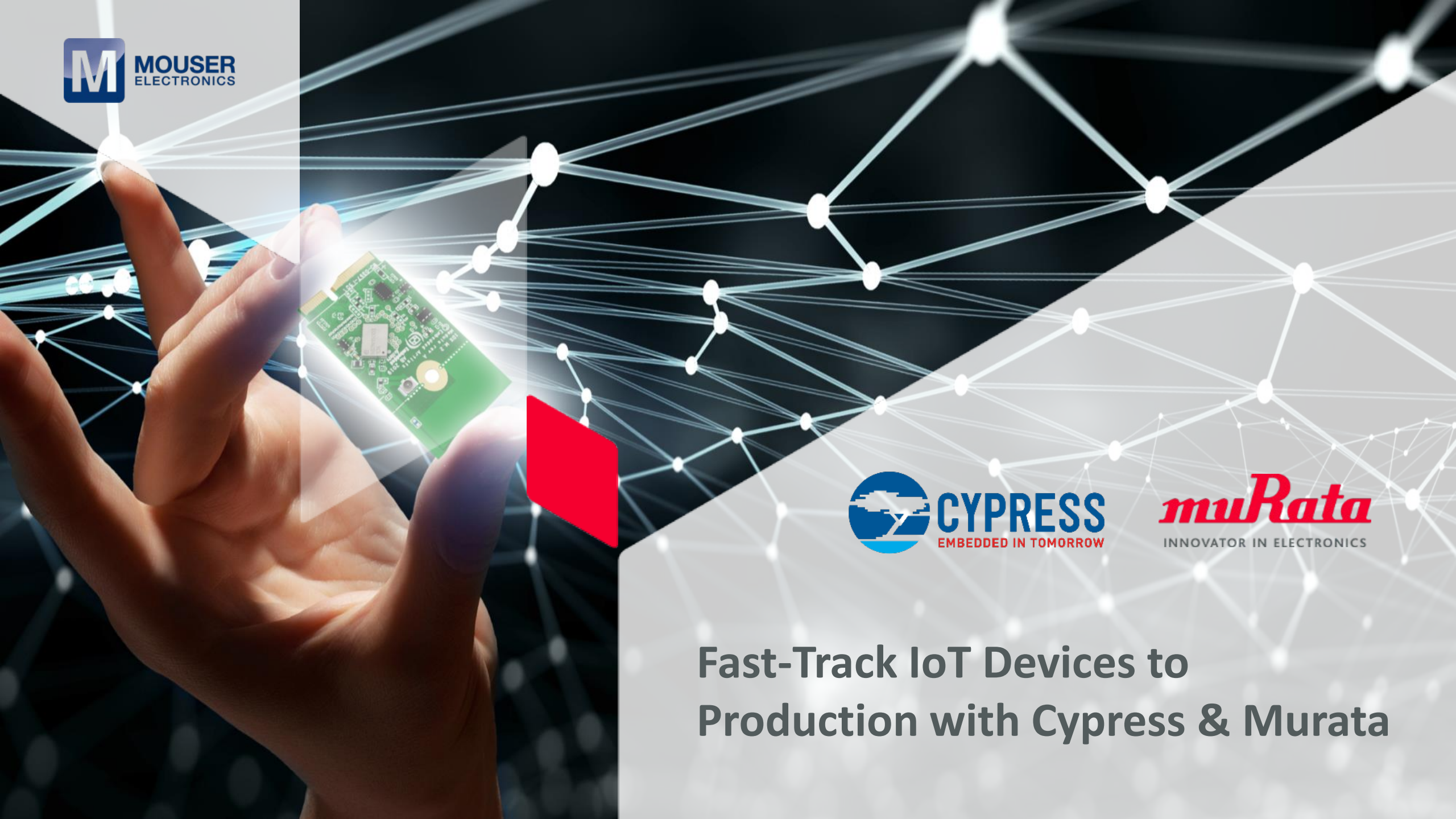






**Fast-Track IoT Devices to
Production with Cypress & Murata**

Speakers



Gary Han

General Manager
Murata Singapore



Rui Ramalho

Product Manager,
Connectivity Modules
Murata Europe



Scott Kerr

Senior Business
Development Manager
Murata Americas



1 Introducing Murata

World-leading manufacturer
No.1 for wireless modules

2 IoT – Route to Market

Pain points
Removing the headaches

3 Murata/Cypress Modules

Best sellers
Module-down applications

4 Fast-to-Market Solutions

Modular adapter system
Fully modular system

5 Support

Reference platforms
Linux & FreeRTOS
Regulatory

6 Summary

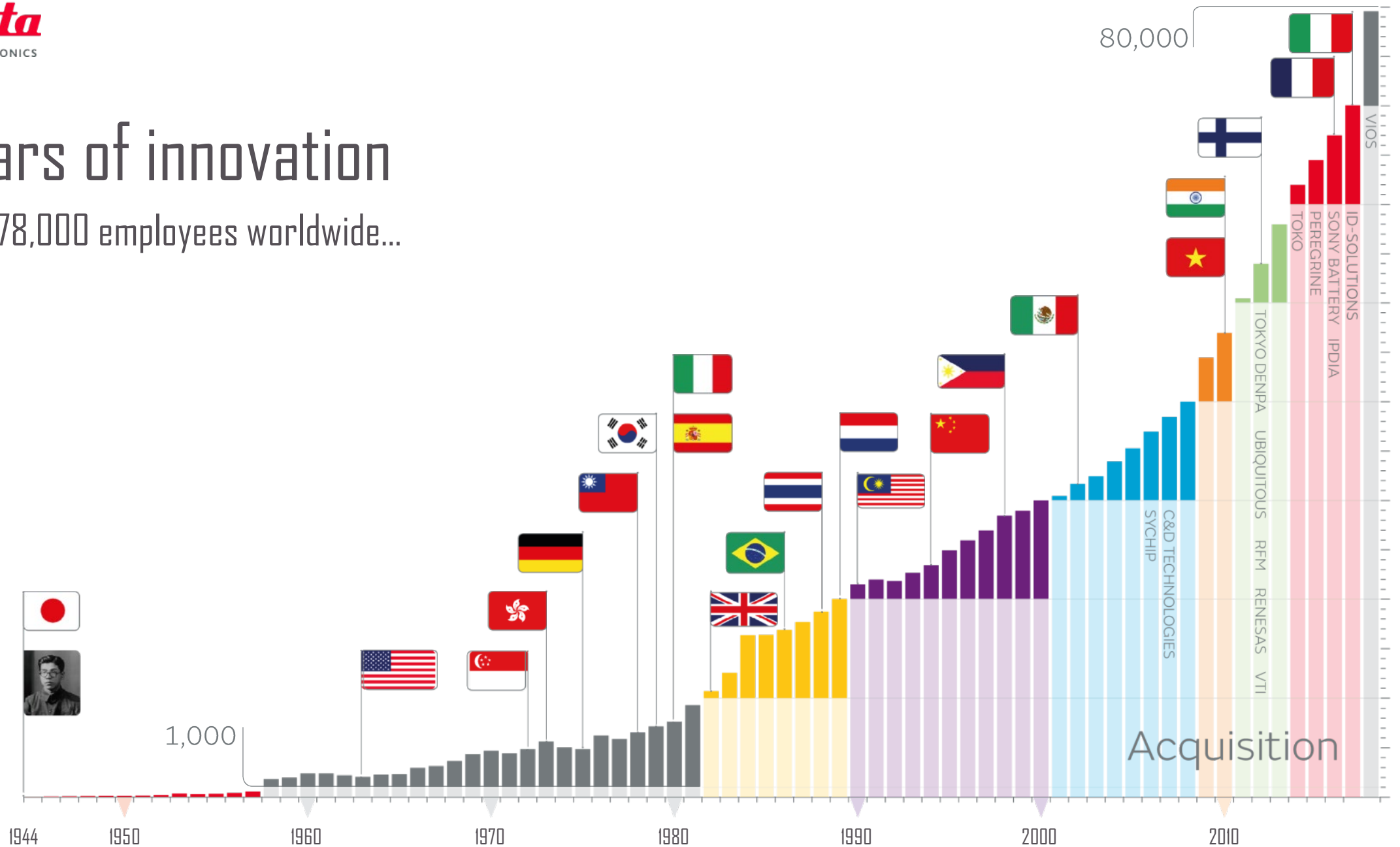
7 Q&A



Introducing Murata

75 years of innovation

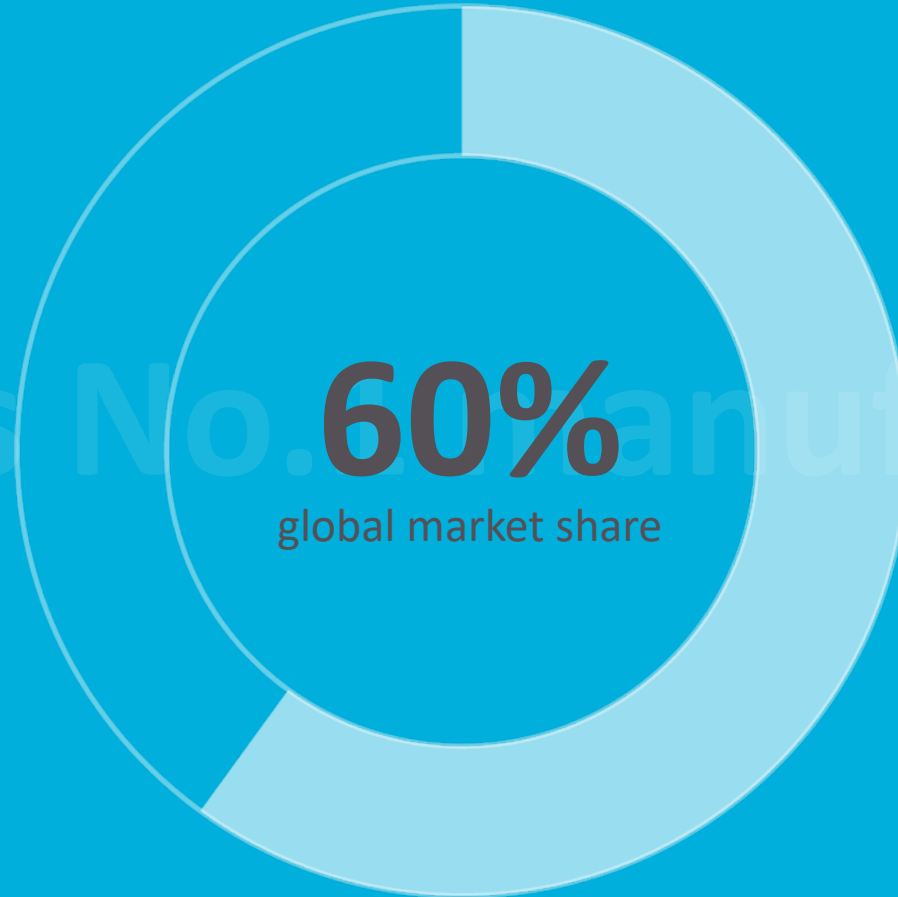
Growth to 78,000 employees worldwide...



Capacitors	Inductors	Noise suppression products	Resistors	Thermistors	Sensors	Timing devices
Quartz devices	Sound components	Power products	Batteries	Micro mechatronics	RFID products	Matching devices
Baluns	Couplers	Filters	Phase shifters	RF switches	Front-end modules	SAW components
Connectors	Antennas	Connectivity modules	Wireless connectivity platforms	Ultra low power short range RFIC	Ionizers & ozonizers	Digital panel meters



