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Abstract

The debacle of the telecommunications industry in the late 1990s resulted in grave consequences to investors, workers, financial institutions, telecom companies, and the economy in general worldwide. As a relatively recent event, studies on what caused this great telecom bubble have just started to emerge. While these studies offered a variety of explanations, ranging from greedy executives and investment bank analysts to a failed legal and regulatory environment, one factor seems to stand out: a large number of telecom startups, especially the competitive local exchange carriers (CLECs), adopted similar business plans. In this study, we investigate the isomorphic business models of the CLECs from the perspectives of the institutional theory. We argue that the combined coercive, mimetic, and normative institutional forces exerted on the companies by the actors who controlled the funding, managed the business, and provided information created the isomorphic business models, which in turn contributed to the demise of these companies and thus the burst of the telecom bubble. Evidence of the institutional influences on CLECs is presented and the consequences are discussed.

Keywords: Telecom industry, telecom bubble, institutional isomorphism, business models, institutional theory

Introduction

From the mid-1990s to the early 2000s, companies in the telecommunications industry worldwide, in North America in particular, had witnessed a historical and unprecedented transformation and shake up: in less than a decade of time, trillions of dollars of investment in the form of venture capital, debt, and public equity were poured into the development and deployment of fiber optic networks intended as the backbones of and ramps to the Internet, the "information superhighway," spawning dozens of new national and international long-haul fiber carriers and hundreds of competitive local exchange carriers (CLECs). By early 2000, however, it became clear that a telecom bubble had been created and was about to burst. When the dust was somewhat settled by mid-2002,[1] the fallout was brutal and far reaching: investors had lost $2 trillion as stock prices tumbled 95% or more from their highs; half a million workers had lost their jobs; banks had to write off billions of dollars in loans; and dozens of debt-laden telecom companies had collapsed into bankruptcy, as manifested by WorldCom Inc., the largest corporate bankruptcy in U. S. history (Rosenbush et al., 2002; Foreman, 2002; Timmons, 2001).

How could such a disastrous phenomenon ever take place in so short a time, under the constant scrutiny of regulators, corporate boards, professional managers, and investment professionals? On the surface, it might be easy to attribute what happened to a few corrupted analysts and greedy corporate executives, as is often suggested in the popular press (Rosenbush et al., 2002). And some have attributed the crash to other factors such as overbuilding, 3G auctions, and the dotcom bubble (Kalba, 2002). An analysis of the CLEC bankruptcies in the US by Foreman (2002) suggests flawed business plans and poor execution as root causes. However, further examination of the series of events and the complex social, economic, and technological environment preceding the telecom bubble suggests there may be other significant factors than what have been discussed. The telecom bubble

[1]Although the burst of the telecom bubble had run its course for three years with many casualties, we are in no way suggesting that the bottoming process has now completed.

involved hundreds of international, national, and local service providers, many of which are veteran telecom operators, such as AT&T, MCI, and the giant Regional Bell Operating Companies (RBOCs). Behind them were numerous investment bankers, venture capitalists, financial analysts, and thousands if not millions of investors. What are the forces that persuaded so many supposedly independent and rational-thinking individuals and professionals to make decisions that led to the disastrous ending of the great telecom boom of the 1990s?

In this study, we attempt to shed some light on this question from the perspectives of the institutional theory, and examine the roles of institutional influence in the inoculation, the growth, and the final burst of the telecom bubble. We argue that the effect of a few rouge executives and analysts, a popular explanation of the telecom bubble, was merely a catalyst that accelerated the institutional process. This institutional process started with the success of two early CLECs—Teleport Communications Group (TCG) and Metropolitan Fiber Systems (MFS) Communications, accelerated by the 1996 deregulation,[2] and punctuated by many mergers and acquisitions at unprecedented levels. In this study we focus on the businesses of the firms in the telecom industry and examine how institutional environments had created isomorphic business models adopted by most new entrants during the 1990s. We further submit that the three fundamental forms of institutional influence on organizational structures and behavior—coercive, mimetic, and normative, as suggested by DiMaggio and Powell (1983)—have all played a significant role in the formation of the isomorphic business models that eventually contributed to the fallout of the entire telecom industry.

