Chapter 2

Spectrum Policy and the Development Of Advanced Wireless Services

Thomas J. Sugrue
Wireless Telecommunications Bureau, FCC

Abstract: This interview took place on July 25, 2002, between Professor Dan Steinbock
              and Thomas J. Sugrue, Chief of the FCC Wireless Telecommunications
              Bureau.

1.   DIFFERENT POLICIES ON STANDARDS

How would you characterize the strengths and the weaknesses of the U.S. mobile telephony market in the past 10 years (the 2G era)?

The U.S. market took a different path than the market in Europe and in some other places in a couple of ways. First of all, we did not adopt a uniform standard. Europe adopted GSM. We did not specify the standard. As a result, we have four 2G digital standards: CDMA, TDMA, GSM, and iDEN.   Great debates can rage on which course overall is the better approach. There are certainly some advantages to having multiple standards and some advantages to having a single standard, and Europeans have been very aggressive in arguing the latter side of the case. There are also substantial benefits to allowing the market to set the standard. Had we set a standard in the United States, back in the 1980s when this issue was on the public policy agenda, we probably would have set TDMA because CDMA wasn't quite ready. TDMA was much further along, in terms of its

development. CDMA has proved to be a very robust standard in the 2G world and has evolved successfully into the 3G arena as well. Indeed, two CDMA technologies, W-CDMA and CDMA2000, are the predominant standards that will be used in the 3G networks.

Had the U.S. taken the time-division approach, the way the Europeans did with GSM, we may never have seen spread-spectrum technologies commercially deployed in these mobile telephony services. Again, one can argue it both ways, but there are certainly differences between the two approaches. For example, one cost of not setting a standard may have been a little bit of slowdown in the development of digital networks here in the United States. But there were other factors at work here as well, including the fact that we were further along in analog so it was more of an overlay issue we had to deal with over the last 10 years.

2.   DIFFERENT LICENSING POLICIES

There has also been a difference in terms of licensing policy. During the pre-2G era, we divided the country into very small licensing areas. There were 734 of those areas, which we refer to as MSAs and RSAs. When we did the PCS auctions in the mid-1980s, we used a variety of licensing areas, but the largest ones still had 51 areas for the entire country. We also licensed a fair amount of spectrum on the BTA basis, which included almost 500 areas.

Over time, the market has told us that while there are some localized services that are economically viable, the market seems to favor broad, national coverage. The major carriers have all been putting together large national footprints through secondary market transactions. If we had to do it all over again, we would at least consider bigger licensing areas – at least regional, if not national, licenses. While secondary markets can lead to efficient aggregation even when the Commission adopts a less than optimal licensing scheme, there have been substantial transaction costs and time delays encountered as carriers seek to achieve an efficient size of operation in terms of geographic scope of coverage.

3.   CHANGING FORTUNES?

Today, U.S. subscribership numbers are still below those in Europe, but our minutes-of-use numbers are substantially higher. That reflects the competition we have that's been driving prices down, as well the pricing models adopted, such as big buckets of minutes, promotional pricing, and so

on. People in the United States just seem to have a strong preference for flat rate or quasi-flat rate pricing for communication services. We see that with local wireline service, Internet access, and again with wireless, where pricing is not literally flat-rate, but people typically buy enough minutes so that they're essentially covered in any given month and on the margin the cost of making a call is zero.

As the market is moving from the 2G era to the 3G era, the pricing models are changing with the market from penetration to usage models, as you mentioned. Concurrently, the technology seems to be commodified. From the U.S. point of view, do you see more optimism, for these reasons?

Yes, a couple of years ago, you couldn't pick up a newspaper or a popular magazine without seeing a headline, "U.S. trailing in 3G," "Why Is U.S. behind?" and so on. To some degree, we were a bit behind in terms of 3G licensing and implementing some services. However, the market demand and the technologies really had not been worked out yet. You always hear about being the first in the market. Well, being first to the market is great if you've got it right. But being first to the market carries enormous risks when the market demand is uncertain and the way the technology is going to operate is uncertain.

