

MASAI Industrial Platform (MASAI-IP)

The open data platform for industrial domains

Test

1

What does MASAI-IP offer?

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Open and interoperable platform for smart industry

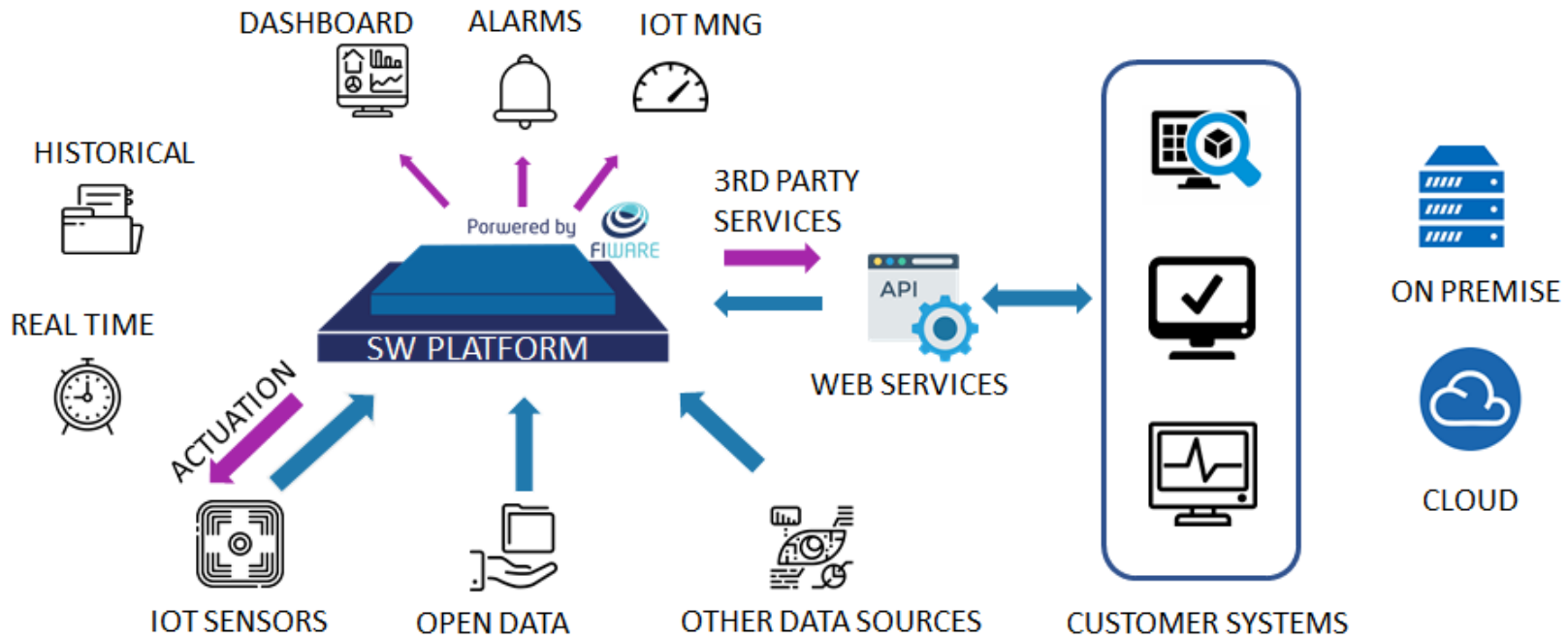
An open and interoperable software platform for:

- ▶ Integrating and collecting information from sensors and other data sources in any format/protocol
- ▶ Normalizing this data to a common standard to foster interoperability
- ▶ Provisioning of aggregated and intelligent visualization of the data to support decision making
- ▶ Exposing the data to build vertical services and integrating services from third-parties



What does MASAI-IP offer?

