unIT-e²: Highlights from the construction site

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UN|IT|E² Reallabor für verNETZte E-Mobilität

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Developing end-to-end solutions for V1G & V2G

Harmonization of grid requirements, business models and customer needs

FUNDED IN:

Elektro-Mobil funding program of the German Federal Ministry for Economics and Climate Action (BMWK)

DURATION:

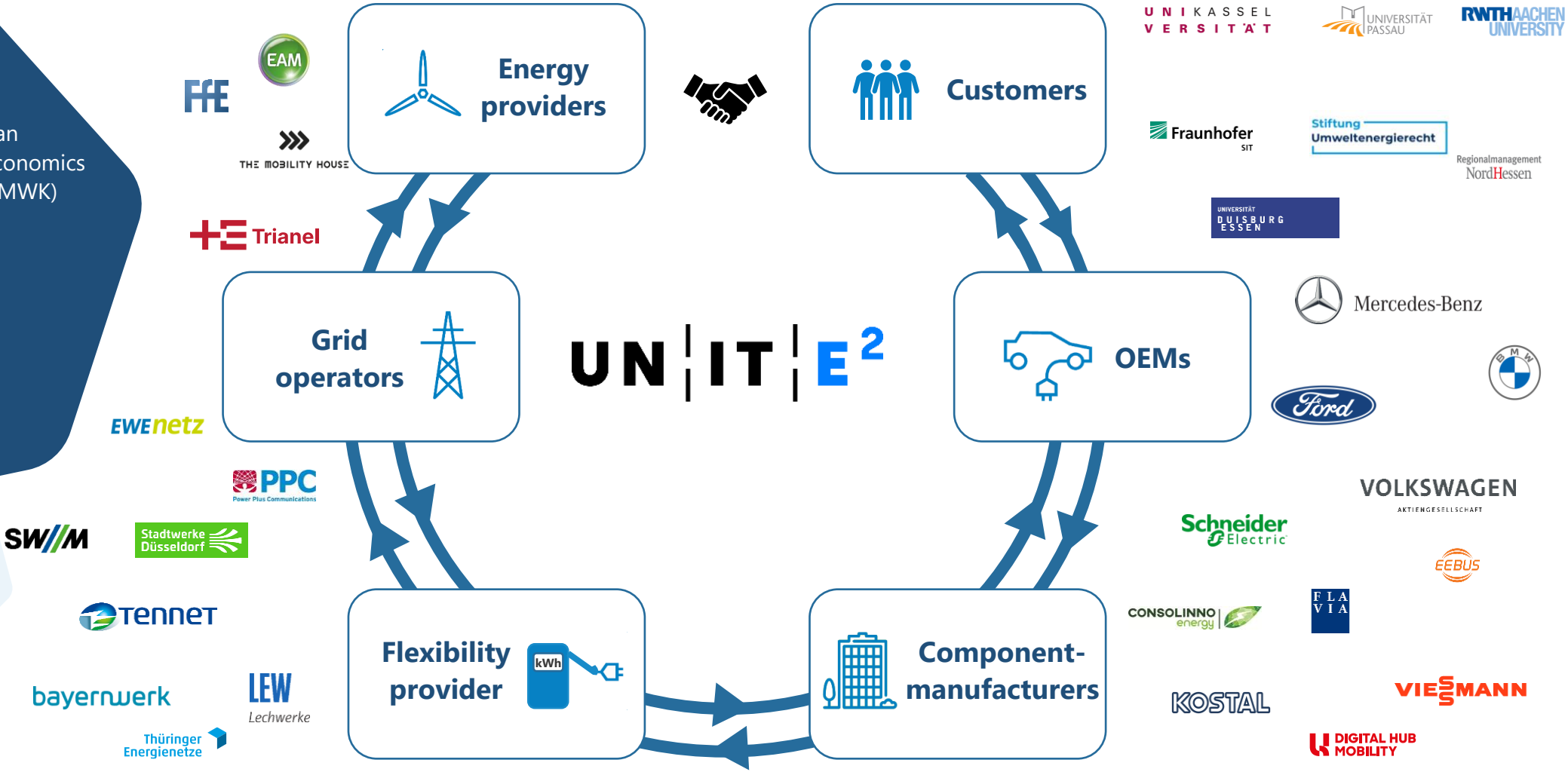
08.2021 – 01.2025

LEAD:

FfE

CONSORTIUM:

