

Alliance for Telecommunications Industry Solutions Board of Directors Meeting

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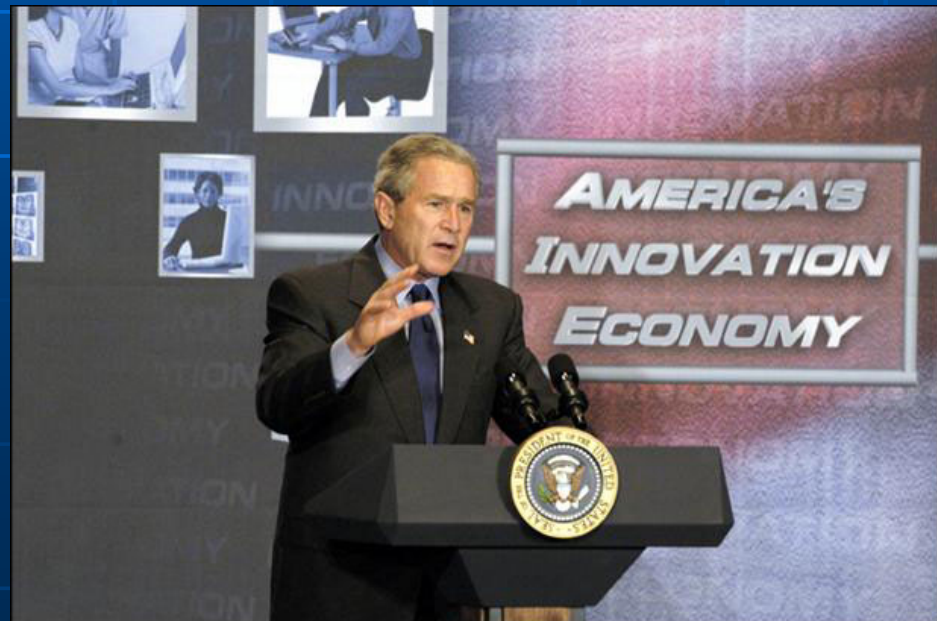


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Overview

- State of the Economy and Telecom Markets
- The President's Broadband Goal
- New and Emerging Technologies
- The President's Spectrum Policy Initiative



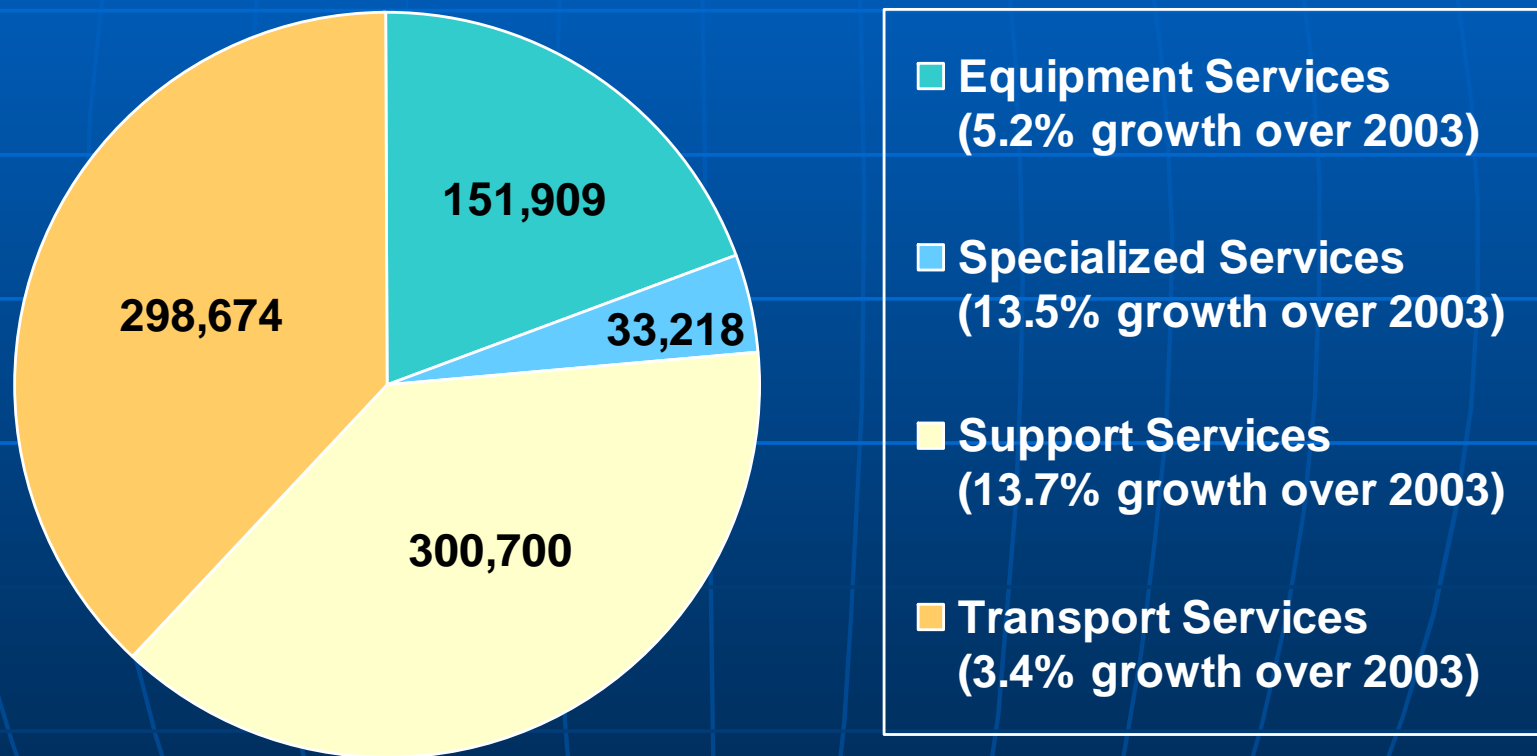
Overarching Goal: Promoting Economic Growth

