



# G E O F I T<sup>®</sup>

SMART GEOTHERMAL

## GEOFIT

**Training on radar technologies for ground inspection and structural health monitoring, thermal load estimation of buildings and use of digital twin management software (GEOBIM)**

**11<sup>th</sup> October, 2022**

Online



This project has received funding from the H2020 programme under Grant Agreement No. 792210



# Content

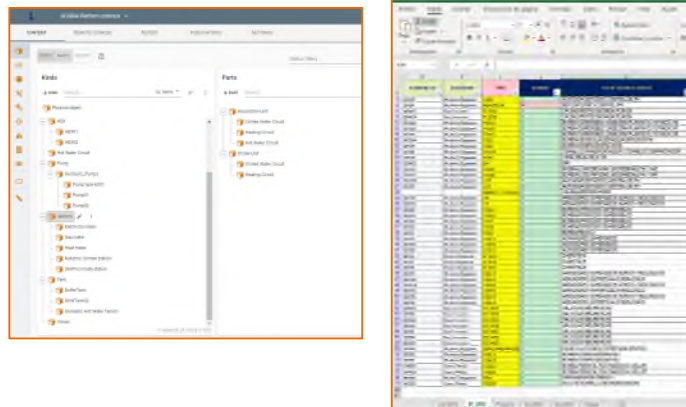
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1. Digital Twin Overview
2. Pilot identification and access
3. 3D Viewer: Controls & Navigation
4. 3D Viewer: Inventory & Assets
5. 3D Viewer: Monitoring
6. Further options

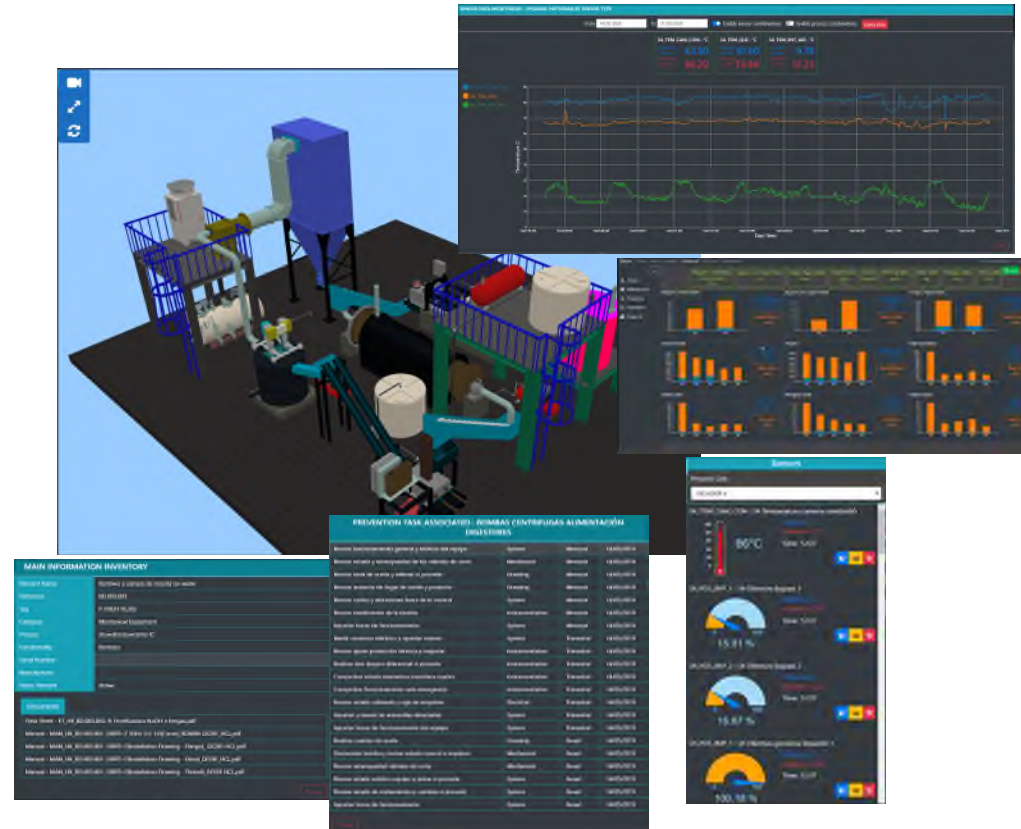
# 1. Digital Twin overview

## Data collection in Libraries or Excel sheets

Asset information and identification of monitored / sensed elements in a Database



