No-code, Low-code Solutions for Industrial IoT

State of the Solution

23 April 2024

www.iotize.com

IoTize is a patented technology of IoTize SAS. Patent No. 14/54445.

Today's Webinar (1)

- **Demo**
  Embedded java in IoTize Studio
  Dashboard & Data Flow Editors in App Creator
  In-app java in App Creator
  AWS IoT & MQTT broker
- **Any IoTize Tap Product**
  TapNLink and our PRIMER eval kit
  Tapioca Modbus-Wireless Adapters
  TapBus Industrial Modules
  TapNPass Modbus-Wireless tools

La FRENCH TECH IN THE ALPS

Authorized Partner

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Today's Webinar (2)

- **Today's Topic**
  No-code & Low-code Solution for Monitoring Apps
- **Solution**
  Where did IoTize start and what do we provide
- **Software Tools**
  IoTize full software ecosystem for No-code / Low-code
- **JVM & Java in Configuration**
  Demo: a no-code Tap configuration, a low-code Tap configuration
- **App Creator**
  Dashboard editor and no-code
  Data Flow editor, nodes and low-code

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Data Logging vs Monitoring

Data Logging

- ***Storing data to a remote platform***
- ***Permanent connection*** *(WAN, LPWAN, GSM)*
- ***Data is persistent***
- ***For data analysis to guide future actions***

Monitoring

- ***Storing data to a remote platform***
- ***On-site, direct device connection***
- ***Temporary connection & data*** *(NFC, BLE, Wi-Fi)*
- ***Commissioning, Testing, Maintenance, User Control***

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Our Expertise

Founder: Francis Lamotte
Offices: Grenoble, France

Embedded Electronics
- Microcontrollers
- Embedded Software
- C, C++, Java

Wireless
- Near Field Communication
- Bluetooth, Wi-Fi, LoRa, …

Mobiles & Cloud
- Cordova, Ionic
- Android, iOS, WIndows
- MQTT, CoAP
- AWS, Bluemix, Watson, …

IoT Security
- Encryption
- Authentication

Customers

Appliance

HVAC

Energy

Automation

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They iotize…

Cotherm

Heating Appliances

Schneider Electric

Energy & Automation

Air Liquide

Industrial Monitoring

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The Race to Connect Industry

Customer Expectations

New Efficiency

New Services & Business

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Problem of Complex Technology Landscape

Customer Challenges

New Technology

Increased Complexity

Lack of Expertise

Lack of Resources

Target Customers

OEM of Industrial Devices

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Problem of Complex Technology Landscape

Customer Challenges

New Technology

Increased Complexity

Lack of Expertise

Lack of Resources

Target Customer Shift

Integrators

Owners

Service Companies

OEM of Industrial Devices

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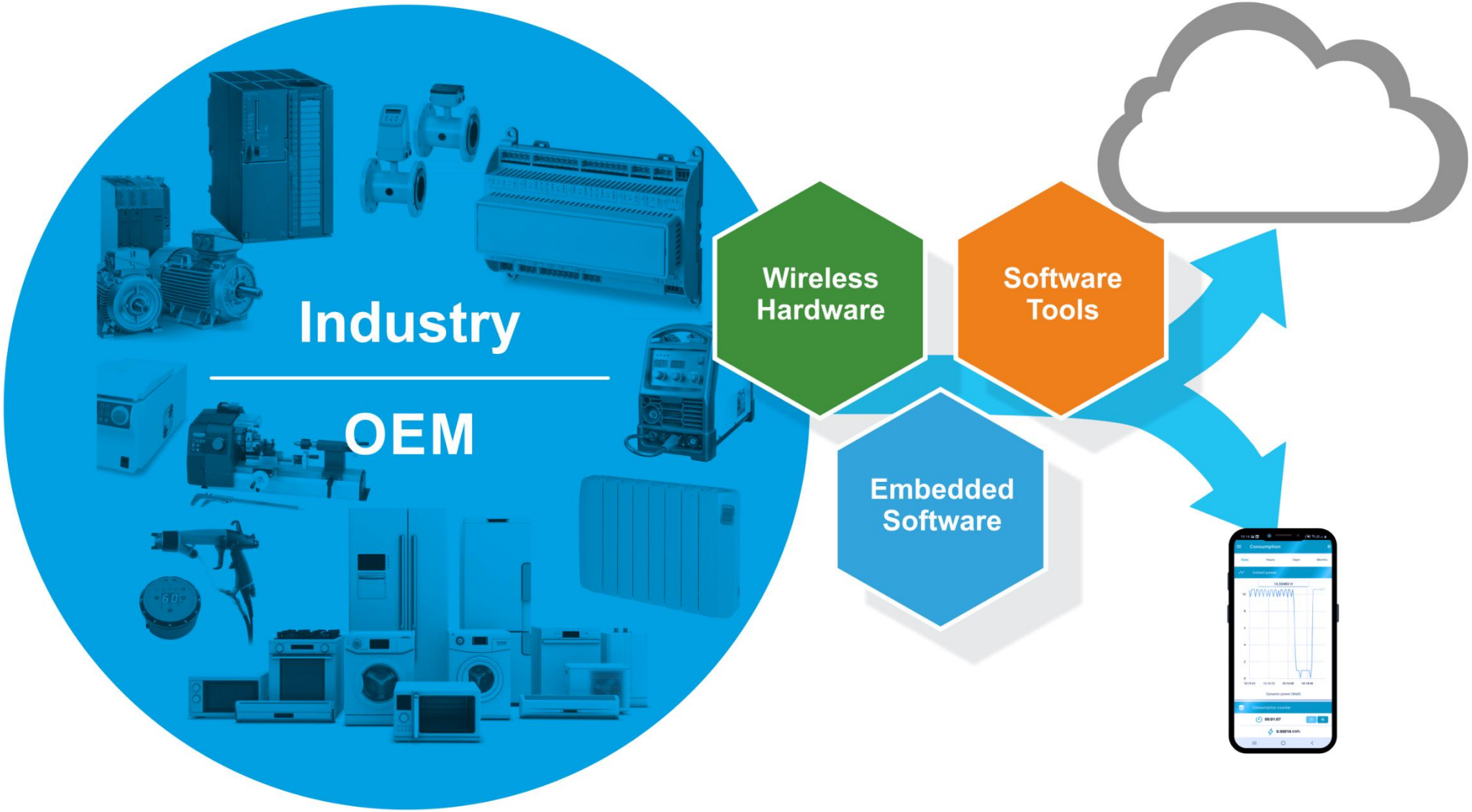
Master the No-Code, Low-Code Solution



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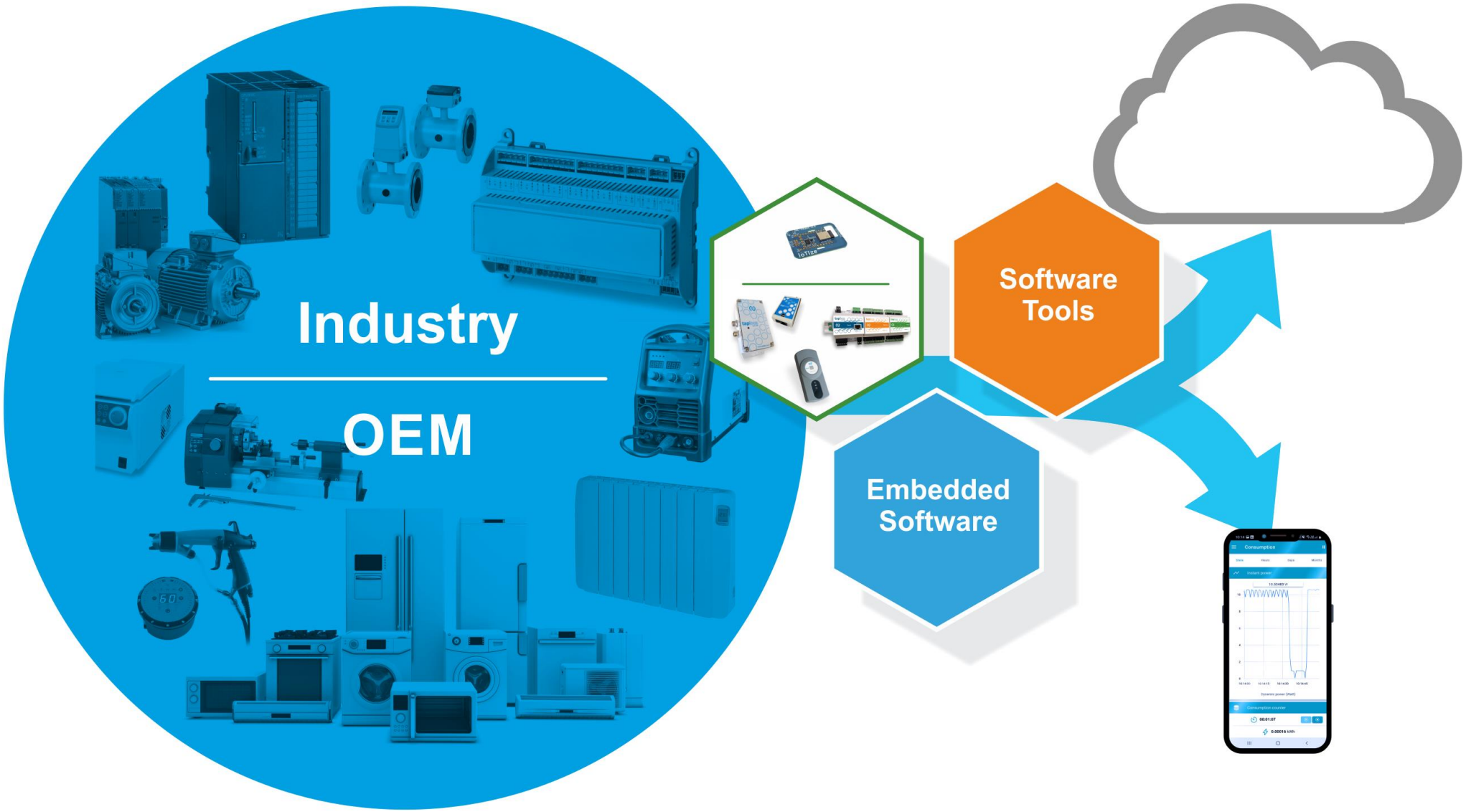
Hardware is Important, Tangible



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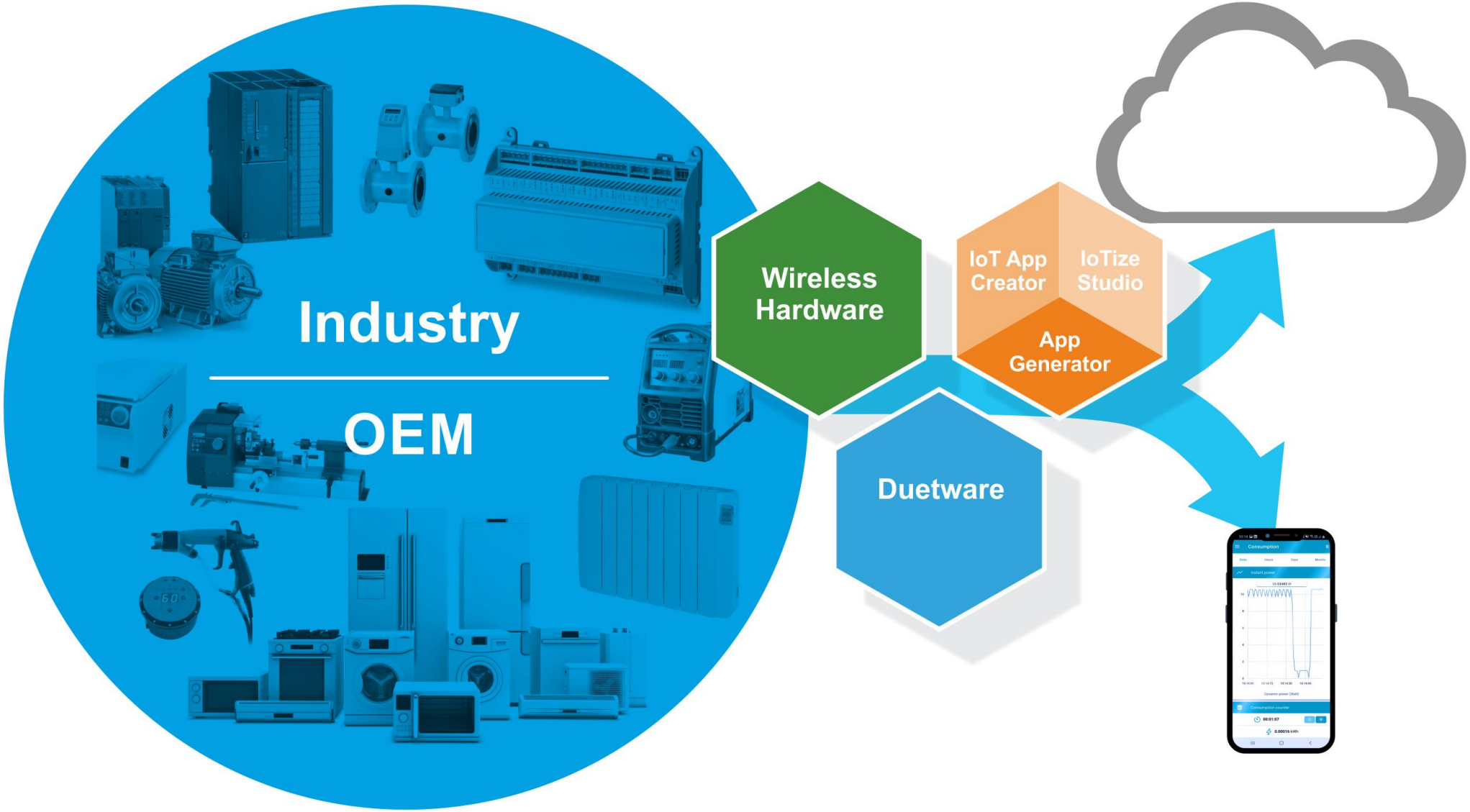
No-Code, Low-Code Advantage is Software