31 partners



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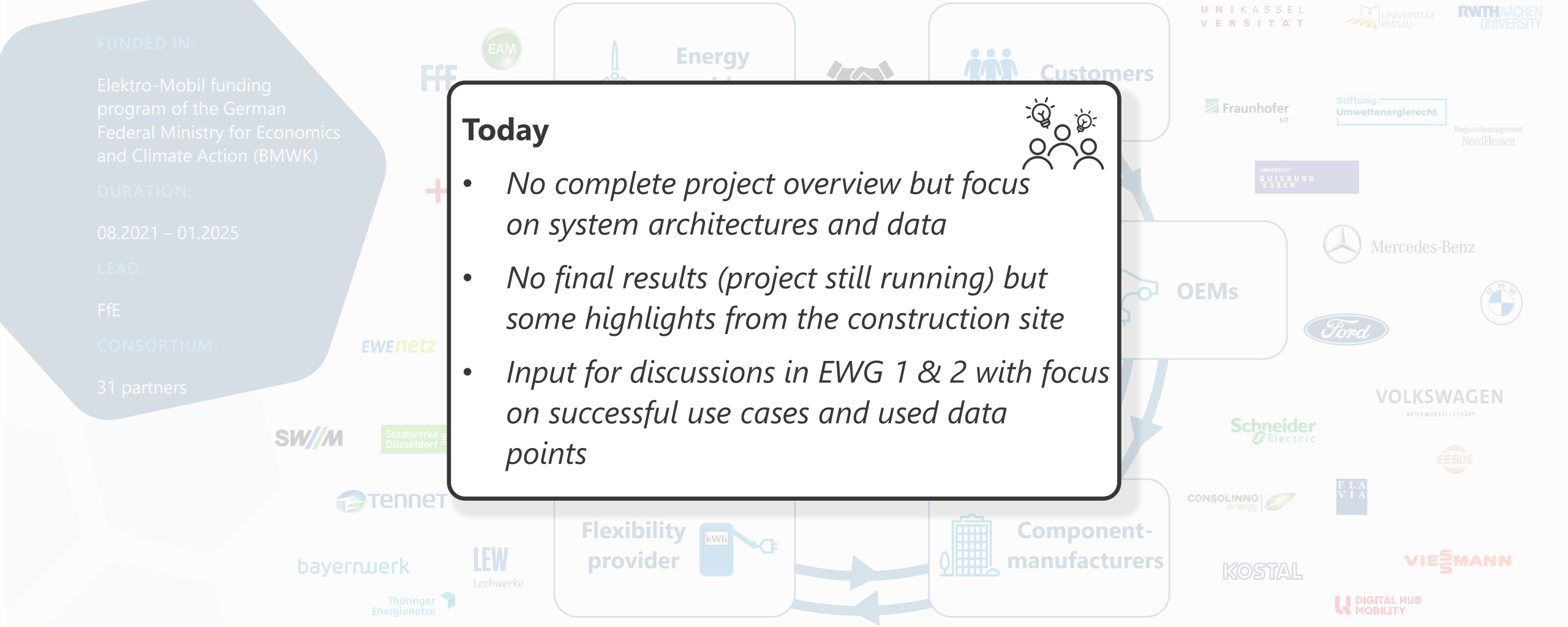
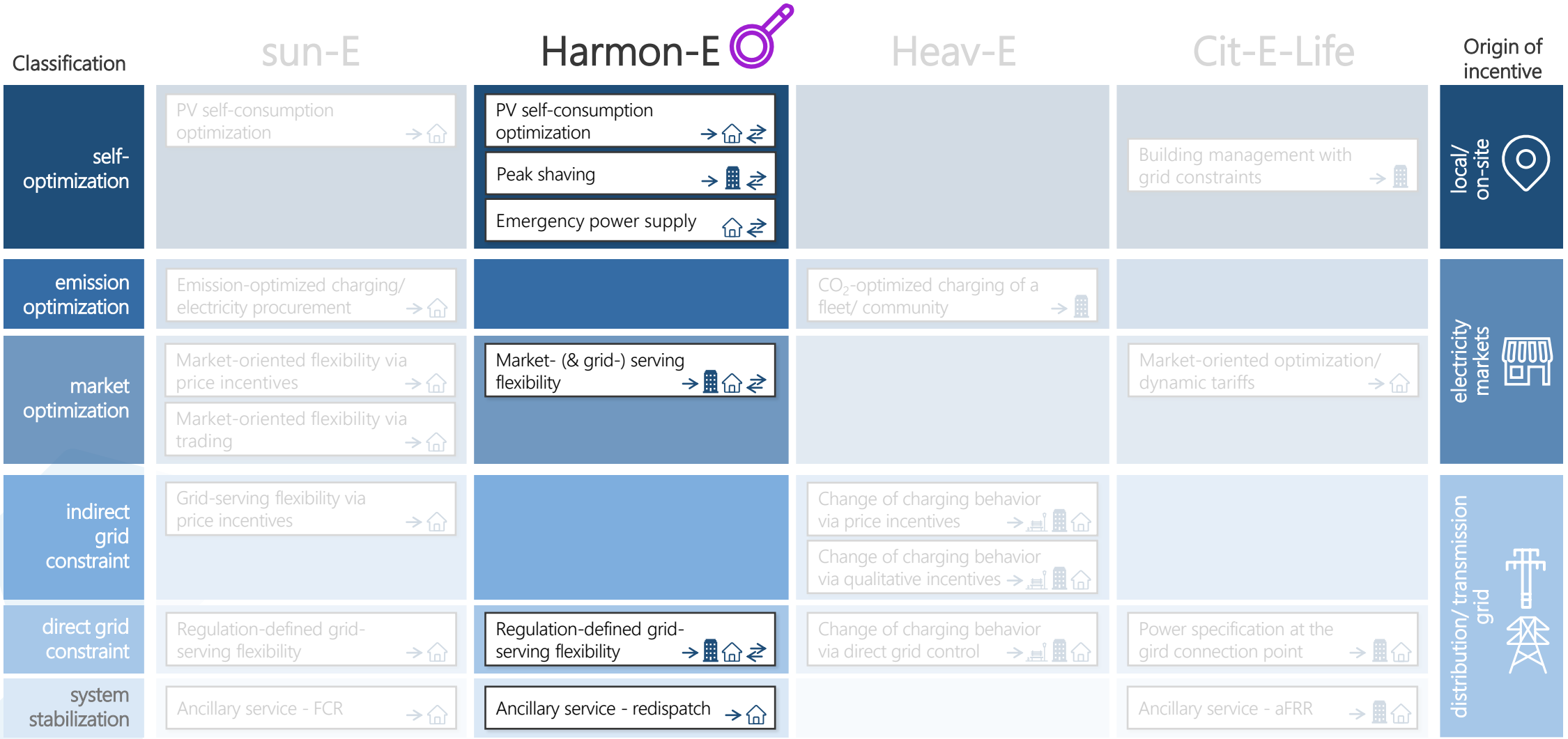
Today

- *No complete project overview but focus on system architectures and data*
- *No final results (project still running) but some highlights from the construction site*
- *Input for discussions in EWG 1 & 2 with focus on successful use cases and used data points*



