

Overcoming Obstacles to Innovation

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Despite high levels of spending and lofty innovation goals, companies often experience declining productivity.

An understanding of the causes and remedies for innovation fatigue can free engineers and their organizations to achieve greater success.

Many talented engineers and scientists face barriers in their quest to perform meaningful work and make a difference for their companies. Those who manage these creative people might also be frustrated by the slow pace of innovation and declining productivity — and wonder why return on investment in R&D or new product development is so poor.

Innovation can be considered to be the successful translation of new concepts into economic value, and the process of creating and realizing value from that which is new. Whether it is a technology, a product, a process, or a method of doing business, innovation goes beyond invention and discovery to involve the social component of changing behavior — individual, organizational, and cultural.

Inventors and entrepreneurs face a variety of risks and challenges along the route to innovation. These often-hidden “innovation fatigue factors” that hinder engineers in their creative work fall into three categories (Figure 1): people factors, involving behavior and interpersonal choices; organizational factors, related to corporate culture, strategy, and decision-making processes; and external factors, including the regulatory environment, patenting issues, and collaborations. This article elaborates on four key innovation fatigue factors that involve people and organizations, and discusses what management needs to understand and what employees can do to circumvent these obstacles.

Fatigue Factor 1: Reduce the risk of “stolen” recognition

In a collaborative environment, the lines of responsibility for innovative work can become blurred. It is not uncommon for colleagues or management — sometimes unconsciously,

sometimes through gamesmanship, or sometimes because of their rank in the company hierarchy — to usurp credit for someone else’s accomplishment.

To reduce the frustrations that come when peers or other groups get recognition for your achievements, clearly document and communicate about your inventive work, so that there are no misunderstandings about its origin. For example, R&D personnel should maintain detailed, dated, and witnessed laboratory notebooks.

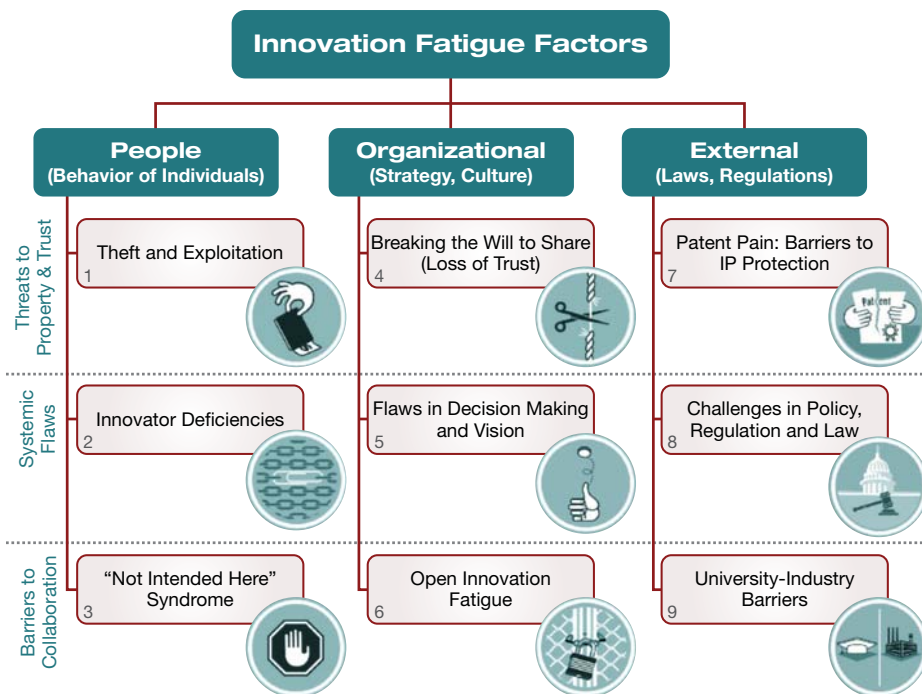
It is even more beneficial to communicate broadly and routinely about your progress. By filing regular invention disclosures (*I*), sharing your work in widely disseminated monthly reports, and networking effectively within the company, you can keep others apprised of your work. Such efforts accomplish much more than merely protecting your self-interest by making it harder for others to claim credit for your work. Good communication is vital for creating internal awareness of opportunities for innovation and for creating momentum and buy-in that can turn concepts and early-stage efforts into actual innovations.

Innovation involves an often-unappreciated social component — new concepts must be adopted and used by others to gain a foothold and change the way people do things. That social component begins in the company. Internal marketing (or benign self-promotion) of an invention or incipient innovation are essential for success.

Some engineers feel that a technical achievement should be recognized and appreciated on its own merits. The reality, however, is that marketing is necessary to bring innovation to life, even at the earliest stages. Promoting your work

This article is based on the authors’ book, “Conquering Innovation Fatigue: Overcoming the Barriers to Personal and Corporate Success” (6).