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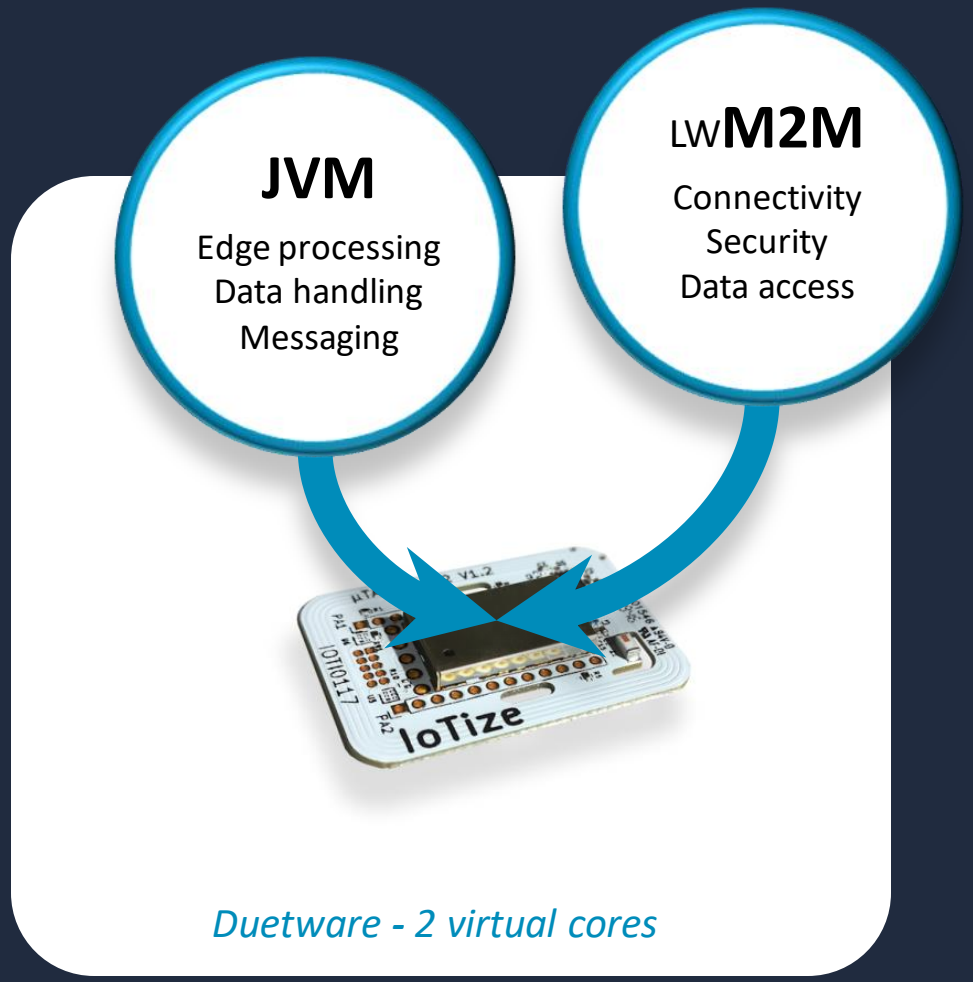
Duetware Embeds Intelligence for No-Code / Low-Code Integration



Duetware for…

- *No-Code communication, security, data handling*
- *Low-Code for customization with java*

Advantages for Customers…

- *No expertise*
- *Customizes easily*
- *Reduces project effort & complexity*
- *Improves design flexibility*

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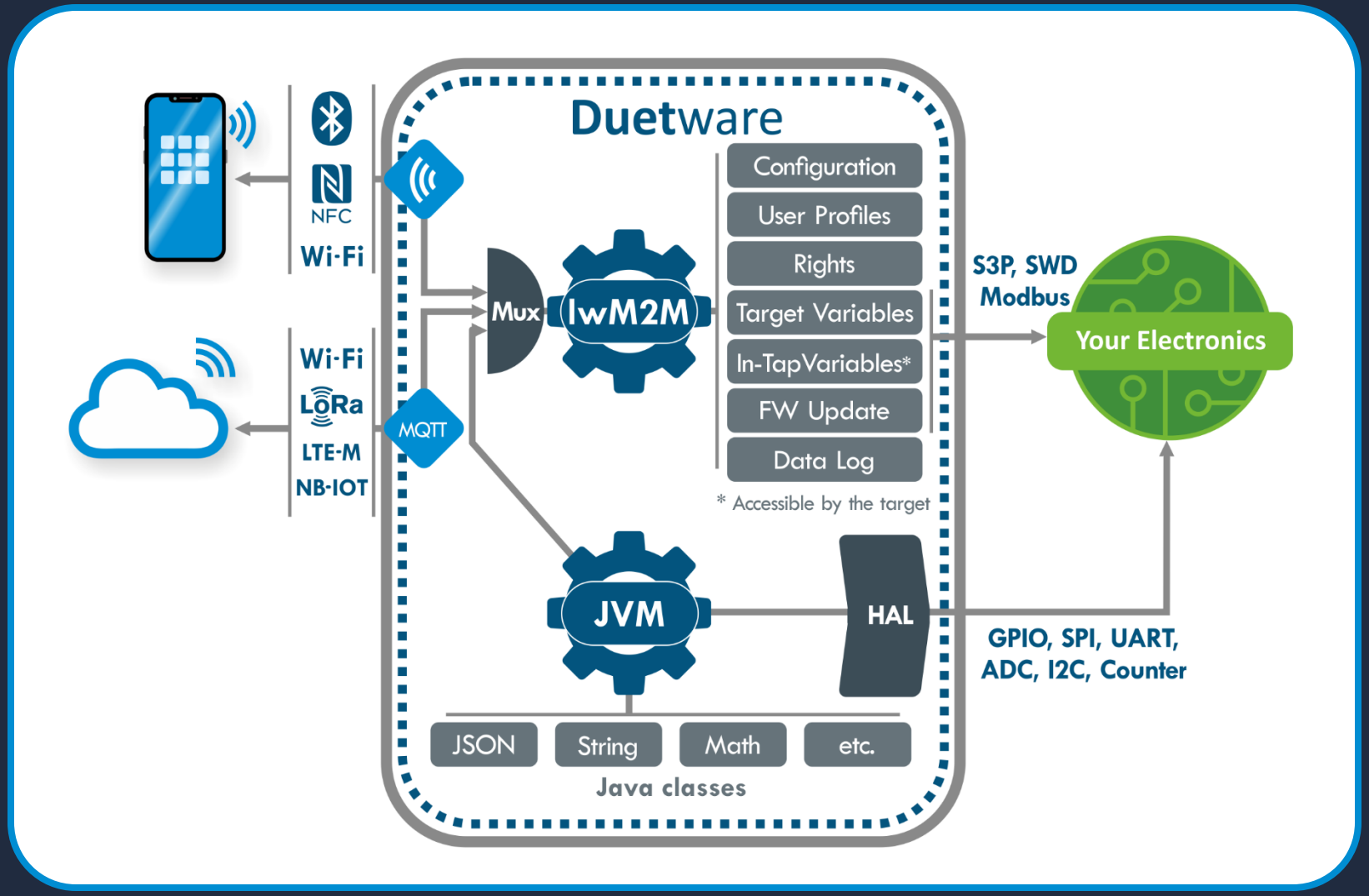

IwM2M engine

- *Retrofit with secure communication*
- *Instant PoC*

Java Virtual Machine

- *Edge processing*
- *Drive components*
- *Connect to any Cloud*

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Duetware Solution Features, Tools & Resouces

Design Aids

Configuration Wizards
Dashboard, MQTT, AWS cloud

In Tap Manager

Java samples
AES, I2C, MQTT, ADC, PWM, UART, SPI

In IoTize Studio

Configuration samples
STM32 (SWD), STM32 (S3P), Arduino (S3P), SPI, Modbus Sensor, SPI Sensor

In IoTize Studio

Dashboard samples
Senor, Wattmeter, Chart, Check list, Table, Dynamic HTML, Cryptography

In IoT App Creator

Reference designs
CO2 meter, Switch timer, Access entry code, Thermostat, Wattmeter

support.iotize.com

Design Tools

Tap Toolbox
Fieldbus connection utilities & testing
Android & iOS
Free

App Store
Play Store

Tap Manager
No-code Tap configuration
Android, iOS & Web app (PC)
Free

App Store
Play Store
iotize-cloud.web.app

IoTize Studio
No/Low-code Tap configuration
Windows (PC)
Free

iotize.com

IoT App Creator
No/Low-code dashboard design
Web app (PC)
Subscription

iotize-cloud.web.app

Ride7 / RKit-JVM
Java code debugger
Windows (PC)
Free

raisonance.com

DUETWARE

NFC
3-Stroke Configuration
Secure pairing (BLE, Wi-Fi)

Bluetooth (BLE)
Device-to-mobile comm.

Wi-Fi
Device-to-mobile comm.
WAN

LoRa
Module or Tapioca HW extension

LTE & NB-IOT
Tapioca HW extension

lwM2M	JVM	SCRAM	SSL	MQTT
FUOTA	JSON	Access profile management	Certificate management	CoAP
SWD	SPI	USB	Modbus RTU / TCP	TCP / IP
S3P	I2C	RS232	RS485	Ethernet
UART	GPIO	CAN		

Board Support & Evaluation

For Cortex M MCU
SWD & S3P Library

TapNLink PRIMER

For Arduino
Ard-Tap Library (S3P)

