

The Manufacturing Innovation Series

Innovation in Manufacturing— Driving Greater Returns, Predictable Outcomes and Market Leadership

The Manufacturing Institute–Accenture
Innovation Roundtable Report

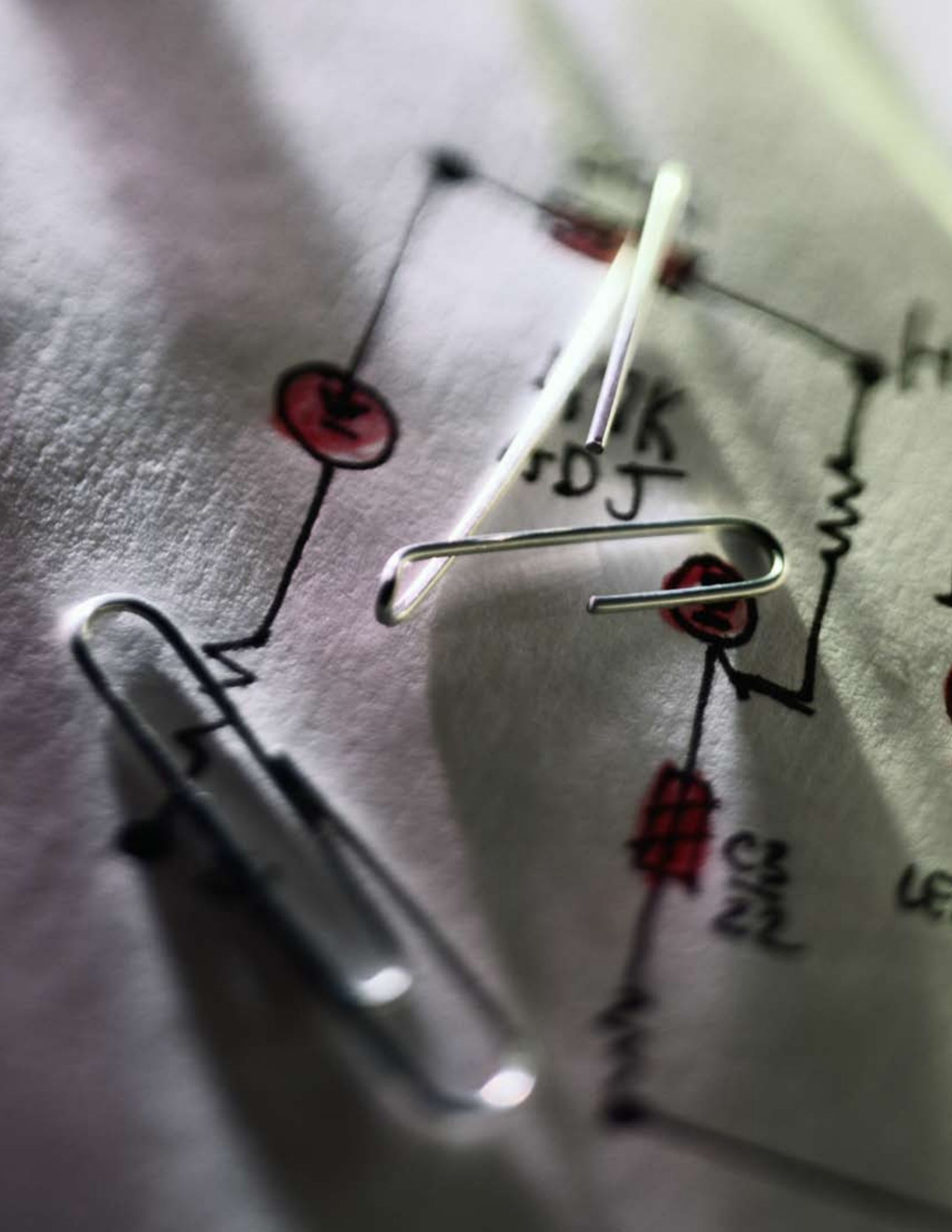
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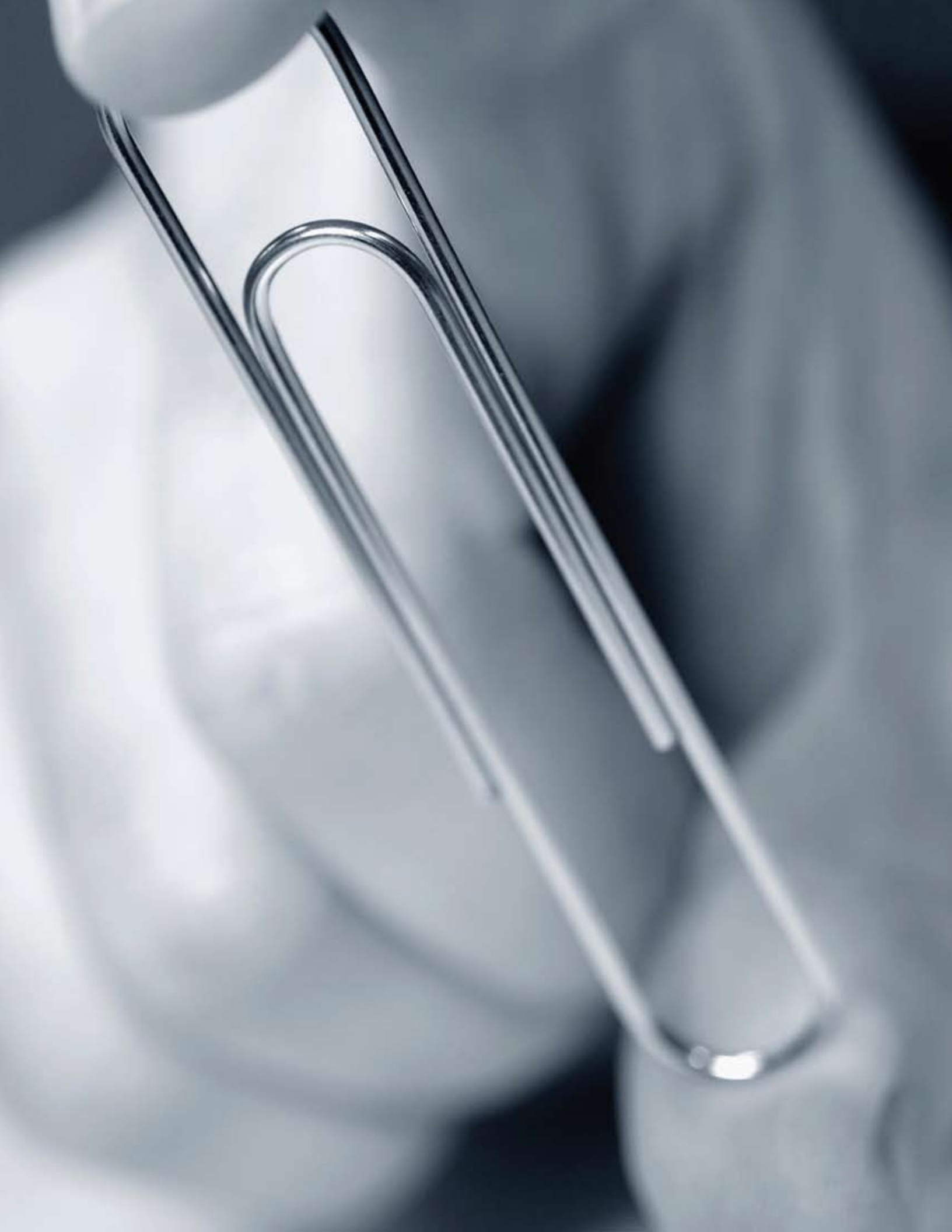
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1. About This Report

The prospect of change is in the air for U.S. manufacturers, with many unknowns on the horizon—relentless and agile competitors seemingly everywhere; U.S. and world economies in a transitional phase; national government leadership turning over and establishing itself.

With this as a backdrop, the time is right to reinforce one of the foundation stones of the industry—its ability to innovate and stay ahead of the competition. U.S. manufacturing has weathered recessions, governmental changes and diverse economic challenges. Yet finding the right paths to innovation is more important today than ever before. Manufacturers must be adept in developing effective innovation strategies and practices, delivering innovation to customers, and developing innovation capabilities in their people.

This report, a joint effort of The Manufacturing Institute and Accenture, suggests a number of paths that U.S.-based manufacturers might explore to deliver the innovation that is the lifeblood for change and growth. While not an exhaustive treatment of the subject, it does provide an effective summary of the state of innovation today and identify actionable innovation insights that manufacturers can adapt to improve performance.

The report is based on three inputs. It includes original research, perspectives and approaches related to innovation from Accenture's work with clients. It summarizes the key findings and ideas from the June 2008 Innovation Roundtable co-sponsored by The Manufacturing Institute and Accenture, which comprised a diverse group of U.S. manufacturing senior executives. Finally, the report includes information from additional interviews with members of the National Association of Manufacturers (NAM) to elaborate on practices suggested in the roundtable.

