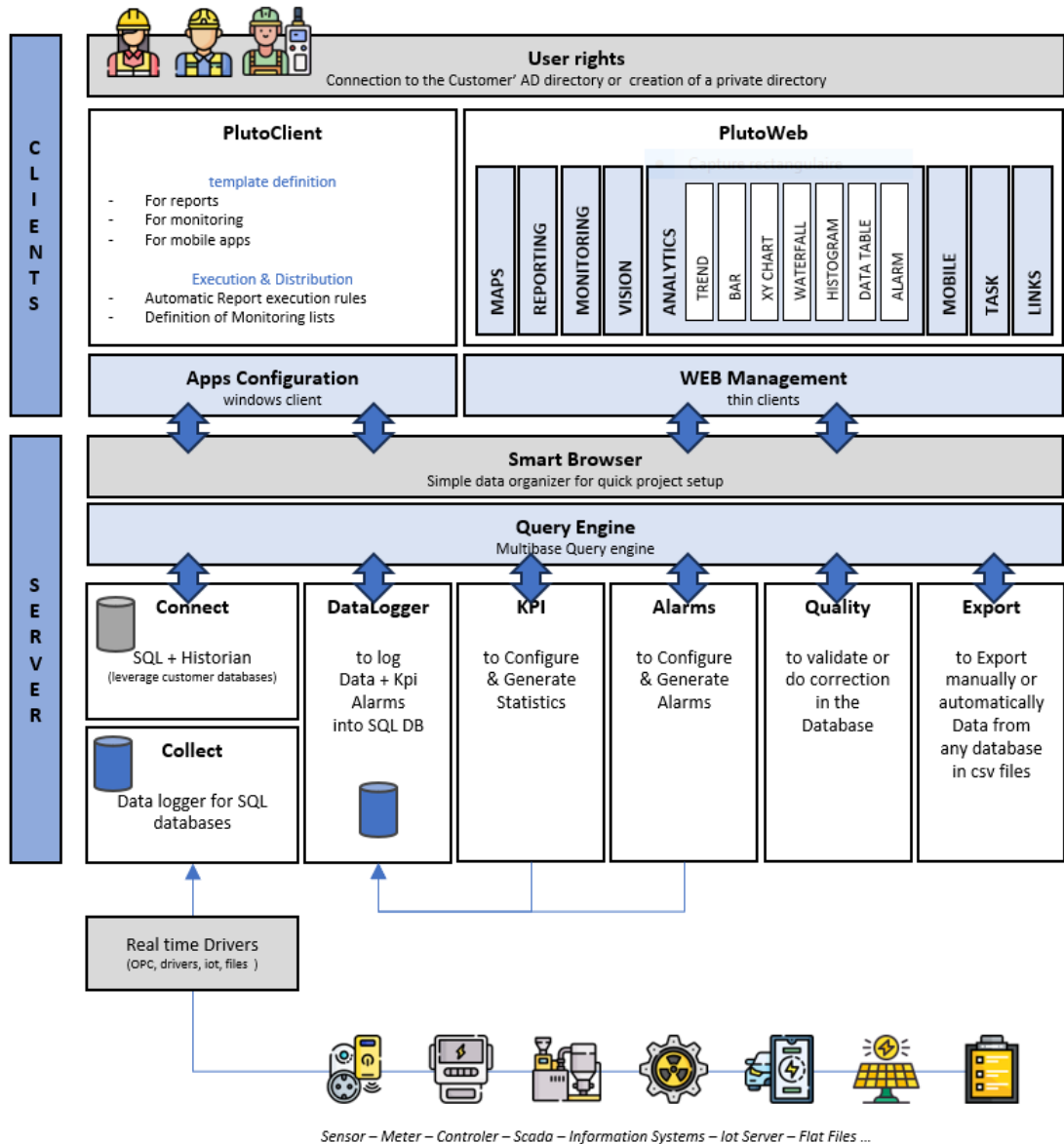


TRAINING MANUAL



DATE :

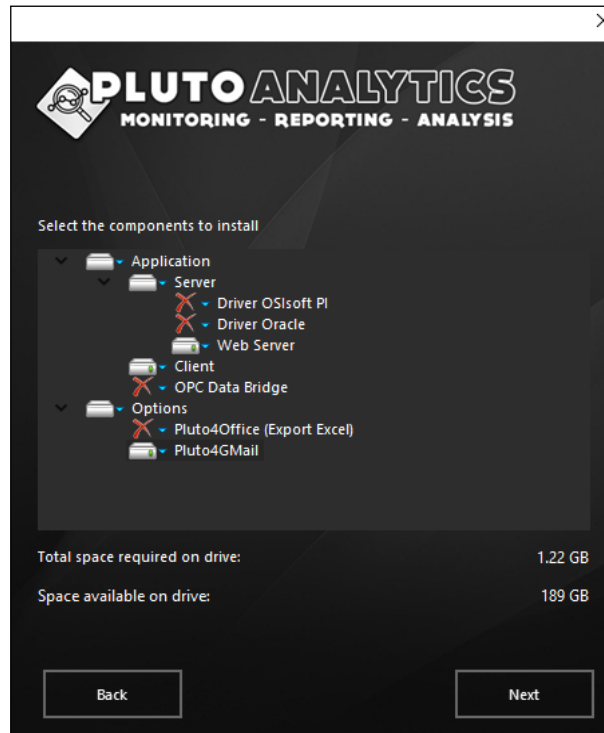
NAME :

PLUTO RELEASE :

1. INSTALLATION

DEFAULT INSTALLATION, THE PROGRAM ALLOWS YOU TO INSTALL SEVERAL COMPONENTS:

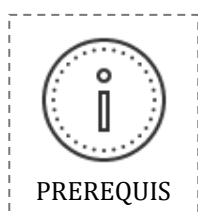
- **PLUTO SERVER** THIS IS THE HEART OF THE PRODUCT, IT WORKS AS A WINDOWS SERVICE
- **PLUTO CLIENT** WINDOWS BASED APPLICATION TO CONFIGURES THE PROJECT
- **PLUTO WEB** WEB SERVER WITH 7 APPLICATIONS FOR UNLIMITED USERS
- **POSTGRES DATABASE** CONTAINS ALL PROJECT SETTINGS AND THE DEMO DATABASE
 LOGIN: [postgres](#) PSW: [pluto](#) PORT: [3002](#)



OPTIONAL

- **PLUTO OPC BRIDGE** TUNNELER PROGRAM FOR OPC DA
- **PLUTO4OFFICE** ADD IN TO CREATE DATA EXPORT TEMPLATES FOR EXCEL
- **PLUTO4GMAIL** TO AUTOMATICALLY RECOVER CSV/TXT FILES FROM A GMAIL MAILBOX

INSTALLED FILES AND PROGRAMS: [C:\Program Files \(x86\)\Exakom\PLUTO Analytics](#)



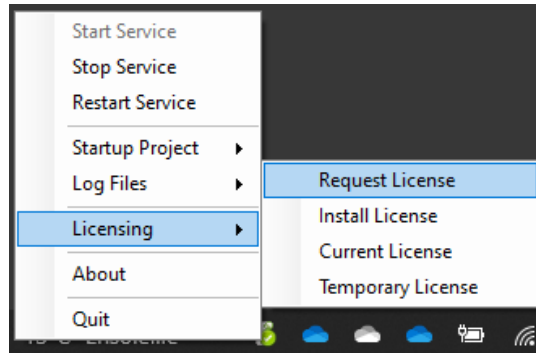
1. PLUTO CAN BE INSTALLED ON ALL 64-BIT WINDOWS OS
2. FRAMEWORK.NET 4.8 OR HIGHER
3. PORT 3000 & 3001 FOR PLUTO CLIENT-SERVER EXCHANGES
4. PORT 3002 FOR POSTGRE DATABASE
5. IIS CONFIGURED IN HTTP MODE (PORT 80 by default) & CAN BE CHANGED IN HTTPS
6. HARWARE MINIMUM, PROC > 2.5 Ghz 4 cores, 8 GB RAM, 100 GB SSD > Drive, Ethernet Card

USER INTERFACES

1.1. PLUTO SERVER MANAGER

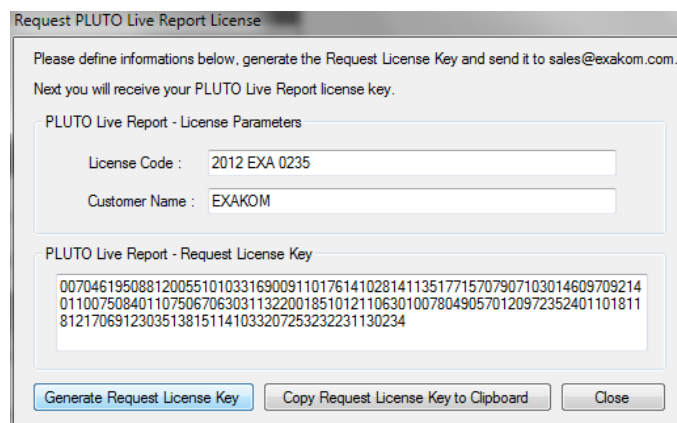
AVAILABLE FROM THE TASK BAR (**SERVICES**), IT IS THE PROGRAM THAT ALLOWS YOU TO:

- CONTROL THE SERVER (STOP /START/RESTART)
- INSTALL THE LICENSE (PERMANENT/TEMPORARY)
- RESET THE SERVER (LOAD PROJECT/CREATE NEW PROJECT)

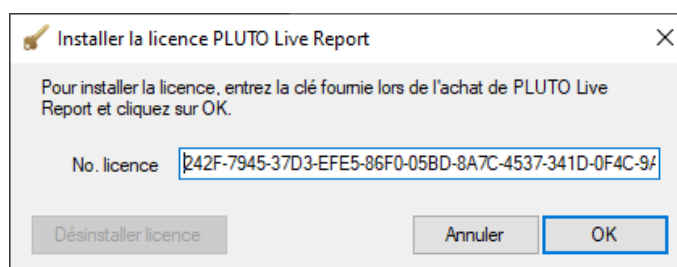


INSTALLING THE LICENSE REQUIRES THE GENERATION OF A "**REQUEST**" CODE WITH:

- LICENSE NUMBER
- THE NAME OF THE END USER

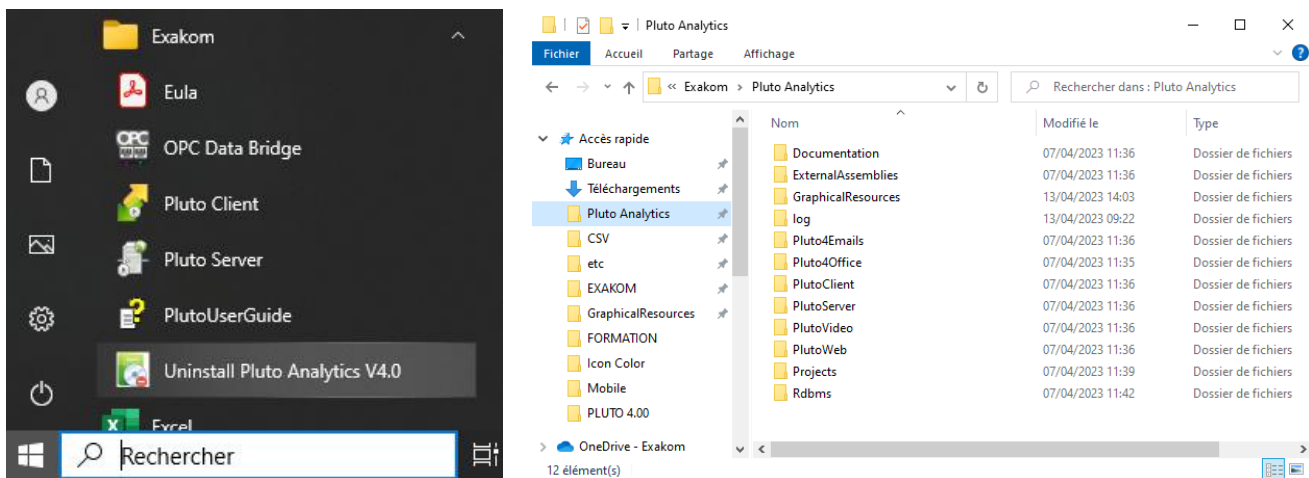
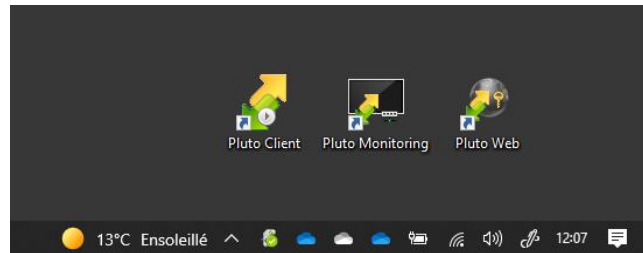


THE LICENSE CODE IS INSTALLED BY COPYING THE CODE SENT BACK



1.2. PLUTO CLIENT

THIS IS THE PROGRAM THAT ALLOWS YOU TO CONFIGURE THE PROJECT



LIST OF PROGRAMS

PLUTO SERVER: ENABLES TO LAUNCH THE PLUTO SERVER MANAGER IN THE TASK BAR ([\\$page 3 - SECTION 1.1](#))

PLUTO CLIENT: ENABLES TO LAUNCH THE PROJECT CONFIGURATOR

UNINSTALL: ALWAYS USE UNINSTALL PROGRAM TO UNINSTALL COMPLETELY THE SOFTWARE AND ALL COMPONENTS



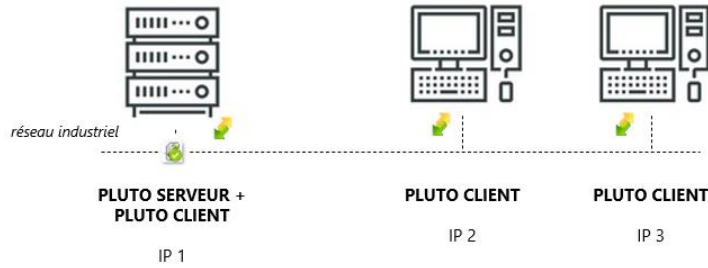
INFO

1. PLACE THE **PLUTO ANALYTICS** DIRECTORY IN THE QUICKACCESS BAR
2. AFTER THE FIRST INSTALLATION, THE PRODUCT RUNS FOR **40 DAYS** WITHOUT A LICENSE
3. THE PROJECT IS A **NAME.XML** FILE LOCATED IN THE "**PROJECTS**» DIRECTORY
4. BACKUP FILES (. BAK) ARE CREATED IN THE PROJECT**Backup** directory.
YOU MUST COPY & RENAME TO .XML TO RETURN TO THE PREVIOUS BACKUP



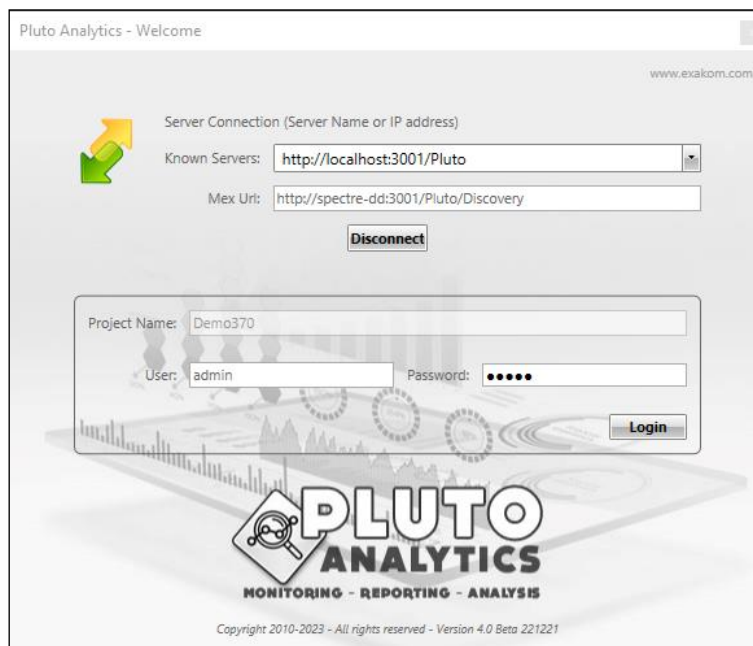
NOTE

PLUTO CLIENT CAN BE INSTALLED ON THE SERVER AND ON OTHER COMPUTERS ON THE NETWORK



TO CONNECT, YOU MUST:

- a. KNOW THE IP ADDRESS OF THE SERVER ([localhost](#) or [127.0.0.1](#) LOCAL ACCESS)
- b. PUT A LOGIN AND PASSWORD ([admin](#), [pluto](#) BY DEFAULT)



THE USER CAN EITHER CREATE A NEW PROJECT OR OPEN AN EXISTING ONE



INFO

1. IF THE CONNECTION IS NOT POSSIBLE, THE SERVER IS NOT RESPONDING OR THE LICENSE IS NO LONGER VALID
2. THE OPENING OF PORTS **3000** AND **3001** ARE NECESSARY
3. THE DEMO PROJECT IMPLEMENTS MOST OF THE FEATURES



NOTE

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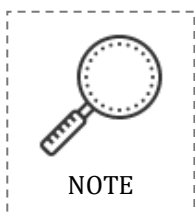
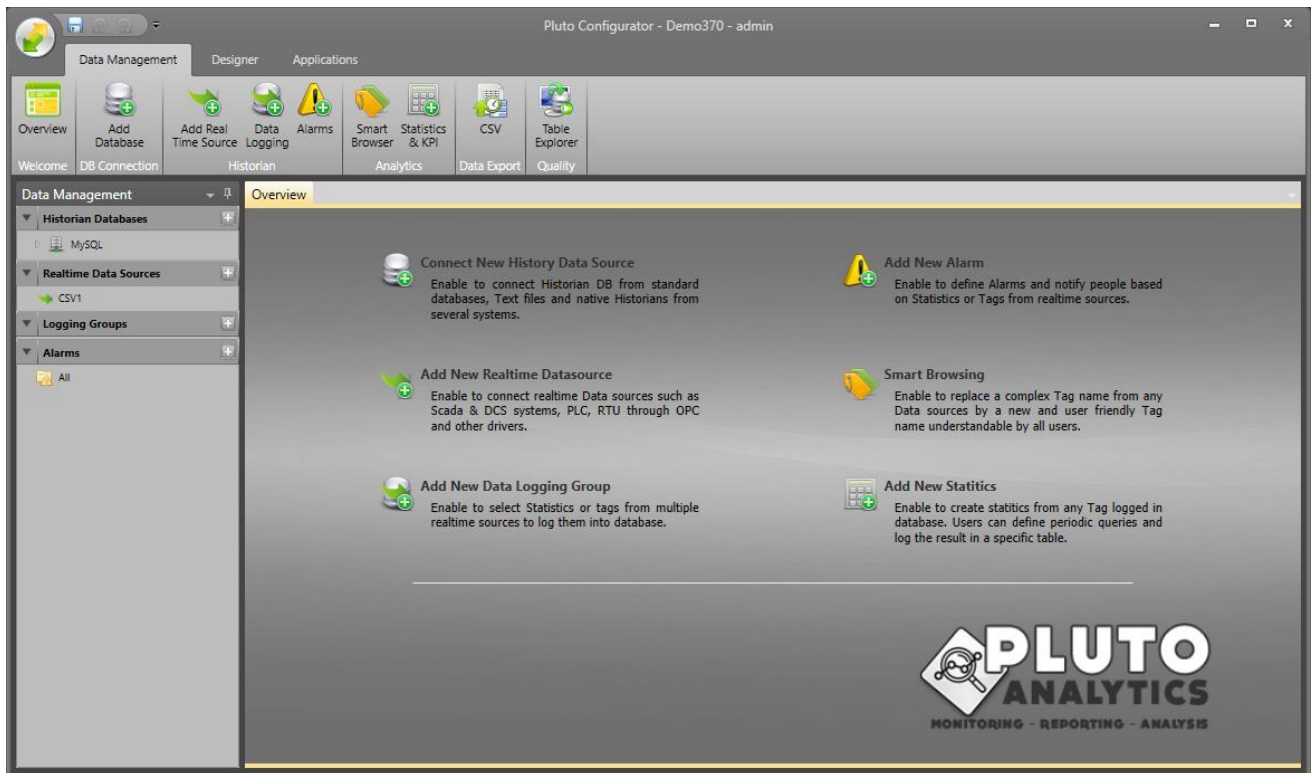
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AFTER THE CONNECTION, THE STUDIO STARTS. IT IS MADE OF 4 INTERFACES, THE MAIN ICON AND THE 3 SECTIONS AT THE RIBBON LEVEL:

- A. DATA MANAGEMENT
MANAGEMENT OF DATA SOURCES, KPI AND ALARMS
- B. DESIGNER
CREATE TEMPLATES FOR REPORTING, MONITORING & MOBILE DOCS
- C. APPLICATION
FOR TESTING & VIEW APPLICATIONS IN LIVE OR REPLAY MODE
- D. MAIN ICON
USER & PROJECT MANAGEMENT

SECTIONS **A** AND **B** ALLOW TO CONFIGURE & DESIGN THE PROJECT



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1.3. PLUTO WEB

ALL APPLICATIONS CAN BE OPERATED FROM A BROWSER



INFO

1. PLUTO WEB OFFERS **7 COMPLEMENTARY APPLICATIONS**
2. PLUTO WEB SUPPORTS **UNLIMITED CLIENT**
3. RUNS LOCALLY ON THE COMPANY'S INTRANET OR ON THE INTERNET



NOTE

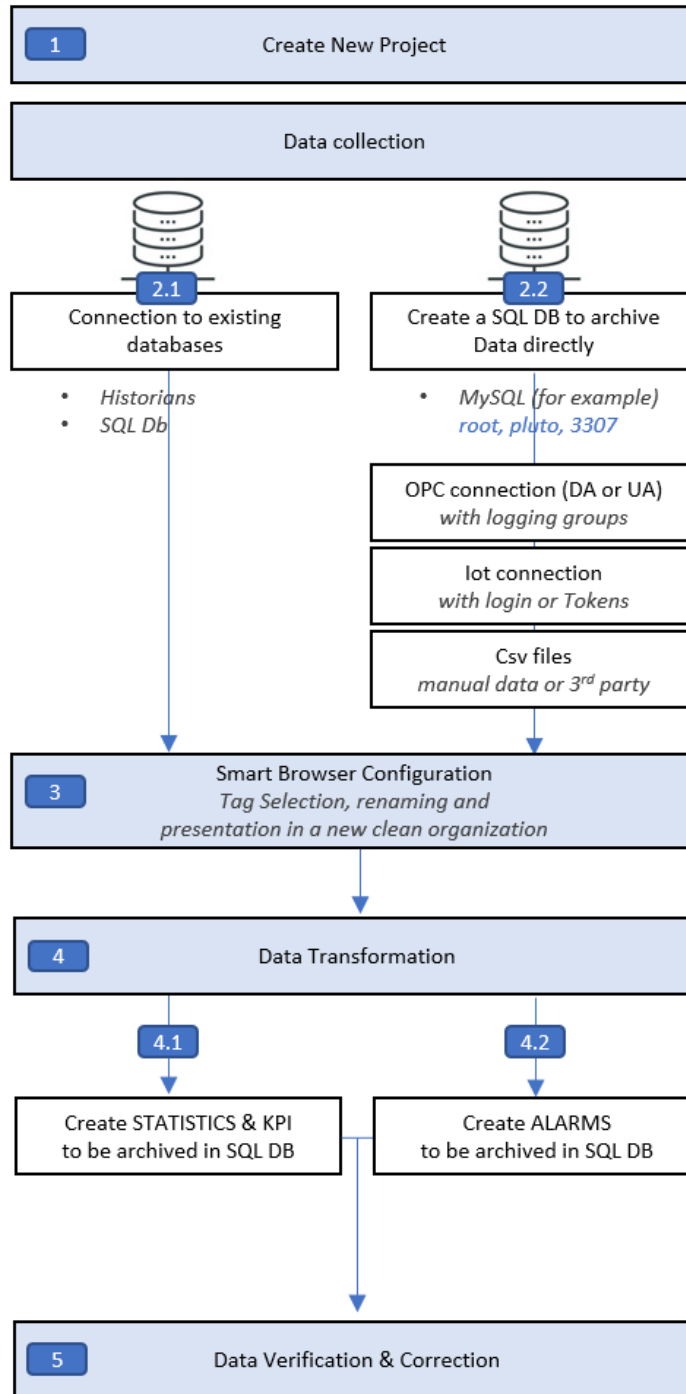
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2. CREATING A PROJECT

WORKFLOW

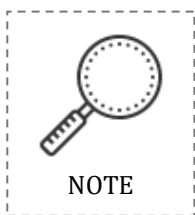
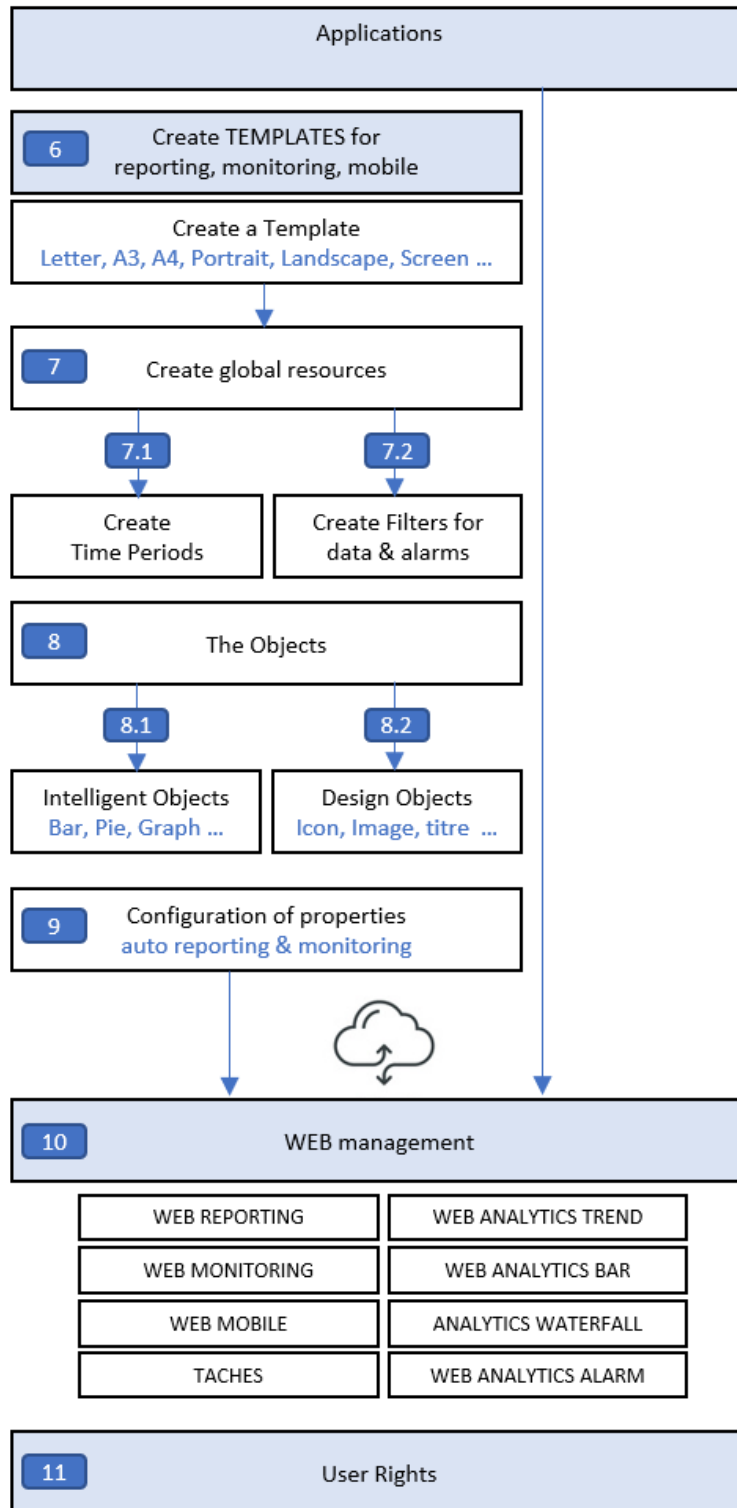


NOTE

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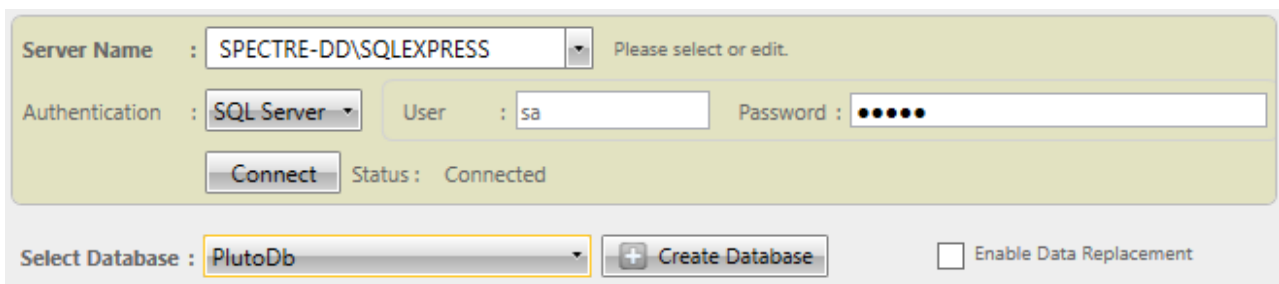
3. DATA MANAGEMENT

IT IS THE TECHNICAL SECTION OF THE PRODUCT THAT ALLOWS TO ARCHIVE, AGGREGATE & TRANSFORM ALL DATA IN **KPI** AND **ALARMS**.



3.1. DATABASE CONNECTION

- PLUTO ALLOWS YOU TO CONNECT TO MULTIPLE DATABASES
- CONNECTING TO THE DATABASES REQUIRES AUTHENTICATION SET DURING INSTALLATION



- PLUTO ALLOWS YOU TO CONNECT TO EXISTING TABLES.
- IT SUPPORTS TWO TYPES OF TABLES:
- MULTIPLE FIELD **TABLE** (one column per variable)
 - SINGLE FIELD **TABLE** (all variables are in 1 single column)

Timestamp	Tag 1	Tag 2	Tag N
01/01/2018 00:00	20	0	-	-	150
02/01/2018 00:00	21	1	-	-	150
03/01/2018 00:00	26	0	-	-	150
04/01/2018 00:00	19	0	-	-	142
05/01/2018 00:00	23	1	-	-	142

Timestamp	Name Tag(s)	Value Tag
01/01/2018 00:00	Tag 1	20
01/01/2018 00:00	Tag 2	0
01/01/2018 00:00	Tag N	150
02/01/2018 00:00	Tag 1	21
02/01/2018 00:00	Tag 2	1
03/01/2018 00:00	Tag 1	26
03/01/2018 00:00	Tag 2	0
04/01/2018 00:00	Tag 1	19
04/01/2018 00:00	Tag N	142
05/01/2018 00:00	Tag 1	19
05/01/2018 00:00	Tag 2	23

EXERCISE 1: CONNECTING TO THE POSTGRESQL DATABASE, PLUTODEMO

Server Name : localhost Please select or edit.
Authentication : User : postgres Password : ●●●● [Eye Icon]
TCP/IP Port : 3002 [Reset Default Port] [Connect] Status : Connected
Select Database : plutodemo [+ Create Database] Enable Data Replacement

THE POSTGRESQL DATABASE CONNECTION PARAMETERS INSTALLED BY PLUTO ARE:

LOGIN: postgres PSW : pluto PORT : 3002

CONNECTING TO TABLES

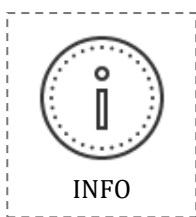
- ▶ ENERGY
- ▶ PRODUCTION
- ▶ PROCESS

List of Tables [+ Data Table] [+ Alarm Table]

Status	Name	Writable	Empty	Delete
Connected	production	<input checked="" type="checkbox"/>	Empty	<input type="button" value="-"/>
Connected	temperature	<input checked="" type="checkbox"/>	Empty	<input type="button" value="-"/>
Connected	oee	<input checked="" type="checkbox"/>	Empty	<input type="button" value="-"/>
Connected	energy	<input checked="" type="checkbox"/>	Empty	<input type="button" value="-"/>

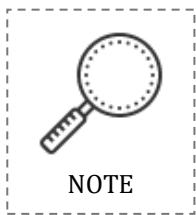
Table Preview

Timestamp	Heat_Meter_1	HotWater_Meter_1	Elec_Meter_1	Elec_Power1	Heat_Meter_2	HotWater_Meter_2	Elec
01/01/2021 00:00:00	175427.000	8903.300	90643.000	2.400	177817.000	8903.750	144.
01/01/2021 01:00:00	175438.000	8907.220	90645.000	9.600	177826.000	8907.050	144.
01/01/2021 02:00:00	175452.000	8910.630	90649.000	10.800	177840.000	8910.350	144.
01/01/2021 03:00:00	175463.000	8913.380	90658.000	21.600	177850.000	8914.270	144.
01/01/2021 04:00:00	175474.000	8918.180	90667.000	21.600	177860.000	8917.680	144.
01/01/2021 05:00:00	175490.000	8927.180	90676.000	21.600	177877.000	8920.420	144.



