Kontron Technology
ARM based Embedded

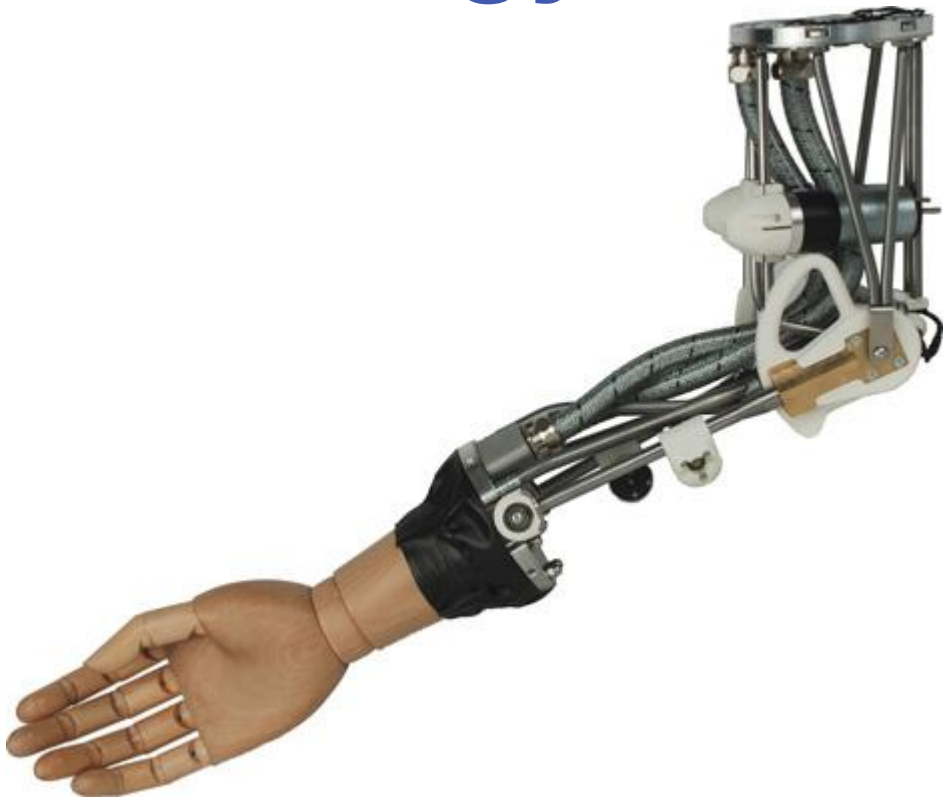




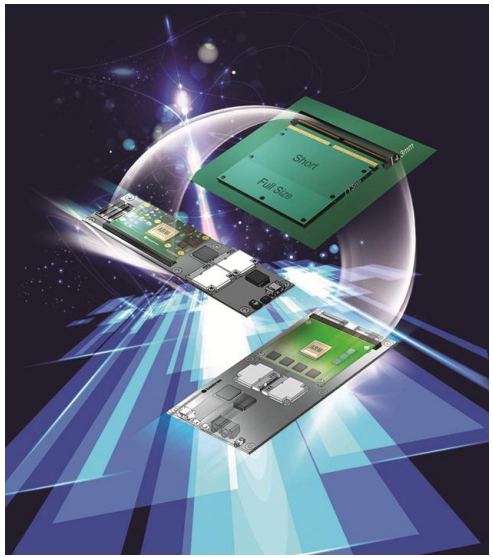



Daniel Piper
Senior Marketing manager
July 2012

KT ARM strategy & Products



Kontron´s ARM Strategy overall



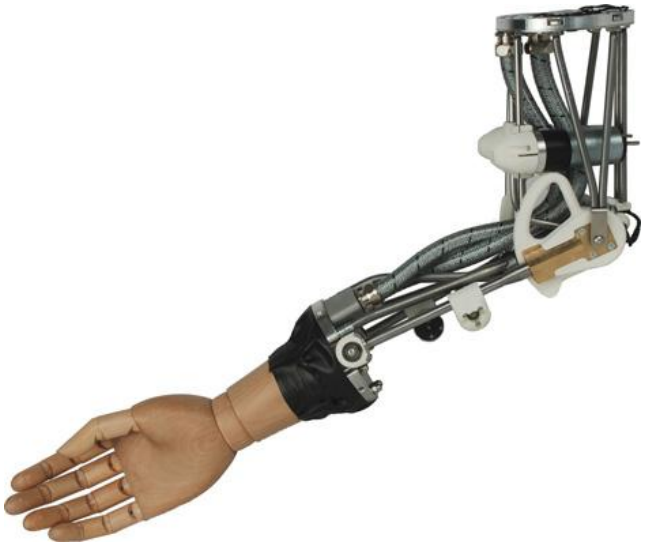
- **Why?**
  - Enabling new mobile applications for our customers
  - Allowing better TTM for ARM processor-based products
  - Reducing overall TCO
- **How?**
  - Creating scalable building blocks for application ready platforms
- **Motherboard & Module products planned for 2012:**
  - **ULP-COM** and **Pico-ITX** with **Texas Instruments Sitara 3874**
  - **ULP-COM** with **Freescale i.MX6**
  - **Pico-ITX** with **NVIDIA Tegra 2**
  - **Mini-ITX** and **ULP-COM** with **NVIDIa Tergra 3**

Kontron ARM Strategy

"In the past, integrating an ARM solution was far more straightforward – there was no complicated power sequencing, high speed buses or high speed memory. ARM 3 chips were simple for OEMs to integrate, but ARM 9 chips are not. With increasing frequency, OEMs have had to look to outside firms to take advantage of the latest advances in the technology"

