

OSI4IOT: The new Shipyard 4.0

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5 Manufacturing Processes



- Additive Manufacturing
- Automatic Tape Placement



- Adaptative Moulding



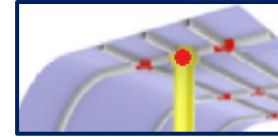
- Hot-Stamping



- UV Cured Pultrusion

5 Manufacturing Processes

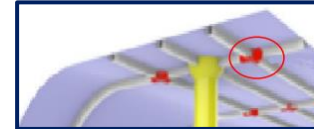
→ **10XL**



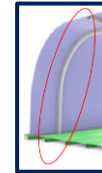
→ **CURVE Works**



→ **ineqi**

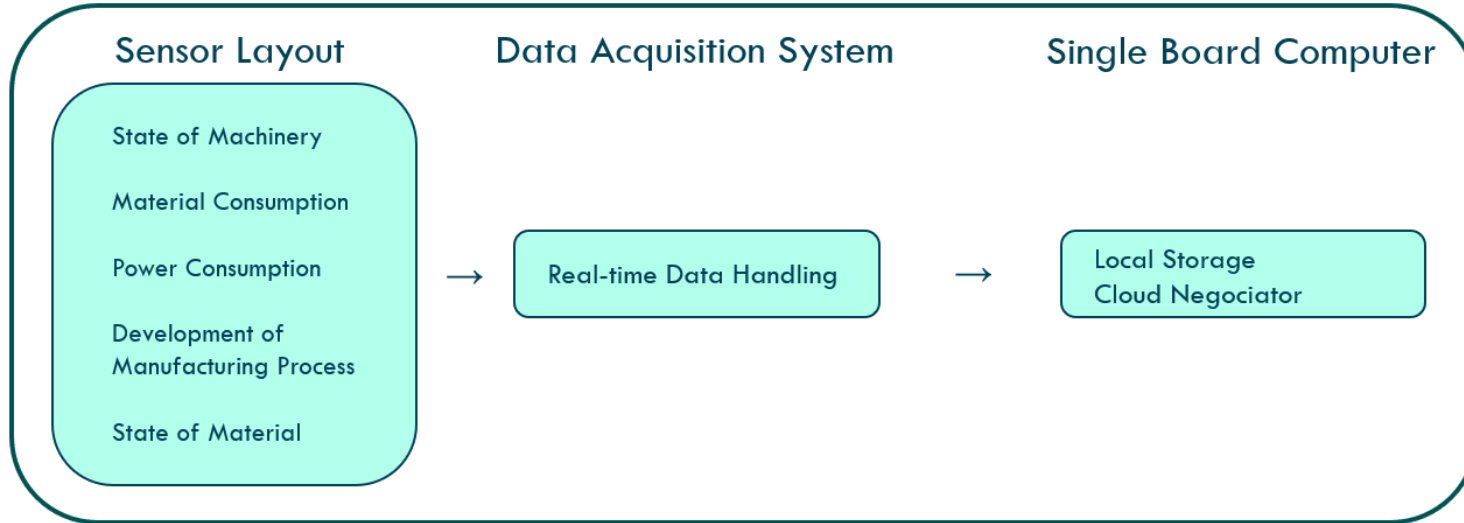


→ **IRURENA**GROUP



How to monitorize each manufacturing process?

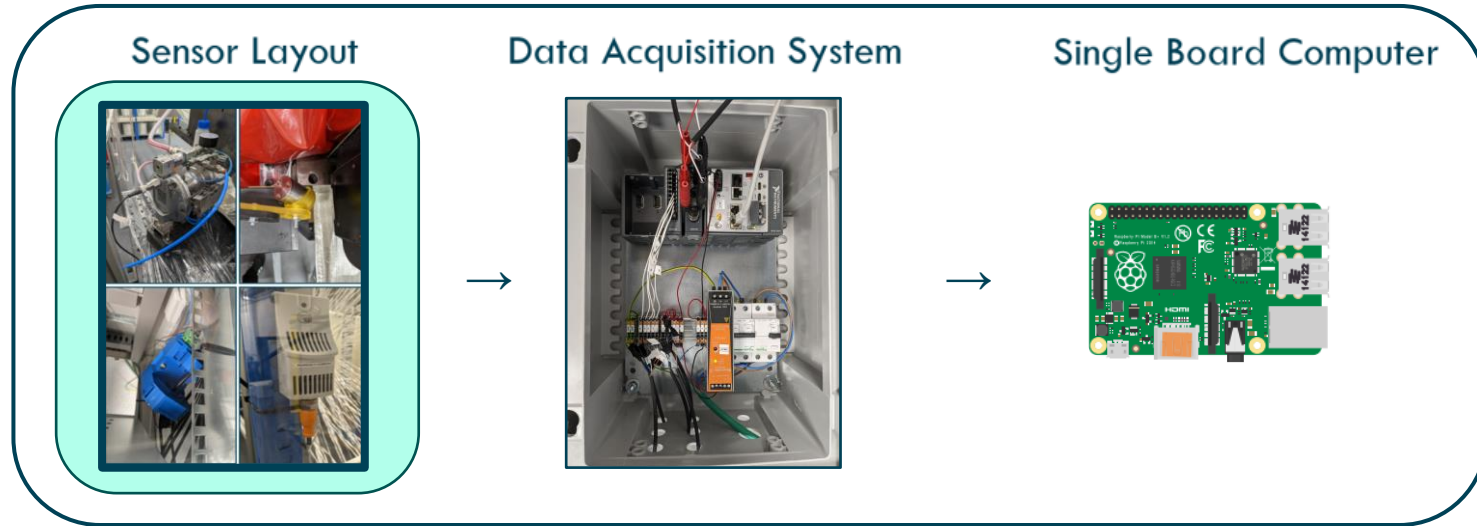
Hardware Monitoring Architecture



IIoT Philosophy as Core of the Monitoring System

How to monitorize each manufacturing process?

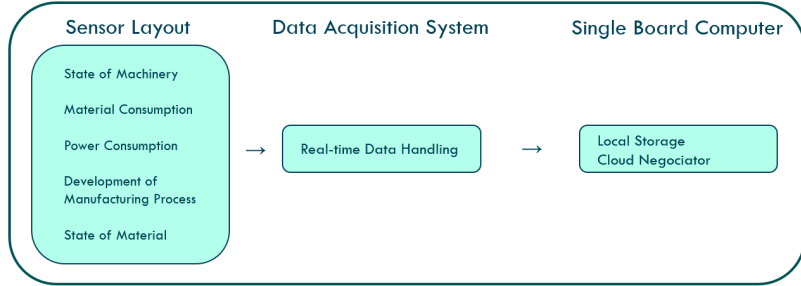
Hardware Monitoring Architecture



Assess Best Maintenance Plan for Each Manufacturer

How to monitorize each manufacturing process?

