

Revitalize Your Product Lines Through Continuous Platform Renewal

Companies like Compaq, EMC, Gillette, HP, and Hon have been able to sustain value-cost leadership by obsoleting their own products with better ones. Here's how to do the same.

Marc H. Meyer

OVERVIEW: Many corporations suffer from aging product lines that are prone to attack by more aggressive, entrepreneurial innovators. Managements ought to systematically plan and implement the renewal of their product platforms, with the objective of bringing excitement to the corporation's existing markets and forging ahead into new, emerging ones. This elevates new product development from a single product, single market focus to a higher plane that embraces a stream of products based on common product and process technology.

One of the factors that clearly differentiate innovative companies is the constancy of their devotion to strong products and to the need to constantly improve them over time. Further, they understand that long-term success does not hinge on any single product. They know that they must generate a continuous stream of value-rich products that target growth markets and find new markets for their core technologies. These products form the product family—individual products that share common technology and address related market applications. It is these families of products that account for the long-term success of corporations.

Product families do not have to emerge one product at a time. In fact, they are planned so that a number of derivative products can be efficiently created from the foundation of common core technology. This foundation of core technology is called the "product platform." It is a set of subsystems and interfaces that form a common structure from which a stream of derivative products can be efficiently developed and produced. A platform approach to product development dramatically reduces manufacturing costs and provides significant economies

in the procurement of components and materials because so many of these are shared between individual products. Perhaps as important, the building blocks of product platforms can be integrated with new components to rapidly address new market opportunities.

Hewlett-Packard's ink jet printers provide an outstanding example of a product platform architecture that has been constantly renewed with improved technologies to upgrade particular subsystems. The platform design shown in Figure 1 was created for the original Deskjet printer, and has remained largely constant through successive generations of the product family. Specific subsystems, however, have been improved with new inks, mechanics, electronics, and software—as well as improved manufacturing processes—to provide HP with sustained value-cost leadership.

Product platforms must be managed. As HP's experience demonstrates, if a platform is not rejuvenated, its derivative products will become dated and will fail customers in terms of function and value; however, if a company's platforms are renewed periodically—redesigned to incorporate new functions, components and materials—the product family will remain robust through successive generations.

Robust product platforms do not appear by accident. They are the result of methods and strategies for designing, developing and revitalizing them over time as an essential element of business strategy to dominate markets. Understanding the linkage between platform strategy and business success is the focus of this article (1).

Identifying Platform Strategies

Figure 2 presents a simple grid that firms can use to segment their markets. Major market segments are arrayed horizontally, each representing the major customer groups serviced by the firm's products. Hewlett-Packard's inkjet printer business, for example, features market segments that include the desktop PC user, the portable computer user, and the upscale home office or small business user. Or, a power tools manufacturer might address two market segments

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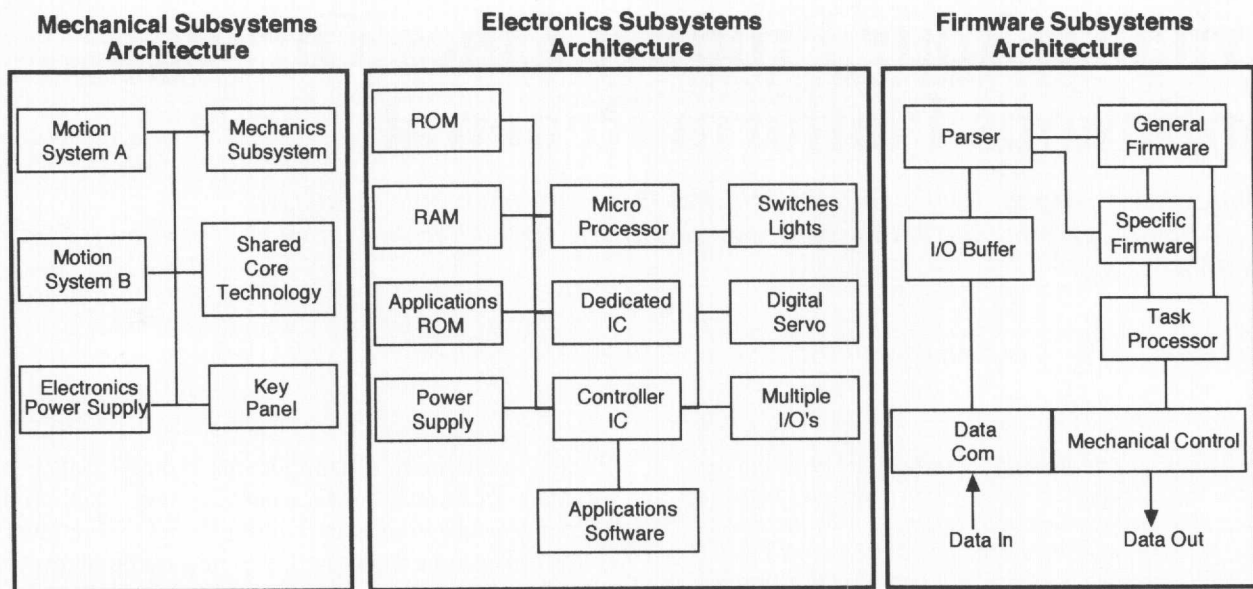


Figure 1.—A platform is the architecture common across a product line, like Hewlett-Packard's highly successful inkjet printer platform architecture, which is shown here with its key subsystems and interfaces. Source: Hewlett-Packard Corporation, 1996

composed of consumer and professional users (with many subgroups within these segments). Or, a company making air conditioners may have segments that include residential indoor systems, residential outdoor systems, and commercial systems.

