

Many strategic factors go into determining whether innovative new technology secures a permanent place in an industry—or fails to stick around. Three companies marketing revolutionary technology to the mortgage industry in recent years serve as case studies in “disruptive technologies.” Pedestal, Ultrarise and nCommand promised to transform aspects of the business—but today, they have quietly conceded the market wasn’t ready. (The author was a managing director for infrastructure and corporate development at Pedestal in 2000.

All references to Pedestal business plans came from industry trade publications.)

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How New Technology Elbows Out the Incumbents

How empty is theory in the presence of fact!
—MARK TWAIN

THESE PAST FEW YEARS—MAYBE 20—HAVE BEEN strange for mortgage lenders and the companies that serve them. Those of us who have been around the industry for a decade or more have seen many good ideas come to little, except some psychic pain and a fair amount of financial distress to their financial underwriters. What often remains is left for merchants of “collectable” stock and bond certificates and other old paper items. On Scripophily.com, an engraved specimen certificate from FiNet.com was recently listed at \$69.95. On the same day, investors could purchase a share of FiNet.com common stock for just \$0.40.

Lenders, vendors and investors continually make the fatal miscalculation of overestimating the speed at which financial institutions can adopt and integrate technological innovations. Divorced from the real effects of institutional and cultural inertia, capitalistic exuberance forces too great an investment in innovation before the market is ready to leave behind existing infrastructure and conventional business practices. It always takes time—and lots of it—for lenders to understand and internalize new technologies.

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Technology ambitions

Backed by the deep-pocketed venture capitalists and so-called strategic investors, the new generation of technologists may have overreached their grasp (see sidebar). Rather than solve a contained set of operational problems, companies such as nCommand, San Mateo, California; Ultraprise Loan Technologies Inc., Frederick, Maryland; and Pedestal Inc., Washington, D.C., synthesized technologies meant to “disrupt” traditional business relationships in the mortgage banking industry. Their results fell far short of their revolutionary visions.

In a November 2000 interview with *Future Banker*, Lani Porter, chief financial officer of the now-dissolved nCommand, spoke of the company’s ambition to insert itself in the back offices of the country’s housing lenders. The article stated: “If the stars align for nCommand, then, the firm could provide an electronic route over which thousands of

lenders send the flurry of documents—which nCommand intends to be made of pixels, not paper—involvement in home buying. ‘This enables adoption by the lending industry,’ [Porter] says.”

In July 2001, John Bourne, chief executive officer of Ultraprise, was quoted in *National Mortgage News* as saying, “We have created a suite of product offerings that are modularized to fit anyone’s needs—from the brokers and originators who deal directly with consumers, all the way up to the big lenders, GSEs [government-sponsored enterprises] and Wall Street traders who deal in securities and pools of loans. We now offer the only technology that encompasses both the primary and secondary markets, automating the entire mortgage supply chain.”

In February 2001, Terry Rowland, senior vice president of sales and marketing at Pedestal, announced an interest rate swap trading platform for to-be-announced (TBA) mortgage-backed securities. In April 2001, he then released the news that Pedestal had launched FLOWLoan, a program designed to allow users to sell loans on a flow, or loan-by-loan, basis. Shortly thereafter, in June 2001, Pedestal Inc. and Des Moines, Iowa-based Wells Fargo Home Mortgage Inc. launched an electronic correspondent sales initiative called SellLoans.comSM. And in September 2001, Pedestal reported that it planned to host live, online auctions of mortgage servicing rights on its Web site.

In December 2001, *National Mortgage News* reported that “Pedestal Inc., a B2B [business-to-business] mortgage trading venue that raised \$60 million in venture capital money last year, is on the verge of announcing a major lay-off, and contemplating a sale of assets.”

In a very short period of time, these three technology innovators announced the equivalent of electronic back offices, end-to-end secondary marketing and the electronic exchange of myriad mortgage assets. In the space of one year’s time, they each were in the process of corporate retrenchment or dissolving their operations.

Almost simultaneously, these technology upstarts brought out a boxload of innovative technologies that promised to “disrupt” conventional mortgage industry business practices. Yet, according to *MORTECH 2000*—the annual survey of mortgage company attitudes and behavior conducted by MORTECH, LLC—lenders spent a modest \$2.5 billion on technology that year. So, in an industry already short on technology capital and struggling to process almost \$2 trillion in new mortgages last year, lenders may have had too little energy and a paucity of will to absorb that much fundamental change.

