THE TELECOMMUNICATION INDUSTRY REVISITED
THE CHANGING PATTERN OF PARTNERSHIPS

THE FLOURISHING NUMBER OF PARTNERSHIPS IN THE TELECOM ARENA TELL A FASCINATING STORY OF FORGING NEW BUSINESS STRATEGIES IN A FRAIL ECONOMY. THEY ALSO DEMONSTRATE HOW SOME JOINT VENTURES MAY BE STRONGER THAN OTHERS.

At the core of the digital economy lies the telecommunication industry that has transformed organizations and opened new opportunities for progress through technological advances. Important characteristics of this industry include high sunk costs, rapid technological advances, high obsolescence, and intense competition in most segments. While open standards are encouraging innovation and lower prices, many established companies are slow to give up on their proprietary standards. Also, deregulation has opened entry of telecommunications companies into all segments of the market. This has led to a plethora of mergers, acquisitions, joint ventures, and partnerships (referred to collectively as partnerships), particularly with large companies putting pressure on the small- and medium-sized companies to merge or to be acquired [4].

Convergence and bandwidth are two trends driving these partnerships as the significant increase in data and video traffic increases demand for bandwidth. However, opening access to previously protected market segments, a spending binge in fiber and network gear, and overestimation of demand has created substantial overcapacity of bandwidth and placed many carrier companies in severe price wars, putting a serious strain on their profits margins. These effects are trickling through the industry, forcing players to devise strategies for controlling risks and revaluating industry relationships. The situation seems chaotic with valuations of telecom companies dropping—some precipitously—and no consistent view of the direction of the structural changes taking place or the strategic intent behind these partnerships. Here, we explore these complex, yet interesting, questions.

Since the 1996 Telecommunications Act only one (BellSouth) out the

By Varun Grover and Khawaja Saeed

seven Regional Bell Operating Companies (ROBCs) exists. The others have evolved through acquisitions into three companies (SBC, Qwest, Verizon) [3]. For instance, Bell Atlantic purchased NYNEX and subsequently merged with GTE to become Verizon. US West merged with Qwest, a long-distance and fiber-optic company. BellSouth has been upgrading its network for operationalizing its broadband deployment strategy by partnering with Marconi and 3Com Corp to deliver high-speed Internet and data services via an Asymmetric Digital Subscriber Line (ADSL). Bell-south and SBC have come together to form Cingular, the second largest wireless network in the U.S.

Categories	Description
Network Providers Network Providers (landlines)	Companies that own and operate network based on physical links such as telephone and cable networks.
Network Providers Wireless and Satellite	Companies that own and operate network based on virtual links such as wireless and satellite networks
Tool Providers Hardware providers	Companies manufacturing hardware that is integral part of the communication network
Software Providers	Companies producing software that is integral part of the communication network
Transaction and Service Providers Service Providers	Companies providing diverse types of services such free Internet service, communication tools, Web hosting, VPN services, calling cards, etc.
Transaction Service Providers	Companies that enable buying and selling of goods and services through Internet
Internet/Content Providers Content Providers	Companies producing copyright material distributed through channels other than the Internet
Internet Content Providers	Companies producing copyright material distributed through the Internet

Table 1. Company categorization.

Long-distance carriers hit with falling growth are eagerly devising strategies to branch out into high-growth areas and gain access to the local loop. A clear example is AT&T's acquisition of cable network companies to provide local phone service through cable lines. AT&T has also made inroads in the wireless market through minority stakes in TeleCorp and Tritel that both co-brand their service with AT&T. Similar trends are visible in other sectors of the industry. For instance, to get a stronger foothold in various markets, Cisco acquired Monterey Networks and Cerent Corporation (optical networking), teamed up with NEC (voice transmission), acquired Fibex Systems (to combine traditional voice services with data services) and acquired a provider of middleware Amteva Technologies (to integrate voice mail, fax, and email over an IP-based network).