► **Figure 1.** Innovation may be thwarted by any of these factors. Source: (6).



gives it a chance to make an impact. Reducing the risk of theft will be one favorable side effect of this approach.

When credit has been misappropriated, complaining loudly will often be counterproductive. Be gracious, cooperative, and keep the welfare of the company in mind. By cooperating, your past work may come to light and help to further advance your accomplishments. Avoid the possibility of damaging your own reputation and ability to work with others by demanding justice for a short-term gain.

At the same time, management must be sensitive to possible abuses in the company, and deal aggressively with problems that may be identified. Providing fair recognition of those who contribute important innovations to the company will build trust and further motivate innovation efforts.

Managers should routinely meet with and talk to members of their innovation community to identify problems. Structure incentive systems so that they do not discourage people from acknowledging the contributions of potential co-inventors. Work with the legal department to educate employees about the legal requirements for proper inventorship in patent applications, and give careful attention to any questions or disputes.

Fatigue Factor 2: Avoid self-inflicted barriers

Sometimes the weak links in the chain of innovation are the innovators themselves. Self-imposed barriers can arise from excessive pride, unrealistic expectations, or uncooperative attitudes — all of which can scuttle innovation. Overstating the value of a contribution can make an invention difficult or impossible to license and commercialize. Unrealistic expectations or excessive pride might blind even the most talented people to the realities of the company culture, objectives, or the flaws in their own concepts. Uncooperative attitudes can make it difficult for the innovator to remain open and collaborate with those who can help improve the innovation and bring it to fruition.

Routinely request reality checks on your work, your attitudes, and your expectations. Having the humility to

ask “Am I the problem?” is often the first step to renewed success. In this regard, having a trusted mentor, or regularly consulting with peers or other colleagues with demonstrated success in innovation, can be very helpful.

Business leaders can help their innovation communities by giving constructive feedback and coaching when needed. This might include training employees to understand the screening process required to select projects for commercialization.

Fatigue Factor 3: Conquer internal “not invented here” syndrome

The term “not invented here” (NIH) describes the tendency of many companies to ignore potentially valuable innovations from outsiders. Only familiar kinds of innovation from insiders or trusted allies are welcome. Yet, as counter-productive as it might seem, *internal* NIH syndrome exists, and it can be even more debilitating to a company’s innovation progress.

Internal NIH syndrome occurs when a group or an influential person in a company has an incentive to hinder or suppress the creative work of others. This incentive is often not aligned with the good of the organization, but instead with the survival of a group or its budget, or with personal career ambitions.

Some employees might erroneously diagnose a frustrated innovation attempt as internal NIH syndrome, when in fact the company might simply have determined that a particular innovation was not worth the risks involved or otherwise

Management

aligned with the organization's needs. Inevitably, some clever attempts, inventions, and proposals will fail or be rejected. However, you can take several constructive steps to deal with such problems, including actual NIH situations.

The most benign example involves a corporate culture that leads to good-faith efforts that crush opportunity. In this situation, consider the perspectives (or lens of risk) that other people in the company are likely to use in evaluating opportunities. The business climate or performance objectives may create systemic incentives to avoid new projects, to not rock the boat, or to lay low and avoid potential trouble. Although this can quash innovation, the damage is not due to corruption or a conspiracy against the individual, but is rather due to the inherent incentives and mandates that other presumably well-meaning employees face.

Some employees may have the tenacity to buck the system and stand up for what they think is right. However, fighting the system comes with its own risks. Instead, a better tactic is to reach out to potential allies through effective networking and communication.

Within any healthy organization, some individuals, perhaps at the senior level, will feel genuine responsibility for advancing innovation. In the same organization, other peoples' jobs might depend on their ability to demonstrate change or progress toward new products, services, or processes. These may be the very people you need to align yourself with — their personal lenses of risk may help them to see your creativity as a solution to their problems.

Understanding your colleagues' needs and aligning your efforts with theirs involves networking, effective communication, and persistent internal marketing. Reference 2 can serve as a guide to effective networking and personal marketing.

When, due to personal agendas, rivalries or other factors, people really are guilty of internal NIH behavior, engaging in a direct battle will often leave you wounded. Seek advice from experienced peers or trusted leaders on how to build constructive bridges with the offending parties, or how to reposition your work so that it is no longer a threat and helps advance everyone's interests. This will not always be possible, but solutions often do exist.

Meanwhile, continue to hone your marketing skills — developing your internal network, communicating broadly and effectively, and positioning your work so that others will recognize the value that it can provide to the company and to them. Stay focused on the long-term goal of delivering innovation success, even if you must endure some short-term setbacks.

