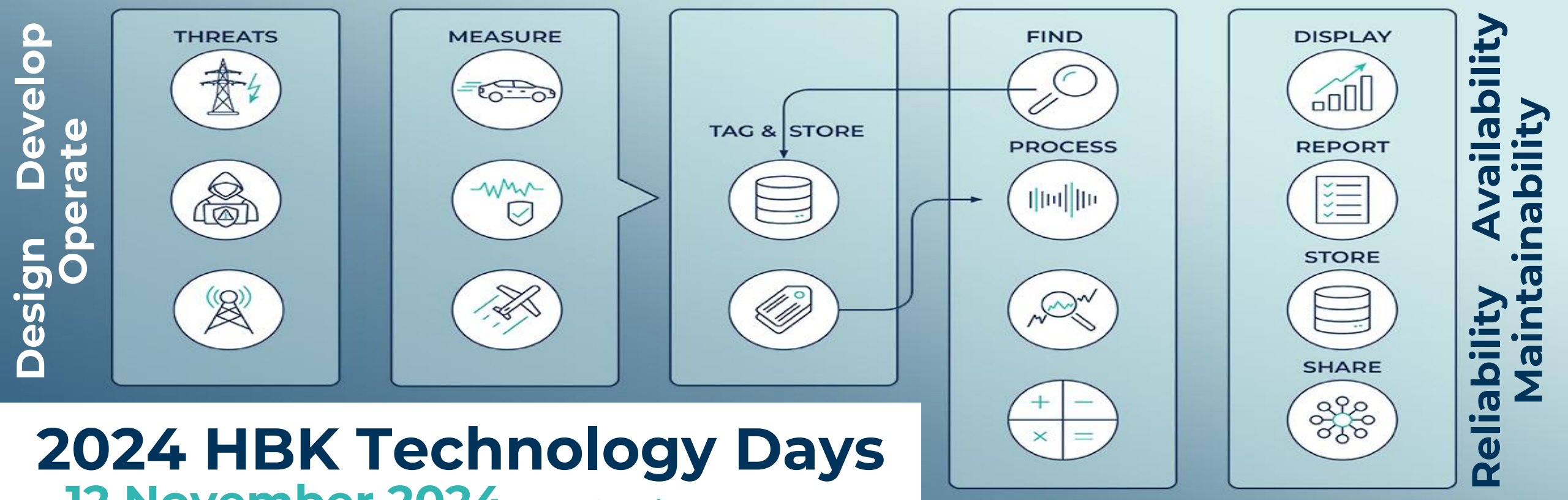




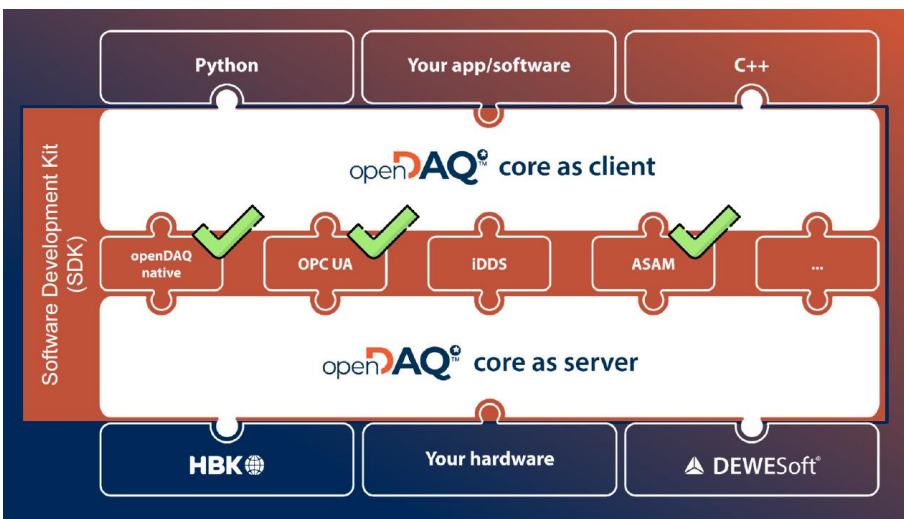
2024 HBK Technology Days

12 November 2024

Session 3: Vehicle Network Measurements

- openDAQ – the future of DAQ systems

Nils Röttger,
Chief Technical Officer, openDAQ



openDAQ – the future of DAQ systems

▲ Abstract

- Over the past two years, the openDAQ Software Development Kit (SDK) has undergone substantial advancement, evolving from concept to actualization. openDAQ release 3.10.0 signifies the culmination of this development effort, with all key features fully developed and refined. This enables seamless integration of test and measurement products into a solution via the unified application programming interface for discovery, streaming and configuration. Notably, openDAQ embraces well-accepted industry standards for achieving this.
- This advancement is poised to significantly streamline our professional life. How it works, who is already engaged and how you can get engaged are explained in this presentation.

▲ About the presenter, Nils Röttger, Chief Technical Officer, openDAQ

- Current job CTO at openDAQ d.o.o since 2022. Previous jobs: Head of firmware development at HBK (2021-2022), Firmware developer at HBK (2018-2020). Education: M.Sc. in Computer Science (Technische Universität Dortmund) and Master of Business Administration (Graduate School Rhein-Neckar).



