

# 引入TSN对工业4.0意味着什么

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SECURE CONNECTIONS  
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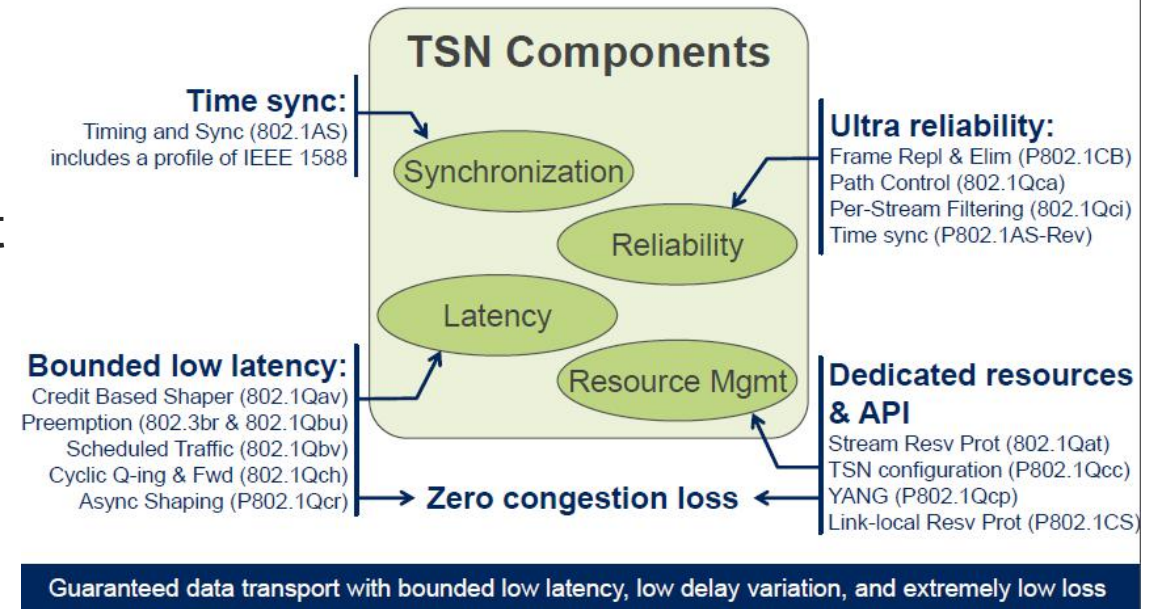
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# TSN时间敏感网络概述