A previous study by Grover and Vaswani [2] in *Communications* analyzed the structural changes occurring in the telecommunication industry in the U.S. from 1993–1998 and explored the underlying objectives of partnerships. This study aims at advanc-ing that work. It uses a modified framework to capture structural trends emerging in the industry. It explores not only the objectives of partnerships but also studies the relationship between the types of partnerships and these objectives. This study also examines a much larger spectrum of partnerships (589) occurring in 1999–2001 period.[1]

Methodology and Framework

In order to assess partnerships, the first issue that must be resolved is whether a company under consideration is within the telecommunication industry. This is no longer straightforward. Penetration by companies in totally unrelated markets has resulted in blurring industry boundaries. Prior to its bankruptcy, Enron was considered a major force in the telecommunication industry with its own high-speed fiber network. Microsoft is another example of a company with high stakes in different industries. For the purpose of this study a broad definition was developed for setting the boundaries of the telecommunication industry. It is defined to include *all suppliers that provide elements (products and services) to networks that carry voice, video, and data.*

The second step is to develop a classification scheme to categorize companies in different segments of the telecommunication industry. For this purpose, we adopted a modified version of a framework presented by Grover and Vaswani [2] to reflect the industry's evolving nature. They classified companies into four categories: distributors, communication providers, tool providers, and content providers. Since the 1996 Deregulation Act, the difference between the "last mile" (communication providers) and "non-last mile" (distributors) has been increasingly blurred. For example, AT&T's ownership of Media One and TCI gives it an immediate entry into the local cable and cable modem Internet access market. BellSouth, a former RBOC, has been aggressively setting up its own fiber-optic backbone, providing high-speed and digital cable channels under the name of BellSouth Entertainment. On the other hand, some newly developed technologies have enabled the former distributors to bypass local carriers to com-

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[1]It was not possible to do a meaningful analysis of 2002 as there were very few partnerships amid the tumultuous year.

Long-distance carriers hit with falling growth are eagerly devising strategies to branch out into high-growth areas and gain access to the local loop.

municate directly with consumers. For example wireless DSL makes it possible for long-distance companies to provide service without having to go through the local loop. With markets opening up, it is no
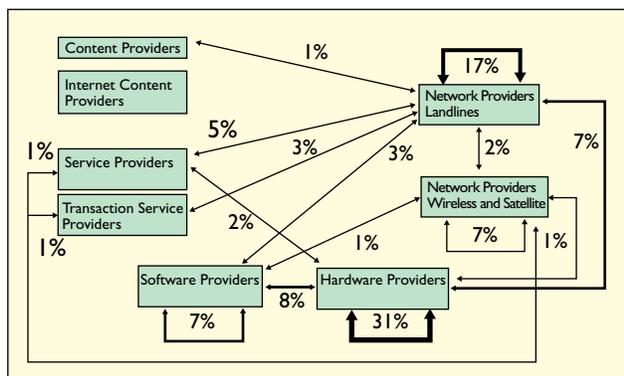

Figure 1. Partnership patterns.

longer useful to distinguish between local and long-distance providers. We combine both into a single category called "network providers" or companies that own their own physical networks used for public voice, video, and data transmissions.

An additional category called "transaction and service providers" (TSP) is added to the framework. The companies in this category provide diverse types of services such as prepaid calling services, Web hosting, Internet access, email facility, and transactional services. The TSP category is included owing to increasing evidence of partnerships between traditional telecommunications companies trying to expand their repertoire of value-added service offerings. For example, AT&T has acquired a stake in Net2phone, a company that offers long-distance telephone services over the Internet.

The two other categories were retained from the previous framework. "Tool providers" develop and deliver the hardware and software technologies to the industry. "Internet/content providers" includes companies that provide copyright or proprietary material over the Internet.

In order to add granularity to the framework, each generic category is further divided into two subgroups. The tool providers category includes "hard-

ware providers" and "software providers." The network providers category is segregated into "network providers (landlines)" and "network providers (wireless and satellite)." Transaction and service providers are subdivided into companies that provide platforms to make business transactions possible over networks called "transaction service providers" and those that provide different types of services (for example, phone, Internet) called "service providers." Finally, the content providers category is broken down into traditional media companies called "content providers" and "Internet content providers." Table 1 summarizes these groups.

