Freescale i.MX
Your Interface to the World

At the end of this session, you will be able to understand the Freescale i.MX applications processors **strategy and positioning**, have an overview of the **i.MX portfolio** and a grasp on the i.MX **software support and enablement tools**.

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► Hunt the i.MX team on the show floor

- **Libor Gecnuk**, FAE Eastern Europe – libor.gecnuk@freescale.com

- **Vladan Jovanovic**, FAE Nordic Europe

- **Franck Nicholls**, i.MX marketing Europe

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Freescale Focus

Four **Product Platforms**

+ Software

Focused on **Growth Markets**

- Automotive
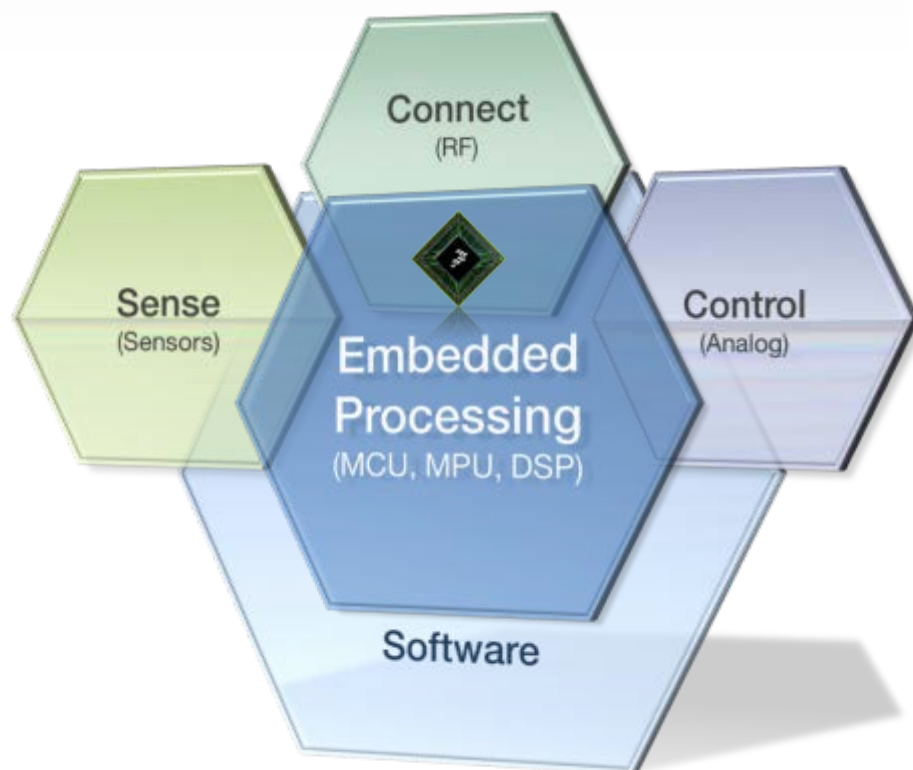- Networking
- Industrial
- Consumer

Leveraging Three **Growth Trends**

- The Net Effect
- Health & Safety
- Going Green

Connect (RF)

Sense (Sensors)

Embedded Processing (MCU, MPU, DSP)
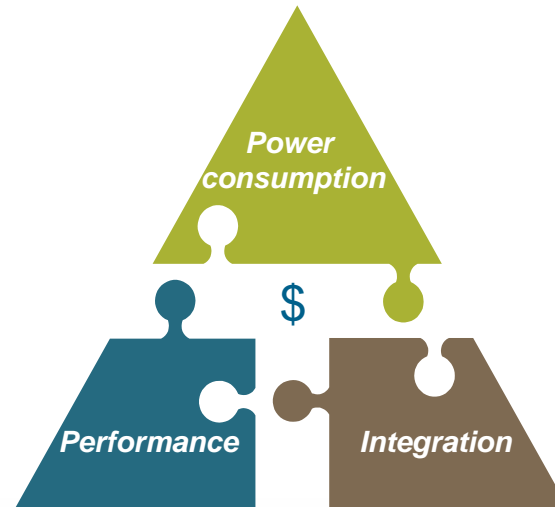
Control (Analog)

Software

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Freescale Multimedia Solutions: i.MX Application Processors

Industry Best Balance of the 3 P's

Price, Performance, Power

Power consumption

$

Performance

Integration

Designed for Consumer, Automotive and Industrial markets

3 Qualifications

Larger Pitch Packaging

Product Longevity

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i.MX Focus Markets

Smart Mobile Devices

► Pioneer in Portable Media Players and Tablets

Automotive

► Leadership in Telematics and advanced automotive infotainment

eReaders

► #1 market share in e-Reader market

Industrial

► Appliances, Medical, Energy Management, Factory Automation
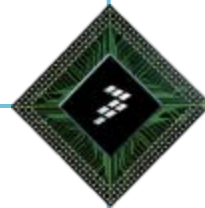
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i.MX Differentiation

Smart Mobile Devices

► *High quality audio & video*

► *Small form factor & lowest BOM*

► *Quick time-to-market*

Automotive

► *Auto grade & ext. temp*

► *Connectivity peripherals*

► *Audio, video & navigation*

eReaders

► *Balanced portfolio*

► *E Ink controller integration*

Industrial

► *Industrial qualification*

► *Product longevity*

► *Larger pitch packaging*

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Product Longevity: Minimum 10 to 15 Years of Availability

Freescale Product Longevity Program
Long-term availability for a broad range of devices

Freescale Product Longevity Statement

Freescale Semiconductor provides a product longevity program for the market segments we serve. For the automotive and medical segments, Freescale will make a broad range of devices available for a minimum period of 15 years. For all other market segments in which Freescale participates, Freescale will make a broad range of devices available for a minimum period of 10 years.

