

Making Smarter Technology Decisions

How CEOs Can More Effectively Use Technology
as a Source of Competitive Advantage

by Geoff Tuff, Monitor Group

The Neglect of Technology

Technology plays a major role in practically every industry and sector of business today. From computer chips in sneakers to tertiary oil recovery, from GPS navigation systems in cars to robotic manufacturing, technology pervades our daily routines either directly or indirectly.

Yet ironically, many companies underemploy technology as a source of competitive advantage. These same companies devote massive amounts of time and energy to compete in other ways – supply chain dynamics, operational efficiency, streamlined distribution networks, brand equity, incremental product advances, collaborative customer relationships – while neglecting to pay as close attention to their technology assets. In this age of total competition, companies must use every asset at their

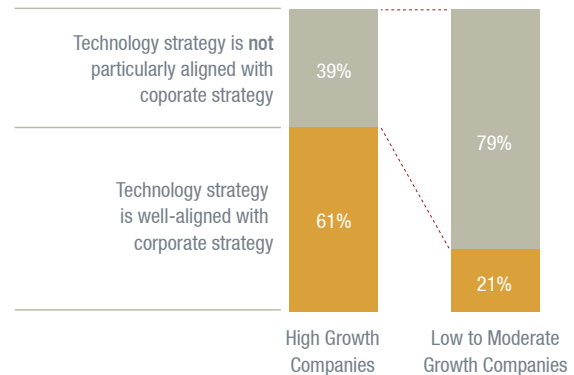
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disposal to win. So where to next? Cost cutting, while sometimes necessary, has natural limits. And conventional approaches to marketing and growth are used by everyone in business. For dramatic results, technology seems an obvious choice.

Why have some corporations refrained from technology or technology-based competition? Perhaps they fear the cost overruns, the false starts, the missteps and experiments that end up in the tech graveyard. The problem is that most companies simply don't have a reliable and systematic approach to consistently, effectively and simultaneously consider technology as they make business decisions. Using technology as a source of competitive advantage doesn't have to mean spending more on technology—it means spending smarter by implementing mechanisms to tightly integrate technology decisions with business strategy and planning. The trick is to find ways to translate the uncertainty and complexity inherent in technology research and application into data that marketing, operations and finance team members can understand. Translating technology into business terms results in richer business decisions, and a higher likelihood of breakthrough business performance.

The results of a recent global cross-industry Monitor survey suggest that top-performing firms have already figured out ways to do just that. Through collaboration and reframing of the role of technology in strategy-setting, they have been able to break down the barriers which traditionally separate R&D professionals from their commercial colleagues.

High growth companies have taken action to align their technology strategy with corporate strategy



Source: Monitor Group survey, 7/08

You don't have to sell technological products or be a "tech" company to face this issue. Almost any organization is impacted by technological change—in its operational processes, in its distribution and supply systems and in its marketplace. The giant Wal-Mart currently dominates the retail environment. Part of this dominance is due to its choice to use commercially available computer communication technologies to hyper-integrate its supply chain. In doing so, Wal-Mart has significantly improved its ability to track and manage its partners, supply chain, and finances, thereby creating a new business model with significant cost savings . . . and they are hardly a "high tech" company by most definitions.

The window to use technology for business advantage is closing rapidly in many markets. Since technology has been neglected for so long, there are often "low hanging" opportunities in many markets, but these opportunities are going fast to the most adept: the secret is getting out. The tools to gain this advantage—

discussed below — are accessible to anyone; the spoils will go to those who get ahead of the curve and deploy them fastest. This is not a job for the CTO or R&D department alone; responsibility sits at the highest levels of the business organization.

Why is This So Hard?

