



TELEPHONY AND THE FUTURE OF WIRELESS AUDIO

Robert Szybel, December 2010

With over 234 million subscribers in the USA¹, there are nearly as many consumers with mobile phones as there are listeners to terrestrial radio. Since the introduction of transistor radios in the early 1950's, listeners have demonstrated their desire for mobile audio: pocket-sized entertainment on-the-go. Until recently, AM and FM radio dominated consumer choice for free, portable audio. Radio was able to retain this dominant position despite technology incursions from cassette, CD and MP3 devices that offered more personalization, but less variety and no fresh content. Indeed, device makers found that models including a radio tuner sold better and delivered more profit, coincidentally ensuring Radio's continued proliferation and domination of the market for *wireless audio*.

USA Market Size

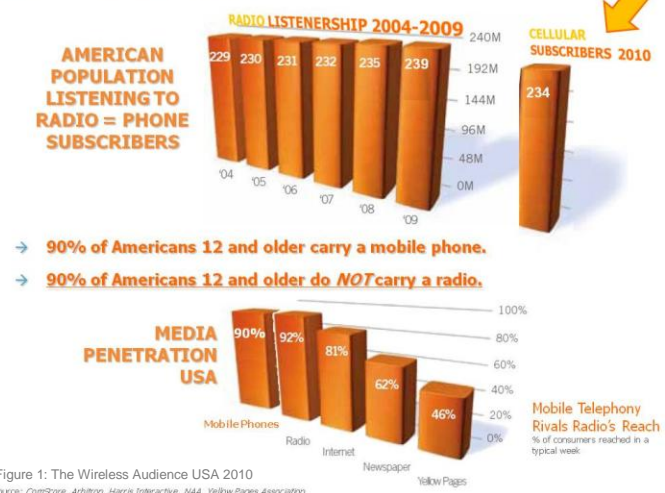
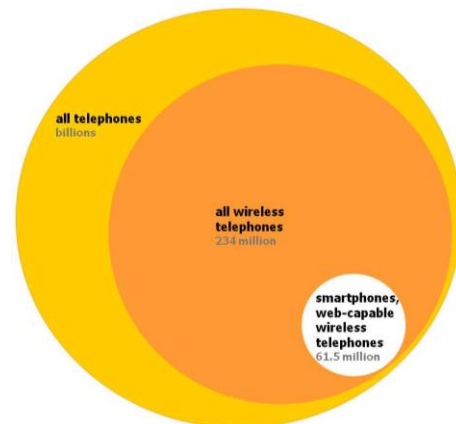


Figure 1: The Wireless Audience USA 2010
Source: ComScore, Arbitron, Harris Interactive, NAA, YellowPages Association

But with the advent of mobile two-way communication, the competition for space in one's pocket has been decisively won: listeners are setting aside their portable radios in favor of mobile phones. This device displacement allows a new wave of wireless content providers access to Radio's formerly exclusive audience. Many web upstarts are actively applying new technologies to win these mobile listeners. *Telephony and interactive technologies are increasingly finding their way onto automobile dashboards*. As people become accustomed to interactive mobile wireless content offerings and the ease of integration into their cars and homes, conventional radio will truly be at risk. Ironically, the cell phone is at its core a two-way radio; more akin to a conventional radio than a computer.

SMARTPHONES VERSUS ALL PHONES: AN OBVIOUS STRATEGY?

Twenty-six percent of Americans carry smartphones.² This market share will continue to grow, but at what pace? Consider that basic handsets comprised the majority of new devices sold in 2010³; pre-paid phones, typically acquired by cash-strapped consumers, now comprise 20% of the total US subscriber base⁴; and despite retaining iPhone exclusivity, AT&T and other carriers report sales growth erosion and a decline in the number of post-paid "contracts" that comprise the smartphone target demographic⁵. Of all handsets sold in the 4th quarter 2009, 66% were pre-paid plan devices, suggesting a recession-era approach to wireless consumption may be manifesting.⁵



If we accept from the history of radio that a vast majority of the population wants easy and convenient access to mobile content, then most of the market continues to be grossly underserved despite the proliferation of wireless. Given that there are as many wireless subscribers in the USA as there are listeners to terrestrial and satellite radio combined, is targeting a small subset of devices with expensive services the only avenue to reach this mass market audience? The market penetration of advanced devices falls far short of the total mobile population (radio listeners). There are few eyes-free content offerings conducive to usage while engaged in other activities; indeed, the smartphone phenomenon eludes segments of the population that are visually-impaired or print-disabled.