The Manufacturing Institute, NAM and Accenture wish to thank the individuals listed in the participants section for their contributions to this report.

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Key Innovation Roundtable Takeaways

Innovation is more vital than ever to the success of manufacturing. More and more companies are using the practice as a focal point, or catalyst, for dramatically improving performance, and in some cases transforming their companies. The next frontier in the maturation of corporate growth initiatives is to harness innovation in more predictable ways. That means developing the deeper capabilities that increase the likelihood of innovation taking place—and of more rapidly linking innovative products, services and processes to profitable growth.

Among the practices that are apparent among innovation leaders in and out of manufacturing, including the companies participating the innovation roundtable, are the following:

Focus on more structure, less serendipity –

A concerted effort to create and evolve the processes, tools, organization and personnel that make executing innovation a less serendipitous affair and a much more structured business discipline, with measurable, predictable outcomes.

Evaluate multiple innovation dimensions –

A broader understanding and application of innovation to include dimensions beyond just products—focusing also on innovations in new business models, delivery channels, supply chain and customer experience. Integrate customers into innovation processes – surfacing and integrating customer needs and desires into innovation processes with approaches and tools that promote ongoing research, observation, communication and collaboration.

Bring greater discipline to managing innovation portfolios –

Imposing more rigorous checkpoints and financial analyses to prudently vet innovation projects as they work through the pipeline, and managing the overall risk profile of the product and services portfolio.

Cultivate innovation in people –

Recognizing the criticality of identifying, cultivating and reinforcing behaviors and skill sets that are vital to the success of innovation, especially in celebrating success and “walking the talk” on accepting failure—smart, valiant attempts that fall short.

2. The State of Innovation Today— New Perspectives, New Capabilities

Overview

Moving innovation to the center
In hotly competitive and increasingly global business environments, companies are examining every aspect of their operations for opportunities to improve performance and to gain competitive advantage. No major business process or function has escaped executives' scrutiny—from the supply chain to finance to customer relationship management.

Innovation is increasingly a vital element across these and other efforts. In fact, it has become the pillar of many organizations' overall growth strategies. Companies that are consistently rewarded in the market and weather the storms of economic and leadership changes are superior in this practice over time. As outlined in the sidebar *Innovation and High Performance*, Accenture's ongoing research into the characteristics of high-performance businesses has found that innovation delivery is a capability that colors a high performer's entire "competitive essence." [Sidebar 2]

For purposes of this report, innovation is considered the creation and capture of value in new ways. In addition, as will be discussed in detail below, the robust practice of innovation should imply:

- Seizing opportunities that incorporate more dimensions than just products or technologies (for example, services, platforms and customer experiences)
- Constructing pipelines of many innovations with different release timeframes
- Developing the core capabilities to make innovation a discipline, with systematic processes and supporting tools and organizations

Figure 1



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Putting innovation to work in U.S. manufacturing
Thinking about and executing innovation was the subject at hand at the June 2008 Innovation Roundtable, a gathering of U.S. manufacturing senior executives in Washington, D.C., co-sponsored by The Manufacturing Institute and Accenture. The findings from the roundtable are relevant for manufacturers of all sizes, in all regions, not just large multinationals in U.S. industrial centers. In fact, the manufacturing supply chain succeeds only when small and medium suppliers that are key components of it are as innovative as their larger customers. High-visibility innovators, notably those in the well-known

consumer-goods arena, are far from the only engines of innovation. In fact, as the roundtable findings demonstrated, it is very instructive to look at smaller industries and companies for ideas on their innovation strategies.

Participants at the roundtable—as well as senior executives from the U.S. manufacturing sector in general—can be characterized by their pragmatism and resourcefulness. They shared great insights on their innovation approaches and practices, which are broadly applicable for manufacturers (and their customers and suppliers) to achieve greater value.

Climbing the steps of innovation maturity
Though developing superior innovation execution capabilities is a largely iterative process—always subject to refinement and renewal—it is helpful to think of the end goal in terms of a progression toward innovation maturity as described by the Accenture Innovation Maturity Model. (See Figure 1). Companies that succeed as innovators tend to climb these steps (with increasingly fast, repeatable and multidisciplinary tools, processes and methods) to achieve greater innovation results (characterized by increasingly greater returns, predictable outcomes and market leadership).

Innovation and High Performance

Accenture's ongoing research into the characteristics of high-performance businesses has found that innovation delivery affects all aspects of a company's entire "competitive essence." This essence is achieved by balancing, aligning and renewing three building blocks of high performance:

Market focus and position –

Having a winning innovation capability that enhances companies' ability to know where and how to compete

Distinctive capabilities –

Discovering and executing unique business models or processes they can use to differentiate themselves

Performance anatomy –

Creating mindsets and behaviors among their people to continually sharpen their offerings and market presence in the face of enormous and swift change

High performance, for Accenture, means effectively balancing current needs and future opportunities, consistently outperforming peers and sustaining superiority across time. Winning the innovation game over the long term—just as in achieving high performance in this broader sense—requires management and execution of repeatable processes that promote balance, consistency and sustainability.

Figure 2

Organization's commitment to innovation

Support of CEO to Innovation

Frequency of Innovation

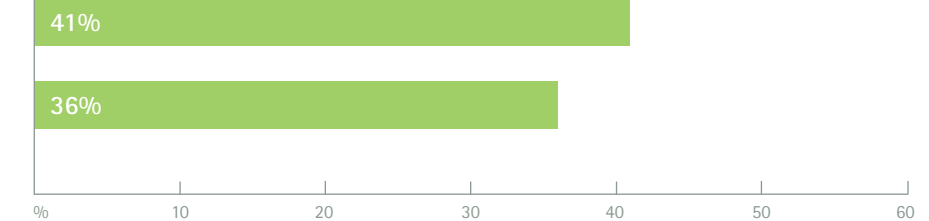
Pace and speed of innovation

"Percentage of companies indicating that they are stronger than competition with respect to . . ."

Commitment



Execution



Source: Accenture-sponsored survey, conducted by the Economist Intelligence Unit. Copyright © 2008 Accenture

How companies are faring in their quest for innovation

What is the state of innovation today? How are companies faring in their quest for innovation? What is their level of commitment to the practice? And more importantly, how effective are they in executing their ideas? What do they consider their main challenges and how do they overcome them?

To answer these and related questions, Accenture commissioned a survey in late 2007, conducted by the Economist Intelligence Unit, of 600 executives at major companies in North America and Europe. Respondents included

board members, CEOs, CFOs and other C-level executives, as well as senior managers—personnel with broad perspectives on their organizations' activities, capabilities and performance. Key findings from the survey highlight the challenges that most organizations face as they seek to enhance their innovation execution capabilities and results.

Gap between innovation commitment and execution

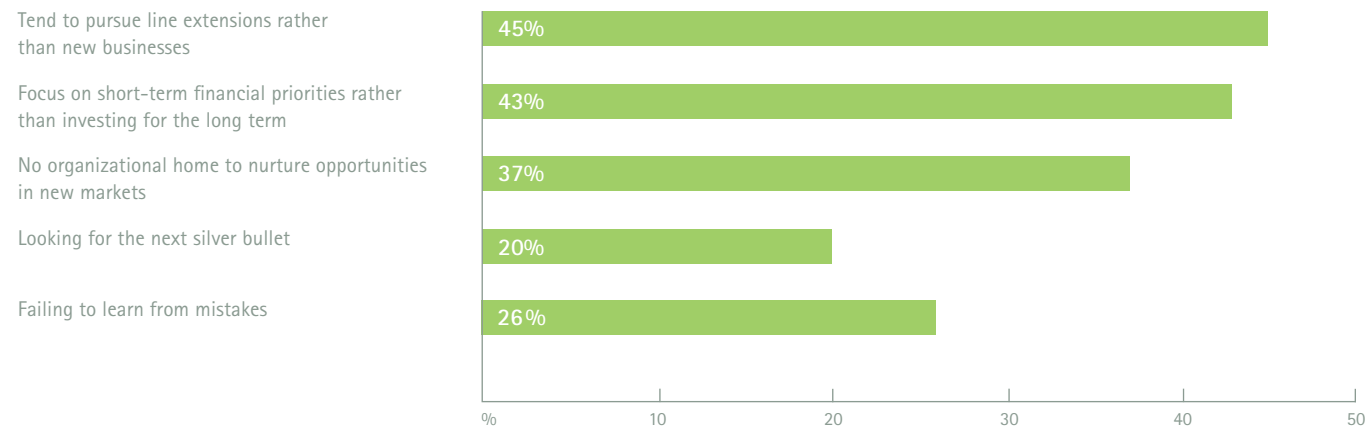
More than 60 percent of the companies surveyed are pursuing business strategies that depend on a stream of innovation. Eighteen

percent say they are totally dependent on innovation for their long-term success. When asked to distinguish between their commitment to innovation and their ability to execute on it, a noticeable gap emerged. Slightly more than half of the companies believed they were stronger than their competition with respect to commitment to innovation and their CEO's support. But when it came to frequency and the pace and speed of innovation, respondents thought they were in a weaker position than their competition. [Figure 2]

¹All of the respondents' companies had more than \$750 million in annual revenues, and nearly two-thirds had annual revenues of at least \$5 billion. The majority of respondents (58 percent) were based in the United States, with the rest based in the United Kingdom (16 percent), Germany (15 percent) and Canada (11 percent). The companies represented a broad range of industries, including financial services, technology, energy, logistics, aerospace, defense, media and entertainment, manufacturing and professional services.