The strategic motivations of partnerships can be classified by six different objectives [2]: controlling technology, gaining market access, economies of scale and scope, creating shelf space, preempting competition, and hedging. We recognize these objectives may not be mutually exclusive but to mitigate this effect we only consider the primary objective of the partnership. The objective of partnerships is inferred from the press releases of the events.

To reinforce the earlier concern about industry boundaries *we only consider those partnerships in which at least one partnering company belongs to the network provider or tool provider categories.* These two categories form the core of telecommunication industry, so such an approach retains focus on the telecommunication-specific partnerships. Further, we only include those partnerships that occurred in 1999–2001 and had a clear discernible objective. Data on 589 partnerships is collected through extensive search of *Today in Telecom* from Information Gatekeepers Group [6]. Detailed descriptions of partnerships were carefully analyzed in order to appropriately classify them.

Structural Changes

Figure 1 depicts the percentage of partnerships involving different categories of companies. Here, we describe specific partnership pairs:

Hardware providers and hardware providers. Results show the largest numbers of partnerships were made between the hardware providers (31%). Faced with rapid advances in technology and inception of

small incubators of innovation, hardware providers are pursuing partnerships as the source to satisfy their quest for dominance in specific markets. Such moves are often in direct response to emerging optic networks, increasing demand for wireless networks, and a transition from circuit-based voice systems to Internet protocol-based data systems. In this regard, Cisco, which has streamlined its acquisition processes, is at the forefront. The acquisition of NuSpeed Internet Systems in a stock swap marks Cisco's 60th acquisition in the past six years, and allows the company to offer its customers a solution to converge data and storage networks into one infrastructure. Similarly, Nortel Networks acquired Shasta Networks (a data-networking company) and Qtera Corporation (that produces ultra-long-reach optical networking systems) to get into emerging and high-growth markets. Lucent Technologies pursing the same objective acquired Excel Switching Corporation, a developer of programmable switches, and partnered with Tellium Inc. to get involved in the optical networking segment. More recently, Palm and TI joined together to build a more powerful wireless device for both enterprise customers as well as consumers.

Network providers (landlines) and network providers (landlines). Network providers (landlines) (17%) is the second most active category. Encouraged by the Deregulation Act of 1996, traditional long-distance telecom companies previously prohibited to make inroads into specific markets segments are actively enlarging their service offering and pursuing access to end customers. Over time AT&T has acquired a vast stake in the cable network. Similarly, WorldCom, which recently filed for bankruptcy, was built on 60 mergers over a 15-year period and still controls 50% of the U.S. Internet backbone. More recent partnerships in this genre focus on cable operators buying into new markets.

Hardware providers and software providers. An emerging trend reflecting the third highest percentage of partnerships is among hardware providers and software providers (8%). A notable example is Microsoft and Dialogic working together to jointly develop computer telephony hardware and software. Lucent Tech-

nologies acquired CCOM Information Systems, giving it software that makes it easier to move data across computer networks. Also, partnerships between mobile phone manufacturers and software companies are prominent. Ericsson and Microsoft have launched a mobile email services joint venture called Ericsson Microsoft Mobile Venture, which supports mobile email and other personal information management tools through existing mobile networks worldwide.

Network providers (landlines) and hardware providers. Extensive partnerships between network provider (landlines) and hardware providers (7%) are also visible. This trend toward vertical partnering makes sense, as many of the network providers want their networks to be at the cutting edge of technology. Cable companies have actively been involved in making their networks telephone-ready. Similarly, development and deployment of fiber-optic and broadband networks is another impetus of such partnerships. AT&T is working with Cisco Systems and General Instrument to develop an Internet protocol product that would allow AT&T to offer data, voice, and video services. On another front, AT&T has partnered with General Instrument to develop IP Telephony Access Network Solutions.

