DOCKETED	
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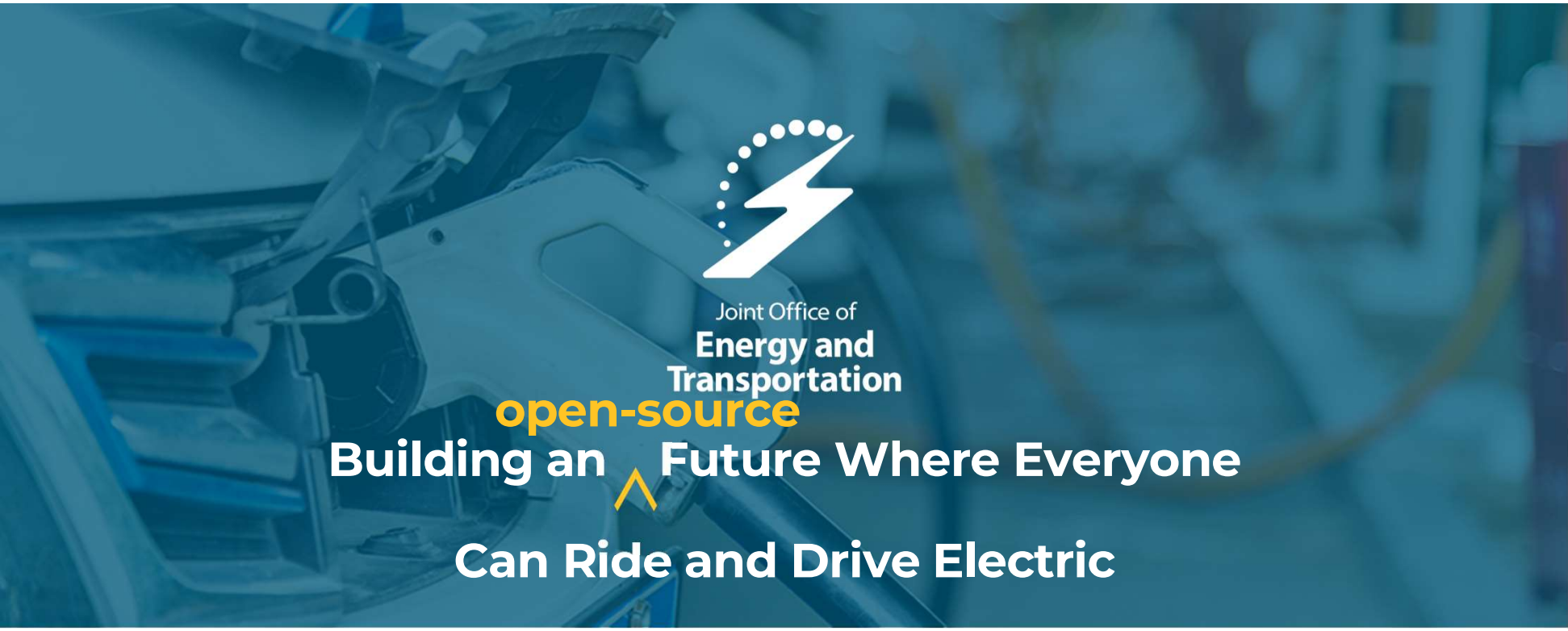