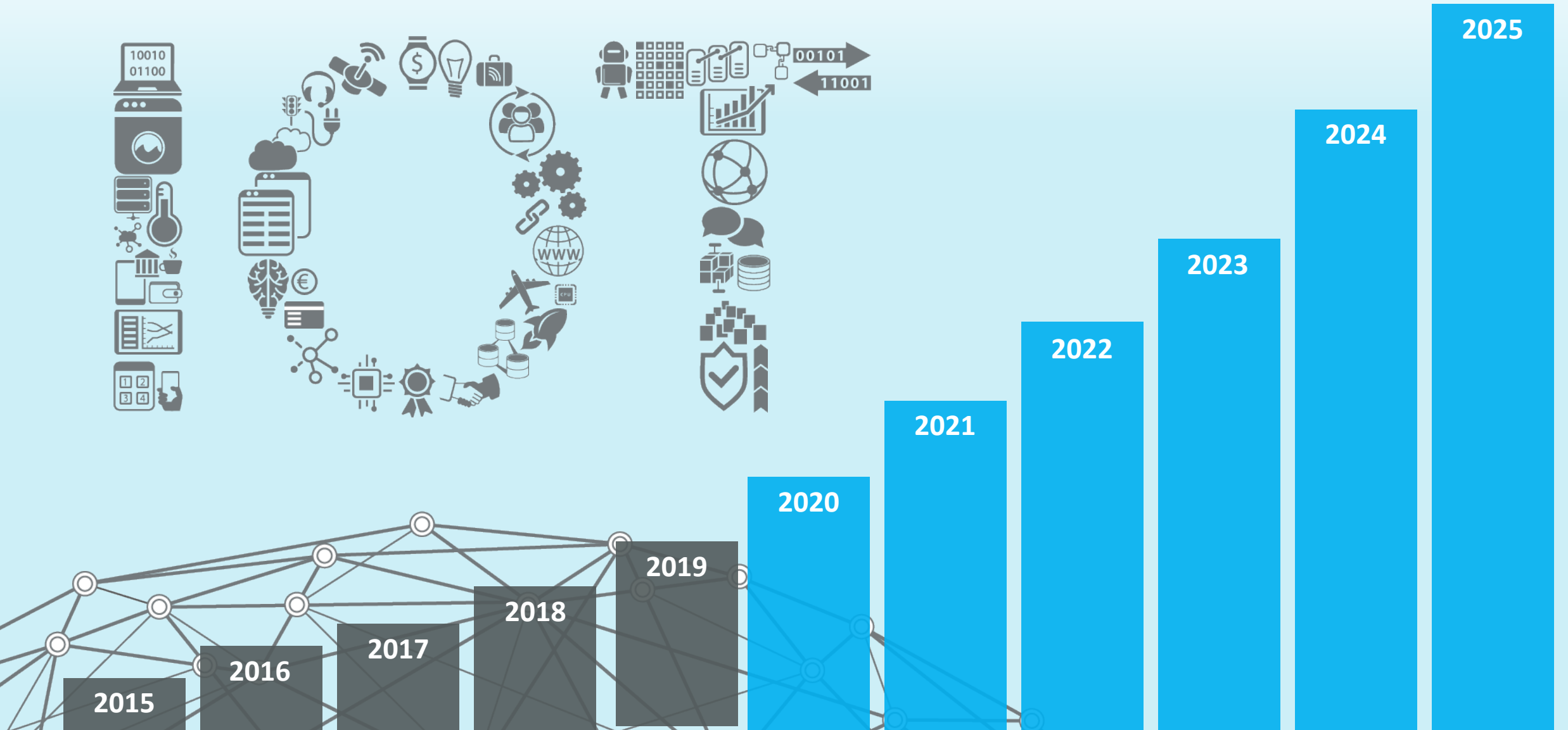
Wireless modules





The Internet of Things

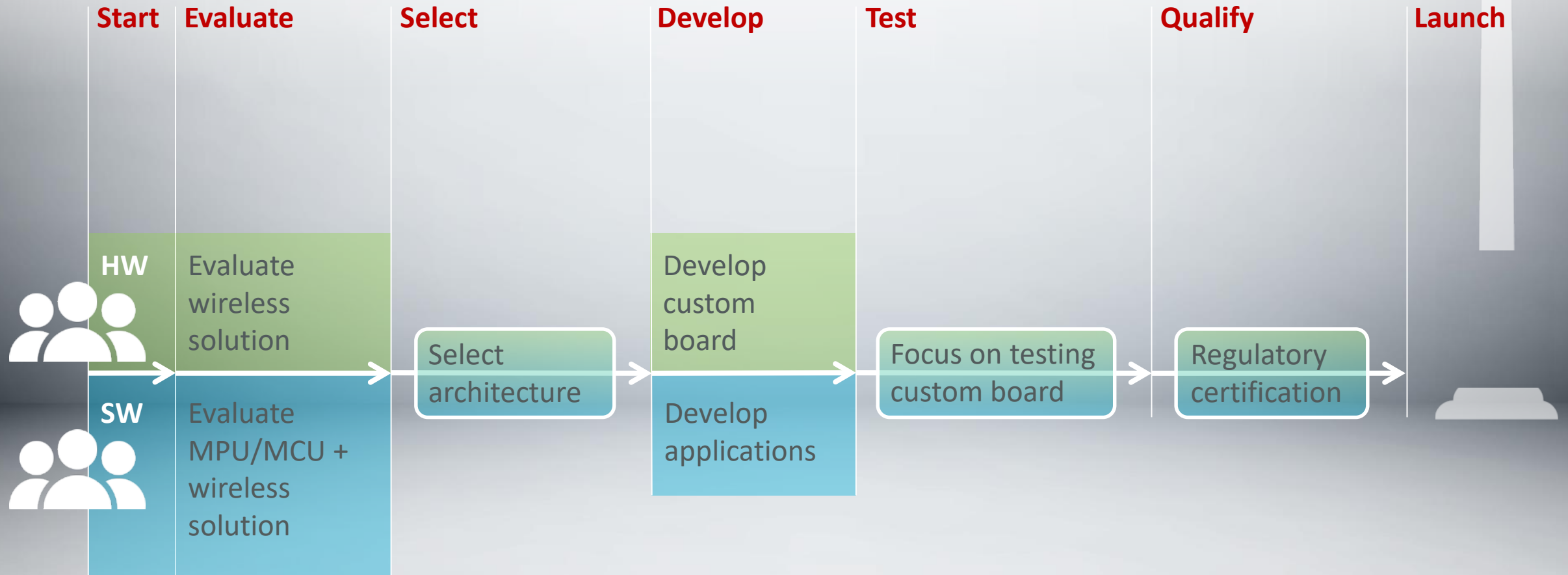
The Internet of Things



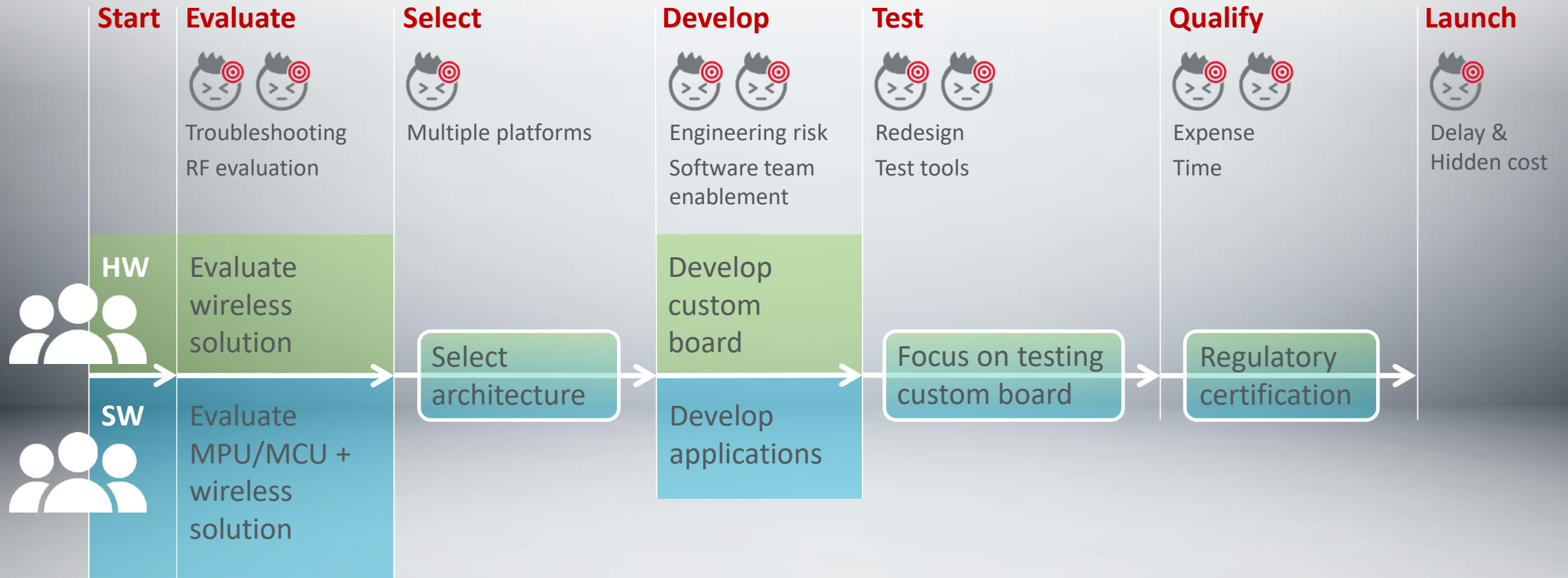


Route to market

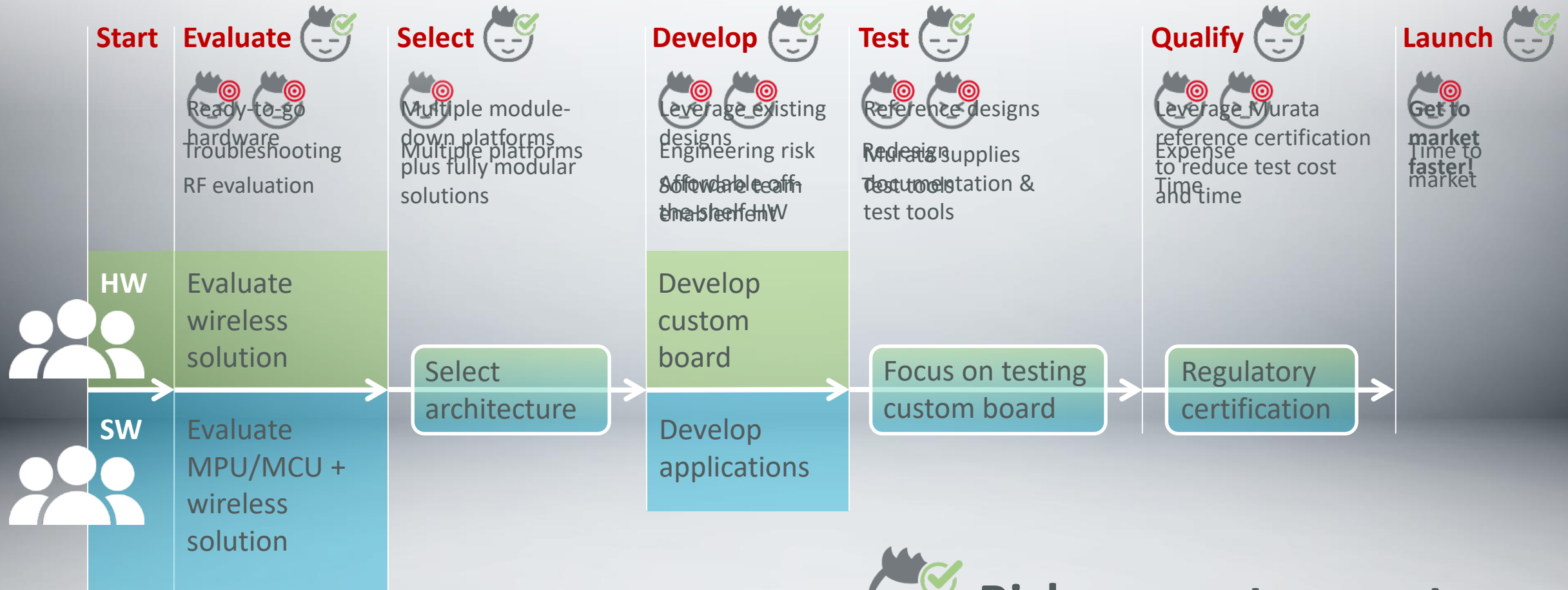
The Path to Connectivity



Pain Points



Murata Solution



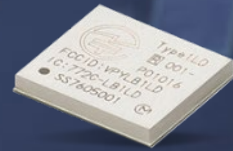


Murata/Cypress Wi-Fi & Wi-Fi/Bluetooth Module Portfolio

Murata/Cypress Wireless Modules



Best sellers...



Type 1LD

CYW43438 Radio

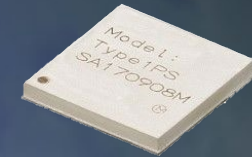
802.11 b/g/n + BR/EDR/BLE 4.2



Type 1GC

CYW43907 Wi-Fi MCU

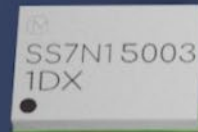
802.11 a/b/g/n Cortex®-R4



Type 1PS

CYW54907 Wi-Fi MCU

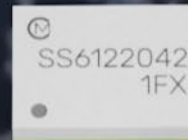
11a/b/g/n/ac Cortex®-R4



Type 1DX

CYW4343W Radio

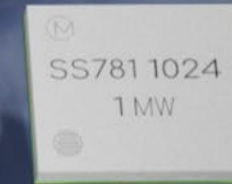
802.11 b/g/n + BR/EDR/BLE 5.1



Type 1FX

CYW43364 Radio

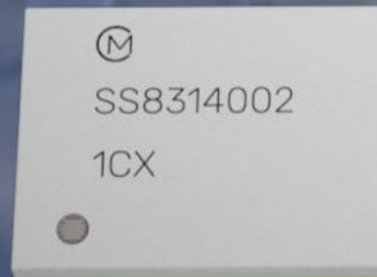
802.11 b/g/n



Type 1MW

CYW43455 Radio

802.11 a/b/g/n/ac + BR/EDR/BLE 5.0



Type 1CX

CYW4356 2X2 Radio

802.11 a/b/g/n/ac
BR/EDR/BLE 5.0



Type 1LV

CYW43012 Radio

802.11 a/b/g/n & 11ac-Friendly™
BR/EDR/BLE 5.0

i.MX Module-Down Platforms



i.MX 8M Quad EVK

Murata 1CX module

i.MX 8M Mini EVK

Murata 1MW module

i.MX 8M Nano EVK

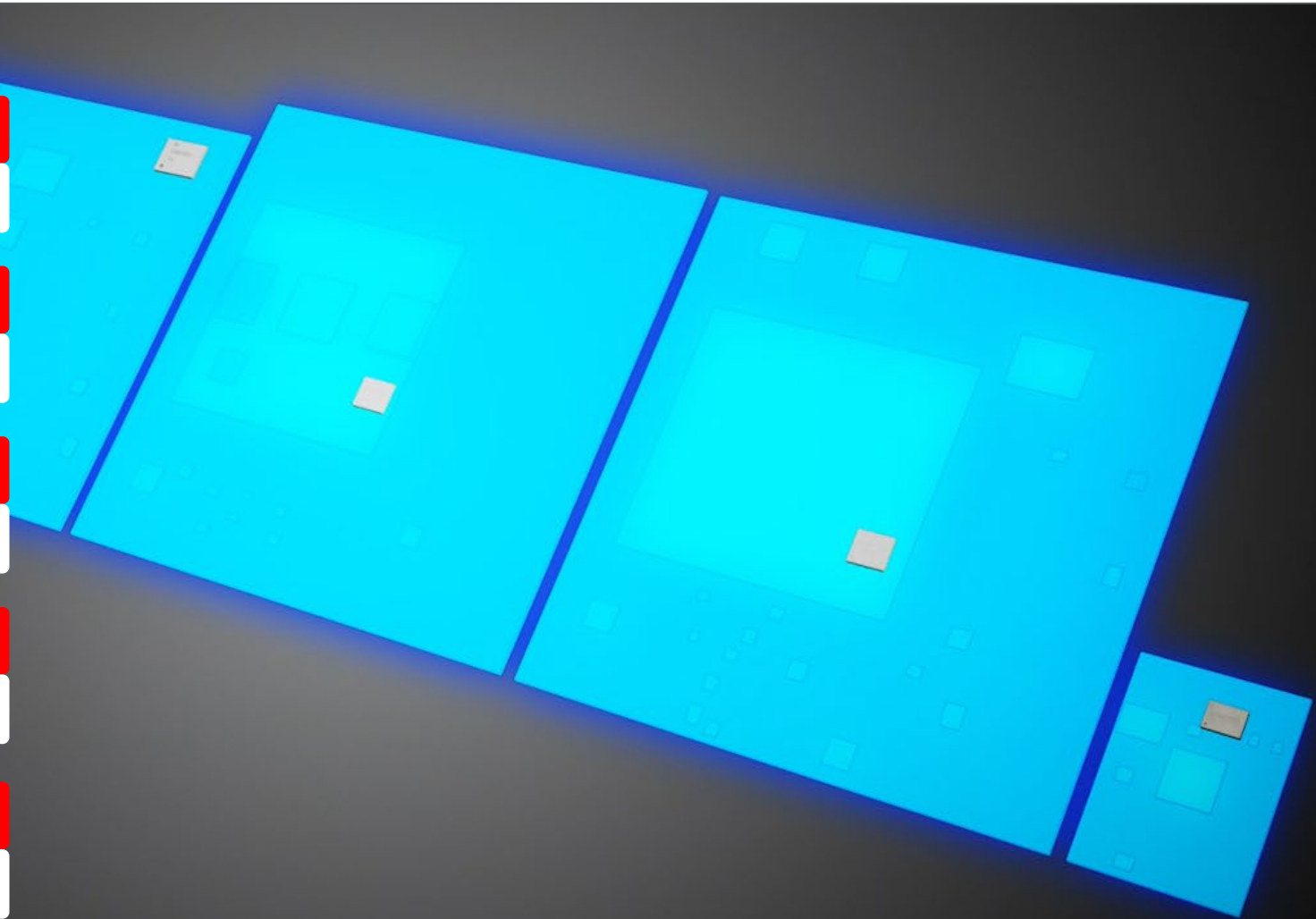
Murata 1MW module

i.MX 7ULP Evaluation Kit

Murata 1DX module

i.MX RT 106x

Murata 1DX module



Cypress Module-Down Platforms



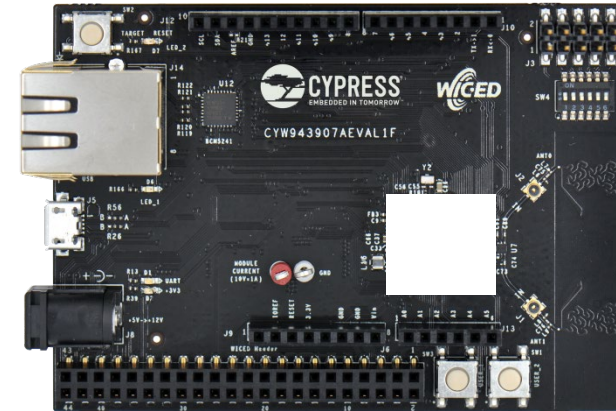
MCUs for IoT applications

PSoC® 6 MCU

- Dual-core Cortex®-M4/M0+
- Type 1DX or Type 1LV
- Supported in Arm® Mbed™ & Amazon FreeRTOS