The vertical axis of the market segmentation grid reflects different tiers of price and performance within a firm's

markets. In place of the terms "low-cost, mid-range and high-cost", many companies prefer "good, better, and best." Either way, step-up functions in product lines ordinarily command higher prices over base-level models.

Car manufacturers typically use engine horsepower, seat materials and other amenities to distinguish performance and pricing tiers in their product lines. Using the power

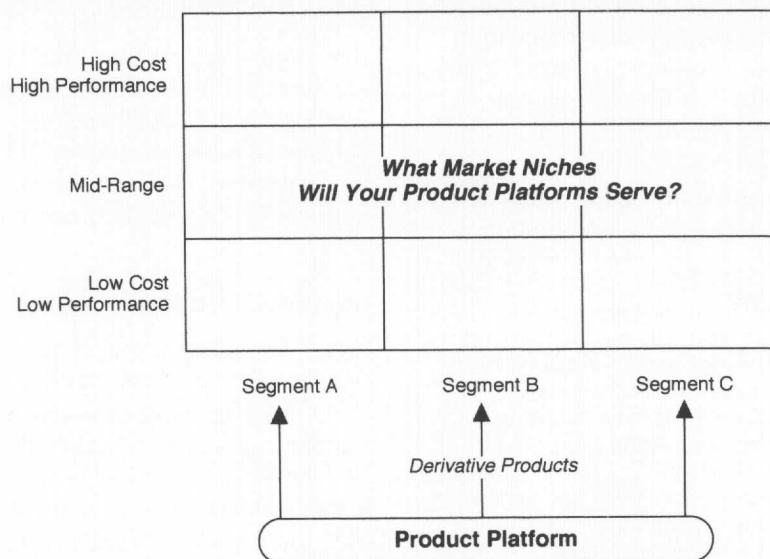


Figure 2.—Firms can use this grid to segment their markets.

tools example once again, a \$20 drill has a single speed and low power, whereas a \$50 drill offers variable speeds, anti-lock, reverse drilling, and higher wattage. Personal computers provide step-up functionality through faster microprocessors, greater memory and larger or faster disk drives.

Indeed, it is rare to find a mature business without step-up functions in its product lines; the trick is to rationalize them into a consistent gradation of price-performance, as these are required to clearly plan how and where platforms will be scaled and leveraged into different regions of the market. The cells formed by the intersection of the horizontal and vertical axes may be described as the firm's "market niches."

The reader may find it useful to think conceptually about his or her own markets in this way—to actually draw your own business's market segmentation grid—as we progress through various examples in the pages to follow. I shall use this framework to describe four strategies by which product platforms may compete in the market.

Strategy 1: Niche-Specific Platforms with Little Sharing of Subsystems/Manufacturing Processes

Several years into a major reorganization, Ford Motor Company announced plans in 1996 to radically alter its product development activities. The centerpiece of these plans is to reduce the number of vehicle platforms from 24 to 16. Many observers noted that Ford's product-development activities were terribly complex, and that this reduction would save the company enormous sums of money and make its dealings with suppliers less difficult, even as it provided the means to design and manufacture a multitude of vehicle types and models for its global markets. "What we are striving for," said one person familiar with the automaker's plans, "is under-the-skin commonality, and more vehicle products" (2).

Platform strategy can be used to simplify portfolios. Like Ford, many companies suffer from having too many platforms, sharing too little technology. Each market niche is served by a different platform architecture. The result is a myriad of product families, with few shared subsystems or manufacturing technologies, higher costs and lower margins. This strategy typically creates products that look and feel much different to the customer.

Figure 3 shows a fragmented platform strategy for a manufacturer focused on high- and mid-range market niches. Here, low-end niches are left uncovered, creating tempting targets for offshore manufacturers. For this company, each product development group and manufacturing plant is totally focused and dedicated to serving the needs of a very specific niche. While this strategy may have its benefits, it can be a very expensive way to do business. R&D can easily be duplicated and discoveries made by one team may remain unknown to

Many companies have successfully leveraged product platforms from one premium market segment to the next.

other groups. Capital investments in manufacturing would be expected to be far higher than would be the case if production capacity were shared between product lines. Additionally, fundamental improvements to manufacturing introduced by one group may not be adopted by others. Finally, the potential for synergy in market development between product lines (i.e., a common brand supported by shared advertising and promotional campaigns) is largely foregone.

Unfortunately, this fragmented platform approach is common in industry. Seeking to build the perfect product for each new customer group, engineers lead the corporation away from commonality. Each time a new customer request is formalized, new parts are added to achieve the optimum solution without considering the downstream costs of the decision. The engineer, or the engineering manager, rarely gets wind of these costs. As the components of the firm's products proliferate—be they motors, fasteners or whatever—opportunities to achieve procurement economies diminish.

Component variety also makes manufacturing unnecessarily complex. Each plant, focused on making particular product lines, becomes enamored with its own processes, machines and materials, and enjoys the liberty to pursue its own initiatives. Major changes to processes or materials fly in the face of existing plant and equipment and the need to amortize the investment in them.

Strategy 2: Horizontal Leverage of Key Subsystems/Manufacturing Processes

This strategy is one in which a product platform, or one of its key elements, is leveraged from one market niche to the next within a given tier of price-performance. A representation of the horizontal leverage platform strategy is shown in Figure 4. The figure also shows the two basic variations of the strategy. These variations depend upon the tier of price-performance that is the company's primary focus. Many companies have successfully leveraged product platforms from one premium market segment to the next. For example, A.T. Cross Company has a similar design and manufacturing process for both its high-end pens and mechanical pencils.

