



# GWS Industrial IoT platform



# GWS IIoT Platform – a quick summary

- 1 The platform allows to pool all industrial data in order to maximize the economic benefit of using IIoT technologies, ML and modern functional architecture of apps
- 2 Utilizing the platform drastically increases the speed of creating and implementing the industrial applications, including MES
- 3 Microservice architecture allows using solutions from various developers while maintaining common traceability of the processes

**GWS**

Industrial IoT Platform

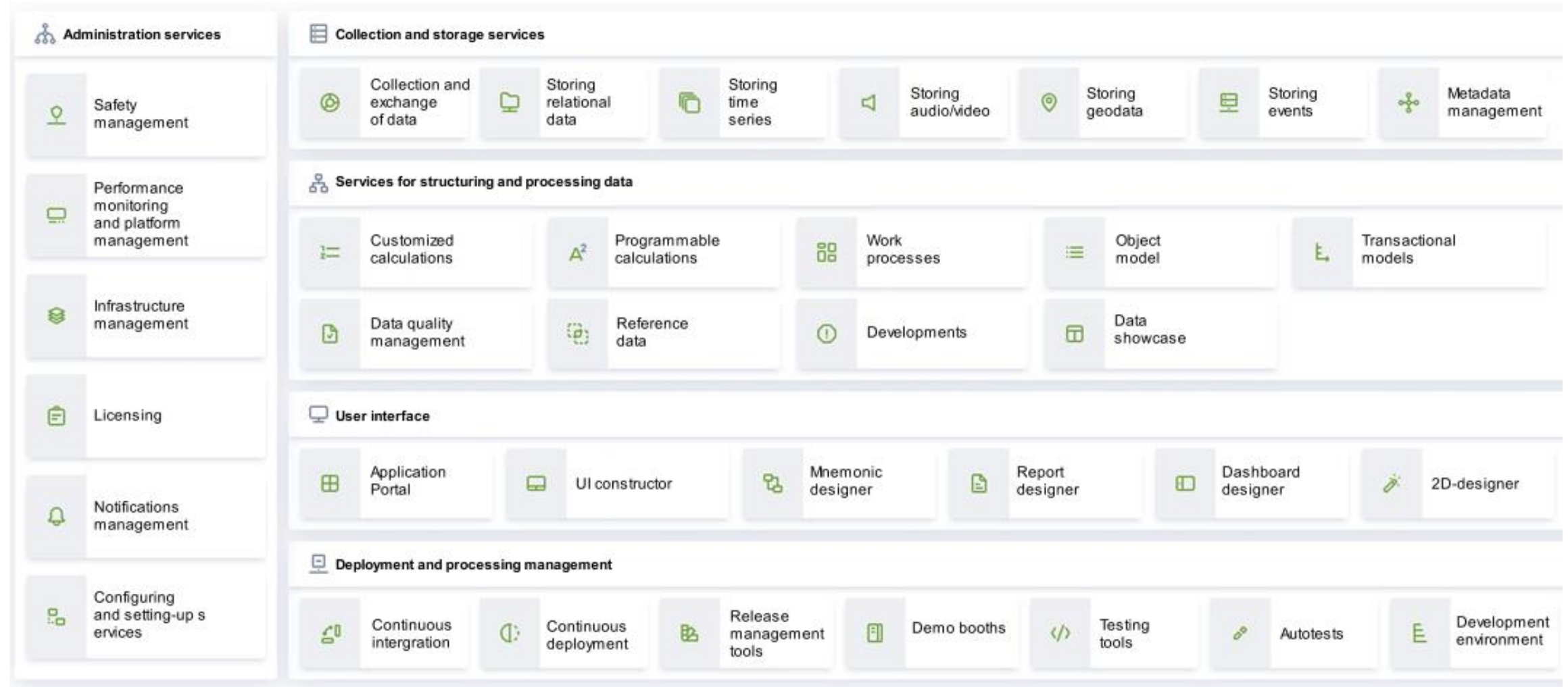
## ADVANTAGES

1. Control over the source code
2. Unified object model
3. Wide connectivity
4. Unified data space
5. Unified interfaces with data sources
6. Base of data infrastructure (same as OSIsoft/Siemens)
7. ML infrastructure
8. PAAS/SAAS models
9. Cloud infrastructure support
10. Development speed



