Showcasing the power of 5G devices for professional content production: the 5G-RECORDS approach

3rd COREnect Workshop: Microelectronics and connectivity: Europe going forward

Dr. Manuel Fuentes
R&D Manager
Fivecomm

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About us

- **SME** based in Valencia (Spain). Our offices are at UPV campus.
- **5G solutions** for the industry digitalization.
- We enable B2B market opportunities answering real industrial needs.

5 EU H2020 projects

5G INDUCE · 5G RECORDS · FUDGE-5G · 5G IANA · inenious

+10 Spanish projects

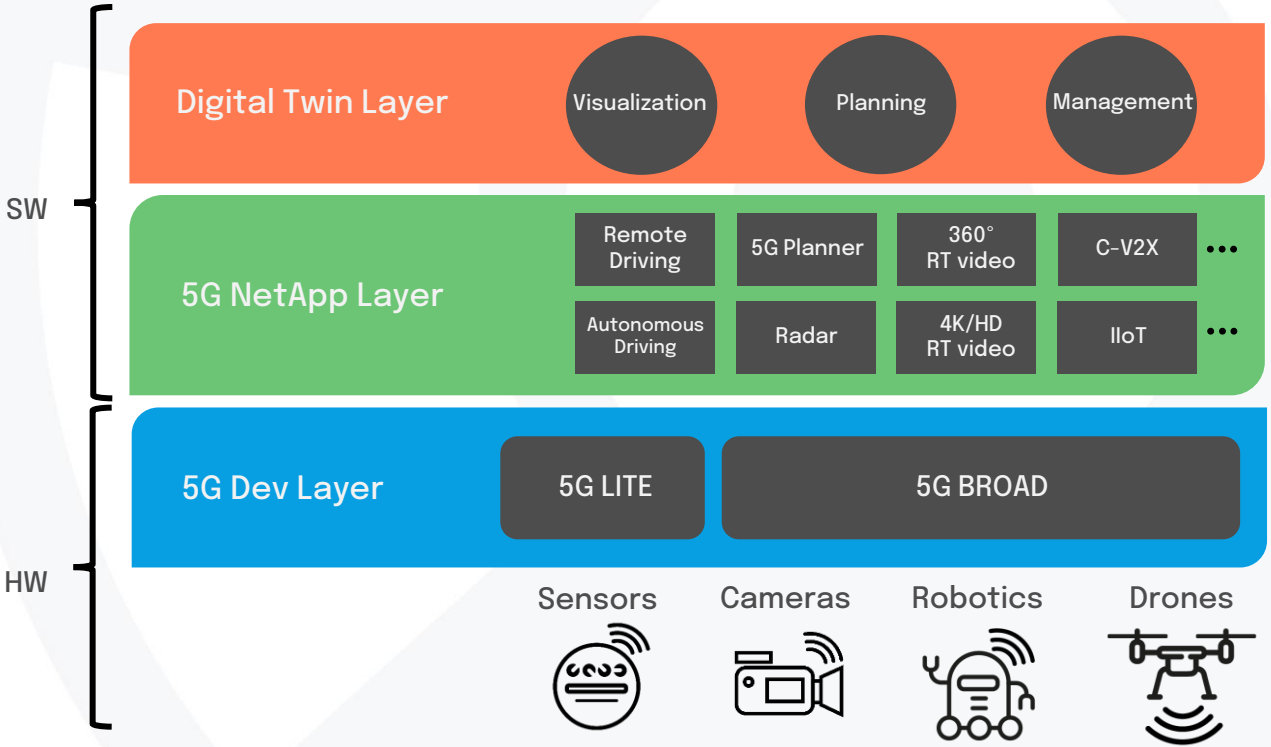
FERMAX · faurecia · FGV · ivo · valenciaport · orange · Telefónica · Ford · IDRICA · RED ELÉCTRICA DE ESPAÑA · cellnex · vodafone

We belong to...

6G SNS IA · 5G PPP · Network Europe · one6G

Our ecosystem

- **Architecture** overview:



+ 5G Services

- Consulting
- Radio planning studies
- Industrial solutions integration

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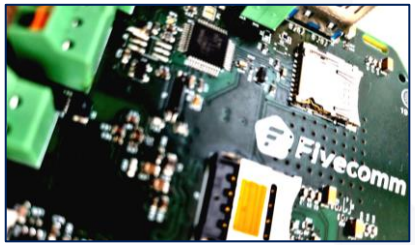
5G devices

- **5G modem** to provide high performance at low power.

