


CITI
The State of Telecom
A Trans-Atlantic Dialogue
October 20, 2006

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- Current OECD data
- OECD Principles for Regulatory Quality and Performance
- U.S. broadband availability by location
- Effects of convergence
- Sustainable policy
- High level EU and US policy comparisons
- Policy and action frameworks



OECD broadband results through 6-06

- Broadband subscribers in the OECD increased 33% from 136 million in June 2005 to 181 million in June 2006
 - Increased BB penetration rates from 11.7% 15.5%
- Northern Europe an countries continue to advance
 - Denmark, the Netherlands, Iceland, Korea, Switzerland and Finland with at least 25% penetration
- **Denmark** leads OECD with 29.3% penetration
- **Strongest per-capita growth** in Denmark, Australia, Norway, the Netherlands, Finland, Luxembourg, Sweden and the United Kingdom – all over 6%
- Fiber to the premises (FTTP) growing in countries with high BB penetration
 - **Danish power companies** burying fiber along with power lines
 - Municipal broadband projects expanding in northern Europe
 - Telecommunications operators in several countries pursuing FTTP
 - **Japan** leads FTTP with **6.3 million fiber subscribers**.
 - ADSL subs in **Korea and Japan** decline as more users **upgrade** to fiber

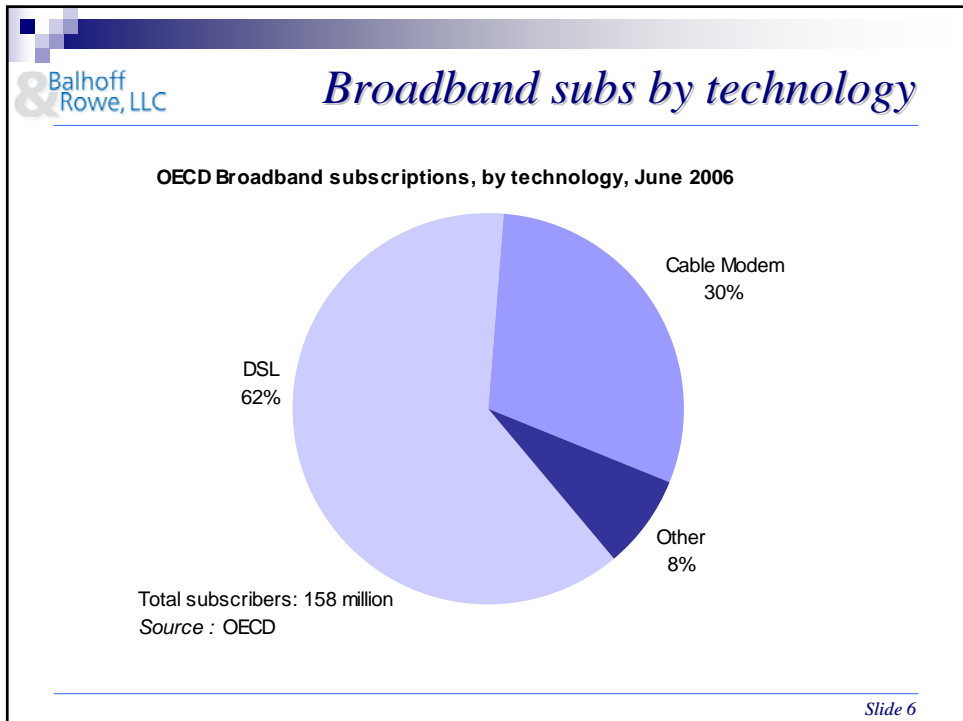
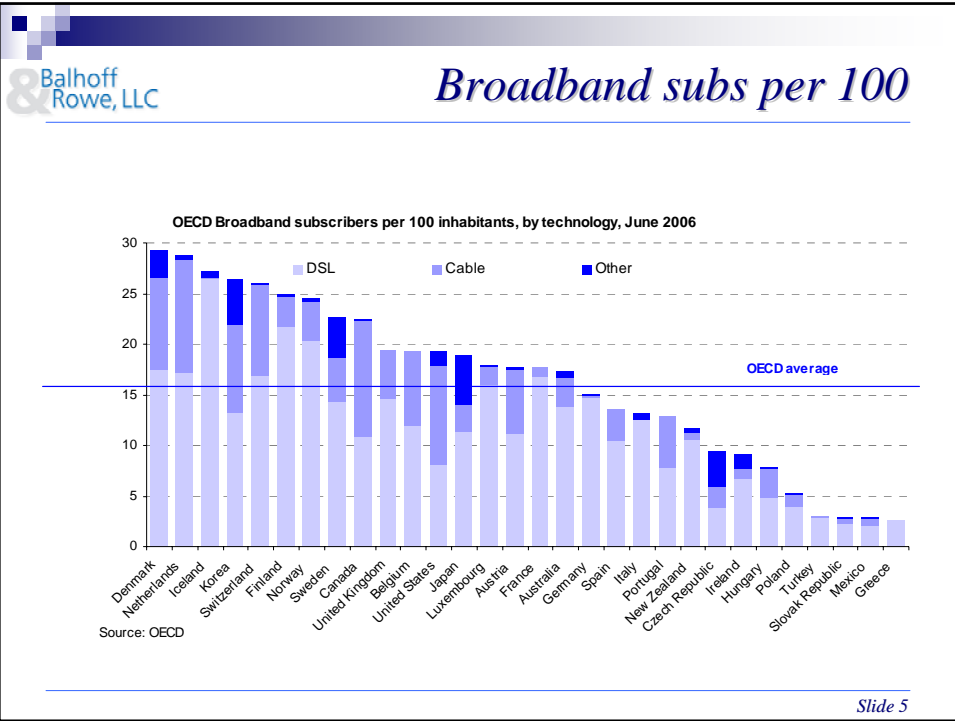
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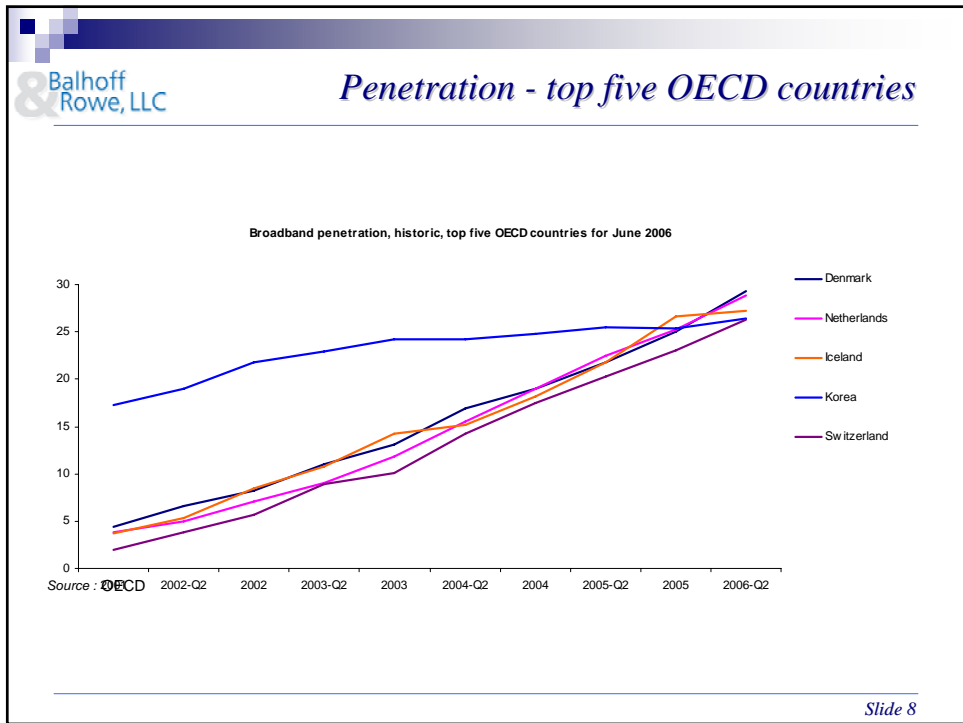
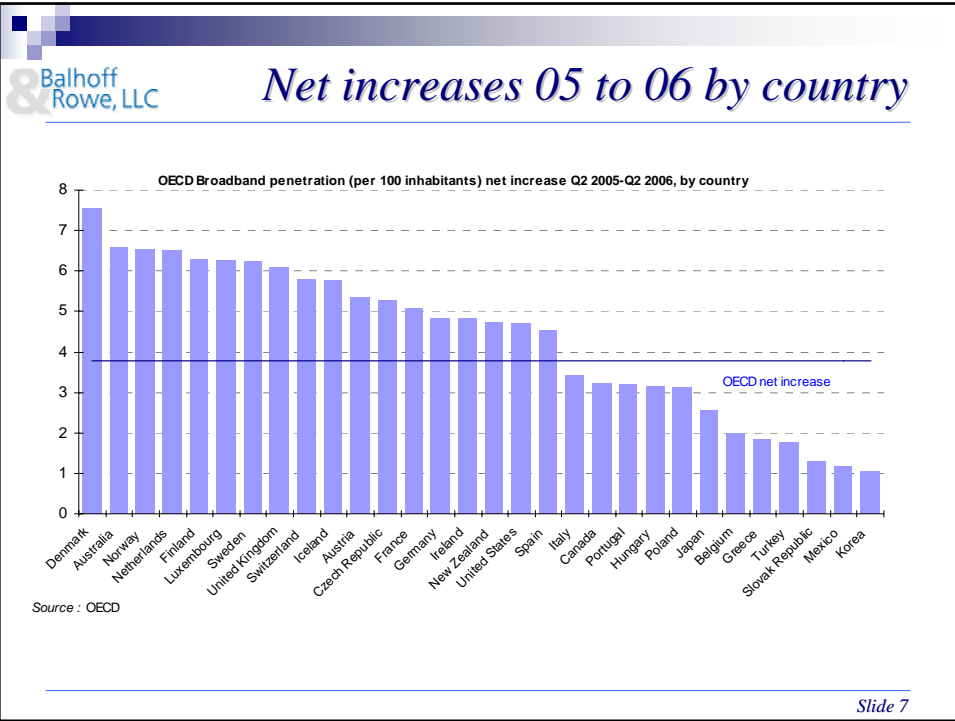