CEOs ultimately hold the responsibility for directing technology decisions and investments, but few top executives come from an R&D or technical background. As a result, many CEOs struggle with solving some of the challenges that stand in the way of effectively leveraging technology as a source of competitive advantage. These challenges include:

- **The Technology/Commercial Chasm**

When R&D and commercial organizations operate in silos, they become accustomed to making important technology decisions on their own. For R&D shops, decisions can make sense from a technical perspective but they may be sub-optimal from a commercial or operational standpoint. An R&D project may move forward for years with decisions being made largely on a technical basis with inadequate commercial judgment. Suddenly a business-side audit of all corporate activities discovers the project and shuts it down after deciding that no significant profitable market exists for the project. This lack of coordination sows the seeds of acrimony between different functions, wastes countless hours of effort and has a negative impact on morale and retention. Yes, technical folks become

Out There: Motorola's Iridium

In the late 1980's, Motorola started working on a project to enter the global communications market. The Iridium satellite phone system was launched to overcome anticipated reception issues with cellular phone technology: physical obstacles like mountains or tunnels tended to interfere with reception, and coverage for cellular towers appeared to be limited to high density, urban areas. Based on scant connection to the market — obtaining only a cursory understanding of target customers and their willingness to adopt cellular — Motorola plowed \$3.5 billion into the development of the Iridium satellite system, blinded by its boldness and networking marvel. By 1995, after foreseeable delays and challenges, it was obvious that the market window was closing, that customer and risk forecasts had been far too optimistic and that the company had made a mistake in betting on intra-satellite instead of Earth-satellite-Earth ("bent pipe") technology. Remarkably, the project continued to be funded and additional Low Earth Orbit satellites were deployed. Motorola missed the opportunity to conduct early pilot work with customers which may have predicted the faster uptake of competing products — such as evidenced by dramatic European mobile telephone adoption. Commercial support continued based on poor and mis-guided information about the true timing and feasibility of the project. In the end, Motorola missed most milestones, faced manufacturing delays, and failed to raise public debt. Needless to say, shareholders were not happy. The founding company went into bankruptcy, and Iridium now has to settle for a much smaller piece of the pie (some would even call it niche) than they had originally hoped. Iridium is oft-cited as a classic instance of the technology team and the commercial team being completely disconnected.

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Tethered: The iPod Cord

When Apple was making design choices for its iPod line, Bluetooth was clearly the emerging technology standard, hailed for its convenience and potential to eliminate wires. Early on, Apple understood that Bluetooth would be expensive and complicated, likely increasing the size and weight of the iPod and probably delaying its delivery to market as well. But it was, after all, an opportunity to jump on the cutting edge technology. Led by a CEO who forced connection between marketers and product designers, Apple had a clear and shared understanding of what the market valued in Apple's brand: simplicity, reliability, ease of use and lifestyle experience. State of the art technology was not part of the equation unless it supported one of these elements. Apple prioritized investment in the ergonomics of the touch wheel, interoperability, and compactness — to provide an experience clearly consistent with consumer taste — and stuck with the cord when it came to the earphones. Armed with a clear sense of the commercial requirements and an open communication of technology choices, Apple decided to go simple. Using shared language and shared understanding of what really matters, Apple has been able to forge an integrated and strategic approach to product development. As a result, their strategic choices are shared and recognized by all corners of the organization. And, for those who haven't noticed, the little white cords have at this stage become a globally and instantly-recognized symbol for the near-ubiquitous iPod.

enamored with pushing the envelope and they do bias their investment decisions towards novelty or an overoptimistic view of customer behavior. However, the blame for this lies not only at the feet of the R&D department; in fact our study suggested that R&D executives are 'invited to the strategy table' less than 40% of the time. The perpetual struggle between Commercial ("why can't you make something that the market needs") and R&D ("why can't you sell this great new technology") can only be brokered by the most senior leaders of the organization.

• When Words Have No Meaning

Non-technical executives have a hard time judging technology value intuitively and, frankly, many of the words that their scientists and engineers use to describe their work on a day to day basis. And R&D professionals sometimes lack the business background and financial acumen to fully understand the impact of their activities on the broader organization. Problem solving and communication patterns are fundamentally different (as are often the personalities and motivations) of technical and non-technical people. Making matters even more complicated, non-technical and technical employees often make decisions using different planning processes, metrics and values. Often, the commercial mindset is focused on near term results, while the technical mindset favors longer term possibilities. When organizations do manage to get their technology experts and their business people working in tandem, the results can be impressive.

