Capturing the Real Value in High-Tech Acquisitions

by Saikat Chaudhuri and Benham Tabrizi

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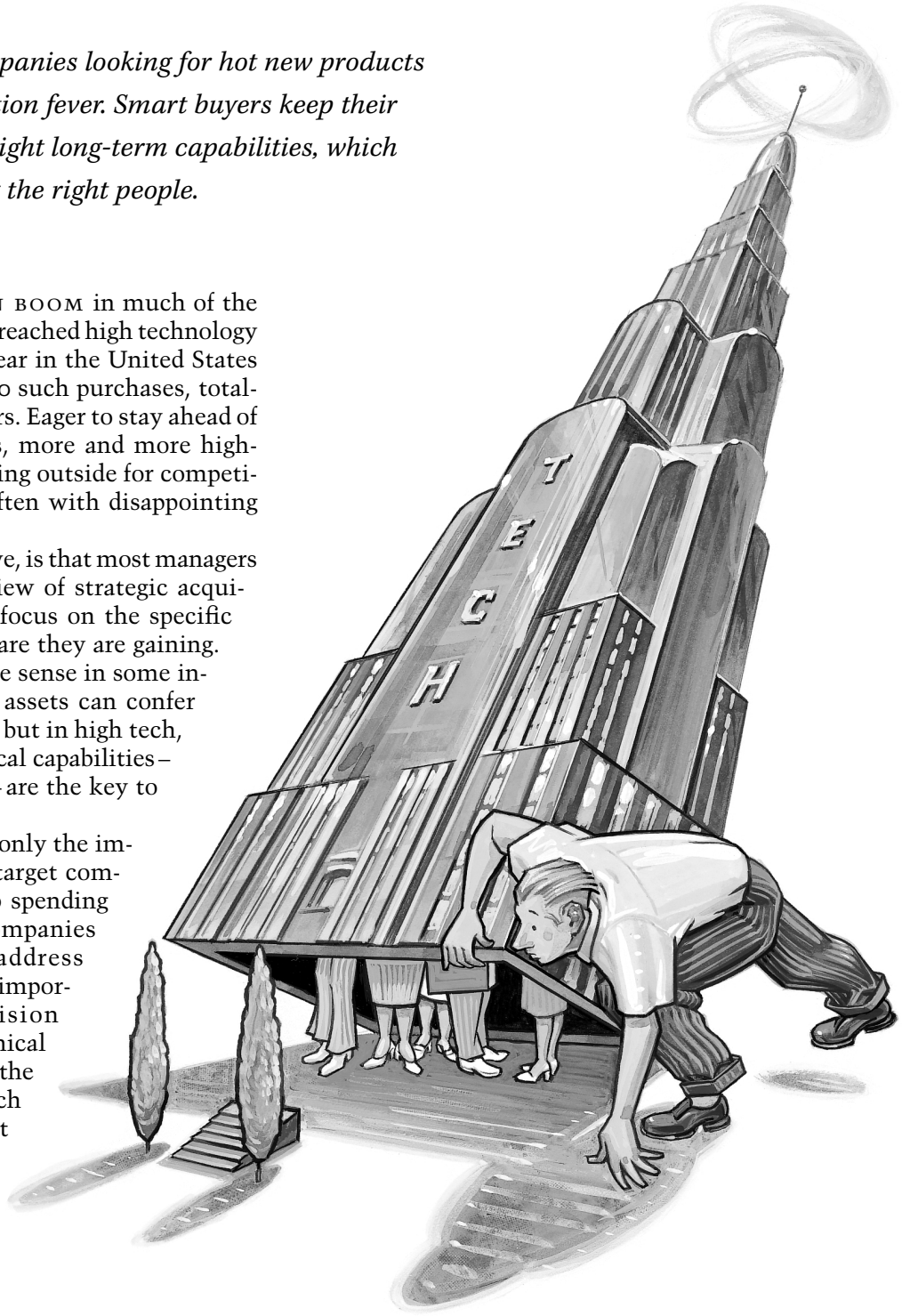
BY SAIKAT CHAUDHURI AND BEHNAM TABRIZI

Many high-tech companies looking for hot new products have caught acquisition fever. Smart buyers keep their eye on building the right long-term capabilities, which often means keeping the right people.