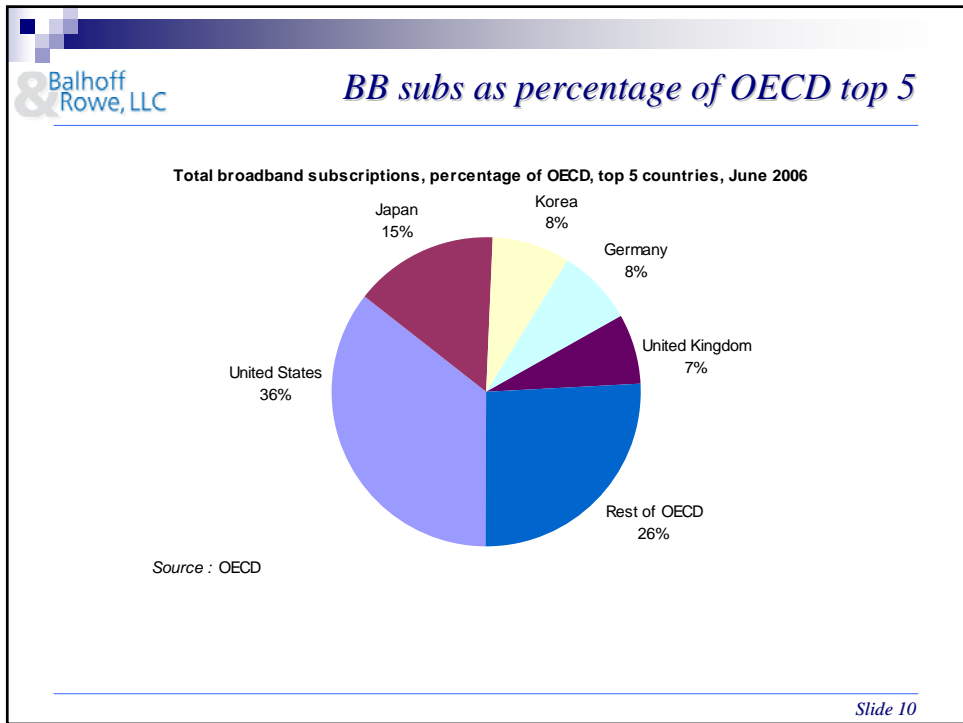
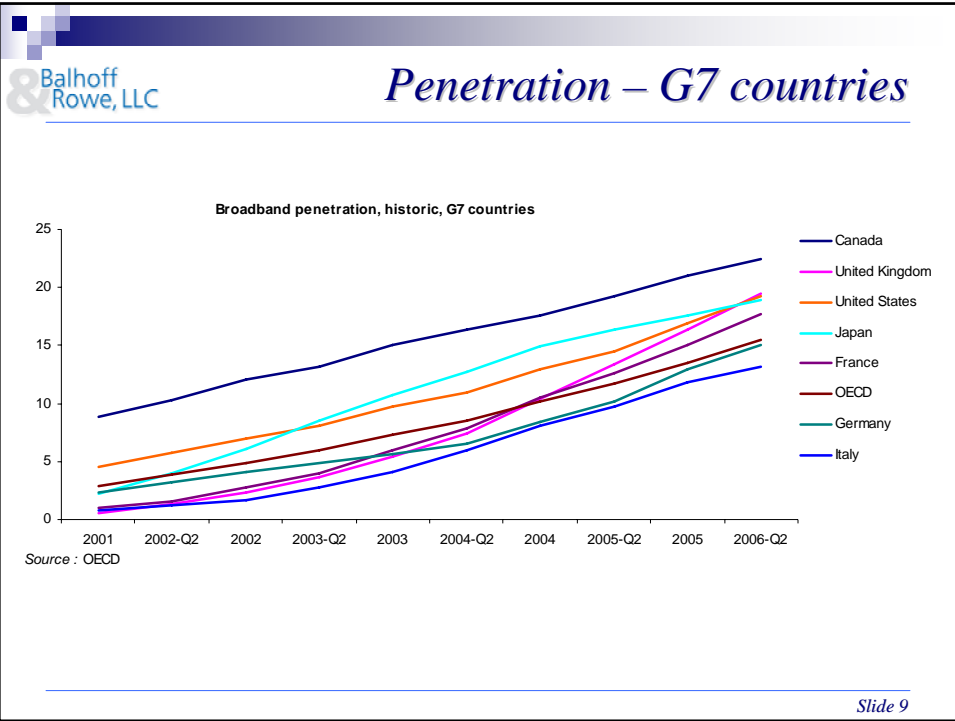
OECD broadband results through 6-06