LIST OF AVAILABLE DATABASE DRIVERS:

- :: SQL SERVER :: MySQL (& MariaDB) :: ORACLE :: POSTGREE
- :: OSISOFT PI :: PROFICY GE :: BRAINCUBE :: PC VUE
- :: WONDERWARE :: PANORAMA :: ...



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EXERCISE 2: CONNECTING TO A NEW DATABASE

- CONNECTING TO [POSTGRESQL](#)
- CREATION OF THE DATABASE [HISTORIAN](#) * BUTTON ' **CREATE DATABASE** '
- CREATION OF 2 TABLES in [LOCAL TIME](#) * BUTTON ' **DATA TABLE** '

Server Name : localhost Please select or edit.

Authentication : User : postgres Password : [REDACTED]

TCP/IP Port : 3002 [Reset Default Port] [Connect] Status : Connected

Select Database : historian [Create Database] Enable Data Replacement

Please select a Table and configure it in the right section

List of Tables [Data Table] [Alarm Table]

	Status	Name	Writable	Empty	Delete
	Connected	public.csv	<input checked="" type="checkbox"/>	Empty	
	Connected	public.opc	<input checked="" type="checkbox"/>	Empty	



INFO

1. TABLES CREATED BY PLUTO ARE ALWAYS IN SINGLE FIELD FORMAT
2. PLUTO ALLOWS YOU TO CREATE DATA TABLES IN **UTC** OR **LOCAL** TIME.
UTC CORRESPONDS TO AN ARCHIVING BASED ON UNIVERSAL TIME



NOTE

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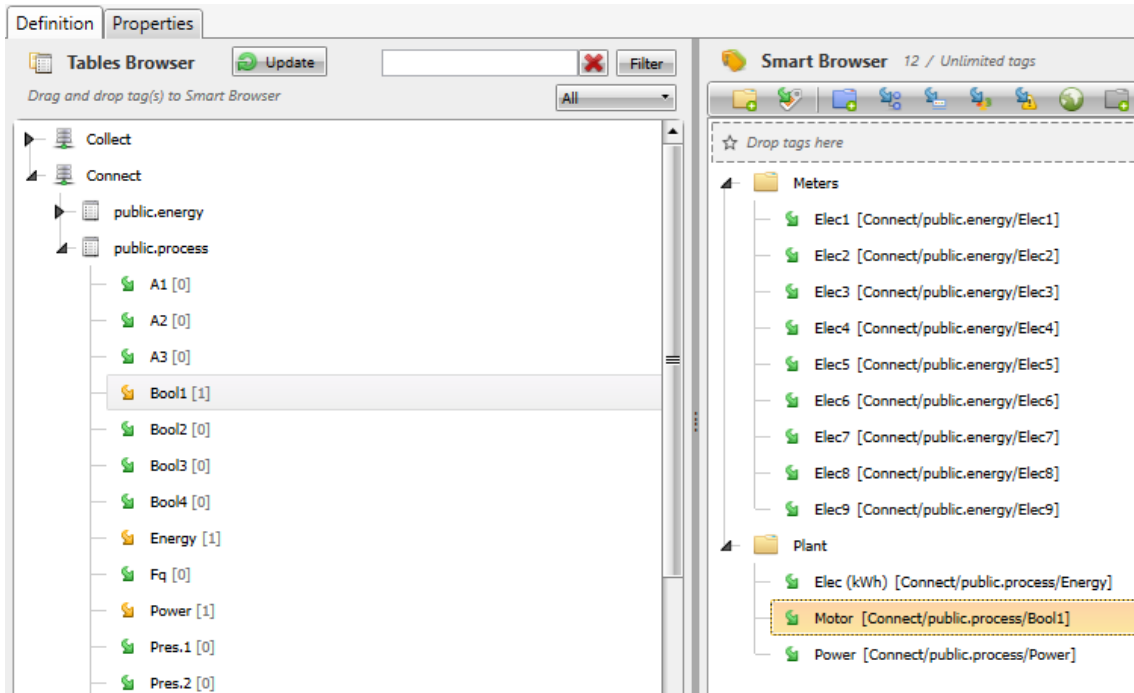
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EXERCISE 3: IMMEDIATE DATA EXPLOITATION IN PLUTO ANALYTICS

1. FROM THE DATA IN THE TABLES:

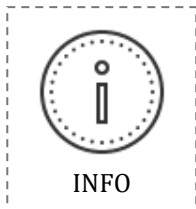
- ▶ ENERGY
- ▶ PROCESS

CREATE THE FOLLOWING **SMART BROWSER** (page 19):



2. LEVERAGE DATA IN PLUTO WEB ANALYTICS:

- ▶ ANALYTICS TREND
- ▶ ANALYTICS BAR
- ▶ ANALYTICS WATERFALL

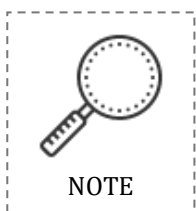


BEFORE USING THE WEB, NEVER FORGET TO **SAVE** THE PROJECT

URL PAR DEFAUT : <http://localhost/PlutoWeb> (page 34)

OR REPLACE **LOCALHOST** WITH THE SERVER'S IP ADDRESS

LOGIN: **admin** PSW : **pluto** (page 41)



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3.2. REAL-TIME COMMUNICATION

OPC CONNECTION

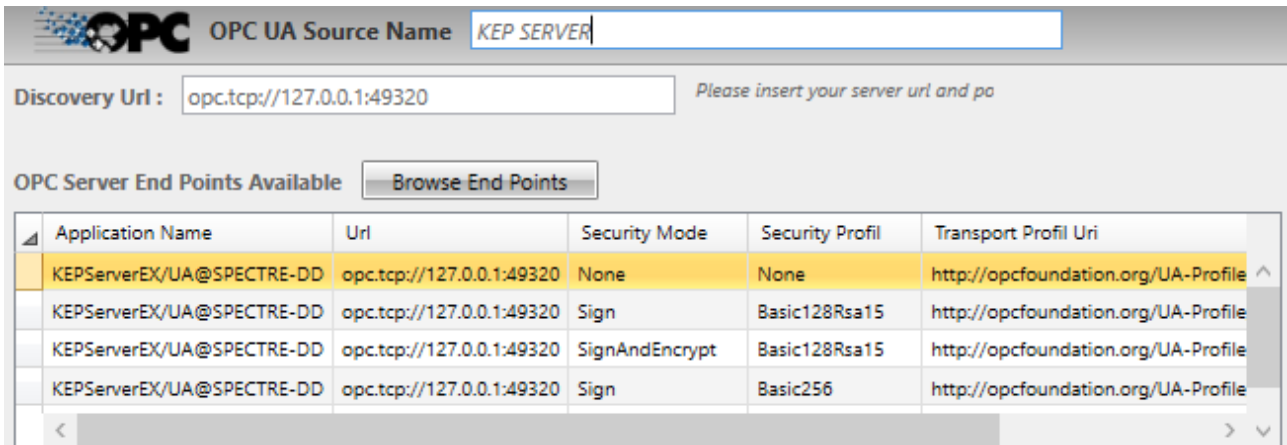
PLUTO IS AN OPC CLIENT THAT ALLOWS REAL-TIME DATA EXCHANGE WITH AN OPC DA or UA server

THE PRINCIPLE IS TO COMMUNICATE WITH AN OPC SERVER (SCADA, CONTROLLER, COM SERVER, ETC.)

EXAKOM SUGGESTS MULTI-PROTOCOL OPC SERVERS (BACNET, ETHERNET IP, MODBUS, PROFIBUS, ETC.)

OPC UA CONNECTION

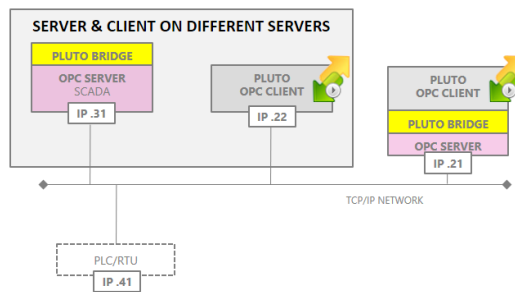
- ENTER **THE IP ADDRESS** OF THE OPC SERVER AND THE **PORT** (LOCALHOST IF IT IS ON THE SAME MACHINE)
- EXCHANGE CERTIFICATES IN CASE OF SECURE COMMUNICATION (BETWEEN PLUTO AND THE OPC SERVER)
- SELECT THE SERVER FROM THE LIST AND CLICK ON **CONNECT** AND THEN **SAVE**
-



ONCE THE CONNECTION IS ESTABLISHED, YOU NEED TO CONFIGURE THE ARCHIVE (NEXT PAGE)

OPC DA CONNECTION (OLD OPC GENERATION)

- REQUIRES THE INSTALLATION OF THE **OPC BRIDGE** ON THE SCADA WORKSTATION
- ENTER THE IP ADDRESS OF THE OPC SERVER (LOCALHOST IF IT IS ON THE SAME MACHINE)
- SELECT THE SERVER FROM THE LIST AND CLICK ON **CONNECT** AND THEN **SAVE**



NOTE

3.3. REAL-TIME DATA ARCHIVING ARCHIVING GROUPS

1. SELECT THE DESTINATION TABLE
2. SELECT THE DATA FROM THE SOURCE (OPC)
3. CONFIGURE THE LOGGING RULES [WITH AN OPTIMIZATION OBJECTIVE](#)
 - **ON CHANGE** (STATE CHANGE OR DEABAND %)
 - **PERIODIC** (EVERY MIN, EVERY HOUR...)
 - **ON EVENT** (WHEN AN EVENT OCCURS)
 - **ON PREDEFINE TIME** (TEAM SHIFT, MIDNIGHT...)

Data Table MySQL2.data_opc

Select tags Group active

Tag List for this Group Total : 15 - Filtered : 15

Tag name	Data Source	Address	Value
UA_OPC_Kep_BMS_Site_1_AirTemp	UA	ns=2:s=OPC Kep.BMS.Site 1.AirTemp	32
UA_OPC_Kep_BMS_Site_1_GateStatus	UA	ns=2:s=OPC Kep.BMS.Site 1.GateStatus	1
UA_OPC_Kep_BMS_Site_1_HeatStatus	UA	ns=2:s=OPC Kep.BMS.Site 1.HeatStatus	0
UA_OPC_Kep_BMS_Site_1_TempLevel1	UA	ns=2:s=OPC Kep.BMS.Site 1.TempLevel1	24.25
UA_OPC_Kep_BMS_Site_1_TempLevel2	UA	ns=2:s=OPC Kep.BMS.Site 1.TempLevel2	23.3333339691162
UA_OPC_Kep_BMS_Site_1_TempLevel3	UA	ns=2:s=OPC Kep.BMS.Site 1.TempLevel3	24.3333339691162
UA_OPC_Kep_BMS_Site_1_TempLevel4	UA	ns=2:s=OPC Kep.BMS.Site 1.TempLevel4	27

Database Table Preview for this Group

Timestamp	Tag	Value	Quality
14/04/2023 14:29:47	UA_OPC_Kep_BMS_Site_1_TempLevel1	22.25	0
14/04/2023 14:29:47	UA_OPC_Kep_BMS_Site_1_GateStatus	1	0
14/04/2023 14:29:47	UA_OPC_Kep_BMS_Site_1_HeatStatus	1	0
14/04/2023 14:29:47	UA_OPC_Kep_BMS_Site_1_Valve2	1	0
14/04/2023 14:29:47	UA_OPC_Kep_BMS_Site_1_Valve1	0	0
14/04/2023 14:29:45	UA_OPC_Kep_BMS_Site_1_TempLevel3	22.25	0
14/04/2023 14:29:45	UA_OPC_Kep_BMS_Site_1_TempLevel2	24.2000007629395	0
14/04/2023 14:29:45	UA_OPC_Kep_BMS_Site_1_TempLevel7	23.2000007629395	0
14/04/2023 14:29:45	UA_OPC_Kep_BMS_Site_1_TempLevel1	25.1666660208228	0

LOGGING Properties

Multiple logging options can be selected to get clean and accurate history.

On Change Tolerance

IF

Log all values when Tag value change

Every

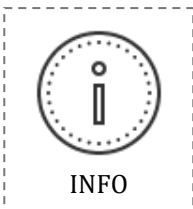
IF

On Event

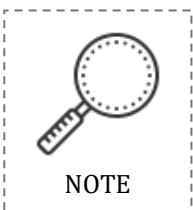
IF

On Time

Select Time:



1. RESPECT THE LOGGING RULES ([\\$page 16](#))
2. IT IS POSSIBLE TO DEFINE SEVERAL GROUPS
3. IT IS POSSIBLE TO COMBINE SEVERAL RULES TOGETHER
4. IT IS POSSIBLE TO REJECT OUT-OF-BOUNDS POINTS



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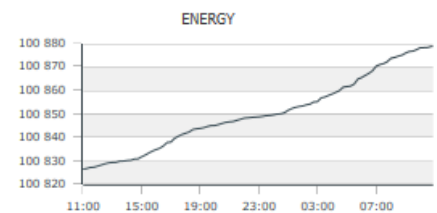
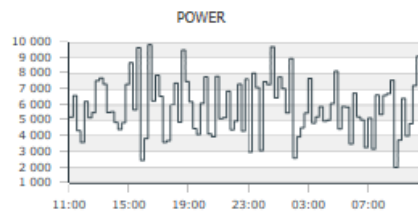
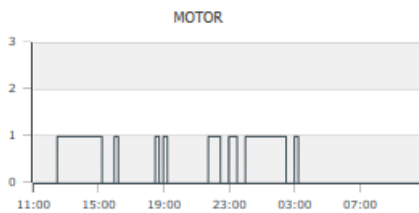
THE PERFORMANCE OF THE APPLICATION DEPENDS ON THE QUALITY OF DATA LOGGED.

- TOO MUCH DATA SLOWS DOWN THE APPLICATION
- NOT ENOUGH DATA AND THE APP HAS NO VALUE

IT IS THEREFORE NECESSARY TO THINK ABOUT AND OPTIMIZE ARCHIVING BY RESPECTING A FEW RULES.

THERE ARE 3 TYPES OF DATA

- **BOOLEANS** OR STATE VARIABLES (MOTOR, PUMP, LINE STATE...)
- **ANALOG** VARIABLES (POWER, TEMP, SPEED, LEVEL, PRESSURE, FLOW RATE...)
- **METERS** (ENERGY, PRODUCTION, ETC.)



