WiMAX: Vision & Next Generation Devices

Maurizio Riva
Enterprise Business Director
Intel Corporation Italia S.p.A.
June 1st, 2005

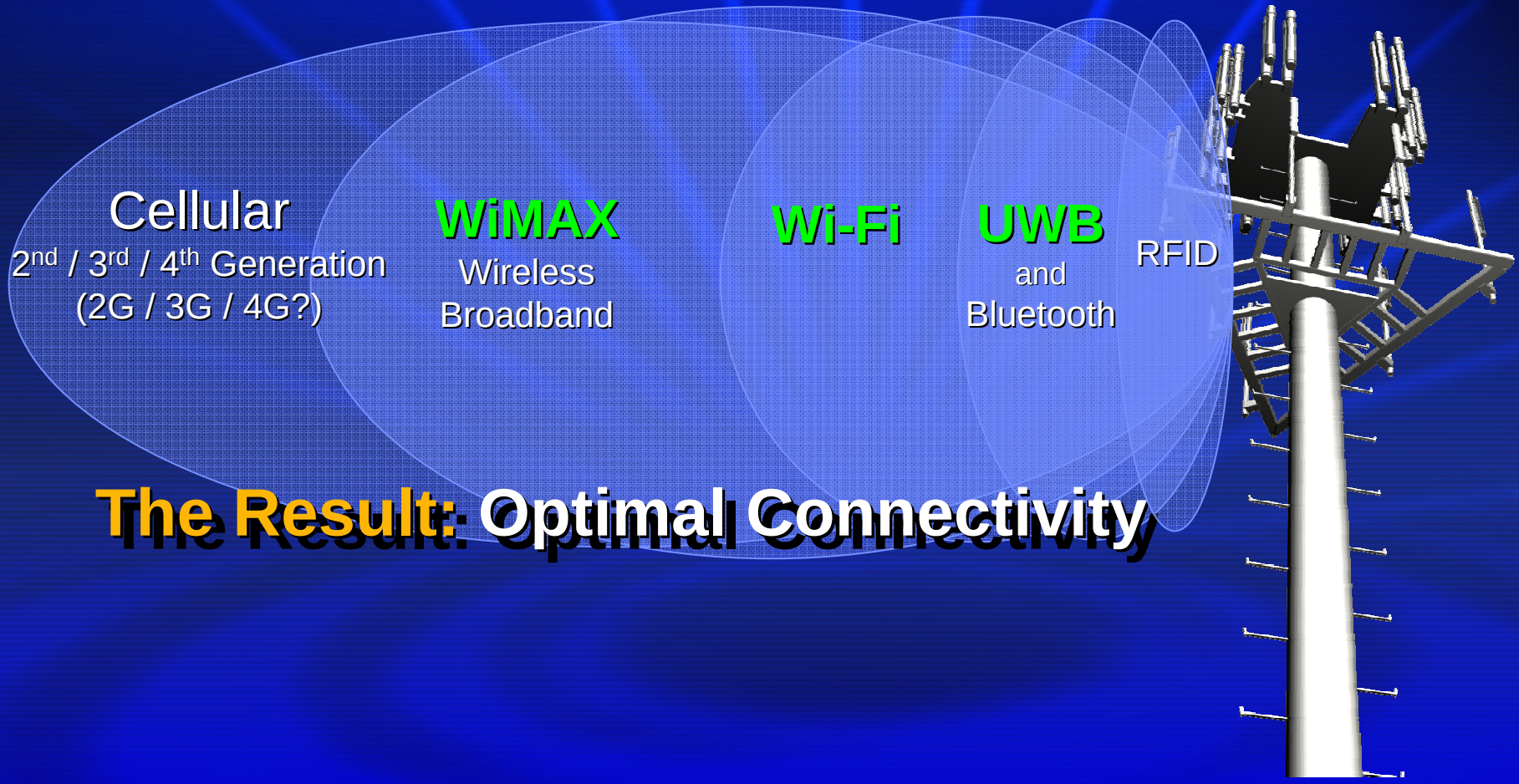
maurizio.riva@intel.com

Agenda

- Intel's Wireless Platforms Vision
  - Wireless Technologies
- WiMAX: Metro Access Technology
- Spectrum Regulatory
- WiMAX Deployment Timeline
- Intel Roadmap & Next Generation Devices

