

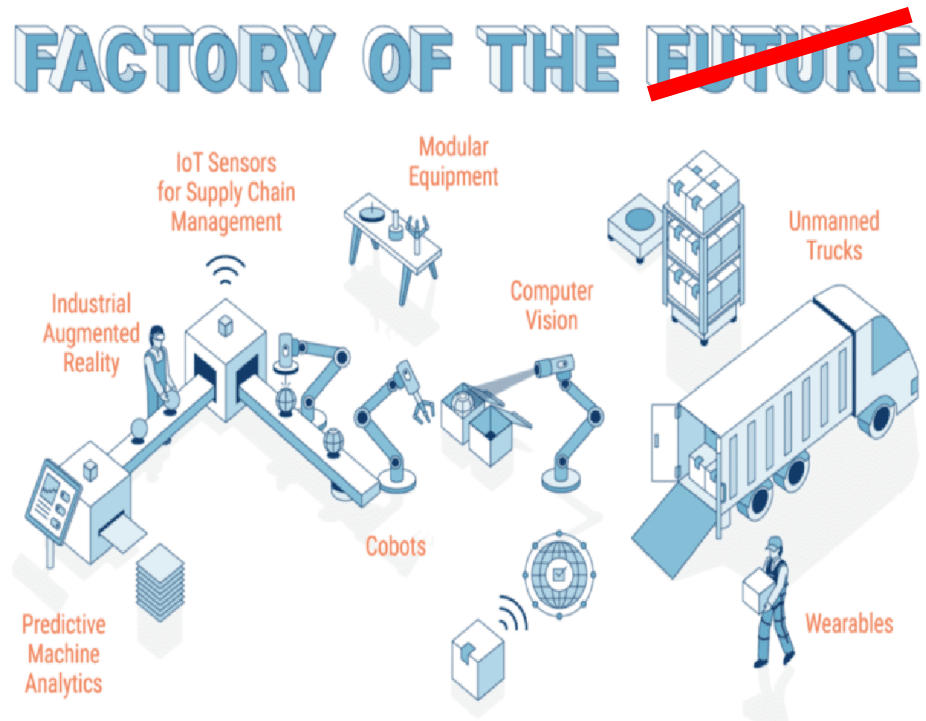
Virtualization of PLC in Industrial Networks

HotRFC-113

(call for collaboration)

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Industrial IoT: Behind every device there is a rugged computer



That Rugged Computer is Programmable Logic Controller that should survive harsh environmental conditions

- PLCs are the basic building blocks of Automation.
- PLC control Sensors and Actuators on Factory floors

PLCs are everywhere.

- Robotics – motion control
- Automation – smart manufacturing

Automation is improved when

- Complex operations run smoothly – requires more compute power and memory

Traditional PLC

Different size, types and Functions

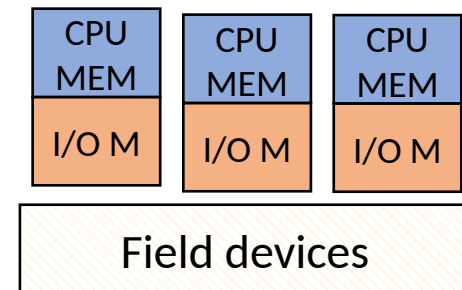
Nano	I/O points < 15
Micro	16-128
Medium	129-511
Large	512+ I/O

Fixed PLCs
Compact PLCs
Chassis style PLCs
Modular PLCs
Soft PLCs

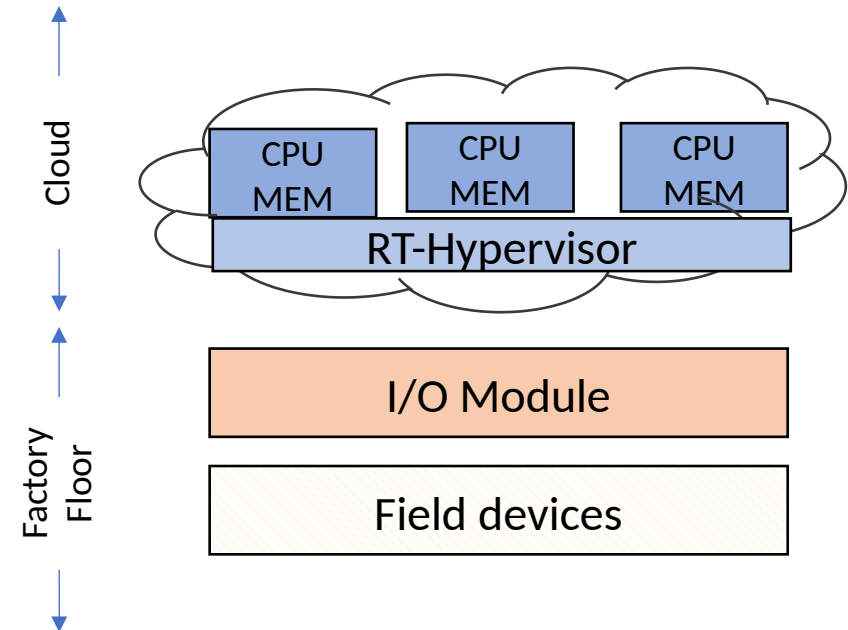
Of course, choice of PLC depends on scenarios and applications

- **Problem:** bigger solutions need bigger PLCs – occupy factory floors .. And some other limitations (written in the draft)
- **Solution:** Virtualize PLCs – Get all the functions at scale with customization

vendor X PLCs...



← Factory Floor →



Not So Easy – disaggregation is necessary

L5	Enterprise applications	Enterprise Security Zone
L4	Gateways, servers (ops, mgmt)	IDMZ
L3	Supervisory controls	Industry Security Zone
L1	Device control	Zone
L0	Sensors, Actuators, Robots, etc	(cells or zones)

- Moving to cloud breaks hierarchical structure and security zone since PLCs were at L1-L2, now they could be at any level.
- So, the network architecture changes – perhaps is simplified

Call To Action – Interested?

We are looking for collaboration on all things virtualization in Industrial Networks.
Starting with evaluating the Problem statement and requirements

- How to design network aspects of a virtual PLCs? – the address, verifications, authentication, security
- How to use of Edge compute networks? Or disaggregate security zone concept
- How to maintain safety of PLC operations?
- What type of Industry network could emerge?
- How to apply IETF technologies to Industrial networks?

Coordinates to learn more:

- URL: <https://datatracker.ietf.org/doc/draft-km-iotops-iiot-frwk/>
- When: 10:00-12:00 Thursday Morning session I - March 24
- Home for discussions: IOTOPS@ietf.org

Thank you