K. Shankari, PhD
Principal Software Architect, Standards and Reliability Pillar

California Energy Commission Virtual Workshop

13 May 2024

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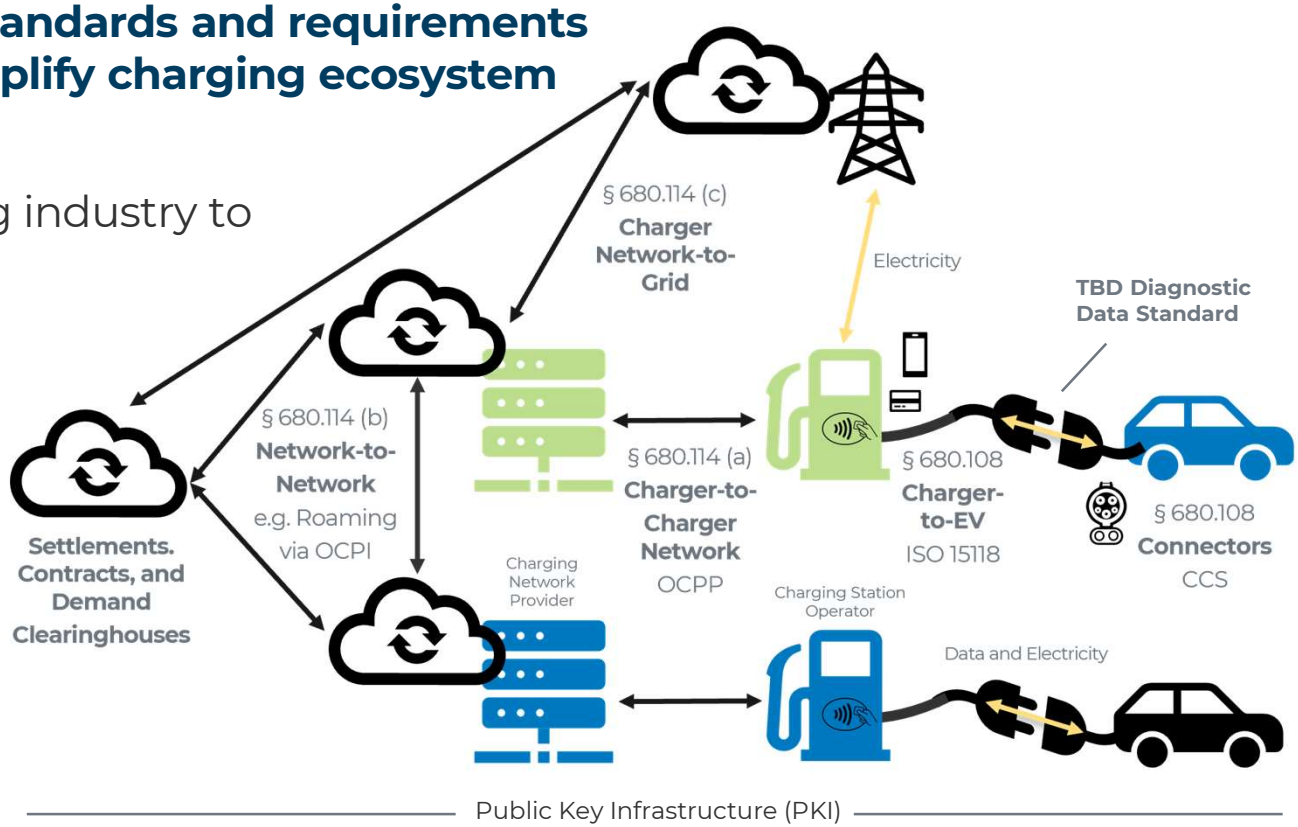
Simplifying the Charging Ecosystem

NEVI minimum standards and requirements signal how to simplify charging ecosystem

We are supporting industry to implement:

- ❑ **OCPP 2.0.1**
- ❑ **ISO 15118-2**



Open source reference implementation of CFR 680

https://github.com/EVerest/EVerest/blob/main/COMMUNITY.md

Mailing list | Developer chat | GitHub issues | Working groups

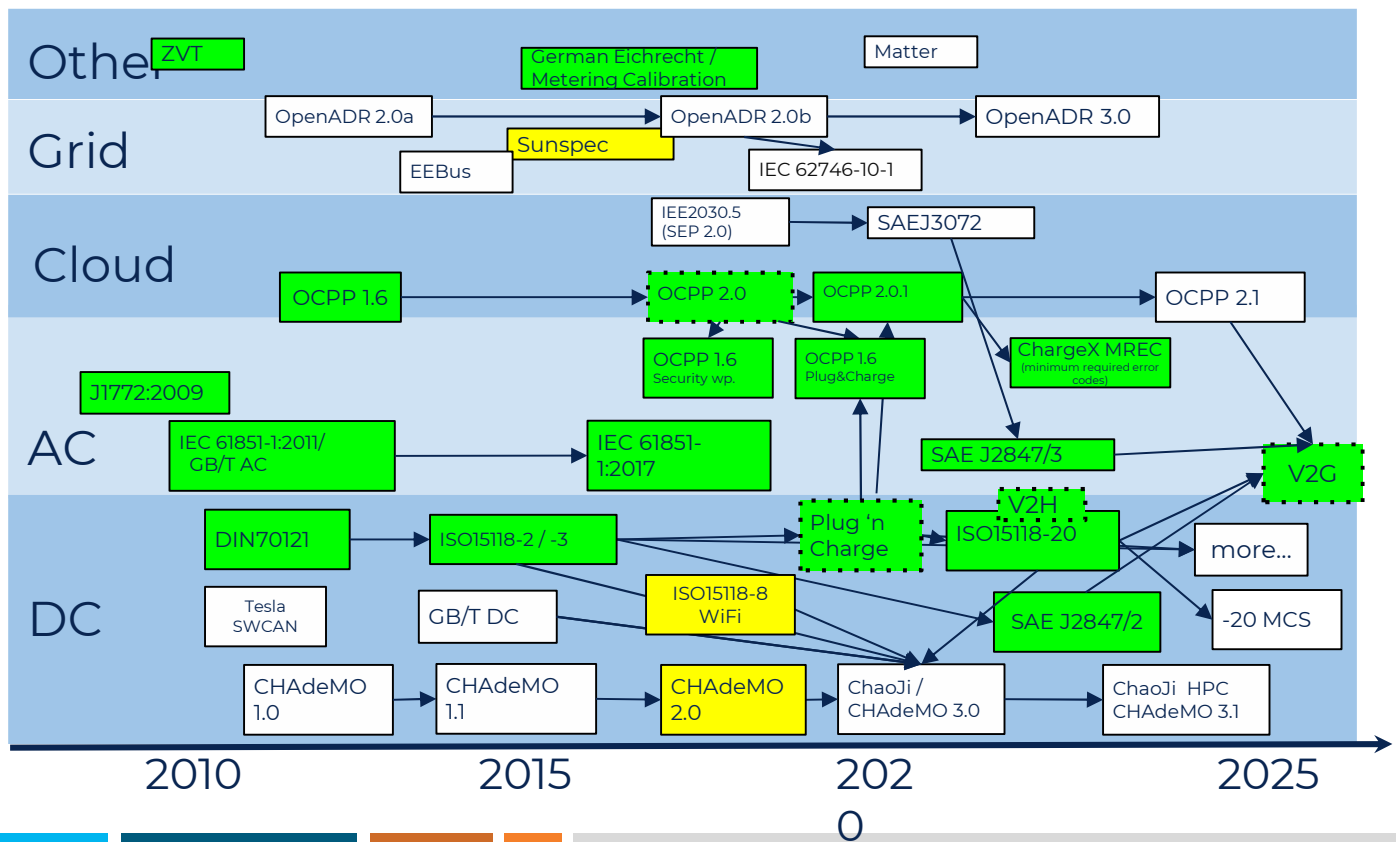
https://github.com/EVerest

- 32 public modules
- 720k lines of Code

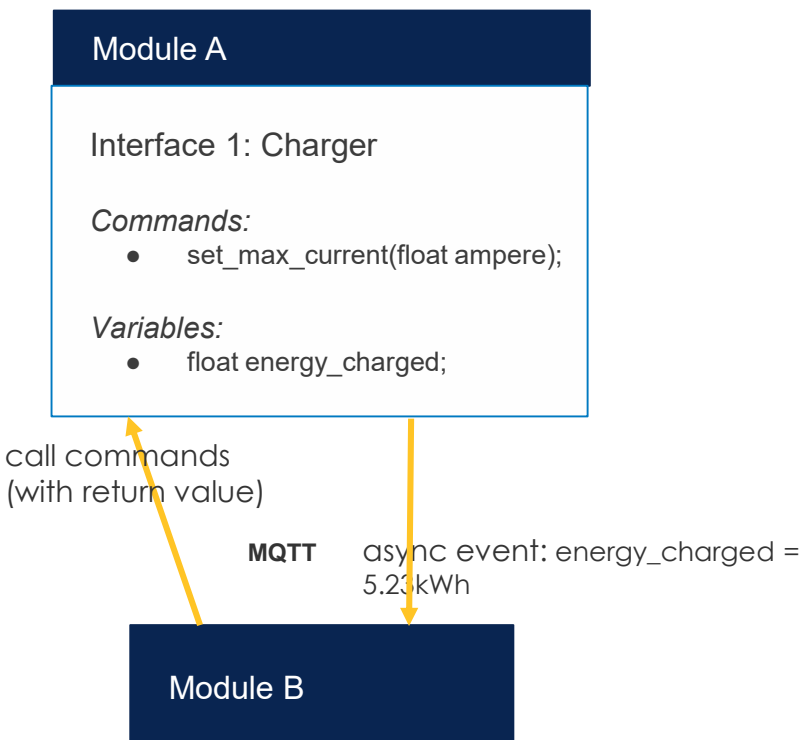
thoughtworks / maeve-csms