Figure 3

"Which of the following barriers to innovation have you observed often in your organization?"



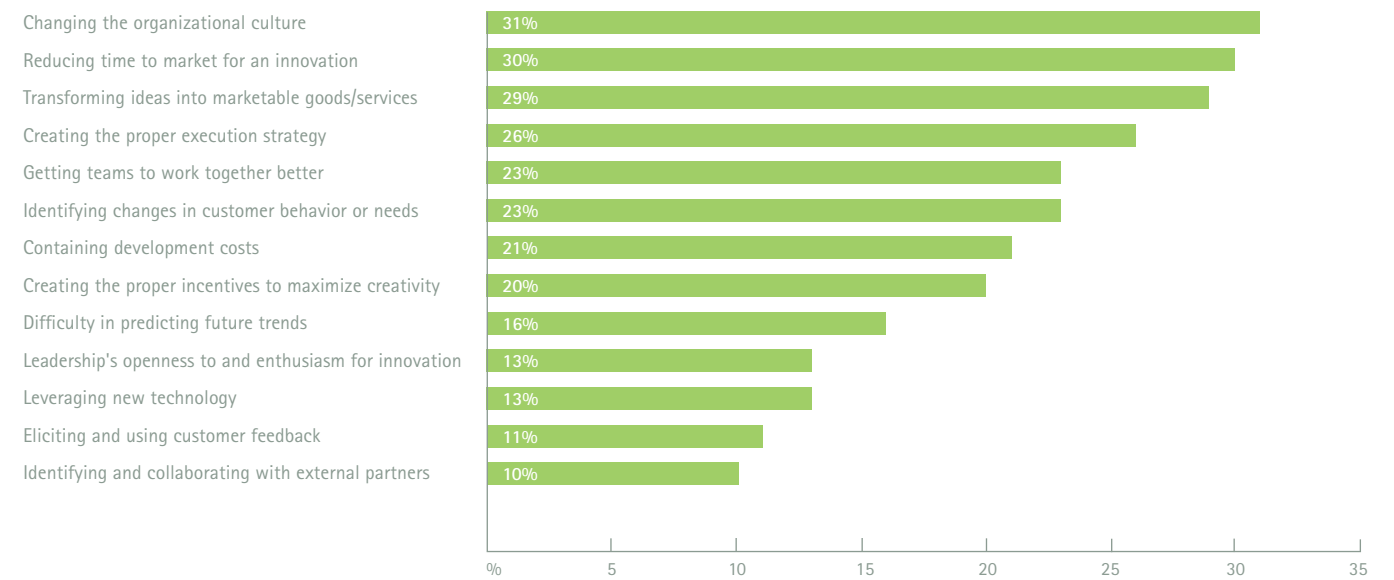
Source: Accenture-sponsored survey, conducted by the Economist Intelligence Unit. Copyright © 2008 Accenture

Barriers to innovation

An important component in executing an innovation strategy is to address barriers that may stand in the way of effective management. Survey respondents' most-often-cited barrier was a tendency to pursue line extensions rather than new businesses. [Figure 3] In many organizations, there is indeed a natural tendency to take this route, and it often makes sense. But companies too frequently structure metrics, incentives and processes geared towards "safer" line extensions—sometimes at the expense of growth and innovation. Other top barriers were tied to an overemphasis on short-term financial priorities, and the lack of an organizational home to nurture opportunities in new markets. The latter issue is particularly troublesome when development responsibility and investment for an opportunity straddles two or more business units.

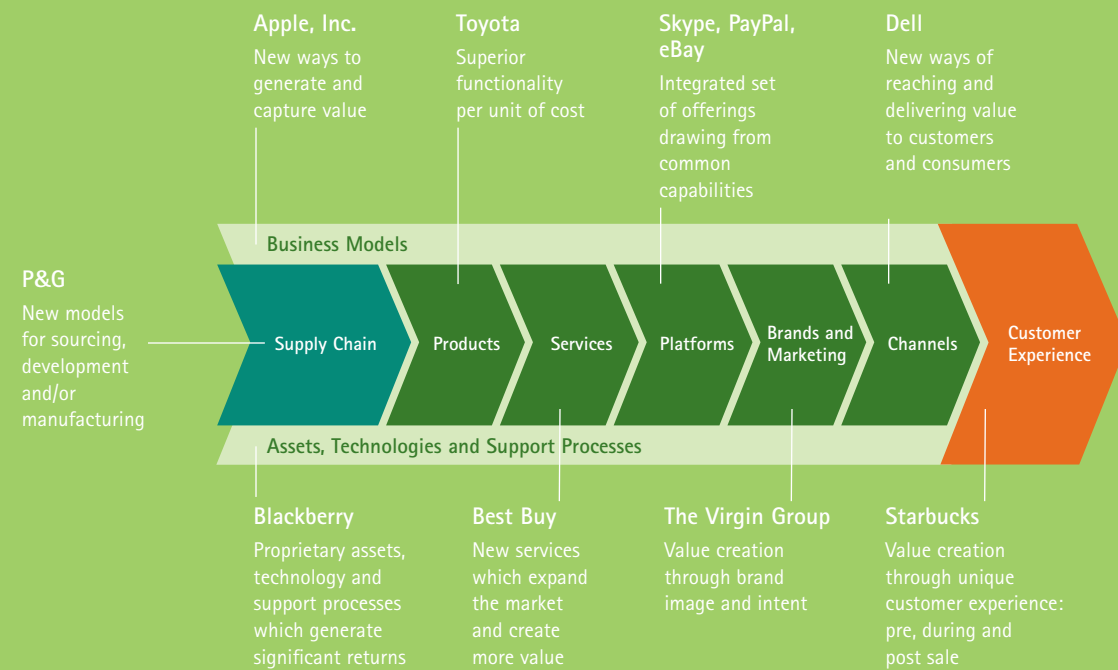
Figure 4

"What are your greatest innovation-related challenges?" (% of respondents)



Source: Accenture-sponsored survey, conducted by the Economist Intelligence Unit. Copyright © 2008 Accenture

In a similar vein, the survey asked companies to choose from a list for their greatest innovation-related challenges. [Figure 4] After "changing the organizational culture," "reducing time to market for innovation" was a close second. The latter finding squares with Accenture observations gathered from client work in a number of industries, which are under tremendous pressure to compress their life cycle of innovation and development.



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Many of the most powerful and valuable products and services on the market are those that integrate several different dimensions of innovation. In fact, in most cases a strong innovation has more going for it than just one of these dimensions. Apple's iPhone is a good example: strong product design innovation plus a unique business model plus a customer experience element. Successful innovators, such as the representative companies noted in the graphic above, often tap into more than one dimension for their products or services to go beyond traditional boundaries. The resulting innovations in such cases have the potential to be more sustainable and difficult to replicate by competitors over the long term.

Revising three misconceptions about innovation

The survey data shows that although innovation is on the radar screens of many companies, there are varying degrees to which companies are able to execute. Some of these shortcomings are related to tactical issues such as a lack of speed to market. But a number of misconceptions about innovation linger and can also impede efforts to establish the right strategic direction from the outset.

Misconception 1: Innovation equals technology or products

Fact: Innovation can address several dimensions, not just technology or products

Technology is certainly a key part of innovation, but it is a mistake to equate the two. Some of the most powerful instances of successful innovation show the limits of this equation. A ubiquitous example is Starbucks. Twenty years ago, one might stop in a gas station for coffee-to-go for 50 cents. Today, Starbucks has succeeded at price points 10 times that amount. Admittedly, it is a different and (most would concede) superior cup. But much of Starbucks' innovation and value related to more than a plain cup of Joe. It offered a very different customer experience, providing a comfortable place for socializing or working. It created a national brand associated with coffee, something that did not previously exist in quite this way. It developed a variety of new products that have entered the popular lexicon, whereas previously one thought of two coffee offerings—regular and decaf.

In addition, when many people think about innovation, they focus on new and shiny product offerings in the marketplace—a new line of harvesting equipment, an MRI machine, a fuel cell car.

