Flexible Production based on OPC UA

Making Production Machinery ready to fit into the next generation of shopfloors

Pro²Future

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MOTIVATION & GOALS

Manufacturing faces a clear trend towards **customized mass production**, that is **series production** of rapidly changing **variants** of a specific product, down to **lot size 1**. In addition, the pressure to **innovate** products leads to **shorter** product **life cycles**, together with changing production process and plant layouts. These two trends are to be met in the future by production machinery, which

- accepts **changes** to the production **sequence** online
- works as an **autonomous** unit
- embraces **reconfiguration** to adapt to new plant layouts

Project FactBox

Project Name APS.net
Project ID DP2.1-1
Duration 39 Months

Area 2
Cognitive Robotics & Shopfloors

Project Lead
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APPROACH

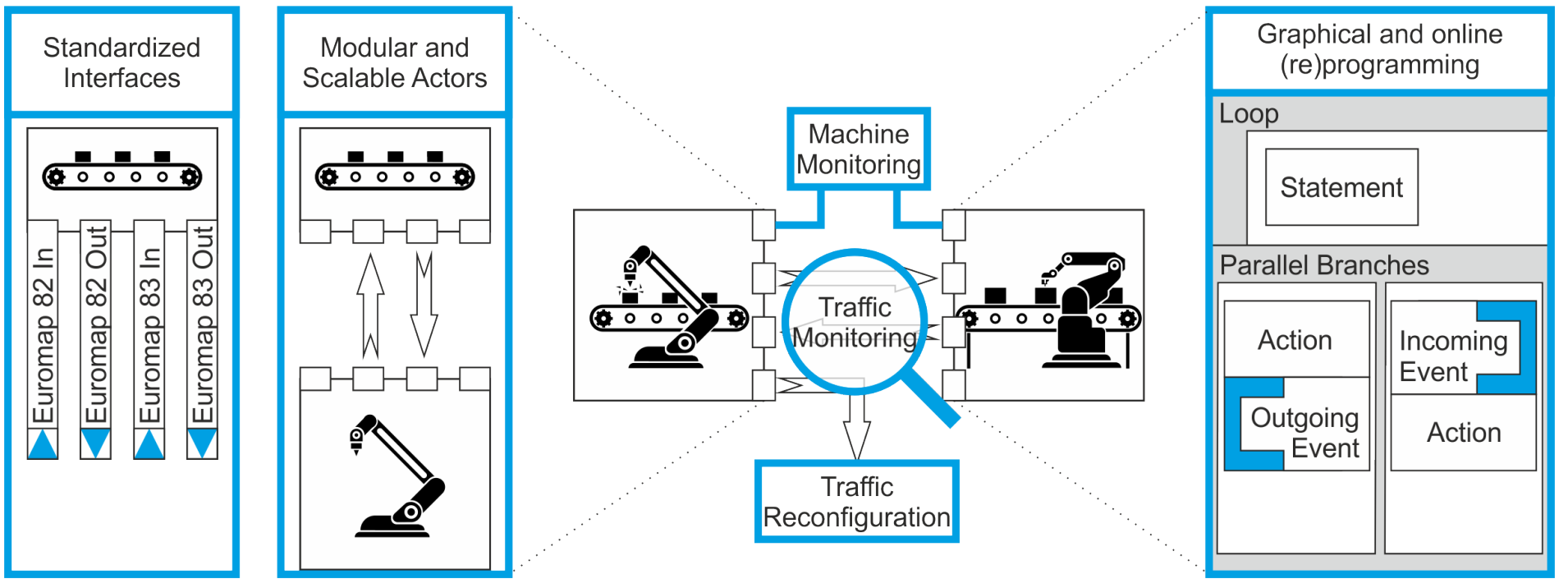
OPC UA is the **protocol** standard for machine-to-machine **communication** in Industry 4.0.
Its structured nodeset allows detailed models that are readable to other machines.
Abstracting from machine functionality to **capabilities** provides a unified environment for machines.
Mappings between capabilities provide and internal functions **decouple** interface and implementation.
Reconfiguration is possible at the mapping layer.

CONTRIBUTION

Scientific contribution
Publication of architectures for cyber physical production systems at European Conference on Software Architectures (ECSA2019)
Publication of a framework for capability-based control at Emerging Technologies in Factory Automation (ETFA2020)

Economic contribution
Shorter Time-To-Market
Support for Debugging
Prevention of Errors leads to quicker Set-Up/Reconfiguration
Cheaper Development by Reuse of Components

RESULTS



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