Computer-On-Module with Qseven form factor and Freescale processors

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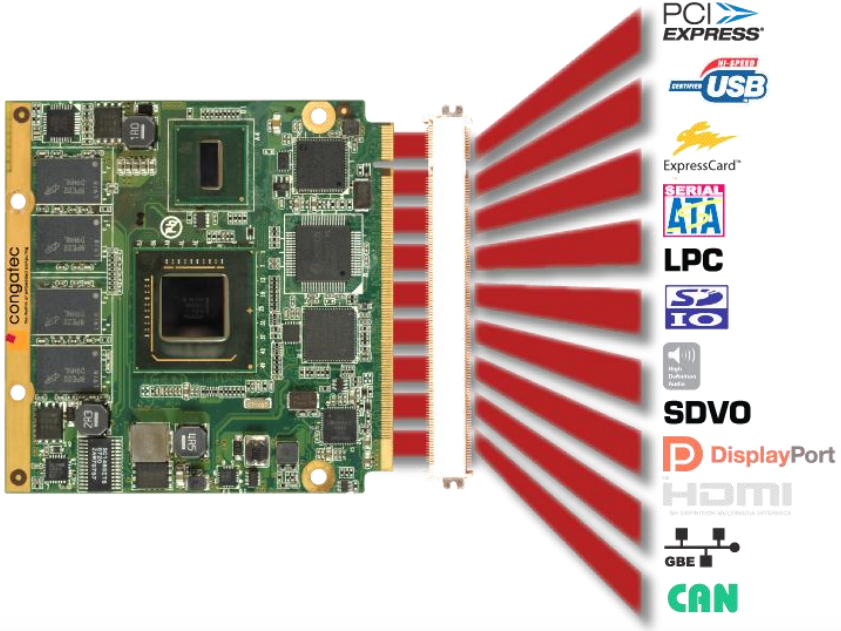
Abstract

- The standardization of ARM processors has increased in line with the rise in high-performance mobile multimedia devices, leading to more tightly integrated, less application-specific processors with reliable, well-defined interfaces. Some brand new ARM processors are ideal for the Qseven module form factor, which provides both standard PC interfaces as well as traditional industrial interfaces on the chip. The decision to design the right Computer-On-Module based on ARM brings us to Qseven + Freescale.

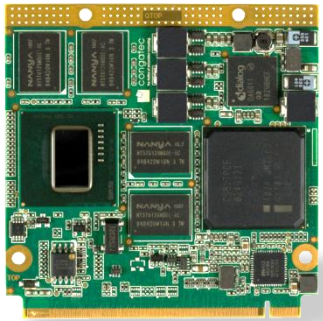
Qseven

QSEVEN



x86 Intel® Atom™ Z500

ARM Freescale® i.MX6



x86 Intel® Atom™ E600

x86 AMD® Fusion

New conga-QMX6 Qseven module

Product strategy expands with ARM

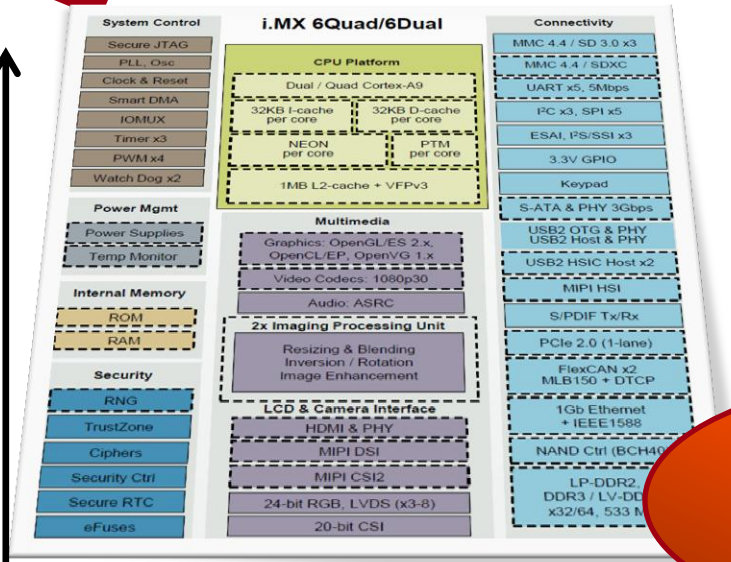
- **congatec extends it's product range with ARM architectures**
  - i.MX6 processors from Freescale™
  - Low power consumption
  - Rich I/O feature set
  - Scalable computing performance
  - Long time availability (10 years +)
  - Software support
  - Perfect fit for Qseven
  - Power envelop

freescale™ semiconductor

Qseven ARM Quad Core

- **QSEVEN with ARM Quad Core Processor**
  - Up to Freescale i.MX6 Quad ARM Cortex A9 with 1.2 GHz
  - Multimedia Performance with HDMI & LVDS interface
  - Industrial Temperature Option
  - Low Power Consumption

