工業4.0解決方案發想 (初稿)

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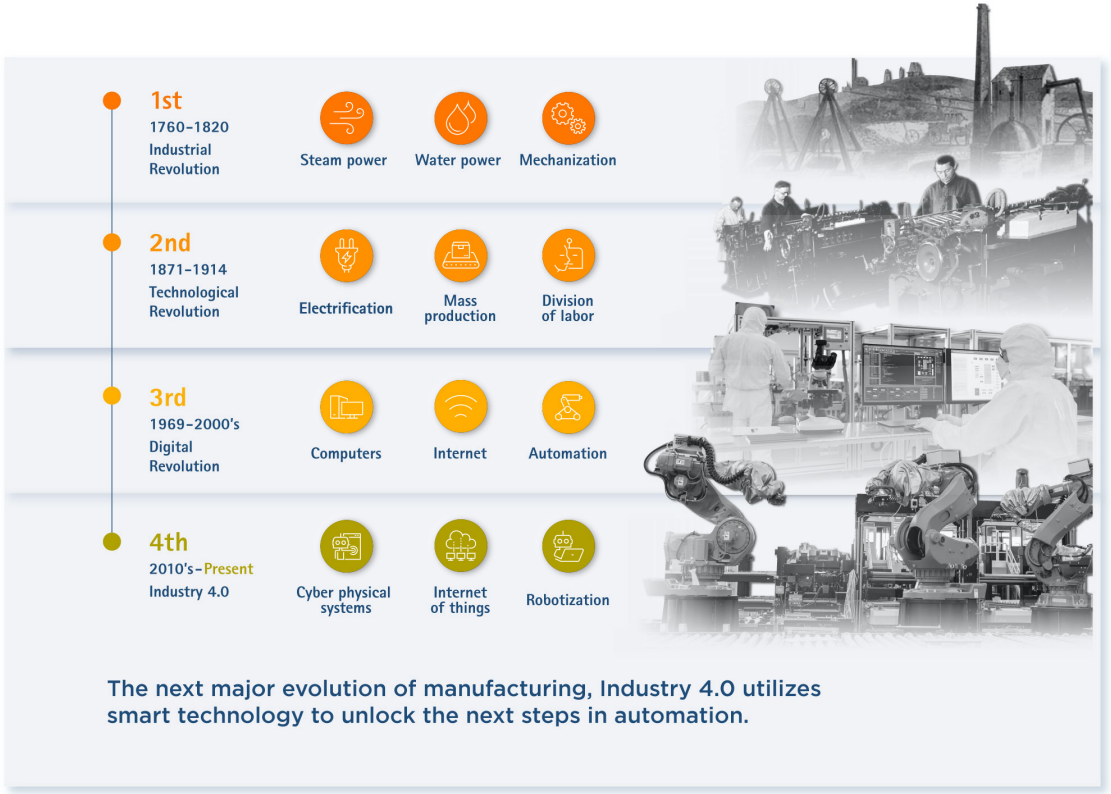
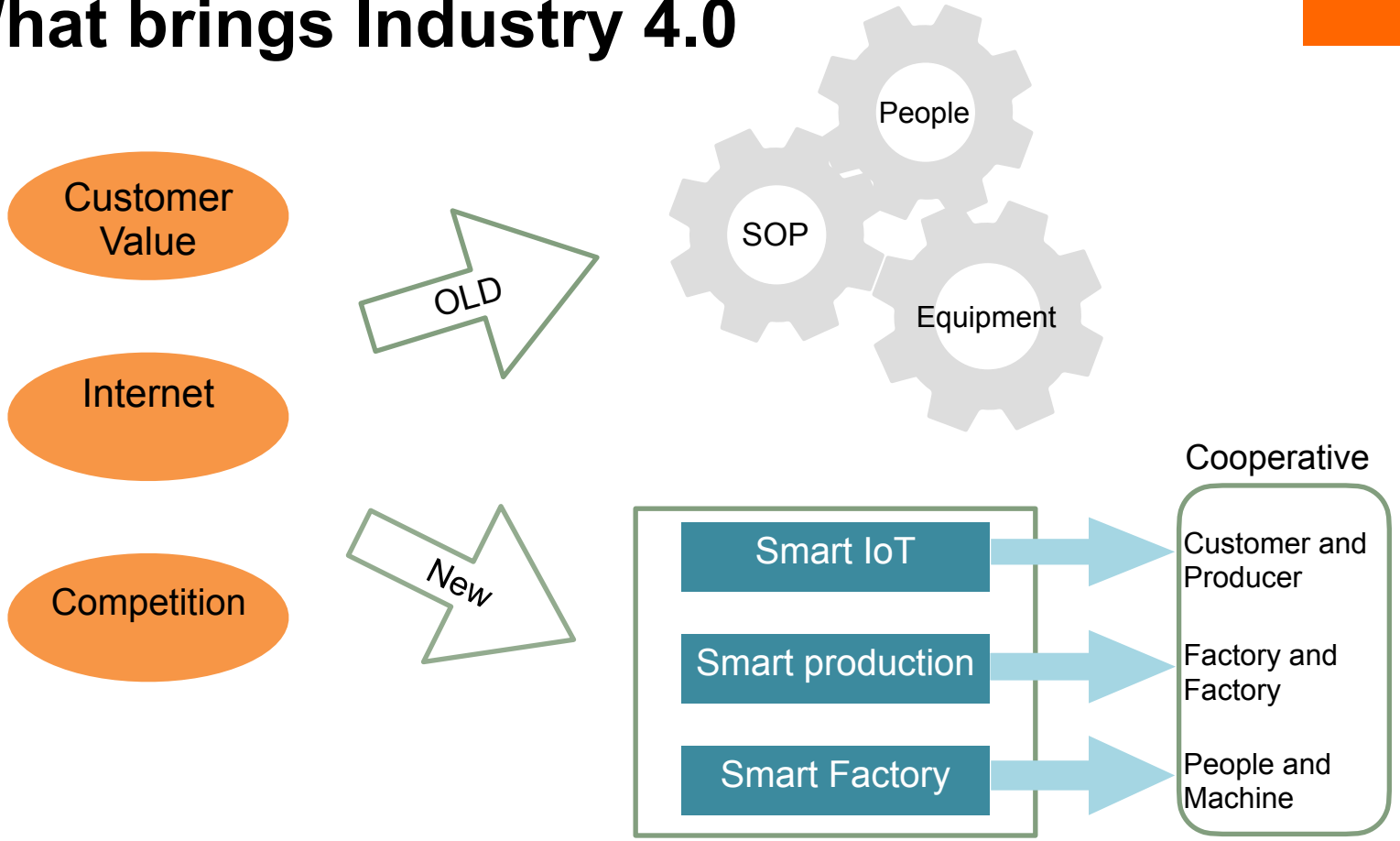
Manufacturing is Evolving

