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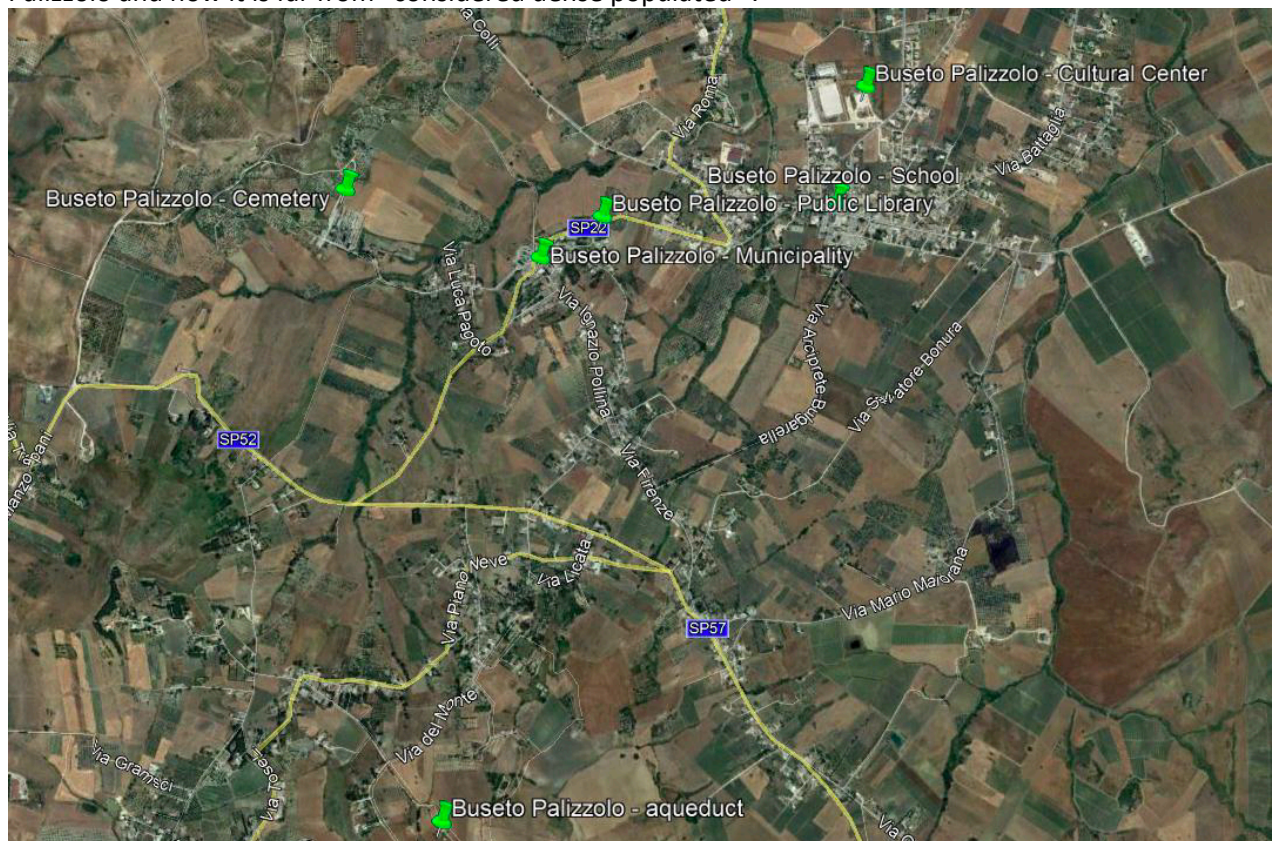
3rd Open Call

FLAME infrastructure in Buseto Palizzolo, Italy

PRIS 3rd party project (Open Call 2)

In the PRIS project the 5G infrastructure is located in a rural community in Sicily (south Italy) where one of the main social problems is related to the high rate of migration of young people from those rural areas towards metropolitan areas or to north Italy. In this territory, Level7 has already a relative dense infrastructure that will be upgraded and then connected to the FLAME infrastructure and in particular the nodes that Level7 directly operates are:

- All those nodes, are in the Buseto Palizzolo territory and directly operated by Level7 proprietary infrastructure. Also, the local municipality is a Level7 customer for all their buildings since 2011. Below a map is shown, taken from Google Earth, that shows the characteristics of the rural area of Buseto Palizzolo and how it is far from “considered dense populated”.



PRIS replicator will upgrade the current Level7 infrastructure to a FLAME based testbed that can operate experiments in the rural area of Buseto Palizzolo.

In regards to the possible scenarios and supported areas for the technology, experiments can be done in the outdoor areas that are covered by the nodes as well as in the indoor areas that will support the FLAME infrastructure.

