

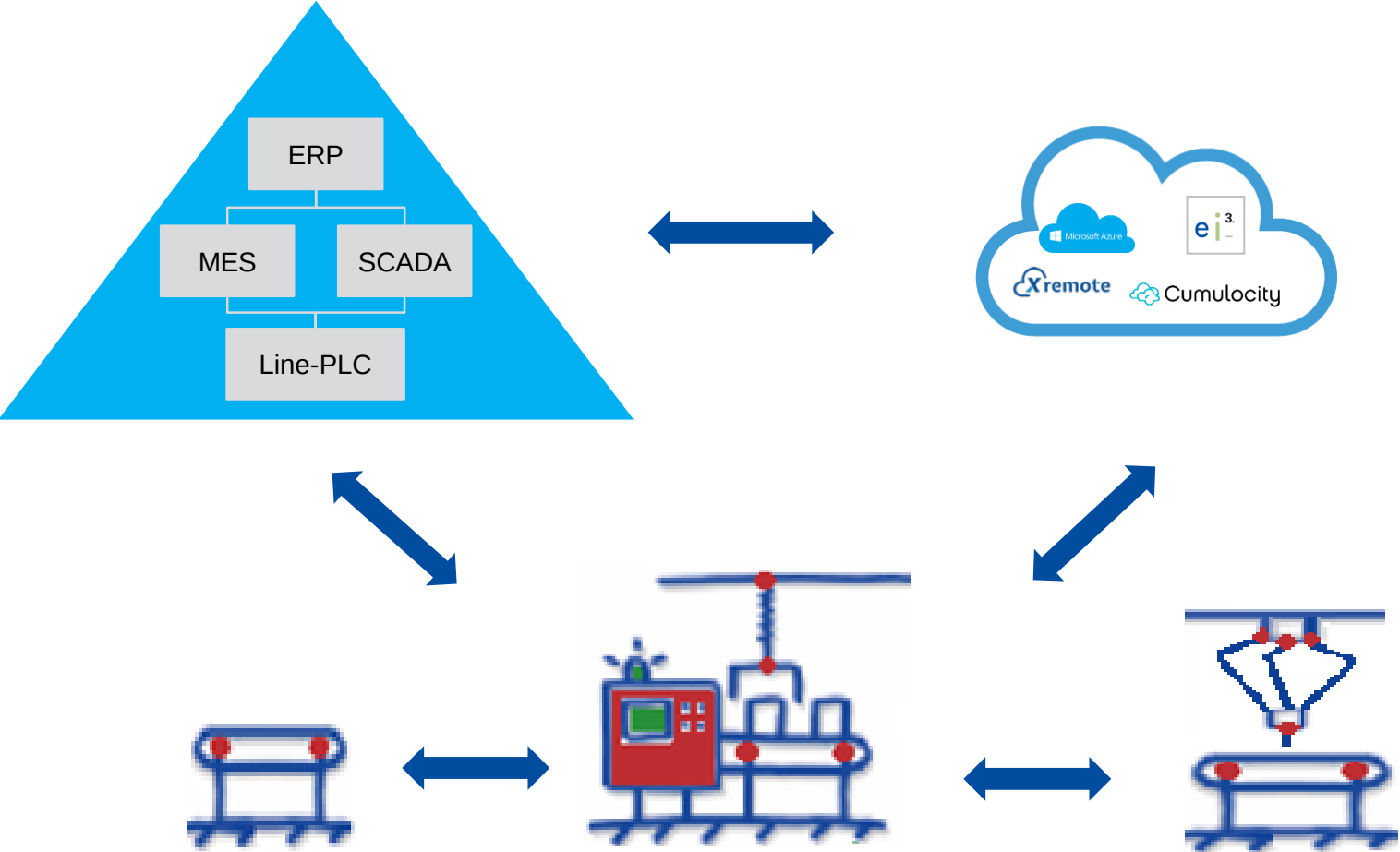


Plug & Produce – the future of flexible production lines

Hannover Messe 2019

Individualization is
driving the demand
for modularity and
flexibility of modern
production lines

What is the challenge? - Integration



Where is the industry now?