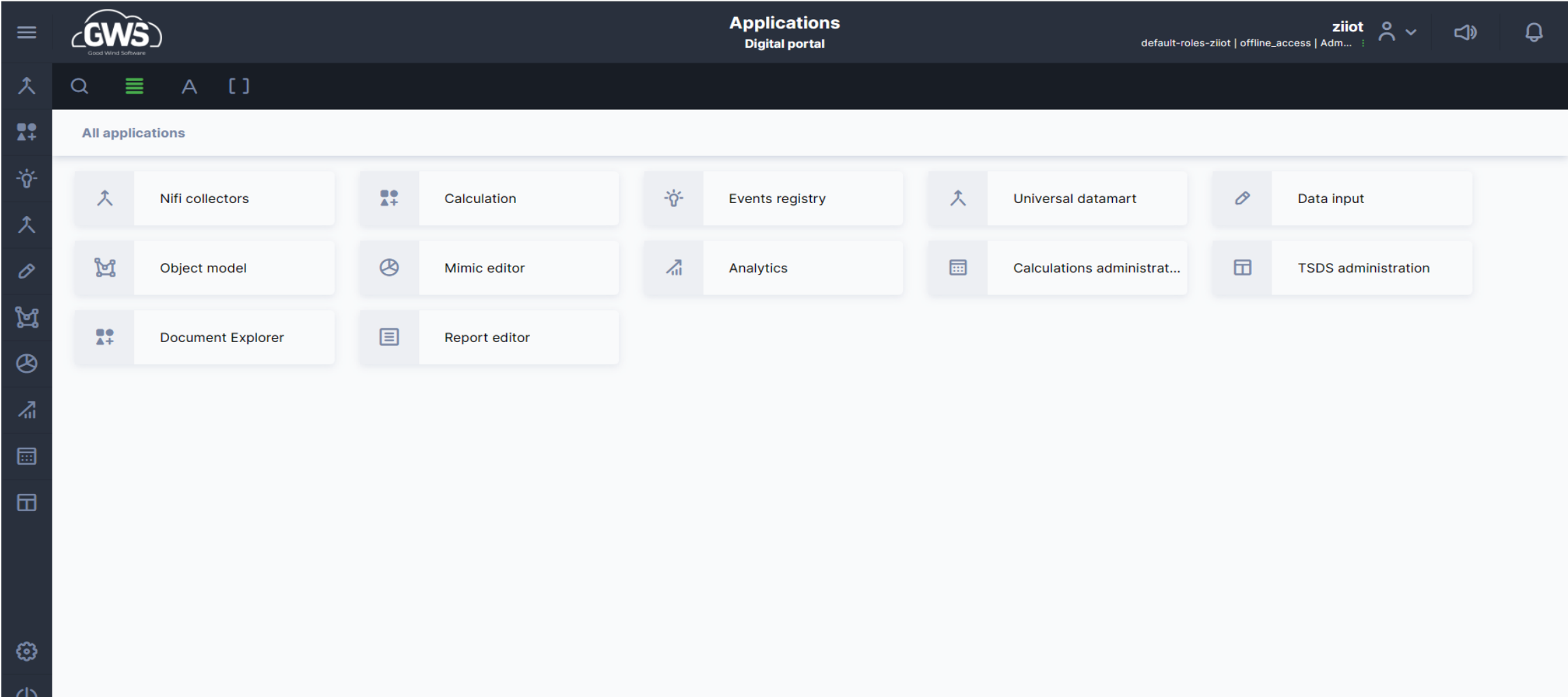
# GWS IIOT

## Functional structure





# GWS home screen





# Data collection

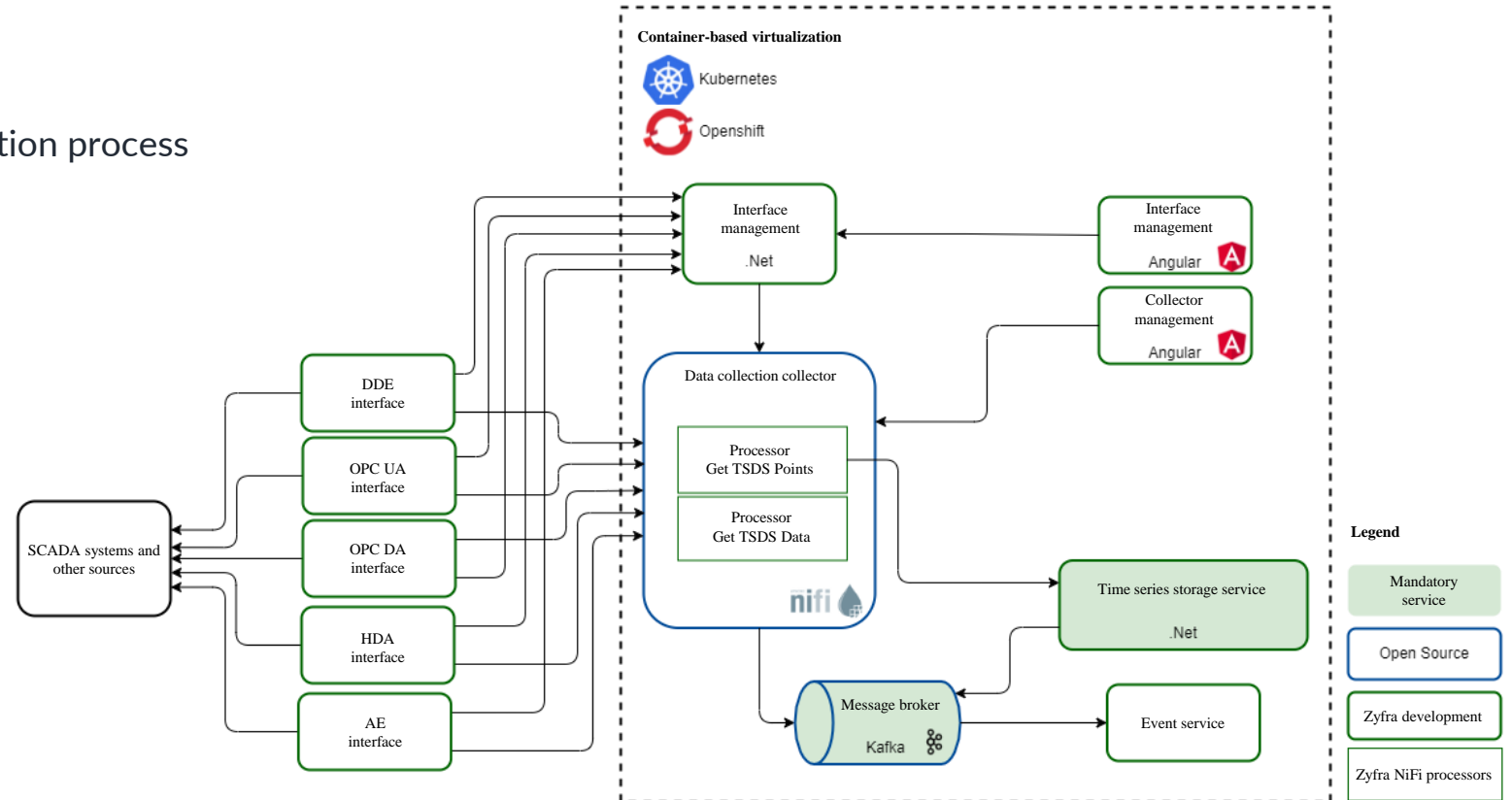
Interfaces, normalization, compression, incoming signal fault tolerance

## Key advantages

- Great integration opportunities
- Flexibility for customization of the data collection process
- Clustering of data collection collectors
- Guaranteed data delivery

## Data collection interfaces

- GE Historian
- OPC DA 1.0/2.0/3.0
- OPC HAD
- OPC AE
- OPC UA
- OSISoft PI
- System
- RDBMS
- Text file
- RTDB
- Simulation
- SNMP
- Modbus





# Data collection

Interfaces, normalization, compression, incoming signal fault tolerance

Object model

Document explorer

Mnemonic diagram editor

Monitoring

Real-time database administration

Notifications

Events

Nifi collector management

Computation management

Turn on night mode

Change localization

Source 1

Collector 1

Collector 2

Source 2

Source

TestSource1

Source No. 1

Collector Collector 2

Processor status	Collector	Template	Data source	Administration
Started	10	Collector 2	OPCCollector	OPC-1
Stopped	0			