- **Needing to Know the Unknowable**

Perhaps the most challenging issue, even once cross-functional alignment is achieved and language issues are resolved, is the fact that the future of technology is by definition uncertain. Many technology ‘plays’ require significant resources: new people, commitment to a research path, new and expensive capital equipment, external partnerships and alliances, and so on. Stories abound where a company knew its own business and technology only to be taken out by an upstart from another part of the market. It is a lot safer to place bets that feel closer to home when the stakes are so high. The paradox is that the breakthroughs in competitive advantage usually come in exactly the opposite situation: taking technology positions that are inherently far from home and whose outcome is hard to predict with any degree of certainty. Nonetheless all too often uncertainty, fear of the unknown and risk-aversion keep technology at an arm’s length.

The trick to overcoming all of these challenges comes in using shared, structured tools and methodologies to turn ambiguity and complexity into useable information to make decisions. Those data and decisions in turn will inspire confidence and the ability to take action in a concerted fashion.

Direct Insight: Dell Computer

Dell’s “Direct Model” is now famous as *the* business model disruptor in the personal computer industry. Before Dell came along, competitors sold through distributors, resellers and retail sites. Instead, Dell took orders directly from customers (especially corporate customers) and rapidly built computers to customers’ specifications, shipping the machines directly to them within a matter of days. Dell was able to implement this direct model partially because of the way they managed their supply chain technology: they were able to connect electronically with suppliers, monitoring all the pieces of the computer in a way that sometimes could direct some suppliers’ shipments straight to its customers. For example, monitors supplied by Sony could be sent directly to the customer, and a web site customized to Sony gave both supplier and OEM continuous access to ordering and manufacturing information. In July 1996, Dell took this one step further, to the commercial end of its value chain, by launching dell.com. Increasingly customers used the site to contact Dell directly: buyers could obtain product information, configure a computer system, check pricing, place an order and track the order’s progress all on their own. They could also gain access to the complete catalog of service and support information used by Dell’s service representatives. By December of 1998, 10 million transactions per day involved the website. Michael Dell could not possibly have anticipated the business-changing impact of the internet when he launched his company, but he made an informed bet that the technological trend toward freer flow of real-time information coincided with his customers’ desire for configuration and ordering experience. Eleven years after the launch of dell.com, that insight saw him and his company holding onto a 30% market share of the PC market.

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Moving the Masses: Nintendo Wii

For years, the video game industry had been stuck in a cycle of brinkmanship, pushing the limits of graphics, visualization and audio processing technologies. Nintendo broke that cycle when it took a big bet by focusing on the game experience, and the Wii was born. The move, inspired by the market insight that there was huge untapped potential in casual gamers, is an example of informed technology risk-taking. Leaving Microsoft and Sony to fight for the sophisticated gaming market using traditional means, Nintendo used off-the-shelf components and focused on improving the user interface and on developing a global positioning gyrosopic technology. This allowed them to launch the Wii at an average price of \$249 vs. the \$499 of their competitors, a price point consistent with the target audience they were pursuing. Though their margin, at \$50, is lower than that of competing game systems, the sheer scale of their market potential has allowed them to leave Microsoft and Sony in the dust. This is the power of shrewd technology choices.

Technology Decisions as Management Science

More organizations need a real commitment from senior management to tie corporate strategy to technology strategy in the way that high-growth, top-performing companies have already done. What sets those high-growth companies that make smart technology decisions apart from the competition? In addition to fostering technology-business alignment, the CEOs of these companies have found a number of ways to proactively use technology to drive growth and increase shareholder value.

The following are eight hallmarks of a systemic and effective technology decisions capability, shared by the high-growth companies in our study:

1 PRECISION TAXONOMY AND UNDERSTANDING OF RELEVANCE They have a sophisticated and nuanced understanding of all the technologies – at the appropriate level of ‘unbundling’ – that are relevant for their operations and offerings now and in the future. They also have a shared understanding of the interrelationships between these technologies.

