AMD
Smarter Choice

AMD Handheld Multimedia Technology
Unleash The Ultimate Mobile Entertainment Experience

February 12, 2008
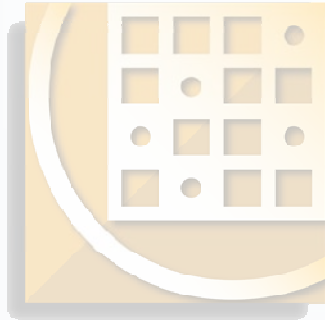Mobile World Congress
Barcelona, Spain

Agenda

- AMD Consumer Electronics

- Mobile Multimedia Trends

- AMD Handheld Graphics & Multimedia

- New AMD Discrete Media Processors

- New AMD Graphics Core Technologies

- Q&A

AMD Consumer Electronics

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AMD's Technology Leadership
Consumer Electronics Focus

Energy-Efficient Processing

Ultimate Visual Experience

Affordable Internet Access

AMD's Consumer Electronics Group

![AMD Smarter Choice logo]

Handheld

AMD Imageon™

- Nearly 250 million units shipped over product life

DTV

AMD Xilleon™

- Over 40 million units shipped over product life

Driving the Ultimate Consumer Entertainment Experience - Anywhere

AMD's Leading CE Customers

SONY   NOKIA   SAMSUNG

LG Electronics   MOTOROLA

SHARP   JVC   htc smart mobility

MITSUBISHI ELECTRIC
Changes for the Better   freescale semiconductor   ST

Westinghouse   Panasonic   QUALCOMM

**Providing Customer-Centric Innovation
to Leading CE Manufacturers**

Mobile Market Trends

AMD Handheld Technology - Mobile World Congress

Mobile Multimedia Trends

Global Handset Shipments (M Units)
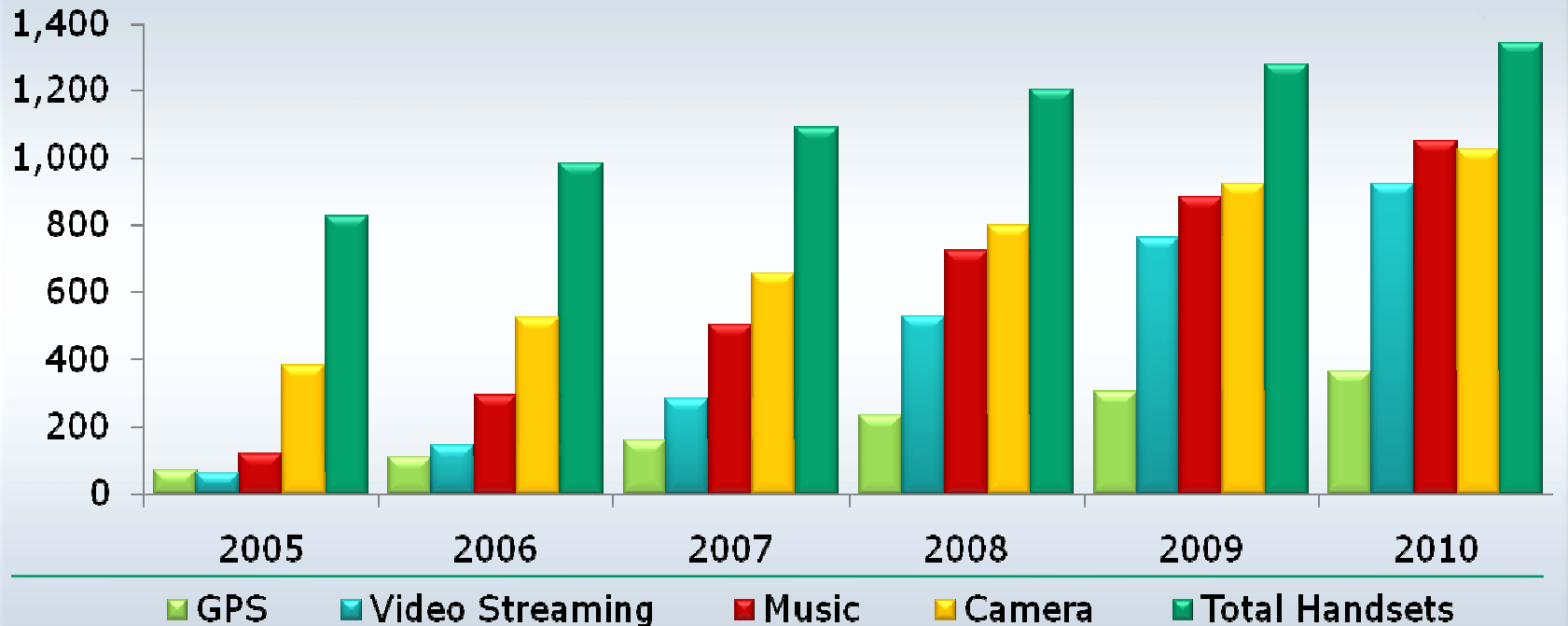
(Source: AMD estimates based on 3rd party data)