ARTWORK BY DOUGLAS JONES

THE ACQUISITION BOOM in much of the economy has also reached high technology industries. Last year in the United States alone, there were 5,000 such purchases, totaling half a trillion dollars. Eager to stay ahead of fast-changing markets, more and more high-tech companies are going outside for competitive advantage – but often with disappointing results.

The reason, we believe, is that most managers have a shortsighted view of strategic acquisitions. They tend to focus on the specific products or market share they are gaining. That focus might make sense in some industries, where those assets can confer substantial advantage, but in high tech, full-fledged technological capabilities – tied to skilled people – are the key to long-term success.

When managers see only the immediate benefits of a target company, they can end up spending a lot of money for companies that don't properly address their real needs. More important, such tunnel vision can alienate key technical employees. As a result, the target rarely adds much value beyond the first product launch. To make an acquisition succeed, managers

need to move beyond the traditional model of acquisition, where the people acquired are secondary to the physical assets and brands or even represent costs. High-tech acquisitions need a new orientation around people, not products.

We studied the practices of 24 high-tech companies in their execution of 53 acquisitions, looking to identify why some companies succeeded and others did not. The acquirers – global leaders in the information technology, communications, and engineering industries – have annual revenues in the billions. The target companies ranged in size from start-ups to companies with sales of several billion dollars. Besides conducting interviews with employees from both the acquiring and the acquired sides, we had access to confidential internal information, including corporate strategies, technology decision-making processes, due diligence reports, integration procedures, and postmortems.

Eleven of the acquisitions were considered successful by both sides; nine were clear failures. The remaining 33 provided zero or slightly positive but disappointing returns on investment. On the whole, the successful acquirers followed the same basic steps as the others, but their focus on capabilities put them ahead of the crowd.

The Power of Capabilities

High-tech industries are fundamentally different from other industries, so it's not surprising that high-tech companies need to approach acquisitions differently. Although product life cycles for all industries have shortened, high-tech products can become obsolete in a matter of months. A successful new product may boost market share and profits, but the relentless pace of innovation means that any one gain is likely to be brief. Long-term success depends on the sustained ability to build on excellent products – to develop or recognize rising technologies and incorporate them into new versions that satisfy changing markets.

Intel, for example, has managed to remain the leader in microprocessors for two decades. Its success has come not from owning the microprocessor design for the first personal computer but from its expertise in optical lithography – the process of etching circuits onto silicon. It has built and maintained such a strong competence that it has integrated new process technologies through six generations of PC chips. Other semiconductor suppliers were quick to reverse engineer Intel's chips or achieve onetime advances in processes. Some even grabbed market share in the short term. But most of them did not build a substantial capability in this area and have since dropped out or become contract manufacturers.

In fact, even companies that are first in a market can lose their leadership in future product generations if they don't develop a capability. For example, Pye drew on its long tradition in radios to become a pioneer of mobile communications. But because its people lacked an essential competence in wireless technology, it couldn't make the jump from radio-based systems to cellular systems. Motorola, by contrast, built up a capability in signal processing and has remained a leading player through several generations – including the big leap from analog to digital technology.

Once developed, technical capabilities are hard to imitate, so they provide a barrier to entry against even the strongest rivals. Xerox, for example, parlayed its expertise in imaging to create and dominate the highly profitable photocopier industry. Its success prompted IBM to enter the industry in the 1970s. But even though IBM threw an enormous amount of resources at the business and tried to replicate Xerox in every way, it could not gain much market share. Xerox's products were always technologically a step ahead. IBM eventually decided to withdraw from the market altogether.

Capabilities also enable a company to bounce back after missing a shift in technology or product development. Although Xerox held off IBM, it lost market leadership in the mid-1980s when rival Canon drew on its capabilities for standardizing and miniaturizing components. By shrinking the imaging components to fit into a disposable cartridge, Canon was able to introduce smaller, mobile copiers. Xerox struggled for years, rapidly losing market share. Thanks to its fundamental imaging capability, however, the company regained market leadership in the 1990s by introducing digital copiers.

