5G RECORDS

5G Technology Enablers for Content Production – Part I

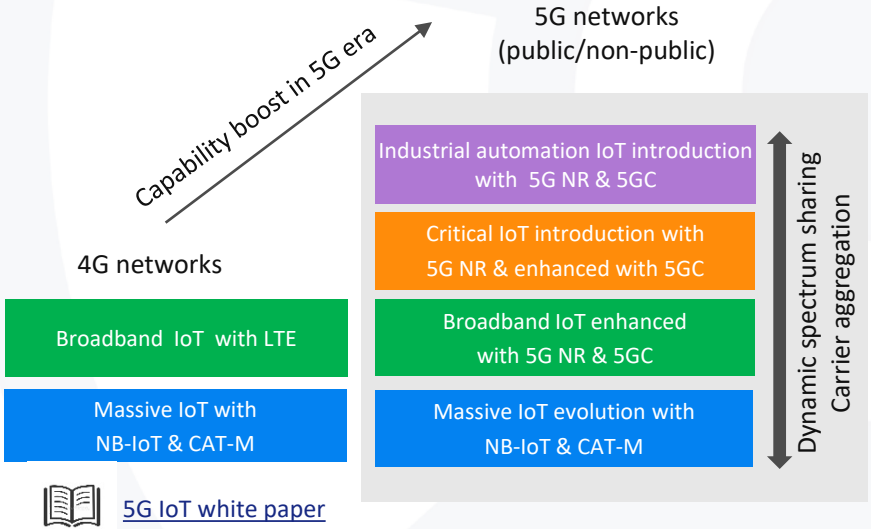
Thorsten Lohmar, PhD.
Ericsson

5G use cases

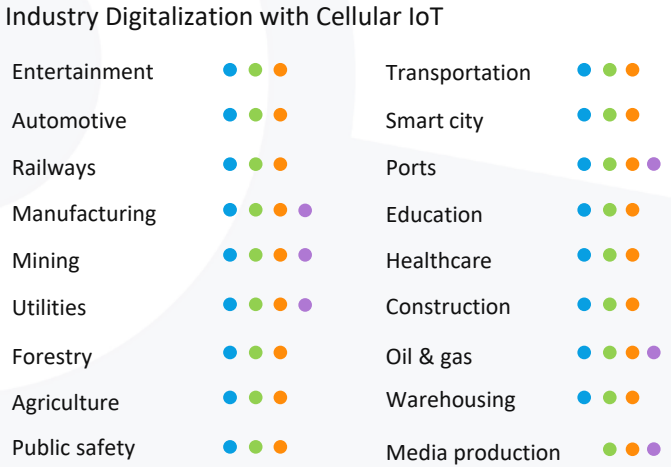

Massive MTC
LOGISTICS
SMART AGRICULTURE
FLEET MANAGEMENT
SMART METER
TRACKING
LOW COST, LOW ENERGY
SMALL DATA VOLUMES
MASSIVE NUMBERS
Critical MTC
TRAFFIC SAFETY & CONTROL
INDUSTRIAL APPLICATION & CONTROL
REMOTE TRAINING
REMOTE MANUFACTURING
Media Production
ULTRA RELIABLE
VERY LOW LATENCY
VERY HIGH AVAILABILITY
Enhanced mobile broadband
ENTERPRISE
HOME
MOBILE/ WIRELESS/ FIXED
VENUES
NON-SIM DEVICES
SMARTPHONES
VR/AR
BROADCAST DISTRIBUTION
4K/8K UHD

One 5G Network serving many demands

Massive IoT	Broadband IoT	Critical IoT	Industrial automation IoT
Low cost devices Small data volumes Extreme coverage	High data rates Large data volumes Low latency (best effort)	Bounded latencies Ultra-reliable data delivery Ultra-low latency	Ethernet protocols integration Time sensitive networking Clock synchronization service