TapNLink PRIMER

For Other MCU
S3P Library

TapNLink PRIMER

For Modbus devices / systems
Native Modbus RTU & TCP

Tapioca
TapNPass
TapBus

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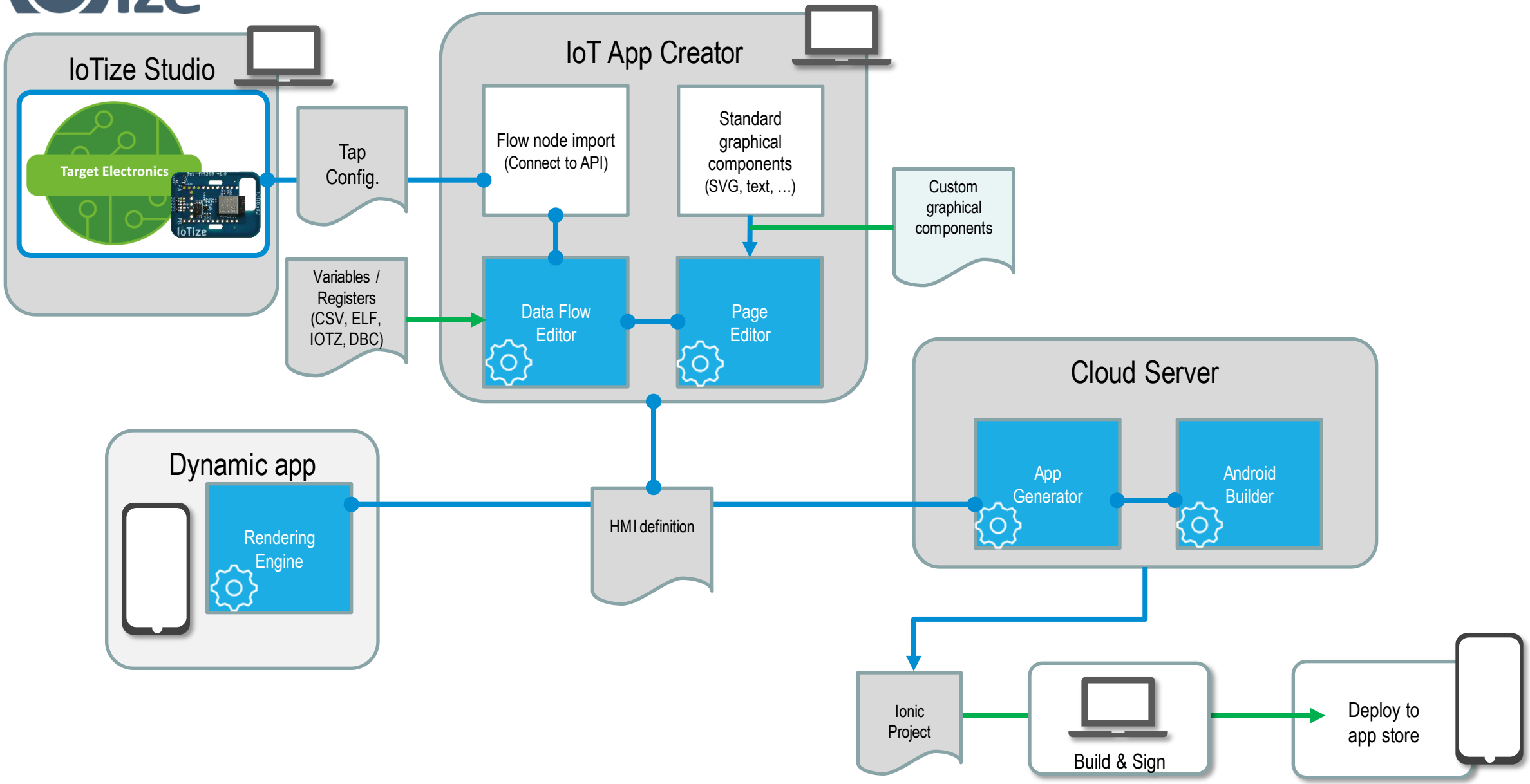
Monitoring App Creation Workflow



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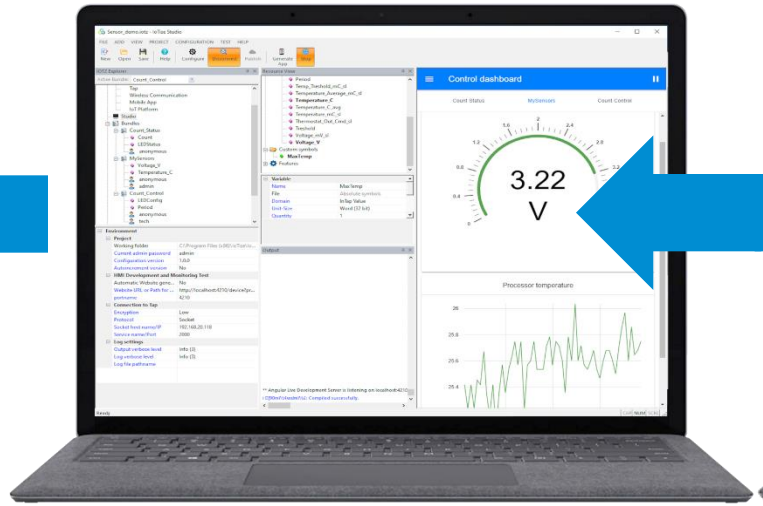
No-Code / Low-Code Tool Ecosystem

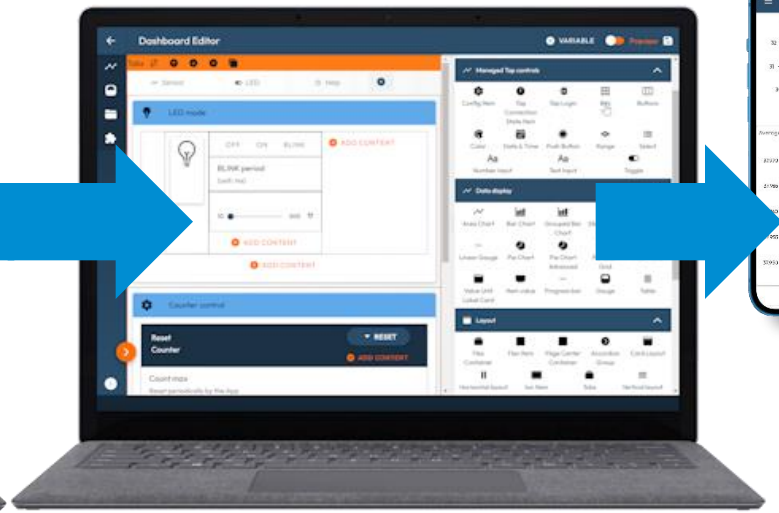
Duetware Embedded

IoTize Studio



Duetware Feature Configuration for Data Communication

IoT App Creator



HMI Creation to Exploit Your Data

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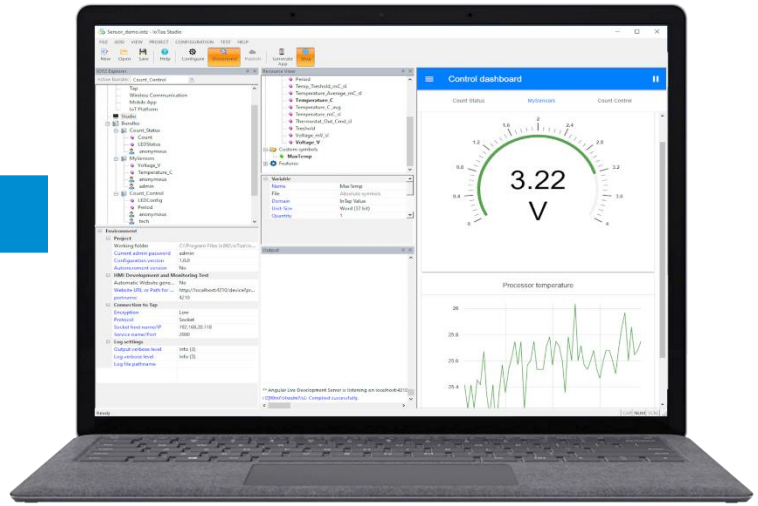
No-Code & Low Code HW Configurations

Duetware Embedded

IoTize Studio



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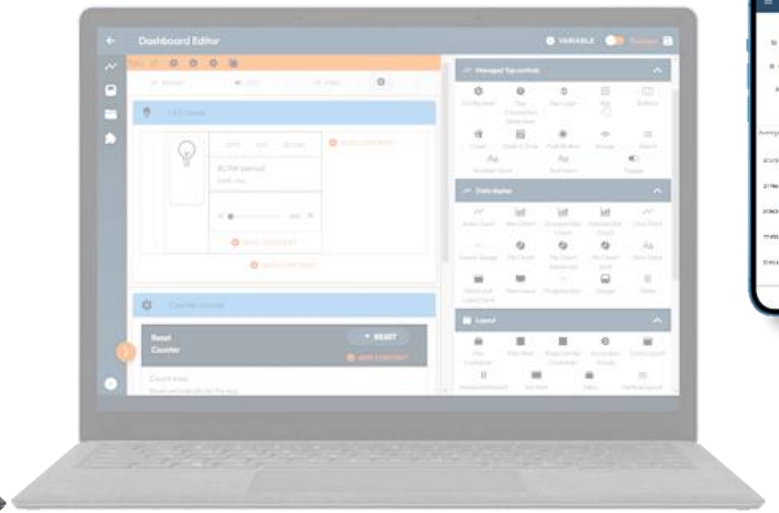

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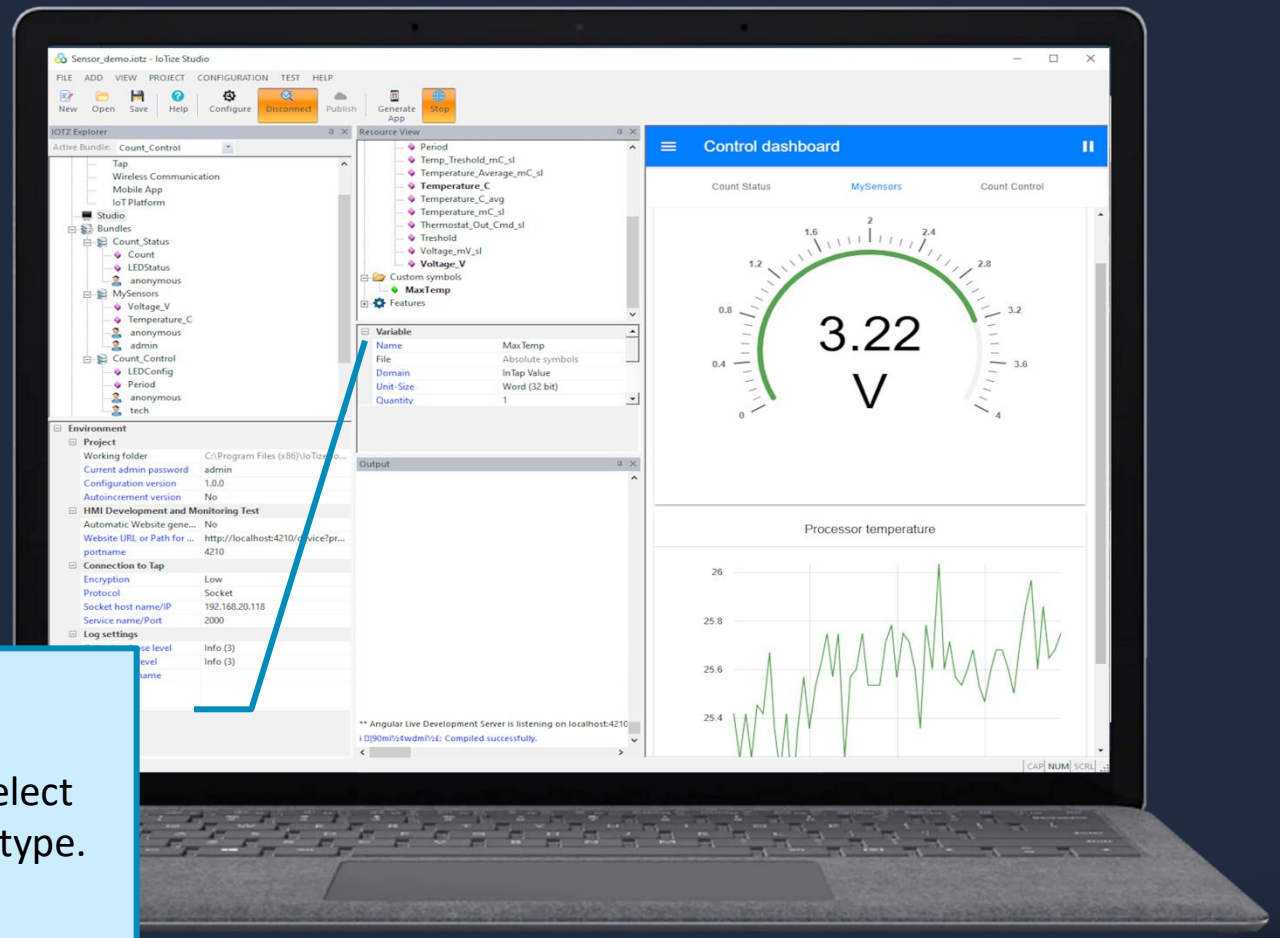
No-Code Configuration (1)



Create Configuration

Drag'n drop variables, and select options for access rights and type.

