

# Stimulating [Telecom & Advanced Wireless] Investment and Business Expansion

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1. This panel will address, among others, the following telecom policy questions:
  - How do policy decisions impact investment?
  - How can businesses profitably serve low income markets?
  - In what ways can liberalization stimulate growth?
  - What is the role of government in making public private partnerships sustainable?
  
2. At the previous Global Symposium for Regulators, the National Regulatory Authorities concluded that an “enabling regime” can foster innovation, investment and affordable access to Next-Generation Networks, and that this enabling regime includes, *inter alia*:
  - “The establishment of an effective regulator separated from the operator;
  - The adoption of clear and transparent regulatory processes;
  - Regulatory flexibility and technology neutrality to permit technological innovation;
  - The creation of regulatory certainty for both incumbent and competing/alternative providers in order not to stifle innovation; and
  - Regular reassessments of the framework in order to remove undue regulatory barriers to competition and innovation as well as to allow the framework to evolve with the objective of enabling users and provides to migrate to succeeding generations of networks when the market dictates.”<sup>1</sup>
  
3. This high level GSR prescription is “spot on,” but the devil is in the details. For example, what constitutes “technology neutrality,” “regulatory flexibility,” “regulatory certainty” and “a regulatory barrier to competition”? And why could such an enabling regime stimulate investment, innovation and how do they help low income markets? Today, I wish to address these questions using spectrum policy.

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<sup>1</sup> Report of the Chairperson, ITU Global Symposium for Regulators, 5-7 February 2007, Dubai, United Arab Emirates, p.2.

- 4. We are at the dawning of what will likely be the most significant technical revolution in radio technology in over 70 years. Rapid improvements in microprocessors will soon make possible radios that are much smarter and more flexible than those in use today. In the not too distant future, any device that might benefit from being able to communicate will likely have a radio (or multiple radios) designed into it. Industry will increasingly focus on low-cost, small form factors like ultra-mobile PCs (UMPCs) and mobile Internet devices (MIDs), such as Intel's embedded Wi-Fi/WiMAX combination solutions. In short, Moore's Law is going to meet Marconi's transmitter.**
- 5. But regulatory regimes will enable or impede this revolution. In 2002, the United States Federal Communications Commission (FCC) created a Spectrum Policy Task Force to examine spectrum policy and recommend improvements thereto. This task force found that the FCC's current "command and control" spectrum management system is cumbersome, litigation-prone, and politicized; its tendency to "lock in" inefficient uses and technologies is costly to the economy, hinders the burgeoning demand for diverse wireless uses, and does not take advantage of the ability of technology to minimize interference. The task force recommended a market-oriented, exclusive rights spectrum management model for licensed services. Similarly, other countries, such as Australia and the United Kingdom, have begun to move away from the "command and control" approach in their spectrum framework reviews.**
- 6. A command and control spectrum management approach was more suitable in the early days of radio because the tuning range of radios was quite limited, and the designs of radios were fixed and tightly tied to the specifics of the application for which they were intended. But now converging markets and accelerating technological change will make picking technological and business winners much harder and mistakes more costly. Also, one of the biggest obstacles in the path of this revolution is the artificial scarcity created by the inability of regulation to move spectrum from old to new uses..**
- 7. Thus, the best way to reduce barriers to innovation, investment and competition is for regulators to give licensees more flexibility to use the technology of their choice (*aka* technology neutrality) and provide the service they think will best serve their consumers (*aka* regulatory or service flexibility).**
- 8. Technology neutrality and regulatory flexibility promote the allocation of spectrum with as few technology designators as possible. They support allowing a licensee to consider multiple technologies and uses in a given band as long as it is not interfering with its geographic and frequency "neighbors." In today's world licensees will have market-based information and strong incentives to quickly adapt to market conditions and to adopt solutions that are most likely to benefit consumers and the larger society.**

9. **This modern approach to spectrum management also reduces regulatory barriers to innovation and competition. Frequently, the command and control approach has given vested interests a platform from which to delay innovation and frustrate competition. In the U.S., vested interests used regulation to delay the advent of television, cable TV, direct broadcast satellite, PCS and OFDM wireless technologies. This is an age-old story that always ends the same—consumers lose.**
10. **When regulators give licensees flexibility, on the other hand, their competitors can't attempt to get regulators to delay innovation. These policies also promote investment, because incumbents cannot sit on their laurels. Increased competition forces them to invest in the new more capable technology whether it is GSM, CDMA or OFDMA. Consumers determine when technologies are obsolete not carriers.**
11. **Some companies object that governments can foster investment by limiting competition or foster global harmonization by mandating use or technologies. But in practice limitations on competition have increased prices, profits and investment in lobbyists (not facilities). The beneficiaries of such regulatory protection do not suddenly become altruists. Indeed, they can be expected to reduce output from competitive levels and waste scarce resources fighting to keep their favored treatment. Government mandates are not necessary to achieve global harmonization. Vendors and service providers have strong incentives to harmonize around global standards when that makes sense. PC history is replete with such examples. However, convergence through industry-led standards does not impede innovation and competition the way government mandates can. In general, the “regulatory certainty” that spectrum policy makers should aim for is that provided in other markets—the ability to enter into enforceable contracts and the freedom to invest and enter new markets without undue delay.**
12. **Regarding low income markets, it bears pointing out that limitations on competition also keep equipment prices higher than they otherwise would be. They may also limit low cost business models such as that employed by many Wi-Fi providers. Such regulation can also impede new form factors such as embedded radios in laptops. When Intel embedded Wi-Fi radios in its laptops, Wi-Fi penetration rates spiked upwards. The record is clear competition and innovation not only increase capability they also reduce costs and prices.**
13. **Finally, serious spectrum reform requires hard work. The technical questions are formidable. While incumbent users have a legitimate interest in assuring that their uses are not subject to significant interference, policy makers should always keep consumer interest foremost in their considerations. Some of the existing holders of spectrum or businesses that might face competition as a result of technological innovation may oppose these reforms. Such protectionist efforts should be resisted. In the end, consumers and the broader public will benefit enormously if improved**

spectrum management techniques can eliminate the artificial scarcity created by the current inefficient spectrum management system.

## Technology Neutrality and Regulatory Flexibility

Old “Command and Control” Approach	Technology-Neutral Approach
3G/IMT-2000	Mobile Services
Modulation – DSSS/FHSS	Digital
Duplexing TDD only	Either TDD or FDD
Fixed services only	Flexible use
Specific channel schemes	Flexible channel schemes
Licensees cannot resell spectrum	Spectrum sub-licensing and trading

### Spectrum Policy Toolkit

- Give existing and new licensees substantial service flexibility
- Allow licensees to aggregate and disaggregate spectrum subject to competition review.
- Set objective interference limits for each licensee’s co-channel (geographical) and adjacent channel (frequency) boundaries. For example, a licensee should not be limited to erecting a 200-foot antenna at particular coordinates emitting a particular power. Instead, it should have operational flexibility (including moving from broadcast to mobile and portable uses) as long as it operates within specified power limits at its boundaries with its co-channel and adjacent channel neighbors.
- Exhaustively assign spectrum across their country. Where only urban areas have been licensed on particular frequencies, the regulator should assign the spectrum in the rest of the country. In addition, regulators should promote the ability to allow licensees to aggregate a national footprint, which will address roaming issues and reduce overall costs to consumers.
- Use auctions to assign initial licenses.