Legend: GPS · Video Streaming · Music · Camera · Total Handsets

- Adoption of multimedia rapidly exceeds overall market growth
- Video, audio, imaging will be required features in most phones

Handheld Market Trends
Graphics Driving the Experience

Powered by

AMD Imageon™

Key Technology Enablers:

Large, high-resolution displays
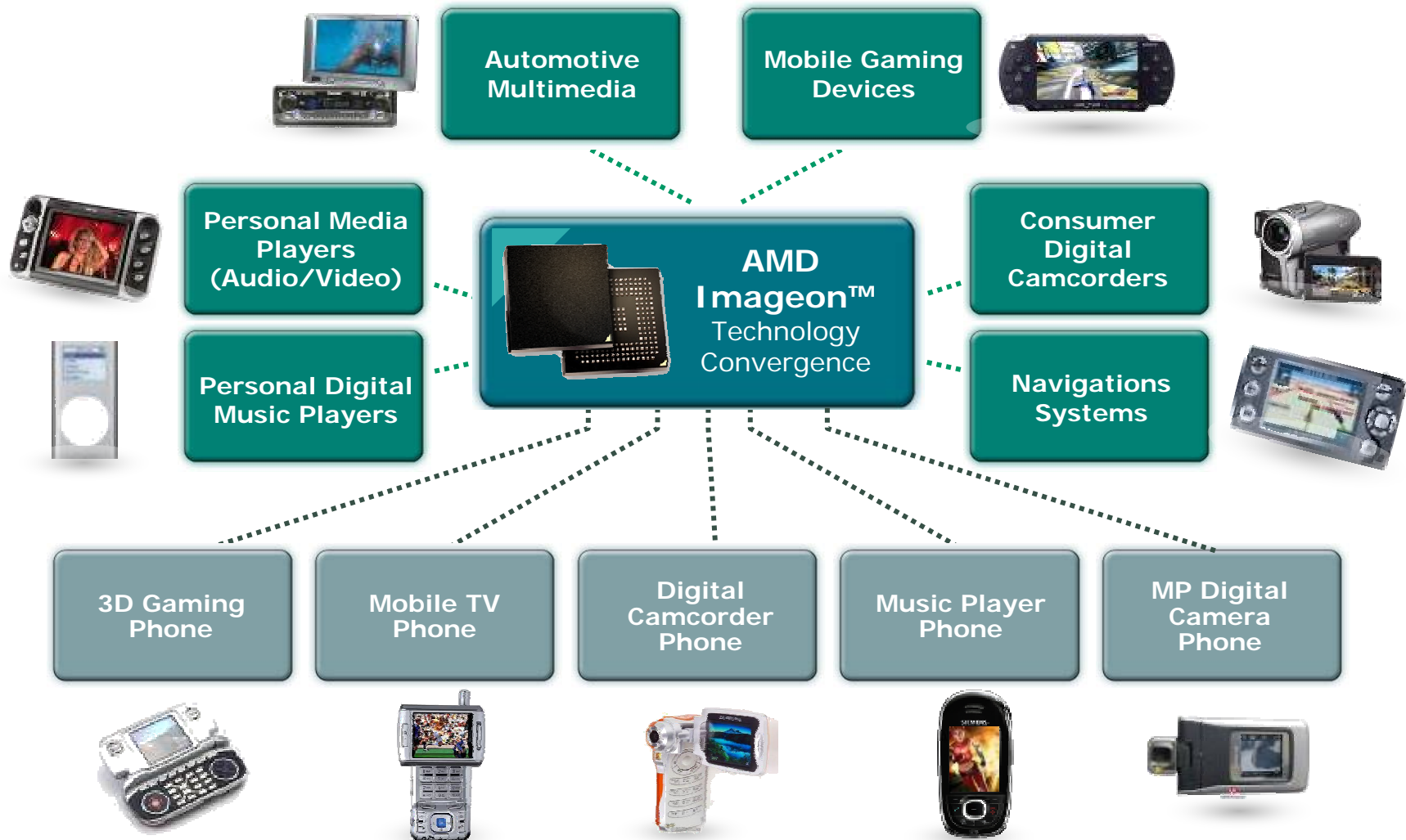
Intuitive touch-screen interfaces