Disruptive technologies

But there is a subtle, maybe counterintuitive and complex, reason why a technology disruption may not be inserted

EXITING FROM MORTGAGE E-COMMERCE

- August 2000: iOwn sells technology assets.
- October 2000: mortgage.com shuts down.
- October 2000: OnLoan sells technology assets.
- October 2000: Bank of America and Wells Fargo pull out of HomeAdvisor™ Technologies.
- November 2000: GE Capital shuts down NetOriginate.com.
- January 2001: E*TRADE Group Inc. acquires LoansDirect.
- April 2001: Freddie Mac acquires Tuttle Decision Systems applications from Microsoft.
- April 2001: nCommand closes.
- May 2001: ALLTEL acquires Xpede mortgage technology.
- May 2001: LoanTrader Inc. sold to Ultraprise Inc.
- June 2001: Celeris Financial Services submerged in Fleet Mortgage sale.
- August 2001: Pedestal Inc. closes TBA trading exchange.
- January 2002: GHR Systems acquires technology assets from Ultraprise.

successfully into the collective operational portfolios of the mortgage industry.

If there is one common element in the positioning and marketing at nCommand, Ultraprime and Pedestal, it is that each designed technologies that might be appreciated by and marketed to large, mainstream mortgage banking operations. After all, which companies would have the experience and knowledge to take advantage of leading technologies, if not the industry leading bankers? Which firms have the capital to invest in and the ability to manage innovative technology if not the largest mortgage lenders?

But are these companies the legitimate candidates for technologies that will disrupt their traditional marketing and processing architectures?

If the answer is no, maybe it was neither deficient technical execution nor inadequate systems functionality that caused the business models of these innovators to fail. It may be that there is a market-based reason to explain why their potentially disruptive technologies did not take hold and their use subsequently was denied to mortgage lenders.

Defining disruptive technologies

Disruptive technologies are defined functionally as technologies that introduce performance packages that differ from the most commonly used applications of technology (e.g., loan origination systems, or LOS). Their architectures, their functionality and their measures of performance fall outside the perceived needs and mindset of mainstream users.

As a result, demand for disruptive technologies at first is localized in niche segments where their nonstandard attributes are valued. Over time, with experience, retooling and market exposure, potentially disruptive technologies are allowed to mature and satisfy mainstream customers. At the time they begin to move “up-market,” the potentially disruptive technologies often are functionally and technically inferior to the entrenched technologies. But they eventually become the dominant technologies in use. How can this be?

Clayton M. Christensen, professor of business administration at the Harvard Business School, Cambridge, Massachusetts, developed the concept of disruptive technologies. In his 1997 book, *The Innovator’s Dilemma: When New Technologies Cause Great Firms to Fail*, he popularized the findings from his serious research on how an emerging technology application succeeds an established one. Christensen makes a distinction between sustaining and disruptive technologies.

Sustaining technologies are characterized by a sequence of better/faster/more-sophisticated extensions of established technology applications (e.g., new versions of LOS that are released in DOS, then Windows®, then Internet browser). Disruptive technologies reshape markets or define new ones and ultimately destroy old ones (e.g., open electronic mortgage exchanges replace proprietary commitment processing systems). (See Figure 1 for ways to identify disruptive technology.)