Parameter list of collector Collector 2

Main

Additional

Collector name

Collector 2

Administration

http://192.168.101.144/nifi-proxy/nifi/?processGroupId=4a45a529-016a-1000-0e2e-c330d7ecb45d&componentIds=ca5937fc-d020-1f81-ee11-2fcddced15d

Logging system address

http://192.168.101.144/nifi-proxy/nifi/bulletin-board

Save



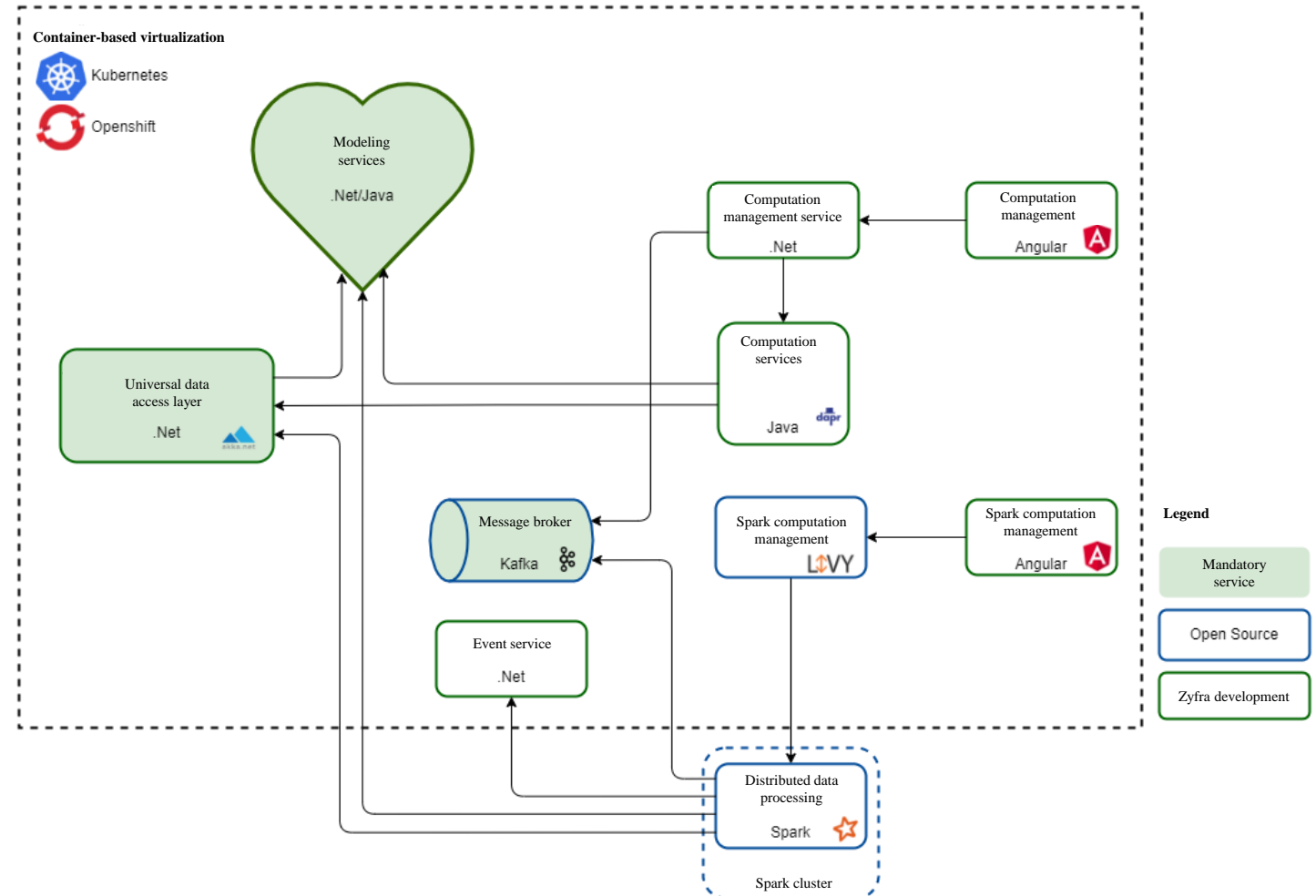
# Data-flow and out of the box calculations

## Types of computations

- Data pre-processing prior to saving time series
- Data-flow calculations of time series integral values (minutely, hourly, daily data)
- Calculation of measurement derivatives based on collected time series data (recalculation of weights, volumes, densities)
- Calculation of rules for generation of alarms and events

## Key advantages

- Random computation algorithms
- Connection of third-party libraries
- Horizontal scaling
- Recalculations on historical data





# Data-flow and out of the box calculations

Object model

Document explorer

Mnemonic diagram editor

Monitoring

Real-time database administration

Notifications

Events

Nifi collector management

Computation management

Turn on night mode

↺

≡

↻

⬆

List of calculation libraries

Event generator

brokers \*  
kaf1.backend.svc

nameExport \*  
Generator

+

Computation 1

Computation 2

Computation 3

mode \*  
archive

calcWithBadValue \*  
false

+

Computation 4

integralcontexttrapezoid(archive)

Editing computation library

ra

Name ие \*  
Event trigger

Class name са \*  
SparkAppMain

Source code ика \*  
Calc.eventframegenerator

Main file йл \*  
EventFrameGenerator-1.0-SNAPSHOT.jar

Additional files

+

jackson-datatype-jsr310-2.9.8.jar

kafka-clients-2.2.0.jar

mvel2-2.4.4.Final.jar

spark-streaming-kafka-0-10\_2.11-2.4.1.jar

APPLY

Monitoring

Addr... \*  
132/€

typeld \*  
9b72aa5e-93ac-4

timeRefresh \*  
300

Error

timeStartDate \*  
03-07-2019 12:00

resetSeconds \*  
7200

Error

Error

Error

Error



# Time series storage

## Data cache, hot/cold storage

The screenshot displays the GWS Real-time database administration interface. The left sidebar contains navigation options: Object model, Document explorer, Mnemonic diagram editor, Monitoring, Real-time database administration (highlighted), Notifications, Events, Nifi collector management, Computation management, Turn on night mode, and Change localization.

