



**Akamai Technology and the Inktomi Corporation
both speed Web pages from servers
to desktops. But to chase earnings,
they've taken different routes.
Can both lead to riches?**



Product or. Service?

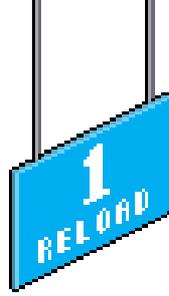
Internet
Infrastructure's

Battling
Business Models

by Lawrence M. Fisher

Lawrence M. Fisher

(fisher_larry@strategy-business.com) has covered technology for *The New York Times* for more than a decade and has written for dozens of other publications. Mr. Fisher, who is based in San Francisco, is a recipient of the Hearst Award for investigative journalism.



Some Web sites sprint while others crawl. Some fill the computer screen with the urgency of a Special Delivery message; others may as well be dead letters. Not surprisingly, in this speed gap, there's a business opportunity. But whereas everyone can agree that a fast Web site has gone from a nicety to a necessity, especially as corporations use the Internet for critical business processes and applications, there's less accord on how best to accomplish this goal. There's even less agreement about the right business model for making money accelerating Web access.

The two market leaders facing this challenge, the Inktomi Corporation of Foster City, Calif., and Akamai Technologies Inc. of Cambridge, Mass., are a study in contrasts. Both purport to make Internet infrastructure software that improves Web performance through more efficient and intelligent distribution of content, but they go about it in entirely different ways. Akamai sells content distribution services — in other words, it does the work for its customers. Inktomi sells technology that enables better content distribution — the do-it-yourself approach.

Conventional Web wisdom holds that the service model trumps the product model, because it piggybacks onto the infrastructure of the Internet to deliver value and benefits to customers without the burden of manufacturing and distribution; think voice mail versus answering machines. Services also generate an annuity-like recurring revenue stream, which is reassuring to investors. And customers like services because there's no big up-front capital expenditure or lengthy deployment process.

But conventional wisdom isn't always right. Sometimes the nature of the benefit delivered dictates a product over a service, or the target customer prefers a product to a service. In this regard, an apt analogy is Webvan Group Inc., an e-tailer offering same-day deliv-

ery, going to the expense of owning its own fleet of trucks to shepherd items within hours to customers, because that's Webvan's essential value component.

In other words, even with Web applications, selling software the old-fashioned way, in shrink-wrapped boxes and with site licenses, has some enduring pluses, like low fixed costs and high profit margins.

The World Wide Wait

The niche Inktomi and Akamai are attempting to fill is a technical baffle brought about, in large fashion, from the design of the Internet itself. The disparity between a fast Web site and a lagging one often owes to coding errors or poor design. But when a site races during one visit only to crawl the next, the problem more likely stems from the underlying architecture of the Internet, which, after all, was built for the bombproof delivery of e-mail between engineers, not for fancy graphics, sound, and video.

Calling up a Web page requires the downloading of multiple objects scattered across the Internet that have to be broken down into packets of bits and then reassembled at their destination. In the delivery of just one page, there's a tremendous amount of dialogue between the user's browser software and the server where the information resides — all of it has to hop across multiple networks and routers. The speed of light becomes a limiting factor, as does the loss of packets at each stop or change of direction. Resending lost packets just adds to the delay.

These performance issues didn't matter much when the World Wide Web was populated by early computer hobbyists and tolerant enthusiasts. But with the Web's focus shifting to commerce and entertainment, long waits can be deadly. Studies show people won't stay on a site that takes more than eight seconds to fill. So for online

merchants, gaming networks, and advertiser-supported content providers, to name just a few, a slow site means lost revenue. For Internet service providers, all the bandwidth in the world means little if users are frustrated by sluggish downloads.

Improving the Web's performance is a big opportunity. The worldwide market for content-delivery products and services is forecast to grow to \$6 billion in revenues by 2004, according to a February 2000 analysis by Internet Research Group, a unit of Jupiter Communications Inc. (See Exhibit 1.)