Life cycles for participating Freescale products will begin at the time of product launch and will include the standard Freescale end-of-life notification policy (one-year notice for placement of final orders and an additional year until the last ship date). Freescale will manage the program through our own factories, outside foundries and other manufacturing resources. If it becomes necessary to transfer the production of a participating product to an alternate manufacturing facility, Freescale will re-qualify that product. These actions demonstrate our intention to provide supply stability to our customers.

Products included in the Freescale product longevity program:

Search/Filter: i.mx

Category	Family	10-Year	15-Year	Product Launch
Applications Processor	i.MX Family	-	i.MX28	2010–09
Applications Processor	i.MX Family	i.MX31	-	2005–06
Applications Processor	i.MX Family	i.MX27	-	2007–06
Applications Processor	i.MX Family	i.MX51	-	2009–11
Applications Processor	i.MX Family	-	i.MX53	2011–02
Applications Processor	i.MX Family	-	i.MX35	2008–10
Applications Processor	i.MX Family	-	i.MX25	2009–06
Applications Processor	i.MX Family	i.MX233	-	2009–08

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i.MX Industrial Strategy

▶ Provides key environmental differentiators
  - 3.3V IO support
  - 0.8mm pitch package to reduce PCB & manufacturing cost
  - Extended Temperature coverage

▶ Provide all required peripherals for control and monitoring industrial systems.
  - LCD controller for user interface with touchscreen
  - Connectivity modules for links to other systems (USB host, OTG, UARTs, Ethernet, CAN)
  - Memory and media cards for updates and storage (MMC, SD, PCMCIA, CF)
  - Security for signing code

▶ Linux®, Android and Windows® CE support as well as RTOS's such as Green Hills, QNX and MQX

▶ Extended Temp range available with full Industrial qualified parts

▶ Supporting long product life spans for required industrial applications

▶ Strong Ecosystem with Module Manufacturers and Software Integrator

▶ Extensive range of core and performance levels.

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i.MX Portfolio Overview

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i.MX Consumer & Industrial Portfolio

Cortex A8

i.MX537
- Cortex A8 800MHz
- Industrial qual
- HD video, OpenGL/VG
- CAN, EEE1588

i.MX535
- Cortex A8 1GHz
- HD video, OpenGL/VG
- Consumer qual

i.MX515
- 513 + OpenGL/VG

i.MX513
- 512 + D1 Video Encode

i.MX512
- Cortex A8, 800MHz
- Ethernet, DDR2, USB Phy

i.MX357
- 353 + Open VG 1.1

i.MX508
- Cortex A8, 800MHz
- E Ink controller
- OpenVG

ARM11

i.MX31
- 31L+ OpenGL

i.MX31L
- ARM1136, 400 MHz
- Video Encode VGA

i.MX353
- ARM1136, 532 MHz
- DDR2

ARM9

i.MX27
- i.MX27L+ D1 Video

i.MX27L
- ARM926, 400MHz

i.MX258
- 257 + Security

i.MX257
- 253 + Touchscreen, CAN x 2

i.MX253
- ARM926, 400MHz
- Ethernet, DDR2
- USB Phy x 2

i.MX233
- ARM926, 454MHz
- Integrated PM, Analog Audio
- USB Phy

i.MX287
- 286 + 2xEth, L2 switch

i.MX286
- 283 + 2xCAN

i.MX283
- 280 + LCD

i.MX280
- ARM926, 450MHz
- DDR2
- USB Phy x 2
- 10/100 Eth IEEE1588
- No LCD controller

2009

2010

2011

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Associated PMIC

Cortex A8

ARM11

ARM9

i.MX31
- 31L+ OpenGL

i.MX31L
- AR
-

i.MX27
- i.MX27L+ D1 Video

i.MX27L
- ARM926, 400MHz

Associated PMIC: MC13783

i.MX357
- 353 + Open

i.MX
- ARM11
- DDR2

i.MX258
- 257 +

X253
- ARM926, 400MHz
- Ethernet, DDR2
- USB Phy x 2

screen, CAN x 2

Associated PMIC: 34704B

i.MX515
OpenGL/VG

i.MX513
512 + D1 Video Encode

i.MX512
- Cortex A8, 800MHz
- Ethernet, DDR2, USB Phy

Associated PMIC: MC13892

i.MX
- ARM
- Integ
  Analog
- USB Phy

i.MX287
- 286 +   switch

283
280 + LCD

i.MX280
- ARM926, 450MHz
- DDR2
- USB Phy x 2
- 10/100 Eth IEEE1588
- No LCD controller

Embedded PMIC!

i.MX5
- Cor
-      L/VG

35
- Cortex A8 1GHz
- HD video, OpenGL/VG
- Consumer qual

Associated PMIC: DA9053 from Dialog

i.MX508
- Cortex
- E Ink
- Or

Associated PMIC: 34708

2009   2010   2011

Under NDA

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i.MX28 Family: Intelligent Integration

The new i.MX28 processor family reaches new levels of integration in an ARM9™ device, with on-chip display, power management and connectivity features. Easy-to-use tools and software help you design differentiated industrial, automotive and consumer products in less time.