The main panel is titled "TAGS" and "DISCRETE SETS". It shows a "Diagram by tag values 'Test.SourceCalc.1'" and "Value display parameters". The parameters include:

- Beginning of period: 11.09.2019 13:23:26
- Boundary type: Within
- End of period: 11.09.2019 14:23:26
- Number of values: 150
- Direction: Left

An "APPLY" button is visible. Below the parameters is a "Trend" graph showing a line plot of values over time. The x-axis represents time from 21.07.2019 to 25.08.2019. The y-axis represents values from 0 to 60. The graph shows a decreasing trend.

On the right, a table displays data for the tag "Test.SourceCalc.1". The table has columns for "DOUBLE", "17.04.2019 18:08:01", and "17.04.2019 18:08:01". The data rows show values for "DOUBLE", "17.04.2019 18:08:01", "14.05.2019 11:35:45", and "20.06.2019 19:40:00".

Below the table, there are settings for "Units of measurement" (set to "9130") and "compression settings". The "compression settings" section includes "Source compression" (set to 0) and "min time" (set to 0). The "max time" is set to 10. A "Save" button is at the bottom right.



# Event and notification management

## Settings of a notification template

Mailing groups

E-mail and SMS settings

E-mail settings

SMS settings

**Settings of mailing templates**

Contacts settings

Event log

Default

Test With SMS edit

Test template 1

Name of pattern\*

Test template 1

Message header pattern\*

letter header

Message text pattern

Hint

Rich text editor toolbar: Undo, Redo, Bold, Italic, Underline, Link, Unlink, Bulleted list, Numbered list, Decrease indent, Increase indent, Default, Arial, 5, Text color, Background color, Link, Unlink, Source code.

content template 1

Localizations

Save Cancel Collapse

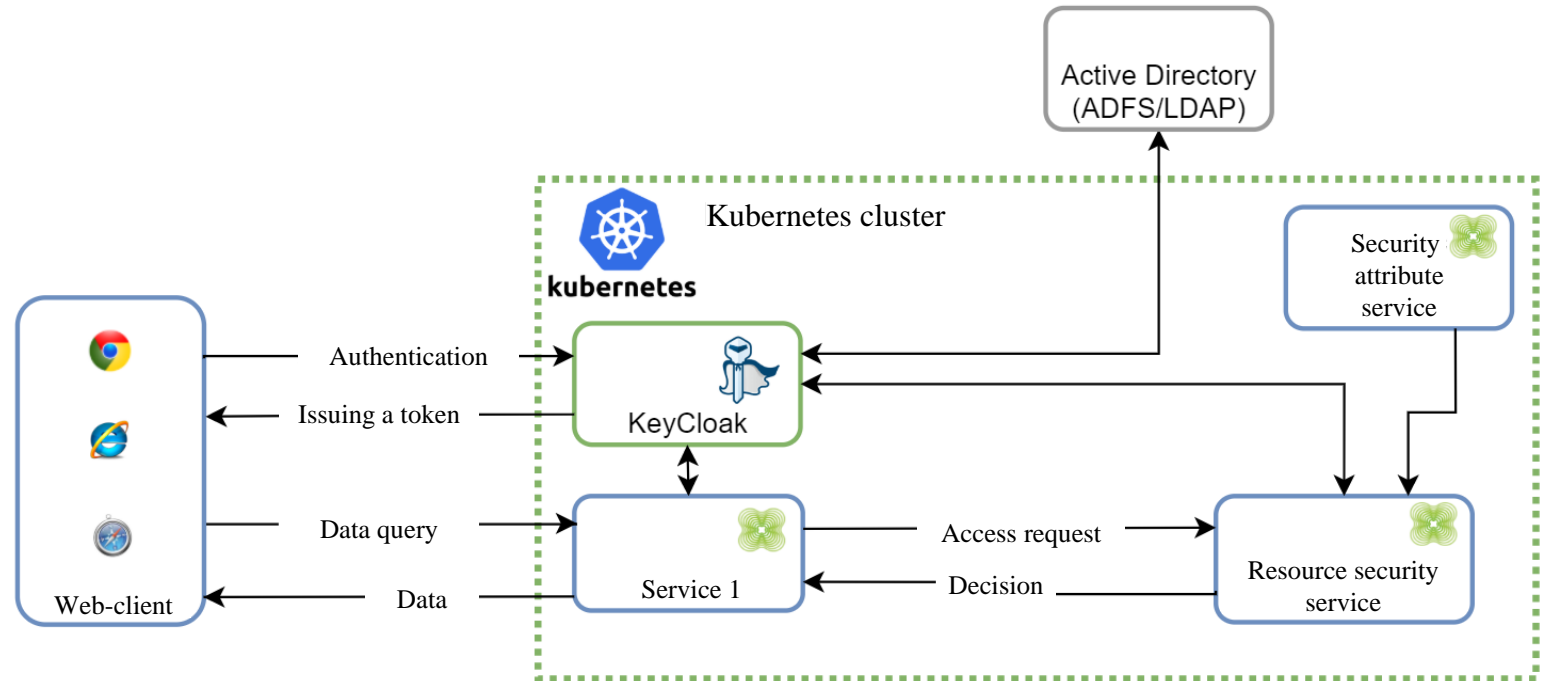


# Security

## General diagram of a security system

### Key advantages

- Single sign-on for all SSO apps
- Integration with AD for convenient support
- Setting of roles in AD
- Two mutually supportive models of access restriction
- A role model determines what functions are accessible for the user
- A resource model determines what rights the user has for a particular resource
- Encrypted delivery channels
- Signed authorization tokens