Hardware Monitoring System



Data Visualization Platform



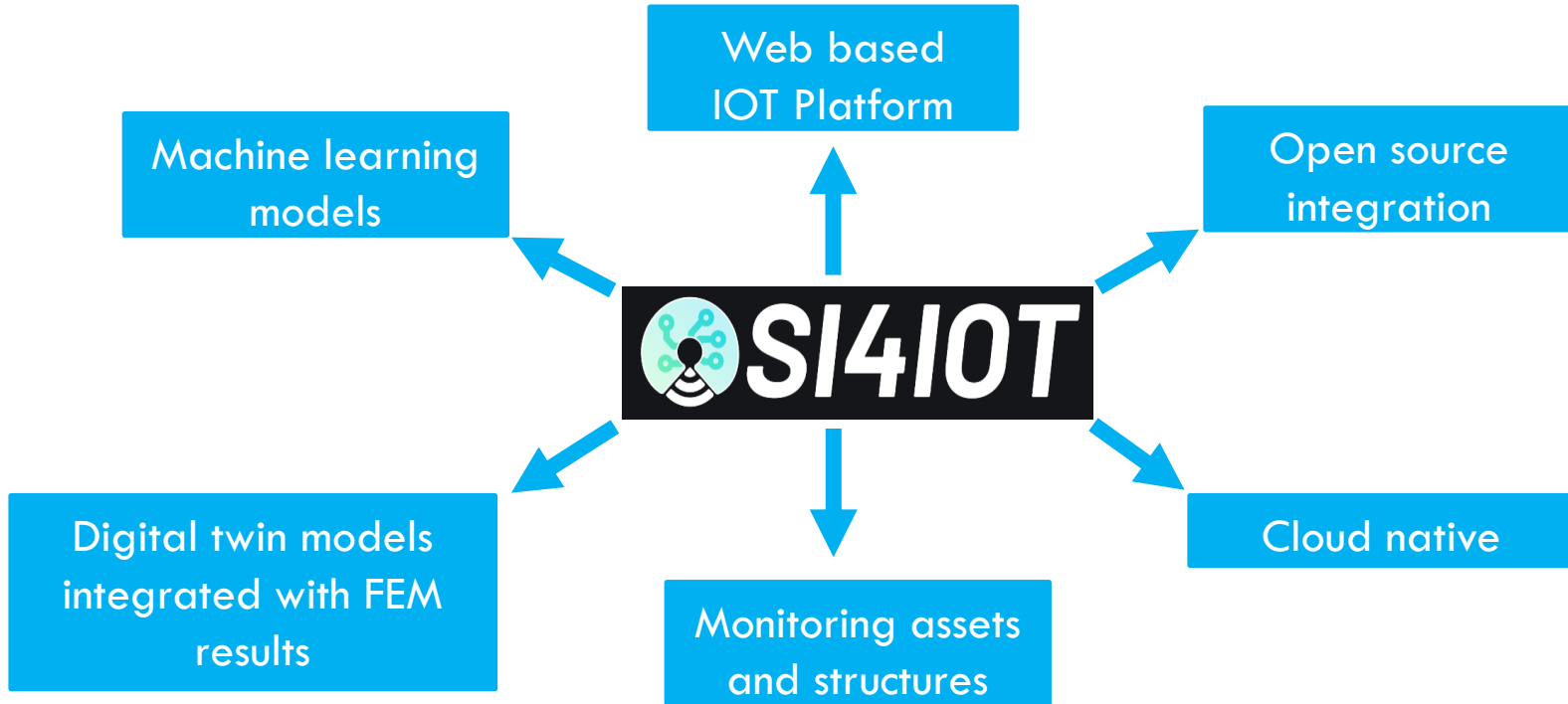
Monitoring Dashboard
Digital Twin



Open Source Integration For Internet Of Things

<https://github.com/osi4iot/osi4iot>

What is OSI4IOT?