2 CONSTANT SCANNING They constantly scan the relevant technology landscape – both close to home and far afield – to identify technologies that offer interesting opportunities or that present a risk of disrupting existing business models. The best companies actively manage their external networks and partners to increase quality and reach.

3 LONGER TERM PLANNING They spend more time planning and investing in long-term technology initiatives and they create a roadmap for technology investments which anticipates both short-term technology moves and long-term (5+ years) technology futures. The most adept have a clear sense of the five or so core technology platforms which are connected to business objectives and use these platform strategies to link and focus longer term investments back to business objectives.

4 OPTION MAINTENANCE They manage their knowledge about – and access to – various technologies as a portfolio of options for the future; some of that knowledge and access they will exercise but much of it they will not.

5 RISK MANAGEMENT AND MITIGATION They deploy cross-functional resources and use defined processes to systematically identify and quantify future technological risks, and create ways to mitigate the most significant risks.

6 INTEGRATED DECISION MAKING They apply a wide array of methodologies for making technology decisions and then integrate the results of these decisions into every significant business investment. And they ensure that they balance the time devoted to those considerations with time devoted to other strategic levers.

7 METRICS AND TRACKING They have clear and specific metrics for measuring internal and external technology change, plus contingency plans in case tracking metrics are out of tolerance. They

also have a system for monitoring developments in all relevant technology domains.

8 RELATIONSHIPS They maintain and nurture a network of formal and informal networks with technology partners and experts around the world.

Better technology decisions do not require more spending. They require smarter spending and an impatience to uncover new, better methods of achieving results.

Building the Mindset and Capability to Make Smarter Technology Decisions

Even a company that has good internal coordination – and an enlightened leadership eager to get involved in technology decisions – will not be able to make the right technology choices without the appropriate information, systems and people at its disposal.

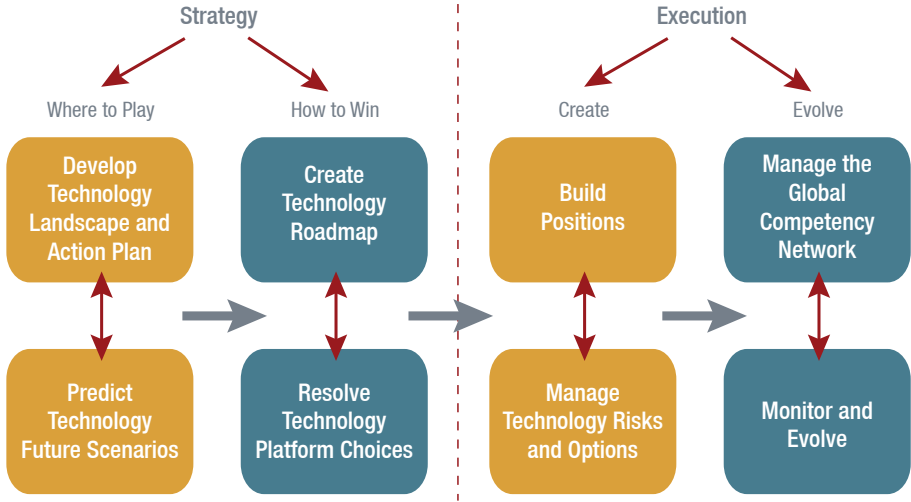
Business people need data. In recent years, finance departments have done a good job of simplifying and explaining statements so that other functional groups can have an informed, high-level discussion on issues that would have formerly been the domain of numbers specialists.

Now companies need to figure out how to do the same for technology by creating a common language – and systemic capability – that all departments can use to communicate and participate in strategic decisions on R&D and technology investments.

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Deployed effectively, this capability will give a company agility and the ability to respond to the unpredictable better than its competitors. See Exhibit 1 below for a high-level view of the building blocks of the capability; envision that each of these blocks has associated with it a clearly defined process, responsibility matrix and supporting tools.

Making smarter technology decisions is not a matter of intuition or luck. It takes discipline and commitment to formal protocols that marry technology strategy with corporate strategy. It takes a detailed understanding of the technology landscape and sustained attention to developments in technological fields.