The Future of DAQ Systems

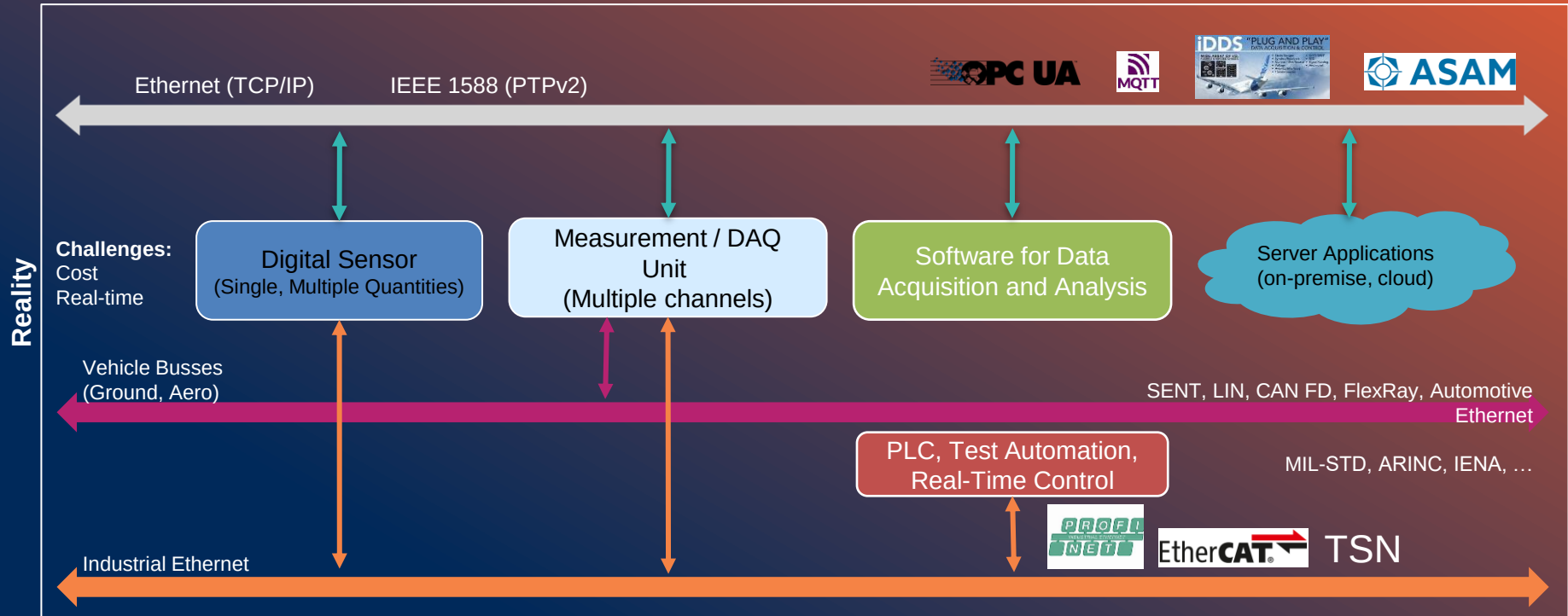
Nils Röttger / CTO

Simplification of System Integration



Imagine ... that you could **easily integrate** the products of many vendors in your test and measurement system.

Handling of Complex System Topologies

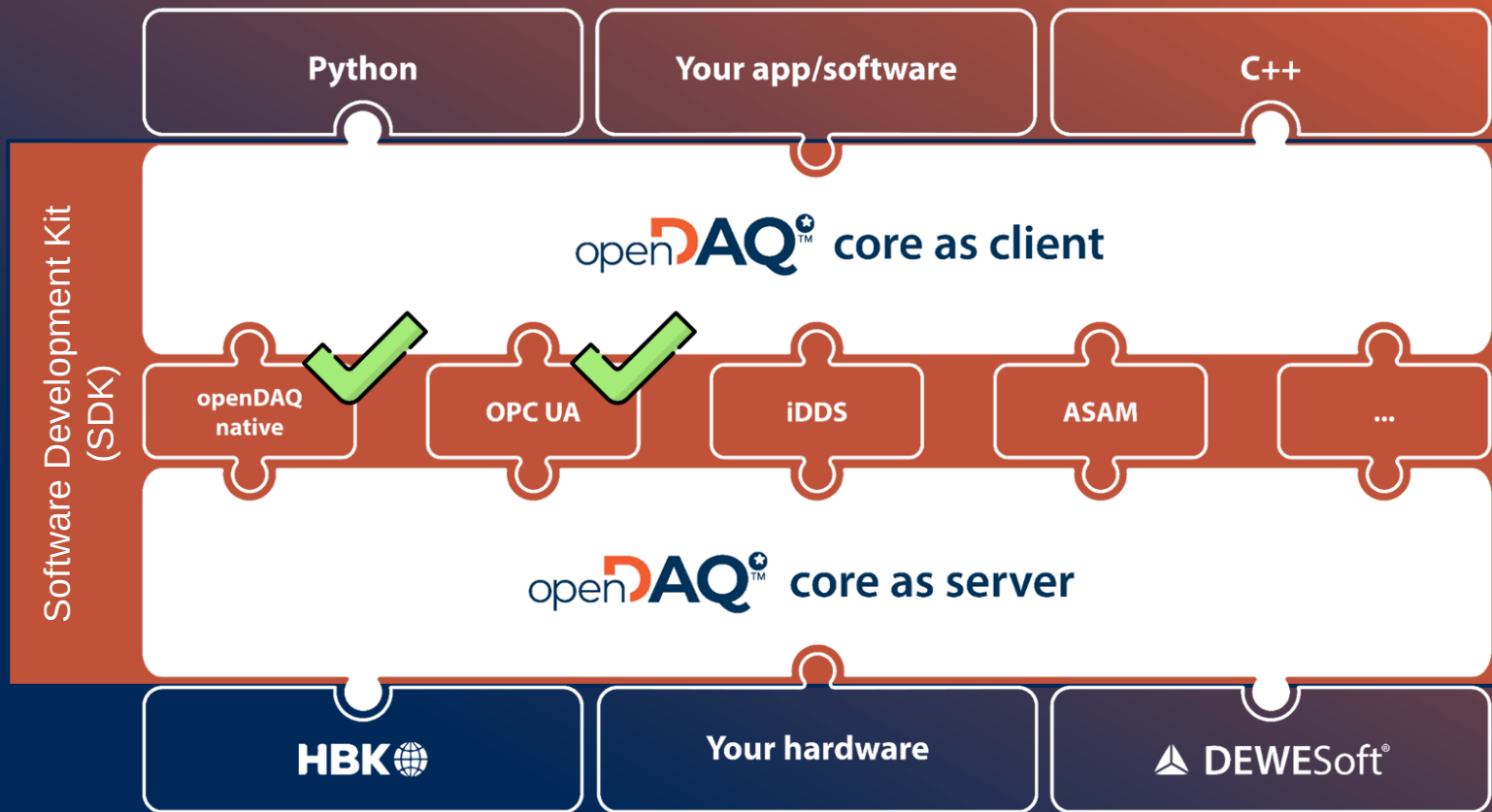


Imagine ... that you could easily integrate / handle all standards in your product / solution.

If you can **imagine** it, then ...

... we are the missing piece.