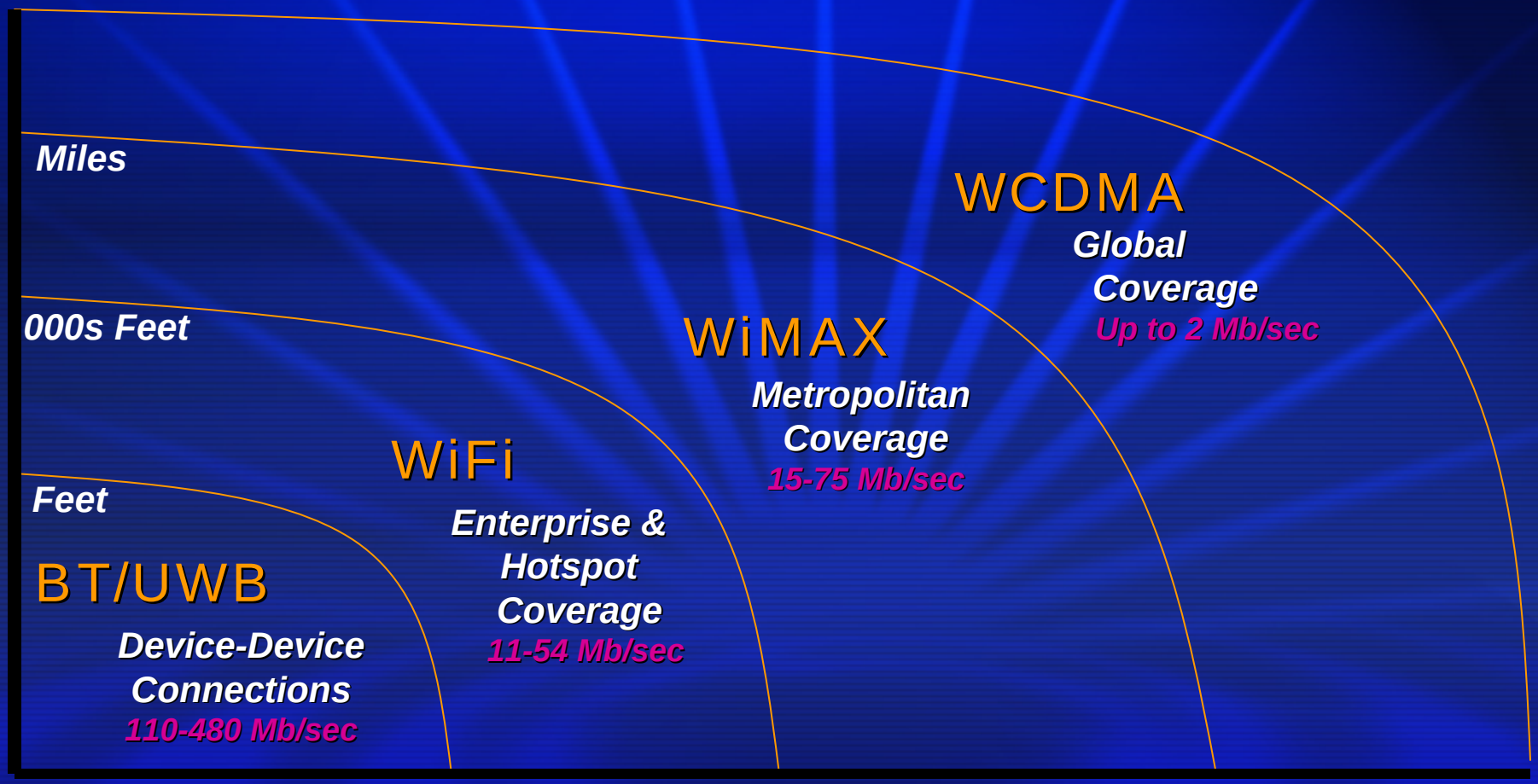
Wireless Technologies Overlap

Wide Area Network — *Metropolitan Area Network* — *Local Area Network* — *Personal Area Network*



