Mobility’s Next Wave of Growth

Anand Chandrasekher
Senior Vice President, Intel
GM Ultra Mobility Group
1 Billion IA Mobile Devices a Year By 2015
Worldwide PC Shipments by Form Factor

- Desktop
- Notebook

Forecast

Source: IDC 2008
How Mobile Computing Became Mainstream

First Notebooks
How Mobile Computing Became Mainstream

First Notebooks

Intel™ Centrino™ Processor Technology

Small Form Factor Notebooks
China - Mobile Computing’s Next Leader?

- World’s largest mobile phone market: ~635Mu
- World’s greatest number of Internet users: ~300Mu
- World 2nd largest PC installed based: ~200Mu
China PC Shipments by Form Factor

- Desktop
- Notebook

Forecast

Source: IDC 2008
Intel™ Atom™ Processor: Celebrating 1st Birthday

IDF Shanghai
April ‘08
LAUNCHED INTEL ATOM PROCESSOR & MIDs

Computex
June ‘08
LAUNCHED NETBOOKS

Olympics
Aug ‘08
1st MIDs SHIP Aigo & Lenovo

IDF Beijing
April ‘09
ATOM 1st BIRTHDAY
100+ MID+NETBOOK DESIGNS
MULTIPLE PRC DESIGNS
Semiconductor Insights
2008 Insight Award

Most Innovative Mobile Processor
Intel™ Atom™ Processor

Intel's Smallest Processor Built with the World's Smallest Transistors
< 25 mm² Die Size
45nm High-K CMOS
47 Million Transistors

High Performance
Fastest Processor in <3W space
High Performance Graphics
HT Technology

Intel's Lowest Power CPU
0.65-2.5 Watts TdP
Low Average Power (160-400mW)
Low Idle Power (80-100mW)

Ground-up Design for CPU
Core 2 Duo ISA Compatible
SSE3, SSSE3

IDF2009

1. HT Technology can add 200mW of power above quoted TDP for HT SKU's when multi-threaded applications are run.
2. Average power is defined as measured CPU power whilst running BAPCo WinMark™05 Office Productivity suite on Microsoft® Windows® XP for a period of 90min at 50°C.
3. Idle powers is measured when running Windows Vista in idle at 50°C.
Intel™ Atom™ Processor: Port of Choice Across OSs

- **NetBooks / MIDs**
- **Moblin 1.0 Today**
- **Moblin 2.0 Coming!**
- **Windows XP Home, Windows Vista Basic, Windows 7 Starter, Windows 7 Basic**

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The "Moblin on Atom™" Ecosystem is Growing

Community

14 OSVs and Growing...

MOBLIN.ORG

WIND RIVER
ubuntu
Asanux
xandros
LINUS
Novell

100+ ISVs and Growing...

lenovo
Clarin
G
V
 elles
Dell
acer
Shuttle

Moblin Now Hosted at the Industry Neutral Linux Foundation
Will Foster New Innovation and Growth In Open Source and Linux

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MIDs - New Form Factors and Usage models

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Intel™ Atom™ Processor: ANNOUNCING TODAY

Two New Z Series Processors

Z550
• Extends Speed to 2GHz
• Fastest Performance in a Handheld*

Z515
• Intel Burst Performance Technology for performance on demand
• Existing Sleek Form Factors

* <3W power envelope
Announcing Today . . .

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Announcing Today

Neusoft Delivering
Moblin Compliant Applications

Ximin Chen
Vice President, General Manager of
Embedded Software Division

Neusoft
Beyond Technology
Moorestown: Continued Innovation

2008 / 09

>10X Reduction in Idle Power
Target: Smartphones

2009 / 10

First Low Power CPU and Chipset Designed from the Ground Up
Target Usages: Entertainment, Social Networking, Information

45nm
Power Management: Continued Innovation

10X

Menlow

Mooresstown
Mooresstown Ecosystem Momentum

PMIC VENDORS
- NEC
- Freescale
- Maxim

MID INNOVATION ALLIANCE CUSTOMERS
- LG Electronics
- BenQ
- Inventec
- Quanta Computer
- Compal

WIRELESS / TELEPHONY
- Ericsson
- Option
- OpenPlug

OS AND APPLICATIONS
- Wind River
- Neusoft
- NAVTEQ
- Skype
- Telmap
- Asia
- Ubuntu
- RedOffice
- Bmat
- Myspace.com
- Adobe

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Netbooks: Enabling More People to Experience the Internet

Simple
Affordable
Internet-Centric
Netbook & MID Usages:

- Purpose built for Internet use
- Web: Learn, Communicate and View
- Compact form factors
- Basic PC functions

Notebook Usages:

- Multi-purpose PCs
- Entertainment, Productivity, and Rich Web experience
- View, create or edit HD video
- Content creation and Intense workloads
- Range of form factors (>10")
“Thin is In”...
New Wave of Thinness for Mainstream
With Intel™ Centrino™ 2:
Performance Does Not Have to be Power Hungry!