Research Background

The telecom bubble of 1990s is the result of the interactions among social, technological, and economic forces unique to that period of time. In order to understand why the telecom bubble occurred, we turn to the new institutional theory, as outlined in the seminal works of Meyer and Rowan (1977) and DiMaggio and Powell (1983), for guidance. The new institutional theory attempts to understand organizational behavior and structures from the perspectives of social, economic, and technological environmental influences, or the institutional environment, on organizational actors. The fundamental arguments of the new institutional theory are that structural and behavioral changes in organizations seem to be less driven by competition or by the need for efficiency, but rather as the result of processes of institutionalization that make organizations more similar without necessarily making them more efficient (DiMaggio and Powell, 1983).

Institutionalization can be described as the processes through which societal expectations of appropriate organizational form and behavior come to take on a rule-like status in social thought and action (Martinez and Dacin, 1999), and the components of formal structure become widely accepted, as both appropriate and necessary, and serve to legitimate organizations (Tolbert and Zucker, 1983). The quintessential questions that the new institutional theory addressees are why and how the institutionalization processes propagate in organizational fields.[3] Institutional theory argues that organizations are structured by phenomena in their environments, and tend to become isomorphic with them. In turn, institutional isomorphism promotes the success and survival of organizations. By adopting a formal structure that adheres to the prescriptions of *myths* in the institutional environment, an organization demonstrates that it is acting on collectively valued purposes in a proper and adequate manner (Meyer and Rowan, 1977).

DiMaggio and Powell (1983) further developed the new institutional theory by offering a detailed account of how organizations increasingly become isomorphic in highly institutionalized organizational field. They identified three basic institutional mechanisms through which organizational isomorphism occurs: *coercive* mechanism stemming from political influence and resource dependency, *mimetic* mechanism resulting from the standard responses to uncertainty, and *normative* mechanism associated with professionalization of the members in an organizational field.

Specifically, coercive isomorphism is the process where organizations become similar due to the formal and external pressures exerted upon them by other organizations upon which they are dependent and the cultural expectations in the society in which the organizations function. Coercive pressure can come from regulations and policies of government agencies, from industry and

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[2]In 1996, Congress passed the Telecommunications Act of 1996, which opened up the local telephone market to all companies. As a result, the local monopolies of the RBOCs were broken and hundreds of new and established companies entered the local voice and data service markets.

[3]Organization filed, as defined by DiMaggio and Powell (1983), denotes "those organization that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products" (p. 148).

professional networks and associations, or in the form of competitive necessity within an industry or market segment. For instance, Mezias (1990) finds that both the Accounting Principles Board, an accounting professional organization, and the Interstate Commerce Commission, a government agency, had significant influence on the adoption of certain accounting procedures by corporations.

If the coercive isomorphic process is the result of external forces working on organizations, then the mimetic isomorphic process is an internal response by organizations to deal with uncertainty. When organizational technologies are poorly understood, when goals are ambiguous, or when the environment creates uncertainty, organizations may model themselves after other organizations perceived to be legitimate or successful (DiMaggio and Powell, 1983). Plenty of empirical evidence has been reported of the influence of mimetic behavior on the decision making processes. For instance, Tingling and Parent (2002) show that inferior technologies are selected if the decision makers are informed that their competitors have selected these technologies. In a study of corporate entry to new markets, Haveman (1993) finds that corporations tend to mimic large and profitable companies rather than the ones of similar size. He concludes that organizations attend to the actions of successful organizations and imitate their behavior.

The normative isomorphic process stems primarily from professionalization as the collective struggle of members of an occupation to define the conditions and methods of their work, to control the production of the future member professionals, and to establish a cognitive base and legitimization for their occupational autonomy (DiMaggio and Powell, 1983). It is argued that through the mechanisms of formal education and professional networks, a pool of almost interchangeable individuals are created. Occupying similar positions across a range of organizations, they possess a similarity of orientation and disposition, overriding variations in tradition and control that might otherwise shape organizational behavior. For instance, in a study of how corporations decide on which nonprofit organizations to support, Galaskiewicz (1985) finds that professional associations had an indirect effect on how company officers evaluate nonprofit organizations. Those who belong to the same professional association tend to select organizations in similar contact networks, and highly professionalized staff in charge of contribution in different corporations tends to recognize the same nonprofit organizations as their targets.