- **DSL the leading platform** in 28 OECD countries.
- **Cable modem** subscribers outnumber DSL in Canada and the United States
- **United States has the largest total number of broadband subscribers** - 57 million
 - 36% of all broadband connections in the OECD, up from 31% in December 2005
- **Canada continues to lead the G7** group of industrialized countries in broadband penetration
- **Distribution of broadband technologies**
 - DSL: 63%
 - Cable modem: 2
 - Other (e.g. satellite, fibre and fixed wireless) : 8%

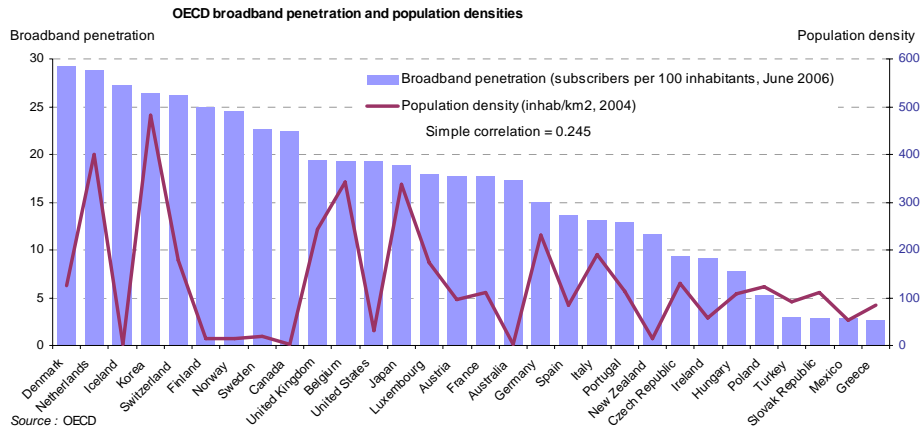
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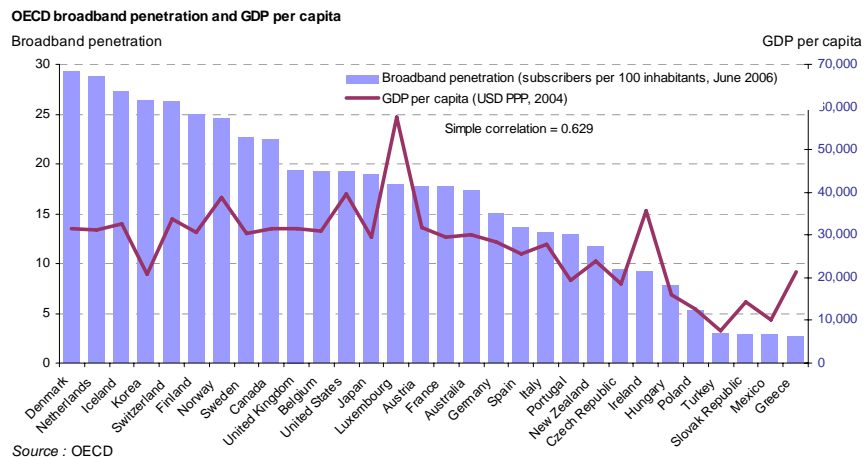