Database located in Cloud environment



Results of the integration of assets for the management and monitoring and KPI visualization

# 1. Digital Twin overview.

## Process of integration and Data extraction

### SOURCE



IFC Architecture



IFC Structure



IFC MEP



SENSORS

MQTT / HTTPS / AMPQ

Extraction of geometry  
data and properties of  
each element



DTWIN PLATFORM

### PROCESS



GLB  
Geometry  
data storage



DATABASE  
Data storage

### VIEWER



### RESULT

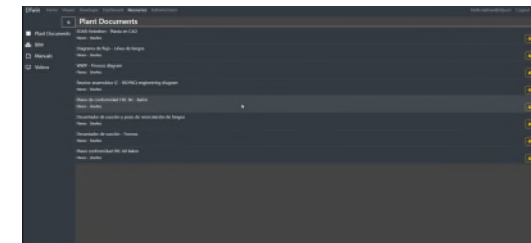
### MONITORING



### DASHBOARD - KPI



### SHARED DOCUMENTS



# 1. Digital Twin overview.

## Process of integration and Data extraction

### SOURCE



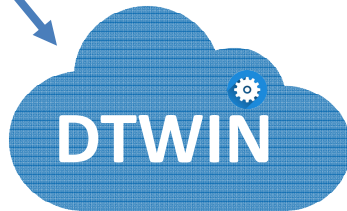
IFC Architecture



IFC Structure



IFC MEP



WEB PLATFORM

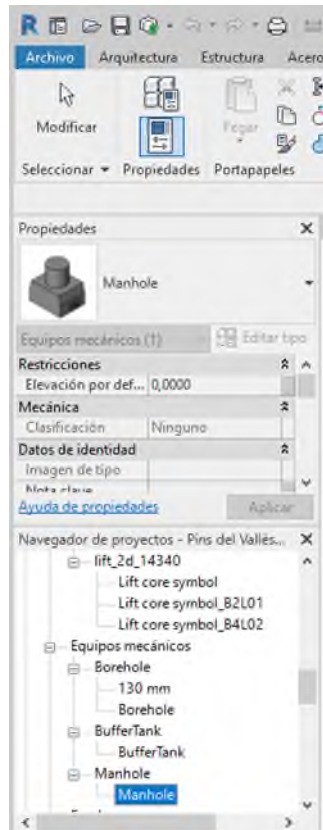
### DTWIN-VIEWER



# 1. Digital Twin overview.

## Process of integration and Data extraction

NATIVE  
INFORMATION

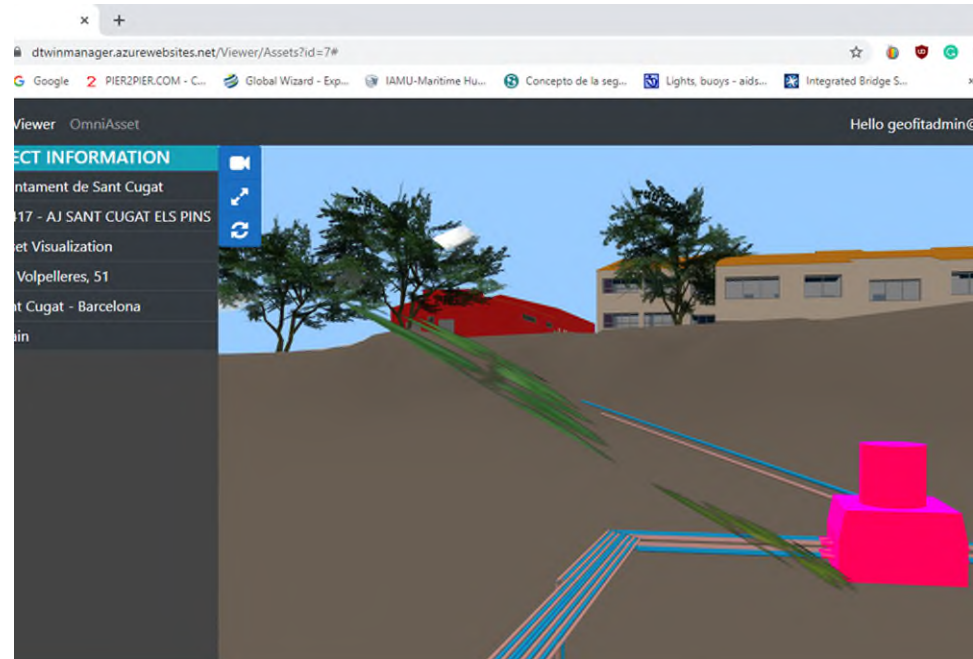


IFC MEP

HTTPS CALLS  
RESULT



DTWIN-VIEWER







# 1. Digital Twin overview.

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## 3D Viewer

### DTWIN-VIEWER

- Allows the user to interact with the model and get data from each element selected.
- Each inventory can have associated basic data sheet, manuals, layouts and safety plans documentation.
- The inventory can have associated a list of preventive task than needs to be executed following the periodicity applied.
- Creation and execution of corrective / preventive task
- Monitoring (Sensors) for performance and assets' management

## 2. Pilot identification & access



Click on Pilot – Select “Viewer”





## 3. 3D Viewer: Controls & Navigation



## 4. 3D Viewer: Inventory & Assets

Further Inventories: Geothermal Information

