

Dandin Chronicles

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A Different Kind of World,
A Different Kind of Company:

Dave Hughes: Internet Evangelist

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Dave Hughes: Internet Evangelist

On the day after his 72nd birthday, Dave Hughes described his latest wireless communication project with the enthusiasm of a 12 year-old. The National Science Foundation has granted him one million dollars to spend the next three years developing ways for field scientists to wirelessly retrieve and access data collected at remote locations, via the Internet. “I had to take a deep breath on this one and I delayed for some time before I was willing to do it,” he says. “I could see I’d be 75 when the damn thing would be done.” But the subject is too close to Hughes’s heart for him to refuse the project. “My self appointed mission is to hook up all the environmental scientists in the whole damn world,” he says, which comes under the umbrella of his larger goal: “To connect up all 6 billion brains on this planet individually, each with the other, through all the ways that information goes in - the eyes, the ears, the mouth and the fingers. That’s what I’m zeroed in on.”

Hughes is a pioneer of wireless communication and a tireless crusader for universal access to the Internet. His focus is the computer user in a tiny American farming community tens of miles from the nearest “wired” town just as it is the computer user in a third-world village with little hope of a wired network ever being established nearby. “I knew that the rest of the third world was not about to go down the road of America with a wired solution; places like Africa, India, there’s just no way there’s going to be a built up wired infrastructure,” he says.

Hughes's first large-scale project was connecting 116 one-room schools in Montana into a network that he named Big Sky Telegraph. Word of the success of this venture, and others such as the establishment in his home town of Colorado Springs of an ISP operation and the first on-line bulletin board, spread to Washington, DC, which led to his being offered his first NSF grant in 1995. His task was to perform field tests, and evaluate the applicability, of wireless technology in education. Hughes selected Dandin Group founder and CEO, Dewayne Hendricks as his co-principal investigator.

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In his previous position as founder and CEO of Tetherless Access, Hendricks had installed the radios in Hughes's home and office that enabled him to get his website and ISP operation up and running. "I was standing around looking over his shoulder trying to figure out how the damn thing works and why it works," he says. "That's where it started."

Under the auspices of the NSF grant, Hughes and Hendricks used spread spectrum unlicensed wireless radios to connect 15 schools in Colorado's San Luis Valley. They had been collaborating for a couple of years when another portentous telephone call came from the NSF. "Right in the middle of it, the NSF, so happy at what we're doing, calls me up and says 'Hey Dave can you get the Hell over to Mongolia before the winter sets in because the Mongolians want to be on the Internet,'" Hughes explains with a laugh. According to Hughes, the capital of Mongolia, Ulaan Baatar, had a poor wired telephone infrastructure and lacked the equipment or expertise to install a 56kb dataline to connect them to the rest of the world. But the Mongolians were keen to join the computer revolution. It was a chance for Hughes and Hendricks to further demonstrate the applicability of unlicensed wireless communication. But it was also a challenge. Equipment worth \$26,000 had to be shipped to Ulaan Baatar, and installation and technology transfer to the Mongolians had to be complete in a timeframe of just 10 days, says Hughes. Seven radio sets were distributed to sites in the city, including the University of Mongolia and the Mongolian Academy of Sciences, and a router was created at the base, which was then linked to a feed from PanAmSat. Despite having to conduct a last-minute site survey when the requested video survey failed to materialize, Hendricks and his subcontractors completed the wireless network and the Internet arrived in Ulaan Baatar. "The Mongolians ran with the ball from that point on," says Hughes.

Since working together on the NSF project, Hughes and Hendricks have proceeded on parallel tracks. Their collaborations these days are often in the form of combined assaults on the Federal Communications Commission. Hughes says that Hendricks had an independent relationship with the FCC in his role as a representative of Tucson Amateur Packet Radio, but he helped Hendricks gain more visibility within the commission. "I think he saw that I am very high profile when I choose to be," comment

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For more information about Dave Hughes and his wireless projects visit his web site

<http://www.oldcolo.com>

Hughes. “The FCC and Congress and the newspapers hate to see me coming in my Stetson hat ‘cause I take no prisoners.” The pair was invited to participate in an FCC work session to discuss wireless technology and education. There, and in later meetings with NSF staffers, they had the opportunity to describe their visions of the technology and associated economics that would allow people everywhere to connect to the Internet – those in remote locations in addition to those in urban areas. Hughes staunchly believes that there should be different regulations for rural and urban areas to accommodate the problems unique to each. In urban areas, where cell phones are competing for spectrum, interference is the major issue. In rural areas it is the tyranny of distance. “I don’t give a hoot and a holler about the big cities. They can take care of themselves on the Internet because costs are lower and distances are shorter,” says Hughes. “Today you can do DSL, cable, shortlines, ISDN, all that stuff. And then you go 15 miles out of town and you can’t do any of those things.”

Hughes says that he and Hendricks share insight into the FCC and have both been wrestling with the same problem - the FCC rules for power and frequencies. According to Hughes, the most significant decision that the FCC could make is to lower the frequencies through which unlicensed radios can operate, thereby enabling spread spectrum transmissions to pass through buildings. He also advocates an increase in available power, believing that with sufficient power and low enough frequencies, remote rural areas can readily use spread spectrum radios to join an Internet network. “The problem is that they stuffed these no license radios up into the garbage bin bands - the part 15 bands - and that’s up there where microwave ovens are, and cordless phones,” he says.

But Hughes is optimistic that change will come. Both he and Hendricks talk in terms of “revolutionary” and “paradigm shifting” when describing the impact on the communications industry of digitally modified data being transmitted by radio waves. “We’re in this messy period of a revolution in radio communications,” says Hughes. “This industry is only 15 years old. But the processors during that time have gotten faster, better and cheaper; and the faster, better and cheaper they are the higher the bandwidth, the lower the cost and the less the interference. And that is a revolution.”

- Kristin Weidenbach