In contrast to these high-end players, other companies have successfully leveraged their platforms across a related set of low-end market segments. Pentel is the counter-example to Cross, branching across different

segments on the low end of the writing instrument market with common product platforms and manufacturing processes.

Either way, the benefit of the horizontal leverage strategy is that a company introduces streams of new products across a series of related customer groups without having to “reinvent the wheel” for each. The primary benefit for R&D is that new products can be developed more rapidly. Further, if particular subsystems can be designed to provide a distinctive functional advantage over competitors, the entire product family will benefit. For manufacturing, procurement and retooling costs can be minimized when new products are introduced into the line.

Leverage can be achieved even if the platform *as a whole* is not used in adjacent segments. Key subsystems of the platform not only will suffice, but are the most common form of horizontal leverage of common technology. Leverage occurs to the extent that the major subsystems of a product platform are adapted for use within different market segments.

Consider the Gillette Sensor-Excel razor systems. The shape, color and general design of the handles are

The power of platforms becomes all the more significant when horizontal leverage is combined with upward vertical scaling.

completely different between male and female versions; yet, the razor cartridge is the same. Gillette has been able to use these cartridges as a key leverage point, both for improving shaving performance and for achieving low costs through a common, highly automated manufacturing process. The standardization of key subsystems (and their components) across a product family can thus improve product performance and reduce costs.

Horizontal leverage is not risk free. If the platform or any of its key subsystems are flawed, then a broader array of products will feel the pain. Also, responsibility for platform renewal can become problematical if each market segment is “owned” by a different business unit—a common case in many corporations. We observe, for

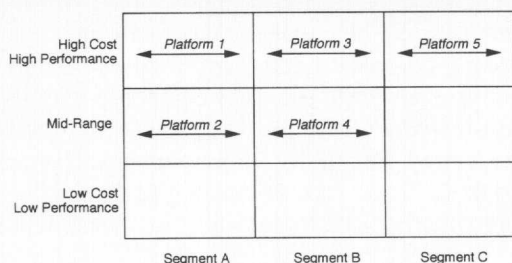


Figure 3.—This company has a different product platform for each market niche in which it competes, with little sharing of subsystems and manufacturing processes between platforms.

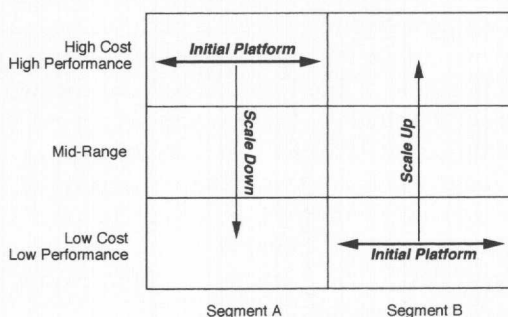


Figure 5.—Some companies have scaled their platforms down into lower price/performance tiers; others have scaled low-end product platforms upward.

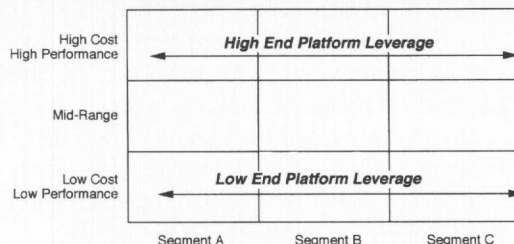


Figure 4.—Many companies have successfully leveraged product platforms from one market segment to the next.

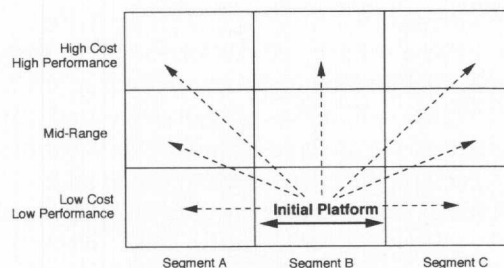


Figure 6.—The “beachhead” strategy combines horizontal leverage with vertical scaling.

example, that separate business control of different international markets is the norm for global enterprises. This tends to produce a diversity of platforms, subsystems and manufacturing processes in different regions—even within single product categories. Who would force one P&L owner to accept, and thus depend on, platform technology coming from another P&L? However, if analysis finds the opportunities offered by sharing platforms between groups to be compelling, executives are obliged to revisit the organization and integrate different business units.

Strategy 3: Vertical Scaling of Key Platform Subsystems

This strategy is one in which the firm seeks to address a range of price/performance tiers within a market segment with common product platforms. One basic variation, shown in Figure 5, is when a company that has traditionally excelled in the high end of a market segment scales its platform down into lower price/performance tiers. In its simplest form, certain functionality is removed from the high-end product set to achieve lower price points for customers. Or, major subsystems from the high-end platform are used in a distinct low-end platform design.

The second basic variation of vertical scaling is when low-end product platforms are scaled upward into higher price/performance tiers through the addition of more powerful component technologies or new modules to meet the demands of functionality and performance for higher-level market tiers.

The benefit of this approach to vertical platform scaling is that the firm is able to leverage its knowledge of any particular market segment, and to do so through product development that will be less costly than if an entirely new platform had to be developed for each tier of price/performance. Once again, the risk is that a weak common platform or common subsystems will undermine the competitiveness of the entire product line.

A number of companies pursue both types of vertical platform scaling described above. Is one preferable to another in terms of product development effectiveness and cost? Many American companies with strong engineering cultures have a tradition of building high-powered solutions. Meeting the needs of high-end segments is perceived as the greatest challenge for engineers. However, growth in markets invariably shifts downward over time into mid-range and lower price/performance tiers. As they do, engineers go to work to serve these growth areas. However, what they typically find is that it is not so easy to turn a “Lexus” into a “Corolla.” The expensive componentry or materials of the high-end platform condemn the new lower priced products to low levels of profitability.

