The Four Dimensions Of Intelligent Innovation
Winning the Race For Profitable Growth
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Winning the Race for Profitable Growth

Over the last decade, companies have made great strides in retooling their innovation engines. Leaner and faster, they can get products from concept to customer in record time. But even a Ferrari does not know where to drive. While there are still plenty of opportunities to enhance execution, inspiration and insight are increasingly the critical challenges for innovation executives. But improving these capabilities demands different, more outward-looking techniques. This viewpoint introduces our thinking on a new approach to ideation and development that we call Intelligent Innovation.

Innovation executives know that a new approach is needed. In our recent survey they reported significant dissatisfaction with their ability to deliver on several ambitious but key performance goals. For example, on average, executives reported that they were seeking a dramatic 29 percent improvement in their innovation hit rate over the next three years. Yet 52 percent were dissatisfied with the ability of their current approaches to achieve it.

To date much innovation performance improvement has been driven by initiatives that are highly analytical, inward-looking, and focused largely on retooling the innovation engine. So far, we have seen three stages of performance improvement:

- **Management control.** Innovation was treated like any other process and controlled with traditional management techniques.
- **Cost control.** The innovation process was fine-tuned or redesigned focusing on a specific performance outcome: minimizing cost and cycle times.
- **Profit control.** Innovation was managed as a portfolio of projects, each of which has to be profitable in its own right.

Each successive stage built on the previous one, but all focused on operational aspects of the innovation process: turbocharging the innovation engine with little thought on how to pick the best places to drive. (see Exhibit 1)

While these “control regimes” have built a critical foundation for future progress, they cannot on their own deliver

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the desired results. To boost performance to the next level, executives need to simultaneously loosen and tighten their approach to innovation. Loosen it by looking outward and opening themselves up to customers, collaborators, and their own creative side. Tighten it through continuous improvement—and also by attempting to embed an innovation culture into the organization’s DNA.

Recognizing the need for a new approach, many organizations are working to complement their control regimes with something more outward-looking and creative. Most of these efforts, however, are piecemeal and lack a core point of view that can animate the organization and drive positive cultural change.

We see Intelligent Innovation as a comprehensive approach that can support the next phase of innovation performance improvement. Why Intelligent Innovation? Cognitive researchers have found that successful human intelligence relies on a delicate balance among aptitudes for analytical insight, practical insight, and creative insight. Similarly, successful innovation demands an equally deft balance between the analytical rigor of the control regime with a softer side encompassing creativity, curiosity, cultural sensitivity, leadership, agility, and a learning organization.

The practice of Intelligent Innovation complements the strengths of the current control regime with excellence in four critical areas (see Exhibit 2):

- **Customer Insight.** The most important performance improvement lever reported by executives was *improved customer understanding*. Nearly 50 percent of respondents were dissatisfied with their current approaches. Intelligent innovators work hard to understand the evolving needs and critical priorities of their customers—and to increase customer participation in the innovation process.

- **Global Network.** In a globalizing world, organizations that maintain a “headquarters knows best” mentality are at a disadvantage. Intelligent innovators know how to leverage dispersed knowledge across the globe, whether inside or outside the organization, and they integrate each site or external partner into a seamlessly managed innovation network.

- **Future Foresight.** Although many companies do scenario planning, few use it creatively to identify tomorrow’s market opportunities and risks—and to drive innovation. By teasing out the strategic and tactical implications of likely scenarios in conjunction with senior management

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**Exhibit 2**

The Four Dimensions of Intelligent Innovation

![Exhibit 2 Diagram](image-url)

Source: Booz Allen Hamilton

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and broadly sharing the information throughout the organization to influence innovation decisions, intelligent innovators boost tomorrow’s return on innovation investment.

- **Innovation Organization.** Even though an innovation culture was the fourth most important performance improvement lever cited by respondents, 52 percent felt that they lacked one. Intelligent innovators work hard to unlock the innovation potential within their organizations. They embed intelligent innovation principles—such as senior management commitment to innovation, knowledge sharing, cross-functional teaming, freedom to pursue ideas, and innovation-friendly incentives—into their organizations’ DNA.

The remainder of this viewpoint goes into greater depth on each of these dimensions.

**Customer Insight**

Profit is the reward for providing unique value to customers. Provide anything short of unique value and discounts start nibbling away at profits. The “value” part of that equation requires an understanding of what customers want and the ability to transform that insight into a product or service. The “unique” part is harder. To achieve it requires both sharper insights into customer needs—particularly those that are important, yet unspoken—and faster processes for development and commercialization of offerings that satisfy them.