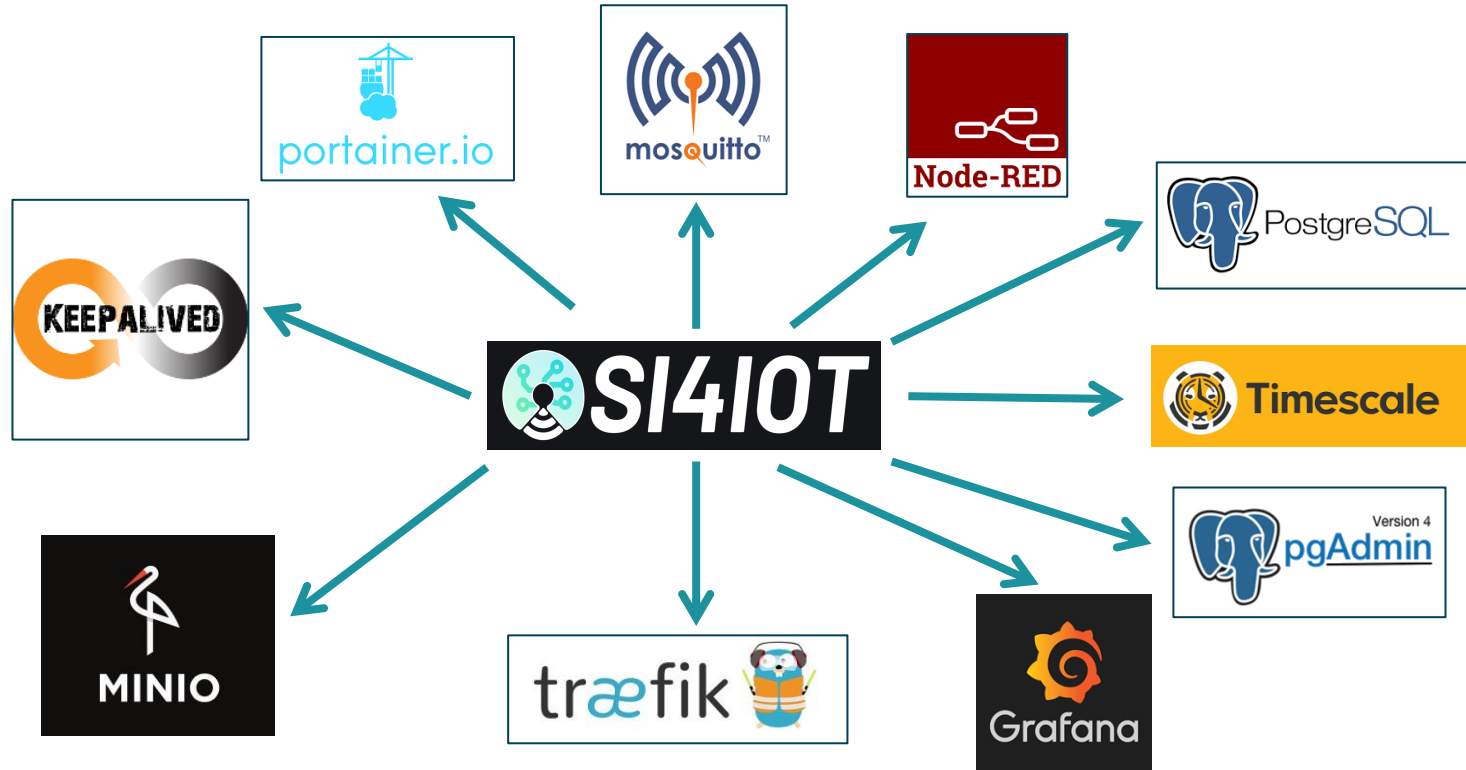


**Well known open source
packages**

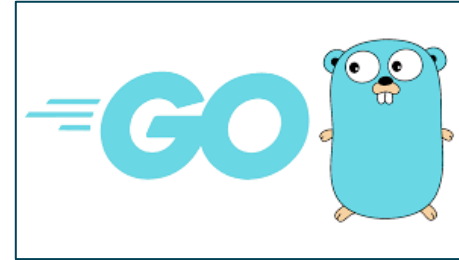


**Custom code
(also open source)**

Well known open source packages



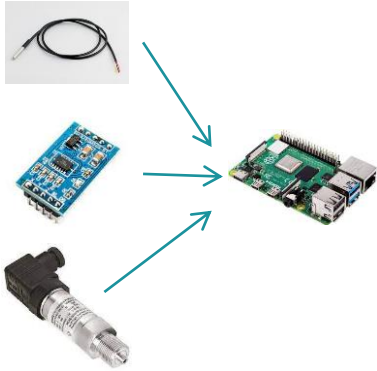
Custom code



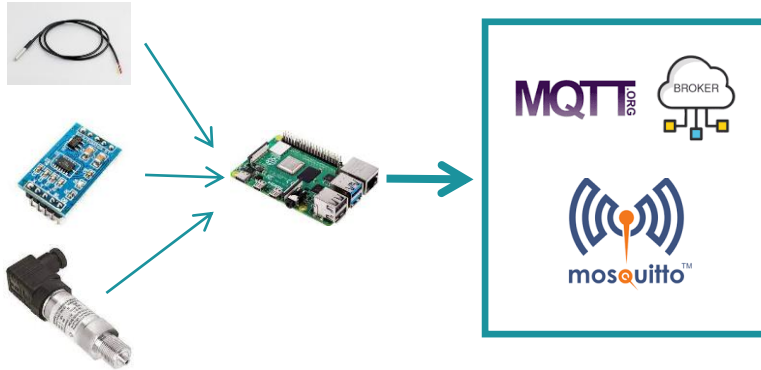
OSI4IOT Layers



OSI4IOT Layers

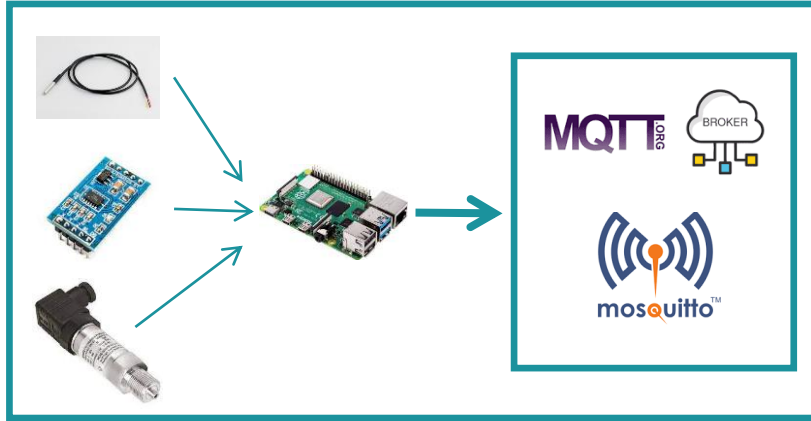


OSI4IOT Layers



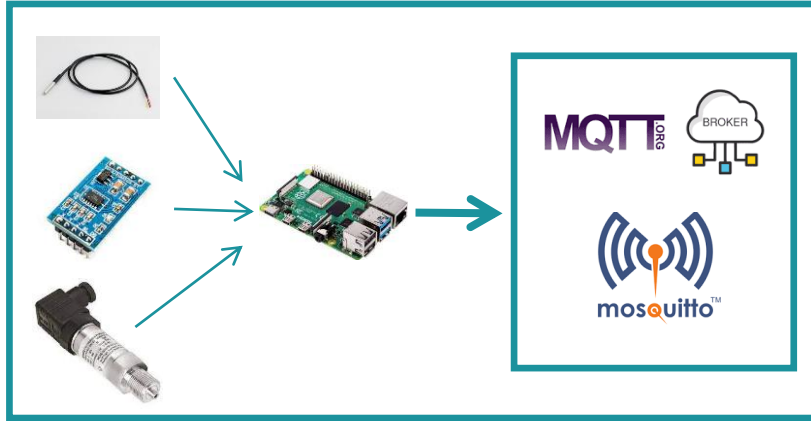
OSI4IOT Layers

Data ingestion

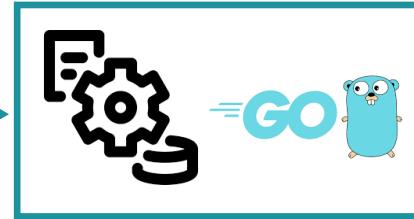


OSI4IOT Layers

Data ingestion

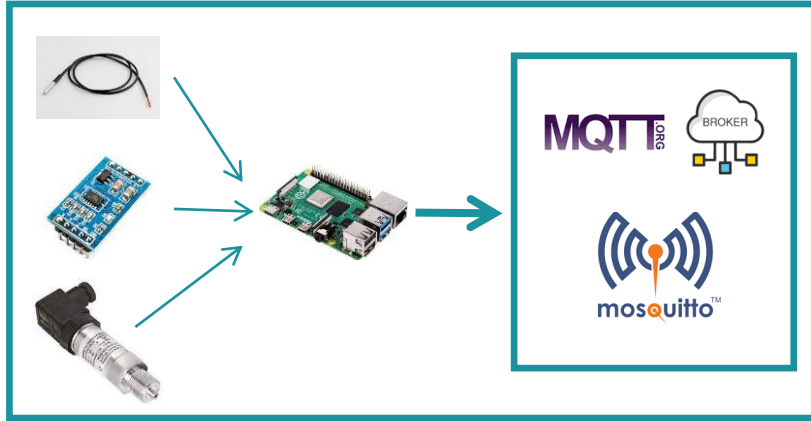


Data transformation

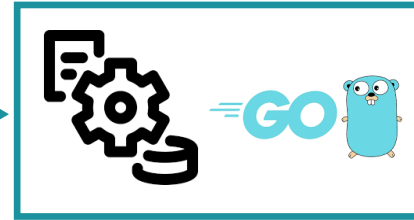


OSI4IOT Layers

Data ingestion



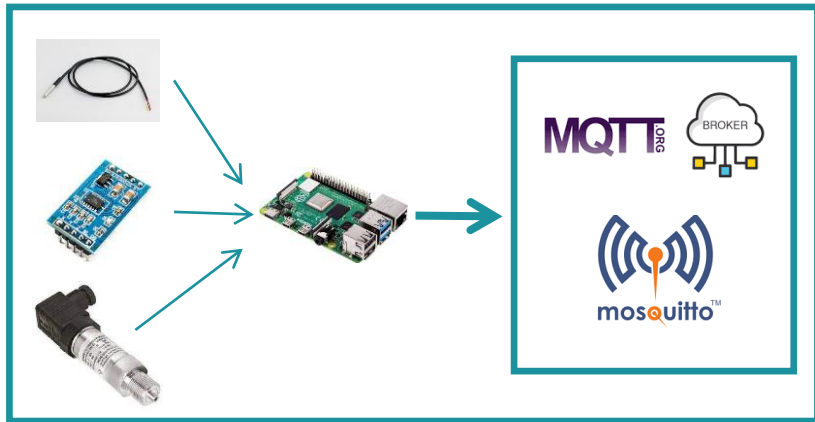