- Thanks to the President's policies, America's economy is strong:
 - Over the past four quarters the U.S. economy grew at a real GDP rate of 4.0%; compared to GDP growth in Europe of 2.1%.
 - The economy has shown job growth for 20 straight months and added 2.7 million new jobs – more than Canada, France, Germany, Great Britain, and Japan combined.
 - The U.S. unemployment rate is 5.2%, while the unemployment rate in Europe was 8.9% (Dec. 2004).
 - There has been a sharp pickup in business spending on capital equipment.
 - Homeownership rate was a record high of 69.2% in the third quarter of 2004.
 - Manufacturing activity (ISM index) has been growing for 20 straight months and employment has been growing for 14 straight months.

U.S. Telecom Market Continues to Grow...

(\$ Millions)

2004 Total: \$784,501 (7.9% growth)



Source: TIA's 2005 Telecommunications Market Review and Forecast

U.S. Investment in Information Technology

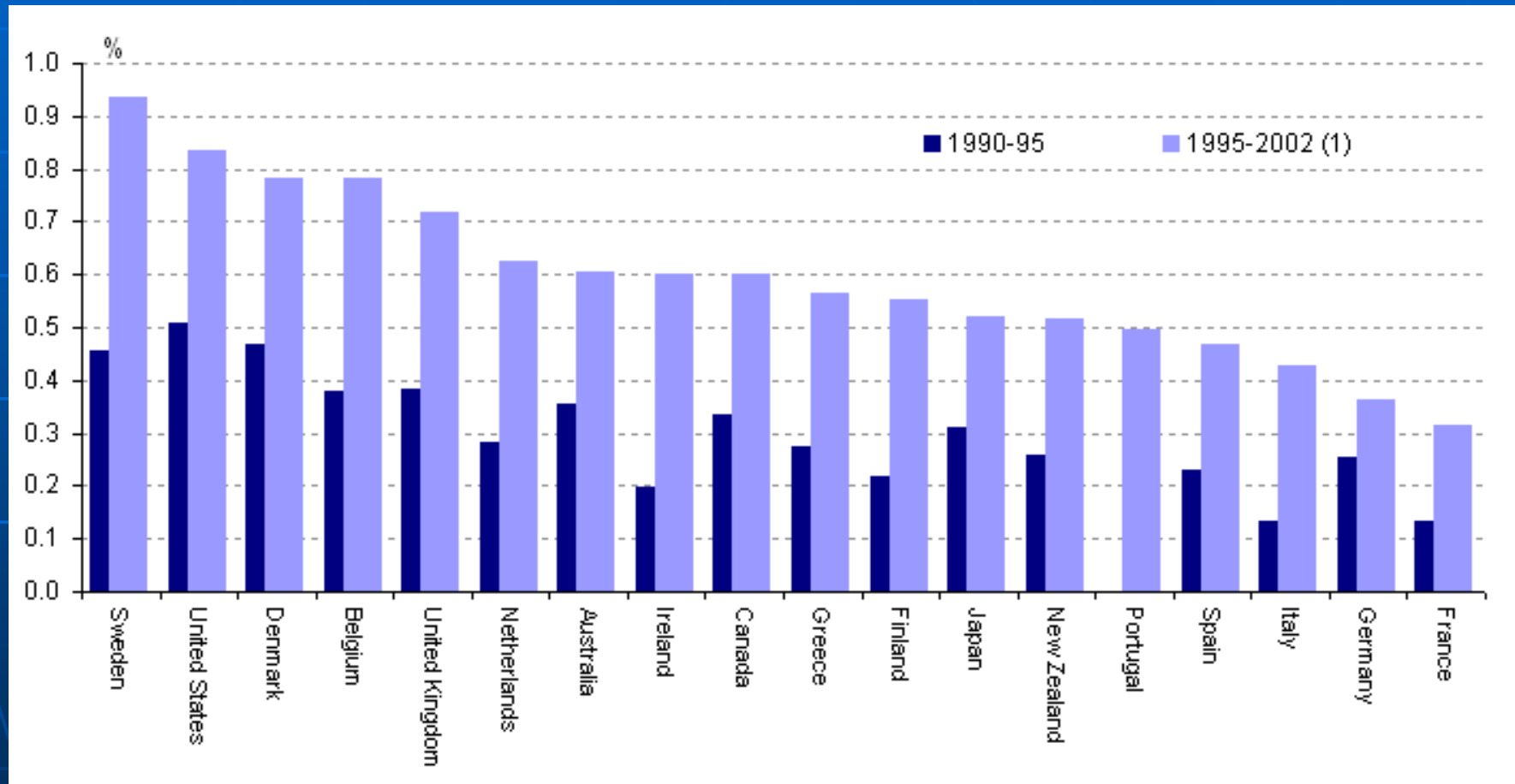
- IT spending has rebounded after the downturn of 2000.
- IT producing industries have contributed to real economic growth: IT contributed 0.8 percent to the 2.9 percent increase in GDP for 2003.
- The top 500 companies spent an average of \$353 million on IT in 2002 and were estimated to spend \$369 million in 2004.
- In addition to investments in IT equipment and software, U.S. businesses spent a total of almost \$270 billion on communications services in 2003.

Source: Progress and Freedom Foundation, The Digital Economy Fact Book, Sixth Ed. 2004 [citing other sources, including the Department of Commerce]

Global Indicators for ICT Growth

- The international telecom equipment market is valued at more than \$300 billion, growing at approximately 15 percent a year, faster than the U.S. market. (TIA 2004)
- At year-end 2003, telecom services revenues worldwide were forecasted to reach \$1.07 trillion. (ITU)
- Mobile subscribers are 51 percent of all telephone subscribers worldwide (ITU)
- 1.199 billion GSM subscribers worldwide 12/04 (GSM Ass'n)
- China expects 400 million mobile subscribers by 2005 (CATS)

Contributions of ICT Investment to GDP Growth: International Comparisons



1. 1995-2002 for Australia, Canada, France, Germany, Japan, New Zealand and the United States, 1995-2001 for other countries.

Source: OECD Productivity Database, September 2004, [www.oecd.org/statistics/productivity]

Benefits of Broadband

“[B]roadband will not only help industry, it’ll help the quality of life of our citizens.”