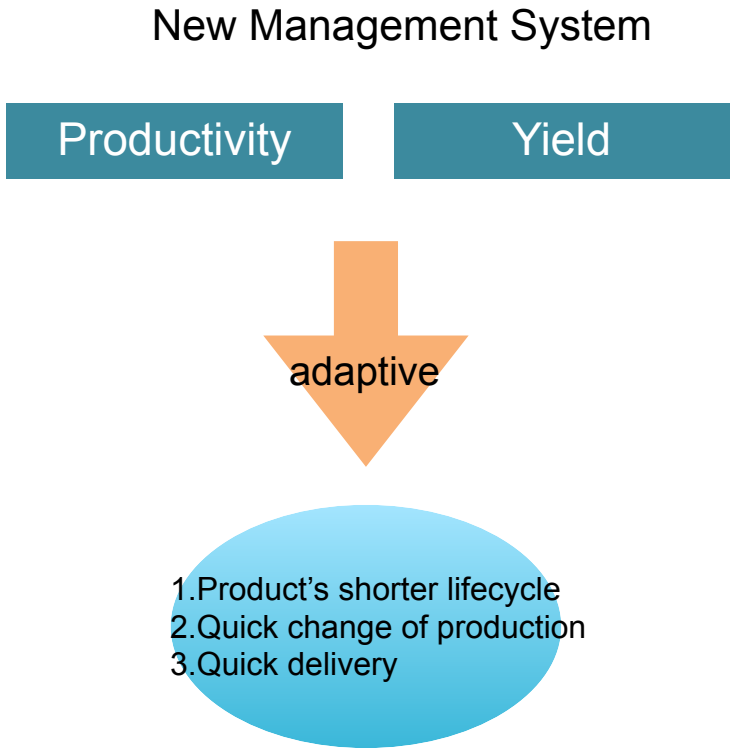


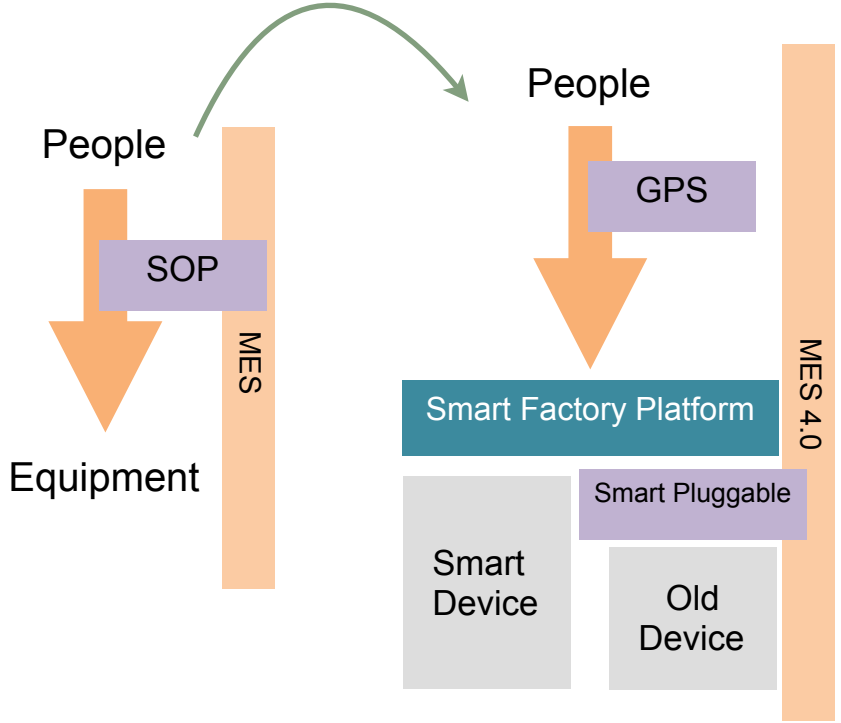
- Before:
  - *programmable and autonomous production within factory*
- Now:
  - *Infrastructure change (IoT)*
  - *Cloud Technology and AI -> IT + OT (CPS)*
- Business goal:
  "Connecting people, things, and business to enable end-to-end "Right-time" & "Autonomous" communication, collaboration, reaction, adaptation and optimization"