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No-Code Configuration (2)

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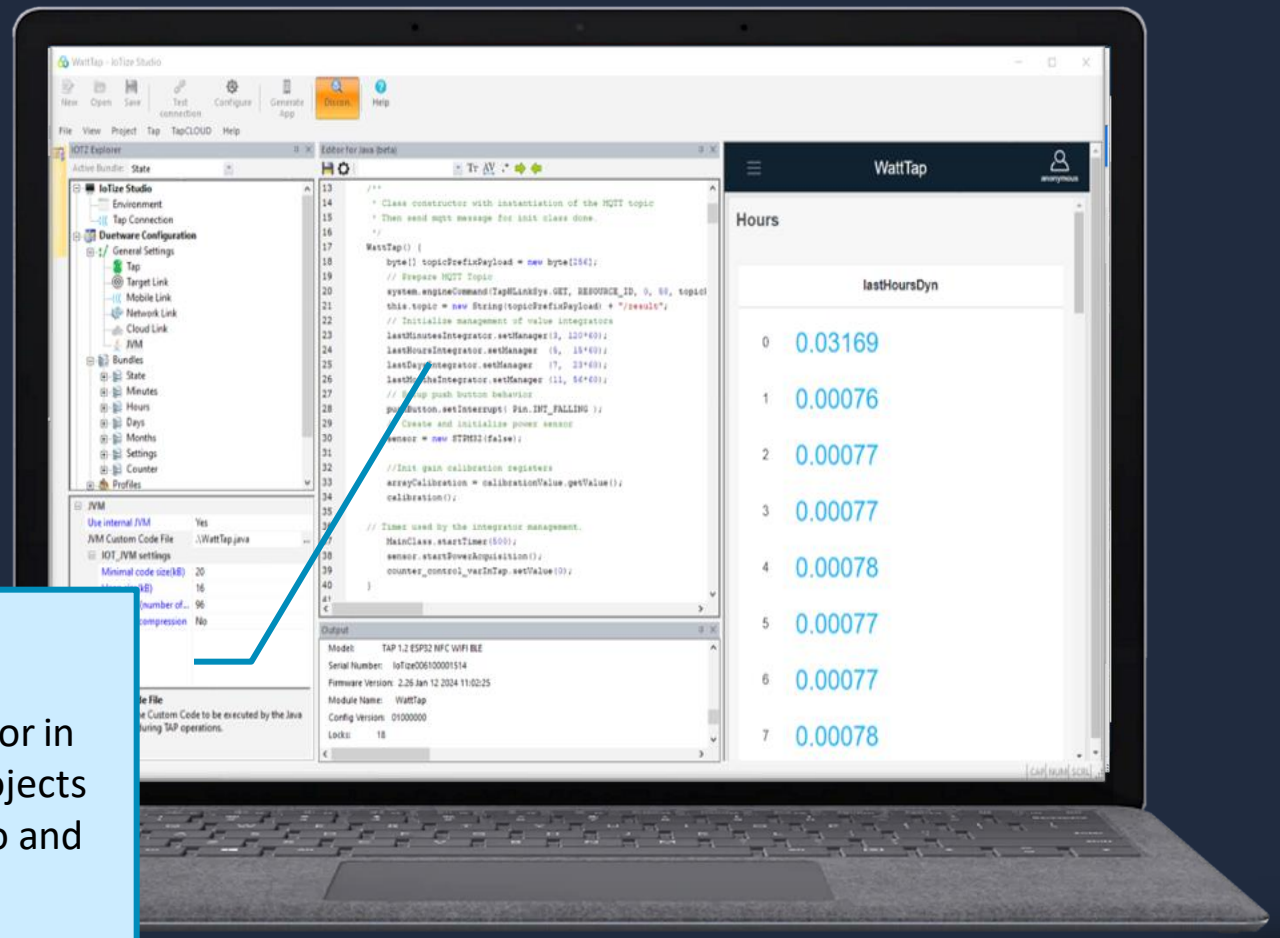
Low-Code Configuration (1)



Embedded JVM

Add java file using Code Editor in IoTize Studio. We provide projects and examples in IoTize Studio and on support.iotize.com

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Low-Code Configuration (2)

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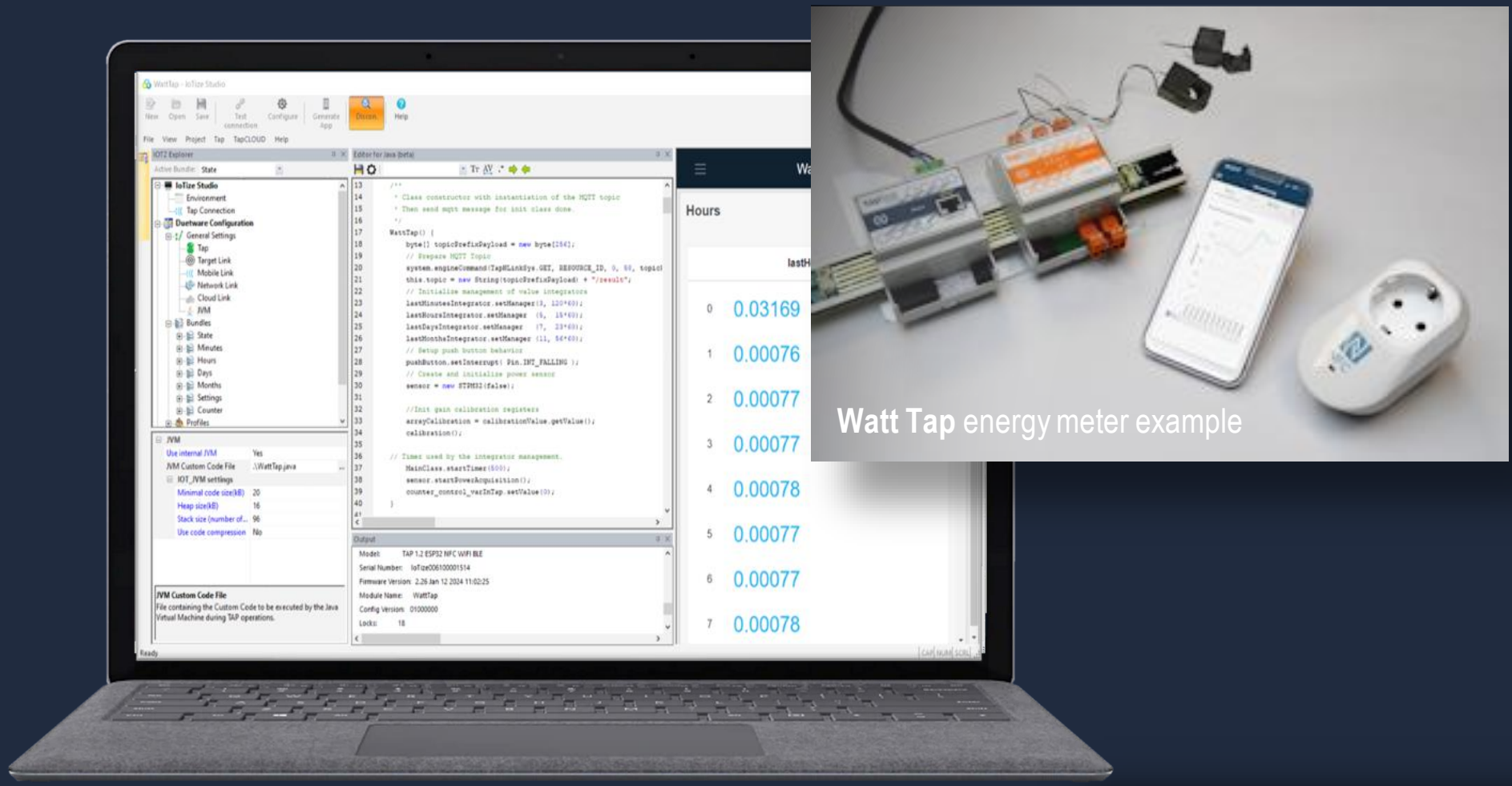
Low-Code Configuration (3)



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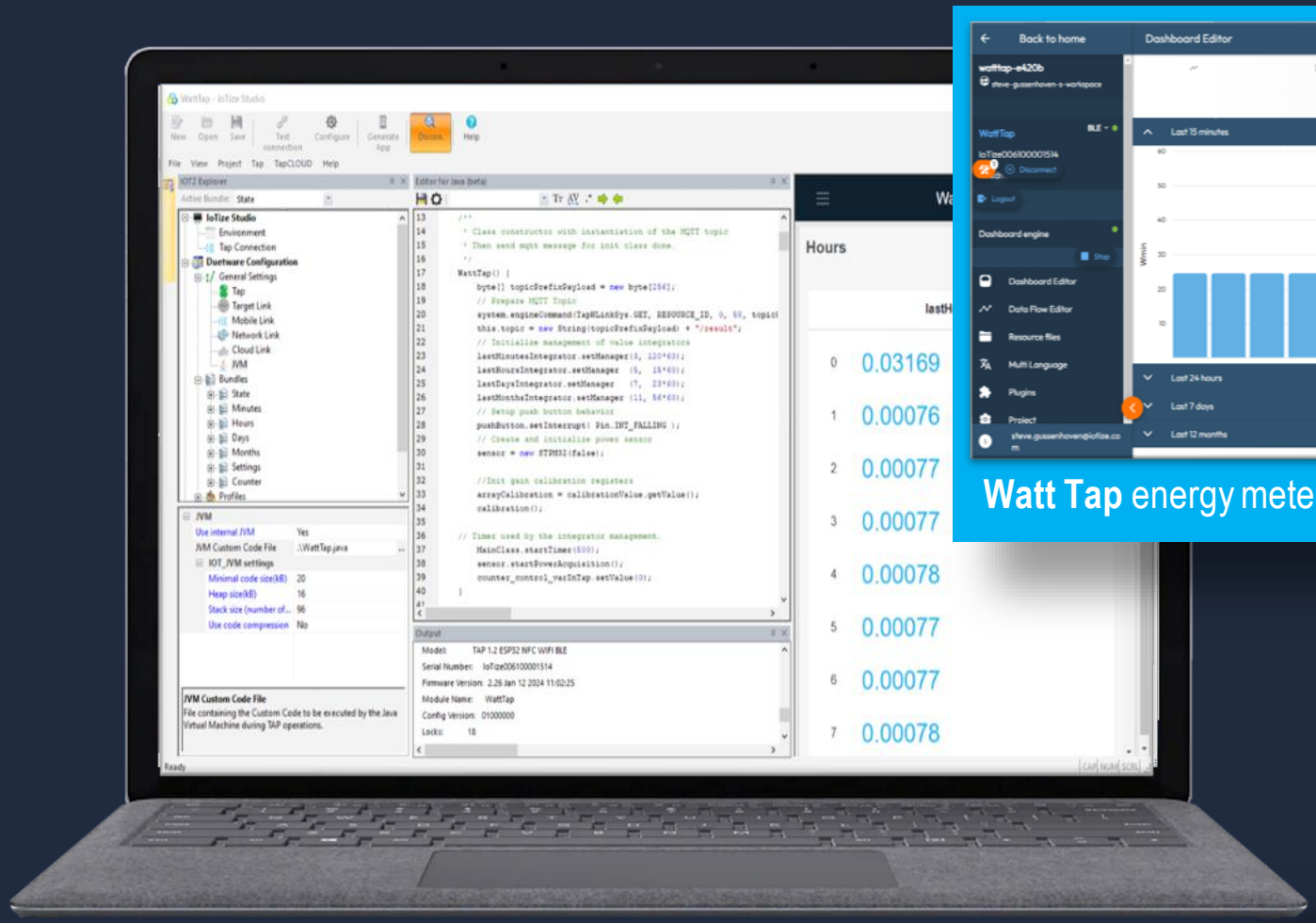
Low-Code Configuration (4)



Watt Tap energy meter example

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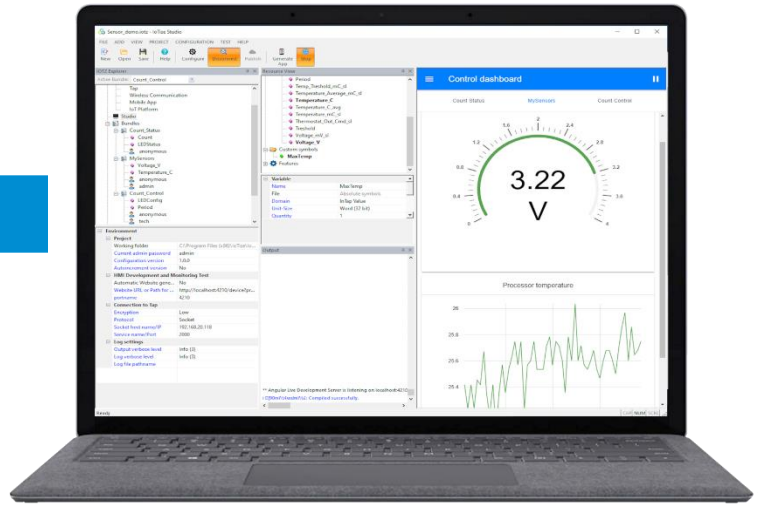
No-Code & Low Code HW Configurations

