ECLIPSE UNIDE
UNDERSTAND INDUSTRY DEVICES

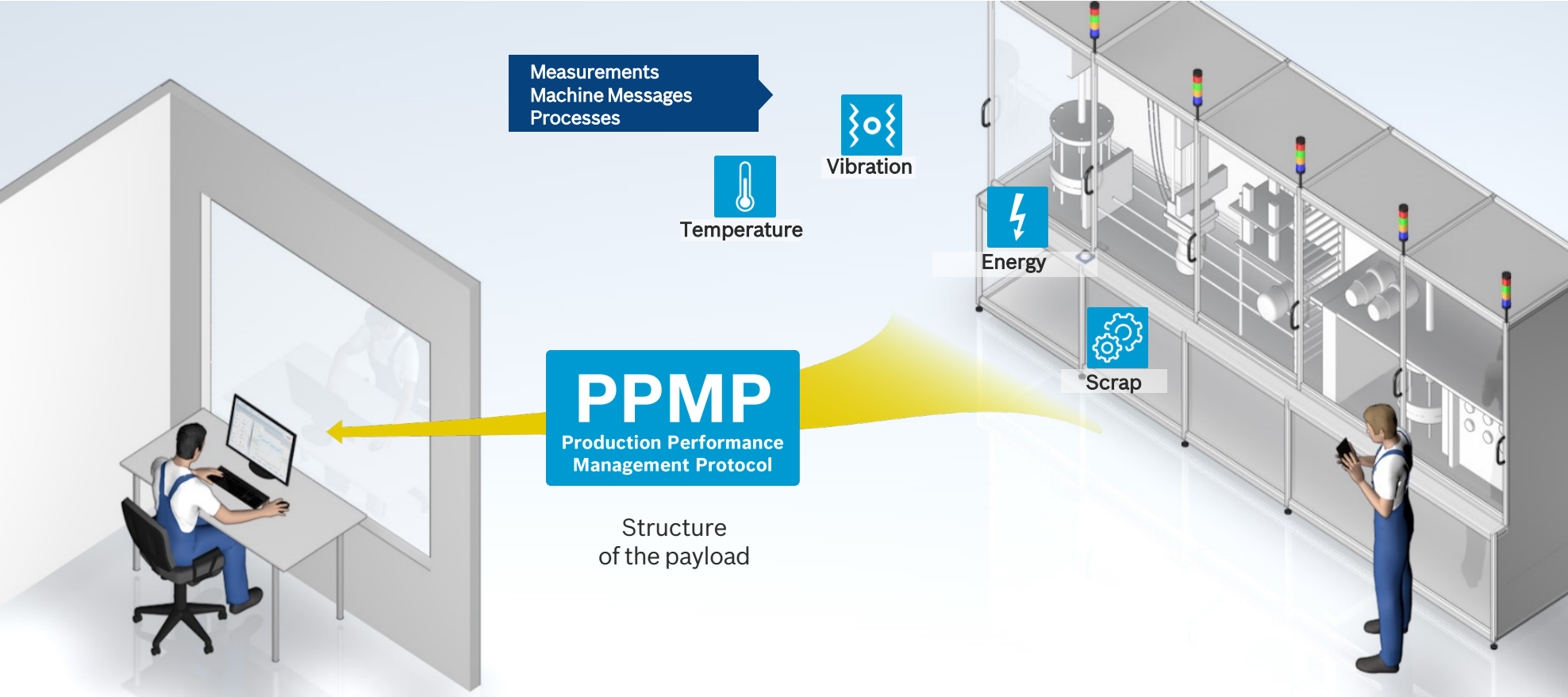https://www.eclipse.org/unide

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Eclipse Unide
What is Unide?