- Touch-screen interface enables popular applications
  - Internet, Web 2.0, Flash
  - Navigation and mapping
  - Premium and casual games

The User Interface Defines The Experience

# AMD Handheld Strategy
Convergence & Divergence

Automotive Multimedia

Mobile Gaming Devices

Personal Media Players (Audio/Video)

AMD Imageon™ Technology Convergence

Consumer Digital Camcorders

Personal Digital Music Players

Navigations Systems

3D Gaming Phone

Mobile TV Phone

Digital Camcorder Phone

Music Player Phone

MP Digital Camera Phone

AMD Driving Innovative Technology

AMD is a leading supplier of discrete media processors and graphics technologies to handheld device makers.

AMD is expanding its portfolio of innovative, open-standard technologies to deliver immersive, next-generation mobile graphics and multimedia.

Introducing new AMD technology for today's most popular media-rich applications, as well as upcoming features to delight tomorrow's mobile consumer.

- Mobile TV
- 3D Games
- Internet Browsing
- High-Definition Audio
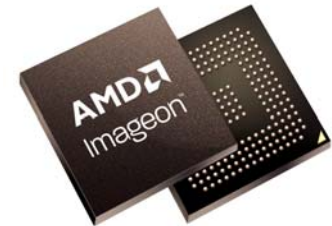
Features expected to appear in mobile phones in late 2008 and 2009

Introducing
AMD Imageon™ D160 Mobile TV Solution

AMD Imageon™ D160 Mobile TV Solution

Mobile TV Anywhere, Anytime

AMD Imageon™ D160 Mobile TV solution delivers to OEMs a complete hardware and software package to quickly design and build new handheld devices to receive over-the-air mobile TV.

- Receives TV signals broadcast in the DVB-T and DVB-H standards, which are currently used worldwide, including parts of Europe, Asia, Australia, India, Africa.

- AMD's turnkey solution also enables USB-powered mobile TV devices for watching live television on notebook PCs, PDAs, portable media players, etc.

AMD Imageon™ D160 Receiver
Great Mobile TV - Anywhere, Anytime

TV in the Palm of Your Hand

- Fully-qualified Antenna-to-Display solution
- Excellent QoS and Doppler for high speed mobility
- Low-cost, low-power, small footprint complete receiver module
- Multi-channel decode with PiP, fast channel change, and PVR
- Entire AMD middleware stack plus 3rd party support

Easily add Broadcast TV to Notebook PCs & PDAs

- Validated USB & SDIO reference designs for PC accessories
- Free-to-air DVB-T/H reception on Windows notebooks and UMPCs
- Superior multipath for challenging urban environments

AMD's Turnkey Mobile TV Solution

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M180/A250

Audio | Imaging
Video | Graphics

+ **D160**
DVB-H
DVB-T
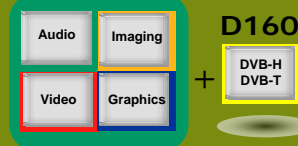
Antenna-to-Display Solutions