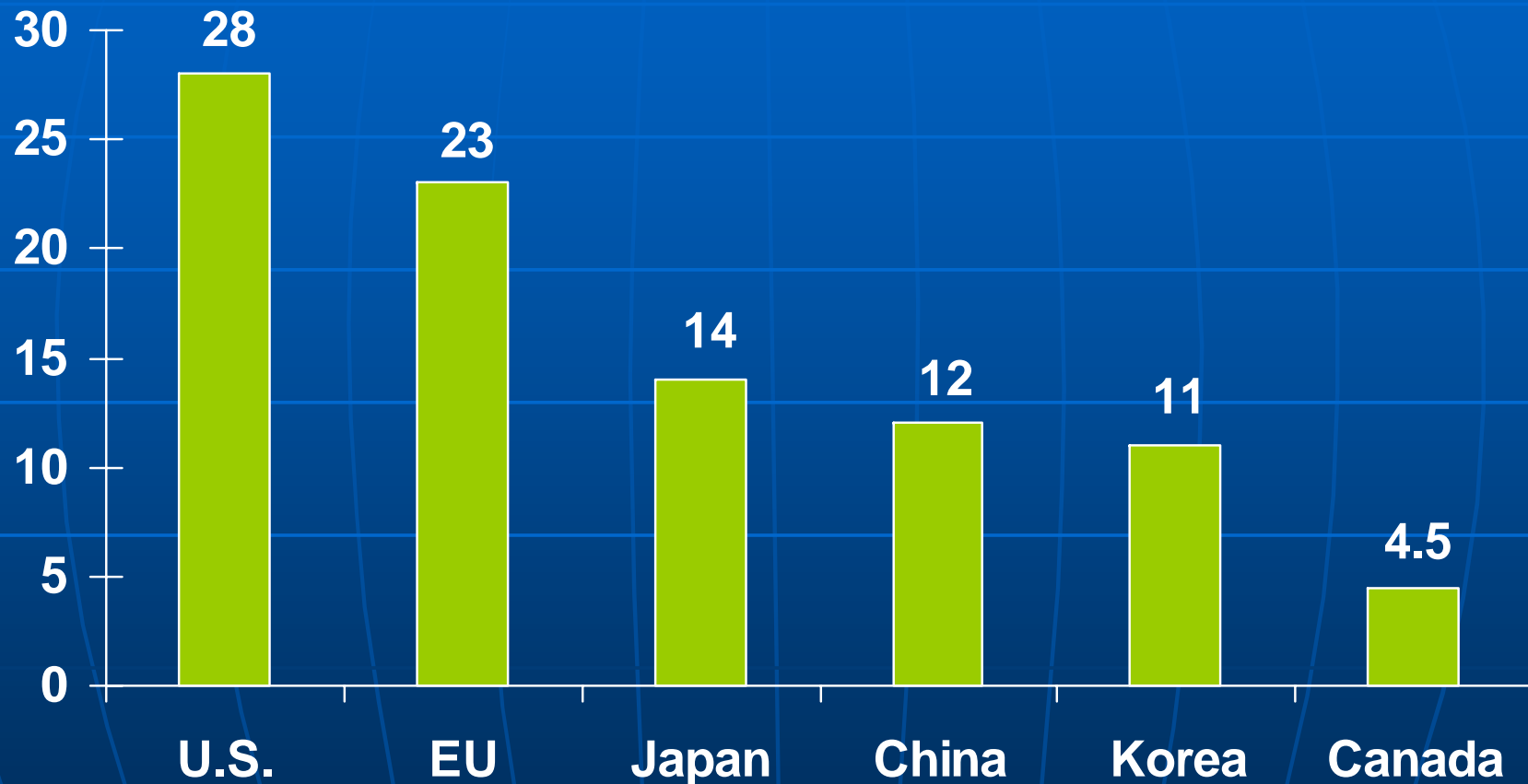
— President George W. Bush, U.S. Department of Commerce, June 24, 2004

- Tele-Medicine
- Distance Learning
- Tele-Work
- National Security
- Jobs and Economic Growth



Largest Broadband Markets in the World

(Millions of broadband subscribers)



Source: OECD, April 2004

The President's Broadband Vision

Goal

"This country needs a national goal for broadband technology . . . universal, affordable access for broadband technology by 2007."