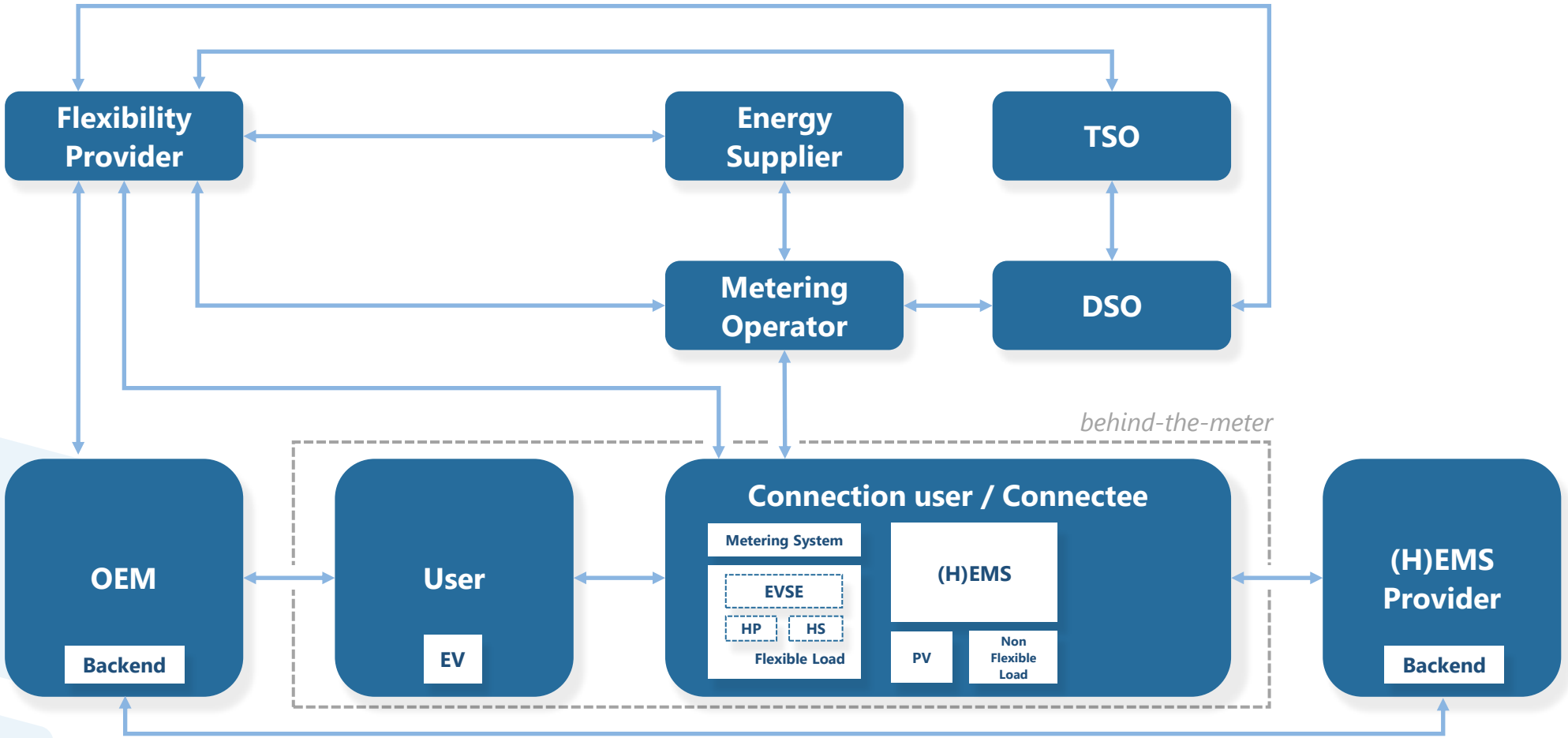
Use case for smart and bidirectional charging