5G IoT white paper



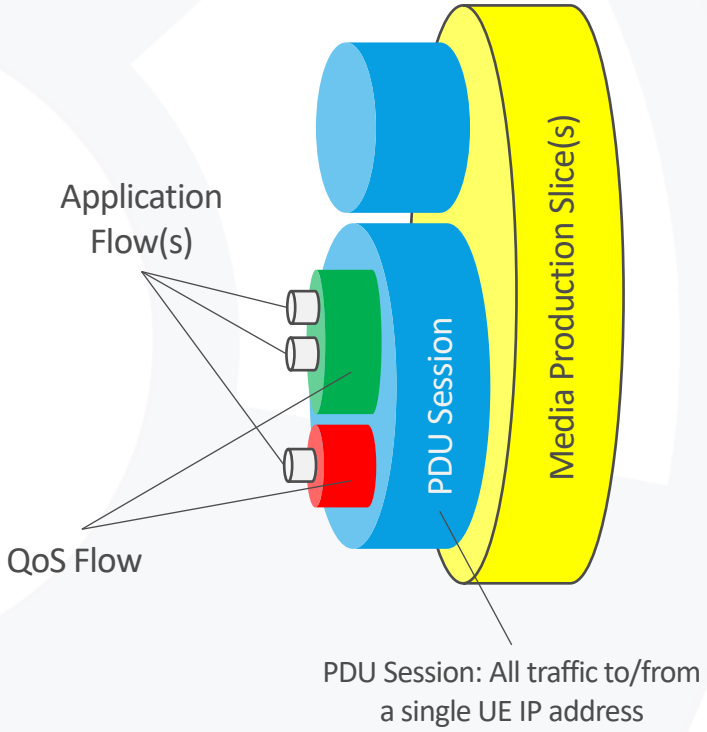
Ericsson Review: Critical IoT connectivity: Ideal for time-critical communications (link)

5G for Media Production

- High flexibility and different deployment options with 5G NPNs (Non-Public Networks)
- Effective network capacity management and use-case isolation with Network Slicing
- Traffic Separation and flow-based prioritization with the 3GPP URLLC and QoS features
- Precise device time synchronization
- Leverage technical capabilities and features driven by other industry verticals

