

PROCUREMENT: The Missing Link in Innovation



By Corey Billington and François Jager

Procurement groups have a much greater role to play in helping their organizations to innovate. The internal driver is the compelling need for revenue growth—growth that can be propelled by stronger success rates in product innovation. The new role flows from the principles of open innovation and is made possible by the rapid emergence of Internet-facilitated “seeker-solver” networks.

A few years ago, Goldcorp Inc., one of the world’s top gold producers, had a big problem. Some of its mines were performing very poorly compared to other mines in northwestern Ontario, Canada.

After trying everything that his mining engineers knew, Goldcorp’s CEO, Robert McEwen, made a very risky bet. He broadcast the entire geological data record of the company’s Red Lake Mine, in effect triggering a new kind of gold rush. He offered \$575,000 in prize money, with a top award of \$105,000 to the person or company that would give Goldcorp an effective way to mine more gold.

McEwen’s bet paid off handsomely. The broadcast of the challenge via the Internet—a novel approach in the year 2000—led to two Australian companies collaborating to come up with a three-dimensional depiction of the mine. The 3D graphical data produced an astonishing breakthrough at Red Lake. From annual production in 1996 of 53,000 ounces at a production cost of \$360 an ounce, the mine was producing 504,000 ounces at a production cost of \$59 an ounce by 2001.

Goldcorp had tried and succeeded with a markedly different type of procurement activity. The company had outsourced part of its engineering activity to a supplier—not one of its preferred or even its regular suppliers of goods and services but a supplier it hadn’t known previously. The supplier team had identified itself and the service it would provide rather than being found and evaluated by Goldcorp’s

Corey Billington is professor of operation management and procurement at IMD Business School in Lausanne, Switzerland. He can be reached at: corey.billington@imd.ch. François Jager (francois.jager@imd.ch) is a research associate at IMD.



procurement group in the context of predetermined supplier criteria. Essentially, Goldcorp had not only broken with the idea of seeking innovation only from its own staff, but also had gone beyond looking “locally” for innovations from its established suppliers.¹

Now that the Internet has greatly reduced the cost of acquiring knowledge and made it so much faster to do so, we expect such unconventional procurement activities to gather momentum. Indeed, we expect it to transform procurement’s role in not only containing costs, but also in driving innovation and therefore top-line growth. Essentially, the new conditions call for a re-examination of the make-vs.-buy decision. The approach looks well beyond fixed relationships within a carefully screened “extended enterprise” to more one-off transactional relationships with organizations and even individuals with which there is rarely a pre-existing relationship. We urge supply management professionals to recognize that procurement processes lie at the root of much innovation activity. Further, we propose that the organization must provide the processes to enable and encourage such problem-solving relationships— processes that we call “seeker-solver networks.” (For more on the seeker-solver concept, see accompanying sidebar.)

This marks a major shift from what even the best-

in-class procurement groups are doing. Although there are quite a few informal efforts among leading companies and some impressive new structured problem-solving networks, we know of no instances of networks that formally involve procurement staff. It will be necessary, we believe, for procurement professionals to develop new ways to define and identify needs inside their organizations, to assess the capabilities of the organizations’ internal resources to meet those needs, and to match them against all available external resources.

Innovation: A Growing Problem

Nowadays, CEOs are under more pressure than ever to accelerate revenue growth. To drive growth, they are looking for more innovation—and more productive innovation—particularly in products and services. Defining success criteria for R&D productivity is notoriously difficult. But CEOs realize that the great majority of their innovation investments fail to deliver lasting value. In 2005, the global 1000’s top R&D spenders spent an average of 3.84 percent of sales on R&D². But innovation productivity is dismal. Recent research shows that only 4.5 percent of innovation initiatives produce successful outcomes—defined as reaching predetermined return-on-investment (ROI) targets.³

In many industries, R&D expenses have gone up while the profitable outcomes of research have gone down. The pharmaceutical industry offers a typical example: Its declining R&D productivity has obliged executives to focus their resources on blockbuster drugs (drugs that will net more than \$1 billion over their product lifecycles). The story is similar in many other sectors. As rising development costs combine with shorter product life cycles, executives have an increasingly difficult

been well used for years by contract design firms such as IDEO and Frog Design. Their business model recognizes that knowledge is unevenly distributed and that reusing mature ideas in different contexts is more cost-effective than inventing the same ideas from scratch. Asking a supplier to invent on your behalf may be a little less expensive, but it's much faster and more cost-effective to find existing mature solutions and adapt those solutions to your challenge.