Cluster Harmon-E in focus



Visualizing connected players and interfaces clearly

Simplified unIT-e² *system architecture*



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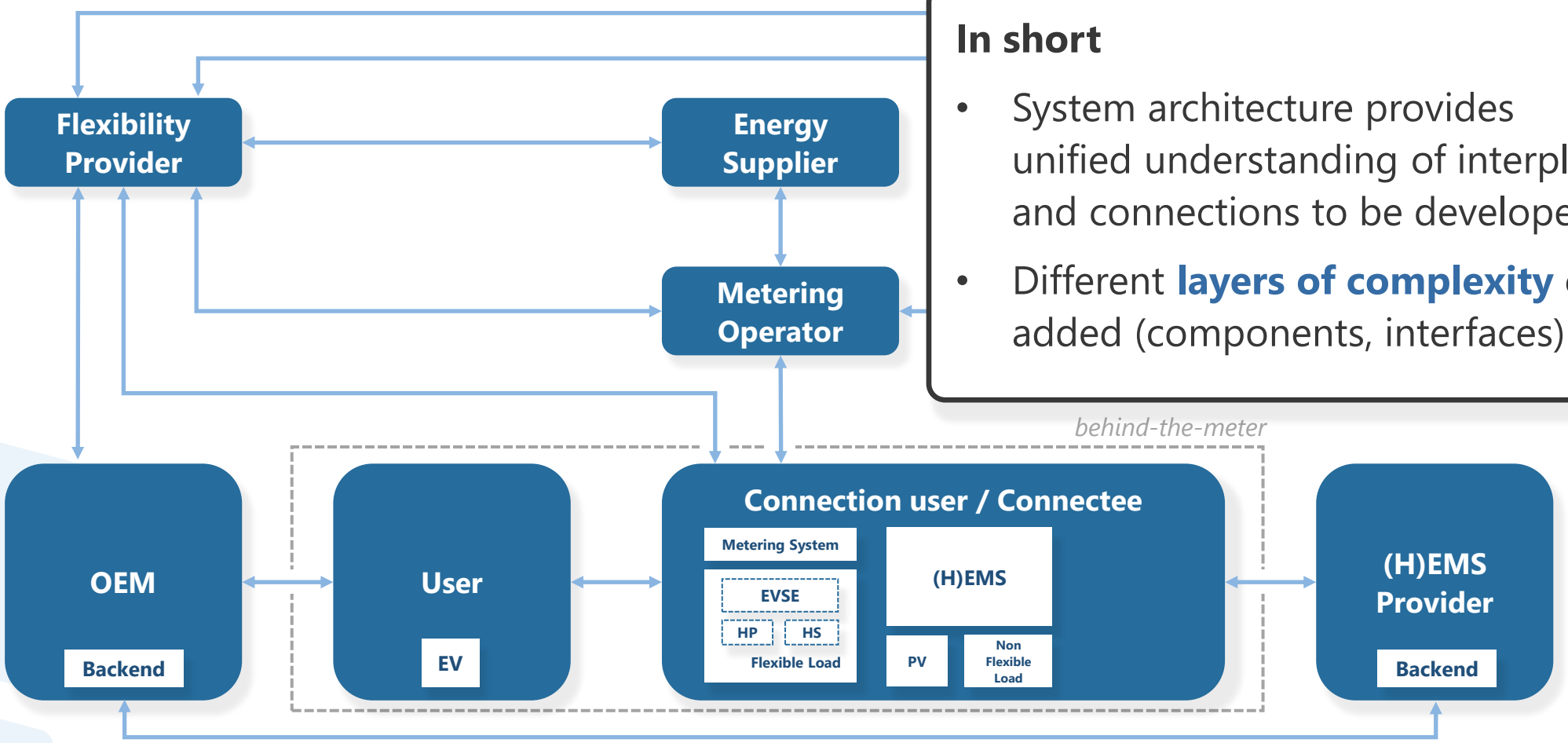
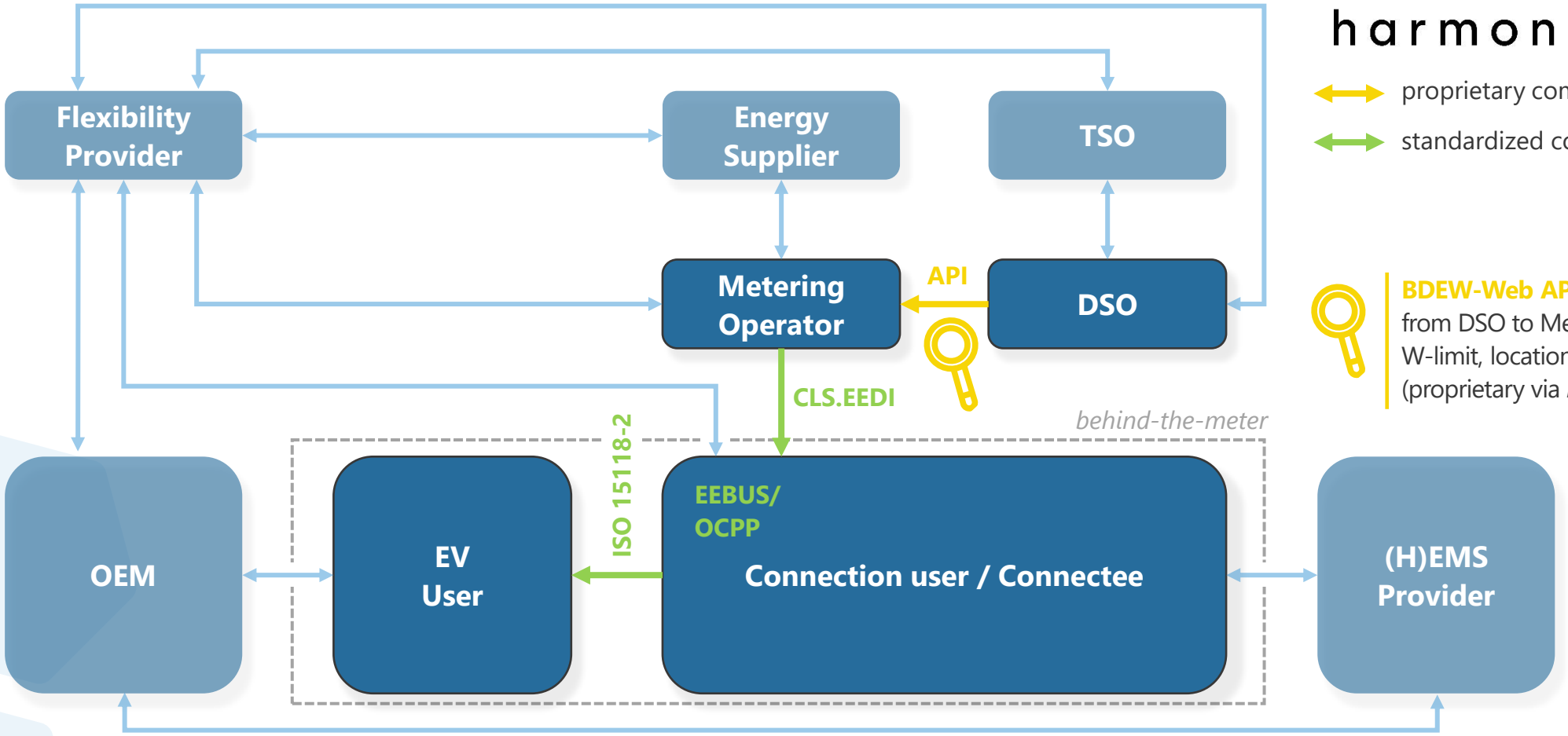


In short

- System architecture provides unified understanding of interplay and connections to be developed
- Different **layers of complexity** can be added (components, interfaces)

Implementing standards for grid stability

Smart charging use case: Regulation-defined grid-serving flexibility (EnWG §14a in Germany)



harmon|E

proprietary communication

standardized communication

BDEW-Web API
from DSO to Metering Operator
W-limit, location, time period
(proprietary via *MQTT*)