¹ As of July 2010 – comScore MobiLens, released September 2010

² As of July 2010 – comScore MobiLens, released September 2010

³ NPD Group, *Mobile Phone Track*, 2010

⁴ New Millennium Research Council, Wash. DC, March 31, 2010

⁵ Reported in *CNET*, Marguerite Reardon, April 20-21, 2010; and *Financial Times*, Telis Dimos, April 22, 2010

ABOUT ANYWARE RADIO

AnyWare Radio LLC provides research, design, implementation and strategic guidance for the creation and deployment of mobile and wireless products and services to a wide range of industries. AnyWare Radio owns and licenses US patents and other proprietary rights to cloud computing and smart network technologies that deliver the internet and advanced smartphone-like interactivity and personalization to conventional telephones.

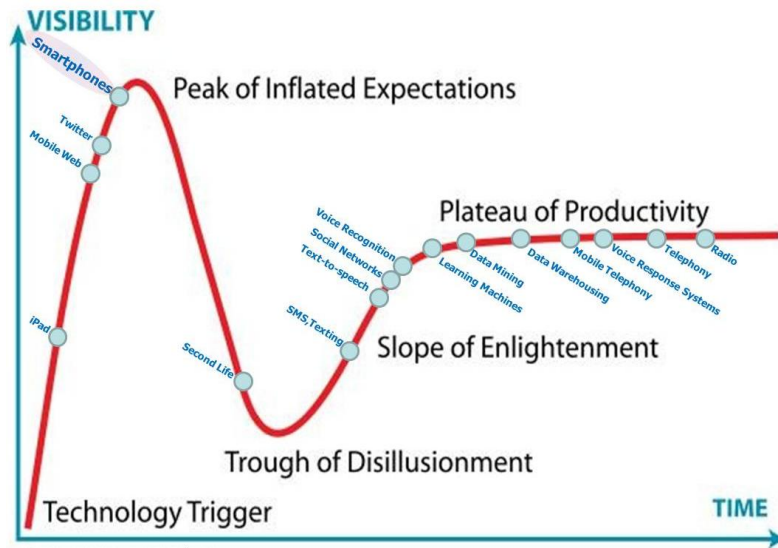


SMARTPHONES, THE MOBILE INTERNET AND THE HYPE CYCLE

Despite proclamations of cohesive wireless broadband, there are certain realities that impose on the real world, video-centric, mobile web. In a recent survey by Fanfare, 71% of respondents said they incur problems frequently when browsing the Internet; issues with social networking services repeatedly crop up for over 67%; and 65% experience frequent problems with streaming media such as music and video via the mobile web. 55% of those surveyed said they cannot tell whether problems stem from the handset or the mobile network – meaning that their disappointment can easily be leveled at the application and its provider too.⁶

Dan Meyer of RCR Wireless News explains the true current state of the mobile web relative to the publicity hype: “The industry likes to throw around marketing claims that consumers can access the Web wirelessly from wherever they roam, but that is simply not true. They might as well claim that mobile devices can be used to control unicorns.... Even the most GHz-packed smartphone fails miserably. Most failures are due to a screen that is always too small, a processor that can't load...Web sites...within a reasonable time, and lack [of] support for the necessary plug-ins....There is nothing worse than a half-assed solution and that is where we currently stand....”⁷ This dirty secret is also reflected in data not released by research firms and competitors in this segment. We previously established that as many as 67% of those with capable handsets listened to music on their phones at least once in the last thirty days. But for how many has it become a daily or weekly routine? Pandora and Slacker boast that 70% of their new registrations are mobile, but how many of those new customers actually become regular listeners? There is a novelty factor associated with the acquisition of a smartphone and downloading of apps that promise to deliver personalized music and video on-demand. The desire is there, but despite the creative advertising of America’s Carriers, our wireless data infrastructure is still unable to match the cohesive coverage available to voice calls, or the simplicity of function of basic telephony or radio. Device Penetration ≠ Usability.

Gartner Group developed the Hype Cycle to chart new technology evolution relative to marketplace and media expectations. The graph helps enterprises plot relevant technologies relative to their viability and time-horizon. In Figure 3, we chart relevant mobile, interactive and enabling technologies on this curve and suggest that for several high-profile technologies, the level of hype misrepresents the current cost/benefit/value proposition. Gartner’s Hype Cycle is a reflection not only of technology function and application, but also of business model viability.