This new market has attracted multiple competitors, from tiny startups to behemoths like Cisco Systems Inc. and the Intel Corporation — some of them adopting Inktomi's product model, and others choosing Akamai's service approach. Since Inktomi and Akamai set the pace in this sector as the early movers, deconstructing their business strategies provides some clues as to whether a product or a service model has better long-term viability.

Inktomi, Lakota Spider

Inktomi was founded in 1996 by Eric Brewer, a professor of computer science at the University of California at Berkeley, and Paul Gauthier, a graduate student. As part of Mr. Gauthier's master's thesis, the pair developed a technology that let clusters of workstations act in parallel, as if the multiple machines were one immense supercomputer. To put the thesis to the test, they developed a Web search engine that ran atop this technology; they immediately discovered they had a product.

From the start, Mr. Brewer planned to commercialize the product unconventionally, and he chose a moniker accordingly. The company's name, pronounced "INK-tuh-me," is derived from a Lakota Indian legend about a

trickster spider, known for its ability to defeat larger adversaries through wit and cunning. "I wanted the mentality that we would outwit the competition in terms of strategy and technology," Mr. Brewer says.

Inktomi's first trick was not to launch a search engine site of its own, as the Digital Equipment Corporation had done with AltaVista, but instead to sell search capabilities to others. Inktomi provided the search engine behind *Wired* magazine's HotBot site. Its first big win, though, came in 1998 when Yahoo Inc. chose Inktomi to be the search engine on its site.

When a user clicks on the search button on any of the dozens of sites "powered by Inktomi," the request is transferred to the company's battalion of servers in Foster City, which deliver the results back to the site. The site pays Inktomi by the click, and benefits from retaining the user throughout the search process, thus allowing the site to display more ads and offers that otherwise might have gone to a search provider.

Inktomi now offers a range of searching services for 80 different portals. In taking this approach, Inktomi debuted as a service provider, not the product company that it has subsequently become.

"It was a novel strategy in 1996 to be a behind-the-scenes player," says Mr. Brewer, Inktomi's chief scientist, who continues to teach at Berkeley. "At the time, all Internet companies were brand companies targeted at the end user. 'Powered by Inktomi' is a philosophy similar to 'Intel Inside.' We don't compete with our customers."

Perhaps not coincidentally, in 1997, Intel, through its venture fund, became the first outside investor in Inktomi, taking close to a 5 percent stake for about \$2 million. That was just a year after Inktomi hired David Peterschmidt, a technology industry veteran and chief

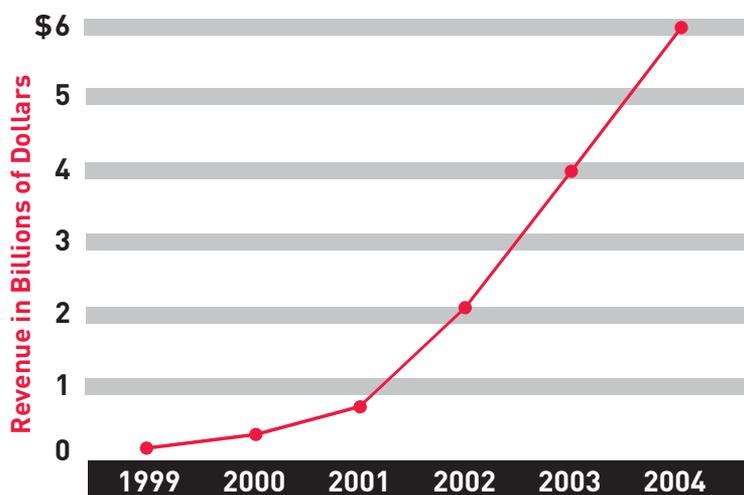


Exhibit 1:
**Internet Content-Delivery
Products and Services:
Projected Growth**

operating officer of Sybase Inc., to be its chief executive.