In this study, we submit that the telecom industry of the 1990s has provided a clear manifestation of institutional influence and organizational isomorphism. To illustrate, we choose the organizational field of CLEC industry as our sample. In particular, we argue that this organizational isomorphism is well represented by the business models adopted by the CLECs during that time period. The basic thesis of this study is that the combined coercive, mimetic, and normative institutional forces exerted on the companies by the actors who controlled the funding, managed the business, and provided information have created the isomorphic business models of CLECs during the 1990s, which may have contributed to the collapse of the CLEC industry in early 2000s.

Data and Method

To substantiate our thesis, we first define the key dimensions of business models. The concept of "business model" is used as a representation of a firm's business. For this study, we adopt the definition of business model by Osterwalder and Pigneur (2002) as the "description of the value a company offers to one or several segments of customers and the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, in order to generate profitable and sustainable revenue streams." According to this definition, four components characterize a particular business model: the *product* that a company offers, its innovation and value proposition; the *customers* whom the company targets, how it delivers the products, and how it builds the relationship with them; the *management and operations* that define how and with whom the company performs infrastructure and logistical operations, and the *financials* that define the company's revenue model, cost model, and financing model. Table 1 shows the key characteristics of the business model adopted by the CLECs based on the four components described above.

For this study, we employ a data set derived from New Paradigm Research Group, a Chicago-based consultancy, who publishes widely circulated surveys of CLEC activities on an annual basis (NPRG 2001, 2002). The CLECs that are wholly-owned subsidiaries of other telecommunications or cable companies, as well as those without full descriptions of their businesses in the report, are excluded. The resulting sample of 39 CLECs are used to illustrate the extent of isomorphism of CLEC business models (see Appendix A for a detailed listing of their business model attributes). As it can be seen, with a few minor exceptions, these

businesses are strikingly similar in key business model dimensions.[4] How do we account for this highly isomorphic business model? What were the institutional forces that contributed to the formation of this isomorphism?

Table 1. Key Characteristics of CLECs' Business Models

Components	CLECs' Focus	Description
Products	Integrated Services to Business	CLECs intended to provide integrated services often included local voice telephony, long-distance telephone service, date transfer, and Internet. In fact, many CLECs attempted to change their industry designation to integrated communications providers (ICPs).
Customers	Targeting small and medium businesses	CLECs focused on the business market, not the consumer or residential market. In particular, most of the CLECs target small and medium businesses, based on the widely accepted belief that this segment was ignored by the RBOCs.
Management and Operations	Switch-based, multi-city networks with leased lines	CLECs built networks, city by city, as individual islands with leased lines from and interconnecting with the RBOCs that they competed with, with an operation focus of central office switch (and, in some cases, access equipment close to business parks and buildings).
Financials	Vendor and/or Debt financing	CLECs employed borrowed money to finance their network buildout. Sources included high-yield debt, commercial banks, leasing operators, and equipment vendors.

Who were the actors exerting these forces on the organizations to adopt this isomorphic business model? In the next section, we present our propositions pertaining to these questions with substantive evidence. We intend to show that a large number of CLECs established in the late 1990s shared the same *key* business model characteristics as the result of institutional forces exerted on them by internal and external actors through the coercive, mimetic, and normative mechanisms.

Analysis and Discussion

The Coercive Force

> ***Proposition 1:*** *Financial institutions which financed the CLECs contributed positively to the formation of isomorphic business models through the coercive mechanism leveraged by their control of funding in an attempt to legitimate their involvement and control risk in an uncertain environment.*

One of the major coercive forces that a telecom venture may feel is exerted through the process of financing. There are three possible funding sources from which an entrepreneur can get financing, outside of his/her personal or family ties: *equity investors*—venture capitalists, private placement firms, institutional investors, and the public stock market—own (part of) the company that they invest in, and their return on capital is tied to how well the company is going at the time of the liquidation (i.e., sale of shares to other investors) of their investment; *debt investors*—the financial institutions that issue commercial loans or marketable bonds—lend money to a company, with an (usually fixed) interest and principal repayment schedule; and the *equipment vendors* and *leasing companies*—providing financing to seal the deals of the equipment selling—are essentially a class of "secured" creditors, whose lending is tied to physical assets (the equipment) in case that the borrowing company goes under. A (partial) list of CLECs and their funding sources can be found in Appendix B.