The Result: Optimal Connectivity

Wireless Capabilities: Range & Throughput



The Wireless World

ENTERPRISE:
Unwired Offices and Factories
Connected Mobile Devices
Ubiquitous Wireless Connectivity

Infrastructure
Voice and Data Last Mile
Fixed Wi-Fi* Backhaul
Mobile Service Convergence

CONSUMER:
Wireless DSL (WiMAX)
Voice/Data/Video
Interdevice communications (UWB)
Streaming Video/ 3D Gaming

Broadband Wireless Connectivity

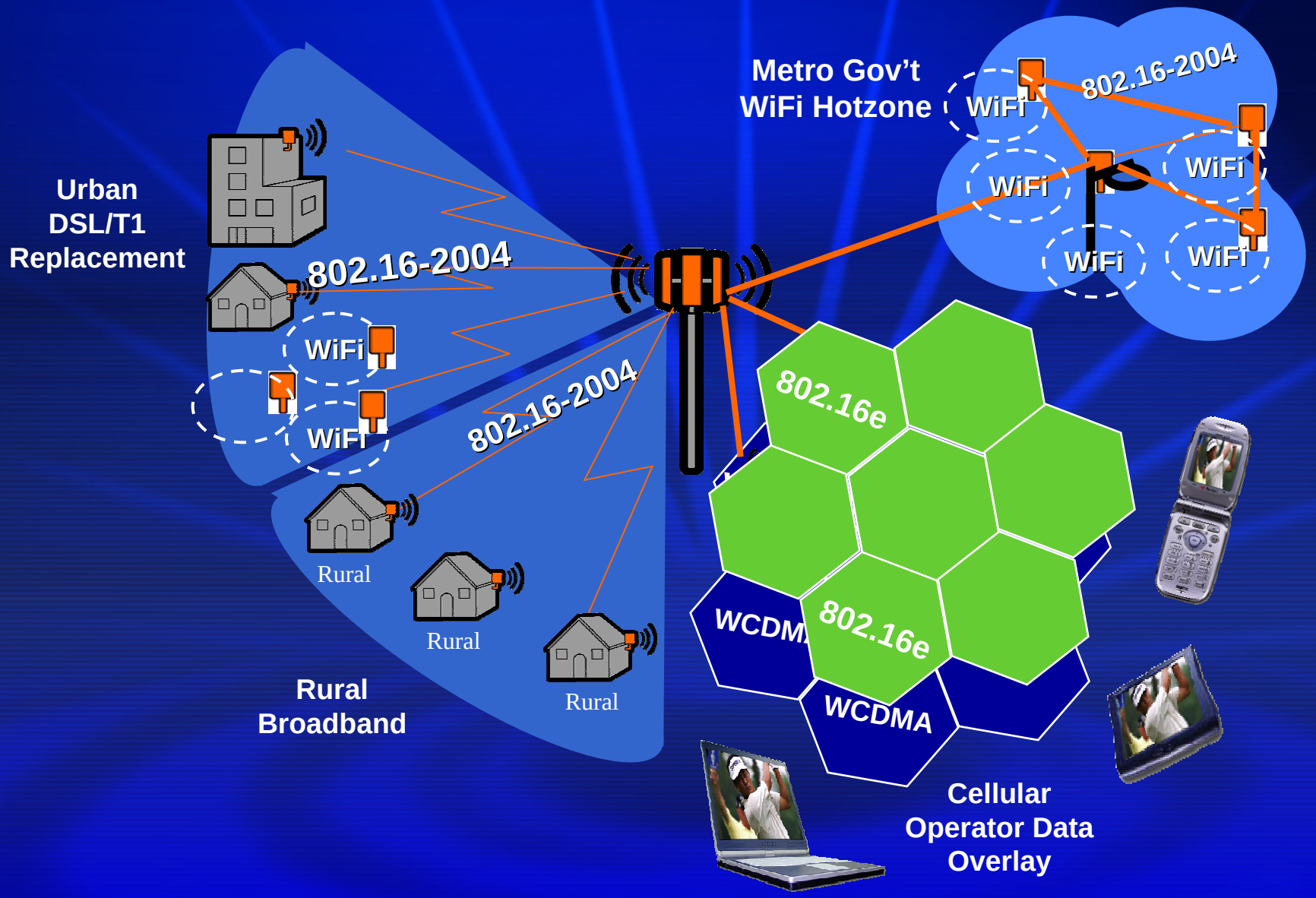
	Fixed	Portable	Mobile
Definition	Single login with single access point on fixed IP address over one access point on one location	Ability to seamlessly login and logout when moving from node to node	Ability to roam from cell to cell without logging in when hitting different cell sites
Service Level	E1/T1, DSL & Cable	Business Access Consumer DSL/Cable	Wideband Data Rate
Access Definition	Enterprise / Backhaul Residential Access	Destination Based Nomadic	Wide Band Cellular
Standards & Usage Model	802.16-2004 Last Mile 802.11 Wireless LAN 802.11 Hot Spot	802.11 Hot Spot 802.16e Portable Broadband	3G Mobile Wideband 802.16e Mobile Broadband

