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Launch and Learn

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To consistently turn out profitable new offerings, companies must integrate three distinct innovation portfolios.

by Tim Laseter and Ron Kerber

Despite the critical importance of new products, many companies, amazingly, lack the ability to develop new products and services consistently and efficiently. Accountability for this fundamental shortcoming rests squarely at the feet of executive leadership. And so does the responsibility for correcting it. Executive leaders need to inspire, and channel, the creativity of the organization while maintaining an appropriate level of discipline. Leaders must make the strategic decisions of where to invest, when, and how much — and the most difficult decision of all: when to walk away.

The root of most business innovation problems is a lack of adequate integration among the disparate corporate activities related to product creation. Without clear linkages among three distinct “innovation portfolios” — the current portfolio of products or services, the portfolio of advanced technology capabilities, and the portfolio of product creation projects — companies inevitably waste money on needless development

efforts and miss out on revenue opportunities because of poorly planned product launches.

But integrating these portfolios is no easy task. Each has its own set of stimuli and time lines:

- The product portfolio must constantly respond to customer feedback and the competitive environment. As critical as this market-back approach may be, however, it can also place excessive emphasis on marginal enhancements and “me too” products.

- The advanced technology capabilities portfolio tends to focus on significant new capabilities, leading-edge innovation, and adaptation of existing technologies to new purposes. Its technology-forward approach, by definition, puts it on an unpredictable time line.

- The product creation projects portfolio, while adhering to the discipline of the stage-gate product innovation process, must operate on a relatively tight time line to ensure that new products arrive in the marketplace at the right time.

Firsthand experience with a diverse mix of companies, together with field research, suggests that there is a way to reconcile these con-



flicting time lines and priorities. The most effective companies employ three enablers to improve the linkages among the portfolios. First, they separate advanced technology and product development efforts but explicitly link them with technology road maps and advanced technology demonstrators (see below). Second, they employ a product architecture that offers variety to the end customer, but at an affordable cost to the company. Finally, they use annual product reviews to engage executives in a detailed analysis of all three portfolios to secure the linkages and force the prioritization (and the painful but necessary culling) of each portfolio's contents.

Research Meets Reality

Without a forcing function to bring focus, research projects can extend indefinitely. Advanced technology demonstrators (ATDs) can fill this need by compelling researchers to validate new technologies in a context similar to that in which customers will actually use them. Unlike prototypes, which typically

ATDs prove an idea on a product "host" within a context that simulates the real-use environments for the innovation. In the voice-activated control example, a home electronics company might initially build an ATD to simulate the viability of the device in a simple bedside clock-radio with limited functions. More advanced versions would compensate for the noisier environment of a living room and incorporate the wider range of functions of a DVD player. ATDs logically link to specific product creation projects, but their development must remain separate.

Although companies do not typically explain their product introduction delays and outright failures in public, we have noted that companies lose millions of dollars trying, essentially, to invent and develop a product simultaneously. ATDs offer a flexible way to avoid this; they link research projects with product creation projects without requiring adherence to the same time line. Breakthrough innovations are inherently hard to predict;

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This article is adapted from the book *Strategic Product Creation* (McGraw-Hill, 2007), by Ron Kerber and Tim Laseter.

Companies lose millions of dollars trying to simultaneously invent and develop a product.

represent a new or existing product within the research and development process, ATDs offer a way to authenticate new technological capabilities independent of product creation projects. For example, a voice-activated remote control for home electronics would represent a step-function change in remote-control technology and accordingly would be developed independently and validated as an ATD.

designing a product around an assumed breakthrough usually leads to disaster. ATDs can help distinguish genuine breakthroughs from great expectations. That is why product creation projects should incorporate only technologies that have been proven with an ATD, and why an ATD should be developed separately from an announced product introduction.

The use of an advanced tech-

nology demonstrator may appear to slow down the innovation process, yet experience has shown us the opposite is true. The research group can take a less-mature idea and refine it in the supportive environment of the laboratory without the timing pressures imposed on a specific product development project. The ATD forces the group to make the concept real and also becomes a vehicle to show the organization the possibilities of the concept. Showing is far more powerful than telling.

Of course, technology demonstrators are not enough to produce improved returns. New technology capabilities create value only when they come to the marketplace as products or features. Senior management must ensure that ATDs explicitly link the research function, the product creation teams, and the product in the market through technology road maps. Just as the road

advanced technology originally envisioned. A subsequent demonstrator, also developed on a disciplined schedule, would then host the delayed technology capability. Some capabilities still under development can be realigned for future ATDs. The clear linkages — with flexible timing — between technology objectives and the research program, coupled with the use of regular ATDs to validate concepts, instills a realistic level of discipline in the unpredictable world of invention.

Modular Innovation

A company's product or service architecture makes up the building blocks for managing the product portfolio. By leveraging common building blocks and systematically mixing, matching, and upgrading others, a company can offer a wide array of competitive products or services without designing every one

deliver efficiencies in product creation, purchasing, manufacturing, and service while offering superior customer benefits.