Looking for larger markets for Inktomi's core technology, Mr. Peterschmidt focused on the two bugaboos of Web performance. Web sites were slow, and the most popular ones crashed when a burst of users overwhelmed a server with simultaneous requests, as happened during the February 1999 Victoria's Secret Webcast.

Inktomi's solution was to develop a software product that borrowed a concept called caching from the semiconductor industry. It is common practice to put a small amount of memory, called cache, directly on a micro-processor, where it can more rapidly deliver frequently used bits of data. Inktomi's Traffic Server, a software application that runs on servers deployed around the Internet, does essentially the same thing. It monitors network traffic and stores frequently requested objects locally, closer to the user. The servers watch for repeated requests for the same bits of code and put them on their own hard disk or in their own memory chips. By temporarily warehousing these bits (which could be the components of a graphic, a headline, or an audio/video file), the cache can dole them out rapidly as users request them.

Inktomi's initial target market for its Traffic Server was the big network operators and Internet service providers, partly because they're judged on their ability to deliver content quickly, but also because they have the fattest checkbooks. Inktomi initially planned to offer Traffic Server as a hosted service — in other words, like its search engine, managed by Inktomi — but found that large companies did not want to buy core technology that way. So Inktomi put Traffic Server on a CD-ROM that cost \$24,000 a copy, a bit less with volume discounts.

"The big guys want a supplier relationship, not a partner," says Mr. Peterschmidt. "They want to have fixed

costs, and they don't want the costs to fluctuate with changes in volume. The service model worked great with dot-coms and portals, but the back-end and infrastructure companies are of a different ilk."

Even as a product, Traffic Server was a tough sell at first. No one had ever deployed large caches on the Internet. No one really knew if they would work. Consequently, Inktomi's first target, the big network provider UUNet, turned it down. It wasn't until 1998 that Inktomi signed its trophy customer: America Online Inc., which now uses several hundred Traffic Servers. "People said 'I don't understand this company; I don't know what caching does,'" says Shernaz Daver, Inktomi's vice president of marketing. "But when AOL adopted it, they had to pay attention."

Inktomi's technology was immediately put to the test. On September 11, 1998, two days after the deal was signed, U.S. Special Prosecutor Kenneth Starr released on the Internet the 445-page report on the Clinton/Lewinsky tryst. Millions of AOL users tried to download the document simultaneously, unaware that they weren't linking to a government server, but to Inktomi caches that duplicated and delivered the report. AOL and Inktomi watched the information rush with some trepidation and were relieved when there were no delays or crashes.

Inktomi followed the AOL win with sales to Excite@Home and Microsoft's MSN, as well as Internet hardware and software companies, such as Enron Communications, Digital Island Inc., and Adero Inc. Intel, which still holds its stake in Inktomi, bundles Traffic Server with a hardware product as a caching appliance. In its latest push, Inktomi is trying to sign up content providers, with some success: Fidelity Investments, *The New York Times*, and financial information provider ILX Systems, among others, use Inktomi as one of their content-distribution backbones.

Traffic Server and related products in Inktomi's Content Delivery Suite now account for 70 percent of revenues and helped drive the company to that all-too-rare Internet milestone, net income, in the second and third quarters of fiscal 2000. In the third quarter ended June 30, Inktomi reported earnings of \$4.5 million, or 4 cents a share, compared to a loss of \$7.7 million in the same quarter a year earlier; revenue rose 202 percent to \$61.5 million versus \$20.3 million. At the end of July, Inktomi shares traded at about \$100, giving the company a market value of nearly \$11 billion.

To maintain its robust growth, Inktomi wants to broaden the role that its caching software can play for its

Inktomi had planned to offer Traffic Server as a hosted service, but “the big guys,” its CEO says, “want a supplier relationship, not a partner.”

customers. To this end, Inktomi openly publishes the application programming interfaces, or APIs, to Traffic Server, which lets other companies augment Traffic Server with functions like streaming audio and video or enhanced security. Because of this approach, customers can build and attach all their Web applications to Traffic Server. It is very similar to Microsoft's Windows being used as a platform for PC applications.