As with all investments, telecom financing is a balance of risk and return. Despite the theories and evidence pointing in the opposite direction, investors, in particular professional money managers, strive to hit high return while limiting risk. One

[4]An insider joke in that time period was that all CLECs' business plans started with the claim that "*Our business is* unique *because we offer integrated communications services to small and medium businesses*."

seemingly sensible way to achieve this goal is to invest in ventures similar to those that have been successful.[5] When evaluating CLEC business plans, therefore, money managers tend to look for business models that have proven to be successful in the past. The money manager's expectation for the "successful types" of CLECs, in turn, is likely to create pressure (the coercive force) on the telecom ventures to follow "popular" business models in order to get funding.

An examination of the CLEC funding sources (see Appendix B) shows that the same financial institutions have acted as the funding sources for many CLEC ventures. With past experience and limited information, the same money managers may have the same expectation for successful CLEC business models when evaluating investment opportunities. For instance, some venture capitalists openly expressed their preference to "smart build" (i.e., switch-based, leased-line networks) strategy (Gove, 1997). This would represent a form of coercion to the entrepreneurs looking for funding, when they went to the same group of money managers. This coercive force would have the effect of "institutionalizing" CLEC ventures, resulting in many with similar, if not identical, business models.

The Mimetic Force

> ***Proposition 2:*** *Entrepreneurs who founded and business executives who managed the CLECs contributed positively to the formation of isomorphic business models through the mimetic mechanism in an attempt to duplicate successes of other companies and to manage the risk in an uncertain environment.*

To examine the existence of the mimetic force, we look into the two pioneers in the CLEC industry: MFS and TCG. In their early days, their business models were similar, focusing on building metropolitan fiber optic networks in large cities to offer voice, and sometimes data, services to large corporations (Huber et al., 1992). By 1997, their business models had evolved into owning and operating switched networks in second tier cities, targeting small-sized high spenders, such as law firms and investment companies concentrated in business parks or commercial office buildings (Huber, 1997). They entered into interconnection agreements with RBOCs to access those potential customers off their own networks—some, in fact, argued that the MFS-Nynex 1995 interconnection agreement provided the blueprint for the Telecommunications Act of 1996 (Pelander, 2001).

A comparison of their strategies in the late 1990s and the key characteristics of CLEC business models discussed previously show many commonalities—focusing on high potential small businesses, building multiple switch-centric networks, extensive use of leased lines for customer access, etc. We posit that these similarities are likely to be the result of new CLEC ventures mimicking these industry leaders. The reasoning behind this argument is straightforward: with high uncertainty, which characterized the local exchange market in the late 1990s, companies tend to model themselves after those considered legitimate or successful (Haveman, 1993; Staw and Epstein, 2000). Both MFS and TCG were highly successful in the creation of shareholder value. In 1996, MFS was purchased by WorldCom for $13 billion, plus the assumption of debt (of over $1 billion), for an underlying asset[6] value of less than $4 billion (MFS, 1996b). In 1998, TCG was bought by AT&T for $11 billion (AT&T Corp., 1998). Such financial success would likely be a driver for the mimetic isomorphism among entrepreneurs to seek similar achievements while reducing uncertainty.

The Normative Force

> ***Proposition 3a:*** *The flow of top executives from a few telecom companies with early success to the newly created CLECs executive market contributed positively to the formation of isomorphic business models through the normative mechanism as a result of their training and experience in other companies and their associations with other top executives through professional and social networks.*

> ***Proposition 3b:*** *The telecom industry analysts contributed positively to the formation of the isomorphic business models through the normative mechanism by way of their industry research reports that promoted "best practices".*

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[5]This amounts to buying stocks and funds based on past performance, a common technique among small investors. This technique is proven to be a fallacy, but its popularity never seems to fizzle.

[6]Total assets minus goodwill. See MFS, 1996a.

There are at least two types of normative forces at work. The first is the industry veterans. Many executives of a few early successful companies, particularly those from MFS and TCG, became executives of newcomers of the industry in the late 1990s. Well trained and entrenched in a particular mode of business and culture, they tend to apply the "proven" model of operation and management in the new environment. In fact, because of this type of personnel outflow, an implied normative way of running the business may be created. Examples of how the same executives were employed in new ventures after they left their old successful companies are provided in Appendix C.