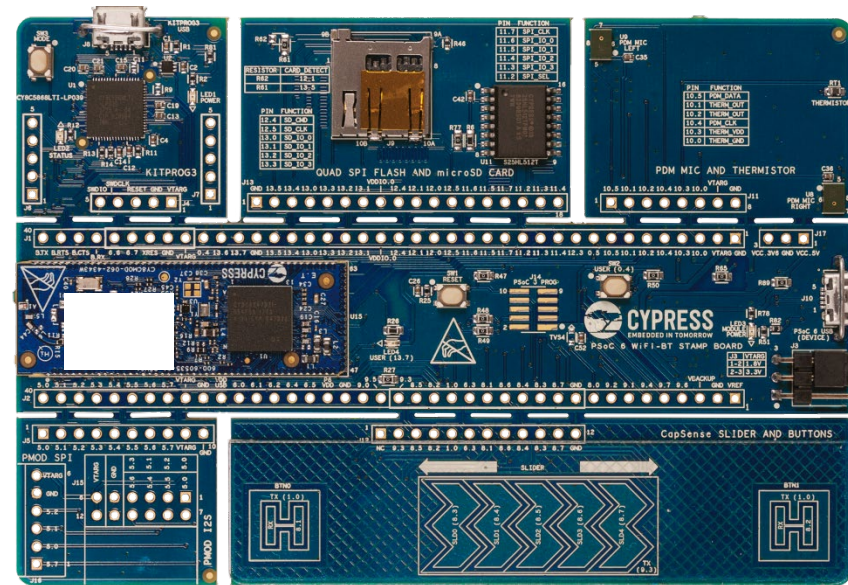
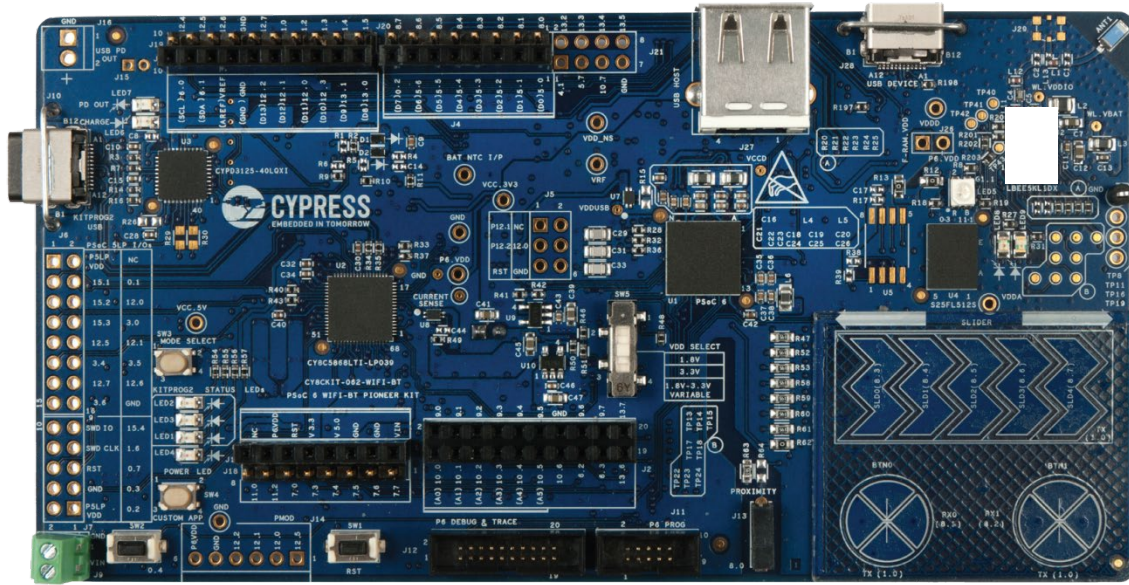
Type 1GC

- Type 1GC
- Cypress CYW43907 Wi-Fi MCU
- 2 Cortex®-R4 MCUs



Type 1GC

Type 1PS



Type 1DX

Type 1LV

STM32MP1 Discovery Kit

Processor

STM32MP157 Arm®-based dual Cortex®-A7
32 bits + Cortex®-M4 32 bits MPU in
TFBGA361 package

Radio Module

Murata 1DX dual Wi-Fi 802.11b/g/n
65 Mbps and Bluetooth 5.1
BR/EDR/LE

Type 1DX



Arduino Portenta H7

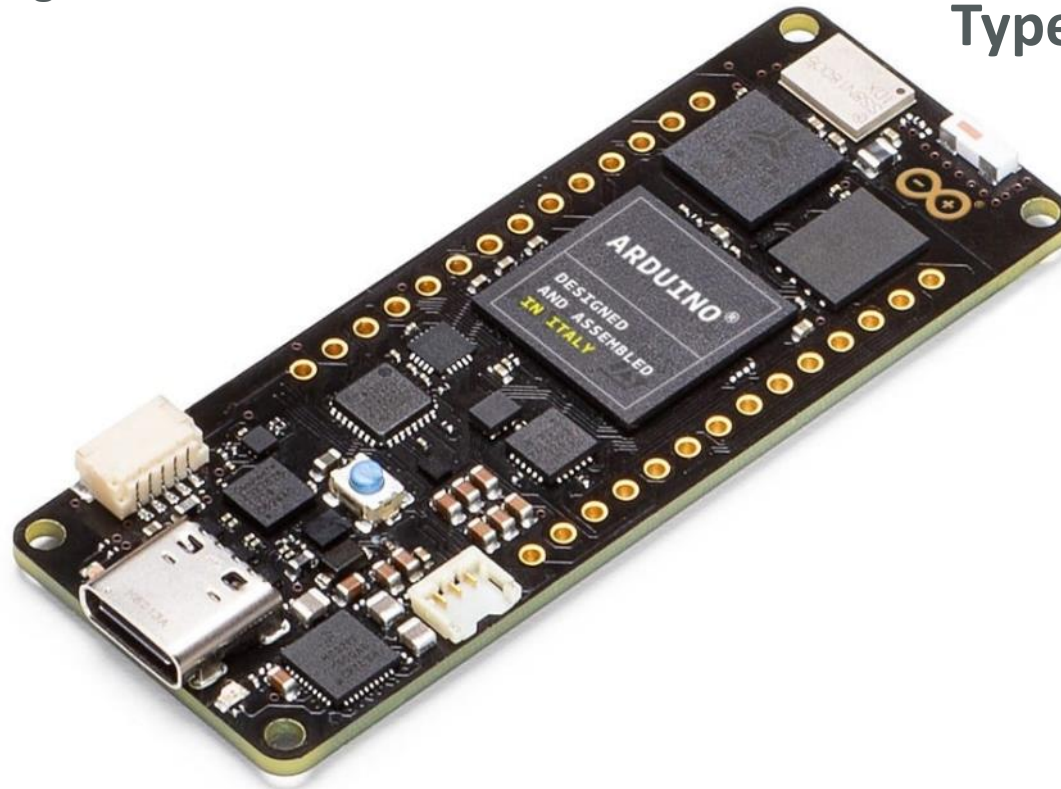
Simultaneously runs high level code along with real time tasks