Platforms. Alfred P. Sloan, who led the General Motors Corporation from 1923 to 1946, played a seminal role in building the foundation for modern product management through platforms. In the company's 1924 annual report, Sloan articulated his vision of providing "a car for every purse and purpose." At that time, the company offered 10 cars under each of seven different nameplates: Chevrolet, Oakland, Olds, Scripps-Booth, Sheridan, Buick, and Cadillac. Without clear market positions, each car and brand competed with the others, and except for Cadillac and Buick, all of the brands were losing money. Sloan's clear vision allowed the company's divisions to stake out their own market positions and show the entrepreneurial spirit necessary in a dynamic environment while ensuring a common direction overall.

Today GM manages a far more complex product line by employing a dozen platform variants. For example, the Chevrolet Malibu, the Pontiac G6, the Saab 9-3, and the Opel Vectra all share the same mid-sized, front-wheel-drive platform. Similarly, a single rear-wheel-drive platform supports the Buick Rainier, Chevrolet Trailblazer, GMC Envoy, and Saab 9-7X. Although these models build on a common chassis and suspension design, each offers a feature bundle and price point consistent with the supporting nameplates. The different combinations of platforms among the variety of GM nameplates provide a unique lineup for each brand despite a high degree of common-

Several GM models share a suspension platform, but each of them offers a different feature bundle and price point.

map connects the technology project to the product portfolio through the product creation projects, it also establishes, in advance, a contingency plan if the invention effort takes longer than expected.

Although research efforts have longer time horizons and tend to be less predictable than product creation projects, ATDs should include some level of schedule discipline. Producing ATDs on a fixed schedule requires accepting that the actual content of a specific ATD might not incorporate all of the

from scratch. The primary building blocks are platforms, modules, and differentiators.

Platforms provide the basis for a number of models that serve different market segments but share certain underlying features. Modules help reduce part counts and manage complexity. Differentiators result from a clear understanding of what matters to the customer and what can or should remain invisible. Thoughtful management of product architecture using platforms, modules, and differentiators can

ality across all product lines.

The platform concept, although widely practiced in such industries as automotive and commercial aircraft, is less prevalent in food, software, and financial services. Yet the benefits of defining platforms and strategies in these “softer” product industries can prove just as valuable and lead to product extensions and efficiencies as well.

For example, Masterfoods, the McLean, Va., maker of candy, pet foods, and other products, applies platform logic to its products with a linkage to its manufacturing technologies. The company has used its proprietary technology for applying hard-shell coating to soft inner substances beyond the chocolate used in traditional M&Ms, including crisped rice, peanut butter, and the chewy center of Skittles. Product managers find that the platform is the most powerful organizational tool for ensuring order and efficiency in the product lines. All companies should think creatively about their definitions of product platforms and consider both physical and virtual platform models for product architecture.

Modules. A modular design philosophy, in which different products share common parts and specifications, complements the platform architecture by simplifying the process of creating variations of the common platform. Designers can bundle a set of product functions and features into a module with common interfaces that allow plug-and-play substitution. Often modules are used across many different product platforms. A block upgrade involves adding several new features to keep the product fresh and interesting while avoiding the cost and effort of a major redesign. Without

block upgrades, development teams sometimes delay product creation projects in an attempt to get every possible feature into the current version under development. But with a planned block upgrade process, ideas that surface well into the current development cycle can be slated for inclusion in the first block upgrade after product launch. The use of modular designs can make the ongoing process of block upgrades even more seamless and efficient.

Modular designs, appealing as they may be, have a downside. They

can be seen quite clearly in the personal computer industry, where none of the major manufacturers except Dell make any significant profits, while “component” suppliers such as Microsoft and Intel reap large returns. Charles Fine of MIT argues that industries with excessively modular designs will ultimately revert to using integral designs for this reason.

Differentiators. The most successful adopters of modular design identify and continually innovate a set of differentiators, even as they

At Whirlpool, attributes that customers value reside in front of an imaginary green line.

can force trade-offs and potentially generate a suboptimal design because of designers’ need to create and maintain clear interfaces with existing modules. For example, today most office copiers have modular designs, with different sorter and paper tray options depending on the customer’s needs. A more integral design (where components work well together but aren’t interchangeable with components of other devices) would lower the cost of the unit in isolation, but raise the cost across the full product line.

Despite the advantages gained from reduced complexity, excessively modular product architectures can eventually turn the end product into a commodity. When modules become completely interchangeable within an industry, the end-product assembler loses its market power and the suppliers of competitively advantaged components begin to accrue the majority of industry profits. This phenomenon

standardize modules and employ platform architecture to reduce cost in areas of little importance to the consumer. Whirlpool uses the colorful term “the green line” to highlight the distinction between differentiators and less-critical product attributes. Features that consumers perceive and value reside in front of this imaginary green line. Those that customers do not perceive or value lie behind it. In a refrigerator, for example, the cooling system, insulation, and control system lie behind the green line. The aesthetic design, including interior shelves, drawers, and control features, remain in front of it. Whirlpool encourages its product teams to focus on controlling costs behind the green line and to marshal their creative efforts on new features in front of the line that might create competitive differentiation.