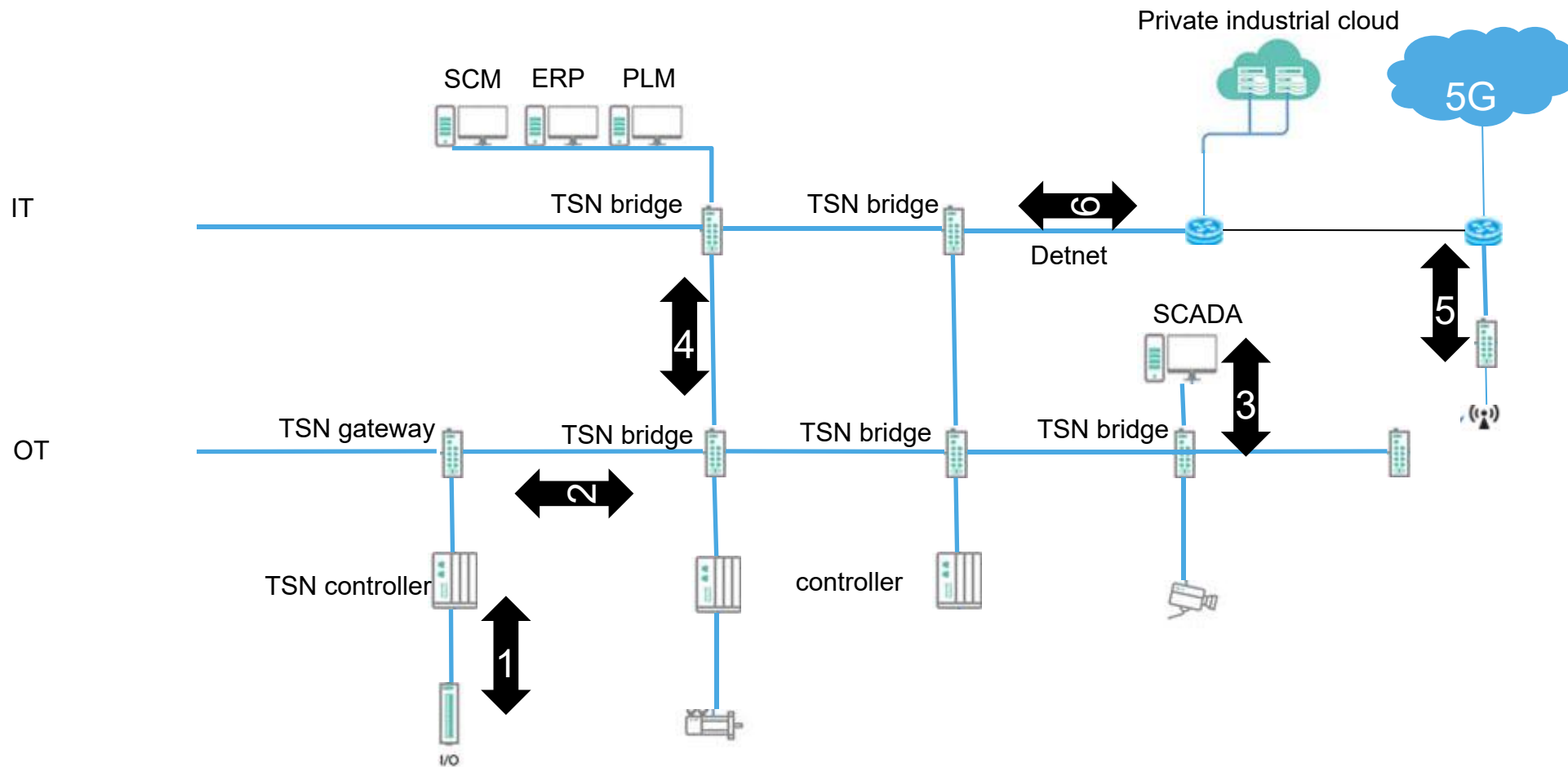
- TSN is all about Layer 2 of the OSI model and is an extension to IEEE 802.1 to make Ethernet
  - Deterministic
  - More Robust and Reliable
- Time Sensitive Networking (TSN) refers to a set of standards that are being driven and developed by the IEEE 802.1 Time Sensitive Networking Task Group.
  - <http://www.ieee802.org/1/pages/tsn.html>
- The charter of the TSN TG is to provide deterministic services through IEEE 802 networks, i.e., guaranteed packet transport with bounded latency, low packet delay variation, and low packet loss.