Microcontroller

STM32H747XI dual Cortex®-M7+M4
32bit low power Arm® MCU

Radio Module

Murata 1DX dual Wi-Fi 802.11b/g/n
65 Mbps and Bluetooth 5.1
BR/EDR/LE



Type 1DX

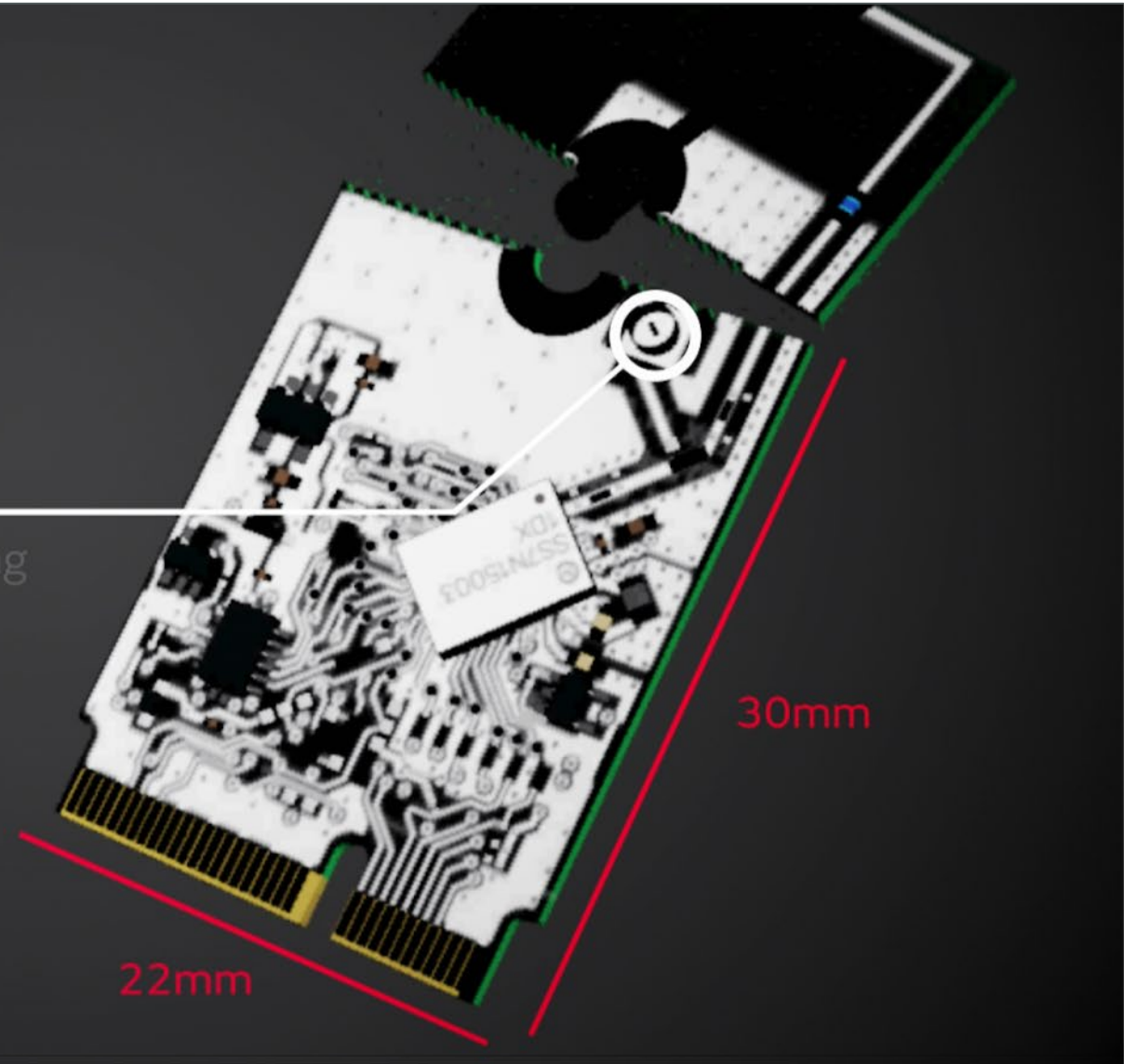


Easy Wireless Module Evaluation and Implementation

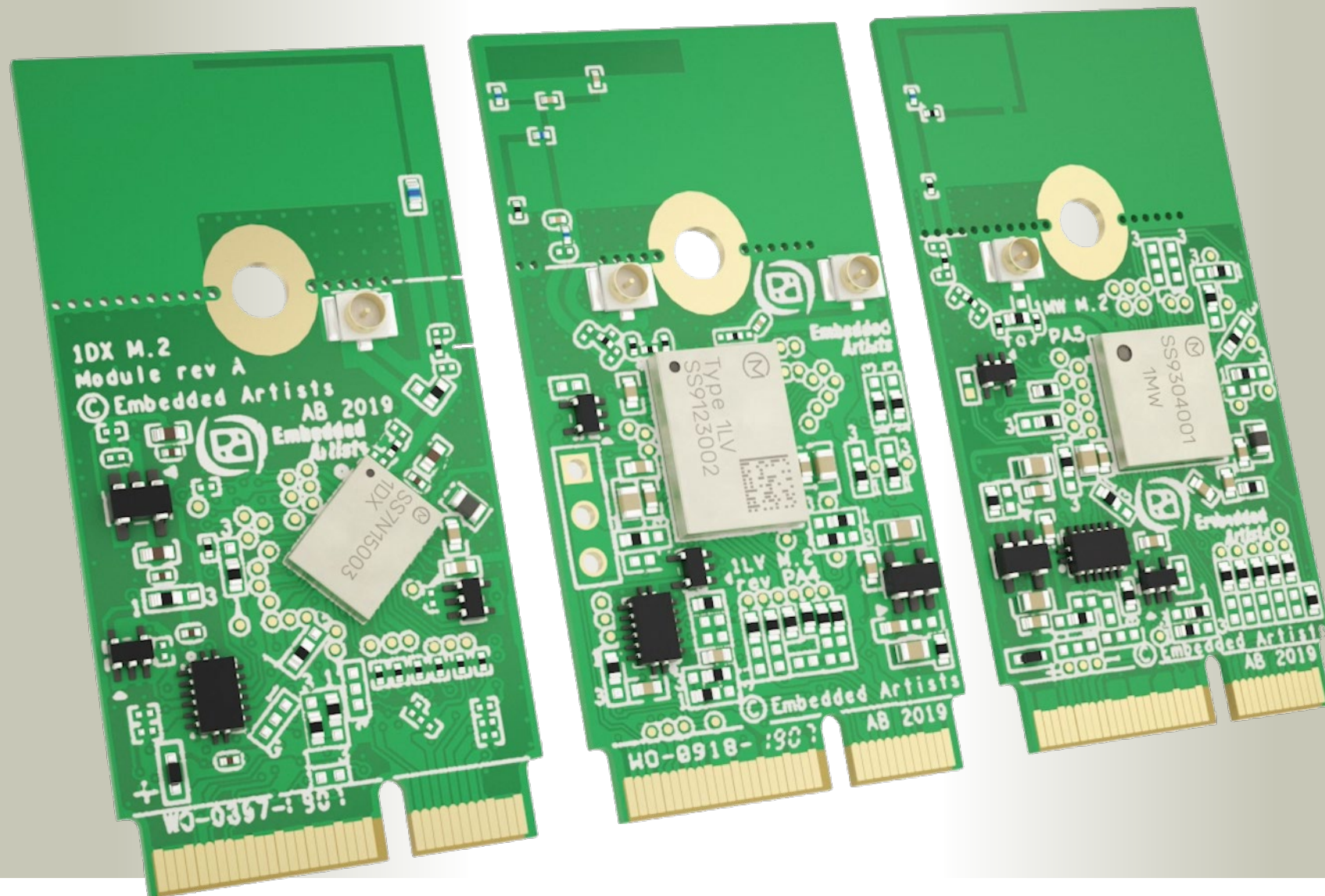
M.2 Boards

U.FL antenna

for external antenna or conducted testing



M.2 Boards



Cost Optimization

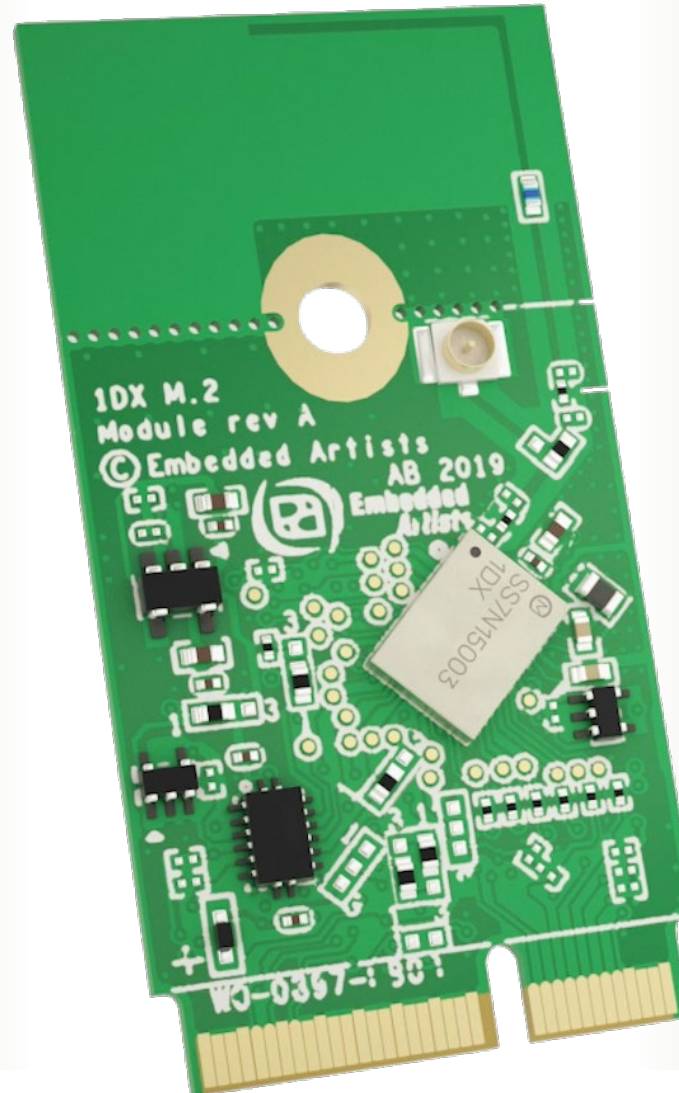
Murata 1DX module

Cypress CYW4343W chipset

802.11 b/g/n + BT/BLE 5.1

Wi-Fi SDIO 2.0

BT UART/PCM



1MW M.2



High Performance

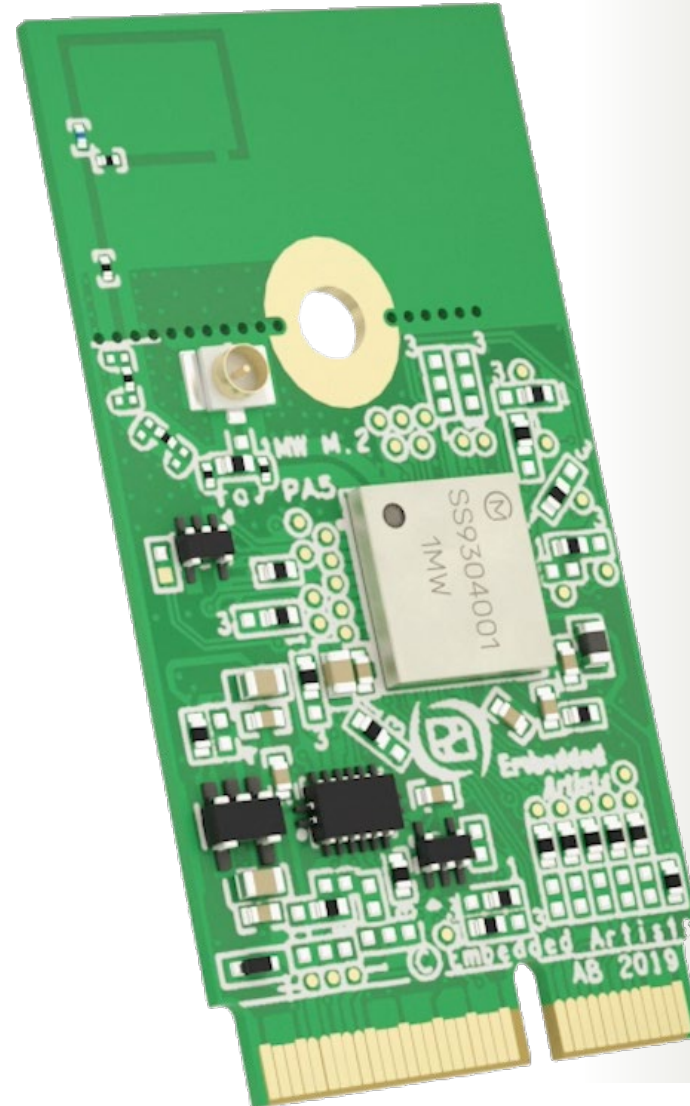
Murata 1MW module

Cypress CYW43455 chipset

802.11 a/b/g/n/ac + BT/BLE 5.0

Wi-Fi SDIO 3.0

BT UART/PCM



Low Power Consumption

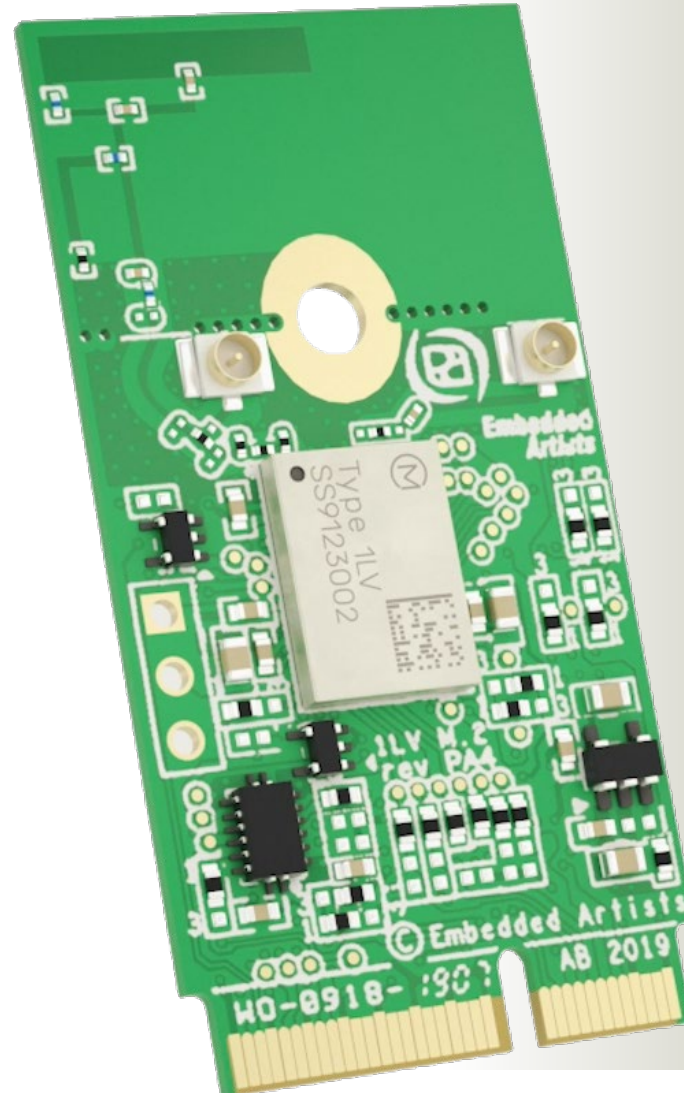
Murata 1LV module

Cypress CYW43012 chipset

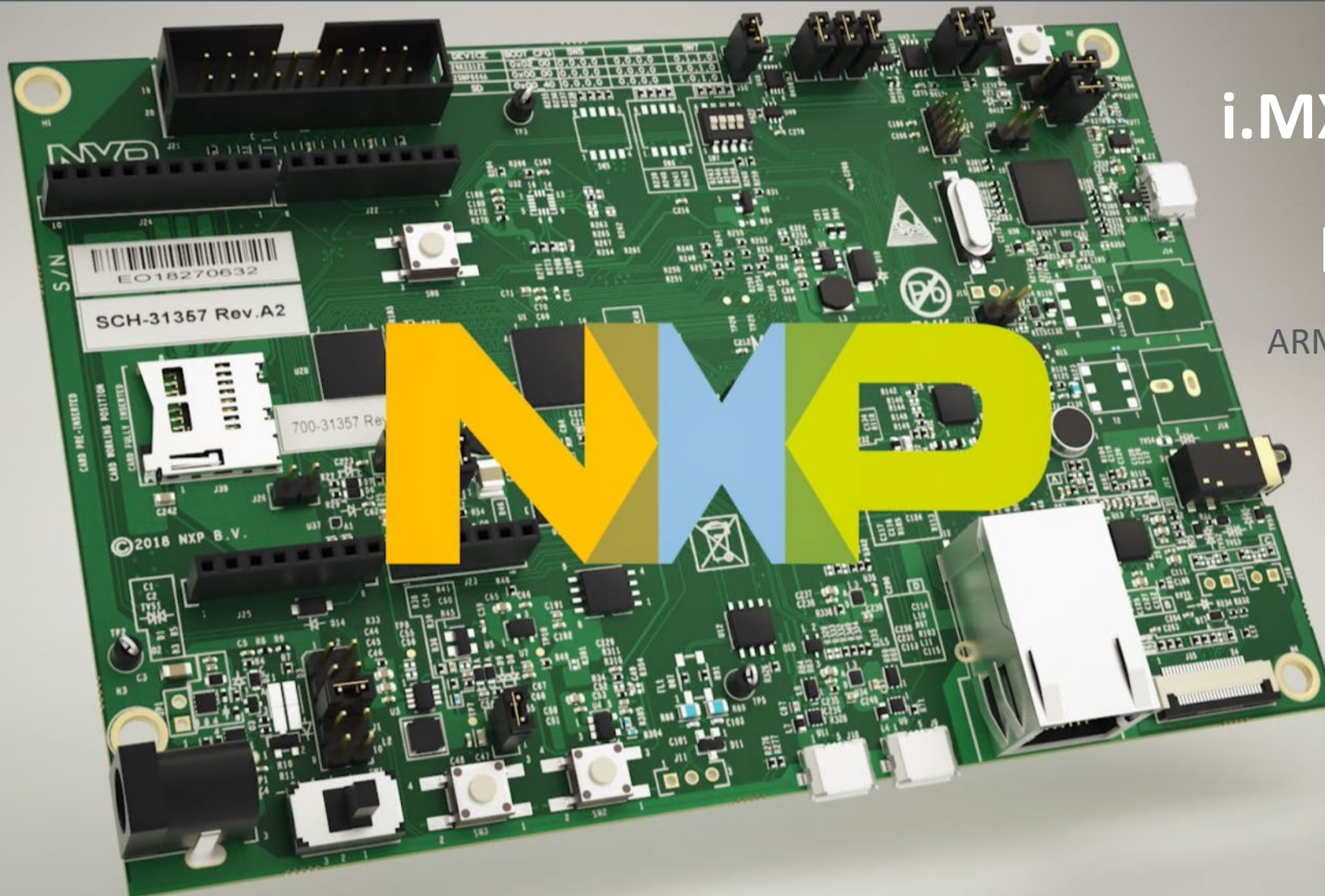
802.11 a/b/g/n/ac-friendly + BT/BLE 5.0

Wi-Fi SDIO 3.0

BT UART/PCM



NXP i.MX RT EVKs



i.MX RT 1060 crossover processor

ARM Cortex-M7 core

High speed
performance

Best real-time
response

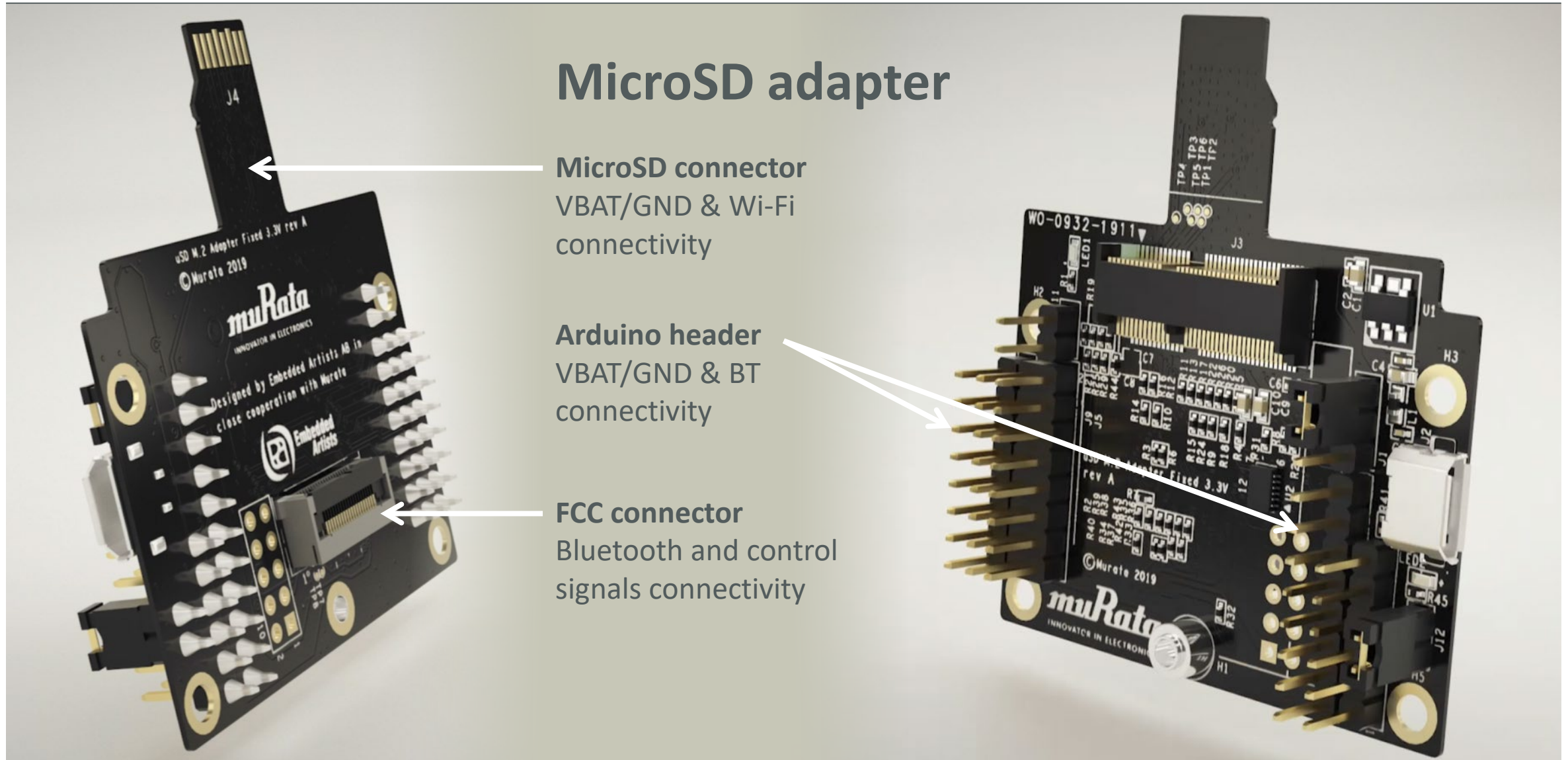
Connecting M.2 Boards

MicroSD adapter

MicroSD connector
VBAT/GND & Wi-Fi
connectivity

Arduino header
VBAT/GND & BT
connectivity

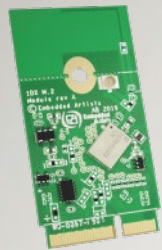
FCC connector
Bluetooth and control
signals connectivity