SD/Mini-SD

Packaged ICs

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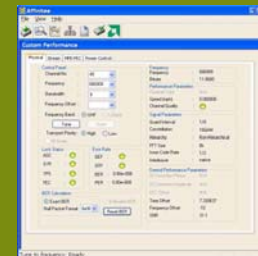
Modules

USB

Bumped Die

Accessories
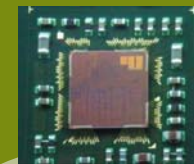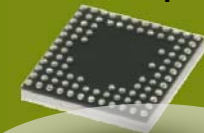
Middleware & Tools

Modules & Die

Complete Mobile TV Solution:
Hardware, middleware, software app, reference designs, and test suite

Introducing
AMD Imageon™ M210 Audio Processor

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AMD Imageon™ M210 Audio Processor

Dedicated Audio Processor Designed for 100hrs of Music

Fully Integrated Audio Subsystem

- Turnkey hardware/ software for reduced integration time
- Lower system cost
- Integrated Memory, Analog Audio Codec & Power Management
- USB 2.0, NAND, SD and Bluetooth support enable stand-alone Audio Playback

Ultra Low Power Consumption

- Dedicated low-power audio engine (LPAE)
- Designed for 100 hours stand alone playback:
  - ~32mW Audio Subsystem for playing from SD/NAND (900mAh/3.7V battery; 150mVrms into 16Ω headphones)

Best Quality Sound

- 99 db signal to noise ratio

Complete audio solution with
advanced use cases and best-in-class audio

AMD Imageon™ M210 Audio Processor

Advanced Digital Audio for Phones and Music Players

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Designed for 100 Hours Playback

AMD's Low Power Audio Engine

- Dedicated engine for music playback

Use your phone as a music player without worrying about talk time!

Advanced Use Cases

Video Telephony

- Parallel audio (AMR-NB) encode and decode
- HW sample rate converter and mixer

Multiple users

- Different audio streams to headphones and Bluetooth
- Each mixed and with various audio enhancements

Rich Suite of Components

Extensive suite of over 30 standard codecs

- MP3, AAC, AAC+, WMA
- AC3, DTS
- MIDI with SMAF support
- 3D audio, and much more

Support for lossless codecs

- MPEG-4 SLS
- FLAC

Enhances everything from ring tones to games!

Custom Add-ons

Extensible architecture

- Open standards based modular architecture
- Downloadable codecs
- Allows for 3rd-party codecs to run on Imageon
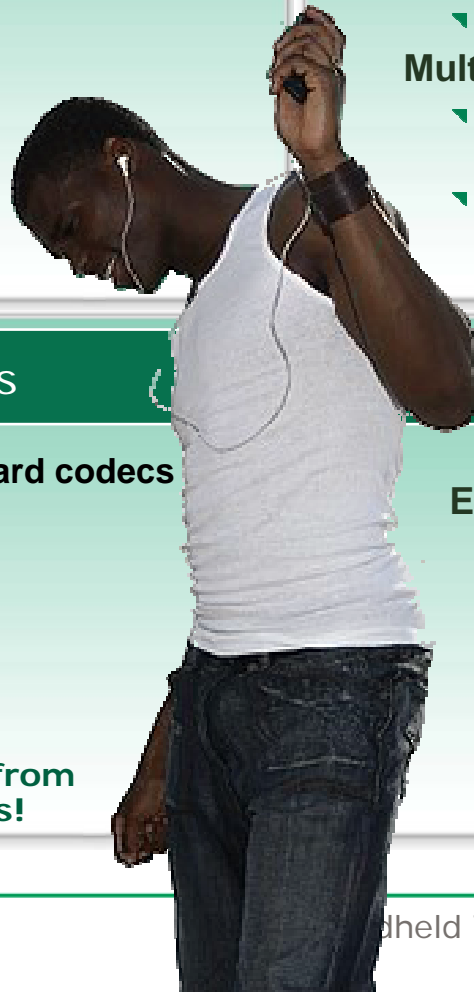
Introducing
AMD Imageon™ A250 Application Processor

AMD Imageon™ A250 Application Processor

Outstanding Multimedia + Vector Graphics

New application processor for feature phones combines the best of AMD's state-of-the-art multimedia technology for photo imaging, video recording and playback, with vector graphics for compelling user interfaces.