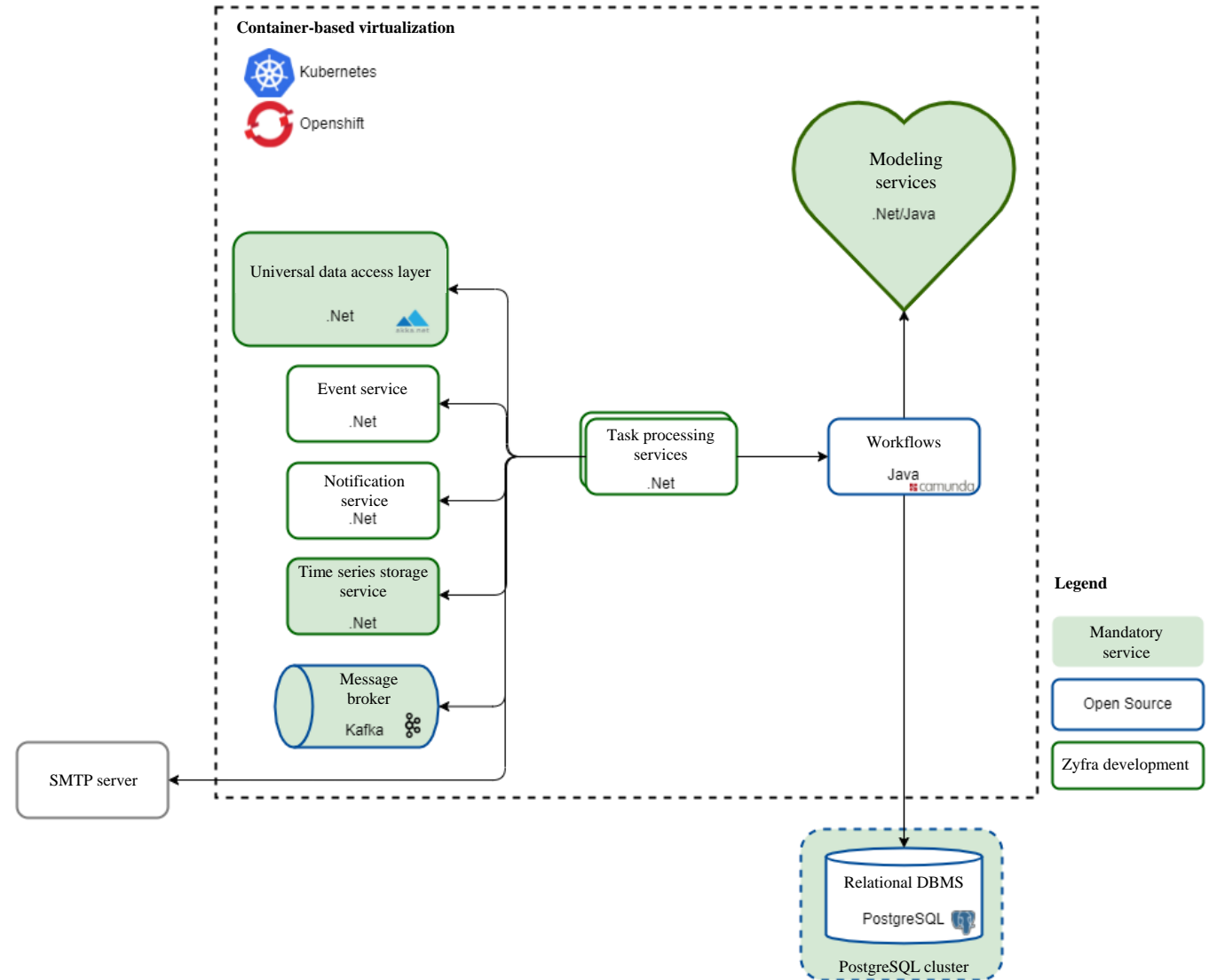


# Workflow management

## General diagram of the workflow management system

### Key advantages

- Creating a process without coding
- Support of BPMN 2.0 and DMN 1.0 standards
- Capability of integrating by various protocols
- Integration with security services for flexible access control
- Capability of being embedded in services for logic control