Duetware Embedded

IoTize Studio



Duetware Feature Configuration
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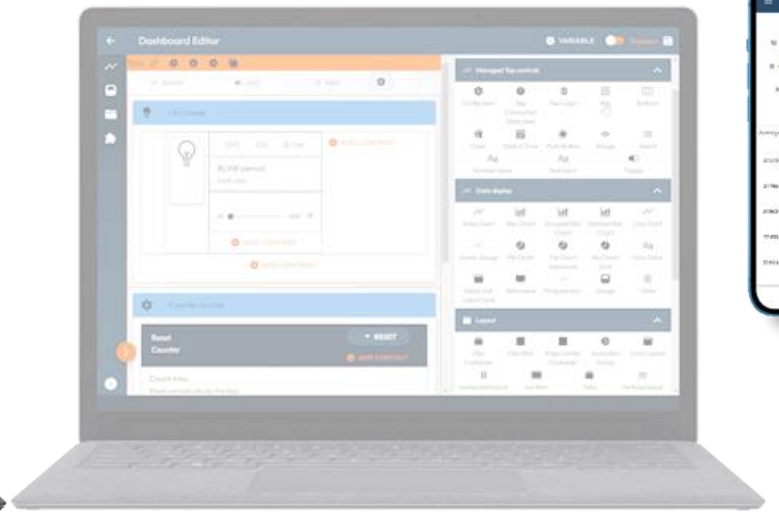
IoT App Creator



HMI Creation to Exploit Your Data

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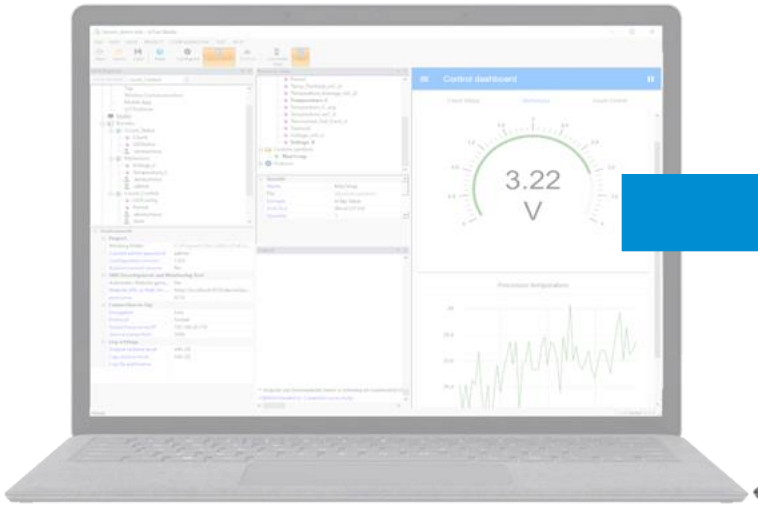
No-Code / Low-Code HMI & Data Display

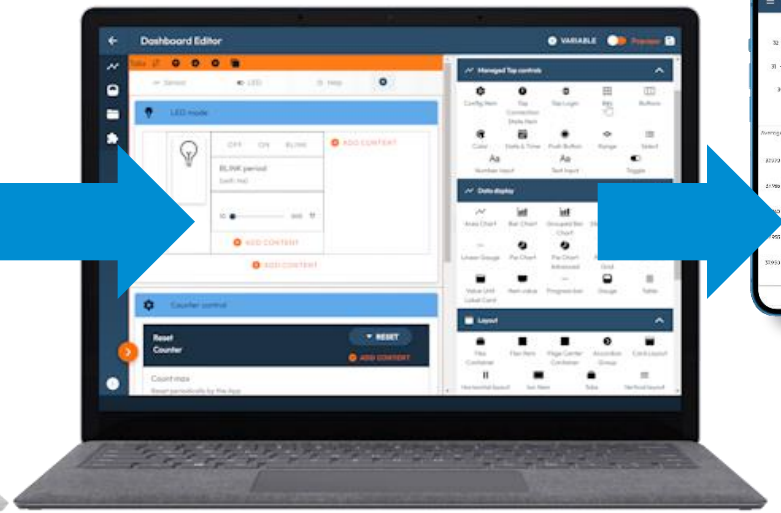
Duetware Embedded

IoTize Studio



Duetware Feature Configuration for Data Communication

IoT App Creator



HMI Creation to Exploit Your Data

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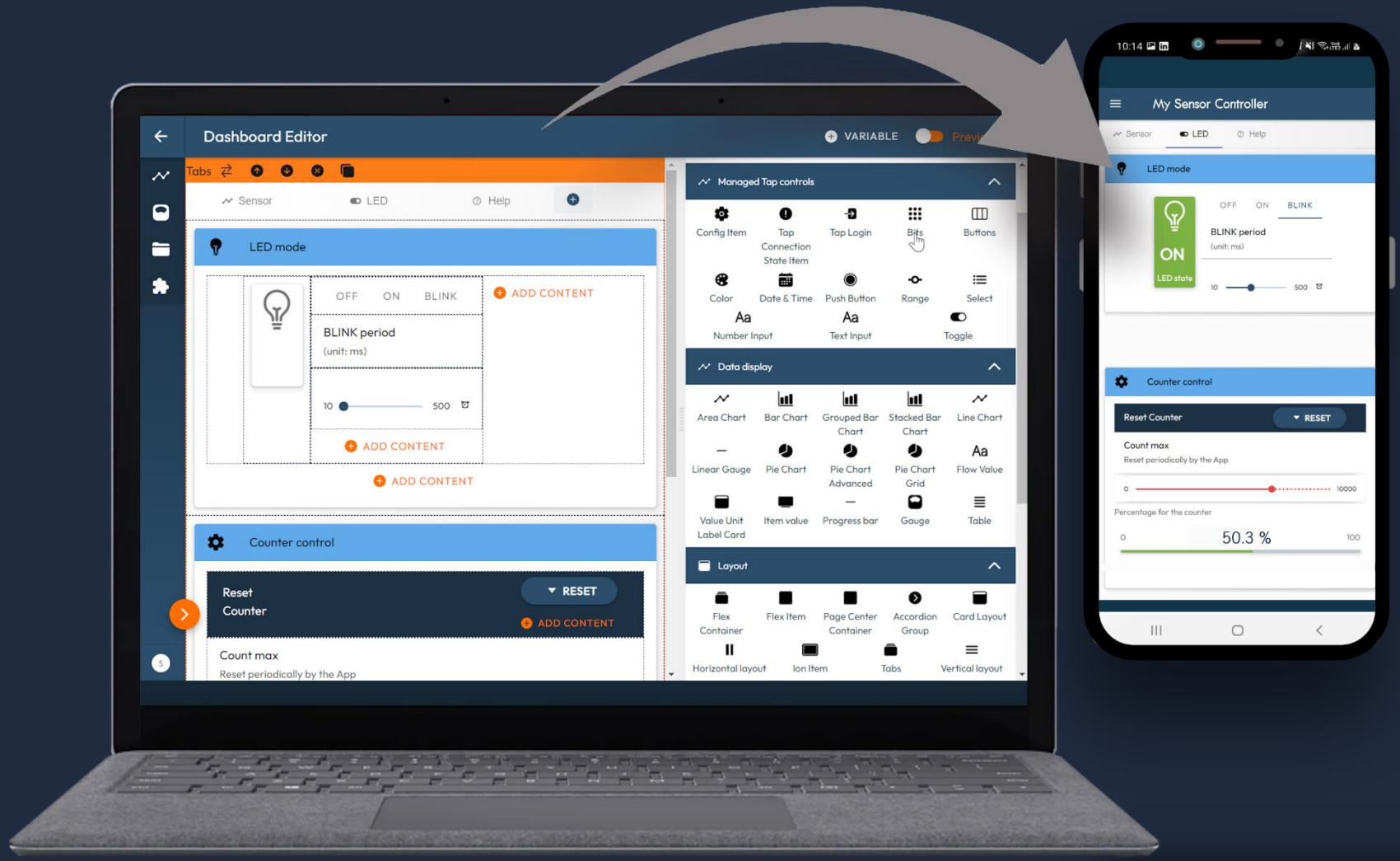
Drag & Drop, WYSIWYG Environment



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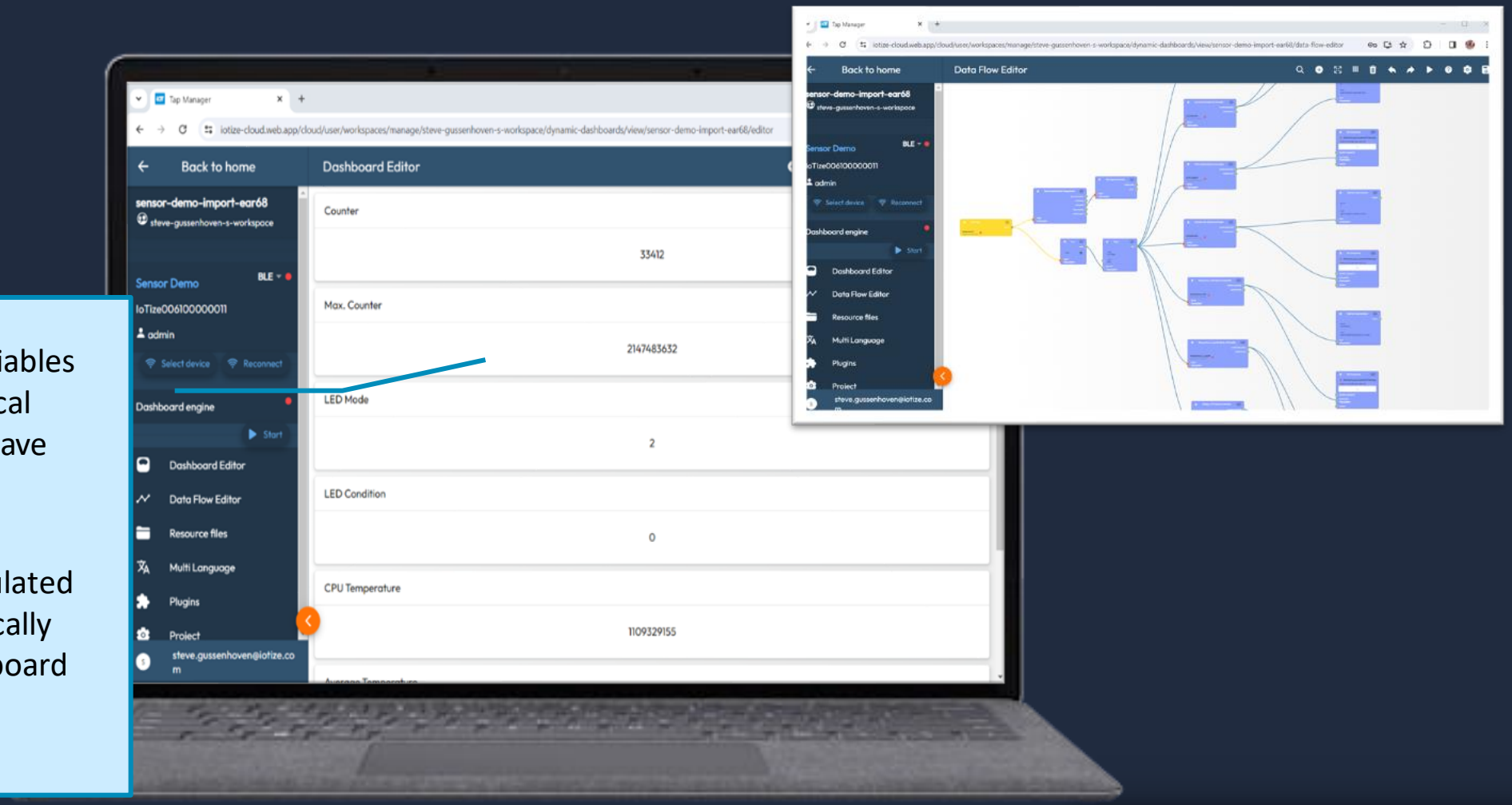
Direct Configuration Import from IoTize Studio

Dashboard displays variables as text or with graphical component that may have been set in Studio.

Data Flow editor is populated and updated automatically while you work in Dashboard editor.