But, as the Starbucks example demonstrated, multiple innovation dimensions offer opportunities for creating and capturing new value that go beyond technology and products. Accenture's innovation framework as outlined in the sidebar below details these value options. [Sidebar 3]

Misconception 2: Innovation is a long-term project

Fact: Innovation can deliver value over multiple timeframes, not just long term

As the innovation survey showed, many companies struggle to dedicate themselves to a systematic innovation practice. We are faced by quarterly pressures of Wall Street, the thinking goes. If we are going to invest in innovation—the resources, processes and time needed for that—how are we going to meet our quarterly targets? Innovation is great, but it's basically a long-term thing; we have to pay attention to the here and now.

Innovation is about creating and capturing new kinds of value in whatever way is most relevant to a particular industry, and over a range of timeframes. In its best sense, it provides a steady flow of new releases over time, not just an occasional blockbuster product or service sometime down the road.

It is typically best to think of innovation as a portfolio, and to lay out a set of innovations that will be ready for release over different timeframes. With this framework, some initiatives may be designed to pay off in the here and now; others may have mid-term or long-term objectives of five or 10 years.

Misconception 3: Innovation happens by chance

Fact: Innovation is a discipline, not a random process

The third misconception is that innovation is some random, chaotic process, a sort of black box full of creativity. Creativity is indeed a driving force of innovation—ingenious responses to gaps in the market or spoken or unspoken customer needs. Companies that succeed as innovators over the long term, however, find a way to harness that creativity and use it for greater strength with processes, supporting tools and so on to promote repeatability, better management and better predictability.

In essence, they view innovation as a discipline. Innovation should be like any other business endeavor—such as supply chain, finance, marketing or human resources—one with formal, codified processes, people and tools to help direct and implement the creativity that is its chief component.

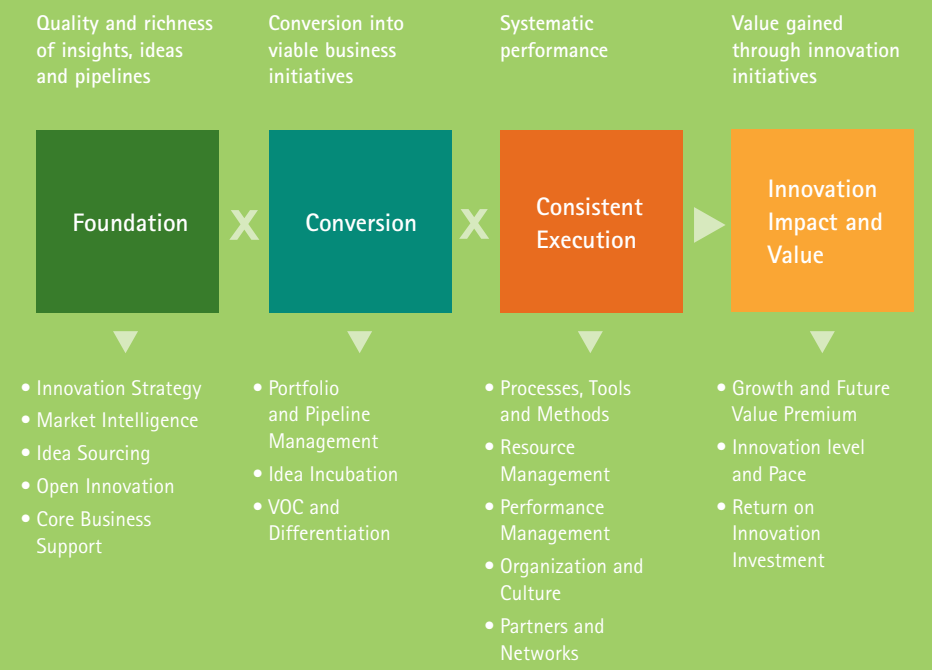
Three innovation capabilities to master

Through its research and work with clients, Accenture identified three fundamental innovation capabilities that high-performance innovators cultivate in order to generate and sustain consistent value. The framework—including Foundation, Conversion and Consistent Execution—features a multiplier between capabilities. The cumulative impact from all of them helps to maximize the value from innovation. The sidebar on the next page details these capabilities. [Sidebar 4]

The next three sections of this report expand on the themes explored above. They also summarize key ideas developed in the innovation roundtable and in follow-up interviews with participants, specifically on:

- Developing and supporting your innovation strategy
- Delivering innovation to your customers
- Building innovation capabilities in your people

Innovation Capabilities to Master



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Foundation
This concerns the quality and richness of the insights, ideas and pipelines within the organization. Many companies are hampered right out of the gate by their inability to collect insights from customers or even their own workforce and create the conditions that generate high-quality and high-potential "foundations" for their innovation initiatives. Little collaboration, lack of diverse sources for insights and ideas and risk averse culture, among others, lead to only to a series of narrow, "me-too" ideas.

Conversion
Many companies lack the ability to synthesize intelligence. This is where a strong Conversion capability comes into play—the ability to effectively convert the high-quality foundation into economically viable and profitable offerings.

Flexibility and judgment are important in Conversion. Innovations have different risk/return profiles. The more "out there" a promising idea is, generally speaking, the greater the risk and potential. Ideas that are a little away from a company's mainstream need to be evaluated in a disciplined way, just like all ideas entering the innovation pipeline. Companies certainly need to develop a structured process, and the fortitude to eliminate losers, so scarce resources can be devoted to other, more-promising initiatives. But they require perhaps more flexibility and measured judgment, backed by different steps than the traditional stage-gate process, to ensure that the business appropriately nurtures, tests and shapes promising ideas through to maturation.

Consistent Execution
Many times organizations make a very public push towards innovation, but do not have structured, consistent ways of managing it as a process with ongoing capabilities. Achieving reliance and consistent innovation performance comes down to executing on the initiatives, creating a Consistent Execution capability and a high and sustained C-level commitment. Investments need to be made in tools, programs and dedicated resources to enhance, track and sustain the organization's capacity to innovate. Education and training must occur so that people know what is expected; and new reward structures need to follow so that behaviors also change.

3. Develop and Support Your Innovation Strategy

Whether they are responding to specific challenges or operating from a position of strength, manufacturers that are attaining a high degree of maturity in their innovation practices are adept at making innovation central to their overall strategies for growth and high performance. They are clear in their commitment to the discipline of innovation, one that demands formality, organization and support to evaluate ideas and convert them into workable projects and activities. In short, to them, innovation is something done on purpose; it is not a matter of happenstance. They make executing innovation a less serendipitous affair and much more a structured business discipline in an effort to gain measurable, predictable outcomes.

On June, 2008 The Manufacturing Institute and Accenture co-sponsored an Innovation Roundtable which was comprised of a diverse group of U.S. manufacturing senior executives

(see page 29 for a participant list). The roundtable discussions suggested a number of actions that manufacturers can consider to develop and support their innovation strategies.

Make innovation a catalyst for driving high performance

Use market and competitive challenges to initiate improvement

Manufacturing executives who are bolstering their innovation capabilities today have arrived at their current strategies through a number of routes. In many cases, they have been prodded into action through dramatic new pressures—for example, major crises related to new global competition or industry consolidation. In other cases, manufacturers have come to understand that the ways they conceived, evaluated and executed new ideas were simply not bearing much fruit or were marked by a lack of discipline and strong measurements.

For example, the Engine division of Cummins, Inc., a major diesel engine and power-generation equipment manufacturer, revamped its innovation practices as part of a program to transform the division, according to Sean Milloy, Engine Business Chief Technical Officer. Cummins had confronted two simultaneous challenges: emissions-reduction mandates were dramatically accelerating, and the automotive and off-highway industries were consolidating. Both put special pressure on Cummins' heavy-duty, on-highway market offerings, particularly in the United States. Delivering differentiating quality, features and economics for its engine lines was even more critical because its top nine customers were also making their own engines. Cummins had to innovate, delivering something more than a "me-too" product.

Another, if more subtle, motivator in setting an innovation strategy in motion is a clear realization that a company is not getting enough from its innovation practices. Manlio Valdes of Ingersoll Rand Industrial Technologies saw this in his own division before Ingersoll Rand made innovation a core part of its corporate business strategy with more formal, highly structured processes. "You come from a situation where somebody recognizes that this is just hit or miss," said Valdes, Vice President of Global Product Management. "You're spending a significant amount of resources to yield very poor results. And it's unpredictable, so you're not clearing any of your financial hurdles."

Corning, the global specialty glass and ceramics giant, has an exceptionally long history of funding and supporting innovation. In fact, in the spring of 2008 it celebrated its 100th anniversary of having a formal central research lab. Even during a recent telecom downturn, which dramatically impacted financial performance in the company's fiber-optics business, Corning continued to fund research to the tune of about 10 percent of revenue.

But in light of that downturn, Corning's management committee, the top seven executives in the company, unleashed a new focus to the company's strategy: growth through innovation. Bruce Kirk, Director of Corporate Innovation Effectiveness, said that "one of the things we did coming out of the downturn was to step back a little and study when we were successful in the past, what did it entail?" Corning articulated something called its innovation recipe, a framework depicting the key ingredients of historical projects which were successful.

