

CABLE INDUSTRY OUTLOOK

The War of the Wires

Scott Evans

The week before Christmas, my wife answered the phone and found herself talking to a representative of one of the big three long distance companies. They wanted to know if we would be interested in buying all of our telephone and entertainment from a single source: local, long distance, cellular, paging, cable TV, movies, sports, Internet access, e-mail—you name it. “Why would they ask that?” she asked me. Why indeed? That’s our topic of discussion for today. It’s a simple question, but the answer is quite complex. It also requires examining a number of dynamics at work in the marketplace in order to fully understand what the implications and ramifications are.

What we’re talking about is confluence, not convergence. A common set of technologies is beginning to be applied to a core set of opportunities, specifically the technologies required to provide a multitude of communications. Who will be the provider, and what will the market bear in terms of pricing? What services will the market accept, and what are the business models? Is it about information or entertainment—or both? Has the Internet’s “All-You-Can-Eat” pricing policy driven the communications consumer to an unrealistic level of expectation where they now want premium service at predatory prices? Will this be a war where the deepest pockets win through attrition at the expense of the consumer in the long term? Will regulatory regression prevent the necessary technology transitions? All good questions. What we need are good answers.

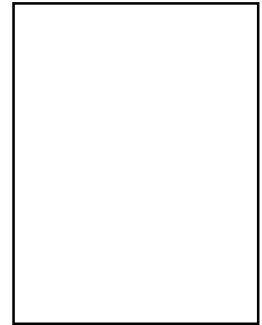
Aging Infrastructures, Overlapping Markets

One fallout of divestiture is that the U.S. communications infrastructure is aging

rapidly, and we’re falling behind the rest of the world. We watch as they deploy new technologies because they had no extensive infrastructure to replace. Meanwhile, we’ve grown fat and complacent, paying artificial prices for regulated services. As the information age progresses into the next millennium, the Venn diagram of markets served by the telephone and cable industries will migrate from divergent bubbles to an almost total eclipse, as digital technology continues to convert every type of signal into zeros and ones.

Look outside your window...how old are the wires bringing service? The networks feeding those wires were developed almost 30 years ago, and took shape over the first two decades of that period. What’s changed in the last trimester is the “backbone” that feeds the distribution system. Today’s telephone network is based on the same basic digital switching and transmission technologies that were developed in the late 1970s and deployed in the 1980s, long before computers extended their tentacles to the desktop and into your home. Since then, the major technological advances have been in the area of transport. First fiber optics, and now SONET (Synchronous Optical Network) provide the high-capacity backbone that the National Information Infrastructure (NII) is being built upon.

During the same time periods, cable began to replace the roof antenna as the source for entertainment, and CATV (Community Antenna Television) migrated from rural areas into the urban and suburban markets. More channels were added as the industry grew into a major entertainment and advertising force. Broadcasting on cable became “narrowcasting” as cable programming targeted specific demographic and age



Mr. Scott Evans is President of Vector Communications, Inc., a Miami, Florida based consulting service. Scott has focused on interactive television and cable since 1993. A 27-year veteran of the telecommunications industry, Scott has been involved with the development, marketing, and deployment of digital transmission services, ISDN, video conferencing, and dynamic bandwidth-based services for business and telecommunications applications.

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groups (think ESPN and MTV). As coverage increased, reaching 97% of the U.S. population today, “nichecasting” evolved providing full-time programs on cooking, health, business, golf, and others. So many new cable channels were added that the cable systems ran out of capacity. Minor upgrades expanded service from 30 to 50 and then 80 channels, but regulatory issues (rate structures and “must carry” rules) restricted further expansion.

The roots of these networks are now intertwined, overlapping with a significant exception: the business district. Herein lies the problem: Current market dynamics have eroded the margins of core products to the point where continued growth and profits for both industries are dependent on expanding beyond the existing boundaries. Business telephone users want:

- More bandwidth for video.
- More bandwidth for imaging.
- To extend their local area networks.
- To access the Internet.