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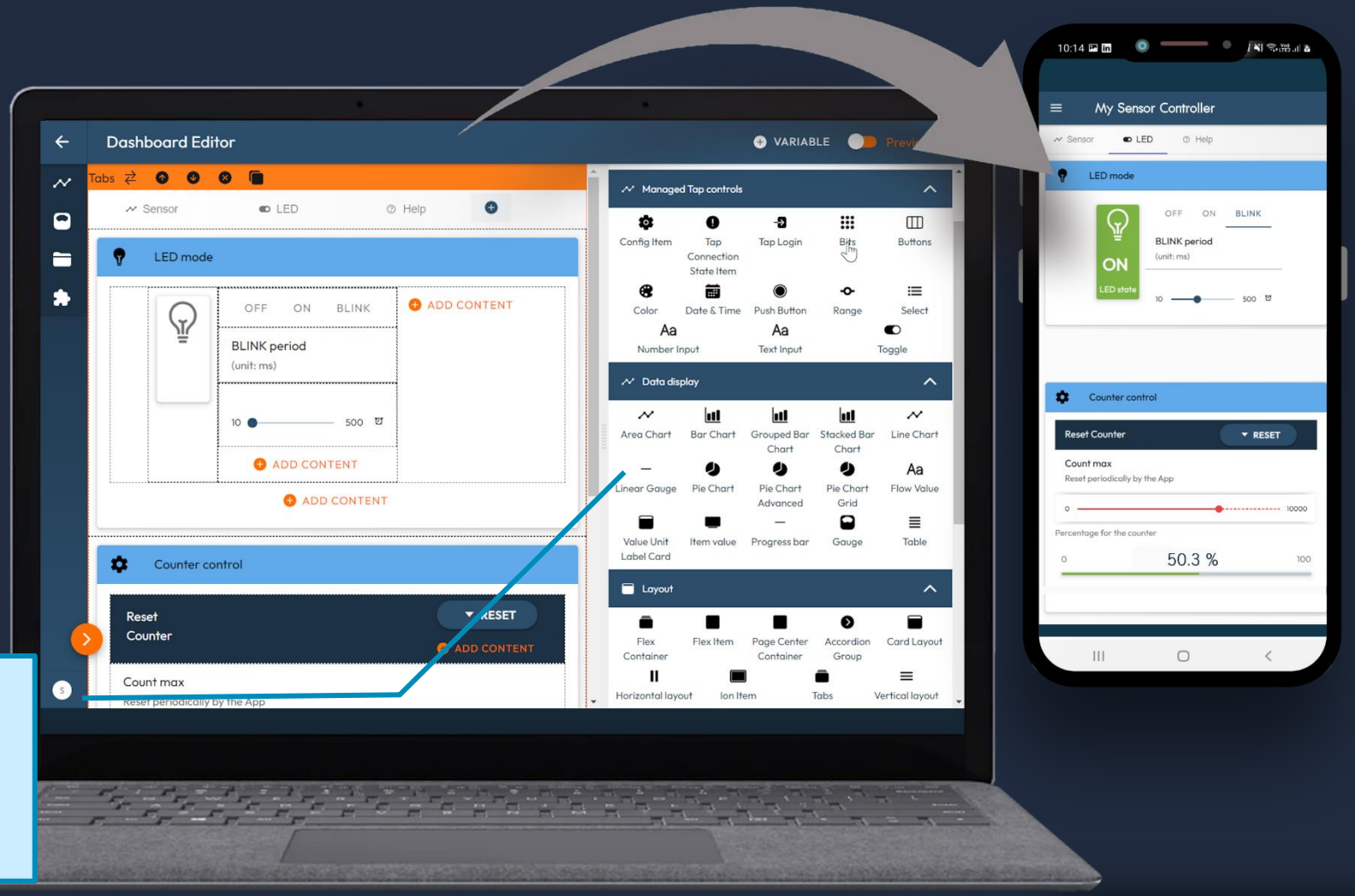
HMI Layout & Creation



Configure Dashboard

Drag'n drop, and click to set display options

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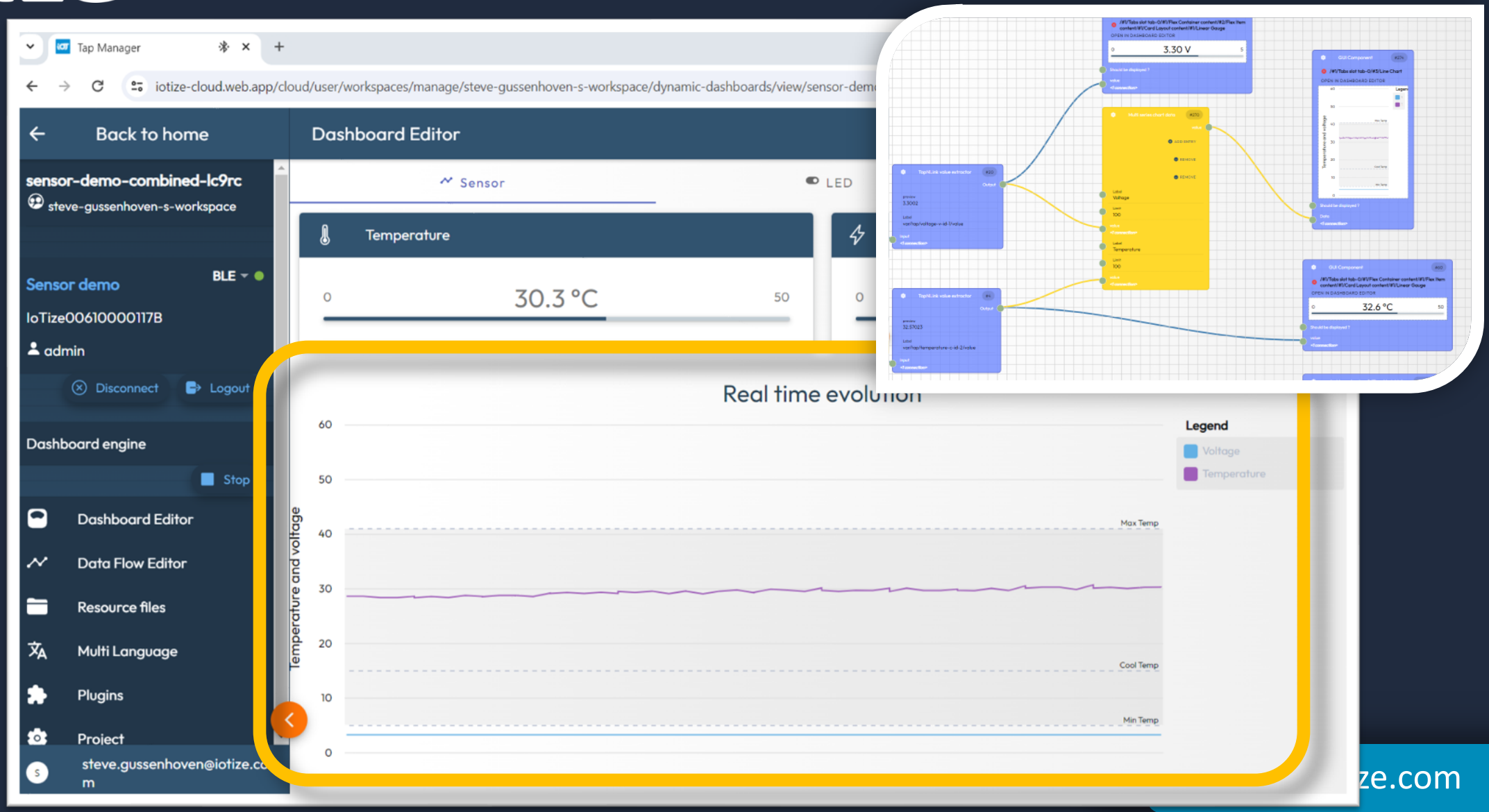
Data Flow & Nodes



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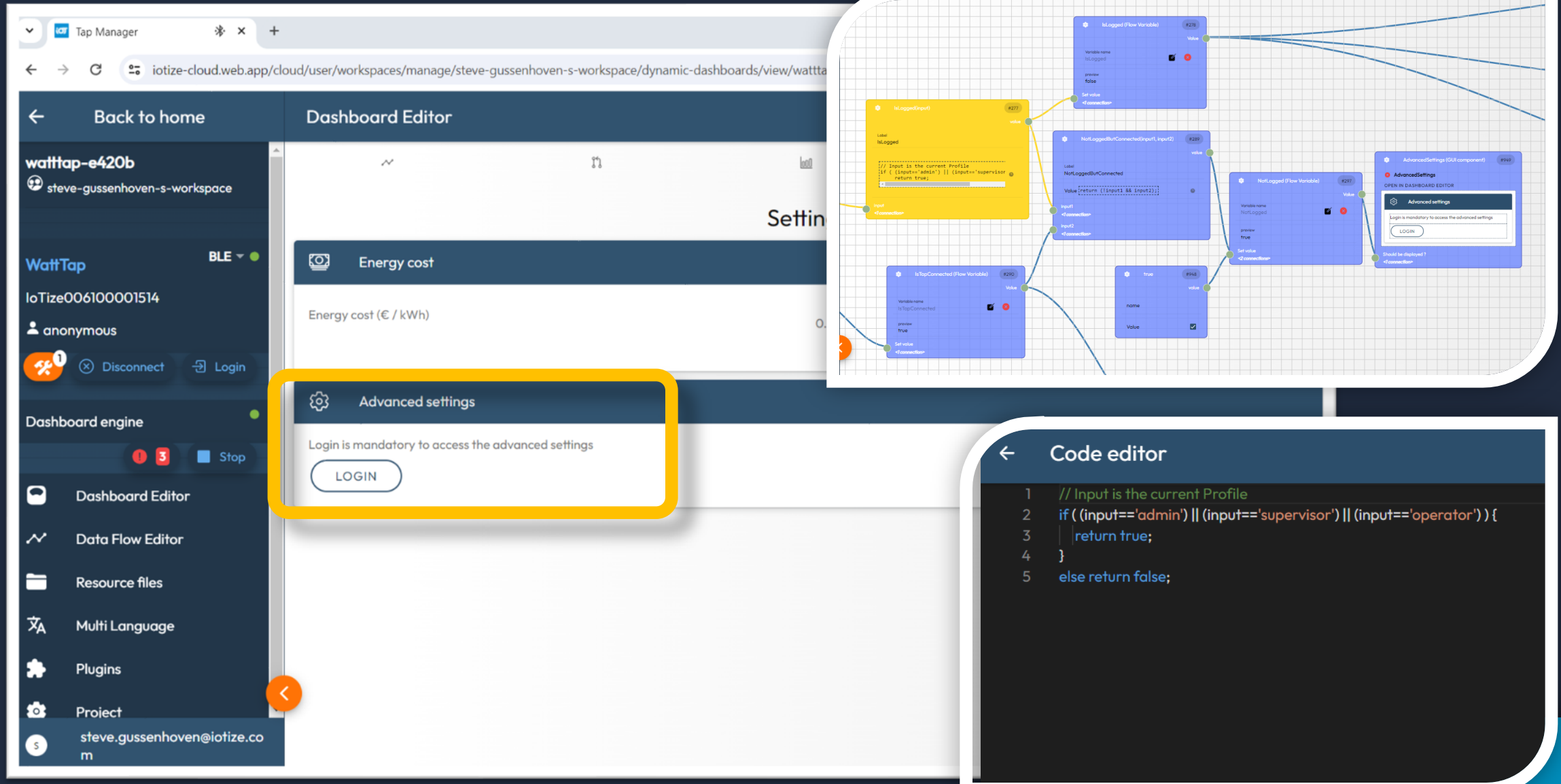
Data Flow Nodes & In-App Code



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Integrated Testing on PC & Mobiles

Test in Preview

Use your dashboard on the PC or directly on your mobile.

Test on Mobiles

Dashbord is available for tests without compiling final app.