Industrial-Strength Integration

► WVGA LCD controller with touchscreen for display-centric applications
► Numerous connectivity options including dual 10/100 Ethernet (1588 capable) with L2 switch

Industry-leading Power Management

► Integrated power management simplifies customer design and saves on system cost
► <0.5 W performance under harshest conditions

Comprehensive Enablement

► Software BSPs and multimedia codecs available and supported by Freescale at no added cost
► Freescale-owned development system priced at <$400 include access to all design and layout files
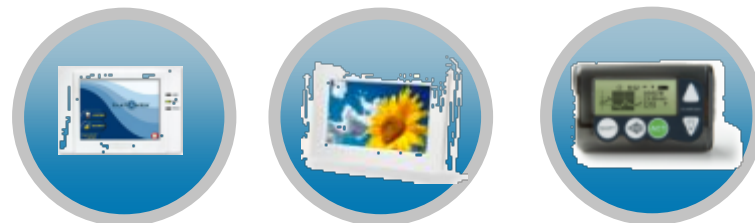
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i.MX28 Target Applications

Industrial

- Smart Energy Gateways/Meters
- HMI (Factory Automation & Building Control)
- Industrial Control

Home & Office

- HMI (Appliances, Security Panels, Automation)
- Portable Medical
- Media Gateways/Accessories

Point Of Sale

- Data Acquisition (Scanners)
- Fixed and Handheld Printers

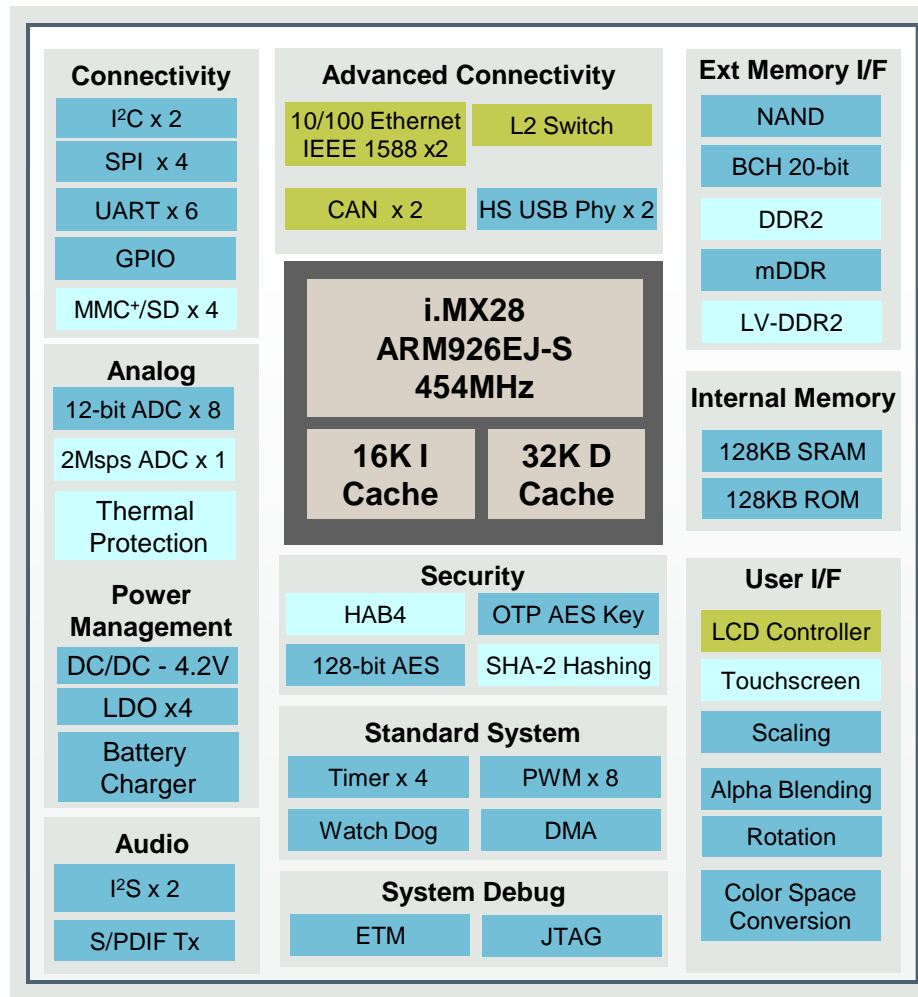## Automotive

- Audio Connectivity
- CAN Gateways

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i.MX28 Family Overview

▶ **Key Features and Advantages**

- 454MHz ARM926EJ-S core w/ 32KB Cache
- PMU with high efficiency on-chip DC/DC, supports Li-Ion batteries
- 10/100 Dual IEEE 1588 Ethernet with RMII support and L2 Switch
- Dual CAN interfaces
- LCD Controller with Touchscreen
- NAND support – SLC/MLC and eMMC 4.4 managed
- Hardware BCH (up to 20-bit correction)
- 200 MHz 16-bit DDR2, LV-DDR2, mDDR external memory support
- Dual High speed USB with embedded PHY
- Up to 8 General purpose 12-bit ADC channels and single 2 Msps ADC channel
- Temperature sensor for thermal protection
- Multiple connectivity ports (UARTs, SSP, SDIO, SPI, I2C, I2S)
- Family of products supporting various feature sets

