2002

Ten Years on the Information Superhighway: Lawyers and Technology

Michael Botein
New York Law School, farrah.nagrampa@nyls.edu

TEN YEARS ON THE INFORMATION SUPERHIGHWAY; Lawyers and Technology

New York Law Journal

July 16, 2002 Tuesday

New York Law Journal

Section: Pg. 29, (col. 5); Vol. 228

Length: 1089 words

Byline: Michael Botein

Body

Lawyers and Technology

Anyone old enough to have voted in the 1992 election may remember Vice President Al Gore's promises to implement an information superhighway. This grandly named National Information Infrastructure would have brought high-capacity, two-way video, voice and data into virtually all U.S. homes and classrooms. Students and others would have been able to access encyclopedic amounts of information as text, graphics, and high-quality video. Instead of just reading about the Civil War, students and history buffs would be able to download contemporaneous documents or view a re-enactment of the battle at Gettysburg.

Convergence of Media

The driving engine behind this was supposed to be the convergence of various electronic media, particularly cable television and local telephone exchange companies (LECs). The cable industry then consisted of about five dominant companies, which collectively served more than 70 percent of 50 million U.S. cable subscribers; after some currently pending mergers and acquisitions, three companies would

have about 6 percent of almost 80 million subscribers. Both then and now, the LECs largely were the Regional Bell Operating Companies (RBOCs), which had been divested from American Telephone and Telegraph Company (ATT) in 1984, and which provided local service to more than 80 percent of U.S. telephone users.

Whether these players viewed this as realistic or just good PR, they all professed boundless optimism with the project. At the end of 1992, Dr. John Malone said that his cable company, TCI - by far the country's largest - would begin implementing two-way digital service in 1993 and extend it shortly thereafter to all its systems. (TCI later was absorbed by ATT, which recently sold it and other cable holdings to Comcast, making that firm the largest cable operator in the United States. An instant multi-billionaire, Mr. Malone went on to take over Liberty Media, with global interests in systems and programming.)

Unfortunately, none of these grand promises have come to pass. Cable operators quickly had to admit the conventional wisdom of the last decade - namely, that it was impossible to send messages back to a system's head-end central office by way of the same cable that delivered programming to subscribers.

For several years, the cable industry tried to work around this problem by installing nodes - in effect, substations for switching subscribers' return communications. Since no node could handle more than about 500 subscribers, and since each one required a separate direct link back to the head-end, this was not an effective return link. Moreover, the cost of rebuilding cable systems with nodes was astronomical - roughly $2,000 vs. about $600 for one-way service - thus making nodes an extremely unattractive investment. Finally, cable operators found that even nodes could not provide as much reliability as LECs, thus making them too liability-prone for voice telephony.

Conversely, the LECs had complete two-way switched service over their existing plants, but absolutely no broadband capability. While cable operators were struggling to make their already high-capacity systems switchable, telephone companies were desperate to find a way of transmitting broad band and data or video over their superbly switchable systems. As with cable, a partial solution emerged - the not too new but previously ignored digital subscriber line (DSL) technology. By upgrading the electronics at both the LEC's central office and the subscriber's location, telephone companies could offer a digital signal; and

since digital content can be compressed by several thousand percent, LECs could fit much more information onto their existing copper lines.

A telephone company thus could squeeze high-quality video - indeed, often better than cable - signals as well as massive amounts of data onto their networks. And the only major cost was the addition of the DSL cards, which in mass production was heading toward the $100 level.

The only problem with this seemingly elegant solution was that DSL signals would travel only about three miles over telephone wires. While this was enough to serve urban high-density central business districts, it clearly could not bring service to suburban, let alone rural, areas. As with cable, an add-on solution was available - namely placing subswitches in distant areas and connecting them directly to an LEC's central office - somewhat reminiscent to cable's flirtation with nodes. But this greatly increased the complexity and cost of the whole enterprise. For the moment, DSL thus seems to be limited to providing high-speed data in urban centers.

Other Possibilities

Although the two prime contenders do not seem to be likely to create the National Information Infrastructure in the near future, there may be other possibilities. In the last decade, of course, several new or newly marketed technologies appeared, which might have some applications to the superhighway. Moreover, all of them operate via the radio spectrum, and thus do not incur the high plant costs of cable or telephone.

First, direct broadcast satellites (DBS) now offers about 150 digital television channels from space - with an enthusiastic reception from 15 million new subscribers. With even modest compression, these signals could be increased to 500 or more. Like the cable industry it so much resembles, however, DBS has no return link - and not even the possibility of a jerry-rigged one such as nodes.

A second possibility would be pooling capacity on digital broadcast TV (DTV) stations, if they ever replace current analogue TV. (About two-thirds of the stations did not meet their initial on-air deadlines this spring.) And even though DTV signals can be compressed substantially - yielding 10 or more signals per station - they also share the problem of not having a flexible and inexpensive return link.

Finally, a substantial number of frequencies still are available for personal communications services (PCS) - i.e., mobile telephony. These would be allocated by auction, and the cost of national coverage likely would be on the order of $10 billion - less than cable, more than DBS. On the other hand, since PCS is a switched system, a high-quality return link can be built in.

What is Next?

So, where does the great Gore plan of 1992 stand now? Is it technologically possible under any set of technologies? And, as will be discussed in a future piece, can anyone - in either the public or private sector - afford to build it?

Michael Botein

Load-Date: August 6, 2011