Penetration and population density



Slide 11

Penetration and per capita GDP

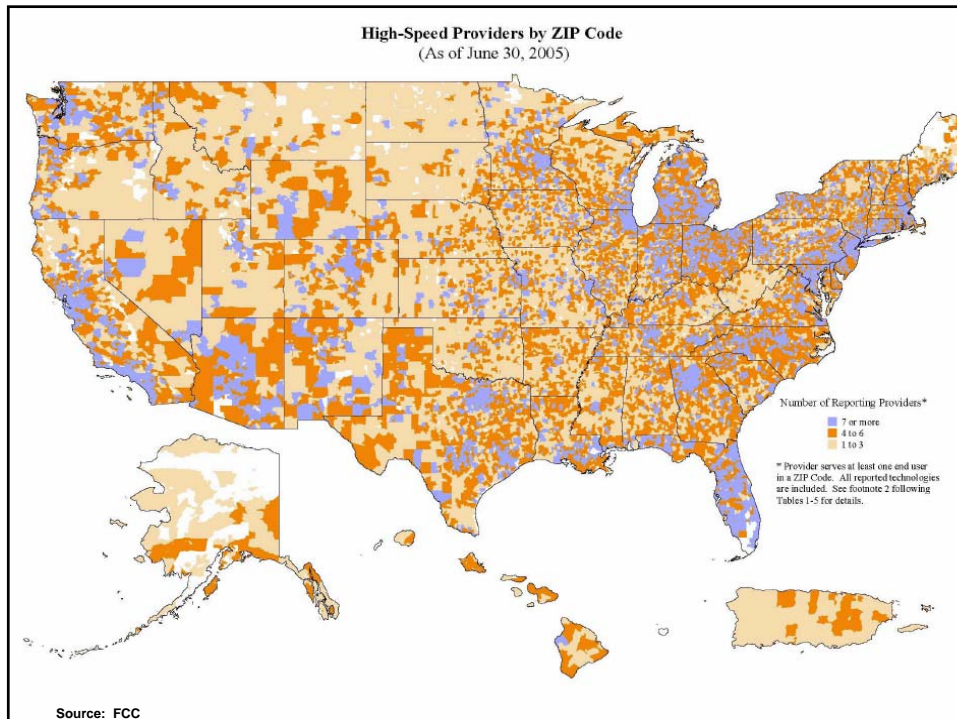


Slide 12

OECD Principles for Regulatory Quality and Performance (updated 2005)

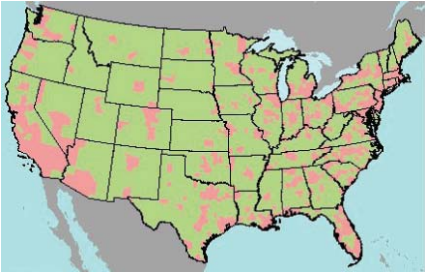
1. Adopt broad reform programs that establish clear objectives and implementation frameworks
2. Assess impacts and review regulations to ensure they meet objectives in a changing and complex environment
3. Ensure transparent and non-discriminatory regulations and institutions
4. Review and strengthen scope, effectiveness and enforcement of competition policy
5. Design economic regulation to stimulate competition and efficiency, and eliminate regulations except where clear evidence demonstrates they are the best way to serve broad public interests
6. Eliminate unnecessary regulatory barriers to trade and investment through continued liberalization, and enhance integration of market openness throughout regulatory process, thus strengthening efficiency and competitiveness
7. Identify important linkages with other policy objectives and develop policies to achieve them in ways that support reform

Slide 13



Balhoff & Rowe, LLC *Geography, carrier and policy affect availability*

- Approximately 1,300 incumbent local telephone companies in U.S.
 - RBOCs serve almost 85% of total copper lines
 - "Rural" carriers serve most of remainder
- Competition
 - Competitors in urban business markets control 30% of market
 - Intermodal in residential areas
 - Wireless is growing 10%+ annually
 - VoIP growth rapid (off small base)
- Rural regions (green on map)
 - Less than 15 lines per square mile
 - RBOCs serve 25+ million rural lines
 - RLECs serve 10+ million rural lines
- Broadband services
 - 70% or greater coverage in rural independent service areas
 - Less than 30% in RBOC rural areas
 - "Actual deployments may vary"