Source: Gartner Group, AnyWare Radio 2010

Figure 3: The Hype Cycle of Enabling Mobile Technologies

The Radio Industry established for wireless audio a successful, sustainable, ad sponsored business model which is universally accepted by audiences worldwide. The business model has been continually refined and proven over nearly a century and boasts six key aspects: Free (1) content, Instantaneously (2) received; a Pervasive Network (3); and a Ubiquity (4) of Convenient and Simple to Use (5), Standardized (6) receivers.

Contrast the success factors for Radio with emerging smartphone “pay-for-play” business models that defy all lessons for success: Subscriptions for content and necessary fees for the ability to access that content via the mobile web; downloading and buffering delays; incomplete national and global wireless data network; and a segmented market of complex, non-standard devices, carriers and operating systems.

⁶ Fanfare, as reported by Nick Wood, Total Telecom, March 3, 2010

⁷ “Worst of the Week: The Mobile Internet Myth” Dan Meyer, RCR Wireless News, March 12, 2010



We are at a nascent stage in the evolution of mobile technologies into viable revenue-generating appliances for dissemination of audio content. The rate of acceptance of pay-for-play is not yet proven. For a next generation wireless audio service to succeed, it should build upon expectations established with and demanded by the consumer audience. Listeners accustomed to Radio's immediacy, intimacy, ease-of-use, ubiquity and convenience may not so quickly embrace the superior fidelity and function of the mobile web given the associated complexities and costs of access and use.

SMARTPHONES VERSUS THE SMART NETWORK

Most of the subscriber base remains an untapped audience ripe for exploitation. Are smartphones and data plans the only viable medium for content distribution? Might there be a game-changing alternative path to market?

Today's competitors in tele-entertainment view the phone as a computer, forcing graphics-intensive interfaces and video-centric, computer-oriented content into a less than optimal form-factor. This phone-as-computer paradigm assumes a consumer demand to actively and regularly seek and pay for compelling content for consumption on the handset, and willingness to download and run proprietary software and routinely break visual awareness with their surroundings to use it. Moreover it assumes that over time, listeners will reject basic telephony and SMS to accept the increasing cost and complexity of new visual user interfaces that vary from OS to OS, from phone to phone. The lack of standardization limits all competitors in the smartphone sector and creates an opportunity for a different kind of mobile audio solution to dominate. The success factors for Radio dictate a course of action. Complexity, cost and device penetration hamper wireless web acceptance. A successful mobile audio alternative needs to instead be friendly, familiar, and ubiquitous, like Radio, with no extra wireless data fees.

Stripped of their proprietary software, interfaces, processors, screens and memory, all wireless handsets share certain common traits: they are two-way *radios*, with a speaker and microphone – radios that allow the listeners instant interaction with the content provider! They all generate the same DTMF tones; a preponderance of devices retain the classic twelve-button keypad. These shared features point to a common interface already familiar to all Americans regardless of their level of education. Telephone and voice response interfaces are as friendly, pervasive and easy to use as AM/FM tuners. Ease of use and access facilitates trial and adoption. What is needed is not a smart phone, but a **smart network**. Instead of wireless data apps that rely on costly devices for memory and personalization, a *smart network* - accessed by *voice call* - delivers that same functionality to *all* telephones.

Our Hype Cycle suggests that the promise of smartphones has yet to be realized. It also reveals a considerable amount of enabling technology that has already matured to deployable products that can be combined to deliver those promised personalized, interactive services to dumb feature phones that make up most of the install base. By harnessing these technologies into a *smart network*, a telephonic radio service can be rapidly deployed without regard for means of access. Advanced psychoacoustics enable the delivery of radio quality audio via conventional wireless telephony; learning agents, data warehousing and data mining systems facilitate complete control and personalization for each listener without registration. The data collected is invaluable to networks, content providers and advertisers. The *smart network* can transform and define the *Wireless Audio* business for the next century.

