



MQTT Quick Start for Cloud Data Logging

*Examples for
AWS & HiveMQ*

- **Demo MQTT & Cloud Wizards**

- Tap Manager (PC, Mobile) for instant data logging setup
- HiveMQ free MQTT broker
- AWS IoT & MQTT broker

- **Cortex MCU & TapNLink**

- TapNLink PRIMER eval kit

- **Download the procedures**

- [HiveMQ.pdf](#)

- [AWS.pdf](#)



- **Today's Topic**
Remote Data Logging versus On-Site Monitoring
- **Solution**
Where did IoTize start and what do we provide
- **Software Tools**
IoTize full software ecosystem versus Tap Manager for rapid approach to creating a PoC.
- **MQTT Broker**
Demo: Tap Manager wizard for HiveMQ MQTT broker
- **AWS IoT Cloud**
Demo: Tap Manager wizard for AWS IoT

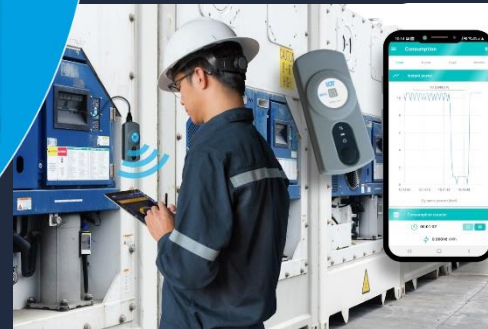


Data Logging vs Monitoring



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

Data Logging vs Monitoring



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- Commissioning, Testing, Maintenance, User Control



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

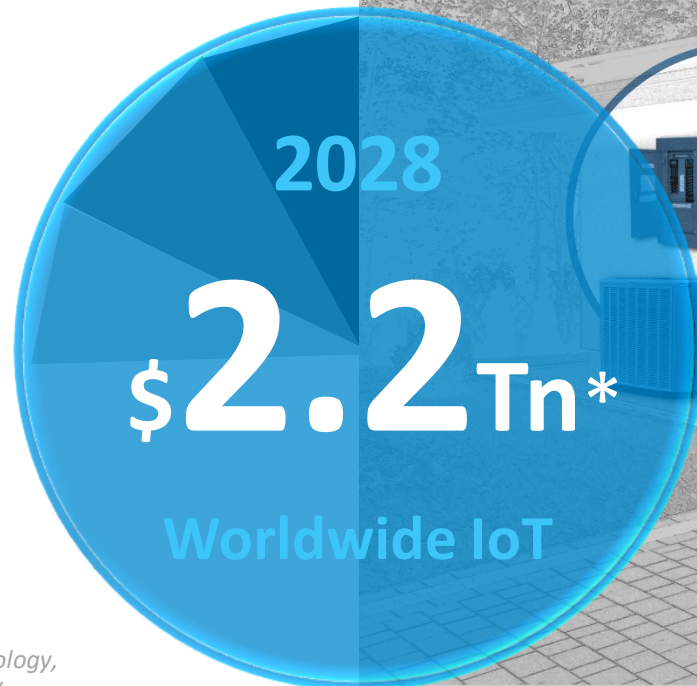
Energy

Automation



The Race to Connect Things

Customer Expectations
New Efficiencies
New Services & Business



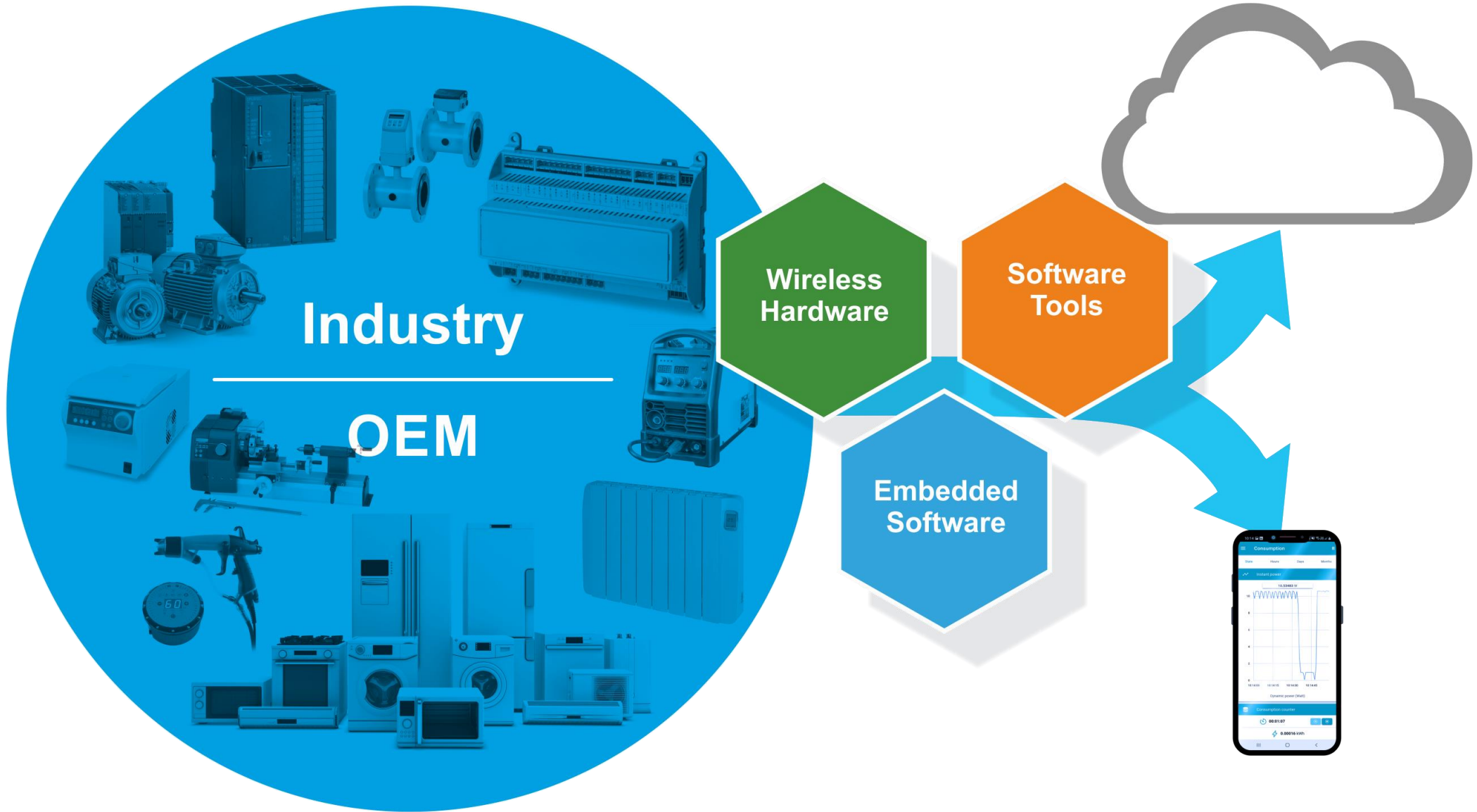
*Note: Statista, "Market Insights, Technology, Internet of Things Worldwide Highlights"
<https://www.statista.com/outlook/tmo/internet-of-things/worldwide>

OEM & Designer Challenges

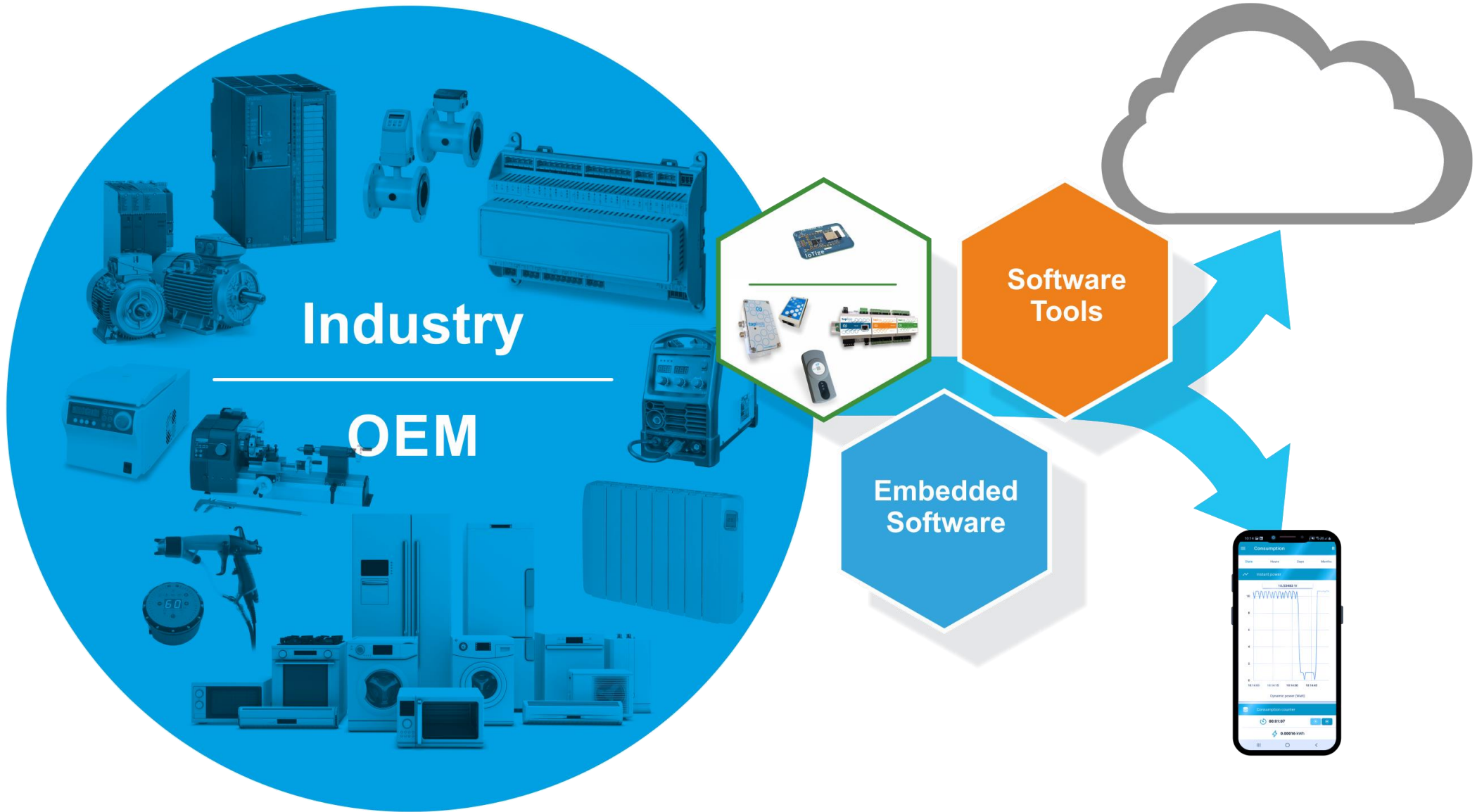
- New Technology
- Increased Complexity
- Lack of Expertise
- Lack of Resources