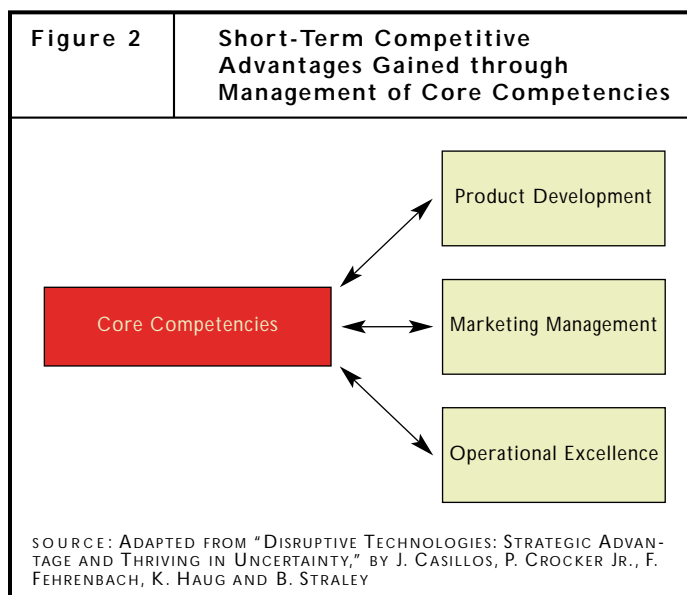
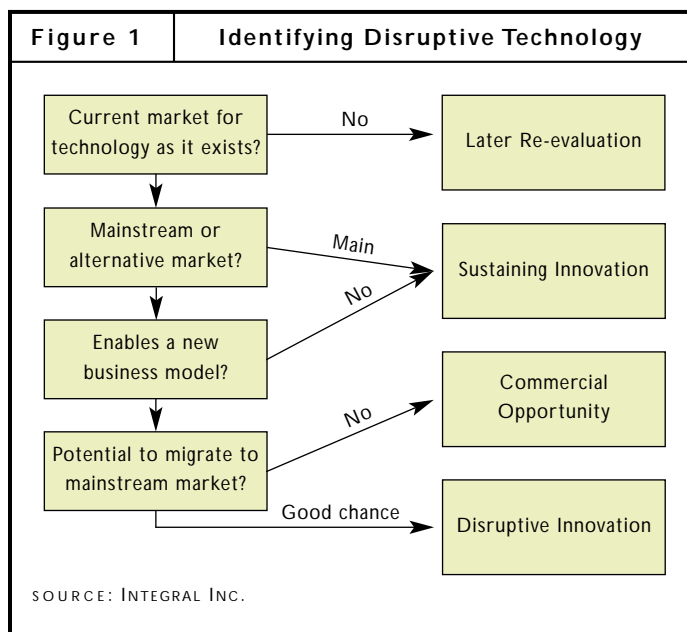
Incumbent technology companies always dominate the market for what Christensen terms “sustaining technology.” These established companies have a broad installed cus-

tomers base, are experienced with mature technology applications and enjoy the cash flows needed to enhance their technologies. The incumbents, however, rarely lead in developing and marketing disruptive technologies.

Disruptive technologies are ignored when business is good and markets are growing—for example, when loan origination volume approaches \$2 trillion. In good times, firms focus on increasing demand for their services. As business slows down, firms look to draw new customers away from their competitors and to cut costs.

Responding to the ebbs and flows of their business cycles, well-run companies, in general, continually develop cost-effective and increasingly efficient business processes. These incremental business improvements are what Christensen refers to as “sustaining technological innovations.”

Sustaining innovations are created through good management and by focusing on core competencies (better/faster/more-sophisticated) within a firm. Core competencies are



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one of three types: product development, marketing management and operational excellence (see Figure 2).

Well-schooled lenders develop their core competencies to obtain marketplace advantages. These advantages result in above-average profitability. Well-honed core competencies ensure increasing returns during good times and allow survival through a business trough. While sustaining short-term competitive advantages, management has little time and scant budget available for technology experimentation.

Disruption in action

Christensen uses many examples to demonstrate the differences in application of disruptive and sustaining innovations. One example from the financial services industry contrasts the application of technology by Charles Schwab & Co. Inc., San Francisco, and Merrill Lynch & Co. Inc., New York.

Charles Schwab employed online technologies (and then the Internet) to bring self-service discount brokerage to a segment of investors who preferred to manage their own trading and who did not want to deal with an account representative. Merrill Lynch and other full-service brokers could not easily adopt—neither could they afford to adopt—the discount business model. Merrill Lynch was fully invested in customers who willingly paid premium commissions for a full-service relationship.

Each of the full-service brokerages have adapted to the technology challenge by implementing supplementary online services in a fashion that sustains its current business model. They use the Internet to support their full-service brokers, who serve their dominant full-service client segment. Christensen points out that it is rational for full-service brokers to employ technology to protect their future

profits from serving their upscale client base well. To mimic Schwab would be profoundly disruptive to the full-service broker business model.

Christensen theorizes that over the next 10 or 15 years, Schwab will move up-market with its lower-cost delivery model in a flanking attack on the upscale customer base of the full-service brokers. As evidence of the promise of Schwab's potentially disruptive capacity, Christensen points out that Schwab's market capitalization exceeded that of all the full-service brokerages in 1999. As of February 13, 2002, Schwab's market capitalization had fallen to \$20 billion; Merrill Lynch's market capitalization was \$41 billion. Fortunes reversed, for now.