Source: US Department of Agriculture

Slide 15

Effects of convergence

Balhoff & Rowe, LLC *Borders between markets eroding*

- Networks competing
 - How many and where?
- Technology development and (finally) rapid deployment
- Product markets converging
- Revenue spanning both applications and platforms
- Terms of engagement between network providers and applications providers need to be resolved

Slide 16

Effects of convergence

Balhoff & Rowe, LLC *What's a regulator to do?*

Slide 17

Balhoff & Rowe, LLC *“The Broadband Incentive Problem”*

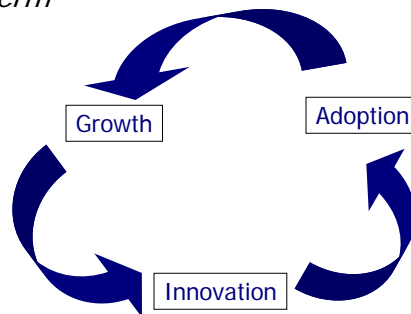
- MIT Communications Futures Program, Broadband Working Group (9-05)
- *“The broadband value chain is headed for a train wreck. . . . The broadband locomotive left the station with a critical missing piece: the incentive for network operators to support many of the bandwidth-intensive innovations planned by upstream industries and users.”*
- Potentially derails ability of mass-market users to take advantage of Moore’s Law.
- Flat-pricing models encouraged penetration but lead to bandwidth-intensive behaviors that impose costs on operators.
- No good access pricing mechanism yet apparent.
 - Value added services likely insufficient to cover rising usage costs.
 - Some intensive uses won’t have associated revenue-generation.
 - Problematic usage-based pricing
- Desire to preserve *“virtuous cycle of industry innovation, user adoption, and market growth.”*
 - Fueled by revenue growth to fund R&D.
- Download from http://web.mit.edu/ctpid/www/cfp_press_release.html

Slide 18

Sustainable policy

- Sustainability - *from the verb to sustain meaning: to hold up; to bear; to support; to provide for; to maintain; to sanction; to keep going; to keep up; to prolong; to support the life of.*
- Sustainable competition – *Economic conditions for a viable sector over the long term*

Is sustainability a policy goal?
Is one path more sustainable?
Is the answer situation dependent?
What will we learn from the experiment?