Scalable ARM Performance



i.MX6 Quad
4x 1.2 GHz
PCIe, SATA, HDMI

i.MX6 Duo
2x 1.2 GHz
PCIe, SATA, HDMI

i.MX6 Solo
1.2 GHz
PCIe, SATA, HDMI

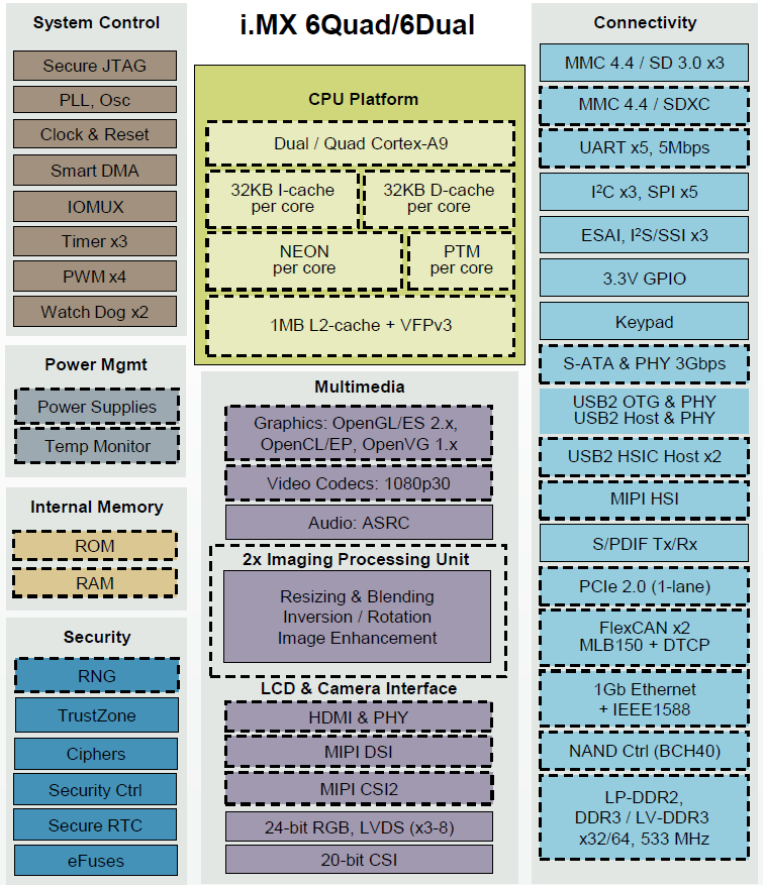
Power / Performance

Scalability

freescale semiconductor

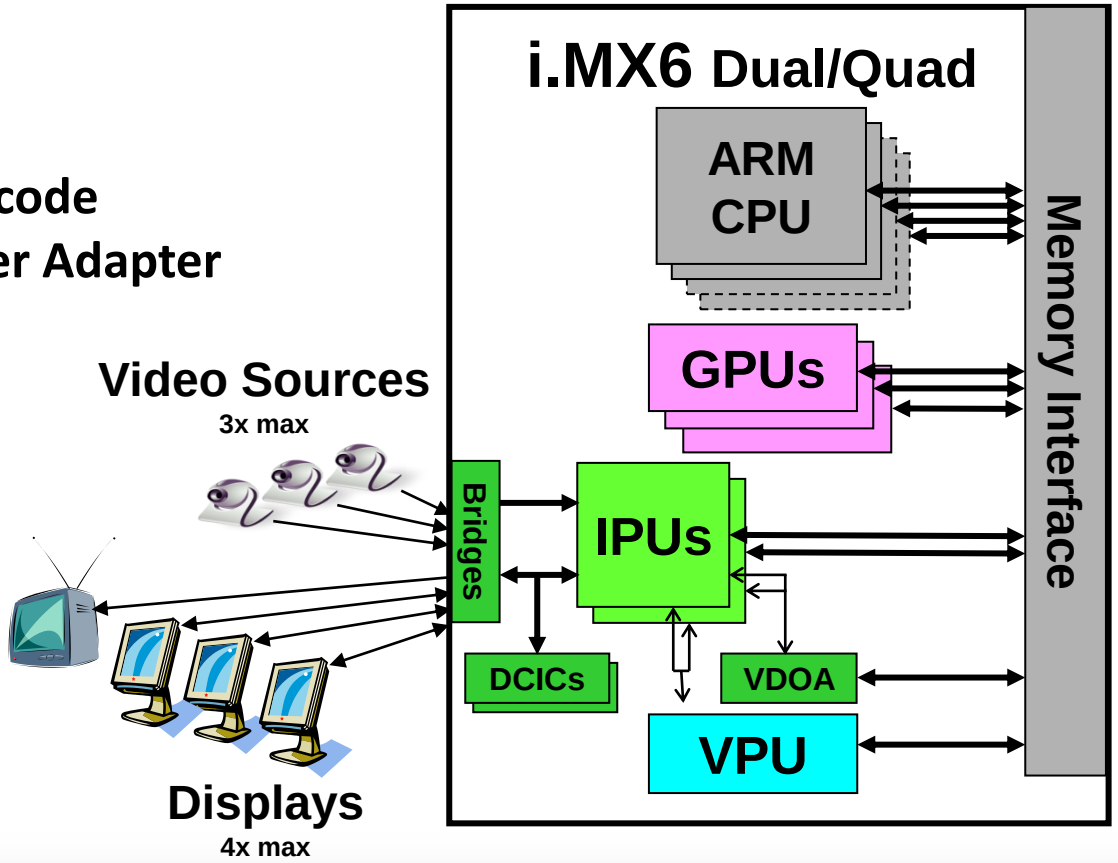
i.MX 6 series at a glance

- **ARM Cortex-A9 up to 1.2GHz Quad Core**
  - HD 1080p encode and decode
  - 3D video playback in high definition
  - Low power 1080p playback at 350mW
- **Integrated I/O**
  - PCI-Express Gen 2
  - 2x24bit LVDS
  - SATA II
  - 2x HDMI v1.4
  - MIPI CSI-2 Camera Interface
  - Gigabit Ethernet
  - USB 2.0
  - CAN
- **SW support: Google Android™, Windows® Embedded CE, Linux®**



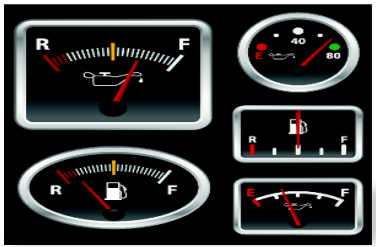
Video Graphics Subsystem in i.MX 6

- IPU – Image Processing
- GPU – 2D/3D Graphics
- VPU – Video Encode/Decode
- VDOA – Video Data Order Adapter



