Redefining Mobility

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Mobility Today

- Local Applications
- Form Factor-driven I/O
- Limited View of Internet
- Fixed User Interface
- Location-aware
- Wired Sync
Mobility Tomorrow: What People Want

**Today**
- Local Applications
- Touch I/F
- Form Factor driven I/O
- Limited View of Internet
- Location-aware
- Wired Sync

**Tomorrow**
- + Web Applications
- Gestures & Voice I/F
- Nearby Device driven I/O
- Uncompromised Internet Experience
- Location Relevance
- Wireless Sync
Redefining Mobility

More **Powerful** Mobile Devices

More **Aware** Mobile Devices

More **Personal** Mobile Devices
Carry Small, Live Large

A New Vision For Our Future...
Carry Small: More Performance, Smaller Platform

A Vision of tomorrow’s mobile device:

- Carry essential computational resources
- More compute & graphics power
- Anytime, anywhere connectivity
- Sensors to understand world around you
- Platform-wide power efficiency
Live Large: Better Experience

That knows No Bounds...

• Delivers amplified, more robust mobile experience
  • Seamless access to new Devices, Networks and Services
  • Understands & Anticipates what you want to do
Multi-Display Gaming

Wireless Docking

Wireless Display

Conference Room

Personalized Shopping

Travel Advisor
Making CSLL Real: What’s the Technology?
To Carry Small, We Must Transform Connectivity

- DVI Video
- RJ11 Modem
- VGA Video
- PS2 Legacy Mouse
- Parallel Port Legacy Printer
- Docking Port – Vendor Specific
- RJ45 Ethernet
- 1394
- Wi-Fi A, B, G, N
- WiMAX
- 3G
- 60 GHz
- USB Ports
- UWB/BT
- Monitor – DisplayPort
- HDTV – HDMI
- USB
- A, B, G, N
- WiMAX
- 3G
- 60 GHz
- UWB/BT
- Monitor – DisplayPort
- HDTV – HDMI
Technologies for Multi-Radio Integration

Tunable Front End Modules / Antenna

Digitally Enhanced Radio RFIC

Scalable Communication Core - PHY/MAC

Radio Platform SoC RFI Mitigation

Energy Efficient Communications

Seamless connectivity

Standards

Keys: Size, Efficiency, Flexibility
Enrich the Mobile Experience with Nearby Devices

CPU-MEM-GFX-I/O

Dynamic Discovery of Nearby Devices
- Wireless discovery of sleeping devices
- Request connections when needed

Easy and Secure Connection Setup
- Pin entry or NFC touch
Remote Graphics Rendering

CPU → CMD Que → GPU → Frame Buffer → Display Controller → Display

Framework Compression → Transport

Framework De-compression → GPU → Frame Buffer → Display Controller → Display

(flash animation)
Anticipating What You Want: Context Awareness

Goal: Human supervised experience, not human controlled
What will it Take to Realize the Vision?

Industry cooperation

Standards

Technology convergence
Industry Taking Divergent Paths...

“Toshiba announced a single-chip CMOS 60-GHz receiver.” †

“Philips and Sony are gearing up to use different proprietary versions of UWB.” †

“Panasonic and perhaps others, including Toshiba, will pass on Wireless USB in favor of 60GHz radios.” †

“Samsung and Hewlett-Packard have plans for the Wireless USB variant of UWB.” †

“Sony also may use proprietary versions of Wi-Fi, based on demos at last week’s Consumer Electronics Show.” †

“LG Electronics will at least initially use Wi-Fi.” †

Sources:
† EE Times, “CE’s wireless Babel: Connectivity strategies are all over the map”, January 14, 2008, by Rick Merritt and Junko Yoshida
Architect Convergence to Accommodate Divergent Requirements

Video Stack
PAL

PAN Peripheral Stack
PAL

Network Stack (IP)
PAL

Common Radio Platform
60GHz MAC

60GHz PHY

Example Approach for Short-Range Wireless
A Vision for Consolidated Platform I/O

Multi-radio Integration & Wireless PAN Unification

- One logical network
- Best radio selection

Wireless I/O

Universal Port (fiber)

- Plan for the coming transition to cost-effective fiber

Docking Port - Vendor Specific
- RJ45 Ethernet
- 1394

USB Ports
- USB
- 3G
- 60 GHz

WiMAX

Wi-Fi A, B, G, N

UWB/BT

HDTV - HDMI

Monitor - DisplayPort
Carry-Small Live-Large: The New Definition of Mobility

More **Powerful** Mobile Devices

More **Aware** Mobile Devices

More **Personal** Mobile Devices
Users & companies will benefit from convergence and standards that will enable the future of mobility
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