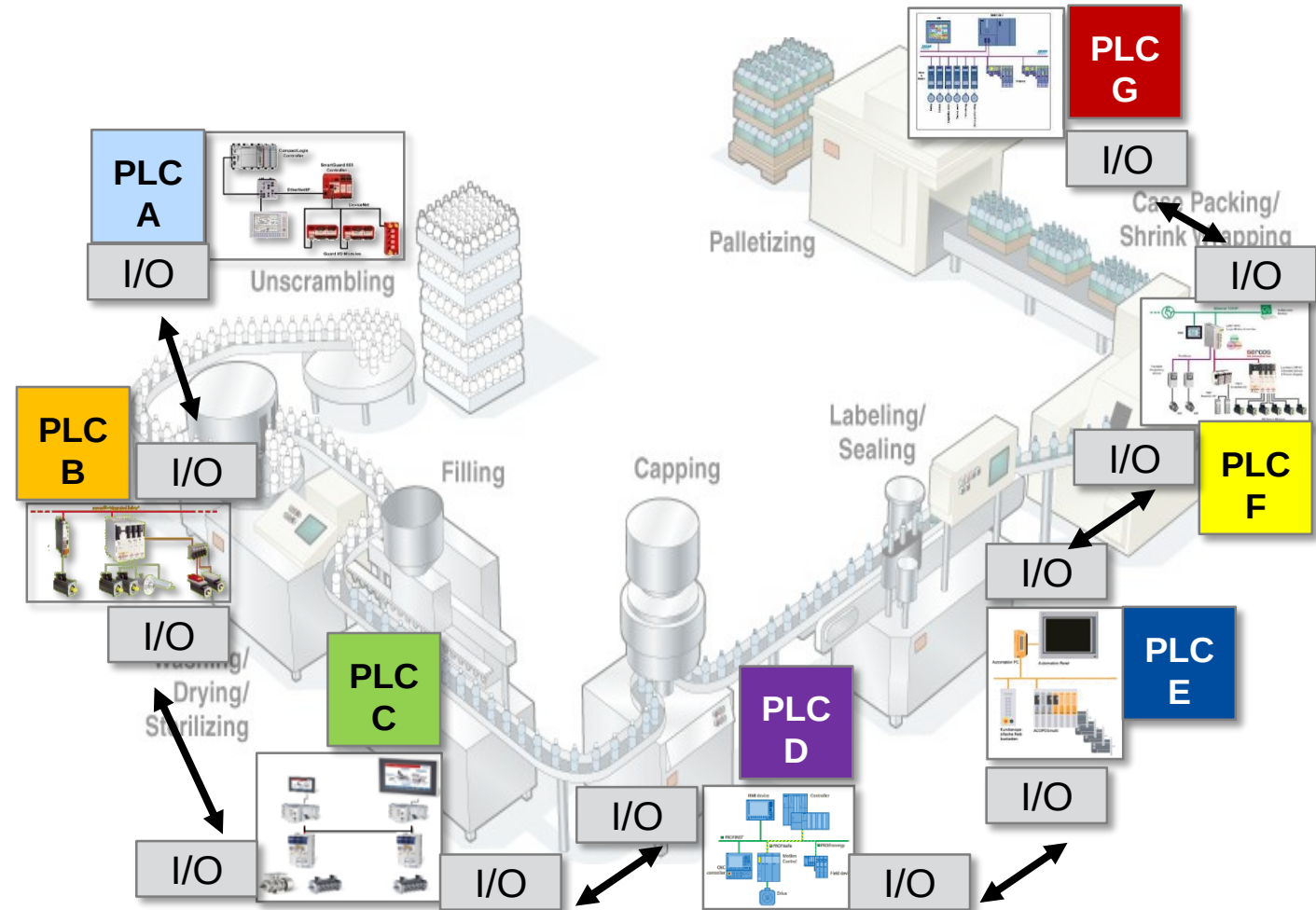
Different PLCs and hardwiring

Pros:

- easy communication
- easy diagnostics

Cons:

- very limited bandwidth
- not flexible
- not standardized
- demand for coordination OEM - OEM



Where is the industry now?