There are many ways to learn from customers. Exhibit 3 spotlights four important ones:

- **Understand the customer experience.** The experience of finding, selecting, purchasing, and using a product/service has a huge impact on customers’ willingness to repurchase it and recommend it to others. A thorough and dispassionate assessment of all customer touch points can yield powerful ideas for important process enhancements and product/service improvements. Customer interviews can help, but customer observation is equally important. By training a sharp and creative eye on customers, it is possible to uncover minor—and not so minor—inconveniences that are associated with the entire customer experience. In some cases this thinking can lead to entirely new innovations. Depending on the findings, different types of innovation—business model, product/service, and process—can create new opportunity and competitive advantage.

JCI, a global Tier One automotive supplier for car seating, for example, relies on an extensive video library that captures the ways people enter and exit cars under a broad variety of conditions as a crucial input.
to their design process. Apple has shown exceptional skill at developing products that exceed customers’ expectations for capabilities and ease of use. There had been other digital music players before the iPod, but none had successfully delivered the mixture of simplicity, style, and service that made the iPod a must-have.

- **Collaborate with customers.** A further step is involving “lead” customers in the innovation process. Organizations benefit from the perspectives and insights of customers in numerous ways: mid-course corrections to ongoing projects, new ideas for products/services, and stronger customer relationships—all of which lead to improved innovation hit rates.

Nike’s partnership with runners uncovered both interest in and openness to Nike-branded apparel, as well as equipment such as watches, MP3 players, and even heart monitors. Today, Nike’s equipment business alone has grown to more than $400 million in sales. Zara, on the other hand, is an example of a company forging a virtual collaboration with its customers. Design teams have real-time access to store-by-store information on demand trends—and supported by a world-class supply chain—are able to adjust in-store styles and colors within two weeks.

- **Make employees customers.** This approach is very powerful for consumer items. What better way to understand the advantages and shortcomings of your product or service than to use it yourself? Employee customers not only can better empathize with customers, but by being “forced” to use the product, may be more effective at generating new ideas themselves.

Harley-Davidson benefits from an army of employee-customers. Regularly attending rallies with other “hog” enthusiasts, they gain empathy for customers and insights into product improvements and potential new offerings.

In the business-to-business space, such an approach is less feasible. However, some of the same benefits can be achieved by ensuring that product development team members have regular interaction with customers.

- **Understand customer economics.** Evaluating the way your product/service fits into the customer’s operating economics can be another fruitful source for innovation insights. Are there ways to change your offering that can simplify the customer’s process? Is there an opportunity to embed your product in a broader service offering that offers the customer attractive systems cost savings? Addressing such opportunities often increase the profits of both customer and vendor. Moreover, understanding how the drivers of customer economics are likely to change can help uncover new ideas well before customers can articulate them.

In seeking customer insights, it is critical to keep in mind Henry Ford’s words of caution: “If I’d only listened to customers, I’d have developed faster horses.” Listening alone is not enough. A customer-centric culture must be built that combines active listening with rigorous customer observation and economic analysis to uncover the tacit priorities that fuel the most attractive development options. Moreover, even the best insights are worthless unless an organization has an effective mechanism to share them broadly among all innovation stakeholders, particularly those within R&D.

**Global Network for Ideas and Execution**

Companies sell their products globally and have developed sophisticated supply chain and manufacturing networks to leverage factor cost advantages around the globe. When it comes to innovation, however, they are frequently much less sophisticated. They typically either work in “projector mode,” with headquarters developing all the ideas, or they have innovation organizations that span multiple locations and geographies but fail to integrate them sufficiently. While this latter approach can yield market-specific innovation as well as in some cases lower costs through offshoring or outsourcing, it misses out on many other benefits.

Intelligent innovators harness a global innovation network that focuses as much on knowledge as it does on cost-effectiveness. They gain benefits through access to critical expertise and key technology or industry “hot spots,” as well as through better sharing of knowledge, ideas, solutions, and resources. Building a global
Innovation network requires three elements (see Exhibit 4):

- **Sensing.** First, intelligent innovators have well-developed sensing capabilities. They seek relevant knowledge and skills on a global scale. They study developments in adjacent technology areas, and anticipate hot spots. They recognize the varied nature of the knowledge they seek: explicit versus tacit; stored versus diffuse; and objective (e.g., scientific results) versus context-dependent (e.g., consumer behavior). Intelligent innovators use many sensing channels including vendors, associations, and conferences. They perform primary and secondary research, keeping up with the literature, scanning the Internet, making country visits, etc. And they tap their own global organization, leveraging the creativity, technical expertise, local knowledge, and relationships of many employees.

- **Accessing.** Second, they determine the best way to access critical knowledge and skills—for example, through an external partnership or an owned facility. These decisions are based on careful trade-offs between the value of the knowledge and the cost to access it and must include an assessment of the complexity of the knowledge and the ease with which it can be transferred across locations. External partnerships are often a more cost-effective channel. They can take many forms from situational (e.g., a one-off project with an outside vendor) to strategic (e.g., a lab facility jointly run with a leading university). As a result, companies are opening themselves up to the outside world more than ever before. They tap into networks of academics and venture capitalists as well as partners and vendors. These network participants are not only a source for skilled resources and new technologies but also a sounding board for innovative ideas.