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Concluding Points

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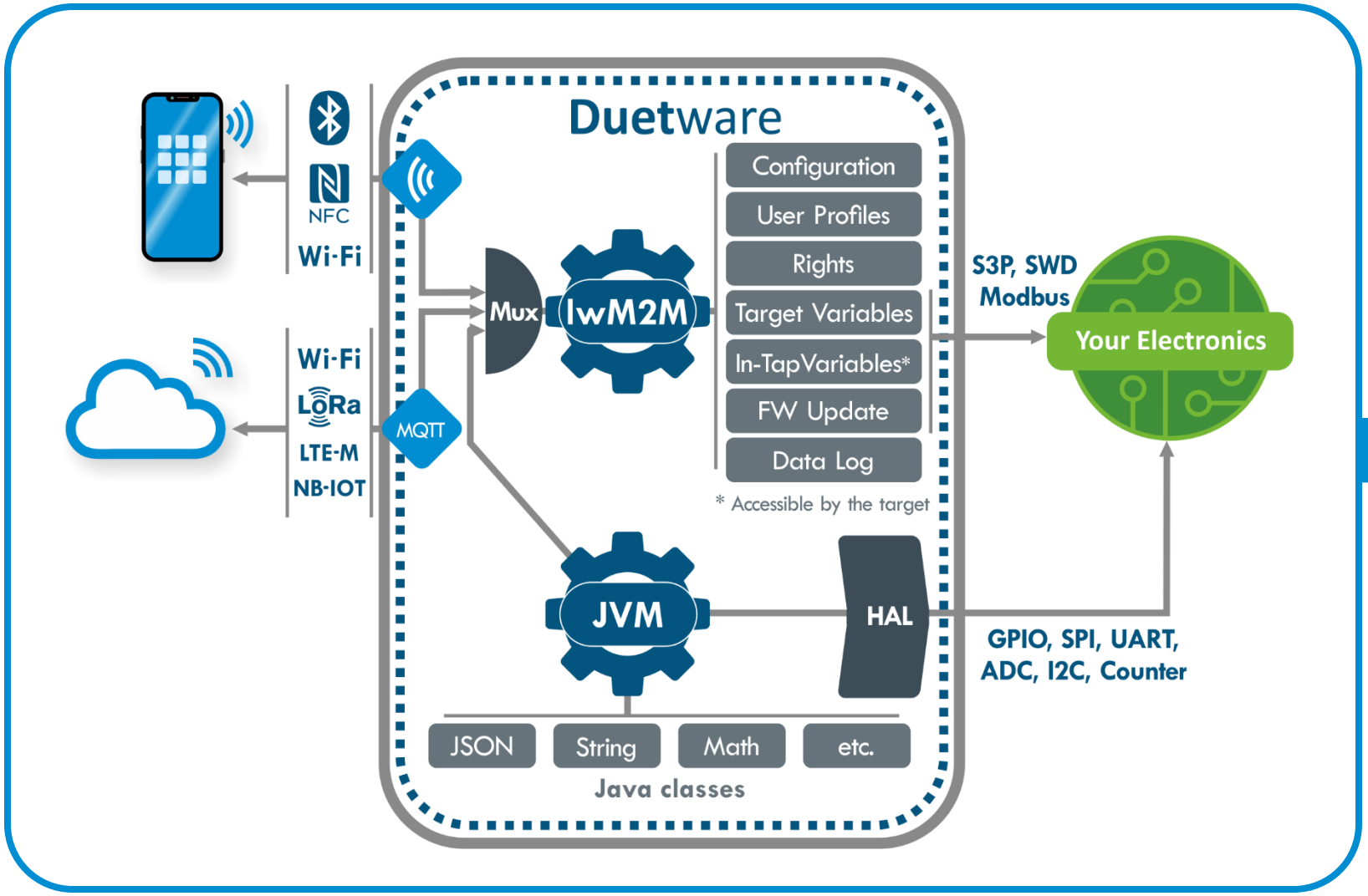
The Common Core of All Our Products



Duetware Embedded

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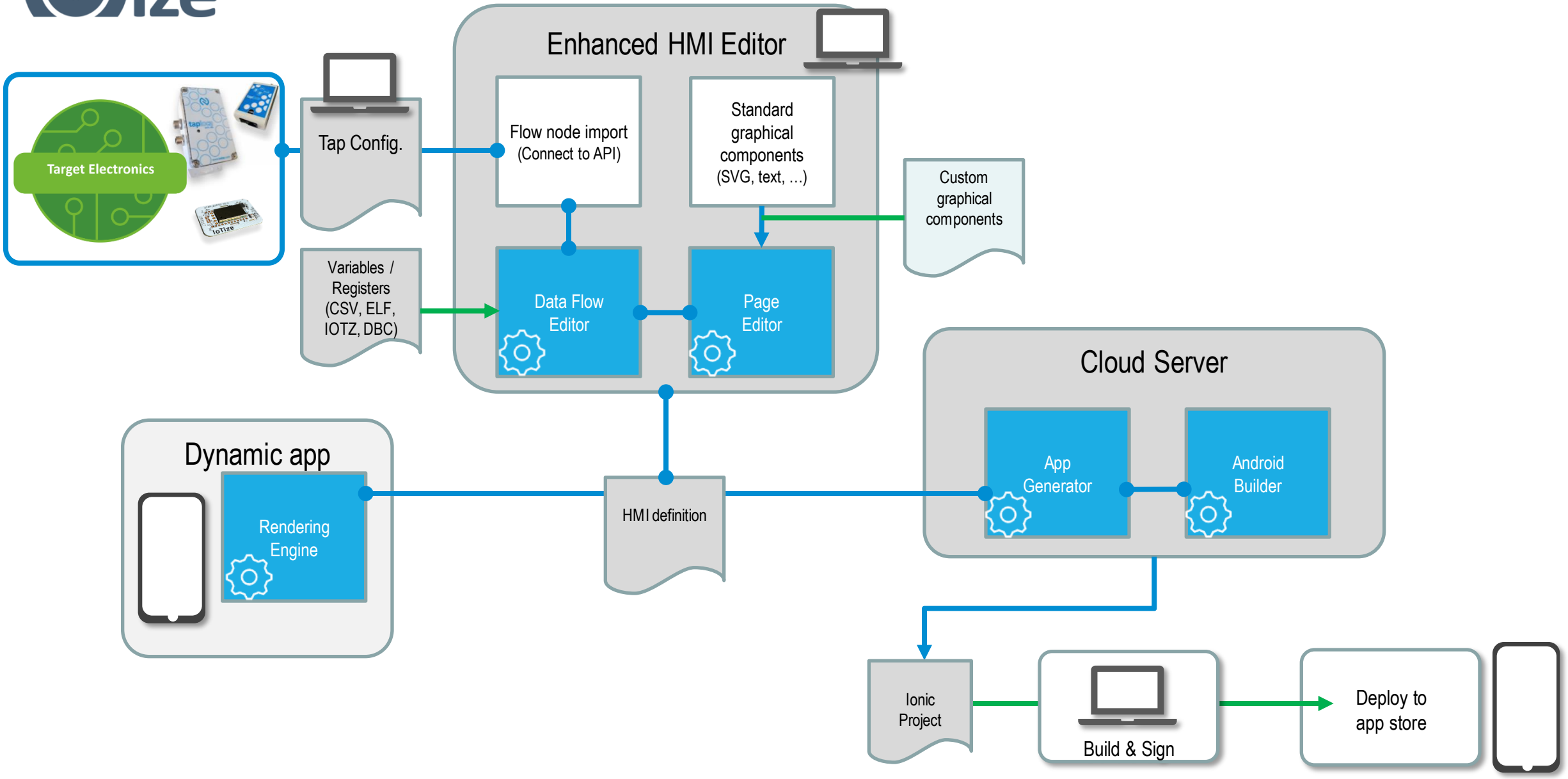
A Common Workflow



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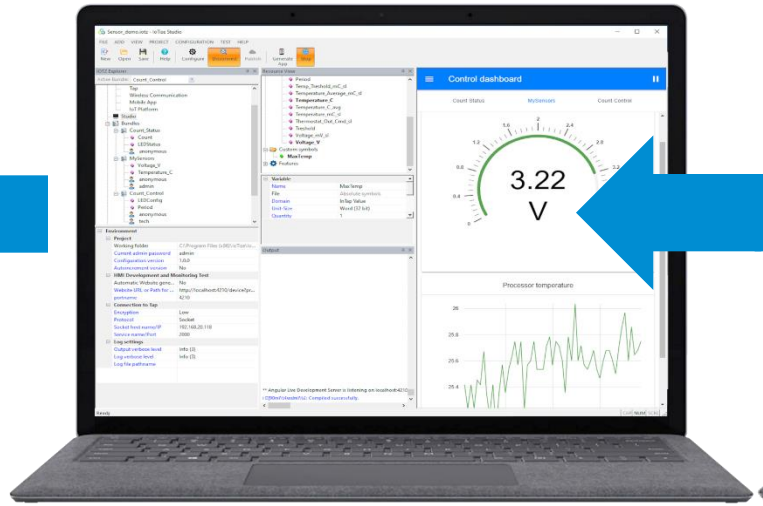
Unified No-Code / Low-Code Tool Ecosystem

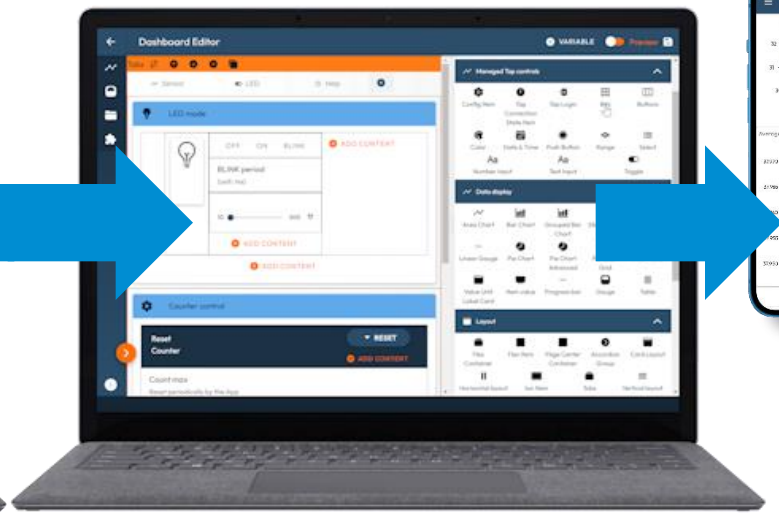
Duetware Embedded

IoTize Studio



Duetware Feature Configuration for Data Communication

IoT App Creator



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Resources

- **Tool video**
  Introduces our tools and no-code / low-code approach.
  Also on Iotize YouTube channel. Follow us.
  Watch it here…
- **Solution catalog**
  Introduces our tools and no-code / low-code approach.
  Share this link. PDF format.
  Download here…
- **IoTize Studio**
  Free Windows-based configuration software for all our HW products. Includes sample projects. User manual.
  Download here…
- **IoT App Creator**
  Just create your IoTize Cloud account. Includes samples of dashboards that you saw here. Free access to dashboard editing and testing for user of any IoTize hardware products.
  Sign up on IoTize Cloud…
- **Sample Applications**
  Complete examples include hardware BOM, device configuration, java code, and mobile app. Interesting projects with everything you need to try them.
  Try them here…

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Duetware Solution Features, Tools & Resouces

Design Aids

Configuration Wizards
Dashboard, MQTT, AWS cloud

In Tap Manager

Java samples
AES, I2C, MQTT, ADC, PWM, UART, SPI

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iotize-cloud.web.app

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Free

iotize.com

IoT App Creator
No/Low-code dashboard design
Web app (PC)
Subscription

iotize-cloud.web.app

Ride7 / RKit-JVM
Java code debugger
Windows (PC)
Free

raisonance.com

DUETWARE

NFC
3-Stroke Configuration
Secure pairing (BLE, Wi-Fi)

Bluetooth (BLE)
Device-to-mobile comm.

Wi-Fi
Device-to-mobile comm.
WAN

LoRa
Module or Tapioca HW extension

LTE & NB-IOT
Tapioca HW extension

lwM2M	JVM	SCRAM	SSL	MQTT
FUOTA	JSON	Access profile management	Certificate management	CoAP
SWD	SPI	USB	Modbus RTU / TCP	TCP / IP
S3P	I2C	RS232	RS485	Ethernet
UART	GPIO	CAN		

Board Support & Evaluation

For Cortex M MCU
SWD & S3P Library

TapNLink PRIMER

For Arduino
Ard-Tap Library (S3P)

TapNLink PRIMER

For Other MCU
S3P Library

TapNLink PRIMER

For Modbus devices / systems
Native Modbus RTU & TCP

Tapioca
TapNPass
TapBus

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Thank you!