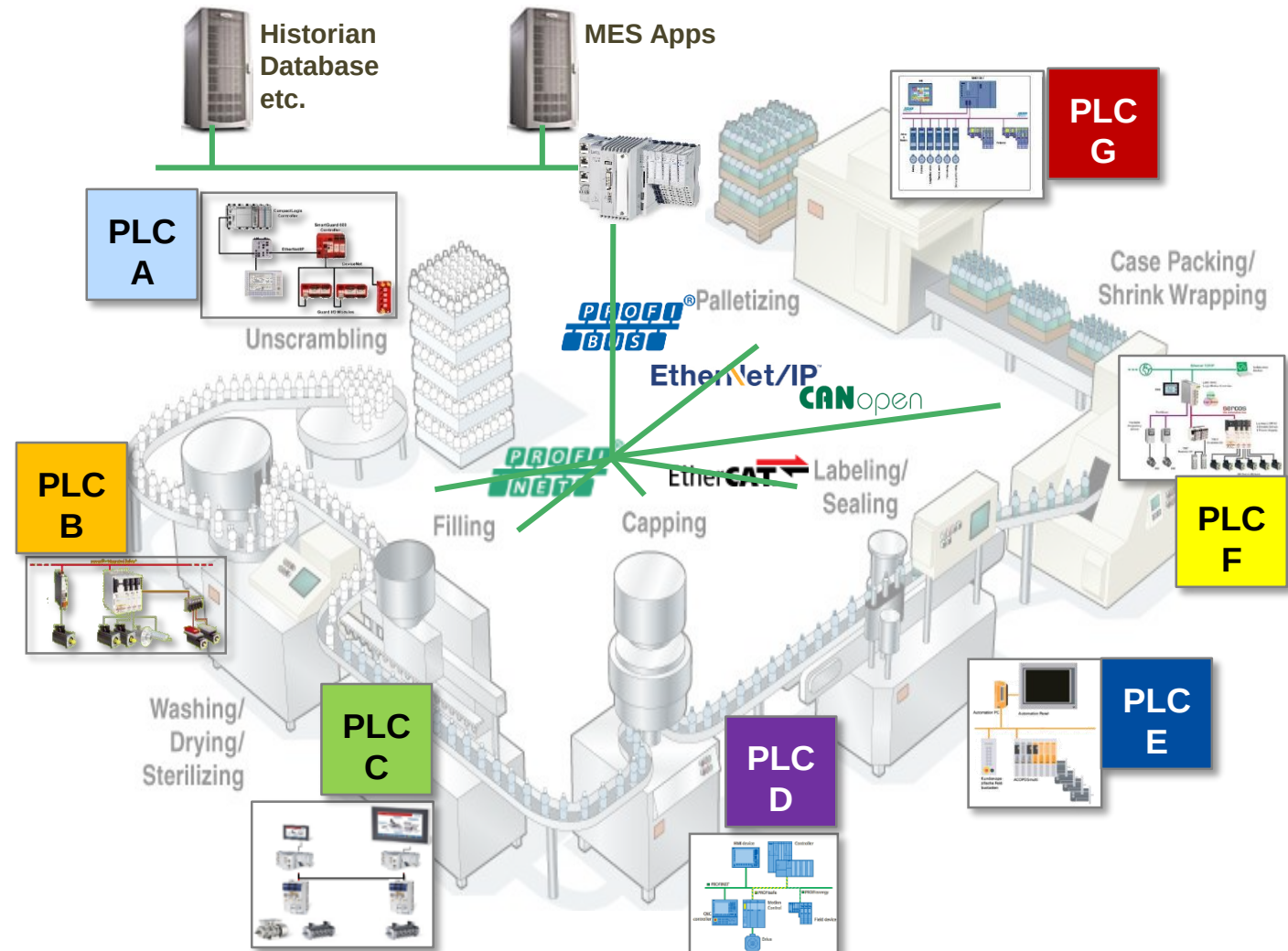
Different PLCs and multiple fieldbuses

Pros:

- network based communication
- high bandwidth
- line balancing capabilities
- ERP / MES integration

Cons:

- high demand for coordination (EU – OEM / OEM – OEM)
- high demand for integration work



Where is the industry now?