Winning

Taking their cue from the most successful high-growth companies, organizations that figure out how to make smarter technology decisions can see a significant benefit to their bottom line and overall competitiveness. On average, firms that worked with Monitor to revamp their technology decision-making process discovered net new realizable market revenues of over \$1.5 billion, achieved a 25–30% increase in their pipeline values, and doubled or even tripled their product growth rates.

It’s easier to use technology to beat your competitors if you have an investment roadmap that anticipates short-term technology improvements and long-term scenaric futures. You can then use this roadmap to develop a technology portfolio that maximizes current assets and lays the groundwork for future success. By proactively and systematically identifying the risks and opportunities that technology holds, companies can minimize the downside and maximize the rewards of using technology to their advantage.

Those seeking to take the first step toward achieving these sort of breakthrough improvements should realize that unlocking the strategic potential of technology begins with expanding the ranks of businesspeople within the organizations that can understand technology. Becoming a strategic technology powerhouse takes an investment not of money, but of time and attention. In a world where many other sources of competitive advantage have already been leveraged to the hilt, firms that make smart, perceptive technology decisions can still gain an edge on the competition and reap all the attendant rewards. •

Ten Questions Every CEO Should Know the Answers To

- 1 How important is technology for my business(es) and how can I create more value through technology?
- 2 Am I investing the right amount in technology and in the right technologies?
- 3 Are we achieving the highest possible return and value on technology investments?
- 4 What technological information do we lack? Do I feel confident that I will be able to avoid surprises?
- 5 How can I increase the predictability and certainty of technology-related growth and innovation programs?
- 6 How can we get winning technology into our next new product or service?
- 7 How do I globalize my technology capabilities and take advantage of future trends?
- 8 Do I know that technology is being managed effectively throughout my organization between R&D, Manufacturing, Marketing, M&A, and Legal?
- 9 Should we develop technologies in-house, buy-in or co-develop with partners?
- 10 Do I have the right people in the right places to optimize technology as a source of competitive advantage?

About
MONITOR GROUP

Monitor works with the world's leading corporations, governments and social sector organizations to drive growth on the issues that are most important to them. The firm offers a range of services—advisory, capability-building and capital services—designed to unlock the challenges of achieving sustained growth. Founded in 1983 by six entrepreneurs, including Harvard Business School Professor Michael Porter and Monitor's current Chairman Mark Fuller, Monitor brings leading edge ideas, approaches and methods to bear on clients' toughest problems and biggest opportunities. Headquartered in Cambridge, Massachusetts, the firm employs over 1,500 people in 22 countries worldwide. For more information visit www.monitor.com

About
MONITOR INNOVATION

Monitor Innovation works with clients to help them deliver new sources of profitable growth. We achieve that through collaborative work on projects centered on innovation strategy, articulation of the future-looking growth gap (and the role of game-changing and sustaining innovations in closing that gap), identification of new opportunity spaces, integrating deep customer insight and new technologies, and the development of new business models and platforms beyond the organization's current purview. Ultimately, this leads to work with our clients to prototype and launch these businesses and to define appropriate financial expectations and options for financing innovation. We also partner with our clients to build the skills and organization (leadership models, organization structures, competencies, systems, processes and tools) to significantly improve their innovation capabilities. Monitor Innovation is a global practice of more than 60 passionate professionals encompassing a wide range of specialist skills including strategists, designers, ethnographers, business concept illustrators, economists, technologists and researchers. In addition, we maintain relationships with an extensive network of experts on a wide range of technologies that will enable innovation. We have worked closely with our clients on hundreds of engagements around the world.

About Geoff Tuff

Geoff Tuff is a Partner of Monitor Group and leader of Monitor Innovation. He first started working for Monitor in 1992 and is a recognized expert on helping companies grow. Geoff received his B.A., with honors, in English Literature and Creative Writing, from Dartmouth College. He also holds a MBA from Harvard Business School, where he was an honors student. He can be reached at gtuff@monitor.com.

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