Set stretch targets to inspire innovation and growth

One feature of Cummins' strategy has been to set aggressive new targets for each business unit, higher targets than in recent years. "We set new, higher sales and profit targets for the company and thus for each business unit which are different by business unit as each has a different set of market opportunities," said Thad Ewald, Executive Director of the Growth Office, a part of the Cummins Corporate Strategy group.

The Manitowoc Company takes a similar approach. Corporate strategy imposes some very specific targets that embed innovation into the operation of this global manufacturer of cranes, foodservice equipment and marine products, according to Terry Growcock, Manitowoc's Chairman. Since the mid-1990s, Manitowoc has set a goal at the corporate office dictating that, excluding service income, 80 percent of its sales must be from products that it did not have in the portfolio five years earlier. Part of that change is product-line extensions, part is new markets, and part is a set of entirely new products, he said.

"We're trying to have market leadership in each of our three segments," Growcock said of the strategy. "It's telling our people, 'Raise the bar to keep competition at arm's length on all of this.' That doesn't mean that we have all new products, but we are constantly reinventing ourselves." The strategy is especially important to Manitowoc's crane business, noted Growcock. The life expectancy of one of Manitowoc's crawler cranes might be 30 years or more, underscoring the need to give customers innovative and value-added reasons to buy new equipment.

Included in Corning's Culture of Innovation is a simple appreciation of patience and tolerating longer time horizons for innovations bearing fruit.

Corning's Kirk noted that his company's LCD business actually started back in the mid-'60s with a manufacturing process originally developed to make windshields for automobiles. "We found out eventually that the characteristics of that process were exactly what were needed for the display business in terms of the surface quality and other characteristics of the glass," said Kirk. Many of Corning's big innovations can be seven to 15+ years in the making. According to Kirk, Corning is seeing road maps that go out, at times, as far as seven to 12 years with operating divisions—certainly a time horizon that promotes thinking outside 90-day routines for delivering results.

Build and sustain the infrastructure to move innovation from "serendipity to predictability"

Introduce standardized processes and tools to increase predictability and value generated from innovation

Manufacturers that are moving up the steps of innovation maturity find their progress depends on robust, end-to-end innovation processes and supporting tools. By instilling formality and structure to what was once a sometimes haphazard undertaking, companies are better able to unleash more predictable outcomes from their innovation efforts—or, as was memorably framed by Manlio Valdes during the roundtable, move from "serendipity to predictability."

On the front end of the pipeline, manufacturers are using processes and capabilities that help identify new markets, technology, and customer trends, and integrating these into insights which trigger development initiatives. They help to surface and fill gaps in a manufacturer's overall products and services portfolio.

Manitowoc, for example, uses what it calls its Product Voids Matrix as part of each business segment's strategic process. This tool shows where Manitowoc faces competitive vulnerabilities, both from product and geographic coverage standpoints. The Product Voids Matrix goes through a number of iterations, initially driven by the marketing department, but later making stops in sales, engineering and manufacturing.

"It really helps focus us on gaps within our products," said Growcock. On new product development—as well as acquisitions and joint ventures, which close other gaps—the Product Voids Matrix helps Manitowoc align with its strategic direction. "We don't get too far outside of our scope, our capabilities or our customer base," said Growcock.

Traditional stage-gate processes for product development, which are increasingly rigorous, are common among manufacturers' innovation processes. Honda, for example, uses its SED (S is for sales, E for engineering or manufacturing, and D for development) process to refresh current products and prepare for new ones, said Rick Schostek, Vice President of Honda Manufacturing of Indiana. They are in that order on purpose, according to Schostek. "First we've got to find out what the customer wants," he said. "Next, how can we manufacture it? Finally, we set about designing it. We actually involve all three of those disciplines in the new model development cycle from the outset."

"For us, that is a very well-defined process," he said. There are scores of checkpoints along the way—with formal evaluations against Honda's

targets—a process that might take 36 months from the start of that project till three months after Honda produces the first one.

Milloy credits the introduction of Six Sigma tools throughout development as instrumental in the Cummins' innovation process. "They drive a more relevant set of voices than in the past—of the customer, of technology, of regulators and of business," said Milloy. In addition, Cummins' Analysis-Led Design (ALD) capabilities, combined with the decision-making processes within Six Sigma Technology Development for Six Sigma (TDFSS), has led to a better understanding of the many potential technology choices and a rigorous process to select the "right" one, and then certify or validate it with both analytical tools and experimental validation.

"The tangible outcome from this is technology that is ready to be applied to a dedicated and focused new product development team," said Milloy. That team can now move quickly with the goal of executing and industrializing the technology for production in three years or less. It can focus on execution when the technology is stable, he said, rather than continuing with "invention" during the product industrialization phase.

Outcomes

Rolling out specific processes and supporting tools enables manufacturers to establish a clear business and financial structure to manage innovation. These tools and processes allow companies much greater visibility into their pipeline. Where does a company stand in one year? Two? Five? For Valdes, this is critical, as he said, "That is how we balance the short term and the long term. You can project. You can give financial projections. You can establish road maps."

Managing innovation "like a business process" also enforces discipline in decision making, helping executives determine which ideas to cultivate and which to trim. It also provides them clearly articulated and supported business rationales that can be communicated to employees to rally them around a company's innovation strategy.

One other thing that robust processes give you, according to Valdes, is nimbleness. Having robust processes puts companies in a position to "be ready to really turn on a dime as a new technology or a new disruptive movement from your competitors comes into play," he said.

Finally, roundtable participants noted while robust practices can be a very good thing, the rigid application of them can occasionally introduce barriers to relatively unfettered creativity or hinder the ability to bring consumer insights into the innovation process—spurring even greater creativity and relevance. Balance is the key.

Corning's Kirk noted in a discussion related the importance of Portfolio Management, that companies seeking to roll out innovations face risks if they don't achieve a balance of short, medium and long-term projects.

"Obviously, relative to following a stage-gate process, if you underwhelm it, you'll probably be making mistakes that will lead to costly rework or failures," said Kirk "just as costly, If you overwhelm it, however, you can maybe drive your risk down to as close to zero as you're going to get it, but you're likely to be two or three years late to market, which obviously has a significant cost as well."

Establish groups to promote innovation leadership, accountability, coordination and best practices

Increasingly, manufacturers are establishing dedicated offices to provide a primary point of accountability and coordination for growth and innovation, and to spearhead improvements in innovation execution. Cummins' senior management, for example, sponsors a Growth Office that takes on this role, an organization that Thad Ewald directs. At Corning, a new organization is has been created called the Strategic Growth Group; it is physically located in Corning's research facility and reports directly to the CTO. The role of this Strategic Growth group is to identify Corning's next big opportunities. Corning has paired the best and the brightest from a market standpoint, and the best and the brightest from a technology standpoint, to do assessments on very early stage or emerging opportunities, as part of this Strategic Growth group.

At Cummins and Corning, as well as other companies, these offices, and the senior innovation executives who lead them, fulfill a number of functions.

Promote longer-term thinking

A key part of Ewald's job is to facilitate a process that identifies and keeps after longer-term growth opportunities for the business. Given that the Cummins business units are frequently planning for five years out, the office seeks to illuminate what might be some blind spots regarding even longer-term, significant trends.

Ewald works with people in the business units to avoid artificially cutting off good ideas before they can truly understand their long-term viability—a duration that might easily exceed a business unit's explicit planning period. "The Engine business unit typically plans further out than some units," said Ewald. "But our Filtration business unit and Power Generation business unit don't plan longer than five years. Their product-market cycles are shorter."

"One thing we are charged with doing in the Growth Office is to help the business units think about opportunities 10 or 15 years down the road," he said. "We have a mission to look a little farther"—but without losing focus or getting "too wild."

Share innovation best practices

A key activity for Kirk and his group is to oversee innovation effectiveness processes and share what works across divisions. Customer and market understanding is critical in this endeavor, and he has a strong relationship with key members of Corning's marketing function. He is responsible for road mapping at Corning, one of the ways the company identifies opportunities. Kirk's small team also assists key project teams to assure their effective and efficient application of Corning's Innovation Process and tools. Kirk has a small team of innovation effectiveness facilitators that align with the operating divisions. Their role is to work with the leadership of those divisions to help them articulate specific goals around improvement and applying the innovation process. "So they work closely with the business units to try and get very unit-specific plans," he said.

Solicit and embed best ideas from far-flung organizations

The Cummins Growth Office looks to engage the global organization in identifying ideas and insights that can support innovation. As Ewald said, "We have a very broad company. We need to be able to get ideas from outside Southern Indiana," where Cummins is based. For example, he says he needs ideas from India, where Cummins has had a presence for more than 40 years, and from China, where it's been for almost 30 years. "We have very large organizations of people in those areas who want to be engaged with the mission just as much as our employees in the U.S. and Europe," Ewald said.

Serve as a good idea's bridge across multiple business units

The innovation growth office and its leadership can also provide the organizational bridge and the coordination to make sure that good ideas are supported and executed despite organizations that are sometimes fragmented.