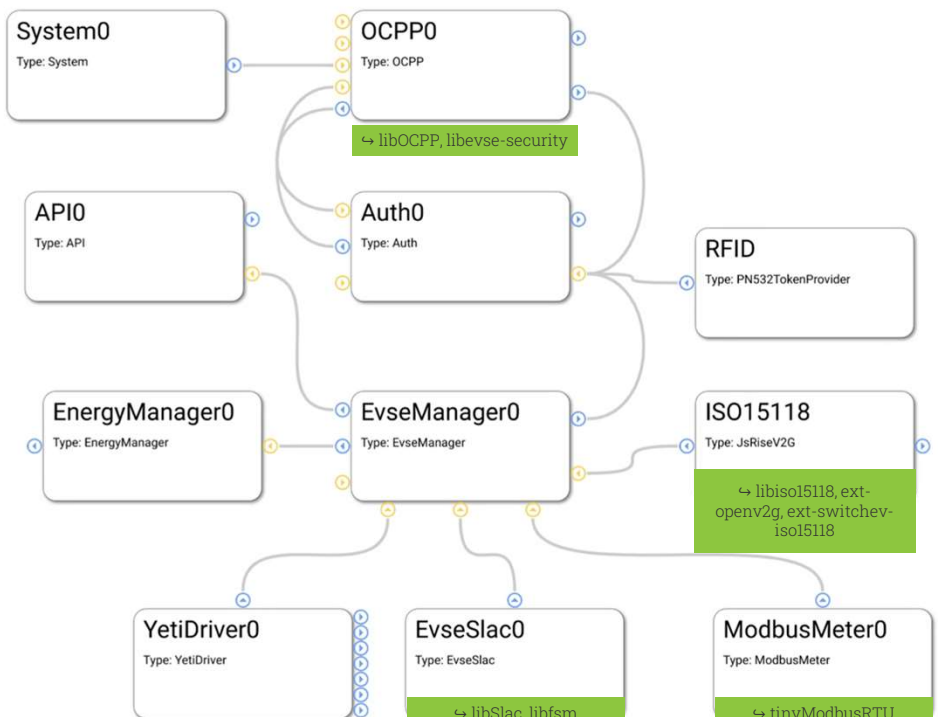
https://www.ecfr.gov/current/title-23/chapter-I/subchapter-G/part-680

EVerest: Wide variety of supported protocols



Modular system: Drag and drop to assemble





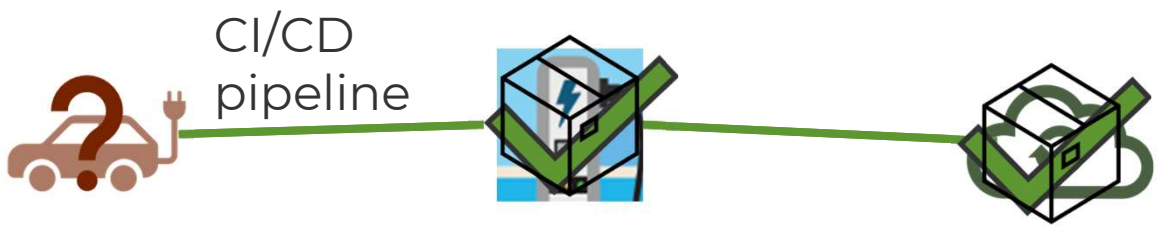
Build a simple AC wallbox using drag and drop: https://youtu.be/4ylKUCx_0tM?t=1852

Testing:

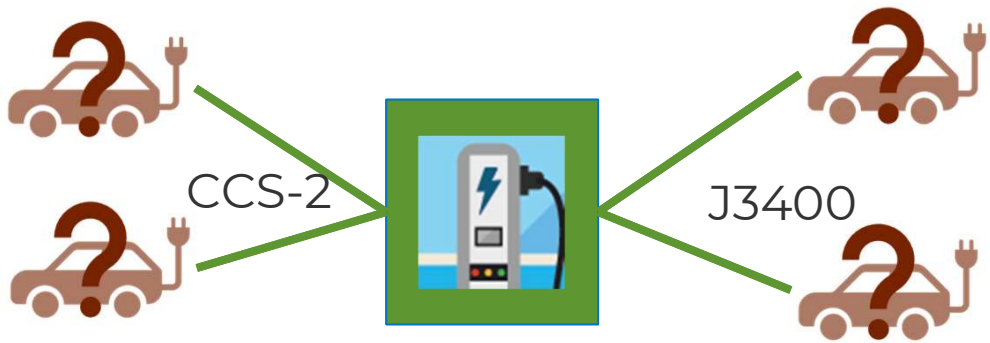
greater reliability and interop-erability