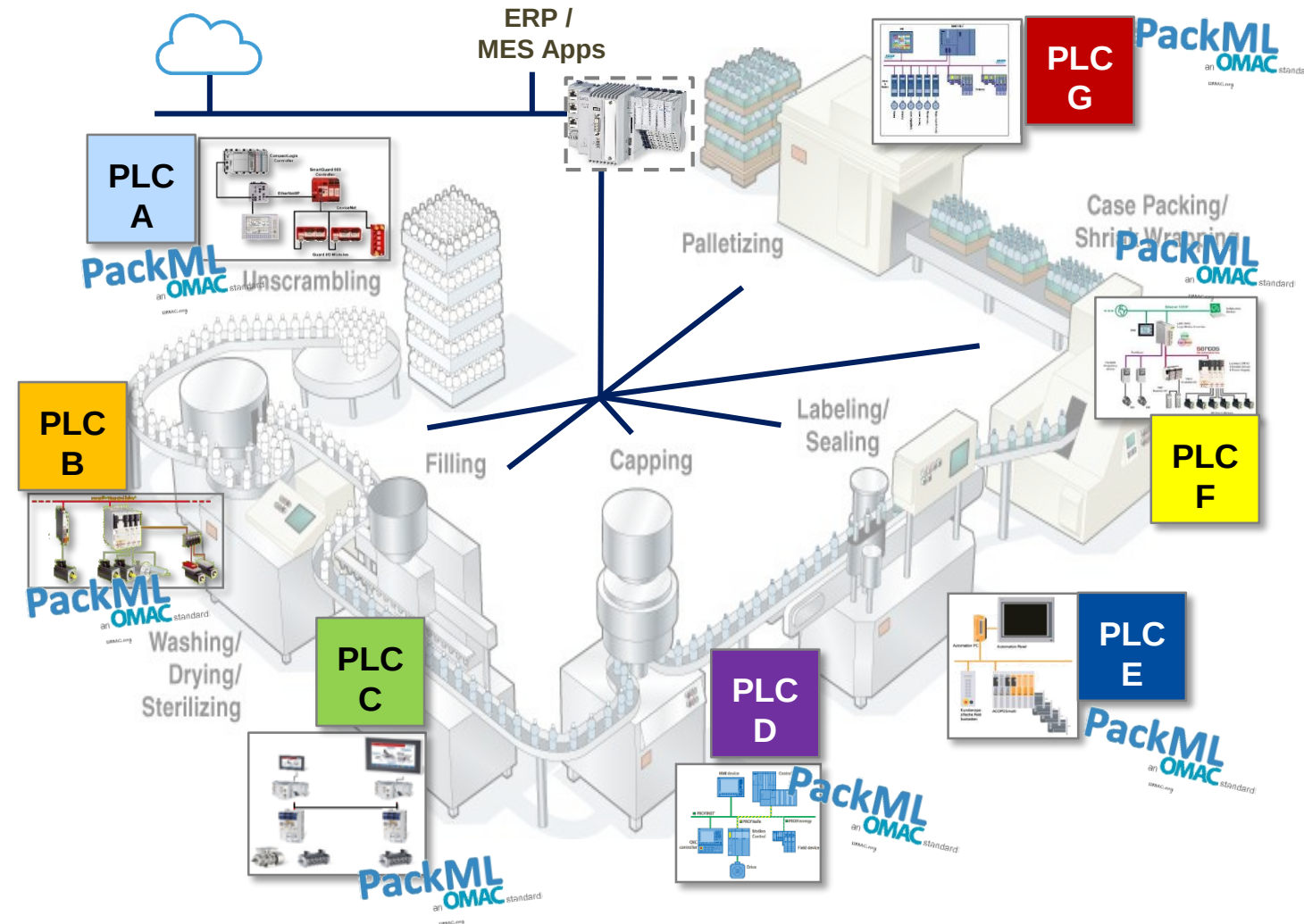
Different PLCs, unified communication, data structure guidelines

Pros:

- standardized information model
- full line balancing capabilities
- limited efforts for coordination between the suppliers

Cons:

- still not full flexibility in line setup



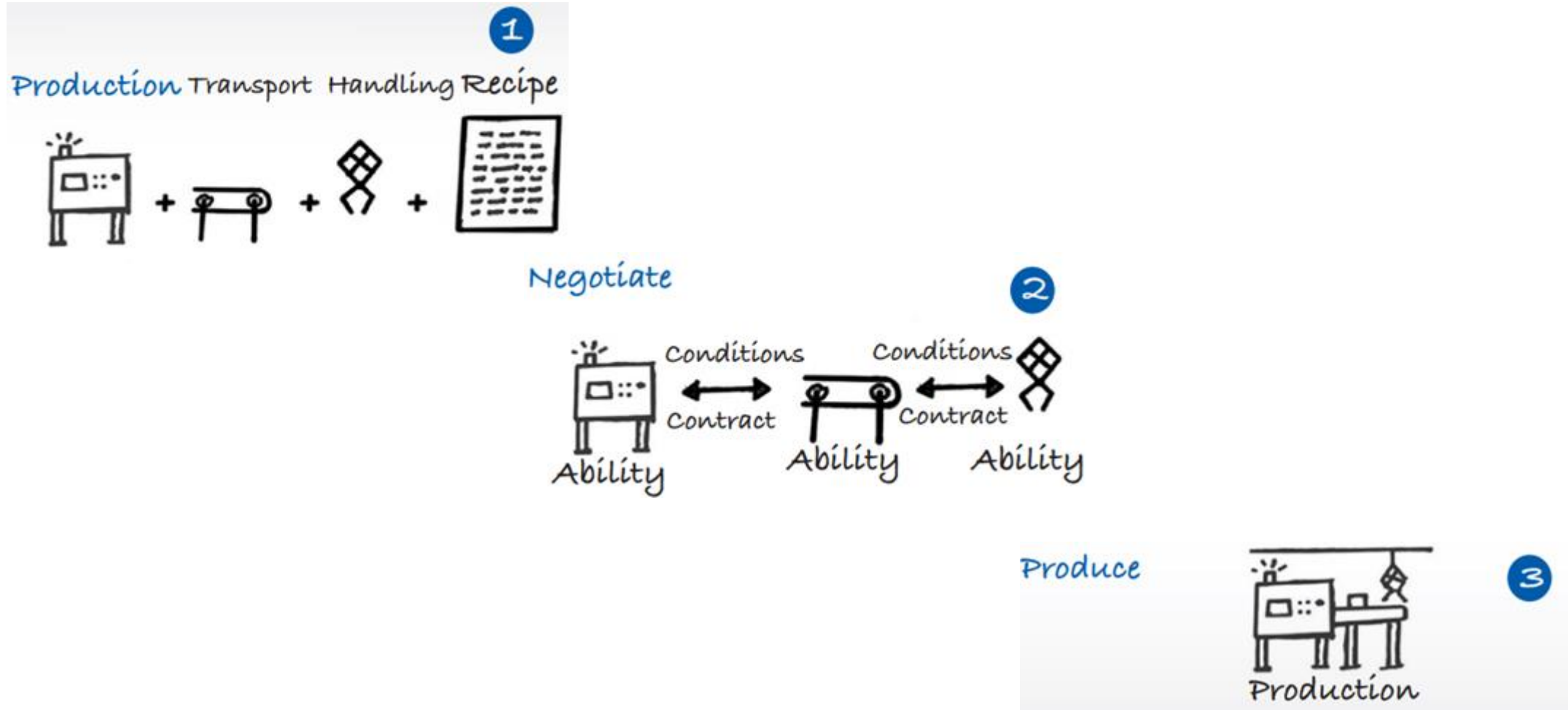
The Vision of Plug & Produce

What is it all about?

Machines or modules can be rearranged and integrated into the production line with minimal or no manual effort

■ P L A T T F O R M ■
INDUSTRIE4.0

Plug & Produce Procedure



Plug & Produce Requirements

Machine capabilities =
what a machine can do

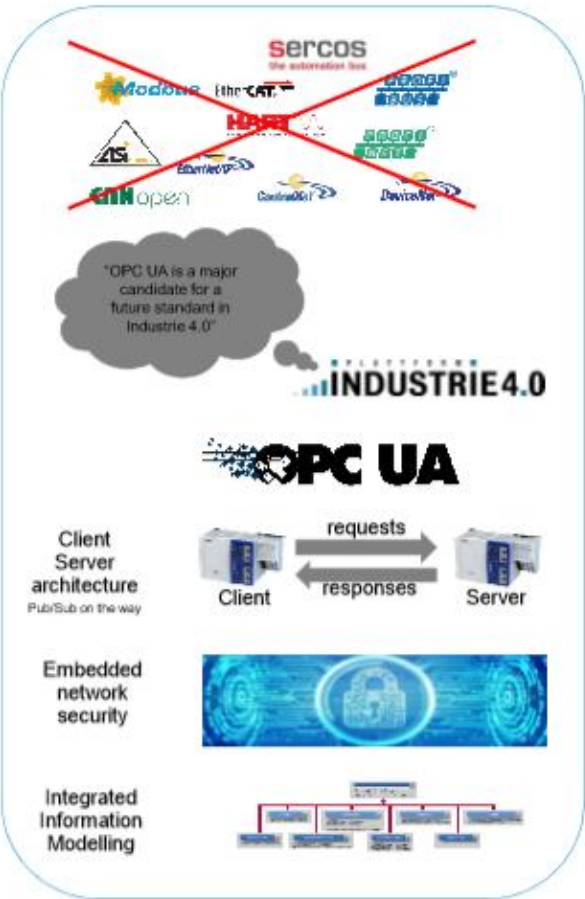
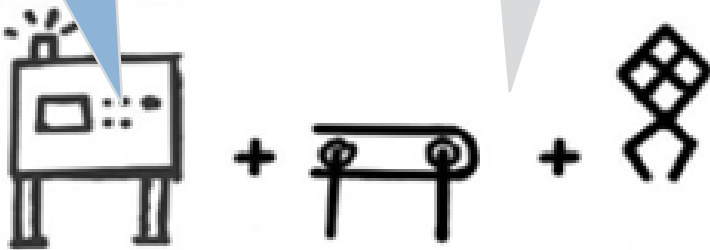
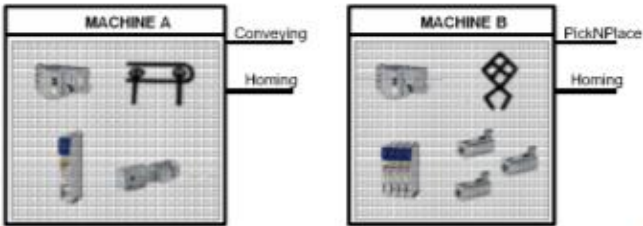
Unified communication
protocol