Whole-loan trading exchanges

The technology experiments at Pedestal and Ultraprise are on hold for now. The technology assets of Ultraprise were purchased by GHR Systems Inc., Wayne, Pennsylvania. Pedestal is looking for a strategic partner to sustain its businesses.

These companies were not successful in “disrupting” the traditional mortgage banking business model. As have the full-service securities brokers, the mortgage banking establishment is persevering by extending its retail and wholesale channel technologies with well-executed Internet applications. That establishment is represented by the likes of Calabasas, California-based Countrywide Credit Industries Inc. and Wells Fargo Home Mortgage.

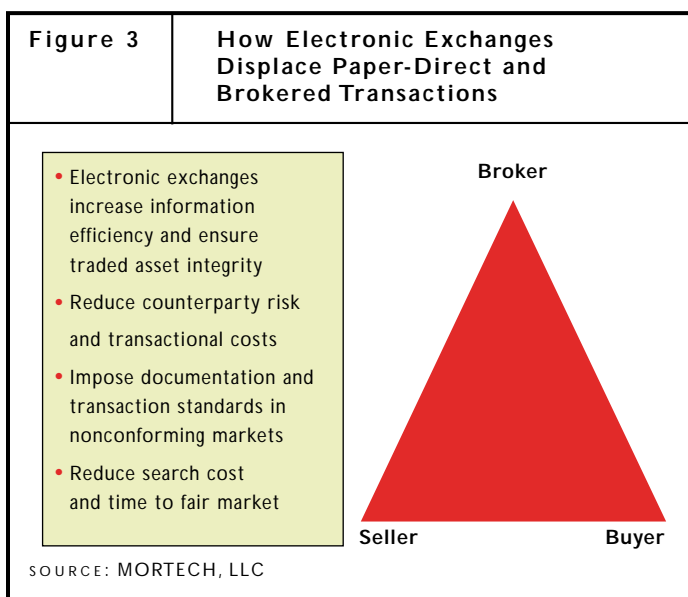
But what if successors to Pedestal and Ultraprise emerge with new versions of electronic trading platforms? What might the effect be on the mortgage industry? Using the Pedestal case as an example, how might a whole-loan trading exchange evolve and benevolently be disruptive to the business models of the mortgage industry establishment?

An electronic mortgage exchange would have to displace traditional methods of trading. To do that, the exchange would have to provide at least the same services offered with direct, paper-based trading methods and something more.

An electronic exchange excels at bundling and providing access to information that describes the assets being traded (see Figure 3). By standardizing the underlying documentation, all potential trading parties have immediate access to a reliable description of the asset. This provides an important element of transparency not available in paper-based trading.

In the traditional paper-based approach to mortgage trading, each seller and each buyer has idiosyncratic formats for describing the underlying asset. This “opaqueness” leads to a complicating set of representations and warranties and the inefficiencies of having to reformat information for each trade.

In today's mortgage trading environment, wholesalers and investors manage separate marketing staff. These teams are employed to search for appropriate product and to



explain and force compliance with their firm's product and trading requirements. The maintenance of separate and redundant teams imposes significant overhead and still does not ensure uniform interpretation of trading rules.

With an electronic exchange, the requirements of both buyers and sellers are embodied in the documentation standards and trading rules enforced by the exchange applications systems. Exchanges are inherently information-efficient.

What's more, there is little to limit the amount of product that can be posted and accessed on an electronic exchange. The architecture of electronic exchanges permits nearly unlimited access to a trading inventory. Paper-based systems, on the other hand, require a significant amount of human intervention. Paper-based trading capacity can be expanded only by adding salespeople and traders. Unlike paper-based systems, electronic trading exchanges are naturally scalable.

Exchanges also benefit from what are known as network effects. The more subscribers there are to an exchange, the more inventory becomes available and the greater the likelihood that more competitive bids for product will emerge.

The greater the number of subscribers, the more useful the exchange becomes to both buyers and sellers.

In the end, electronic exchange mechanisms will find acceptance in the mortgage industry if the cost of trading on an exchange is less than the cost of direct paper-based trading between buyers and sellers or less than the cost of trading through a broker.

The inherent characteristics of exchanges promise these economies if sufficient time is allowed for the exchange to attract large numbers of participants. When that occurs, it is more than likely that the electronic exchange will disrupt (displace) conventional trading methods and processes.