Implementing standards for grid stability

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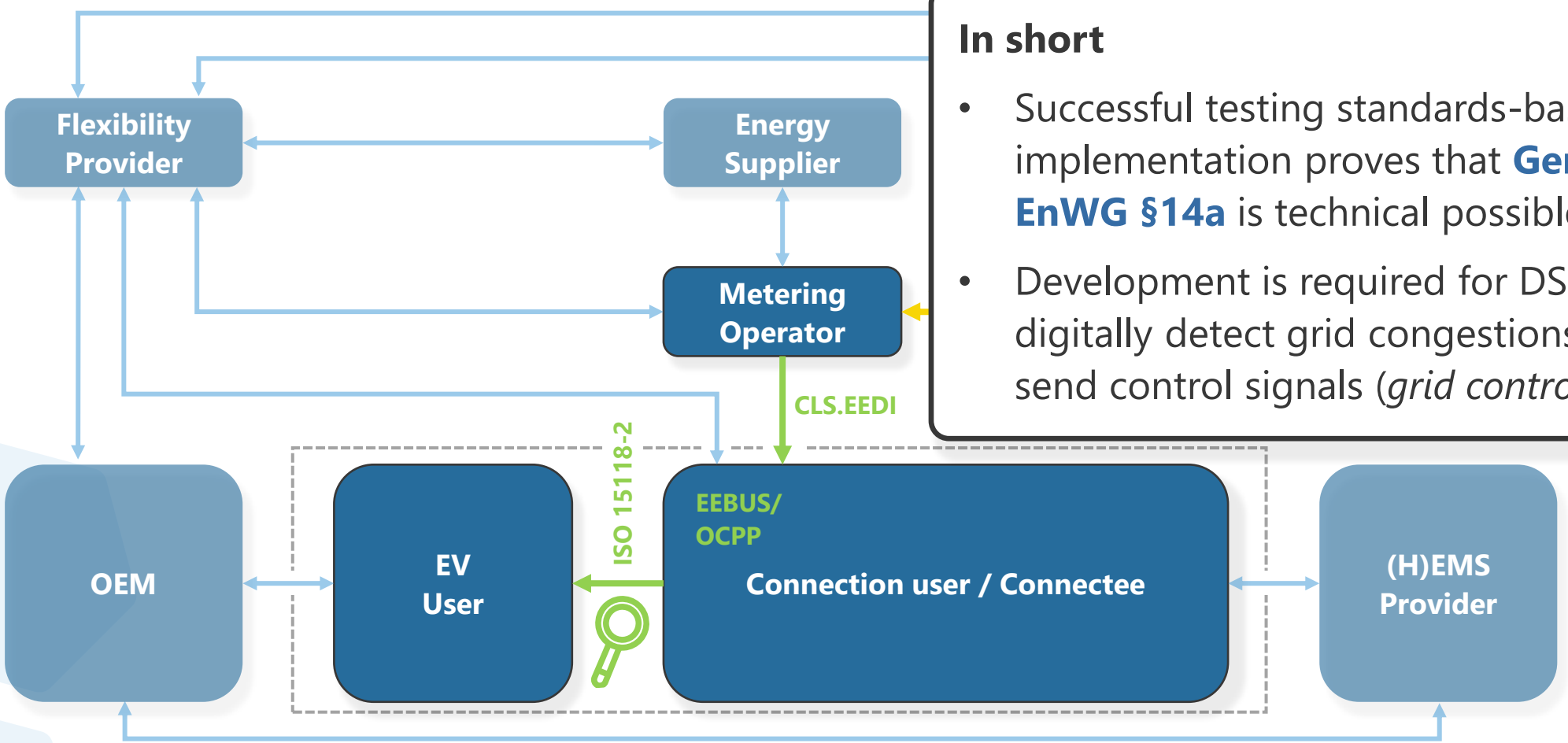
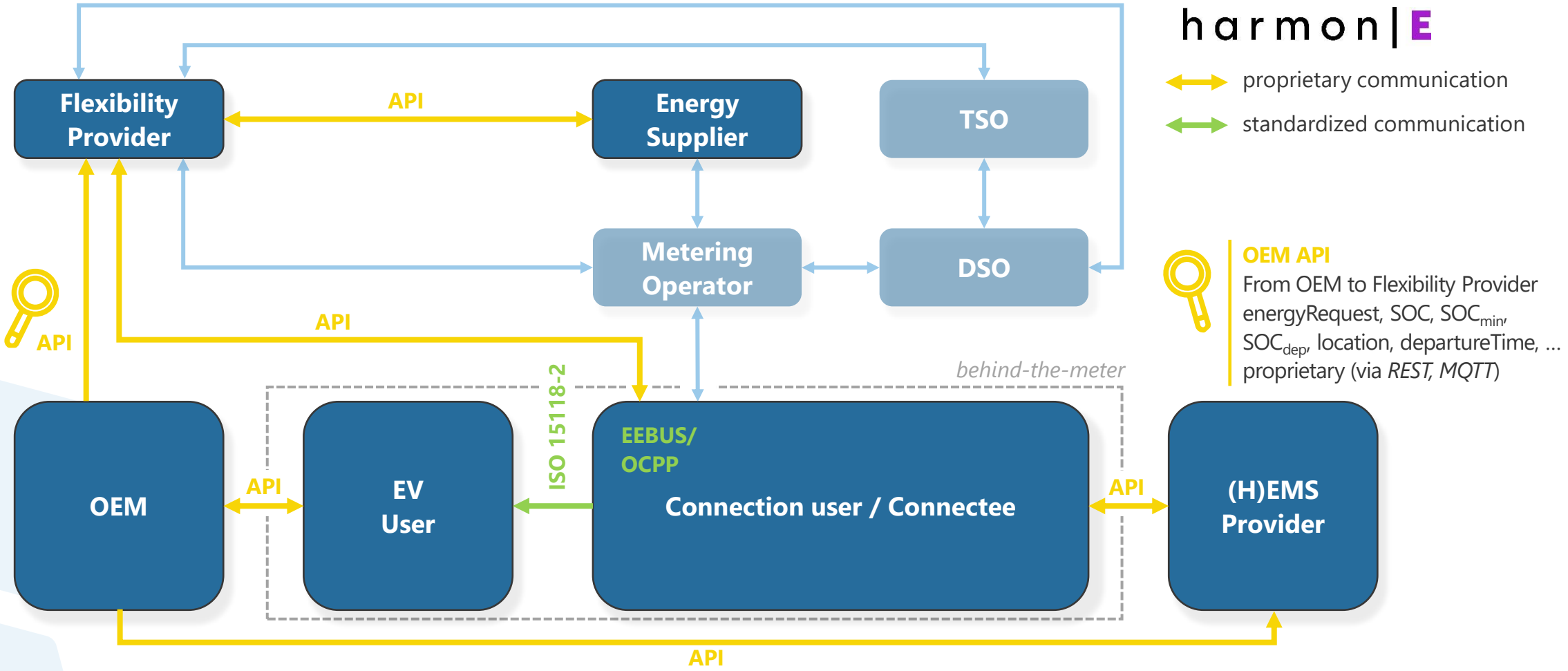