Slide 19

EU and US comparisons

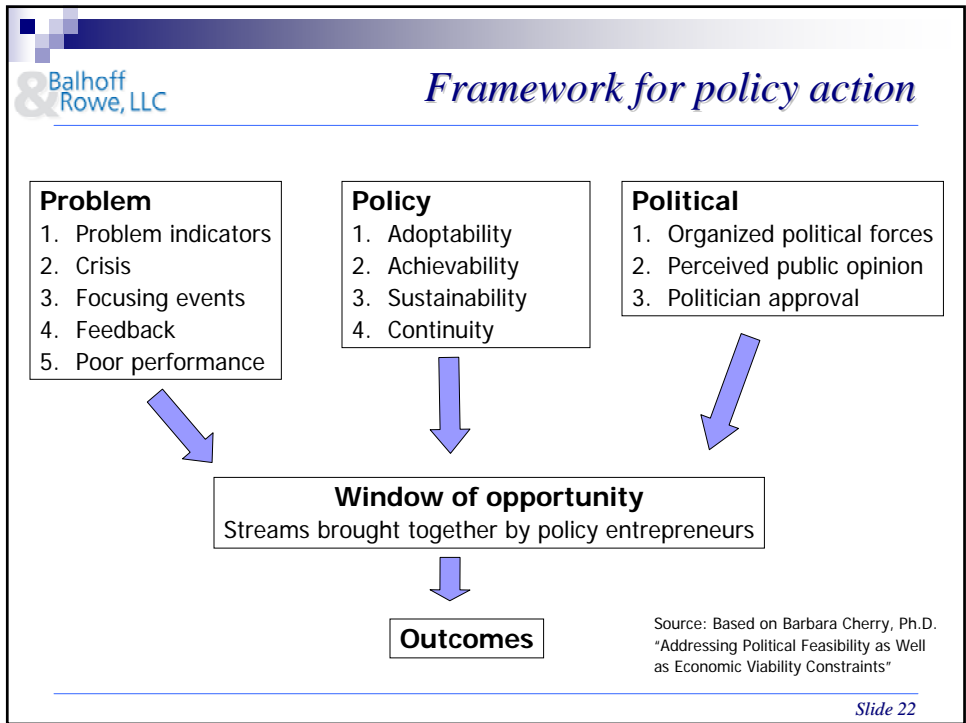
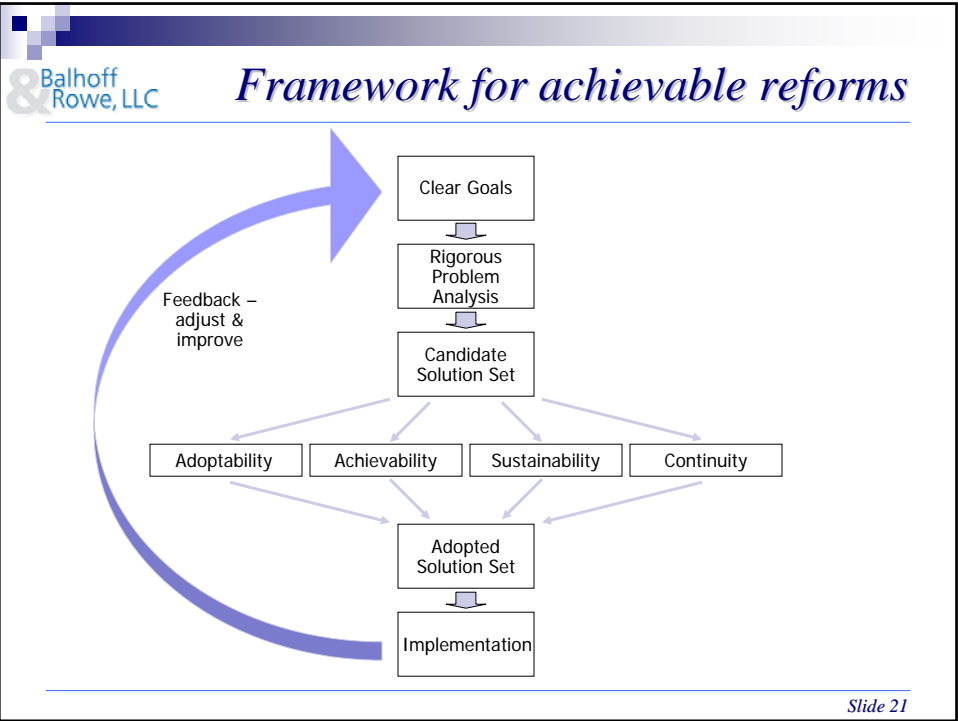
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| <ul style="list-style-type: none"> ■ Subsidiarity ■ More activist competition policy ■ Formal structure driven by market definition, findings of Significant Market Power ■ Wireline + <i>unbundling</i> + wireless ■ Currently higher European denpovment | <ul style="list-style-type: none"> ■ Federalism ■ Less activist anti-trust <ul style="list-style-type: none"> □ Tempered by public choice? ■ Gradual partial decoupling of sector from economic regulation <ul style="list-style-type: none"> □ Increasingly focused interventions, including support for Carrier of Last Resort ■ Wireline + <i>cable</i> + wireless ■ Currently higher US wireline cap ex/revenues |
|---|---|