Strategy 4: The Beachhead Strategy

The power of platforms becomes all the more significant when horizontal leverage is combined with upward

A key source of Compaq's success has been its ability to leverage platforms and key subsystems across different market niches.

vertical scaling. One might call this the “beachhead strategy” (see Figure 6). Here, the company develops a low-cost but effective platform, and the processes for making it efficiently, for one particular segment of low-end users. From this initial market foothold, engineers then scale up the performance characteristics of the platform and add other features designed to appeal to the needs of other segments. Extensions are made to the initial platform to make it ideal for different segments; extensions are also made to provide the step-up functions required by customers in higher price/performance tiers within market segments. Leverage in creating these derivatives, and the low-cost manufacturing process developed to compete in the initial market, make it possible for the company to enter these new market niches from a superior cost position.

Compaq Computer Corporation provides a noteworthy example of the beachhead strategy. Compaq entered the personal computer business in 1982 with a line of portable computers and quickly established a strong foothold in that small niche, surpassing \$300 million in annual sales within only two years. From that base, the company introduced a stream of new products for other market segments and at many levels of price and performance, beginning with a line of desktop PCs, the Compaq Deskpro series. Sales grew apace. By 1988, annual revenues had reached \$2 billion, and by year-end 1995, Compaq could boast of sales nearing \$15 billion, with earnings of almost \$800 million. Still, despite its sales growth and abundance of product variety, Compaq's 1995 R&D spending was about 2 percent of sales.

A key source of Compaq's success has been its ability to leverage platforms and key subsystems across different market niches. The initial desktop PC product platform was developed for the Deskpro line in the early 1980s and targeted at the corporate microcomputer market, especially for networked PC environments. Figure 7 shows that the market focus of this platform was in the low-end tier of the corporate and small business market. Numerous derivative products were created from the Deskpro platform, including a server called the Compaq Systempro. (Servers are used as the hubs for sharing printers and storing data and programs in local area networks). The Deskpro platform itself was upgraded throughout the 1980s with faster microprocessors, new memory components and improved electronics.

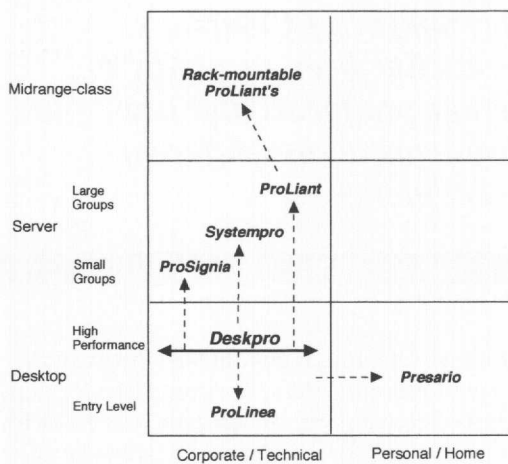


Figure 7.—Compaq's platform market grid.

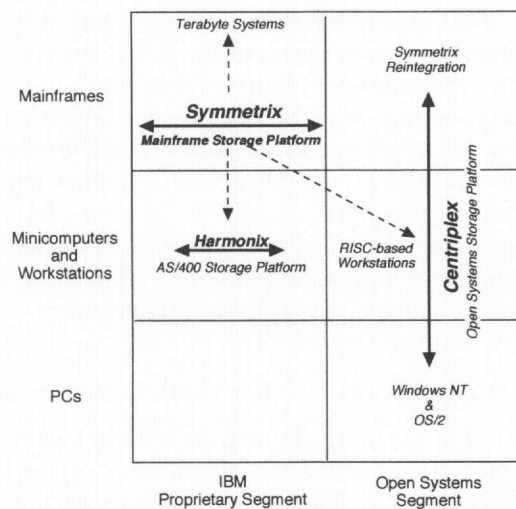


Figure 9.—EMC's platform market grid.

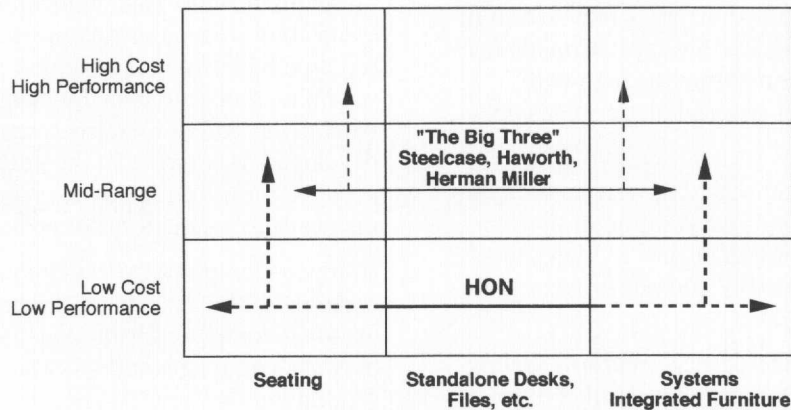


Figure 8.—Office furniture platform market grid.

The early 1990s was a rich time of product innovation within Compaq. Engineers created a new platform architecture that would not only replace the existing Deskpro design but serve as the basis for a number of other platforms serving other market niches. Introduced in 1991, this new architecture had a highly modular, "open" design that allowed both Compaq and its customers to quickly upgrade with more memory, faster processors, bigger disk drives, and so forth.