Connecting M.2 Boards



Insert M.2 board into MicroSD adapter



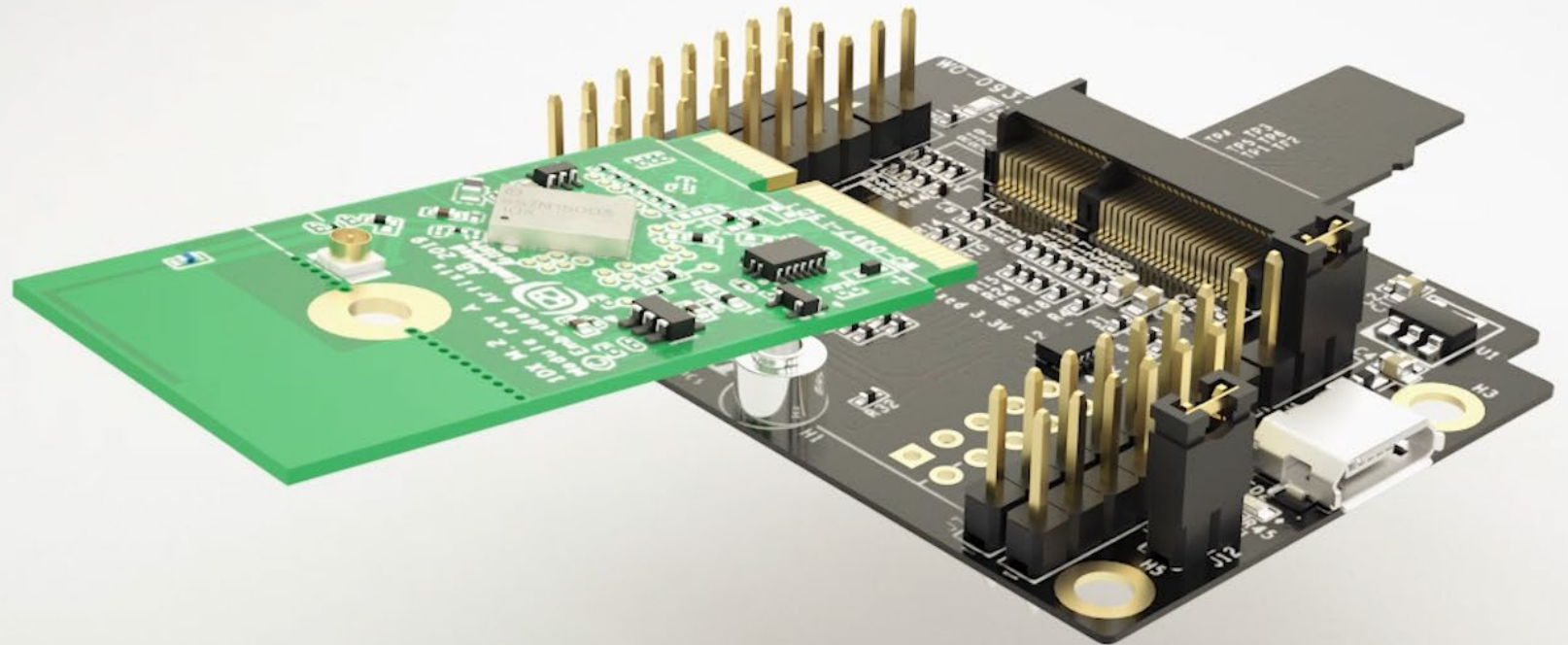
1DX
For cost
optimization



1MW
For high
performance



1LV
For low power
consumption



Connecting M.2 Boards

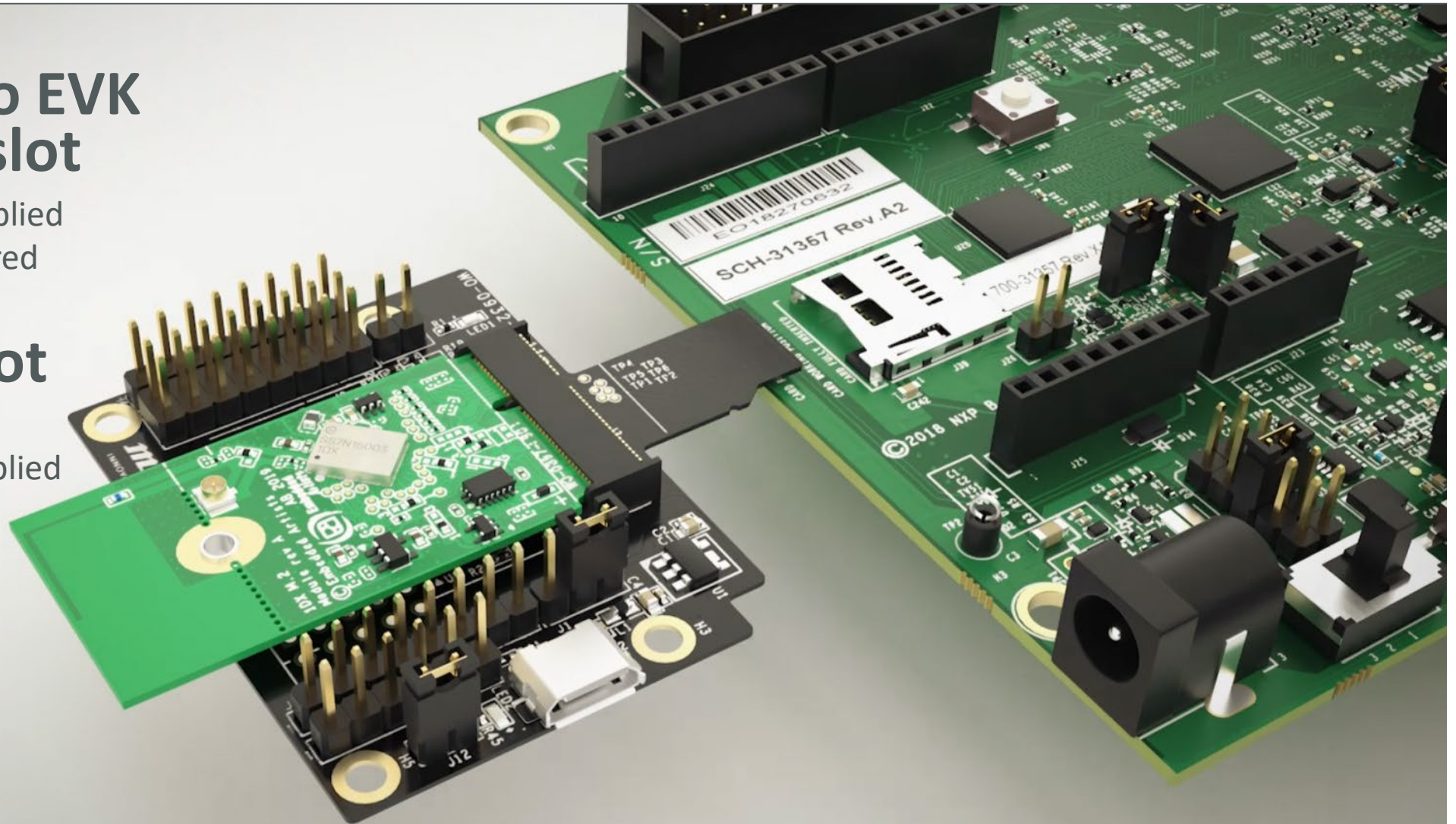


Insert into EVK microSD slot

And connect supplied
jumpers as required

...or SD slot

microSD to SD
adaptor also supplied

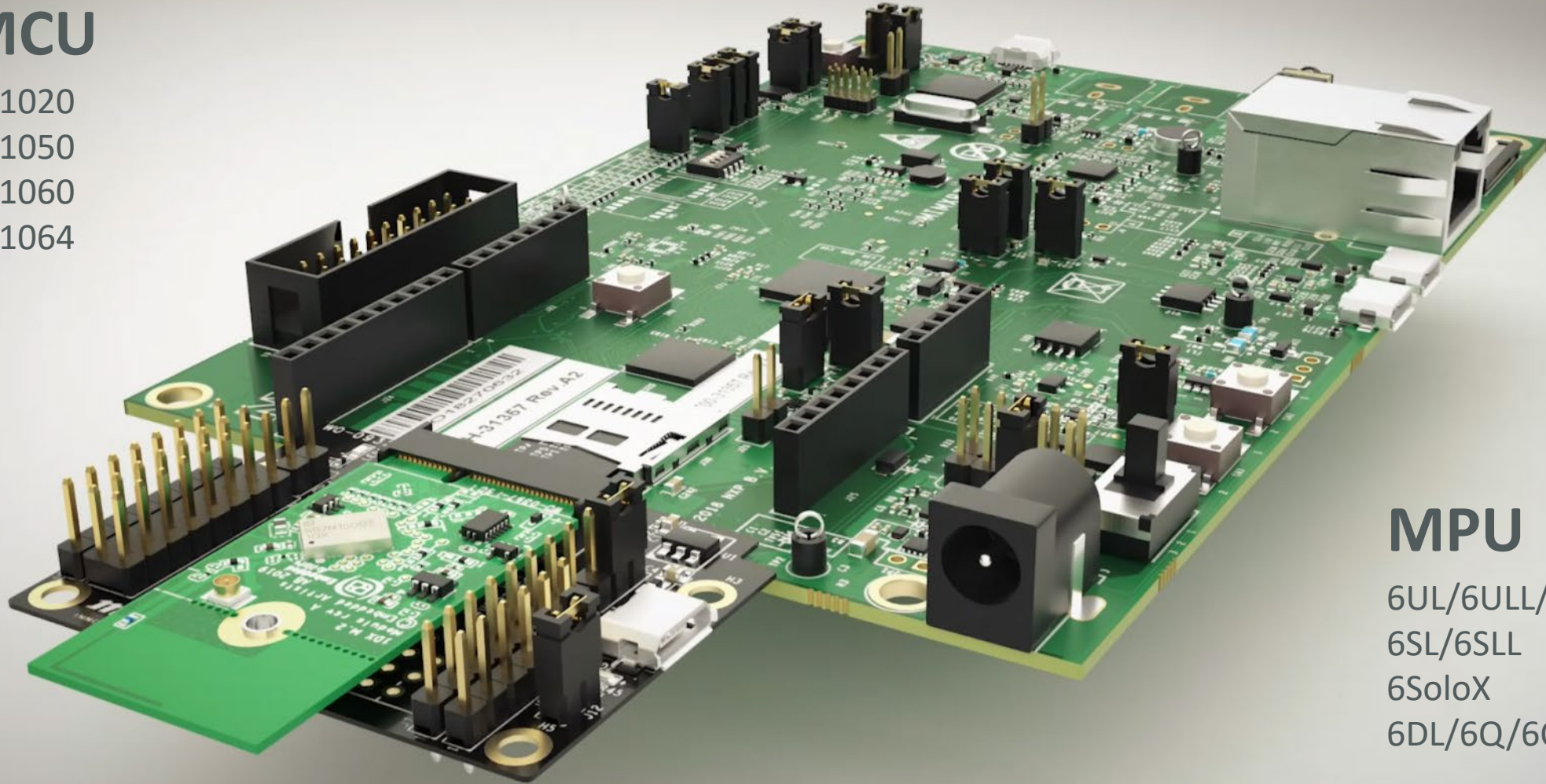


Supported i.MX EVKs



MCU

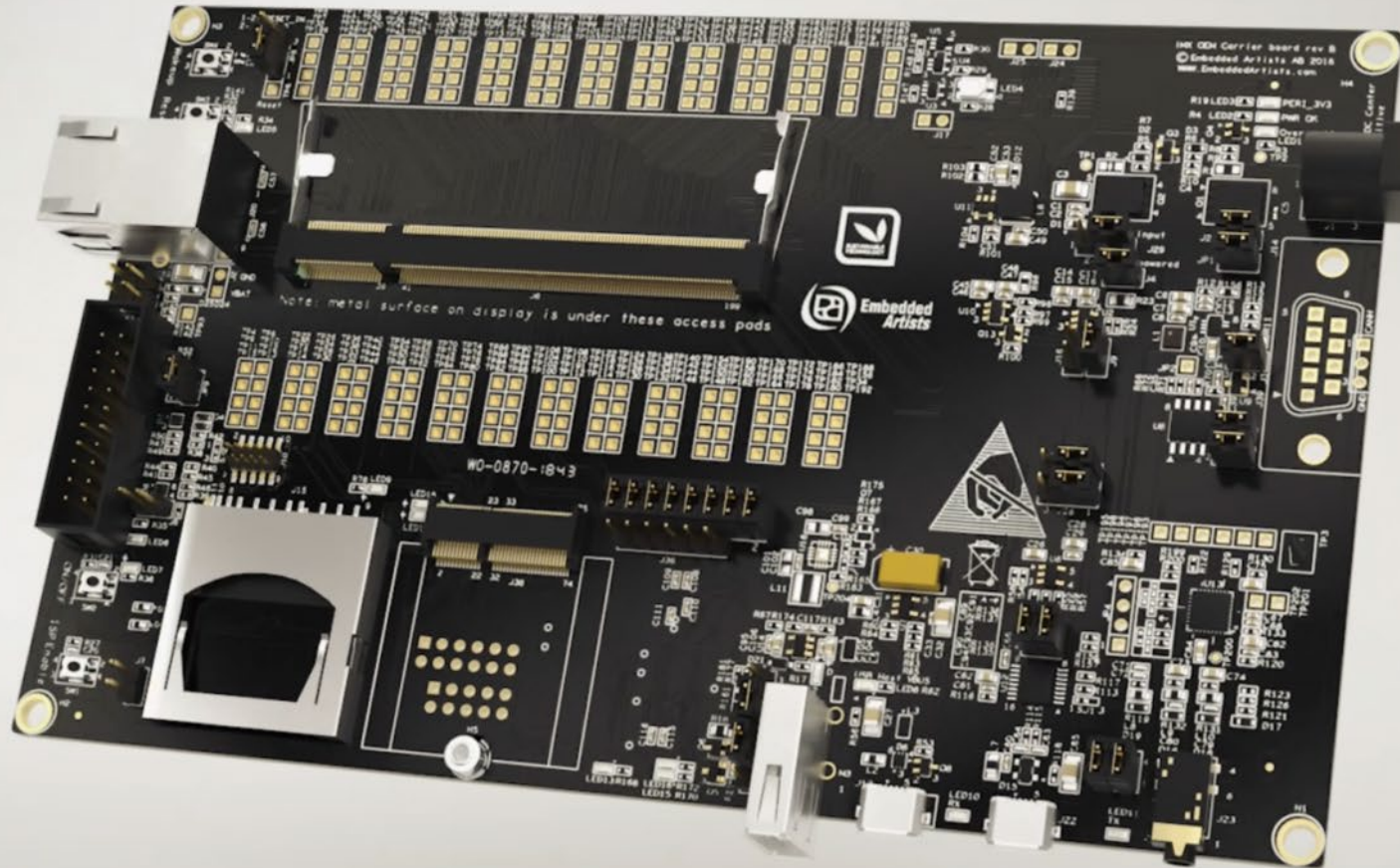
RT1020
RT1050
RT1060
RT1064



MPU

6UL/6ULL/6ULZ
6SL/6SLL
6SoloX
6DL/6Q/6QP

Fully Modular System



i.MX RT carrier board

i.MX RT1062 developers kit with i.MX RT1062 or RT1052 OEM board

Also available

Large COM carrier board compatible with COM boards:

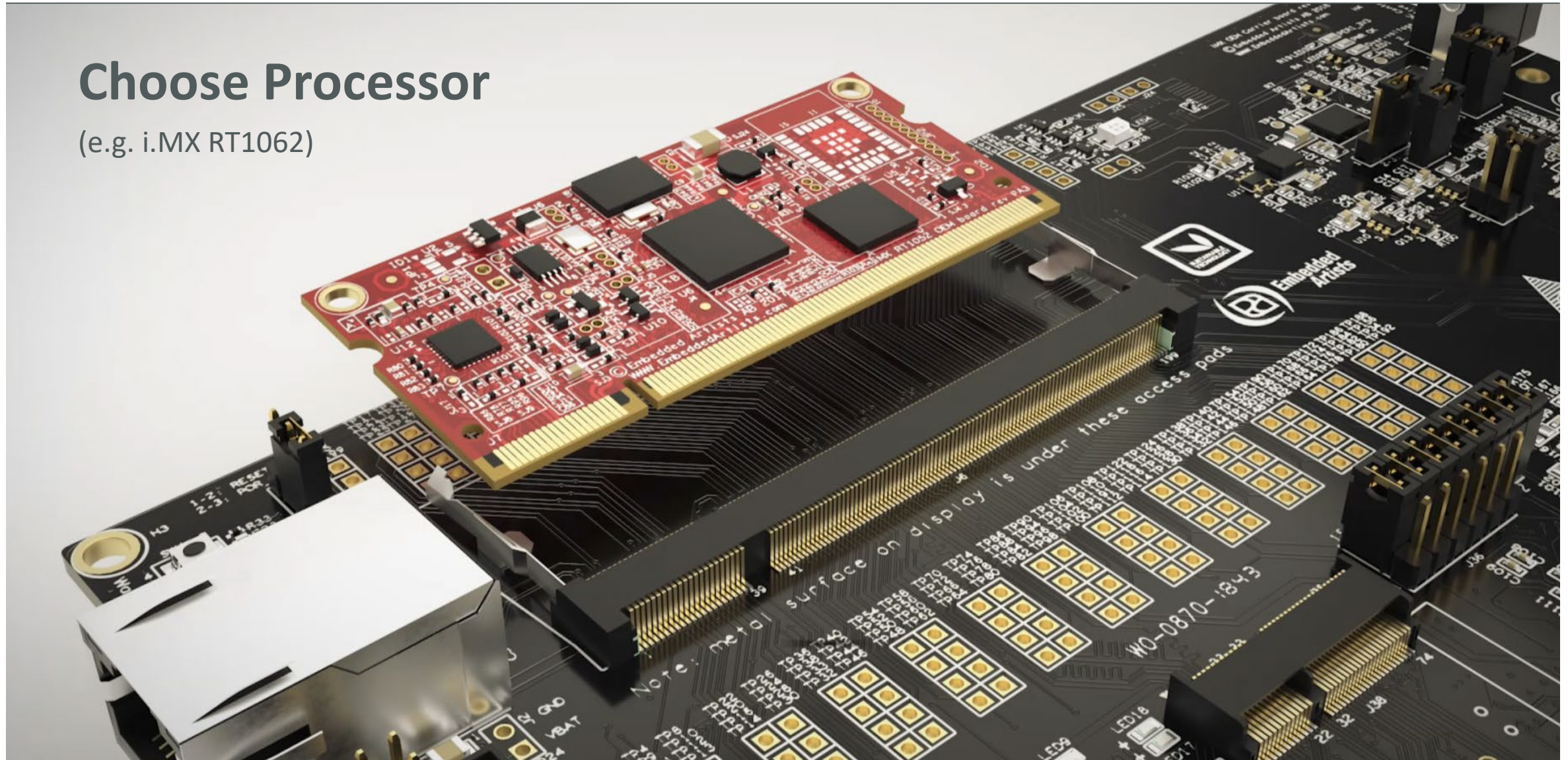
- i.MX8M Quad
- i.MX8M Mini uCOM
- i.MX8M Nano uCOM
- i.MX6 Quad
- i.MX6 DualLite
- i.MX6 Ultralite
- i.MX6 SoloX
- i.MX7 Dual
- i.MX7 Dual uCOM
- i.MX7ULP uCOM

