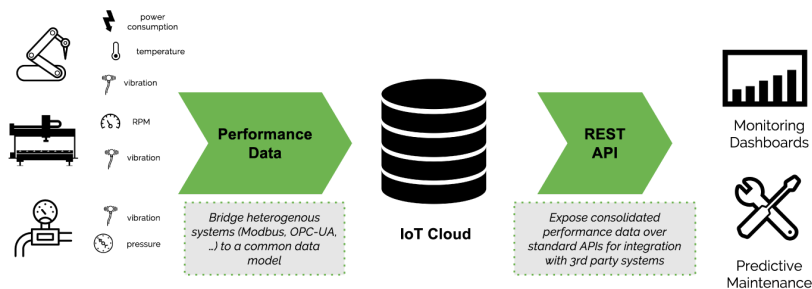


Eclipse IoT Open Testbeds

Production Performance Testbed

A key challenge of the manufacturing industry is to improve capacity, quality and flexibility, while lowering costs. Industrial IoT (IIoT) Applications therefore monitor manufacturing assets and initiate maintenance operations.

The Eclipse IoT Open Testbed for Production Performance Management demonstrates how to gather performance data from industrial assets, how to analyze and transfer it to business process interfaces.



Key Benefits

■ Easy data transfer from heterogeneous machinery

PPMP is a straightforwardly specified protocol to capture data from industrial machinery. It especially provides the relation of machine status and currently produced parts. As a result the context of measurements is described, which allows an elaborated analysis of the production process as a whole. Gateway- and backend-implementations are available in JAVA and Python.

■ Enabling Advanced Data Analytics

The different endpoints of the testbed are all communicating with the same backend, which demonstrates the monitoring of the different assets in an industrial environment. Here InfluxDB is running, a time series database storing all the PPMP messages. An example of data visualization and analytics is implemented using a Grafana dashboard that aggregates all measurements from the different assets being part of the testbed.

■ Integration with vendor ecosystem : Links to business processes and digital twin (“as maintained”)

The testbed is a great example of how open source can help implementers easily get started with their Industrial IoT solution: It can be connected indifferently to the Eclipse Unide open source backend or to e.g. CONTACT Elements or Bosch Production Performance Manager. So the downstream integration to business processes or Digital Twin management is satisfied.

Partners

BOSCH supports the testbed project with an interface to its Production Performance Manager. It demonstrates the link into existing industrial data management infrastructures.

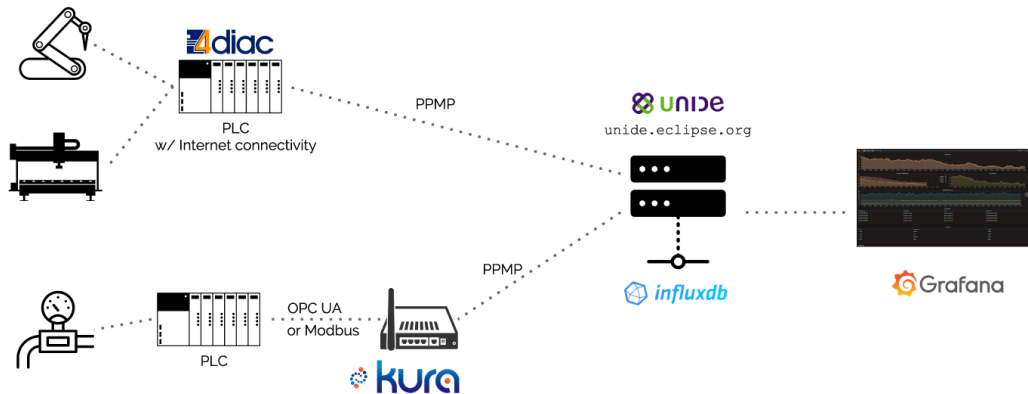
By implementing an interface to the CONTACT Elements platform a link to IoT business models such as pay-per-X models is shown. Thereto **CONTACT** provided the Python implementation for PPMP and real world examples from different customers.

EUROTECH implemented a PPMP interface to Kura Wires and **fortiss** did so for 4DIAC. With these both implementations the PPMP protocol is also settled in the gateway domain.

influxdata provides its open source time series database. To allow easy integration they also prepared adapters for interpreting PPMP messages.

To support further integration **RedHat** is preparing an interface between PPMP and OPC UA protocol.

Features Eclipse Technology



Eclipse 4diac is an open source PLC environment that allows to implement industrial control solutions in a vendor neutral way according to IEC 61499 extending IEC 61131-3.

Eclipse Kura provides an open source middleware for implementing the IoT gateway services required for collecting sensor data from the machinery and providing connectivity to the IoT cloud server.

Eclipse Unide provides a lightweight Production Performance Management Protocol (PPMP) server-client implementations (using JSON, REST and other).