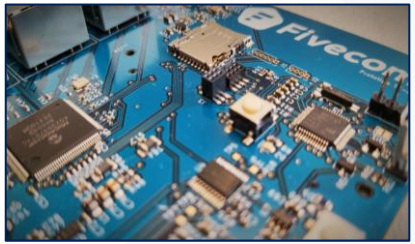
5G Dev Layer

5G LITE



First 5G-NR IoT device with MQTT globally

5G BROAD



Fits to any machine

5G Rel-15 SA validation

ERICSSON NTT HUAWEI Cumucore

Industry 4.0

Energy

Ports 4.0

5G Broad

- Designed for connecting any robot, drone, vehicle, camera, radar… to 5G public or private networks through **Ethernet** (1Gbps).
- Some characteristics:
  - Low power consumption
  - Light weight
  - Small form factor
  - Ultra low latency (8-10 ms RTT)
  - 4 (integrated/external) antennas in mid-band / 2 in low-band

Main features:

- **5G native**: Both 5G Non-Standalone (**NSA**) and 5G Standalone (**SA**) modes are supported.
- **Easy deployment**: install, plug, configure.
- **Customizable**: up to 6 antennas, USB interface…
- **Remote management**: SW platform to configure, monitor and perform updates remotely.

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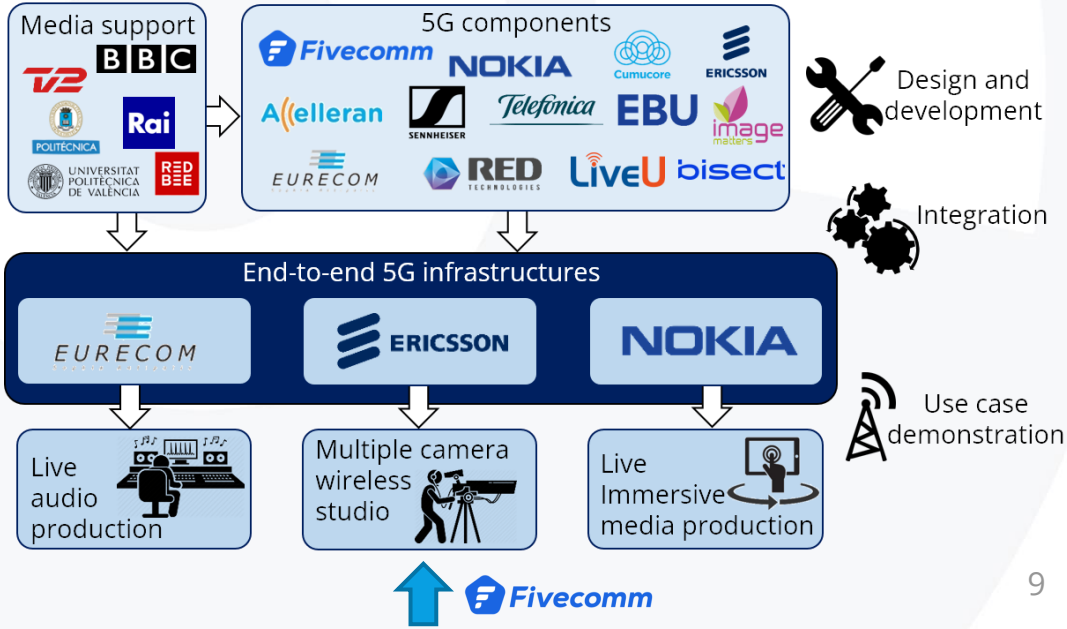
Application scenario: 5G-RECORDS

- 5G-RECORDS explores the opportunities that **5G components**, integrated in **Non-Public Networks**, bring to **professional media content production**.
- **3 end-to-end 5G infrastructures**
- **3 use cases**:
  - Live audio production
  - Multiple camera wireless studio
  - Live immersive media production
- **Duration**: *24 months*
  - Sept. 2020 – Aug. 2022



Use case: multiple camera wireless studio

- **Partners:** 5G (Ericsson, Fivecomm) Content production (TV2, Rai, BBC, EBU, image matters, bisect, LiveU)
- The best of an **IP studio** combined with super-fast and highly reliable **5G**.
- Goal:

> *To develop a complete production system that thanks to **5G NPNs** and time synchronization enables **remote** + **distributed** production and **remote** contribution scenarios*

- **2 scenarios**:
  1. Multiple cameras within a wireless production studio. ← Fivecomm
  2. Outdoor production scenario with 2 or more 5G-enabled cameras.
- **Requirements:**

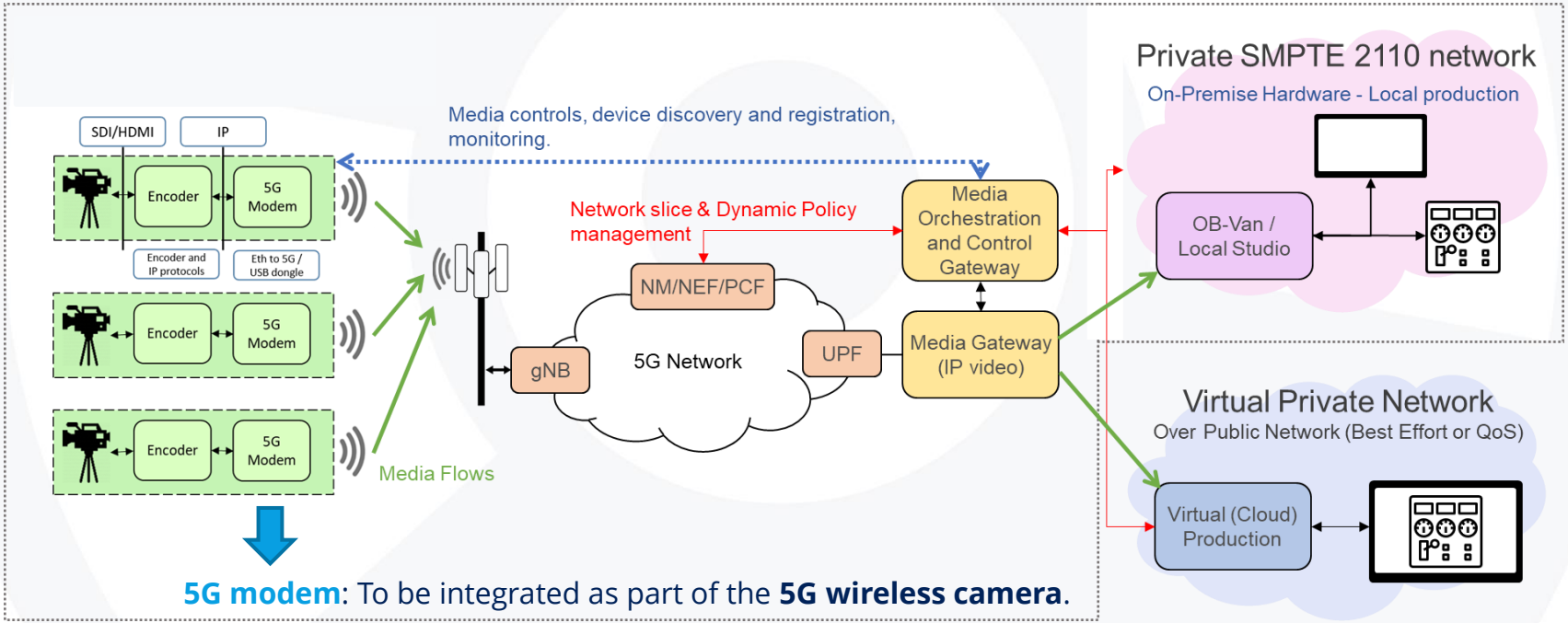
UL Throughput > 50 Mbps / camera

High reliability

E2E latency < 20 ms (50 fps)

Use case: multiple camera wireless studio

- **Scenario**:

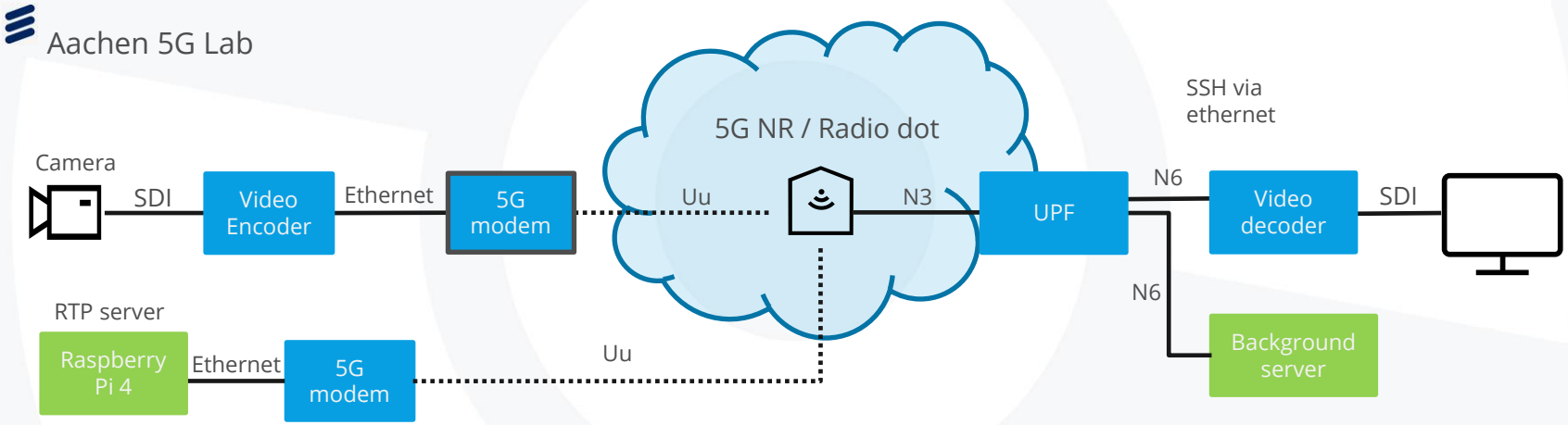


5G modem: To be integrated as part of the **5G wireless camera**.

- ***Phase-1***: backpack
- ***Phase 2***: form factor analysis and integration

Lab tests and measurements

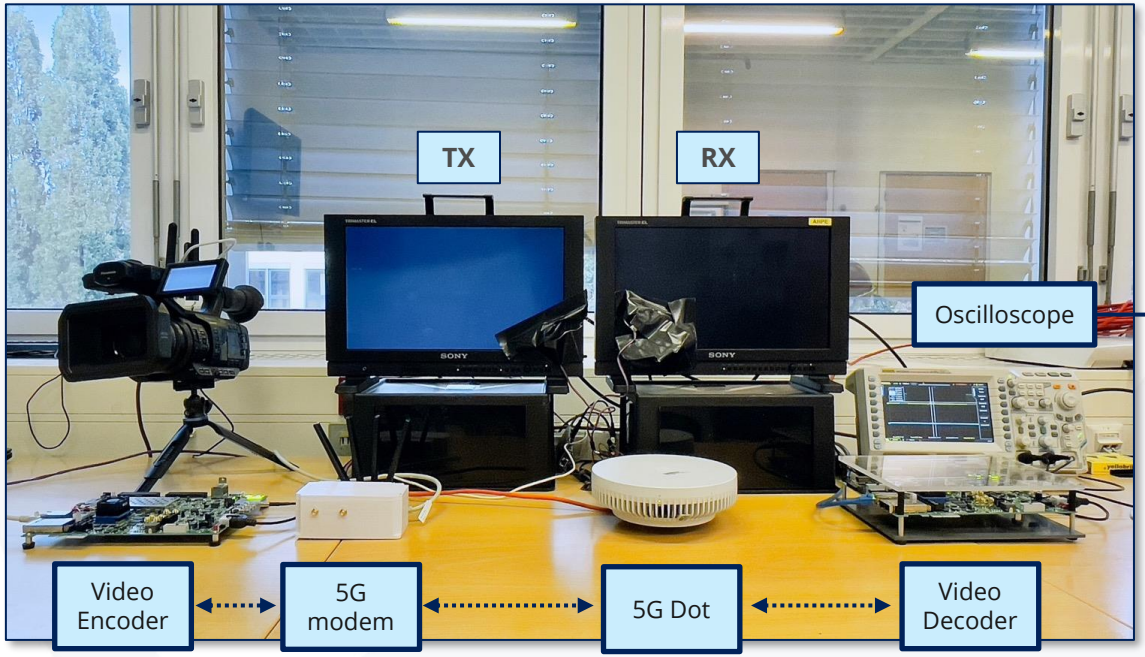
- Some preliminary tests already done in Ericsson lab (Aachen, Germany).