[illegible]

For the indoor areas, in coordination with the local community, experiments can be done in the cultural center (that hosts a museum of agricultural heritage tools) as well as the local school (kids under 15 years old and the local library).

Page 3 of 5



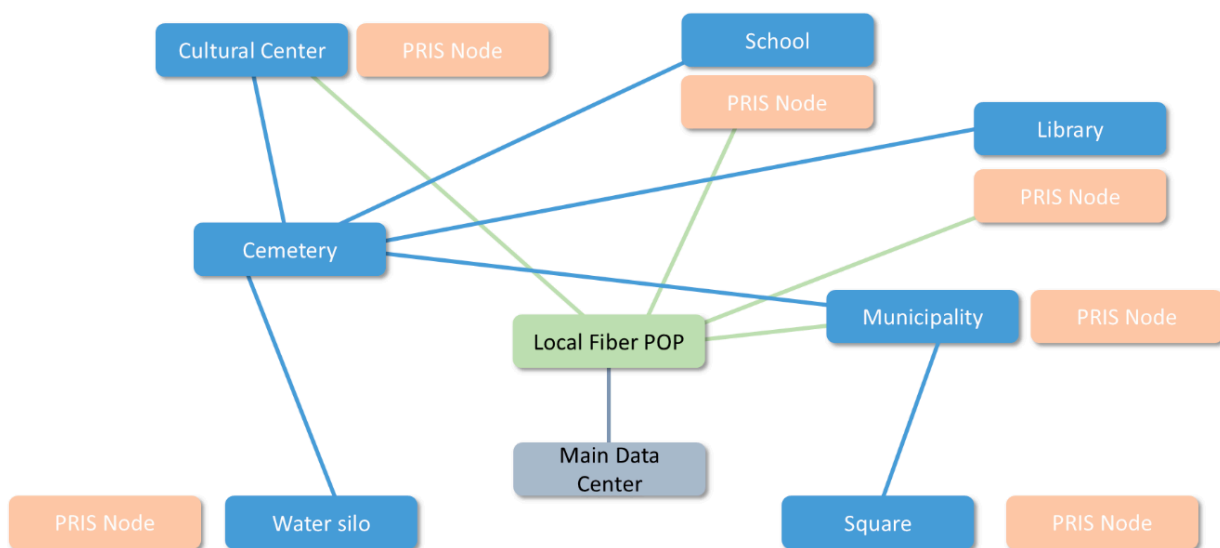


Figure 3 PRIS node interconnection (upgraded to fiber)

In this figure the green lines are fibers connecting the buildings to the local PCN/POP that is then connected to the national POP (for the new fiber infrastructure this should be in Milan MIX the first Italian national Internet Exchange). Each fiber connection (green line) will be at least 1Gbps.

Besides the PRIS nodes (in orange) a local node for computational needs will support the FLAME architecture. This specific infrastructure is called “edge cabinet” and it is connected to each PRIS node (via wireless or fiber). For the local PRIS edge cabinet, the following hardware will be dedicated to the FLAME infrastructure:

- Two x86 computational devices, each one with 4 cores CPU, minimum 16GB of RAM and 256GB SSD.
- One server with 8 cores, minimum 128GB of RAM and 10TB of local storage available.

All the devices will be registered as available resource at the OpenStack controller.

For each network node (orange box in the above figure) the following features will be available locally:

- WiFi access supporting SDN (e.g. SBC devices, Ruckus devices, etc.), and 802.11ac as well as 802.11a/n for backward compatibility
- SDN switch: x86 linux appliance or similar with at least 4 network cards and Openflow 1.3 support.
- One computational device: x86 hardware, with 4 cores CPU, minimum 8GB of RAM and 256GB SSD.

In the main data center, remotely connected to the PRIS replicator, the following hardware will be dedicated to PRIS:

- Three servers will be available in order to OpenStack and the FLAME software suite. Each server will be with 2 CPU, at least 64GB of RAM and 4TB storage.

Besides the networking aspects, other facilities will be available for testing and in particular:

- Weather station: the weather station will be installed at the aqueduct node in order to provide basic weather data that can be accessed from the Internet as well as locally. The weather

station can also be useful for 3rd party projects with the farmers present in the territory, as a basic service for the local community as well as for future development for agricultural scenarios.

- IP cameras: IP cameras will be installed in the aqueduct and in the roof of the City Hall. In both cases the cameras will be installed with a main focus on the landscape instead of pointing to faces or to persons so that privacy will not be violated by the cameras. The main purpose of the cameras is to collect a constant and valuable multimedia stream that can be used both technically (for the storage) and as reference content for experimentation from 3rd parties.

Other facilities will be also present in each node, but not directly made available and accessible to experimenters such as:

- Alarm for power outages
- Power Backup systems (batteries)
- Cabinet Temperature monitoring
- Video Surveillance