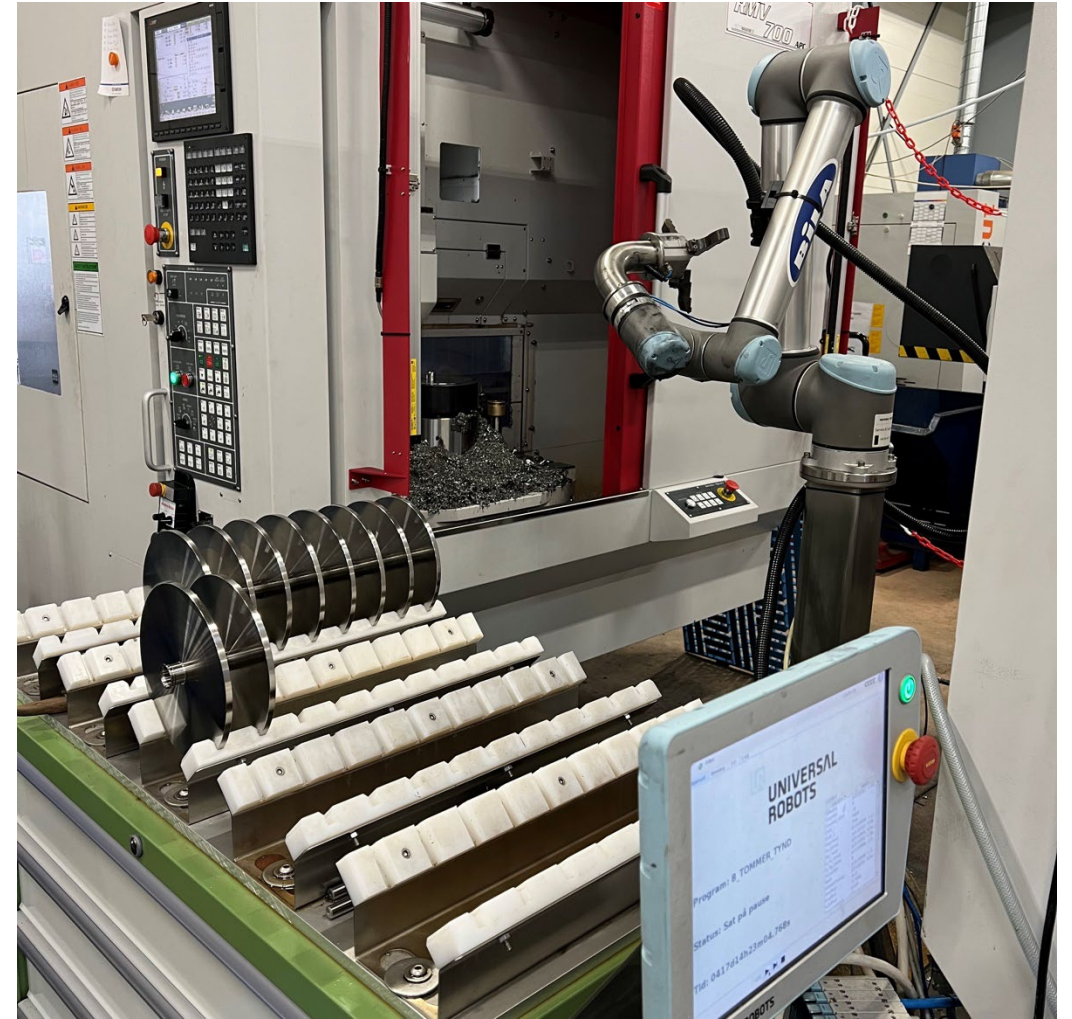# Connectivity og rekonfiguration i Industri 4.0

Goal

From the application:

The participating companies have concrete needs for connectivity through their activities in continous data collection and (network) connected robots in production environments.

The goal is therefore to analyze, design, implements and evaluate software architectures in light of these needs with a focus on a reconfigurable IoT (software) platform that supports flexible industrial production.

SDU

Project

- Wila A/S (provide case and test opportunities)
- Universal Robot (robot solution and programming)
- TrendLog ApS (logging solution)
- Århus University (Architecture)
- SDU (Middleware, Digital Twin)

- Focus: One production cell

- Challenges (IT):
  - Connect the cell to the network
    - Robot
    - CNC Machine
    - Logging device
  - Configure and re-configure the production (robot)
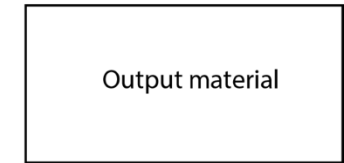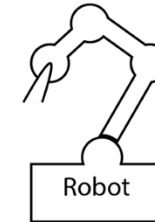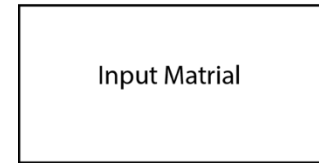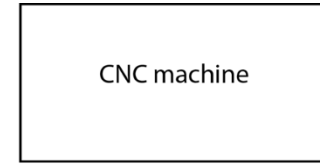
- Challenges (Robot and CNC machine)
  - Inspect and clean machine
  - Enter material
  - Activate machine
  - Remove material
  - Perform quality control
  - Program Robot