With the rebirth of Deskpro, Compaq aggressively created new platforms that made heavy use of Deskpro platform subsystems. First, certain networking features of the Deskpro were removed to create the Compaq ProLinea platform, targeting the stand-alone market found in small businesses and homes. The ProLinea platform was itself improved and leveraged horizontally to create a platform ideally suited for the home market: the Presario line.

Vertical scaling of the Deskpro's subsystems was achieved at the same time with the goal of creating a new,

more powerful server platform for the corporate market: the Compaq ProLiant platform. ProLiant machines could support multiple microprocessors "inside the box." A scaled-down version of the ProLiant platform, branded the Compaq ProSignia, targeted the fast growing market of small workgroups of 30 or fewer computers connected to a server.

Recently, Compaq took aim at the highest end of the corporate market. Using the ProLiant as a key subsystem, the company created a system that allows rack-mounted versions of the ProLiant to be stacked together. A sufficient number of ProLiant servers integrated in this manner provides tremendous power with greater flexibility and lower cost than traditional mid-range solutions. In sum, Compaq represents an outstanding case of platform leverage, both vertically within segments and horizontally between them.

We need not confine ourselves to high technology to find companies that have used a "beachhead" along the bottom of the platform-market grid from which to invade

other tiers and segments. The office furniture industry, dominated by Steelcase, Herman Miller, Haworth, Westinghouse, and Knoll, provides a “low-tech” example. For decades, these producers targeted either the premium or mid-level market tiers, leaving the low-end market largely uncovered.

Hon had been an also-ran in the office furniture business for years. During the 1990s, however, Hon made itself into a formidable competitor by addressing the needs of the lower-tier market with products based upon low-cost, modular platform architectures and highly efficient manufacturing processes. At the same time, it developed distribution capabilities for serving that broad market. Figure 8 compares Hon’s platform strategy to those of the traditional market leaders.

Hon’s platform strategy translated into strong earnings from what many would have thought to be a low-margin business. It used those earnings to expand its beachhead, acquiring a select group of office furniture companies already entrenched in the mid-range and premium office furniture niches with well-known brands. With these acquired brands, Hon broke out of the low-end segments and started to penetrate upscale furniture niches. It used its low-end capabilities to revitalize the acquired brands with greater modularity and lower-cost manufacturing. The results to date have been impressive. Ten years ago, Hon was number 12 in the domestic market. Today, it is fourth.

Making Money in the High-End: EMC

It would be naive to think that establishing a beachhead in low price/performance tiers is the only path to success. Companies that have focused on upper market tiers have likewise enjoyed success with platform-based strategies.

Consider EMC Corporation, a leading manufacturer of large-scale storage systems for computers. Started in 1979, the company spent about a decade producing add-in memory products for minicomputers. One of its successes in those early years was a product line of 64-KB chip memory boards for Prime and Hewlett-Packard minicomputers. During the mid-1980s, EMC also began producing disk controller systems for minicomputers. By the close of the decade, the company was approaching \$200 million in sales.

The year 1990 marked a point of departure for EMC. Its engineers wheeled out a new product line to the launching pad: the Symmetrix. This product family offered large-scale storage systems for IBM mainframes. At that time, the mainframe storage market was approximately \$5 billion in total revenue and IBM claimed about 90 percent of it. EMC’s then senior vice president of marketing described his company’s marketing thrust this way: “We were the first company to come along and show information officers that not all data was created equal. Some needed fast access rather than 100 percent fault tolerance” (3). The goal of

Symmetrix was to offer unparalleled performance in the speed of accessing information, and it would do this by integrating EMC’s proprietary software technology with commodity components.

When EMC first entered the mainframe storage system business with Symmetrix in 1990, its existing competitors (chiefly IBM) were trying to achieve performance largely through specialized hardware components, namely proprietary 14-inch disks, called SLEDs (Single Large Expensive Disks). EMC’s approach was radically different. University research had been exploring the use of RAID technology (Redundant Arrays of Inexpensive Disks). EMC’s management saw RAID as a great opportunity to beat SLED storage systems in both performance and cost.

Beneath the new product line was a robust product platform. First, EMC engineers designed a platform that would use arrays of 5.25-inch disks, which were widely available from suppliers (today, new designs feature 3.5-inch disks). This reduced materials cost. Second, the engineers coupled these small disks with solid-state memory used as cache in the front end of the storage system. Third, the engineers developed highly intelligent software, known as caching algorithms, that not only accessed the most recently used data but could anticipate what data was most likely to be accessed next based on analysis of prior usage. Technology was also developed to allow components such as disks or controller boards to be swapped in and out while the machines were still running.

The integration of these major building blocks—arrays of small disks, cache memory, caching algorithms, and hot-swappable components—resulted in a highly modular and flexible platform architecture that allowed EMC’s storage systems to be expanded as customer needs changed. The platform was also designed to allow different types of computers and networks to be easily linked to the same storage system. Customers were thereby provided the great convenience of being able to adapt their storage system to new types of computers placed onto “the network” over time.

The modularity of the Symmetrix platform allowed EMC to offer step-up functionality from its entry level systems in a series of ever-more-powerful systems. At the time of this writing, the company was selling a series of entry-level mainframe storage products, a series of mid-range systems for mainframes, and a series of high-end mainframe storage systems with terabyte storage capacity. Over the past five years, EMC’s engineers substantially improved the performance of its Symmetrix systems. The company recently announced a 58-percent increase in the access speed of its high-end Symmetrix 5500s.

In 1994, EMC introduced a second product family—the Harmonix line—targeting the AS/400 market (IBM’s mid-range computers). At the end of 1995, AS/400s retained the second highest dollar installed base in the

computing industry. Following the general platform approach, EMC created Harmonix by using the basic architecture of the Symmetrix platform. To this base of technology, EMC added specific software modules and electronics tailored for the AS/400 environment.