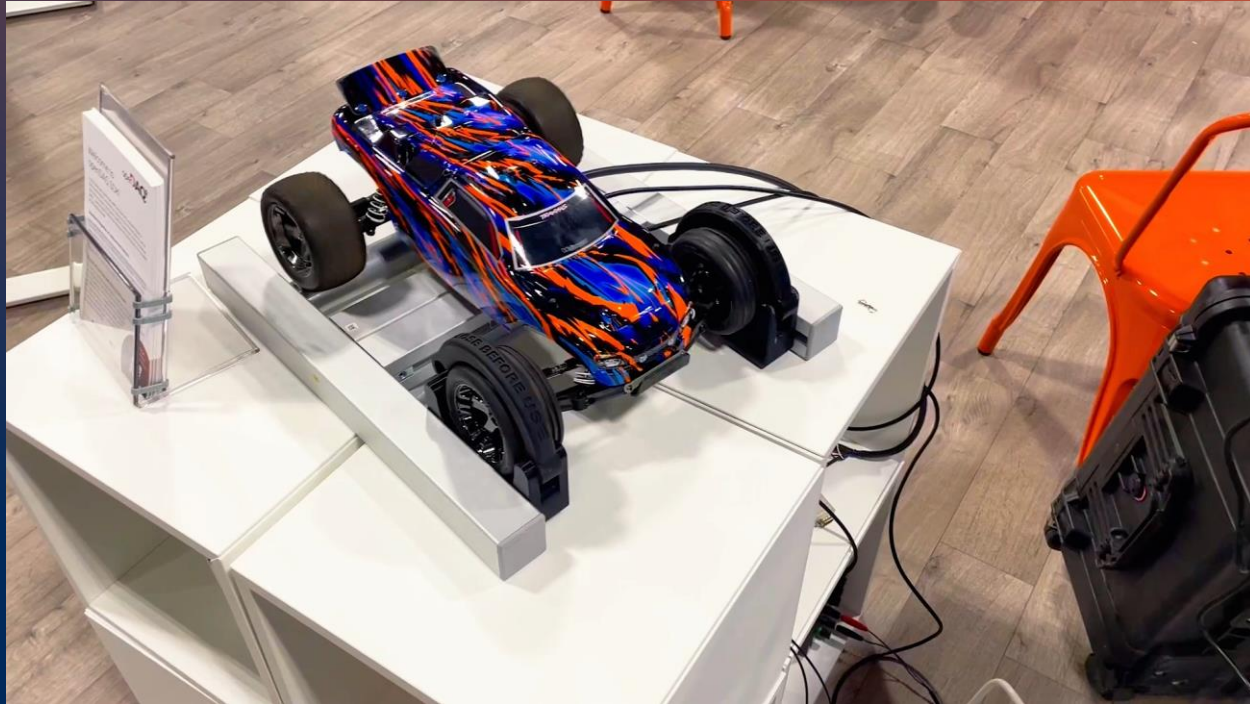






Discover, stream, and configure data effortlessly
with openDAQ, an open-source toolbox for embracing standards.

openDAQ is live since October 2023!



ATE Novi, 2023



openDAQ is for all of us!



System integrator



Test engineer



Academia

openDAQTM



Electronic vendor



Smart sensor vendor



Software vendor



System integrator



Test engineer



Academia

openDAQ™



Electronic vendor



Smart sensor vendor



Software vendor

openDAQ enables **Electronic and Smart Sensor Vendors** to deliver:

- streamed timestamp data via embraced standards – like the openDAQ streaming protocol
- to configure the devices via embraced configuration interfaces
- for announcing the device in a network.

This significantly reduces development time on the hardware side for developing these interfaces enabling your hardware to be easily integratable.



openDAQ enables **Software Vendors** to:

- Discover devices in the network
- Access timestamp data streams via the same generalized readers
- Configure the devices with the same logic of generalized API calls

Software vendors only need to map the generalized interface to their internal data model / business logic for openDAQ devices. Integration simplified.