At home, they want more channels of entertainment (heavily weighted toward movies and sports, the traditional cornerstones of cable programming) and the same level of voice and computer communications as the workplace. This provides opportunity for telephone companies to provide faster data access services, along with a chance to deliver entertainment and information programming that has traditionally been the domain of the cable operator. Conversely, the cable guy has a medium by which telephony and high-speed data services can be delivered to homes over an existing access mechanism—the coaxial cable wire. Now, two complimentary service providers whose wires shared the same poles began eyeing the other’s territory.

Before that can happen, the access infrastructure needs to be upgraded. The question is, who pays for the upgrade? Traditionally, in both the telephone and cable businesses, maintenance of the local loop distribution network (a.k.a. “outside plant”), which is primarily copper wire

bringing service to your home, consumes an average of 30% to 35% of the annual expenditures, while generating roughly 20% of the total regulated revenue. On the telephone side, the business user has been willing to pay the freight for new services—the ones requiring fiber optics and high bandwidth—especially those deemed “mission critical.” This is why you have megabits of bandwidth at the office, while your modem at home rarely runs at maximum speed. The benefits of fiber optics and other digital communications technologies have been delivered to the business districts in order to maintain the customer base that contributes the bulk of the revenues. Conversely, your boss doesn’t want you watching television at work, so cable is a residential service with bandwidth to burn (if the cable companies knew how to use it) but minimum penetration into the business market.

Make no mistake—the business user will continue to dictate the roll out of new services and deployment of new technology for two reasons:

- (1) Business consumes “mass quantities” due to the higher population density of the workplace, allowing service providers to leverage economies of scale that dictate margins.
- (2) You’re taking your work home with you.

Of late, a new class of user has emerged to create the gravitational mass required to pull new services into your home. Let’s call them the “transparent,” because what they want (or need) is transparent access to core resources. These resources are concentrated around the workplace, which increasingly is either mobile or virtual (supported via telecommuting) or SOHO (Small Office/Home Office). When you add the transparents to the “willing-to-pay” roster, it pushes the potential customer base for new services up enough to make it a paying business.

For now, the issues that drive (or limit) the availability of new services continue to be access and egress. Consider this: The

latest development in home entertainment, direct broadcast satellite (DBS), can now deliver high-speed data. It's called DirectPC, and is based on the same digital technology that has motivated over four million subscribers in slightly more than two years to make DirectTV the most successful consumer product of all time. So now, for the first time and without changing out the wires, you can have digital information delivered anywhere you work.

At the same time, personal communications services (PCS)—which initially offer improved cellular telephone service but also can provide data, messaging, and bandwidth—are becoming available at competitive prices. Either could substitute for wireline access while providing ubiquitous access to high-bandwidth services. Pretty scary to the people who spend such a disproportionate percentage of their revenues and expenses to keeping the wires working. The existing local telephony service infrastructure is already creaking and groaning under the weight of modem madness created by dial-up access to offices, information services (e.g., America Online and CompuServe), and the Internet.

Infrastructure Is the Limiting Factor

The drag of the existing infrastructure has become the limiting factor on service introduction. A decade ago, the telephone industry had an idea of what kind of bandwidth would be needed, but didn't realize the traffic would be *data* instead of voice. Given the technology available at the time, the networks were built to handle two classes of traffic—DS0 (voice or 64 Kilobit data) and DS1 (1.5 Megabits). Further, they guessed wrong with ISDN (Integrated Services Digital Network or Improvements Subscribers Don't Need—take your pick) by providing only three sizes of pipes: A single “bearer” channel (a DS0), H0 (256 Kilobits, which at the time seemed sufficient), and H11 (the ISDN version of DS1).

Don't blame the telephone guys. In the late 1970s, when the ISDN specifications were being developed, high-bandwidth applications like video conferencing and

multimedia were barely a glimmer in their inventor's eyes. At that time, ARPANET, the precursor to the Internet, was running at 300 Baud (if you remember Baud, your age is showing), and high-speed packet switching was done at 9,600 bits per second. Satellites were carrying video, but the dishes were gigantic. The technology benefits of man walking on the moon were just finding their way into applications and microprocessors, the great-great-great grandfathers of the monster sitting on your desktop, and they were computing at four bit levels known as “nibbles.”

