

April 22nd, 2021

WUHAN

QUALCOMM

QUALCOMM Demos at Hannover Messe 2021

All(Alliance of Industrial Internet) #16 plenary Spectrum WG meeting

Agenda

- IOT
- Smart factory
- Smart campus
- Robotics
- Vision



Accelerating Digital Transformation through IoT

- We're building **compute and connectivity technologies** for the intelligent age and transforming industries and lives.
 - Camera
 - Logistics/Warehousing
 - Robotics
 - Retail
 - Healthcare
 - Manufacturing
- Product groups
 - Software solutions for Industry 4.0 and Internet of Things, IoT, Industrial Internet of Things, IIoT
 - Components, systems for the Internet of Things, IoT in industrial applications



https://www.youtube.com/watch?v=C9R_KPfHfFc

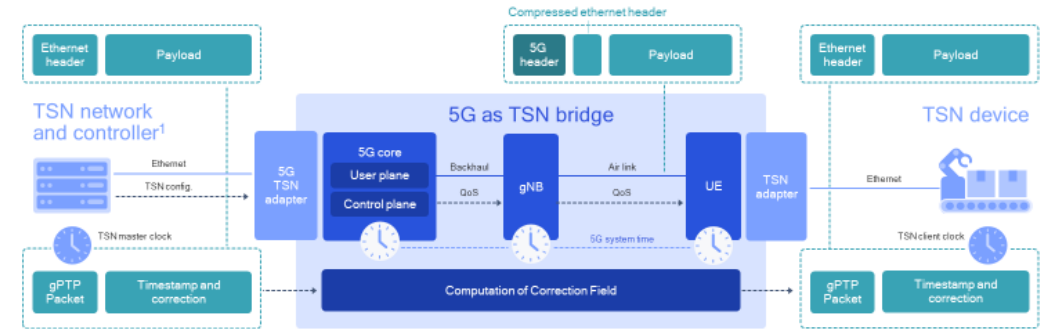
Smart Factories

- The global **industrial** sector is undergoing a significant digital transformation with help from our **5G** technology.
- Live over-the-air demonstration of upcoming 5G industrial IoT capabilities such as **time sensitive networking (TSN)** and **enhanced ultra-reliable low latency communication (eURLLC)**.
- Product groups
 - 5G Infrastructure
 - 5G applications

<https://www.youtube.com/watch?v=TKlIKYpUtHw>

5G brings support for Time Sensitive Networking (TSN)

A requirement for industrial automation and many other industrial IoT applications



1. The TSN network is controlled by a Central Network Controller (CNC). TSN and CNC are defined in a set of standards specified by IEEE 802.1.

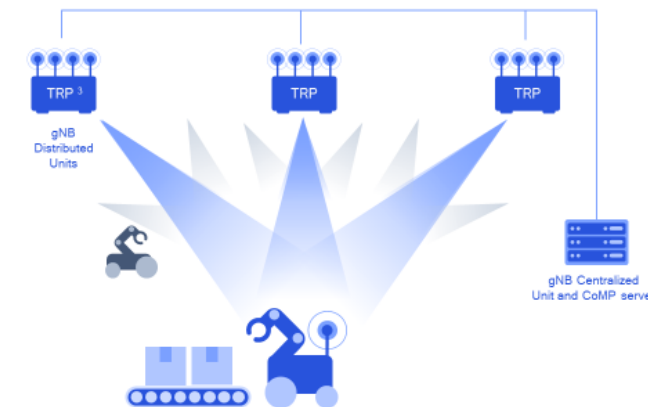
5G TSN adapters allow the 5G system to act as a TSN bridge with Ethernet connectivity

Mapping of TSN configurations to 5G QoS framework for deterministic messaging and traffic shaping

Precise time synchronization with generalized Precision Time Protocol (gPTP) at microsecond level

5G CoMP achieves ultra-reliability

Spatial diversity for eURLLC¹ to reach 99.9999% reliability²



1. Enhanced ultra-reliable low latency communication; 2. A performance requirements for communication service availability in 3GPP TS 22.104; 3. Transmission/Reception Point