▶ **Un**derstand **I**ndustry **De**vices

▶ Created in August 2016

▶ Tools and implementations

– Validation of PPMP-Messages

– Visualization and persisting of PPMP-data

– Bindings for implementations

▶ Platform for PPMP specification and further development

▶ Target group

– Small & Medium Enterprises
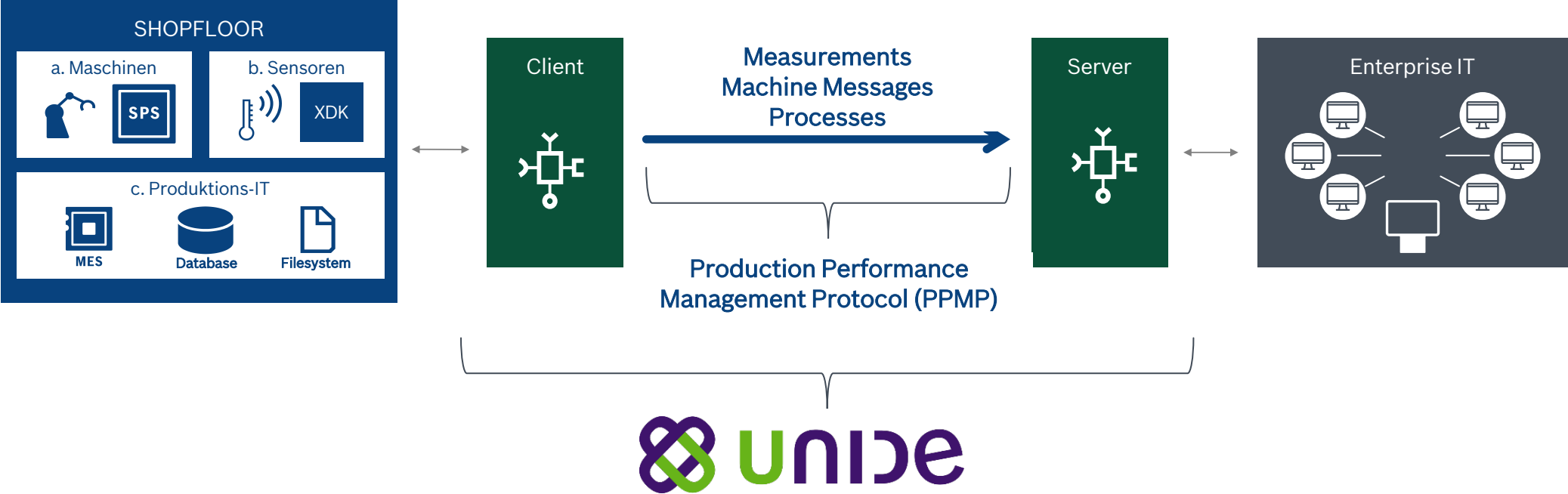
– Industry component manufacturer

– Software developer

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What is PPMP?

Measurements Machine Messages Processes

Vibration

Temperature

Energy

Scrap

PPMP
Production Performance Management Protocol

Structure
of the payload

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Difference between Unide and PPMP?

SHOPFLOOR

a. Maschinen

SPS

b. Sensoren

XDK

c. Produktions-IT

MES

Database

Filesystem

Client

Server

Enterprise IT

Measurements
Machine Messages
Processes

Production Performance
Management Protocol (PPMP)

UNIDE

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Eclipse Unide
What is PPMP?

▶ Production Performance Management Protocol

▶ An Open standard for I4.0

▶ Focus on message payload, <u>not</u> transport protocol

▶ Three defined message types yet
- – Machine messages
- – Measurement messages
- – Process messages

▶ Specification under
https://www.eclipse.org/unide/specification

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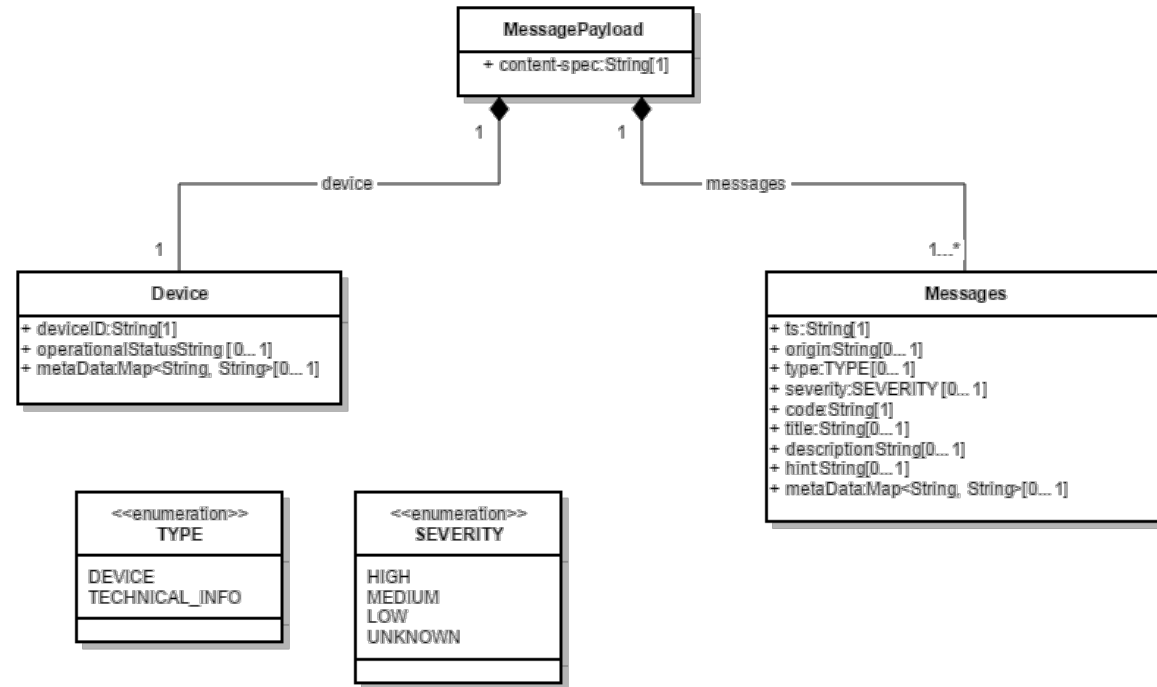
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Tooling - Bindings