Also in 1994, EMC introduced storage systems that addressed the "open systems" market (computers running non-proprietary operating systems such as Unix). Once again using the existing Symmetrix platform architecture and its key subsystems, this new line, called Centriplex, could serve as the central data repository for the RISC-based workstations of IBM, HP, DEC, and Sun Microsystems, among others. Additionally, PCs running Windows NT or OS/2 could also be hooked up to the system.

Thus, EMC established a beachhead in a high-end market niche first, and then leveraged its platform into both mid-range niches and entirely new market segments. Figure 9 illustrates EMC's platform strategy. The power of its product platform has led to a decisive victory in what had long been considered the turf of IBM, Amdahl, and Hitachi. Introduced in 1990, sales of the Symmetrix line started to accelerate by 1992. The company's share of the mainframe storage systems market had grown to 5 percent on sales of \$386 million. By the close of 1994, the company commanded a 40-percent market share. At the close of 1995, its revenues had grown by 39 percent over the prior year to \$1.9 billion, with net income of \$256 million. EMC shows that by taking the time to thoughtfully develop robust product platforms—platforms that offer unparalleled value to customers through new technical approaches—entrepreneurs can indeed take on the giants in their respective industries.

Defining Platform Strategy in Your Company

Many companies leave the low-cost, low-performance niches of their markets uncovered. If the "sweet spot" for your own business is not yet in the lower tiers, someday, somehow, some new entrant is likely to figure out how to operate profitably in that region.

The challenge of operating profitably in the low end of a market cannot be met by revisiting products one at a time. New product technologies, materials, manufacturing processes, and even distribution structures may be necessary. It may also require the hiring of new technical talent, and perhaps new management.

When Nicolas Hayek took over SMH, Switzerland's largest watch producer, in the early 1980s, the company was suffering at the hands of low-cost Asian producers, losing \$124 million on some \$1.1 billion in sales. SMH launched a major initiative to create a plastic watch that would be inexpensive, reliable and appealing. The company designed a new platform produced at low cost using one-third to one-half the number of parts found in comparable quartz

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watches, coupled with a high-precision plastic molding process that mounted tiny sub-components without screws and other fittings. This new platform made it possible for the company to compete in the low-tier market. Using the best of contemporary European design, SMH began turning out almost 140 new Swatch models every year: some elegant in their simplicity, others fanciful and striking. By 1992, SMH was producing \$286 million in profits on revenues of \$2.1 billion. In 1993, it shipped almost 27 million Swatches.

Can a company reach beyond the product features and sales volume of existing products? Can a company develop new generations of value-rich products that create excitement in the market and bring new customers into it? These are the larger goals of continuous platform renewal. Having studied companies such as SMH, HP, Compaq, and EMC, I can recommend some practical action steps that managers can take to achieve it.

The very first step is to assemble multi-disciplinary teams composed of engineering, marketing and manufacturing talent. Although it is typically easy to identify and obtain outstanding technologists to participate in product line renewal, experience shows that getting marketing experts of similar quality—individuals with insights into customer needs and skills to validate these insights with in-depth market research—is often difficult and requires the intervention of senior management. The team's efforts may then be guided by the following steps, which have been used in various forms in a number of corporations:

1. Segment Your Markets.—You must first identify major market segments and the price/performance tiers within them, constructing a market segmentation grid of individual market niches similar to those shown earlier in this article. It is important to look forward in time, incorporating emerging segments as well as existing ones into the grid. A definition of "the business" that is too narrow or traditional will only serve to limit the commercial potential of new-product platform initiatives.

2. Identify Growth Areas.—Next, identify the growth opportunities in these segments and individual niches, using the market segmentation grid to show 1) the current sales volume, 2) your own participation rate or market share in the niche, 3) the five-year expected growth rate

(anything less than a five-year view into the future is insufficient for planning new platform developments and their derivative products), 4) the leading competitors in each respective niche, and 5) the driving customer need in each niche. Together, these data should present a clear picture of where opportunities exist in your markets.

3. Define and Map Current Product Platforms.—Define your major product platforms and where they “play” on the market segment grid. The platform strategies of Compaq, Hon and EMC, described earlier, are examples of this platform-market mapping.

Defining a product platform for a particular business is not always easy, particularly when a corporation is not used to thinking about its product lines and product architectures from a platform perspective. My experience is that platform definition is aided by the use of high-level block diagrams (similar to the inkjet printer diagram of Figure 1) that show the common subsystems and interfaces for a series of derivative products.

Many companies fall victim to focusing their major efforts in traditional market areas that have either plateaued or are in decline in terms of new growth. Whether or not this is the case for your company will become clear by synthesizing the results of this third step with those of the second step above.

4. “Clean-Sheet” a New Product Platform.—

Clean-sheeting means taking a fresh look at market needs, product technologies, materials, and manufacturing processes to formulate a superior product solution. Working at the level of major subsystems and interfaces, the team should then work toward defining a platform architecture that will satisfy its key objectives of market coverage and scalability. How might your company go on the attack? Can the new platform make the company competitive in the lower-price/performance tiers of its market segments, as in the Swatch and Hon examples? Do opportunities exist for applying the concepts of horizontal and vertical scaling? Take the additional step of envisioning the entry-level products to be derived from new platform initiatives. What would be their key performance and price characteristics?