Too Slow = Lost Opportunities



Hardware is Important, Tangible



Industry

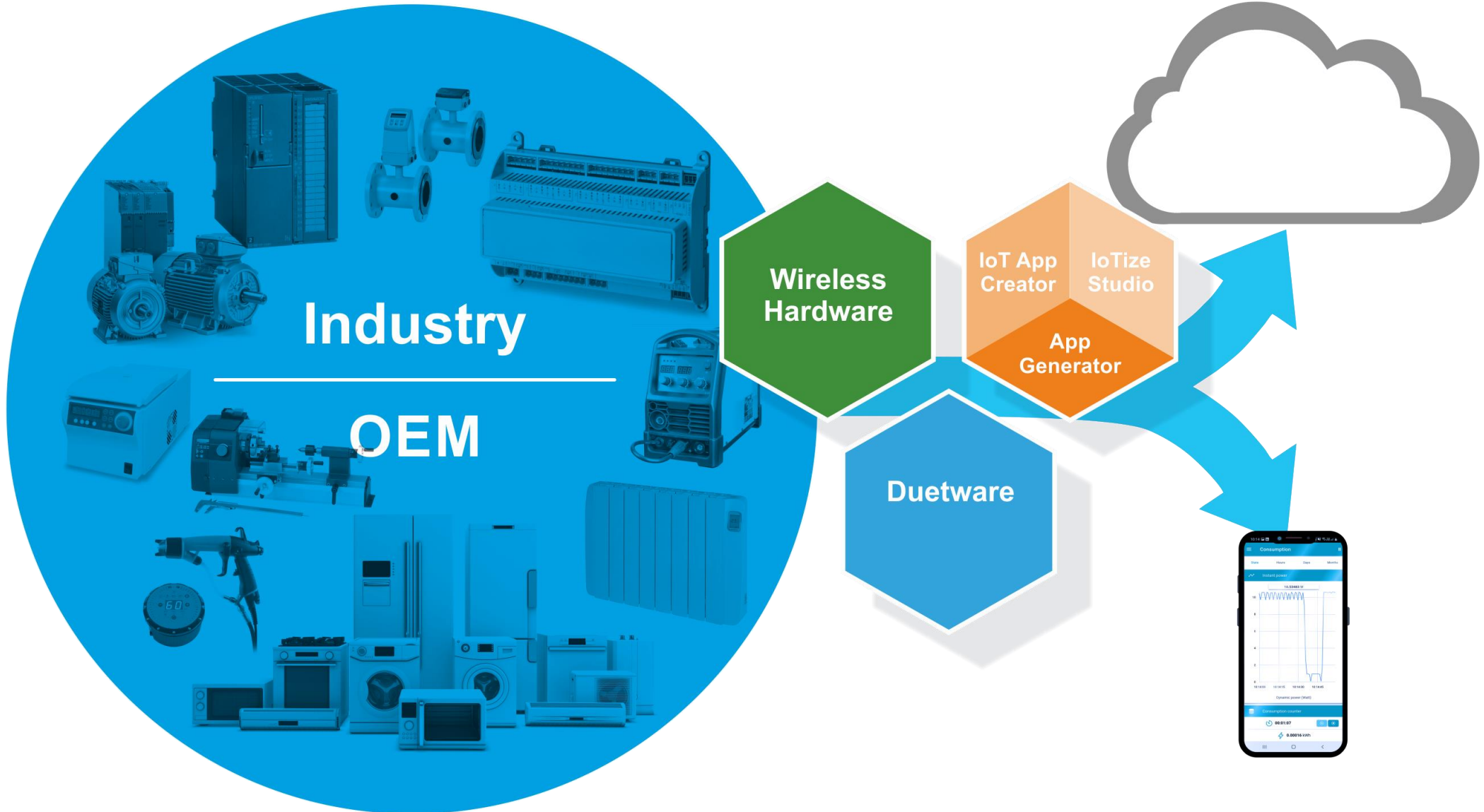
OEM

Software Tools

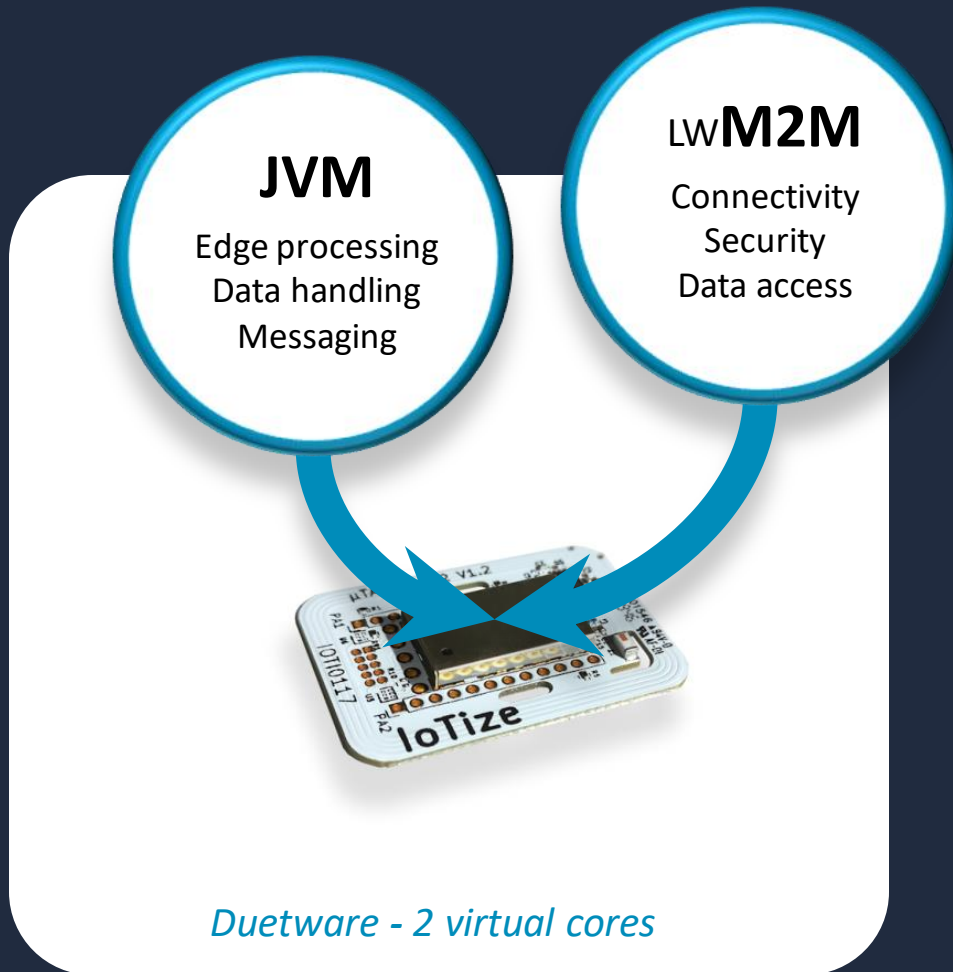
Embedded Software

Added Value Software

Embedded Foundation of Our No-Code / Low-Code Advantages



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

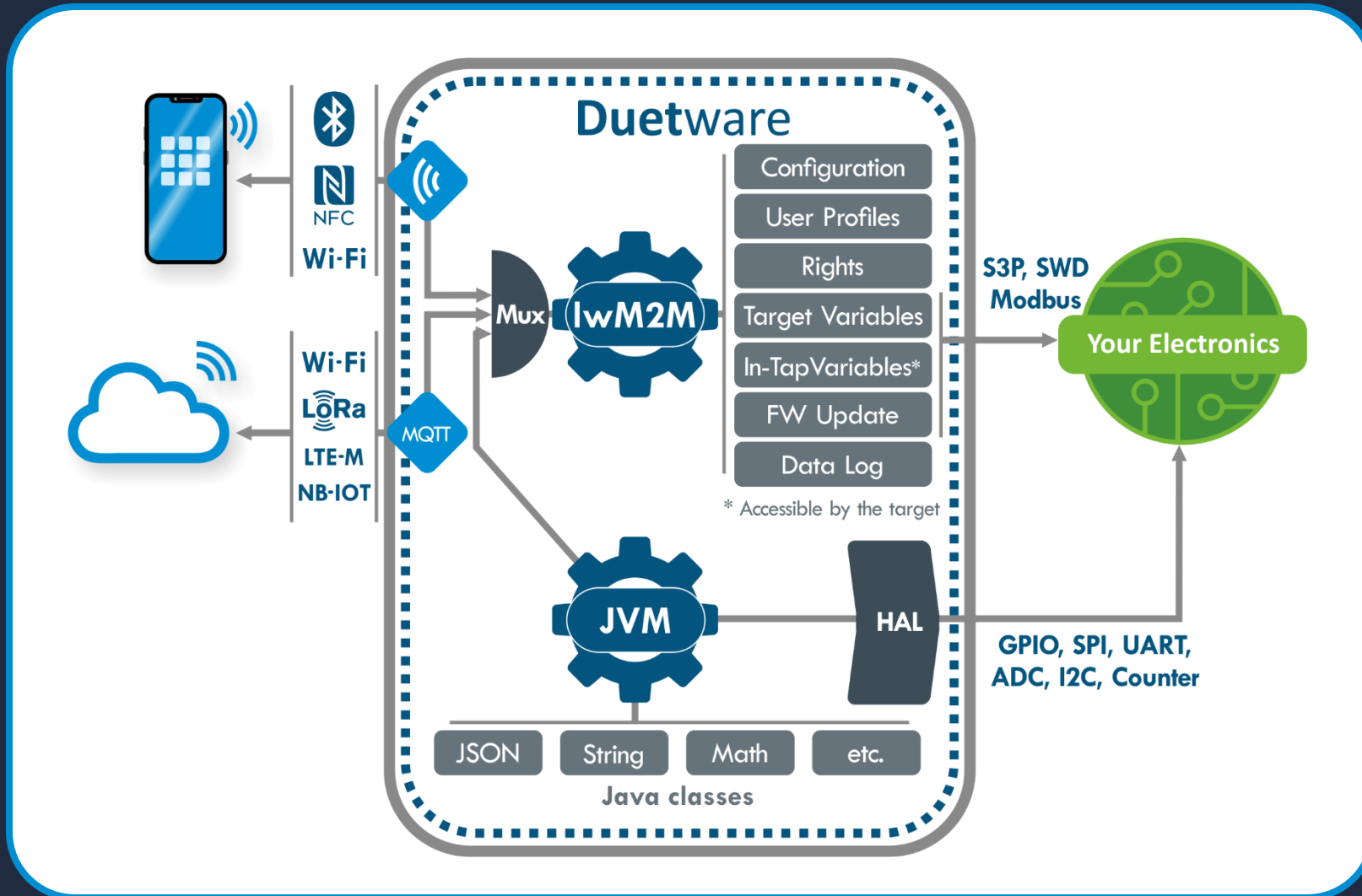


Duetware for...

- *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*



lwM2M engine

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

Java Virtual Machine

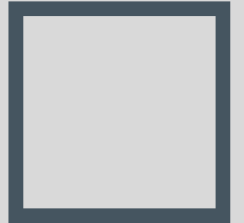
- *Edge processing*
- *Drive components*
- *Connect to any Cloud*

Full Professional Ecosystem

IoTize Studio - IoT App Creator - App Generator



- Full access to feature configuration
- Java code adaptation and tools
- Full control of HMI apps for publication
- Full adaptation for any Cloud



Instant PoC

Tap Manager Configuration Wizard & Adaptable HMI



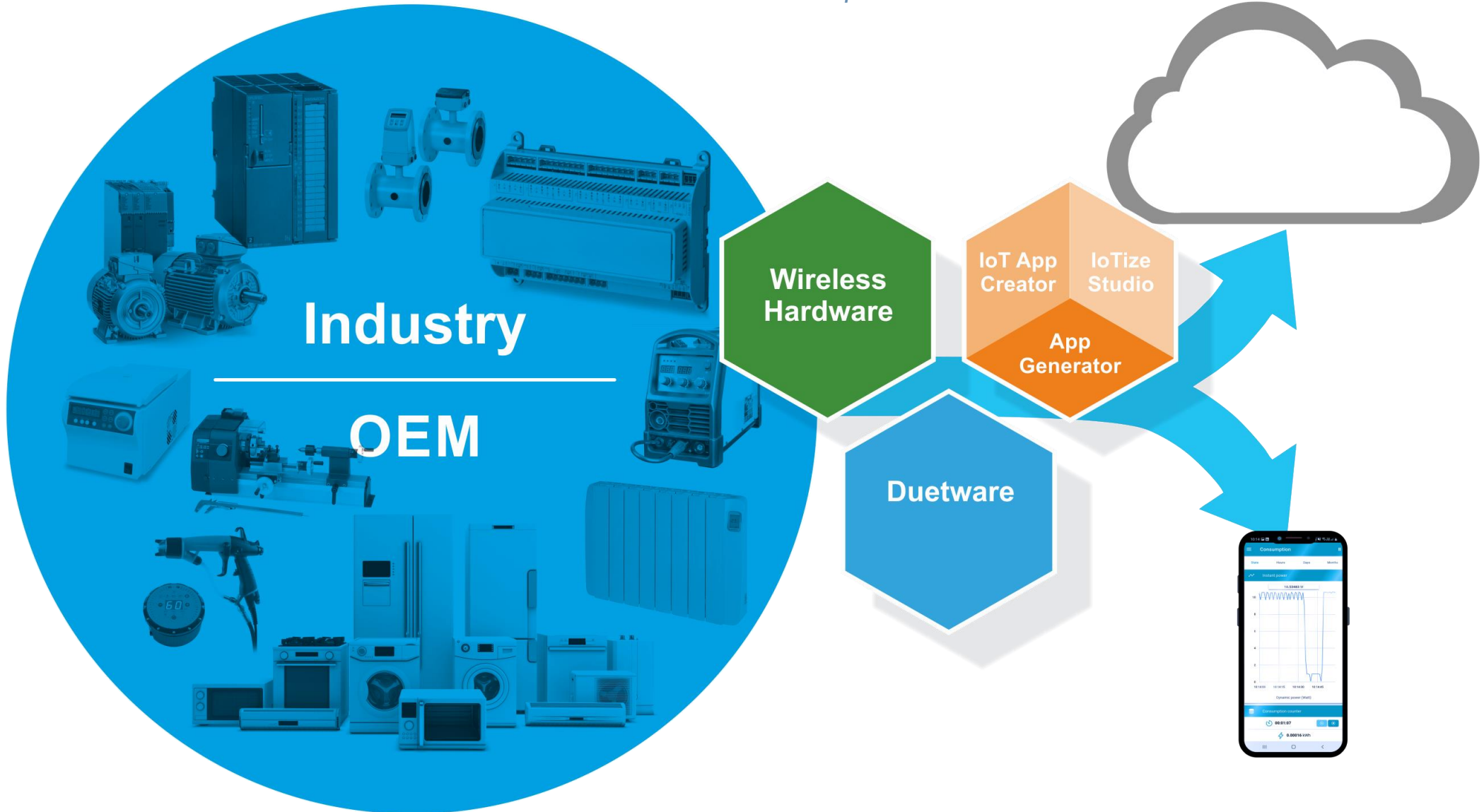
- Rapid configuration, Minimum tools
- Try on-site monitoring with apps
- Try MQTT or AWS data logging
- No need to create your own app



This presentation

Added Value Software

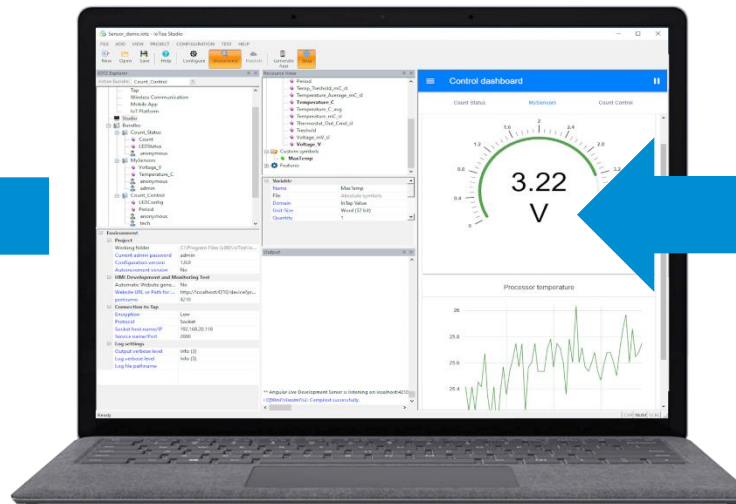
Complete Professional Solution for No-Code / Low-Code Design