Of course, markets can change so much that even time-tested capabilities become inadequate. The best companies don't rest on their laurels; they continually graft new competencies onto their established expertise. Intel, for example, recently realized that its focus on the desktop is insufficient because in the near future, computers will likely get much of their processing power from networks. Most of the growth and margins in Intel's businesses will

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come from networking equipment. To extend its semiconductor expertise from PCs, Intel acquired Level One, a maker of silicon building blocks for high-speed connectivity.

In this context of fast-changing technology and markets, acquisitions with an eye on specific products or market share are useless. These onetime gains rarely last long enough to justify the substantial acquisition premiums. Smart acquirers look to obtain real capabilities.

Assessing Your Needs

The first step to a successful acquisition is understanding what capabilities you really need. In the frenzied world of high technology, many companies operate in a reactive mode. Besides those that focus narrowly on a desirable product or on market share, some companies follow the "buzz" and go after attractive candidates before assessing their own needs. Successful acquirers, by contrast, systematically determine and outline their capability needs. They set up structures to promote objective decisions on whether to develop the capabilities in-house or acquire them. They certainly value the short-term gains from acquisitions, particularly in the fastest-changing markets, but they keep their focus on basic competencies.

To understand their capability needs, effective acquirers begin with basic decisions about what businesses they should be in over the next few years. For each business, they rely on elaborate product road maps – the same maps used for internal product development. General managers of each business unit work with corporate strategists to plot these maps, which typically look two to three years ahead. With the aid of market demands and customer feedback, the managers identify the holes in their product line. Then they work with engineering and planning to define the products that will fill those gaps, clearly identifying performance and cost requirements. Finally, they outline the technological capabilities they will need to develop products in the specified time horizon. (For details on product road maps, see Behnam Tabrizi and Rick Walleigh, "Defining Next-Generation Products: An Inside Look," HBR November–December 1997.)

Once the capability gaps are known, companies face the choice between developing the competence internally or purchasing it. Oftentimes a deciding factor is not whether the capability can be developed in-house but whether it can be developed quickly enough to keep up with rivals. We found several companies that cut their time to market in half through a successful acquisition.

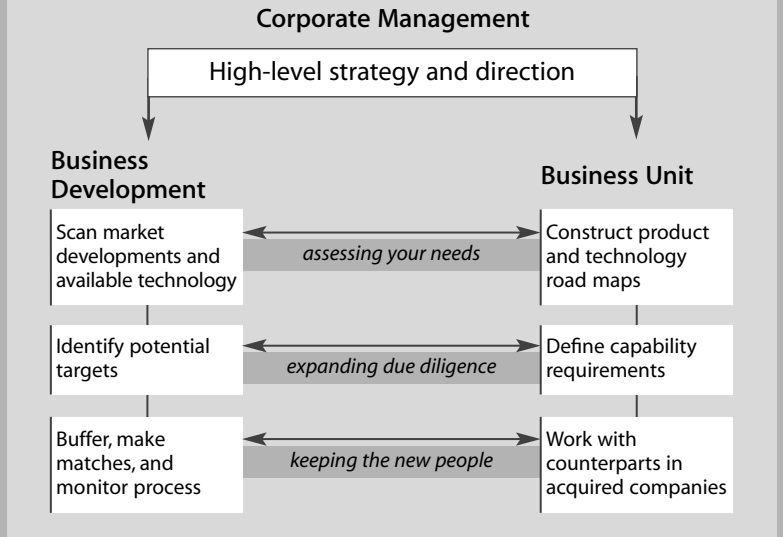
Technology managers and engineers naturally take the lead in assessing whether the capability can be developed in the time the road map requires. However, the successful acquirers – aware of engineers' tendency to favor in-house development – have a separate group study the outside possibilities.

