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Managing the Evolution of Microsoft's Hardware Business

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Designing as a Source of Strategy and Innovation

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Managing the Evolution of Microsoft's Hardware Business

by Andy Cargile and Ken Fry

Over its 25-year history, the hardware division of Microsoft Corp. has delivered innovative products that delight customers and contribute revenue to the company. Andy Cargile and Ken Fry describe how a growing emphasis on the user experience and the application of several key business principles have helped their division create compelling designs that simultaneously respond to advances in technology, the demands of the marketplace, and the human spirit.



When most people think of Microsoft, they don't think of hardware. And truly, being a hardware product team in the world's largest software company makes for a unique set of challenges, as well as opportunities. The Microsoft Hardware Division was founded in 1982 on the principle of deep integration of hardware with software. The division was originally charged with creating the company's first mouse compatible with Microsoft Word. Subsequent releases of the Microsoft Mouse led in market share, consumer popularity, and industry awards. The 1990s saw an expanding variety of products, including PC keyboards, gaming joysticks and gamepads, a cordless telephone system, PC audio speakers, and trackball devices.

In 1992, the Microsoft Hardware team hired its first industrial designer.



Andy Cargile, User Experience Manager, Microsoft Hardware



Ken Fry, Design Director, Artefact

Today, the hardware user experience (UX) team is composed of more than 25 UX professionals, including industrial designers, interaction designers, model makers, user researchers, ergonomists, and copy writers. The team works within a community of more than 550 UX professionals across Microsoft, and helps develop products as core members of the 200-person hardware division.

User experience design and research has played an essential part in the evolution of Microsoft Hardware's business strategy. The tight integration of UX with our technology and business strategy has served as a powerful accelerant for rapid revenue growth.

Business strategy evolution can occur by accident, coincidence, or intent; it can also result from a chang-

ing competitive environment. Clearly, the preferred way to accelerate business evolution is by intent. However, changes to business strategy without a focus on integrating user, market, and technology factors can result in stagnation.

Four stages of business strategy evolution in Microsoft Hardware

Microsoft has been a technology leader in the mouse and keyboard business for many years. However, when we branched out into other hardware products, such as interactive toys, gaming peripherals, and broadband networking equipment, we were met with limited success. Some products were too early to market; some were too late. Some products were too broadly focused; others were too narrowly focused. Many products provided great value to customers, but didn't balance their focus on the user with a focus on the business or technology aspects of the products. Innovation was focused solely on the product and tended to be driven primarily by technology innovation. Although we were recognized for technology innovation and recorded a number of firsts, we barely stayed ahead of the competition.

Microsoft Hardware has always been profitable and has experienced major success with some products. However, the failure of a few individual efforts made that success inconsistent and less predictable. We've gained momentum in recent years by adopting business strategies that focus more deeply on the customer experience. We have returned hardware to its roots of

tightly integrating hardware and software. Each business strategy has led to an increase in revenue across the hardware business.

Stage 1: Commodity strategy

Visit any consumer electronics store and, in the PC peripherals aisle, you will find rows of products differentiated by a wide range of features, shapes, and prices. In the late 1990s, Microsoft Hardware was not equipped to compete across the board in such a broad and deeply competitive market. We were accustomed to developing and launching a mouse or keyboard product every year or so. Things changed when we started framing our success within the context of the broader competitive landscape. We knew we had to change how we developed and launched products if we wanted to be successful in the world of "commodity" products.

After the release of the industry's first optical mouse in 1999, Microsoft Hardware moved from launching a few products a year to launching multiple products across mouse, keyboard, and other product categories. This new product line strategy required that we consider how our products compete with other hardware manufacturers in a growing market with increasing competitive pressures, such as product development strategy, cost to develop and manufacture hardware, time to market, and relentless competition based on price, features, and design. We evolved in each of these areas (Figure 1).

Microsoft Hardware revenue and profit remained strong at this stage. However, we tend-