RECOMMENDED ARCHIVING RULES

- **BOOLEANS:** CHANGE OF STATE + MIDNIGHT
- **ANALOG:** DEADBAND % + HOURLY
- **METERS:** EVERY 10 MINUTES

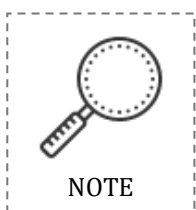
IF IN DOUBT, ARCHIVE EVERY MINUTE (1440 POINTS/DAYS)

EXERCISE 4:

- CREATE AND CONFIGURE 3 ARCHIVE GROUPS (STATUS, ANA, COUNTER)
- ARCHIVE IN OPC TABLE



1. ARCHIVING EVERY SECOND WILL FULL UP YOUR DISK SPACE VERY QUICKLY
SO YOU SHOULD AVOID IT RIGHT AWAY OR DO IT ONLY FOR FEW IMPORTANT TAGS
2. DO NOT MIX DIFFERENT TYPE OF ANALOG VARIABLE IN THE SAME GROUP
CREATE A GROUP FOR POWERS, A GROUP FOR TEMPS., A GROUP FOR FLOWS, ...
3. OBSERVE THE DATABASE QUALITY AFTER 1 WEEK AND CHANGE SETTINGS IF NECESSARY



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3.4. ARCHIVING FROM A CSV or TBOX TMA FILE

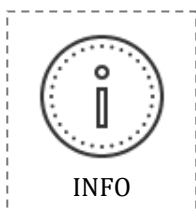
CSV FILE EXAMPLE

```
Oee 201.txt
1 Date,DownElec,DownHydrau,DownMeca,DownUndefined,Down,DownSchedul
2 2020-01-01 00:00:00,0,0,0,1,1,0,0,0,0,0
3 2020-01-01 00:15:00,0,0,0,1,1,0,7,0,0,0
4 2020-01-01 00:30:00,0,0,0,1,1,0,14,0,0,0
5 2020-01-01 00:45:00,0,0,0,0,0,0,21,2,7,0,7
6 2020-01-01 01:00:00,0,0,0,0,0,0,28,3,4,1,11
7 2020-01-01 01:15:00,0,0,0,0,0,0,35,2,7,0,18
8 2020-01-01 01:30:00,0,0,0,0,0,0,42,2,7,0,25
9 2020-01-01 01:45:00,0,0,0,0,0,0,49,2,7,1,32
10 2020-01-01 02:00:00,0,0,0,0,0,0,56,2,7,4,39
11 2020-01-01 02:15:00,0,0,0,0,0,0,63,2,7,0,46
12 2020-01-01 02:30:00,0,0,0,0,0,0,70,2,7,0,53
```

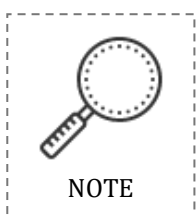
THE OBJECTIVE IS TO **SCAN A CSV FILE DIRECTORY** AND INSERT THE RAW DATA INSIDE INTO THE DATABASE.

CONFIGURATION

1. THE DRIVER REQUIRES THE CREATION OF 3 DIRECTORIES: **RECEPTION, ARCHIVE, ERROR**
2. DEFINE THE SEPARATOR USED IN THE FILE: **; | , | space | tab**
3. READ THE COLUMN HEADER (TO GET THE TAG NAMES)
4. DEFINE THE DATE & TIME FORMAT (e.g. **yyyy-MM-dd HH :mm :ss**)
5. SELECT THE DESTINATION TABLE, **create the table if necessary (\$page 12)**



1. A **CSV** DIRECTORY IS INSTALLED WITH PLUTO: **C:\CSV** WITH THE SUBDIRECTORIES
2. IT IS POSSIBLE TO DEFINE MULTIPLE CSV DRIVERS PER PROJECT
3. IT IS POSSIBLE TO IGNORE CERTAIN FIELDS
4. DUPLICATES ARE MANAGED AUTOMATICALLY
5. IT IS POSSIBLE TO OVERWRITE THE DATA (DB Option: **replacement**)



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3.5. ARCHIVING FROM AN IOT SOURCE

THE PRINCIPLE IS TO PERIODICALLY INTERACT WITH THE CLOUD DATA PROVIDER'S AND RETRIEVE THE DATA TO INJECT IT INTO THE DATABASE.

1. CONFIGURE THE DRIVER WITH THE ACCOUNT SETTINGS.
2. INITIATE A CONNECTION
3. RETRIEVE THE LIST OF CONNECTED EQUIPMENT
4. DEFINE THE DATA TABLE FOR EACH DEVICE, **create the table if necessary (§page 12)**
5. DEFINE THE POLLING FREQUENCY

EXAMPLE: EWON FLEXY

Connection Type

Account Login Password

Token

Status: Connected *initialization in progress*

Device List:

Id	Name	UTC	Data Table for all	Alarm Tab for all	Last Synchro	Stop
258357	HMS_Office_BE	<input type="checkbox"/>	MySQL2\data_iot	<input checked="" type="checkbox"/>	2023-04-14 1	<input type="button" value="Reset"/>
320539	PackagingMachine	<input type="checkbox"/>		<input checked="" type="checkbox"/>	2023-04-14 1	<input type="button" value="Reset"/>
1398223	WaterHeaterSystem_1	<input type="checkbox"/>		<input checked="" type="checkbox"/>	2023-04-14 1	<input type="button" value="Reset"/>
1416911	WaterHeaterSystem_2	<input type="checkbox"/>		<input checked="" type="checkbox"/>	2023-04-14 1	<input type="button" value="Reset"/>
1416913	WaterHeaterSystem_3	<input type="checkbox"/>		<input checked="" type="checkbox"/>	2023-04-14 1	<input type="button" value="Reset"/>

Talk2M Properties

Name: eWON - Data Mailbox V2

Global Configuration

Polling min.
please define the polling period (between 1 and 1440 min.)

Only good quality
Only log eWon data with good quality (Initial/Good and Good) in database.

Autoconfiguration
automatic device detection and database configuration.

Alarms Configuration

please define the alarm label separator

Auto Acknowledge

EndTime State:



INFO

1. IT IS POSSIBLE TO DEFINE SEVERAL IOT DRIVERS PER PROJECT
2. THE FREQUENCY OF POLLING CAN VARY FROM 1 MINUTE TO 1 DAY
3. DUPLICATES ARE MANAGED AUTOMATICALLY
4. EWON FLEXY CAN BE PAIRED WITH A [LORAWAN GATEWAY](#)



NOTE

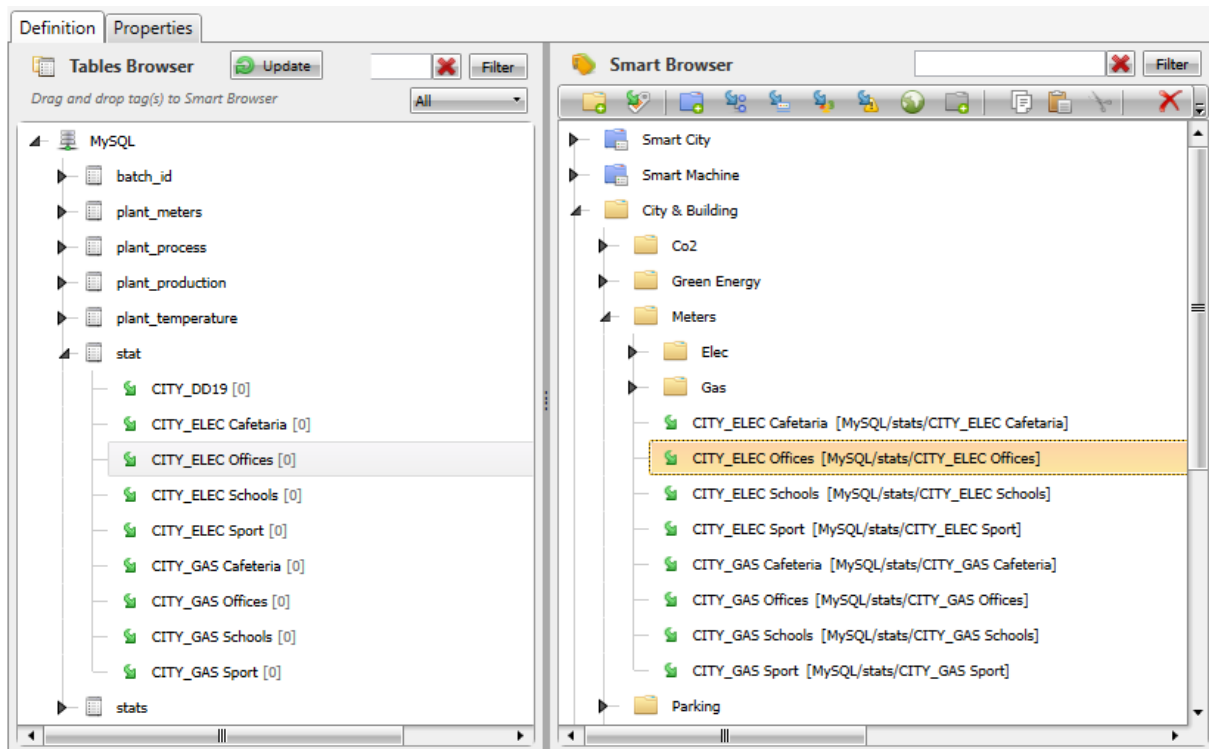
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4. SMART BROWSER DEFINITION

THE SMART BROWSER IS AN APPLICATION THAT ALLOWS YOU TO CREATE A SIMPLE AND UNDERSTANDABLE DATA ORGANIZATION. IT IS BASED OF TWO TABS ([DEFINITION](#) AND [PROPERTIES](#))




TAB DEFINITION

THE INTERFACE ON THE **LEFT**

- LISTS ALL THE DATABASES AND TABLES CONNECTED TO THE PROJECT, WE TALK ABOUT A [TECHNICAL REPRESENTATION](#) OF THE DATA

THE INTERFACE ON THE **RIGHT**

- ALLOWS YOU TO CREATE A SIMPLE ORGANIZATION OF THE PROJECT VARIABLES, WE TALK ABOUT A [PRACTICAL REPRESENTATION](#) OF THE DATA

THE USER MUST CONNECT THE SOURCE DATA TO THE NEW DATA MODEL WITH THE MOUSE BY A SIMPLE DRAGGING AND DROPPING ACTION 

TAB PROPERTIES

IT ALLOWS YOU TO DEFINE THE PROPERTIES:

- [MIN](#) AND [MAX](#) OF EACH VARIABLE
- THE [N](#) OR [P](#) FORMAT (DIGITAL OR PERCENT %)
- TYPE [S](#) OR [N](#) (STRING OR NUMERIC)
- EXPORT RULE APPLICABLE TO EACH VARIABLE

5. CREATION OF STATS & PEI

TRANSFORM RAW DATA INTO VALUABLE INFORMATION AND ARCHIVE IT IN SQL DATABASE

CONFIGURATION

1. CREATE A NEW STATISTIC
2. DEFINING THE EXPRESSION THAT COMBINES RESOURCES (SQL QUERIES) AND MATH. EXPRESSIONS
3. SELECT THE EXECUTION FREQUENCY (every H, every day, every Month...)
4. SELECT THE DESTINATION TABLE ([archiving](#)), [creating the table if necessary \(\\$page 12\)](#)
5. SET UP A TIME CORRECTION IF NEEDED

The screenshot shows the 'Groups Definition' sidebar on the left with a tree view containing 'STATS (0)', 'CITY (9)', and 'FACTORY (0)'. The 'CITY (9)' group is expanded, showing sub-items like 'DD19', 'ELEC Offices', 'ELEC Sport', 'ELEC Schools', 'ELEC Cafeteria', 'GAS Offices', 'GAS Sport', 'GAS Schools', and 'GAS Cafeteria'. The main configuration area is titled 'Name: DD19'. The 'Expression' field contains the formula: $(19 - ((\{TpMin\} + \{TpMax\}) / 2)) > 0 ? (19 - ((\{TpMin\} + \{TpMax\}) / 2)) : 0$. Below the expression, there are options for 'Execution': 'None', 'Real Time Execution' (selected with a 01:00 interval), and 'Differed Execution'. A 'Manual Execution' button is also present. The 'Properties' section shows 'Statistical table: MySQL.stats', 'Name in database: CITY_DD19', and 'Timestamp correction: 1:00:01'. At the bottom, a 'List of Statistics Expression' table is visible, listing various statistics with their names, expressions, execution frequencies, and target tables.

Exec	Name	Expression	Execution	Profil	Target Table	Name in datab	Delta Timestamp	Dis. log	Info	Description
...	1 DD19	(19 - (({TpMin} + {TpMax}) / 2)) > 0 ? (19 - (({TpMin} + {TpMax}) / 2)) : 0	Real Time E	01:00	MySQL.stats	CITY_DD19	01:00:01	<input type="checkbox"/>		
...	2 ELEC Offices	{CityElec.City_Hall} + {CityE	Real Time E	01:00	MySQL.stats	CITY_ELEC Offic	01:00:01	<input type="checkbox"/>		
...	3 ELEC Sport	{CityElec.Stadium} + {CityE	Real Time E	01:00	MySQL.stats	CITY_ELEC Spor	01:00:01	<input type="checkbox"/>		
...	4 ELEC Schools	{CityElec.S_Georges} + {City	Real Time E	01:00	MySQL.stats	CITY_ELEC Scho	01:00:01	<input type="checkbox"/>		
...	5 ELEC Cafeteria	{CityElec.GreenHouse}	Real Time E	01:00	MySQL.stats	CITY_ELEC Cafe	01:00:01	<input type="checkbox"/>		
...	6 GAS Offices	{CityGas.City_Hall} + {CityG	Real Time E	01:00	MySQL.stats	CITY_GAS Offici	01:00:01	<input type="checkbox"/>		
...	7 GAS Sport	{CityGas.Stadium} + {CityG	Real Time E	01:00	MySQL.stats	CITY_GAS Sport	01:00:01	<input type="checkbox"/>		
...	8 GAS Schools	{CityGas.S_Georges} + {City	Real Time E	01:00	MySQL.stats	CITY_GAS Scho	01:00:01	<input type="checkbox"/>		

EXERCISE 5:

STATISTICS 1: (2 * 10)

REPLACE (2 * 10) BY {ELECcons} * 1

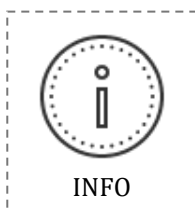
RESSOURCE {ELECcons}

EXECUTION EVERY 10 MIN

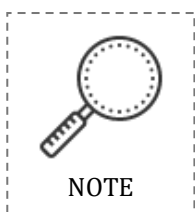
EXECUTION EVERY HOUR

Tag: ELEC; Function: Index Dev; Period: Last Hour

ARCHIVE IN **STATS TABLE** [create the table if necessary \(\\$page 12\)](#)



1. A RESOURCE IS A SQL QUERY DEFINED FROM CONNECTED DATA
2. A STATISTIC CAN USE MULTIPLE RESOURCES
3. FOR DIVISION EXPRESSIONS, SET AN IF FUNCTION TO AVOID INFINITE VALUES
 $PROD > 0 ? (ENERGY/PROD) : 0$
4. MANUAL MODE ALLOWS YOU TO CALCULATE PAST STATISTICS



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6. ALARM DEFINITION

THE OBJECTIVE IS TO DEFINE ALARMS, BASED ON **REAL-TIME DATA AND STATISTICS**

- ▶ REAL-TIME ALARMS ARE MADE WITH LIVE VALUES. **PUMP ON, POMP OFF, LEVEL HIGH, STEAM LOW ...**
- ▶ STATISTICAL ALARMS ARE MADE WITH VALUES FROM THE DATABASE. **OVERCONSUMPTION, LEAK...**

CONFIGURATION

1. SELECT THE ALARM TABLE, **creating the table if necessary (page 12)**
2. DEFINITION OF THE ALARM EXPRESSION
3. SET THE ALARM MESSAGE
4. SELECT THE ATTRIBUTES

Name	Start Time	End Time	Duration	Message	Priority	Field1	Field2	Field3	Field4	Field5	Field6
Light Kiosk	30/12/2023 00:34:00	31/12/2023 00:19:00	23:45:00	Light Kiosk	9	Light	West	1	-	-	-
Light Garden is Off	27/12/2023 19:39:00	28/12/2023 08:51:00	13:12:00	Light Garden is Off	10	Light	West	1	-	-	-
Light Kiosk	23/12/2023 14:58:00	24/12/2023 09:12:00	18:14:00	Light Kiosk	9	Light	East	5	-	-	-
Video is Off	23/12/2023 03:44:00	24/12/2023 03:15:00	23:31:00	Video is Off	3	Security	North	7	-	-	-

EXERCISE 6: ARCHIVE IN **ALARM TABLE** **create the table if necessary (page 12)**

ALARM 1: {UA_Analog1} > 80 AND {UA_Pump} = 1

MESSAGE: Pump is ON and Tank is High

1. IT IS POSSIBLE TO SET ALARMS WITH SEVERAL VARIABLES
2. IT IS POSSIBLE TO CREATE **ATTRIBUTES** THAT COMPLEMENT THE ALARM MESSAGE
3. **ATTRIBUTES** ENABLES TO DEFINE ALARM FILTERS



INFO



NOTE

7. DATA VERIFICATION & CORRECTION

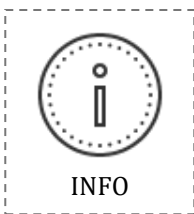
THIS MODULE ALLOWS YOU TO SELECT ANY TABLES MANAGED BY PLUTO IN ORDER TO CHECK, CORRECT OR DELETE FAULTY DATA.