The cable industry has a slightly different problem. They spent their mortgage money building networks that cannot deliver digital services. Cable is the analog victim of the digital revolution. Over the past decade, while the telephone networks were being migrated to an all-digital architecture, the cable guys were busy stringing (or burying) wire and putting old technology out in the physical plant. No wonder DirectTV is such a hit...it delivers crystal clear digital signals that are easily segregated to a consumer used to viewing pictures degraded by analog interference. Further, cable networks are built for broadcast, meaning they are unidirectional toward the subscriber. They do not provide connectivity, since they are segregated, receiving signals from analog satellites. They retransmit the signal in analog format through a cascade of amplifiers that degrade the signal even further. Ergo, they have lots of bandwidth, most of it unusable for digital communications.

The bad news for consumers and investors is that neither telephone nor cable has the kind of network needed to deliver the current (much less future) class of services that are driving the markets today. The options are not appealing from a financial point of view, since neither type of network can be easily (or cheaply) migrated to support high-bandwidth traffic. Compounding the problem is the lack of market direction. Neither service provider has a good handle on what services their customers really want, and recent trial and test efforts have focused on “gee whiz” rather

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than “willingness to pay.” The result has been a plethora of technology trials and forays into new businesses based on desire rather than demand.

Common Competitors Make Strange Bedfellows

While many will argue that technology calls for evolution, not revolution, the biggest changes have occurred in alliances. Even prior to the Telecommunications Act, the access wars between the long distance, local, and alternate access carriers had escalated.

- AT&T acquired McCaw Communications, giving them cellular access to local customers.
- A group of cable companies took over Teleport Communications, one of the earliest alternate access carriers.
- Sprint got into bed with three major cable multiple system operators (MSOs) to form Spectrum, a service consortium providing local and long distance telephony along with Internet access and enhanced (including wireless) cable services.
- U S WEST and Southwestern Bell Corporation (SBC) bought cable companies. U S WEST’s holdings include 50% ownership of Time Warner Cable (the second largest cable operator with 15% market share), Continental Cablevision (#3), and their highly successful United Kingdom Telewest partnership with cable giant TCI.
- SBC went further, getting into the DBS business as a distributor while partnering with Ameritech, BellSouth, GTE, and Disney to create Americast, and following up by acquiring Pacific Telesis, itself a partner in the TeleTV triumverate with Bell Atlantic and NYNEX.
- GTE spun off its programming efforts as Main Street, marketing the service to cable companies, at the same time building out their own telephone networks to support distribution of cable service.
- Ameritech began building separate cable systems after obtaining franchise from local governments within its operating area.

The emerging trend is for the cable operator to partner with a long distance carrier (remember the Spectrum alliance discussed earlier?) that has the necessary infrastructure and political clout to enter the local service business. Cable operators have local wireline access networks to complement and extend the long distance carrier’s egress network. The IXC’s also have switches which, for some time now, have been handling local traffic for their largest customers, routing traffic between their virtual network sites. They also offer a branded product for the cable operator to resell. To the long distance company, the cable operator is a reseller, aggregating traffic. How that traffic gets to the long distance network is unimportant. It’s the traffic itself that counts. The fact that the cable operator can provide local access is a plus, once they figure out how to do it.

Long Distance Calling, Will You Accept?

All this “gee whiz” technology is interesting, but nothing gets the competitive juices flowing like drawing a little blood from your enemies, and the abandoned children of “Ma Bell” want their revenge. Divestiture gerrymandered the telephony landscape into bits and pieces called a LATA, short for local access transport area. This allowed AT&T to divest itself of the outside plant problems while continuing to skim the cream, even if “long distance” means going one mile or less across a LATA boundary.

Pay back time is at hand. While the politicians did their thing, the local telcos upgraded their infrastructures in preparing to offer long distance services. Interoffice channels were upgraded to fiber optics. Local access tandem switches, which route traffic between the local serving offices, were made ready to forward long distance traffic at the keystroke of a program command. And, even though they were prevented by regulation from carrying subscriber traffic across LATA boundaries, they were allowed to carry their own traffic between company locations for internal

purposes. This allowed them to put into place the basic mechanism to deliver traffic across their own serving areas. The pipes connecting their own locations ran through the same switching centers as the long distance access arrangements used by the interexchange (a.k.a., long distance) carriers. The trap was set, waiting to be sprung when the day came that long distance was no longer a forbidden fruit.

