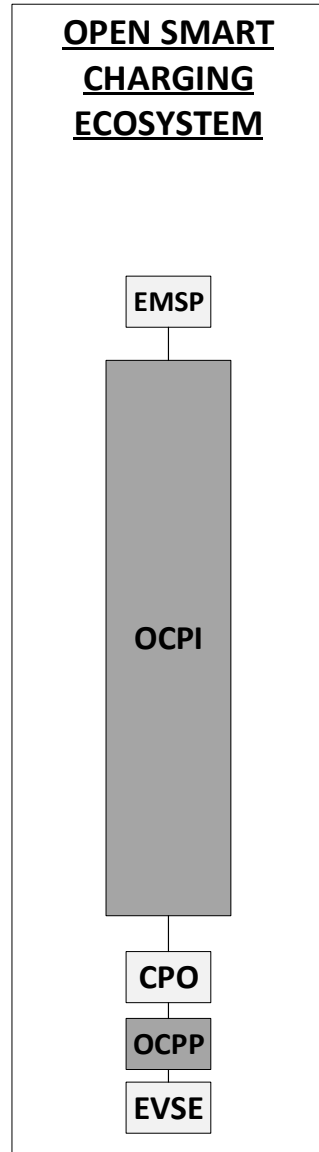
Open Standard Interfaces Analogy



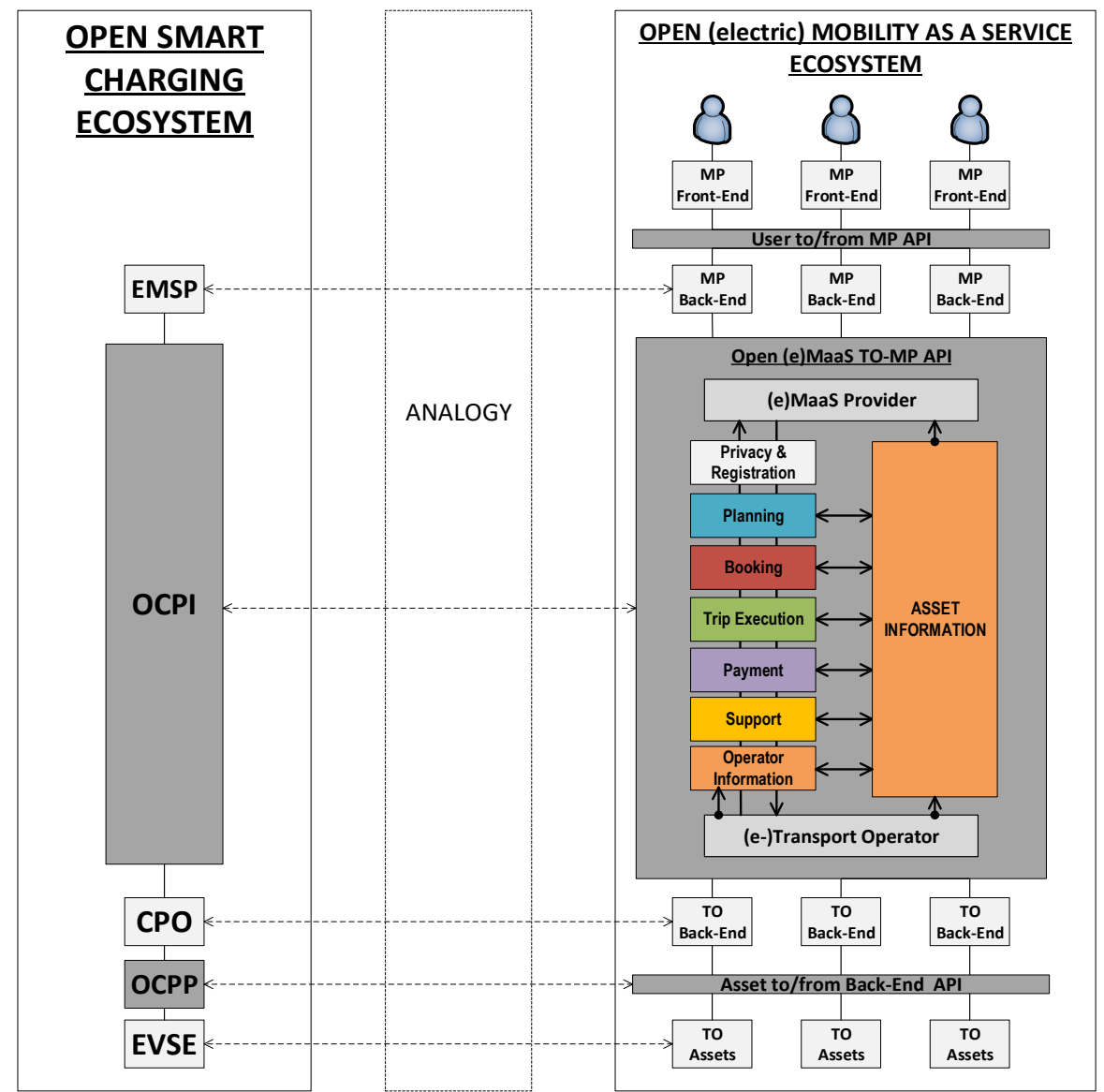
Open Standard Interfaces Analogy



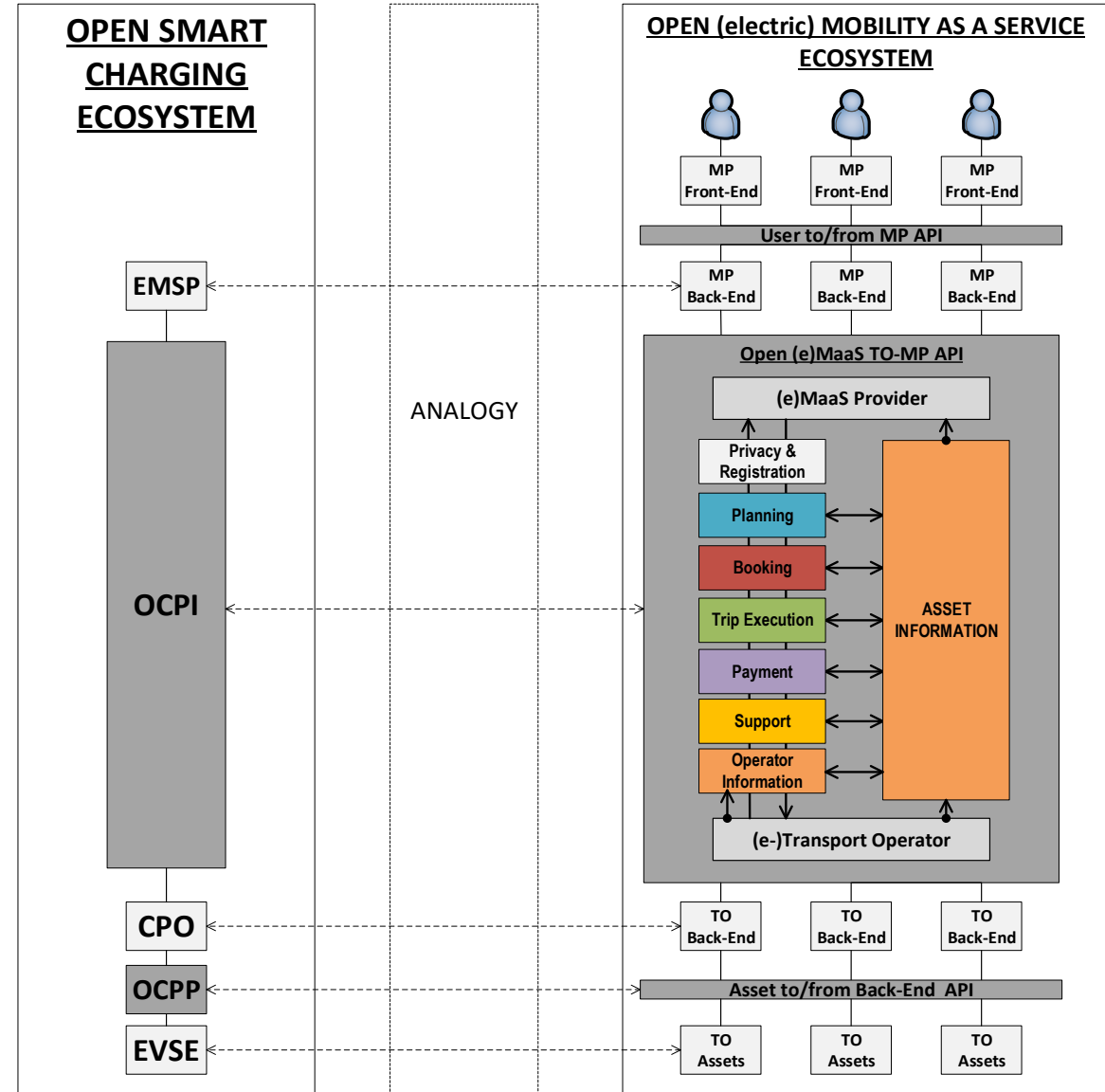
Open Standard Interfaces Analogy



Open Standard Interfaces Analogy



Open Standard Interfaces Analogy



Take Away Message!

Advantages of standard protocols/interfaces in the eMaaS ecosystem

- Open access, free to use, independent usage
- Only one language / operating system
- Allow for (inter)national interoperability
- Allow for collaborative research and development
- Allow for large-scale implementation

Thank you for your attention!
Any questions?

Contact:

Roberto Reyes – j.r.reyesgarcia@utwente.nl

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