

LOCAL DIGITAL TWINS VILANOVA I LA GELTRÚ



What is it?

Virtual replica of the city to study, to monitor and to improve efficiency. Using Digital Twins technology to develop the smart city that allows you to observe and simulate dynamic urban processes.

How does it work?

Data is collected through sensors, cameras and iterations distributed throughout the city, which with big data technology, IoT and AI, this information is analyzed and it is possible to simulate future scenarios.

Digitizing the city of VNG allows it to provide the tools for an efficient management of the city and it helps to solve complexity problems to manage.

What is needed?

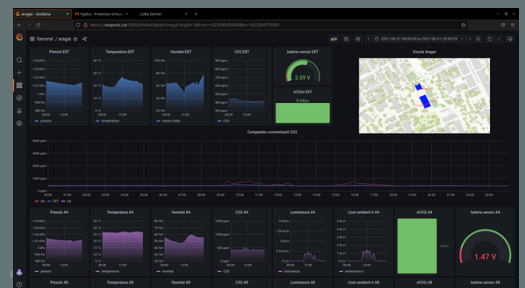
A data strategy to obtain quality data and to optimize the use of all the data that the City Council already has. This facilitates the success of the pilot project and makes it scalable to other cities.

What do we have?

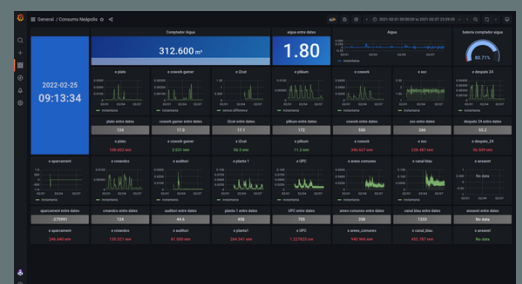
Data on mobility, on energy, on running water, on environmental and on health flows. This data was collected in Neàpolis, where there is a server with all databases that have been collected in the pilot test. With LoraWan and Sentilo technology (system of Diputació de Barcelona) it is possible to view this data through Grafana visor.

SUSTAINABILITY DATA

- Environment: humidity, temperature and pollution



- Sensors for controlling running water consumption: Meters with sensors are located in different public buildings in the city of Vilanova i la Geltrú.
- Sensors that show electricity consumption



DATA HEALTH AND ELDERLY

- GPS system for the elderly: real-time location of people without using a mobile phone and taking advantage of the system installed in the city (LoraWan). There is a project on the design of a prototype mobile application that has also been done.
- Health project for patients with Diabetes 2, to control patients and to prevent associated risks. There had been meetings with the Hospital Clínic (Barcelona) and some Primary Care Centers of Vilanova i la Geltrú.



What do we need?

To create digital twins it is necessary to have real-time data that can be viewed quickly and easily. For that reason is why it will be necessary to implement the IoT and a sensorizing strategy, once different pilot tests have been carried out from Neàpolis.

What are the expected impacts?

- To predict and to anticipate policies between the different cities of Digital Twins City project, in which Tarragona, Lleida and Figueres also participate.
- To increase technological innovation in IoT and Digital Twins around the city, through real-time data and historical data.
- To visualized for management and citizen participation.

What are the objectives?

- 1.To increase the capacity to manage the complexity of cities (to boost public value).
- 2.To have a comprehensive vision of how the city works, which serves as an example to administrations, companies, institutions and intelligent management (SMART CITY).
- 3.To define unique city strategies..
- 4.New opportunities to increase social and economic value.

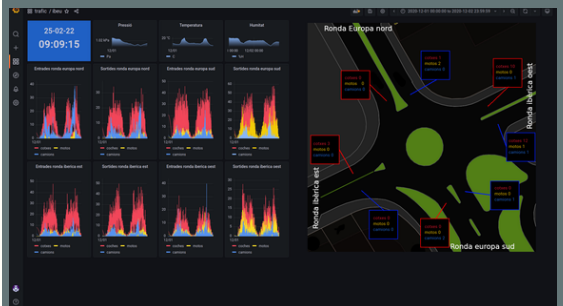
What is the proposal?

To create a platform with different functionalities

- Data repository collected by sensors.
- Database updated at the moment.
- Citizens can provide data (in citizen science format).
- AI tools to predict, to simulate and to compare city data.

MOBILITY DATA

- Pilot test: GPS sensors (geolocation) to install to a fleet of vehicles
- Recently there will be an acquisition of sensors to be placed in the fleet of vehicles of the Municipal Brigade.These sensors will collect information on position and speed data.
- Traffic data sensors: number and type of vehicles



Different collaboration agreements have been signed: one of them is to lead a project with three other cities in Catalonia (Tarragona, Lleida and Figueres) to aim Vilanova i la Geltrú to be a Digital Twin City, and later with this expertise replicate the VNG's Digital City model to the others cities.

The other collaboration is an agreement with the i2Cat Foundation to establish cooperation in researching technologies and expertisses.



What benefits are obtained?

- Improving city sustainability (predicting and anticipating phenomena related to the environment).
- Impacts of different city policies (mobility, urbanism, infrastructure, ...).
- Improving social policies (anticipation of gentrification problems, migration of citizens with specific needs).
- Improving resilience and emergency management (climate change, security).

What tools do City 4.0 want to implement?

- Platform where the life of the city is digitally reproduced through the analysis of data (energy flows, water, mobility, waste, commercial activity, work, health and education, as well as other municipal services).
- Sensor Network: Live view of city operation. Space for citizens, with interactive screens to see live what happens in the city.

What are the next steps?

- To sensorizing throughout the city.
- To join and to collaborate with other City Councils, so that the VNG experience serves them as a model to replicate the project in their cities.
- To define other international alliances.
- To create communication strategy and public policies.