Fully Modular System



Choose Processor

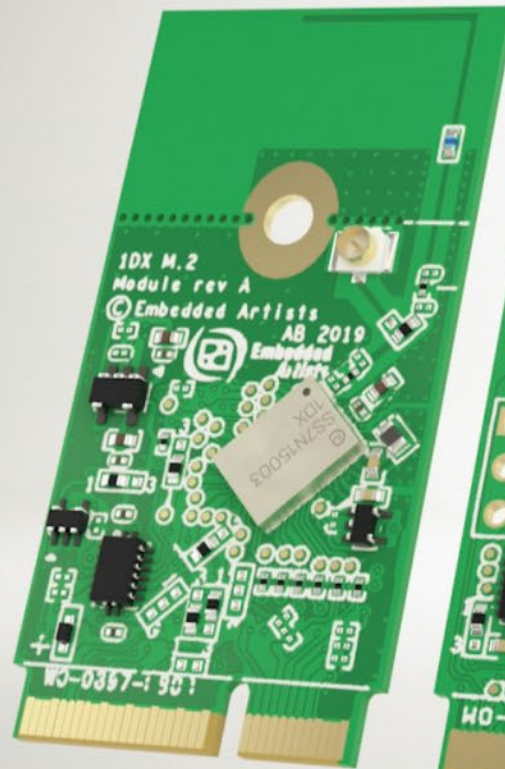
(e.g. i.MX RT1062)