IHS has acquired IMSresearch

Toby Colquhoun
Analyst - Discrete Automation, June 2012

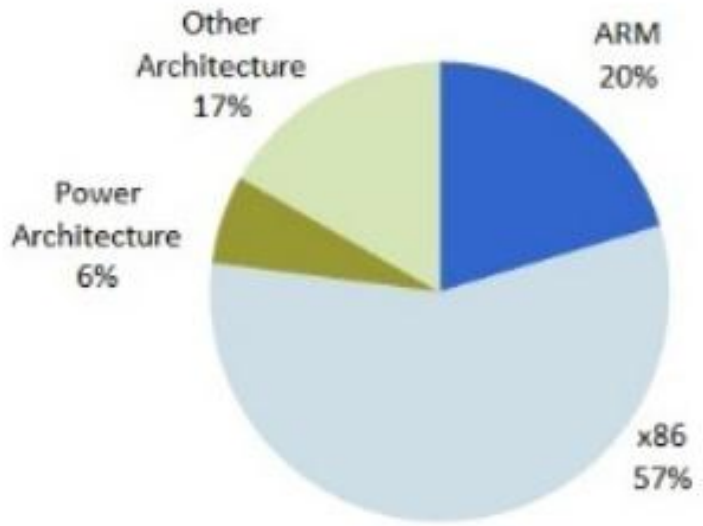


Kontron ARM Strategy

Figure 1

The World Market for Computer on Modules by Processor Architecture

Revenues Share (SM) 2011



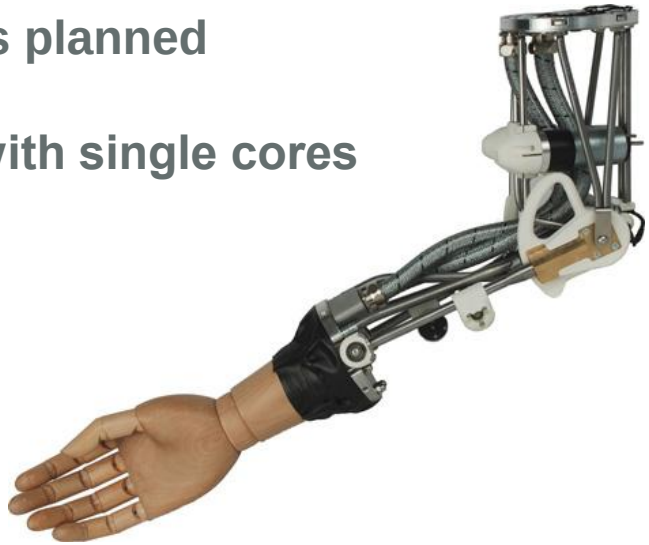
Source: IMS Research

May-12

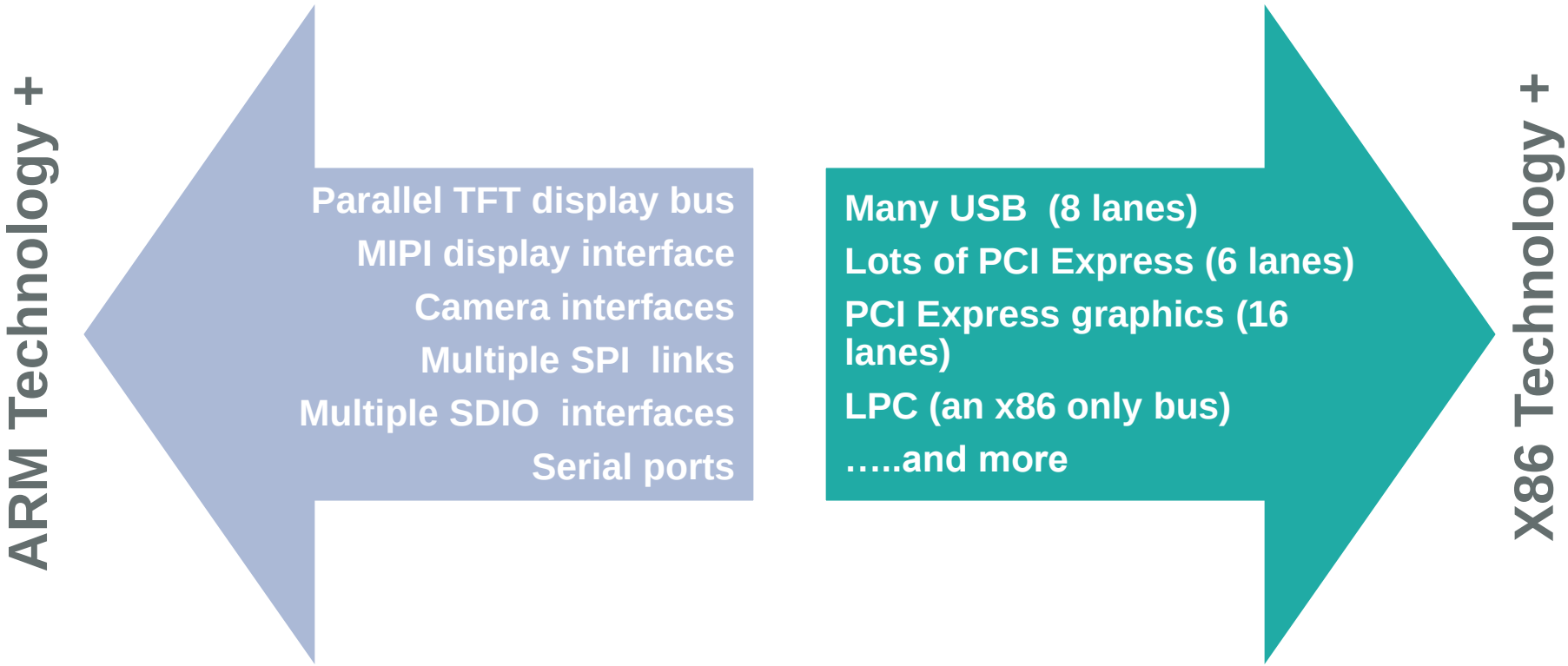
ARM based modules are hardly a new feature of the COM market, but in 2011 x86 based modules still made up the majority

Kontron ARM Strategy for Motherboards

- **ARM processors powerful enough to drive a graphical user interface at very low power consumption, (Smartphone, Tablet)**
- **Extreme low power consumption at operation (<1W)**
- **CPU performance comparable with ATOM range with dual/quad core**
- **Extended temperature selections planned**
- **CPU performance “sub ATOM” with single cores**
- **Longevity 7 - 10 years minimum**



Key Feature Differences



Designed for mobility

Kontron Pico-ITX™ embedded motherboard KTT20/pITX

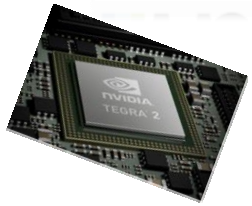
Nvidia Tegra 2 - 1 GHz super processor with two ARM Cortex A9 cores
Ultra low-power NVIDIA® GeForce® GPU delivers graphic performance for mobile devices in high-quality gaming console quality

Ideal for graphics-oriented applications:

- Compact digital signage players for stationary or in-vehicle use
- POS/POI systems
- Mobile medical monitors / medical carts plus
- Compact Panel-PCs and thin clients.