Performance Qualifying Score
Higher is Better

- Intel Core™ 2 Duo processor T9600 (2.8GHz, 6MB L2 Cache, 1066MHz FSB) and Mobile Intel GM45 Express Chipset
- Intel Core™ 2 Duo processor T7800 (2.6GHz, 4MB L2 Cache, 800MHz FSB) and Mobile Intel GM965 Express Chipset
- Intel Core™ Duo processor T2700 (2.33GHz, 2MB L2 Cache, 667MHz FSB) and Mobile Intel 945GM Express Chipset

Battery Life (In Minutes)
Higher is Better

MobileMark® 2007 - Productivity
Delivering Real Value for Consumers

Significant Performance Improvement on Everyday Applications

1.4X Better
iTunes* MP3 Encoding

2.3X Better
Sony* Vegas* Video Encoding

1.5X Better
Adobe* Photoshop* Elements

Source: Intel Comparisons refer to comparably configured Intel® Core™ Duo Processor T2790 (2 MB 1.2 Cache, 2.33 GHz, 667 MHz FSB) and Intel® Core™ Duo Processor T9300 (6 MB 1.2 Cache, 2.8 GHz, 1066MHz FSB) systems. See back-up for system configurations and other important legal information.
A New Era of Mobile Security

Intel™ Anti-Theft Technology

Prevention - Detection - Reactivation - Response

Anti-theft Solutions - Addressing Comprehensive Theft Services Business
Anti-Theft Solutions

*Other brands and names are the property of their respective owners.*
Quad Core in Mobile!
The Best Gets Even Better...

The world’s highest performing mobile processor¹

- **4 Cores** at clock speeds of up to 2.53 GHz
- **12 MB** of L2 Smart Cache
- **1066 MHz** Front Side Bus

The ultimate mobile engine for HD multimedia and gaming

- Up to **50% faster** Hi-Def video encoding and editing²
- Rocking hardcore gaming experience
- Overspeed protection removed to maximize performance³

¹ For more information on why Intel® Core™ 2 Extreme Processor QX9770 is the world’s highest performing quad-core mobile processor see www.intel.com/performa/ mobile/extreme/index.htm for important additional information.
² Performance measured based on Adobe® Premiere Pro® CS3 comparing notebooks with quad-core Intel® Core™ 2 Extreme Processor QX9770 with notebooks based on dual-core Intel® Core™ 2 Extreme Processor X9100. Actual performance may vary. See www.intel.com/performa/mobile/extreme/index.htm for important additional information.
³ Warning: altering clock frequency and/or voltage may (i) reduce system stability and useful life of the system and processor; (ii) cause the processor and other system components to fail; (iii) cause reductions in system performance; (iv) cause additional damage; and (v) affect system data integrity. Intel has not tested, and does not warranty the operation of the processor beyond its specifications.
Calpella Platform Architecture

Montevina

Penryn Processor

Cantiga

ICH9M

Robson

PCIe* Graphics
Display
Clocks

FSB
DDR2 / DDR3
DMI

Calpella

Nehalem Processor

PCIe* Graphics
GFX
IMC

GFX
IMC

Flexible Display Interface (Intel FDI)

DDDR3
DMI

PCH

NVM
ME
Clock Buffer

Display
I/O

Higher Integration Delivering More Performance and Battery Life in Innovative Form Factors
Integrated Power Gate
Enabling Energy Efficient Integration

- Integrated Power Switches turn individual Cores on/off
  - Zero leakage power
  - Novel process technology
  - Modular & Scalable Clocking
- Intel™ Turbo Boost Technology
- Also used in Memory System, Cache, I/O to dynamically power down when not in use
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Generations of Innovation

Moore’s Law Driving Innovation
Process Leadership - Silicon Integration
1 Billion IA Mobile Devices a Year By 2015