In short

- Successful testing standards-based implementation proves that **German EnWG §14a** is technical possible
- Development is required for DSOs to digitally detect grid congestions and send control signals (*grid controllers*)

Market-oriented smart charging use cases

APIs & backend-2-backend communication between non regulated market participants



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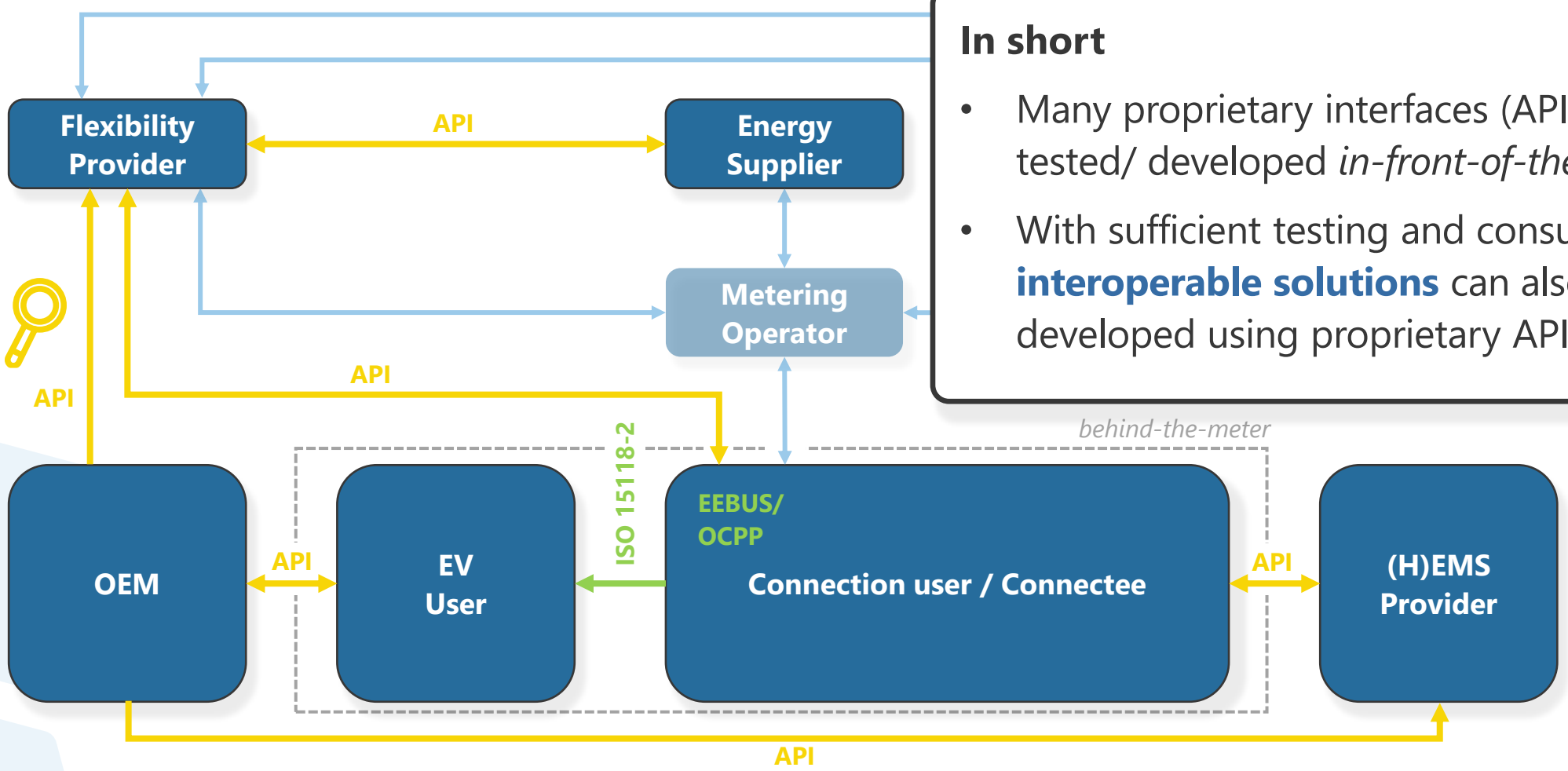
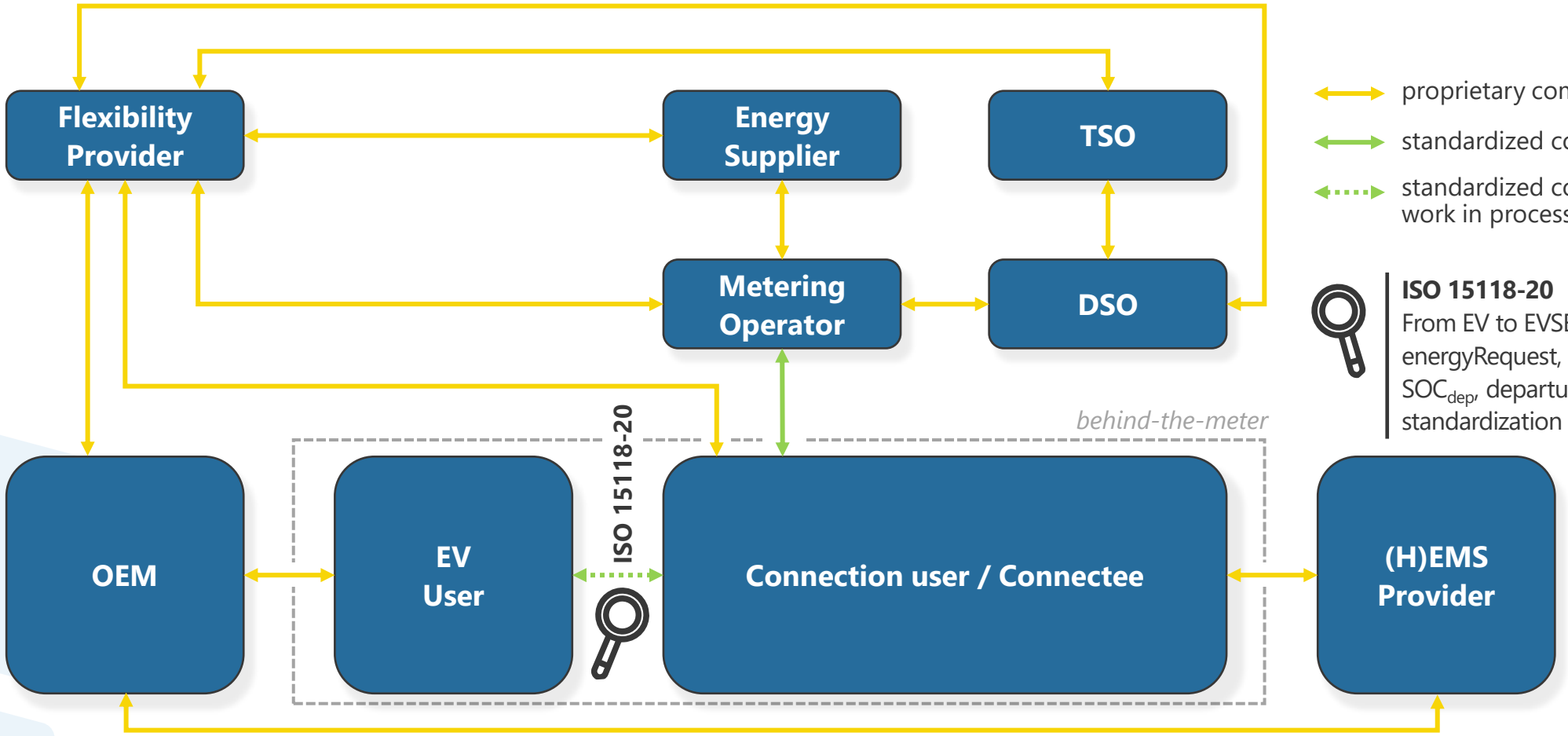