I think the United States *is* well positioned for 3G. We have an orderly transition path. We also have a policy that provides a distinct benefit. Consistent with the idea of not specifying the technology or standards, we permit any generation of wireless technology to be implemented in any of our mobile bands. In our original 1G bands used for the initial deployment of analog celular service, 2G digital services have been deployed and 3G services are starting to be deployed. For example, Verizon still has a lot of 800 MHz spectrum (the original cellular band) and they're rolling out CDMA2000 in that spectrum. 1G is transitioning to 2G is transitioning to 3G. In Europe, most countries limit 2G technologies to specified 2G bands, and 3G technologies to specified 3G bands. That practice drove valuations in the European 3G game, as well. If you wanted to play in the 3G game, you had to win in the auction. Our carriers always have the option of staying with what they have and transitioning to the next-generation on their current spectrum holdings.

4.   CONVERGING MOBILE AND IT WORLDS: CHANGING COMPETITION

What makes these developments interesting in terms of competition is that, in the present pre-convergence world, the U.S. IT leaders dominate the

data world, whereas the European mobile leaders tend to dominate the traditional wireless world.

In the data world, the WiFi technologies are a new and exciting development. Only two or three years ago, few saw how extensively these technologies would be deployed in the unlicensed space. I know that the licensed carriers are looking at those approaches very closely and are trying to integrate them into a 3G environment. That creates exciting opportunities. Some of the WiFi proponents think their approach will trump 3G. But just how it will play out is hard to say; it still has a long way to go. However, it has been a bright light in the data world and we've seen a lot of innovation. As commercial players are coming in, we're trying to standardize the approach so that it would become a more user-friendly experience for people who travel around the country. I do think that the U.S. carriers are well-positioned on that front going forward.

How far ahead do you see the practical implications of the changing value chain? We've seen a lot of debate and hype on these matters, but there seems to be far more uncertainty on the empirical impact on effective competition and market shares.

I really don't have a view on that. Certainly in the academic world there's a tremendous buzz on WiFi. In a way, if you can control the real estate on which a system is deployed, such as a campus, you can internalize difficult issues, including interference and to some degree privacy, and effectively coordinate the use in that fashion. There's a fair amount of innovation in that field. Some of the folks who brought us the Internet, the World Wide Web and the browser communities are now looking at WiFi and the wireless world. The nice thing about the unlicensed space is that it sort of unleashes these guys. How that will play out in terms of industrial developments, I'm not sure. If it is the Internet model, it should redound to the benefit of the United States because in that space we've done very well.

5.   INDUSTRY GLOBALIZATION AND U.S. WIRELESS INDUSTRY

In the 1G era, the United States was the center of worldwide wireless innovation, the core cluster and the lead market. With the 2G era, the industry has been swept by rapid globalization. How would you characterize

the role of the U.S. wireless industry within the global wireless business, in the early 3G era - and in the long term?

On the carrier side, I think the industry as a whole is in a good shape. It's still growing in terms of subscribers, usage, and revenues. Currently, the financial community is skeptical of anything that involves "telecom." But when one looks at wireless, particularly the demand side, it still looks good. People are spending more money. Even when you look at the demographics, this technology really seems to hit the sweet spot. Penetration rates are higher in attractive age groups than in other comparable communications. Among young adults, the wireless phone is part of their life – they might rather give up television than their cell phone.

On the manufacturing side and the technology development side, I think U.S.-based companies are also well positioned going forward. We have four 2G standards, and it appears we'll have at least two 3G standards. I don't know if we'll have four as we do with 2G. The TDMA guys are moving toward GSM, EDGE, and wideband CDMA. The CDMA carriers – Sprint and Verizon – are moving into the CDMA migration path, to CDMA2000. Qualcomm in the United States is still a very active, aggressive, and successful company with its CDMA technology playing a major role in 3G networks. The network infrastructure manufacturers still include major North American players, including Lucent, Nortel, and Motorola. The handset market is very competitive on a global basis and is likely to remain so with major players from Europe, the U.S., and Asia. So it's a very dynamic world.

We at the FCC don't try to adopt policies, whether they be spectrum management or other carrier regulations, to pick winners and losers in the wireless market. We don't try to handicap the global industrial race. We just adopt what we think are good, consumer-focused policies that promote competition and innovation, and then let that process work itself out.