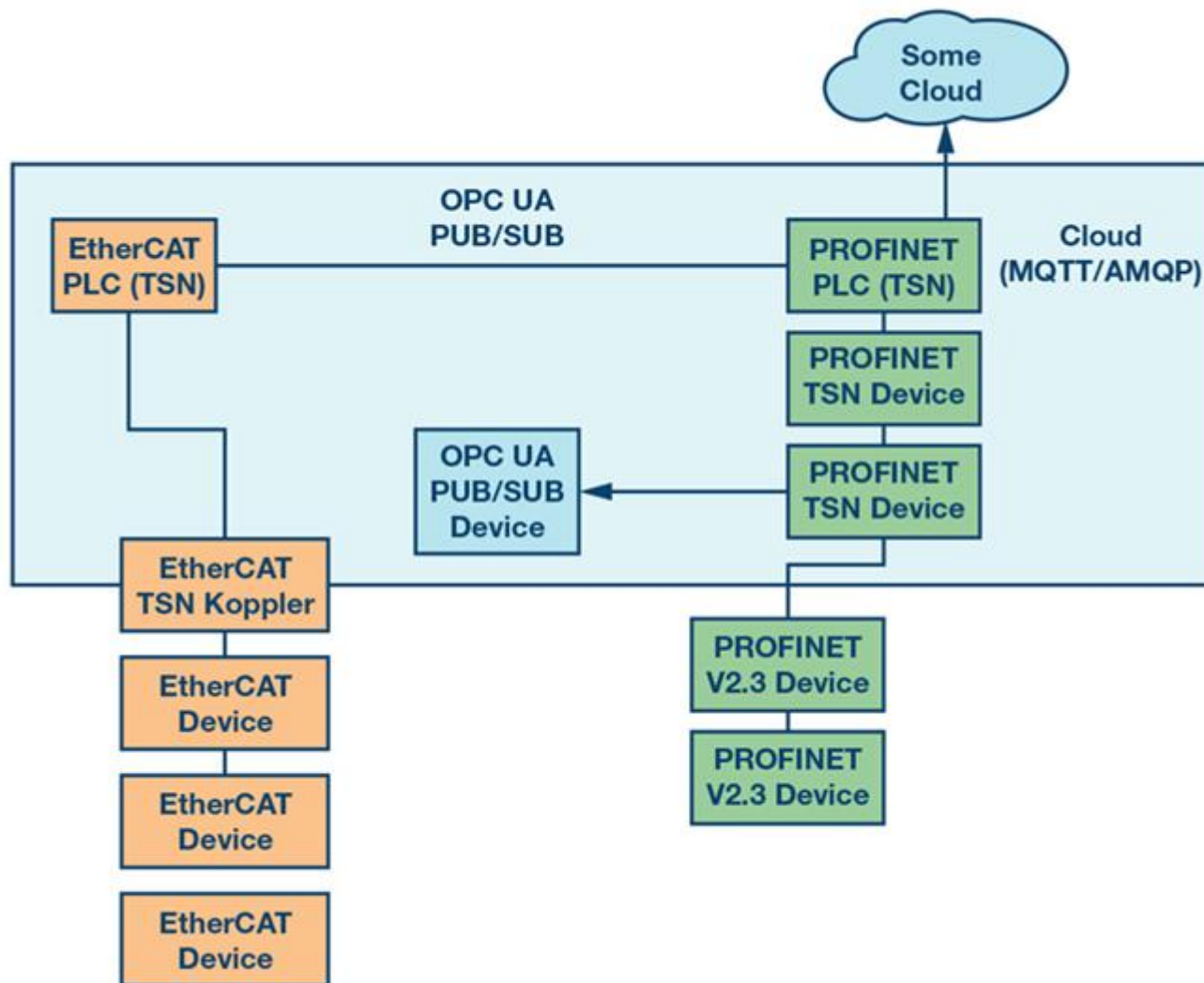
# 工业 4.0 与 IOT



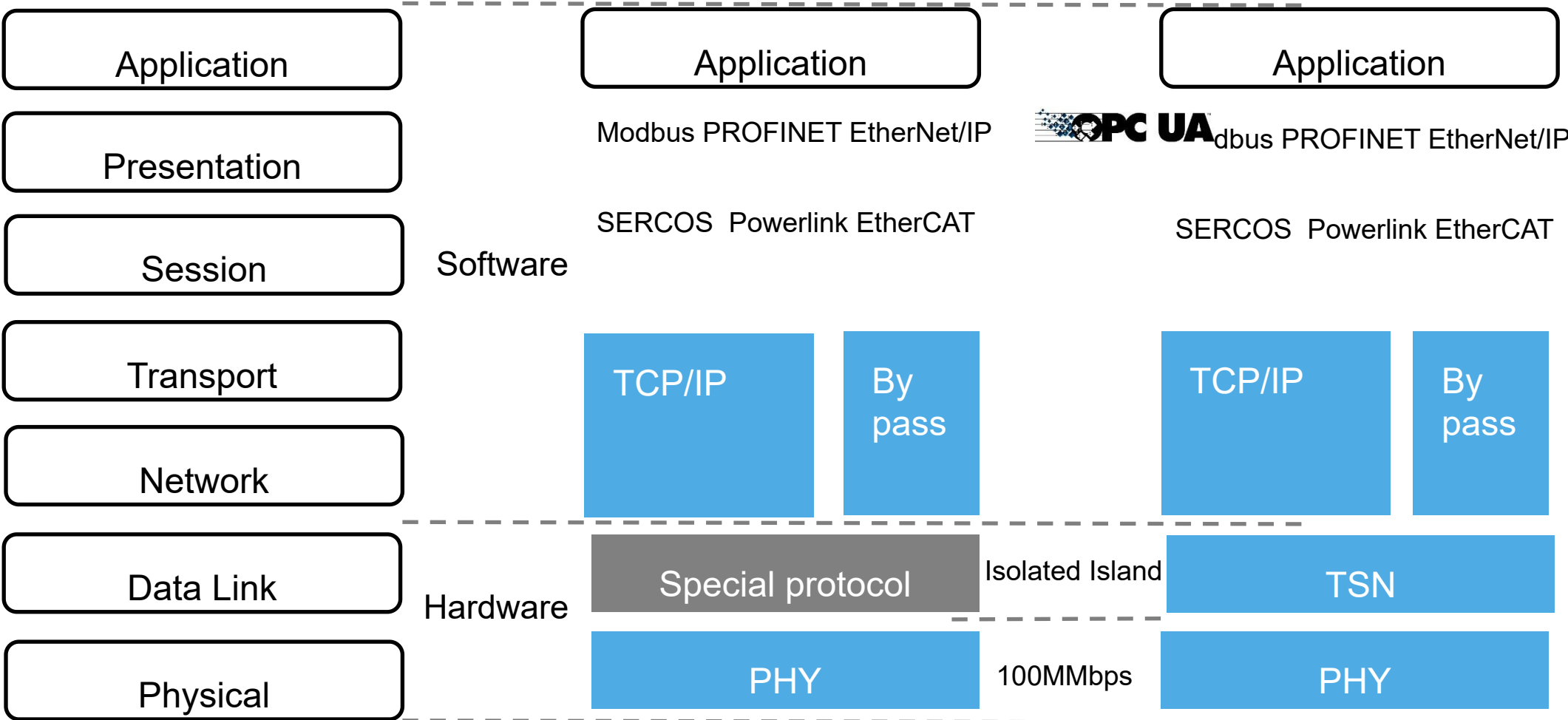
# TSN在工业物联网网络中的位置



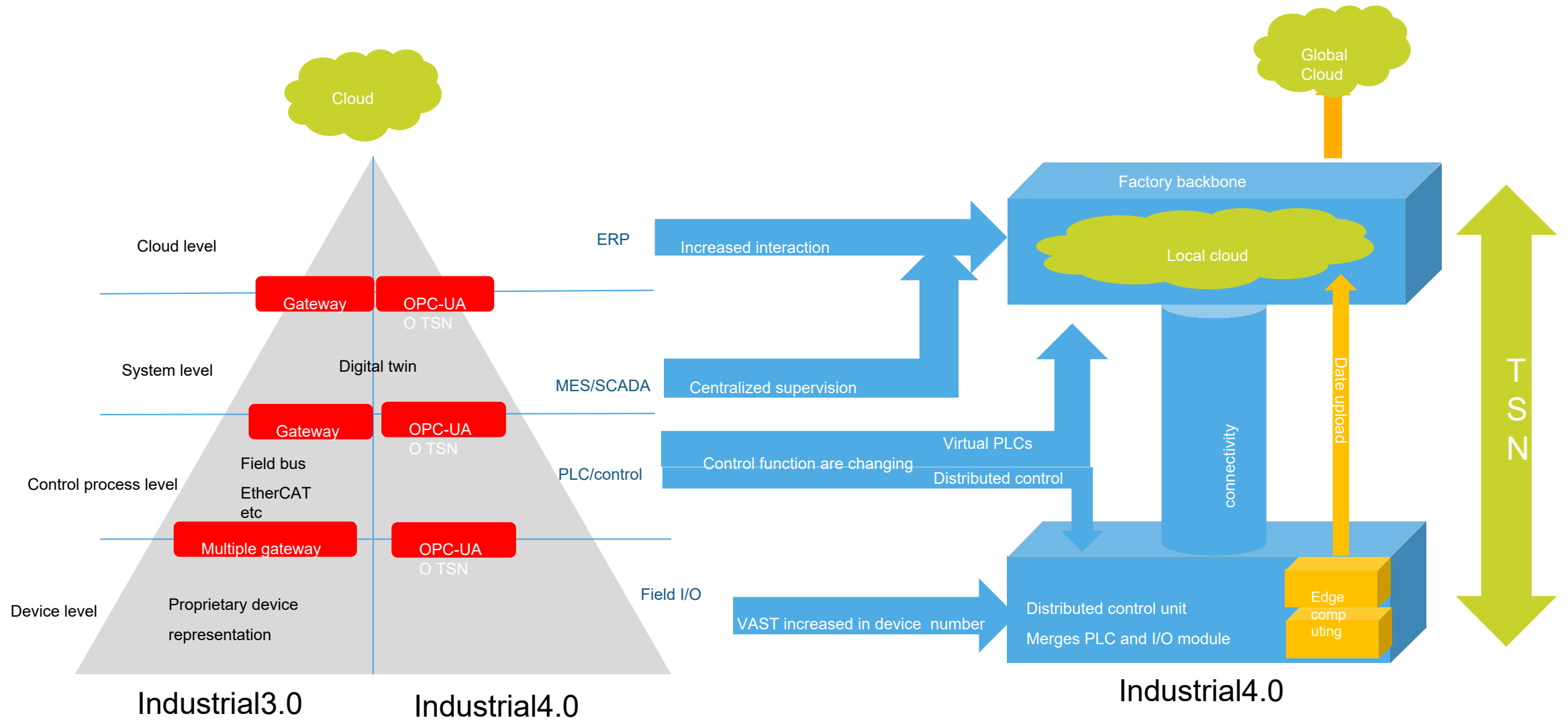
# TSN与现有工业现场以太网的共存，目前存在的问题



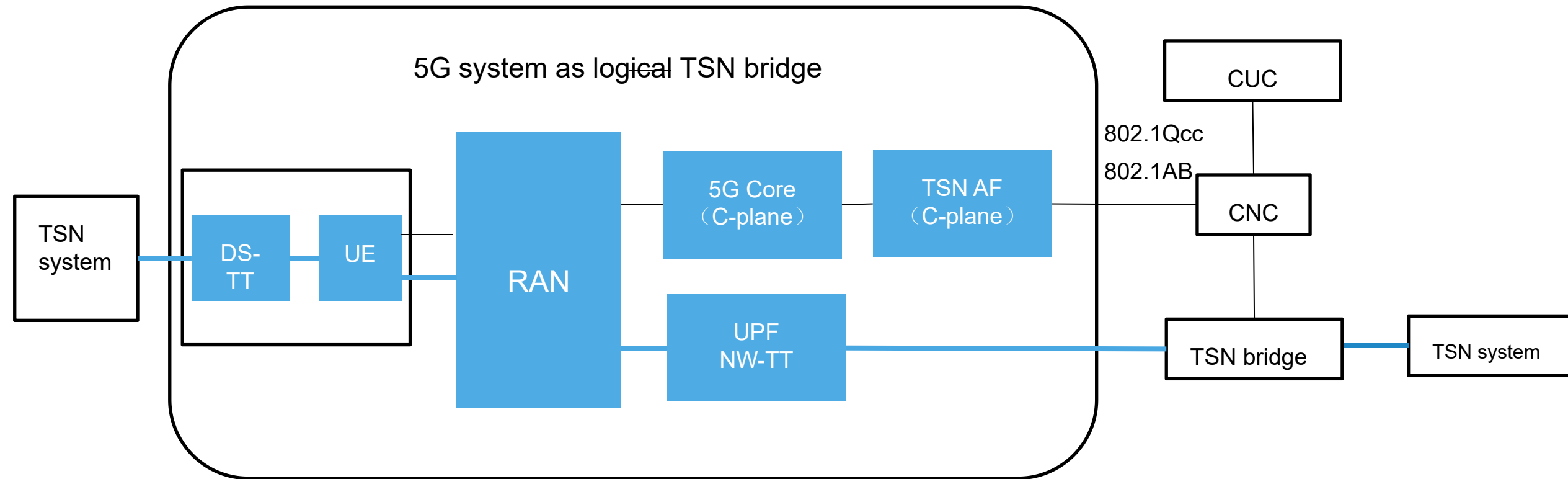