Niche market for electronic trading

Christensen's theory dictates that the required business model for an electronic exchange is one that focuses on serving a limited market and unique customer segments that would value the capabilities of an exchange when commercially introduced. As in the case of Pedestal, nCommand and Ultrarise, trying to accommodate too many business segments and too many products with differing requirements likely would be unsuccessful.

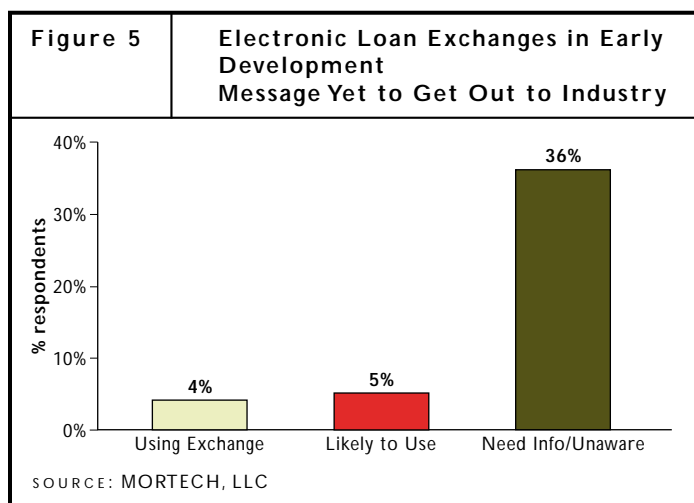
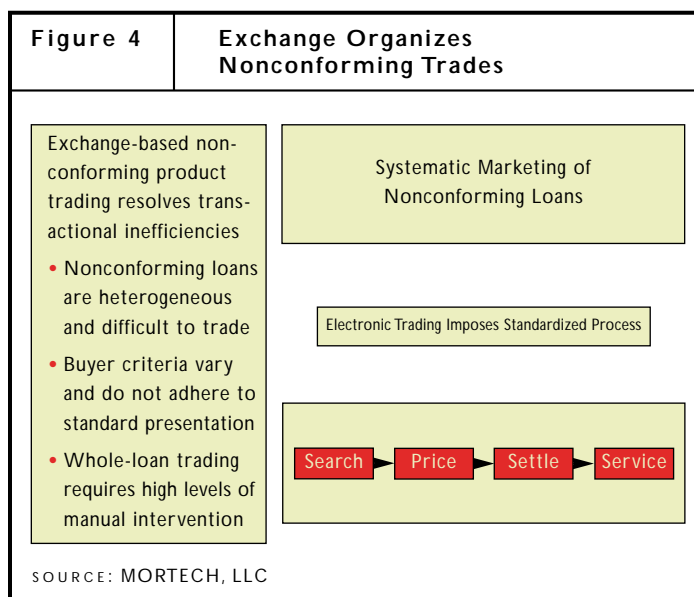
According to the theory of technology disruption, potentially disruptive technologies first demonstrate their advantages in a niche market. The technology then is refined and finally extended into other markets ("moving up-market"). The electronic trading of nonconforming product might have fit the theory if allowed to mature from a niche business. The theory advises innovators to prove and improve their innovations in an out-of-the-way niche first. Once proven in such a laboratory, the innovator can then extend technological functionality and generalize its innovations to mainstream applications ("moving up-market").

Prior to its entry into the interest rate swap (TBAs), flow and servicing rights trading, Pedestal built a system (exchange) for trading nonconforming mortgage pools. Apparently thinking this to be a relatively small opportunity, Pedestal quickly expanded beyond the niche business around which the company was formed.

The trading of nonconforming mortgages is inherently inefficient (see Figure 4). Buyer and seller requirements are heterogeneous and do not adhere to a common set of standards. Obtaining and interpreting terms of trade can be fraught with error. The transferring of information about the inventory to be traded is notoriously time-consuming. Worse are the process and cost incurred in translating individualized and incompatible data formats.

The customary method of trading nonconforming product inhibits the timely formulation of bids. All of the major inefficiencies in the nonconforming market can be remedied through electronic trading systems.

Pedestal's initial strategy of serving the nonconforming market held the promise of disrupting established trading relationships and conventional negotiating processes in that market. The theory of technology disruption states that the early application of potentially disruptive technologies need not be perfect. But it requires time for the market to



become aware of the benefits of that new technology, and even more time to adapt.