In short

- Many proprietary interfaces (APIs) are tested/ developed *in-front-of-the-meter*
- With sufficient testing and consultation, **interoperable solutions** can also be developed using proprietary APIs

Identifying missing pieces for bidirectional charging

System interoperability has not yet been established X



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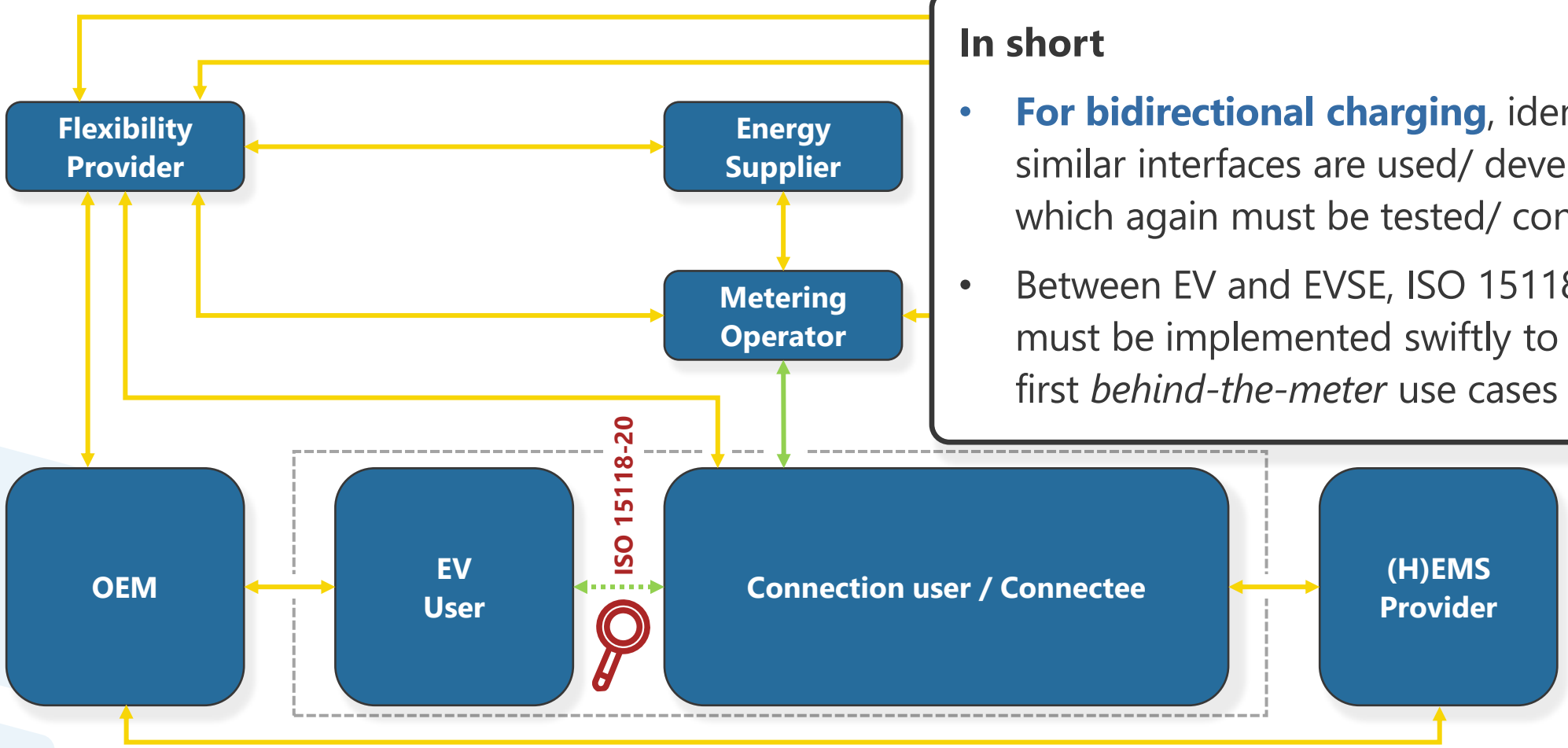