Another normative force came from industry analysts. Because of the complexity of market and technology, companies in the telecom industry tuned into the industry analysts for the most current information and ideas about the market. New CLECs ventures, whose information sources might be limited, would be even more likely to rely on analysts' advice on industry direction and market behavior. As a consequence, industry analysts' opinions would likely become an industry norm, or the normative force, to drive the CLEC ventures towards the most accepted business models. The Yankee Group, for instance, advocated the small and medium business market as the most viable for CLECs; further, the Yankee Group claimed that the most feasible approach to this market was to offer bundled multiple services (Yankee Group, 2000a, 2000b). Analysts of the New Paradigm Research Group touted the "smart build" approach—deploying network intelligence (i.e., the switch) while leasing transmission from other providers—as bright strategy for future CLECs (Weinberg et al., 2000). Actions and opinions from these and other industry analysts, such as IDC, Forrester, RHK, and Gartner, would have been a significant normative influence on the CLEC ventures in constructing their business models.[7]

Conclusion

In this study, we have provided evidence of institutional influences on the formation of isomorphic business models of CLECs, which might have contributed to the great telecom bubble during the period of 1995 to 2000 in the US and worldwide. The institutional environment that fostered the expansion and the subsequent implosion of the bubble was created by many institutional actors. Entrepreneurs, who seized the historical opportunity of telecom deregulation under the Telecommunications Act of 1996 to create new ventures and provide innovative services to businesses and organizations, resorted to mimetic behavior in order to manage uncertainty and access external funding. Financial institutions, which perceived the deregulated telecom industry as the new frontier of the digital economy and poured billions of dollars into these ventures in the forms of loans, bonds, and equity, used their power to compel the acceptance of business models that had previously succeeded. Analysts of market research and consulting firms pushed what they perceived as the optimal business models and best practices to the executives of their clients, indirectly contributing to the adoption of isomorphic business models. Lastly, telecom industry veterans from a few early successful ventures dispersed across the telecom landscape attempted to duplicate their spectacular successes all over again. We have argued that those institutional actors had exerted their influences through coercive, mimetic, and normative mechanisms that eventually created the isomorphic business models of the CLECs. It is difficult to argue that any one of these forces had a more significant role than another; we submit that it is the combination of these forces that created the isomorphic business models. Future studies will explore the possible link between the isomorphic business models and the collapse of the CLEC industry.

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[7]Many CLECs, in fact, hired these market research firms to write business plans for them, further reinforce the possibility of the institutionalization of CLEC business models.

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Appendix A: Isomorphic Business Models of CLECs

Firm	Business Model Characteristics			
	Integrated business communication services	***Targeting small and medium businesses***	***Switch-based multi-city networks with leased lines***	***Vendor and/or debt financing***
2nd Century	•	•	•	debt
Actel	•	•	•	N/A
ATG	•	N/A	•	debt
Allegiance	•	•	•	debt
Broadview	•	•	•	both
BTI	•	•	•	N/A
Choice One	•	•	•	N/A
Coast to Coast	•	•	•	N/A
Convergent	•	•	•	N/A
Conversent	•	N/A	•	debt
CTC	•	•	•	debt
e.Spire	•	•	•	both
Eschelon	•	•	•	debt
Focal	•	N/A	•	both
Globalcom	•	•	•	vendor
GST	•	•	•	debt
ICG	•	All business	•	debt
Integra	•	•	•	N/A
Intermedia	•	All business	•	debt
Ionex	•	•	•	vendor
ITC^Deltacom	•	N/A	•	debt
KMC	•	•	•	vendor
Lightship	•	•	•	N/A
Logix	•	•	•	debt
McLeod	•	•	•	debt
Mpower	•	•	•	N/A
Net2000	•	•	•	vendor
Network Plus	•	•	•	N/A
New South	•	•	•	debt
Norigen*	•	•	•	debt
North American Telecom	•	•	•	vendor
NuVox	•	•	•	debt
Pac-West	•	• (and service providers)	•	debt
PaeTec	•	All business	•	debt
Telergy	•	All business	•	debt
US LEC	•	All business	•	debt
TelePacific	•	•	•	debt
XO	•	All business	•	debt
Xspedius	•	•	•	N/A