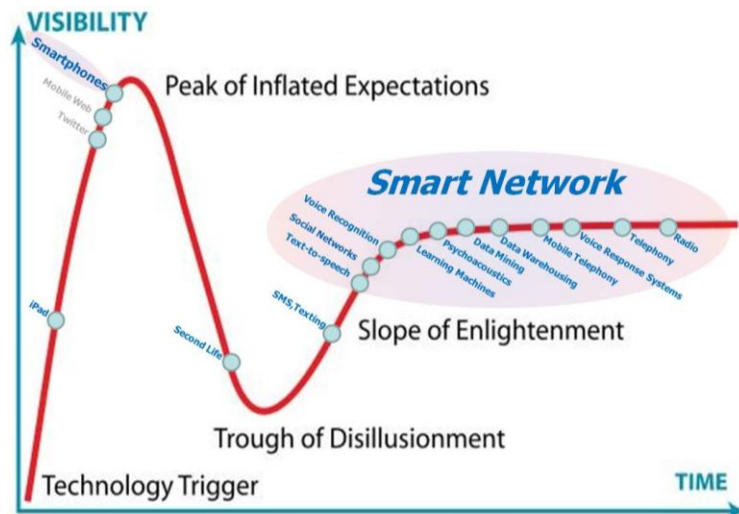


Figure 4: Using the Hype Cycle to Define the Future of Wireless Audio



STRATEGY FOR MASS MARKET WIRELESS AUDIO SUCCESS

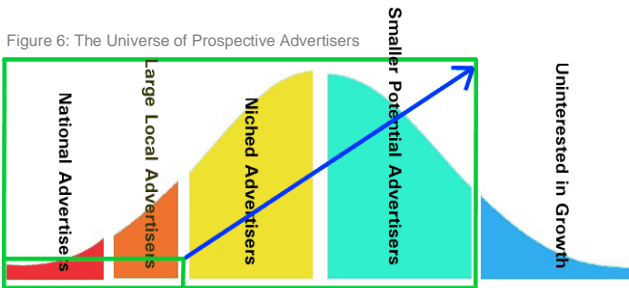
With the advent of cell phones, virtually everybody now carries a personalized two-way transistor radio. Listeners can manipulate the signal they are receiving on their handset. The telephone keypad is as familiar and easy to use as a radio tuner dial, yet allows more flexibility of interaction, as does the microphone. *Smart Networks* capitalize on the standardized aspects of mobile telephony – ease-of-use and familiar interface paramount - to provide highly personalized listening experiences to individual callers. For most, the cost of the voice call necessary to access the network has become negligible, imposing no extra burden on the caller. The affordability and convenience of access contrast dramatically to the complexity and cost of wireless data alternatives.



Smart Networks deliver a mobile audience, reaching devices in the pockets and purses of all mobile subscribers. The smart network delivers optimum personalization and mobility at low cost. They move beyond classic broadcast one-to-many marketing media to attract a new and unexploited advertiser base drawn to the more precise targeting of ads enabled by the *smart network*. Servers track content, navigation and behavior; intelligent learning agents continually mine this data to determine what ads to serve. Manufacturers and advertisers define the characteristics of their target market – these become rules applied to ensure qualified listeners and thus higher

impression rates for ads. Niche demographics can be identified; some smart networks are even location-aware. Basic ad rates are comparable to Radio, and the *smart network* allows premium pricing for advertisers reaching known niche demographics; the network can prove every impression made *Smart Networks* create a true one-to-one marketing and sales environment with on-line functionality and radio-caliber impression rates.

Figure 6: The Universe of Prospective Advertisers



The mobile entertainment sector demands a strategy to improve audience retention, mindshare and growth. Of two approaches to the ubiquitous mobile audience, the smartphone path is still new, small, untested and costly to implement and support. Alternately, smart networks affordably reach all audiences without need for premium devices, data plans and subscription fees. Smart Networks leverage carrier infrastructure to provide advertiser-sponsored audio in a format that takes its cues from radio's successful history and makes its signal pervasive to all.

Consumers have long demonstrated tolerance for compromise in accepting mobile entertainment. Tiny screens and long download times have not hindered consumption of video or investment by dozens of companies anxious to enter this sector. At the same time, wireless telephone systems and handsets are delivering increased audio fidelity, even for voice calls. Technologies like Bluetooth already deliver telephone audio to millions of dashboards nationwide. The new generation 4G LTE infrastructure now proliferating delivers voice call sound quality that exceeds AM radio and approaches MP3, allowing for audio content delivery services to rival those offered via smartphone apps, satellite and terrestrial radio. Shortcomings of the occasional dropped call or poor connection are more than offset by the convenience of receiving desirable content anywhere, anytime, on any phone. Radio has always been an uncomplicated, video-free zone - wireless telephony is ideally suited to exploit such audio-centric content in exciting and profitable new ways.