What brings Industry 4.0

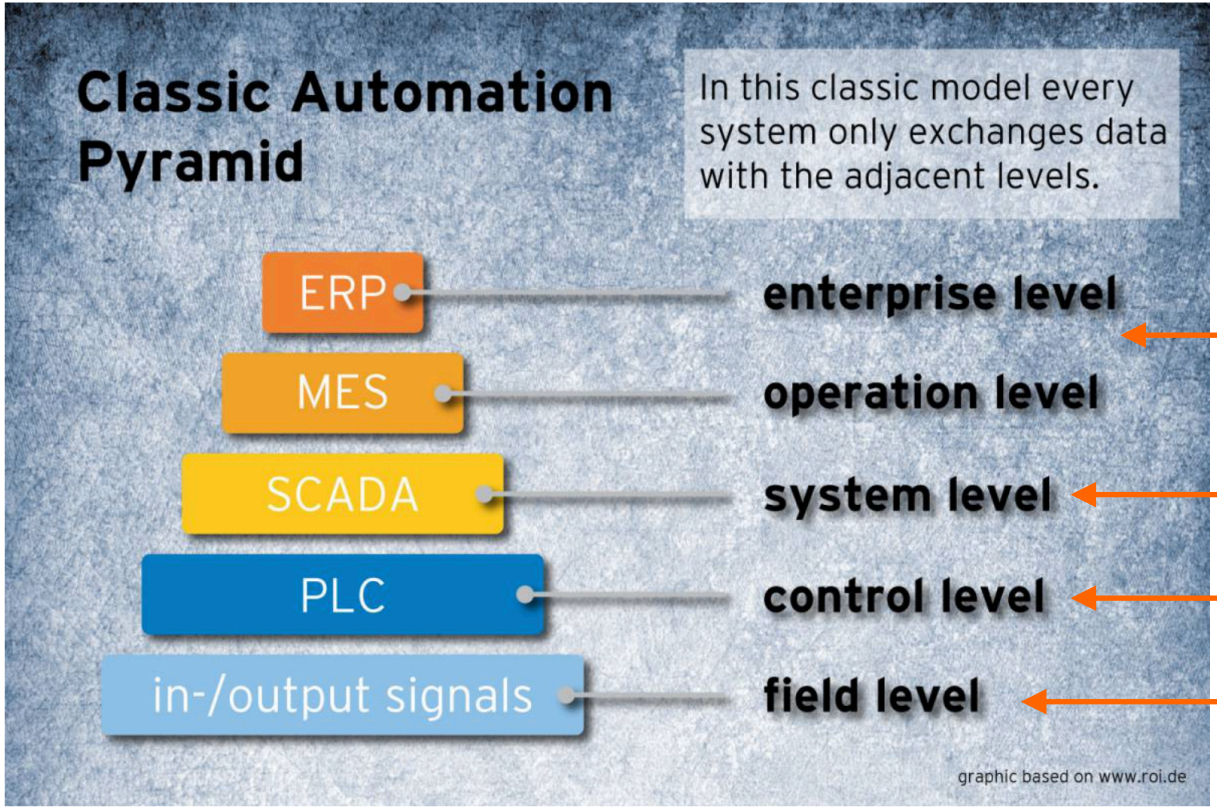


New model under Industry 4.0





Industry 3.0 Automation Pyramid (Bottom-up)