Fully Modular System

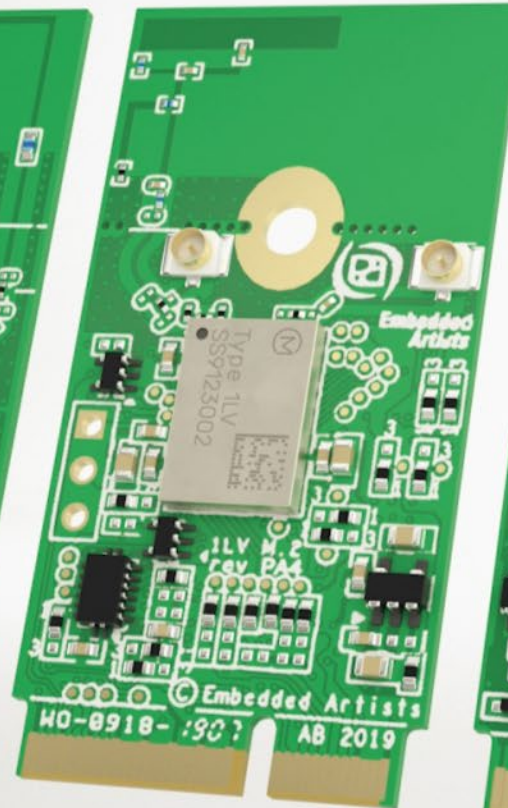


Choose
wireless
module



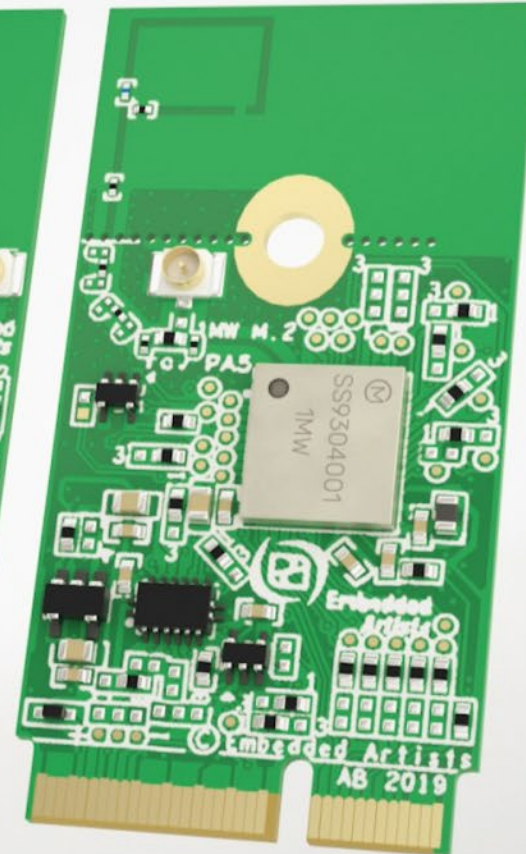
1DX

For cost optimization



1LV

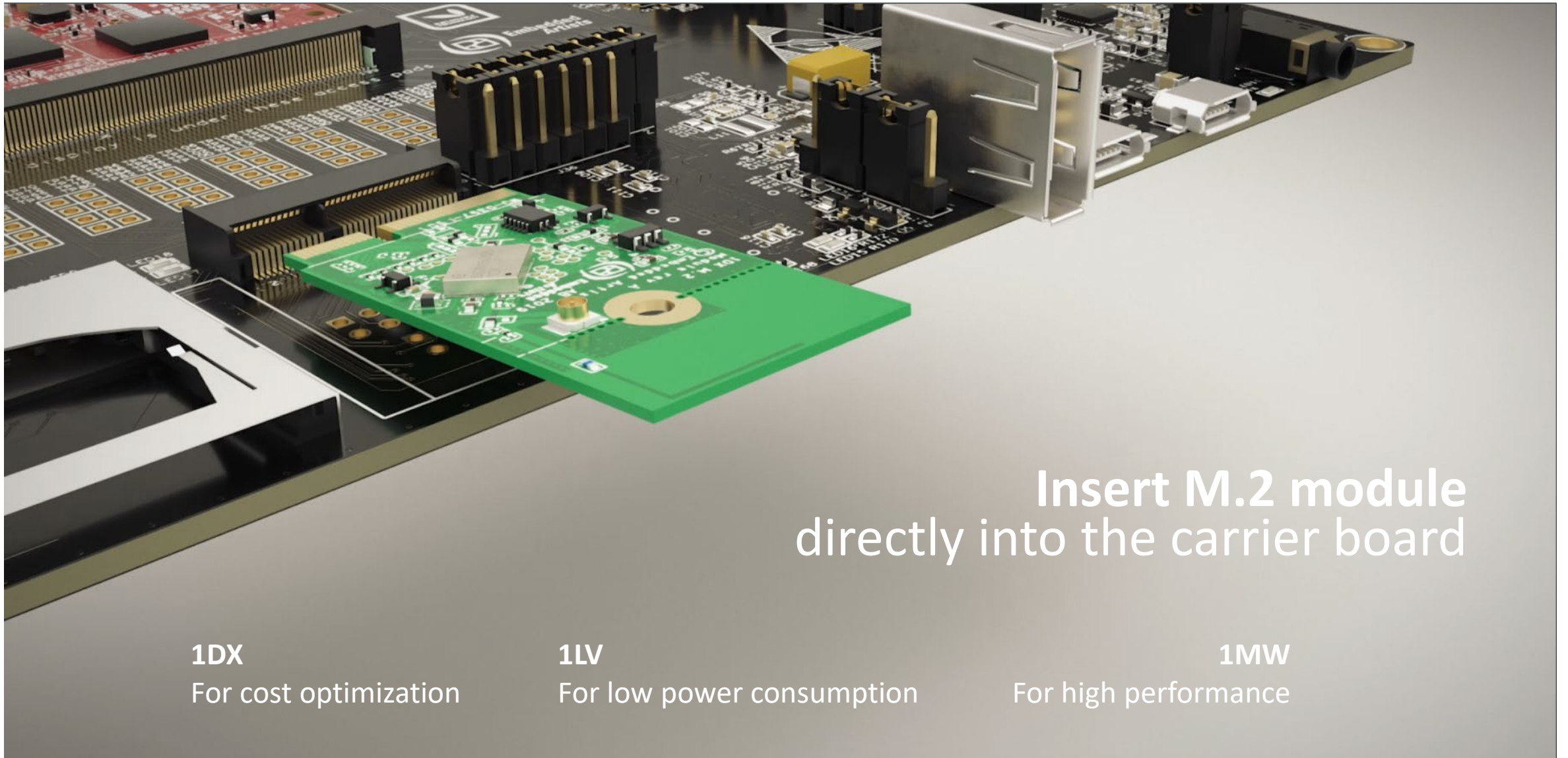
For low power consumption



1MW

For high performance

Fully Modular System



Insert M.2 module
directly into the carrier board

1DX

For cost optimization

1LV

For low power consumption

1MW

For high performance

Fully modular system



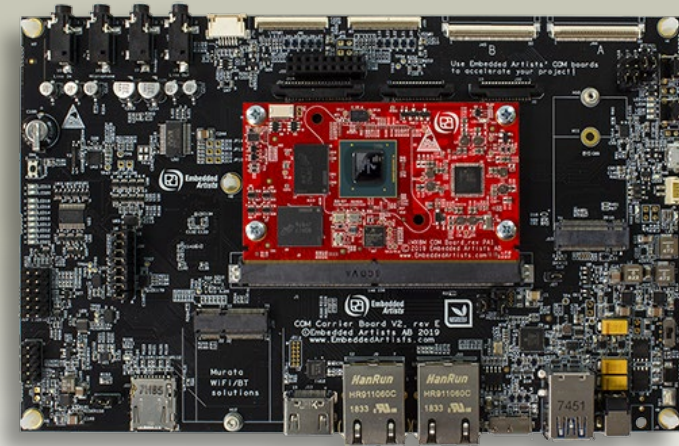


Support

Supported reference platforms

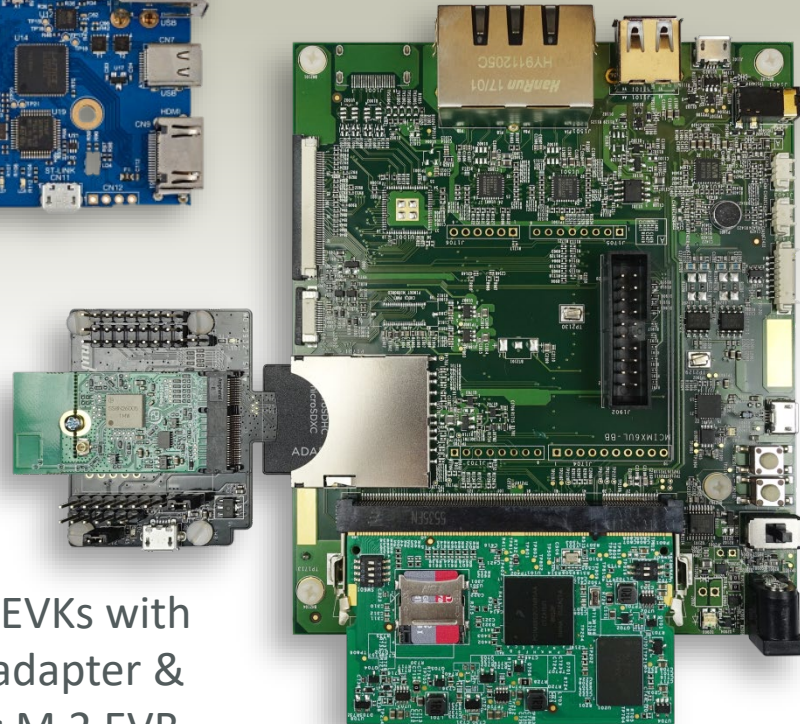


ST Micro
discovery kit

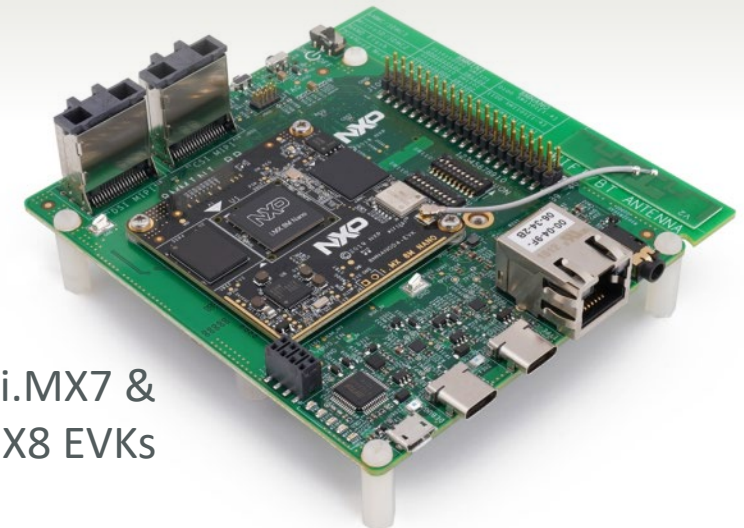


Embedded
Artists i.MX6,
i.MX7 & i.MX8
Dev Kits

NXP i.MX6 family EVKs with
Murata uSD-M.2 adapter &
Embedded Artists M.2 EVB



NXP i.MX7 &
i.MX8 EVKs



Support – Linux



Documentation

Murata

Quick-start guide

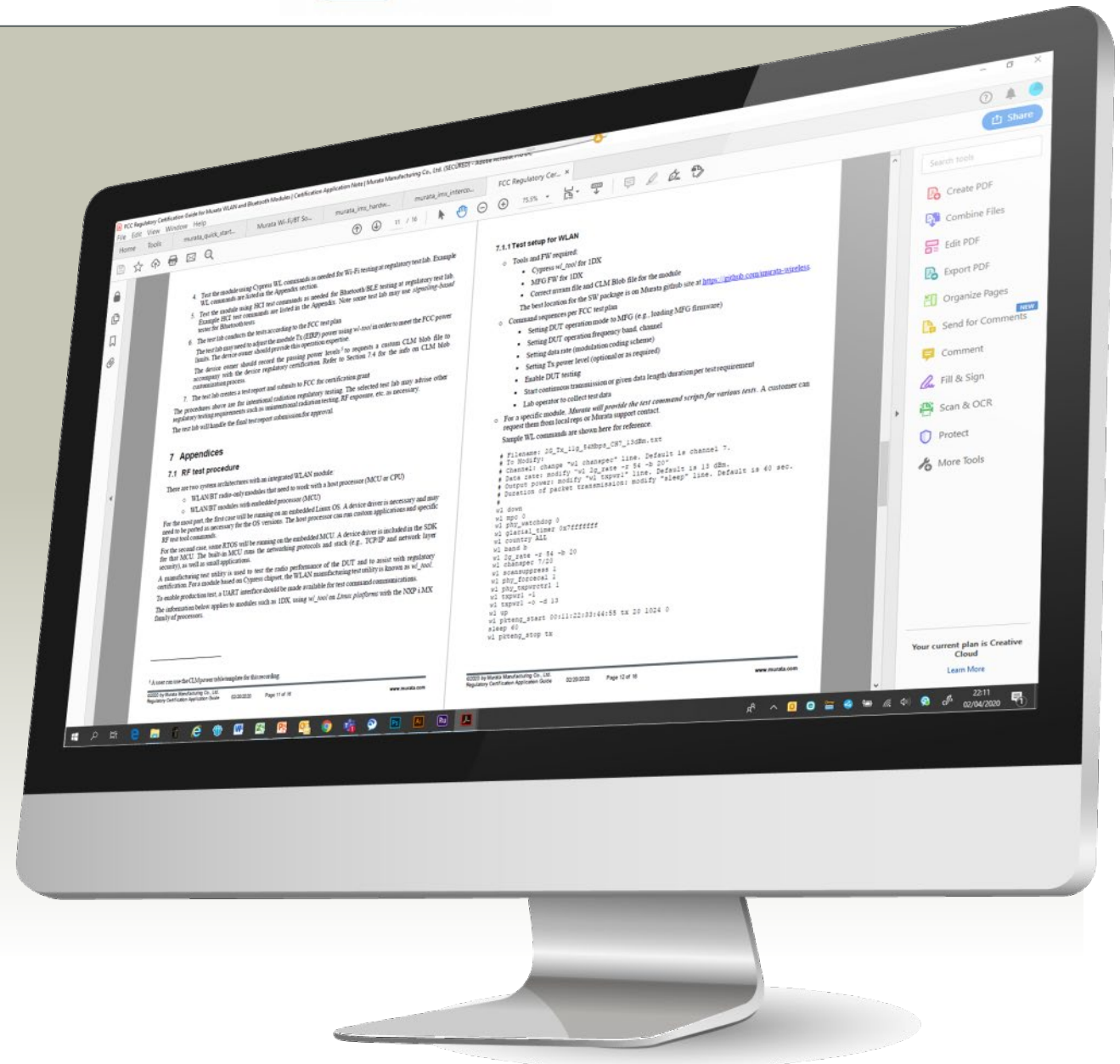
Linux user manual

Hardware user manual

Reference schematics

RF test manual

wireless.murata.com/imx



Documentation

Embedded Artists

Getting started with the i.MX Developer's Kit V2

Getting started with M.2 modules & i.MX 6/7/8

i.MX working with Yocto

Application development

How to use devices and peripherals

Software resources

Reference schematics

www.embeddedartists.com



Support – Linux



GitHub

Murata

Open source

Supports Cypress-based modules on NXP i.MX

Includes latest fixes

Simple Script for building images

github.com/murata-wireless



Support – Linux



GitHub

Embedded Artists

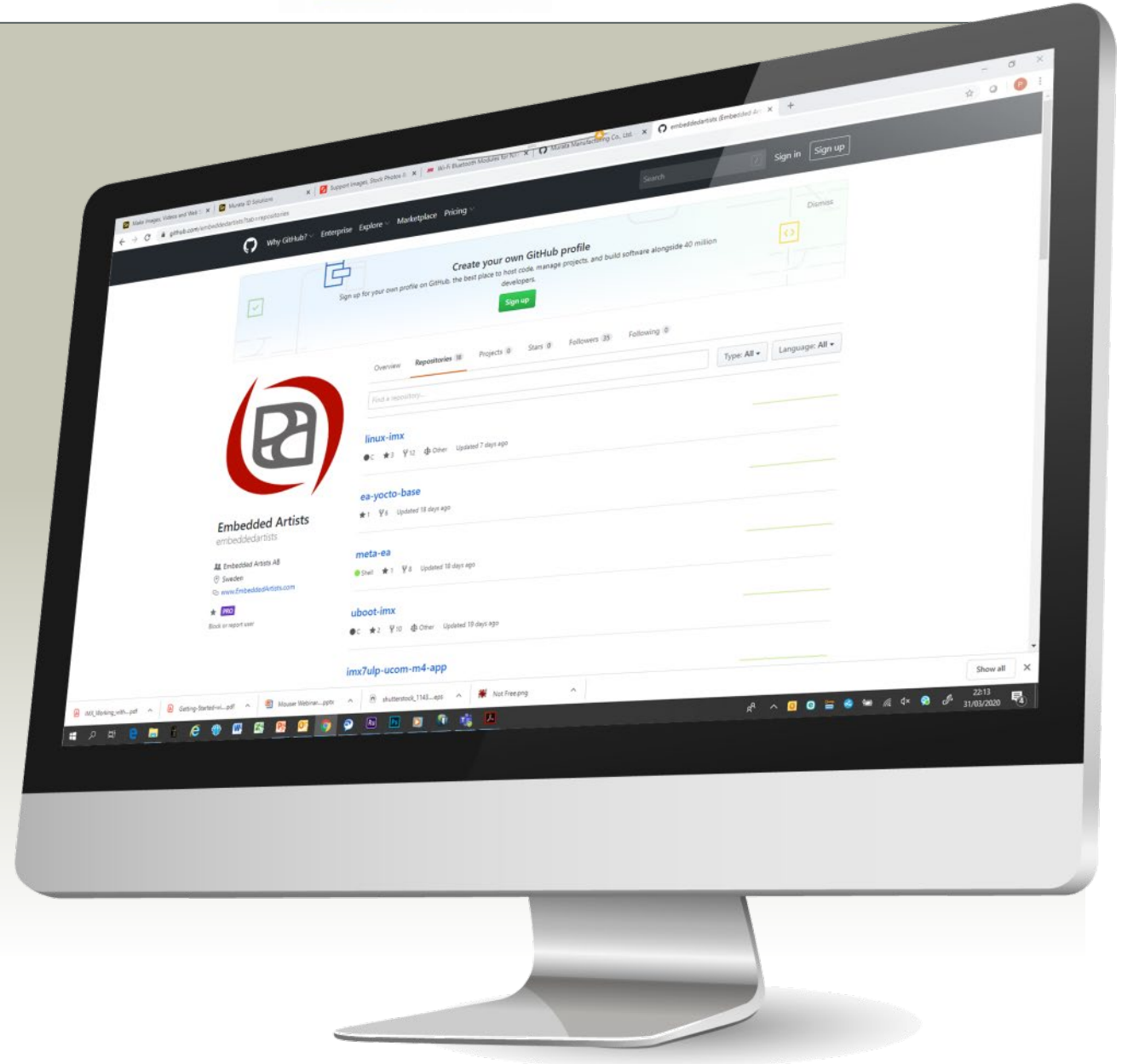
Open source

Supports Cypress-based modules on Embedded Artists' i.MX6, i.MX7 & i.MX8 Dev Kits

Includes latest fixes

Cypress WLAN 'fmac' driver built into kernel: makes for faster development cycles (no need to rebuild file system if only working on WLAN).

github.com/embeddedartists?tab=repositories



Support – Linux



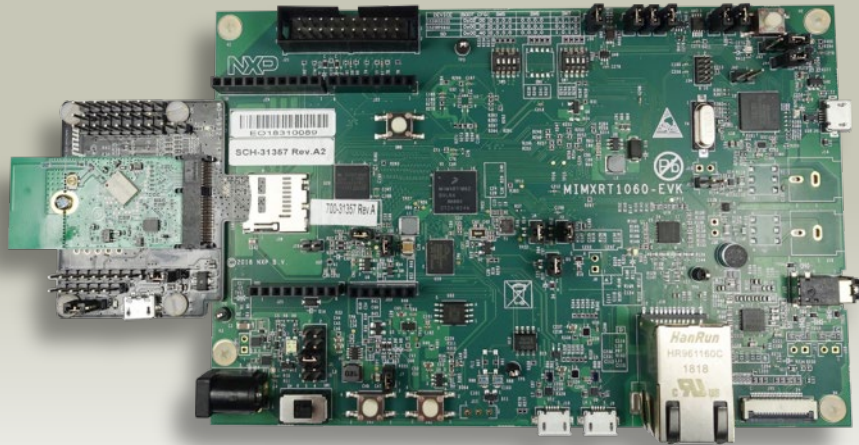
Community Forum



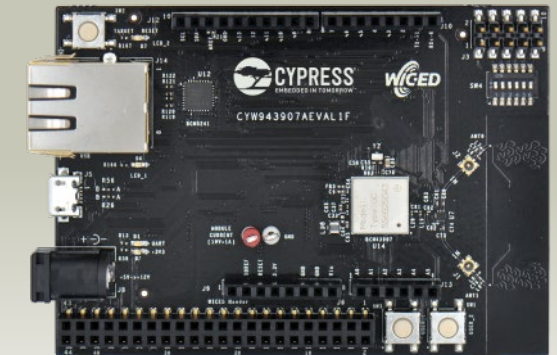
Support – FreeRTOS



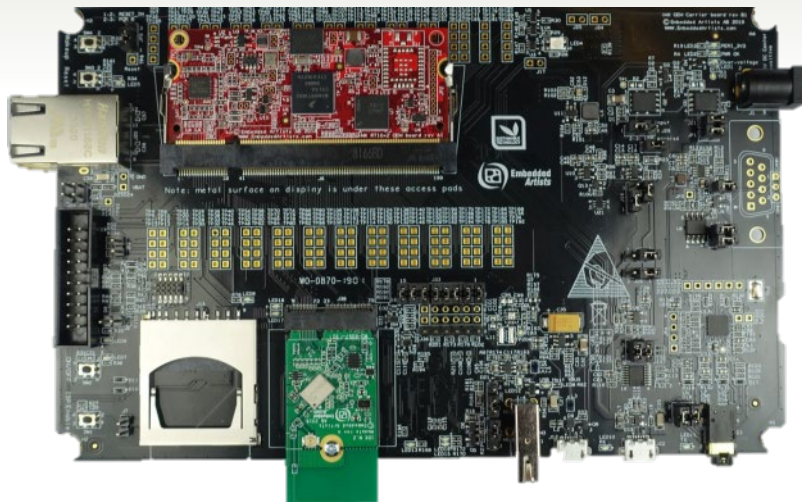
Supported reference platforms



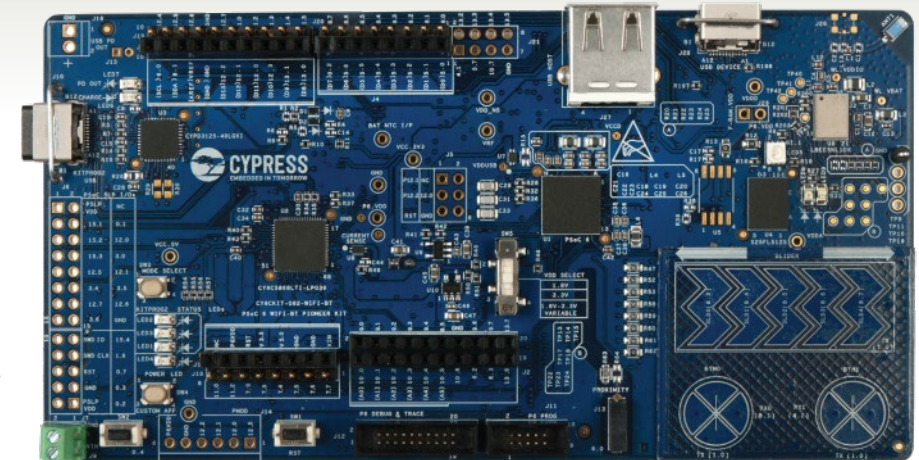
NXP i.MX RT Family
EVKs + **Murata** uSD-M.2
Adapter + EA M.2 EVB