Duetware Embedded

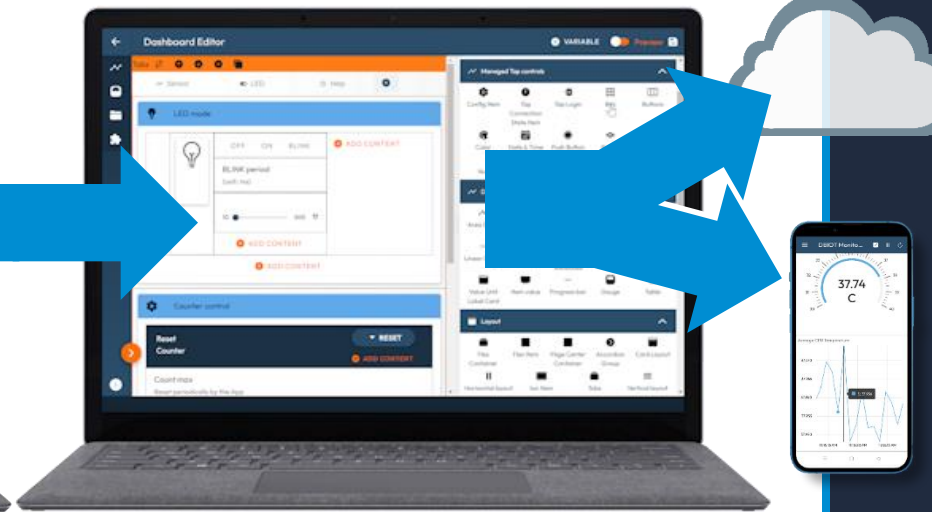


IoTize Studio



Duetware Feature Configuration for Data Communication

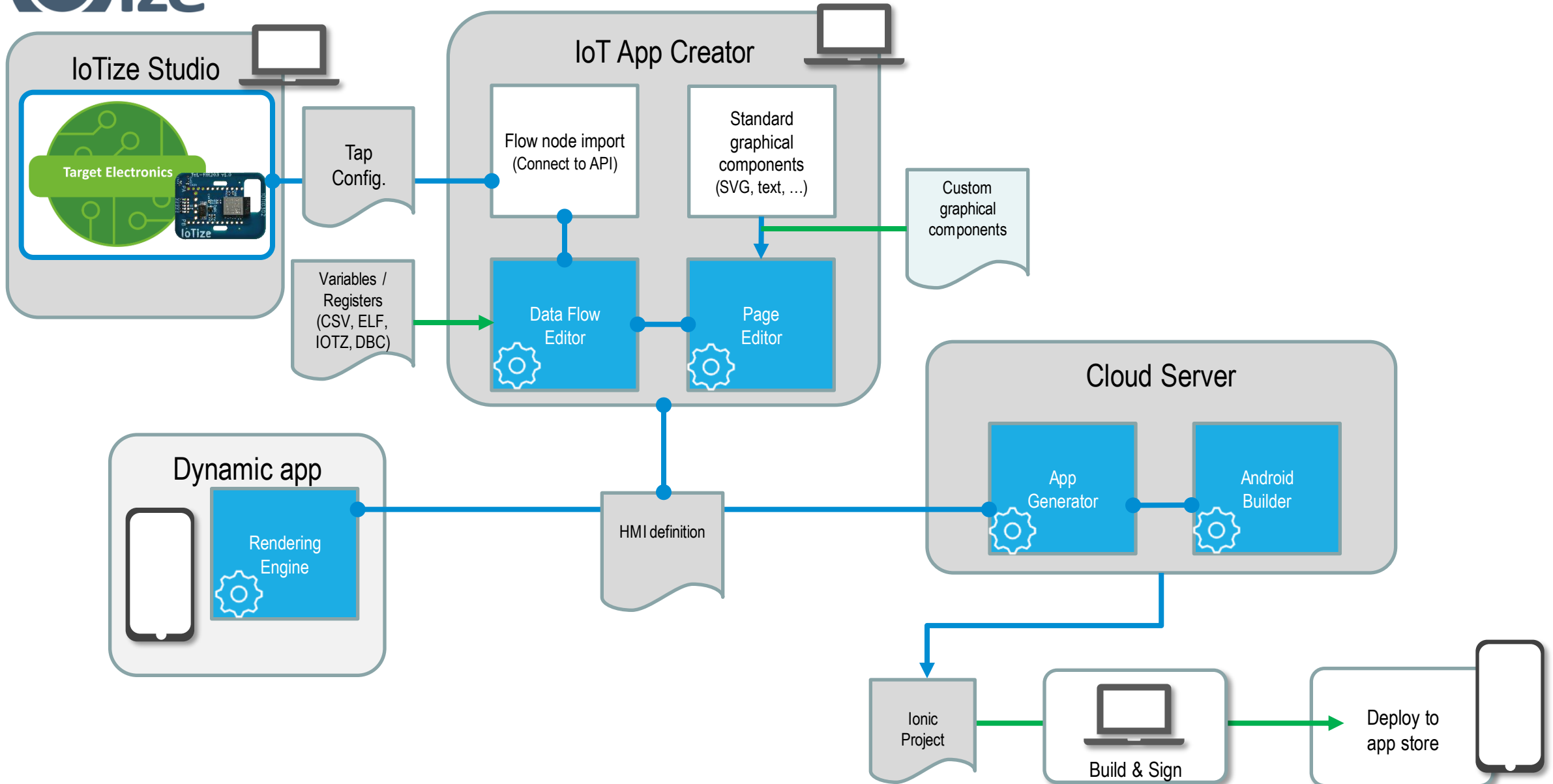
IoT App Creator

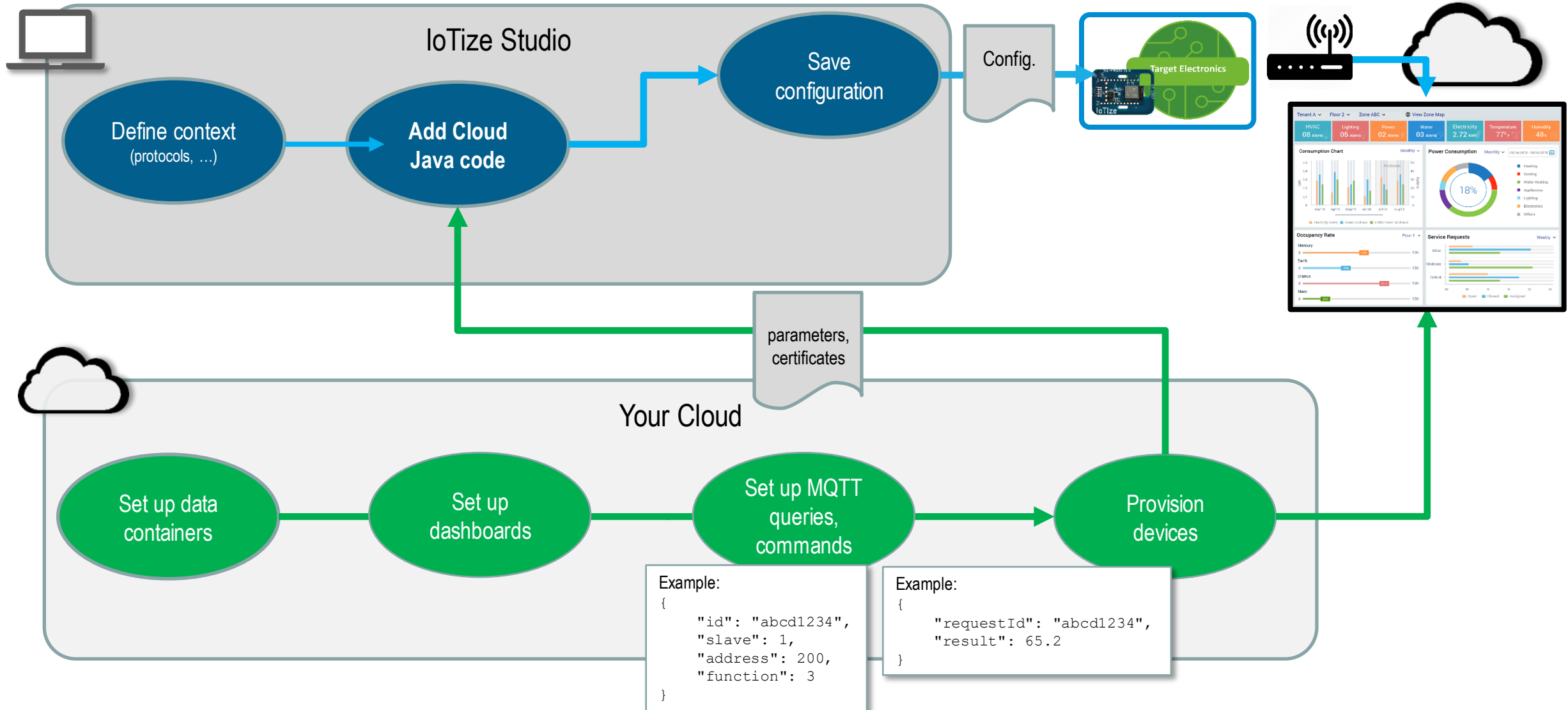


HMI Creation to Exploit Your Data



Monitoring App Creation Workflow

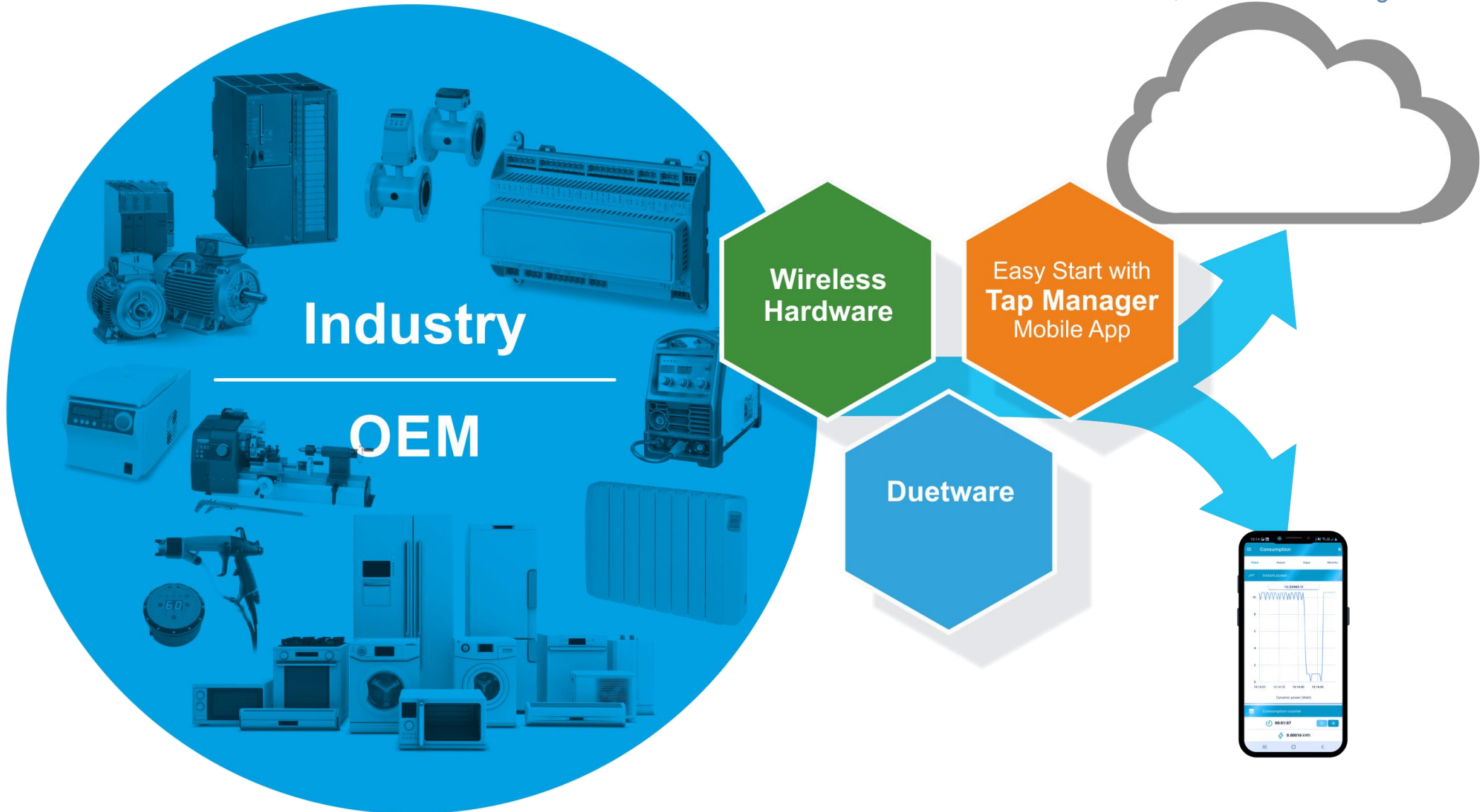


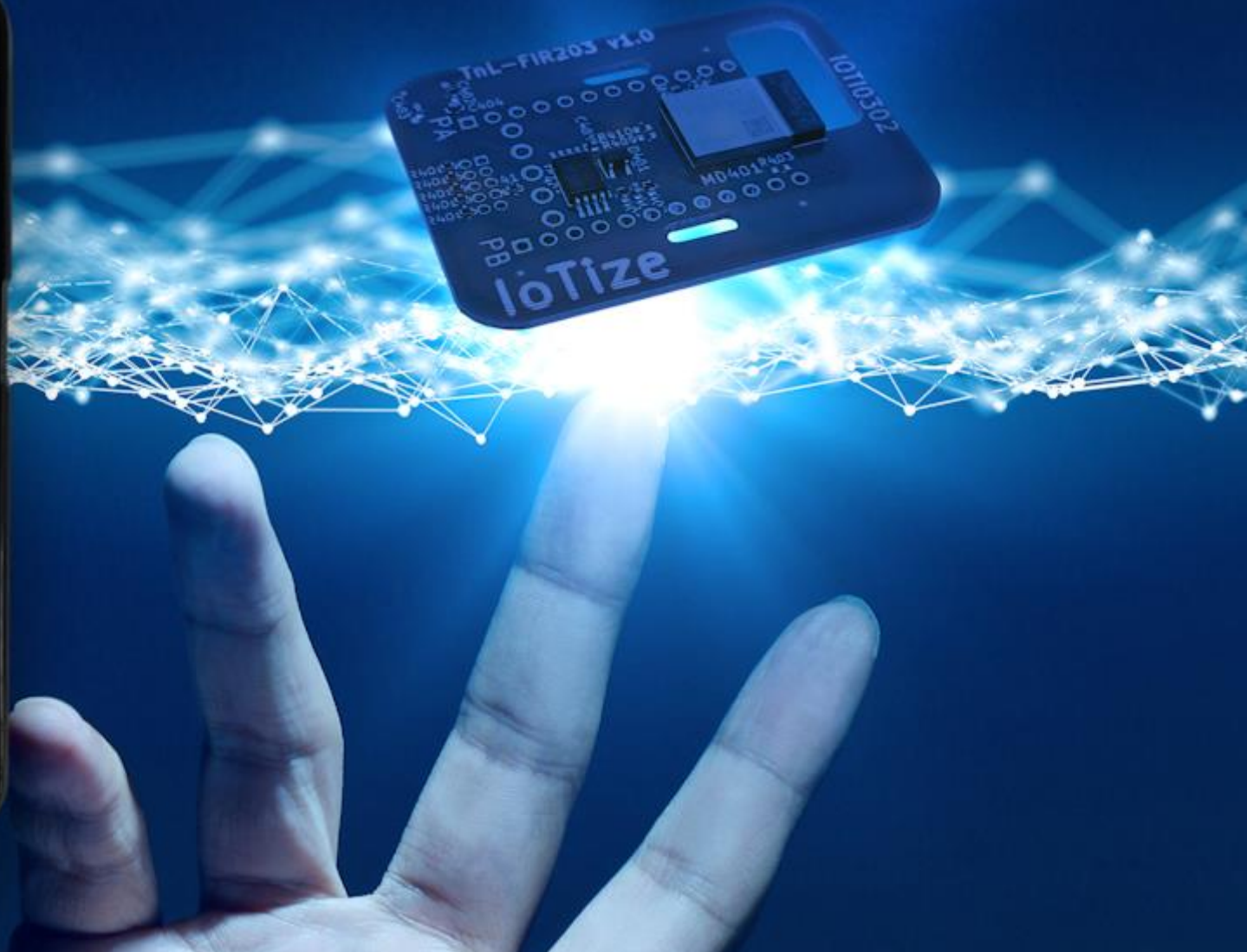
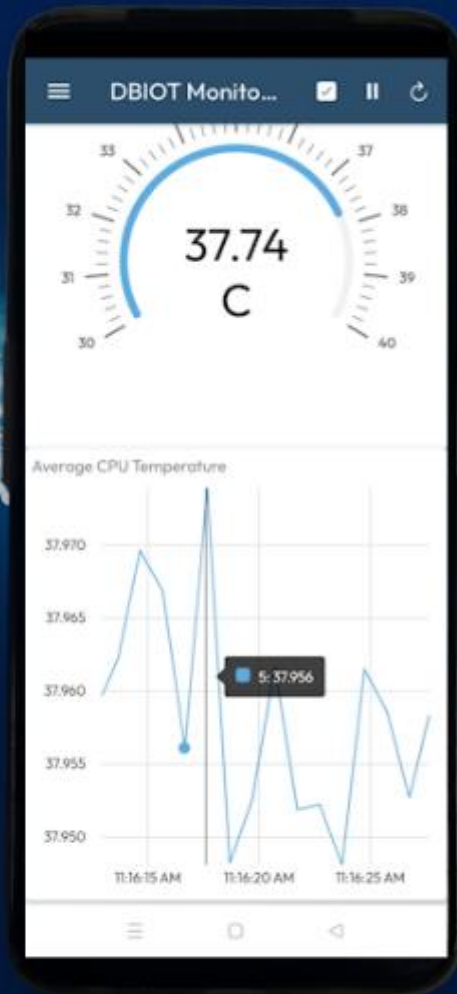
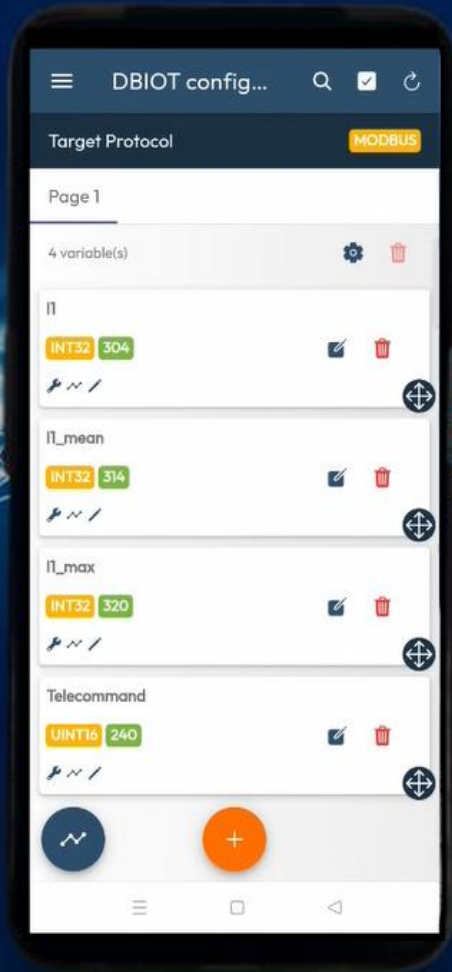