Appendix B: Funding Sources for CLEC Ventures

Firm	Major Funding Sources		
	Equity Investors	*Banks and Creditors*	*Vendors*
2nd Century	Accel Venrock Northbridge	GATX Capital	
@Link	Columbia Ventures Madison Dearborn GE Capital Morgan Stanley		Nortel
Allegiance	Battery Vulcan Madison Dearborn Morgan Stanley	Goldman Sachs Morgan Stanley	
ATG	AT&T Ventures JP Morgan Texas Pacific Group	First Union GE Capital JP Morgan	
Broadslate	Bessemer Charles River Columbia Ventures JP Morgan		
Broadview	CIT New Enterprises Weiss, peck & Grier	CIT GE Capital JP Morgan	Nortel
Cavalier		Bank of America Bank of New York CIT GE Capital	Lucent IBM
Conversent		Bank of New York CIT FleetBoston GE Capital	
CTC	Bain CSFB	Toronto Dominion	
Eschelon	Bain GE Capital Windpoint	CSFB FleetBoston GE Capital JP Morgan	
Grande	Austin Ventures BankBoston Toronto Dominion		
HickoryTech		First Union US Bank	
Integra	Bank of America FleetBoston CIT		
Intermedia	KKR Microsoft	Bank of America Bank of New York Toronto Dominion	
Ionex	Raymond James Weiss, Peck & Grier		Lucent
IP Comm.	CIBC GE Capital		Lucent

Firm	Major Funding Sources		
	Equity Investors	***Banks and Creditors***	***Vendors***
	VantagePoint		
Lightship	JP Morgan		
Logix	Dobson	Bank of America CIBC Toronto Dominion	
McLeod	Forstmann Little	Bank of America Chase Manhattan Citibank Goldman Sachs	
Net2000	BankBoston Boston Ventures Carlyle Group		Nortel
New South		CIT First Union JP Morgan KKR	
Norigan	BankBoston Chase Manhattan Norwest	Chase Manhattan CIT First Union Merrill Lynch	
PaeTec	Blackstone CIBC Madison Dearborn	Canadian Imperial CIT	
TelePacific	GE Capital Investcorp Rader	GE Capital	
US LEC	Bain Capital Thomas H. Lee Partners	GE Capital First Union	
USN Comm.	CIBC Norwest Merrill Lynch		
Verado	Texas Pacific Microsoft		Lucent
Western Integrated	Columbia First Union JP Morgan Madison Dearborn Oak Invetment		
XO	Forstmann Little		

Appendix C: The Origin of Top Executives of CLECs

	Origin of Top Executives			
Firm	**Name**	**Position**	**Previous Company**	**Tenure**
Focal Comm.	R. Taylor	President and CEO	MFS (VP Global Account)	1996-2001
	E. Vanneste	Exec. VP, Sales and Marketing	MFS (Director of Sales)	2002-
	K. Perone	President and CEO	MFS	2002-
Allegiance	R. Holland	Chairman and CEO	MFS (President)	1997-
	A. Parella	President	MFS (VP and GM)	1997-
	C. Malinowski	President	MFS (VP and GM)	1998-
	J. D'Amico	National VP, Sales	MFS	
Covad	S. Slusser	VP and GM	TCG (VP and GM) MFS	2000-
	K. Marley	VP and GM	Brooks Fiber	2000-
Xspedius (e.spire)	M. Senda	President and CEO	MFS (SVP) Brooks Fiber (SVP)	
	H. Teets	CIO	MFS Brooks Fiber	
Conversent	R. Shanahan	President and CEO	Brooks Fiber (Regional VP)	1998-
Broadview	J. Gross	Exec. VP	TCG (SVP)	1999-
	E. Roden	COO	MFS	1998-
	K. Shulman	CTO	TCG (CTO)	1999-
	D. Thomas	Exec. VP, Sales and Marketing	TCG (National VP, Sales)	1999-
USN	E. Roden	VP and GM	MFS	
NuVox	D. Soloman	President and CEO	Brooks Fiber (VP and CFO)	1998-