Other partnerships. Other partnerships illustrated in Figure 1 with significant representation include:

Partnership	Overall (N = 589)		1999 (N = 319)		2000 (N = 216)		2001 (N = 54)	
	Total	%	Total	%	Total	%	Total	%
Network Provider Landlines								
Network Provider Landlines	102	17.32	70	21.94	25	11.57	7	13.0
Network Provider Wireless and Satellite	13	2.21	11	3.45	1	0.46	1	1.85
Hardware Provider	44	7.47	29	9.09	11	5.09	4	7.40
Software Provider	15	2.55	9	2.82	4	1.85	2	3.70
Service Provider	31	5.26	28	8.78	2	0.93	1	1.85
Transaction Service Provider	15	2.55	12	3.76	3	1.39	0	0
Content Provider	8	1.36	6	1.88	1	0.46	1	1.85
Internet Content Provider	3	0.51	2	0.63	1	0.46	0	0
Network Provider Wireless and Satellite								
Network Provider Wireless and Satellite	41	6.96	17	5.33	5	2.31	19	35.18
Hardware Provider	7	1.19	7	2.19	0	0	0	0
Software Provider	6	1.02	6	1.88	0	0	0	0
Service Provider	6	1.02	2	0.63	1	0.46	3	5.55
Transaction Service Provider	6	1.02	1	0.31	5	2.31	0	0
Content Provider	0	0	0	0	0	0	0	0
Internet Content Provider	0	0	0	0	0	0	0	0
Hardware Provider								
Hardware Provider	182	30.9	64	20.06	104	48.15	14	26.00
Software Provider	46	7.81	30	9.40	16	7.41	0	0
Service Provider	14	2.38	8	2.51	4	1.85	2	3.70
Transaction Service Provider	5	0.85	3	0.94	2	0.93	0	0
Content Provider	1	0.17	0	0	1	0.46	0	0
Internet Content Provider	0	0	0	0	0	0	0	0
Software Provider								
Software Provider	39	6.62	10	3.13	29	13.43	0	0
Service Provider	0	0	0	0	0	0	0	0
Transaction Service Provider	5	0.85	4	1.25	1	0.46	0	0
Content Provider	0	0	0	0	0	0	0	0
Internet Content Provider	0	0	0	0	0	0	0	0

Table 2. Partnerships analysis.

- Partnerships between network providers (wireless and satellite) (7%) represented over one-third of the partnerships in 2001. Companies providing mobile telephone services are partnering to expand the range of their wireless networks (for example, the formation of Verizon that now boasts of the largest wireless networks in the U.S.). High growth prospects for this segment and wireless Internet are two underlying forces motivating the companies to expand service areas. Also wireless providers are better placed to handle the issues that have emerged due to opening up of markets segments and led to the reconsideration of the deregulation act. Not constrained by the lack of access to the local loop, these firms may turn out to be the primary beneficiaries of the "all distance strategy."
- Similar to the activity in the hardware provider category, software providers are actively pursuing partnerships with other software companies (7%) to gain synergy and develop complementary expertise. Software companies in the network security area are active in developing partnerships to get a strong foothold in this high growth market.

Value Objective	Number of Partnerships	%	Number of Partnerships (1999)	%	Number of Partnerships (2000)	%	Number of Partnerships (2001)	%
Controlling Technology	203	34.5%	72	40%	127	59%	4	7.40%
Economies of Scale and Scope	199	33.8%	126	23%	50	23%	23	42.6%
Market Access	126	21.3%	68	21%	33	15%	25	46.3%
Creating Shelf Space	26	4.41%	22	7%	3	1.5%	1	1.85%
Hedging	21	3.56%	17	5%	3	1.5%	1	1.85%
Preempt Competition	14	2.33%	14	4%	0	0%	0	0%

Table 3. Value objective.

- Partnerships between network providers (landlines) and service providers (5%) seem to represent an interesting trend reflective of the emergence of Internet-based services. Some examples include AT&T's investment in Telltime Networks, a company that allows customers to dial a 1-800 number and retrieve recorded information (such as stock quotes and movie listings) and in Net2phone for Internet telephony.

