VICTORIA NETWORK

6G RESEARCH AND INNOVATION CENTER
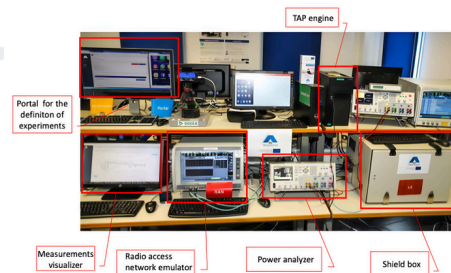victoria-network.eu

Victoria Network
Research in Advanced 5G & 6G

Victoria Network includes a wide variety of mobile networks and other technologies situated across various physical locations, but with a clear centralized control post in the Ada Byron building on the University of Malaga (UMA) campus.

TR UNICO I+D 6GSNS

Evolution and Projects

...- 2020

2023 – ..

Portal for the definiton of experiments

TAP engine

Measurements visualizer

Radio access network emulator

Power analyzer

Shield box

Nokia Airscale Micro RRH N78 (gNodeB)

Nokia Airscale Micro RRH B7 (eNodeB)

Main data center

Athonet EPC

Mobile edge

BBU Nokia Airscale BTS

Connected Car (Dekra)

Agro 5G (La Mayora)

Torremolinos

Victoria Network

UMA Campus

Larios Street (City Center)

Málaga Harbor

Q4Health · FED4FIRE FEDERATION FOR FIRE PLUS · Tecrail · 5Genesis · BroadWay · evolved 5G · 5G+ TACTILE · fidal field trials beyond 5G · 6G-Path · 6G-VERSUS

FLEx · EuWireless European Mobile Network Operator for Research · 5G · NRG5 · 5G-EPICENTRE · AFFORDABLE 5G · VICTORIA NETWORK 6G RESEARCH AND INNOVATION CENTER · SAND BOX · 6G SNS CO-OP

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Architecture
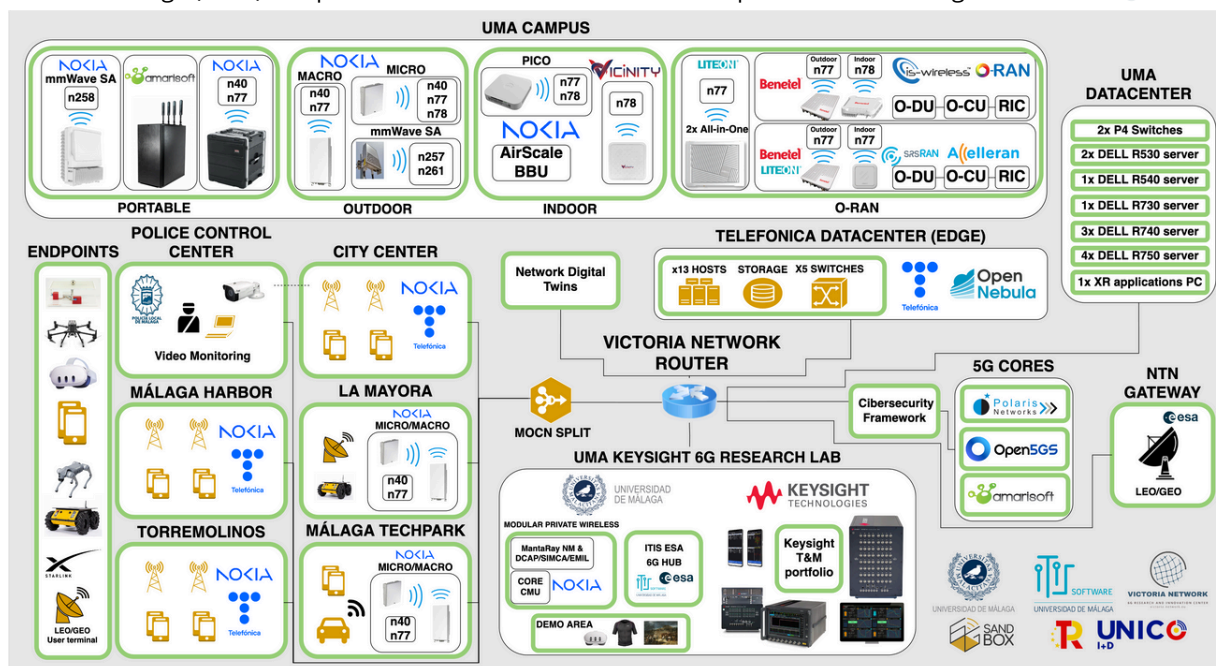

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Victoria Network (Malaga Platform) includes a wide variety of mobile networks and other technologies situated across various physical locations, but with a clear centralized control post in the Ada Byron building on the University of Malaga (UMA) campus. An overview of the Network is depicted in the next figure.

Victoria-Network key assets in the current infrastructure

University Campus – Ada Byron site
- Radio Access Network (RAN)

– Nokia AirScale BBU managing the following set of Nokia RRHs:

Outdoor:
- x10 Nokia microRRHs in FR1 (bands b7 and n78). Four of them are configured for 5G SA in band 78, and the rest act as eNB in b7 for 5G NSA.
- x2 Nokia mmWave FR2 (bands n258 and n261), which are configured for 5G NSA operation using two of the Nokia microRRHs as eNB in lower frequency.

Indoor:
- x2 Nokia picoRRH in FR1 (band 78).

–O-RAN solutions based on:
- x2 RUs: Benetel RAN550 (band n78) for indoor use cases and Benetel RAN650 (band n77u) to provide outdoor coverage.
- DU/CU: Docker-based solution from IS-Wireless.
- Near RT-RIC: Provided also by IS-Wireless, including xApps for KPI monitoring and Slicing.

Other RAN locations linked to Ada Byron through MOCN split. These deployments are managed by Telefonica, and are focused on experimentation in real scenarios:
- Malaga City Centre
- Malaga Harbor

Other infrastructure
- 5G Cores: Polaris 5GC, and Open5GS and Nokia CMU.
- Nokia management and monitoring software.
- Keysight Hardware and Software tools from Testing & Monitoring portfolio.
- Telemetry and UPF P4 modules for deterministic communications.
- UGV, UAV and XR devices.
- Commercial NTN solution offered by Starlink.
- Smartjac software to record SIM cards.
- eSIMs
- NTN Starlink connection

PTA – Dekra circuit site
- x2 Nokia microRRHs in FR1 (bands n40 and n77)
- x1 Open5GS core instance running in a server with 8 CPU and 16GB RAM

La Mayora site
- x2 Nokia microRRHs in FR1 (bands n40 and n77)
- x1 HP Proliant DL 165 g7 server (48 CPUs, 198GB RAM and 8TB storage)
- x1 Open5GS 5GC instance
- x1 HPE 5GC instance
- x1 NTN Starlink connection

Services currently offered by the infrastructure
- Digital Twins: Network Digital Twins of some of the 5G deployments in Ada Byron.
- Testing full services with virtualization and slicing in an end-to-end 4G/5G environment.
- Automation of experiments with local and remote access.
- Support for multidisciplinary research, with special support for connected cars and PPDR, but open to any vertical or multidisciplinary research.
- Rapid deployment of portable 5G nodes, offering two options: outdoor mmWave FR2 radio system (n258) and indoor FR1 radio system (n40/n77).

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