Cypress
CYW943907AEVAL1F
Evaluation Kit



Embedded Artists
i.MX RT1062 Dev
Kit + EA M.2 EVB



Cypress
PSoC 6 Wi-Fi-BT
Pioneer Kit

Support – FreeRTOS



Documentation

Murata

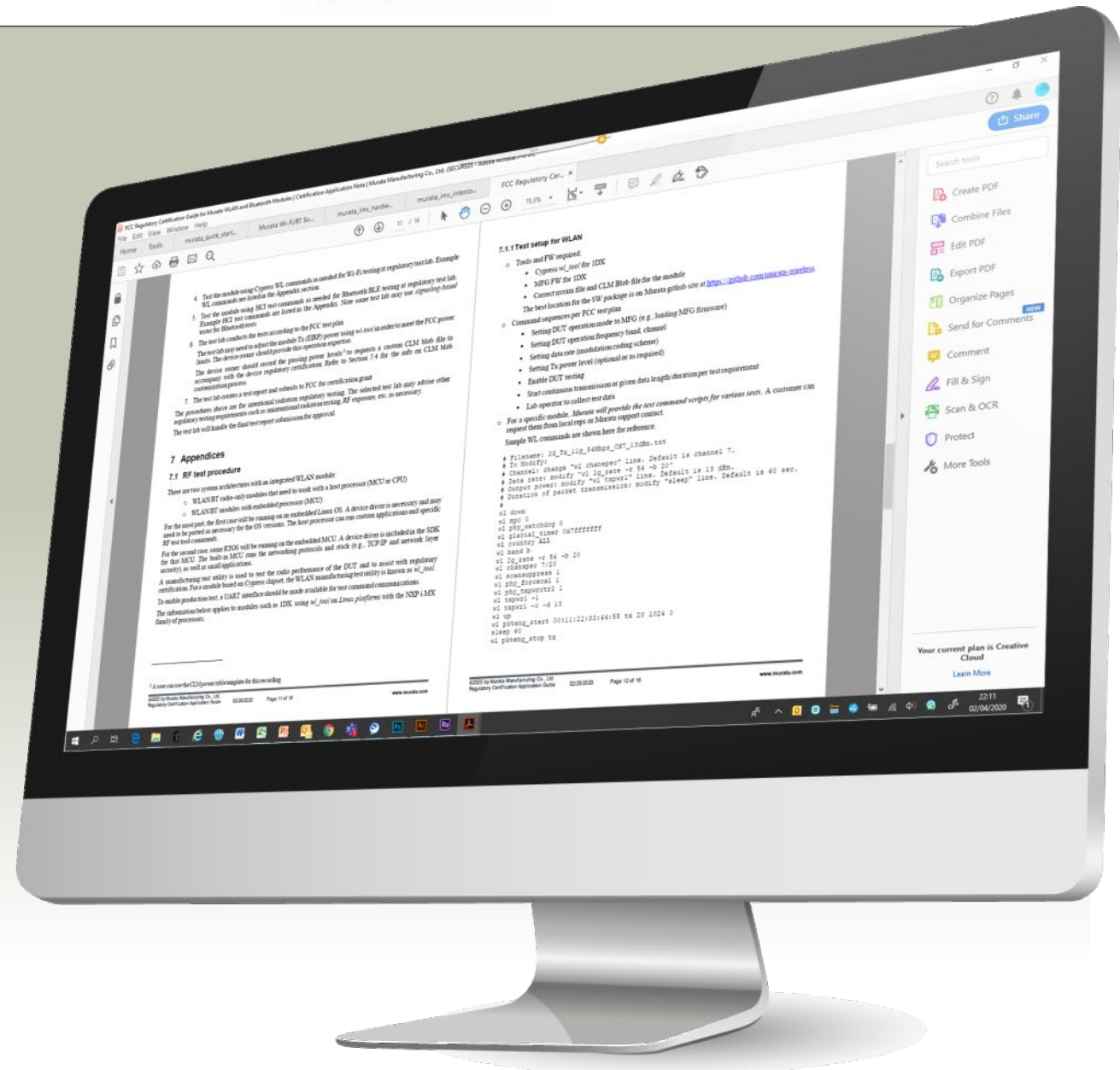
Quick-start guide

Hardware user manual

Reference schematics

RF test manual

wireless.murata.com/products/rf-modules



Support – FreeRTOS



Documentation

Embedded Artists

iMX OEM carrier board schematics

iMX RT1062 Developer's Kit user guide

iMX RT1052/1062 Developer's Kit program development guide

Getting started with M.2 modules & i.MX RT

www.embeddedartists.com



Support – FreeRTOS



Integrated software environments



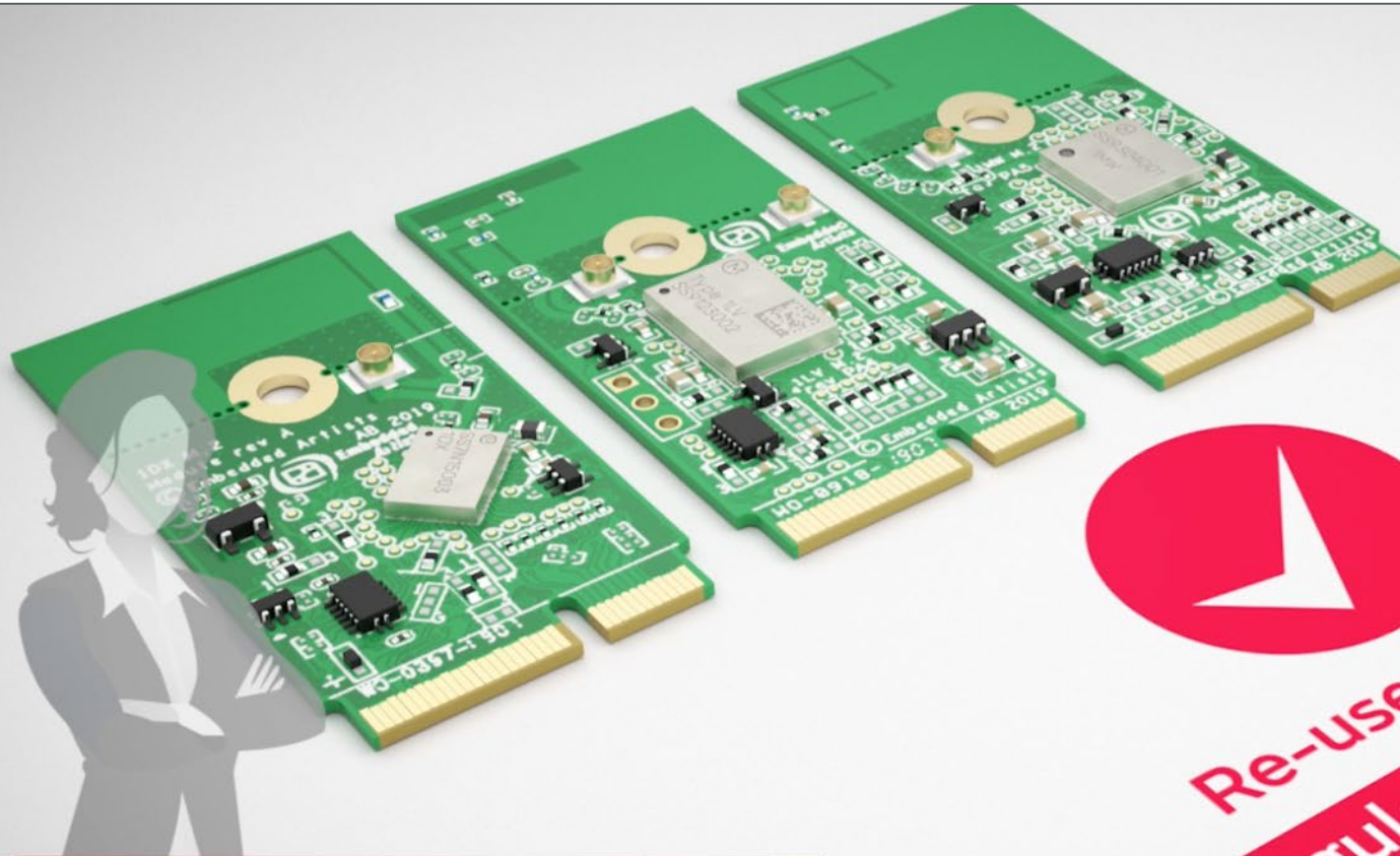
Support – FreeRTOS



Community Forum



Support - Hardware Scalability



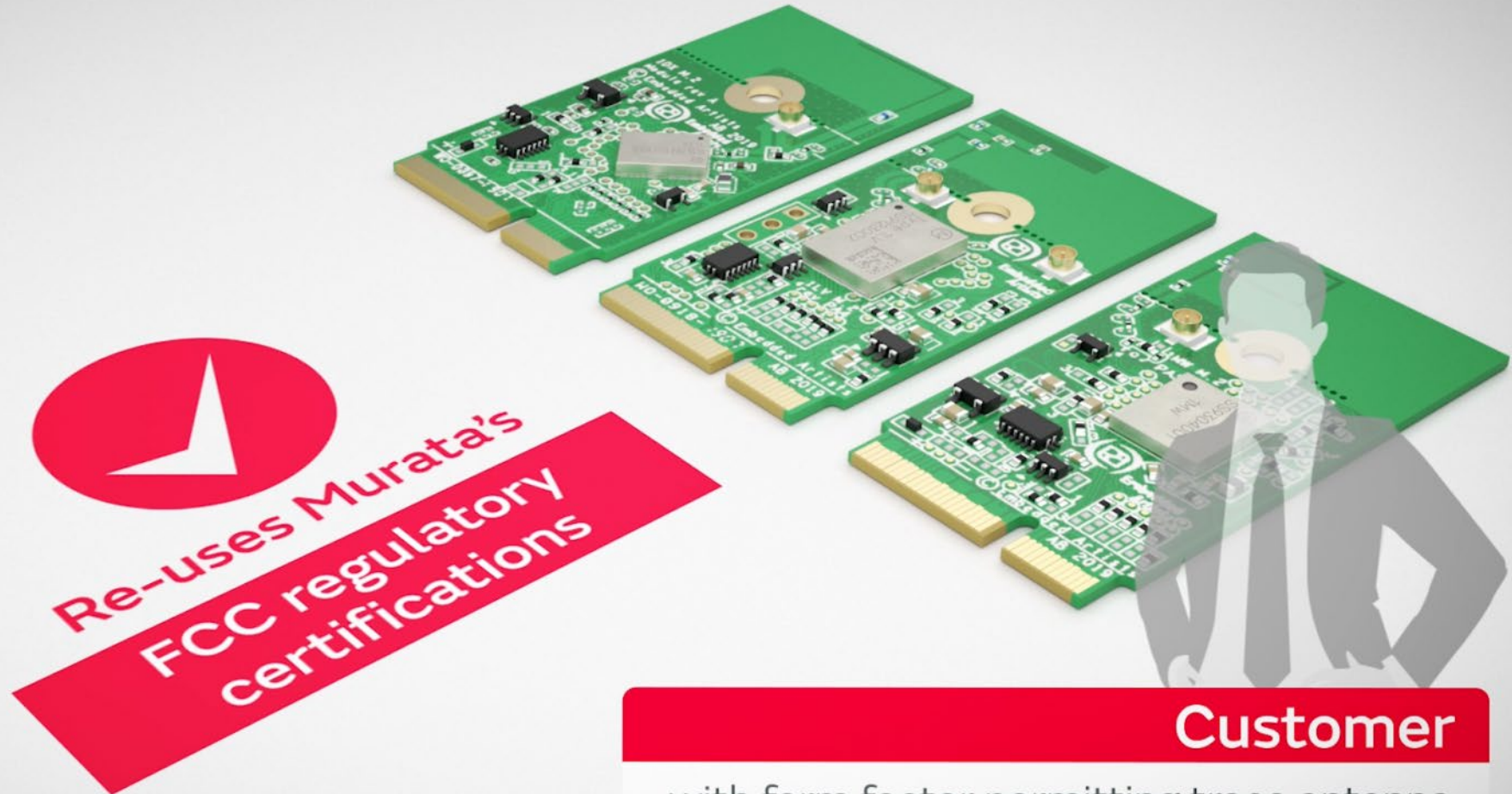
Customer

with M.2 compatible form factor



Re-uses Murata's
FCC regulatory certifications

Support - Hardware Scalability

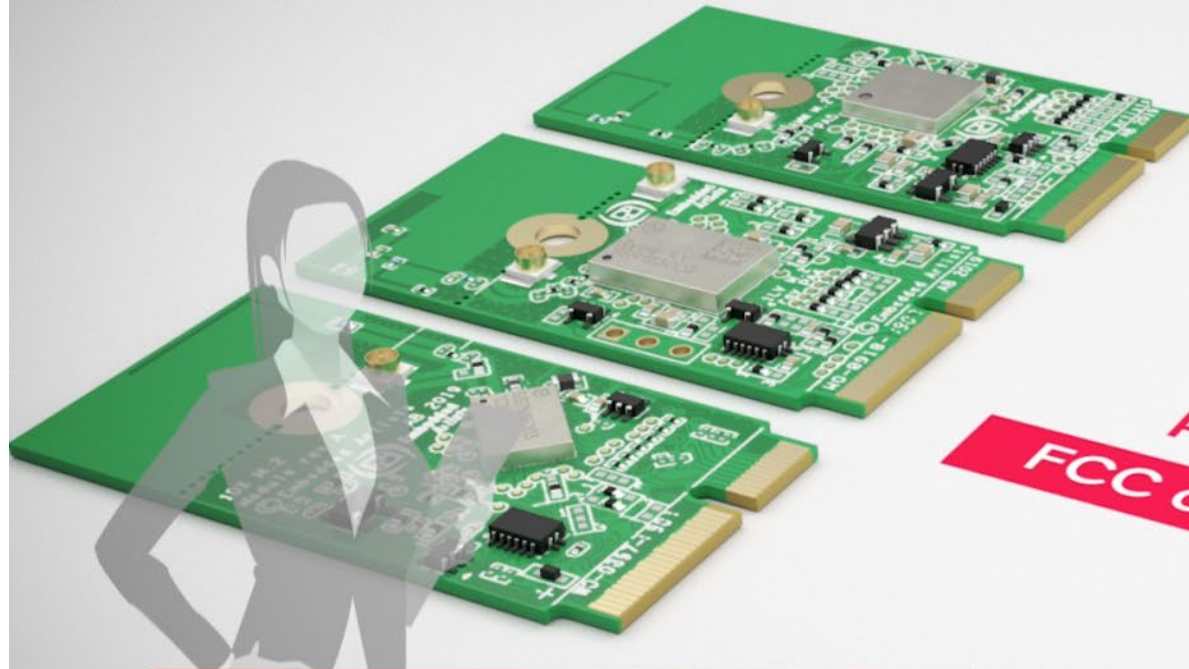


Re-uses Murata's
FCC regulatory
certifications

Customer

with form factor permitting trace antenna

Support - Hardware Scalability



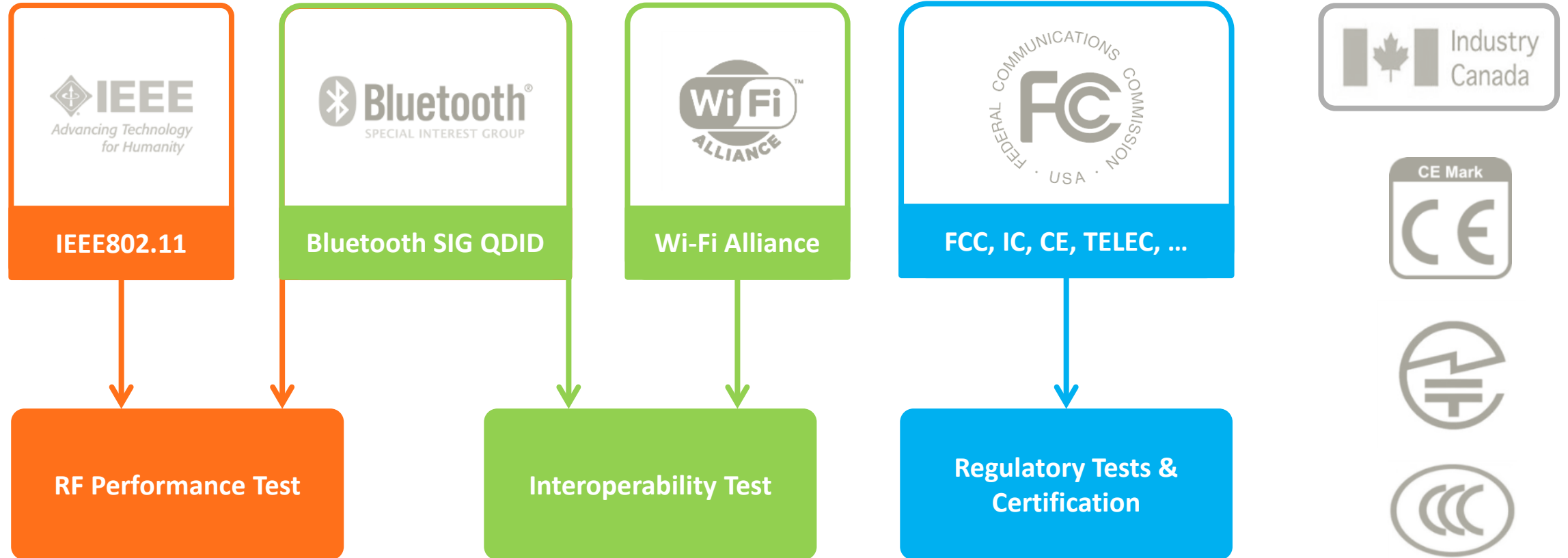
CUSTOMER

Needing specific antenna solution

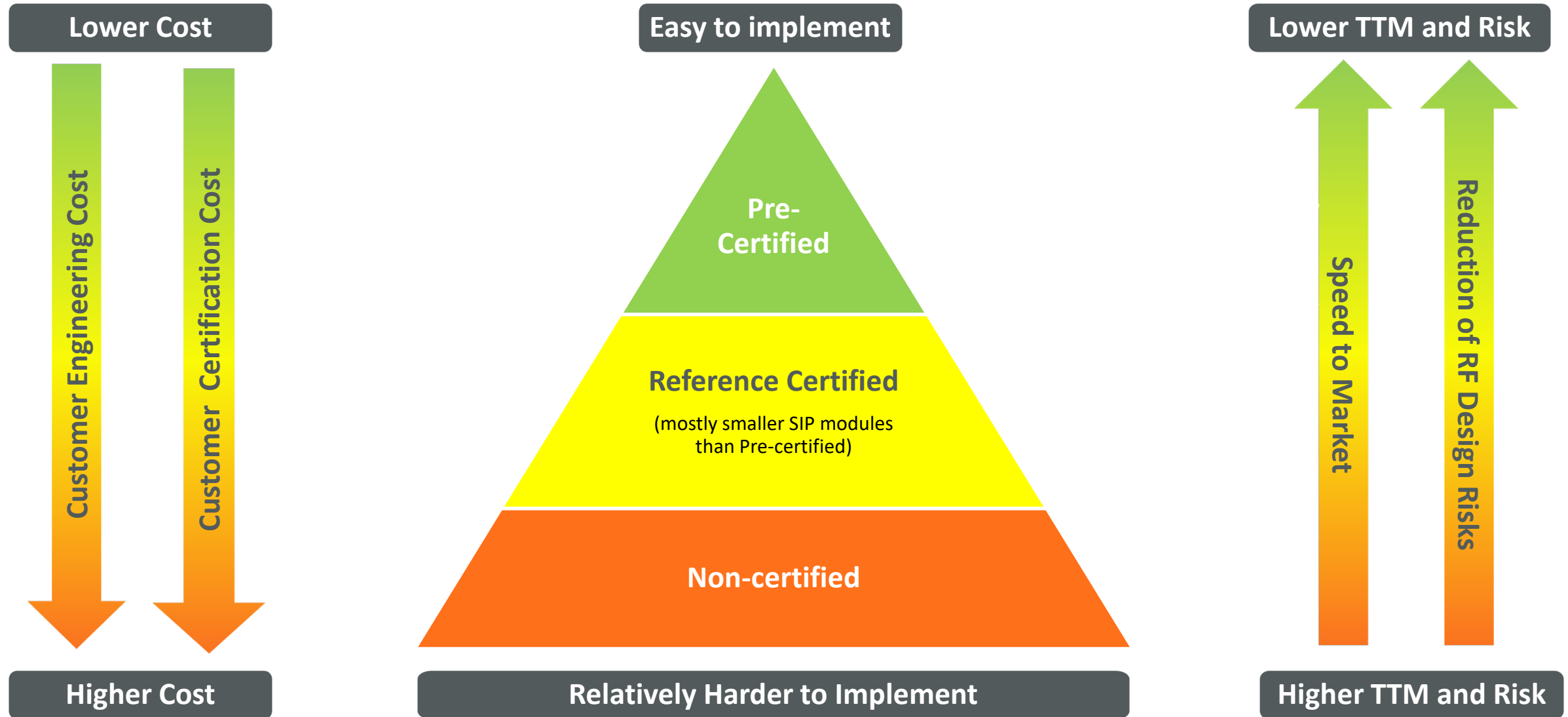


Re-uses Murata's
FCC conducted testing

Support - Regulatory Compliance



Support - Regulatory Compliance



Summary



Strong Partnerships

Global Footprint

Online Support

Ready-to-go Hardware

**Regulatory
Certifications**

Community Forum



**Cypress and Murata make IoT challenges easier
...and get you to market faster!**



Questions & Answers