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time justifying heavy R&D investments. In the automotive industry, for example, purchased parts costs account for around 80 percent of the cost of a car, on average. Not surprisingly, industry executives have looked to their suppliers for innovation in component designs, in quality processes and in manufacturing processes.

Yet suppliers face the same type of challenges as their customers.

We have found that many R&D managers who try to utilize seeker-solver networks often make costly mistakes by poorly constructing their challenges. (In knowledge brokering parlance, a "challenge" is a question that seekers broadcast to potential solvers.) Either their challenges are too tightly defined, with inherent biases that lead them to the same dead ends, or their definitions are too loose to net any new answers. We have found both types of defects in our research. Too often, R&D managers are "reinventing the wheel" of procuring services, making expensive mistakes as a result or making very slow headway or losing process capability when managers retire or transition out of the R&D organization.

Collaborative Approaches to Innovation

Supporting evidence for the effectiveness of "procuring" solutions by finding them rather than creating them is found in research about knowledge brokering. The knowledge brokering cycle described by academics Andrew Hargadon and Robert Sutton⁴— capturing good ideas, keeping ideas alive, imagining new uses for old ideas and putting promising concepts to the test—has

By itself, the concept of procurement helping reach outside their companies for innovation is not new. In the late 1980s and early 1990s, for example, Chrysler supply chain executive (and later president) Thomas Stallkamp achieved spectacular wins by developing collaborative partnerships with the automaker's supply base. Stallkamp's approach helped improve product quality and cost efficiencies at a time when other industry procurement executives stuck firmly to cost-squeezing "iron fist" relationships with their suppliers.

In recent years, the concept of "open innovation" has gained more currency, with companies looking not only at how they can bring innovation in from outside their firm but at how they can sell some of their unused "information assets"—such as patents and trademarks—to increase shareholder value. Henry Chesbrough, executive director of the Center for Open Innovation at the University of California, Berkeley's Haas School of Business, defines open innovation this way: "The use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. This paradigm assumes that companies can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology."⁵

Lately, the Internet has added a powerful twist to the open innovation concept that can significantly reduce the cost of innovation, pairing corporations (seekers) with R&D challenges and external scientists (solvers) who can approach problems from many different angles. The core premise is not only that somebody "out there" may already have solved your problem (or has the wherewithal to do so easily) and is willing to do so for a fraction of what it would take to replicate the solution in-house, but that they can be found and contacted quickly and efficiently via the Internet and that the transfer of intellectual assets is safe and secure. (See Exhibit 1.) The premise has tremendous appeal to open-minded organizations.

One striking example is InnoCentive, launched in 2001 by Eli Lilly.⁶ Seekers, who are nearly always cor-

porations, pay an annual fee of \$100,000 to access the network; InnoCentive gets a percentage of the bounty paid to the solvers. The fast-growing network of solvers was approaching 130,000 by mid-2007.

Ed Melcarek, an InnoCentive solver, was able to answer an interesting challenge: finding a more efficient way for getting toothpaste ingredients into a tube. The Canadian engineer's solution suggested putting a positive charge on fluoride powder, then grounding the tube. Colgate-Palmolive, the InnoCentive client that reportedly posted the problem, liked the idea, according to Melcarek. He earned \$25,000 for a few days of work. "It's a beautiful way of doing business," he said.⁷ Colgate-Palmolive's returns were good, too, compared to what the company might have spent to achieve the same solution using traditional R&D approaches.

Nine Sigma uses a similar operating model, but its knowledge exchange focuses on the management of innovation. Launched in 2000, Nine Sigma says its mission is "to work on behalf of its clients to source innovative ideas, technologies, products and services from outside their organization quickly and effectively by connecting them to the best innovators from around the world." By mid-2007, Nine Sigma's network of expert solvers had expanded to 1.5 million globally. This network is made up of scientists, university research departments, and technology incubators.