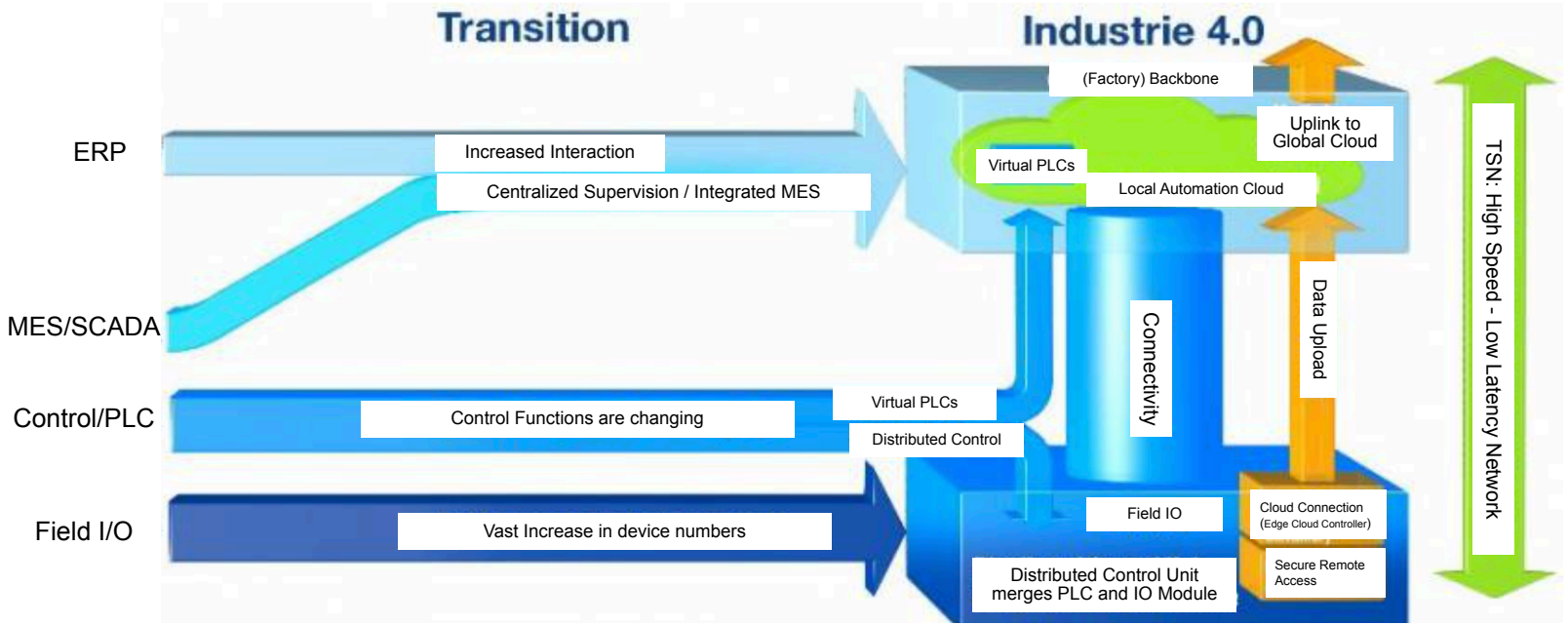
Control and plan production

Remote Central Supervisor