▶ **Package and Temperature**

- 289 BGA 14x14mm .8mm
- -40C to +85C (Industrial, Automotive)
- -20C to +70C (Consumer)

Connectivity
- I²C x 2
- SPI x 4
- UART x 6
- GPIO
- MMC⁺/SD x 4

Analog
- 12-bit ADC x 8
- 2Msps ADC x 1
- Thermal Protection

Power Management
- DC/DC - 4.2V
- LDO x4
- Battery Charger

Audio
- I²S x 2
- S/PDIF Tx

Advanced Connectivity
- 10/100 Ethernet IEEE 1588 x2
- L2 Switch
- CAN x 2
- HS USB Phy x 2

i.MX28 ARM926EJ-S 454MHz
- 16K I Cache
- 32K D Cache

Security
- HAB4
- OTP AES Key
- 128-bit AES
- SHA-2 Hashing

Standard System
- Timer x 4
- PWM x 8
- Watch Dog
- DMA

System Debug
- ETM
- JTAG

Ext Memory I/F
- NAND
- BCH 20-bit
- DDR2
- mDDR
- LV-DDR2

Internal Memory
- 128KB SRAM
- 128KB ROM

User I/F
- LCD Controller
- Touchscreen
- Scaling
- Alpha Blending
- Rotation
- Color Space Conversion

Common IP with i.MX233

New or enhanced from i.MX233

Not available on all variants

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i.MX53 Family – Multimedia Experience to the Max

The low-power i.MX53 family offers ultra-fast processing and full HD capability to provide the ultimate user experience.

► **Full HD Capability:** The i.MX53 is the first i.MX processor to offer full HD video playback, for a stunning visual experience

► **Best-in-Class Performance and Integration:** The highly integrated i.MX53 offers fast processing and features hardware accelerators, improving graphics performance and reducing power consumption

► **Beyond the Chip:** Highly optimized hardware and software solutions that simplify out-of-box development and speed time to market

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i.MX53 Target Markets

Consumer

- Tablet
- Smart Mobile Devices
- Smartphone
- Personal Navigation
- Video-enabled IP Phone
- Digital Photo Frame
- Connected TV
- Smart Monitor *i.MX535, i.MX538 (POP)*

Industrial

- Security and Surveillance
- Industrial HMI
- Digital Signage / Kiosks
- Barcode Scanners
- Printers

i.MX537

Automotive

- Connectivity and Telematics
- Digital Instrument Clusters
- Video and Navigation

i.MX534, i.MX536

Medical

- Patient Monitors
- Telehealth
- Infusion Pumps

i.MX537

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i.MX53 Family Overview

Specifications:

- **CPU:** Cortex-A8
  1.0GHz – Consumer
  800MHz – Automotive/Industrial
- **Process:** 65nm, LP/GP
- **Core Voltage:** 0.85V-1.3V
- **Package:** 19x19 0.8mm 529 ball BGA
  12x12 0.4mm PoP (Consumer)
- **Case Temp:** -20 to 70C (Consumer)
  -40 to 85C (Automotive/Industrial)

Key Features and Advantages

- High performance CPU: Cortex A8
- 2GB DDR2/3, LPDDR2 memory at 400MHz
- HDD: PATA, S-ATA interface
- One eSDHC ports supports MMC4.4 including DDR mode
- Ethernet 10/100 with IEEE1588
- Delivers rich graphics and UI in HW
  - OpenGL ES 2.0 3D accelerator (AMD Z430)
  - OpenVG 1.1 graphics accelerator (AMD Z160)
  - Neon Vector floating point co-processor
  - Display up to UXGA (1600x1200)
- Drives high resolution video in HW
  - Multi-format HD1080 video decode
  - Multi-format HD720 video encode
  - High quality video processing (resizing, de-interlacing, etc)
  - Displays: Parallel, LVDS or VGA
- Audio:
  - I2S, SPDIF Rx/Tx, ESAI
- Secure boot (HAB), cryptographic accelerators, TZ
- More analog integration: simplified system, reduced system BOM
  - Temperature Monitor for smart performance control
  - Linear supply regulators
  - 32KHz Oscillator

i.MX53 block diagram:

System Control: Secure JTAG, Power Mgmt, PLL x4, Clock Reset, Smart DMA, 32kHz Osc, Temp Monitor, LDO Supply x2

Timers: Timer x3, PWM x2, Watch Dog x2

Memory: ROM, RAM

Security: Sahara v4, Trust Zone, RTIC, SCC v2, SRTC, eFUSES

CPU Platform: Cortex-A8, 32KB i-cache, 32KB d-cache, 256KB L2-cache, Neon, ETM, Vector Floating Point Unit