Open and interoperable platform for smart industry

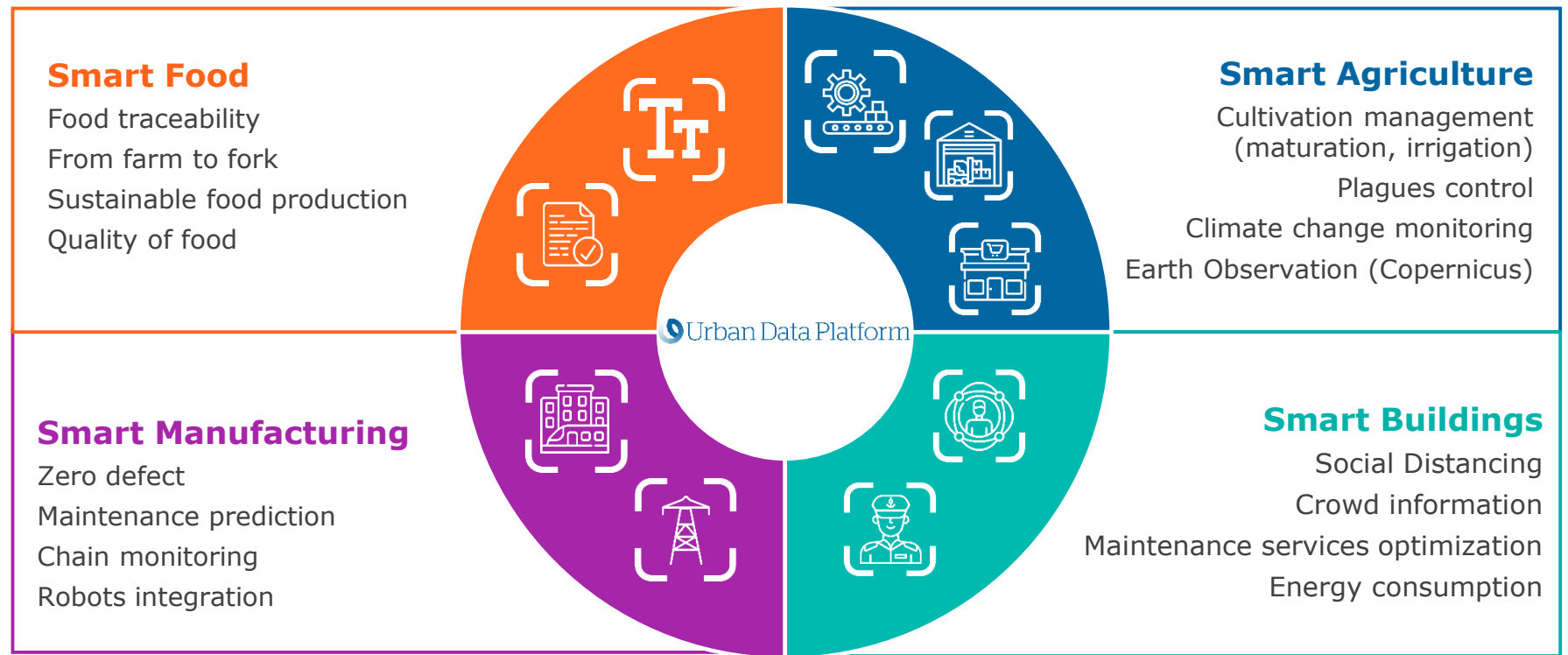


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Shuttle applications & high
level technical solution

Applications / Use Cases

Applicable to any vertical domain, but focused on manufacturing, agrifood and buildings