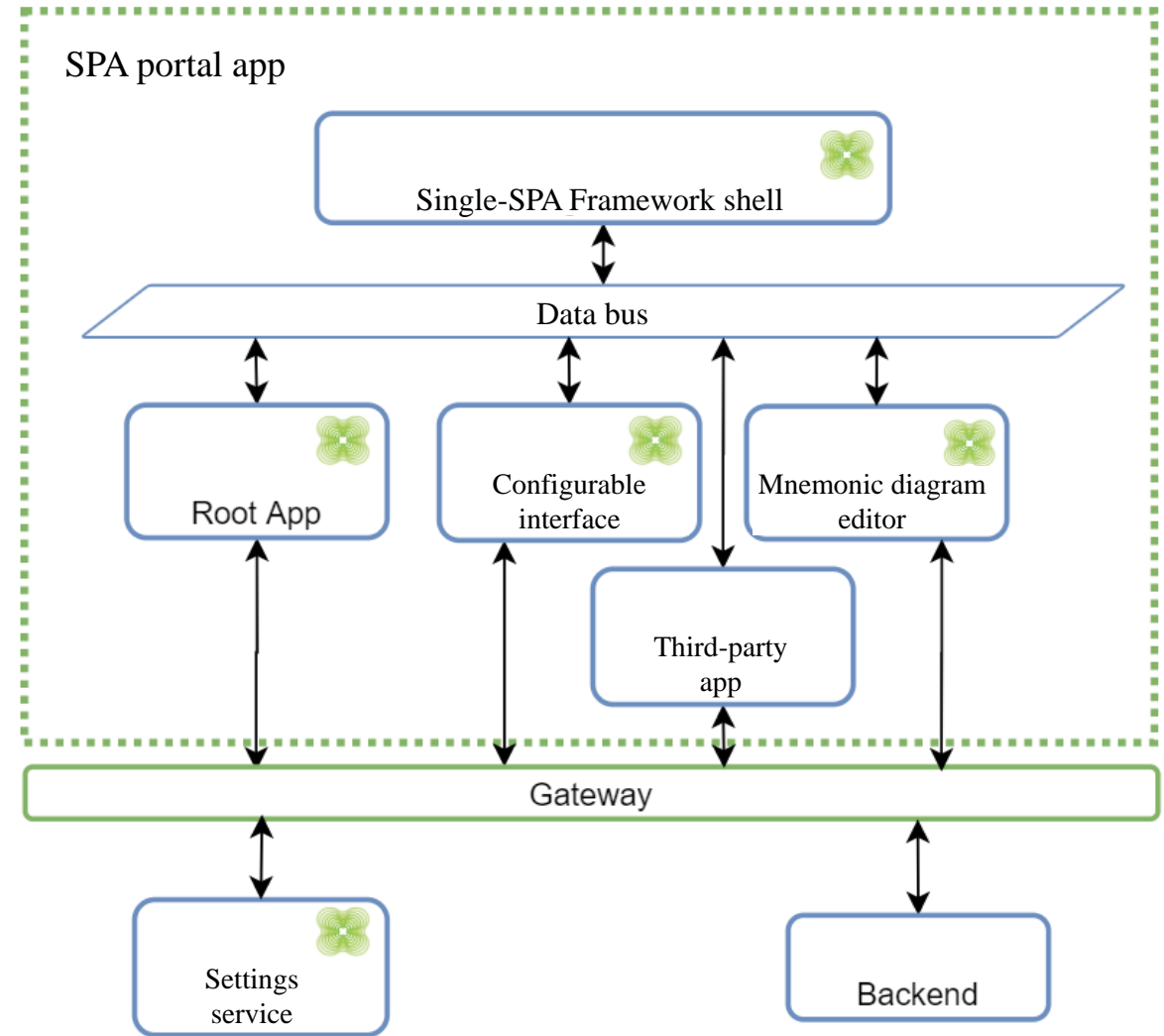


# Visualization (web portal)

## General diagram

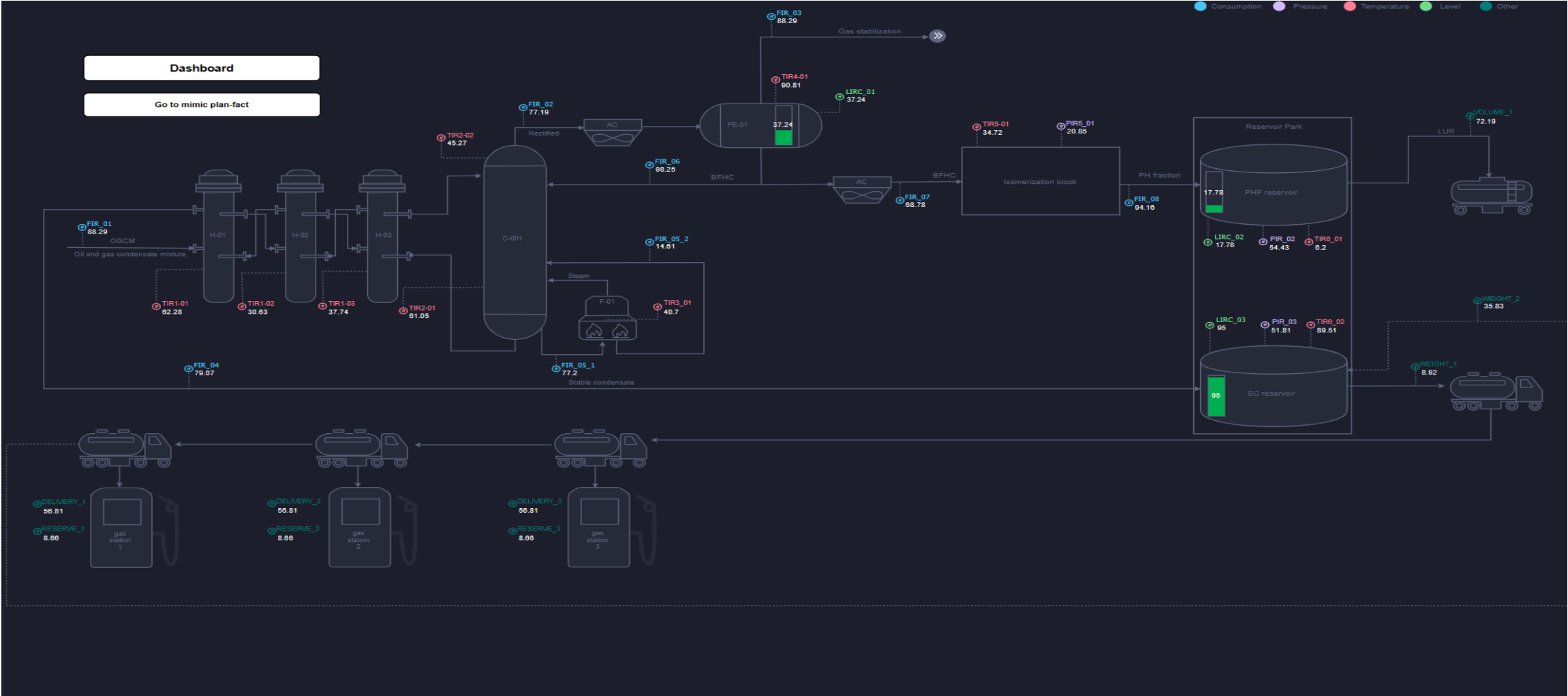
### Key advantages

- Embedding business apps including third-party ones
- Common data for all apps
- Support of system and user settings
- Catalogue of apps capable of separating into private and public ones