# OPC-UA OVER TSN 加速工业4.0



# TSN + IOT+ 边缘计算助力工业4.0



# TSN + 5G/WIFI 提升工业4.0



CNC: centralized network configuration

UE: User equipment

NW-TT: network-side TSN translator

UPF: user plane function

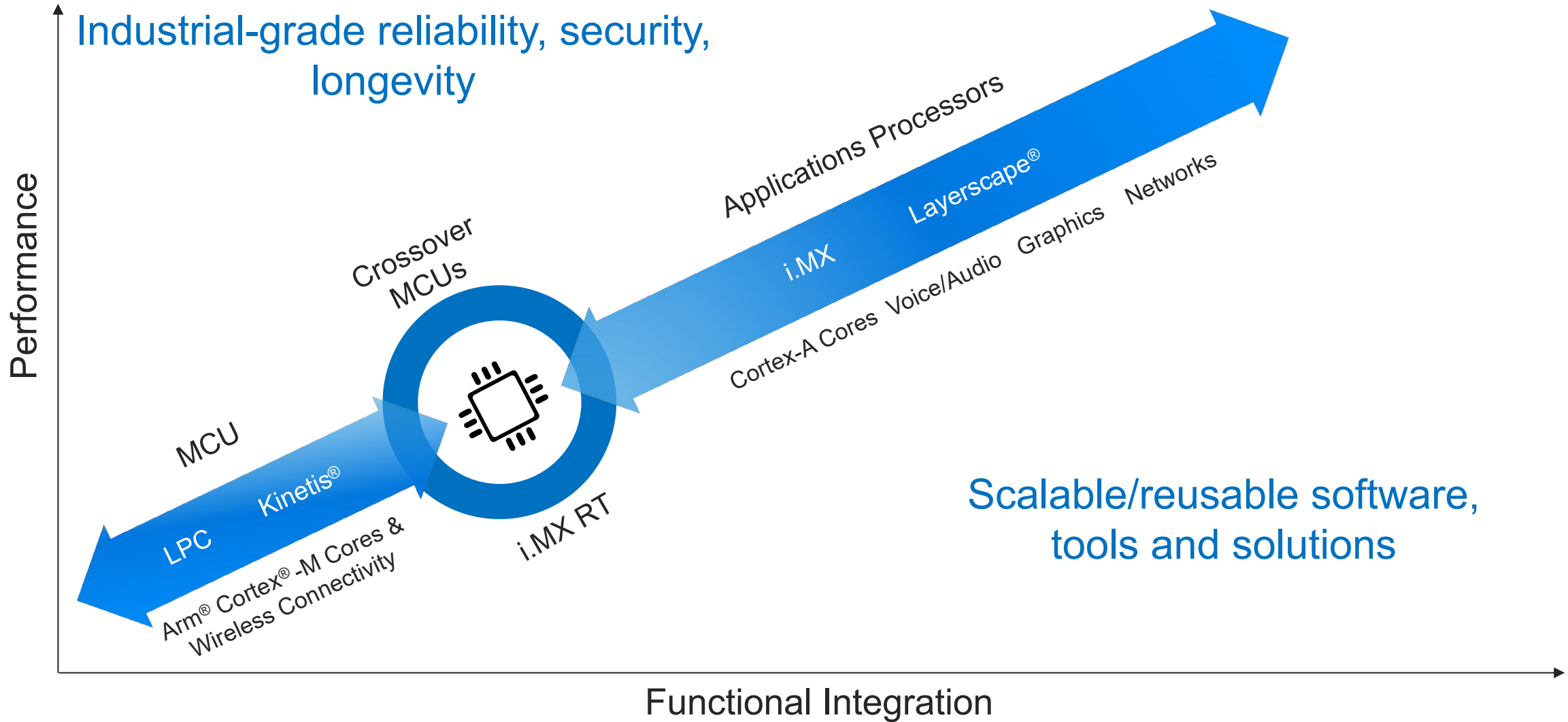
CUC: centralized user configuration

DS-TT: Device-side TSN translator

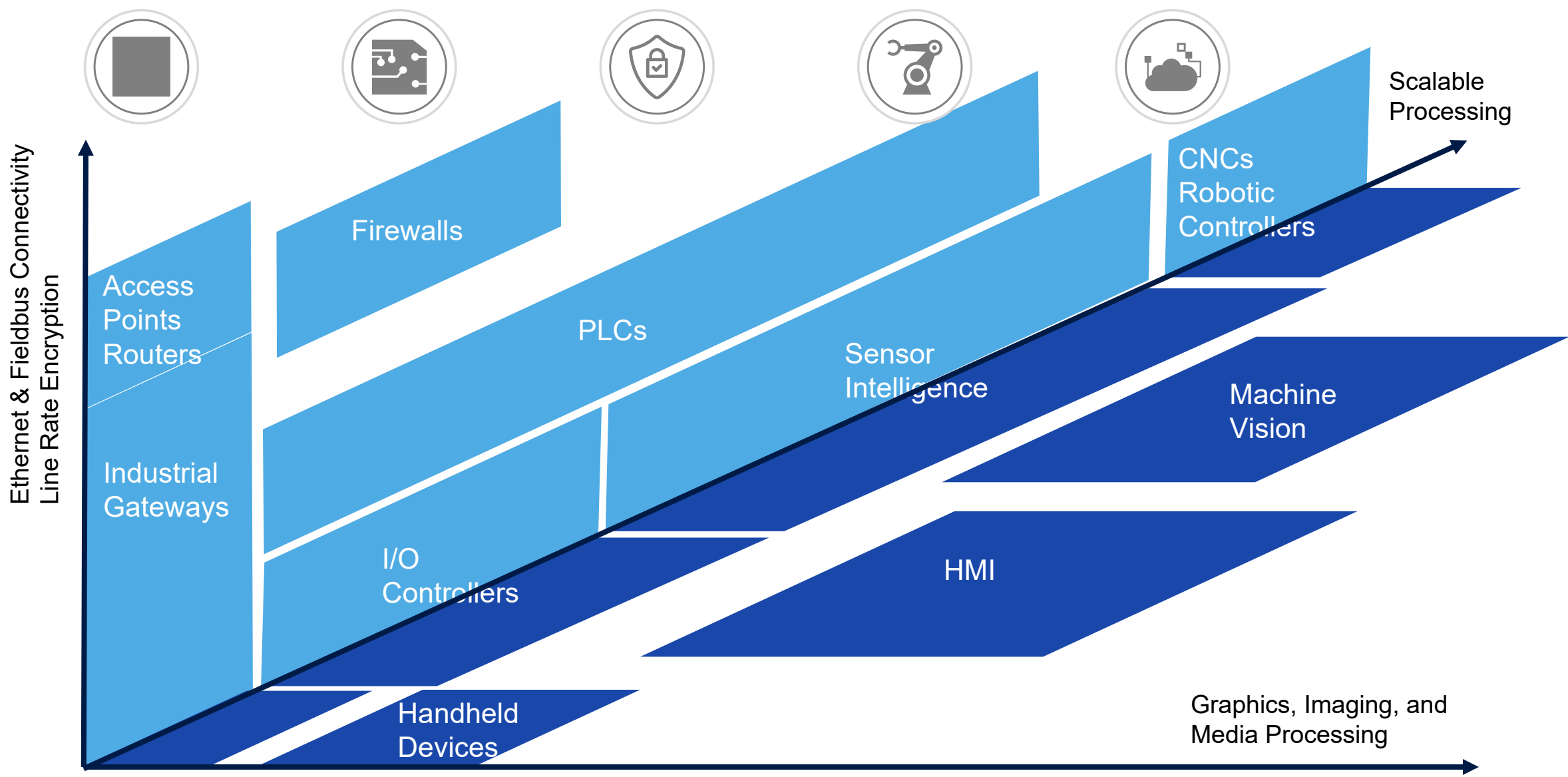
AF: application function



