Improve Time to Market for Industrial Edge Devices with Qt and WINSYSTEMS
SPEAKERS

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Continuity since 1995

1995 - First public version of Qt released by Trolltech

2006 - Trolltech acquired by Nokia

2008 - Trolltech IPO to Oslo exchange

2011 - Digia acquired Qt software technology and business from Nokia

2012 - Digia acquired Qt Commercial licensing business from Nokia

2016 - Qt Group plc listed independently on Nasdaq Helsinki

2017 - Qt Group plc raised EUR 15 million equity to fund growth investments

2021 - Acquisition of Freescale's Quality Assurance portfolio
Enabling Collaborative, Agile Development

Design

Qt Design Studio

Develop

Qt Creator IDE

Test

Squish, Qt Test, Coco
Schedule Driven Releases Twice a Year

- Qt 6.x.0 framework releases with new features
- April and September every year

Feature- and Fix-Driven Releases

- Qt 6.x.y framework releases with bug, performance and security fixes
  - No new features
- Three Qt Creator and Qt Design Studio annual releases + Qt for MCUs releases
- Every third minor version is an LTS – Long Term Support version with 3-year support
More Than a Collection of Libraries

- **Frameworks are opinionated**
  - Consistent APIs and documentation
  - Structure
  - Best practices – Frameworks provide proven solutions
  - Dictates how to do things – can be extended

- **Frameworks come with a toolbox**
  - IDE, toolchains, etc.
  - Makes it easy to apply best-practices

- **A good framework drives structure and consistency**
Boot to Qt

Enjoy:
› Prototype and see UI design live on real embedded environment
› Getting the embedded development environment up and running in no time.

Use:
› Light-weight, Qt-optimized, full software stack for embedded Linux systems
› Transfer to production deployments with Yocto when needed
› Works with Qt Design Studio
UI Technology for Every Use Case

› Qt Modelling Language (QML) for designing touch-based UIs and embedded devices
› Qt Widgets for complex desktop UI with mouse and keyboard use
› Qt for WebAssembly bringing Qt to the web
› HTML 5 can be embedded for web-based content
EMBED SUCCESS IN EVERY PRODUCT!
Industrial Embedded Computer Solutions

Embed Success in Every Product with WINSYSTEMS®

- More than 39 years as a leader in the embedded computing industry
- Trusted resource for industrial embedded systems expertise
- Highly reliable industrial-grade products with long-term availability
- Knowledgeable and responsive technical staff
- Designed and manufactured in Texas
COM Modules to Complete Systems

Technology solutions that transcend boards

- Embedded computing solutions utilizing a variety of proven designs:
  - COM Express, Single Board Computers, Panel PCs, Industrial Computers
- Cost-effective solutions designed to support existing technology and future upgrades
- Security-enabled hardware and software partner ecosystem
- Average product life cycles of 10+ years
A Proven Consultative Approach

Innovation-driven

• Specialists in embedded computer products, accessories and software
• Focused on solving each client's unique application challenges
• Skilled in designing and executing embedded solutions for many industries
• Expert guidance in the selection of optimum product and solution design strategies:
  • Commercial Off The Shelf (COTS)
  • Modified COTS
  • Custom solutions
Proven Manufacturing and Design Expertise

**Centrally based U.S. headquarters**

- Headquartered in Grand Prairie, Texas, U.S.A., between Dallas and Fort Worth—an established, dynamic regional technology center
- In-house engineering and manufacturing allows for prototyping, quick-turn production cycles, and full product manufacturing with maximum quality and efficiency
- All departments necessary to conceive and execute products—from project initiation to product launch—located on a single corporate campus
Industrial Internet of Things – Cybersecurity

Device security starts with the hardware

- Internet of Things Cybersecurity Improvement Act of 2020
  - Bipartisan Support
  - Signed into law by President Trump December 12/4/2020
- WINSYSTEMS COM Modules and new single board computers enable:
  - Establish Root of Trust (RoT)
  - Secure boot firmware
  - Hardware data encryption
  - TPM-2.0 onboard
- Software ecosystems partners further enable:
  - Security patch updates and Continuous Integration
  - Secure Over-the-Air (OTA) Updates
  - Secure communications
  - Security Key management
Why WINSYSTEMS and Qt Partnership?

Mutual Customers Actively Spanning Legacy to Future Designs

- WINSYSTEMS has almost 40 years of products in the field
  - All SBCs were based on x86 CPUs between the 1990's until 2013
  - 2013 introduced our first Arm based SBC
  - Future product roadmaps have product lines for both x86 and Arm CPUs
Why WINSYSTEMS and Qt Partnership?

Mutual Customers Actively Spanning Legacy to Future Designs

- Operating systems have also changed drastically over the years
  - Windows and various Linux Distros comprise about 80% of total operating system usage
  - DOS and RTOS's the other 20%
Why WINSYSTEMS and Qt Partnership?

Mutual Customers Actively Spanning Legacy to Future Designs

• An Energy Client was one of the first known cases of WINSYSTEMS + Qt back in 2015
  – Using legacy x86 based SBCs but was planning to use Arm in the future
  – WINSYSTEMS SBCs had a 20+ year install base with client due to industrial requirements
  – Client selecting Qt as development platform so they could write application code once and run on current x86 based products and future Arm based SBCs
  – Client was very happy with the implementation of Qt development software
Qt Development from the Engineering Perspective

3 Ways the Qt and WINSYSTEMS Partnership Helps Engineers

1. WINSYSTEMS’ Edge Computing Platforms are **Rugged and Security-Enabled**
   - Designed for Industrial Environments
   - Designed with security in mind for Critical Infrastructure
   - USA Manufactured Quality
   - Offers a software ecosystem for OEMs to leverage

2. Qt for Device Creation **Significantly Reduces Development Time**
   - Code once, deploy across platforms benefit for Arm and x86 lines
   - SDK and QBSP Supported Embedded Boards for Rapid development
   - Pre-built libraries for a multitude of industrial communication protocols

3. WINSYSTEMS + Qt Partnership **Speeds Time to Market**
   - Provides proven industrial Edge Computing platform with
     Pretested libraries that will have a development running in minutes!
   - Certified code base for communications.
Demo Hardware: ITX-P-C444

Why is it the Focus Product?

- Truly Industrial Arm product
- Very small form factor
- Flexibility to add low speed I/O sensor
  - Low speed IO: GPIO, I2C, SPI
- Camera: MIPI CSI camera input
- Security: TPM 2.0 on board
- Power input: +9V to 32V DC
- Operational: -40 to +85C
Industrial Use Case Example

Oil & Gas Remote Monitoring and Surveillance

- Critical Infrastructure Monitoring
- Security a top concern with recent cyber attacks
- Artificial Intelligence (AI) Vision System Alerts of activity
- Reduces number of on-site visits and improves safety
Demo
Ask your questions
Thanks for joining!

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