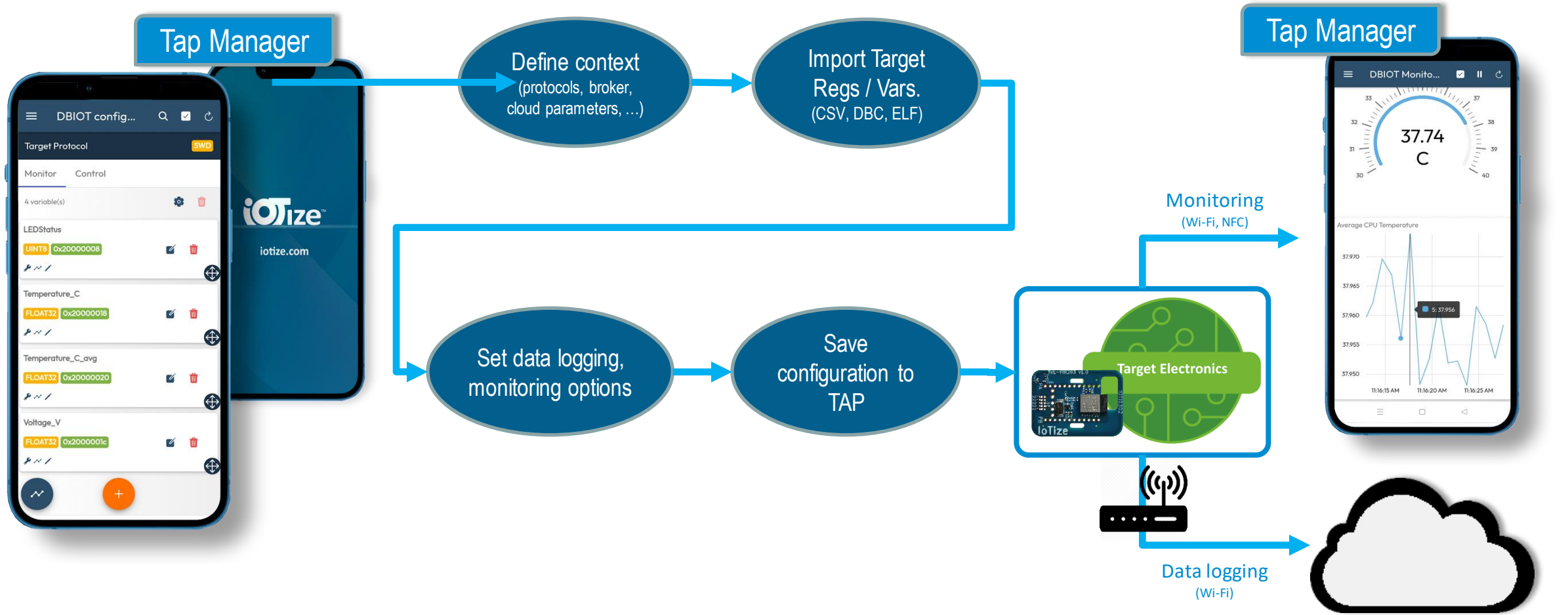
Added Value Software

Solution for Instant, No-Code Configuration for PoC





Tap Manager Configuration Workflow



- **Demo MQTT & Cloud Wizards**

- Tap Manager (PC, Mobile) for instant data logging setup
- HiveMQ free MQTT broker
- AWS IoT & MQTT broker

- **Cortex MCU & TapNLink**

- TapNLink PRIMER eval kit

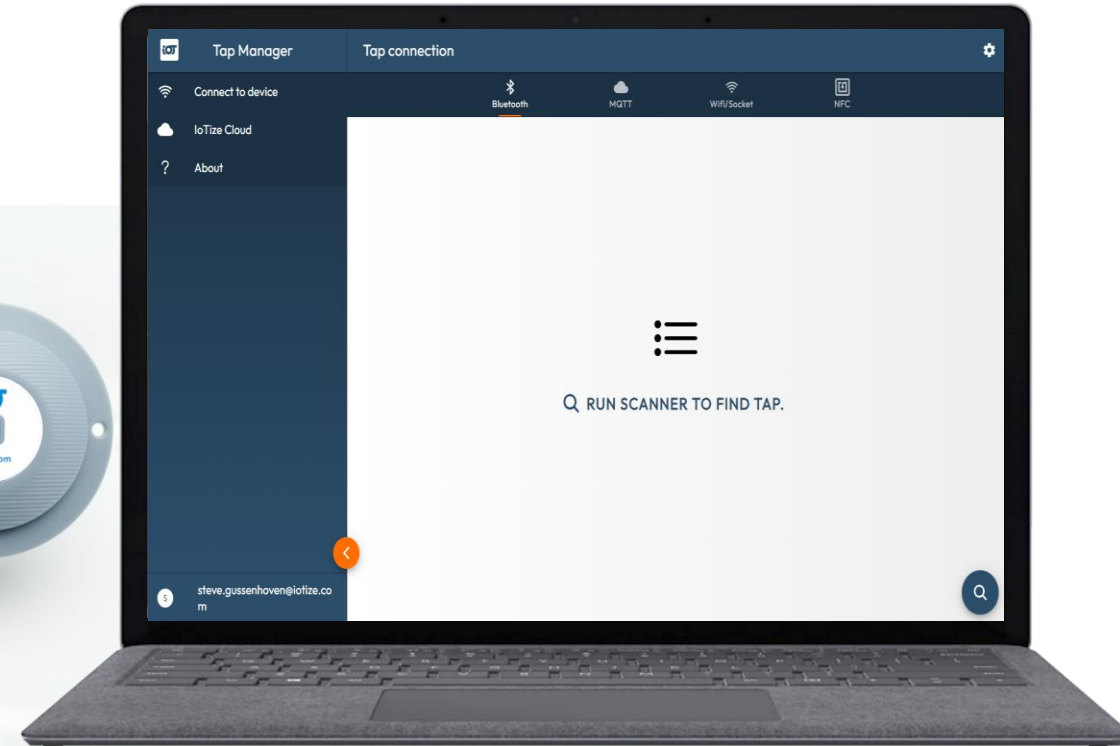
- **Download the procedures**

- [➔ HiveMQ pdf](#)

- TapNLink PRIMER
- IoTize Cloud account
- Tap Manager running in Chrome on your PC
- Wi-Fi network

- [➔ AWS pdf](#)

- AWS account
- TapNLink PRIMER
- IoTize Cloud account
- Tap Manager running in Chrome on your PC
- Wi-Fi network

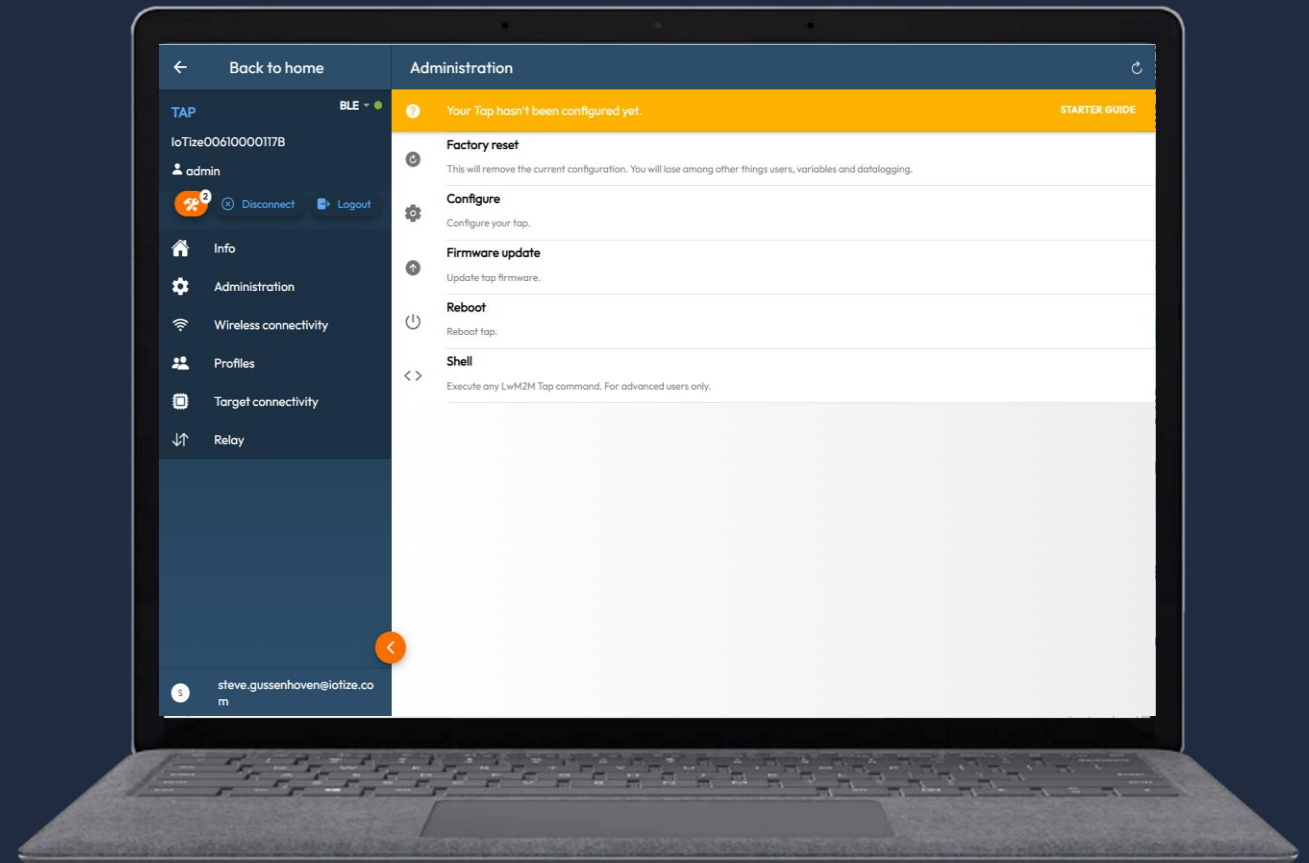


Connect to TapNLink

- *PC - Bluetooth*
- *Mobile - Bluetooth (NFC pairing)*

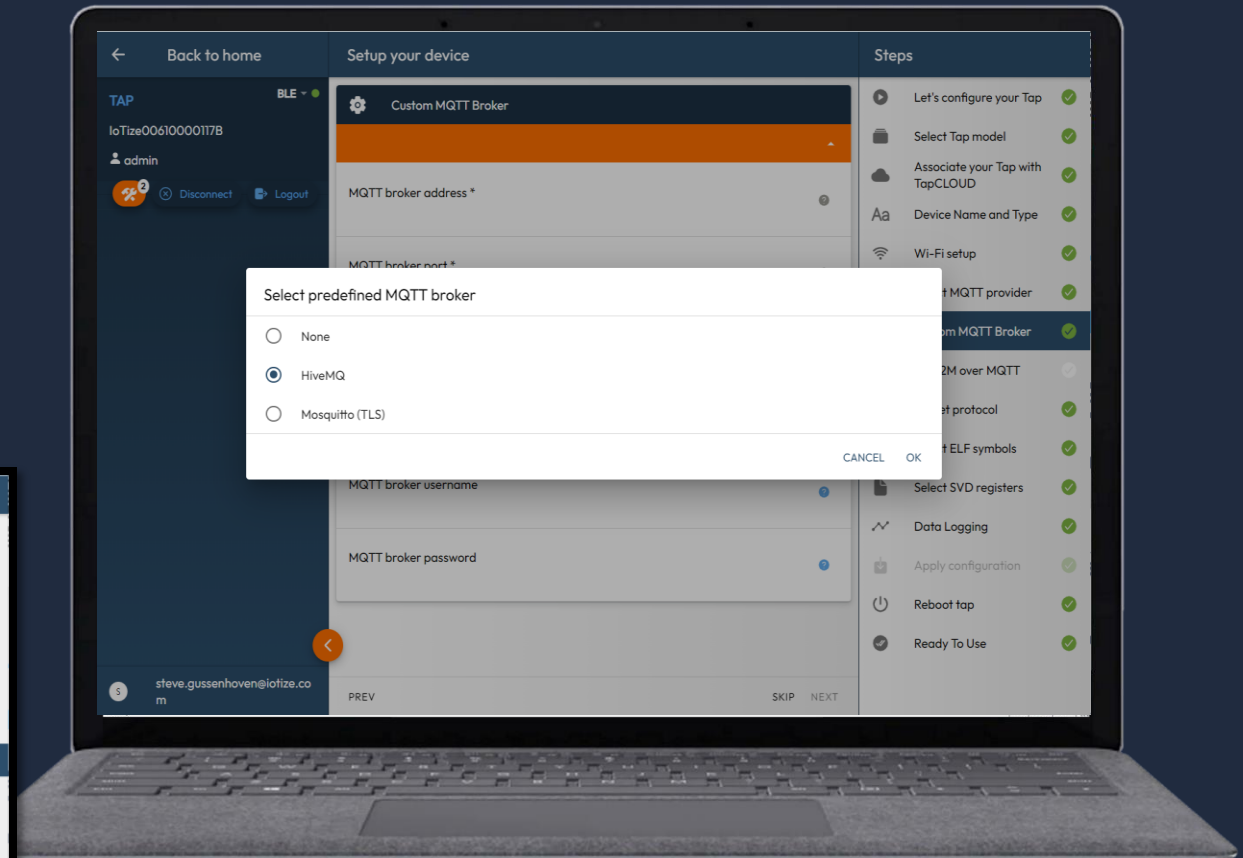
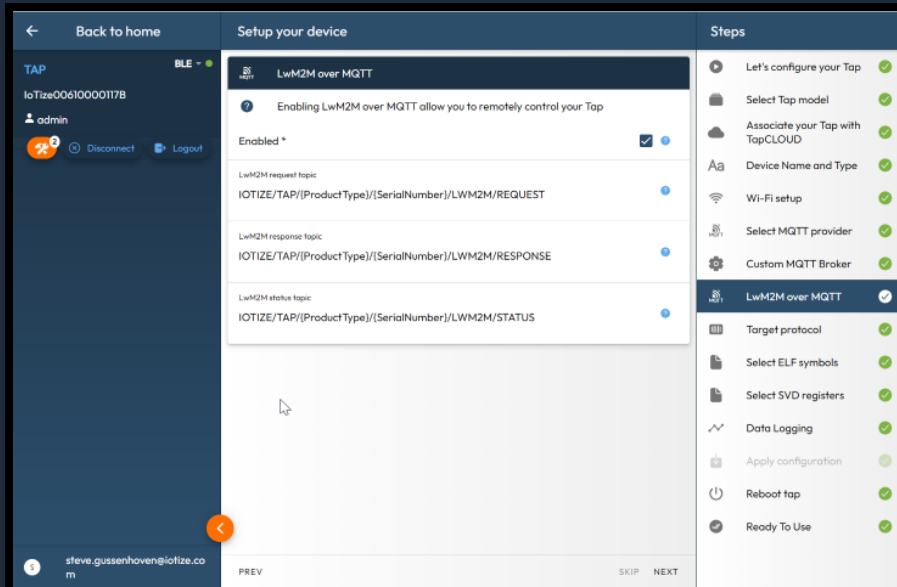
Start Configuration Wizard

- *TapNLink configuration detection is automatic*
- *Login (admin : admin)*
- *Click “Starter Guide”*