SIL chaos engineering

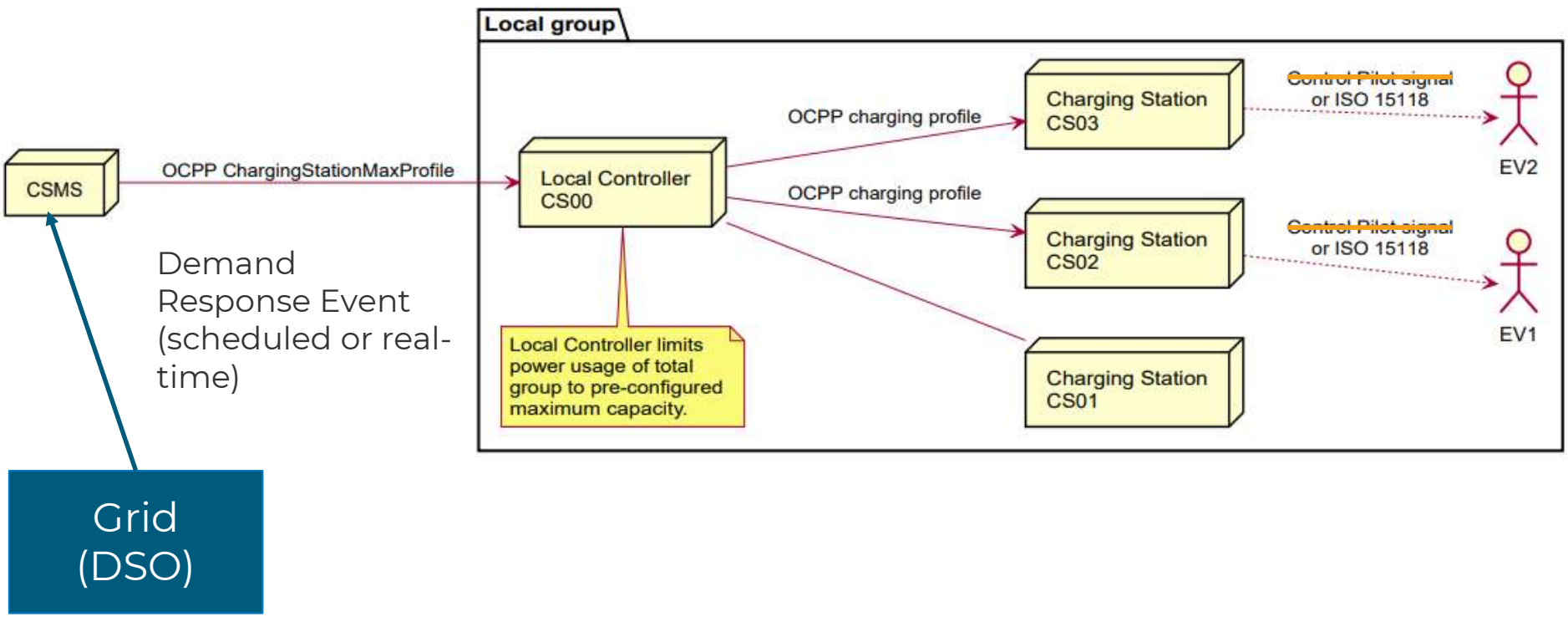
End to end SIL conformance testing



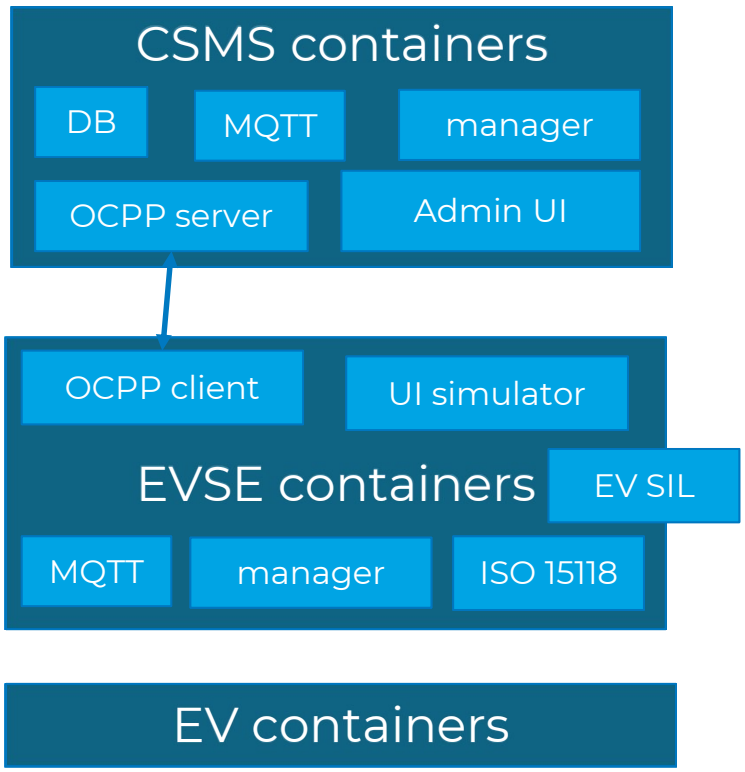
Tabletop Testival

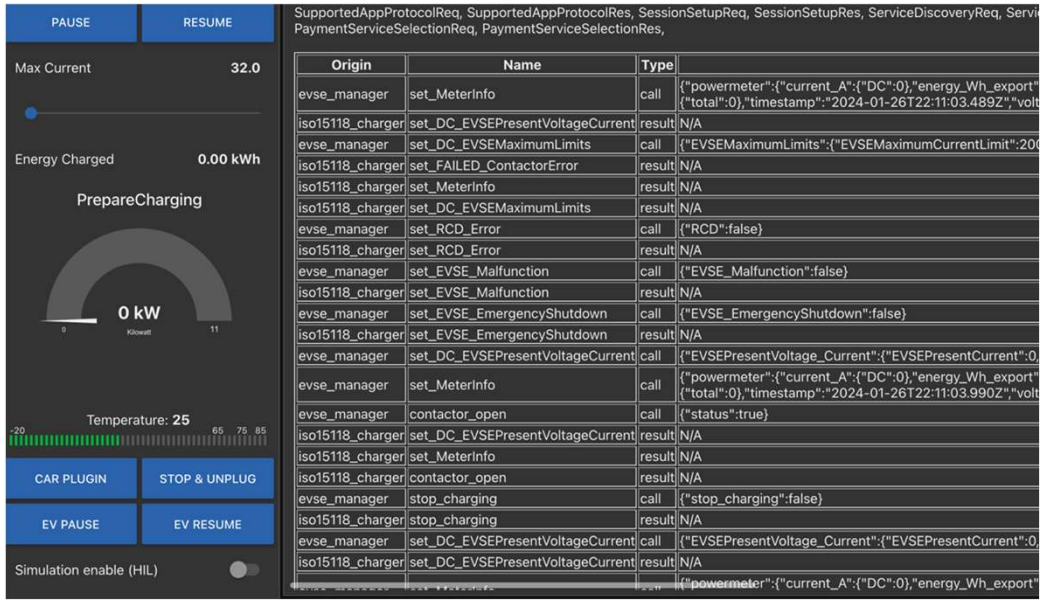


Beyond the car: VGI and energy management



Single-line SIL demos





More demos, including CFR 680 compliant session https://github.com/everest/everest-demo

Smart charging modules and improved documentation

K01.FR.36	✅
K01.FR.37	
K01.FR.38	
K01.FR.39	✅
K01.FR.40	✅
K01.FR.41	✅
K01.FR.42	
K01.FR.43	
K01.FR.44	✅
K01.FR.45	✅

Schedule Validation Follow-Ups ✓
#537 by christopher-davis-afs was merged 2 weeks ago • Approved 3 tasks done

Make EVSE mockable and add mock ✓
#534 by christopher-davis-afs was merged on Mar 28 • Approved 3 tasks done

tests: Rename K01.FR.39 tests ✓
#533 by christopher-davis-afs was closed last week • Draft 3 tasks done

Accenture Federal + NREL
Dedicated dev team

Yocto builds

PKI testing and best practices in the US context

Documentation on writing a new module for custom hardware and plumbing it in

Communities Taking Charge Accelerator: $54 million in funding available

Topic Area	Anticipated # of Awards	Anticipated Award Range ($)	Total Funding Available ($)
1. Solving for No-Home Charging: Expanding Charging Access for Privately Owned E-Mobility	6-20	$250,000 - $4,000,000	$23,000,000
2. Expanding E-Mobility Solutions through Electrified Micro, Light and Medium-Duty Fleets	5-15	$250,000 - $4,000,000	$20,000,000
3. Managed Charging for Clean Reliable Energy	3-6	$1,000,000 - $4,000,000	$11,000,000

Open-source contributions are explicitly required

> "The intent is to provide resources and solutions into ecosystems supporting open-source distribution and may also contribute to Standards Development Organizations (SDO) for industry consensus."

> "When applicants apply to one or more Topic Areas for which open-source software distribution is required, applicants must submit an Open-Source Software Distribution Plan as part of their Full Application."

Deadline: May 20, 2024

Hop on the open-source EV charging bandwagon!