Unique and universal
description approach

Concept of a skill

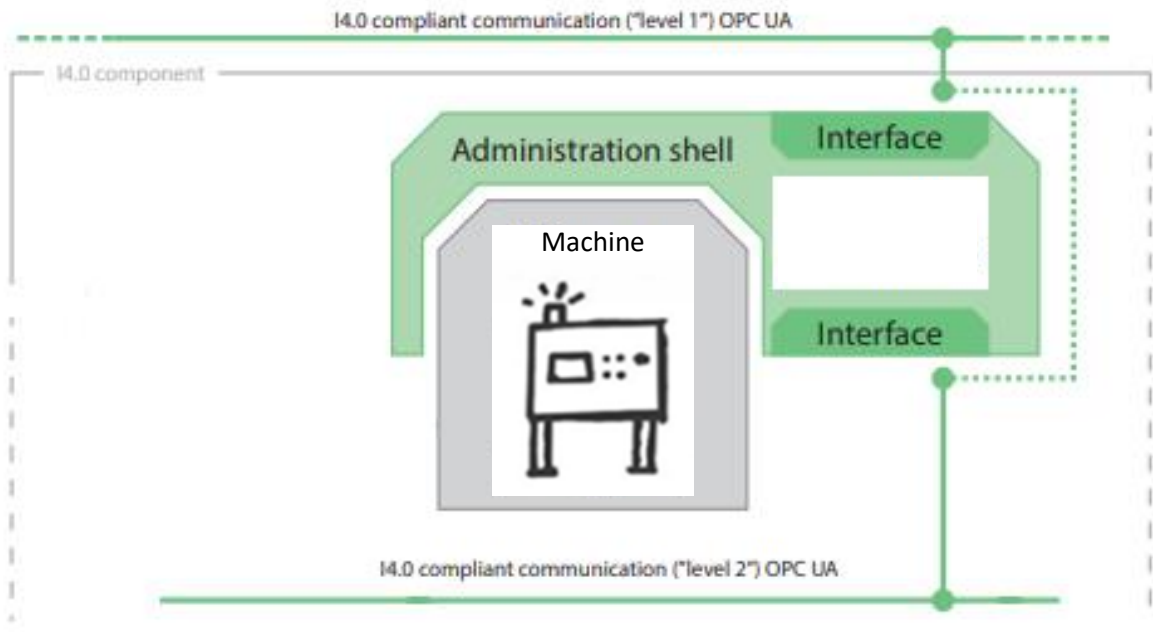
Skill – a functionality (service) that a machine can do and exposes to the others.

Machines are recognised based on „what they do“ not „who they are and contain“.

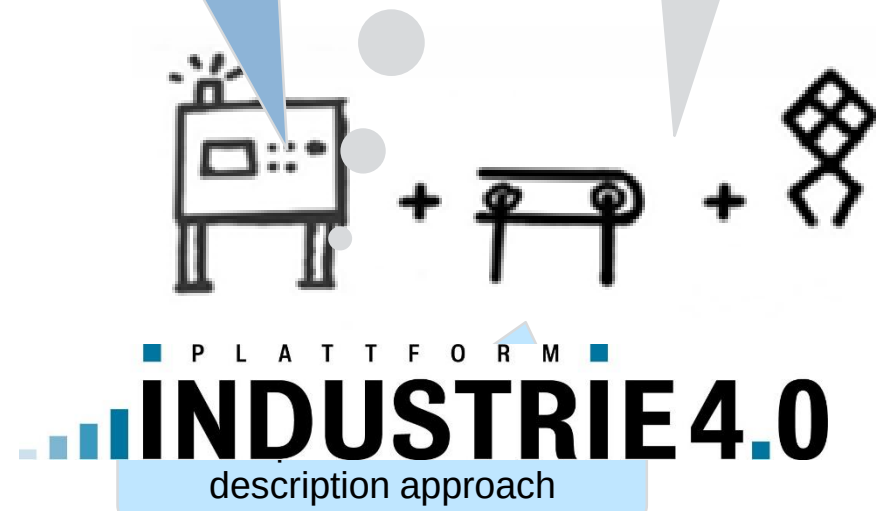


Plug & Produce

Skills and Administration Shells



"In the Industrie 4.0 world, each asset is represented by an Administration Shell – its own "Internet presence" describing all the information and functionalities (...)"