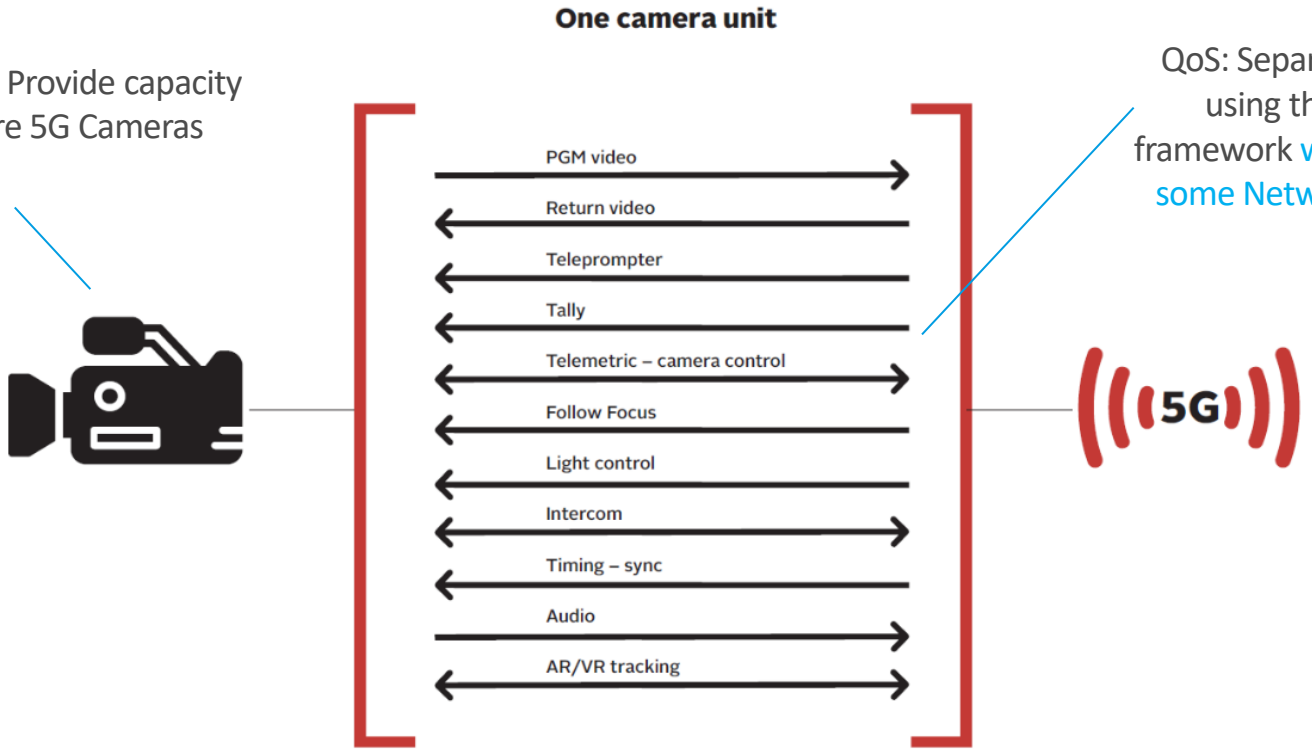
3GPP QoS and Network Slicing

- QoS Model: Application Flow base separation and prioritization
  - Allows differentiation of traffic characteristics like priority, packet error rates (PER) or packet delay budgets (PDB)
  - Supports guaranteed bitrate (GBR) and non-GBR for application flows
- Network Slicing: Industry Vertical separation
  - Facilitates use-case differentiation and secures the necessary capacity and performance during high load to fulfill service-level agreements (SLA)



Applying to Medi a Production

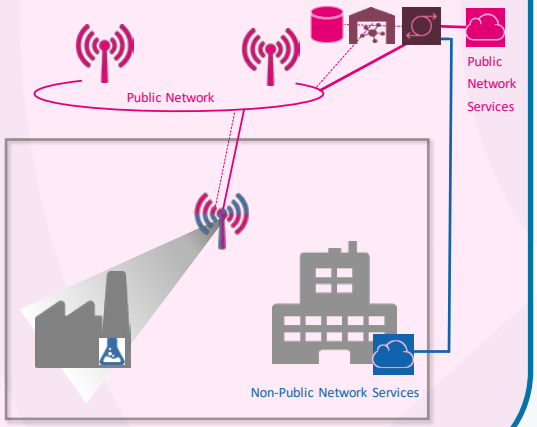
Network Slicing: Provide capacity to one or more 5G Cameras



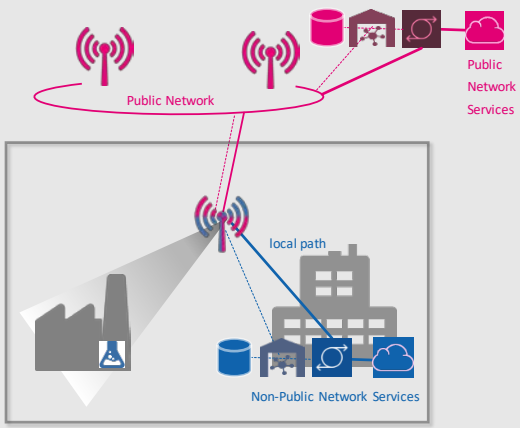
QoS: Separate flows using the QoS framework within one / some Network Slices

NPN Realizations

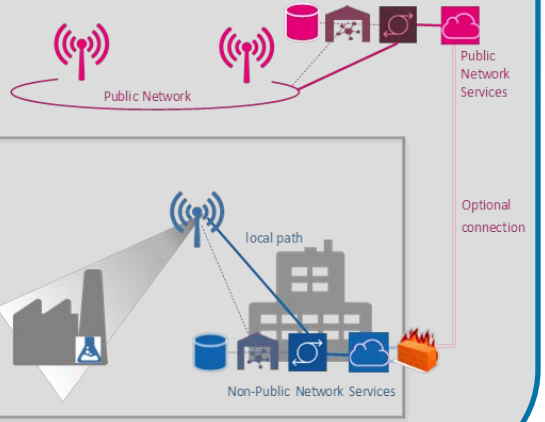
NPN in a public NW



Shared RAN (Control)