POWERED BY NVIDIA® TEGRA®

Pico™



KTT20/pITX

Basic feature

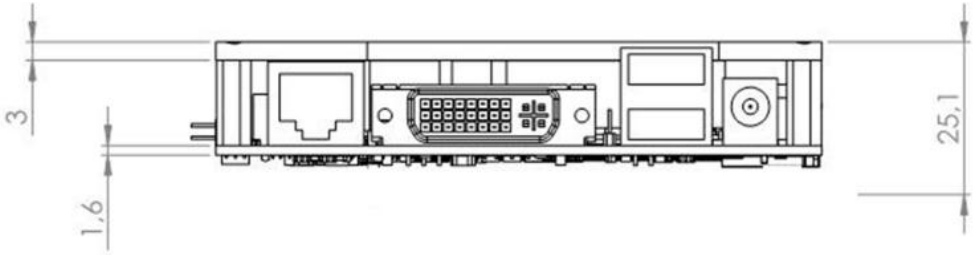
- Dual-core ARM Cortex-A9 CPU, 2x1GHz
- Ultra-low power (ULP) GeForce GPU w. 3D and 1080p capability
- Soldered down memory, up to 1 GB
- DVI-I and 24-bit LVDS/TTL
- USB, RS232, Camera input, 4 GB NAND, mPCIe
- Battery charger for 2/3 cell LI-ON packs
- Flexible power input, 5..15VDC
- Target power consumption < 5W, full board

Target markets

- Digital signage
- POS/POI
- Medical monitors

Timing

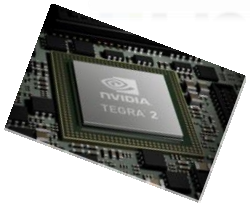
- EFT: available
- Release Q3/2012



KTT20/pITX

Ultrasmall Pico-ITX 2.5” SBC with latest NVIDIA ARMTechnology in detail:

- Dual core ARM Cortex-A9 CPU up to 900MHz with SMP technology (NVIDIA Tegra T20)
- Integrated DDR2-667Memory controller supports multiple chip configurations up to 1GB Dram
- Ultra low power GeForce GPU with enhanced 3D capabilities
- 1080p H264 MPEG-4 encoding/decoding Video ProcessorOnboard 32bit DDR-2 (memory down 512MB or 1GB)
- DVI and VGA output combined on DVI-I connector
- Onboard 24 bit single channel LVDS converter
- 5 x USB ports, 2x front, 3x rear one also acting as slave
- Micro SD Card Slot, Mini PCIe Slot
- Backlight output selectable 5V or 12V external bypass
- 1x 10/100Mbit Ethernet
- Configurable GPIO options up to 24
- Battery charger for 3cell LI-ION battery packs
- Single supply DC in up to 15V
- Lowest power consumption
- Passive cooling concept



KTT30/mITX

Basic feature

- ARM Cortex-A9 Quad Core 900MHz Processor with NEON Technology
- Ultra low power NVIDIA GeForce GPU with enhanced 3D capabilities
- 1080p H264 MPEG-4 encoding/decoding Video Processor
- Up to 2 GB DDR3L memory down
- HDMI & 24-bit LVDS
- USB, RS232, CSI/DSI/12-bit par. Camara input, Bootable eMMC
- 1x mPCIE, 1xmPCIE/mSATA, 2xSD card
- Target power consumption < 7W, full board

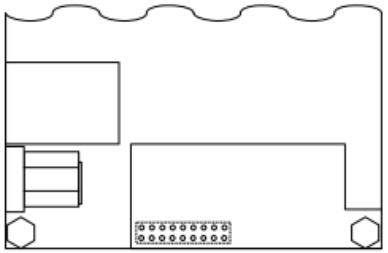
Target markets

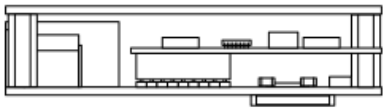
- Digital signage
- Medical
- Instrumentation

KT3874/pITX

Basic feature

- Single core Cortex A9, 900MHz ARM
- Soldered down memory, up to 2 GB DDR3
- Onboard NAND flash, 4Gb
- DVI (via HDMI connector) / 24-bit LVDS
- 2x RS232, 2xTTL, 2xCAN bus, 5x USB, 26x GPIO
- 2x 10/100 LAN, 1x SATA, Audio
- mPCIe slot w. SIM card support & micro SD slot
- Target power consumption < 2-3W, full board
- POE optional