# NXP 丰富的工业及IOT产品



# NXP 产品覆盖广泛的工业应用



# NXP 丰富的TSN 产品涵盖各种应用场景



Spans multiple segments – Automotive, Factory, Process, Building, Infrastructure

Unified TSN API software support to the Application Layer

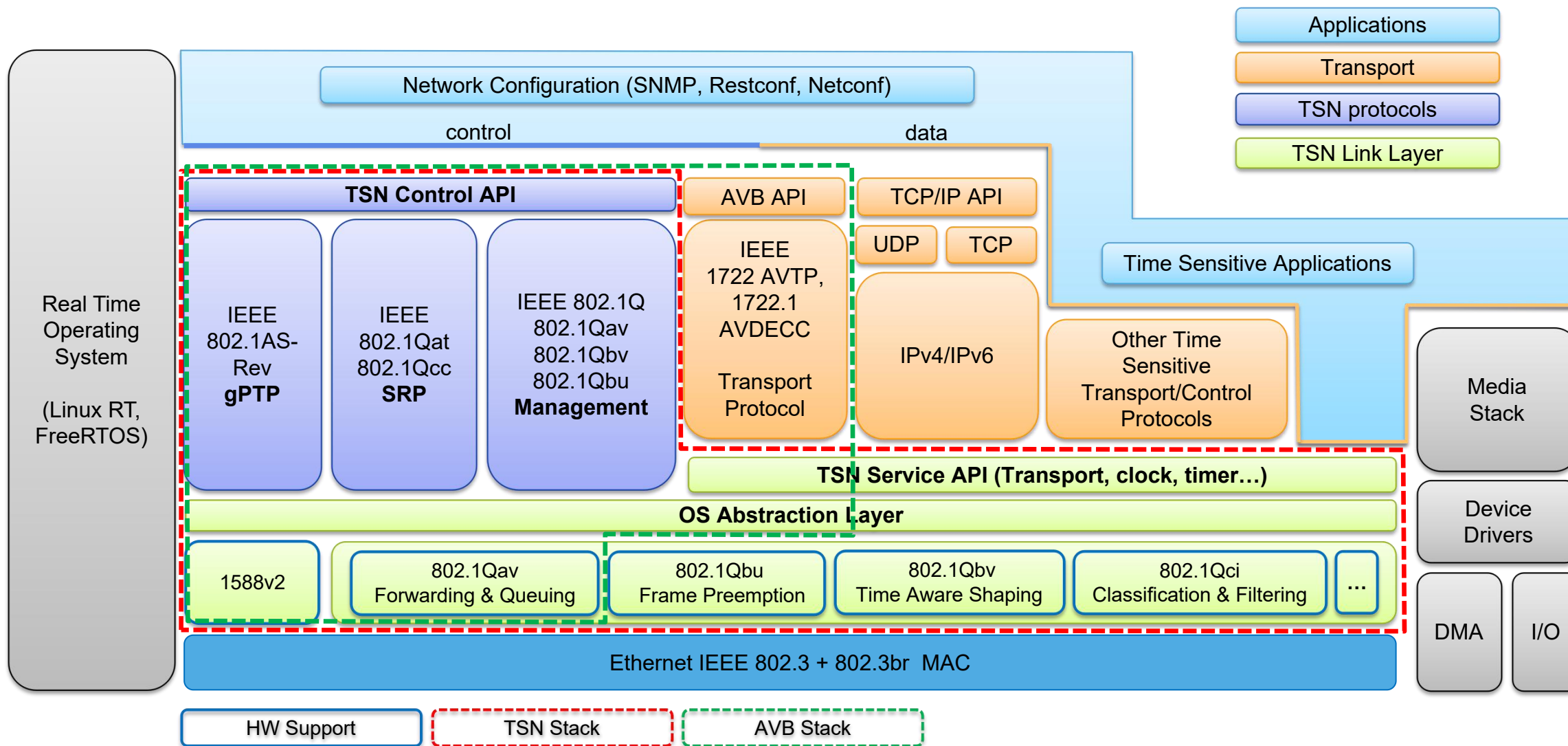
Scales from low-cost MCUs to feature-rich MPUs

- **i.MX RT1170** Crossover MCU (integrated TSN MAC) for drive control and low-cost HMI
- **i.MX 8M Plus** applications processor (integrated TSN MAC) for rich HMI and machine learning
- **LS1028A** processor (integrated TSN switch) for daisy chain applications



# NXP TSN 软件开发包

NXP官网: [www.nxp.com.cn](http://www.nxp.com.cn)





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