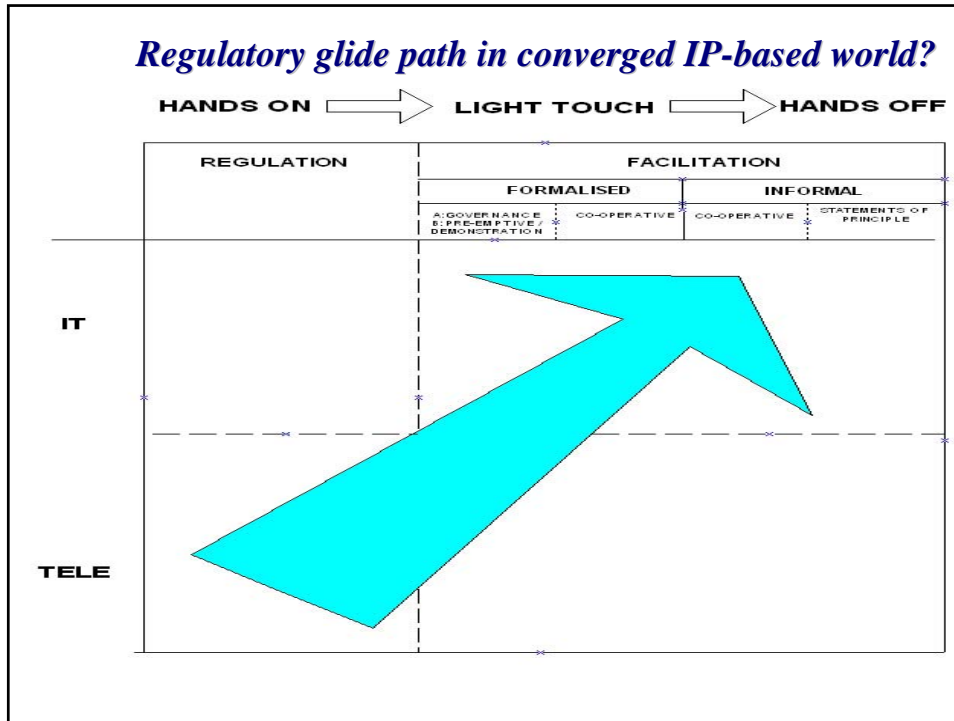



Note social, physical and other differences as well



Slide 20







**Balhoff
& Rowe, LLC**

About Balhoff & Rowe

Balhoff & Rowe, LLC, is a specialized professional services firm focused on providing financial-regulatory advice. The principals have more than 40 years of experience in advising investors and regulators on complex investment issues. They have provided services to a wide range of communications companies, including incumbents, competitive carriers, wireless operators and cable operators. Additionally, the firm has expertise in energy and other utility services. The services of Balhoff & Rowe include research, think-tank projects, professional facilitation, advocacy efforts, financial and restructuring advice for various companies, carriers and policymakers. The company offers an unparalleled combination of experience, credibility, strategic insight and access in a rapidly changing environment.

Michael J. Balhoff, CFA, Managing Partner
 Michael J. Balhoff, CFA, is managing partner at Balhoff & Rowe, LLC. Previously, Mr. Balhoff headed for 16 years the Telecommunications Equity Research Group at Legg Mason, which advised investors about equities in media, cable, wireless, telephony, communications equipment and regulation. Prior to joining Legg Mason in 1989, Mr. Balhoff taught at both the graduate and undergraduate levels. He has a doctorate in Canon Law and four master's degrees, including an M.B.A., concentration in finance, from the University of Maryland. A Chartered Financial Analyst and a member of the Baltimore Security Analysts Society, Mr. Balhoff has been named on six occasions as a *Wall Street Journal* All-Star Analyst for his telecommunications recommendations. His coverage of telecom was named by *Institutional Investor* as the top telecommunications boutique in the country in 2003. He has also testified multiple times before congressional committees, is regularly a featured speaker at conferences for investors and policymakers, and is widely quoted in the media, including television, newspapers as well as communications and business journals.

Robert C. Rowe, Esq., Senior Partner
 Robert C. Rowe, Esq., is a senior partner at Balhoff & Rowe, LLC. Previously, Mr. Rowe served as the Chairman of the Montana Public Service Commission which was responsible for regulating telecommunications, electricity, natural gas, water, and some transportation services. Mr. Rowe also served as President of the National Association of Regulatory Utility Commissioners, Chairman of the NARUC Telecommunications Committee, member and state chair of the Federal-State Joint Board on Universal Service, member of the Federal-State Joint Conference on Advanced Services, chairman of the thirteen state Operations Support Systems Collaborative working with Qwest and its competitors to achieve compliance with Section 271 of the 1996 Federal Telecommunications Act, and member of various advisory boards for university-affiliated programs.

Bradley P. Williams, Esq., Principal
 Bradley P. Williams joined Balhoff & Rowe as a principal in 2005. Previously, Mr. Williams was a member of the Strategic Planning & Business Development group at Lowe's Companies Inc., the Fortune 50 home improvement retailer. Prior to joining Lowe's, Brad worked with Mr. Balhoff in the award-winning Telecommunications Equity Research Group at Legg Mason, focusing on incumbent and rural local exchange carriers. Prior to joining Legg Mason, Brad was a co-founder of eSprocket / Beachfire, a venture-backed company that evolved into one of the pioneers in mediation technology solutions for the financial services sector. Previously, he served as a financial executive for Iron Road Railways Incorporated, a Washington, D.C.-based holding company that integrated, through acquisitions, a significant regional freight rail network serving northern New England and eastern Canada. Brad began his career as an investment banker in First Union's Capital Markets Group. He has a BA in Economics from the University of North Carolina and a JD from the University of North Carolina School of Law.

Slide 24