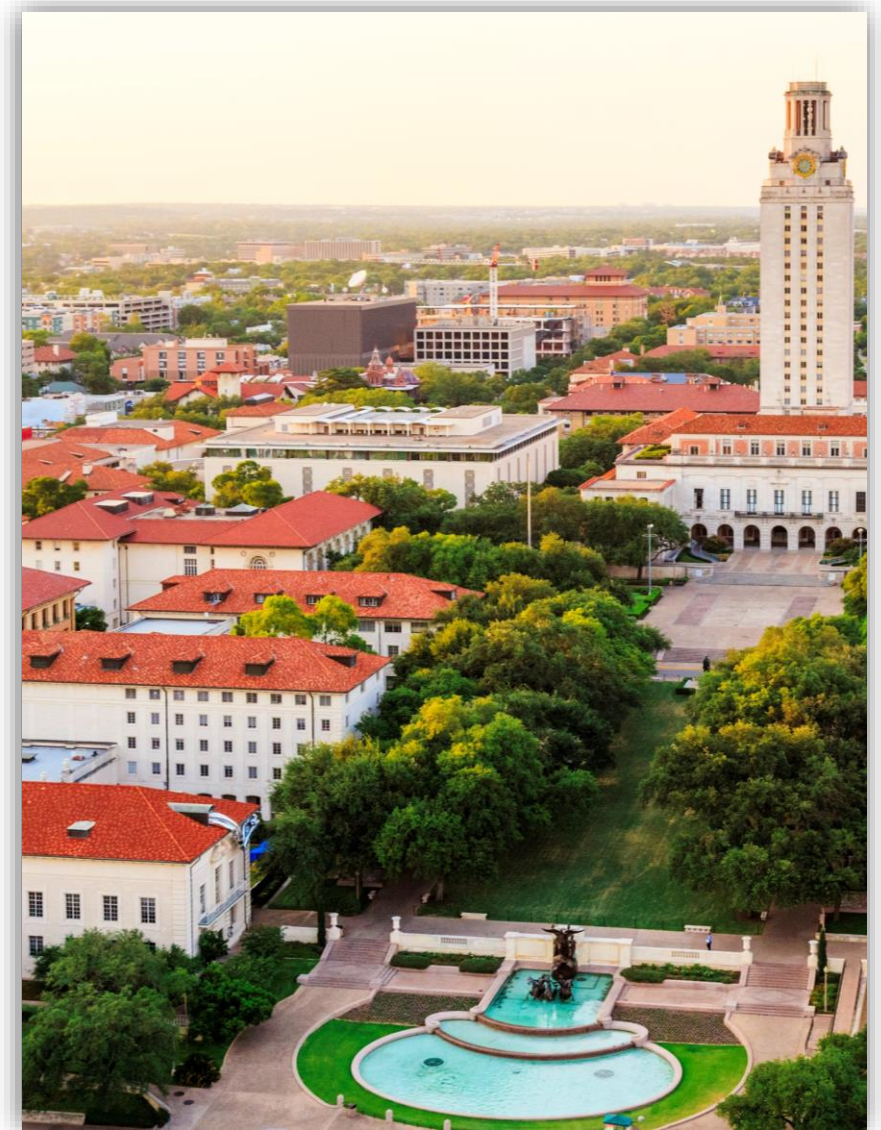
Coordinated Multi Point (CoMP) creates spatial diversity with redundant communication paths

- Other diversity methods such as frequency and time diversity are not sufficient for URLLC
- CoMP is facilitated by denser deployment of small cells with high bandwidth backhaul

Smart Campus

- Transforming where we work: Qualcomm Smart Campus
- We're collaborating with industry-leading solution providers to transform our facilities into a world-leading smart campus, with innovations like [5G network](#), [smart transportation](#), [solar-powered smart bins](#) for intelligent waste management, [smart asset tracking](#), and more – replicating a city environment in a campus – that can be deployed across any smart connected space or city.

<https://www.youtube.com/watch?v=BeTPgrmbIpM>



5G- and AI-enabled Robotics

- When you combine the capabilities of 5G with precision robotics, advancements in AI, smart manufacturing, and Industry 4.0, you unlock brand new opportunities that can transform not only our daily lives, but innovation as we know it.
- Product groups
 - Programmable control systems for assembly, handling and robotics
 - Other control systems for assembly, handling and robotics
 - Machine integrated sensors, sensor systems and sensor modules for assembly, handling and robotics
 - Sensors for assembly, handling and robotics



<https://www.youtube.com/watch?v=eAvT52IJlGU>

Qualcomm Robotics RB5 Platform



- With the RB5 Platform, manufacturers will be able to design **future robotics** and **drones for enterprise, industrial and professional service applications**. The world's **first 5G- and AI-enabled robotics platform** is designed to deliver powerful heterogeneous computing cutting-edge **connectivity**, and power-efficient **inferencing** at the edge for AI and machine learning.
- Packed with the **Qualcomm AI Engine** that delivers 15 TOPS, a dedicated Tensor Accelerator, and support for Linux, Ubuntu and the Robot Operating System (ROS) 2.0 (and more), the Qualcomm Robotics RB5 Platform supports **enhanced connectivity**, **robust security**, and **ultra-low power consumption** for the next generation of robotics.

https://www.youtube.com/watch?v=RArzm3h_0vg

Qualcomm Vision Intelligence Platform







- 15 years of experience and innovation has led us to the next generation of 360-degree cameras, [the Oncam C-Series](#): Oncam's most powerful and compact series powered by the Qualcomm Video Intelligence Platform.
- Product groups
 - Intelligent cameras, intelligent PC cameras, intelligent line cameras for image processing
 - Surveillance cameras for image processing
 - Other special cameras for image processing
 - Other sensors for image processing

<https://www.youtube.com/watch?v=BpAzweLFY8>



Thank you

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