What? Don't they want to offer service outside of their serving areas? Isn't that what it's all about? Not really. There are already a lot of dogs in that hunt, and marketing out of area has yet to succeed. Yes, the long distance offering has to be ubiquitous to be competitive, but remember—it's all about the traffic, the precious call minutes. What every good traffic engineer knows is that upwards of 80% of the long distance traffic terminates within the operating company's area. Why fight for the out-of-area scraps when the big prize lies within your grasp?

Think about the pending merger of Bell Atlantic and NYNEX. Between them, they have roughly 45% of all telephone users in the continental United States, and control the dense strip cities that stretch from Virginia to Massachusetts—including the Washington, DC district bounded by the beltway and the incredibly communications-rich New York, New Jersey, Connecticut "tri-state" area. Considering that success in long distance is all about leveraging economies of scale, the traffic flowing within their own boundaries is the prize. So the big guns are turning to fight the long distance wars, giving the cable industry room to breathe—for now.

HITS, Misses, and the Ballad of John Malone

In the cable industry, the dust is still settling from three years of striving to deliver futuristic service. Interactive television is their ISDN (Improvements Subscribers Don't Need). The harsh realities have driven cable back to its core business: delivering video services. Even Time Warner has abandoned the FSN (Full Service Network) project in

Orlando, Florida after equipping 4,000 homes with state-of-the-art electronics to find out that what people want to buy from home are postage stamps. But, by and large, what holds the greatest near-term opportunity while waiting for technology to mature and politics to level the playing field can be simply stated as "more movies."

The fall-out of all the trials, all the digital dreams and technology nightmares, is that people like to watch movies. This makes one of the earliest propositions the most viable for cable: HITS, short for Headend In The Sky. A classic misnomer, because the "headend" which controls a cable network isn't in the sky, it's in Denver. The HITS concept is to multiplex digitized video streams and broadcast them to cable systems via satellite, where they are sent down the cable wire to a set-top box capable of decoding and displaying them as discrete channels on a regular TV. Similar to what DirectTV and others are doing, but without the little dish.

HITS offers the advantage of expanding the capacity of a cable system via digital compression while mitigating the technology issues. The compressed signal takes up one channel slot on the system, and looks to regular cable boxes and cable-ready TVs like a scrambled channel. But the compressed signal carries 10 digital channels that, when decoded properly, yield crystal clear pictures and sound competitive with anything currently available. The signals are compressed at a single source and delivered to any system wishing to deploy a new cable box costing approximately \$400.

Any system can take advantage of HITS, since upgrade of the cable plant is not required. This is in stark contrast to HFC, which is only affordable in medium-large and large cable systems. These digital signals will carry more movies with staggered start times and significantly improved pictures and audio to the homes of viewers with big screen TVs and surround-sound music systems. At a \$19.95 price point, plus a fee equivalent to renting the movie at your local video store, it's a pretty good value proposition.

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In evidence of the current state of affairs, TCI (the nation's largest cable MSO) pulled back from its technology-driven activities on November 1. Orders for new equipment were canceled or put on hold, and build out of cable systems was suspended and/or postponed. TCI had taken a beating in the stock market while receiving almost unlimited bad press at every turn. Industry analysts rushed to ponder in print the meaning of these actions. With the industry's second largest event of the year at hand, the Western Cable Show took on the look of a showdown of sorts. Other large MSOs quickly released statements that TCI was acting alone and that technology roll outs, "at least in our systems," would continue "as planned." But, the cat was out of the bag, leaving many to wonder what was going to happen next. It would take a while for the other shoe to drop.

TCI Chairman John Malone conducted an interview early in January 1997 stating that TCI was in the video delivery business, not the interactive TV/Internet access/telephone business. The press had made it seem otherwise, complained Malone, and admitted even TCI had overstated its position in its last few annual reports. But that wasn't really the case. Further, Malone inferred his belief (shared by many) that the telephone companies all had long distance service as their main goal and wouldn't be coming after cable anytime soon. So, for now, TCI would stick to its knitting and focus on providing a quality video service at a price consumers were willing to pay.

