

## NetworkEurope SME Working Group

### SME Success Story – October 2022



#### Fivecomm

Thanks to 5G-PPP projects such as FUDGE-5G, Fivecomm has developed the **5G BROAD** router designed for connecting user devices to 5G networks through Ethernet or USB. It comes with an open operative system based on OpenWRT that permits any user to configure it and make changes in an easy manner. It has been integrated into the framework of several projects into multiple networks with different vendors, with NSA and SA, low-band and mid-band, being these projects the main testing framework for the product.



*Figure 1. 5G BROAD device developed at Fivecomm.*

In the 5G-RECORDS project, Fivecomm went one step further and provided a **portable 5G-connected device attachable to professional video cameras** for media production scenarios. The whole solution is formed by our 5G module, an NVIDIA Jetson Xavier as encoder, and an SDI video capture card, all enclosed in an ad hoc 3D printed case plugged to the camera. The device was successfully demonstrated in the wireless studio final trials in June 2022, proving its potential.



*Figure 2. 5G portable device for professional video cameras, used in the 5G-RECORDS trials.*

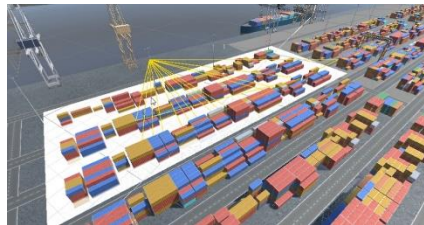
Fivecomm developed, in the framework of the Spanish Digitalization Programme, the first 5G SA devices for connecting water meters. The 5G devices read pulses generated by the meters and translate them to data integrated into the IoT platform of the water management company. These devices are the basis of the Fivecomm product called **5G LITE**, capable of connecting different smart or industrial sensors through configurable I2C, SPI, analog and digital interfaces. The device offers low power consumption, light weight, small form factor and high performance. A variant of this device is the **4G NARROW**, which instead of 5G

supports LTE NarrowBand IoT (NB-IoT) and CAT-M configurations, and low power wide area (LPWA) technologies.



*Figure 3. The 5G-LITE device (left) connected to a water meter (right) in a trial.*

Fivecomm also enhanced the capacities of its second product line, a **Radio Network Planning** tool, in the same regional framework, in a project conducted in the Valencia Port, working closely with multiple port players. In that project, the logistics data related to the container terminal of a main shipping company were integrated into our tool. This integration allows us to capture the changes in the planned area (height and position of container stacks) in a digital twin with a 3D model used to perform detailed ray tracing channel modelling. The consideration of the dynamicity of the scenarios allows us to provide accurate and updated estimations of the network performance in the area under study.



*Figure 4. 5G coverage study in a container terminal with the Fivecomm planning tool.*

Finally, our third main line of products is a **software platform** for 5G use cases including **NetApps** that have been developed, further enhanced, and integrated in the context of several 5G-PPP projects. A good example of this integration is the 5G-INDUCE project. In this project, we performed a trial to show the great potential of 5G network slicing through the development, integration, and validation of an AI-based human **gesture recognition NetApp** for controlling robots. The proof-of-concept showed end-to-end orchestration for full slicing life cycle support and radio resources partitioning, offering a key differential user experience to customers. A similar use case has been validated in the context of **INGENIOUS**, an EU-IoT project where we integrated the use of **haptic gloves and VR** glasses for controlling larger AGVs that usually operate outdoors. A third great example of our successful integration of NetApps into our software platform (and in other platforms for end-to-end orchestration) is the **5G-IANA** project. In this case, we are currently developing an end-to-end application for remote driving with 360 lidar and ML video-based object detection.



*Figure 5. Fivecomm software platform used in the context of 5G-INDUCE for remote control of AGVs.*