Overcoming the Global Chip Shortage with Cross-Platform Development

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What other leaders think
“The current semiconductor shortage has negatively impacted our ability to deliver new products”

Source: Smarter Products Need Smarter Development, a commissioned study conducted by Forrester Consulting on behalf of Qt, May 2021

In this study, Forrester conducted an online survey of 262 embedded device and connected product development decision-makers at global enterprises to evaluate how companies are developing smart products. Survey participants included decision-makers in IT working at companies that are developing or planning to develop devices or products that require embedded software applications, connected products (designing and manufacturing internet of things-enabled [IoT-enabled] connected products and services), or devices or products that include digital user interfaces (e.g., touchscreens, digital displays). Questions provided to the participants asked about the development cycle, tools available to developers, and challenges. Respondents were offered an incentive as a thank you for time spent on the survey. The study began and was completed in March 2021.
“Ensuring we have an adequate supply of semiconductors and other key hardware components for our products”

Source: Smarter Products Need Smarter Development, a commissioned study conducted by Forrester Consulting on behalf of Qt, May 2021
“What process challenges does your organization experience with producing products/digital services?”

Source: Smarter Products Need Smarter Development, a commissioned study conducted by Forrester Consulting on behalf of Qt, May 2021
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How to overcome future chip shortages?
Chipset Independence

- Cross-platform development supporting the separation of UI modelling, application logic & hardware-specific capabilities
- Code once, Deploy everywhere
Effective Portfolio Development

Cortex-M4 MCU (<10 EUR BOM) – 640x480

ARMv7A 32bit low end MPU (<30 EUR BOM) – 854x480

ARMv8A 64bit Quad Core high end MPU (<100 EUR BOM) – 960x480

Companion app

Washing Machine

1:55
REMAINING TIME

Process/Relay: 11:06

Qt
Qt Modelling Language (QML)

Declarative UI Modelling:
Describes what the outcome should look like.

Imperative UI Modelling:
Describes how the outcome should be built.
Cross-Platform Development

› Qt supports different OS for embedded devices: eLinux, QNX, Integrity, RTOS, ...

› Qt offers ready reference software images for various chip technologies: Intel, ARM, STI, Nvidia, Windriver, Qualcomm, NXP, ...

› Other technologies can be supported as Professional Service
Qt Rendering
Hardware Interface

Graphics abstraction layer allowing you to run your UI on different technologies without coding it again: Vulkan, Direct 3D, OpenGL, Metal
Qt Shader Tools

Abstraction layer for hardware-accelerated drawing of surfaces, light, shadows, etc.

Different chips “speak” different languages:
 › OpenGL Shading Language (OpenGL)
 › High Level Shader Language (Direct3D)
 › Metal Shading Language (Metal)
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Enabling Collaborative, Iterative Development
Consumer Electronics
Take the first step to chip independence
Making it Happen

**Start Small:**
› Arrange Cross-Platform Development workshop with Qt Professionals

**Identify:**
› Future software architecture options
› Effective product development organization opportunities

**Plan for:**
› Proof-of-Concept
Summary

› Cross-platform development increases chips independence
› Integrated software platforms increase agility
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