System integrator



Test engineer



Academia

openDAQ™



Electronic vendor



Smart sensor vendor



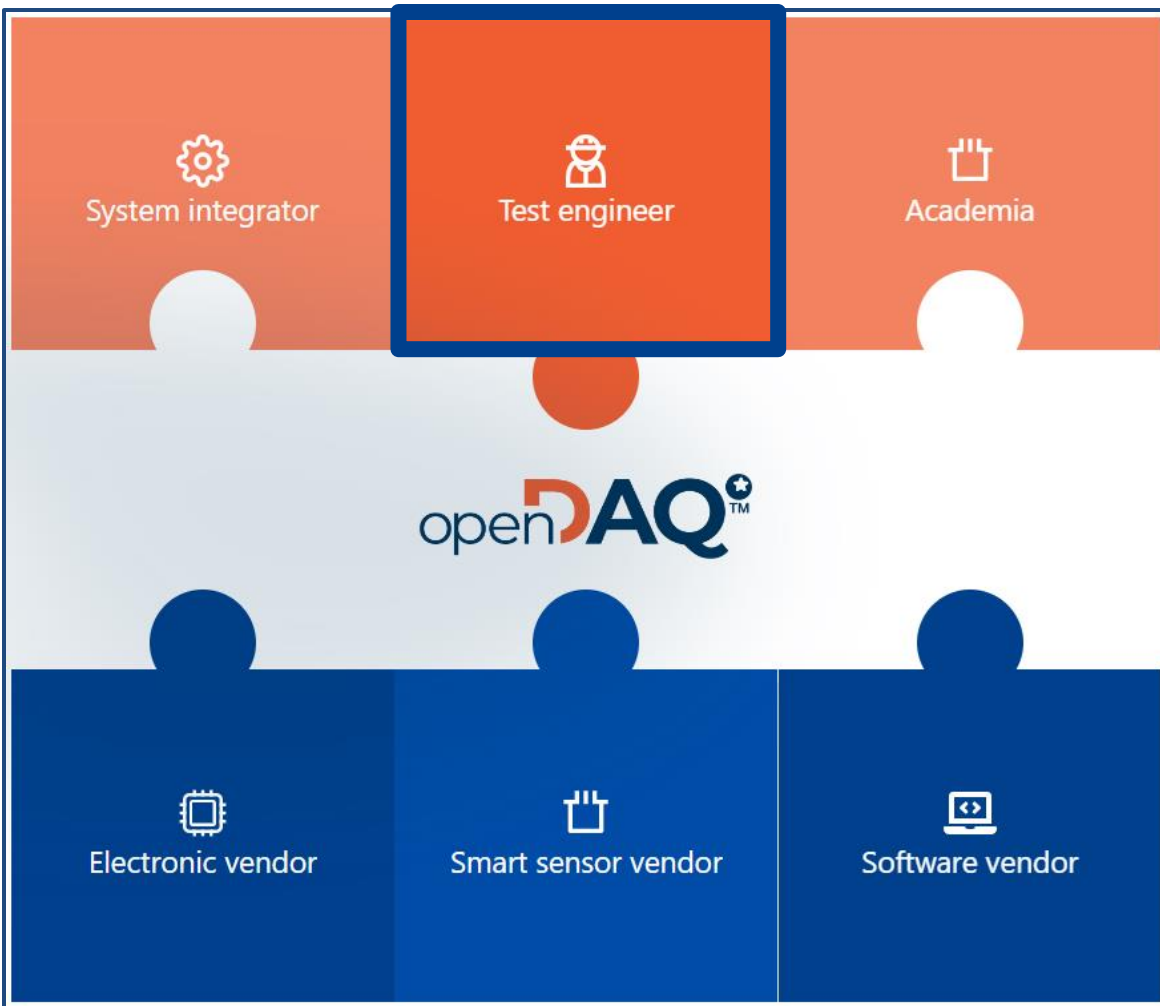
Software vendor

openDAQ enables **System Integrators** to:

- Select software and hardware products from a portfolio of enabled certified openDAQ devices and merge them into one system.

Plug and Play comments:

- *You need to be aware of the compliance levels.*
- *You still need to study the Data Sheet.*



openDAQ enables **Test Engineers** to script / program against openDAQ devices in the most powerful way:

- End users have full control over the delivered API for data streaming and configuration from the openDAQ SDK.
- They can accelerate their scripting development massively with the SDK. Learn the SDK once and be empowered to have full access to all openDAQ devices.

The openDAQ Python GUI example demonstrates how easy it is to write generalized software.



System integrator



Test engineer



Academia

open**DAQ**TM



Electronic vendor



Smart sensor vendor



Software vendor

openDAQ enables **Academia**

- to easily and quickly introduce the fundamentals of data acquisition (DAQ) or measurement systems through simple programming tasks, independent of dedicated hardware and software solutions.



is open source!

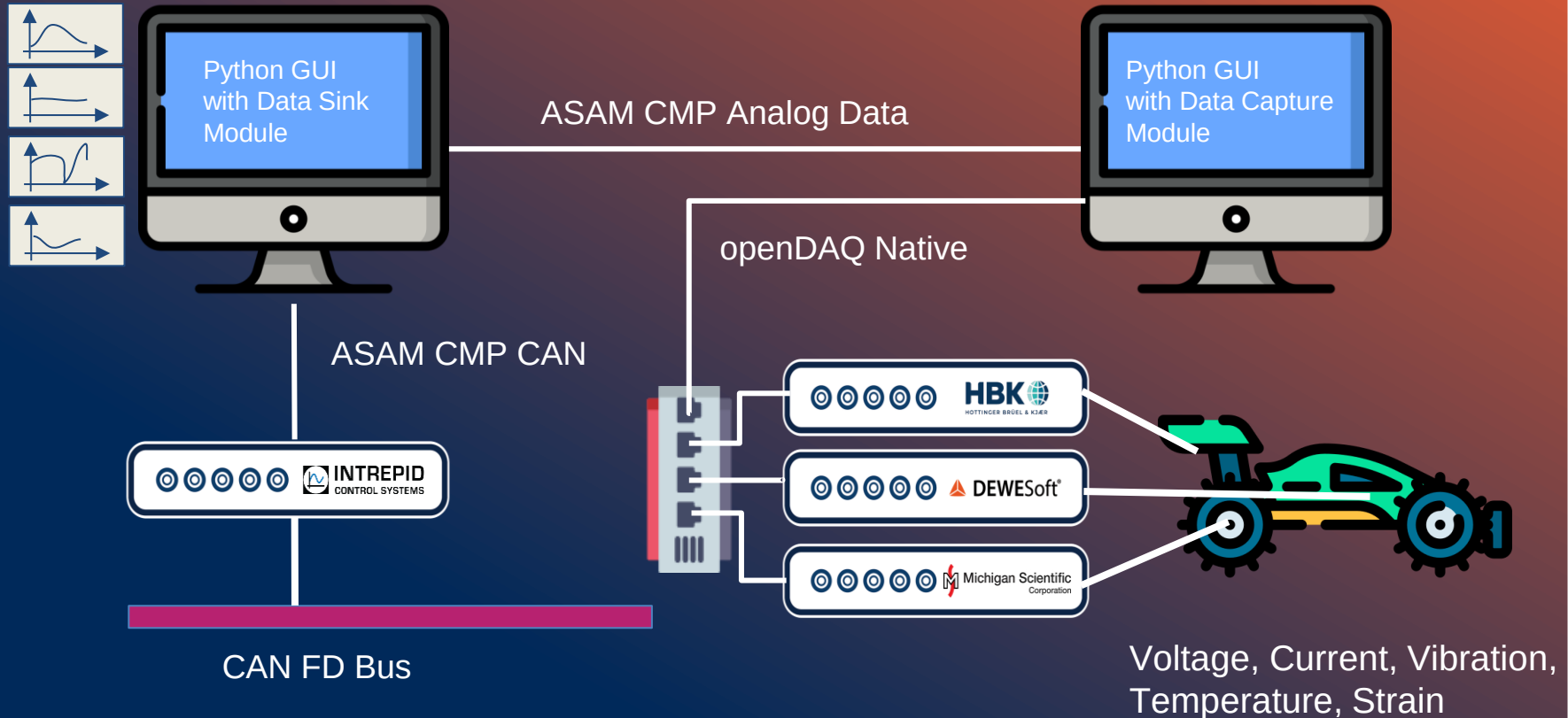
see: [openDAQ/openDAQ \(github.com\)](https://github.com/openDAQ/openDAQ)

... is driven by an independent Team



... creating the new REALITY - demo at our booth

REALITY



... and here recorded as a movie.