That group, the business development office, wields real power. Its scouts constantly look for new opportunities for the company and new ways of creating and penetrating markets. Each member is technologically knowledgeable, usually with experience in one of the business units. They all work closely with general managers to understand capability needs. As a result, they can monitor the environment for emerging developments in the particular competencies required.

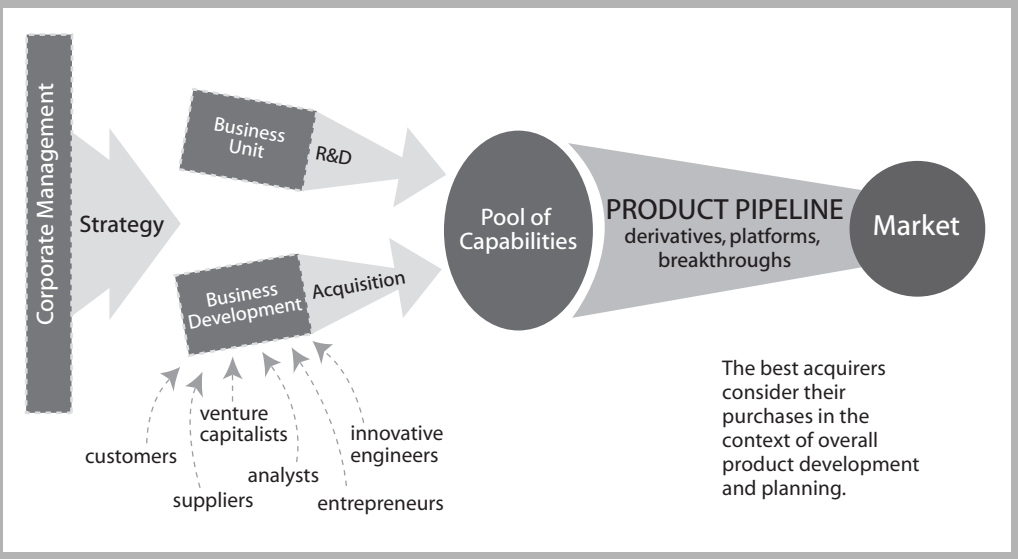
The scouts range widely, talking to customers, suppliers, industry analysts, investment bankers, venture capitalists, innovative engineers, and entrepreneurs to look for emerging and established technologies. They get a good read on the pulse of the market by soaking up information, both formally at trade shows and informally, over lunch or coffee. The scouts at big companies can leverage their size and reputation. They rely on their estab-

The Three Stages of an Acquisition

Although the business units and the business development office play different roles during an acquisition, the work that they do is shared and mutually beneficial.



Dual Development of Capabilities



lished network of contacts, but they also find that people with ideas often seek them out in hopes of bringing concepts to fruition.

Baan is a good example of an acquirer that is methodical about evaluating its technology capability requirements and options. In early 1998, when the Dutch vendor of ERP software was laying out its product road map, it saw that the ERP market was likely to consolidate in the next few years. Managers realized that only those competitors offering a complete supply chain package, from demand planning to manufacturing scheduling to distribution management, would succeed. They also saw that Baan's software suite was missing a key element: a logistics application.

In conjunction with their engineers, Baan's managers outlined in detail the logistics competence that they needed. A good product – a logistics program based on the Microsoft platform that could be easily integrated with Baan's existing suite of applications – was only the first requirement. More important was a demonstrated expertise in optimization technology and its application in transportation planning, route selection, and delivery scheduling – expertise that was essential for future development of this complex and highly customized product. Given the development process and the time constraints of the market, Baan's managers realized that they needed the capability within a year.

While Baan's engineers assessed the potential for building the capability in-house, its business development people discovered a logistic competence that could be acquired. The U.S. company Caps Logistics was a leading vendor of transportation planning and scheduling software in the logistics industry. By the end of the year, Baan acquired Caps Logistics, and it has now leveraged the new capability to become the first in the industry to provide the complete suite of supply chain planning software.

In this case, Baan's business development staff persuaded the rest of the company to go along with the acquisition. Successful acquirers such as Baan, however, empower their business development offices to do more than pass information on to managers. Business development reports directly to corporate management, and it may be endowed with purchasing power – a budget. If discussions with the in-house engineering team don't reach a consensus, business development often has the power to make the acquisition itself.