Malone went on to say that TCI's business should be measured on profits and not cash flow. For debt-ridden TCI, this was a major shift in position. Previously, TCI had touted its massive cash flow as its primary defense against debt burden. But as the debt mounted to \$14.5 billion while operating margins shrank, the stock value suffered, taking away Malone's leverage for acquisitions. Something had to be done to turn things around. The interview was conducted with the Associated Press, who, just as Malone hoped, put it out on their wire service to every major publication in

America. After favorable coverage by the *Wall Street Journal* and others, the TCI stock price jumped up a bit, achieving Malone's true objective.

The Nice Thing About Standards

While all of this was going on, Time Warner drove a stake in the ground for the entire cable industry. Long leveraged by their vendor's proprietary systems, cable had learned the hard way the lessons of standards and interoperability. Faced with an onslaught of competition, a technical consortium was formed to provide the industry with a venue to drive standards protocols and practices that it hoped would result in lower cost interoperable products. CableLabs, as it became known, worked for two years on putting together a set-top specification that would allow for new services to be delivered without ripping out the existing infrastructure in the process. Known as Pegasus, it included:

- A high-speed delivery capability via cable modem.
- General Instrument's Digicypher II conditional access to descramble all those movies.
- Scientific-Atlanta's PowerTV operating system.
- The Wink graphics presentation engine to display information on the TV screen.

With Pegasus, CableLabs had managed to cobble together a specification that pacified GI and S-A, the two dominant equipment suppliers, while satisfying the need for a de facto standard that would support HITS and other new digital services.

To drive the stake deep enough into the ground that it would hold, Time Warner announced at the Western Cable Show that it would buy two million Pegasus boxes: 1.5 million from Scientific-Atlanta, 500,000 from Toshiba, and an unspecified quantity from Pioneer. S-A scored a major coup by agreeing to build an interoperable product that included its principle competitor's proprietary technology. This was a trade-off allowing it to get a jump on delivering a

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“standard” product. Being late with its own digital set-top box, S-A jumped on the Pegasus bandwagon hoping it would result in near-term market share gains. The digital set-top box orders previously put on hold by TCI were not based on the Pegasus specification, but in view of TCI’s renewed emphasis on HITS as its near-term digital service, the message had been sent loud and clear. It also explained a flurry of announcements leading up to the Western Cable Show by content providers licensing the Wink software. This included World Gate Communications, developers of a headend system to deliver Internet access to homes via a cable box, thus eliminating the need for a PC to surf the ‘Net.

What to Expect in 1997

The telephone and cable industries have turned their focus to their main competitors for the near term. Long distance is the target for telephone, while rolling out a competitive service to DBS-based programming is the focus of cable. The two may collide in the Internet access arena, which is due for a major shake out. Everyone wants to be in the Internet business, causing the Internet service provider business, made up of mostly “Mom and Pop” operators, to be caught in the squeeze. Otherwise, it should be business as usual. Technology has taken its toll on both parties, leaving them to wait and ponder the next round. Trials will continue, including TCI providing Internet access and the @HOME service in three major markets. Consumer acceptance will determine how far and how fast new services get deployed by cable, while the telcos struggle to forge new markets for incremental products.

Another area to watch is DBS as it becomes DTH (direct to home). Southwestern Bell and the rest of the Americast group will move forward on that front, joined by a newly merged Bell Atlantic/NYNEX partnering with also newly merged British Telecom/MCI. MCI has a DBS satellite being prepared for launch in late spring, but service plans are still fuzzy. After announcing the BT/MCI merger, MCI rushed the

check for the DBS orbit slot over to the FCC, which promptly cashed it. This indicator that MCI will be allowed to proceed means that a new source of digital delivery capacity will be on-line about the same time the revamped TeleTV will have programming ready.

As for movies, Hollywood and its distributors will sell to all comers, anticipating a windfall of profits as a bidding war breaks out. Meanwhile, the Internet continues to creep into every corner of our culture, made even more ubiquitous as Internet-enabled products appear in the consumer electronics space. For a while, the War of the Wires will remain invisible to most, but it’s still being waged. In the end, it will be the consumer who wins, flooded by service choices attractively priced because of competition. If you are in any of these businesses, keep your head up, your eyes open, and be ready to pounce on the opportunities that emerge. If you are a consumer, lay back, relax, and enjoy the ride. Either way, it should be a doozy.

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