Assuming that Pedestal's technology generally met the needs of nonconforming loan traders, the theory of disruptive technology suggests that Pedestal could have stayed the course. Once exhausting the potential of the nonconforming market niche, Pedestal may have been in a position to extend future refinements of its trading platforms to meet the needs of the industry's mainstream users.

Market receptivity

Where is the mortgage market currently in regard to electronic trading? There are a small number of lenders and investors that have at least tried using an exchange. They are few, but they are substantial.

The latest data on mortgage exchange use (*MORTECH 2000*) indicated that 4 percent of lenders had registered to buy or sell through one of the electronic trading platforms (see Figure 5). Another 5 percent thought they would be likely to trade electronically.

Those that had tried the electronic trading platforms accounted for \$208 billion of loans originated and \$146 billion of loans sold to the secondary market. Combined with lenders likely to use an exchange, these segments originated a total of \$354 billion and sold \$271 billion in mortgages.

Considering that Pedestal and Ultraprise had been operational for only two years at the time the survey was fielded, the size of the early adopter market was significant indeed.

The survey showed that another 36 percent of lenders had yet to become aware of electronic trading exchanges or had too little information to judge their level of interest.

Assuming that these trading platforms might deliver increased functionality and significant trading efficiencies over time, they appear to have been addressing a promising market. The mortgage industry may yet be receptive to the potentially disruptive effects of electronic trading exchanges. While the investors in these trading systems expended considerable capital, it appears that not enough time was given to prove or disprove the disruptive capability of these innovative technologies. Disruption requires capital that is both focused and patient.

Ultraprise

In February 1999, Ultraprise.com traded \$500,000 of home-equity loans for the benefit of City Lending Services, Irvine, California, a regional subprime mortgage lender. The subprime mortgage exchange service grew out of a consulting project with City Lending Services, a subsidiary of City Holding Company, Charleston, West Virginia.

With the May 2001 consolidation of LoanTrader Inc., Irvine, California, Ultraprise suddenly was in the business of providing a complete infrastructure solution to the industry. The transformation of Ultraprise from a niche product trading exchange to a purveyor of industry infrastructure solutions runs counter to the embedded wisdom of Christensen's theory of disruptive technologies (see Figure 1). The merger certainly muddied the

market positioning Ultraprise had been nurturing for three years.

When GHR Systems announced its acquisition of Ultraprise's technology assets on January 10, 2002, Chief Operating Officer Cyrus Brinn stated that GHR would integrate elements of Ultraprise's technology into GHR's. This effectively would be a functional extension for GHR. And the extended capability will preserve elements of the Ultraprise vision to transform the mortgage banking business model.

nCommand

Founded in 1998, nCommand's extensible markup language-based (XML-based) service "went live" in July 2000 with 27 lender customers (10 are among the nation's top 100 lenders and three are among the top 10 lenders). The company had partnered with an influential cadre of mortgage service providers that included Lender's Service Inc. (LSI), Coraopolis, Pennsylvania; Fidelity National Services, Irvine, California; and Mortgage Guaranty Insurance Corporation (MGIC), Milwaukee. The PMI Group Inc., San Francisco, had an investment stake in the company. In April 2001, nCommand closed its business.

nCommand ambitiously built and sold the idea of its Mortgage EPN™, a complete electronic fulfillment solution for mortgage loan processing. The electronic partner network (EPN) aggregated disparate documents from multiple external service providers and consolidated them into a digital loan package (including credit analysis, automated underwriting, title and appraisal services, flood certification, mortgage insurance and loan document preparation).

For a flat fee of \$75, the Mortgage EPN was designed to make all of the elements of a loan package available to lenders via the Internet. The problem nCommand faced—and it probably had not quantified the problem—was that most lenders were already ordering and receiving these services electronically. According to *MORTECH 2000*, 60 percent of lenders were tied in electronically with their services partners. The \$75 nCommand fee was too high a price to motivate lenders to abandon processes that were less elegant, but which were already in place.

nCommand was a mortgage industry pioneer in the use of an XML-based architecture and an avid supporter of the MBA's Mortgage Industry Standards Maintenance Organization (MISMO). These may well be nCommand's legacy to the industry.

Driven to large-scale experiments by anxious venture capital money, these companies violated the principles of the theory of disruptive technologies. Had they the benefit of a coherent theory of innovation, each might have been more modest in their ambitions—and met with success in employing modified business models. MB

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