Executives at networking giant Cisco, for example, are particularly clear about the need to move aggressively beyond in-house strengths. Company policy is to "eat our young." While most discussions have led to consensual decisions, sometimes the development staff has had to force an acquisition on a business unit. That was the case when it bought Crescendo, whose capability in switching technology now contributes a substantial share of Cisco's total revenues.

Back in 1993, Cisco's expertise in routers made it the market leader in data-networking equipment. Cisco's engineers were aware that the industry was moving beyond routers, but they believed they could work out the new switching technology in-house. Cisco's business development staff, however, saw that rivals were moving quickly toward switches. They pushed hard for acquiring Crescendo, a privately held company that was already developing network-switching technology for work groups. The acquisition cost $95 million, a large sum for

Cisco at the time, but the business development staff was able to sell top executives on the move despite the engineers' objections.

Expanding Due Diligence

Of course, not all acquisition candidates come on board. Even the most promising ones must first go through a screening period of due diligence. Successful acquirers go beyond the usual strategic, financial, and legal checks. Because they're focused on long-term capabilities, they look carefully to make sure that the candidate's existing products reflect real expertise, not just an easy imitation of others' advances. The best-investigated acquisition still leaves a lot to chance, but attentive legwork can boost the odds of success.

The business development staff takes the lead in conducting this expanded due diligence. They try out candidates' products and talk to their customers. Particularly in Silicon Valley, where people talk to outsiders all the time, these scouts draw on their informal networks to probe the candidate.

A strong product line is certainly important for meeting the short-term goals of the acquisition. The best acquirers, though, look beyond the product to see if its success reflects a deeper competence. In most cases, there isn't enough time to run elaborate tests of a candidate's products. Instead, business development usually grabs some experienced in-house engineers off the job for a few days – ideally, people who are veterans of the acquisition process. These engineers play around with the technology, getting a feel for the products and checking the performance at common rough spots. They also visit the candidate's key product developers; a few conversations can tell them whether the target company has the intellectual capital.

Sometimes the candidate doesn't have a fully developed working product, so the engineers check what they can. When Bay Networks was looking to buy Rapid City, for example, it needed to make sure that the latter's expertise in high-end gigabit switches was real. So its engineers obtained Rapid City's prototypes and confirmed that they were more than shell products – they included sophisticated computer coding beyond the commonplace.

Besides checking a target for capabilities, business development looks at whether the key people would be comfortable at the acquiring company. The best capabilities are useless if they walk away from the purchase. Cultural matches are particularly important when acquiring big companies, which tend to have established ways of doing things. Whenever possible, business development has engineers from both sides mingle to see if they can be productive together. They also seek commonality in the vision, strategy, and goals of both companies. And geographic proximity helps speed the cultural cross-pollination.

Ideally, successful acquirers take on a team of people that reflect their own company's personality. They go beyond merely judging whether both sides are "entrepreneurial" or "conservative." Cisco, for instance, seeks frugal, critical people who are not caught up in hierarchies. While a match is not a prerequisite for acquisition, a high degree of compatibility will increase Cisco's eagerness to buy and the premium it is willing to pay.

Acquirers also check whether employees at the targeted company have material incentives to stay. Do they have large contingent stakes in their company? Most high-tech companies regularly give their people stock options, which generally become vested only after a certain period. If the employees' stock options are already largely vested, they may be tempted to take their money from the acquisition and run. At the least, a high degree of vesting is a sign that the new compensation packages must include a big dose of unvested options.

This intensified due diligence can be a burden when market pressures are forcing a quick decision. But an incomplete look can come back to haunt an acquirer. Consider AT&T's acquisition of NCR in 1991. AT&T's executives were struggling for a new growth strategy in the wake of long-distance deregulation, and they believed that telecommunications and desktop computer technologies were converging. So the company's executives considered NCR a promising candidate, as it made a profit in its sale of personal computers. And they believed NCR would unfurl its competence to the fullest at AT&T, since both companies shared a white-shirt style and other conservative trappings. AT&T persisted in a hostile takeover and eventually won the company.