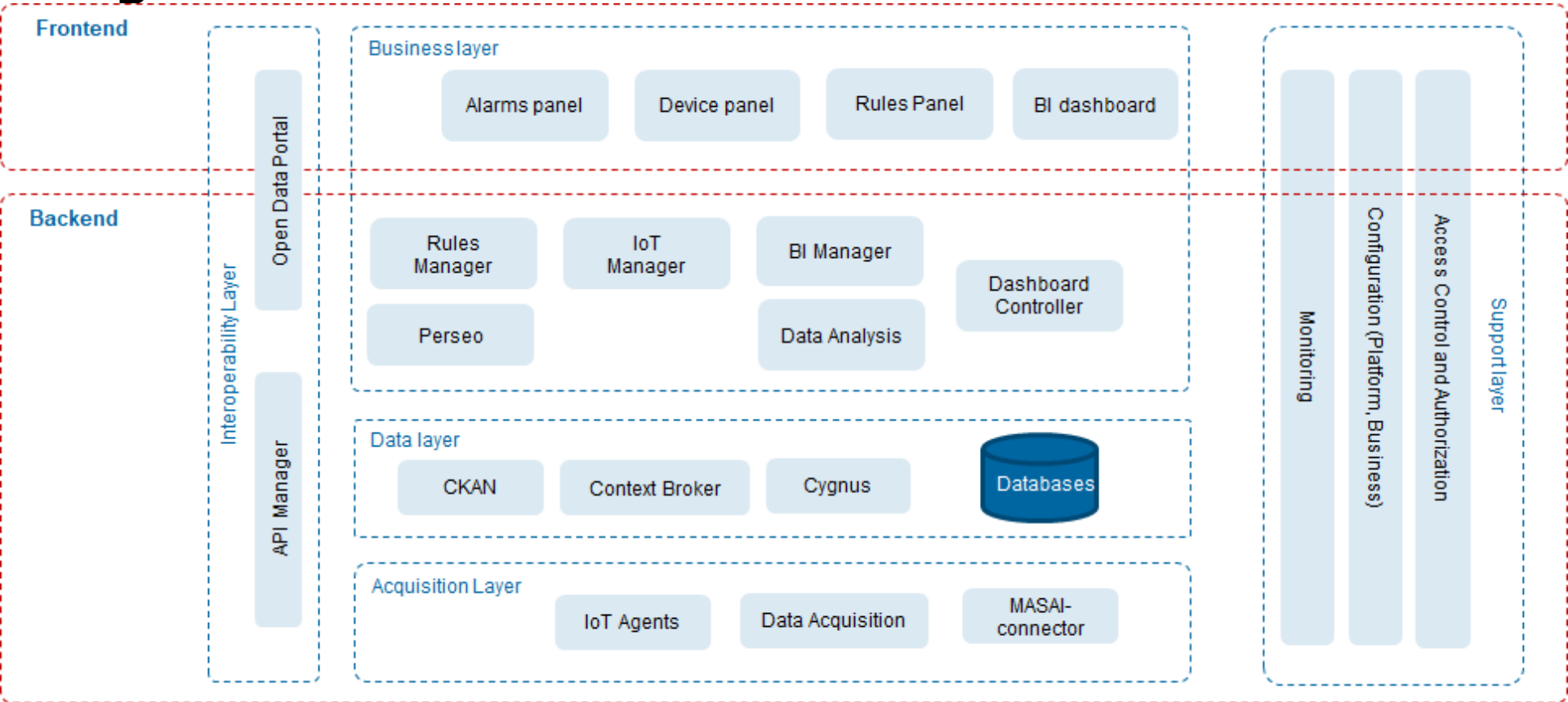


High Level Technical Solution

Main drivers

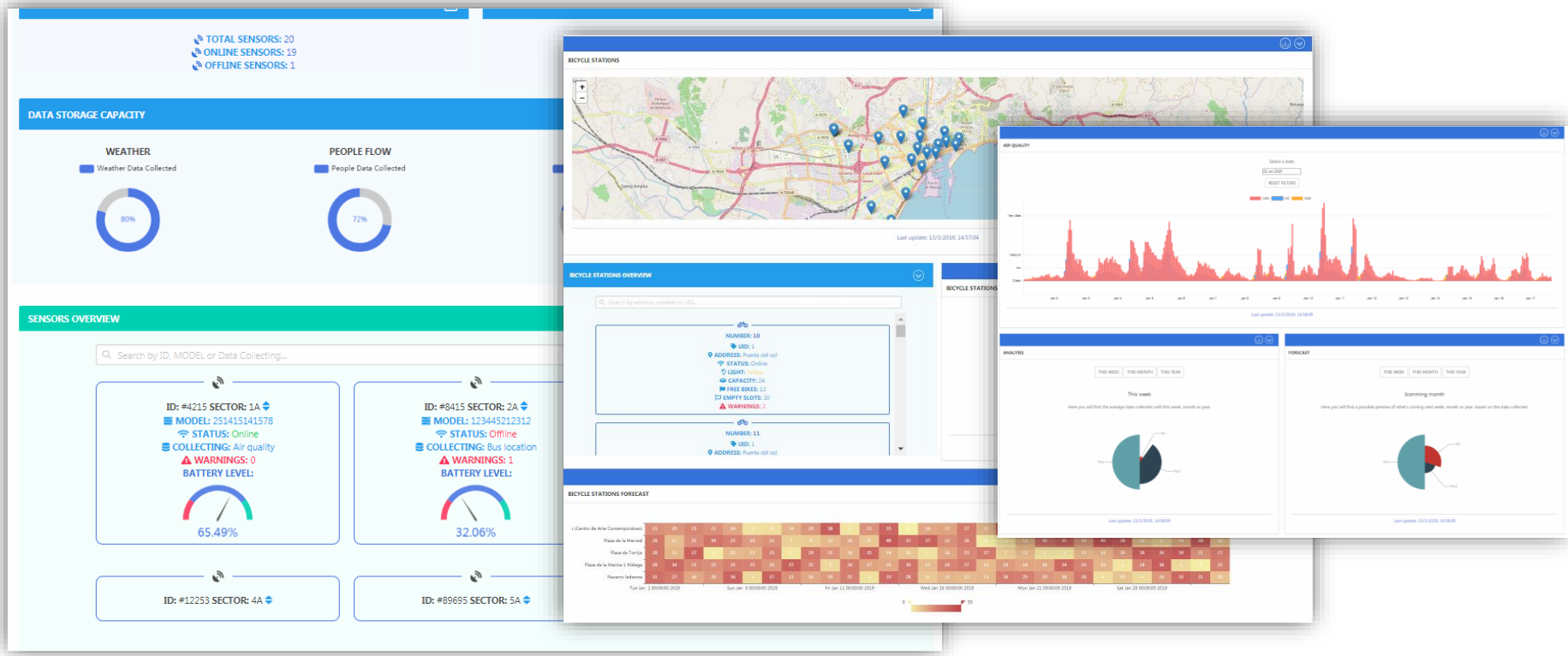
- ▶ Built on core component from FIWARE (Context Broker), relying on Next Generation Services Interface (NGSI) standard
- ▶ Using and extending FIWARE Smart Data Models to represent the different data formats
- ▶ Following a layered architecture proposed by ISO/IEC JTC
- ▶ Based on microservices paradigm completely dockerized (complaint with Kubernetes)
- ▶ Securized APIs and users access control (Oauth2 compatible)
- ▶ Available for the most common IoT protocols (M2M, LoRaWAN, OPC-UA, MQTT)
- ▶ API REST integration with other services and systems
- ▶ Deployable both in cloud and on premise

High Level Technical Solution



High Level Technical description

Some screenshots



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Added value of the
different components

Data Collection

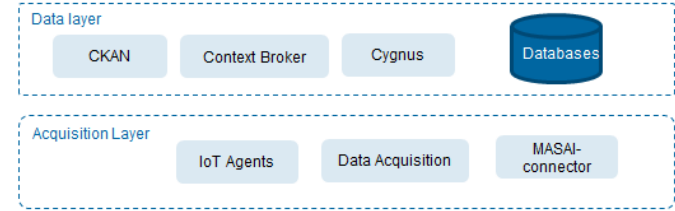
MASAI-IP supports the collection of diverse data sources

▶ IoT Agents

- Engage IoT devices and convert specific protocol/data format into NGSI
- Common library to develop new IoT Agents
- Atos owns the IoT Agent for LoRa tech

▶ Data Acquisition

- Extract, transform and load external data sources (structured and non structured)
- Load into an open data system (CKAN) or directly in the Context Broker