- **Key activities**:
  - Video encoder/decoder and 5G modem integration.
  - 5G and E2E latency measurements.
  - Stream availability and packet loss under several conditions.

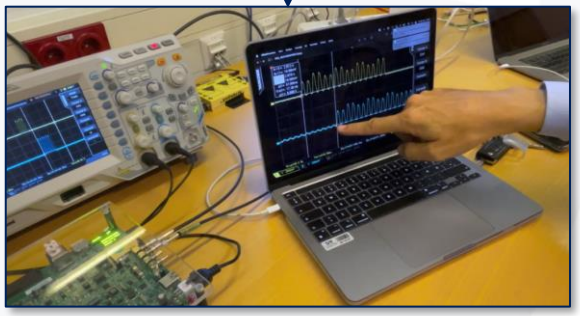
Lab tests and measurements

- **Setup**:



Results:

- UL throughput = **82 Mbps**
  (100 MHz BW).
- 5G latency = **10 ms (RTT)**
- E2E latency = **46 ms**
  (10 Mbps @ 50 fps)



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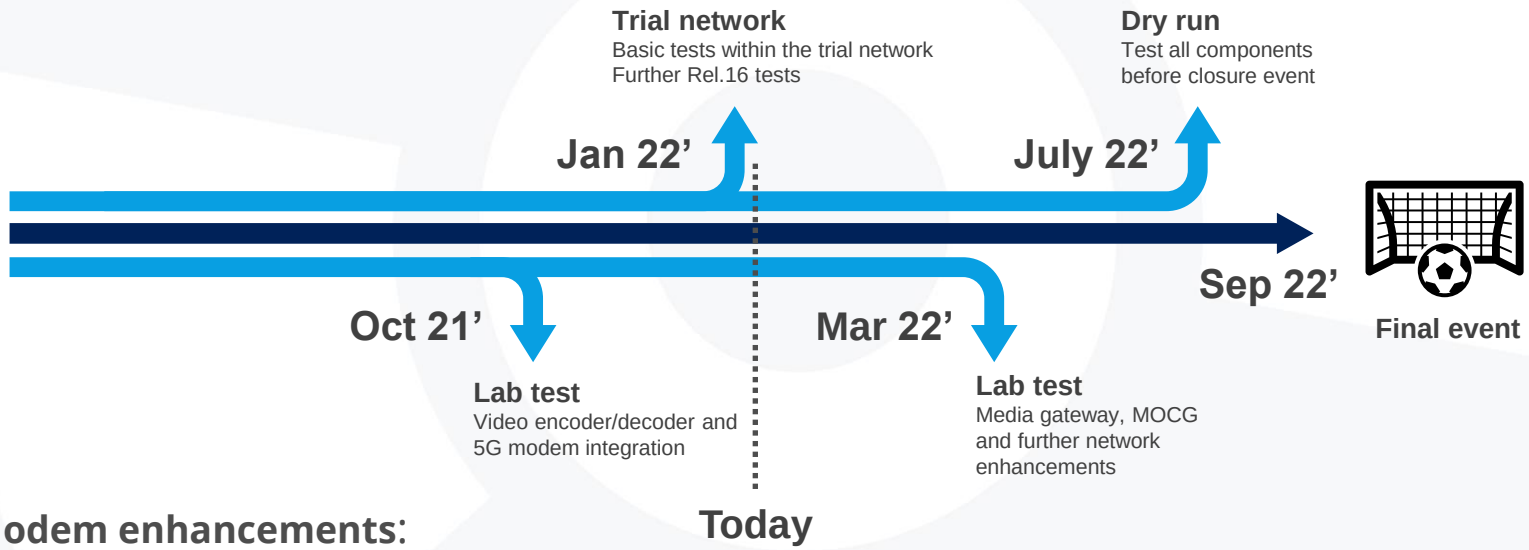
Future work

- **Setup**:



- **Modem enhancements**:
  - HW upgrades
  - Encoder integration
  - Rel-16 implementation

www.5g-records.eu

twitter.com/5g-records

5G RECORDS

5G-RECORDS Group

5G-RECORDS Channel

Thank you!

Fivecomm

manuel.fuentes@fivecomm.eu

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