The screenshot displays the DTwin software interface. The top navigation bar includes 'DTwin', 'Home', and 'Viewer'. On the right, it shows the user 'Hello jramon@idp.es!' and a 'Logout' button. The left sidebar contains icons for Project, Assets, Inventory, Structure, Maintenance, Monitoring, and Safety. The main content area is titled 'INVENTORY' and shows a list of elements, with 'TE-001-399169 : Terrain' selected. The 'INVENTORY DETAILS' panel is open, showing 'MAIN INFORMATION' and 'CUSTOM INFORMATION' tabs. The 'MAIN INFORMATION' tab is active, displaying a table of details for the selected element. Below this, there is an 'INVENTORY RESOURCES' section with 'Documents' and 'Images & Videos' tabs. The 'Documents' tab is active, showing a list of documents. The 'Images & Videos' tab is currently empty, displaying the message 'There's no any media type file associated...'. At the bottom right, there are buttons for 'Edit/Add Resources' and 'Close'.

DTwin Home Viewer Hello jramon@idp.es! Logout

**INVENTORY**

Project TE-001-399169 : Terrain

**INVENTORY DETAILS**

**MAIN INFORMATION**

|               |                  |
|---------------|------------------|
| Element Name  | Terrain          |
| Tag           | TE-001           |
| Reference     |                  |
| Process       |                  |
| Sector        | Exterior         |
| Parent        | TE-001 : Terrain |
| Category      |                  |
| LevelName     |                  |
| Manufacturer  |                  |
| Model         |                  |
| Serial Number |                  |

Edit Main Information

**CUSTOM INFORMATION**

|                                  |               |
|----------------------------------|---------------|
| Installation Date                |               |
| Installation Cost                | 0             |
| Replacement Date                 |               |
| Replacement Cost                 | 0             |
| Comments                         |               |
| Warranty Years                   | 0             |
| Borehole Thermal resistance (RB) | 0.076 K/(W/m) |
| Ground temperature               | 16.6 °C       |
| Thermal conductivity             | 2.21 W/m.K    |