▶ Binding/serializing functionalities for getting programming language object out of PPMP-JSON-strings

▶ Object definition in different programming languages (**Java** and **Python** today)

→ https://github.com/eclipse/unide

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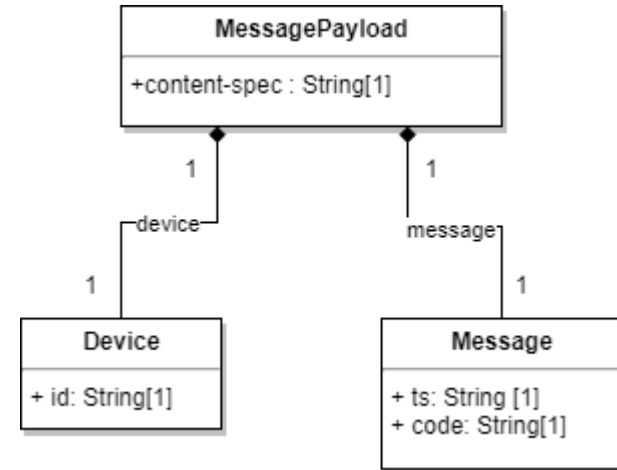
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Tooling - Validation

▶ JSON-schema validation

▶ POST-Requests with PPMP-Body

▶ Parameter `validate=true`

▶ Response with
  – 200 OK
  – 400 Bad Request, Response-Body with validation information