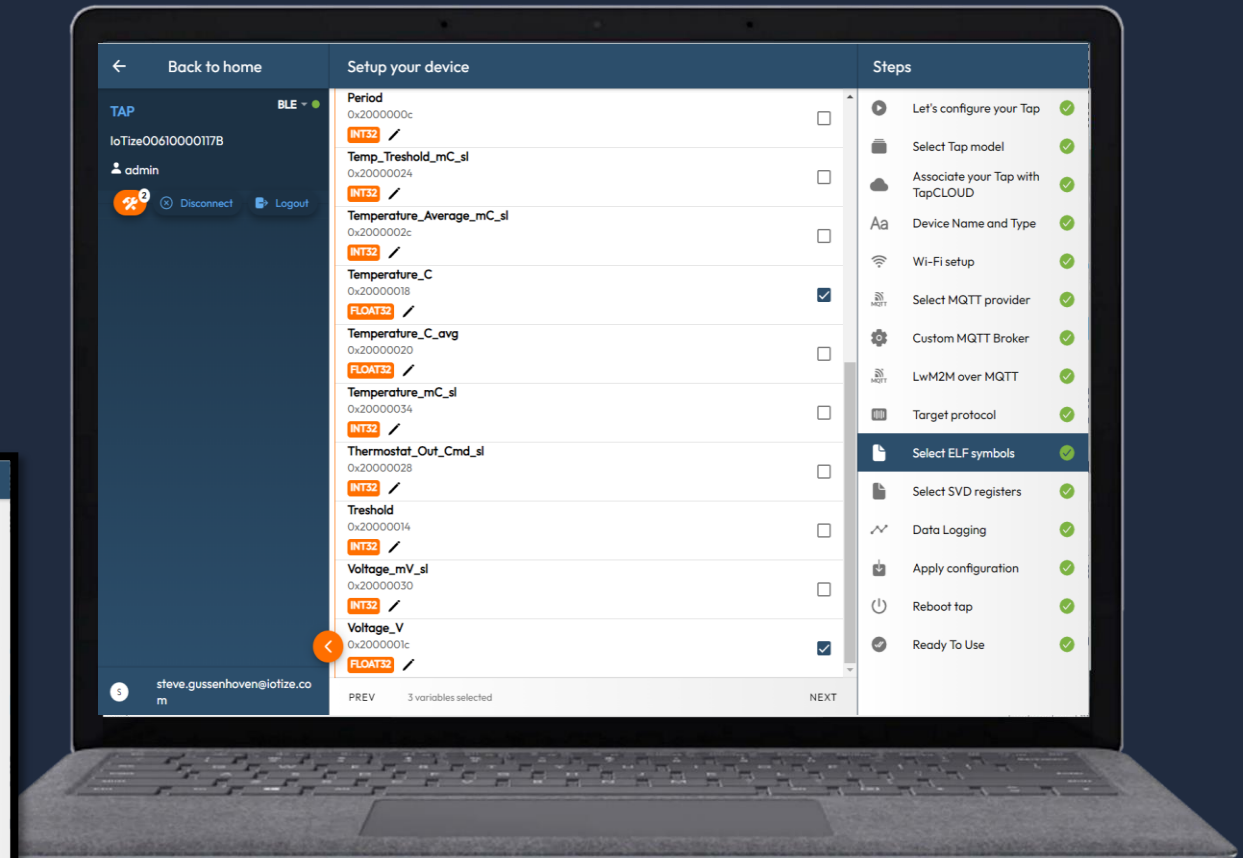
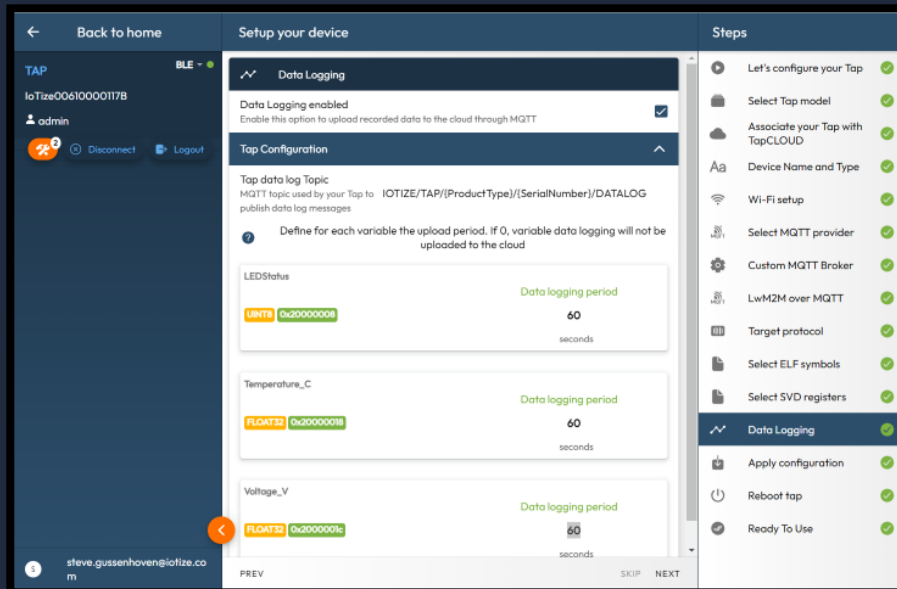
Define the Context

- *Tap Model*
- *Device Name & Type*
- *Wi-Fi Network*
- *MQTT > Custom > HiveMQ > Enable*
- *Topics are predefined (can be personalized)*



Import Target Information / Variables

- *SWD connection*
- *Import from ELF*
- *Select Variables*
- *Enable Data Logging*
- *Send Configuration to the Tap*



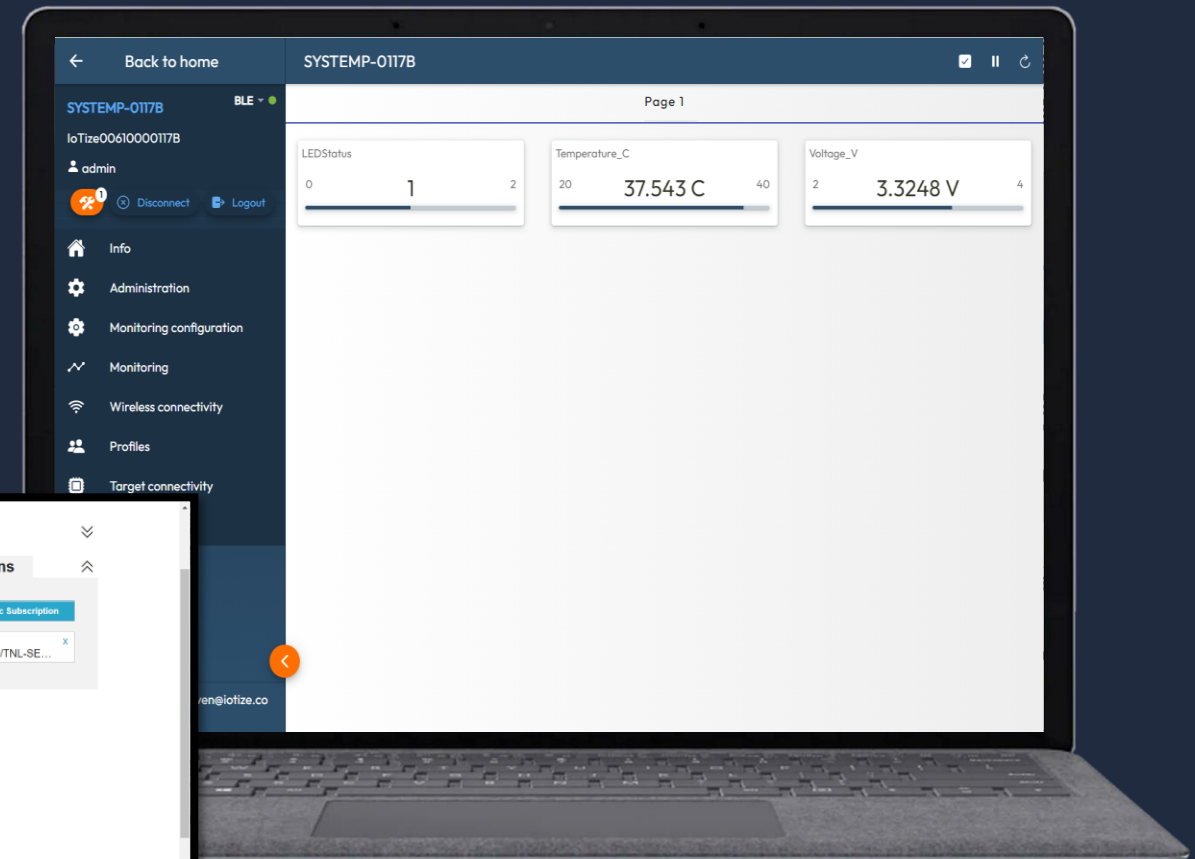
Optional: Create a Local Monitoring Interface

- *Monitoring Configuration for Access to Parameters of Graphical Components*

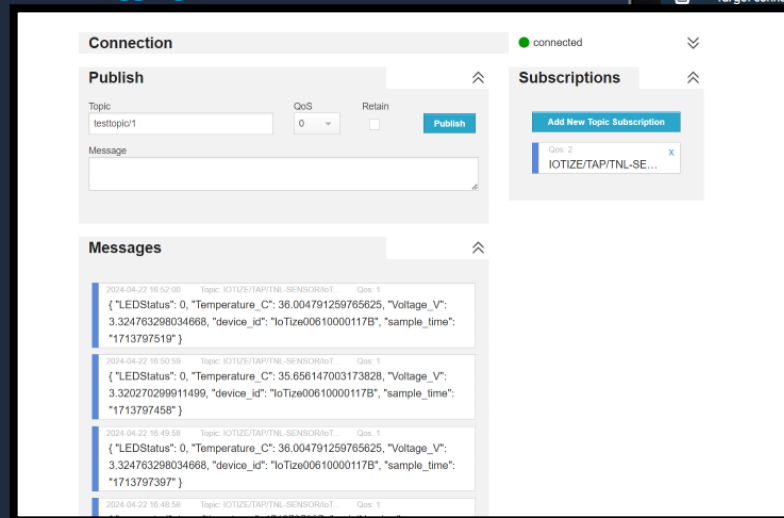
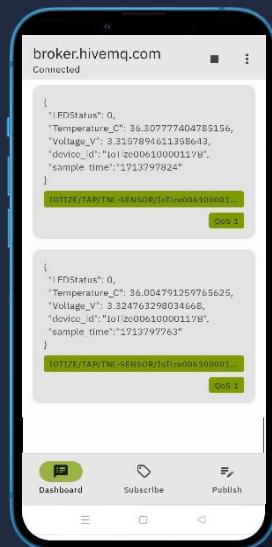
Test MQTT Broker Setup

- *Exit the Configuration Environment*
- *Go to HiveMQ > Websocket Client*
- *Or 3rd-Party Websocket app*

Monitoring interface (via Bluetooth or MQTT)



Data Logging Stream via (Wi-Fi)

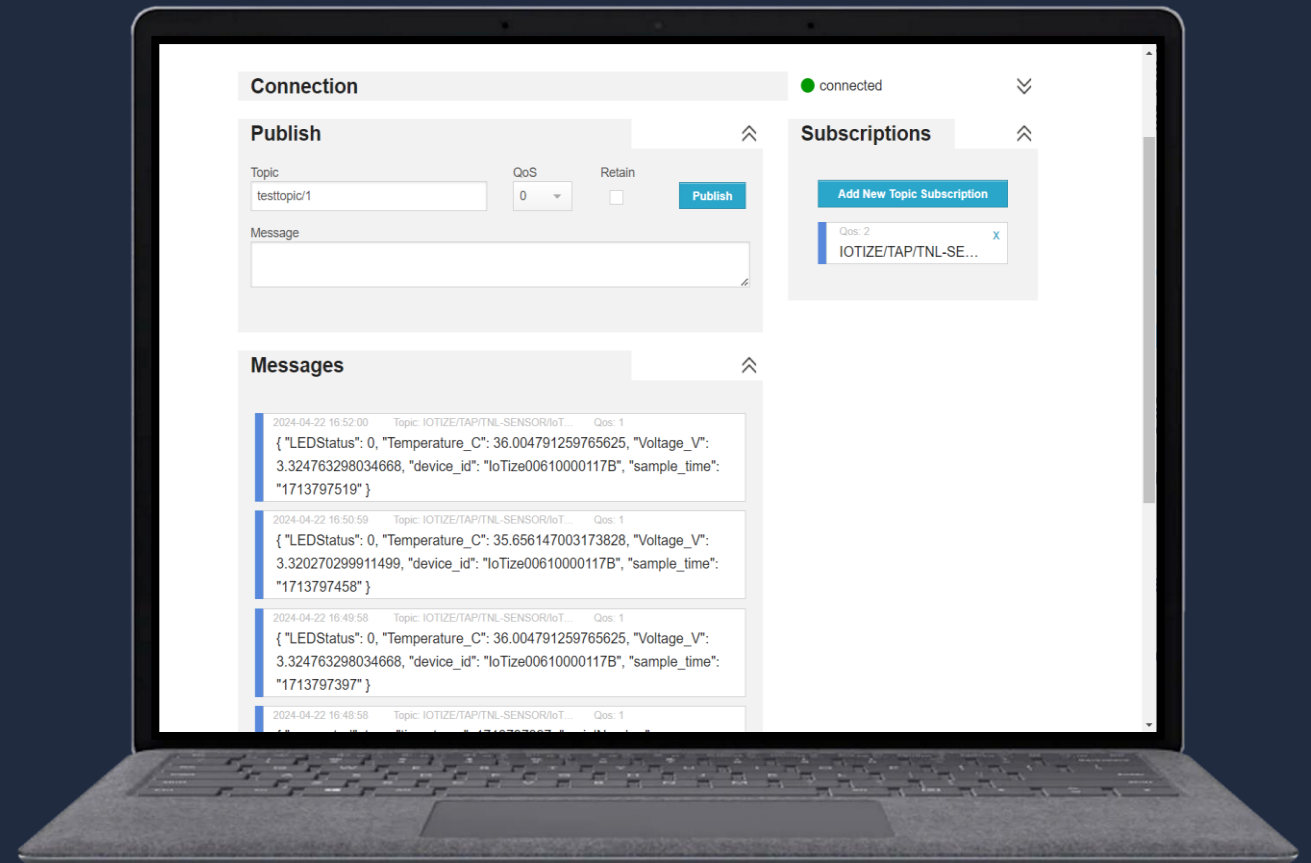


What We Have Done

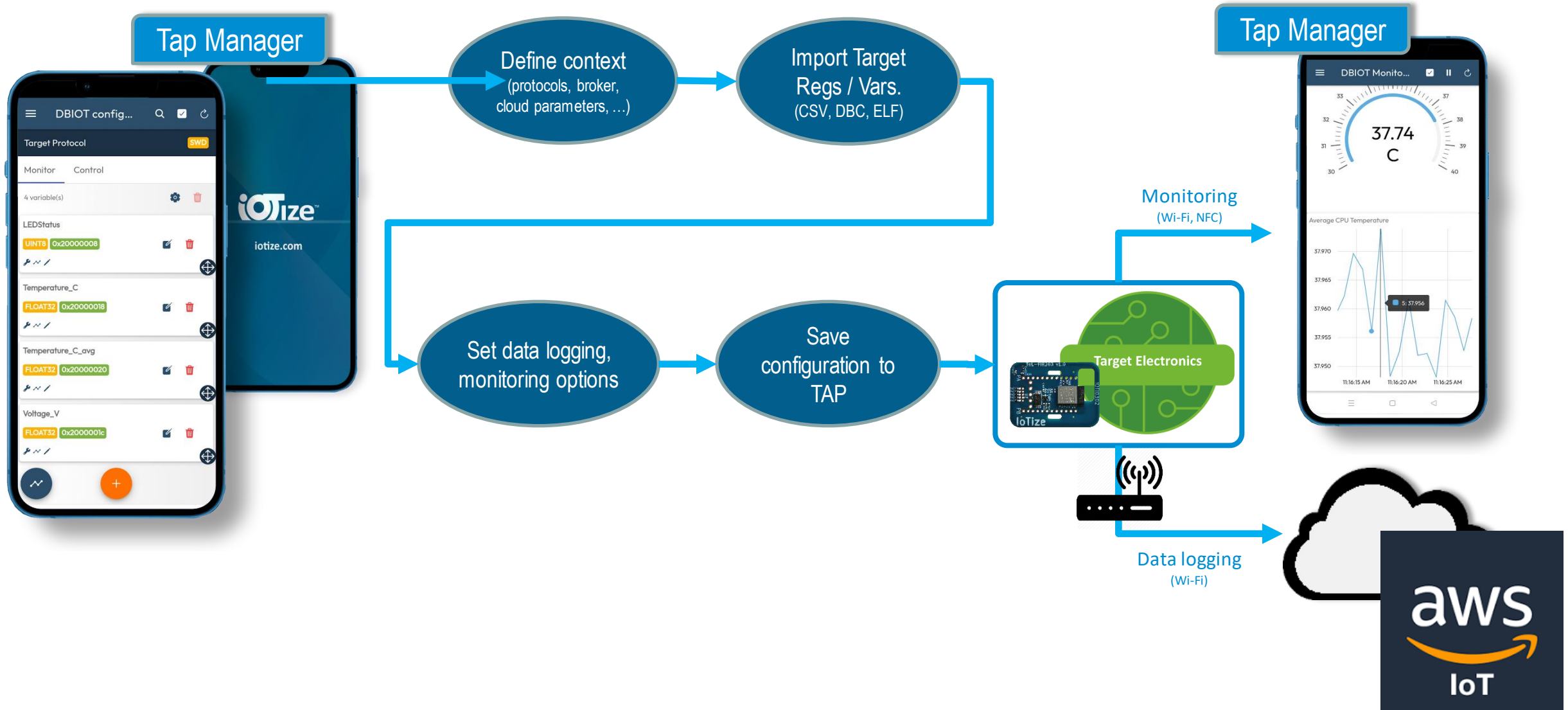
- *Provided MQTT data stream for testing*

What You Still Need to Do

- *Set up a platform or app to log this data*
- *Secure the data stream*
- *HiveMQ also provides Cloud data storage*