The best capabilities are useless if they walk away from the purchase.

A sophisticated due diligence process, however, would have uncovered serious problems. Engineers from AT&T's Bell Labs assessed NCR's technology only after the acquisition. They discovered substantial differences between AT&T's switching abilities and basic PC technology, differences that would reduce the synergies expected from the acquisition. Also, NCR's PC group had no real competence in personal computing – it was little more than a me-too assembler that supported the company's forte in mainframes.

Even the cultural similarities proved superficial. NCR's resistance to the purchase was a sign in itself – hostile takeovers almost never succeed in high tech because the key people are automatically alienated from the acquirer. Despite the seemingly similar conservative approach, NCR operated in a highly centralized fashion; AT&T was decentralized. AT&T's attempts to flatten NCR's hierarchy – office workers saw their doors and walls replaced by glass partitions, for example – backfired. The different ground rules stemming from this cultural mismatch might have undermined the merger on its own. After suffering heavy losses, AT&T spun off NCR in 1996.

By contrast, Advanced Micro Devices carefully looked at NexGen before acquiring it in 1996. After many years of selling reverse-engineered Intel clones, AMD had invested heavily in the self-developed K5 chip to compete against Intel's Pentium. When K5 proved disappointing, AMD realized it needed a new design approach for subsequent generations of microprocessors. Without it, the company was doomed. But AMD didn't leap to purchase when it identified start-up NexGen as a candidate. Instead, AMD first undertook extensive due diligence to ensure that the target had the right capability – one that could be exploited within its organization.

AMD's managers had internal technical staff assess NexGen's technological competence and design concept. They were soon excited by the gifted engineering team and its promising new methodology for chip design, both of which could be employed for making successive product generations. AMD also ascertained that the developed chip concept could be supported by its existing marketing capabilities. Finally, AMD found that the companies shared an engineering-team-dominated environment, with a relatively open culture that encouraged interaction. And NexGen passionately shared AMD's vision of beating Intel.

Apart from ensuring that AMD was getting the capability it needed, this in-depth investigation convinced the people at NexGen that joining AMD was a good idea. NexGen was a young company struggling with cash flow, and its people appreciated the opportunity to ramp up the development of their ideas and bring them to fruition. Their agreement paved the way for a smooth integration and led to the successful redesign and launch of the K6 microprocessor. Early reports on the K7 chip, which is based on a new architecture, suggest that it actually outperforms Intel's forthcoming Katmai chip. Intel undoubtedly still has the dominant overall capability in microprocessors, but AMD is now a solid competitor.

Keeping the New People

Convincing people in the acquired company to accept the change is essential to making high-tech purchases work. Talented employees can quickly jump ship if they're unhappy with the changes. Successful acquirers go out of their way to retain these people, make their transition as smooth as possible, and keep their development energies focused.

Most high-tech acquirers designate a team of experienced employees to plan and carry out the integration process. The best ones start the team's work early, well before announcing the purchase. The key is to give the new people mental security as soon as they hear about the acquisition, not when the deal is finally closed months later. The message needs to include more than the usual array of stock options and other financial bonuses. In the cases we studied, key people at the acquired company looked for clear direction from their new owners. When it was lacking, many of them left rather than wait in uncertainty.

Accordingly, successful acquirers sketch their high-level product road map and market vision on the same day as the announcement. By showing how the purchased company fits in, they communicate their enthusiasm and respect for the new people. They answer the three questions every employee – new and old – is likely to have: Why did this acquisition happen? What will happen to me? And what is the new reporting structure? The acquiring company brings in high-level employees who themselves had come from acquisitions to answer questions and temper the fear. By conveying the message "we've been there, too," these employees can dramatically reduce uncertainty and anxiety.