Multimedia: OpenGL ES 2.0 + VG1.1, 1080p30 Video Decoder / 720p30 Video Encoder, 1080p30 @ 60Hz TV Out

Display: Analog VGA Out, Parallel (RGB) UXGA, LVDS UXGA, Resizing & Blending, Inversion / Rotation, Image Enhancement, De-interlacing, Camera Interface

Connectivity: Fast IrDA, eMMC 4.3/SD 2.1 x4, eMMC 4.4, CSPI x3, UART x5, Keypad, I²C x3, ESAI, SSI/I²S x3, PATA, SATA, HS USB OTG +PHY / HS Host+PHY / HS ULPI Host x2, SPDIF Tx/Rx, CAN x2 / MLB50 / ASRC, 10/100 Ethernet, GPIO

Ext. Memory I/F: 2GB DDR2/DDR3/LPDDR2, SLC/MLC NAND Up to 16-bit ECC, NOR

Legend: Reused IP from i.MX51x or i.MX35x | Updated IP from i.MX51x | NEW IP in i.MX53x

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i.MX Roadmap

Premium

CPU: 1GHz+ multi-core
2500 – 14,000+ DMIPS
Graphics: Adv 2D+3D HW
Video: >1080p enc/dec
LCD: >1080p
PMIC: Integrated/Separate

i.MX 6Quad

i.MX53

Balanced

CPU: 1-2 core
500MHz – 1GHz
650 - 7000 DMIPS
Graphics: 2D and/or 3D HW
Video: D1 to 1080p enc/dec
LCD: WVGA to 1080p
PMIC: Integrated/Separate

i.MX 6Dual

i.MX51   i.MX50

i.MX31   i.MX35

Entry

CPU: Single core
400 – 800MHz
500 – 1000 DMIPS
Graphics: Basic 2D HW
Video: QVGA – D1 dec
LCD: Segmented to WVGA
PMIC: Integrated

i.MX 6Solo

i.MX28

i.MX 6Solo Lite

i.MX27
i.MX25
i.MX233
STMP37xx

2011   **2012**   **2013**

Legend

- ARM9
- ARM11
- Cortex-A8
- Cortex-A9

Production

Proposal

Execution

Samples w/BSP

Production

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i.MX 6 Series

Coming in 2012

i.MX 6Solo, 6Solo Lite

- Single ARM Cortex A9 at 1.2GHz
- 256KB L2 cache, Neon, VFPv3, Trustzone
- Next generation video, 3D graphics (6Solo only)
- External memory support up to 32bit DDR3 and LPDDR2
- Integrated EPD controller

i.MX 6Dual

- Dual ARM Cortex A9 at 1.2GHz
- 1 MB L2 cache, Neon, VFPv3, Trustzone
- 3D graphics with 4 shaders up to 200MT/s
- Dual stream 1080p/720p dec/enc
- External memory support up to 64-bit DDR3 and 2-channel 32-bit LPDDR2
- Integrated SATA-II

i.MX 6Quad

- Quad ARM Cortex A9 at 1.2GHz
- 1 MB L2 cache, Neon, VFPv3, Trustzone
- 3D graphics with 4 shaders up to 200MT/s
- Dual stream 1080p/720p dec/enc
- External memory support up to 64-bit DDR3 and 2-channel 32-bit LPDDR2
- Integrated SATA-II

Common Features of the i.MX 6 Series Platform:

- ARM Cortex A9 based solutions up to 1.2GHz
- Dual HD 1080p decode, Dual 720p encode, single stream up to 1080p60, 50Mb/s
- 3D video playback in High definition
- Low power 1080p playback at 350mW Integrated IO's that include HDMI v1.4 w/PHY, LVDS display ports, MIPI CSI/DSI for camera/Display, MIPI HSI, Gigabit Ethernet, multiple USB 2.0, PCI-Express, CAN controller, MLB bus
- Consumer, Industrial and Automotive temperature range qualifications
- POP, BGA packaging options using low layer count PCB design rules
- SW support: Google Android, Microsoft Windows Embedded CE, Ubuntu, QNX, Linux, Linaro, Adobe Flash, Skype

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i.MX Enablement: Software, Ecosystem & Dev Kits