▶ Schema identified by content-spec

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Tooling – Data generation

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Tooling - Visualization

- ▶ Use of existing, open and easy to use tools
- ▶ Open Source applications:
  - ▶ Grafana
  - ▶ Node-RED
- ▶ Commercial applications
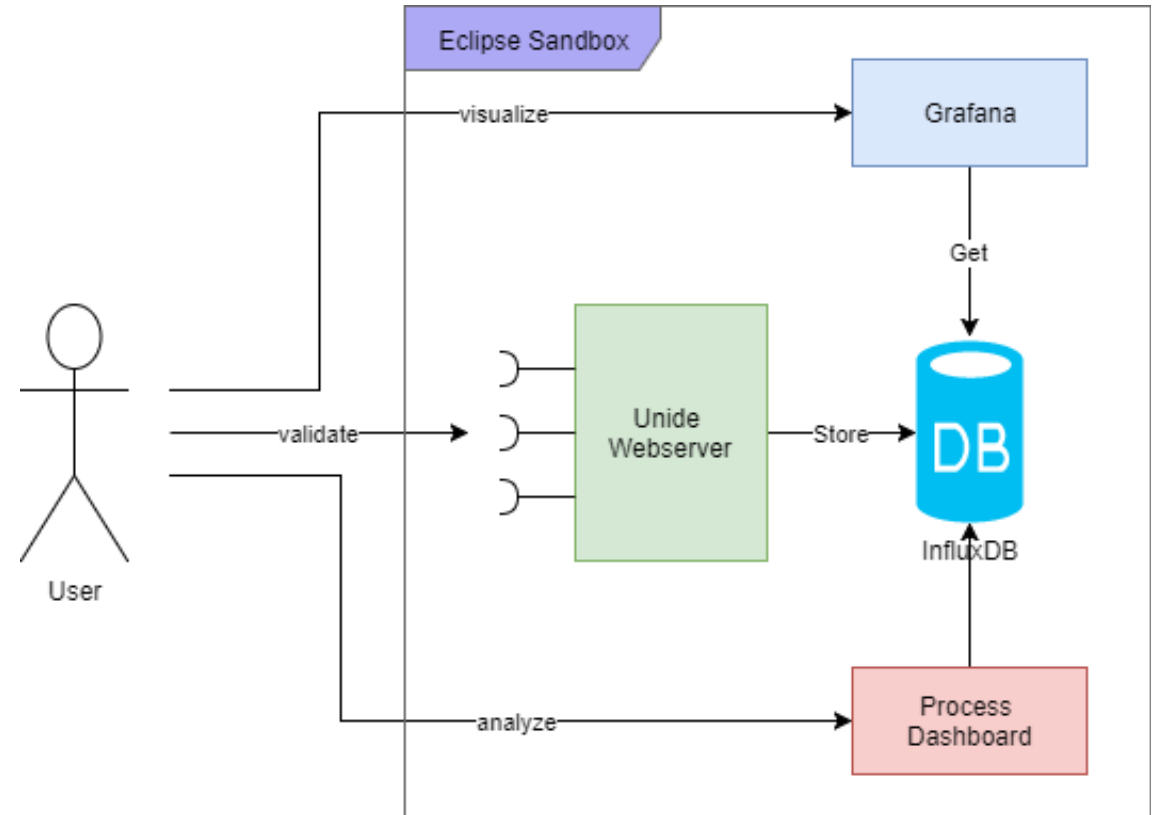 - ▶ Contact Elements for IoT
  - ▶ Bosch PPM
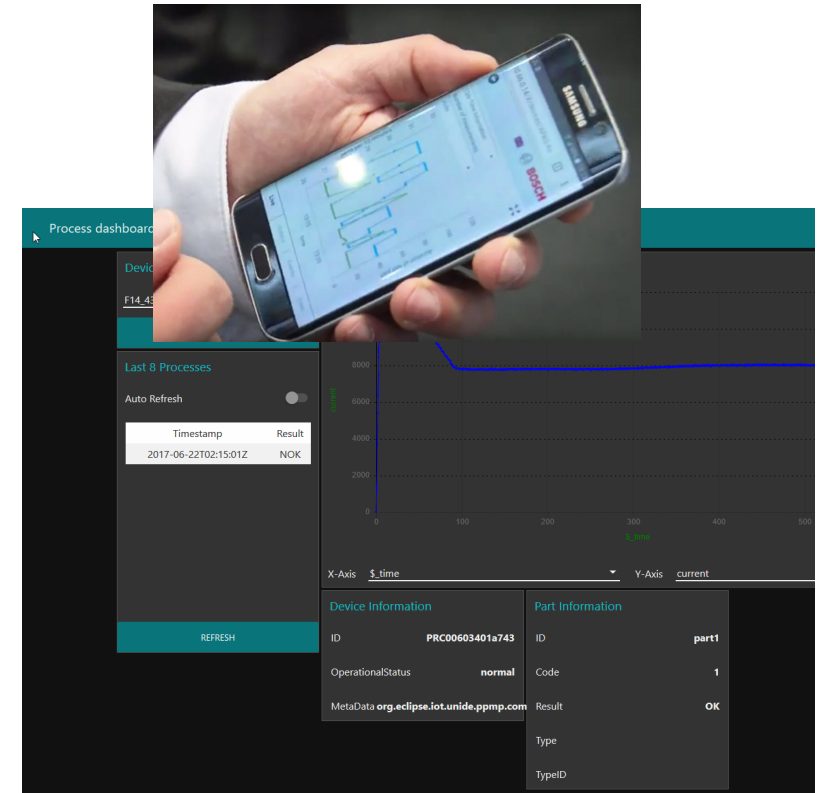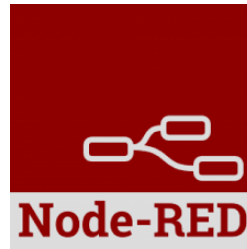
Eclipse Unide
Test environment