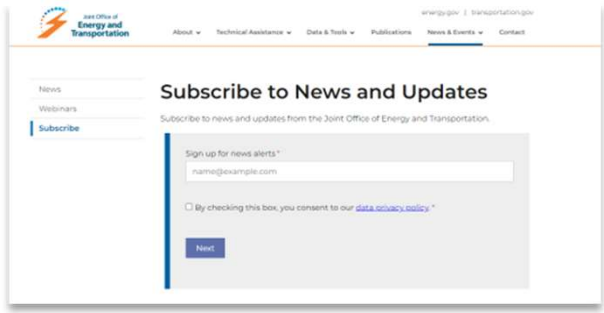
LFENERGY CitrineOS

LFENERGY EVerest

thoughtworks / maeve-csms

OpenChargingCloud / WWCP_OCPP

Stay Engaged with the Joint Office



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Upcoming Events

- 5/15: Open EV Charging Summit (Dallas, TX)
- 5/20-23: ACT Expo (Las Vegas, NV)
- 5/23: Reliability Strategies for EV Charging Webinar
- 6/11-14: CharIN Testival and Conference North America (Cleveland, OH)

Joint Office of
Energy and Transportation

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Vision for the Joint Office of Energy and Transportation

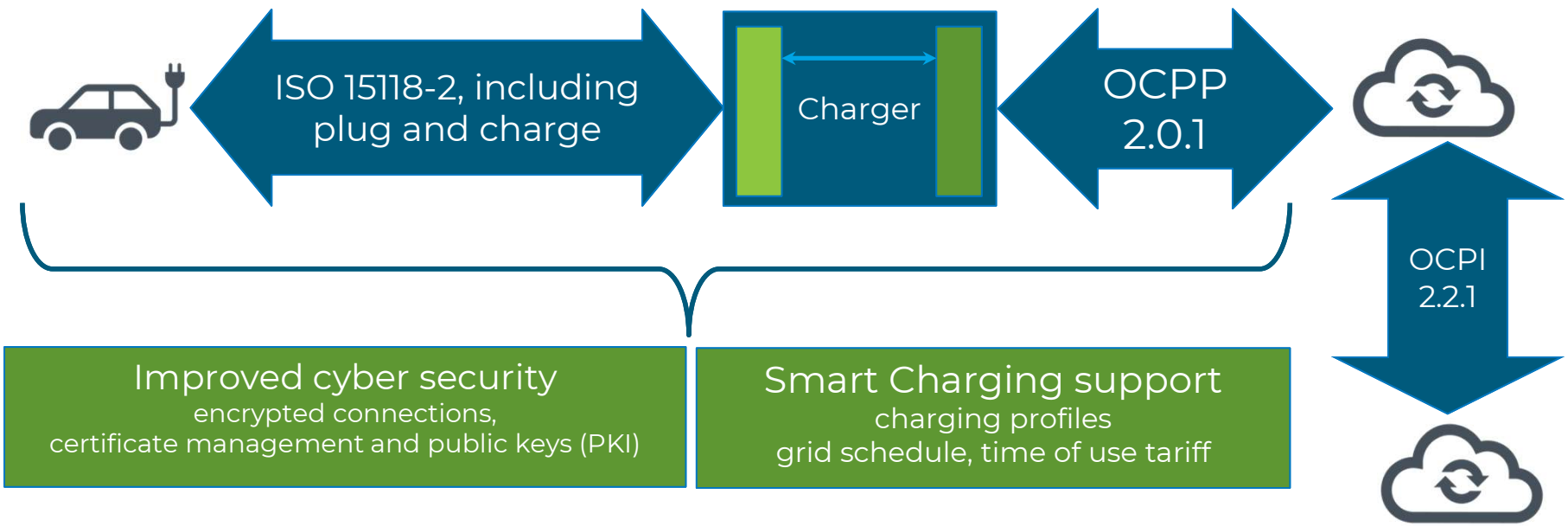
1. Support **deployment of zero-emission, convenient, accessible, equitable transportation infrastructure**—coordinating and leveraging activities between the U.S. Department of Energy and the U.S. Department of Transportation.

2. Serve as the **front door to the Federal Government for expertise and technical assistance**.

3. Serve as a **convenor of federal agencies, private sector companies, NGO and academia** to bring an all of government and stimulate an all of society approach to zero emissions transportation and mobility services.