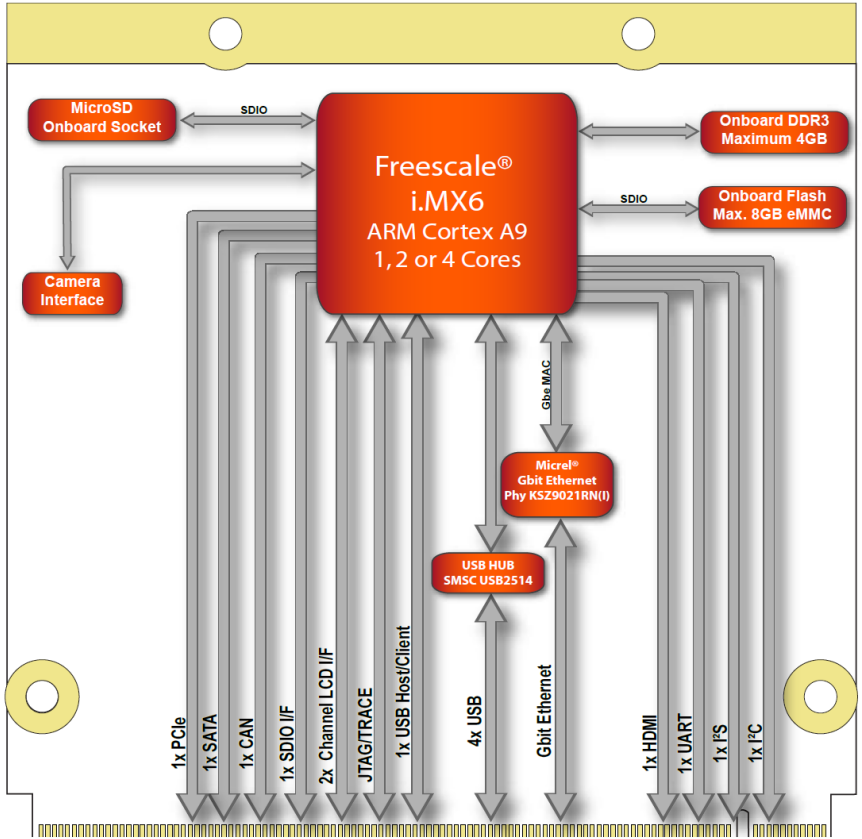
i.MX 6 series graphic processing goals

- **Diverse markets and applications call for multiple GPUs:**
  - User Interface
    - Accelerate existing windowing environments (Android™, X11, etc.) and base user interfaces with a low-power high-performance composition engine
  - Vector Graphics
    - Providing compelling vector capabilities for high-quality fonts and automotive clusters in a manner that assures quality of service in performance
  - 3D
    - Accelerate next-generation 3D and GPGPU applications with a feature-rich high-performing unified graphics processor



Implementation on Qseven: conga-QMX6

- **1 – 4 ARM CPU Cores**
- **1 – 2 GByte DDR3 DRAM**
- **Mass Storage onboard**
  - 8 GByte eMMC flash
  - MicroSD Slot
- **5 USB 2.0, 1 USB OTG**
- **Gigabit Ethernet**
- **Fast onboard graphics**
  - 2x24 Bit LVDS & HDMI
  - or 2x HDMI
- **1 Lane PCI Express 2.0**
- **Rich Interfaces**
  - SATA, CAN, SDIO, JTAG, UART, I²S, I²C



conga-QMX6 Software Support

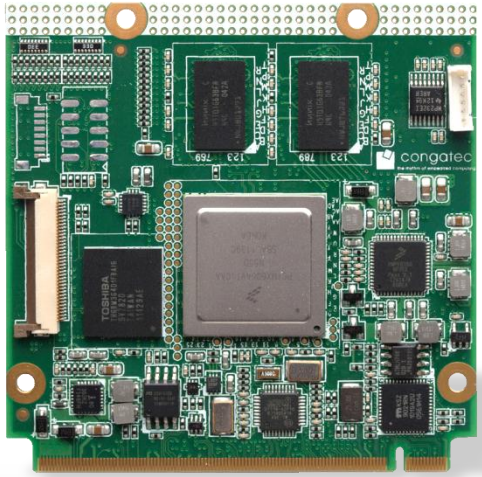
- **OpenCL**
  - Intel, AMD and Freescale support OpenCL
  - OpenCL allows to use the powerful graphic engines to boost the application performance
- **Software Support**
  - Standard BSP's will be supported by congatec.
  - Customized BSP implementation will be done by our partner Adeneo.
    - Android
    - Linux (Ubuntu)
    - Windows CE 7.0

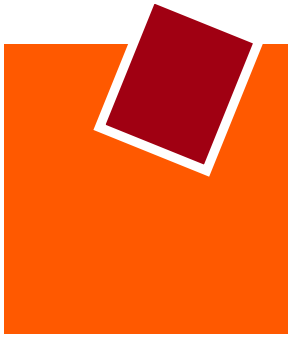
Development Tools

- **Mini Carrier Board**
  - Including Schematics
- **Reference Carrier Board**
  - Including Schematics
- **Starter Kit**
  - Evaluation carrier board
  - LVDS to DVI converter
  - Universal flat panel adapter
  - SATA-to-CF card adapter
  - SATA-to-IDE converter
  - ATX power supply
  - …

Summary

- **Performance**
  - Freescale i.MX6 ARM processors offer x86 entry to mid level computing & graphics performance
- **Flexible**
  - Qseven designs can choose from ARM and x86 low power processor architectures without changing the carrier board
  - IO's features are almost the same for ARM and x86
  - High performance ARM can be an alternative for low power x86
- **Software**
  - Software need to be ported
  - OpenCL is supported by both architectures and can boost application performance





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