— President George W. Bush, Albuquerque, NM, March 26, 2004

Government's Role

"The role of government is not to create wealth; the role of our government is to create an environment in which the entrepreneur can flourish, in which minds can expand, in which technologies can reach new frontiers."

— President George W. Bush, Technology Agenda, November, 2002.

Creating Economic Conditions For Broadband Deployment

“We ought not to tax access to broadband. If you want something to flourish, don’t tax it.”

– President George W. Bush in Baltimore, Maryland on April 27, 2004

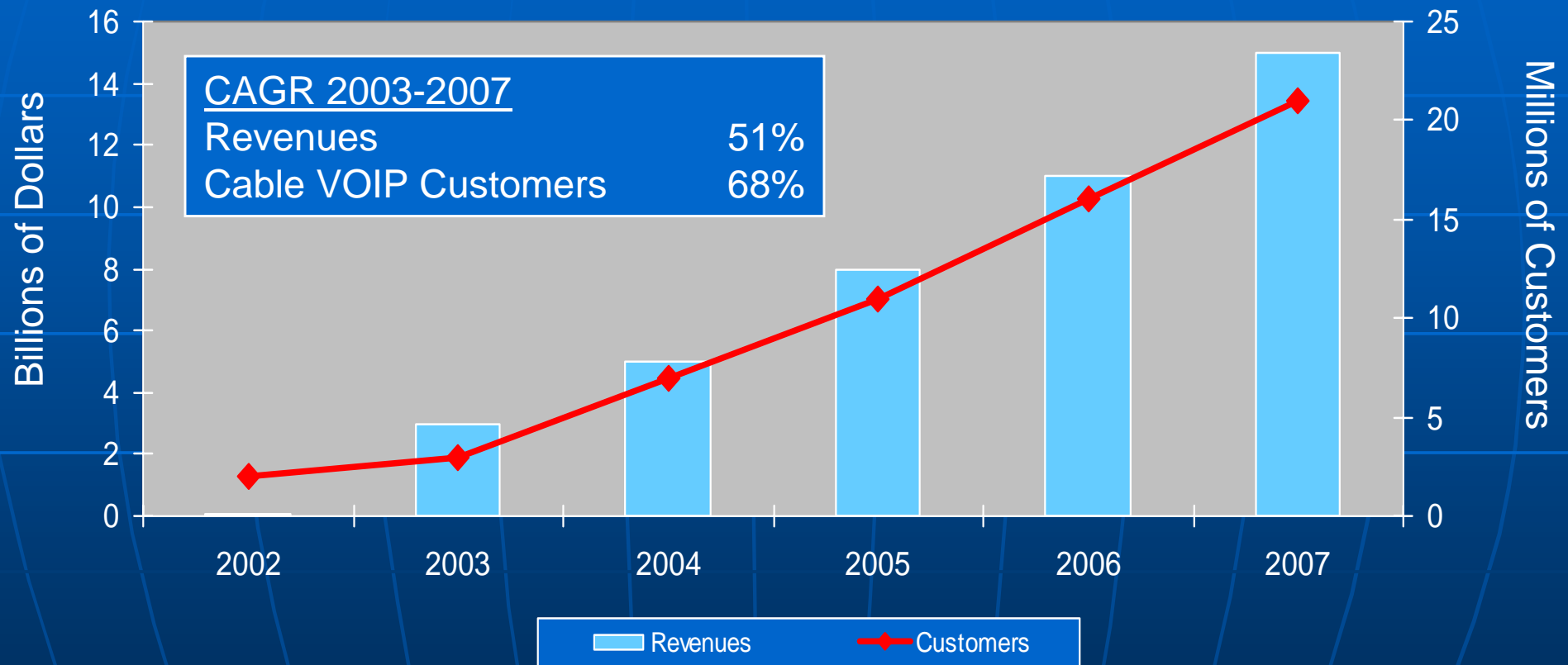
- Tax relief has given businesses powerful incentives to invest in broadband technology
 - Accelerated depreciation for capital-intensive equipment
 - Extension of the Internet tax moratorium until Oct. 31, 2007; support making the moratorium permanent
 - An 18-month extension of the research and experimentation tax credit; support making it permanent
 - President's FY 2006 budget requests a record \$132 billion for research and development.