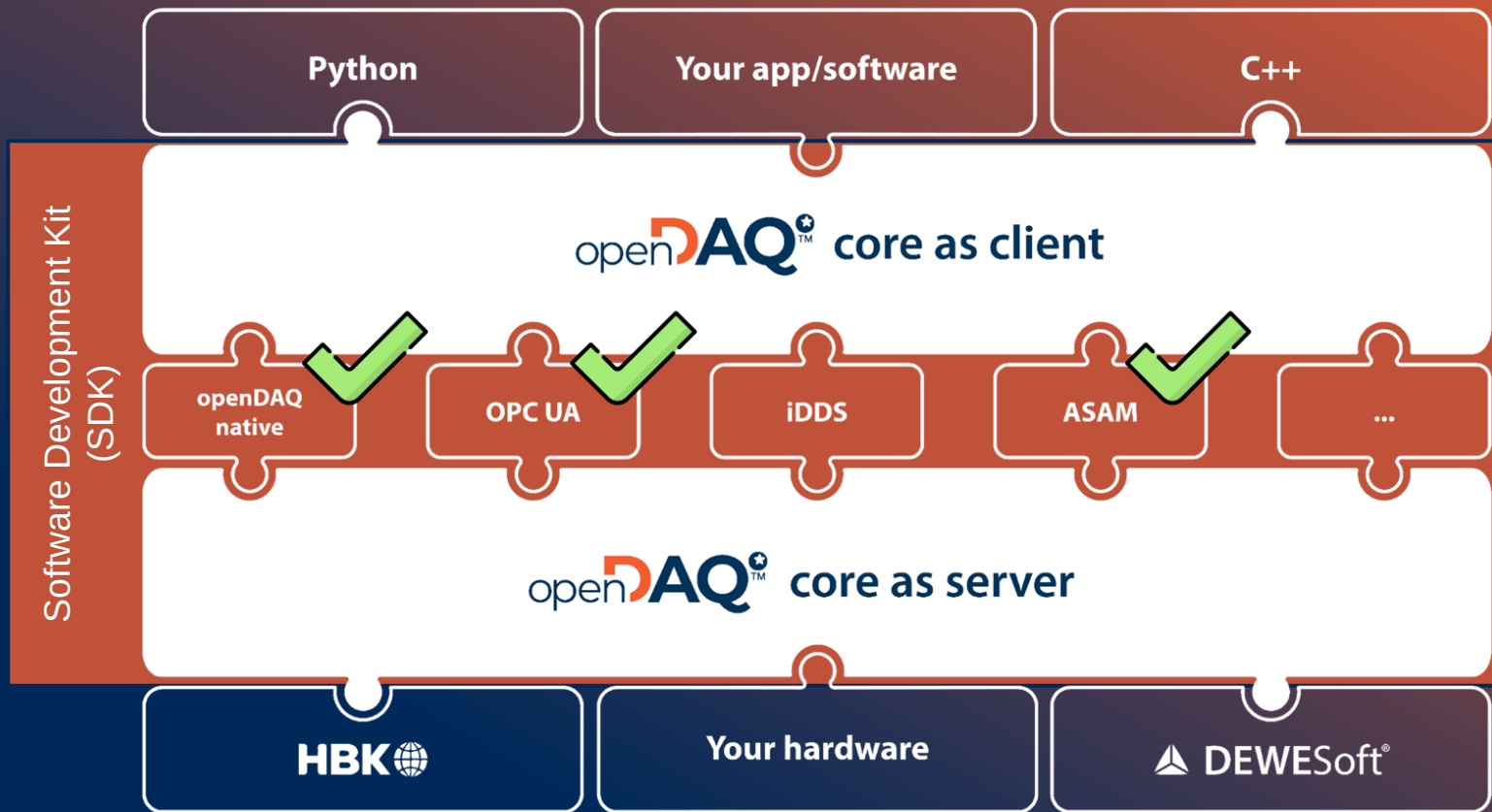


ATE Novi, 2024



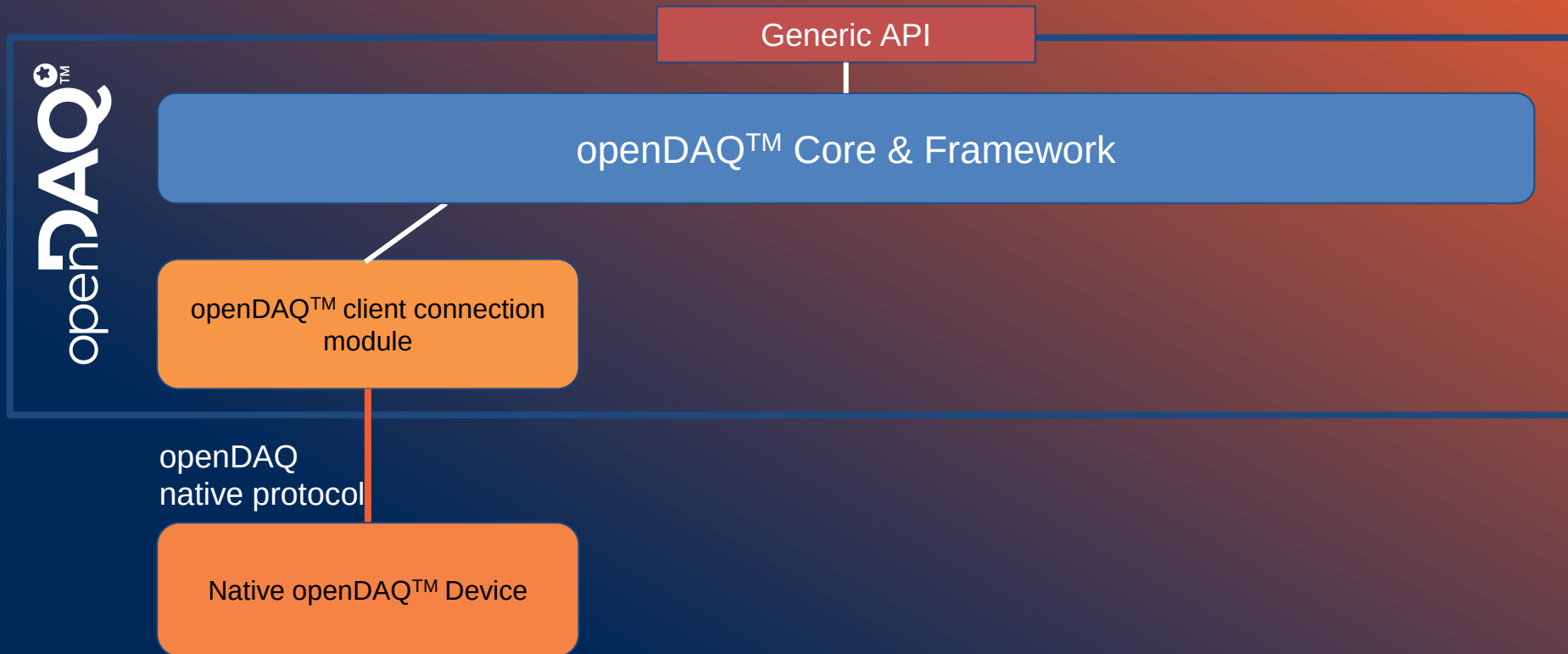
**openDAQ publishes the first open source
implementation of ASAM CMP!**