With products beyond refrigerators, differentiators need not be physically visible — nor even con-

sistent among competitors and market segments. The suspension and powertrain performance serve as differentiators in high-end sports cars like BMWs or Porsches. Conversely, these features clearly fall behind the green line in most family sedans. Family car buyers put more emphasis on practical features like interior seating configuration, fuel efficiency, and safety systems. A sports car enthusiast may be satisfied with a minimalist interior as long as the vehicle accelerates quickly and handles well at high speeds.

The green line concept applies equally well in a service company. Differentiated reservation services provided to frequent flyers by major airlines offer the most valuable travelers a special toll-free reservation number. Call center staff greet the preferred customers by name and route them to the front of the queue. Unknown to most customers, a single call center — situated well behind the green line — provides service to all callers, creating staffing efficiencies without forcing the most important customers to wait longer than necessary for a higher level of service.

Bringing the Pieces Together

In its oversight role, senior management can ensure the integration of the various advanced technology projects, product creation projects, and product portfolios through annual product strategy reviews. Although rare even among leading companies, such reviews rank as high in importance as the more common processes of strategic planning and annual budgeting. Many companies conduct a multi-year strategic review at the beginning of the fiscal year and then finalize the next year's operating

budgets near the end of the fiscal year. An annual product review held between these two planning events can focus attention on the real lifeblood of any growing business: the ongoing nurturing of the product or service portfolio.

Building on the company's understanding of customer trends and the anticipated strategic moves of major competitors, the annual product review allows management to set priorities and to integrate development efforts across the full spectrum of project and product portfolios. These priorities then inform the annual operating plan, which allocates expense and capital budgets on the basis of product creation commitments.

Product strategy reviews differ significantly from corporate strategy reviews. The latter tend to focus on strategic direction, new lines of business, revenue and profit goals, and opportunities such as mergers and acquisitions. A product strategy review, in contrast, forces senior management and the product management teams to assess the total product offering both as it exists and as it will evolve in the years ahead.

Preparation for the product strategy review serves as a good forcing function for all product areas, requiring them to communicate their plans and rationale comprehensively without the distraction of other business issues. The reviews typically expose gaps and opportunities in the product portfolio. They also serve as a forum for ensuring that there is a common understanding of key customer trends and answering key questions that cross product creation boundaries. Should one product type be expanded more rapidly than another? Are the technology concepts being

prioritized to the best consumer applications? How are competitive product portfolios changing?

Senior management can use the product strategy review to tighten the linkages among the advanced technology groups in research and development and the various product management teams. The process forces everyone to look outside their group to calibrate the typically internal focus on the next “new new thing” or the most recent minor product upgrade. The review starts with an outside-in marketplace perspective on customers and competitors and then works market-back. Starting with that same outside-in perspective, the review assesses the entire portfolio in a technology-forward way as well. This systematic analysis typically identifies areas where senior management will clarify and often alter its product portfolio objectives.

Ultimately, the collective group of senior management, product management teams, and technology managers hammers out the priorities to ensure that the various portfolios of advanced technology and product creation projects will generate the most competitive product or service portfolio as fast as possible. The size of the investment will dictate the pace of change, which suggests a natural transition to the annual budgeting process. The portfolio makes sense when market-back and technology-forward reviews align at an investment level the company can afford. The product strategy review then feeds the budgeting process in an informed manner, so that the new annual budgets become objective driven rather than merely an extrapolation of past revenues, margins, and costs.

Platforms, modules, and differ-

entiaters allow a company to drive continuous innovation while leveraging economies of scale. Senior management plays a crucial role in setting the context. Individual product managers, designers, engineers, and researchers generally focus on their own piece of the big picture. No company can afford to pursue all opportunities; it must find the right mix of technology-forward and market-back innovation ideas. The essence of strategy involves deciding what not to do as much as it involves deciding what to do.

Does a new technology require a fundamental breakthrough and accordingly warrant separation from product development and an ATD? Or does most of the technology already exist and do developers trust it enough that it can be tied to a new product program? When introducing night vision into the automotive world, GM used the launch of the 2000 Cadillac DeVille to drive the timing. Does the platform architecture provide adequate differentiation, or has it blurred important distinctions across brands? Should this innovation effort be stopped now or given more time and investment dollars? Such strategic decisions can be made well only by executives with a deep understanding of the technology and the innovation processes. A former GM manager once remarked that prior to the 1980s, "General Motors had 20 cars that looked different on the outside but were the same underneath." But by the beginning of the 1990s, "GM had 20 cars that looked the same on the outside but were different underneath." Who did he blame for this unhappy change? The executive leadership, and rightfully so. +

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