The Role of Standards and Standards Development

- Standards can facilitate trade, economic growth and innovation
- Standards can also act as barriers to trade
- Standards development processes should be driven by commercial interests and be open, transparent, fair and nondiscriminatory.
- The role of government in standards development should be minimal and only in areas that are aimed at protecting the public interest, protecting spectrum from harmful interference, and laying the ground rules for a competitive market.
- Standards intended for use in regulations should be created in an open, balanced process; be technology neutral; and be based on performance.

VoIP and Other IP Applications Will Continue to Change the Market

Cable VoIP Market



Source: Kaufman Brothers, "A General Flavor of Mild Decay," July 14, 2003

"Big V" over IP: IPTV

- IPTV delivers streaming broadcast-quality video over the Internet. In consumer settings, IPTV can support video on demand (VoD), digital video recording (DVR), and interactive TV.
- Businesses can also use IPTV for video conferencing, employee training, or product training.
- IPTV will enable telephone companies to offer video services, as well as bundles of voice, data, and video services.
- Microsoft, Thompson/RCA, Juniper, Cisco, Minerva Systems, and Amino) are developing hardware and software to support IPTV.

IPv6 Will Enable New IP Capabilities

- IPv6 was developed during 1990's as a replacement for existing Internet Protocol version 4 (IPv4)
- Enhanced capabilities of IPv6 as compared to IPv4 would:
 - Exponentially increase the number of available Internet addresses
 - Enable the proliferation of enhanced mobile services/applications
 - Increase security
- NTIA co-chairs the Commerce Department's IPv6 Task Force with the National Institute of Standards and Technology which sought public comment on IPv6 in July 2004.
- The Department of Commerce hosted a public forum on IPv6 and will produce a report detailing its findings on IPv6 to the President in the next few months.

Broadband Over Power Lines: The Third Wire

“We need to get broadband to more Americans . . . one great opportunity is to spread broadband throughout America via our power lines.”

— President George W. Bush, US Department of Commerce, June 24, 2004

- The principal concern has been the risk that BPL systems might interfere with radio communications.
- NTIA in 2004 submitted to the FCC a study that defined interference risks and potential mitigations.
- Based on additional analyses, NTIA recommended how the FCC rules could reduce risk of BPL interference
- The FCC adopted rules incorporating most NTIA recommendations in October 2004.
- Today, many utilities, hotel operators and others are deploying experimental and operational BPL systems.



HomePlug Modem
can turn an electrical
outlet into an
Internet connection.

Moore Meets Marconi: Wireless Broadband and New Technologies

"The other promising new broadband technology is wireless. The spectrum that allows for wireless technology is a limited resource . . . [a]nd a wise use of that spectrum is to help our economy grow, and help with the quality of life of our people."

-- President George W. Bush, June 24, 2004

The Administration has made more radio spectrum available for wireless broadband technologies:

- Advanced Wireless Services ("3G")
- Ultra-wideband
- 5 GHz Spectrum
- 70/80/90 GHz