Data transformation



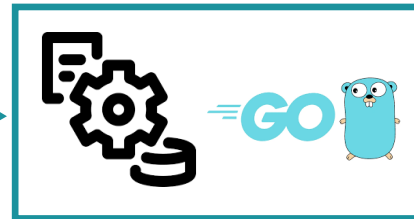
Data storage

OSI4IOT Layers

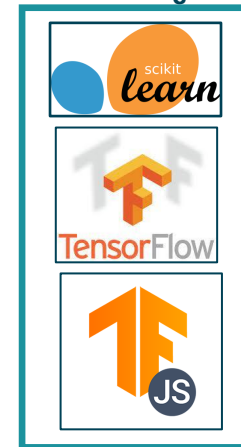
Data ingestion



Data transformation



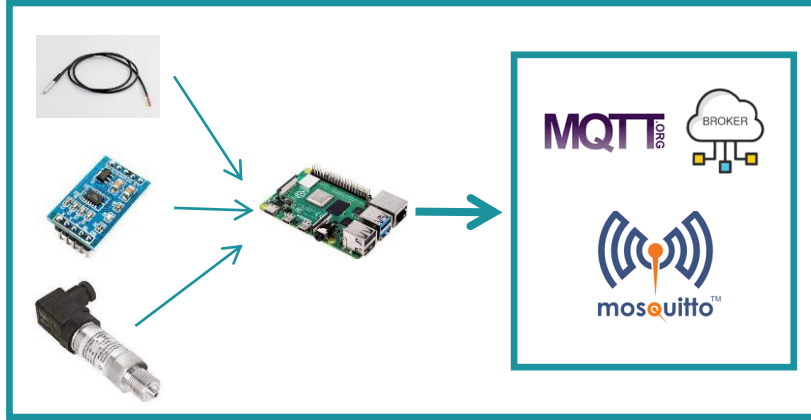
ML models training



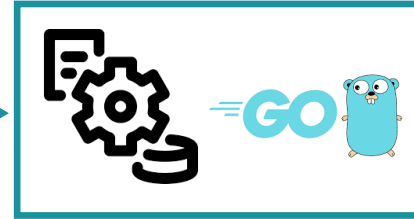
Data storage

OSI4IOT Layers

Data ingestion



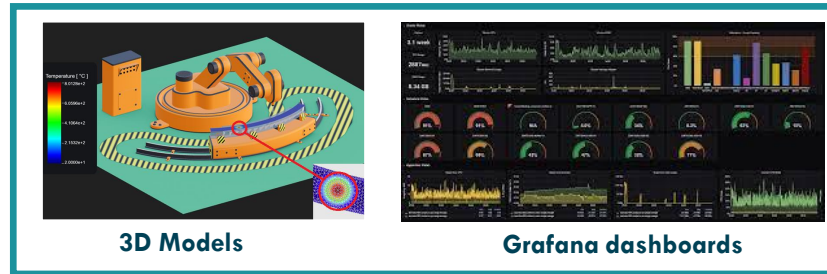
Data transformation



ML models training



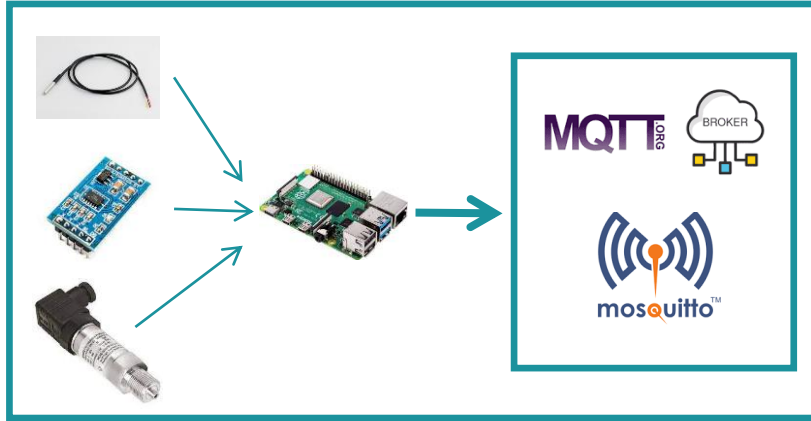
Data visualization



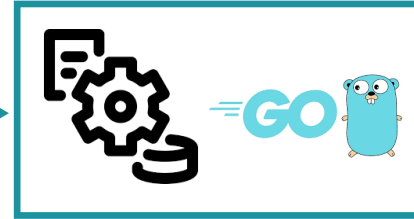
Data storage

OSI4IOT Layers

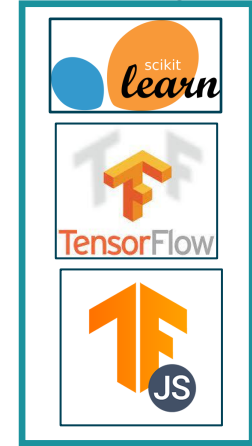
Data ingestion



Data transformation



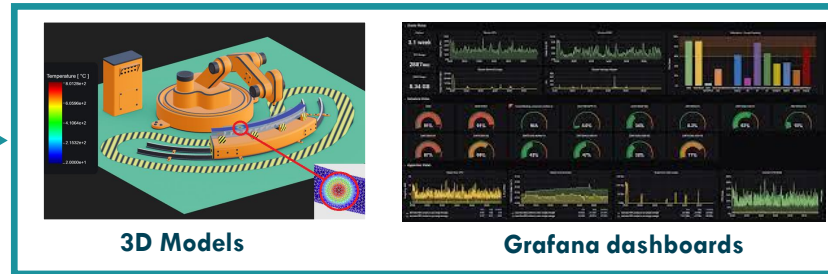
ML models training



Digital twin core