see: <https://github.com/openDAQ/ASAM-CMP-Modules>

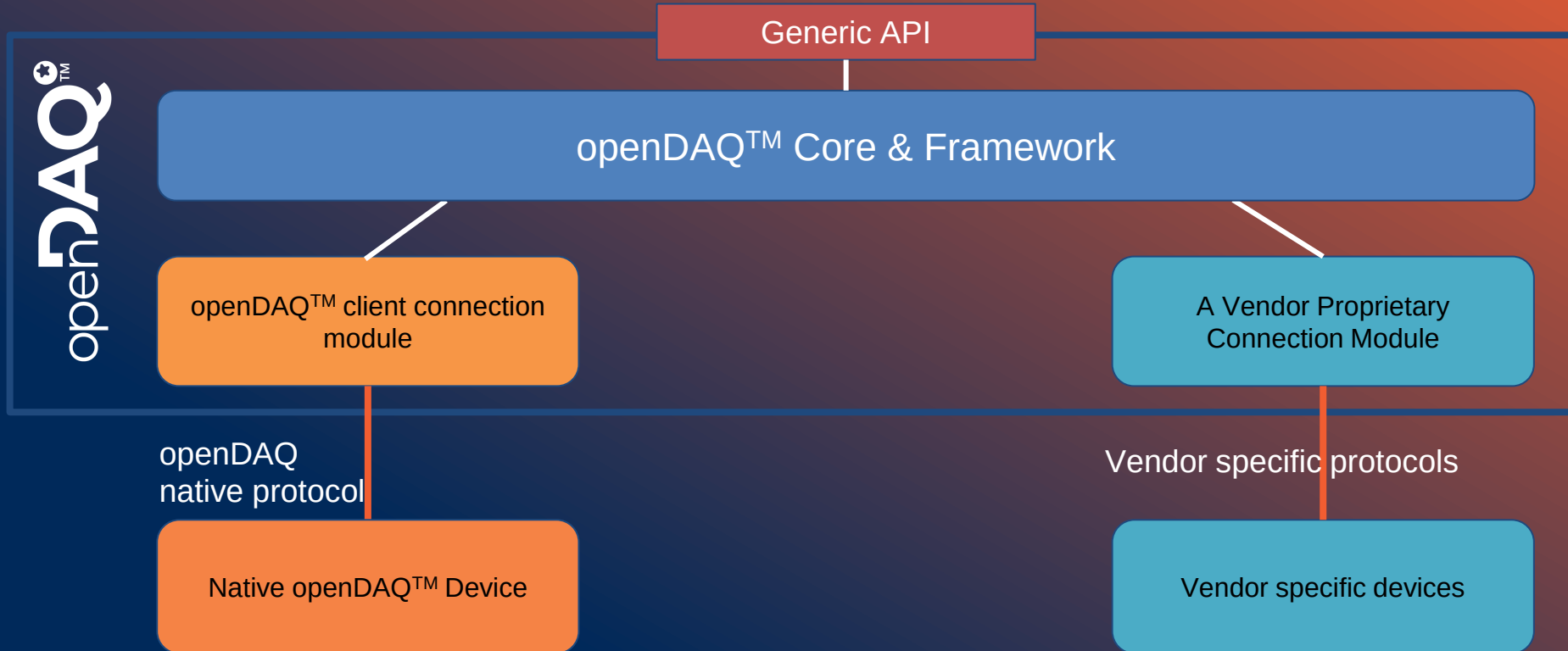


So, what do you need to do
to become **openDAQ** compliant?