New Radio Spectrum Technologies

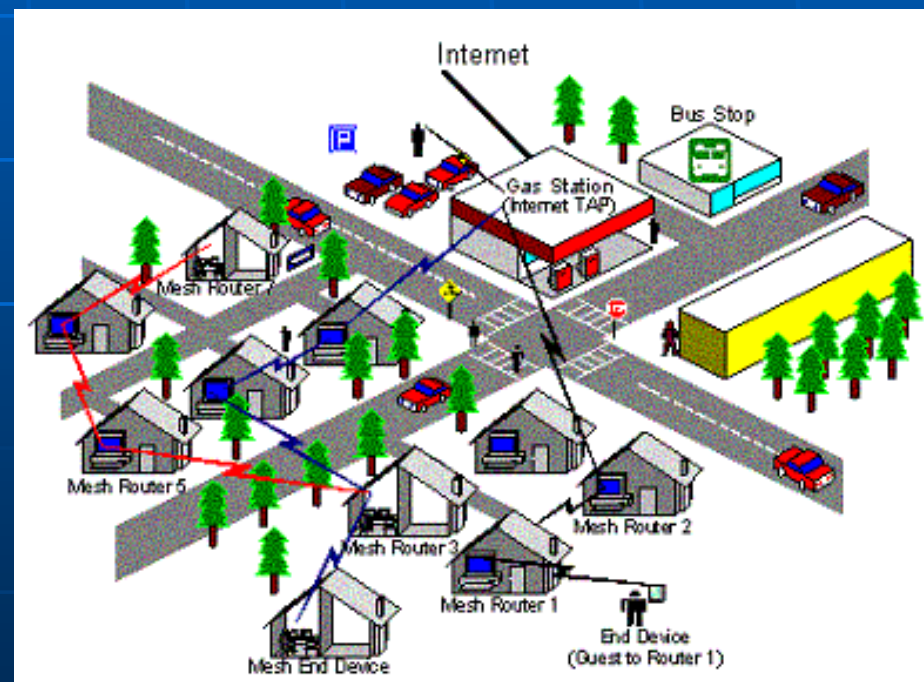
- Software Defined Radio (SDR) devices can dynamically reconfigure the device's characteristics for better performance and new services
- Cognitive radio technology is a particular extension of SDR that employs model based reasoning based upon its assessment of the radio environment.
- Smart antenna systems provide numerous benefits in wireless communications environments

WiMax

- WiMax or 802.16 is designed to provide wireless broadband access in a Metropolitan Area Network (MAN), operating at speeds up to 75 Mbps over a 30 mile radius.
- WiMax connectivity is fast enough to support more than 60 businesses with T1-level connections and hundreds of homes with DSL-rate connectivity using only 20 MHz of channel bandwidth.
- Intel plans to build WiMax into its Centrino chip platforms, which power 80% of all PCs, by 2006. Motorola plans to commercially offer integrated radio access networks that can handle 3G, Wi-Fi, WiMax and other future wireless innovations. AT&T, Siemens, and Alcatel are also backing WiMax technology.
- Industry analysts predict six-fold growth in WiMax sales over the next three years (*New Scientist*, 4/17/04).

Unlicensed Mesh Networking

- By linking nodes on an ad hoc basis, mesh technology promises to deliver high bandwidth at an order of magnitude lower cost than existing licensed wireless technologies.
- Mesh architecture permits the extension of wireless coverage to areas that do not have wire infrastructure, and can link diverse devices or networks.
- Mesh access points integrate with existing WLAN access points to extend wireless coverage to areas not readily accessible by cables.



Self-Organizing Neighborhood Wireless Mesh Networks
(Source: Microsoft Research)

The Spectrum Challenge

A Presidential Policy Board examining spectrum management summed up the urgent issues in stating:

"The development of so valuable a resource as the radio spectrum is a matter of paramount importance. Despite technical and operational improvements the demand for frequencies has steadily crowded the supply within the usable spectrum. The use of this resource should have the most careful planning and administration within the United States and in cooperation with other countries. Unfortunately, guidance and administration have often been inadequate."

President's Spectrum Policy Initiative

“The existing legal and policy framework for spectrum management has not kept pace with the dramatic changes in technology and spectrum use.”

- President George W. Bush, Presidential Memorandum,
May 29, 2003

- Committed the Administration to develop a comprehensive U.S. spectrum policy for the 21st century
- The Secretary of Commerce was charged to lead this initiative

Responding to the President's Directive

- A Federal Government Spectrum Task Force proposed recommendations for improving the federal agencies' use of the spectrum
- A separate report, with input from a wide range of stakeholders, recommended improvements to overall spectrum management (including use by federal, state, local, and private sector entities)
- The recommendations included proposals to develop:
 - A test bed for sharing spectrum between federal government and nongovernment users
 - Long range spectrum strategic plans
 - A process for reviewing cost effectiveness and efficiency in federal agencies' selection of systems
 - Proposals for greater use of incentives in the management of government as well as nongovernment spectrum.
 - A review of international spectrum policy and framework
- In November, 2004 President Bush issued an Executive Memorandum that established the recommendations as national policy and called for their implementation.