- A SEARCH ENGINE TOOL ALLOWS YOU TO DISPLAY A SAMPLE OF DATA
- IT IS POSSIBLE TO ISOLATE A SPECIFIC DATA IN ORDER TO CORRECT IT

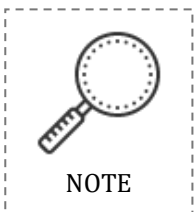
The screenshot shows the 'Table Explorer' interface for a MySQL database. The main table displays the following data:

id	id	ts	tagName	tagValue	quality
1	4047120	31/12/2023 23:45:00	Bool 8	1	0
2	4047119	31/12/2023 23:45:00	Bool 7	0	0
3	4047118	31/12/2023 23:45:00	Bool 6	1	0
4	4047117	31/12/2023 23:45:00	Bool 5	1	0
5	4047116	31/12/2023 23:45:00	Bool 4	1	0
6	4047115	31/12/2023 23:45:00	Bool 3	1	0
7	4047114	31/12/2023 23:45:00	Bool 2	0	0
8	4047113	31/12/2023 23:45:00	Bool 1	1	0
9	3206160	31/12/2023 23:45:00	Ana4.100	27	0
10	3206159	31/12/2023 23:45:00	Ana3.100	11	0
11	3206158	31/12/2023 23:45:00	Ana2.100	74	0
12	3206157	31/12/2023 23:45:00	Ana1.100	73	0
13	3206156	31/12/2023 23:45:00	Ana4.50	30	0
14	3206155	31/12/2023 23:45:00	Ana3.50	33	0
15	3206154	31/12/2023 23:45:00	Ana2.50	3	0
16	3206153	31/12/2023 23:45:00	Ana1.50	32	0

The interface also features a search panel on the right with options for 'Last data', date range selection (14/04/2023), and a 'Tag Selection' list with checkboxes for various tags like Ana1, Ana1.100, etc. An 'Execute Correction' button is located at the bottom of the table.



1. DATA CORRECTION CAN ONLY BE DONE ON PLUTO TABLES
2. ANY CHANGES OR DELETIONS MUST BE CONFIRMED
3. ANY MODIFICATION OR DELETION IS ARCHIVED IN A LOG FILE (SCor.History)



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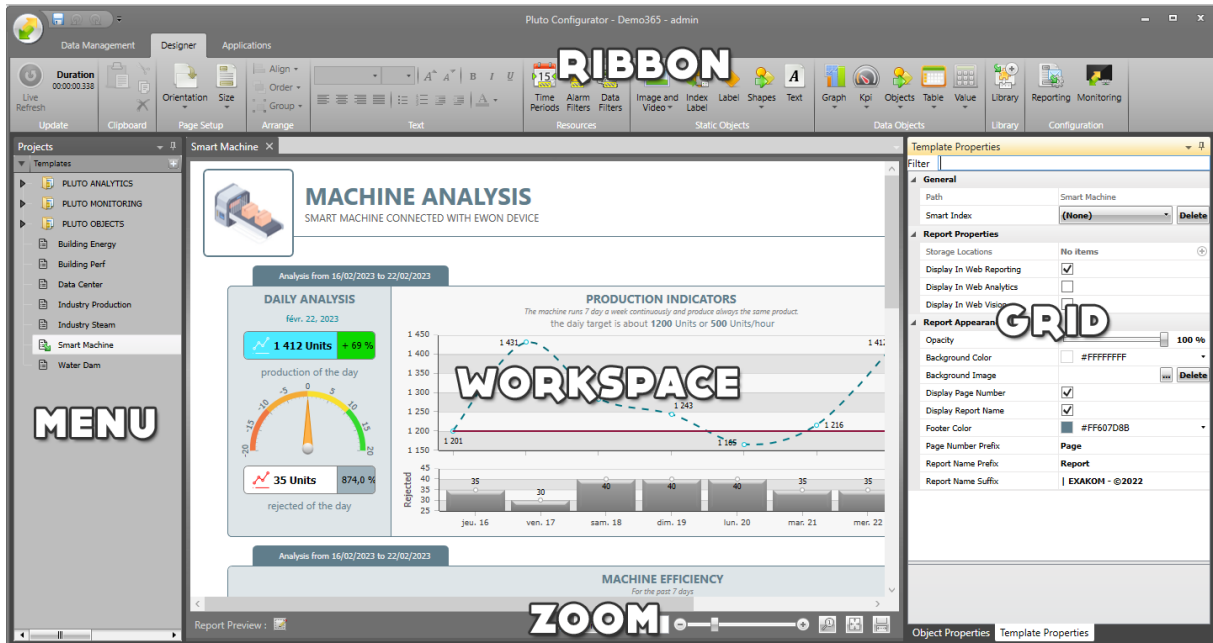
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8. CREATION OF APPLICATION TEMPLATES

PLUTO INCLUDES A SIMPLE AND FULLY CONFIGURABLE APPLICATION DESIGNER TOOL.

IT ALLOWS TO CREATE TEMPLATES FOR REPORT, MONITORING AND MOBILE APPLICATIONS.



THE INTERFACE IS SPLITED IN FIVE MAJOR ZONES

- RIBBON, WHICH CONTAINS THE OBJECTS AND DOCUMENT PROPERTIES
- MENU, WHICH ALLOWS YOU TO CREATE AND SELECT THE DOCUMENTS
- GRID, WHICH ALLOWS YOU TO SET UP OBJECTS
- WORKSPACE, WHICH ALLOWS YOU TO VIEW THE DOCUMENT CONSTRUCTION
- ZOOM, WHICH ALLOWS YOU TO ADJUST THE WORKSPACE

USERS CAN CREATE TEMPLATES IN MULTIPLE FORMATS (A3, A4, A5) SCREEN (16/9, 4/3) AND SMARTPHONE
TO PLACE AN OBJECT, YOU HAVE TO SELECT AND STRETCH IT

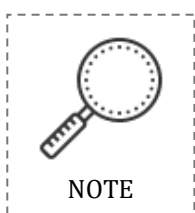
EXERCISE 7:

CREATE 3 DOCUMENTS WITH DIFFERENT FORMATS

A4: FOR A REPORT

MONITORING SMALL: FOR A DASHBOARD

MOBILE : FOR A SMARTPHONE APP



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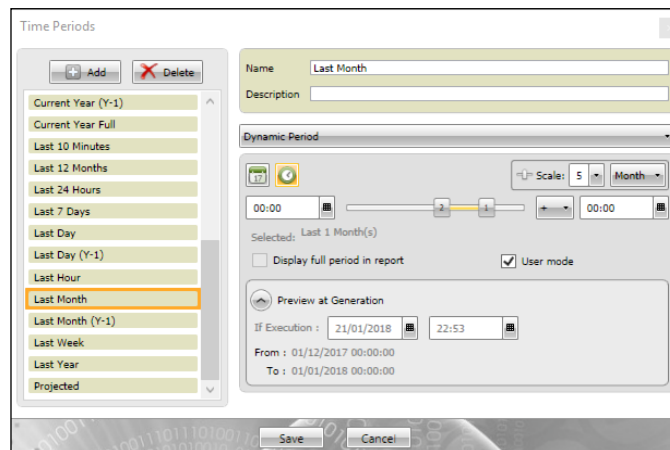
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8.1. RESOURCES - CREATING TIME PERIODS

ANALYTICS ARE BASED ON QUERIES THAT INCORPORATES A TIME PERIOD.

IT IS THEREFORE NECESSARY TO CREATE THOSE PERIODS TO MAKE YOUR PROJECT

SOME PERIODS ARE PROVIDED BY DEFAULT, THE **TIME PERIOD** OBJECT IN THE RIBBON ALLOWS THE USER TO CREATE OTHER PERIODS GRAPHICALLY AND WITHOUT ANY SCRIPTING.



PLUTO OFFERS SEVERAL TYPES OF PERIODS

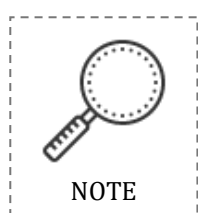
1. **FIXED PERIOD:** THE RESULT OF THE REQUEST WILL ALWAYS BE THE SAME, THIS IS CALLED A REFERENCE PERIOD
2. **DYNAMIC PERIOD:** TWO POSSIBLE OPTIONS-
 - THE BEGINNING AND END OF THE PERIOD ARE DYNAMIC
 - THE BEGINNING OF THE PERIOD IS FIXED, THE END OF THE PERIOD IS DYNAMIC
 - THE OUTCOME OF THE QUERY WILL VARY OVER TIME, KNOWN AS A **ROLLING PERIOD**
3. **RELATIVE PERIOD:** ALLOWS YOU TO DEFINE A PERIOD IN RELATION TO A REFERENCE PERIOD
 - THE TWO PERIODS ARE LINKED AND SLIDE IN TIME
4. **BATCH PERIOD:** THE BEGINNING AND END OF THE PERIOD ARE CAPTURED IN THE BATCH TABLE
5. **PERIOD TEAM:** ALLOWS YOU TO CREATE A DYNAMIC PERIOD THAT SWITCHES WITH EACH SHIFT CHANGE

EXERCISE 8:

CREATE **CURRENT 24 HOURS PERIOD**

DATE FORMAT: IT IS POSSIBLE TO DEFINE THE DATE FORMAT

d 26/02/1968 | D Monday, February 26, 1968 | t 14:30 | T 14:30:54 | g 26/02/1968 14:30
 G 26/02/1968 14:30:54 | f Monday, February 26, 1968 2:30 PM | F Monday, February 26, 1968 2:30:54 PM



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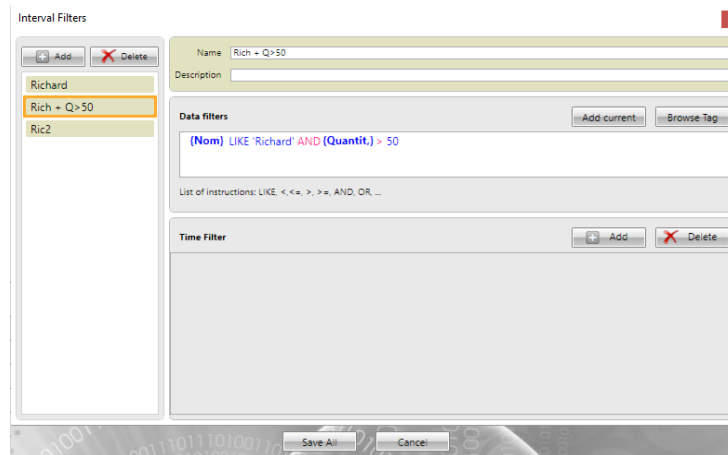
8.2. RESOURCES – DATA FILTERS

A DATA FILTER ALLOWS YOU TO REJECT DATA POINTS IN ORDER TO ADJUST THE RESULT OF THE QUERY.

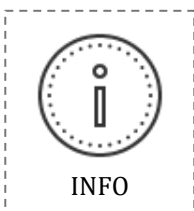
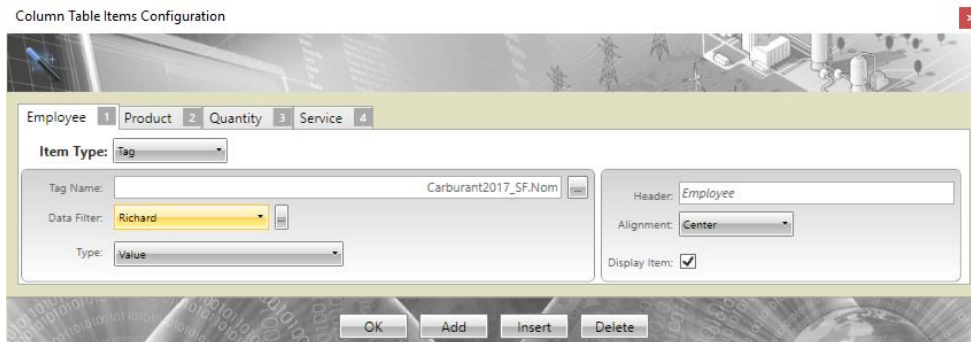
THERE ARE 2 TYPES OF FILTERS:

- **DATA FILTER** (e.g. take data [> 0] or [between 0 and 100])
- **TIME FILTER** (e.g.: take data [excluding weekends] or [between 6 a.m. to 6 p.m.])

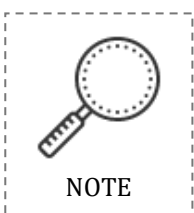
THE DATA FILTER CAN COMBINE SEVERAL CONDITIONS (like, <, <=, >, >=, <>, =, AND, OR, IN, NOT, SUM, COUNT, MIN, MAX, AVG...), SEVERAL VARIABLES AND SEVERAL LEVELS OF ()



THE FILTER IS CONFIGURED ONCE, AND CAN BE SELECTED IN EACH OBJECT THROUGH THE "DATA FILTER" PROPERTY



1. **{CurrentTAG}** APPLIES A FILTER FROM THE VARIABLE CONFIGURED IN THE OBJECT. THIS ALLOWS YOU TO CREATE A SINGLE FILTER FOR ALL VARIABLES
2. FOR TIME FILTERS, IT IS POSSIBLE TO DEFINE **PUBLIC HOLIDAYS**



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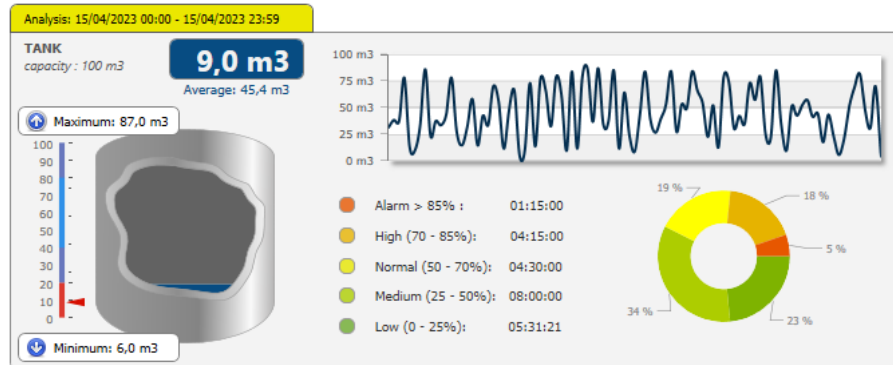
9. THE OBJECTS

THERE ARE TWO TYPES OF OBJECTS

- SMART OBJECTS

THAT ARE USED TO EXTRACT ANALYSES

VALUE, GRAPH, CURVE, PARETO, RADAR, TABLE ...