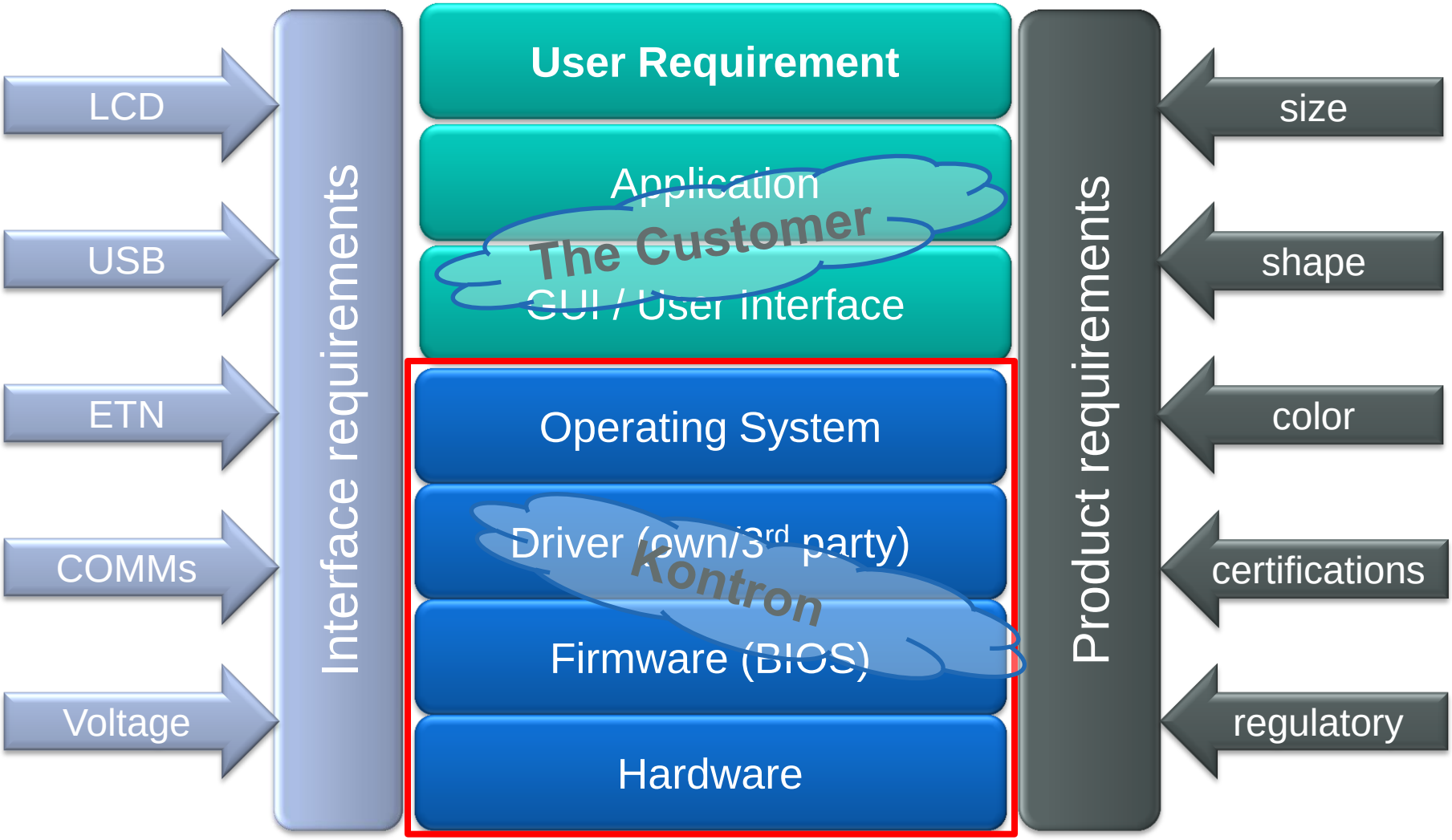
Target markets

- Industrial Automation, entry level
- Home automation
- Energy

Timing

- EFT: Q3 2012
- Release Q1/2013

Layer Model


LCD
USB
ETN
COMMs
Voltage
Interface requirements
User Requirement
Application
The Customer
GUI / User interface
Operating System
Driver (own/3rd party)
Kontron
Firmware (BIOS)
Hardware
Product requirements
size
shape
color
certifications
regulatory

Kontron Software Services

- Board Support Packages
  - Validated BSPs for Linux, WEC 7, VxWorks, Android
  - others on request (like QNX, Android, …)