In short

- **For bidirectional charging**, identical/ similar interfaces are used/ developed which again must be tested/ consulted
- Between EV and EVSE, ISO 15118-20 must be implemented swiftly to enable first *behind-the-meter* use cases

Take-aways from unIT-e²

From pilot test to real operation!

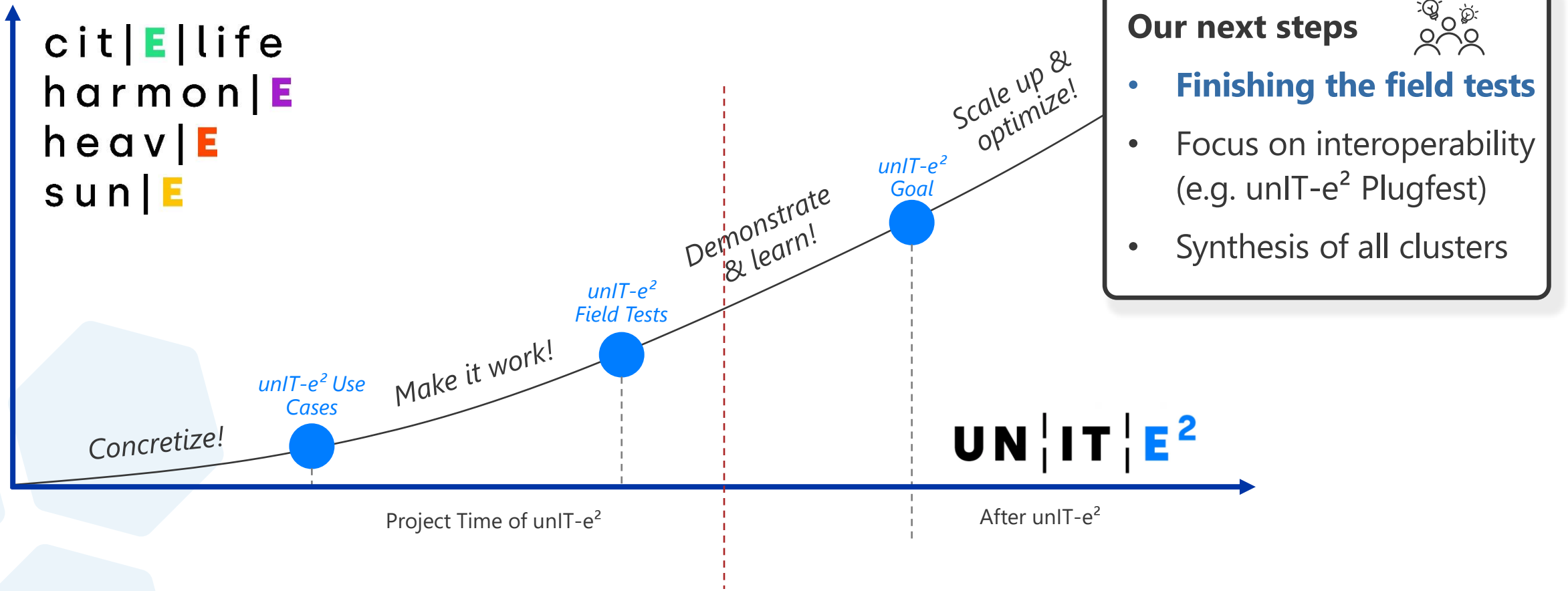
1 Scope for interpretation in almost all standards and their implementation

- Further development of EV & charger necessary (not only ISO15118-20, but also -2)
- Our solution: Iterative testing (“Testivals”, Plugfests, …) & systematic description of errors
- **ToDo for us: Looking for the sweet spot between standardization and proprietary solutions – now and for the our vision!**

2 Grid & market as a field of tension with many design options

- Implementation of EnWG §14a is underway (also in the direction of HEMS)
- Dynamic tariffs and spot market trading are used by "first movers" in production systems

What´s next in unIT-e²?



Our next steps

- **Finishing the field tests**
- Focus on interoperability (e.g. unIT-e² Plugfest)
- Synthesis of all clusters

Kontakt

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