The results of year-wise analysis (Table 2) show that partnerships between hardware providers are prominent in both 1999 and 2001, but dominate in 2000 (with almost half the partnerships in this category!). This is different from the earlier study, where partnerships among network providers were dominant. The results also show a downward trend in partnerships between network providers (landlines) from 1999 to 2000 and 2001, possibly indicating maturity in consolidation of networks spurred by the Telecommunications Act of 1996. However, given the current turmoil in the industry the next few years may spark a new wave of mergers between big companies aimed at further consolidation.

Value Objectives

Companies driving the intense partnership activity have repeatedly stressed ambiguous terms like "synergetic benefits" as the main objective. Critics have also been quite vocal about what they term as "sporadic shopping spree" in the telecommunication industry [7]. Given this lack of clarity regarding what companies are trying to accomplish through partnerships, we reviewed the partnerships and categorized them on six value dimensions[2] (Table 3).

Controlling technology. The results show that a significant number of partnerships are focused on controlling emerging technologies (35%) such as optical networks, telephone over cable, Internet video telephony, and wireless Internet. Many of the established technology companies are partnering with small companies that possess expertise in specialized technologies. Cisco and Tele-communication are jointly working to construct a high-speed broadband network for digital cable subscribers that combine Internet, phone, and video services over a single cable line. Similarly, the partnership between QUALCOMM and SnapTrack, a provider of wireless position location technology provides QUALCOMM with SnapTrack's patent portfolio of nearly 50 patents, critical to the efficient and cost-effective deployment of wireless assisted GPSs.

Economies of scale and scope. The second most popular value objective is gaining economies of scale and scope (34%). High growth for network access has driven many companies to buy existing networks rather than develop them. Major consolidations in the ISP sector and partnerships between wireless companies have been prominent. Similarly, many tool providers have also followed this strategy in order to build capacity to meet the growing demand for net-

work equipment and software. Companies entering into partnerships to achieve complementary synergies and develop a more comprehensive product set are also pursuing this objective.

Market access is pursued by 21% of total partnerships as the main value objective. This objective is a major outcome of 1996 Telecommunications Act. Local telephone companies have been particularly aggressive in providing long distance, Internet, cable, and wireless services. These companies have been able to manage all competition dependent on their local lines for service. On the other hand, long-distance companies are constantly endeavoring to gain direct access to end customers, but are struggling in courtrooms to get competitive access to local switches. Wireless companies or companies with wireless divisions are gaining market access through licenses and are in a better position to circumvent the hassle of getting access to the wired local loop. For example, Verizon is offering its consumers the option to enroll for local, long-distance, wireless, and DSL service for a flat monthly fee.

Other value objectives being pursued by partnerships are creating shelf space (4%), hedging (4%), and preempting competition (2%). Most partnerships aiming at creating shelf space are joint marketing and sales initiatives where each company agrees to provide exposure to products and services of the other company to their customers. Many companies have also ventured into formal Internet advertising agreements. Partnerships with hedging as the main value objective are aimed at getting a stake in technologies, unrelated to the core business, that hold promise for the future.

Trends. Year-wise analysis of value objectives points toward some interesting changes. Data on partnerships before 1999 [2] indicates that the majority was aimed at gaining market access—the more immediate repercussions of the Telecommunications Act. However, disillusionment with the ability to gain seamless access to markets (that is, long-distance companies' penetration of the Bell companies' stranglehold on the local market) [5] caused broader network consolidation in 1999 where economies of scale and scope was the dominant objective. Many companies, including network providers and tool providers, were building capacity or enhancing product offerings to cater to exponential growth in demand for network access. However, "build it and they will come" did not pan out as demand slowed and most network providers are now left with substantial overcapacity. Results for the year 2000 indicate the importance of a dominance strategy where the majority of partnerships involved companies battling for supremacy through control of technology. In 2001, the number of partnerships declined significantly due to deteriorating economic conditions, with economies of scale and market access (particularly in the wireless sector) driving the partnerships.

