

White Space Devices & The Battle Over Innovation: Public Access vs. Industry Control of the Airwaves

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I wouldn't be surprised if you've never heard of a "White Space Device." And yet, white space devices have the potential to be one of the most revolutionary new technologies to come along in the past twenty years. White space devices will have a greater positive impact than Wi-Fi and spur far more innovation than mobile phones. And yet, the trade press and inside-the-beltway media have been inundated by a massive PR campaign, and congressional offices have been swarmed by hundreds of lobbyists, all claiming that white space devices will destroy television broadcasting and make wireless microphones inoperable. Why then, has a large and growing coalition of public interest and consumer groups (including the Consumer Federation of America, Consumers' Union – who publish "Consumer Reports," EDUCAUSE – which represents institutions of higher learning, Common Cause, National Hispanic Media Coalition – which advocates for "media and telecommunications policies that benefit the Latino community," New America Foundation, Office of Communication of the United Church of Christ, Prometheus Radio Project, and U.S. PIRG) teamed up with a growing number of high-tech companies (including Google, Dell, HP, Motorola, and Microsoft) to support white space devices? If consumers and businesses that are innovating new technologies are fighting for these devices, who's funding the lobbying and PR against them? And what does this all have to do with the arts and cultural community?

I first joined NAMAC over half-a-decade ago and have been actively organizing community media and the arts for quite some time. I co-founded the Urbana-Champaign Independent Media Center (UCIMC) in 2000, created the UCIMC's all-ages arts and performance venue in 2002, took part in the "Community Engagement Through Media Salon" that NAMAC held in 2004, and have coordinated countless community media and arts projects over the years. I mention this because when I talk about the enormous benefits that white space devices hold for cultural venues, I do so as someone who wants to see them available both for use by the general media and arts community and by the organizations and projects that I help lead.

Recently, I have read talking points created specifically to mislead arts and cultural organizations and so-called "facts sheets" that no one wants to put their name behind because they're so completely ridiculous and full of misinformation. As a practitioner, I felt it was important to provide information and resources to counter the fear, uncertainty and doubt that is being manufactured by the opponents of white space devices. Public interest groups like the New America Foundation may not have the PR funding and lobbying power of the National Association of Broadcasters or Shure Microphones; but, we do have venues like this one to get the truth out about what white space devices are and the benefits they provide to arts and cultural organizations.

So what are "white spaces" and "white space devices," anyway? And why do some companies want to stop them?

White spaces are vacant frequencies between occupied (licensed) broadcast channels or broadcast auxiliary services like wireless microphones. If you've ever used an old TV, the unoccupied channels that just show "snow" are the white spaces. After the completion of the DTV transition in February 2009, the amount of white space in most of the nation's 210 local TV markets will greatly exceed the amount of occupied spectrum, even in most major cities.² In essence, white spaces are an enormous, underutilized

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² The share of the DTV band (channels 2-to-51) that will be vacant after the February 2009 turnoff of analog transmission ranges from 30 percent in the most congested, coastal markets (e.g., Trenton N.J.) to 80 percent or more in small town and rural markets (e.g., Fargo N.D.) For more information and a survey mapping available white space in a representative number of TV markets, see *Measuring the TV "White Space" Available for Unlicensed Wireless Broadband*, New America Foundation and Free Press,

resource that the media and arts community (along with the rest of the general public) could be using for next generation digital media and low-cost communications. The Public Interest Spectrum Coalition³ wants to open up access to these unoccupied bands for everyone by allowing wireless devices certified by the FCC to operate on vacant frequencies in much the same way that tens of millions of Wi-Fi devices are in use today in laptop computers.

White space devices (WSDs) take advantage of wireless innovations of the past 20 years and automatically detect occupied TV frequencies – allowing the public to use spectrum that would otherwise be unoccupied. Opponents of WSDs have launched a misinformation campaign in an attempt to prevent more widespread access to the TV bands. While the broadcast industry lobby has attempted to convince newcomers to the discussion that WSDs *cannot* work, these WSD detractors have systematically ignored data showing that even the pre-prototypes WSDs the OET is testing work exceptionally well. What is particularly ironic is that unlicensed wireless microphones are already in use throughout the United States – these devices already use unused TV bands, and have done so for years; yet the same companies that manufacture and use wireless microphones are the ones saying that *other* devices won't work.

Upon closer examination, opponents of white space devices have a remarkably simple problem – white space devices will make communications far more distributed and hardware far cheaper. For the National Association of Broadcasters, it means that local communities will be able to broadcast video and audio for free – which means competition and diversity on the airwaves. For Shure Microphones, it means that a whole new generation of wireless microphones – white space device wireless microphones – will be entering the market, dramatically increasing competition and lowering the costs of this hardware. And if you look at the sides in the battle over white space devices, the only opponents of white space devices are the corporations that want to keep their own lock on this market – these companies want to ensure that arts and cultural organizations cannot build their own infrastructures, don't have access to alternative distribution networks, and are not able to buy equipment from (lower-cost) competitors. Knowing that these battle lines were a losing proposition, opponents of white space devices have hired PR experts to “educate” arts and community organizations and win them over to their side. Already, we've seen several very public marketing campaigns where several arts and cultural groups are made the public face of opponents to white space devices (in ads paid for by NAB and Shure). This is particularly egregious since these organizations are basically fighting against the best interests of the general public and that of their sister organizations.

What are the Public Benefits of White Space Devices?