- **Melding.** And third, they integrate each site or partner into a seamlessly managed innovation network. This requires clear governance and well-defined roles and responsibilities. They harmonize structures and processes to facilitate collaboration across sites, and at the same time, ensure that they demonstrate the management commitment and offer the incentives

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**Exhibit 4**

*Key Levers for Creating a Global Innovation Network*

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*Source: Booz Allen Hamilton*
needed to overcome the “not invented here” syndrome and foster real collaboration. Moreover, as people with multicultural experience tend to work better in virtual teams, intelligent innovators encourage key people to broaden their geographic exposure. These human “shuttles” are important for knowledge-sharing, but they must be complemented by further knowledge-sharing channels such as communities of practice, conferences, or specific projects.

Few companies are as skilled as General Electric in mobilizing expertise from different locations. When GE launched GE Wind Energy in 2002, they drew on a global talent pool. The GE Global Research Center at Niskayuna, New York, drew on composites expertise from the research for the design of fan blades for aircraft engines to design the windmill’s turbine blades. Engineers in Bangalore, India, crafted a series of analytical models and turbine systems tools to support the design process. Shanghai team members created a turbine simulator to conduct high-end tests on variable-speed power electronics. The lead gearbox experts came from GE Wind operations in Salzbergen, Germany. Researchers in Munich designed sensors and advanced controls. Engineers at GE Consumer & Industrial in Peterborough, Ontario, designed the manufacturing process that builds the generators. This approach created an organization that is growing faster than its market and that will have tripled in size by the end of 2005.

Future Foresight

Customer intelligence and a good sensing network can generate a huge amount of data. Turning that data into insights about where opportunities will exist in ten to twenty years is a process that benefits from a structured approach. Since being the first mover really does confer an advantage in many sectors, a well-tuned future trends capability can be a powerful strategic and competitive weapon. After all, customer priorities can turn on a dime, so organizations with the ability to “skate where the puck will be” possess an edge.

Although it is based on data and analysis, visioning is fundamentally a creative process (see Exhibit 5). On a regular basis, teams use tools like scenario planning to synthesize sensing data and focused additional research into plausible visions of the future. They tease out the strategic and tactical implications—and the likelihood—of each scenario in conjunction with senior management. The insights from these exercises inform decisions about business model innovation as well as R&D strategy and are shared broadly to influence innovation decisions throughout the organization.

Siemens, for example, draws what it calls “Pictures of the Future.” These describe how trends will affect each of their business sectors. Detailed and imaginative, each picture envisions the future competitive environment. The process begins with an extrapolation of today’s products and technologies into the future. Next, a

Exhibit 5
Benefits of a Future Trends Capability

- **Information Gathering**
  - Focus on trends relevant to the business
  - Involve business unit and research resources
  - Harness sensing network

- **Synthesis of Information into Trends**
  - Use proven methods such as war gaming or scenario planning
  - Develop evolution roadmaps by extrapolation of status quo and reverse extrapolation of most likely scenarios

- **Communication and Buy-In**
  - Conduct interactive workshops with senior managers
  - Disseminate insights broadly in the organization via conferences and intranets
  - Create “virtual” environments to play out your vision of the future

**Viewpoints on the Future**
- Trends
- Likely scenarios
- Major strategic moves

**Wild Cards and Pearls**
- Major positive and negative discontinuities
- Leading indicators

**Ongoing Decision Support**
- Ongoing tracking mechanisms
- Underlying trend research archive
- Background on key decisions

Source: Booz Allen Hamilton
rigorous trend analysis is conducted to yield consensus on which potential future scenario is most likely. Then the fit between the extrapolated product/service offering and the reverse extrapolated future scenario is assessed. In response, the future innovation trajectory is recalibrated to capture the attractive opportunities and a corresponding R&D strategy is developed. Siemens’ reputation for innovation in health imaging and IT finds its roots also in these kinds of exercises.

Innovation Organization

Creating an innovation culture was rated as the fourth most important innovation performance improvement lever cited by survey respondents, yet more than half of them felt that their organizations fell short of what is needed. Building Intelligent Innovation principles into their organization’s DNA. OrgDNA thinking, pioneered by Booz Allen Hamilton, posits four aspects of an effective organization:

- **Decision Rights.** How and by whom decisions are made.
- **Information.** The metrics that are tracked, the way activities are coordinated, and how knowledge is transferred.
- **Motivator.** The objectives, incentives, and career paths available to employees
- **Structure.** The overall organization model including the lines and boxes of the organization chart.