For example, Inktomi is working with the Nokia Corporation to design software for the fast delivery of wireless content and services on Nokia's cell phones. And Inktomi has teamed with DoubleClick Inc., the Internet advertising company, to match targeted banner advertising to keyword search results.

“Caching is going to be as ubiquitous to the Internet as the microprocessor is to the PC,” says Mr. Peterschmidt. “He who runs the most apps wins.”

Akamai, Hawaiian Cool

Akamai was founded in 1998 by Tom Leighton, a professor of applied mathematics at the Massachusetts Institute of Technology, and Daniel Lewin, a graduate student. As part of an academic exercise in 1995, they responded to a challenge made by Tim Berners-Lee, another MIT professor best known as the architect of the World Wide Web, to find a way around the burst phenomenon, also known as flash crowds, in which too many people show up at a site at once and crash the servers.

Instead of solving this problem by figuring out how to make Web servers run faster, Akamai's founders turned to algorithms, sets of mathematical formulas through which they believed they could optimize the management of content distribution. What if, they postulated, Web traffic was monitored all over the world — just as heli-

copter traffic reporters track freeways — and, on the fly, users at busy servers were diverted to less encumbered network hubs? The idea made sense in its simplicity. The hard part, though, would be to perform such complex routing in real time.

Mr. Lewin, now Akamai's chief technology officer, said the nascent company benefited from getting its start in academia, where there was no pressure to deliver a product on time or within other established rules.

“We're kind of lucky we didn't do this in the commercial world,” says Mr. Lewin. “We had the benefit of going about it with a completely clean sheet. It turned out to be a hard mathematical problem.”

It took three years to solve. Akamai didn't formally launch until August 1998.

Akamai's founders discovered the company's name in a Hawaiian dictionary on the Web. Akamai, pronounced “AH-kuh-my,” means intelligent, clever, or, colloquially, cool. Like Inktomi, Akamai targeted a big Web player for its first customer; in this case it was Yahoo. And just as Inktomi proved its technology when AOL delivered the Starr report from its cache servers, Akamai passed its most visible public test in October 1999, when it supported millions of Internet Web site hits during the NetAid Webcast of its concert against hunger.

Two seasoned senior executives were hired to run Akamai: George Conrades, former chief executive of the BBN Corporation, president of GTE Internetworking, and senior vice president of the IBM Corporation, was named chairman and CEO in April 1999. Paul Sagan was brought on as president and chief operating officer. Mr. Sagan had been president and editor of Time Inc. New Media and a founder of Road Runner, the high-speed cable modem service, as well as Pathfinder, Time's failed



effort to roll its print properties into an advertising-supported Internet gateway.

Like Inktomi, Akamai developed cache software, but here the two companies diverged. Whereas Inktomi designed Traffic Server as a stand-alone product, Akamai used caching as the foundation for a range of services. Instead of selling software to network providers, Akamai attaches its servers around the world to its customers' networks and then ties these servers into a central computer system in Cambridge, Mass.

Because Akamai's servers ultimately deliver the content directly to individuals, Akamai can monitor user behavior and package this information in various formats for customers. For instance, Akamai can track people's browsing preferences, showing which types of information or displays are the most enticing and even the order in which people are apt to look at content. Although this data is provided free of charge, it adds value to Akamai's offerings — and it's something Inktomi, because it offers a product and not a service, cannot duplicate.

To prepare information for distribution over Akamai's servers, its customers must first run a program that selectively "Akamaizes" frequently used portions of their site and large files that could be difficult to send to users quickly. This process changes the URL that normally directs a browser request to an originating server into an Akamai Resource Locator (ARL), which directs it to an Akamai server. There are now about 3,000 such servers worldwide, located at network operators like UUNet and the Sprint Corporation. Moment by moment, Akamai's software determines which server is optimum for the user and transmits the "Akamaized" content locally.