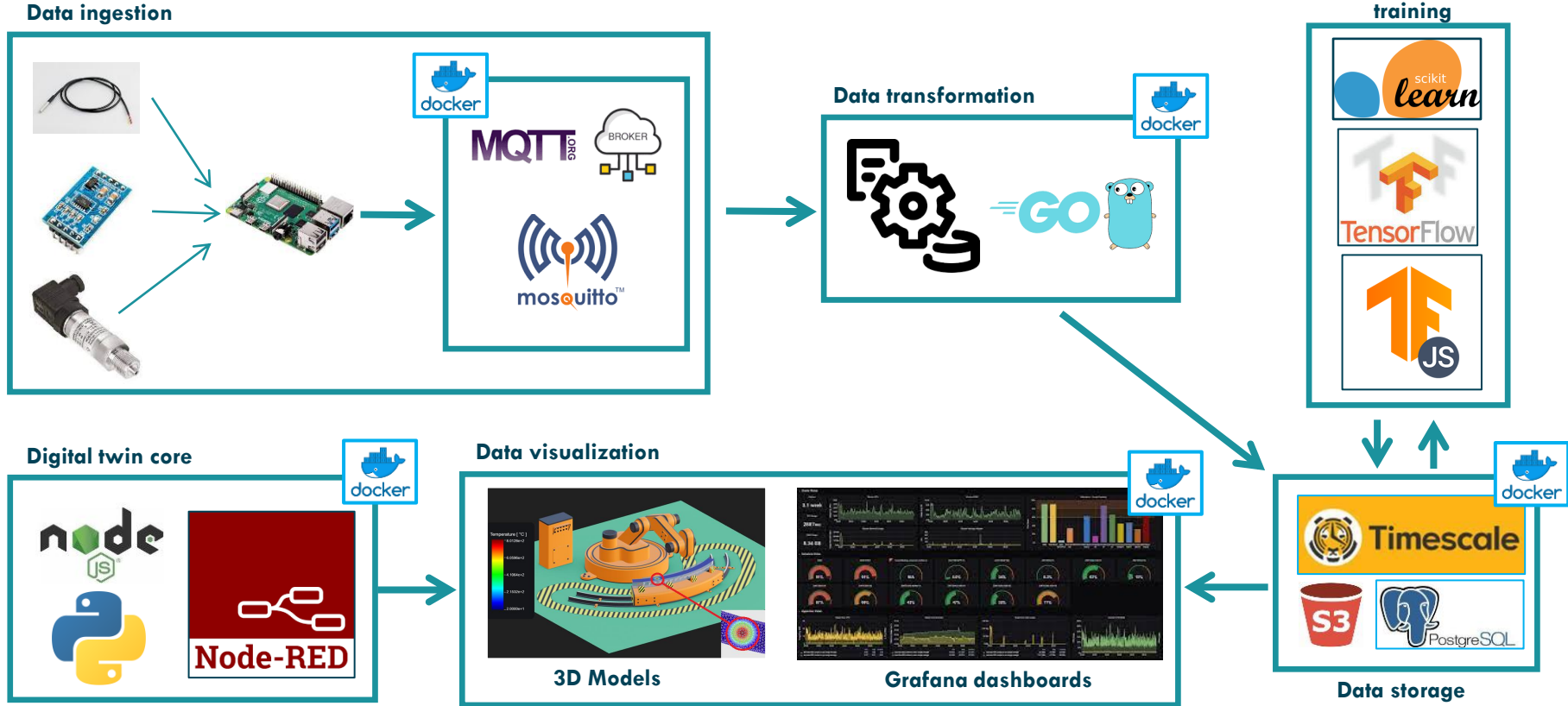


Data visualization

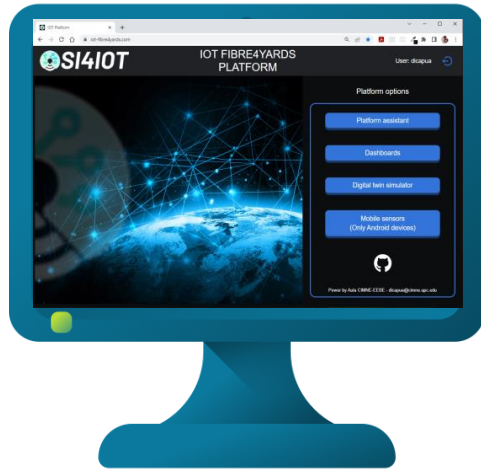


Data storage

OSI4IOT Layers













WEB-BASED IOT PLATFORM



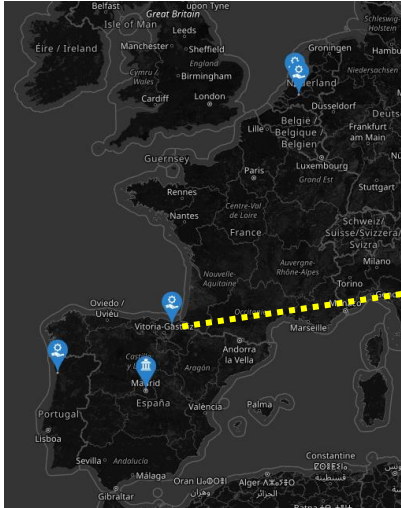
Web user interface



Features

-  **User registration**
-  **Create organizations**
-  **Create private groups**
-  **Assets registration**
-  **Sensors registration**
-  **Dashboards**
-  **Digital twins**
-  **Machine learning models**
-  **3D models**
-  **FEM results integration**

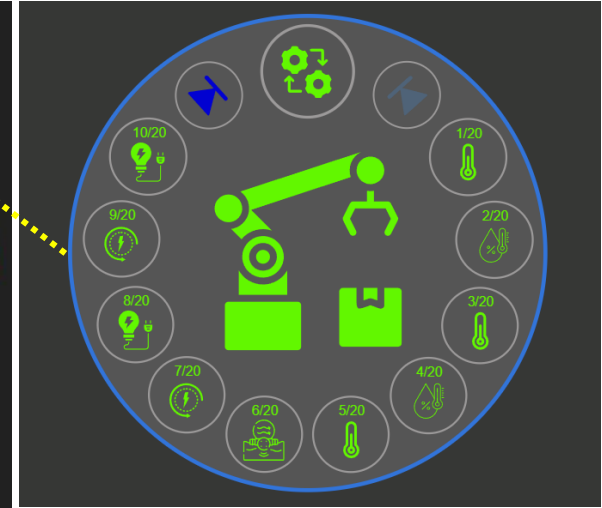
Org assets and sensors geolocation



Org geolocation



Org building



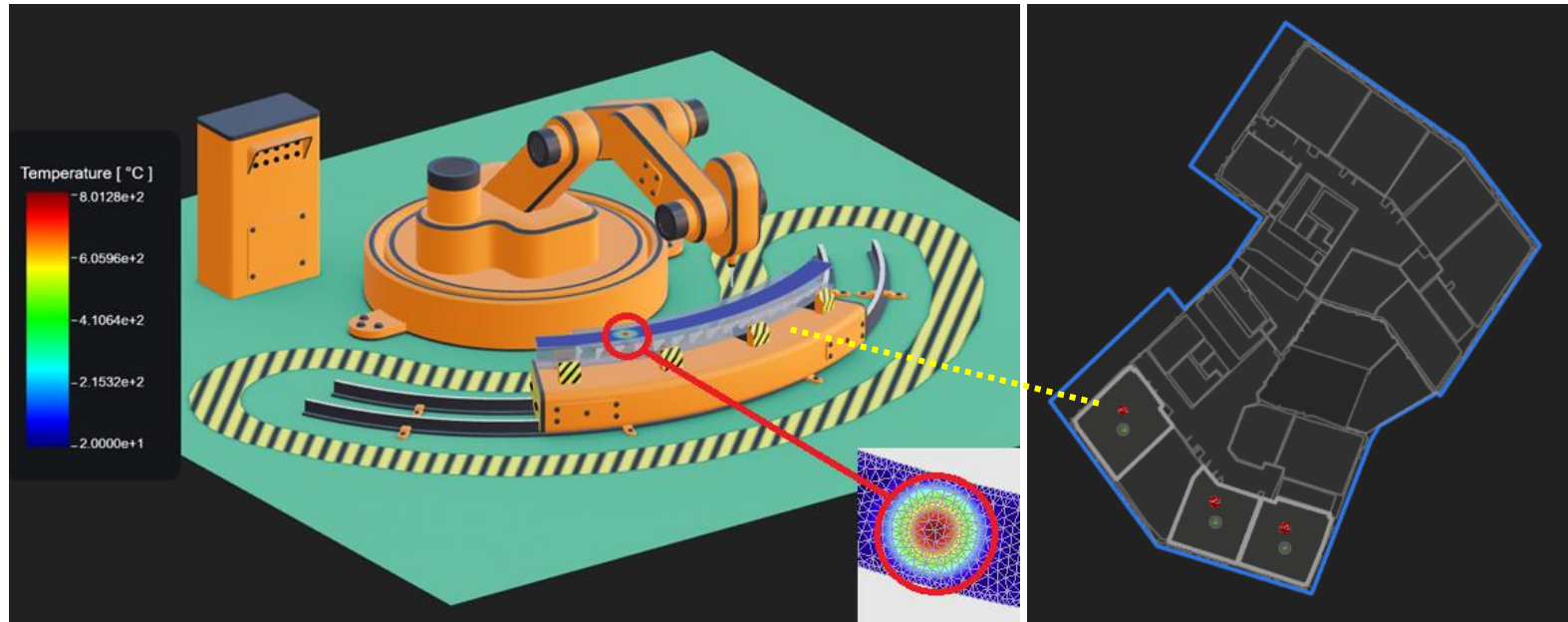
Asset, sensors and digital twin

Grafana dashboards:



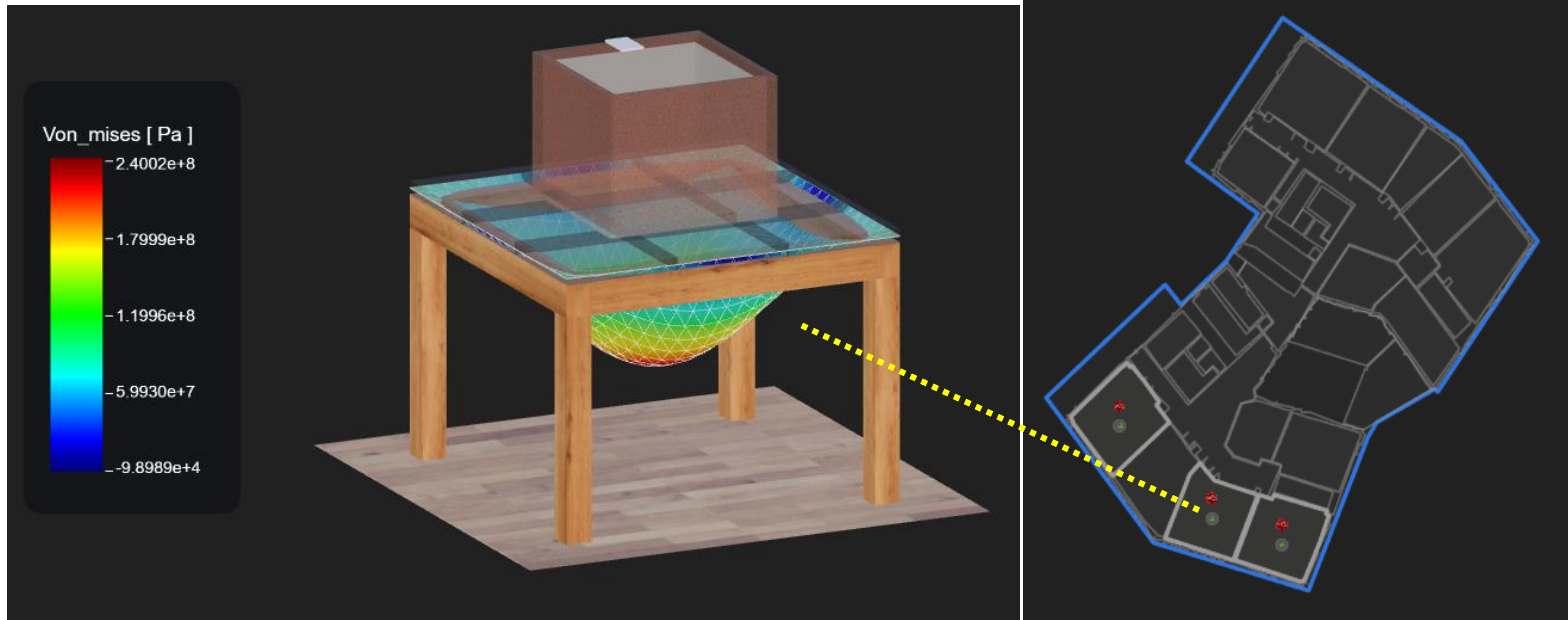
□ Digital twin model represented by a Grafana dashboard.

3D models:



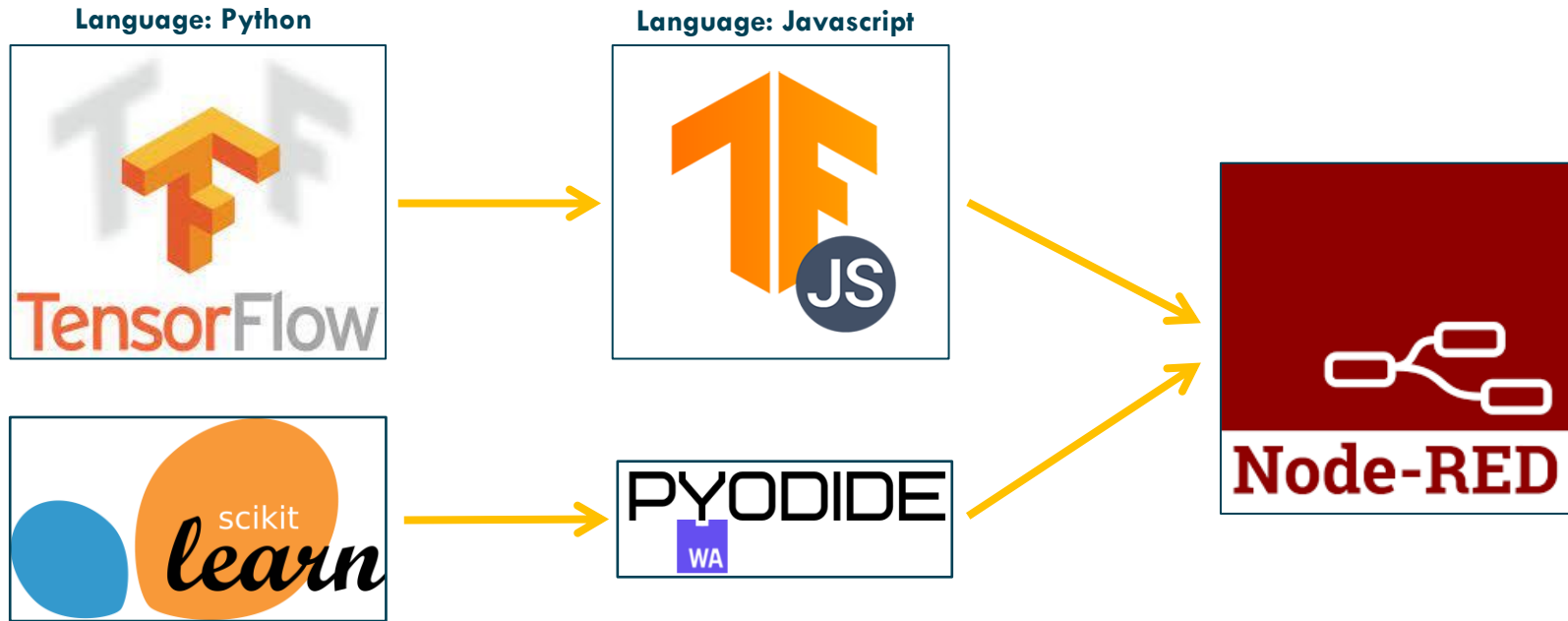
- Digital twin model represented by gltf 3D model and FEM simulations.

3D models integrated with FEM results:



- Digital twin model represented by gltf 3D model and FEM simulations.

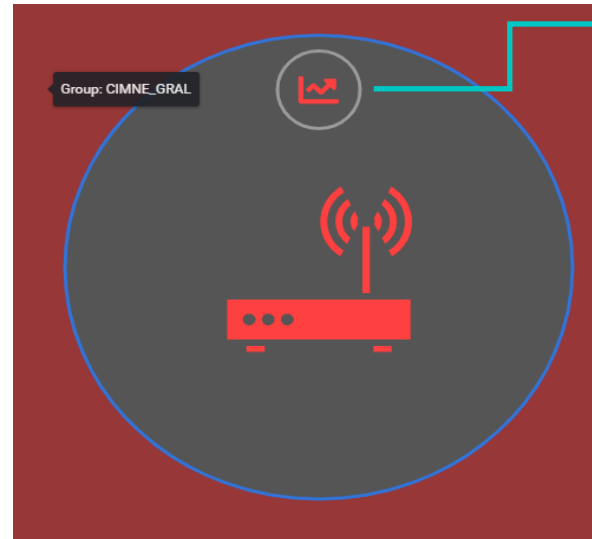
Machine learning models



□ Development process of MLM in OSI4IOT platform

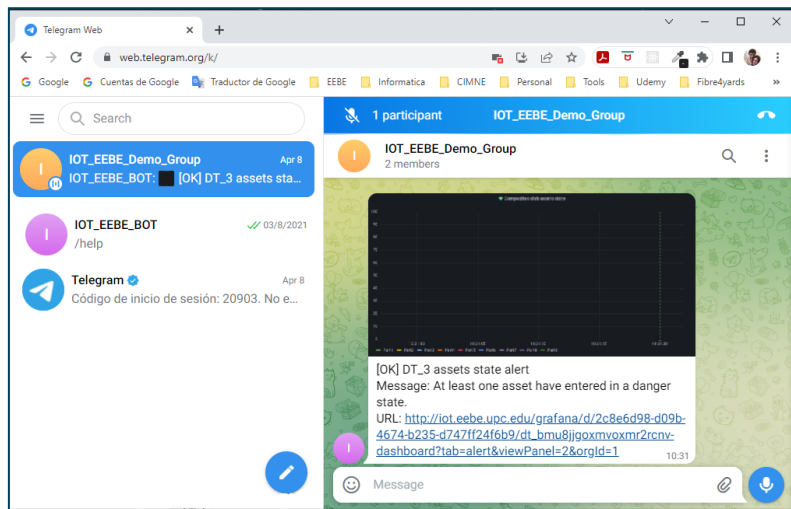
Alerts geolocation

- When same alert is triggered the platform detect in real time the geolocation of the group and device with problems.

