Beacon südtirol - Alto Adige

FESR-2023

CUP: B31H17000060001

D5.1

WSN network pilot area

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Progetto: Beacon Südtirol - Alto Adige
Codice: FESR-2023
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1 - Introduction

The goal of the WP5 - Wireless Sensor Network is the implementation of a pilot area covered by a free access IoT Network. In order to identify the best place for the implementation of the project's IoT Network the local IoT community (beacon.bz.it/community) has been involved.

Considering the feedback of the community and the role of NOI Techpark it has been decided to implement the IoT pilot area at NOI Techpark.

1.1 The NOI Techpark

The NOI Techpark provides the companies, the universities and the research institutes a place to have the necessary space for research and innovation in the five technology fields (Green, Alpine, Food Digital and Automotive/Automation), representing South Tyrol's areas of strength.

Figure 1: *a view of the NOI Techpark.*

The NOI Techpark is an interesting area from both economic and technological point of view. From an economic point of view, as said before, NOI Techpark groups a loto of research institutions and innovative companies as for example:

- the most important south tyrolean research institutions (Fraunhofer, Eurac Research, Laimburg, KlimaHaus/CasaClima)
- the Free University of Bolzano;
- a large numbers of laboratories;
- innovative companies;

- interesting and promising startups.

From a technological point of view the park is organized in areas with really different structures and needs as for example:

- a park with green areas that has to be managed;
- streets where traffic and parking lot can be monitored;
- four old building that has been refurbished by maintaining the old structures of walls;
- two new buildings built using new technologies and innovative materials.

Moreover the NOI Techpark will be extended during the next few years with new areas and buildings. For these reasons the NOI Techpark area offers the perfect context where to test the innovative technologies and find its strengths and weaknesses.

2 - LoRaWAN@NOI Techpark

In order to better plan the IoT pilot area, during the Vertical Innovation Hackathon 2018 a first test IoT network has been implemented at the NOI Techpark. The event was the perfect context to run a testbed since:

- it was limited in the seminar area of the A1 building which is underground and difficult to reach by radio signals in general;
- a large number of people using IoT devices to build prototypes was concentrated in a small area.

During the events the IoT platform has been monitored from both point of view:

- backend in order to understand if the resources dedicated to the backend where sufficient to guarantee a high level service;
- signal coverage in order to be able to simulate the coverage on the whole area and define the numbers of gateways needed.

On top of the result of the Vertical Innovation Hackathon 2018 test, of the simulation made by the Sensor Systems and Technologies lab of Eurac and other aspects emerged during an inspection made with the NOI Techpark building managers the project team decided to install 5 Gateways. In Tabella 1 are listed the positions of the gateways:

Gateway ID	Edificio	Stanza
GW1	A1	NOI Reception
GW2	A1	A1.1.07a
GW3	A1	A1.2.46m
GW6	A2	A2.3.18b
GW7	D2	D1.4.05

Table 1: position of the Gateways at NOI Techpark.

More details about the final configuration of the LoRaWAN@NOI network are described in the D5.5 “Final report of the WSN Network”.