- Any incremental work on all of the above, like
  - App specific performance optimization
  - Migration to other hardware or other OSes/RTOSes

- Initial Integration of almost any 3rd party Software stacks incl. Performance- and Compatibility Validation

- Life Cycle Support of these integrations

- Full support for real-time and high reliable operating systems
- Kontron Global Software Center is available for BSP modification and application porting

Strong software support and application ready platforms with ARM & SoCs based on scalable building blocks is the key differentiation of Kontron

What else...KT product portfolio

PICO-ITX

PC/104

3.5”

7 form factors, 13 chipset cores, 6-digit shipment volume

Mini-ITX

FLEX-ATX

Micro-ATX

ATX

E.G. Pico-ITX Family…
available on all leading CPU patforms

2,5" Pico-ITX				
	pITX-SP	KTLX800/pITX (2)	KTA55/pITX	KTT20/pITX
CPU	Intel® Atom™ Z510 / Z530 1.1 / 1.6 GHZ	AMD Geode™ LX800 / 0.5GHz	AMD 1.0 GHz dual core T40N	Dual core ARM Cortex-A9 CPU
Chipset	Intel® System Controller Hub US15W	CS5536 AD	AMD A55E	integrated
DRAM	1 x DDR2 SO-DIMM up to 2GB	1 x DDR SODIMM up to 1GB	1 x DDR3 SODIMM up to 4GB	Onboard 32bit DDR-2 (memory down 512MB or 1GB)
Audio	HD Audio analog / S/PDIF	Audio Codec 97 (AC97) Controller	Realtek ALC888 Controller, S/PDIF	Audio, 2 channel line in, line out, MIC, speaker amp out
USB	6 x USB 2.0 (2 x at front panel, 4 x on board)	4 x USB 2.0	6 x USB 2.0	5 x USB 2.0
Serial Ports	-	2 x RS232	-	3 x RS232
Ethernet	Intel® 82574L Gigabit Ethernet	Intel 82551ER PCI Gigabit LAN controller	Ethernet Intel® 82574L, 1 x 10/100/1000 Mbit	1 x 10/100/1000 Mbit
I/O Features	8 Bit GPI/O TTL , SDIO	16 configurable GPIO	8 configurable GPIO	up to 24 configurable GPIO
Graphics Controller	Integrated decoders in Intel® System Controller Hub US15W for MPG2 and H.264 / MPEG-4 AVC	internal graphics controller	internal GPU	Ultra low power GeForce GPU with enhanced 3D capabilities
Graphics	DVI-D JILI30 single channel LVDS (24 Bit) interface	CRT (DSUB-15) JILI30 single channel LVDS (24 Bit) interface	DVI and VGA output on DBI-I, dual channel 24Bit LVDS	Output resolution LCD up to WSXGA+ (1680x1050), DVI-I up to 1080p, Output resolution CRT (via Adaptor) up to UXGA (1600x1200)
Dimensions (H x W x D)	100 x 72mm (Pico-ITX)	100 x 72mm (Pico-ITX)	100 x 72mm (Pico-ITX)	100 x 72mm (Pico-ITX)
Special Features	TPM 1.2 , 1x microSD socket	1x microSD socket *	1x microSD socket, lockable DC Power Connector, Backlight output selectable 5V or 12V external bypass	1x microSD socket, lockable DC Power Connector, miniPCIe slot, Battery charger for 3cell LI-ION battery packs; Backlight output selectable 5V or 12V external bypass
Temperature/Humidity	Operating 0°C - 60°C (32°F ~140°F) Storage: tbd	Operating 0°C - 60°C (32°F ~140°F) Storage: tbd	Operating 0°C - 60°C (32°F ~140°F) Storage: tbd	Operating 0°C - 60°C (32°F ~140°F) Storage: tbd
Power Consumption (typ.)	5V DC, 8W typical	5V DC, 5W typical	5V DC, 10W typical	up to15V, 3 W typical
Storage	Single or Dual SATA II (chipset option) , 1x PATA 44 Master / Slave ; mSD-Card-Slot	SATA II , mSD-Card-Slot	2 x SATA III , mSD-Card-Slot	mSD-Card-Slot

Munich/Eching Kaufbeuren Deggendorf San Diego Columbia Pittsburgh Fremont Montreal Beijing Penang Sidney Bangalore
Moscow Warsaw Kiev Tel Aviv Liberec/Pilsen Chichester Copenhagen Brussels Toulon Solothurn

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