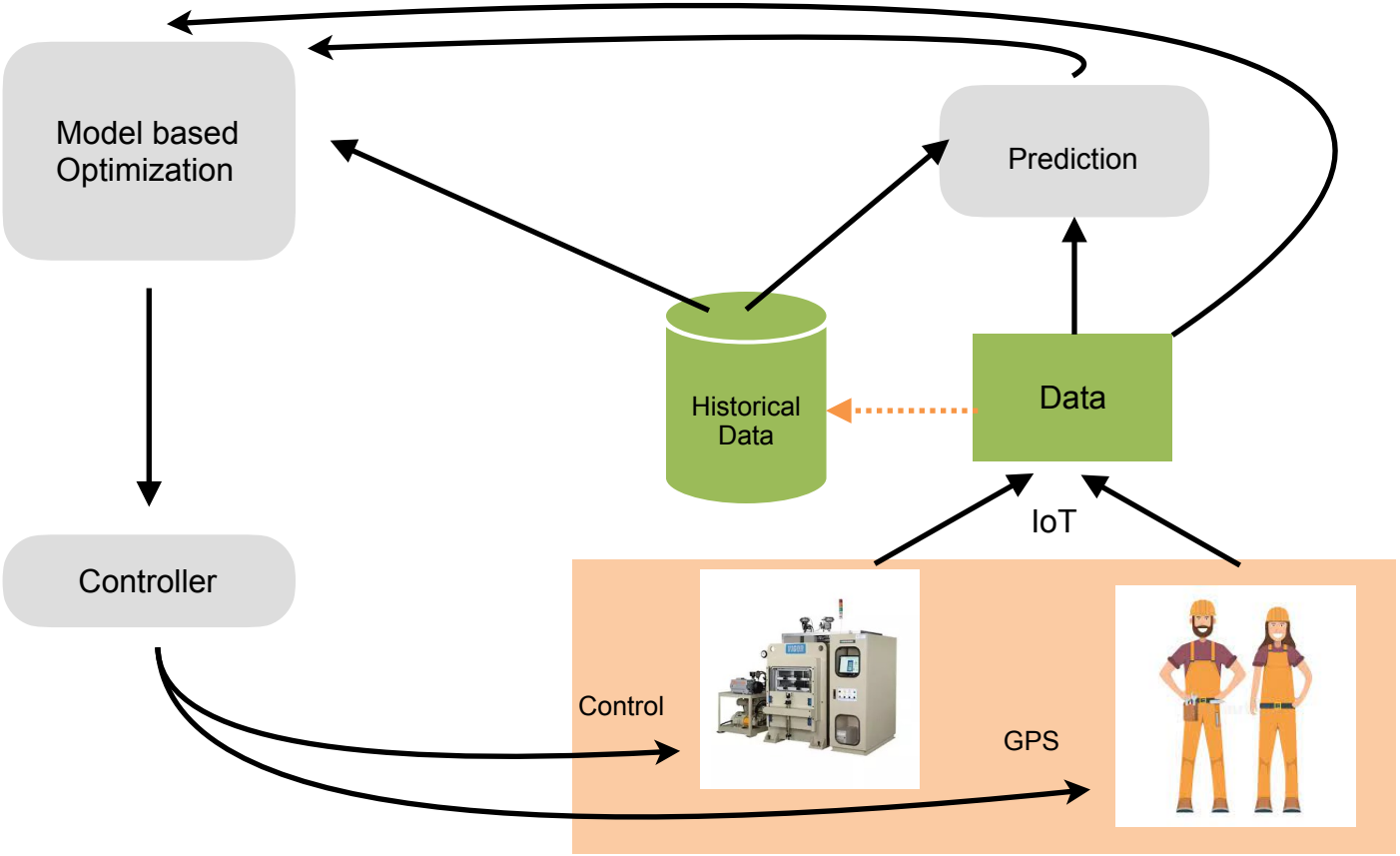
Function Block Diagram,
Ladder Logic, language, PID

