

**Practicing Law Institute/FCBA Wireless Tutorial**  
**By**  
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**1:45 pm**

Thank you for inviting me to speak to this august group.

It is a real honor for me to speak in front of all my colleagues and many mentors on wireless issues. I especially want to thank Dick Wiley for his gracious invitation. Of course, no talk of this sort can be fruitful if I limit myself to my official capacity...therefore indulge me when I say that the views expressed here in are those of my own and not that of the Commission.

Of course, such honor comes with it a sense of responsibility to be succinct. I have two guiding phrases in my life. One that I follow faithfully and the other I try to follow faithfully but fail to do so because of my enthusiasm for certain subjects including my family and, of course, wireless issues.

The one I follow faithfully is D'Israeli's statement that "The Secret of Success is the Constancy of Purpose." This mantra has led me from being a field engineer in Tampa, Florida working on installing two pair copper to working here in DC with the best and brightest to develop and implement a new regulatory paradigm for the wireless industry as well as the telecommunications industry as a whole.

The other one is Shakespeare's Hamlet who said that "Brevity is the Soul of Wit!" I will be faithful to this second principle for the rest of my remarks.

My goal today is to give you my thoughts on three issues that are of value to FCC practitioners especially those that deal with the Wireless Telecommunications Bureau. First, I will cover with you with a sense of the Bureau's mission and how it intends to accomplish them. Second, I will also briefly review with you how the Bureau is organized and how this organization is related to the goals of the Bureau.

Finally, I will attempt to expound on the "big trends" taking place in wireless and how I expect to see their effects on FCC's regulations going forward.

When I started in this job, I came up with a list of high level goals for the Bureau. These constituted were:

- 1) Advancing the public interest in the form of new services, lower prices, and increased competition;
- 2) Increasing the United States' global lead in wireless deployment and investment; and,

- 3) Promoting the use of wireless services and technologies to protect and secure our Homeland.

After a while I was able to better define the specific areas where our Bureau can make a difference. This was to focus our energies on three areas:

- 1) **We needed to develop new regulatory concepts that provided for greater access to spectrum...**this follows on the breakthrough notion developed by the FCC's Spectrum Policy Taskforce Report that found that the rationing problem in spectrum is that of access as opposed to the actual quantity of spectrum. In the last ten months we have followed on this notion by putting out a series of proceedings that have dealt squarely with this issue including:

Secondary Markets Proceeding  
MDS/ITFS NPRM  
4.9 GHz R&O  
Rural NPRM  
Advanced Wireless Services Band Plan Order  
70/80/90 GHz R&O

The take away from our efforts is a set of core principles that include technological neutrality, business plan agnostic regulations, and finally a road map toward full flexibility for licensees. This process had bumps on the road but we expect that we will continue to incorporate these concepts as we go forward.

- 2) **We need to increase the incentives for moving tethered applications towards untethered applications.** I originally thought of this area as our broadband efforts but the goal is much bigger...it is about taking all applications allowing them to co-exist on wireless and wireline infrastructure without the consumer knowing the difference. This notion of seamlessness is based on advances of technology such as frequency agile radios, software defined radios, and software radios. The role of the regulator here is to GET OUT OF THE WAY AND BY ENCOURAGING THE VESTED INTERESTS TO ALSO GET OUT OF THE WAY. Our specific activities here are to encourage full flexibility of available spectrum and to use our bully pulpit to encourage investment such as wireless security, VPNs and other attributes that make the transition from tethered to untethered attractive to consumers.
- 3) **Finally, we need to focus on what I called the embedded capabilities of wireless networks and systems.** These range from the phenomenal capabilities of our Universal Licensing System database which can or should become the core of a future secondary markets engine and our license allocation auction systems to the LNP and E-911 capabilities that we are requiring of the carriers. These embedded capabilities are the pillars that support our other goals. In the case of the auctions and licensing systems, they provide a mechanism for knowing who has access to spectrum and when...the portability and E-911 capabilities

encourage the seamless transition between wired and wireless and in some cases, such as E-911, make wireless the better alternative.

Given these three goals, one wonders whether the trends in the marketplace actually make these goals sustainable. I think it does...