Even though the acquirer needs to declare its goals for the purchase right away, organizational changes work better when carried out slowly. Effective acquirers usually keep the new people together in a separate division, and they try to keep the leader of the purchased company in charge there. They also include this person in the integration team. When Cisco acquired Crescendo, for example, the head of Crescendo, Mario Mazzola, became a very wealthy man. Nevertheless, he accepted Cisco's offer to stay on rather than retire or start a new company. Instead of treating him as an outsider, the established people at Cisco welcomed him, and he proved so successful in his work that he eventually became the head of all enterprise products at Cisco – the dominant business unit there, including not just switches but also the new generation of routers.

Beyond Capabilities: The Transformational Acquisition

In some cases, acquisitions may bring more than a given technological capability. Older high-tech companies, focused on established customers, often develop rigidities that prevent them from responding quickly to new markets. Smaller, younger companies bought for a specific capability can lead the way in transforming the acquirer into a more flexible competitor. The purchase helps the established company reposition itself in the marketplace, and the aggressive, entrepreneurial culture of the acquired firm spills over into the buyer's organization.

Usually these influences are unintended. For example, when IBM bought Lotus in 1995, it hoped to add the latter's capabilities in desktop network software. Yet the purchase also brought in people who became de facto advisers in helping IBM reorient its strategy around the Internet. But some companies consciously make transformational acquisitions. Northern Telecom, the big Canadian telecommunications equipment maker, was looking for renewal in 1998. CEO John Roth identified the need for a cultural "right-angle turn." To become a fast-moving company in the expanded world of telecom, the company acquired Bay Networks.

While Bay delivered important capabilities in Internet technology, perhaps its greatest value was in helping to lead this program of cultural change. Roth made it clear from the start that the renamed company – Nortel Networks – would be culturally closer to Bay Networks than to the former Northern Telecom.

To make the transformation happen as quickly as possible, Roth integrated Bay's leaders into the rest of the company. Accordingly, he made Bay's CEO, Dave House, president of the entire company. House, in turn, installed his senior vice presidents of development, operations, and customer service in key positions at Nortel, responsible for enterprise voice and data business. And Bay's chief technology officer was promoted to the same position over all of Nortel.

Together, Roth and House worked to remake Nortel's planning and product development around the idea of shortened product life cycles. Bay's people have also been catalysts in pulling the company back from its traditional policy of making nearly all its products in-house. To focus the company on product development and innovation, they have preached the virtues of outsourcing to contract manufacturers. Finally, House pushed to change Nortel's culture by institutionalizing Silicon Valley business principles like quick decision making and fast conflict resolution. House decided to leave Nortel after a year, but most of the Bay people are still in place.

Instituting these changes has not been easy, and it's too soon to tell if the transformation will take. If it does, Nortel may become a model for other big technology companies that are feeling left behind.

But structural continuity is not enough to reassure jittery employees during the crucial early phases of an acquisition. Acquirers need to send the message that there will be consistency and openness in the new environment. Intel painfully learned this lesson in its 1997 acquisition of Chips & Technologies. Intel bought the maker of graphics accelerator chips to enhance its visual-computing capabilities, and it announced that C&T's people would form a separate division within Intel's desktop products group. During the quiet period between the announcement and the closing of the deal, however, Intel rearranged itself internally and moved the C&T division into the computer enhancements group.

Intel's people were used to regular organizational realignments, but C&T's people were shocked by the abrupt change. There was no time to build buy-in. The new employees weren't involved in the deliberations, and so they felt like second-class citizens. This negative signal prompted quite a few key people to leave, undermining some of the expected benefits of the purchase.

Acquirers also need to resist the temptation to tell the new people how to run their operations, as IBM learned when it bought the telecommunications equipment maker Rolm in 1984. Big Blue was careful to announce that Rolm's expertise in telephone exchange switching would be a critical asset as IBM expanded into telecom opportunities. And to preserve Rolm's technological competence, IBM's executives formally set it up as an independent subsidiary.