- DESIGN OBJECTS

WHICH SERVE TO IMPROVE THE FRONT END OF THE DOCUMENT

ICON, IMAGE, TITLE, PARAGRAPH...

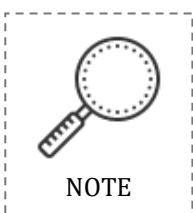
DAILY REPORT

ENERGY ANALYSIS

WHY PLUTO ANALYTICS ?

PLUTO ANALYTICS REPRESENTS THE NEW GENERATION OF REPORTING AND MONITORING SOFTWARES FOR ENTERPRISES LOOKING FOR A MODERN AND ROBUST INFORMATION MANAGEMENT SOLUTION TO:

- COLLECT DATA FROM MULTIPLE DATA SOURCES
- TRANSFORM DATA INTO ANALYTICS
- DESIGN PROFESSIONAL APPLICATIONS
- VISUALIZE ANALYTICS FROM MULTIPLE APPLICATIONS



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9.1. SMART OBJECTS

THERE ARE 2 TYPES OF OBJECTS

- SINGLE-SELECTION VARIABLE OBJECTS

SMART VALUE, SMART LABEL, GAUGE, MOTOR, PUMP, TANK...

SMART VALUE display the result in a numeric view

LIST OF THE MAIN STATISTICAL FUNCTIONS

BASE FUNCTIONS

FIRST value:	71.0	26/02/2023 15:00:00
LAST value:	16.0	27/02/2023 14:00:00
PREVIOUS value:	71.0	27/02/2023 13:45:00
MINIMUM value:	9.0	27/02/2023 01:45:00
MAXIMUM value:	89.0	26/02/2023 23:45:00

For those functions the date & time can be displayed

MATH FUNCTIONS

SUM:	4 497
AVERAGE:	48.4
WEIGHTED AVERAGE:	48.3
AVERAGE DEVIATION:	21.2
STANDARD DEVIATION:	24.0
INDEX DEVIATION:	919

for flow & power values
for energy meters

COUNT & DURATION FUNCTIONS

COUNT ALL:	13	
COUNT ON:	6	OFF: 6
DURATION ON:	10:29:00	OFF: 11:20:00
EFFICIENCY:	45.5 %	

GAUGES display the result in multiple gauges

DYNAMIC OBJECTS display the result in multiple vector design objects

SMART LABEL display the result as a label or an image

POOR Good
DANGER Red
Warning

ICON & LABEL CONFIGURATION

ENERGY A++ 48

IMAGE & GIF CONFIGURATION

STOP

- MULTIPLE VARIABLE OBJECTS

TREND, BARGRAPH, PIE, HISTOGRAM, ...

BAR GRAPH enables for a period to extract analytics for every sub periods all functions can be used, multiple view graphs options are available

energy comparison during 1 week

Date	GAS 1	GAS 2	GAS 3
févr. 13	150	140	130
févr. 14	140	130	120
févr. 15	130	120	110
févr. 16	120	110	100
févr. 17	110	100	90
févr. 18	100	90	80
févr. 19	90	80	70

expression between analytics are possible

800 Nm³
700 Nm³
600 Nm³
500 Nm³
400 Nm³
300 Nm³
200 Nm³
100 Nm³
0 Nm³
-100 Nm³
-200 Nm³

févr. 13 févr. 14 févr. 15 févr. 16 févr. 17 févr. 18 févr. 19

Last Week This Week Gap

PIE GRAPH enables to compare anything from any time all functions can be used, multiple views are available

Flat Pie Graph 3D Pyramid

Category	Value	Percentage
GAS 1	10	33%
GAS 2	11	36%
GAS 3	12	33%

TREND enables to see all data points in a chart with multiple view chart options (line, spline, column, points, area...)

TIMELINE enables to show the status of any process in a linear representation duration and percentage is directly calculated

machine timeline

Category	Value	Percentage
STOP	18.6%	(2.83/00:00)
UNHAZ	22.4%	(1.19/00:00)
PROD	48.4%	(3.05/30:00)
HAZ	10.7%	(0:30/30:00)

HISTOGRAM enables to see the dispersion of values by interval, the idea is to see the data points variance to count and highlight the good and the bad data point.

flow dispersion

Interval	Count	Percentage
0 - 50	81	13%
50 - 100	209	34%
100 - 150	183	27%
150 - 200	115	17%
200 - 250	51	8%
250 - 300	1	1%

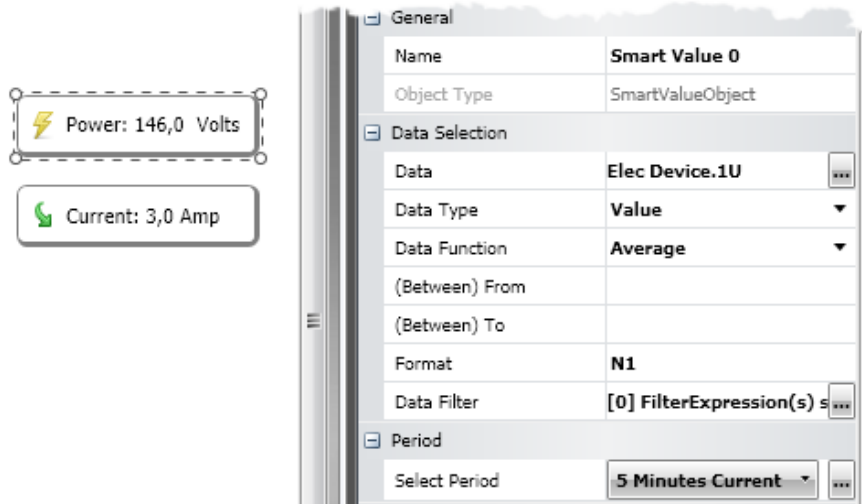
CONFIGURING SINGLE-VARIABLE OBJECTS

THE CONFIGURATION GRID IS ADJUSTED AUTOMATICALLY BASED ON THE OBJECT PROPERTIES

THERE ARE TWO TYPES OF PARAMETERS

- COMPULSORY PARAMETERS

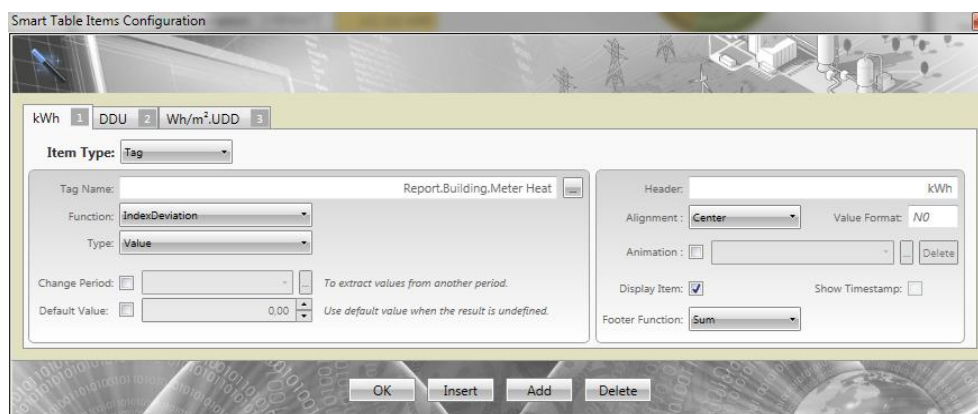
- DATA** VARIABLE SELECTION
- FUNCTION** SELECT THE STATISTICAL FUNCTION (MIN, MAX, AVERAGE, SUM, CONSUMPTION, DURATION, ...)
- PERIOD** SELECT THE TIME PERIOD OF THE ANALYSIS (24 HOURS, 7 DAYS, 1 MONTH...)



- VISUAL SETTINGS

COLOR, BORDER, TRANSPARENCY, FONT, PREFIX, SUFFIX, FORMAT, ICON...

FOR THE CONFIGURATION OF OBJECTS WITH MULTIPLE VARIABLES, A POP UP WINDOW APPEARS FROM THE **DATA** PROPERTIES AND ALLOWS YOU TO SELECT AND ADD MULTIPLE VARIABLES



NOTE

CONFIGURING MULTIPLE VARIABLES OBJECTS

THE **ADD** BUTTON: ALLOWS YOU TO ADD NEW ITEMS

AN **ITEM** CAN BE A **VARIABLE**, AN **EXPRESSION**, AN **ALARM FILTER**...

THE SETTINGS ON THE RIGHT ALLOW YOU TO SET VISUAL RENDERING OPTIONS

SEVERAL OPTIONS ARE AVAILABLE FOR THE CONFIGURATION, WE TALK ABOUT THE **OBJECT INTELLIGENCE**

1. EACH ITEM HAS A UNIQUE NUMBER [1] [2] IN ORDER TO BE ABLE TO MAKE EXPRESSIONS
2. IT IS POSSIBLE TO DISPLAY THE VALUE OR CUMULATIVE VALUE
3. IT IS POSSIBLE TO VISUALIZE SEVERAL PERIODS TO COMPARE A PROCESS OVER TIME
4. IT IS POSSIBLE TO FILTER DATA IN ORDER TO GET CLEAN & ACCURATE ANALYSIS

Bar Graph Items Configuration

Last Week 1 This Week 2 Gap 3

Item Conf.: Tag

Select Tag: City & Building.Energy.Meters.Gas.Tech Dpt

Select Function: IndexDeviation

Data Filter: (None)

Type: Accumulation

Change Period: Current Week

Default Value: 0.00

Item Appearance

Legend: This Week

Insert Date: dd/MM/yy

Color: Red Spline Opacity: 100

Line: Solid 2 Y Axis: Primary

Marker: Circle 6

Animation:

Display Item: Show Value: N Xf: 1

OK Add Insert Duplicate Delete

THE ITEM **EXPRESSION** ALLOWS YOU TO CREATE A MATHEMATICAL EXPRESSION BETWEEN ITEMS SIMPLY AND VERY QUICKLY THANKS TO THE NUMBERS OF EACH ITEM

Bar Graph Items Configuration

Last Week 1 This Week 2 Gap 3

Item Conf.: Expression

Expression: [#1] - [#2]

(#1] enable to use value from Column 1.

Use sliced period as reference for resources

Item Appearance

Legend: Gap

Insert Date: dd/MM/yy

Color: Blue Column Opacity: 100

Line: Solid 3 Y Axis: Primary

Marker: Circle 6

Animation:

Display Item: Show Value: N/O Xf: 1

OK Add Insert Duplicate Delete

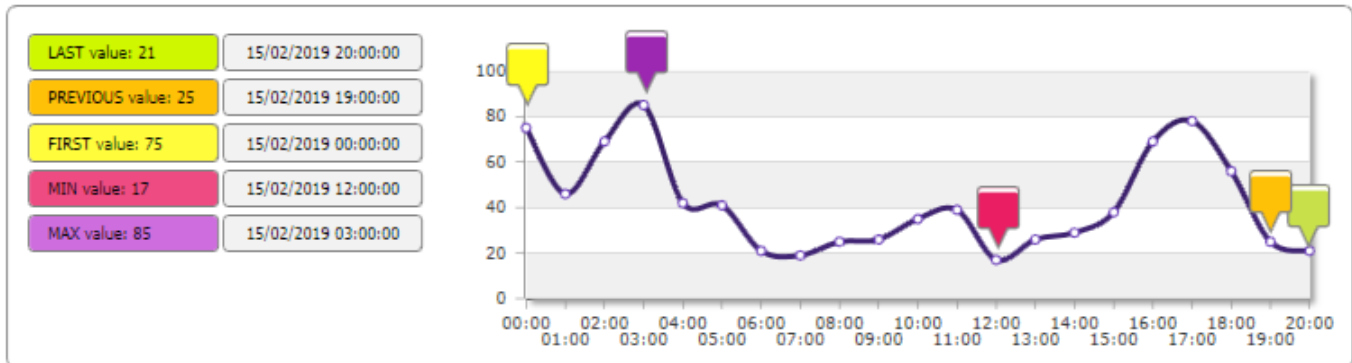


NOTE

STATISTICAL FUNCTIONS

1. BASIC FUNCTIONS

FIRST - LAST - PREVIOUS - MIN - MAX



2. ANALOG FUNCTIONS

AVERAGE

SUM

STANDARD DEVIATION

AVERAGE DEVIATION

COUNT = Counts all the data points

COUNT BETWEEN = Count the number of data points in the interval (From – To)

DURATION BETWEEN = Duration in the interval (From – To)

3. COUNTER FUNCTIONS

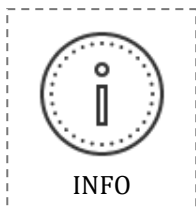
INDEX DEVIATION = Deviation between 2 Index, (Consumption Energy, Gas, Water, Prod Counter...)

4. BOOLEAN FUNCTIONS

COUNT ON or OFF = Count the Rising or Falling Edges

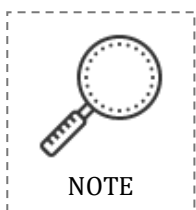
DURATION ON or OFF

EFFICIENCY = Time ON/ Total Time * 100 (in percentage)



SEVERAL DISPLAY FORMATS ARE AVAILABLE

- N0, N1, N2, N3... define the number of DIGITS (from 0 to X digits)
- P0, P1, P2, P3 ... define the number of PERCENT DIGITS (from 0 to X digits)
- C0, C1, C2, C3 ... define the number of CURRENCY DIGITS (from 0 to X digits)
- Duration display: **Dur** = HH:mm:ss or **H** = in hours (H0, H1...)



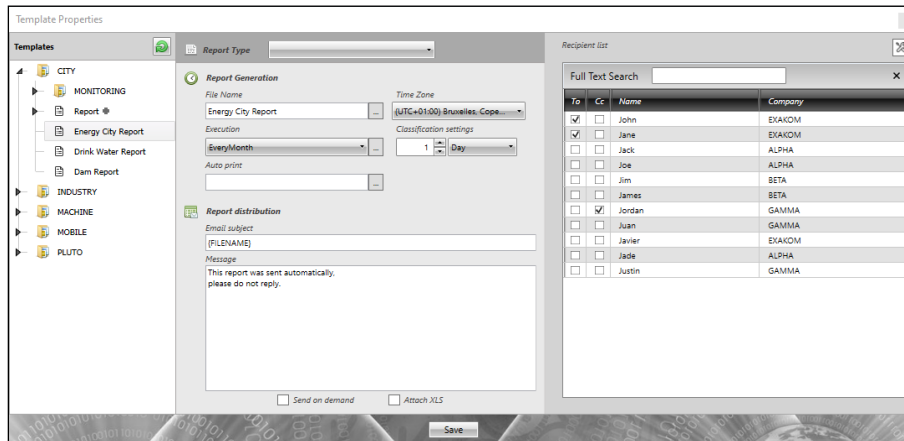
10. LES APPLICATIONS

10.1. REPORT CONFIGURATION

PLUTO ALLOWS TO GENERATE AND DISTRIBUTE REPORTS AUTOMATICALLY IN PDF FORMAT.