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Market Focus is Shifting

Embedded Devices Yesterday

Embedded Devices Tomorrow

Usability

Hardware Design

Applications

Technology

Software

Features

Services
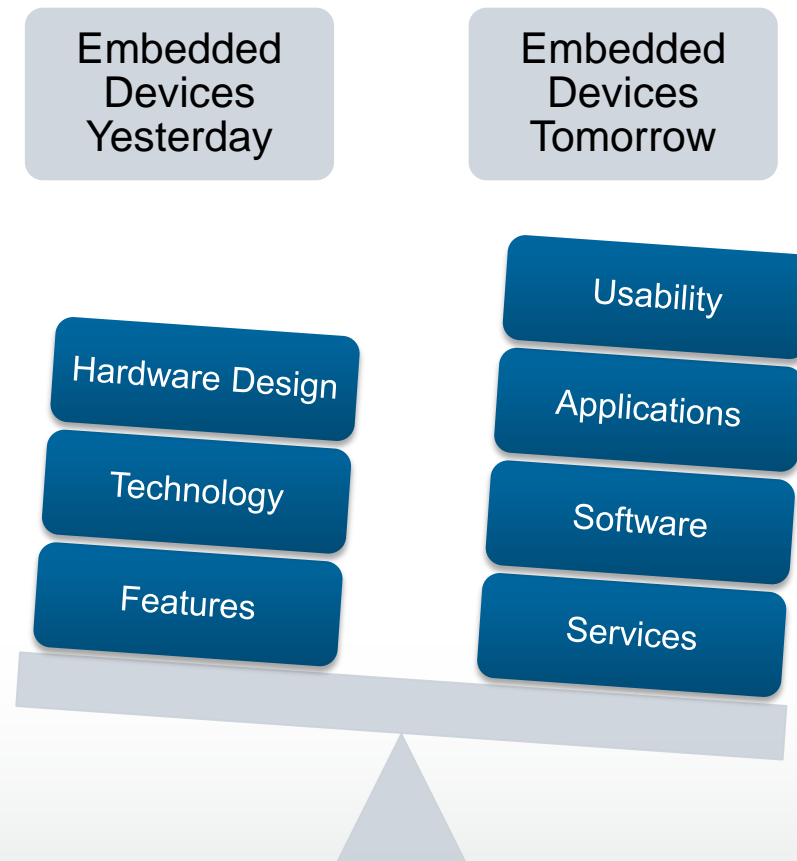
Solution => A worldwide community of partners driving system solutions on Freescale platforms.

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Software Completeness

Freescale Complimentary Software Development Kit:
product-worthy software components, publicly available online

▶ **Documentation:** Release notes, user/reference guides, data sheets

▶ **Development Tools:** FSL tools and listing of 3rd party tools

▶ **Demo Applications:** set of apps for demos or to serve as starting point for customers

▶ **Middleware:** Gstreamer or WinCE framework, multimedia codecs, power management

▶ **BSP:** standard O/S optimized with additional drivers to support peripherals on Personality Module

O/S

Freescale   Third Party or Open Source

Board Support Packages

► Linux, Android, and Windows Embedded Compact 7 OS support (on i.MX53).

- Support for Froyo and Gingerbread versions available today

- In Sync with Google's Android releases

- Optimized Flash10, Video Codecs, Graphics Hardware Accelerations

- SilverLight optimized to use Graphics Hardware engine

- Optimized Video Codecs and Flash10 support

- In Sync with Microsoft's RTM updates

- Hardware accelerated X-Windows environment

- Optimized Flash10, video codecs

- Enabling upstream native support through Linaro

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Inflexion: Complimentary UI Development Toolkit for i.MX
by Mentor Graphics

Create UIs on i.MX51 and 53 in a fraction of the time
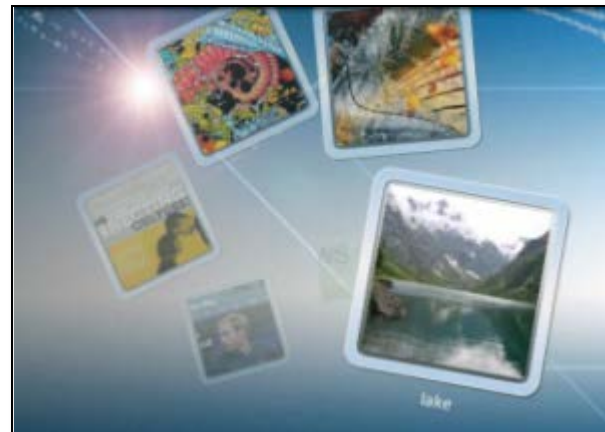
- Stunning animations & OpenGL ES effects in minutes
- Skinable advanced Uis
- Drag & drop tool
- Zero cost for i.MX customers until Feb 2012: download at www.freescale.com/imxinflexion

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http://www.iMXcommunity.org

Freescale i.MX DevKits

i.MX53 Quick Start -149USD
- •i.MX51
- •DA9303
- •SGTL5000
- ➢ i.MX53 1Ghz Cortex-A8 Processor
- ➢ Dialog DA9053 PMIC
- ➢ 1 GB DDR3 Memory
- ➢ 3" x 3" 8-layer PCB
- ➢ LVDS connector
- ➢ VGA connector
- ➢ Parallel LCD add-on card via Expansion connector
- ➢ HDMI add-on card via Expansion connector
- ➢ SPDIF output via HDMI add-on card
- ➢ Freescale SGTL5000 Audio Codec
- ➢ Microphone jack
- ➢ Headphone jack
- ➢ Enables Parallel LCD or HDMI output
- ➢ Camera CSI port signals
- ➢ I2C, SSI, SPI signals
- ➢ Full-size SD/MMC card slot
- ➢ Micro SD card slot
- ➢ 7-pin SATA data connector
- ➢ 10/100BT Ethernet port
- ➢ 2x High-Speed USB Host port
    1x Micro USB Device port

