

# Sharing Unused Airwaves

## Vienna Firm Earns Its Living in Broadcast Spectrum White Space

By Zachary A. Goldfarb

Washington Post Staff Writer

An engineer, Mark A. McHenry litters his speech with dizzying terms like gigahertz and cognitive radio. But on one topic in the national news he is plain-spoken: the claim by the broadcast networks, the NBCs and CBSs of the world, that a new technology to provide Internet service over the air will interfere with TV viewing.

"They're wrong," says McHenry, the chief executive of Shared Spectrum, a Vienna technology company.

The Federal Communications Commission is weighing a proposal that would allow companies to share airwaves. McHenry said his eight-year-old, 30-person firm has already received \$30 million from the Defense Department to develop the concept. The broadcasters' position is "not what the DoD thinks," McHenry said. "It works in the harshest environments."

At its core, the debate over sharing spectrum is about control of the airwaves. All sorts of organizations -- the military, TV stations, cellular companies, police stations -- are assigned specific parts of the spectrum, a potentially lucrative asset. But sometimes spectrum can go unused -- for minutes, hours or years. Shared Spectrum's technology, and that of other companies, finds unused spectrum in what the industry calls white spaces and assigns it to other purposes.

McHenry started Shared Spectrum just as the technology market started to slide in 2000. He thought about commercial uses back then, but heeded advice he received from Dale N. Hatfield, the head of the FCC's engineering and technology office at the time.

"I tried to steer him away from the broadcasters because of the difficulty you have in taking on broadcasters in spectrum matters," said Hatfield, who now teaches at the University of Colorado at Boulder and consults for Shared Spectrum. "They're strong politically."

Instead, Shared Spectrum turned to DARPA, the Pentagon's research arm, where McHenry spent several years researching the technology before forming the company. Over the years, it has edged out several big defense companies to win contracts to build next-generation radio technology for the military technology.

The military's spectrum is allocated to different purposes in advance, such as satellite signals or video feedback from unmanned aerial vehicles. If particular spectrum is not in use at a particular point, it is wasted.

"What our next-generation communications program is looking at is developing the technologies that could

dynamically redistribute the allocated spectrum, where the radios and equipment would listen to see if the spectrum is being used and if not, use it," said Jan Walker, a DARPA spokeswoman.

McHenry said he is happy that Shared Spectrum stuck with government contracting. He is not part of the debate over taking advantage of white spaces for other commercial uses, a dispute that flared last week when Google launched a campaign to urge the public to support an FCC proposal that would authorize the use of unlicensed airwaves between television signals to create a nationwide wireless network.

Supporters say the network will bring broadband to lightly populated areas and help satiate the demand for fast Internet access by a growing number of smartphones and other mobile devices.

Broadcasters have opposed the move, saying the shared airwaves would interfere with TV signals.

"The prototype tests up to this point have consistently shown failure," said Dennis Wharton, a spokesman for the National Association of Broadcasters. "That doesn't give us a whole lot of comfort when there's a potential of thousands or millions of these devices operating without any protection to ensure that our broadcasters are able to get clear picture to our viewers."

McHenry disagrees. But he also chides the tech giants who are pushing for access to white spaces for not asking for a strong enough signal to make a real difference in rural areas and across long distances. Others find merit in that argument.

"The truth of the matter is, if this were a straight engineering consideration, you could do substantially higher than" what's being asked for, said Ed Thomas, a former FCC official helping the alliance of tech companies. "This is a political situation as well as the question as to what is comfortable for the FCC."

Even with the government route, though, McHenry is not free of hurdles. As he urges Pentagon budget officials to factor his devices into their spending, he has had to persuade them to abandon radio programs they already have.

"It takes them a while to realize we have something here," he said. Of the Pentagon budget, he added, "it's like a freight train."