GENERATION CAN BE TRIGGERED:

- PERIODICALLY (EVERY HOUR, EVERY DAY, EVERY MONTH...)
- ON EVENT
- ON ALARM

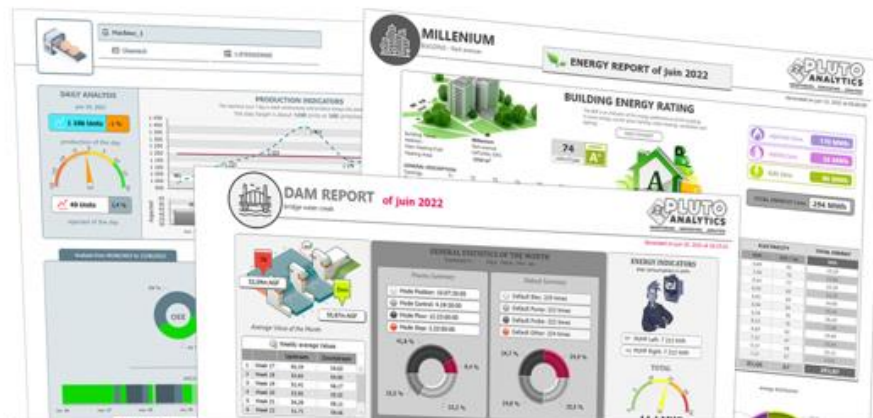


ALL REPORTS ARE SAVED IN THE "REPORTS» DIRECTORY

C:\Program Files (x86)\Exakom\Pluto Analytics\Projects\Reports

THE NAME OF EACH REPORTS CAN CHANGE DYNAMICALLY IN ORDER TO CREATE A COLLECTION OF DAILY, MONTHLY, ANNUAL REPORTS...

REPORT AUTOMATIC **DISTRIBUTION** ONLY REQUIRES THE CONFIGURATION OF THE SMTP SERVER AND THE SELECTION OF RECIPIENTS FROM A RECIPIENT LIST.



TO GENERATE EXCEL REPORTS, YOU WILL NEED TO SET UP A TEMPLATE FROM PLUTO4OFFICE



NOTE

10.2. MONITORINGS CONFIGURATION

MONITORING IS A DIGITAL SIGNAGE APPLICATION THAT PROVIDES REAL-TIME INFORMATION ABOUT THE SITE'S PERFORMANCE. IT IS ALSO FREQUENTLY USED TO INFORM PEOPLE ABOUT SECURITY RULES, GOOD PRACTICES OR ANY INFORMATION THAT MAY BE PUBLISH FAST.

CONFIGURATION

- DEFINE DASHBOARDS IN 16:9 LANDSCAPE FORMAT
- CREATE A LIST OF DASHBOARDS WITH THE TIMING FOR EACH

Report Name	Duration	Repeat	Smart Index Folder
> MONITORING.Building Dashboard	00:00:10	1	
MONITORING.Building Temperature	00:00:10	1	
MONITORING.Building Elec	00:00:10	1	
MONITORING.Building Gas	00:00:10	1	
MONITORING.Building Water	00:00:10	1	



EXECUTION

- LAUNCH THE MONITORING LOCALLY FROM THE **APPLICATION** (ESC TO EXIT)
- START THE MONITORING FROM A **WEB BROWSER**



NOTE

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11. APPLICATIONS

11.1. LOCAL MODE

FROM THE PLUTO CLIENT, THERE IS AN APPLICATION TAB THAT ALLOWS ANYONE TO REFRESH A REPORT OR A DASHBOARD INSTANTLY AND SAVE IT AS A PDF.



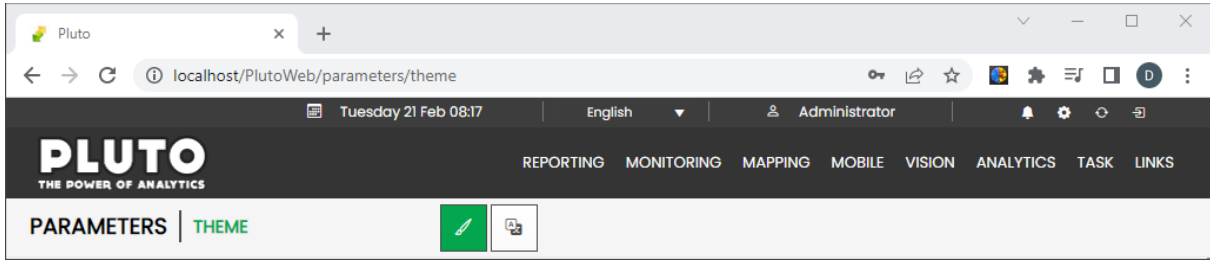
- THE **REPLAY** MODE ALLOWS YOU TO UPDATE ANY DOCUMENT AT ANYTIME IN THE PAST. THIS WAY, YOU WILL GET A **PLAYBACK** APPLICATION.
- A REPORT CAN BE GENERATED ON DEMAND MANUALLY
- YOU CAN SELECT AND LAUNCH A **LOCAL MONITORING** (ESC TO OUTPUT)
- DATA CAN BE EXPORTED IN CSV FORMAT
- YOU CAN OPEN THE **PLUTO WEB PORTAL**



NOTE

11.2. PLUTO WEB

PLUTO WEB IS A MODERN WEB APPLICATION ALLOWING YOU TO INTERACT WITH DATA IN MULTIPLE VIEWS FROM A SIMPLE WEB BROWSER.



URL BY DEFAULT: <http://localhost/PlutoWeb>

- REPLACE LOCALHOST WITH YOUR SERVER'S IP ADDRESS
- THE INTERFACE IS FULLY CUSTOMIZABLE

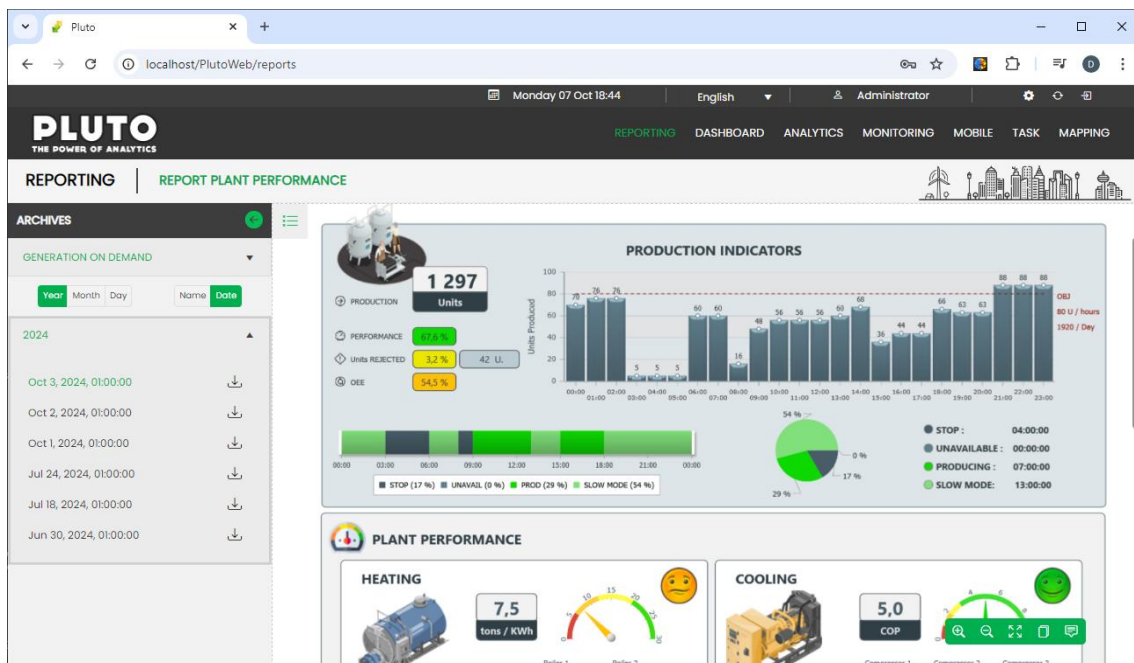
NO CONFIGURATION IS REQUIRED, THE USER RIGHTS DEFINE BEFORE THE USER MANAGEMENT APPLICATION DETERMINE WHAT YOU CAN SEE AND DO. (§page 41)

11.2.1. SECTION REPORTING

IN THIS SECTION, THE USER CAN ACCESS AND SEE ALL THE REPORTS GENERATED

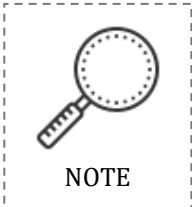
ONLY DOCUMENTS WITH **WEB REPORTING** PROPERTY ENABLED WILL BE DISPLAYED IN THE REPORTING MODULE

Report Properties	
Storage Locations	No items
Display In Web Reporting	<input checked="" type="checkbox"/>
Display In Web Analytics	<input type="checkbox"/>
Display In Web Vision	<input type="checkbox"/>



FROM THE WEB REPORTING APP, USERS CAN:

- GET THE LIST OF AUTHORIZED REPORTS
- ACCESS TO ALL ARCHIVED REPORTS
- COMPARE REPORTS
- GENERATE NEW REPORTS ON DEMAND
- DOWNLOAD REPORT



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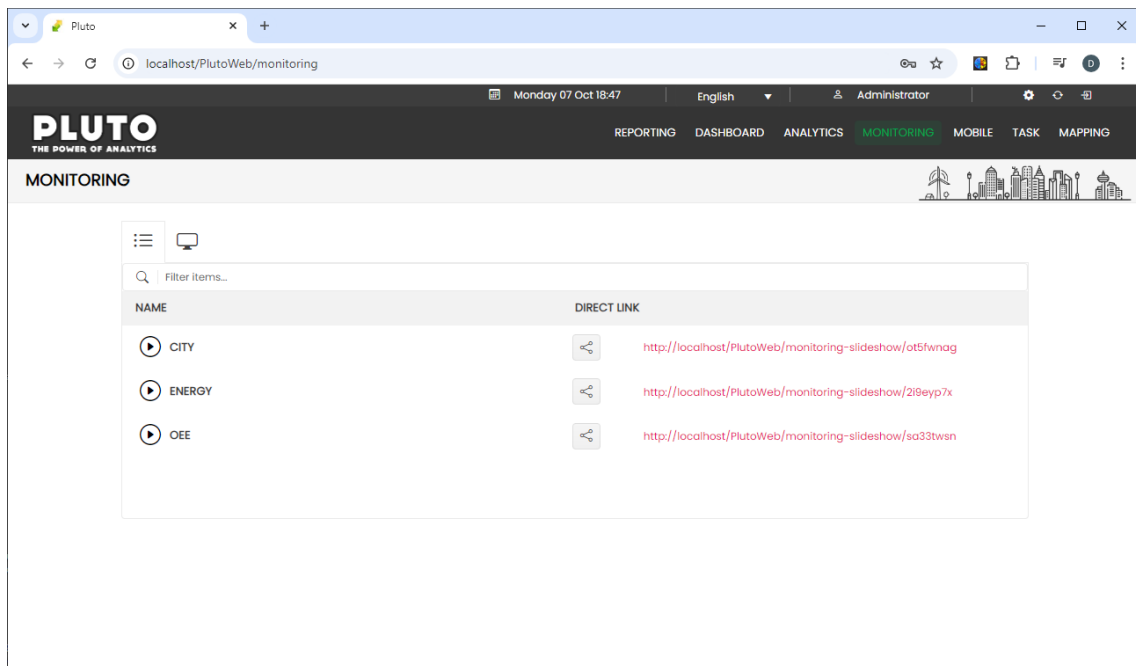
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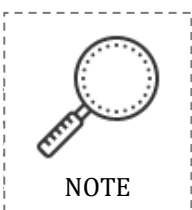
11.2.2. SECTION MONITORING

DIGITAL SIGNAGE APPLICATIONS FROM A WEB BROWSER.

- GET THE LIST OF MONITORING DEFINED IN THE PROJECT
- CLICK TO START ANY MONITORING IN YOUR BROWSER



1. TO BROADCAST THE URL DIRECTLY, YOU CAN LAUNCH THE MONITORING WITHOUT ENTERING THE PORTAL
2. A SECURITY CODE ALLOWS YOU TO BREAK THE URL AND KEEP CONTROL OF THE DISTRIBUTION



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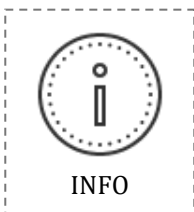
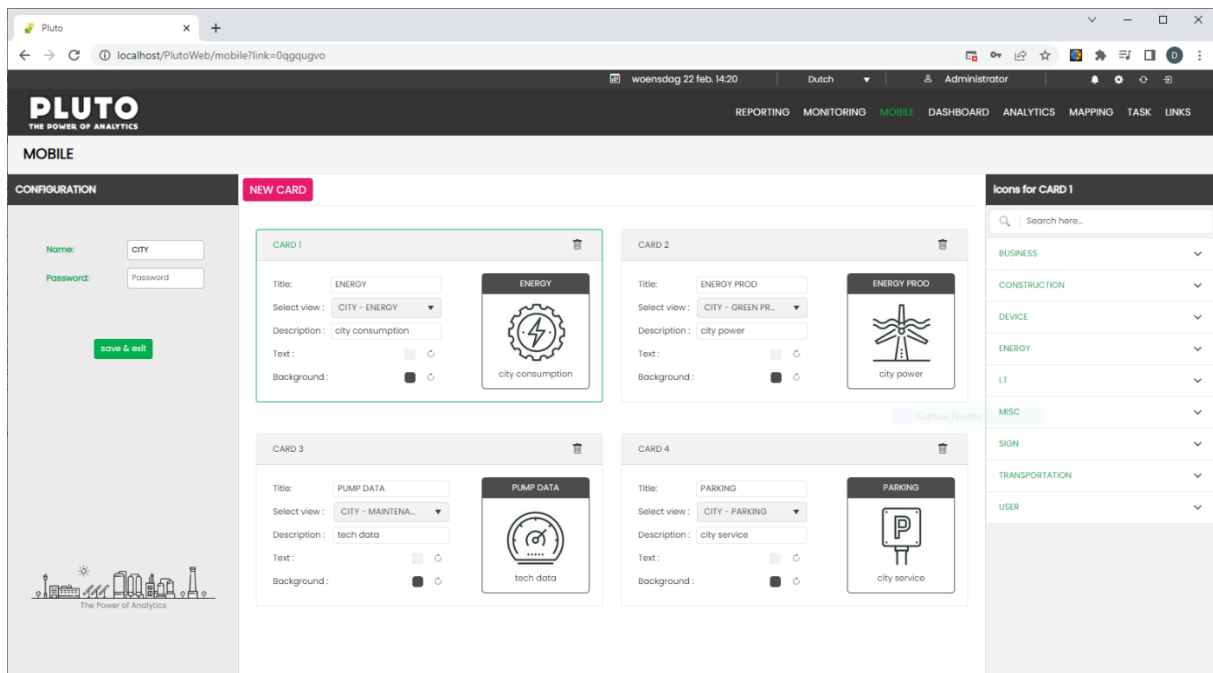
.....

11.2.3. SECTION MOBILE

ENABLES TO CREATE MOBILE APP IN JUST A FEW CLICKS

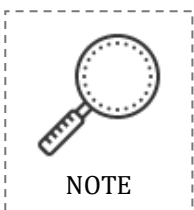
STEP BY STEP CONFIGURATION

- CREATE A CARD
- DEFINE A TITLE
- SELECT THE MOBILE VIEW. [PREVIOUSLY DEFINE IN PLUTO CLIENT](#)
- DESCRIPTION AND COLOR DEFINITION
- ICON SELECTION



1. POSSIBILITY TO PASSWORD PROTECT THE APPLICATION
2. ABILITY TO ADD CUSTOM ICONS

[C:\Program Files \(x86\)\Exakom\Pluto Analytics\PlutoWeb\Images\Icons](C:\Program Files (x86)\Exakom\Pluto Analytics\PlutoWeb\Images\Icons)



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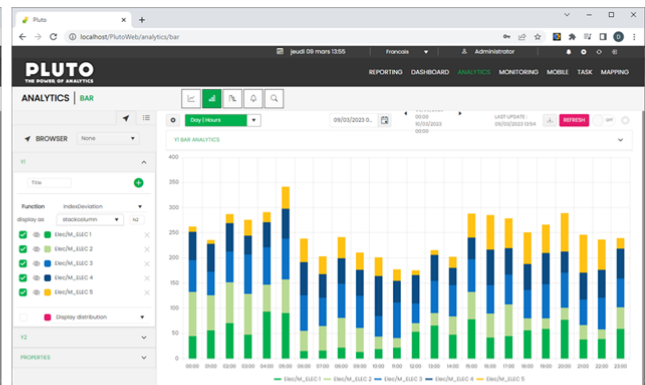
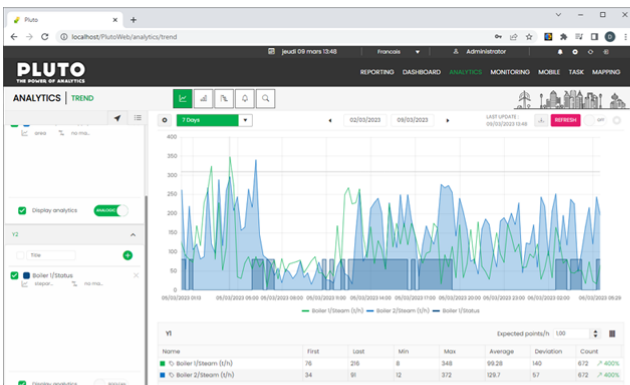
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11.2.4. SECTION ANALYTICS

PLUTO OFFERS DYNAMIC APPLICATIONS FOR DATA VISUALIZATION IN MULTIPLE VIEWS. THE OBJECTIVE IS TO INTERACT AND CROSS-REFERENCE DATA TO UNDERSTAND BEHAVIOURS AND ALL TYPES OF DYSFUNCTIONS.