4. Focus on **social return on investment and providing pilot funding to test outcomes** vs. simply hardware.

Feb 28, 2024: New NEVI standards take effect



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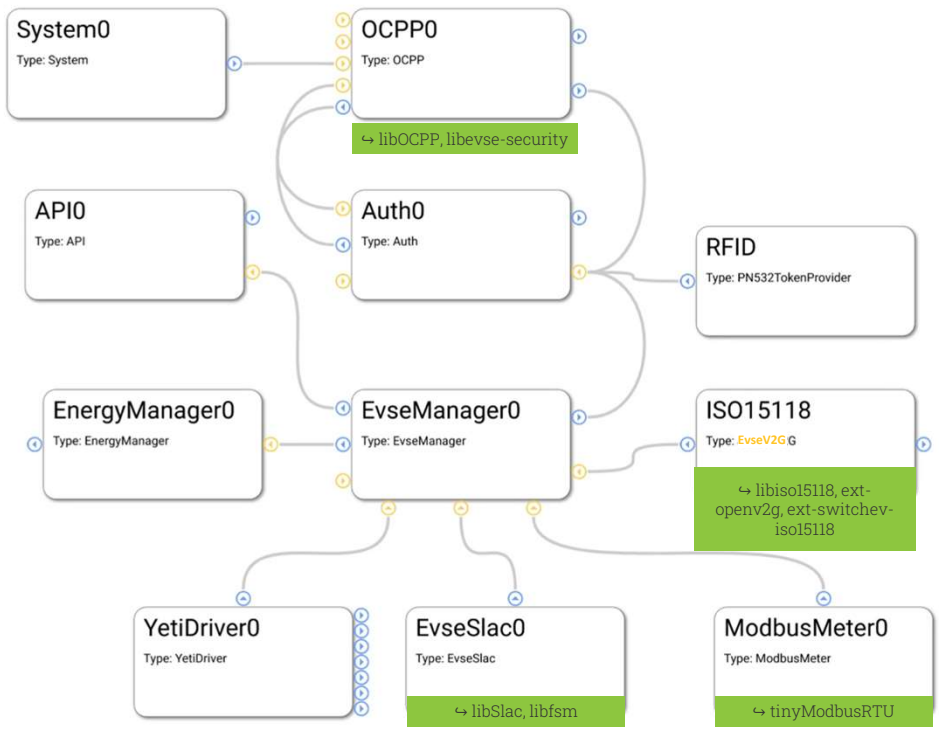
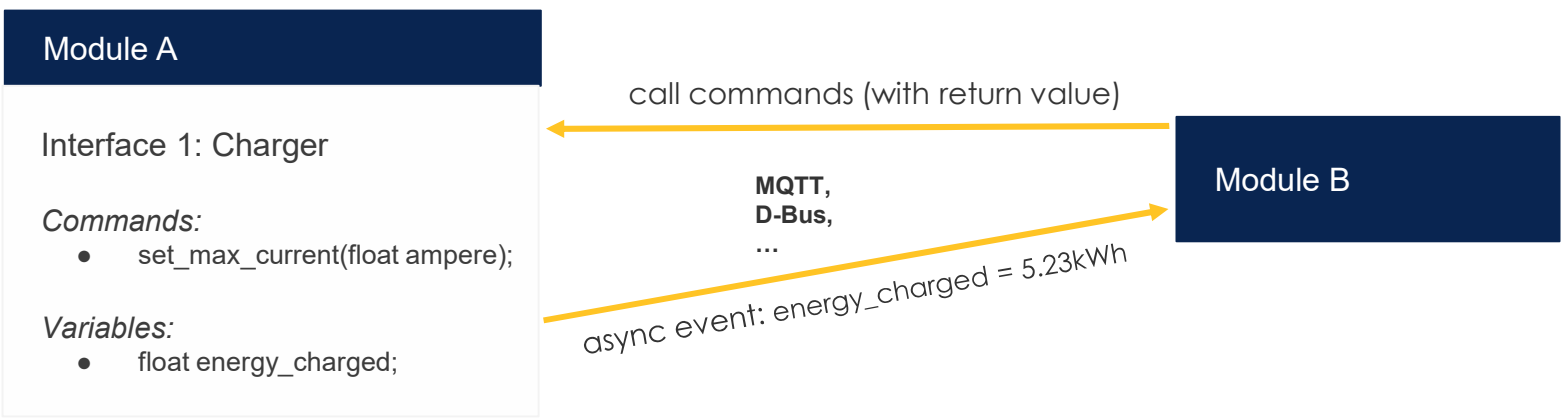
EVerest is a module system AND a huge set of supporting libraries

https://github.com/EVerest

- 32 public modules
- 34 Repositories
- 720k lines of Code
- easily extendable



Microservice architecture



Typical architecture found in many commercial solutions for EV charger software

- Each module is a separate Linux process
- Use publish/subscribe pattern (e.g. MQTT) for communication between modules

Research project modules can fill production gaps