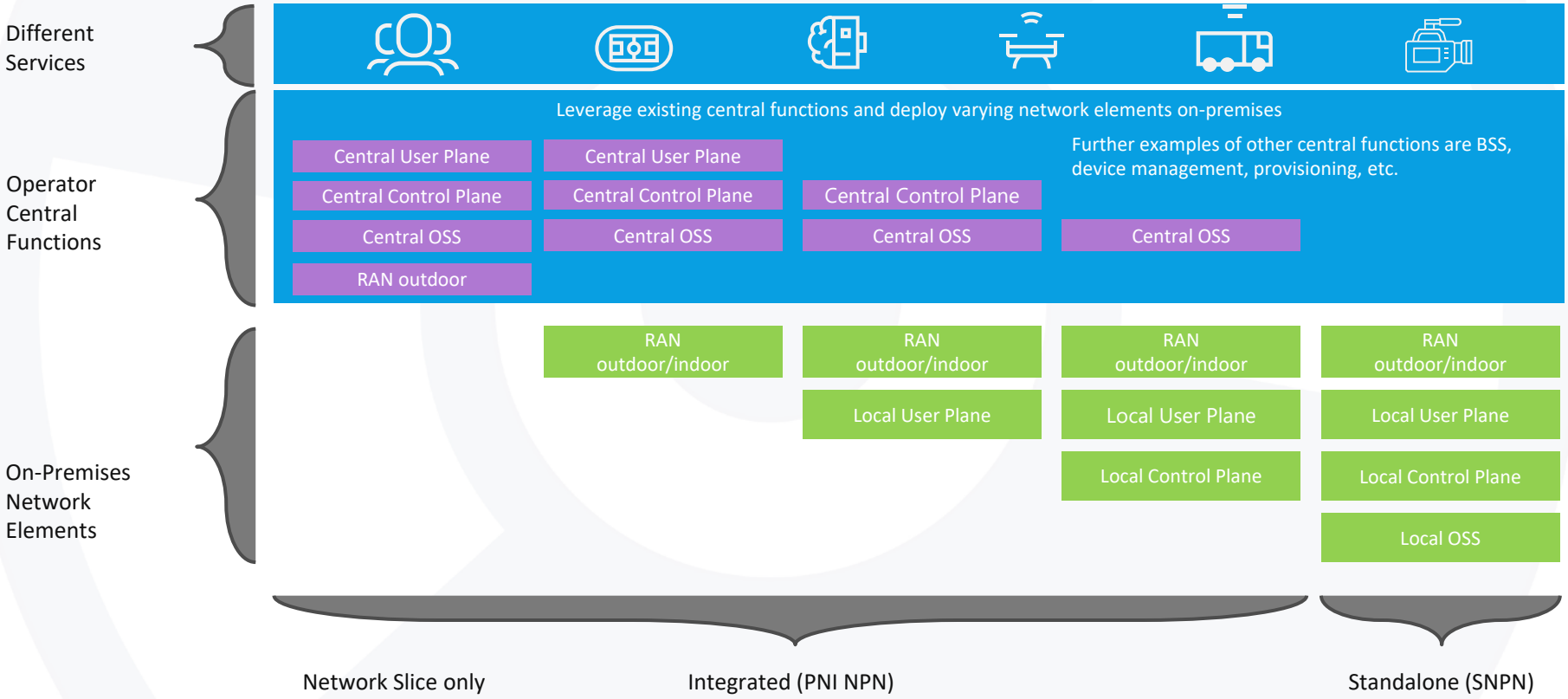


Standalone NPN



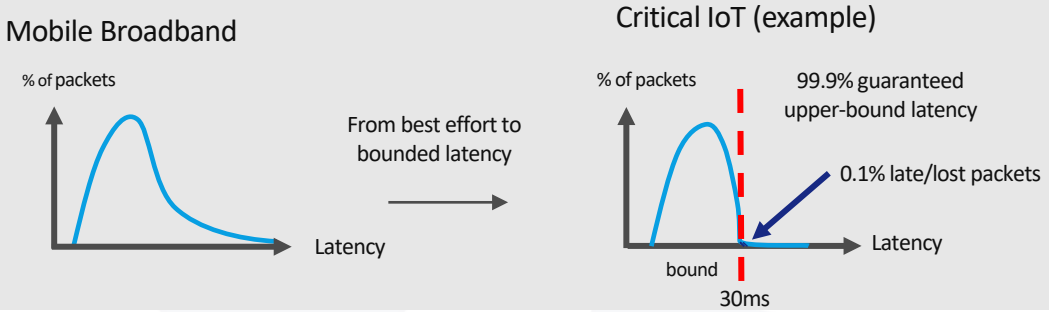
Source: 5G-ACIA

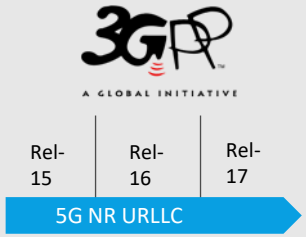
NPN Deployment Options

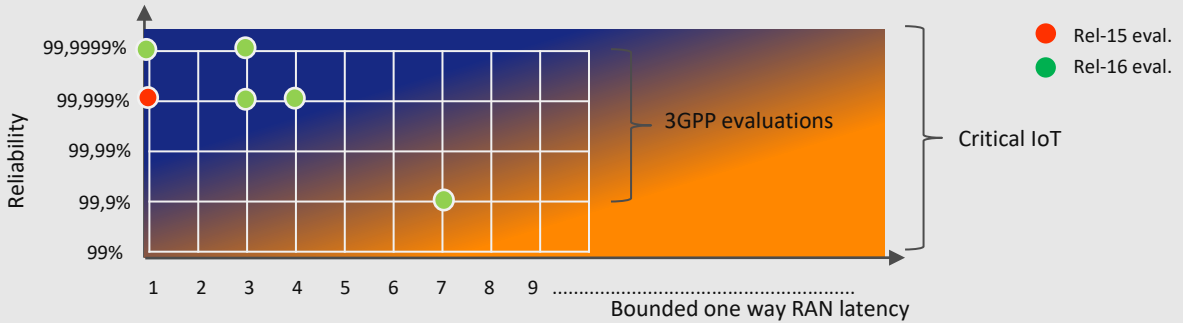


Critical IoT for Time-Critical Communications

Critical IoT enables data delivery within desired latency bounds with required guarantee levels

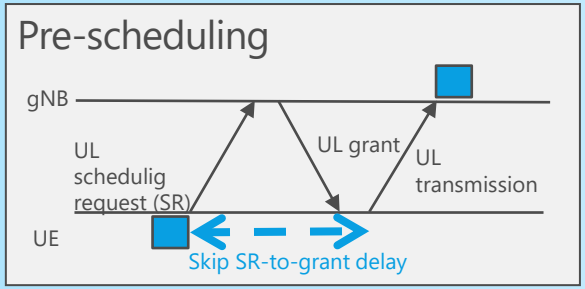






5G New Radio (NR) key features - Latency

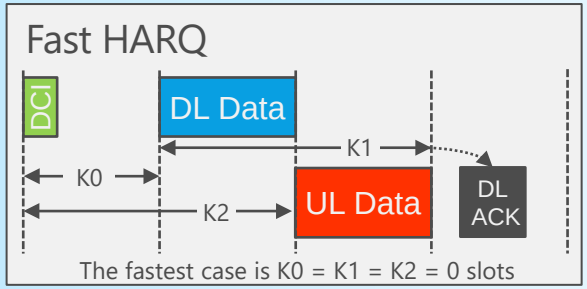
Pre-scheduling



Pre-allocation of transmission resources for critical data stream

Reduces channel access times for the transmission

Fast HARQ

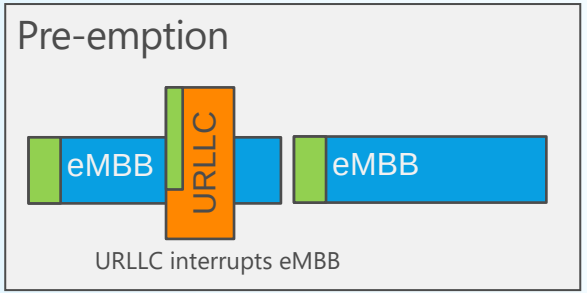


Faster processing time

Enables faster retransmissions

Enables faster channel access for dynamic resource allocations

Pre-emption



Critical data streams can interrupt best-effort data transmission

HARQ - hybrid automatic repeat request
gNB - 5G base station
UE - 5G device
UL / DL - uplink / downlink
eMBB - enhanced mobile broadband
URLLC - ultra-reliable and low latency communication

www.5g-records.eu

twitter.com/5g-records

5G RECORDS

5G-RECORDS Group

5G-RECORDS Channel

Thanks for your attention!
Any questions?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 957102