Edit Custom Information

**INVENTORY RESOURCES**

**Documents**

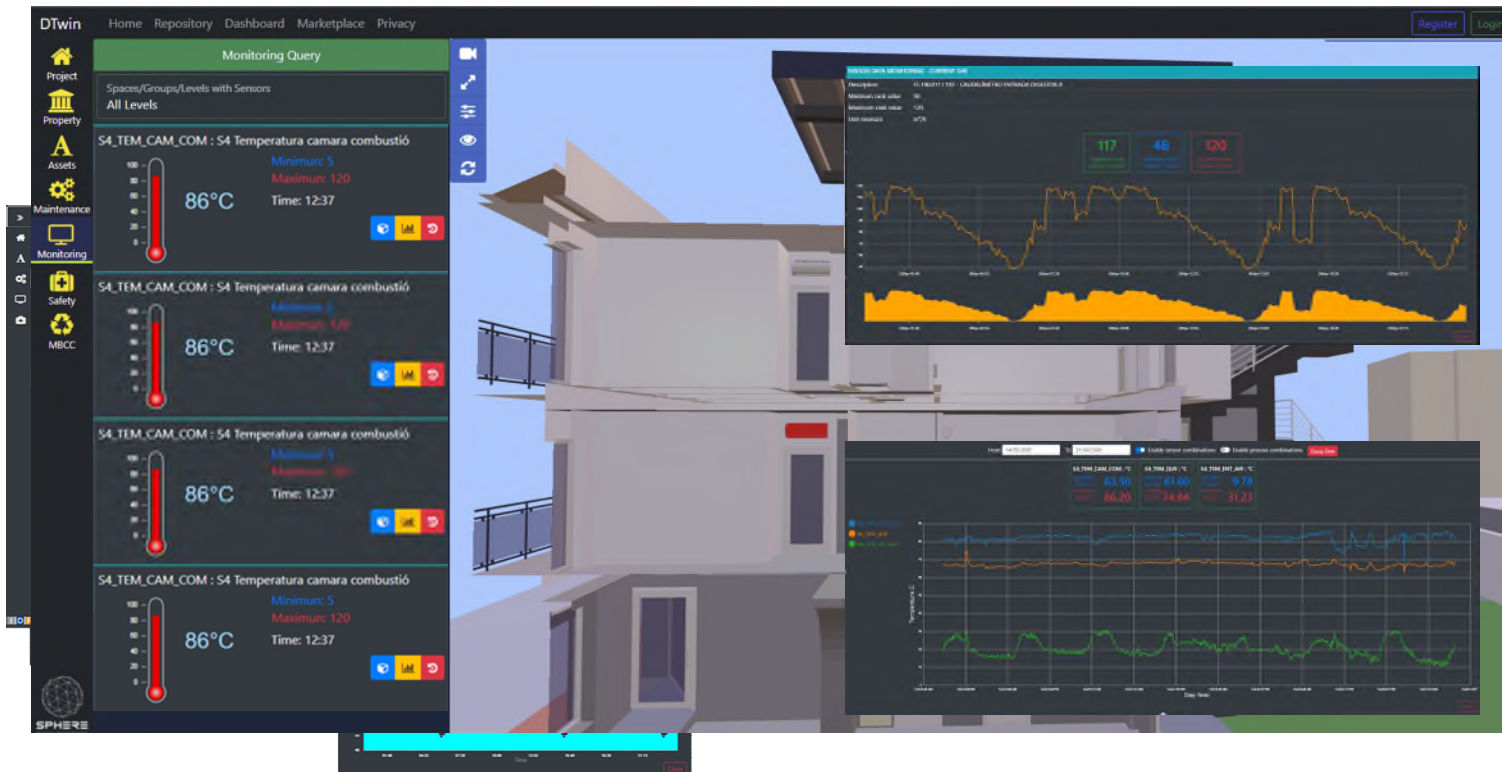
- Borehole Distribution Plan
- Boreholes-Connections Plans
- TRT-STUDY

**Images & Videos**

There's no any media type file associated...