Akamai has pitched its offerings to content providers such as Yahoo, not to Internet service providers and back-

bone operators. But just as Inktomi used its AOL contract to sign up additional customers, Akamai touted the Yahoo deal to attract CNN, Disney's Go network, Apple Computer Inc., the Microsoft Corporation, and Cisco. The latter three also took equity stakes in the company.

Akamai executives say these companies found the service model attractive because it immediately reduced their capital outlays. If Akamai's servers were delivering much of a site's key content, the site itself needed fewer servers. And since most site servers are underutilized except during peak traffic, it makes sense for site operators to outsource as much as possible.

Akamai doesn't disclose its rates, but analysts say the street price for its services is about \$1,500 per megabit of traffic per month, or nearly twice the going rate for generic network services. So far, Internet service providers have housed Akamai's servers free of charge, primarily because the local delivery of content saves them money on long-distance bandwidth. In addition to signing up customers directly, Akamai sells its services through companies that host and manage Web sites for clients. Resellers include IBM, Genuity, GlobalCenter, Digex, and NaviSite.

At the end of its second quarter, Akamai had 895 customers under recurring contract — that is, companies using the service for more than special events or to address a one-time need. That is more than double the number it had at the end of the first quarter. The biggest draw for customers is the financial structure of the relationship, Mr. Sagan says. "There's no up-front capital expenditure, and they can ramp their usage as they choose," he notes. "There is no risk to it, and they can actually reduce their costs, while offering better performance."

When Akamai went public in October 1999, its shares soared from the offering price of \$18 to a first-day

Eight Ways to Choose an E-Business Model



close of \$145. The stock traded as high as \$345.50, briefly giving the tiny company a market cap of about \$32 billion. At the end of July, Akamai had a valuation of about \$7.3 billion.

Akamai has yet to report a profit, but it shares with Inktomi a high revenue growth rate, albeit off a far smaller base. In its second quarter ended June 30, Akamai posted revenues of \$18.1 million, up 151 percent from \$7.2 million in the previous quarter. The company's net loss, not including the cost of stock options, widened to \$43.4 million from \$24.2 million.

Akamai's prescription for maintaining growth is, again, similar to that of Inktomi: It's promoting the creation of new applications that run atop the service. The difference is that Akamai doesn't publish its APIs, but instead hopes to set up joint ventures with selected companies, like one it established recently with RealNetworks Inc., which is providing software for carrying audio and video on the Akamai service.

Analysis: Product vs. Service — Who Wins?

While it is far too early to pick a winner between Inktomi and Akamai, analysts say some of the strengths and weaknesses of the two business models are becoming apparent. Both companies have solid, seasoned management, strong underlying technology, and enviable rosters of early customers. For that reason, it's entirely possible that both will succeed. And although neither likes to admit it, their solutions are in some ways more complementary than mutually exclusive. A really fast Web site may well use both.

But looking at their business strategies more closely, Inktomi would seem to have a leg up because its product sales model is proven; it's the same approach that all suc-

Selling a product...

- 1 Traditionally results in lower fixed costs and wider profit margins
- 2 Can take advantage of sales generated when third parties create related applications
- 3 Requires a field sales force, which could significantly add to the cost of doing business
- 4 May limit the potential customer base, because smaller companies can't afford the purchase of a high-priced specialized product

Selling a service...

- 5 Eliminates manufacturing and distribution costs and generates a recurring revenue stream
- 6 Attracts customers because of lower up-front capital expenditures and a shorter deployment process
- 7 Can be expensive because fixed costs to run a network for customers increase as the business grows
- 8 May be easily replicated by other companies with large worldwide networks in place, which could precipitate a price war

cessful enterprise software companies have used for years. As Larry Ellison, the outspoken chairman and chief executive of the Oracle Corporation, which has made billions on huge corporation-wide database software, said at a recent analysts' meeting, "We sell software in exchange for money. The idea is the money that comes in should be more than the money that goes out." Inktomi's move into the black shows that this equation still works.