Workflow for AWS Full Cloud Set Up



Create an AWS Account

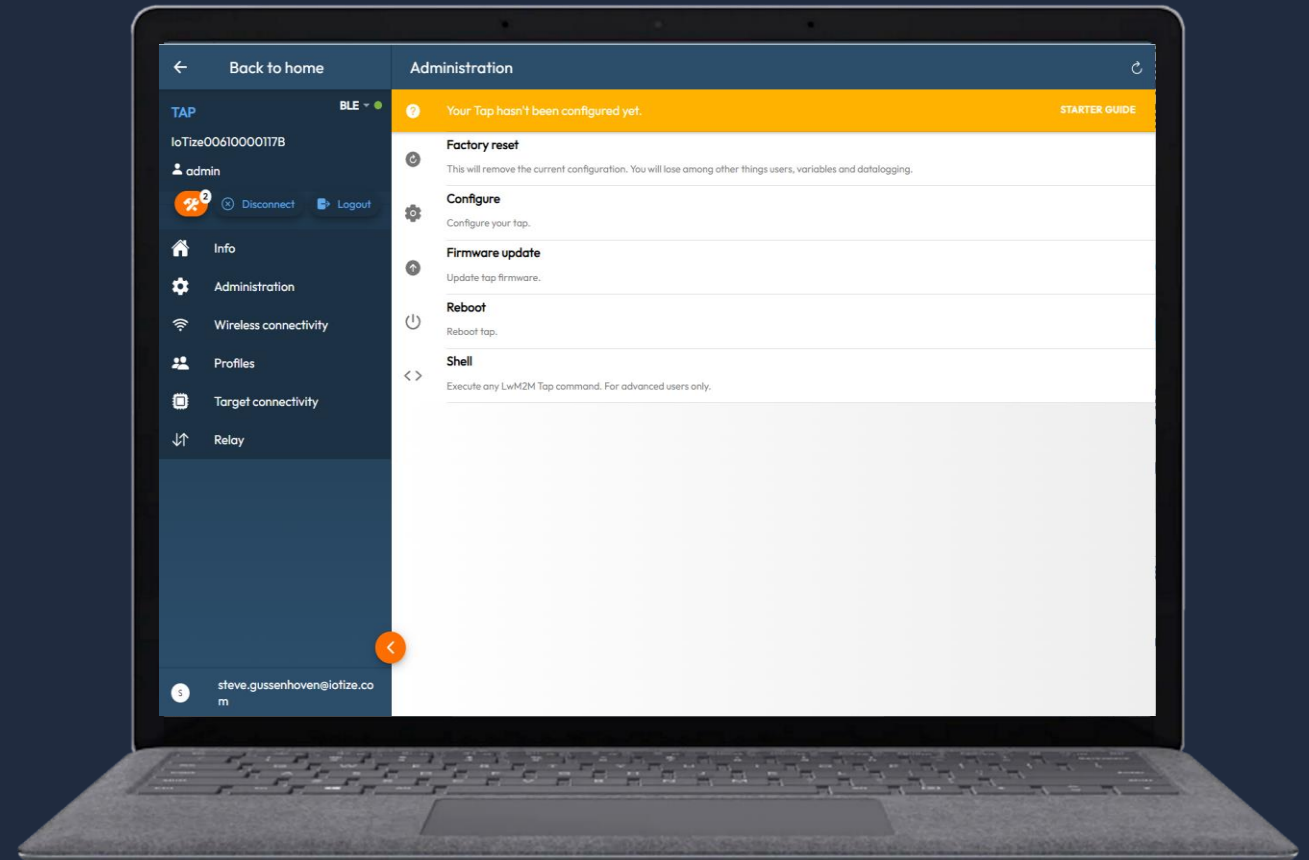
- *Payment card & \$1 USD payment required*

Connect to TapNLink

- *PC - Bluetooth*
- *Mobile - Bluetooth (NFC pairing)*

Start Configuration Wizard

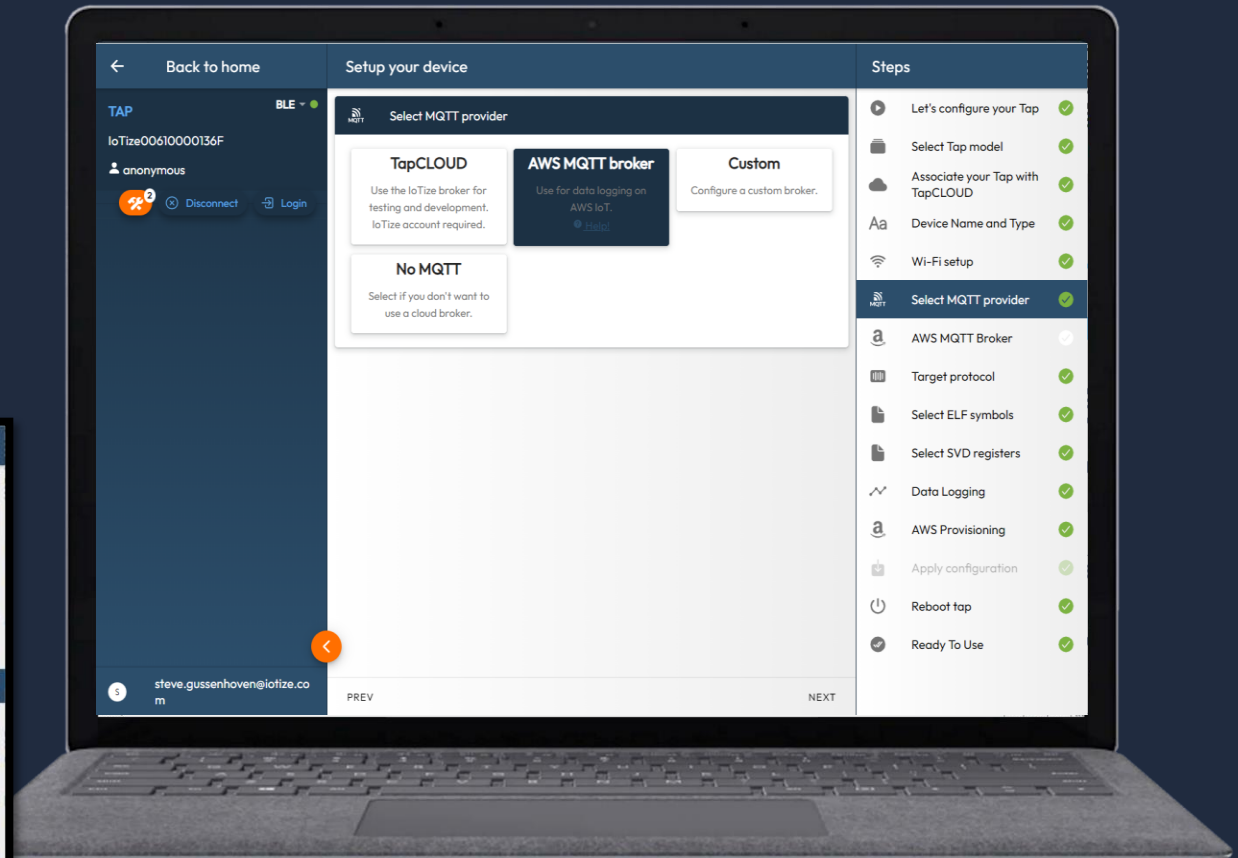
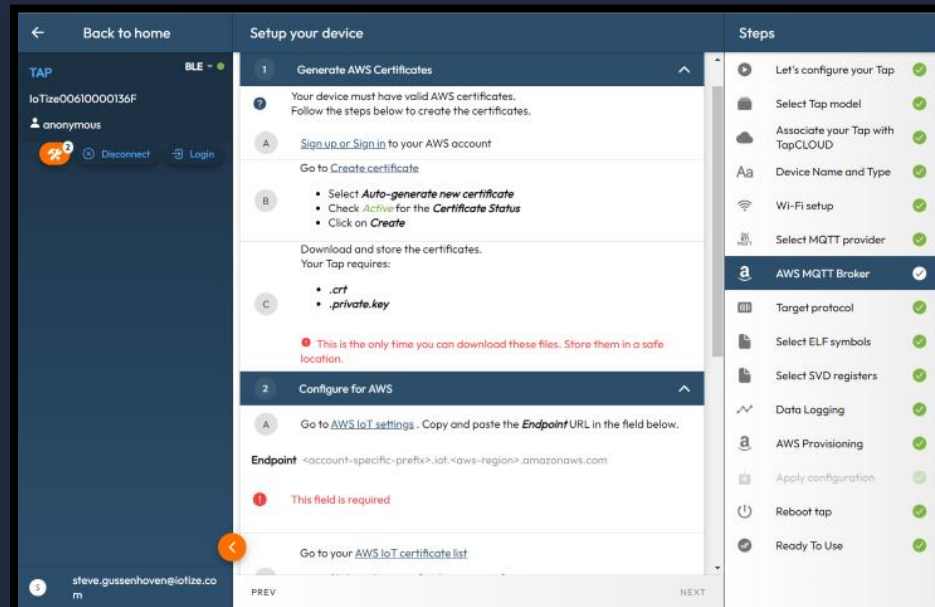
- *TapNLink configuration detection is automatic*
- *Login (admin : admin)*
- *Click “Starter Guide”*



IMPORTANT NOTE: *By following this procedure and creating your AWS account, you accept that you alone are responsible for any charges that may be incurred for your use of the AWS services whether for server use, data or other storage, number of connected devices, for any other service or feature for which AWS might apply charges to your account.*

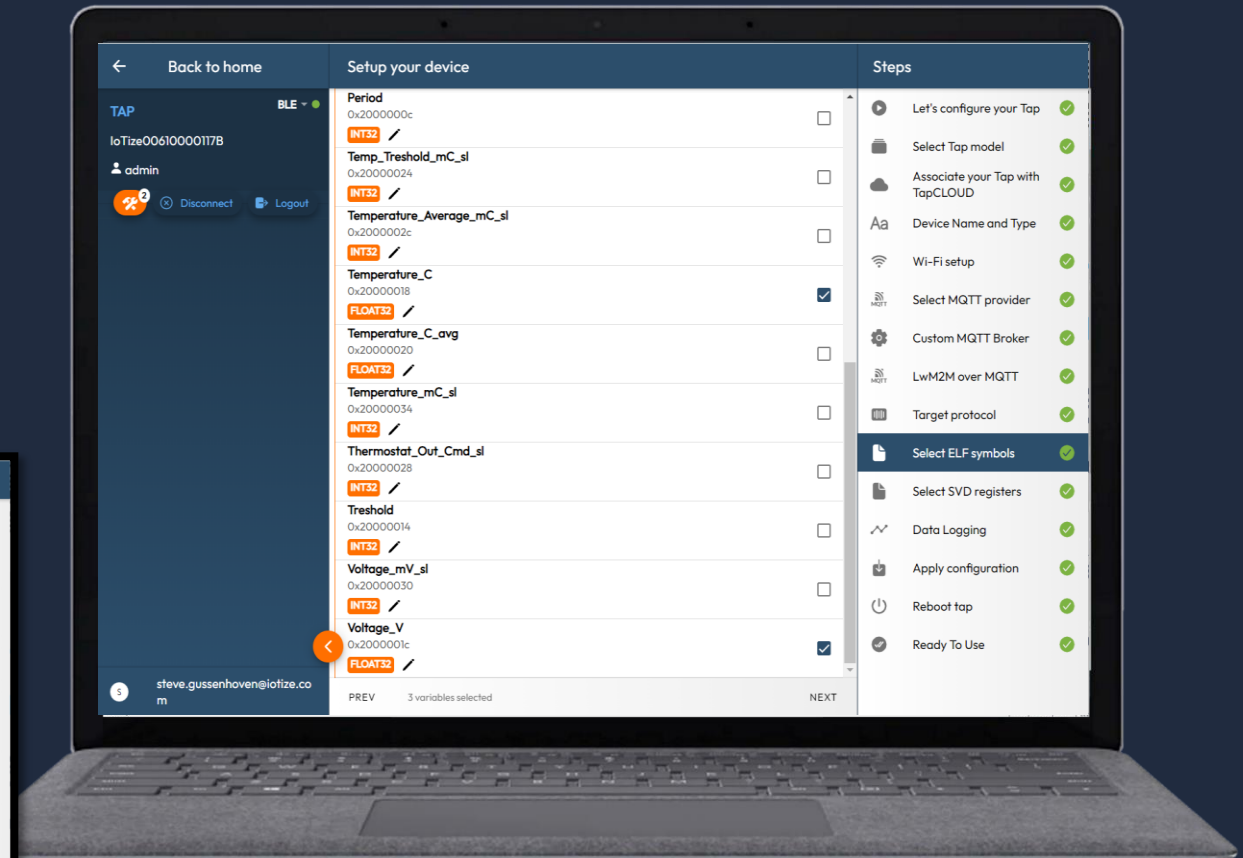
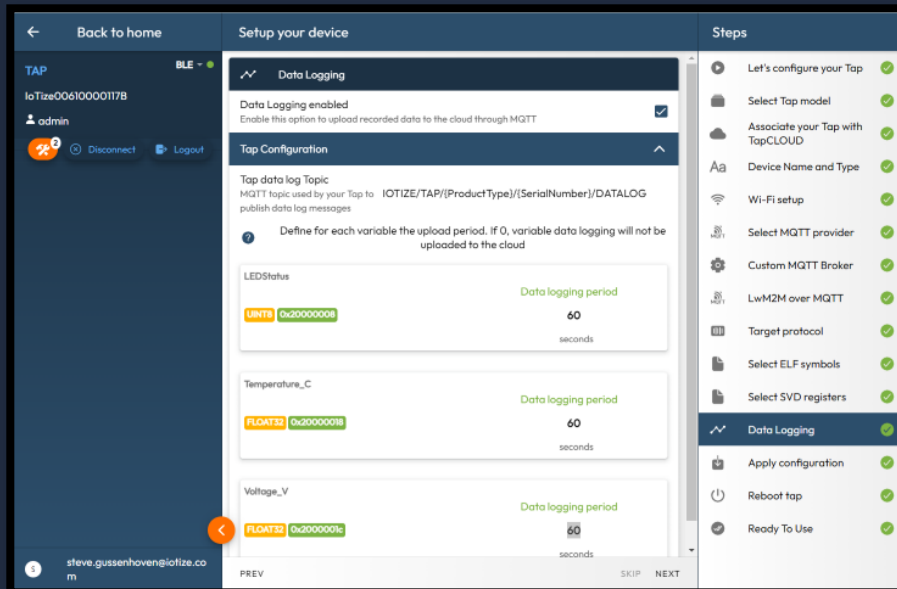
Define the Context

- *Tap Model*
- *Device Name & Type*
- *Wi-Fi Network*
- *MQTT > AWS MQTT Broker*
- *Generate & Load AWS Certificates*