Value Objectives of Network and Tool Providers

All value objectives are visible in the network provider category. This category has been quite volatile since deregulation opened market access and allowed companies to offer services to market segments they thought are viable. Companies have been intruding into each other's service areas not only to become a one-stop shop but also enhance the customer base. Due to heavy sunk costs involved in developing networks from scratch many companies are buying networks to gain market access to specific segments. The unique license system prevalent within the wireless segment of this category renders itself ideal to buying into market strategy. Network providers (landlines) are also actively involved in enhancing product offering by including wireless services to their product portfolios thus gaining economies of scope. For example, the proposed $129 billion merger between WorldCom and Sprint that was blocked, restricted WorldCom's entry into the wireless market and contributed toward its downfall.

Also visible is the drive for network providers to cope with rapid technological change and control technology. This is the main reason many network providers are partnering with tool providers. Network providers at the forefront of offering new services

based on a new technology set the standard and can take a major chunk of the market. For example AT&T teamed up with Cisco to develop an Internet protocol that will assist in transmission television sending and receiving faxes, connecting to the Internet, and using telephony. Similarly Nokia and Korea's SK Telecom teamed up to develop wideband technology for third-generation multimedia wireless networks.

Network providers are also actively involved in the Internet revolution. The main objective is adding new services to their current product mix thus trying to achieve economies of scope. Long-distance telephone providers are more aggressively pursuing partnerships with service providers as they have been hit by a decline in the demand and commoditization of their core product. Web hosting, Internet telephony, VPN services, and data management services are some target areas on which these companies are banking to fuel future growth. But sluggish growth in broadband adoption, overall conservatism in IT spending by firms, and the fall of the dot-com sector are some factors limiting the materialization of the envisioned growth opportunities.

Within the other major segment of the industry, the tool providers, high obsolescence and standardization issues characterize most partnerships. Therefore, controlling technology is a logical objective driving most of the partnerships. Tool providers are acquiring expertise in high-growth areas, trying to unlock new revenue sources and achieve rapid time to market as they develop new products. The company first in the market with a new stable product sets the standard and long-term supply contracts are the norm in the industry. However, tool providers hit hard by the sharp decline in the demand for new equipment are currently struggling. Tough economic conditions are holding back innovation. This has facilitated a reorientation of strategy from acquisition of new technology to internal development. Along with stock prices at all-time low, mergers and aquisition activity in this sector in 2002 has come to a virtual halt [1].

Conclusion

As we take a step back and attempt to observe the spree of partnerships in this important industry, some general observations are in order. First, as companies struggle to survive and absorb existing partnerships in a slower economy, the impact of deregulation is off its frenetic pace. Second, tool providers (hardware) and network providers (landlines) seem to be the most prominent participants in partnership activities. Network providers (landlines) seem to be slowing down in their consolidation of networks, now focusing more on building value-added services. Third, controlling technology, economies of scale and scope, and market access seem to be the major thrusts of partnerships. Fourth, tool providers faced with changing technology landscape are active in acquiring expertise and jointly working with other companies to fuel technological innovations. And fifth, network providers aiming at becoming one-stop shops for customers are buying into new markets, adjusting product portfolios to move into high-growth areas, and working jointly with tool providers to keep abreast with of developments in order to capitalize on opportunities such as convergence of networks. In order to enhance service offerings and customer base, these companies are using partnerships as the main method in realizing their strategies.

Our analysis shows there is some rationale behind the 1999–2001 partnership activity. The FCC's recent rulings seems to be reducing regulatory hurdles in an attempt to foster more competition, particularly in the local consumer markets. As the industry emerges from its economic woes, it will be interesting to see whether the partnership frenzy picks up again. The advantages of network effects in the telecommunications business cannot be underestimated. Further consolidation of networks and all distance value-added services could result in another wave of partnerships. Almost 20 years ago, AT&T's divestiture changed the landscape of a fairly monolithic industry. Today, Humpty Dumpty is being put back together again in the form of many consolidated companies in a far more complex landscape. **C**

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VARUN GROVER (vgrover@clemson.edu) is William S. Lee Distinguished Professor of Information Systems in the Department of Management, College of Business & Behavioral Science, at Clemson University, Clemson, SC.
KHAWAJA SAEED (khawaja_s@hotmail.com) is a Ph.D. candidate in the Management Science Department, The Moore School of Business, at the University of South Carolina, Columbia, SC.