There is also a strong precedent for third parties to build applications, and lucrative businesses of their own, atop software platforms with published APIs, as the thousands of developers using Oracle and Microsoft products for their own programs will attest. That creates growth through a network effect. As Inktomi's caching software catches on, more and more developers will write programs for it. In turn, that should sell more Inktomi products.

"Inktomi is really well positioned to more or less grow with the Internet or faster because the company

Enterprise software companies have successfully used the product model for years. “We sell software in exchange for money,” is how Oracle’s Larry Ellison describes it.

provides such critical infrastructure components,” says Minyoung Sohn, an analyst with Janus Capital, which is the company’s second largest shareholder, after Fidelity Capital. Of the nine top players in Internet content delivery, only Akamai isn’t built off Traffic Server, he adds.

Inktomi’s greatest vulnerability lies in its pricing model, which also borrows from traditional enterprise software companies. Inktomi may be an Internet infrastructure company, but it still sells Traffic Server the expensive way: with a field sales force. Inktomi’s sales and marketing costs in the quarter ended June 30 hit \$32.6 million, about 53 percent of the company’s \$61.5 million in revenue. By contrast, Oracle’s sales and marketing costs were less than half that — only 25 percent of revenue during the same period. Oracle is an established company no longer wrestling with the costs of branding and gaining market recognition that a startup has. Nevertheless, the difference in the two companies’ ratios is hard to ignore.

Moreover, Inktomi needs an aggressive sales force because Traffic Server, at \$24,000, is expensive, and the hardware needed to run it, typically a Sparc Server from Sun Microsystems, or its equivalent, is even more costly, up to six figures for each machine. Moreover, the program and the hardware both require the regular attention of skilled service and support personnel.

So clearly there is an opening for a lower-cost, easier-to-use alternative to Inktomi’s software, which companies like CacheFlow Inc. of Sunnyvale, Calif., have rushed to fill. CacheFlow offers a cache appliance, a computer preloaded with its own operating system and software, which customers can basically plug into their network and forget about. Prices start around \$4,000. Though less flexible than the Inktomi product, CacheFlow’s appliances are more than adequate for many companies.

Perhaps more worrisome for Inktomi is Cisco’s newfound interest in what it calls content networking, as evidenced by its May acquisition of ArrowPoint Communications Inc., in a stock swap valued at \$5.7 billion. While ArrowPoint, a maker of switches that route information based on specific content criteria, isn’t a direct competitor of Inktomi, the deal gives Cisco an entree into one part of the content distribution business and could be a hint that it intends to move more aggressively into that market. Up to now, Cisco’s own cache products have technologically lagged behind Inktomi’s, but there is little to stop the acquisitive networking giant from buying a company like CacheFlow, or applying the resources necessary to develop stronger products internally. Cisco also owns a minority stake in Akamai.

As if the threat from well-heeled rivals isn’t bad enough, Inktomi also appears to have been outmaneuvered by Akamai in the types of customers the two companies are targeting. Akamai’s decision to focus on selling to content providers rather than service providers gives it a much bigger sales channel. Of course, some of this is just the result of natural preferences. Content providers are more likely to gravitate toward Akamai than Inktomi anyway, because they prefer reducing capital outlays, not having to spend time implementing their own software and hardware, and gaining a buffer against technological and operational uncertainty.

Akamai’s customer base is also more motivated than Inktomi’s. Peter Christy, an analyst with Jupiter Communications, says it’s an easier sell for Akamai to convince content providers that improving the user experience will increase sales than it is for Inktomi to persuade Internet service providers that caching will mean more revenue from users or a reduction in bandwidth costs.