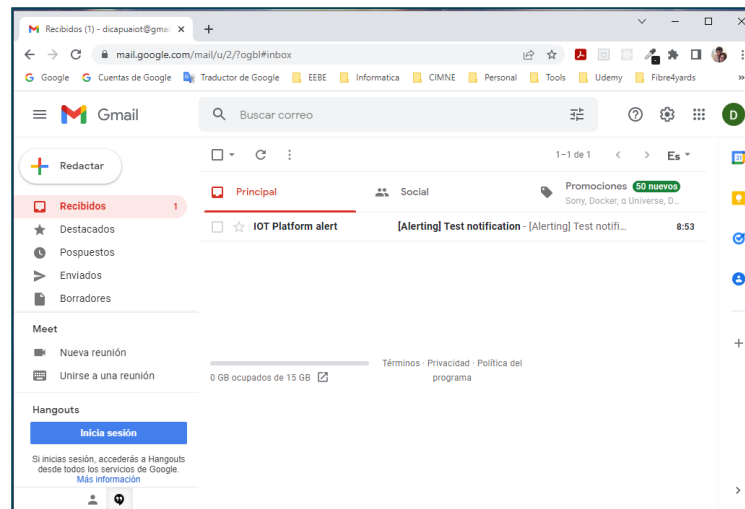


Link to the corresponding Grafana dashboard

Alert notification channels:



 **Telegram**



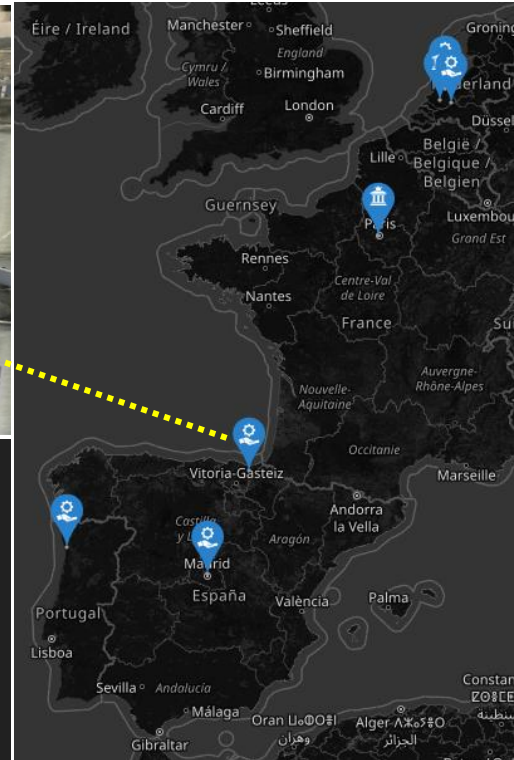
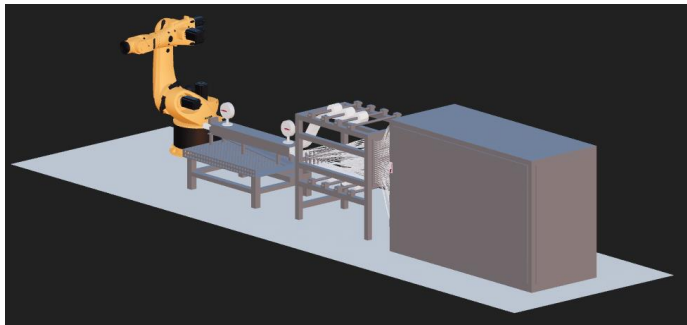
 **Email**