Exhibit 6 details a minimum set of requirements needed to bind an innovation culture into an organization's DNA. Critical elements are senior management commitment, a well understood and communicated innovation strategy, knowledge sharing, consistent incentives, an effective innovation management group, and empowered cross-functional teams.

3M has been long hailed as an innovator. One critical element of its success is the way in which its organization fosters an innovation culture. First and foremost, there is a strong strategic commitment to innovation that is reinforced by top management. This commitment is manifest in a variety of ways. The “15 percent rule” empowers any person in a 3M laboratory to spend 15 percent of his or her time on any idea that could result in potential business for the company. Nonmonetary awards and peer recognition encourage ideation and collaboration. Seed money is available to support early stage research to help engineers prepare a case for new ideas to bring before a peer review evaluation process. And finally, advancement is contingent on strong performance both on knowledge sharing and collaboration.

Boosting Your Intelligent Innovation Quotient—I2Q

Moving from a control regime to a more holistic approach based on the principles of Intelligent Innovation is challenging. The performance benefits, however, are

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Exhibit 6
Building Blocks of Innovation OrgDNA

- **Decision Rights**
  - Cross-functional innovation teams empowered to make many decisions
  - Clearly-defined decision-making authority and responsibilities

- **Motivator**
  - Clear senior management commitment
  - Risk-taking, dissent, and creativity are encouraged and rewarded
  - Freedom for employees to spend a portion of their time on new ideas
  - Resources available to support the exploration of new ideas

- **Information**
  - Innovation strategy understood throughout the company
  - Clear list of clear innovation metrics with accountability for performance
  - Rapid and broad sharing of knowledge and ideas

- **Structure**
  - Lean but empowered Innovation Management group coordinates
  - Span of control in R&D is 1 to 12 or more
  - Rotation to provide broad exposure to functions and sites is part of “fast” career track

Source: Booz Allen Hamilton

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See Profiles in Organizational DNA: Research and Remedies by Gary Neilson, Bruce Pasenack, Decio Mendes, and Eng-Ming Tan; and, Innovation’s OrgDNA, by Rakesh Bordia, Eric Kronenberg, and David Neeley. Copies of both Booz Allen Hamilton viewpoints can be downloaded from www.boozallen.com.
compelling: an increased hit rate, a more efficient development process, and faster time-to-market. Not coincidently, these are the three performance areas for which respondents to our survey reported the least faith in the status quo.

In our experience, boosting an organization’s I²Q is a three-stage process that can play out in as few as 15 months (see Exhibit 7):

- **Diagnose.** It starts with a diagnostic that evaluates the organization’s current innovation process and assesses its listening, networking, visioning, and organizing capabilities.
- **Design.** Diagnostic insights are shared with the leadership to build management commitment for the change process. An innovation vision is established, and a supporting innovation strategy including appropriate metrics is developed or refined. Then priorities are set, pilots identified, and an organization-wide rollout plan is developed.
- **Roll out.** The rollout plan is executed and supporting structures and capabilities—such as idea stimulation, incentives, training, and knowledge management—are launched.

By unlocking potential across the four dimensions of Intelligent Innovation, organizations better position themselves and attract the best talent. This approach promises to drive a quantum leap in innovation performance by boosting ideation as well as development and unlocking the latent innovation contributions of all members of the innovation network.

With a clear destination in mind, all an organization needs is a sure hand at the wheel—and a foot on the accelerator—to leave the competition in the dust.

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**Exhibit 7**  
Bringing Intelligent Innovation to Life

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<th>Phase I</th>
<th>Phase II</th>
<th>Phase III</th>
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<td><strong>Diagnose</strong></td>
<td><strong>Design the Improvement Program</strong></td>
<td><strong>Raise the Intelligence Level</strong></td>
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<td><strong>Key Activities</strong></td>
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| • Understand current innovation approach  
• Perform intelligent innovation diagnostic  
• Identify gaps | • Engage the leadership  
• Craft innovation vision  
• Develop/refine innovation strategy and establish metrics  
• Define priority areas and initiatives  
• Identify “icebreakers” and determine pilots  
• Design implementation approach  
• Establish cross-functional teams | • Develop and implement initiatives  
• Enhance knowledge management  
• Coach executives  
• Train the trainers  
• Communicate to engage the organization  
• Align incentives  
• Manage progress |
| **Deliverables** | **Deliverables** | **Deliverables** |
| • Detailed gap analysis  
• Estimate of improvement potential  
• Insights into future trends and critical opportunities | • Management commitment  
• Detailed plans for implementation and measurement  
• Pilot setup | • Improved performance  
• Intelligent innovation culture |

4–6 weeks | 6–8 weeks | 1 year +

Source: Booz Allen Hamilton
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