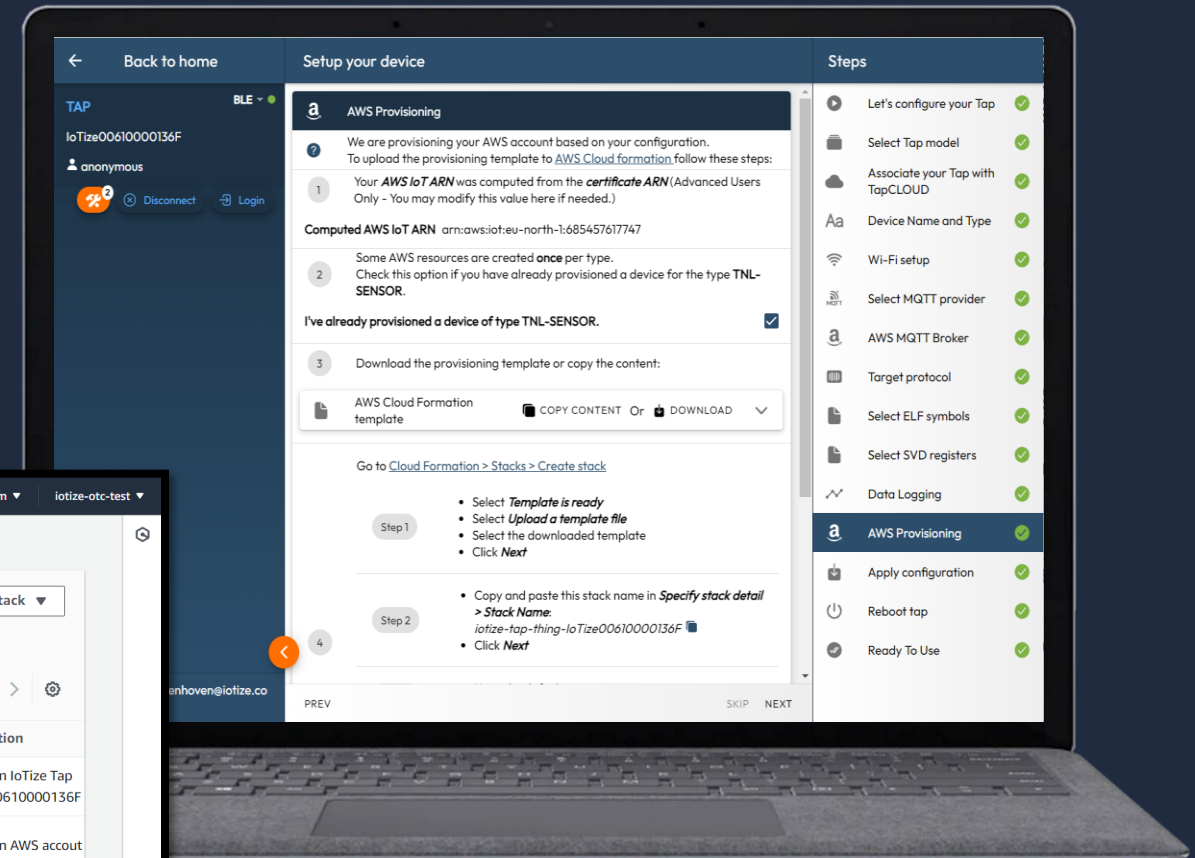
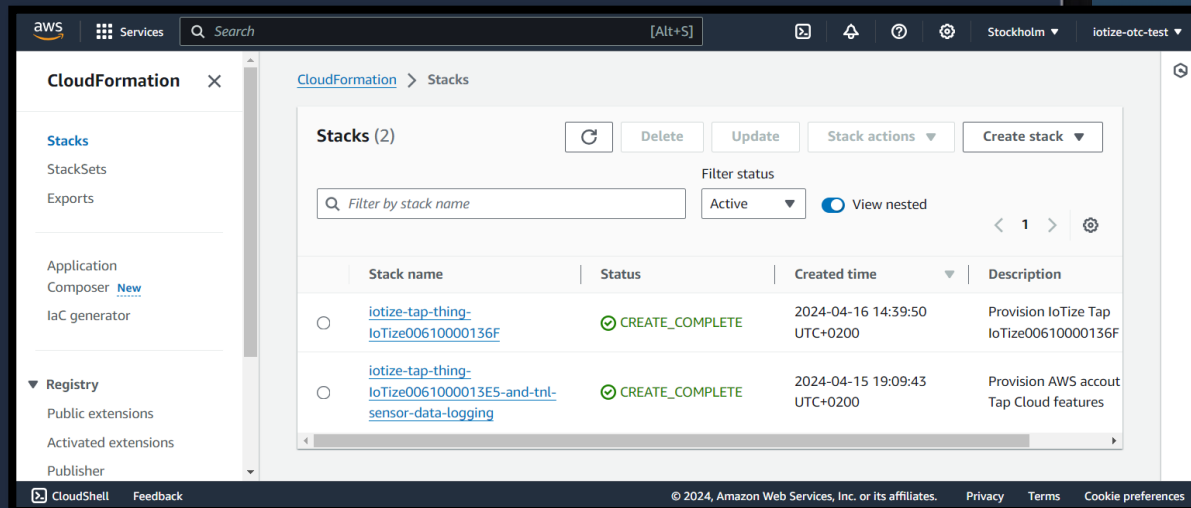
Import Target Information / Variables

- SWD connection
- Import from ELF
- Select Variables
- Enable Data Logging
- Send Configuration to the Tap



Configure & Launch AWS Stack Creation

- *Initial or Subsequent Provisioning of a Type*
- *Get Stack Template*
- *Accept AWS Conditions*

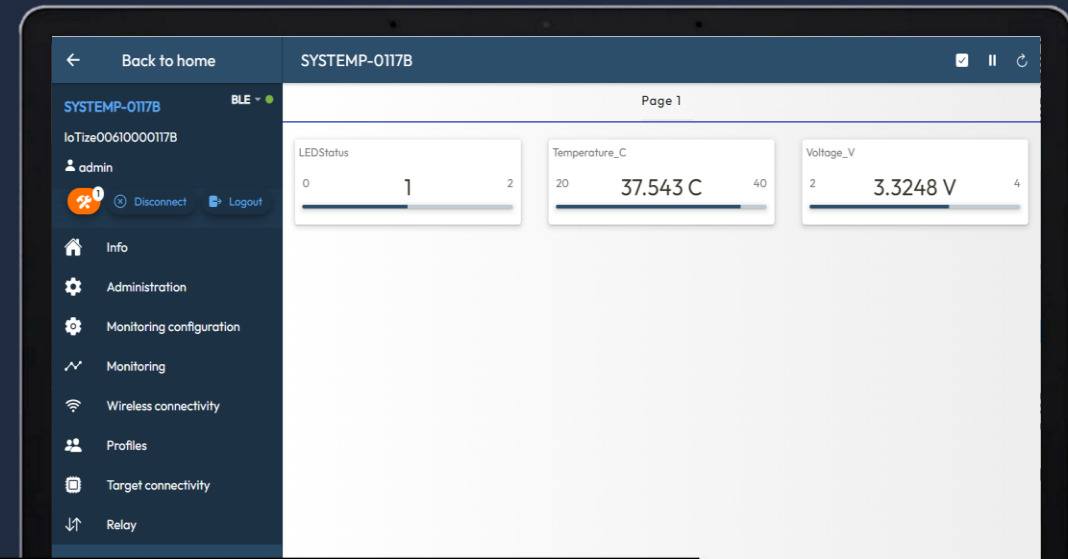


Optional: Create a Local Monitoring Interface

- **Must Reconnect using Tap Manager on Your Mobile and Wi-Fi**

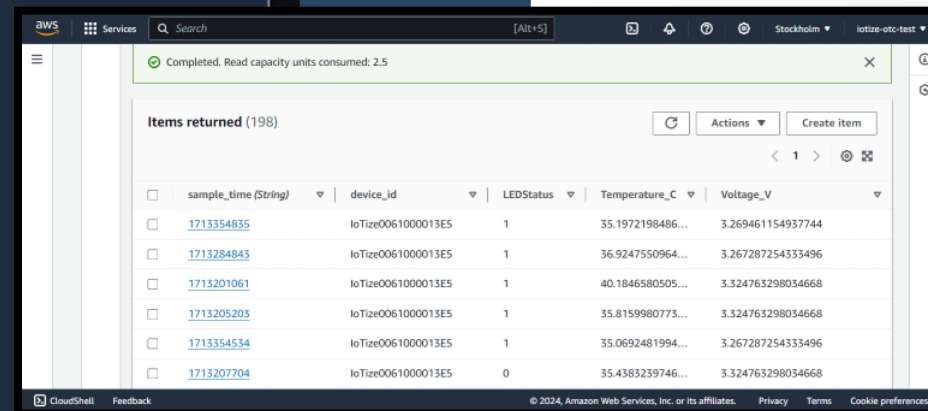
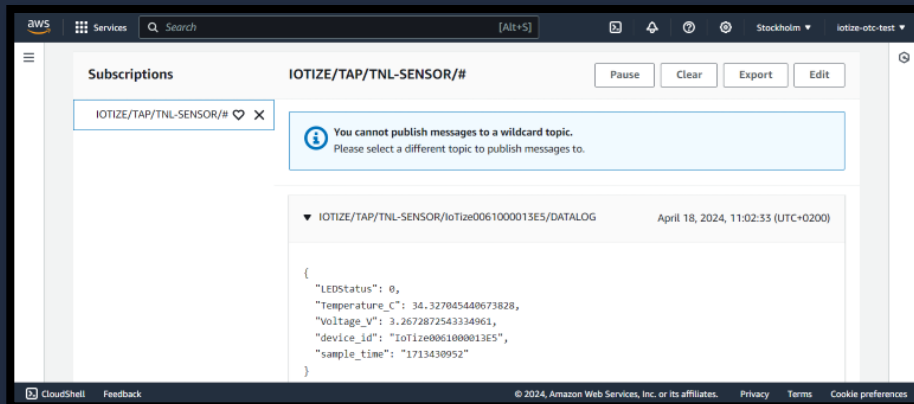
Note: Connecting to the Tap via Bluetooth is no longer possible do to memory limitations of the Tap.

Monitoring interface (via Wi-Fi)



Test AWS Broker & Cloud Setup

- **AWS IoT > MQTT Test Client**
- **DynamoDB > Tables**



What We Have Done

- *Set up a secure MQTT data stream for testing*
- *Created your data containers & tables*
- *Provisioned your device on your AWS*
- *Logged data to your containers*

What You Still Need to Do

- *Create your app or export data to an app for analysis & visualization*



The screenshot shows the AWS IoT console interface. At the top, there's a search bar and navigation options. Below that, a table titled 'Items returned (203)' is displayed. The table has columns for 'sample_time (String)', 'device_id', 'LEDStatus', 'Temperature_C', and 'Voltage_V'. The data rows show various sample times and corresponding values for these metrics. For example, the first row shows a sample time of 1713354835, a device ID of IoTize0061000013E5, an LEDStatus of 1, a Temperature_C of 35.1972198486..., and a Voltage_V of 3.269461154937744.

- **Wizards: Rapid but Limited**
 - AWS, HiveMQ, Mosquitto
- **IoTize Professional Tools**
 - IoTize Studio, IoT App Creator
 - Java code examples provided
 - Any MQTT broker & Cloud platform
 - Full monitoring interface customization
 - Connectivity optimization
 - Security customization
 - Edge data processing
 - and more...

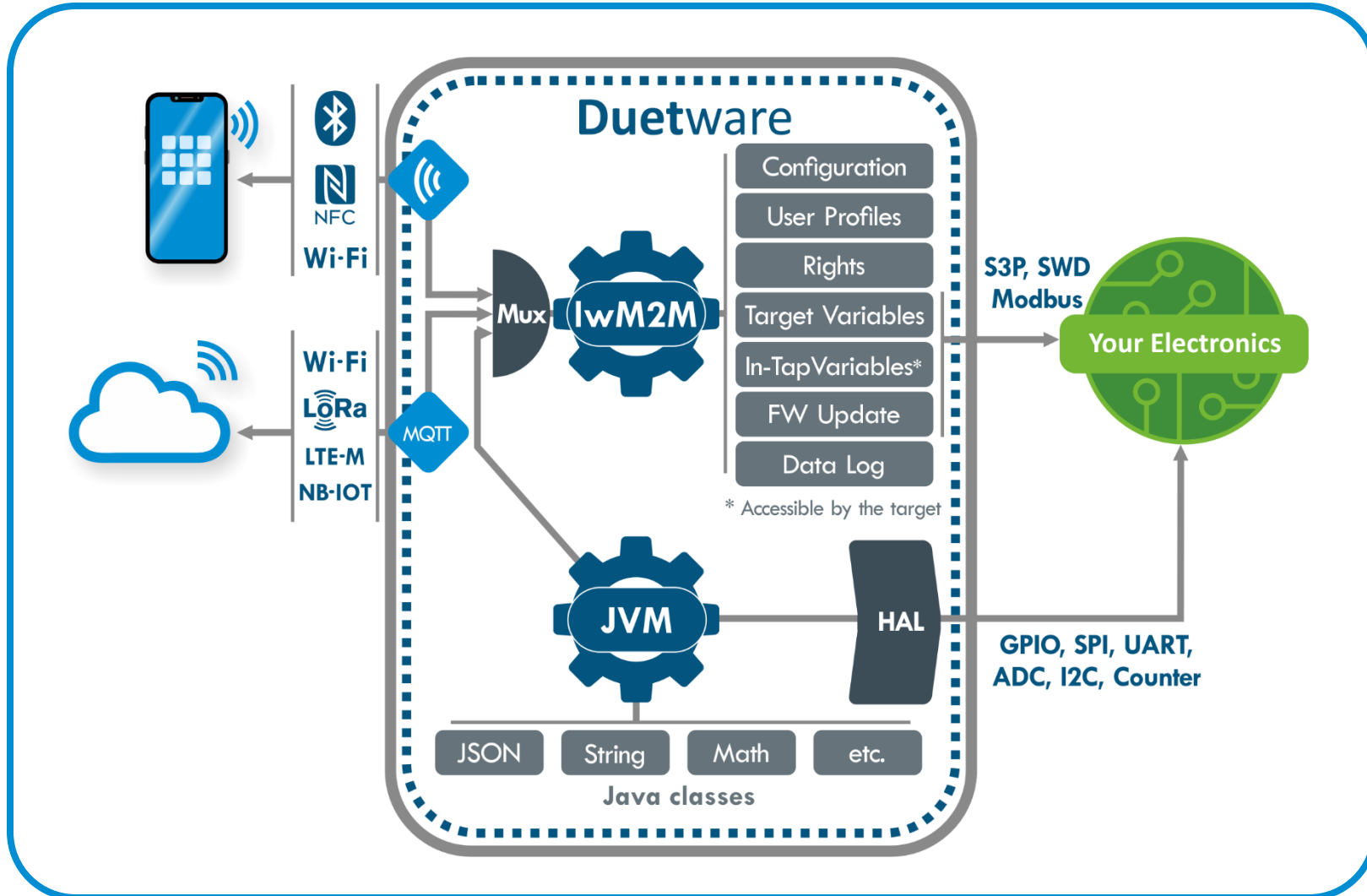
Contact us for demonstrations.
contact@iotize.com





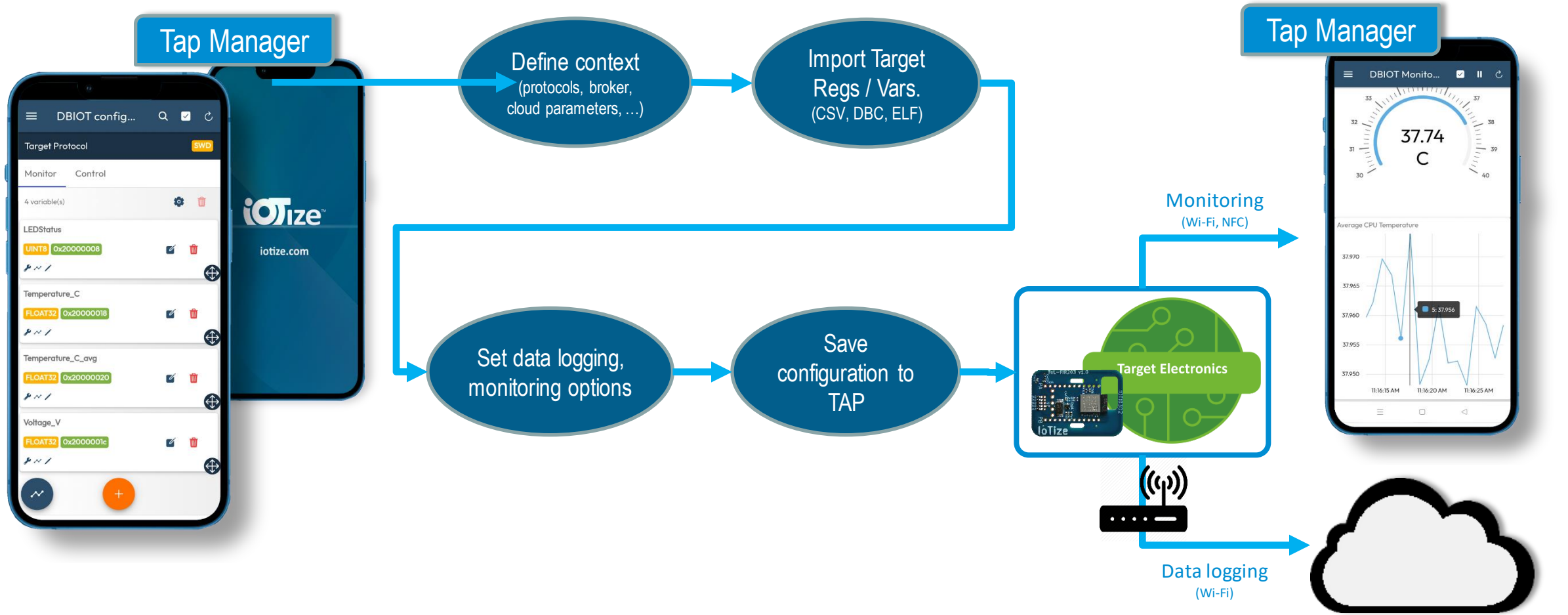
Concluding Points

The Common Core of All Our Products





Rapid Cloud Configuration with Tap Manager



- **Procedures presented here**

The demonstration procedures for AWS and HiveMQ are available here in PDF format.

