

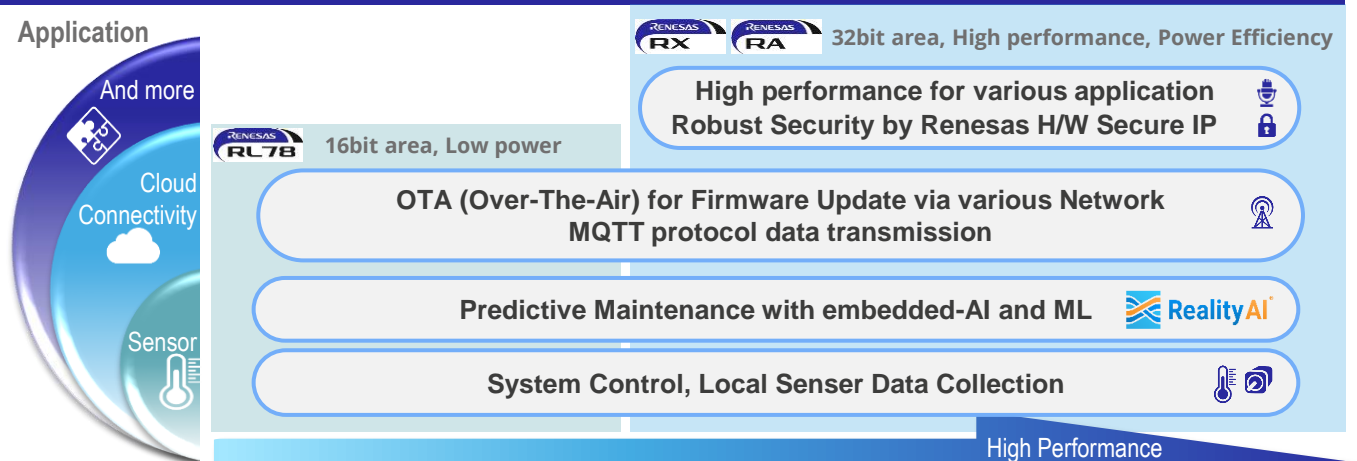
# Accelerate IoT product development

## MCU Cloud Solution

Remote monitoring and control, predictive maintenance, AI/ML, firmware updates, the need for functional expansion which closely linked to cloud environment is growing, so that introducing IoT products into market rapidly expanding.

Renesas provides MCU cloud solution seamlessly for RX family, RA family and RL78 family. This allows you to easily implement cloud functionality by selecting an MCU that matches the functionality and performance of your target product.

### From 16bit MCU to 32bit MCU, Seamless Solution lineup



### Various software which makes IoT product development easier

Various software such as AWS Free RTOS, drivers for several communication method, OTA FW update and security feature which are mandatory for IoT equipment are provided.

IoT mandatory feature		RL78	RA	RX
Cloud Connectivity	Quick Start Example project for MQTT communication with AWS	●	●	●
	Ethernet / Wi-Fi* / Cellular* support	- / ● / ●	● / ● / ●	● / ● / ●
OTA(Over-the-Air) Firmware update	OTA Firmware update sample project via AWS	●	●	●
	Sample project for secondary device Firmware update	●	-	●
Security	TLS for HW Security IP	-	● (SCE9)	● (TSIP)
	Secure FW update & Secure boot	● (FWUP)	● (MCUboot)	● (FWUP)
Mass Production	AWS Fleet Provisioning	-	Planning (2Q in 2025)	●
TCP/IP stack	Only for RX/RA MCU with Ethernet	-	● (lwIP/FreeRTOS-Plus-TCP(FSP))	● (FreeRTOS-Plus-TCP)
Kits for IoT		RL78 FPB + Wi-Fi Pmod(Sold separately)	CK-RA6M5 V2	CK-RX65N V2

\* Note: Wi-Fi : supports DA16600-PMOD

Cellular: RYZ014A and RYZ024A are already production is discontinued, but they are functionally compatible with Sequans products GM01Q and GM02S.