Kirk's team strives to foster a stronger relationship between the operating divisions and the technical community. Given our approach, using a centralized research facility, we strive to foster a stronger relationship with the operating divisions. "Unlike a lot of companies," said Kirk, "we're very committed to a centralized research facility - but, we've tightened our relationships or our linkages to those divisions via road maps."

"The reason you sometimes need a central office is that ideas sit between existing business units," Ewald said. "The business units are partly in, but not all in. They're still spending money, but nobody is actually creating the critical mass to move an idea forward." Providing that organizational "glue" around innovation is a part of the mission of Ewald and his team.

4. Deliver Innovation to Your Customers

Manufacturers are surfacing and integrating customer needs and desires—explicitly articulated as well as hidden or unformed—into their innovation processes with a variety of approaches and tools to promote ongoing research, observation and collaboration.

Groups responsible for growth and strategic planning are also taking a more disciplined approach to managing their portfolios. They are incorporating more checkpoints and financial analyses to prudently vet innovation projects as they work through the pipeline—being patient yet dispassionate about their viability and likely profitability—and to manage the overall risk profile of the product and services portfolio. This pruning process is supplemented by a greater attention to downstream issues related

to quality, design, finance, supply chain and others that can impede consistent execution of innovation for customers.

Integrate customers into your innovation process

Getting customers in on the innovation process is essential. Sometimes traditional methods work; sometimes manufacturers need to incorporate a combination of techniques, conventional and unconventional, to ensure that their innovation process acknowledges customer perspectives and needs.

In the former category are customer satisfaction surveys and similar instruments. They have some utility, but hardly provide the tools required to unearth unmet needs or gain insights for new breakthrough offerings.

“We have reams of customer satisfaction data from the past that didn't really tell us anything,” said Cummins' Thad Ewald. The key for Cummins and other manufacturers is, as Ewald put it, “engaging with our customers and getting actionable data and insight, so we can actually hear the voice of the customer.”

And this means listening, “really listening, really getting the thread,” he said.

Manitowoc gets customers involved in innovation through its Voice of the Customer (VOC) process. This consists of a series of customer interviews, generally held at customer premises and targeting the key markets where any new product is likely to be popular. Manitowoc product marketing personnel conduct the

interviews, which use a series of tailored questions to determine specific market needs—for example relating to the cranes business, capacity, reach and transportability. This information is then summarized and contextualized in terms of Manitowoc's existing product offering and any suggested new product offering. This is benchmarked against competitor cranes before recommendations are given. The VOC process continues through manufacturing with regular consultation with the product development team, which includes customers as well as Manitowoc personnel from the engineering, sales and marketing departments.

A number of roundtable participants also highlighted their use of conjoint analysis, a technique used to deepen their relationships with customers by assessing different product features that a customer might value.

One such company is Al-jon, Inc., a fast-growing manufacturer of scrap processing equipment, according to its CEO and owner Kendig Kneen. “One thing we have tried to do as our business expanded,” said Kneen, “is to use our customers to develop our growth and innovation strategies through conjoint analysis and other tools.”

“It was new for us, but it has been a good process that has really formalized what we do on a day-to-day basis as a factory-direct company,” he said. “It allowed us to look at it from the standpoint of how we can employ these tactics in our daily work, so we get a constant input of customer information. What I liked most about conjoint was that you asked a question many different ways to get the true meaning.”

Go observe!

It is hard to overemphasize the importance of going out to customer sites to see first hand the problems customers encounter and how the manufacturers' products are helping—or not.

“Go observe!” said Mary Andringa, President and CEO of Vermeer Corporation, which manufactures agricultural, construction, environmental and industrial equipment. “I think as you get bigger, you have to push all your folks out more to customer job sites, and look for the unarticulated needs.” It is by far the best way to see if there are specific new products needed or if existing products need updating or enhancing, she said.

Customer observations can facilitate a much greater understanding of how the product is used; innovation in turn is often inspired by that observation. It may have nothing to do with adding functionality and technology but rather ease of use and installation or related matters.

Spend a day in the life

Gathering “day-in-the-life” data proves invaluable in generating and then incorporating client-specific ideas into innovative products, services and approaches.

Find a balance between major customer needs and “minor” customer insights

There is a great tendency in product and service development to address the needs of major customers. Satisfying them only makes good business sense. But manufacturers may find themselves in a situation where overemphasizing a tried-and-true client roster exclusively may cause innovation to slow or operate too much on the margins of what already exists with, say, line extensions. It is

necessary to find the right balance between the needs of your most important customers and those that might expand your thinking and represent future trends in the industry.

In a related area, in sometimes small customer communities, it is sometimes necessary to navigate through sensitive issues relating to who will benefit from certain manufacturer innovations. “One of unique things that we face in the industry where we operate is that there are just a handful of big players globally,” said Rajeev Karpe, Global Operations Director of J.M. Huber's Silica products. He said that the company goes through ideation and the VOC process, and defines very clearly what projects they are going to work on. The hang-up comes at the time for commercialization. “We've got to make some choices,” he noted. “If you go ahead and try to commercialize with one customer, you ultimately end up making the others unhappy because it's a pretty small, tight-knit community.”

They try to resolve the conflict, he said, by carefully defining intellectual property rights up front—that is, who owns what and when; who will participate in developing the next big, bright idea, and who will capture its value.

Judiciously prune the contents of your project portfolio

Use the right mix of evaluation tools

Developing an environment where inspired customer- and market-driven ideas can flourish is of course important. But just as vital in the larger scheme of things is a company's ability to assess and manage which ideas and projects earn the right to enter a company's innovation project portfolio—and how far they are permitted to progress through the development life cycle.

An increasing number of manufacturers are imposing far more detailed checkpoints and analyses than in the past to vet innovation projects as they work through the pipeline. They support their efforts with a variety of evaluation, assessment and management tools, which enables them to patiently yet dispassionately view the ideas' viability and likely profitability and to manage the overall risk profile of the product and services portfolio.

That said, this pruning of the portfolio is not by any means an automatic process, requiring simply filling in the blanks and letting a system spit out a go/no-go or continue/halt decision. There is frequently a tension between creativity, the source of innovation, and the application of rigorous tools, a conflict that needs to be mediated by informed good judgment and experience.

Economic Analysis

Manufacturers broadly employ Economic Value Added (EVA® – a registered trademark of Stern Stewart & Co.) analysis in various forms. EVA (and its variants) is a traditional financial measurement that calculates the economic value of a venture after accounting for its capital cost. "The early stage of our process would be to run an EVA analysis on the project," Manitowoc's Terry Growcock said. "That will be what we would audit once the project is complete to make sure that we did meet the required payback on the EVA basis."

He noted that most companies have far more projects than what they can fit into their schedule. Manitowoc will complete the EVA analysis to determine which projects move forward. "Sometimes it might be that we could get more volume out of one of the products, but we can get a bigger bang for the shareholders with another," said Growcock. "We'll take that EVA analysis and then we compare them to determine which ones we work on first, and prioritize from that basis."

Real options analysis

The weakness of EVA and net present value (NPV) analysis is that they do not allow companies to account for uncertainties and place value on continuous learning and optionally that some innovative initiatives provide. Other tools such as real options analysis and scenario planning are commonly used to help companies evaluate and manage innovation that have a higher risk and uncertainty profile. And they are becoming more common to support decision making.

Real options is an investment valuation tool that enables a company to place value on learnings that will be generated down the road as they make higher risk investments. It is a tool better suited for investment decisions that are more uncertain and that also have phases to them (i.e., one can get out of the investment and stop investing as she learn new facts about the markets, technology and so on).

Ewald said the Growth Office is beginning to incorporate real options analysis as another tool to evaluate potential investments in new ideas. "You make a small investment decision today that leads to more information tomorrow," he said. "NPV is too static for 'early stage opportunities.' He noted that Cummins was working on a project now in which real options analysis was very helpful in allowing the team to think it all the way through. "It's a pretty complex answer to get to the end," Ewald noted, "and the tree gets pretty large by the time you get there. But the nice part about real options analysis is you can see the points along the way. For some problems, it's quite helpful."

Real options analysis puts a numerical value on learning along the way, which NPV does not, said Adi Alon, a Senior Executive in the Process & Innovation Performance service line within Accenture. "It captures the value from learning, which is absolutely critical in the case of innovation because you're

often dealing with ventures that are high risk," he said. "You need to learn down the road whether there are some technology or execution risks that you can't see today. But two years from now, you know which branch of the tree are you on, and at that point you can stop, accelerate or redirect the investment. And that by itself has a lot of embedded value."

Scenarios

Scenario planning, such as Monte Carlo simulation, can also be used to think through options based on different strategic and competitive scenarios, and is especially helpful in evaluating higher risk investments. Monte Carlo simulation is a way to integrate multiple financial and operational uncertainties to develop the range of outcomes of a high-risk project.