- Enables multimedia performance rivaling today's stand-alone consumer electronics devices while maintaining long system battery life.

- Flexible and scalable solution designed to help phone manufacturers reduce the time and cost associated with system integration and qualification.

AMD Imageon™ A250 Application Processor
Fast to Market with a Whole New Visual Experience

Imageon A250
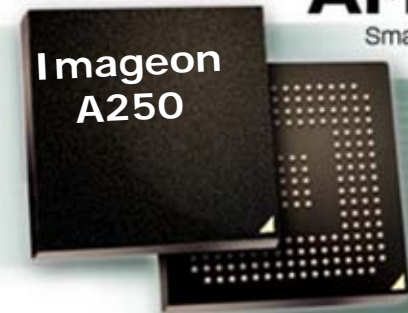
Flexible and Scalable Solution

- Standalone multimedia & graphics subsystem
- Easy integration and qualification
- Lower system power

All the Latest Multimedia Technologies

- D1 resolution video, 8 MPix camera, Super-fast JPEG, dual display
- Unparalleled multimedia performance and quality
- Media storage with USB, SD and NAND support

Vector Graphics - A New Visual Experience

- Incredible animations, fonts, effects
- Flash applications, maps
- Low power, high performance

State of the art multimedia for feature phones

AMD Imageon™ A250 Vector Graphics
For Incredible User Interfaces

AMD Smarter Choice

High-quality Flash® style UIs and applications

Infinite Zoom for Visuals

- ◤ Resolution scaling for free
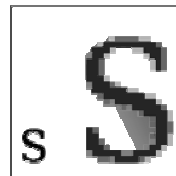
Bitmap   Vector graphics

Quick rendering of Western, East-Asian and other character sets

Superb and Responsive User Interface

The market's only native hardware vector graphics

![AMD Smarter Choice]

Introducing
AMD Z460 3D Graphics
AMD Z180 Vector Graphics

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AMD Graphics IP Licensing Business

AMD licenses leading-edge vector graphics and 3D graphics intellectual property (IP) to mobile chipset and silicon suppliers.

- AMD's complete graphics platform includes the latest OpenVG and OpenGL ES technologies optimized to deliver superb image quality and performance with minimal power consumption
- AMD graphics licensing deals inked in 2007:
  - Freescale Semiconductor
  - Nokia
  - QUALCOMM Inc.
  - STMicroelectronics

AMD Z460 3D Graphics Core
High-End Gaming in Your Pocket!

- Native OpenGL ES 2.0 3D API
- Patented Unified Shader Architecture
  - Based on the Microsoft Xbox 360 Xenos architecture
- Immersive, photorealistic graphics experience with programmable vertex and pixel shaders
  - Optimized for high real-world application performance
  - Support for WVGA and QHD resolutions
  - Performance on par with high-end portable games consoles
- Cross-industry content tools covering PC, Game consoles and handheld
- Inflection point for massive adoption of 3D Graphics in the mobile market in 2009

High-end gaming in your pocket!

AMD Z180 Vector Graphics Core
Industry's Only Available Native Vector Graphics Hardware

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Next Generation Visual Experiences on your Mobile Devices

- User Interfaces
- Personal Navigation
- Web Browsing
- Accelerated Flash support

Native Hardware OpenVG 1.X Rendering

- More responsive UI: up to 40x faster than software-based implementations*
- Significant power savings through native OpenVG hardware acceleration
- Drive displays up to HD resolution
- Superior image and text clarity
- Native Flash support for web applications

High-quality mass-market User Interfaces

* Measured on ARM9 Versatile @ 210MHz using a commercially available software rasterizer

AMD Delivers New Handheld Technology

AMD's Latest Handheld Technologies

Immersive mobile experiences today and tomorrow

- ◤ AMD Imageon™ D160 mobile TV solution
- ◤ AMD Imageon™ M210 audio processor
- ◤ AMD Imageon™ A250 application processor
- ◤ AMD Z180 OpenVG 1.x graphics core
- ◤ AMD Z460 OpenGL ES 2.0 graphics core

AMD Delivers The Ultimate Visual Experience™

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Thank You
Any Questions?