- **TapNLink PRIMER**

Complete hardware/software evaluation platform that you can add on to your existing microcontroller designs in just minutes.

- **Tap Manager via IoTize Cloud**

Just create your IoTize Cloud account. Runs in Chrome. Just connect to your TapNLink via Bluetooth and start the configuration wizard.

- **Tap Manager for Your Mobile**

Just install on your mobile. Connect to your TapNLink via Bluetooth and start the configuration wizard.

- **Solution catalog**

Introduces our tools and no-code / low-code approach. Share this link. PDF format.

[AWS...](#)

[HiveMQ...](#)

[At IoTize...](#)

[Our Distributors...](#)

[Sign up on IoTize Cloud...](#)

[Android...](#)

[iOS...](#)

[Download here...](#)



Thank you!

Questions



They iotize...



Heating Appliances



Energy & Automation



Industrial Monitoring

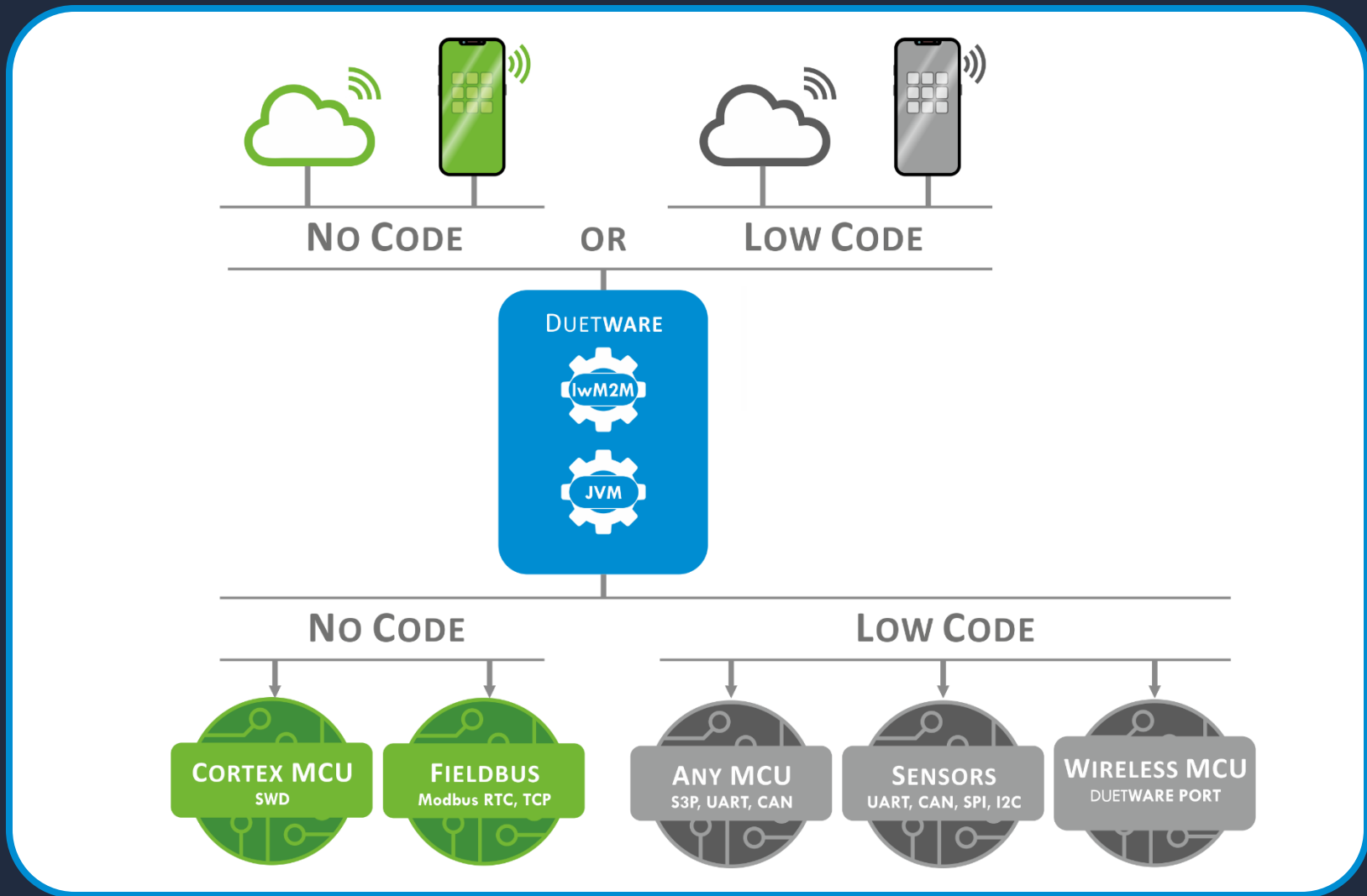


Annex Slides



Duetware Solution Features, Tools & Resources

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
	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	www.iotize.com



1. Commissioning & Configuration

- Mobile app
- Near Field Communication

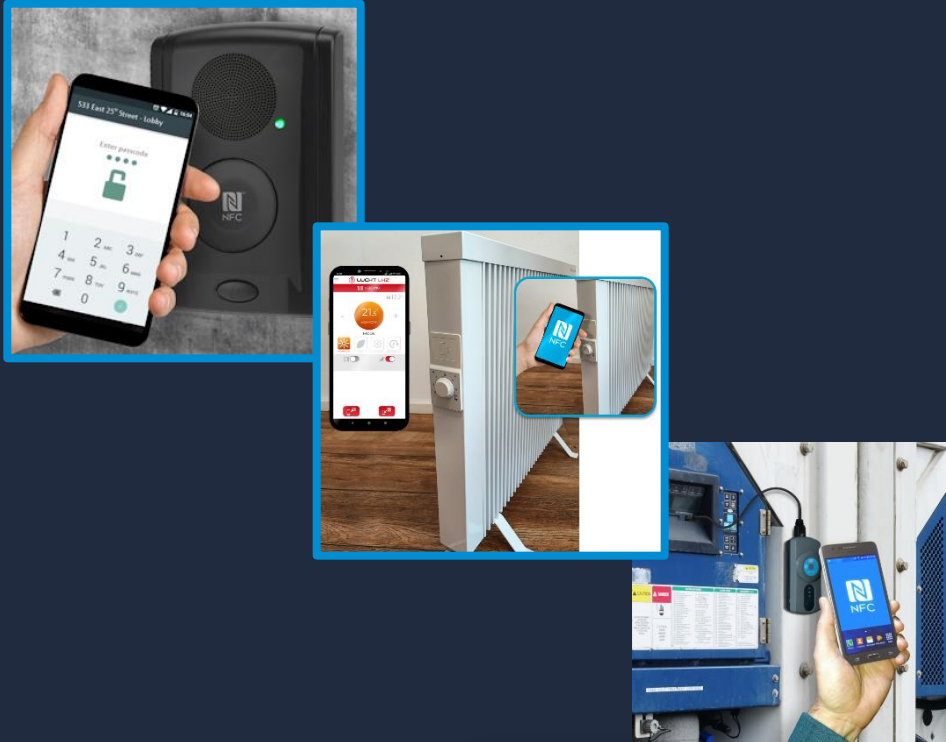
2. Diagnostic Monitoring

- Mobile app
- Bluetooth, or Wi-Fi

3. Remote Monitoring

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





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.*



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.*



WiFi





WiFi or **LPWAN**

Needs...

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

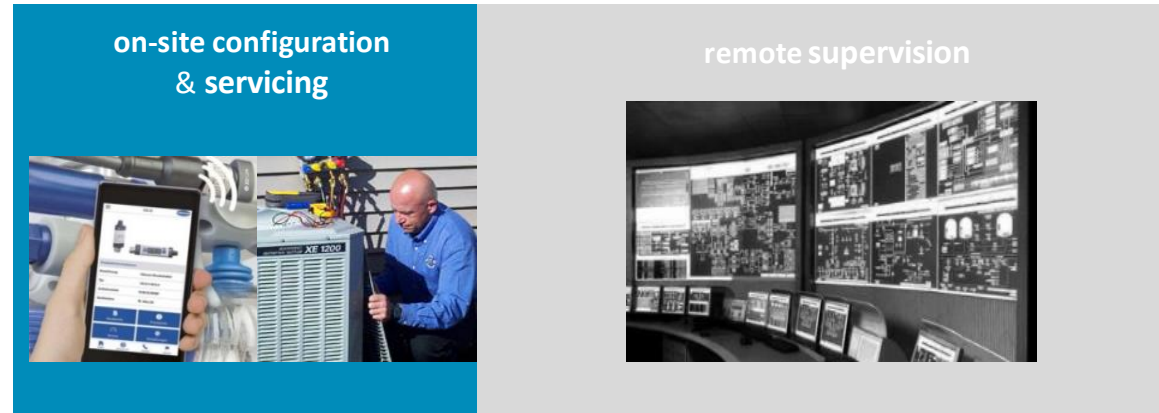
Duet Cloud Solution...

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



Solution for original equipment designers & manufacturers

Connect directly to target CPU

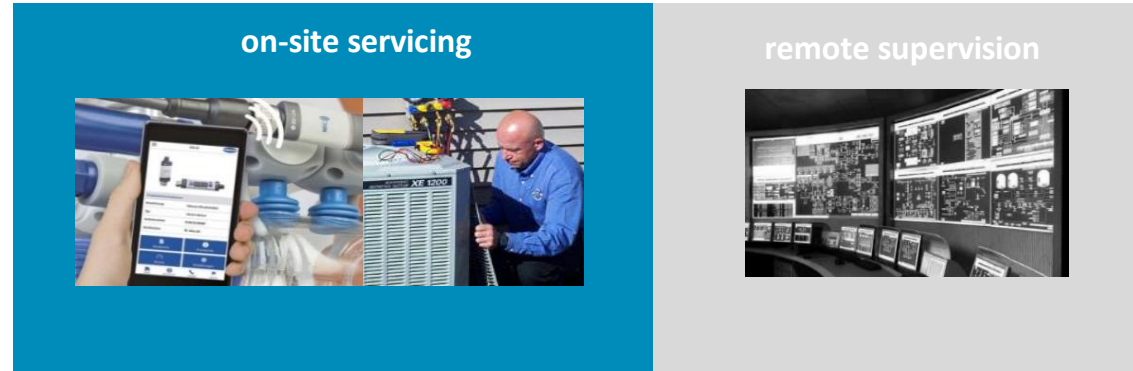


	Available	Certified	NFC	BLE	Wi-Fi	LoRa	LTE	NB-IOT	...
TnL FIT203	Yes	Yes	X						
TnL FIR203	Yes	Yes	X	X					
TnL FIW103	Yes	Yes	X	X	X				
TnL FIL103	Preview	Yes	X	X*		X			



Solution for original equipment manufacturers, owners or service providers.

Retrofit on Modbus or Serial fieldbus.



	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:

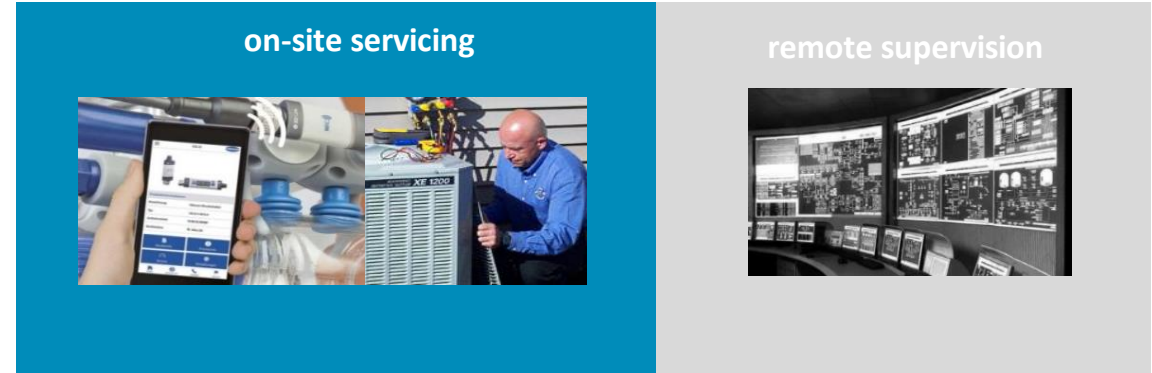
* Rechargeable Li ION battery.

** Powered from the target system.



Solution for original equipment manufacturers, owners or service providers.

Retrofit on Modbus or Serial fieldbus.



	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 PS4L113²	Yes	Yes	RS485		X	X	X		X		
TpC PS4M113²	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 IP67 casing. 2. LoRa, LTE-M and NB-IOT extensions are only available in IP67 casing.

TapBus Modules with Duetware

Power Supply

with backup battery management

Analog

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

Logic

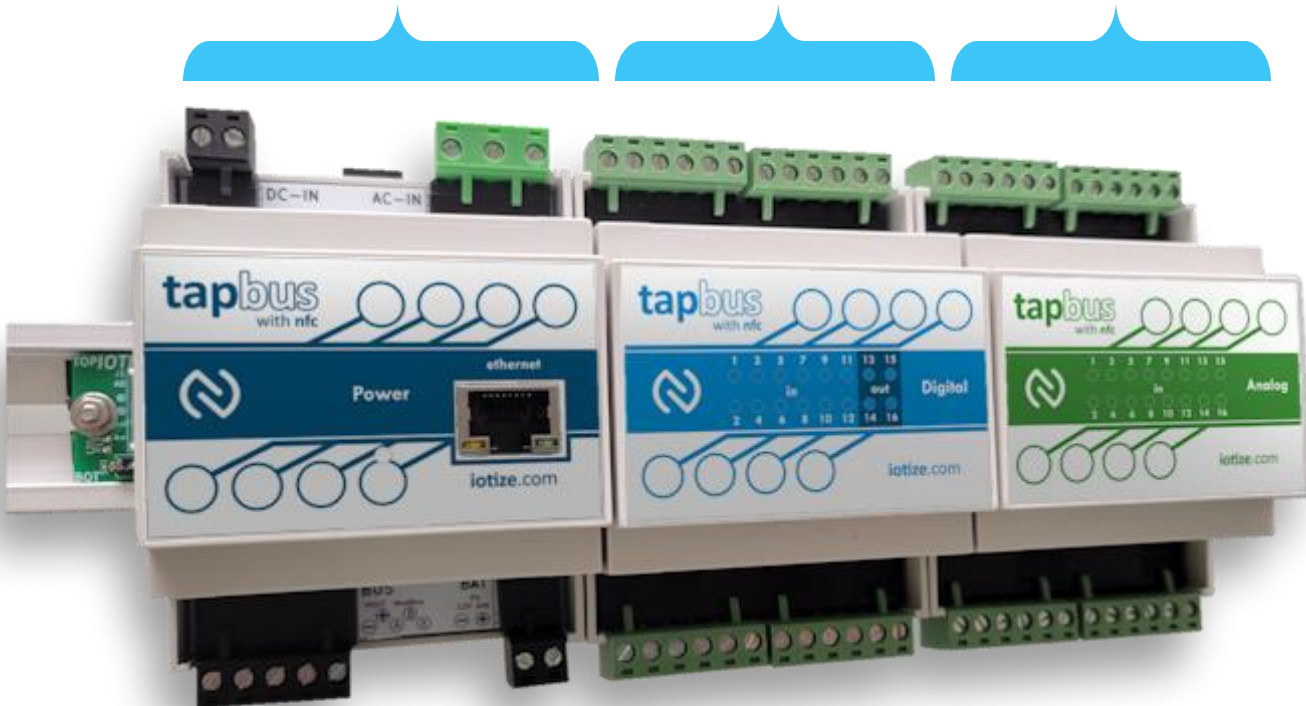
*12 Configurable Inputs
Digital or Counter (to 1kHz)
4 Configurable Outputs
Electronic switches (to 60V)*

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 Now !



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)