Devices, actuator and sensors
1. real-time (reliable timeframe)
2. low data volume

Industry 4.0 Automation Pillar (Top-down)



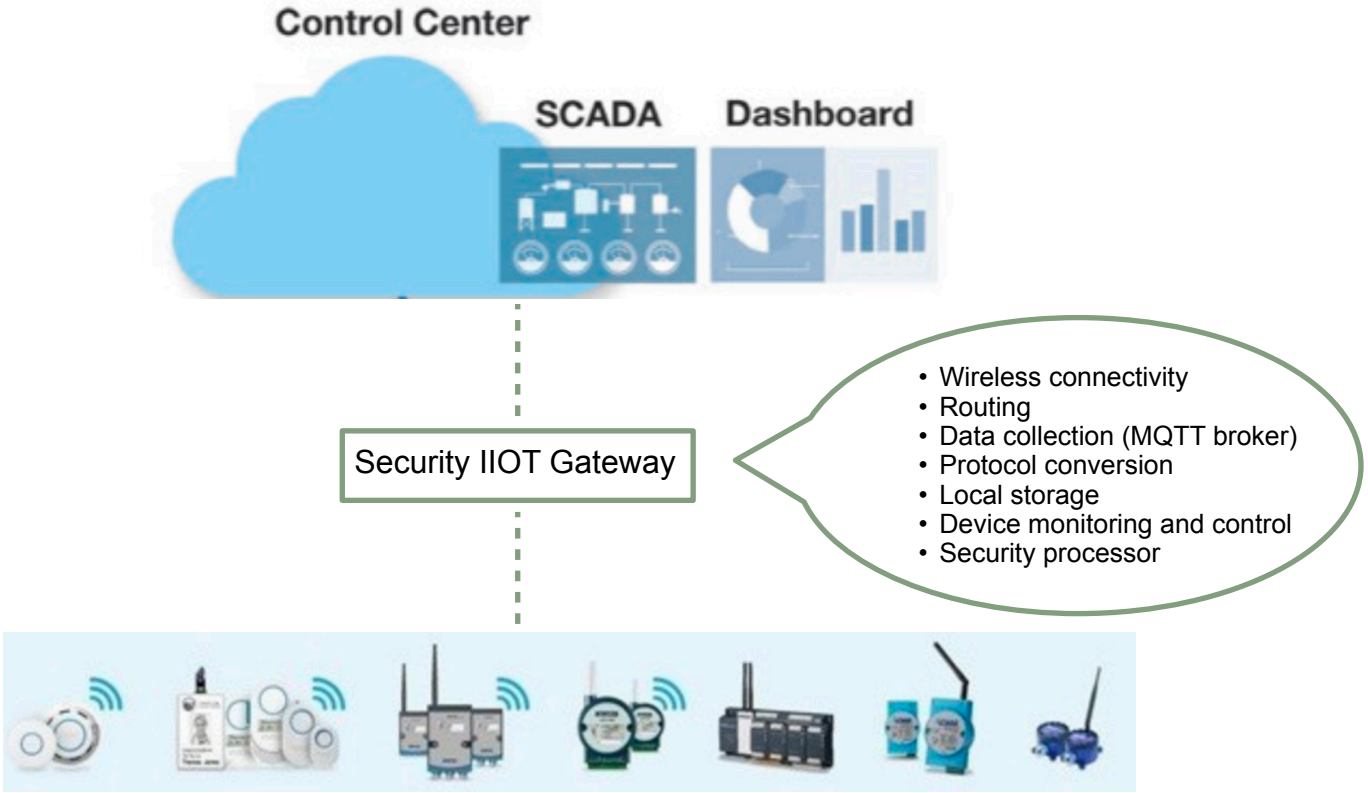
Flow under Industry 4.0



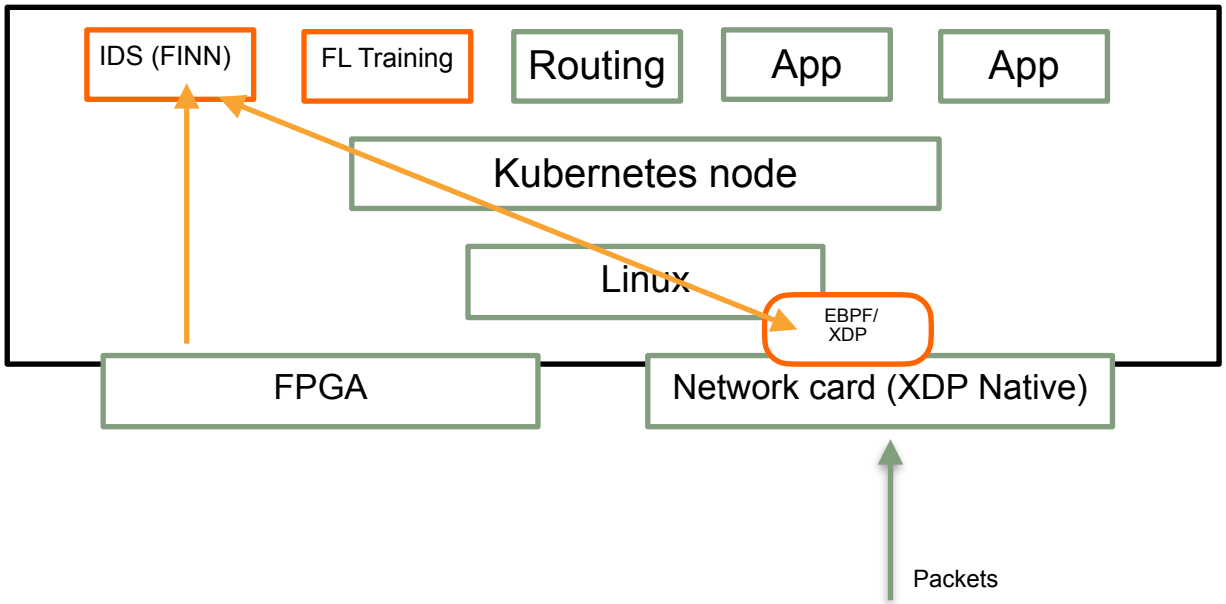
Challenges in Cyber-Physical System

- Intelligent System
- Heterogeneous Communication network
- Real-time awareness and Predictability/ Determinism (TSN)
- Wireless sensing and actuation ->
  1. Data model for distributed sensor data 2. Localization issues of sensors and data 3. Time synchronization issues
- Cybersecurity ->
  Malicious attack (backdoors, DDOS, Trojan horses, viruses), Resilience, Privacy and confidentiality, Intrusion Detection
- Simulation ->
  1. Heterogeneous simulation: co-simulation of diverse physical and cyber subsystems
  2. Multi-resolution simulation: co-simulating subsystems expressed at different levels of abstraction or with different time scales and precisions
  3. Models of time: distributed cyber-physical systems cannot precisely share a single measurement of time, and discrepancies in their measurements can lead to unexpected artifacts, so simulators need to accurately model these discrepancies