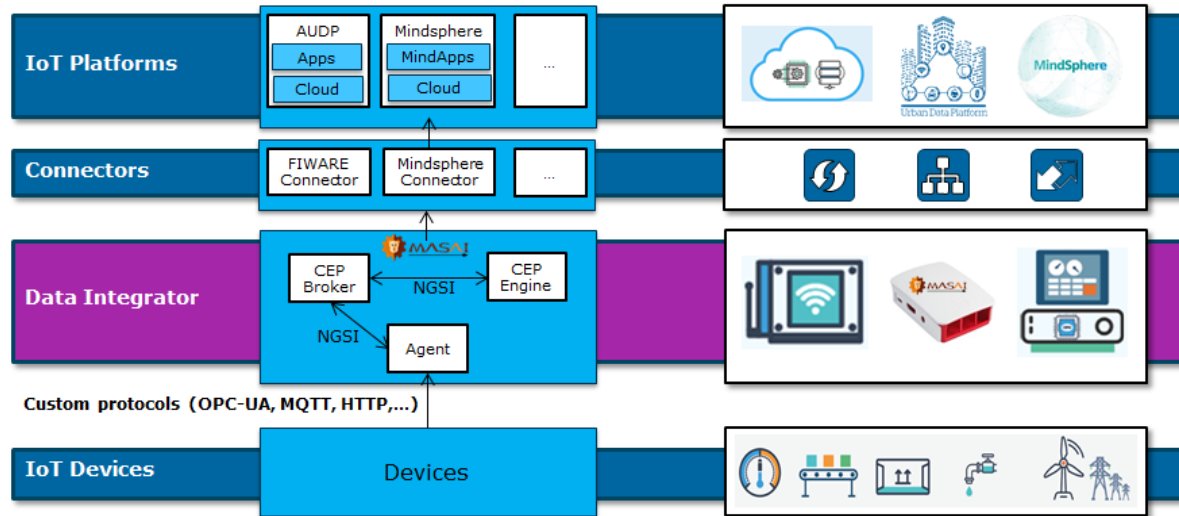
▶ Context Broker

- Manage the entire lifecycle of context information including updates, queries, registrations and subscriptions
- It is persisted into DB by Cygnus

Data Collection/Integration

MASAI-connector for industrial IoT data

- ▶ A data integrator software for heterogeneous resources in the industrial domain.
- ▶ It aims at gathering data available at shop floor level to facilitate its analysis.
- ▶ It supports decision making and predictive maintenance.

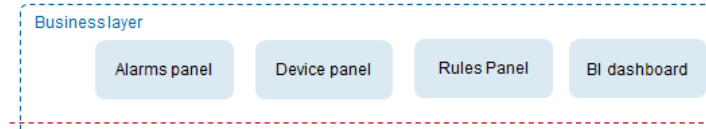


Data Analysis & Visualization

MASAI-IP allows analysis over collected data and advanced visualization

▶ Historical graphics

- Show different views over the stored/analyzed data by using diverse type of graphs
- Use of several filters
- Download to various formats (csv, PDF, png)



▶ Management Panels (devices, alarms, rules)

- Allow the registration and monitoring of all integrated devices
- Allow the monitoring and management of alarms triggered by devices
- Allow configuration of rules to launch events depending some conditions

▶ Predictions

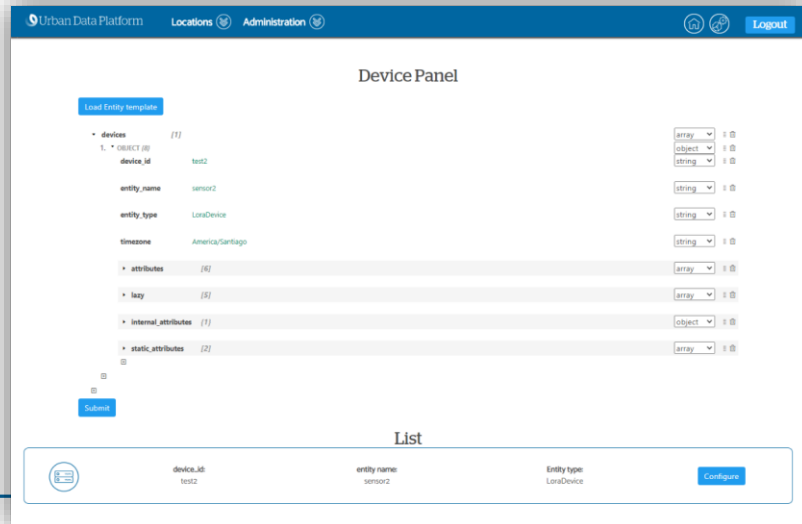
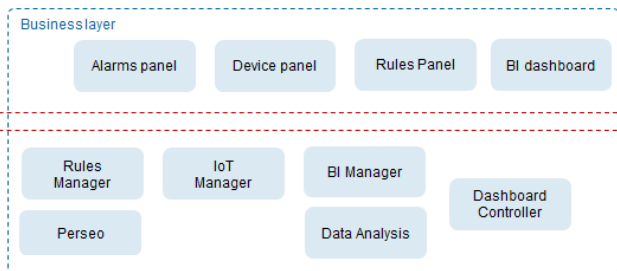
- Based on historical data and Machine Learning algorithms, provide forecast information