# Visualization: HMI



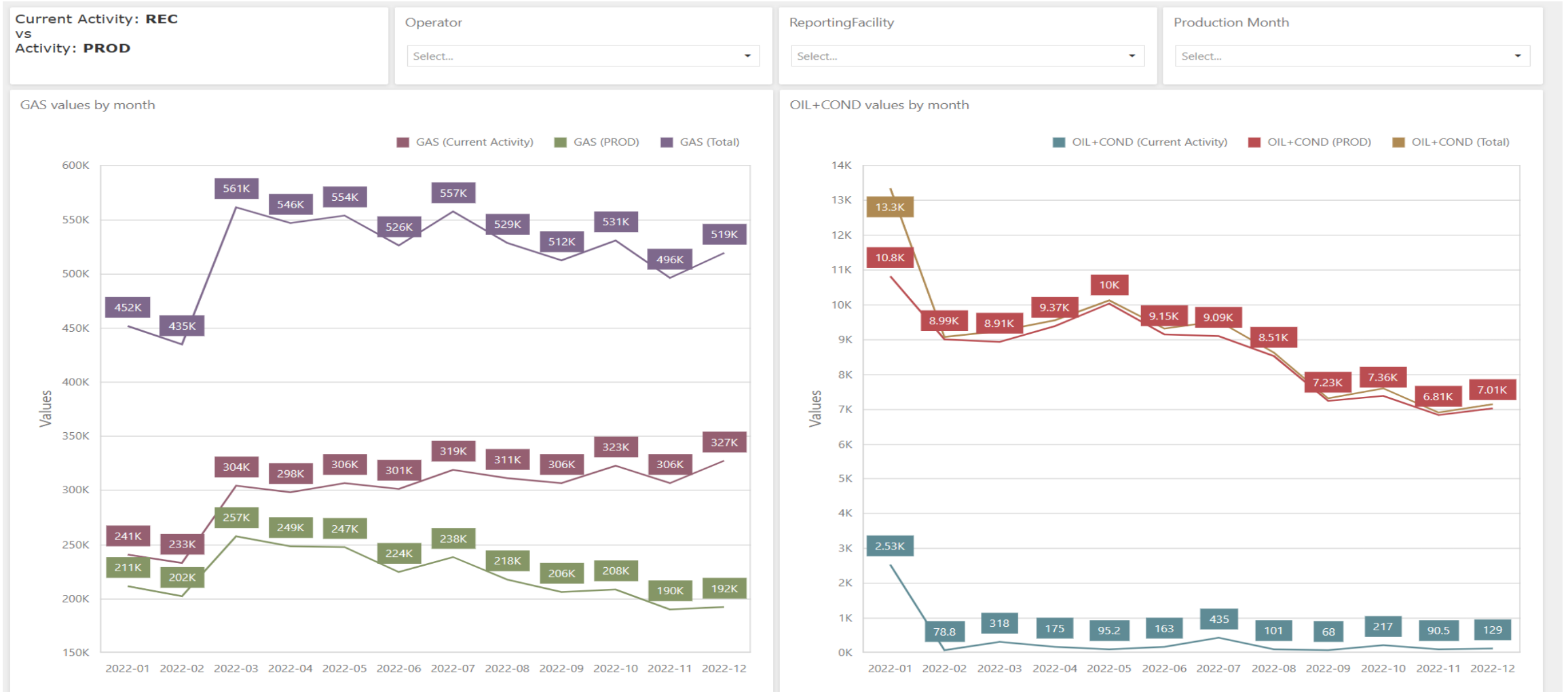


# Visualization: dashboards



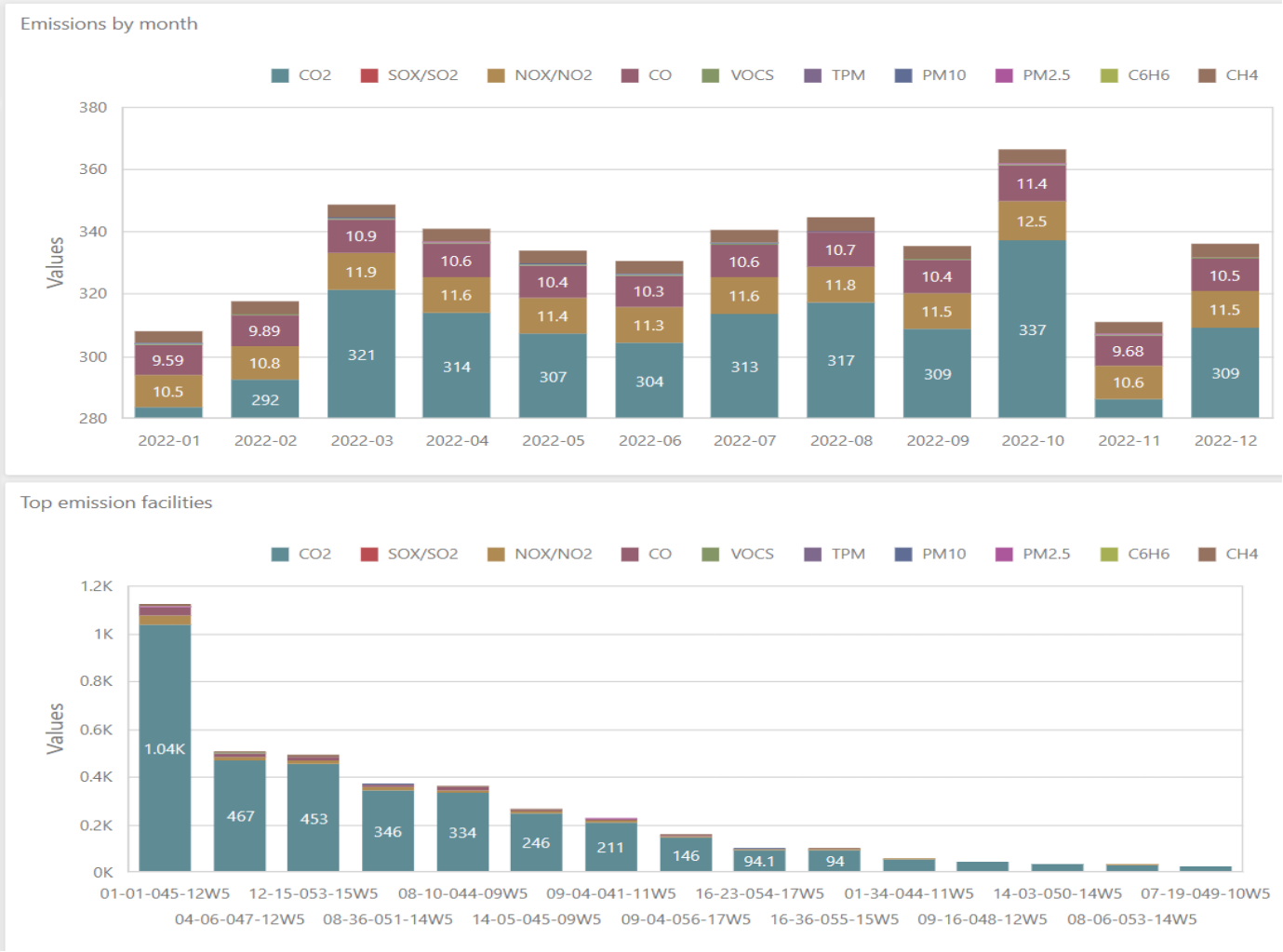
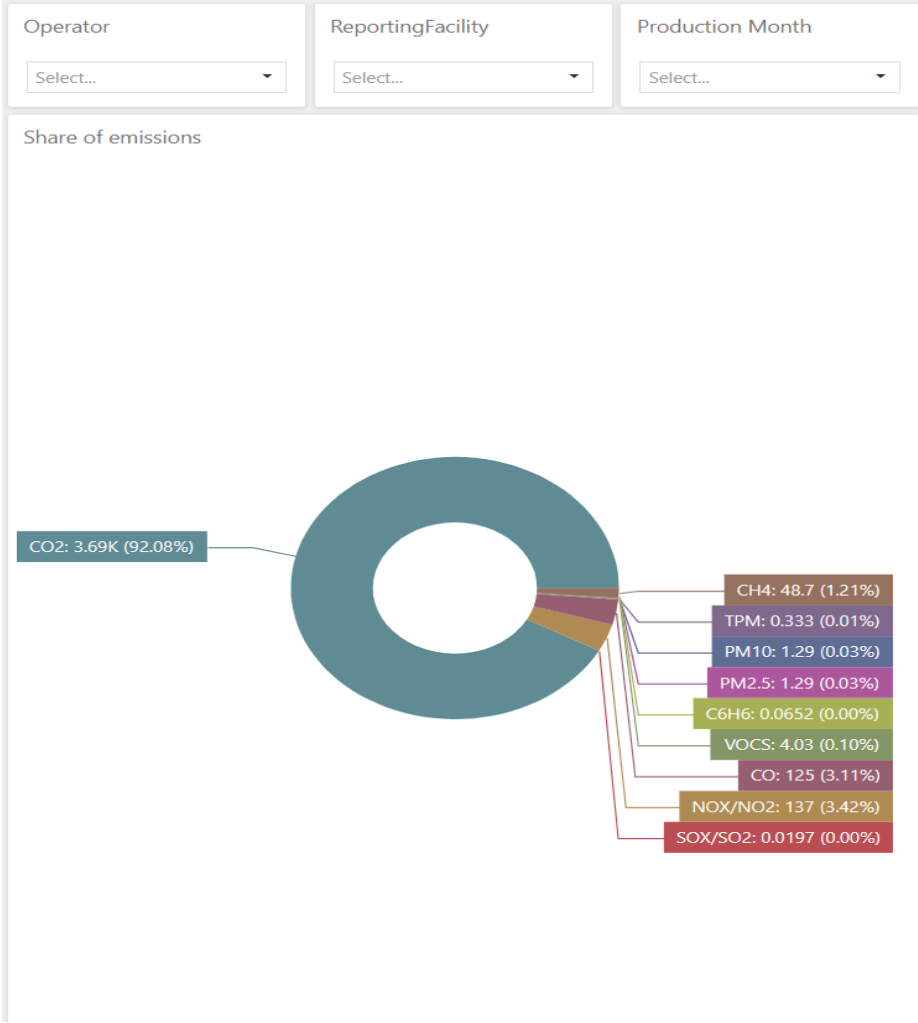