“None of Inktomi’s customers can figure out how to get a consumer to pay more for higher performance,” says Mr. Christy. By contrast, all Akamai has to say is “are you willing to pay to have your site perceived better by the consumer?” The answer is “yes,” Mr. Christy concludes.

But there are some underlying weaknesses in Akamai’s model, which have been obscured by the company’s initial growth spurt and its success on Wall Street: The capital expenditures and execution risks that Akamai customers avoid must be shouldered by Akamai itself. Akamai’s service model requires it to take on enormous fixed costs that will only increase as its business grows.

“I don’t actually think that Akamai has a viable business model in a fundamental sense,” says James Moore, a corporate strategist and author of *The Death of Competition: Leadership and Strategy in the Age of Ecosystems* (HarperBusiness, 1997). The model “transfers all the capital requirements and scaling requirements to the provider. It’s not the writing of software, which everyone knows scales, but scaling the operation,” he says.

New Competitors

Meanwhile, Akamai’s success has attracted competition, primarily from network operators who would rather capture the content distribution revenue stream for themselves than share it with Akamai. Digital Island acquired Sandpiper Networks Inc. in October 1999, specifically to add this capability, while Exodus Communications Inc. invested \$637.5 million in Akamai competitor Mirror Image Internet Inc. in March 2000.

And there’s more to come, Mr. Moore says. Telecommunications giants like the AT&T Corporation and MCI WorldCom, which have enormous layers of servers worldwide and an infrastructure linking these machines to customers, could easily add Akamai-like content distribution to their mix. Even some of Akamai’s biggest customers could decide to go it alone if Akamai prices its service too high. “There are a bunch of rivals in an adjacent space for whom the Akamai class of service is basically just an extension,” says Mr. Moore. “Right now, Yahoo is Akamai’s anchor tenant, but if Akamai wanted to charge Yahoo too much, they would either do it themselves or go elsewhere.”

All this means that Akamai’s ability to charge a premium may be fleeting, while its costs will continue to mount. Looking at the company’s second-quarter financial results, with just \$18.1 million in revenues, Akamai spent \$12.6 million to provide its services, \$12.9 million on engineering and development, and \$39.6 million on

sales, general services, and administration (it has a field sales force too). Just these expenses ballooned 91 percent between the first quarter and second quarter. To be sure, Akamai is still building out its global network, but with the need to add servers constantly as the Internet grows, it’s hard to see how it will ever hold down costs. Akamai declined to predict when it would be profitable.

Akamai executives argue that they do not really compete with Inktomi, but this is true only in the limited sense — the way, for instance, Apple Computer might have said 20 years ago that Intel wasn’t a threat. At that time, Apple was the dominant hardware company in personal computing and Intel a much lower-profile supplier of enabling technology for Apple’s rivals. In like fashion, Inktomi supplies enabling technology to Akamai’s real and prospective competitors. The Apple comparison, of course, leaves Akamai on the short end; between Apple and Intel it’s clear which dominates in PC hardware today. Sometimes the less splashy model wins.

Of course, it’s still possible that a new technology could overtake both Akamai and Inktomi. Indeed, as Jupiter’s Mr. Christy points out, the Web has yet to approach performance standards that were commonplace in the hoary old days of mainframe computers and time-sharing services, although those systems were of course just delivering simple text over private networks.

“Twenty years ago, if you had asked me what good performance was, I would have said half a second,” says Mr. Christy. “In the golly gee-whiz of the Internet we forgot that, and 10 seconds seemed remarkable. Until typical performance gets down to the subsecond range, anyone who can improve performance could have a good business.” +

Reprint No. 00408

Resources

Akamai Technologies Inc.: www.akamai.com

Inktomi Corporation: www.inktomi.com

The Internet Research Group: www.irgintl.com

The Internet Traffic Management Center: www.itmcenter.com

For more discussion on strategy, visit the **strategy+business** Idea Exchange at www.strategy-business.com/ideaexchange/