Balance risk across the innovation portfolio

Assessing the expected value of individual projects is of course essential to making good decisions. So, too, is balancing the risk of the overall innovation portfolio.

"I'm particularly concerned about the risk profile—that I stay balanced," Ingersoll Rand's Manlio Valdes said. But making project decisions is not centered on which innovations have the highest EVA. Instead, said Valdes, the question is how many projects does he have with a given risk profile? They have different paybacks. "If I'm running pretty thin on the long bets," he said, "I may choose to make a little bit faster judgment on a long bet just because I need that sitting within my portfolio of investments."

Regarding Portfolio, "I think the type of project that you're pursuing will determine how you screen them," Corning's Kirk said. "And I think there are general portfolio approaches that get at mix and balance, because that's obviously key as a company." Kirk

noted that one common approach is to use a four-box matrix as a tool to help achieve this balance. "We tend to look at things in a four-box matrix," he said. (The matrix shows existing and new markets on one axis and existing and new technologies on the other.) The "new-new" quadrant is where the highest risk projects would be plotted—and where the potential breakthrough and new, very large growth opportunities will emerge.

"That's where you want some investments for the future," Kirk said. "It makes sense that, for those projects, the senior officers of the company get involved." At the same time, you need to make sure that you have a balance of projects in the other quadrants too as these have a higher rate of success and are needed to generate the funding for the New/New projects.

Brace yourself for the "people implications" of a more disciplined approach

When beginning to apply more rigor to the evaluation process, it is likely to feel constraining to people who are used to a more ad hoc environment. People have to follow more rules and regulations; some projects will inevitably be eliminated. It sometimes creates problems when an organization starts to make the hard choices associated with an innovation strategy.

"It really is a cultural transformation you have to go through," said Valdes, "because you have to go and get the teams to start accepting that failure is a part of life every day." Valdes recalled the difficulty well. "The first time each of the sectors had to go back and kill two projects," he said, "let alone 50 percent of their projects in one go, you do have a significant change on your hand that you need to guide the team through."

"And the only way you can do it is by having the tools and the education so they understand what world you're migrating to," said Valdes.

But the discipline in the end oftentimes creates a scrappier and more focused team. Recalling the "survival mode" at Cummins several years ago, Ewald noted that they consciously lowered the R&D budget. But out of the limitation sprung some innovation, said Ewald. "By putting the brakes on the spending," he said, "we got improved focus and alignment around the strategy of each business that actually sharpened the innovation pipeline."

Manage "downstream issues" early in the process

Get manufacturing involved early on

Getting manufacturing processes squared away early in the innovation life cycle is an increasingly important activity. Companies need to spend an adequate amount of time on it, and especially its costs, to make sure that ongoing investment is warranted.

Given market expectations and shrinking cycle times these days, investments are getting pushed closer and closer to the front end of the pipeline, said Kirk. "You have to start spending money earlier on your process and manufacturing development as well," said Kirk. "For us, manufacturing processes, over the life cycle of the product, have proven to be a very important component as they can be a significant differentiation, especially in the mature phase. I think [companies should] get manufacturing involved and spend a lot more time on process earlier on."

Engage your supply chain in the process

Rick Schostek, from Honda Manufacturing of Indiana, emphasized the importance of getting the supply chain involved in the innovation

process as well as the customer. He believes that, as an original equipment manufacturer (OEM), there's an obligation to explain the vision and challenges to the supply base. He cited, as an example, the quandary of trying to attain five-star crash safety on automobiles and better fuel economy, which do not necessarily go hand in hand. The first could increase weight, and the weight hurts the fuel economy.

"The challenge has to be laid out to the supply chain first: here's where we're going and what needs to happen," said Schostek. "We need to have a stronger vehicle that weighs less, and then explain how we're going to get there. It's important for the supply chain to understand why we need them to develop their capabilities in using high-strength steel and other materials."

Suppliers not only need to understand the innovation vision, but manufacturers need to make sure the supply chain has caught up to them or can be helped to catch up. Sean Milloy pointed out that Cummins integrates a lot of technology from its supply base into its products. "So if we're working through what may be a very innovative product in the end," Milloy said, "it will require robust technology and we're pushing that envelope as well. Some challenges are: Do we understand those processes as well as we need to understand them? And is the supply base far enough along?" Cummins brings in suppliers—as well as companies with which Cummins has joint ventures—and goes through the opportunities and what they want to accomplish. They work together to advance their products along with Cummins, and/or use something they already had on the shelf that can meet that need.

5. Build Innovation in Your People

Manufacturing executives at the roundtable emphasized the care and development of their prime engine for innovation: their people. "I'd make the observation that all innovation springs from the people we employ," said Bob Ratliff, Chairman of The Manufacturing Institute. "It's fundamentally a human resource issue in inventing, commercializing and marketing new products." Companies need to identify, cultivate and reinforce behaviors and mindsets that are vital to the success of innovation—seeking them throughout the organization (and in the labor marketplace), not just in the traditional new-product-innovation strongholds of engineering and marketing.

Attracting and retaining great people is one half of the equation; the other is creating incentives and support within the culture to make innovators, and innovation, thrive. That means handling failure and success correctly. Reassurances about accepting "failure," despite well-considered attempts, must be more than talk. Ideas need a thorough evaluation and sometimes swift rejection; people on the other hand need to be approached with a view toward the long term and encouraged with practices that cultivate their skills and promote creativity and initiative. Successful innovators are equally attentive to celebrating success, recognizing and rewarding people who have conceived and shepherded innovations through their organizations and brought them to the marketplace.

Identify and replicate your innovation "DNA" across the organization

A number of traits for innovative employees were repeatedly cited: persistence, passion, a can-do attitude. "We have a number of folks who just are intuitive," Vermeer's Mary Andringa said. "They're always asking a 'why' question, digging deeper." They are particularly adept at working well with customers, she said, probing for the way they think and what their businesses need, and are therefore able to team with them to design the next solution. Cummins' Sean Milloy looks for "passion" in his people's work, and across all the company's activities—"whether it's for cost or for doing it better or whatever it might be. They never stop."

Having employees with a passion and openness to innovation is critical at any company; when combined with seeing the customer's needs, it is an unbeatable combination. Al-jon's Kendig Kneen said that "when a customer comes to you and says he has a problem and needs something to solve it, that's when we get engaged." In fact, one R&D response born of this passion-plus-customer-need equation effectively put Ottumwa, Iowa-based Al-jon on the map in its industry.

Kneen recalled that a customer had a machine that shredded scrap metal into clean uniform pieces. "But he needed a better way to feed it," said Kneen. "He couldn't get enough cars to it for shredding." He told Kneen that he needed equipment that would mash the cars down, so he could afford to transport it to his shredder. Could Al-jon do that?

"Not having one order in the plant at the time, my father [Al-jon's co-founder] said, 'Yes, we can do that!'" said Kneen. "And so we found a way to build what he needed, even though we didn't know how to do it when he asked for it." The result, according to Kneen, was the birth of the first commercially built car crusher, a machine to flatten cars, which allowed operators to transport via flatbed trailer their limit in weight rather than volume. It made for much more affordable transportation of this customer's feedstock, in this case end-of-life vehicles, to the shredder.

Seek innovators: all levels, all departments, all temperaments

Other characteristic strands of innovation "DNA" are self-confidence and self-possession. Innovators have a degree of confidence, even courage, to pursue new ideas and initiatives that are beyond their comfort zone and without an undue fear for their careers.

Innovators are found across all personnel levels, from senior managers with 20 years of experience or accomplishment to more junior staff with only two or three years in the organization. And they can be found in all areas of the business, not just in product design. "It's innovation across multiple areas of the business," Andringa said. "You want innovation on the plant floor or in the sales office or even in the back office."

Other executives reiterated this point of looking at innovators in a wider sense to cover a variety of jobs and formal training levels in which innovation may play a big role. Al Bernard, Senior Vice President of Operations at Manitowoc, sees this as part of an industrywide challenge to its thinking about education and training.

At Manitowoc, he said, "I need welders. I need pipefitters. I need electricians. And those are very well-paying jobs." With this new generation, he said, "you're bringing in a new generation of ideas. People are going to do things differently." Many innovations in manufacturing come up from personnel who are not necessarily degreed engineers, he noted. Instead, they are "kids with high school diplomas that come up with these ideas, and they're promoted."

Manlio Valdes noticed something similar when he first took his position within Ingersoll Rand. To get familiar with the organization's history, he examined his division's intellectual property filings. He noted two things about them. One was that a handful of names were on a variety of filings, and from people who were not engineers.

The other characteristic, he later found out, was the temperament of some leading innovators. "By nature, a lot of them are contrarians," said Valdes. "They see the world a little bit

differently." For Valdes, it is important to provide a level of sensitivity to these people or provide a buffer to make sure they know you respect their thinking and value, even if their personalities are a little unique among their peers.