The obvious benefit of such networks is that they

can make it far cheaper and more effective to tap volunteers or low-paid hobbyists to resolve what once were seen as specialized technical issues soluble only by R&D departments. However, for all of their apparent benefits, there is a persistent limitation to many open-innovation structures—even to the Internet-enabled networks such as InnoCentive. They do not yet actively engage the procurement professionals whose job it is to help define make-or-buy parameters and support decisions accord-

To begin with, supply chain managers and procurement chiefs in particular have to be seen—and to see themselves—as “drivers of revenue through innovation.”

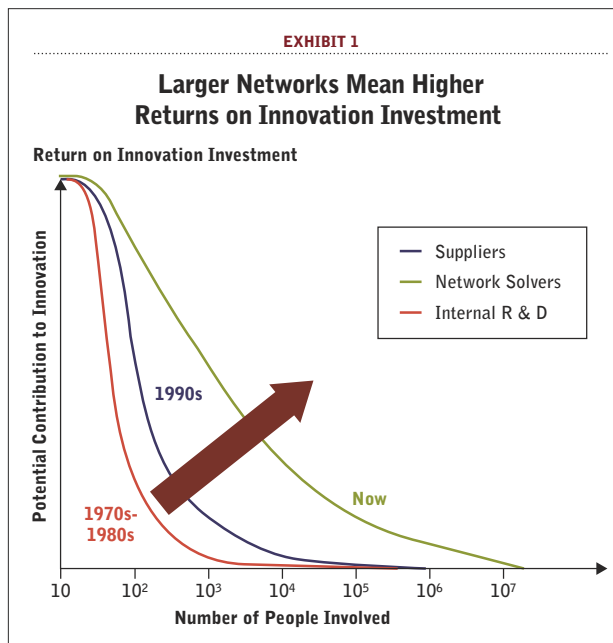


ingly. Although the process of managing the “inflows and outflows of knowledge” should sound familiar to any supply management organization (managing the interface with external suppliers is, after all, one of the function's primary roles), it is often not part of procurement's charter. We contend that supply management professionals will have to become more proactive at managing these sources of innovation.

Up Against Real-World Barriers

There is no shortage of reasons why procurement organizations do not traffic in innovation ideas. For a start, the vast majority are still rewarded for and therefore focused on cost savings. Talk to most procurement heads today about other ways for their groups to contribute and they will quickly point out that their metrics first need to change from price reduction to revenue generation. At the same time, purchasing managers are only now starting to see their roles in broader value-based terms, and as such they are just beginning to explore the possibilities of contributing to top-line growth. Not surprisingly, C-suite executives still mostly view procurement as cost cutters, not catalysts for growth. A vicious cycle is at work: The longer that procurement is seen as a support function, the fewer chances its professionals have to acquire and demonstrate new ideas, much less sell those ideas to the organization.

Corporate silos compound the problem. Communications do not flow naturally between departments; unfortunately, information hoarding is often more



prevalent than truly open and collaborative information sharing. And rightly or wrongly, R&D managers typically have developed their processes for acquiring innovation without support from other departments. Thus, they are unlikely to welcome unsolicited approaches from the procurement organization. Also, R&D communities have many of the same fears about outsourcing that manufacturing communi-

ties had in the 1980s.

For its part, the typical procurement organization has too much work to do, too many suppliers to support, and too few staff to do it all with. It is unrealistic to expect any hard-working procurement group to reach out to support their colleagues in R&D without change-making intervention by senior business leaders or without a clear and widely shared incentive to do so.

Add to these hurdles the inertia of the average Fortune 1000 organization and the persistence of compensation schemes and other incentive mechanisms that reinforce existing and often outdated business practices and it soon becomes clear that new ways of innovating—Internet-driven methods that actively involve procurement departments—are not easy to achieve.

Defining the Seeker-Solver Network

A “seeker-solver network” is an informal collection of people or companies that facilitates a productive working relationship between two previously unconnected parties, usually on a one-time basis. (Exhibit 2 offers a graphic description, contrasting it to traditional practice.) The Internet provides the facilitation mechanism to link a problem presented by one person or organization (the “seeker”) with the myriad people worldwide (“solvers”) who are have the skills and time to consider the problem and resolve it. Usually, the seeker offers prize money as an incentive.

In essence, a seeker-solver network is a procurement structure enabled by the Internet. Such networks are becoming useful because they are significantly less expensive than conventional mechanisms for developing and procuring innovation solutions. A recent pharmaceutical industry study found that a seeker-solver network can be more than 20 times less expensive than regular R&D paths.⁹ Investigators carefully studied 12 challenges and found that the gross value created was \$10.3 million—a 2,600 percent return on investments that comprised \$333,500 in prizes awarded to solvers and total internal costs of \$60,000.