i.MX51EVKJ-699USD
- •i.MX51
- •MC13892
- •SGTL5000

- ► 7" WVGA Touchscreen LCD Display (add-on module)
- ► Expansion board (add-on module)
- ► 2 LVDS connectors
- ► DVI-I connector
- ► 2 SD/MMC Card Slots
- ► USB Host x2 / USB OTG x1
- ► Ethernet Port
- ► Mini PCIe
- ► SATA HDD connector
- ► SIM Card connector
- ► Keyboard connector
- ► Mic input, stereo headphone output (jack), V2IP Headphone
- ► USB Camera connector
- ► RGB output through DVI-I connector
- ► Ambient light sensor footprint
- ► FM receiver footprint

i.MX35PDK-1500USD
- •i.MX35
- •MC13892
- •SGTL5000

- ► Auxiliary Video Input for display from external video source
- ► 5.1 Sound (Audio CODEC)
- ► FM receiver/tuner to support short range FM adapters
- ► CAN Connector
- ► CMOS Image Sensor
- ► USB OTG and USB Host
- ► 10/100 Ethernet
- ► Optional GPS daughtercard

i.MX31PDK – 1500USD

- • VGA Touch-screen Display
    - • USB, Ethernet
    - • BT, Wifi, GPS
    - • FM Receiver
    - • FM Transmitter
    - • TV Encoder
    - • Headset
    - Connector
    - • Speaker
    - • Microphone
- • Camera
- • Storage (HDD)
- • External connectors

i.MX27PDK – 1500USD

i.MX25PDK-995USD
- •i.MX25
- •MC34704B
- •SGTL500
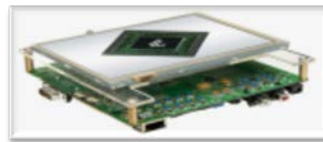
- ► 5.7" VGA LCD w/ Touchscreen
- ► USB 2.0 OTG, Ethernet
- ► SD/MMC, Smartcard
- ► CMOS Image Sensor

i.MX23EVK-399USD
- •i.MX233

- ► 4.3" WQVGA Touchscreen LCD Display (add-on module)
- ► SD/MMC Card Slot
- ► USB Host/Device
- ► Ethernet supported via SPI header
- ► Navigation keys
- ► Mic input, headphone output (jack)
- ► Composite TV Out connector footprint
- ► 3-Axis Accelerometer footprint •
- ► Expansion Port for optional Peripheral Card

i.MX28EVK-399USD
- •i.MX28

- ► i.MX28 Applications Processor (289 BGA)
- ► DDR2
- ► NAND FLASH
- ► SPI Flash footprint
- ► ETM Support
- ► DC/DC Converter components
- ► Li-Ion battery connector

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i.MX28 Evaluation Kit (EVK)

Price. Performance. Personality.

CPU	Debug	Peripherals
► i.MX28 Applications Processor (289 BGA) ► DDR2 ► NAND FLASH ► SPI Flash footprint ► ETM Support ► DC/DC Converter components ► Li-Ion battery connector	► Debug Serial Port ► JTAG ► Reset, Interrupt, boot switches ► Debug display/LED's ► Power Source	► WVGA Touchscreen LCD Display (add-on module) ► SD/MMC Card Slot ► Dual USB Host/Device connector ► CAN connector ► Dual Ethernet with Switch for testing of features and throughput ► Navigation keys ► Line input, headphone output (jack)

$399

MCIMX28EVK	i.MX28 Evaluation Kit	MSRP $399
MCIMX28LCD	4.3" WVGA Touchscreen LCD Display (add-on module)	MSRP $199

Software:
- Freescale Board Support Packages (BSPs)
  - Linux
  - Windows Embedded CE
- Freescale Multimedia Codecs
  - Audio Codec: MP3, AAC, WMA
  - Video Codec: MPEG4, H264
- IEEE 1588 Demo (IXXAT)

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i.MX53 Quick Start Board

i.MX53 1Ghz Cortex-A8 Processor
- Dialog DA9053 PMIC
- 1 GB DDR3 memory
- 3" x 3" 8-layer PCB

Display
- LVDS connector
- VGA connector
- Parallel LCD add-on card via expansion connector
- 24 bit 4.3" 800x480 WVGA with 4-wire touch screen
- HDMI add-on card via expansion connector

Audio
- SPDIF output via HDMI add-on card
- Freescale SGTL5000 audio codec
- Microphone and headphone jacks

Expansion Connector
- Enables parallel LCD or HDMI output
- Camera CSI port signals
- I2C, SSI, SPI signals

Tools Support
- Segger/CodeSourcery, Macgraigor, IAR debug/IDE tool chain
- Inflexion™ UI from Mentor Embedded
- VMware player to bring up image on a Windows PC

$149

Connectivity
- Full-size SD/MMC card slot
- Micro SD card slot
- 7-pin SATA data connector
- 10/100BT Ethernet port
- 2x high-speed USB host port
- 1x micro USB device port

Debug
- JTAG connector
- DB-9 UART port

Additional Features
- 3-axis Freescale accelerometer (MMA8450QT)
- Power supply 5V, 2A

OS Support
- Linux from Freescale; Android 2.2 and Windows Compact 7 from Adeneo

freescale ™
semiconductor

i.MX53 SABRE Tablet Reference Design

i.MX53 1GHz Cortex-A8
Other Freescale silicon
- SGTL5000 Audio Codec
- MMA8451Q 3-Axis Accelerometer
- MAG3110 Magnetic Sensor
- MC1323X ZigBee®