- ▶ Sandbox hosted @ Eclipse
- ▶ HTTP-Webserver for validating and storing in database
- ▶ Grafana Server for visualizing messages and measurements
- ▶ Node-Red dashboard for analyzing process data

→Validation

→Grafana

→Process dashboard

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Eclipse Unide
Project stats? Let's look at the Ecosystem

Eclipse Unide
Collaboration with other Eclipse IoT Projects

▶Integration with **Kura** / Kura Wires

▶PPMP Function block in Eclipse **4diac**

▶**Milo**? **Vorto**? **Cyclone**?
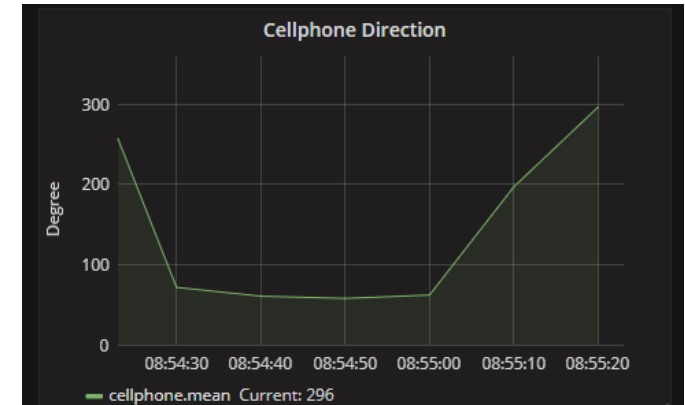
▶**hono** PoC
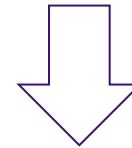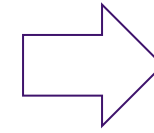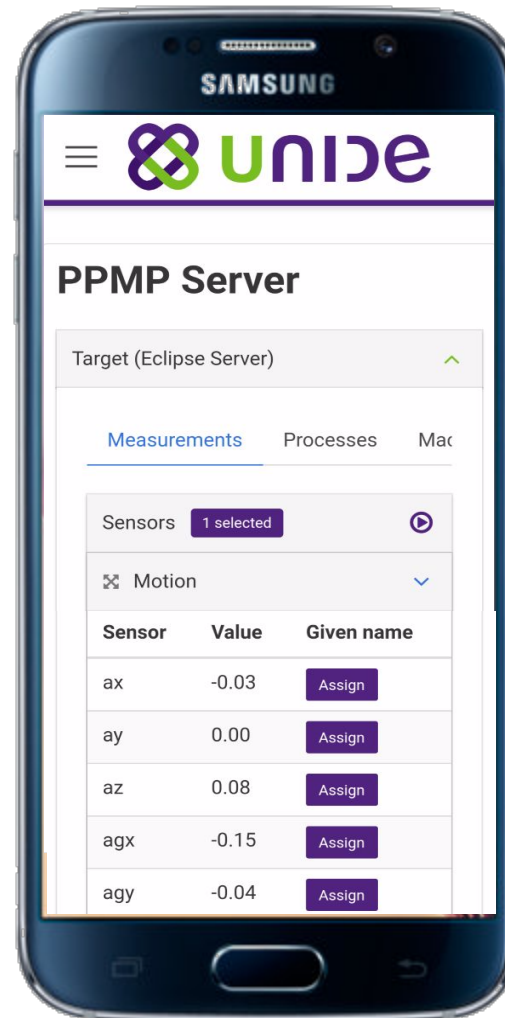
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Next steps

▶ **Unide 0.1.0** planned on Nov-1
  (https://projects.eclipse.org/projects/iot.unide/releases/0.1.0)

    ▶ Java binding + Validation/Persistence Server over HTTP/REST

▶ Start discussions around PPMP v3

▶ Features planned

    ▶ HTML5 Client

    ▶ Providing REST-interface specification (e.g. Swagger-UI)

    ▶ Process data storage and visualization

    ▶ Node.js PPMP-Client

▶ Evaluation topics

    ▶ IoT-to-Machine communication

    ▶ Further message types (e.g. geolocalization, machine meta information,…)

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Eclipse Unide
Tooling – Data generation

▶ Use any modern cellphone
  - ▶ Use (encrypted) local storage (indexedDB)
  - ▶ Multilanguage
  - ▶ Offline capable (serviceworker)
▶ Define multiple server
▶ Scan qr code of machine
▶ Match sensors & frequencies
▶ Play!

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THANK YOU