5. Perform In-Depth Research on Customer Needs.—The overriding goal of product line renewal is to bring excitement to the market in the form of value-cost leadership. This cannot be done by only serving incremental, perceived needs on the part of customers with pedestrian “me-too” products. The team must work to uncover latent, unperceived needs. Such needs tend to be rooted in the frustrations that customers have in using current-generation products and services. Global platform development teams will also have to pay attention to differences in the needs of customers in different parts of the world.

Satisfying these latent needs can be the source of power in new product platforms. For a current example, one need

***Just as the team must
‘clean-sheet’ a platform
design, so must it try to adopt a
similar attitude for production.***

only consider the collective desire for easy access to dispersed information that has fueled the explosion in Internet products and services. Examples abound in all industries: HP’s ink-jet printers provided color at low cost, Black & Decker’s Dustbuster freed users from electrical outlets, Procter & Gamble’s disposable diapers spared users cleaning cloth diapers. All of these products have brought pleasure to their users at advantageous prices.

Multi-disciplinary groups, if given the breathing room to think laterally and creatively, can often develop a fine list of both perceived and latent needs. These needs must then be validated through external customer research. One option here is PC-based market survey software, which forces users to make trade-offs between features and prices and analyzes the results with conjoint analysis. With dedicated resources, this market research should be completed over the course of several months. The overriding goal is to identify the major performance and cost drivers that can make your products superior to those of competitors.

6. Analyze Competing Products.—As market research proceeds, the team should also seek to understand how your existing products stack up against those of competitors. Once again, this analysis must be done on a major subsystem-by-subsystem basis, for rarely does any given product excel at all things. Its strengths and weaknesses are particular, and much can be learned by understanding these specifics. Acquiring competing products and studying them in a “tear-down” room is a highly recommended approach. For non-physical products, such as software, a computer with Internet access is increasingly all that one needs. The team should seek to establish objective measures of performance and price for each subsystem. Then, the team can begin to index the functionality and cost of competing products relative to your own on a subsystem-by-subsystem basis.

As a much-simplified example, if we were making disk storage systems, we might wish to index our products and those of our competitors on dimensions of storage capacity, access speed, materials costs, and total assembly costs. Or, if we were making paper towels, we might wish to compare products on absorbency, materials costs, and wastage or yields. If we were developing a graphics software package, we might perform benchmarking on certain editing and presentation features, the scope and depth of graphic object libraries, and the extent of multimedia integration built into various packages.

In practice, new product platforms are often a composite *design* that combines the company's own value-added technologies with those of other companies. The point here is to identify your own areas of superiority relative to competitors and to make sure that these areas of above parity matter to users. This will help you to establish the future focus of your company's proprietary know-how. The team will discover best-in-class approaches taken by competing products in the design and manufacturing of their own particular subsystems. These approaches can guide the firm's own engineering. The team will also find other companies whose technology might be licensed as part of the new platform effort.

7. Revisit Manufacturing Processes and Distribution Channels.—The mistake many corporations make is to limit the potential of new products by imposing existing manufacturing processes and materials on new product designs. Just as the team must clean-sheet a platform design, it must also try to adopt a similar attitude for production: "If we were never in this business before, what would be the best, most logical way to manufacture these new products?" Indeed, breakthroughs in manufacturing may enable breakthroughs in the functionality and cost of a new set of products. The plastic molding and assembly processes developed by SMH for its Swatch watches, for example, allowed the company to create exciting new products. Manufacturing can and should be turned into the great ally of product innovation, not its enemy.

The same sort of rigorous reexamination must also be performed for distribution channels. What would be the best way to distribute the new product line? Many software companies, for example, are realizing that the World Wide Web makes it possible to use the Internet to download new

New product strategy is as much a mindset as it is a specific process delineating step-by-step activities.

products and plug-in modules, with enormous implications for time-to-market and gross margins.

8. Understand the Core Competency Implications of the New Product Platform.—This step serves as a reality check for the platform renewal team. Figure 10 shows a boilerplate that you may wish to use. At the bottom of the figure are the core competencies required to create, manufacture and distribute the new product line. To step away from the confusion generally surrounding the competencies jargon, I prefer to think of these as the "building blocks" integral to a successful platform effort, and group them into four general categories: key market insights, product technologies, manufacturing processes, and distribution channels.

The team must first articulate the specific areas of competence in each of these areas, and then, using different color markers or some other form of notation, differentiate between those building blocks that currently exist within the firm and those that do not. The latter will either have to be developed, licensed or acquired in some form.

For example, the team may come to the conclusion that the company needs to hire an engineer or chemist specializing in a particular field. Or, it may realize that the company lacks the expertise to perform first-rate research into user needs and the competition. Or, the

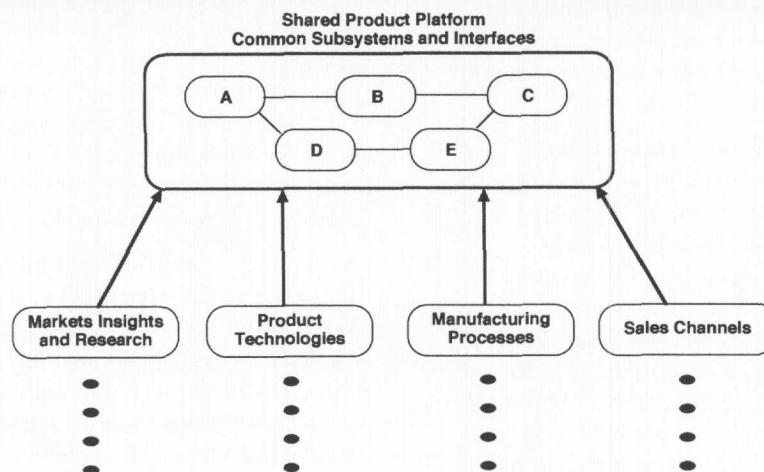


Figure 10.—Before actually building a platform, one must identify its core building blocks and distinguish between those that are internally owned, externally available or that must be developed.