Plug & Produce

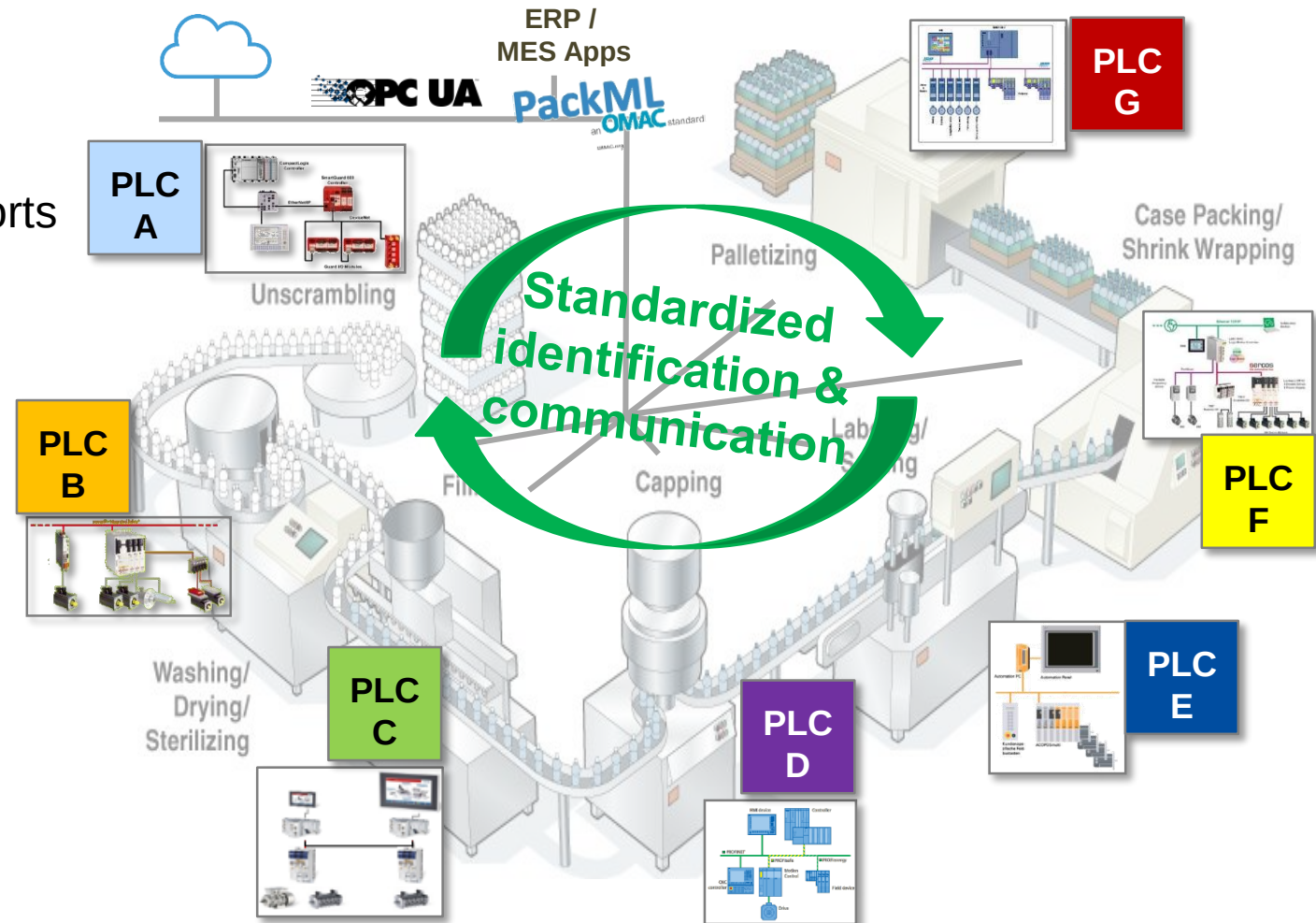
The next evolutionary step

Pros:

- full flexibility in line setup
- automated line integration
- very limited / none manual coordination efforts
- standard interfacing across all vendors

Cons:

- ?