Application case: Assets monitoring

Physical model

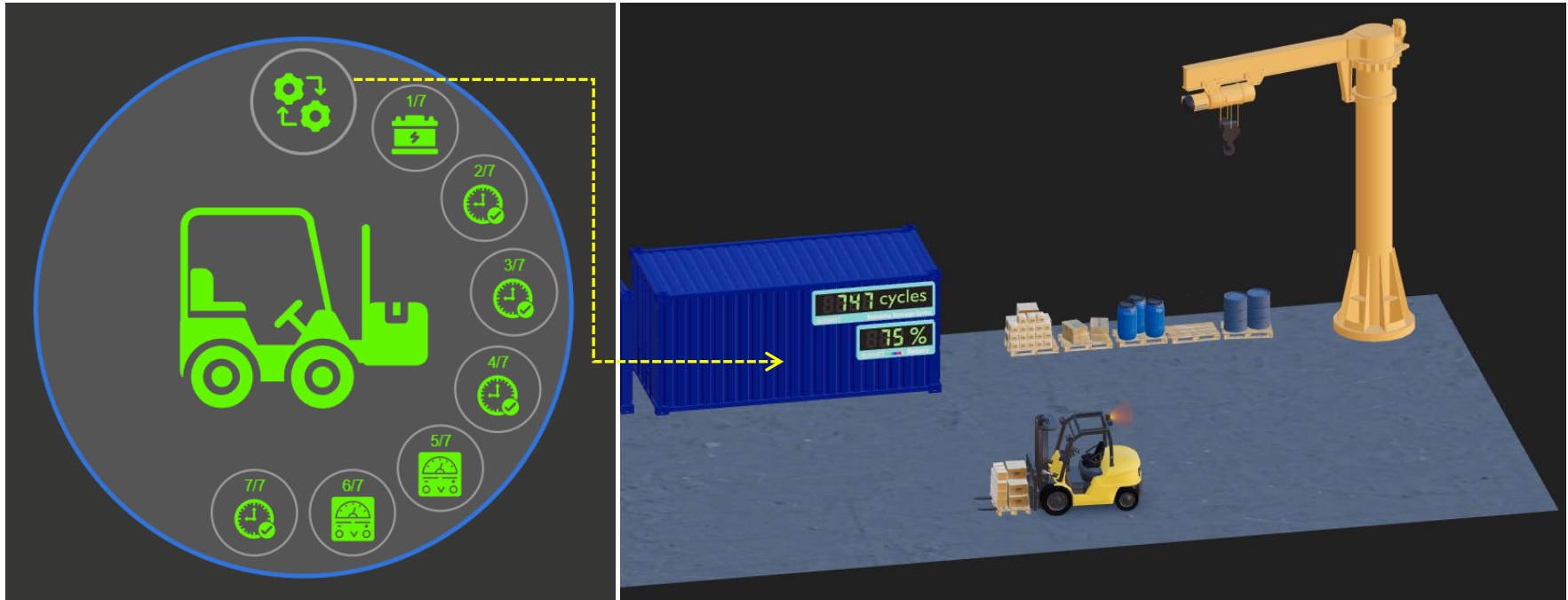


Digital twin model



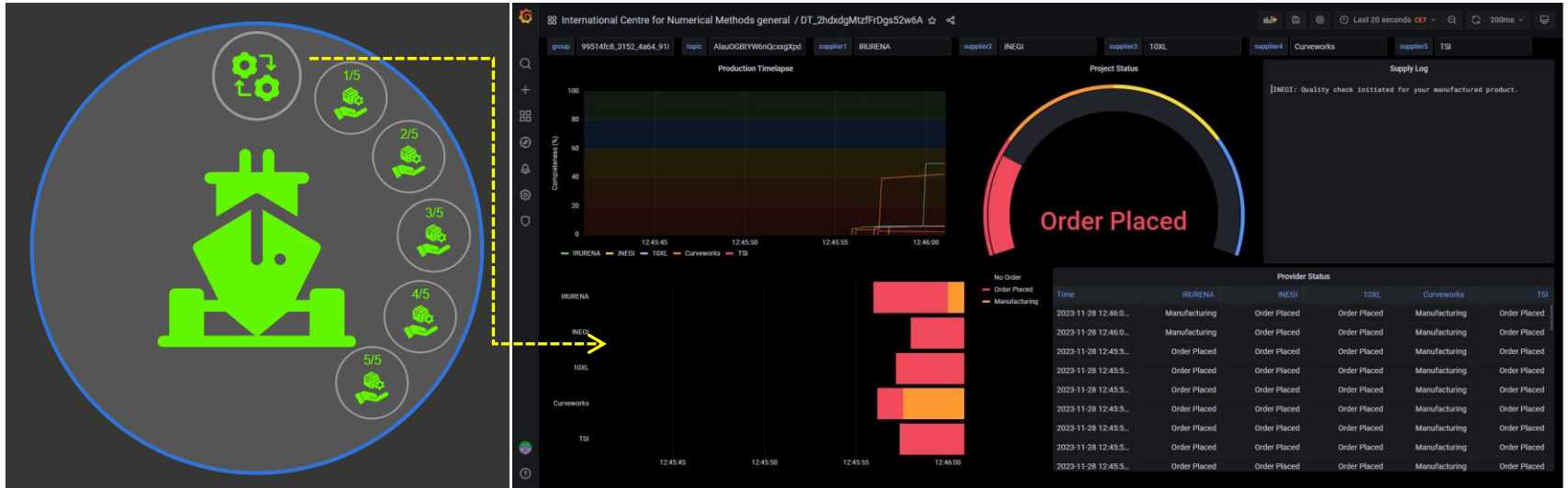
Assets geolocation

Application case: Predictive maintenance of assets using ML models



Remaining recharge cycles of forklift battery.

Application case: Monitoring the overall production process in a shipyard

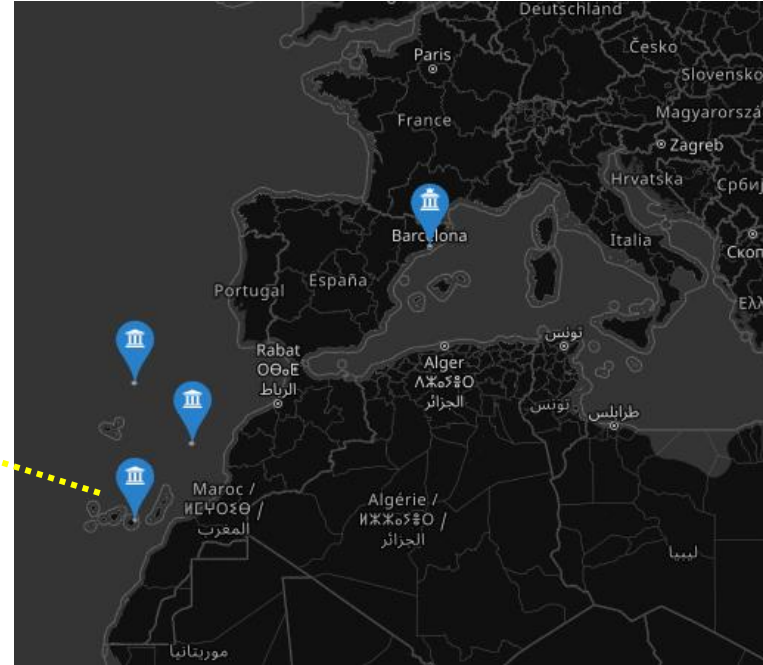


Application case: Wind turbines



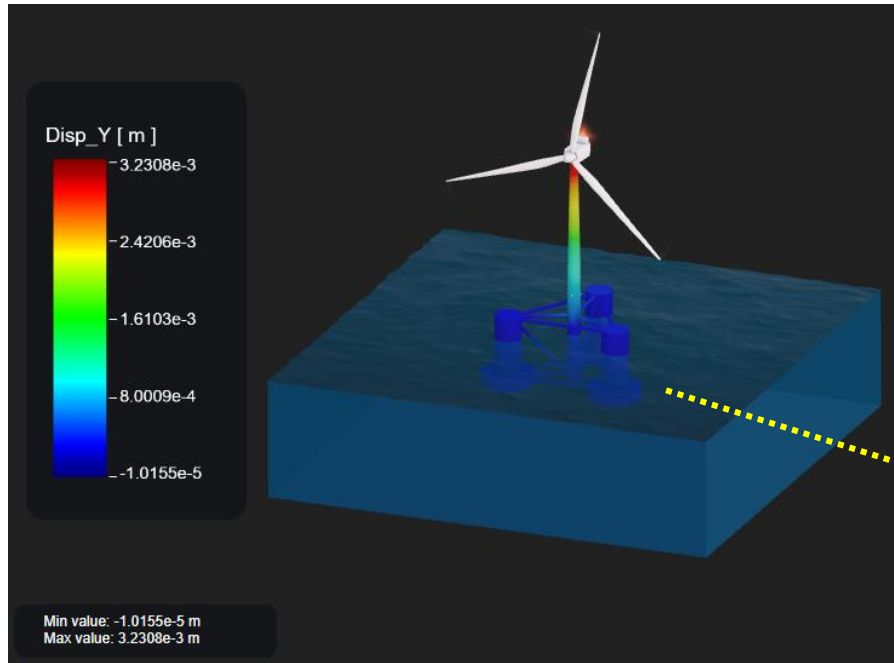
Physical model

Digital twin model

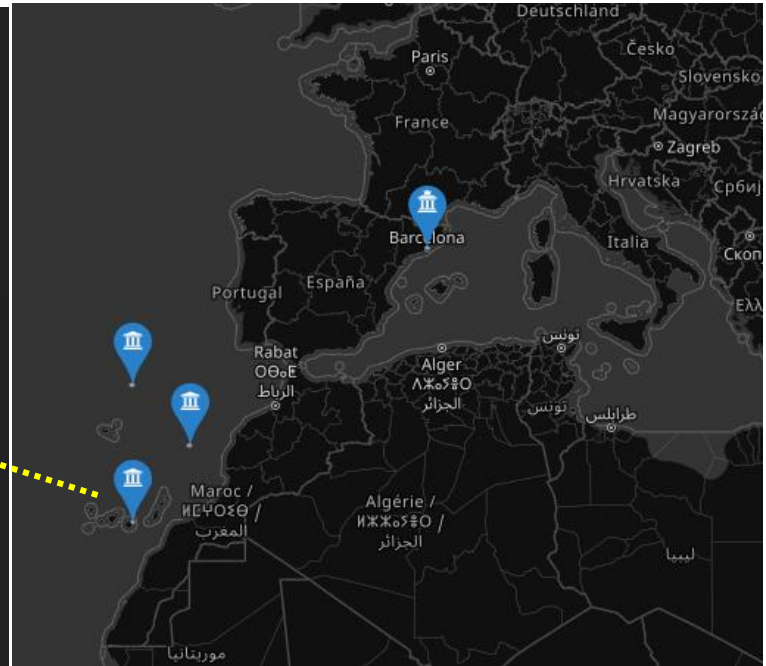


Assets geolocation

Application case: Wind turbines



Digital twin model integrated with FEM results



Assets geolocation

Live demo:



<https://iot-fibre4yards.com/>


Thank you !

 <https://www.fibre4yards.eu/>

 <https://www.linkedin.com/company/fibre4yards/>

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