

GOAL

Enrich the Arrowhead platform with Eclipse IoT components.

Challenge

The Eclipse IoT stack is considered as one of the most matured technologies in the open source IoT domain realm. It is the basis of several commercial offerings and hence a valuable fit for industrial digitalization efforts.

Therefore, an integration of Eclipse IoT with the Arrowhead Framework can provide building blocks to achieve Technology Readiness Level 7 or above (TRL 7+) and by that allow the realization of the Arrowhead Tools project goals in productive settings.

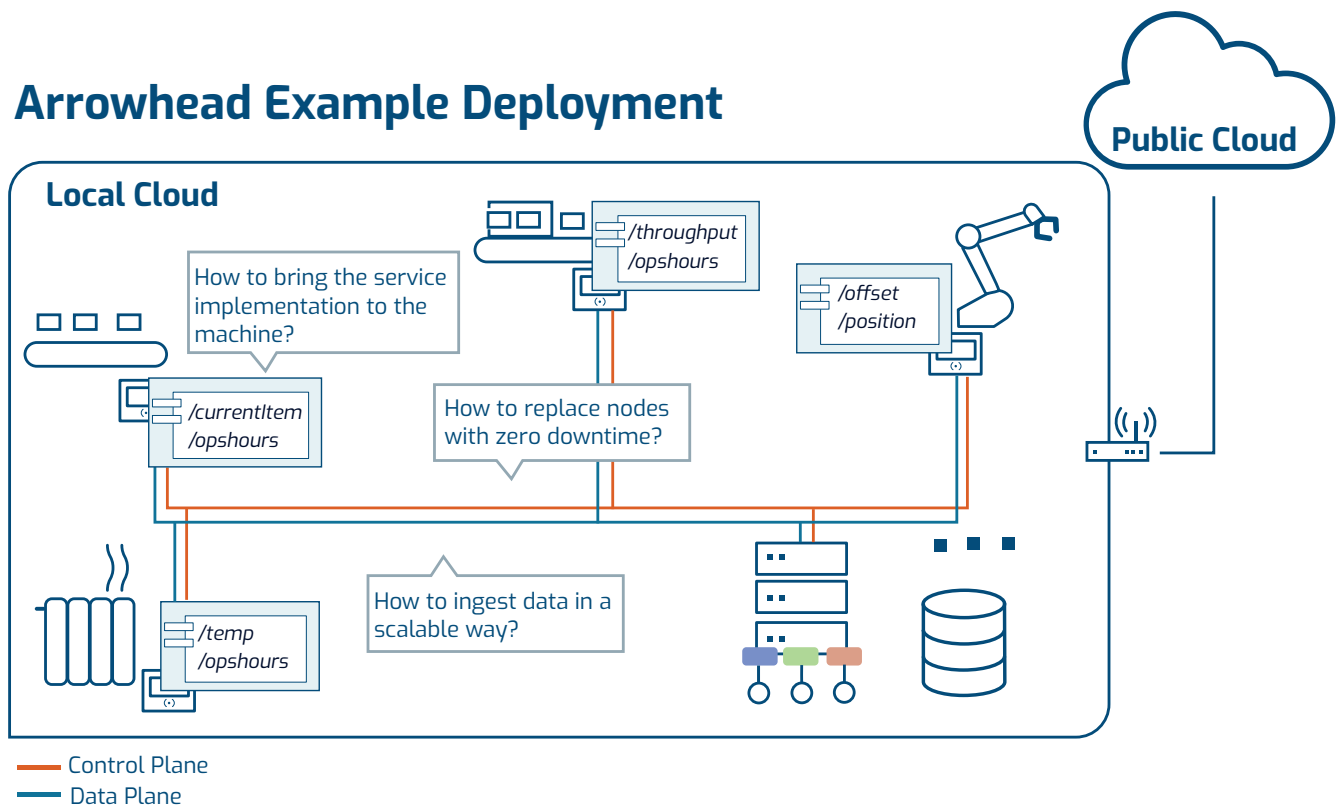
Following a common understanding, the IoT domain comprises two major building blocks, the connected devices

and the backend system being responsible for managing those devices.