Critics allege that seeker-solver mechanisms do not always work. But the cost of unsuccessful challenges is zero or at least significantly less than the cost of a failed internal R&D effort.

Toward a More Robust Solution

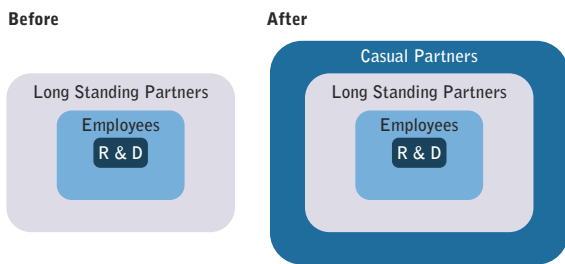
Those barriers notwithstanding, we believe there is much that procurement professionals can do to help drive innovation from the outside in. However, before we describe specific steps that should be taken, it is important to address a few of the preconditions for success that procurement can influence (but not control) and that other corporate functions can help with.

To begin with, supply chain managers and procurement chiefs in particular have to be seen—and to see themselves—as “drivers of revenue through innovation.” Of course, it will help if they start acting accordingly. But in most organizations, senior executives will need to sponsor the new approach to innovation, fostering links between procurement and R&D as well as with human resources (HR) departments. HR plays a key role because performance metrics must be adapted to suit the changes. HR also can help employees cope with the cultural fears associated with the procurement of ideas while creating new measures that recognize procurement’s contributions to revenue growth rather than price take-down.

Another aspect that is likely to require input from other departments is control over the company’s intellectual property (IP). Procurement managers are quite used to ensuring that they have “bulletproof” processes for controlling IP transfer in their conventional contracts with suppliers. Even though the challenges on seeker-solver networks are posted anonymously, some managers fear that industry insiders can deduce which challenges are theirs, thus signaling the competition about their actual R&D objectives and approaches. This issue can be addressed by “thinly slicing” challenges—that is, constructing them in such a way that they do not disclose the strategy or the commercial intent behind the

EXHIBIT 2

R&D Before and After Seeker-Solver Networks



challenge. The company's legal counsel may be able to help to define challenges specifically enough while making sure that any unnecessary information is not exposed to the world. In other words, procurement managers are likely to need some assistance to learn the art of "hiding in plain sight."

First Steps for Accelerating Innovation

Companies that want to harness the full power of seeker-solver networks must ensure that their procurement professionals make rapid progress on three fronts:

1. Launch Multiple Experiments

Procurement managers need to adopt an experimental mindset in order to make the most effective use of such networks. A good starting point is to create a few pilot programs in which real business problems—albeit not necessarily mission-critical challenges—are posted on an existing network such as InnoCentive. (Ideally, the experiments should be tried on different networks to better understand the unique characteristics of each.) In essence, procurement leaders should be including real seeker-solver networks in their toolboxes.

It is important to begin with a low profile and to avoid overselling the concept to senior management. The experiments should be in different topic areas and should reflect different conditions if the procurement teams are to gain a comprehensive understanding of what seeker-solver networks are all about. In such experimental phases, the procurement teams, together with appropriate R&D staff, must learn how to properly subdivide an R&D problem and then how to properly frame a challenge for solvers, using the right terms and offering solvers appropriate incentives. They also have to master the skills needed to capture, sort, analyze, manage, and respond to the responses.

One InnoCentive user, Dow AgroSciences, gives a glimpse of a typical approach. "The approach was a bit ad hoc at first, but we learned quickly that we needed to put some structure around it and help drive it," says Dan Kittle, the company's vice president of R&D. He points out that you need to condense a seeker-solver challenge down to a problem for which the seeker rationally believes there is available expertise, understanding, and capability in the "outside" world. "You don't want to put all of your recalcitrant challenges out there," explains Kittle, "Because that doesn't offer the greatest opportunity, and not all problems fit InnoCentive."⁸

2. Track Results and Build Bridges

Once procurement managers are alert to all the external networks available and after they have launched their seeker-solver experiments, they should document and track every experiment and discuss and absorb its lessons. The experiments should be gauged in terms of the costs of the solutions developed, the interest levels of poten-