Device monitoring

MASAI-IP allows full management of IoT devices

▶ IoT Manager

- Manages all the devices integrated in the platform, providing a list of details about their battery, model, type, etc.
- Monitors their status (active or not) and the possibility to configure them remotely (for actuators)

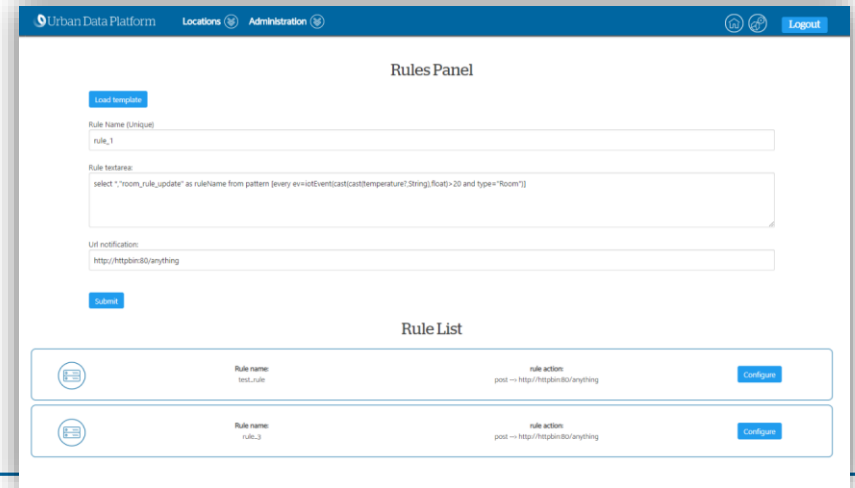
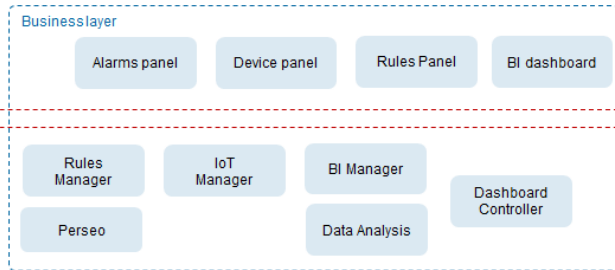


Rules and events

MASAI-IP allows creation of rules and events

▶ Rules Manager

- Definition of actions which are required when certain conditions are given
- Triggering the corresponding events when rule is executed
- Implements a Complex Event Processing (CEP) leveraging on Perseo



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Success Stories

Mallorca Airport

Clean and comfortable spaces



Customer requirements and problems to solve

- ▶ User satisfaction is currently assessed by the Happy or Not system at the exit of the bathrooms
- ▶ The sensorization of the bathrooms allows a more objective and exhaustive control of the service levels
- ▶ Cleaning and maintenance actions could be anticipated, optimizing their planning

Solution provided

- ▶ Integration and collection of data and alarms from sensors
- ▶ Advance visualization of data and alarms
- ▶ Notification of alarms to airport central system for cleaning and maintenance
- ▶ Remote configuration of sensors thresholds



Madrid Airport

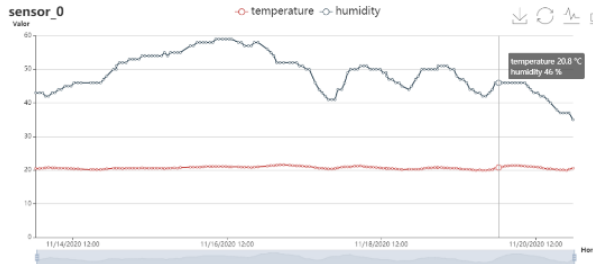
Monitoring of airport spaces



Locations

Filtrar por Fecha:

Mostrando del: 13/11/2020 al 20/11/2020



Customer requirements and problems to solve

- ▶ Test the deployment of a LoRaWAN network at the airport
- ▶ Validate possible use cases of sensors (irrigation, voltage control, interior and runway temperature, humidity...)
- ▶ Assess the LoRa technology for future exploitation.