Edit/Add Resources Close

## 5. 3D Viewer: Monitoring





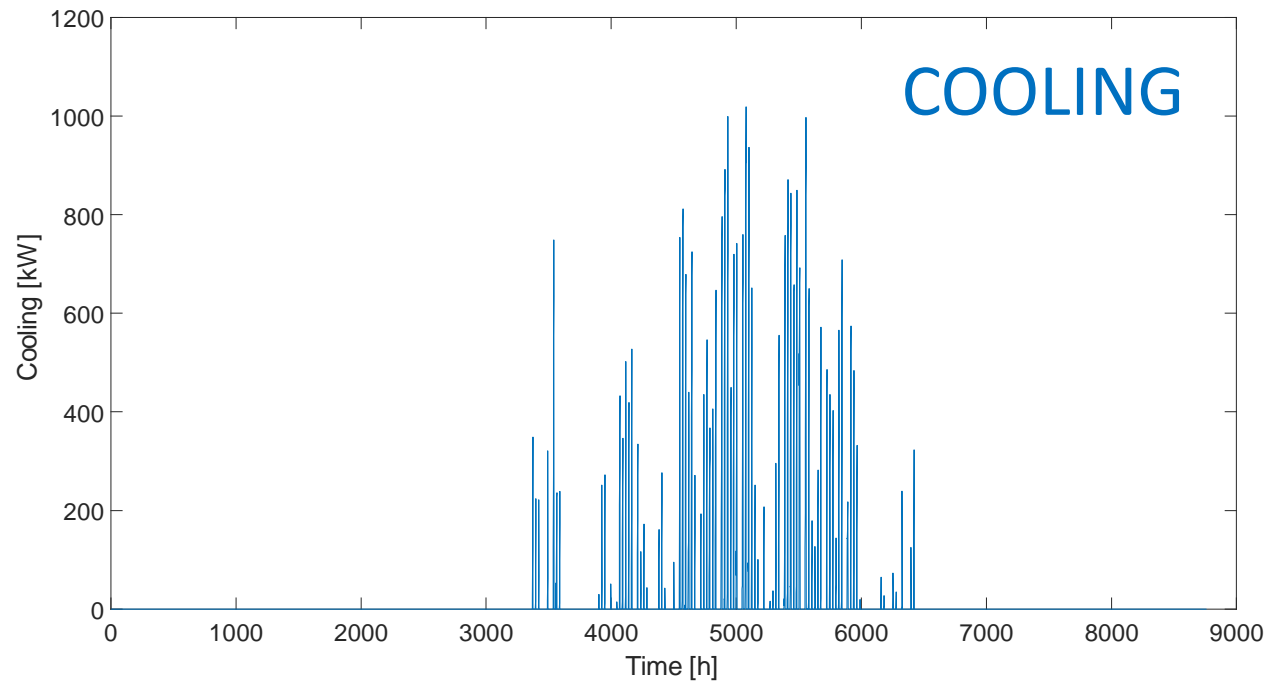
## 5. 3D Viewer: EcoScada





## 6. Further options

### ENERGY DEMAND CALCULATION