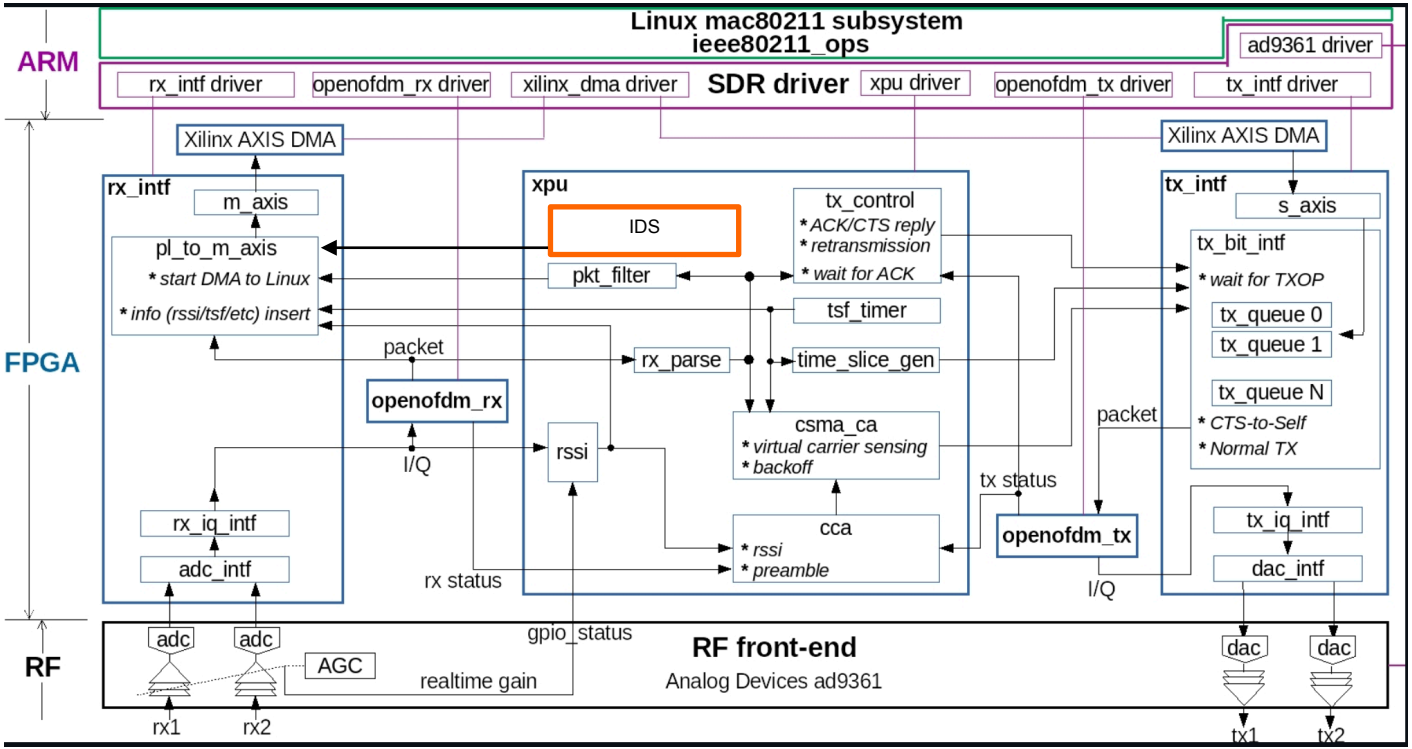
Security Gateway Feature



1.0 Gateway Structure



2.0 Gateway (Open wifi)



Thank You.
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