Solution provided

- ▶ Integration & collection of data and alarms from sensors
- ▶ Advance visualization of data and alarms
- ▶ Remote configuration when feasible

Málaga Airport

Time of service for people and vehicles

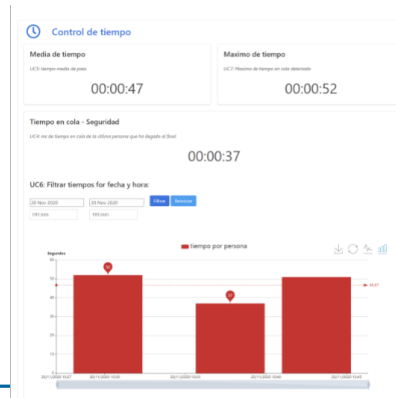


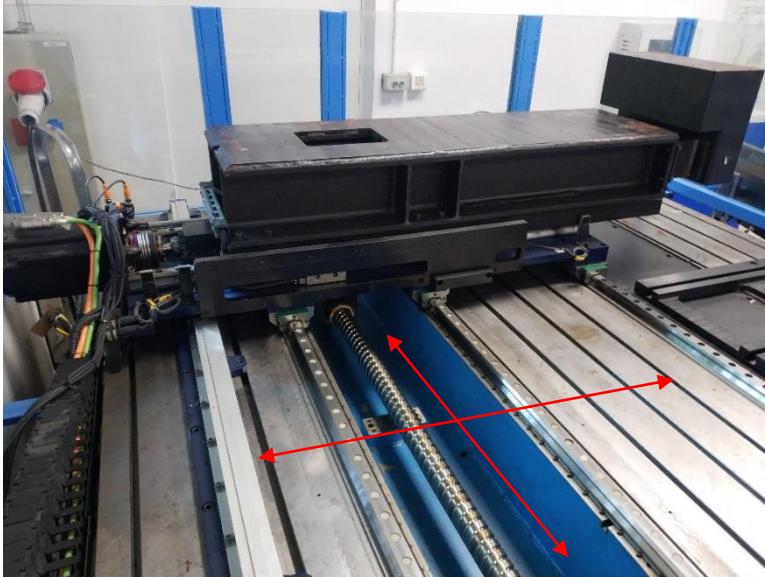
Customer requirements and problems to solve

- ▶ Improve service to passengers and ensure a safe and healthy environment for them
- ▶ Check that they can achieve similar indicators with a non-proprietary solution

Solution provided

- ▶ In combination with Smart Vision Shuttle, that is developing the models for image processing and analysis in certain cameras of the airport
- ▶ Three edge devices will be installed to send the data and the necessary alarms to the platform to provide information about security check times, passengers in queues, full-service time, etc.)





IDEKO requirements and problems to solve

- Simulation of a moving train. The train has a piece that handles charges of 400 kg, moving in 2 axis and working 12 hours daily. If the piece breaks, the train needs to stop until a new piece arrives.

Solution provided

- Real-time data gathered from the sensors on the train piece and transferred to the platform
- Gateway between data sources and data analytics platform, delivering models for predictive maintenance.

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On-going projects

MCU Fortifier

EIT Digital Project



- ▶ The result of the project will be a product that enhances the security and safety of IoT installations
- ▶ The MVP will be tested and validated in our platform MASAI-IP

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Our value proposition &
business model

Business Challenges

Market / Sector

- ▶ Any sector with IoT needs: cities, industry, buildings, health, agriculture, energy...

User habits

- ▶ Lack of strategy: focus on IoT infra (sensors) rather than in what to do with the collected data.
- ▶ Little focus on the improvement or benefit criteria.
- ▶ Look first at the technology (how) rather than at the use cases (what for).

Customer needs

- ▶ Integration of sensors to obtain data from the environment.
- ▶ Advanced data analysis and visualization.
- ▶ Management of alarms and devices.

Technological development

- ▶ Aggregation of different data sources (formats) for value-added services
- ▶ Forecasting the future based on data behavior.
- ▶ Remote configuration on devices and generation of actions on systems.

Business Model

- 1** Pilots and PoCs with customers for demonstration of functionality in selected scenarios
- 2** Platform as a Service: includes set up fee + integration/adaptation cost
- 3** Services delivery: includes initial consultancy, development of vertical services, access to collected data, integration of sensores/data sources



Thank you

For more information:
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