Eclipse Unide
What is Unide?

- **Understand Industry Devices**
- 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
Eclipse Unide

What is PPMP?

- Measurements
- Machine Messages
- Processes
- Temperature
- Vibration
- Energy
- Scrap

PPMP
Production Performance Management Protocol

Structure of the payload
Eclipse Unide

Difference between Unide and PPMP?

SHOPFLOOR

a. Maschinen
b. Sensoren
c. Produktions-IT

Client

Measurements
Machine Messages
Processes

Server

Production Performance
Management Protocol (PPMP)

Enterprise IT
Eclipse Unide
What is PPMP?

- Production Performance Management Protocol
- An Open standard for I4.0
- Focus on message payload, not transport protocol
- Three defined message types yet
  - Machine messages
  - Measurement messages
  - Process messages
- Specification under
  https://www.eclipse.org/unide/specification
Eclipse Unide 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)

```json
{
    "content-spec": "urn:spec://eclipse.org/unide/machine-message#v2",
    "device": {
        "deviceId": "3ca65e8b-396a-4d02-bf0b-785104407d4a"
    },
    "messages": {
        "ts": "2002-05-30T09:38:10.123+02:00",
        "code": "1004BT"
    }
}
```

> [https://github.com/eclipse/unide](https://github.com/eclipse/unide)
Eclipse Unide 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
Eclipse Unide
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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Project stats? Let’s look at the Ecosystem
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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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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!
THANK YOU