Innovation barriers may also be created by company gatekeepers who enjoy playing "devil's advocate." They can frequently influence others to reject untested opportunities prematurely, and may take pride in their ability to spot

potential problems in the making. Although there is a place for such caution and critical thinking, management must develop an eye for these "champions of defeat" and ensure that they do not stand in the way of worthwhile innovation.

The extent of NIH behavior helps to define corporate culture relative to innovation. If the innovation community or company culture is mired with NIH barriers, innovation cannot advance in ways that are aligned with long-term objectives.

Eliminating NIH attitude should be a priority of senior leaders. One of the keys to doing this is to listen to "the voice of the innovator." Leaders must be in tune with a network that can help them to feel and appreciate the pulse of innovation as it is experienced by the people in the ranks — from the lab, the mill floor, the product development team, and other parts of the organization.

Fatigue Factor 4: Don't break the will to share

Employees are paid to offer their time and energy to the company — so they will share their best ideas only when they feel personally motivated to do so. Successful innovation by talented employees requires more than a contract; it's ultimately about relationships built on trust and respect.

Innovation involves the heart and the mind. The company may expect the best efforts from the mind, but if the worker's heart is elsewhere — if loyalty and trust are gone — then the mind's full potential will not be realized, at least not for the benefit of the company.

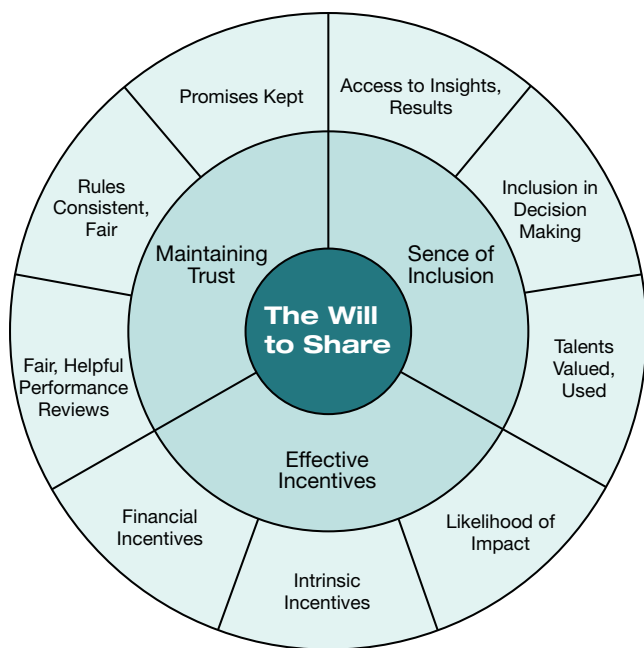
This is why a corporate culture that is conducive to innovation is so important. Companies cannot afford to ignore the impact of intangibles such as respect for employees. The solution does not involve pandering to every demand or offering elaborate benefits and incentives, but rather, simple efforts to treat people with respect and to sincerely listen to their concerns.

Sometimes, the events that strike employees as serious breaches of trust are the result of relatively minor misunderstandings. Simple adjustments in management's communication and behavior can have significant effects on rebuilding understanding and trust. Again, being in touch with the voice of the innovator can help management to fuel success. Figure 2 shows some of the issues that should be considered in maintaining the will to share among employees.

More advice for innovators

Engineers can do many things to increase their innovation effectiveness.

Given the importance of patents and other intellectual assets in supporting innovation and enabling returns on innovation investment, prospective innovators should become



▲ **Figure 2.** A variety of factors can affect an employee's will to share.

more familiar with patent systems. References 3–5 provide this type of information.

Understanding the legal requirements for patents, including the basics of obviousness and novelty, can help engineers to more quickly recognize opportunities and to be more effective in searching out prior art. Understanding what it takes to support claims and how claims are drafted can help you to conduct experiments or develop additional prototypes to support broader claims. Ultimately, a better understanding of patents will enable you to work more effectively with your patent attorney in drafting and prosecuting strong patents.

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Those interested in innovation should also regularly broaden their skills and acquire multidisciplinary knowledge and experience. This quest for new knowledge and experience should include building relationships with experts in new areas who can stimulate your thinking and serve as resources and catalysts for change. The most meaningful innovations are increasingly coming from teams of innovators with multidisciplinary skills. Getting out and forging new ties across disciplines will make you a more successful innovator and one more likely to find success in your company.

In summary

As the world economy has contracted, business and industry are going through dramatic transitions. Chemical engineers have the broad talents and perspectives to deliver the innovations that will be part of future growth in many fields and markets. These talents must not go to waste. Engineers and those who manage them must find ways to overcome barriers to innovation so that those creative skills are allowed to make a difference in the world.

A culture of innovation must be crafted with great care. The intangible elements that affect innovation must be considered as real and important as any IT system or pilot plant. Employees and their managers must overcome internal barriers and disincentives, listening to and responding to the voices of the innovators to know how to best energize innovation and conquer innovation fatigue.

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