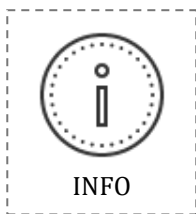
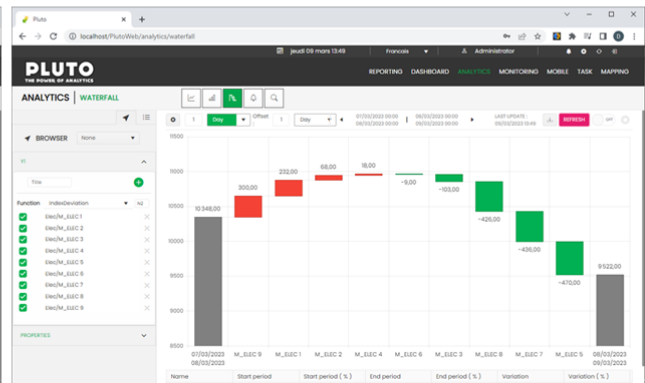
LIST OF APPLICATIONS

- A DYNAMIC TREND MODULE TO SEE ALL DATA POINTS
- A BAR ANALYSIS MODULE TO EXTRACT ANALYTICS BY PERIODS
- A WATERFALL MODULE TO HIGHLIGHT ENERGY VARIATION, LEAKS, OVERCONSUMPTION...
- AN HISTORGRAM MODULE TO VISUALIZE DATA DISPERSION
- DATA & ALARM TABLES TO GET A LIST OF THOSE

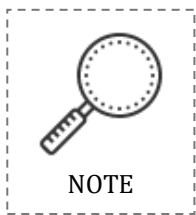


The screenshot shows the 'Alarm' analytics view in PLUTO. It displays a table of system alarms with columns for ID, status, start/end time, priority, message, and alarm fields.

ID	Start T.	End Time	Priority	Message	AlarmField1	AlarmField2	AlarmField3
1	06/02/2023 13:18	06/02/2023 16:14	5	Boiler Temp is High	Temperature	Boiler	10
2	06/02/2023 16:12	06/02/2023 16:14	1	After Door is Open	Security	Boiler	1
3	06/02/2023 17:21	06/02/2023 18:04	1	Boiler Temp is Low	Temperature	Boiler	1
4	06/02/2023 16:06	06/02/2023 16:46	4	Water Door is Open	Security	Boiler	4
5	06/02/2023 16:28	06/02/2023 16:08	1	After Door is Open	Security	Boiler	1
6	06/02/2023 16:26	06/02/2023 16:08	4	Water Door is Open	Security	Boiler	1
7	06/02/2023 16:22	06/02/2023 16:06	3	After Door is Open	Security	Boiler	3
8	06/02/2023 19:44	06/02/2023 19:08	2	Power Shutdown	Power	Boiler	1
9	07/02/2023 14:58	07/02/2023 17:50	5	Boiler Temp is High	Temperature	Boiler	9
10	07/02/2023 06:59	07/02/2023 06:42	3	After Door is Open	Security	Boiler	3
11	07/02/2023 02:44	06/02/2023 03:06	1	After Door is Open	Security	Boiler	1
12	06/02/2023 17:12	07/02/2023 16:34	5	Boiler Temp is Low	Temperature	Boiler	10
13	06/02/2023 17:12	07/02/2023 16:34	5	Boiler Temp is Low	Temperature	Boiler	10
14	06/02/2023 16:27	07/02/2023 16:09	10	Light Shutdown is Off	Light	Boiler	5
15	06/02/2023 17:39	06/02/2023 16:31	10	Light Shutdown is Off	Light	Boiler	5



1. EACH ANALYSIS CAN BE SAVED IN A MENU TO BE AVAILABLE AT ANYTIME
2. A DIRECT DATA EXPORT IS AVAILABLE IN EACH MODULE

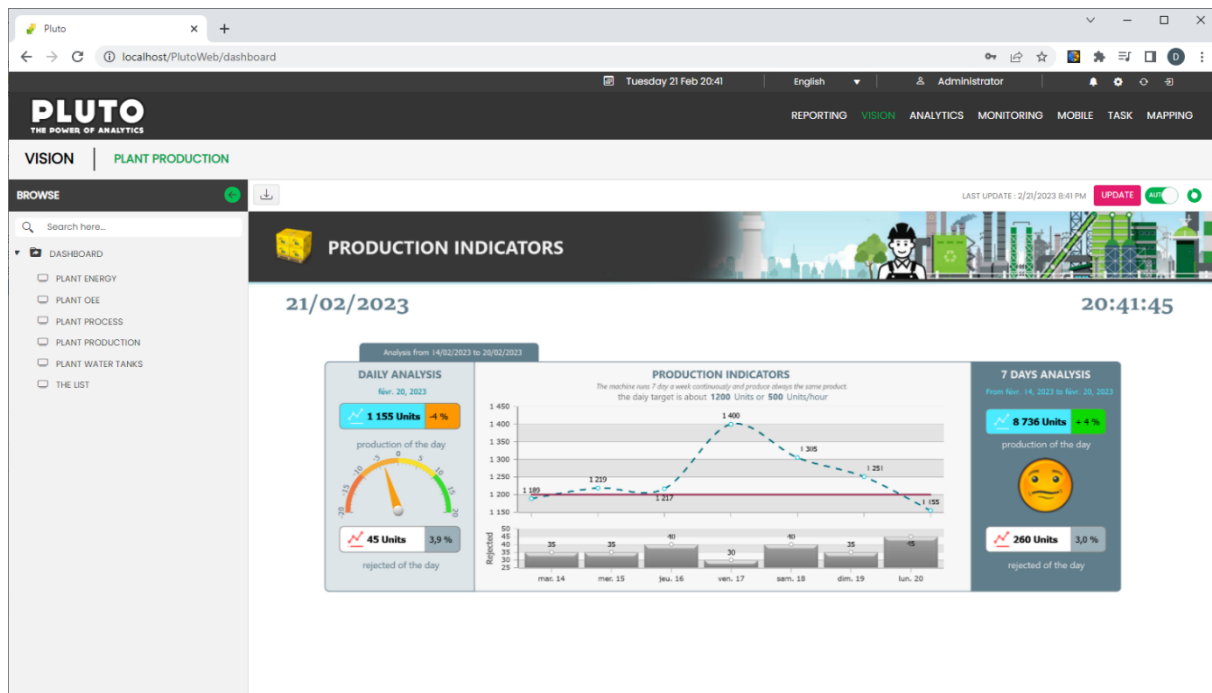


11.2.5. SECTION VISION

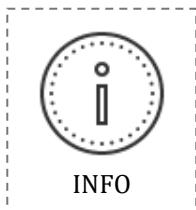
THIS APPLICATION ALLOWS YOU TO NAVIGATE BETWEEN VIEWS MANUALLY LIKE A SCADA APPLICATION. EACH TIME A DASHBOARD IS DISPLAYED, IT IS UPDATED WITH ALL THE UP-TO-DATE ANALYSIS.

ONLY DOCUMENTS WITH **WEB VISION** PROPERTY ENABLED WILL BE DISPLAYED IN THE VISION MODULE

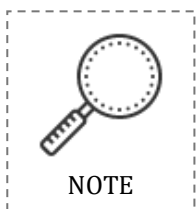
Report Properties	
Storage Locations	No items
Display In Web Reporting	<input type="checkbox"/>
Display In Web Analytics	<input type="checkbox"/>
Display In Web Vision	<input checked="" type="checkbox"/>



NAVIGATION CAN BE DONE BY THE MENU ON THE LEFT OR BY BUTTONS (OBJECT: **SMART LABEL**) CONFIGURED INSIDE THE DASHBOARDS



1. AUTO MODE ALLOWS YOU TO REFRESH THE DASHBOARD AT THE DESIRED FREQUENCY
2. DIRECT DOWNLOAD OF THE DASHBOARD IN PNG FORMAT (IMAGE)



11.2.6. SECTION MAPPING

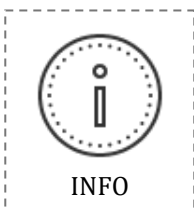
FOR MULTI-SITES PROJECTS, PLUTO SUGGEST CREATING MARKERS ON GOOGLE MAP TO KNOW THE STATUS FOR EACH SITE AND ACCESS TO ALL PLUTO WEB APPLICATIONS.

FOR EACH MARKER, A MINI DASHBOARD IS AVAILABLE ON THE RIGHT SIDE TO SUMMARIZE THE OVERALL SITE STATUS WITH THE MAIN INDICATORS AND FEW DIRECT ACCESS LINKS TO REPORTS, DASHBOARDS AND MORE...

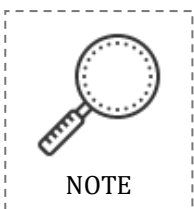
The image shows a 'Smart Browser' window with a tree view on the left containing categories like Smart City, Cafeteria, City Hall, Edison, Pool, San Pedro, Science Institute, St Georges, Stadium, Tech Department, KPI, Area, Type, Location, Co2, and Energy ELEC. The main configuration panel includes:

- Marker Name:** KPI (with a 'Default marker' checkbox)
- Map Configuration:**
 - Display text 1: Location (checked)
 - Display text 2: Location
 - Display text 3: (empty)
- Main Indicator:** Co2 (Type: KPI)
- Data Function:** Last
- Time Period:** Current 24 Hours
- Execution every:** 5 min.
- Unit:** ppm (Format: NO)
- Indicator Color:** A color scale from 0 (green) to 2500 (red) with intermediate markers at 1000, 1250, and 1500.

Below the configuration is a 'Mini Dashboard' for 'Energy ELEC' showing 1417 KWh, a bar chart, and key indicators: Co2 (1880 ppm), Status (0), and Temp. Inside (22.5 °C). It also lists 'Applications' like Reporting, Monitoring, and Analytics. To the right is a map of Europe with colored markers (green, yellow, orange, red) indicating site status. A top navigation bar includes 'MAPPINGS', 'REPORTING', 'DASHBOARD', 'ANALYTICS', 'MONITORING', 'MOBILE', and 'TASK'.



1. THIS MODULE IS FOR MULTI-SITE APPLICATIONS ONLY
2. MARKERS MUST BE CONFIGURED IN THE SMART BROWSER



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11.2.7. TASK LIST SECTION

PLUTO OFFERS AN APPLICATION TO BE SHARED WITH ALL THE PROJECT'S STAKEHOLDERS, IN ORDER TO MONITOR THE PROGRESS OF EACH TASK INHERENT TO THE PROJECT.

FILTERING OPTIONS ARE AVAILABLE TO FACILITATE MONITORING

Id	Status	Date ↓	Initiate by T...	Action to perform	Location	Assign to	Notes	Progress	Actions
30		22-02-2023	Jane Doe	Report Energy	Line A	Paul	Full revision of the report	30%	
22		19-01-2023	Administrator	Change Server	IT	Paul		100%	
23		19-01-2023	Administrator	Install Meters	S.I	Jane	45/ 98 Meters done	100%	
20		19-01-2023	Administrator	Training	Energy Dept.	HR	Schedule in Feb	0%	
21		19-01-2023	Administrator	DB Installation	IT	Paul	Done	100%	



NOTE

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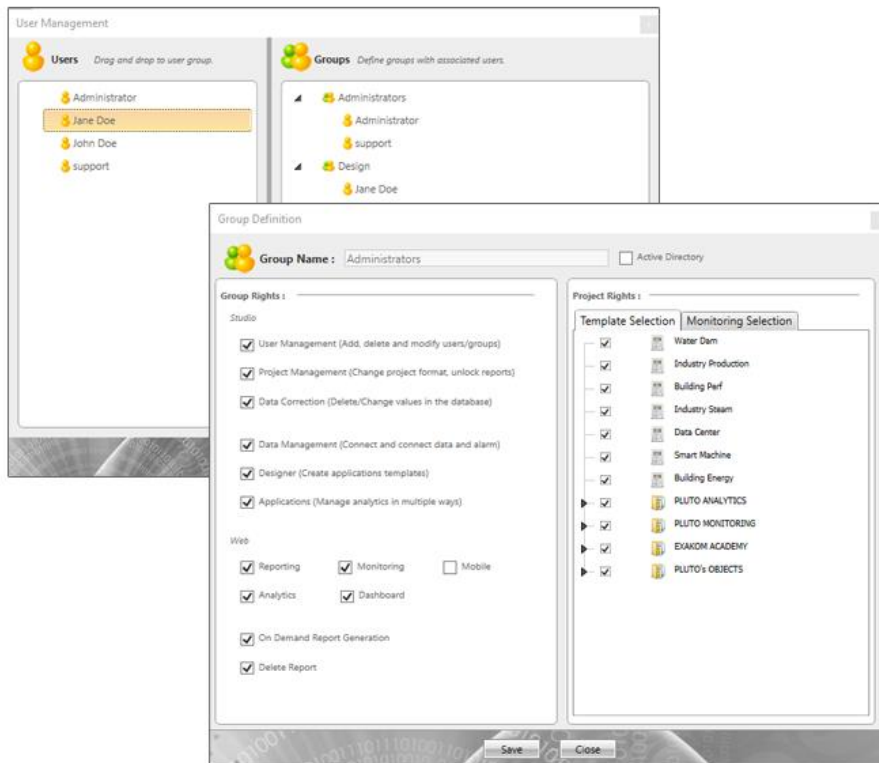
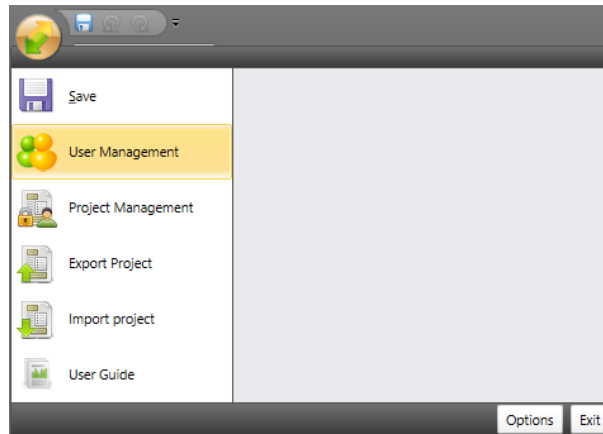
12. USER AND RIGHTS MANAGEMENT

FROM THE MAIN PRODUCT ICON,

THE USER MANAGEMENT MODULE ALLOWS YOU TO DEFINE THE RIGHTS OF EACH USER.

METHODOLOGY

1. CREATE USERS AND GROUPS OF USERS
2. **OR** CONNECT TO THE CUSTOMER'S **ACTIVE DIRECTORY**
3. THEN DEFINE THE RIGHTS TO THE SOFTWARE AND TO THE WEB PORTAL



NOTE

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