WiMAX Fixed and Mobile

- WiMAX Fixed
  - 802.16d or 802.16-2004
  - Usage: Backhaul, Wireless DSL
  - Devices: outdoor and indoor installed CPE
  - Frequencies: 2.5GHz, 3.5GHz and 5.8GHz (Licensed and unlicensed)
  - Description: wireless connections to homes, businesses, and other WiMAX or cellular network towers

- WiMAX Mobile
  - 802.16e
  - Usage: Long-distance mobile wireless broadband
  - Devices: PC Cards, Notebooks and future handsets
  - Frequencies: 2.5GHz, 3.5GHz and 5.8GHz (Licensed and unlicensed)
  - Description: Wireless connections direct to laptops when outside of Wi-Fi hotspot coverage

WiMAX: Four Primary Usage Models



WiMAX Deployment Timeline

……today | Q3/2005 | 2006 | 2007 | 2008/9

High Throughput Access: Business, Backhaul & some Residential

Nomadic / Portable Broadband

Consumer Broadband Access (indoor self-install)

Wi-Fi

Mobile Broadband

Hotspot Backhaul

WiMAX Certified Products

WiMAX Spectrum Requirements Over Time

today | Q3/2005 | 2006 | 2007 | 2008/9

Backhaul

Mobile

Portable

2.5 GHz WiMAX

Portable Indoor

3.5 GHz / 2.5 GHz WiMAX

Fixed Outdoor

3.5 GHz (maybe 5.8 GHz) WiMAX

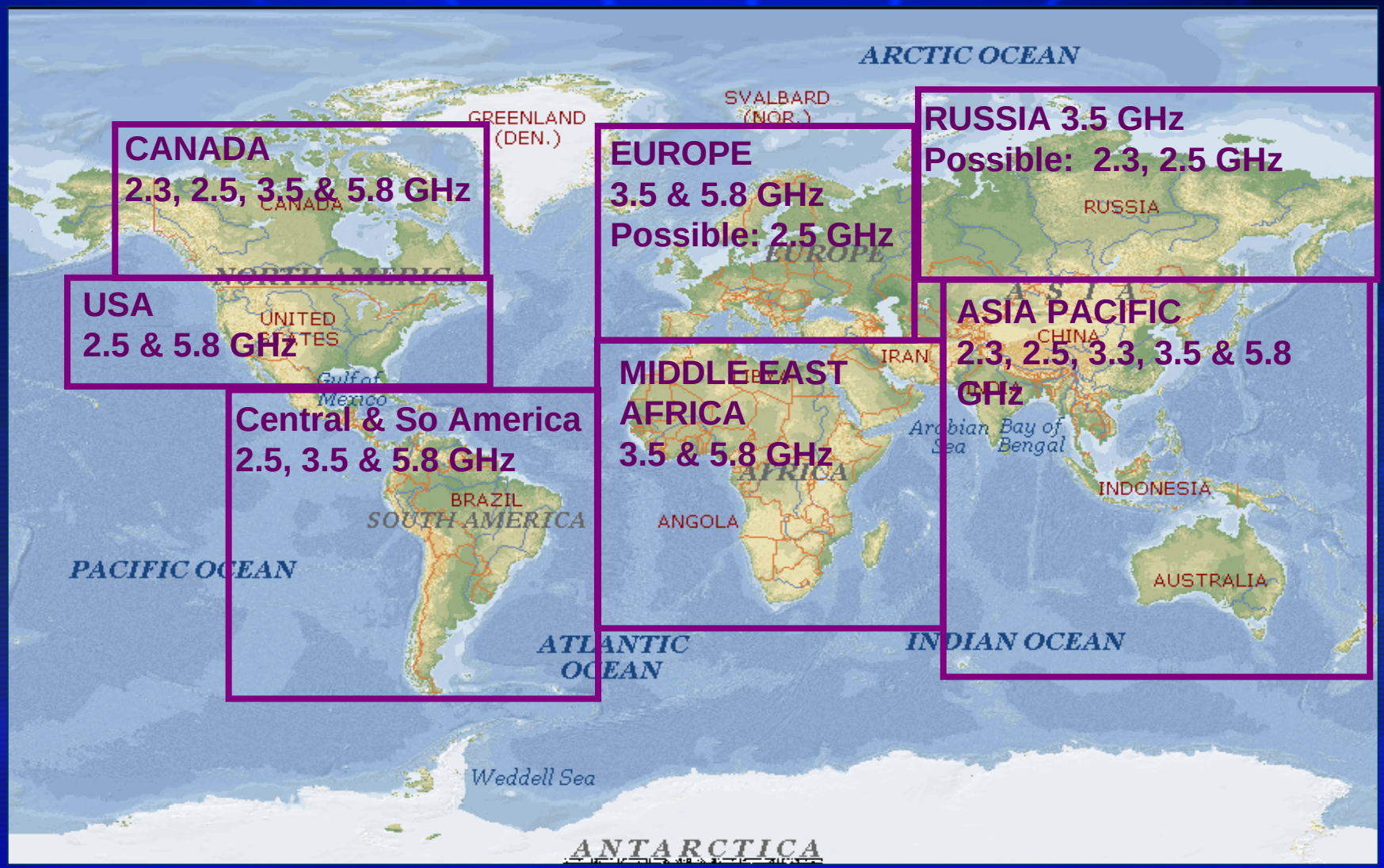
3.5 GHz and 5.8 GHz WiMAX

Today

3.5 GHz and some 5.8 GHz proprietary or pre-WiMAX

Spectrum by Region

Expected ’06-’07 Deployment Bands



Intel WiMAX Roadmap

‘05 ‘08

Last Mile & backhaul

Rosedale based solutions 2H’05

1st CMT option

Metro Zones Market trials with for CMT

Handset Integration

Handset market trials

Intel® PRO/Wireless 5116

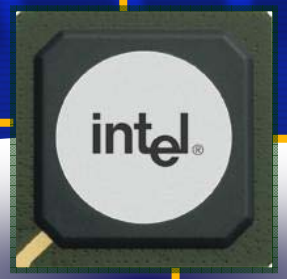
Innovation in WiMAX Fixed Wireless Broadband