Recruit for innovation

Recruiting for innovation is tricky. Some executives doubt you can actually do it. Your objective should be looking for a diversity of skills, said Kneen. "People from all different types of backgrounds have something to bring to the table," He said. Working with selected universities is also a source for innovation characteristics, said Milloy. "You find really bright individuals who are doing some innovation," he said. "You certainly want to take advantage and try and lure them in."

Communicating the right messages about what your own "innovative environment" offers is also important in attracting the right recruits. Terry Growcock noted it is sometimes difficult to recruit for positions in chilly Manitowoc, Wisconsin, as well as for facilities in warmer climates.

"We're trying to change the brand," he said, partly by communicating effectively on the Web about working at Manitowoc (the company). This means, for Growcock, showcasing global experience obtained by working with engineers in Manitowoc's worldwide organization. "You can design with the best people from a global platform standpoint rather than just the engineers sitting in Manitowoc," he said. His people might be based in Manitowoc. But they're likely to be working on products for customers in different geographies and industries, designed by global teams studded with product and technology experts, and fabricated in India or China or in other places where Manitowoc has production facilities.

Create an environment that enables innovation to flourish

Creating a culture where innovation thrives is in part built upon communication—accurate and repeated messages about the company's strategy and a road map to achieving innovation. It also means demonstrating commitment to their people's development in the way they deal with the success, or failure, of their ideas.

Communicate the strategic vision

Part of the journey to innovation is the need to share your vision with line employees and with customers or suppliers. Andringa, for example, supplements Vermeer's five-year vision with a yearly process called the policy deployment. She characterizes it as "a plan on a page"—"literally finding the few most important things we need to do each year in order to be able to accomplish our vision."

Based on her review of recent studies on why major initiatives or transformations fail at companies, she was determined to avoid one common pitfall: the workforce not understanding where the company was going and why. As a corrective action, she put together an array of communication vehicles, including posters on Vermeer's most important initiatives and projects for this year with icons, so people would try to relate color and visuals with what the key things are. "They're all over our plants," said Andringa. "They're on our performance boards in the plants. Every week, a project person puts together kind of a Q&A on one of the projects. What's happening? Why are we doing it? Why it's important. We try to link what's the big picture with what are the specific things we're doing, and how does that affect the folks in all the different segments on the floor," she said.

Having a strong culture naturally helps in communication, said Rick Schostek, of Honda Manufacturing of Indiana. But culture does not develop and stick without reinforcement. "Our management policies speak to the value of research and endeavor; to respecting sound theory and developing fresh ideas," said Schostek. "That's all taught to our new hires, and it's reinforced in formal training." But he agreed with Andringa that it needs to be reinforced on the spot—"whether that's on the factory floor, the R&D office, the lab or wherever."

For Milloy another important aspect is keeping it simple and direct. When Cummins was going through its innovation-led transformation, said Milloy, the clear message from the CEO was: "We're going to fix the business model or we're going to get out of that business." He had been referring to Cummins' heavy-duty truck business, which at the time was a company foundation—"kind of a shock to the employees." The straight talk was supplemented with plenty of follow-up questions and answers to talk through why it was important, why the model was not working and what needed to change.

Get over failure—rigor for proposed innovations, gentleness for innovators

Get used to failure: very few ideas will ever make it out of the pipeline as unqualified winners. "We all know that not every idea is going to flourish into something really great," said Growcock. "Some are really going to be bums—which only emphasizes the need for a disciplined new product development process."

Ideas that fall short can create a lot of people problems, especially given that manufacturing is such "a very product-centric culture," according to Valdes. If "Johnny" has been an impact tool person for a dozen years, his identity becomes wrapped up in the tool; they are one and the same, said Valdes. But if Johnny wants to design the next line of impact tools, and spends too much money or time in developing designs that will ultimately just not work, management may need to pull the plug. "And that's a personal issue," he said. "Generally, people think that, if you're shooting the project, you're shooting me."

"You have to figure out a way to unhinge the two, so people understand that the creativity and the value they bring to a team is not tied to a specific project," said Valdes.

One way is to create very strong frameworks and practices that encourage greater selectivity and finer analysis among people in the first place. Ideally, said Valdes, product developers would not bring "iffy" projects to the stage-gate for elimination. They would instead be more likely to make that recommendation themselves based on progress toward meeting defined criteria.

Cummins', said Thad Ewald, is working to instill discipline and a sense of responsibility for running their growth projects in a fundamentally sound business way—with business plans just as if it's a venture capital endeavor. "If you don't meet the business plan and the gates in that plan, we're done," he said. And, for Ewald, pulling the plug in a timely manner is important. "You have the responsibility to know when to say, that's enough on that idea."

Second, if you say your company has or is going to promote a culture of accepting failure, you better back it up. You can talk about it being "about the project, not about you," but you need to walk the talk by going through the process and having survivors, said Valdes.

Valdes recalled a particularly challenging time when his division was just starting to enforce stronger stage-gate requirements. Teams assigned to him were having difficulty making go/no-go decisions on multiple innovation projects. So Valdes made his own decision: he cut the current roster of 122 projects by 50 percent in one swoop. "It was gut-wrenching," he said of the experience, and he spent the next two days meeting with people to reassure them. "Nothing happened to you," he told them. "It was the project that died, not you. Let's reload. What's next?"

The end goal is to encourage new ideas—naturally, within the parameters of good sense, strategic alignment and strong evaluation processes. That said, risk taking, and a benign reaction to risks that do not pay off, needs to be a component of the program. "You want a robust pipeline," said Valdes, "one where things go through the funnel and good ideas survive out of the other end." You do not want a culture in which people are so timid or bludgeoned by the aftermath of failure that they feel comfortable only putting "sure winners" into the hopper.

Celebrate success—cultivating ownership and recognizing achievement

You can promote innovation through a number of measures—from small, informal actions to large-scale programs—to celebrate the success of new innovations.

For example, Donna Zobel, President-Chief Executive Officer, Myron Zucker, Inc., recalled a line production person coming up with a simple, but highly effective solution to a problem that had been vexing an important OEM customer. The customer was having to disassemble a Zucker component before attaching a ground clip in its equipment, and in turn selling the completed product to the end customer. Instead of refabricating the component's enclosure, the line employee, a woman named Sandy, recommended that the customer send her the clips for installation. She devised a way to install them and repackage the component. Zucker dubbed the solution the "Sandy clip." It went a long way in making its creator "feel like she had ownership of that part of the assembly," said Zobel, "that she could make recommendations for some change to help the customer."

Schostek said that, though the company operates with a very decentralized organizational structure and focuses largely on local management, Honda does sponsor two formal programs that help recognize innovation. One is primarily for engineering personnel, a Technical Festival, where ideas from R&D and manufacturing facilities are brought forward and presented. Then the best advance to subsequent North American and global Technical Festivals.

"Not everything is a patentable invention," said Schostek. "It's simply people presenting their work in a very simple storyboard to each other and to the top management of the company. "People want to be recognized and to feel that their activity is valued by the company."

The global festivals, the last of which was in London, saw people from 150 different manufacturing facilities around the world, including India, China, Japan and North America, sharing ideas. "And we encourage them to 'steal' ideas from each other," said Schostek. "A good idea that's been implemented at one Honda facility can and should be implemented or adapted for another."

Honda has the same kind of program for its floor-based associates. "They're encouraged to solve a problem in their own area," Schostek explained. "They think of the idea, get it built, test it, implement it and then get feedback on the results."

Andringa noted that Vermeer has a similar kind of program to Honda, albeit at a much lower-key level.

"I'm a past teacher," said Andringa, "and I learned early on that whatever behavior I wanted in students I had to reinforce." Vermeer wanted people to generate and implement their own ideas, and Andringa wanted to make sure success was recognized. She said that this year she believed there will be approximately 20,000 implemented ideas for Vermeer's 2,000 people. Vermeer takes its lead innovators on a two-day trip to visit customers, dealers and plants as a way of recognizing their contribution.

Vermeer also makes a big splash about inventors with patents. She said the company has an annual "inventors club" that celebrates the people who have received an issued patent in the past year. "We give a special inventor's cap with their patent number on it. People are very proud of wearing those."

6. The Manufacturing Institute– Accenture Innovation Roundtable Participants

The Manufacturing Institute, the National Association of Manufacturers (NAM) and Accenture wish to thank the following participants in the June 2008 roundtable. Their contributions in the session and subsequent interviews and suggestions have been instrumental in developing and deepening the findings of this report.

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About The Manufacturing Institute

The Manufacturing Institute is the research, education and workforce arm of the National Association of Manufacturers (NAM), the nation's largest industrial trade association, representing small and large manufacturers in every industrial sector and in all 50 states. The Institute's homepage is www.nam.org/institute.

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About Accenture

Accenture is a global management consulting, technology services and outsourcing company. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. With more than 186,000 people in 49 countries, the company generated net revenues of US\$23.39 billion for the fiscal year ended Aug. 31, 2008. Its home page is www.accenture.com.

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