Advancing Innovation with Intel® Atom™ Processor for Embedded

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A new generation of digital devices is transforming the planet. Are you in? Join the embedded internet era at intel.com/embedded/15billion

* Gantz, John. The Embedded Internet: Methodology and Findings, IDC, January 2009.

What is the News?

- Intel Unveils Embedded Specific Intel® Atom™ Processors
- Intel Atom is enabling "The Embedded Internet" which will include 15 billion intelligent connected devices
- New embedded applications coming to market to change the way consumers live, work and play
- Announcing Reference Design for Media Phones

The Embedded Internet
BY 2015

Researchers

Many

Ubiquitous

Invisible

15B Devices


Mainframes


Servers, PC's


Cell Phones MIDS


Embedded

Internet - 7x24, Every Modality of Life

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Intel® Architecture for Embedded
Delivering Growth Beyond the PC & Server

General IA


Notebook


Desktop


Server

Embedded Intel Architecture


Wireless Infrastructure


Enterprise Storage


Routers


Point of Sale


In-Vehicle Infotainment


IP Phones


IP Cameras


Power Lines


Security


VoIP


IPTV/IMS


Military/Aero


Digital Sign


Home Auto


Portable Medical


Home Storage


Gaming


Medical


Industrial PC


Printers


Transport


Robotics


Factory Automation


Sensors

>30 Segments - 3500 + Customers - >30 Years

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Characteristics of the Connected Devices

Multi-OS Environment

Security-enabled

Intelligent

User Interface

IP-based

Energy Efficient

Dedicated Function

Remote Management

Intel Architecture Processors for Embedded

Traditional Intel Architecture for Embedded

Desktop | Mobile | Server

Smart SoCs for Embedded

- Smaller Footprint with Lower Power*
- Full Feature SoC
- Integrated Accelerators support with Intel® QuickAssist Technology

Low Power Intel Architecture Intel® Atom™ for Embedded

- 6 design options
- Built for embedded
- **Choice in package size, performance, & temperature ranges**
- Fan-less
- Ultra Low Power
- Small Footprint

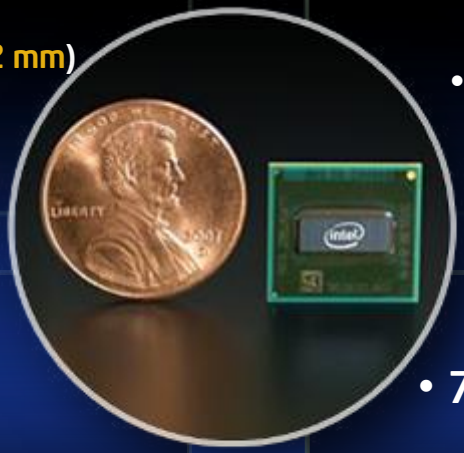
NEW

*Assumptions: Compares Intel® Pentium® M processor platform with external PCI crypto accelerator to EP80579 256 byte packets with 2048 IPsec VPN tunnels

New Options for Intel® Atom™ Processor Product Line

Intel's smallest processor for Embedded with new options

- Industrial or commercial temp
- 2 package sizes (13x14 mm; 22x22 mm)
- Sub 2.5 watt TDP
- 1.10 GHz, 1.33 GHz, 1.60 GHz



System Controller Options

- Industrial or commercial temp
- 2 package sizes (22x22 mm; 37.5x37.5 mm)
- Integrated 2D & 3D graphics, video acceleration, memory (MCH), & I/O
- High Def Audio & SDIO

Advanced Technologies for Improved Power Efficiency

- 45nm High-K
- Hyper-Threading
- Enhanced Intel SpeedStep®
- Deep Power Down

Embedded Requirements

- 7 year extended life cycle support
- IA software compatible
- Multiple operating system support
- Intel® Embedded Graphics Drivers

Adding 4 Processors and 2 System Controller Hub Options for Embedded Product Lineup

Announced Intel® Atom™ Products for Embedded

Hardware

- EuroTech Inc — A MEMBER OF EUROTECH GROUP
- Portwell
- Interface
- INNOTECH CORPORATION
- CURTISS WRIGHT Controls Embedded Computing
- AAEON — Computing Platform Service Partner
- RadiSys — THE POWER OF WE
- DFI-ACP — www.dfi-acp.com
- FDI ENGINEERING
- NORCO
- Trusted ePlatform Services ADVANTECH
- procsys
- iEi — IEI Technology Corp.
- congatec
- PHYTEC

Software and Tools

- Microsoft Auto
- tenAsys
- virtualLogix — Real-Time Virtualization™
- QNX — QNX SOFTWARE SYSTEMS
- COQOS
- LYNUXWORKS™
- phoenix technologies
- American Megatrends
- Green Hills SOFTWARE, INC.

Integrated Product

- Harman International — Automotive Division
- Telemetria Inc. — Empowering Your Life on the Road
- SBS — THE INNOVATORS

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On the Ground or On the Go
Electrify with Intel Atom

Energy

Design opportunity for an extended temp solution for power grid monitoring & control.