Bosch.IO focuses on the backend systems which comprise but are not limited to:

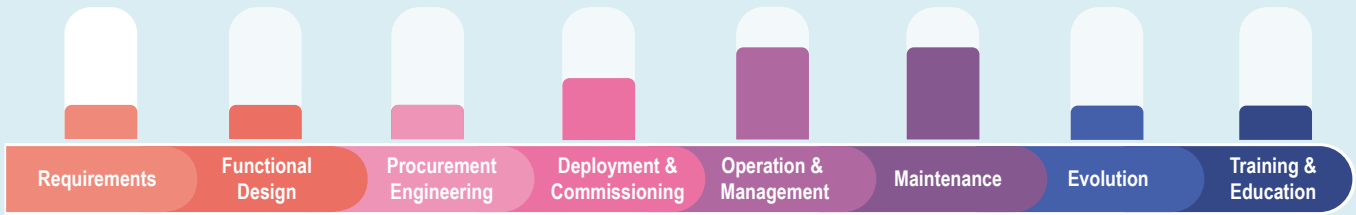
- A Messaging Infrastructure
- Update Mechanisms
- Digital Twin
- Device Abstraction
- Authentication and Authorization

Arrowhead Example Deployment





Engineering Phases



Results

To address the challenges of the Arrowhead Tools project, several new core systems and their related service have to be designed and developed that support the integration to existing Eclipse projects.

The following projects are considered:

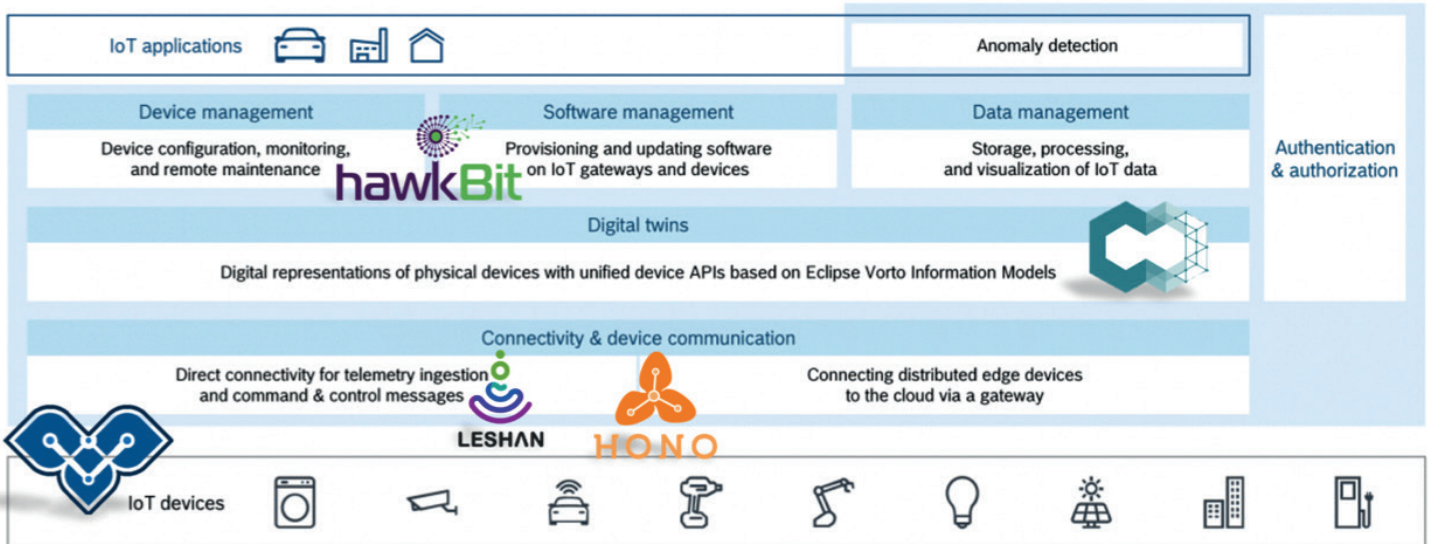
- 1. **Eclipse Hono:** A messaging infrastructure that is able to connect millions of IoT devices in a scalable fashion.
- 2. **Eclipse Vorto:** A toolset to easily describe and model the functionality and characteristics of devices.

3. **Eclipse hawkBit:** A framework to roll out software updates in a structured fashion on a large number of devices.

4. **Eclipse Ditto:** A “digital twin” implementation that allows to capture and manage the state of devices.

5. **Keycloak:** A highly adaptable framework for authorization and authentication.

The results will be made available as Open Source and allow interested parties to use a proven technology stack for their Arrowhead powered digitalization efforts.



Partner Data



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Bosch.IO GmbH combines the full set of consulting and implementation skills to deliver IoT and digital projects, focusing on the retail, energy, building, industry, consumer goods, agriculture, and mobility sectors. Bosch.IO has 900 experts on board, including consultants, coaches, cloud software developers, digital marketers, UX and business model designers, solution architects, and project managers. The interdisciplinary team works together at locations in Germany, Bulgaria, Spain, Japan, China, Singapore and the U.S. to serve customers around the world. Drawing on a broad base of industry knowledge and a deep well of software expertise, this Bosch company has proven its merits in more than 250 IoT projects.

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