# Visualization: dashboards





# Visualization: dashboards





# Visualization: reports

Stabilization Column mimic							
PSA production plan-fact							
Plant material flows	Plan, t	Fact, t	Fact (instant), t/h	Shift 1, t	Shift 2, t	Rel. deviations, %	Abs. deviations, t
PSA							
RAW							
Raw mix	25.05	8.96	82.24	6.81	60.91	25.05	8.96
TOTAL RAW MATERIALS	82.24	72.57	72.57	77.61	54.97	34.26	23.42
PRODUCTS							
Hydrogen	73.63	34.26	73.63	52.47	77.61	28.8	64.27
Stripping gas	23.42	28.8	8.53	31.74	69.21	43.47	72.57
TOTAL PRODUCTS	64.27	43.47	77.9	23.56	25.05	31.74	54.97
UNBALANCE	30.8	5.47	37.17	36.54	8.96		



Report1  
Document Explorer
ziliot | default-roles-ziliot | offline\_access | Adm... | | |

[Home](#) / [Reports](#) / **Report1**

Zyfra Document Explorer

- Dashboards
  - 1. A5WB - Conventional Volumetri...
  - 2. A5WB - Conventional Volumetri...
  - 3. A5WB - Graphs
  - Dashboard stabilization column
- Reports
  - Summary stabilization column par...
  - Detailed stabilization column para...
  - Report1**
- Mimics

[Export](#)
[Report parameters](#)
[View report](#)

< 1 of 19 >

### Test report

Date and time	Object	Property name	Path	Numeric value	Integer value
06/27/2023 07:21:00	66e603a0-d75e-11eb-95d2-3949491c0bae	Equipment Object	Equipment model/Equipment Object	0	0
06/27/2023 07:22:00	66e603a0-d75e-11eb-95d2-3949491c0bae	Equipment Object	Equipment model/Equipment Object	0	0
06/27/2023 07:23:00	66e603a0-d75e-11eb-95d2-3949491c0bae	Equipment Object	Equipment model/Equipment Object	0	0
06/27/2023 07:24:00	66e603a0-d75e-11eb-95d2-3949491c0bae	Equipment Object	Equipment model/Equipment Object	0	0
06/27/2023 07:25:00	66e603a0-d75e-11eb-95d2-3949491c0bae	Equipment Object	Equipment model/Equipment Object	0	0
06/27/2023 07:26:00	66e603a0-d75e-11eb-95d2-3949491c0bae	Equipment Object	Equipment model/Equipment Object	0	0
06/27/2023 07:27:00	66e603a0-d75e-11eb-95d2-3949491c0bae	Equipment Object	Equipment model/Equipment Object	0	0
06/27/2023 07:28:00	66e603a0-d75e-11eb-95d2-3949491c0bae	Equipment Object	Equipment model/Equipment Object	0	0
06/27/2023 07:29:00	66e603a0-d75e-11eb-95d2-3949491c0bae	Equipment Object	Equipment model/Equipment Object	0	0
06/27/2023 07:30:00	66e603a0-d75e-11eb-95d2-3949491c0bae	Equipment Object	Equipment model/Equipment Object	0	0
06/27/2023 07:31:00	66e603a0-d75e-11eb-95d2-3949491c0bae	Equipment Object	Equipment model/Equipment Object	0	0

Tuesday, 27 June 2023
Page 1 of 19



## FAST TRACK TO INDUSTRY 4.0

We've got the production data covered!



Learn more >

✉ info@goodwind.io

☎ 0044 (0) 2045774151

🌐 goodwind.io