Key requirements are extended temp, low power drain & I/O options

The EuroTech product fit the requirements and will be an 800MHz x86 migration to Intel Atom

Other uses for the EuroTech solution:
- Alternative Energy
- Electronic control systems
- Smart Grid technologies
- Wind Power

EuroTech Inc
A MEMBER OF EUROTECH GROUP

Enabling the Military

Targeted at the military, the Curtiss Wright Manpack product includes wearable electronics.

Offers soldiers situational awareness and actionable intelligence through networked sensors

Other portable and in-vehicle apps
- Rugged-Mobile Internet Devices
- Secure Radios
- Wireless access point
- Embedded telematics displays

CURTISS WRIGHT Controls
Embedded Computing

Rail Tracking & Safety

Market Opp: ~2 million US-based railcars and ~20,000 locomotives Identification & accurate location systems are aging & need to be replaced

- Continuous monitoring enables safe increase in average train speed
- Preventative maintenance w/ wheel bearing monitoring
- Powered by vibration

ARCH ROCK

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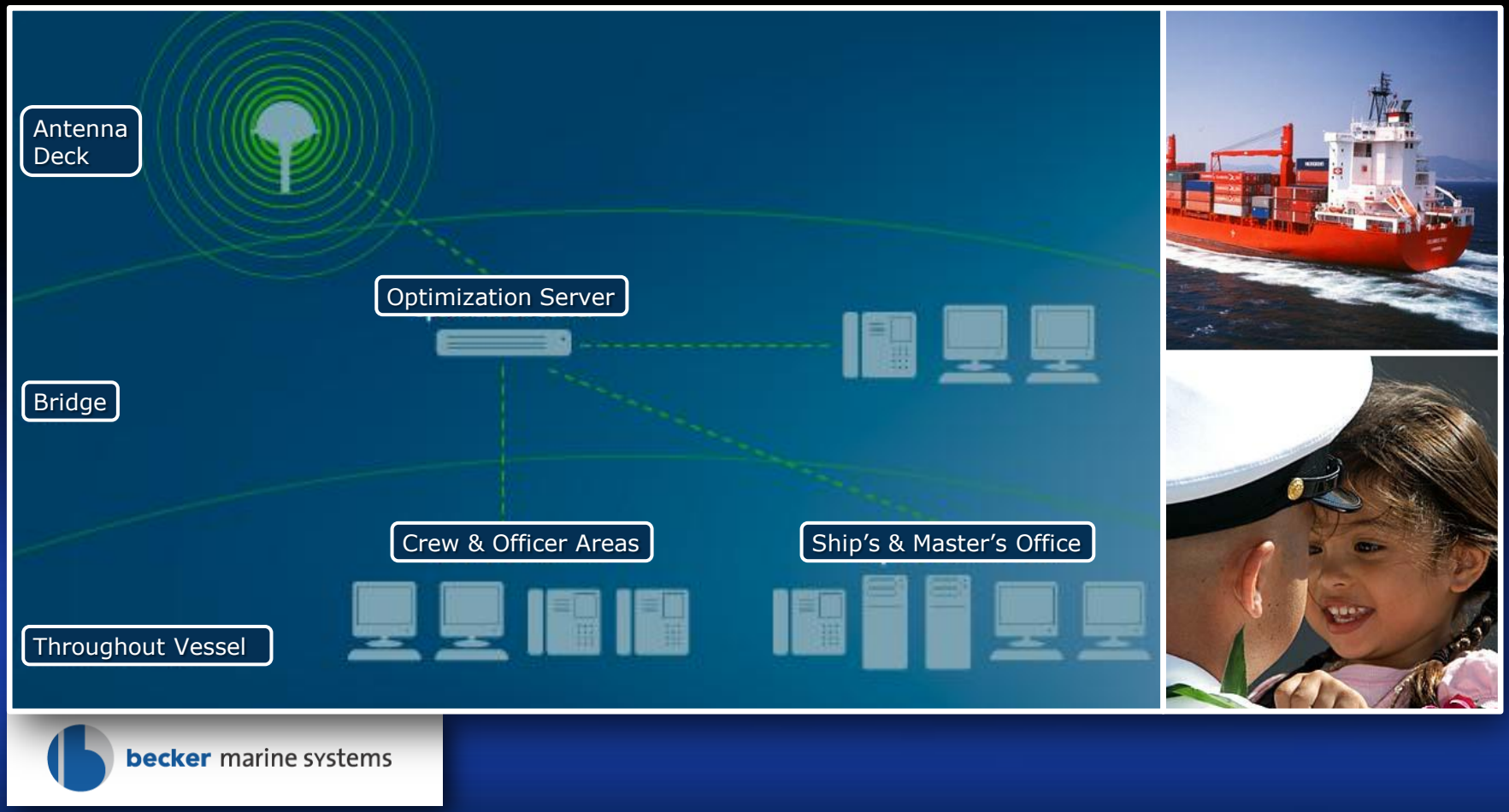
Becker Marine: Ship to Shore Communications