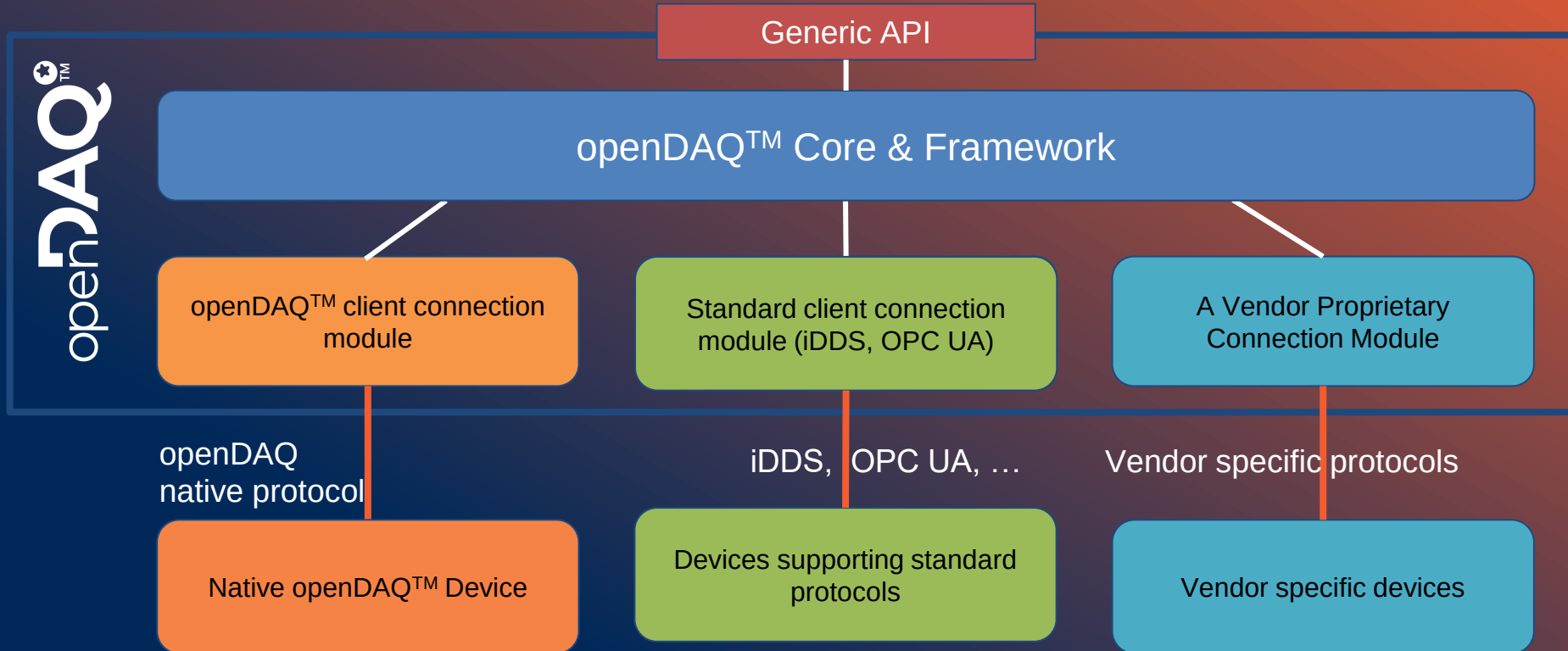
openDAQ™ Architecture - Client View



openDAQ™ Architecture - Client View



openDAQ™ Architecture - Client View



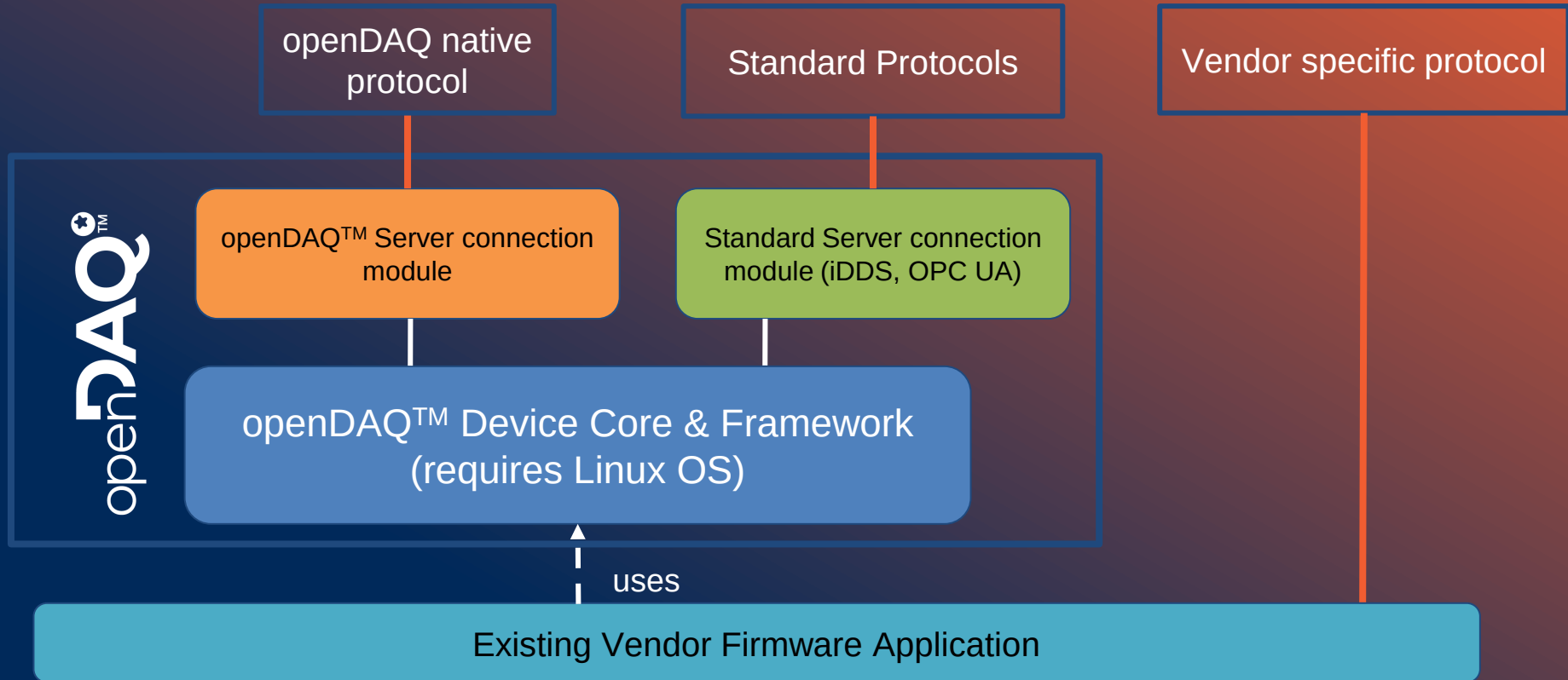
openDAQ™ Architecture - **Server View**

```
graph TD; A[Vendor specific protocol] --- B[Existing vendor firmware application];
```