Questions

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Annex Slides – Use Cases

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IoTize Duetware Use Cases

1. Commissioning & Configuration

- Mobile app
- Near Field Communication

2. Diagnostic Monitoring

- Mobile app
- Bluetooth, or Wi-Fi

3. Remote Monitoring

- Cloud platform & Mobile app
- Wi-Fi, LoRa / LTE-M / NB-IOT

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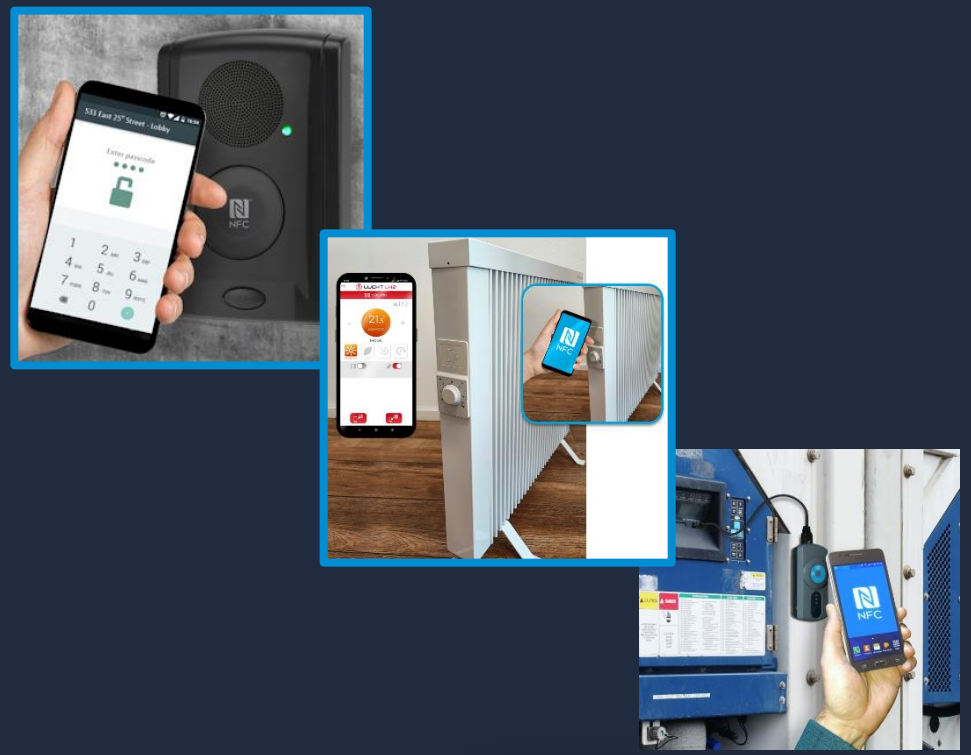
IoTize is a patented technology of IoTize SAS. Patent No. 14/54445.

Commissioning, Configuration & Audits



Needs…

- *Short, Repeated Transactions with Equipment*
- *Collection and/or Update of Parameters*
- *Secure & Sure Connection*
- *Visibility of Parameter Modifications*
- *Record of Configurations & Interventions*

Duet Mobile Solution…

- *NFC Tap-to-Connect is Secure & Sure*
- *Better Visibility & Navigation of Parameters*
- *Stored Record of Configurations, Interventions*
- *Blocked? Get Help Directly Via the Mobile.*

NFC

WiFi

www.iotize.com

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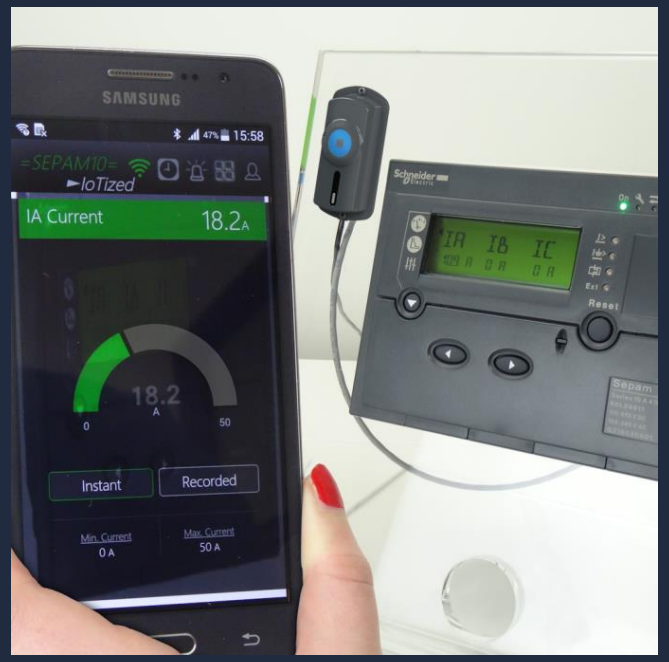
Diagnostic Monitoring & Updates



NFC

WiFi

Needs…

- *Extended, Live Interaction with Equipment*
- *Secure & Sure Connection*
- *Visibility of Parameters, Test Results & Flags*
- *Remote Operation for Safety & Comfort*
- *Record of Results & Interventions*

Duet Mobile Solution…

- *NFC Tap-to-Pair is Secure & Sure*
- *Comfort of Extended Range*
- *Better Visibility & Navigation of Complex Data*
- *Stored Record of Results & Interventions*
- *Blocked? Get Help Directly Via the Mobile.*

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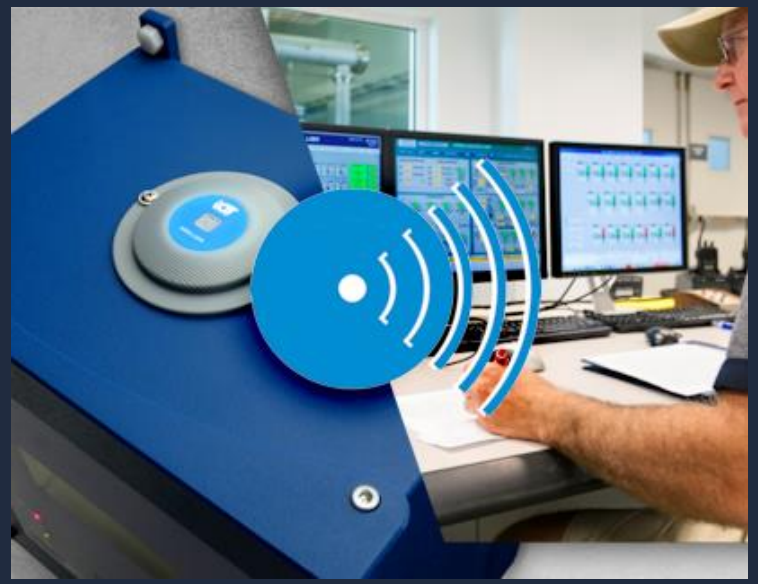
Remote Supervision



WiFi or **LPWAN**

Needs…

- *Secure*
- *Visibility of Parameters & Status*
- *Adaptability to Infrastructure Evolutions*
- *Planning & Triggering of Actions or Interventions*
- *Record of Results & Interventions*

Duet Cloud Solution…

- *Layered Encryption & Configurable Access Control*
- *(Re)Configurable Add-on, OTA Programmable*
- *Visualization & Controls based-on Configuration*
- *MQTT Adapts Easily to Any Service Platform*

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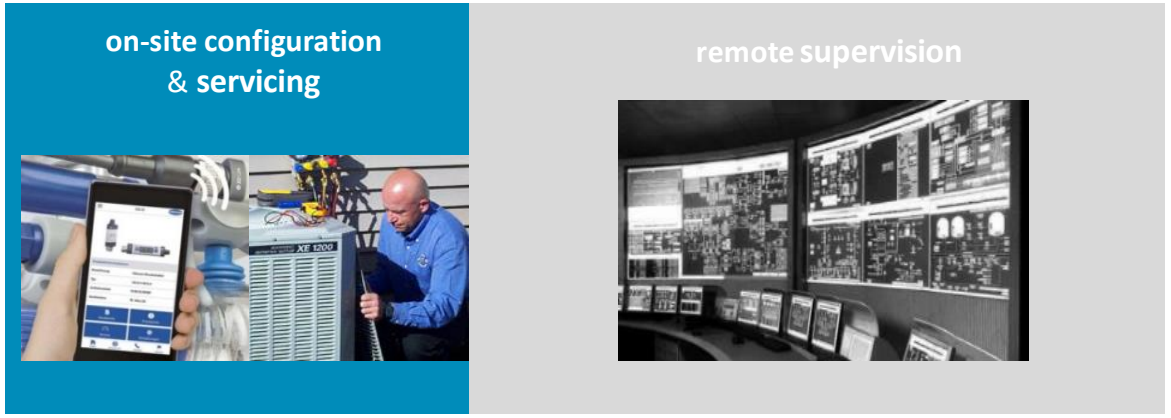
Annex Slides – Products

IoTize is a patented technology of IoTize SAS. Patent No. 14/54445.

TapNLink Line with Duetware

Solution for original equipment designers & manufacturers

Connect directly to target CPU



	Available	Certified	NFC	BLE	Wi-Fi	LoRa	LTE	NB-IOT	...
TnL FIT203	Yes	Yes	X						
TnL FIR203	Yes	Yes	X	X					
TnL FIW103	Yes	Yes	X	X	X	X			
TnL FIL103	Preview	Yes	X	X*		X			

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TapNPass Line with Duetware

Solution for original equipment manufacturers, owners or service providers.

Retrofit on Modbus or Serial fieldbus.

on-site servicing

remote supervision

	Available	Certified	Power Supply	NFC	Bluetooth	Wi-Fi	LoRa	SigFox	...
TnP NSR103	Yes	Yes	Battery*	X	X				
TnP NSW103	Yes	Yes	Battery*	X		X			

Notes:
* *Rechargeable Li ION battery.*
** *Powered from the target system.*

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Tapioca Line with Duetware

Solution for original equipment manufacturers, owners or service providers.

Retrofit on Modbus or Serial fieldbus.

on-site servicing

remote supervision

	Available	Certified	BUS	DIN[1]	IP67[1]	NFC	Bluetooth	Wi-Fi	LoRa	LTE-M	NB-IOT
TpC xS0W123	Yes	Yes	USB	X	X	X	X	X			
TpC xS4W123	Yes	Yes	RS485	X	X	X	X	X			
TpC xSE0W123	Yes	Yes	Ethernet	X	X	X	X	X			
TpC xC0W123	Yes	Yes	RS485	X	X	X	X	X			
TpC PS4L113[2]	Yes	Yes	RS485		X	X	X		X		
TpC PS4M113[2]	Yes	Yes	RS485		X	X	X			X	X

Notes: 1. In the part number, replace "x" with "F" for the standard DIN rail casing or "P" for the protective IP67casing. 2. LoRa, LTE-M and NB-IOT extensions are only available in IP67 casing.

Listing of DIN Rail and IP67 products…

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TapBus Module Line with Duetware

Power Supply
with backup battery management

Analog
16 Configurable Inputs
24-bit ADC
4-20 mA, 0-10V,
Pt100/Pt1000

Logic
12 Configurable Inputs
Digital or Counter (to 1kHz)
4 Configurable Outputs
Electronic switches (to 60V)

No code, low code solution for building mobile and cloud connected industrial systems.

Duetware JVM for **easy creation of automated systems** and **integration with any cloud platform.**

- ***Modbus*** *(RS485, Ethernet)*
- ***Automated addressing for easy configuration***
- ***Optional Modbus+Power DIN rail***
- *Native* ***NFC, BLE, Wi-Fi***
- ***LoRa, LTE-M*** *extension modules*
- ***220 V AC / 24-36 V DC*** *Power Input*
- ***5 or 12 V*** *Power Output*

Sampling in Q3 2023 !

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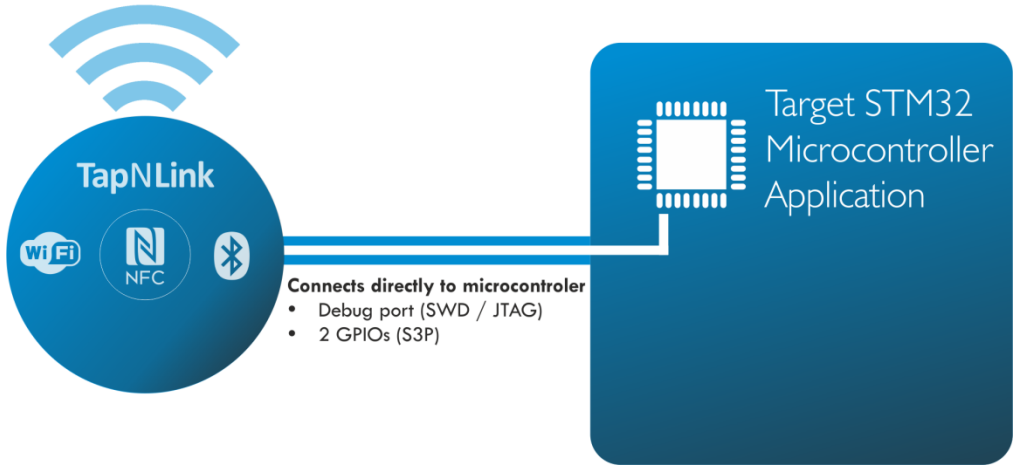
TapNLink Primer Eval Tool

TapNLink Primer NBW

NFC, BLE, Wi-Fi
HMI Proof-of-Concept in minutes
Complete sample implementation
Web apps (HTML5) **or Native Hybrid** (Cordova)
Free configuration software
Online app generator for APK
Arduino ARD-Tap Library

$49 USD (40 Euros)



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