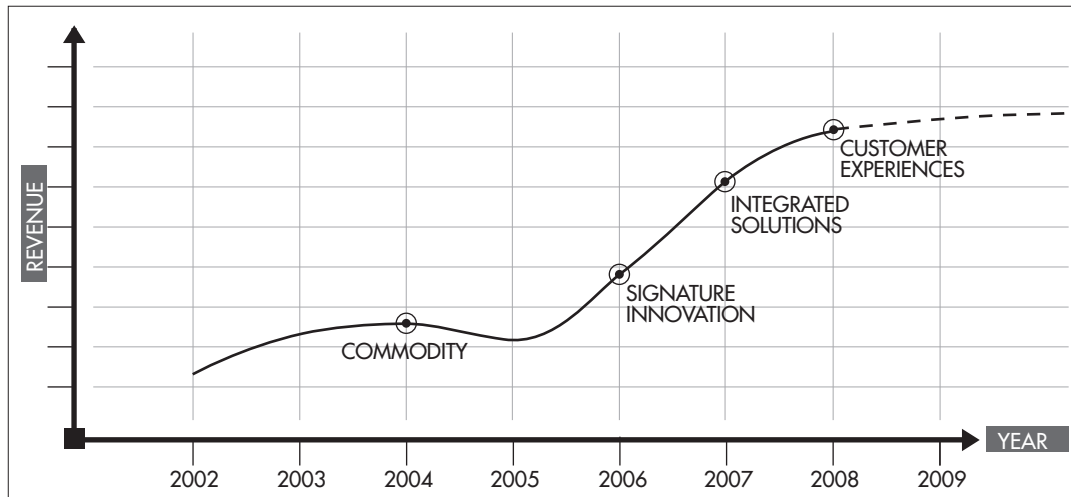


Figure 1. Microsoft Hardware revenue growth across four stages of business strategy evolution. Each stage begins at the moment revenue is realized from a particular business strategy.

ed to prioritize revenue over customer value and lost traction as a technology innovation leader.

Stage 2: Signature innovation strategy

To regain our reputation for thought leadership, we evolved our “signature” innovation strategy. This was to focus on developing high-end products featuring the latest technology advances. Over time, these technology features trickled down to other products in the line and fed our revenue-focused products. Our signature innovation strategy was essential to sustain our leadership position in a computer peripheral market that valued commodity products.

A high-end product that resulted from an early effort to define a signature innovation strategy was our Optical Desktop Elite for Bluetooth (Figure 2). In 2001, we saw an opportunity to take advantage of the Bluetooth technology and to use it in a wireless keyboard. Bluetooth technology was originally developed to enable people to use wireless headsets with their cellular phones. However, the technology evolved to enable a variety of peripheral devices to connect wirelessly to the PC. As a result, this keyboard combined the latest in technology with a variety of new features.

Both the commodity and signature innovation strategies were based on customer research. We invented several new technologies and features to address user needs, and then performed customer research that helped us to understand which of these innovations people found most desirable. Although some observational research approaches were in place, our product planning relied heavily on asking customers to tell us what they wanted. This practice of defining *opportunistic needs* based on technology innovation, and *stated needs* based on a specific approach to customer research, was a good start to staying competitive. However, we had room to improve and evolve.

The Microsoft Hardware business grew in this stage. However, we tended to equate innovation with technology and to over-emphasize technology innovation as a product differentiator that customers valued.

Stage 3: Integrated solutions strategy

Up to this point, conventional wisdom held that people would not pay for software integrated into hardware peripherals. It was technology and

feature innovation together with great industrial design that drove purchase decisions. But innovative software features, such as the Magnifier feature on our mouse products, started to generate excitement in the market. The Magnifier is like a magnifying glass held up to your computer screen, enlarging the area of your screen that fits inside the lens. The feature is useful for detailed tasks like touching-up photos (Figure 3).

Emerging from this new focus on value-added software, we evolved our original business strategy to include hardware and software integration as a core principle. In the landscape of customer needs and emerging opportunities, we began to see an entirely new dimension of innovation.

While we continued to value opportunistic and stated-needs research to inform our integrated solutions business strategy, we were perfecting another way of understanding the customer. It wasn't enough to listen to what customers said they wanted. We needed to better understand their behaviors, motivations, needs, and frustrations. We focused more on observing



Figure 2. Microsoft Optical Desktop Elite for Bluetooth.



Figure 3. The Magnifier on Microsoft mouse products is like a magnifying glass that is held up to your computer screen. With a press and hold motion, the Magnifier enlarges the area of your screen that fits inside the lens.

people's behavior within the context of their experience: not just what people said, but how they behaved. This helped us understand their unarticulated—or latent—needs. Also, the last five years have seen dramatic changes to the computing environment at home, prompting us to understand user behavior at a deeper level. As a result, observational field research emerged as a core practice within Microsoft Hardware.

This additional focus on *latent needs* became an important accelerant for the business strategy of integrating hardware with software. Features such as the Magnifier and our integrated solutions strategy are the result of this research approach. The integrated solutions strategy helped us grow revenue and thrive in the market.