Nevertheless, after a short time IBM sent people over to tell Rolm what to do and how to do it. IBM's managers bought the company for a new technological capability, but they believed they knew how to run Rolm better than Rolm did. Even though IBM lacked insight into Rolm's PBX product and market, it tried to force Rolm to fit into a mainframe-computer business model. IBM's managers also required its new subsidiary to fill all open positions with IBM personnel. Instead of just providing administrative and sales support – IBM's specialty – IBM went too far. Dictating terms not only hindered Rolm from unfolding its capability but also caused key technical employees to leave. Not surprisingly, the takeover produced poor results, and after four years IBM sold Rolm to Siemens.

Successful acquirers usually base the actual level of integration on the type of capability being acquired: the greater the innovation, the less the integration. New companies brought in to work on breakthrough technologies are generally treated as separate entities, perhaps left in skunk works isolation, as otherwise they tend to get suffocated. Most companies develop products that merely extend existing lines in-house – but in the rare case of an acquisition for that purpose, the new company is fully integrated into the acquiring organization.

When the acquisition is intended to help develop new platforms – which is the case for the vast majority of purchases – integration usually proceeds with a hybrid approach. The acquired company's support functions – human resources, finance, manufacturing, and sales and marketing – are integrated into the central equivalents of the purchasing corporation. (This process may go on in phases if the acquired company is big or sells a very different kind of product.) But the engineering teams – the source of the key capability – are kept together within the acquiring business unit. The best acquirers resist the temptation to cherry pick engineering employees and scatter them throughout the organization – moves that undermine the expertise for which the teams were acquired. Many managers mistakenly believe that individual stars can repeat the successes of entire teams on their own.

Successful acquirers resist the temptation to cherry pick engineering employees.

In pursuing the appropriate level of integration, the business development staff can serve as a buffer to keep the acquiring company from overwhelming the new employees as it provides necessary support. Cisco veterans see integration as "docking with the mother ship"; the incoming people need to connect with their new colleagues. But coming too close can be fatal. Or, to use another metaphor, this buffering is "impedance matching," an engineering process that ensures that two connected devices have the same degree of electrical resistance and therefore transfer electricity efficiently. Likewise, Cisco aims to match employees from the different sides appropriately to achieve efficient transfers of knowledge and synergy.

Instead of throwing employees from different departments together all at once (which would be like hooking up equipment with varying impedance and flipping the switch), Cisco's integration team engages in matchmaking in phases, as needed. In the early stages of product development planning, for example, the team might first bring together the chief engineers from the native and acquired development groups. As the plans crystallize and joint work begins, the team slowly introduces other relevant people from the two groups. As the business need and the level of comfort rise, more and more people are brought together until integration is complete.

To propel the integration forward, effective acquirers often try to get the first joint product out as quickly as possible. But moving too quickly can be dangerous; it can cramp the work habits of new employees. Acquirers can win acceptance for the purchase by giving talented people a wide berth. Engineers, particularly those from small companies, are often used to a great deal of latitude in what they work on. At least in the early phase of integration, it's better to give them more responsibility than less, and to make expectations low rather than high. The surest way to dampen their natural excitement is to put them in a box.

Intel understands that lesson well, as it demonstrated when it acquired Corollary in 1997. Corollary provided expertise in multiprocessing technology that helped Intel enter the high-end server market. Once the integration was complete, Corollary's president, George White, considered moving on to a start-up company. To keep him on board, Intel offered him an appealing position in its new business investment group: entrepreneur in residence. White now helps start-ups within Intel develop business plans and get off the ground.

Even after a long period of time, successful integrators often keep the acquired engineers together and let them retain their separate identity. Many members of Cisco's well-known Crescendo team today occupy senior positions within Cisco, yet they're still linked internally to their "alma mater."

These days it's common to hear talk about the free-agent economy. When employees feel little loyalty, it's difficult for even stable companies to retain talented people. In high-tech industries, where a company's prospects can alter quickly, new opportunities emerge daily, and people can thrive in tiny start-ups, retention is by far the biggest challenge. And acquisitions are particularly fraught with turnover because major changes to the employees' environment are inevitable. That's probably the primary reason that most high-tech acquisitions have yielded mediocre results. But if the acquirer approaches the acquisition process with a good dose of self-knowledge, preparation, and humility, it can reap the benefits of creatively joining capabilities for long-term success.

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