The Qt Company
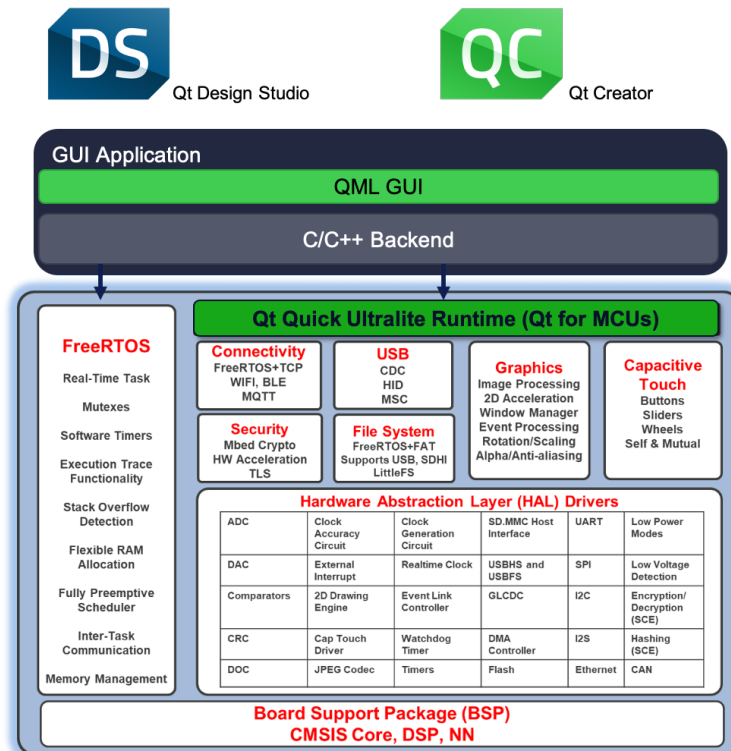
RA Ecosystem Partner Solution
Qt for MCUs

Solution Summary

Qt for MCUs is a complete graphics framework and toolkit with everything you need to design, develop, and deploy GUIs on RA MCUs. Create smartphone-like UI/UX on microcontrollers with industry leading design and development tools, ultimate performance and a tiny footprint.

Features/Benefits

- High graphic performance and low memory footprint (runtime ~80KB)
    - Leverage 2D accelerator and JPEG decoder to provide best-in-class performance
    - Utilize GLCDC to provide flexibility on data formats
    - Support both Rendering Modes – Register Mode and Display List Mode
- Re-use software code across HW platforms from MCUs to MPUs
- Includes WYSIWYG Studio and IDE to support Design-Develop iterative cycle

Diagrams/Graphics

DS — Qt Design Studio
QC — Qt Creator

GUI Application

QML GUI
C/C++ Backend

Qt Quick Ultralite Runtime (Qt for MCUs)

FreeRTOS
- Real-Time Task
- Mutexes
- Software Timers
- Execution Trace Functionality
- Stack Overflow Detection
- Flexible RAM Allocation
- Fully Preemptive Scheduler
- Inter-Task Communication
- Memory Management

Connectivity
FreeRTOS+TCP
WIFI, BLE
MQTT

Security
Mbed Crypto
HW Acceleration
TLS

USB
CDC
HID
MSC

File System
FreeRTOS+FAT
Supports USB, SDHI
LittleFS

Graphics
Image Processing
2D Acceleration
Window Manager
Event Processing
Rotation/Scaling
Alpha/Anti-aliasing

Capacitive Touch
Buttons
Sliders
Wheels
Self & Mutual

Hardware Abstraction Layer (HAL) Drivers

ADC	Clock Accuracy Circuit	Clock Generation Circuit	SD.MMC Host Interface	UART	Low Power Modes
DAC	External Interrupt	Realtime Clock	USBHS and USBFS	SPI	Low Voltage Detection
Comparators	2D Drawing Engine	Event Link Controller	GLCDC	I2C	Encryption/ Decryption (SCE)
CRC	Cap Touch Driver	Watchdog Timer	DMA Controller	I2S	Hashing (SCE)
DOC	JPEG Codec	Timers	Flash	Ethernet	CAN

Board Support Package (BSP)
CMSIS Core, DSP, NN

Target Markets and Applications

- HMI on display panels or touch panels in industrial/building automation
- HMI for metering devices
- HMI for white good appliances

https://www.qt.io/product/develop-software-microcontrollers-mcu
https://www.qt.io/download

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Create beautiful interfaces and applications with Qt.
One framework. One codebase. Any platform.

Qt Creator: A cross-platform integrated development environment (IDE) built for the maximum developer experience. Qt Creator runs on Windows, Linux, and macOS, and allows developers to create applications across desktop, mobile, and embedded platforms.
https://www.qt.io/product/development-tools

Qt Design Studio: Import 2D and 3D graphics from tools such as Sketch, Photoshop, Maya, Modo, blender. Bring your designs to life with animations made with Qt's easy-to-use prototyping tools. Instantly preview and fine-tune your designs to pixel-perfection
https://www.qt.io/product/ui-design-tools

Qt for MCUs: Create Smartphone like UX on MCUs. High graphic performance and low memory consumption. Re-use software code across HW platforms from MCUs to MPUs
https://www.qt.io/product/develop-software-microcontrollers-mcu

Qt for Device Creation: Create high-performance embedded systems with 3D/2D user interfaces and deploy and test on your target hardware. Extensive libraries and intuitive APIs speeds up development. Boot to Qt -- Get your environment up and running in no time with our ready-made software stack
https://www.qt.io/product/develop-embedded-devices

Qt for Application Development: Cross-platform on desktop and mobile OSs: Code once, create more, deploy everywhere. High performance and pixel perfect UIs. Ready-made UI and backend libraries.
https://www.qt.io/product

About Us
Qt Group (Nasdaq Helsinki: QTCOM) is a global software company with a strong presence in more than 70 industries and is the leading independent technology behind millions of devices and applications. Qt is used by major global companies and developers worldwide, and the technology enables its customers to deliver exceptional user experiences and advance their digital transformation initiatives. To learn more, visit http://qt.io.

Qt technology is used by more than one million developers worldwide. We enable a single software code across all operating systems, platforms and screen types, from desktops and embedded systems to business-critical applications, in-vehicle systems, wearables and mobile devices connected to the Internet of Things.

The Qt Group operates in China, Finland, Germany, Japan, South Korea, Norway, Russia, the USA, France, UK, Italy and India
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