Middleware

- The basis for connectivity and reconfigurability

- Change in production
- Data collection
- Control
- Optimization
- Configurations

- External service, e.g. ERP, initiates order
- Orchestrator coordinates the production flow
- Message bus distributes messages and data among services
- Services provides capabilities and communicate through different protocols to the actual assets

- Aggregate data about the real physical world
- Reasons/acts upon the data
- Feed it back to the physical wold as updated configurations
- Basis for orchestration and optimization
- Modelling and simulation
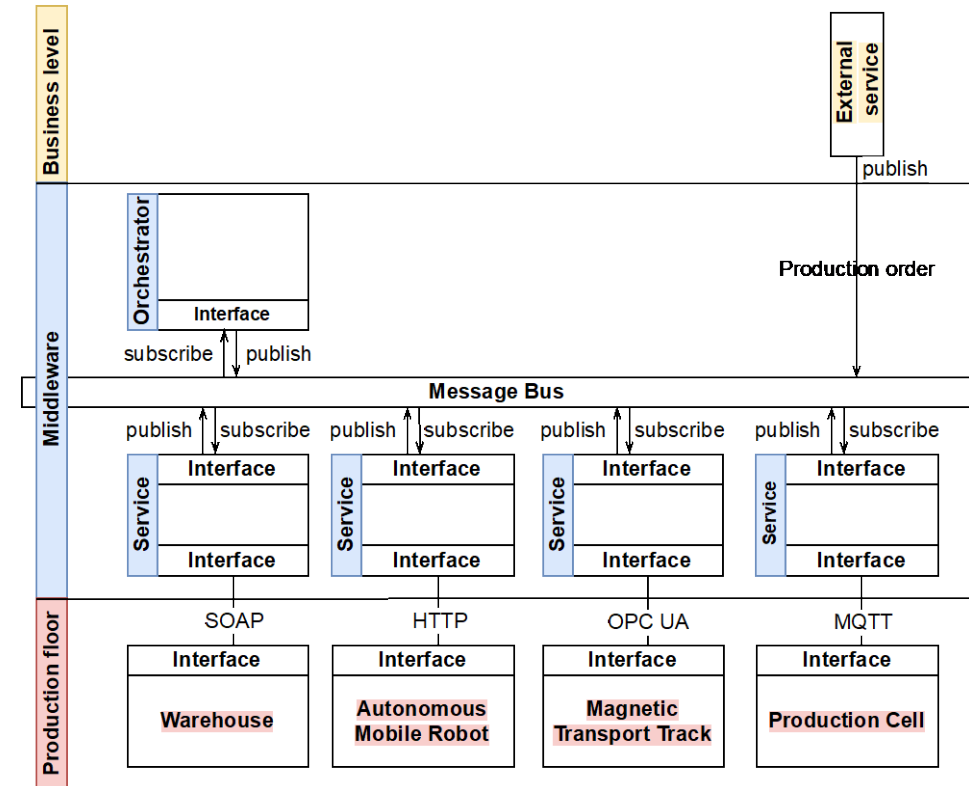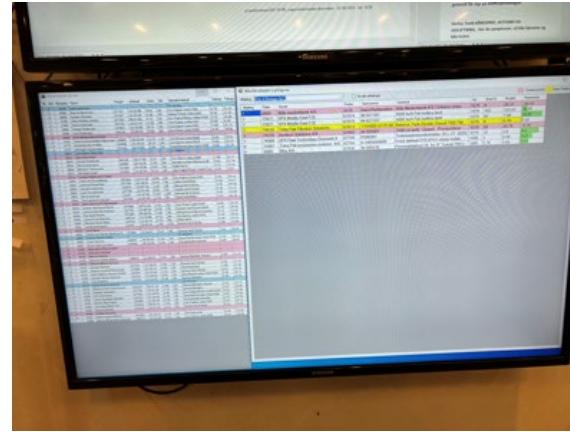
Results

Robot
* A robot has been installed, connected to the network and tested in the production

Logging device
* A logging devices has been installed, connected to the network, tested in the production and data has been collected and presented (dashboard)

SDU Connectivity Box
* A connectivity box has been constructed and tested in a simulated environment (SDU Industry 4.0 Lab)
* Hardware
* Software (Middleware) has been implemented in the box and tested with relevant use cases (download program, upload program, versioning program, quality control) together with a developed software architectural requirement and implemented software architectural tactics.

Dissemination
* Connectivity Literature Review (in preparation)
* Experience / Vision Paper (in preparation)
* Presenataion "Digitale tvillinger og datadreven produktion" (DigitalLead webinar)

Download

Upload Upload Upload

Connectivity Box

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