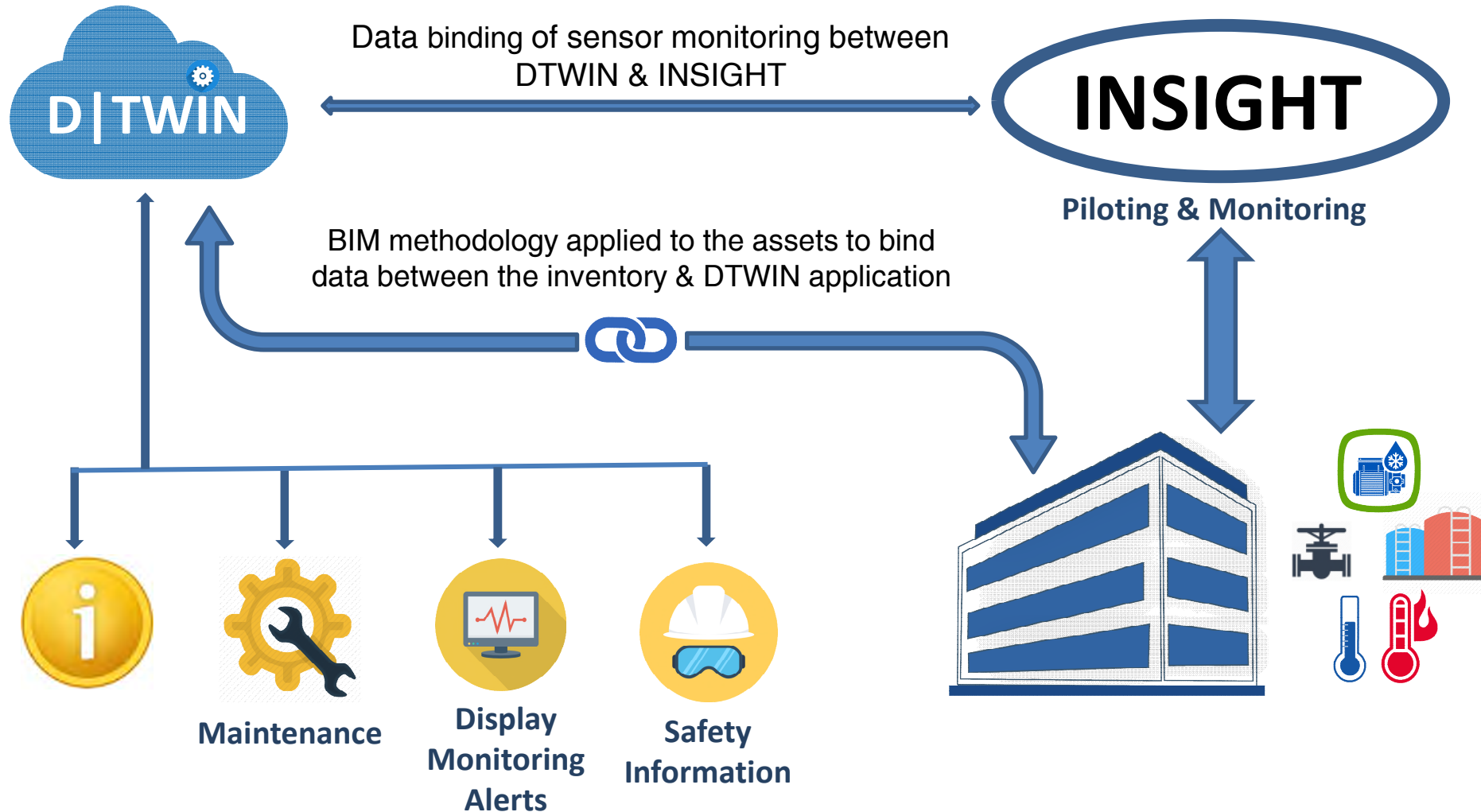






## 6. Further options

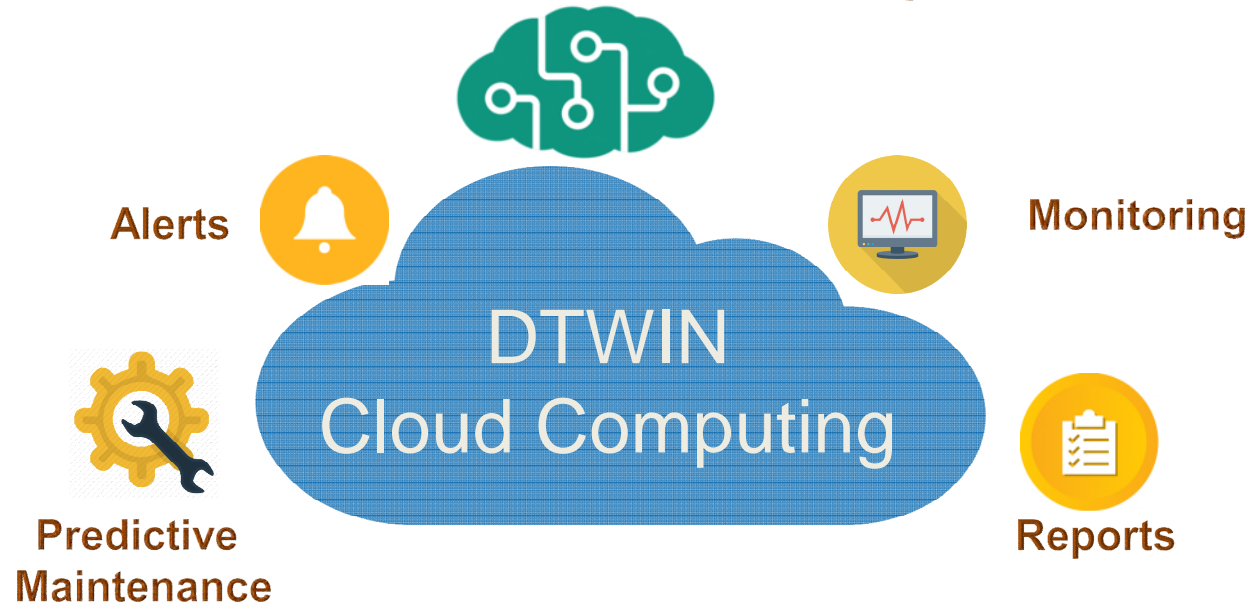
### REAL TIME DATA MONITORING



## 6. Further options

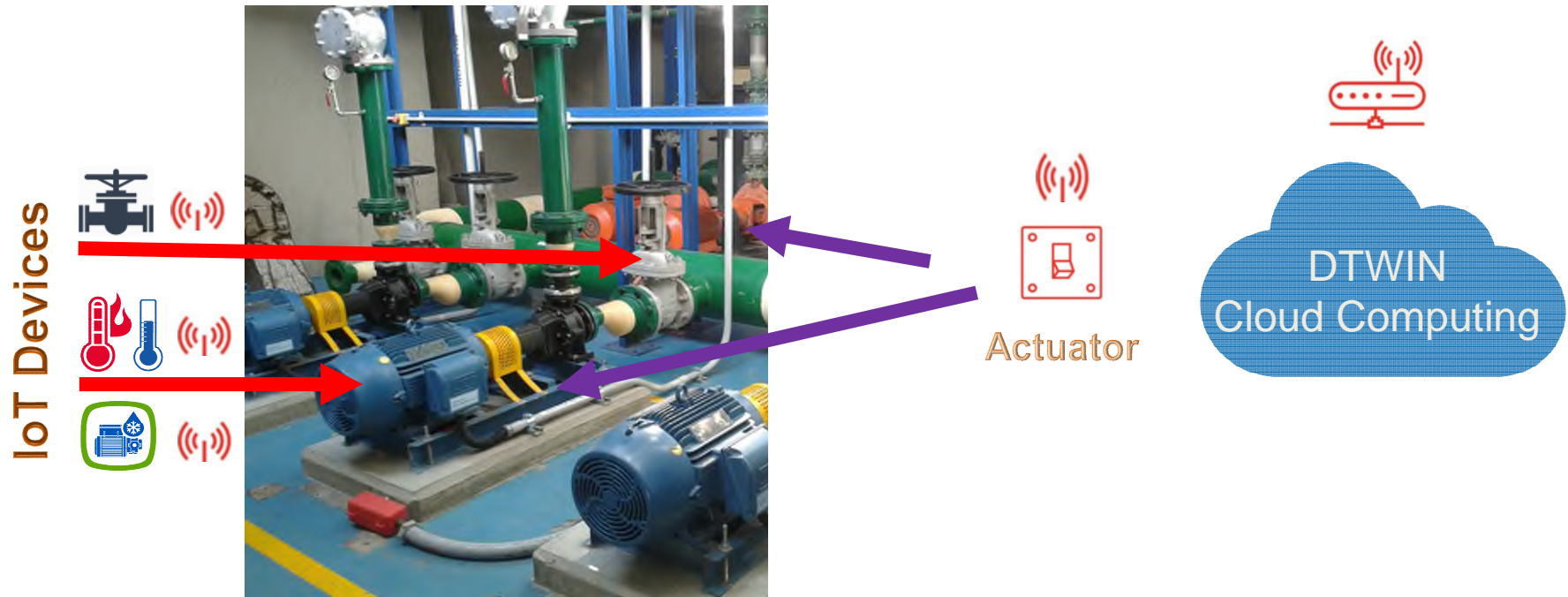
