

## Solving Engineering Problems by Turning to the Crowd

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With pressures mounting to deliver products and services to market in less time, engineering departments that already are stretched thin have to find new methods to solve problems. One such strategy is crowdsourcing, more frequently called open innovation, in which companies seek external ideas or technologies to augment internal resources in the innovation game.

Although open innovation isn't without its pitfalls, corporations spanning a range of industries have implemented such initiatives, whether through an official competition or a simple online submission form.

Even the traditionally secretive automotive sector is recognizing the value of open innovation. The nonprofit [AutoHarvest Foundation](#) — whose members represent the three major U.S. automakers, automotive suppliers, universities and government agencies — offers a neutral online collaboration marketplace ([AutoHarvest.org](#)) for intellectual property in advanced manufacturing. The organization aims to accelerate product development not only in the automotive industry but also in adjacent sectors such as medical imaging, defense and infrastructure.

“Our system gives everyone from two folks and a dog in a garage to a federal agency in Germany the exact same line of sight to respond to an intellectual property (IP) opportunity posted by a member,” says Jayson Pankin, the Foundation’s president and CEO. “Someone who was almost impossible to identify let alone reach in these large organizations is now only one or two clicks away.”

A [partnership](#) with the U.S. Patent and Trademark Office (USPTO) further enhances AutoHarvest’s goals by giving inventors and corporate executives alike direct access to a centralized resource of databases, software and analytical tools. This platform helps innovators better understand the process of obtaining and commercializing their intellectual IP while enabling them to directly respond to parties who may be interested in commercializing it.

In May 2014, [Ford](#) announced that it was offering its patented inflatable seat belt technology to other companies and industries with the goal of encouraging wider adoption of the system to make travel safer in other transportation modes. With the help of AutoHarvest, Ford purchased additional patents to ensure the broad licensing of the technology.

### Do Your Homework

The act of crowdsourcing isn't as simple as reaching out to a network of innovators and receiving great ideas in return. Legal due diligence should be at the forefront of any open-innovation strategy, says Marc Lieberstein, a partner in the law firm of Kilpatrick Townsend in New York City.

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The most common concerns with crowdsourcing/open innovation are those that arise out of third-party submissions which may or may not be infringing another's intellectual property rights, namely, rights protected by patents, copyrights, trademarks and/or trade secrets. To guard against this concern, most corporations require participants in a crowdsourcing activity to sign a contract in which they warrant that the submission is original to the participant, relinquish their intellectual property rights and/or indemnify the corporation from any infringement claims, even though the participant's indemnification may not be enough to protect the corporation.

"Contracts offer one way in which you can hopefully cover some of the risk, but I don't think that should be the end of the evaluation when someone submits an idea," Lieberstein says. "The last thing you want to do is just rely on someone who signs a contract saying that his or her idea is original. You need to be worried about whether that person copied from someone else's work and whether you will be committing patent, trademark or copyright infringement. You need to worry about if that person is using a similar idea, trademark or expression that someone else owns."

In some instances, he adds, companies may need to address trade secret issues. "If an employee of another company is submitting what he learned from his employer, that's a potentially huge violation not only by the employee but anyone who is using the trade secret, even if unknowingly."

That usually means going to a patent, copyright or trademark attorney, who can do an assessment or clearance so that what the company is accepting is clear and doesn't infringe on someone else's rights.

"You're not always going to get a definitive answer, but more than likely you will get some kind of answer that will let you sleep better at night," Lieberstein says.

Companies that are unable or unwilling to reveal their strategic initiatives but still are looking for outside help will work with third-party open-innovation providers to develop requests for proposals (RFPs). "An RFP allows clients to put their need out in an anonymous fashion," says Eloise Young, senior program manager at NineSigma, which connects corporations with a network of innovators. "We also can obscure the end application and reduce the problem down to its core."

From the submitter's standpoint, attorney Lieberstein encourages engineers "to read the rules, read them again and read them a third time. Make sure that if you're going to spend all of that time and effort to develop something you get recognition, compensation or some kind of reward if what you submit is used by the crowdsourcing party."

NineSigma guides its corporate clients in determining the proper compensation. "This could potentially be the start of a business relationship, so it is to the client's benefit to offer an amount of monetary incentive that represents a fair value for the amount of work the participant would be performing," Young says.

## **Successes and Challenges**

GE's Industrial Solutions business is developing a new line of molded case circuit breakers (MCCBs) in half the time of its previous product launches, a process that traditionally has taken five years. The timing and scope of the program, known as project Phoenix, required alternative methods to problem solving.

The project team turned to open innovation, partnering with NineSigma to create a competition with two goals: to invite inventors to create an attractive, ergonomic rotary handle design for the MCCB, and to identify a competent manufacturing partner for the product.

The competition was modeled after similar open innovation initiatives throughout GE's business lines. These include redesigning an aircraft engine bracket, using additive manufacturing to produce components made of refractory metals for medical imaging equipment and developing algorithms to increase flight efficiencies in real time.

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In September 2014, GE Industrial Solutions announced five winners of the rotary handle design competition with \$10,000 awards each. The project Phoenix team, which currently is reviewing two winners who have the capability to deliver what the project requires, learned a few lessons along the way.

Upon the launch of the competition, Wolfgang Meyer-Haack, program leader for project Phoenix, based his expectations on the success of the aircraft engine mounting bracket contest, which received hundreds of submissions. Project Phoenix received far fewer, something Meyer-Haack attributes to the complexity of the request.

This rotary handle was a complex mechanical device that scared people away,” he says. “They didn’t want to spend the effort on understanding the challenge in first place. You want to take advantage of many people looking at the problem, so the problem needs to be very easily communicated to attract people to it.”

Meyer-Haack also learned that crowdsourcing takes more than floating an idea and seeing who responds. “When I first heard about open innovation, I thought, ‘This is great. You just open a page on the Internet and you get millions of solutions for free,’” he says. In reality, however, “it is not as simple as sitting down and putting your idea onto the web.”

In addition to the competition’s \$50,000 prize purse and a fee to NineSigma, time represented another cost as the project Phoenix team spent two months refining its proposal for the MCCB rotary handle design. Additionally, a team member was available to answer technical questions from participants. Once the competition was in motion, however, Meyer-Haack says that it required little maintenance.

Although project Phoenix doesn’t have another crowdsourcing initiative lined up, Meyer-Haack says he is open to the idea. Next time around, however, he says he would scale back scope of the competition. “We were trying to cover two things at once: to create a new, modern-looking design and simultaneously find a partner who could actually manufacture this for us later. It probably would have been smarter to focus in on one or the other because it is targeting different groups.”

Open innovation allows corporations to access a new talent stream, resulting in sometimes unprecedented opportunities for collaboration and tangible solutions to engineering problems. Credible third-party open innovation organizations can help companies target the right audience. A successful crowdsourcing strategy requires a commitment to thorough planning and due diligence to mitigate risk and better face unexpected challenges along the way.

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