802.16-2004 Compliant

- Provides future of interoperability & innovation

Flexible

- Programmable design enables solutions to evolve with emerging standards and usage models



Cost Effective

- Highly Integrated SoC enables low cost customer premise gear
- Integration streamlines design process, lowers BOM cost

Industry Leading

- First SoC for cost effective WiMAX modems
- Leading Equipment Mfgs developing solutions with Intel PRO/Wireless 5116
- Enabled broad RF & power amplifier vendor support

Target Applications: Fixed Wireless Broadband Access and Backhaul

Industry Timeline Expectations

802.16-2004 Solutions

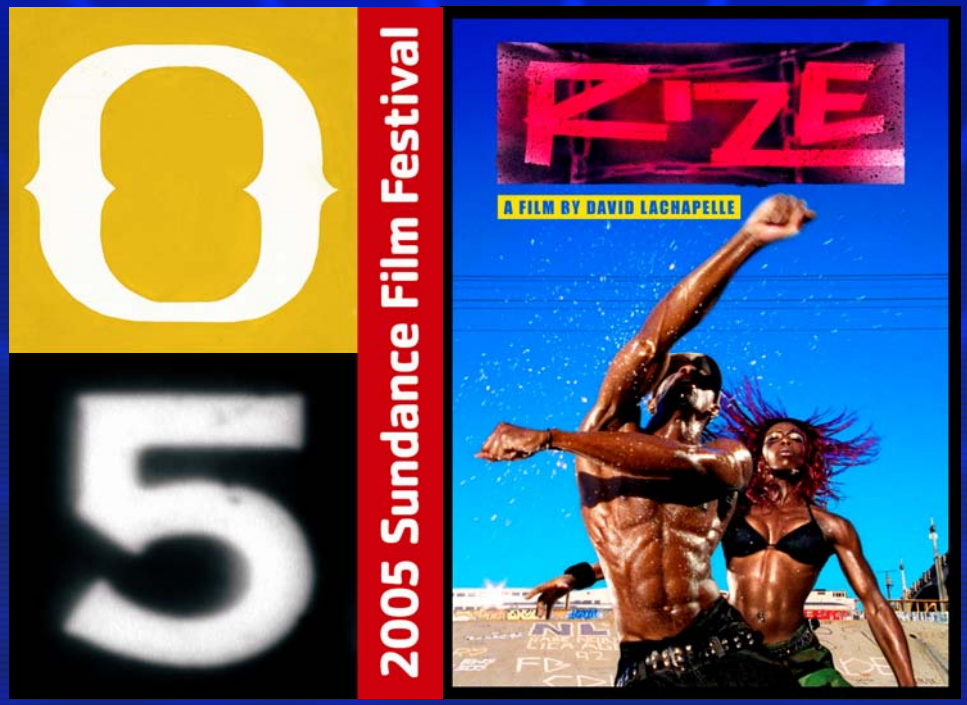
Standard Complete	DONE
Technology/Silicon Samples	DONE
System Interoperability testing	Q2’05
Lab Trials	Q4’05
Commercial Trials	Q1’06

Portable/Mobile 802.16e Solutions

Standard Complete	Q2’05
Technology/Silicon Sampling	Q1’06
System Interoperability testing	Q3’06
Lab Trials	Q4’06
Commercial Trials	Q1’07

Case Study: Distributing Digital Content

Sundance Film Festival



Summary: Wireless Technologies and WiMAX

- Intel is working with many wireless technologies to enable anywhere, anytime connectivity
- WiMAX is a standardized way to provide for wireless broadband access
  - Will bring broadband to many new parts of the world
- Intel has announced our first industry-standard silicon for WiMAX CPE
- WiMAX can used to innovate in many new and exciting ways

Backup