### OTHER INTEGRATED SERVICES

#### AI & Machine Learning



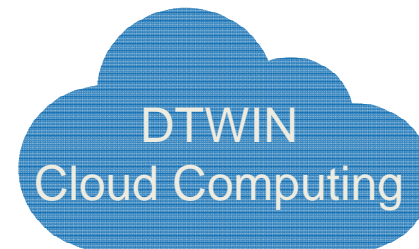
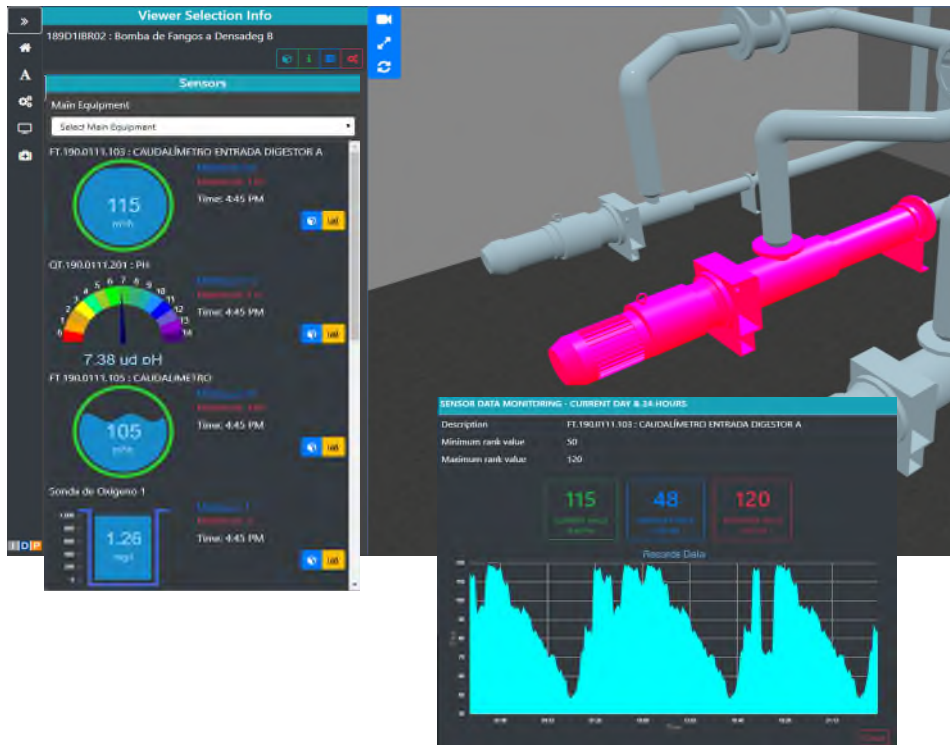
## 6. Further options

### OTHER INTEGRATED SERVICES



## 6. Further options

### OTHER INTEGRATED SERVICES





# Thank you for your attention



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Your WP6 team