"We have to get over our reluctance to use the skills of outsiders: outside R&D, outside the company, and even outside our industry."

tial solvers, the numbers of solutions they offer, the actual success rates, and eventually the returns on investment. From an internal perspective, if procurement managers are to become active solution seekers, they will have to be proactive at creating "wish lists" by interacting with different departments—with R&D in particular. Then they will need to be prompt and efficient at delivering proposed solutions. Procurement and R&D heads will have to create bridges between their respective departments, enabling a trusting atmosphere and ensuring that bench scientists remain supportive and don't feel threatened.



3. Lay Foundations of an "Innovation Culture"

Eventually, all of these early seeker-solver projects should be assembled under a larger "change" program. The head of the procurement organization can provide process leadership and prove cost effectiveness, but corporate behavioral change on such a scale is likely to require C-level support. As such, C-level management—probably the CEO or chief operating officer—must appoint an innovation process champion who will take the learnings from the experiments far beyond defined R&D and procurement initiatives so that they become part of a new corporate innovation culture. That means that the "make-buy" decision processes typical in, say, engineering departments, will have to be modified and adapted to an open innovation context. We expect that seeker-solver networks will evolve in many areas other than R&D. For example, marketing may choose to have selected brand tasks performed by "solvers" identified by evolving networks. IT will likely experience more development tasks procured from outside "solvers."

At the same time, the procurement group's met-

rics will have to be expanded to accommodate the new innovation tasks. Clearly, seeker-solver approaches will flourish in environments where managers are unafraid to experiment and where they may even be rewarded for taking measured risks.

Procurement's New Obligation

Our goal for this article was to show that procurement now has a much broader and more valuable role to

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play. The department best known for containing costs with a predetermined array of suppliers is now in prime position to accelerate innovation and thus drive the organization's top-line growth. Two factors make it so: the growing acceptance of the principle of open innovation and the recent emergence of Internet-enabled seeker-solver networks.


Indeed, we would argue that fostering innovation is now procurement's new obligation and that one day, the procurement group will be judged on its ability to add value in this way. Without the active process support of the procurement organization, companies are at risk of having uncompetitive innovation processes. Because of procurement's skills and competencies in outsourcing and supplier management, CPOs need to be at the forefront of refining these competencies to provide the process guidance necessary to manage knowledge exchange through seeker-solver networks.

The procurement groups that are most ready to fill this new role are those where there is already a healthy respect for the groups' existing roles, where the corporate culture has adopted an experimental mindset, and where seeker-solver networks are viewed as a new value-adding capability. Companies such as Hewlett-Packard, Harley-Davidson, Dow AgroSciences, Colgate-Palmolive, and Procter & Gamble are making the right moves. Trailblazers like the auto industry's Tom Stallkamp long ago showed that it is possible to break with conventional procurement approaches. It is now up to procurement executives to make sure their companies

can and do accelerate their innovation performance.

Many questions surface, of course. What response rates from solvers constitute successful "returns" from challenges posted on seeker-solver networks? What does it take to manage the interactions with unknown solvers? How can procurement best reach out to and add value for R&D groups? How can R&D groups get better at asking "make-buy" questions—and how can procurement groups get better at helping them to do so?

Despite such open questions, we firmly believe that the procurement organization has the best match of skills to allow open innovation to be done cost-effectively. We are confident that it will happen. As universities increasingly teach open-innovation concepts, we expect procurement's new recruits to have the skills to implement the necessary changes. Once open innovation is understood at every level of the organization, procurement groups will be better placed to acquire and assign the resources to take on their new roles. And with the steady escalation of procurement's status come the conditions that will enable procurement to significantly influence revenue growth.

This article reflects our insights and longtime industry experiences, but it is not the result of any extensive research program and certainly is not intended as a detailed blueprint for change. However, it is a topic of intense interest and one that we feel holds enormous potential. As such, we will be continuing to develop our argument and we welcome managers' shared experiences, comments and questions—whether or not they have yet embraced open innovation or begun to explore seeker-solver networks. 

Sources:

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- 7 *Boston Globe*, August 21, 2006.
- 8 *Chemical and Engineering News*, June 26, 2006 Volume 84, Number 26 pp. 24-25.
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