What are the big trends...in keeping with my rule of threes; I have identified three big trends that will have significant implications for wireless:

***Major Trend: A Dedicated Chip for Signal Processing***

My experience in heading up a wireless technology firm and our trip to the west coast earlier this year have left me with the profound belief that chip sets are outcome determinative in the wireless area. The availability of computing power solely dedicated to signal processing will create more opportunity for this sector...it will make wireless in all its forms the only telecoms sector which will have a continually increasing addressable market share...with this trend there will be much greater investment in the wireless sector and it will dwarf all other sectors.

Wireless Signal Processing will become cheap and plentiful...each wireless device will have its own chip dedicated to processing signals and another chip for handling computing instructions outside of the signal processing...These two chips will become smaller and integrated onto the device...

***Implications***

This will bring the advent of downloadable radios...it will lead to a vibrant secondary markets for radio if incumbents have the regulatory incentive to monetize their assets...the Further Notice of Proposed Rulemaking in the Secondary Markets' Proceeding grapples with this issue...

spectrum hoarding will become a thing of the past...since the devices will be intelligent to utilize all useful spectrum bands thereby eliminating the opportunity to monetize scarcity value of spectrum...

In this new world, the consumer device will be the driver and thereby make the consumer a key driver...

***Major Trend: ERA of the Wireless Consumer***

Wireless services will be driven by consumer behavior and demands...wireless regulations will have to respond in kind...

E-911 and LNP are just the beginning of the increased consumer driven regulation that will permeate wireless regulatory processes.

## **Implications**

The layering of the Wireless Service Provider as described by Kevin Werbach...no longer valuable to own the whole stack from the physical layer to the OSS to the Brand...

The new form of competition will be horizontal and the most important aspects of value will be the OSS and the Brand...Vodafone, T-Mobile, and NTT Docomo act as if they realize this. These companies see their mission as being content and access aggregators instead of simply being wireless service companies.

### ***Are today's carriers prepared for this change?***

Other implications in the ERA of WIRELESS consumer are the advent of the plaintiff bar. Any market in which there are 150 million users/subscribers represent a different world for dealing with consumer issues.

Finally, there needs to be a greater dialog between infrastructure deployment issues faced by this industry and consumers' desire to have both NIMBY and better coverage at the same time. Ultimately, this is a societal issue that needs to be addressed comprehensively and hopefully in a national unified way....

Regardless of where we get out there, I do think that people walking around counting dead zones as done by Senator Schumer's staff in NY constitutes the proper analytic framework for dealing with this issue.

### ***Major Trends: What to do about the increased needs of the Public Safety Community***

No doubt there is a great increase in the need for public safety communications following the aftermath of 9/11...

The real challenge is not fundamentally of lack of spectrum as I discussed earlier but one of funding and adoption of Moore's Law to an industry whose investment cycles are not 3-5 years but more 10-15 years...

## ***Implications***

The challenge for the FCC is how do we put in place appropriate incentives for addressing these problem areas while not adding making them in effect unfunded mandates on the public safety agencies and the states

[Cite 800 MHz as one of the critical challenges]

Another related issue is understanding the critical nature of wireless communications both on the consumer side as well as on the public safety agency side as part of a reliable component of the national information and communications infrastructure grid...

[Cite to the NRIC and TAC process as announced by the Chairman at APCO]

***Major Trend: Investment decisions***

Investment will be made on the receiver side...the focus will no longer be tight tolerance but wider tolerance to permit the devices to roam spectrum to the consumer demand

The wireless world will converge to two areas of value: BRAND and OSS.

Brand is an obvious conclusion but OSS is the stealth investment horizon...the current battle between Microsoft and Nokia/Psion and others is for the OSS and one that should concern all of us...

The final implication for investment decisions is for me to caution carriers and their investors not to be trapped by the issue I describe about Cap Ex Dissonance. Any successful business or industry will reach a point where it needs to understand that growth can only come up from self-cannibalization...We need to make sure that carriers don't forgo investment in new technologies such as data networks simply because voice services are more profitable today...the genius of business success is the ability to visualize a different vision than what is fashionable today...

***Conclusion***

My advice to wireless practioners is as follows:

1. Engineering and Engineering Design of radio systems matters even more today
2. Intermodal implications of wireless developments need to be addressed
3. Spectrum transitions will become the primary focus of our efforts in the next few years...in essence, practioners need to develop holistic petitions addressing the incumbency issues when presenting new and flexible uses of spectrum...

Thank you for inviting me today and I'll be more than happy to answers any questions you might have...