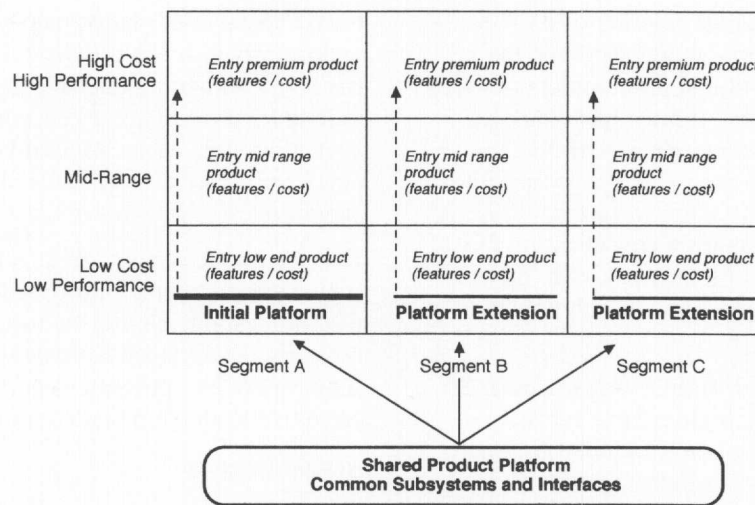


Figure 11.—Product family planning begins by defining initial platform focus, platform extensions, and entry-level products by market niche, as illustrated in this hypothetical example for an initial low-end market beachhead strategy.

team may realize that the corporation does not yet have the distribution channels needed to reach a target population of customers. This competence assessment is hardly a theoretical discussion; rather, it is a pragmatic articulation of what the firm can already do well and what it needs to do better in order to drive a product line renewal forward to commercial success.

9. Formulate the Platform Development Team, Project Timeline and Budget.—Much like the composite design of a new product platform, the team must proceed to specify those individuals internal and external to the firm who should be part of the development effort. This may include not only engineering, marketing and manufacturing personnel, but also individuals from finance, procurement and distribution. Some corporations, such as Boeing, have taken the additional step of including leading customers in its platform development teams.

Often, the best candidates for a project are already busy working on today's business. Senior management must therefore be closely connected to the process of platform renewal, staffing teams and providing "air cover" as projects move from the design stage into commercialization. Indeed, *if an initiative is important to the boss, it becomes important to us.*

Figure 11 may serve as a useful guide for planning the phased rollout of derivative products emerging from a new product platform. It shows the initial development of the new platform, an entry-level derivative product from that platform, extensions to the new platform, and their entry-level derivative products. An extension occurs when a major subsystem of a product platform is substantially

changed or replaced either to incorporate new technologies or to address the needs of a new set of customers. Each market niche within your market segmentation grid may require such an extension to the underlying platform design.

Winning Platform Strategies

The result of following these steps should be a well-researched multi-year, multi-product plan that can be presented to senior management for funding on a *multi-year* basis. This type of funding may well mean that senior management will have to fund *fewer* individual initiatives, bringing a concentration of resources and a purposefulness to new product development that is necessary in competitive markets. Teams must be encouraged to set clear targets for product functionality and then stick to them. This spares the organization the pain, expense and opportunity cost of forever muddling about in the fuzzy front end of new product development.

New product strategy is as much a mindset as it is a specific process delineating step-by-step activities. Many corporations need to recapture the entrepreneurial essence of their early years: to be fast moving, to achieve competitive excellence in technology, and to leverage common assets across individual products.

The mindset that I propose for new product strategy has a simple guiding principle: to obsolete your own products with better ones through continuous product platform renewal. While this may threaten some employees, customers and distributors generally prefer dealing with strong innovators who can be relied upon to introduce better products tomorrow. Management must try to

improve the attractiveness and cost position of its products through standardization, modularity and the economic benefits of higher-volume procurement of common subsystem components. It must try to design its product platforms to compete profitably in low-price/performance market tiers, scaling upward into higher tiers on the foundation of common subsystems and manufacturing processes. Too many firms abandon the lower-price/performance tiers of their markets to other companies, even though it is precisely in such tiers that market growth is the greatest.

This mindset—product renewal, simplifying the business, and competing in the low-cost, high-volume market tiers—may challenge the bureaucracy and conventional wisdom in your company. It is a mindset that places renewed priority on the firm's own internal ability to understand changes in its markets and to continuously innovate in both product and manufacturing technology. Relying on acquisitions as a primary source for introducing innovation to the firm is insufficient; innovation can, and should, come from within. The mindset also demands that different parts of the corporation need to consider how they can work more closely together—designing their respective product lines on common core technology.

In a growing enterprise, an expanding product portfolio is a fact of life. Reconsidering the portfolio, however, from

the perspective of platforms provides a unique opportunity to recapture the entrepreneurial spirit of the firm by formulating decisive initiatives that span individual products, markets and departments. The overriding goal of such initiatives must be to achieve a new level of value-cost leadership *across the entire portfolio*.

This cannot be done without active participation by senior management. Unfortunately, the very executives who are responsible for the future of the corporation are typically far removed from new products. Management frameworks and processes cannot change this. Only executive leadership and commitment can. ☺

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Correction

In the Jan.-Feb. 1997 article "Managing Technology at Caterpillar," an incomplete Figure 2 was inadvertently printed on page 51. The correct illustration appears below.