Stage 4: Customer experiences strategy

Our current stage of evolution puts the customer experience at the center of our business strategy while building on the strengths of each previous stage. The goal of our customer experiences strategy is more than hardware and software integration. For our key products, we design for complete and seamless end-to-end experiences. An end-to-end experience considers other integration opportunities with ancillary hardware and software, and it enforces consistency from point-of-purchase through product use.

First released in 2006, the Microsoft webcam product line is an example of this business strategy (Figure 4). Webcams are portable cameras that record video or still images on a PC for distribution over the Internet. Most webcams are inexpensive to purchase, although the quality of the video is often low. We could have competed

on price, features, technology, and design, but that would have missed the larger opportunity: connecting families to each other across the Internet.

In our research, we found that users new to video communication were not drawn to technology and features. They just wanted to set up a conversation easily and reliably. They wanted to emotionally connect with their loved ones who lived far away.

Our focus on balancing stated, opportunistic, and latent needs enabled us to anticipate what customers wanted. These *anticipated needs* guided our strategy as we created a new webcam product category and business. For example, customers told us they just wanted something simple. We watched them and learned that many of their challenges with existing cameras were less a matter of operating the camera hardware and more about the camera setup process, the initiation of a call, and the reliability of the connection. Anticipating customer needs, we extended these simple observations into the design of the end-to-end hardware/software video communication experience. Our goal was to make video communication as simple and reliable as a phone call. We identified hardware and software integration opportunities with Windows Live Messenger, contact lists, and with the creation of a seamless connection, and we were able to focus on the experience.

Had we applied a commodity strategy to our webcam business, it is likely the product would have had only moderate success competing on technology innovations and features. Because we



Figure 4. Microsoft LifeCam VX-1000.

care about creating great customer experiences, we were able to change how the market perceives and adopts products like this and to grow the entire product category. To underscore the value of customer experience, several companies in this market have followed our lead by focusing more on the end-to-end customer experience.

The right traits for accelerating evolution

Microsoft Hardware business evolution has not relied on a silver bullet to ensure success. Instead, we have identified five traits that accelerate our evolution and growth, namely: involving the right people, balancing competing factors, focusing on holistic needs, using a disciplined approach, and playing “chords of innovation.” We explicitly weave these traits into the DNA of the organization so that we can build on them and evolve further.

Today our business results are stronger than they've ever been in our 25-year history and position us to experience new levels of success in the future.

Get the right people on the bus

Microsoft Hardware is a relatively small group of 200 people. We consistently earn the highest revenue per employee in the company. We could not deliver this level of business performance if we did not take Jim Collins's advice in *Good to Great: Why Some Companies Make the Leap... and Others Don't* to heart: Get the right people on the bus. We have no single visionary or superstar. Instead, we have developed a very strong interdisciplinary team of leaders who collaborate effectively to drive our business. This team is composed of leaders from market, technology (both hardware and software engineering), and user-experience-oriented teams, aligned with business leaders of each of our product lines. Each leader possesses customer focus, technical savvy, and business acumen. As we grow and find new opportunities, we work tightly as a team to deliver the right products to drive the business.

Having the right people on the bus means that we are flexible enough to evaluate new opportunities regardless of where they come from. We are empowered to collaborate closely and make decisions in a similar way at both the business and product level.

Balance market factors, technology factors, and user factors

We define what the hardware organization delivers by focusing equally on the market, technology, and user factors that lead to business success (Figure 5). Even though each factor represents a different area of focus for the hardware organization, they all must work together seamlessly. We've found that when we over-emphasize one factor over the others, we experience less consistent and predictable results. To accelerate evolution, we keep the three factors in balance without a single one dominating.

Focus on holistic needs

Each of the market, technology, and user-oriented teams relies on insight generated by three distinct approaches to research.

1. Teams that are focused on market factors seek to understand what customers, retailers, and salespeople say they want (that is, their stated needs) to inform business strategy decisions.
2. Teams that are focused on technology factors create technology opportunities that link to defined user needs (that is, opportunistic needs).
3. Teams that are focused on user factors rely on ethnographic and observational research to expose unarticulated user needs (that is, latent needs).