TV frequencies are a valuable data networking tool for the same reasons they are desirable for television broadcasts – they easily penetrate obstacles such as buildings and trees and can reach longer distances than the higher frequencies used by Wi-Fi devices. Every region in America has a large quantity of unoccupied TV white space. Although the particular empty channels vary in each local market, in most parts of the nation *a majority* of local TV frequencies are not being used, but could be, to create everything from affordable broadband access to local media distribution. Currently, the vast majority of community and municipal wireless networks – commercial, municipal and community nonprofits, public-private partnerships, etc. – use unlicensed spectrum to transmit data. While existing use of unlicensed spectrum has driven a remarkable amount of innovation, opening more low-frequency spectrum for WSDs is the “rocket fuel” needed to facilitate and scale up home, business, and regional networks. Below are just some of the benefits of white space devices:

Enhanced Local Coverage and Communications

January 2006, available at

http://www.newamerica.net/publications/policy/measuring_tv_white_space_available_for_unlicensed_wireless_broadband.

³ Coalition members supporting unlicensed access to TV white space include Consumer Federation of America, Consumers Union, EDUCAUSE, Free Press, the Leadership Council on Civil Rights, the National Hispanic Media Coalition, Media Access Project, New America Foundation, Prometheus Radio Project, Public Knowledge and many others.

Local communities could use WSDs to enable mobile video and audio services and citizen journalism. These services would provide information of special interest to the local residents (for example, a town hall or PTA meeting), coverage of local sporting events (for example, the high school football game), and new methods for local advertisers to reach customers in a more targeted and valued manner. As WSD technologies are integrated into next generation wireless microphones and other media equipment, these systems will be substantially less prone to interference than today's "dumb" equipment (which are often incapable of sensing whether other devices are transmitting on the channel they intend to use). In the same way that digital media equipment has spurred a new wave of consumer-generated media, the ad-hoc and distributed information dissemination networks that WSDs make possible will encourage the sharing of local content and user-generated content.

Enterprise Networking

From a base of essentially zero in 2000, an estimated 60 percent of U.S. corporations now provide some type of wireless networking using unlicensed spectrum last year.⁴ On May 25, 2006, in testimony before the Senate Commerce Committee, Roger Cochetti, federal policy director of the Computing Technology Industry Association (CompTIA⁵), stated that reallocating the TV white spaces for unlicensed use "will be used by small business to improve their productivity, not least of which will be access to new wireless broadband services."⁶

Rural Broadband Deployment

The highly favorable propagation characteristics of the TV broadcast spectrum allow for wireless broadband deployment with greater range of operation at lower power levels. Thus, the TV white spaces could be used to provide better broadband service in less densely populated areas or as a first broadband service in many underserved areas, including rural and other remote areas. Today more than 3,000 wireless ISPs (WISPs) and rural telephone cooperatives already rely on the current "junk" bands of unlicensed spectrum to provide broadband to remote customers, mostly in rural areas. Which is why the Wireless Internet Service Provider Association (WISPA) and the National Telecom Cooperative Association (NCTA) have been advocates of opening the TV white spaces for unlicensed access.

Education and Enterprise Video Conferencing

The TV white spaces could be used to give local high schools and middle-schools the same multimedia capabilities available to major university campuses: mobile, high-speed Internet access for every student and teacher with a laptop or portable wireless device. WSDs also can be used to increase the reliability and decrease the cost of video conferencing on college and commercial campuses. Such video conferencing could help enable distance learning for students in remote locations for whom traditional classroom-based learning is impractical. This is why EDUCAUSE, which represents the nation's colleges and universities on technology issues, is a leading advocate for white space devices.

Personal Consumer Applications

WSDs could be used to provide new services and applications to consumers by taking advantage of the improved signal reliability, capacity, and range of the TV broadcast spectrum. Wireless local area networks using low power and battery operated devices could enable new communications technologies

⁴ Telecommunications Industry Association, 2006 Telecommunications Market Review and Forecast, p. 188. For a larger estimate, see In-Stat, "In-Depth Analysis: Wireless Data in the Enterprise: The Hockey Stick Arrives," December 2006. See also ABI Research, "Enterprise IP Telephony," 2006.

⁵ CompTIA's 20,000 members are predominantly among the nation's 32,000 value-added resellers, a \$43 billion industry that deploys IT networks for small- to medium-sized businesses and professional offices across the country.

⁶ Roger J. Cochetti, CompTIA Testimony before the Senate Committee on Commerce, Science and Transportation, May 25, 2006.

that bring safety, convenience, and comfort to consumers in their homes. This is why major consumer groups like the Consumers Federation of America and the Consumers Union support opening the TV spectrum to white space devices.

The Take-Home Message:

The FCC is completing a critical phase of the process needed to bring WSDs to consumers. Extensive feasibility testing has been conducted and extensively documented and this testing has demonstrated that WSDs can and do work. A new round of feasibility testing is currently underway and will add further support for the viability of WSD technologies. The next step will be for the FCC to issue the necessary technical specifications for WSDs based upon the empirical data collected during feasibility testing and regulatory precedent. The FCC will then be able to certify consumer devices, ensuring that those devices meet required technical standards. Only after all three phases of this process are completed will consumer WSDs be made available to the general public.

Taken together, this multi-step process will ensure that WSDs co-exist with current license holders without causing harmful interference and that manufacturers and implementers will have the flexibility to develop new features and innovative uses for WSDs. Public interest groups have been vocal in their support of rigorous testing and also have remained committed to the end goal of certifying useful new wireless technologies that operate within TV bands without causing harmful interference to licensed users. For arts and cultural organizations, this process (and white space devices generally), have the potential to add much needed tools to help us conduct our work.

For those who would like to find out more, check out the Wireless Innovation Alliance (www.wirelessinnovationalliance.com), read the policy backgrounder on white space devices available at: www.newamerica.net/publications/policy/unlicensed_broadband_device_technologies, or contact me directly if your organization would like to join the Public Interest Spectrum Coalition or the WIA.