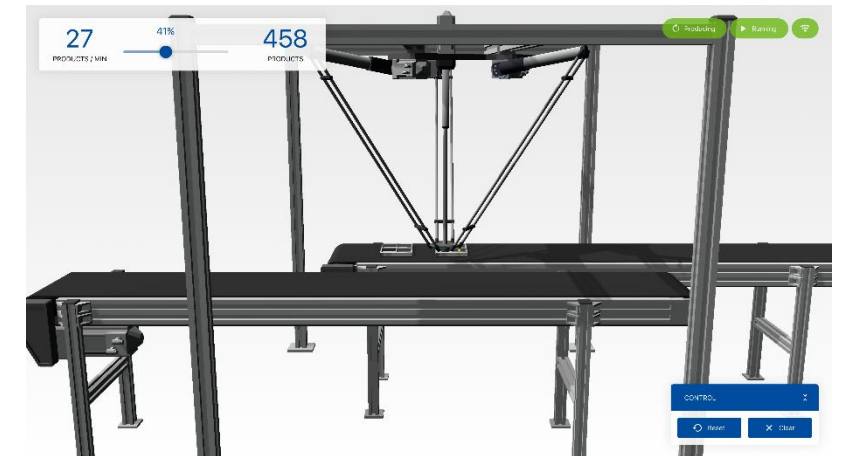


Plug & Produce Showcase at Lenze

Plug & Produce - showcase

Content and operation – machine screen

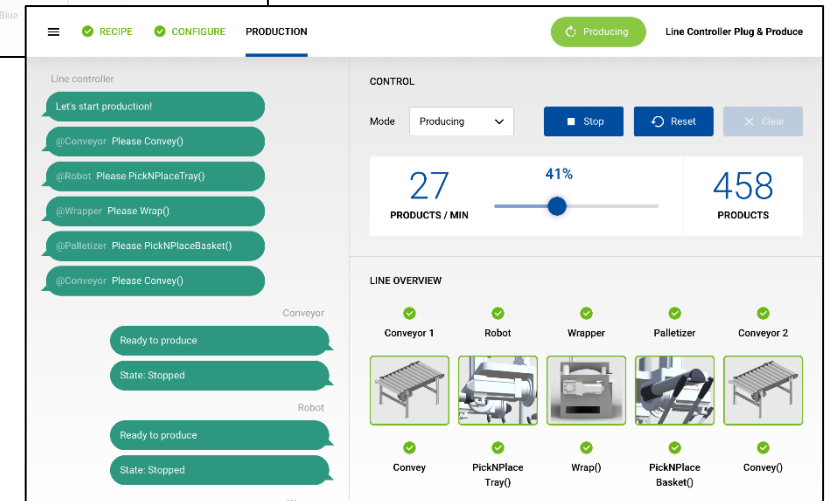
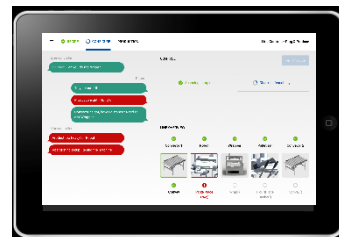
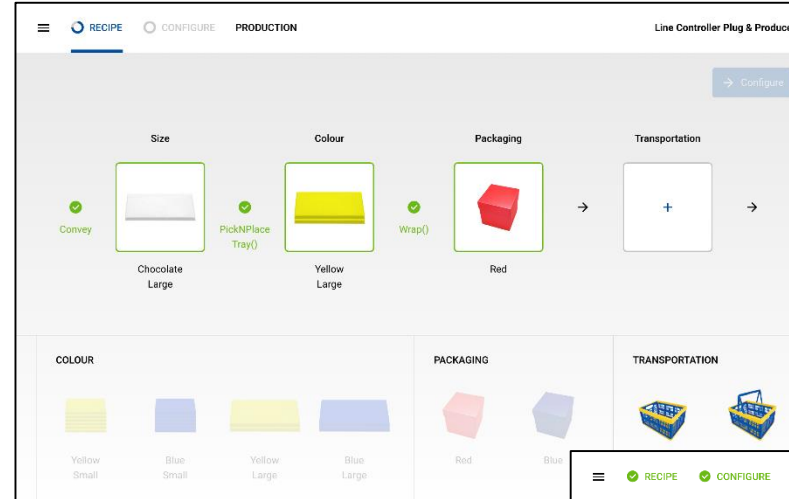
- 8 different machines/modules
- local operation possible
- speed change influences whole machine setpoints



Plug & Produce - showcase

Content and operation – main screen

- big main screen presenting communication in whatsapp style
- operation on tablet (mirrored content)
- operating sequence:
 1. creating a recipe
 2. scanning machine modules (skills) and feasibility check
 3. production mode



Hall 14 / H22



Lenze

As easy as that.

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