Media Phone = Internet Enabled Phone

Media Phone is platform that can take a different personality based on software & packaging Use Cases

- Kitchen Internet Device (Consumer Version)
- Unified Communications Device (Enterprise Version)
- Bedside Internet Device (Hospitality, Telecare)

Openpeak* ProFrame (Office)

Openpeak* OpenFrame (Home)

Source: IDC

Intel Reference Platform for Media Phone

Jump Start Customers for $11 Billion Market Opportunity[1]

App Services	Reference Platform Application Software
Middleware	Media Framework, App Framework
	DSP SW, SIP/RTP/RTCP Stack
Device Drivers	Graphics, HW-specific Drivers (e.g., touch-screen, LCD, DECT etc)
OS	Moblin Linux
BIOS/Firmware	BIOS
Hardware	Intel® Atom™ Processor

- Development Platform for software development
- Hardware reference design, schematics, & gerbers
- Validated software stack
- Established relationship with third parties to reduce go-to-market effort

[1] Source: Nissen, Keith, *In-Depth Analysis: The Media Phone Has Arrived*, In-Stat, February 2009.

Hot-but-not?
Your Car with Intel® Atom™ Can Handle the Heat

Harman International* sets the standard for energy-efficient infotainment solutions without compromise in performance & enjoyment.

The first to fully-integrate the powerful Intel® Atom™ processor Z520PT into the complex automotive environment

Harman International
Automotive Division

Telemetria Inc.
Empowering Your Life on the Road

Telemetria Brings Broadband Mobile Connectivity and Infotainment to the Car with DashTop*

congatec
the rhythm of embedded computing

congatec Introduces First Full Industrial Grade Module

COQOS

OpenSynergy integrates the Intel® Atom™ processor into in-car infotainment platforms
First time in an AUTOSAR Environment

SBS
THE INNOVATORS

SBS Unveils New In-Vehicle Infotainment System

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Microsoft and Intel Collaborate in Automotive

New Microsoft Auto platform will support Intel® architecture
Intel joins Microsoft's new automotive partner program

Collaboration enables automakers and suppliers to:

- Improve scalability of their designs across product generations
- More quickly meet demands for connected, multi-media rich applications

Microsoft Auto

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GENIVI Alliance
To Develop IVI Platforms on Open Source

March 3, 2009 - Global technology leaders launch GENIVI Alliance to develop an in-vehicle infotainment platform derived through open source

- Reduces cost of development & ownership
- Quickens Development
- Spurs Innovation

BMW Group · DELPHI · GM · intel · MAGNETI MARELLI · Visteon · PSA PEUGEOT CITROËN · WIND RIVER

Coming in Summer 2009…

First technical deliverable - a prototype running on the Intel® Atom™ processor and Moblin-based Wind River Linux - will be available as open source code

Summary

Intel Atom is

- Enabling new devices like media phones
- Enhancing existing segments like IVI
- Powering new embedded segments like energy


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Product Name	Core Speed	Front-Side Bus	Thermal Design Power[1]	Support for HT	Temperature Range	Package	Chipset Pairing
Intel® Atom™ processor Z530Δ	1.60 GHz	CMOS, 533 MHz, 32-bit address	2.2 watts	Yes	Commercial 0 to +70▪ C	441-ball lead-free FCBGA8 13x14 mm	Intel® SCH US15W
Intel® Atom™ processor Z510Δ	1.10 GHz	CMOS, 400 MHz, 32-bit address	2.0 watts	No	Commercial 0 to +70▪ C	441-ball lead-free FCBGA8 13x14 mm	Intel® SCH US15W
New Offerings:							
Intel® Atom™ processor Z530PΔ	1.60 GHz	CMOS, 533 MHz, 32-bit address	2.2 watts	Yes	Commercial 0 to +70▪ C	437-ball lead-free FCBGA8 22x22 mm	Intel® SCH US15WP
Intel® Atom™ processor Z510PΔ	1.10 GHz	CMOS, 400 MHz, 32-bit address	2.2 watts	Yes	Commercial 0 to +70▪ C	437-ball lead-free FCBGA8 22x22 mm	Intel® SCH US15WP
Intel® Atom™ processor Z520PTΔ	1.33 GHz	CMOS, 533 MHz, 32-bit address	2.2 watts	Yes	Industrial -40 to +85▪ C	437-ball lead-free FCBGA8 22x22 mm	Intel® SCH US15WPT
Intel® Atom™ processor Z510PTΔ	1.10 GHz	CMOS, 400 MHz, 32-bit address	2.2 watts	Yes	Industrial -40 to +85▪ C	437-ball lead-free FCBGA8 22x22 mm	Intel® SCH US15WPT

Δ Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See www.intel.com/products/processor_number for details.

[1] The TDP specification should be used to design the processor thermal solution. TDP is not the maximum theoretical power the processor can generate.

Block Diagram for Intel® Atom™ Processor-based Platform