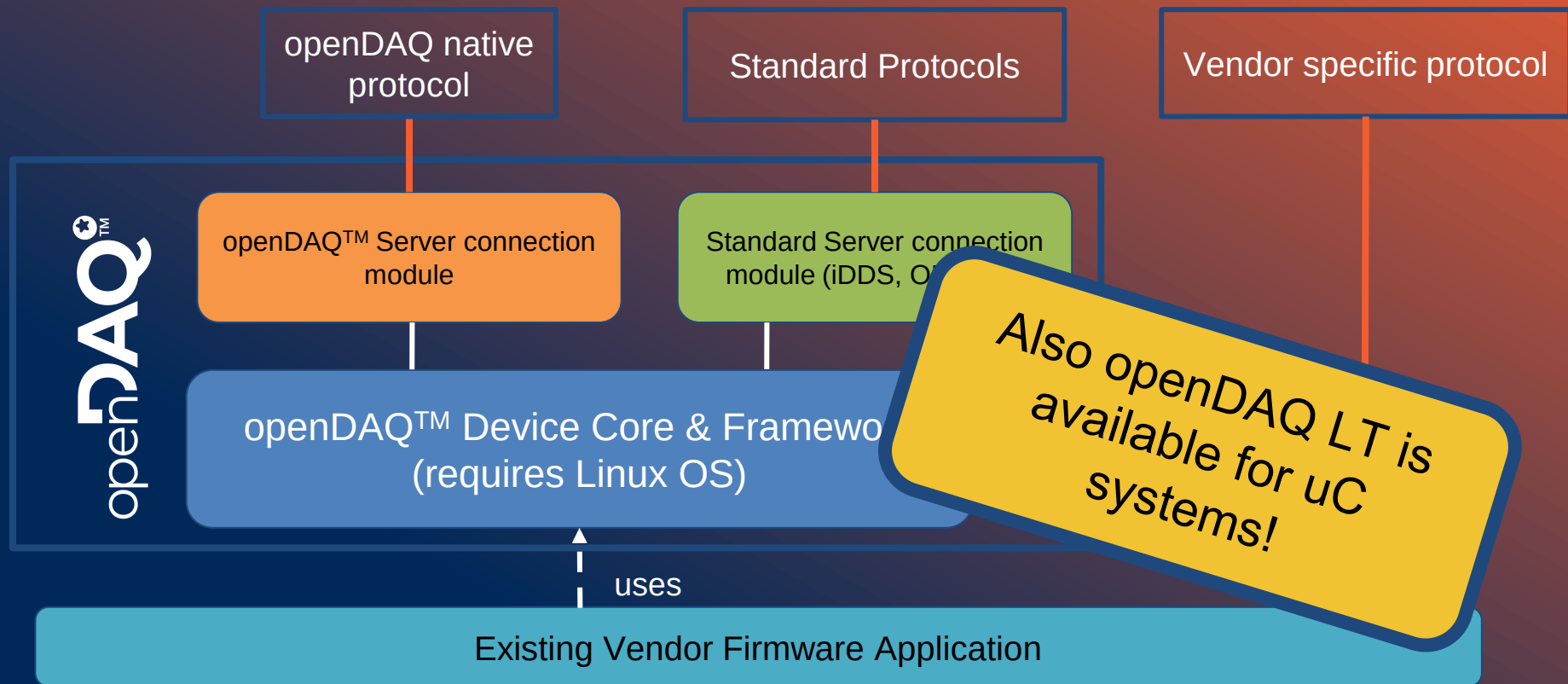
Vendor specific protocol

Existing vendor
firmware application

openDAQ™ Architecture - Server View



openDAQ™ Architecture - Server View





openDAQTM

You are welcome to use openDAQ
and join us!



You?

How can YOU join the openDAQ Community?

- Contribute to the open-source project on [openDAQ/openDAQ \(github.com\)](https://github.com/openDAQ/openDAQ)
- Join as a member
- Visit us at opendaq.com
- Contact us via info@opendaq.com
- Or me directly via nils.roettger@opendaq.com



The journey continues...

Call in for Working Group:

Synchronisation

- Deadline registration 31th Oct. 2024
- First meeting 26th November at 3pm (CET) with 7+ companies

ATE Novi, USA

- ASAM CMP Module Release

openDAQ Workshop

- 1st April. – 3rd April 2024 (Registrations starting soon)
- Location: Trbovlje, Slovenia
- Agenda: Two groups creating their own test and measurement openDAQ “network”
 - One for device vendors (server)
 - One for software vendors (client)

Release 3.10.0



October / November, 2024

April, 2024



openDAQ Release 3.10.0

Enhancements and Stabilization



Enhanced Device Discovery



Rework openDAQ Readers



Save / Load Mechanism



Server / Client Architecture Rework



Improve Examples

Enhancements and Stabilization



Module Template
(not 100% done)



Client to Device Data Streaming



Permission Management



Discovery Server



**Streamlined Device
Synchronization**



Gap Detection

News



NEWS

openDAQ Launches Registration for Synchronisation Working Group

We are launching registration for openDAQ data integrity working groups.



Nils Röttger
Invalid Date



NEWS

openDAQ Launches Working Groups

The openDAQ team is excited to announce the upcoming first call for registrations to join our working groups. The initial working group will focus on "Data Integrity and Alignment," a crucial topic for anyone working with data from multiple devices.



Nils Röttger
Invalid Date



NEWS

openDAQ's Open-Source Solution Wows Engineers at ATE Show 2024 in Stuttgart

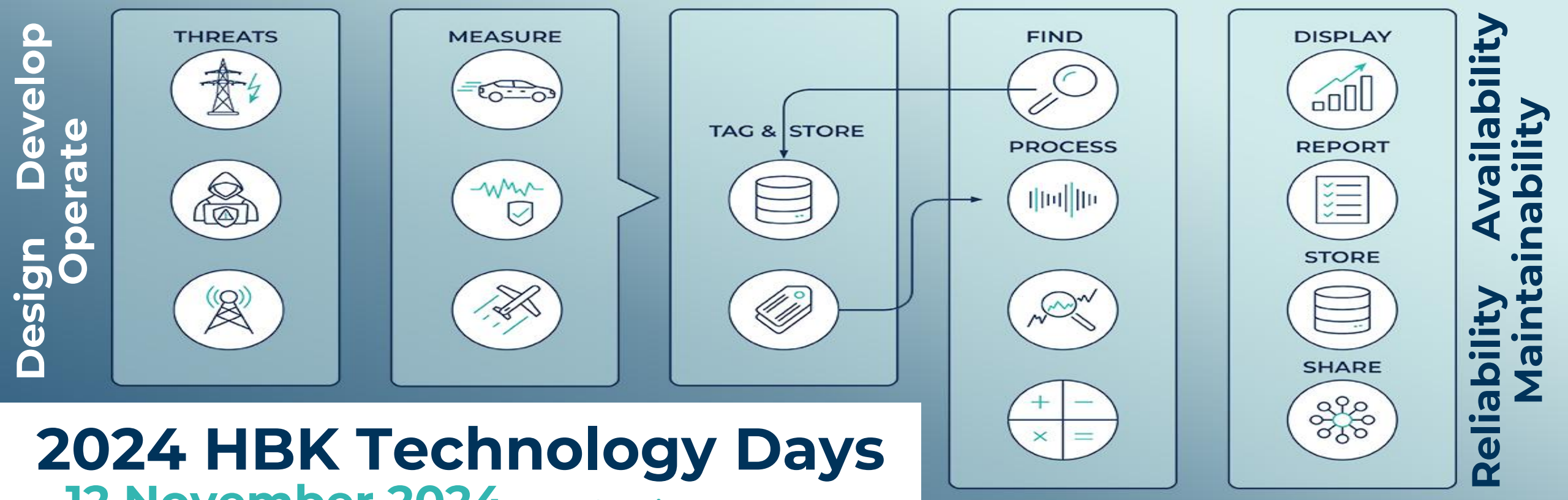
The Automotive Testing Expo (ATE) in Stuttgart showcases the latest in vehicle testing and validation technologies, consistently providing us with an excellent platform to demonstrate openDAQ's cutting-edge capabilities.



Sonja Šmuc
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Thank you



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