## OTA Firmware update mandatory for IOT product

### ■ Provide two kinds of Sample application for Firmware update

- ✓ For Primary MCU which communicate with AWS
- ✓ For Secondary MCU which is updated via Primary MCU.

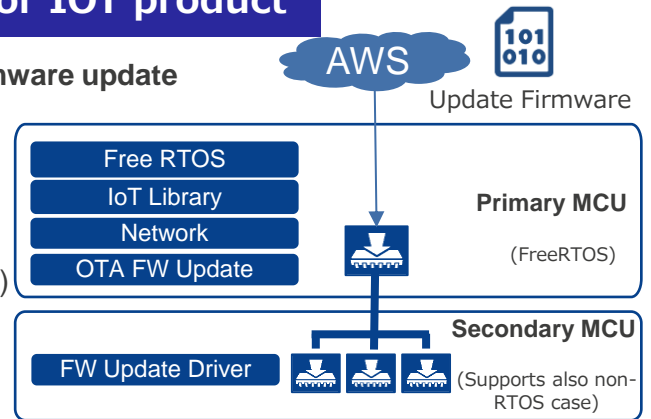
### ■ Provide Drivers for Firmware update

- ✓ Firmware Update Driver for Renesas MCU
- ✓ Can be used with RTOS or Non-RTOS(bare metal)

[RX] FWUP FIT or MCUboot(with TSIP)

[RA] MCUboot

[RL78] FWUP

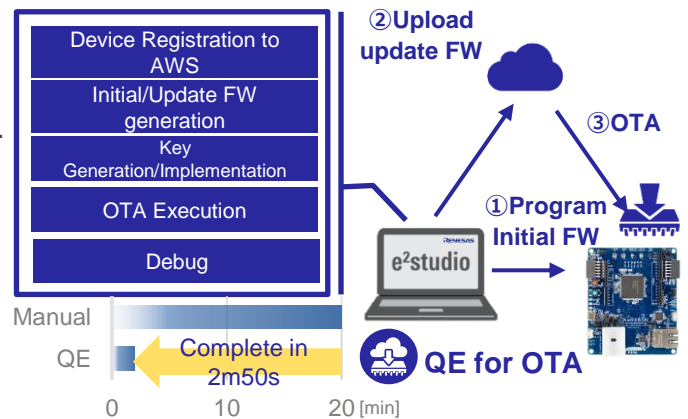


## Tools to help development

### QE for OTA

OTA support tool (free) "QE for OTA" allows you to implement OTA only with simple GUI operation.

Compared to manual implementation case, the time required for OTA execution can be reduced by 86%.



## Evaluation kits which enables easy development & evaluation

### RX/RA/RL78

#### ✓ Turnkey solution for IoT product development



- Supported AWS certified FreeRTOS and IoT Library
- Sample program for Sensor data upload and monitoring in cloud
- Sample Program for OTA Firmware update
- Various application note and sample programs

### RX/RA



US159-DA16600EVZ  
(Wi-Fi module)

CK-RX65N-V2 / CK-RA6M5-V2

#### ✓ Main feature of the kits (RX/RA)

- Wi-Fi module (DA16600 Pmod) included
- MQTT communication, TLS, OTA, client certification are implemented in RX/RA.
- TCP/IP is implemented in Wi-Fi module
- Various sensors suitable for IoT equipment.
- MEMS Micx2, Ethernet
- USB2.0 Full speed Host and device.

### RL78



RL78/G23-128p Fast Prototyping Board



US159-DA16600EVZ (Wi-Fi module)

#### ✓ Main feature of the kits

- Fast Prototyping Board and Wi-Fi module (sold separately)
- MQTT and OTA control are implemented in RL78
- TLS and TCP/IP are off loaded in Wi-Fi module
- Expansion interface such as Arduino, PMOD are supported