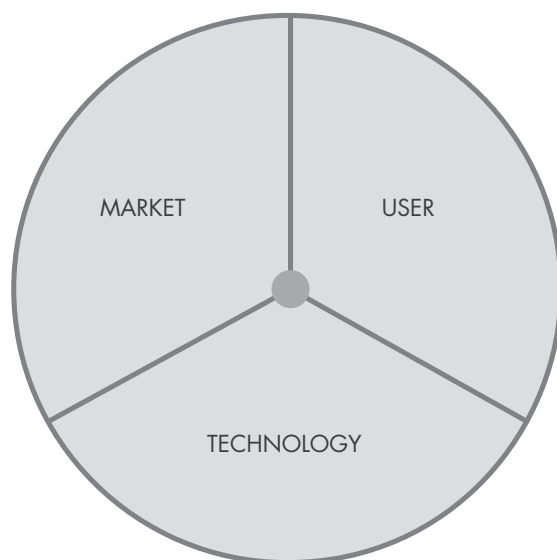


Figure 5. The integration of market, technology, and user factors is core to Microsoft Hardware's business strategy.

Combining all three approaches holistically helps us anticipate customer needs within the context of the business landscape and enabling technologies (that is, anticipated needs—see Figure 6). In the past, we relied heavily on stated and opportunistic needs, but our evolving focus on latent and anticipated needs has accelerated the evolution of this business strategy.

Engage in a disciplined process

Because problems are identified and eliminated early, every dollar spent on research and iterative prototyping at the beginning of a software development project saves you \$100 at product launch. Hardware development cost savings can be more dramatic than software development efforts. Because hardware has high downstream costs in tooling and manufacturing, what you save is actually more like \$1,000 per dollar spent. Our ability to accelerate the evolution of our business relies on a disciplined process across all phases of hardware product definition and development.

A key advantage of this disciplined process is that it allows us to have repeatable successes in product development while driving down costs. It also allows us to learn from missteps as we try new things. As with the other traits, we push this into our organizational DNA so that each project member continually looks for ways to improve our process.

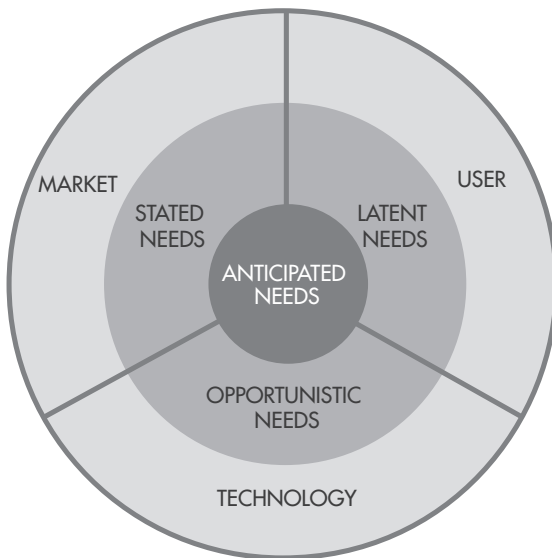


Figure 6. Market, technology, and user factors are informed by stated, opportunistic, and latent needs research data. The integration of these data sets helps define anticipated needs.

Play “chords of innovation”

Larry Keeley of the Doblin Group has proposed a model for innovation strategy that recognizes 10 types of innovation. These include product, process, channel, customer experience, and business model innovation. A company that is very good at one type of innovation can be easily copied or bested by a competitor. But if a company is focused on multiple types of innovation at the same time (that is, a chord of innovation), competitors have a tougher time being successful.

Microsoft Hardware used to focus on a single “note” of product innovation. As we have evolved a customer experience strategy over the past several years, we have begun to develop multiple notes—a chord—of innovation within a product or line. The trait that accelerates growth for us is not any particular chord of innovation. We’ve adopted the innovation framework and recognize that we must be flexible with how we express multiple types of innovation simultaneously. Customer experience is an innovation type that is expressed in all the chords that Microsoft Hardware plays. Like other traits, the organization has incorporated this framework into our DNA, and it is regularly expressed at the individual team level as part of our product development process.

A future in progress

Looking at this article as a case study, you will see a work in progress. It describes how Microsoft Hardware — a large business within a very large software corporation—has evolved and grown by integrating our focus on the user experience with business and technology strategies.

Last year marked our best year across every business metric, including year-over-year growth. What is particularly exciting is that these results are based on a year of products that are primarily the outcome of our integrated solutions strategy. The products that are the result of our customer experience strategy are only beginning to enter the market. Our business strategy is not based on a single focus on revenue, technology, features, or design. Instead, our products rely on the strong integration of the user experience with business focus and technology leadership to accelerate our business growth. We are

hopeful that our upward trajectory will continue under this new strategy.

What's the next stage of our evolution? We have yet to discover the answer to this question. We already know that our business success will continue to rely on traits that have accelerated our evolution to this point. And we will continue to explore and discover new traits as we evolve our business strategy.

Suggested Reading

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