Memory
- 1GB DDR3
- 32GB SanDisk SSD (optional)
- 8GB eMMC

PMIC: Dialog DA9053
Connectivity
- Atheros GM22 GPS Receiver
- Atheros AR6003 Wi-Fi + AR3001 BT Module
- Infineon Amazon-1 3G Module (optional)

User Interface
- 10.1" 1024x768 display with capacitive multi-touch
- Omnivision OV5642 5MP camera
- Capacitive Buttons: Home, Menu, Back, Search
- Other Buttons: Power, Reset, Volume up/down

I/Os:
- HDMI connector
- 1x Full size SD Card Slot
- 2x High-Speed USB Host, 1 x Micro-USB
- 1x SATA port, 1x LVDS display footprint
- Debug PCB with Ethernet 10/100, JTAG, UART
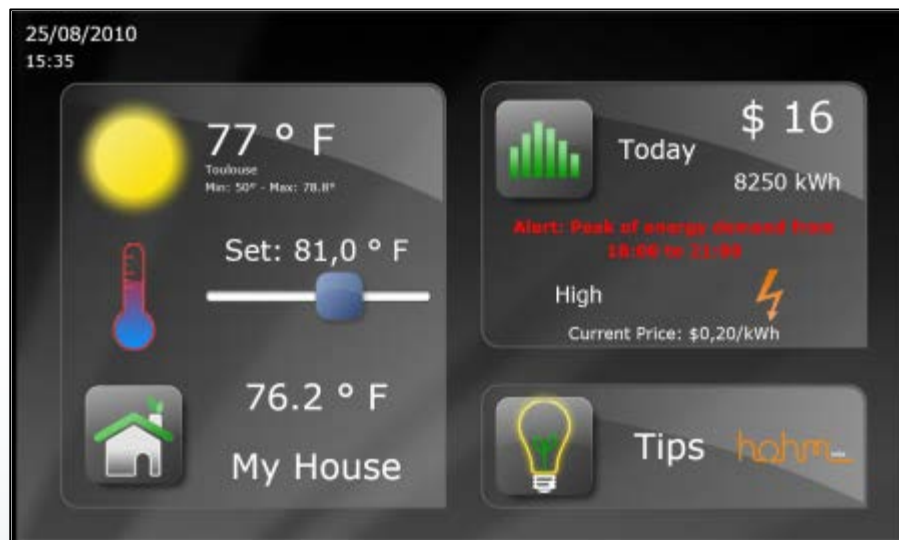- Stereo Speaker, Headphone/Microphone

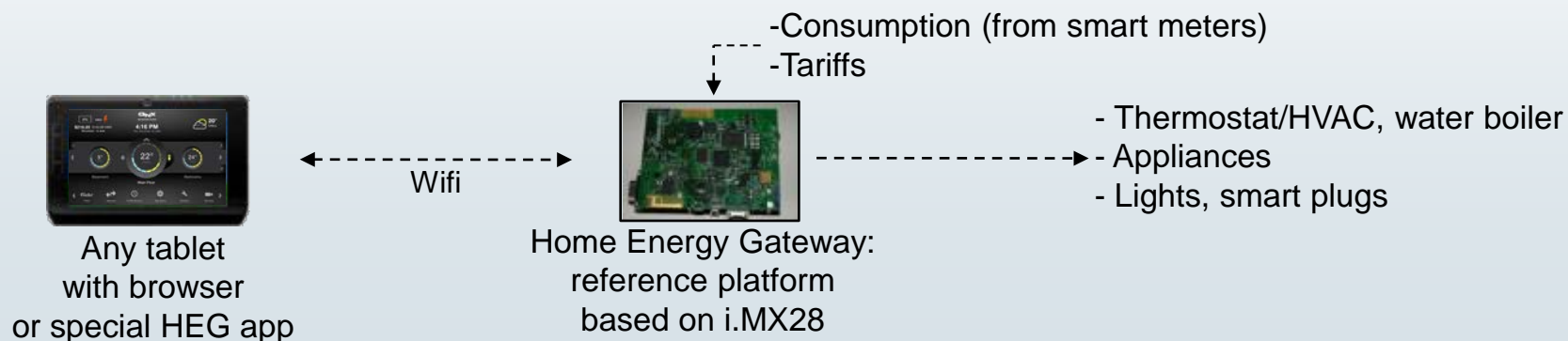## OS Support
- Android, Ubuntu, Linux, Windows Embedded

$1499

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Home Energy Gateway (HEG) Reference Platform
- based on i.MX28

*Real-time **home energy management system**, leveraging a ZigBee meshed architecture*

Teaser:
http://www.youtube.com/watch?v=__62abnnwmY

Windows Embedded
ProSyst
MicroDoc QNX SOFTWARE SYSTEMS
Adeneo

-Consumption (from smart meters)
-Tariffs

- Thermostat/HVAC, water boiler
- Appliances
- Lights, smart plugs

Wifi

Any tablet
with browser
or special HEG app

Home Energy Gateway:
reference platform
based on i.MX28

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http://www.freescale.com/imx

http://www.iMXcommunity.org

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Making the World a Smarter Place.