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NAC Executive Insights

Fostering Open Innovation

Key Points

- Strong and growing needs for knowledge must be transmitted across firm boundaries.
- Open innovation offers the potential to increase the rate of innovation and the value of intellectual property.
- The most important requirement for fostering open innovation is putting in place a culture that treats innovation and intellectual property (IP) as strategic assets.
- Innovation must be open and must protect innovation.

Introduction

All firms struggle with innovation, whether that innovation be incremental or revolutionary. In part, this struggle is due to the use of traditional, closed innovation systems. A closed system can be clearly seen in the following figure.

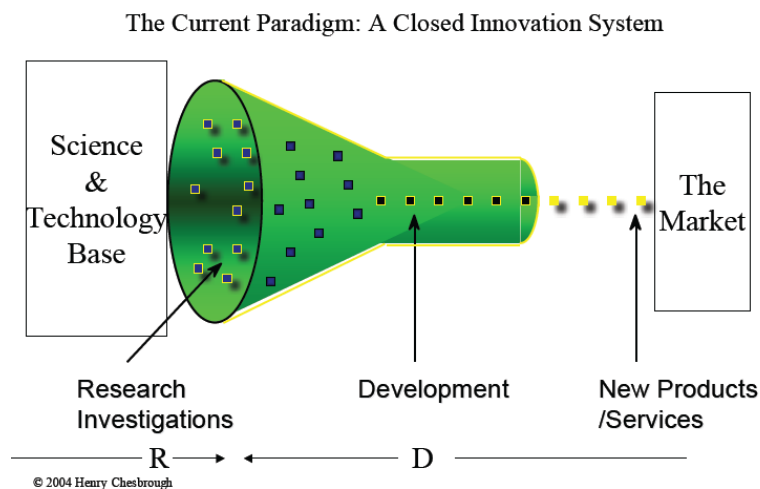


Figure 1. Closed Innovation Paradigm

An alternative to closed innovation is “open innovation.” The term open innovation is defined by UC-Berkeley professor Henry Chesbrough, who coined the term, as follows:

“Open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology.” – Henry Chesbrough

Today’s projects are not only larger and more complex from an execution standpoint, but they are also more technologically complex. As such they require inputs from more than one (specialized) firm. These technologically complex products often need to interact with other products and systems, sometimes in complex ways. This implies a strong and growing need for knowledge to be transmitted across firm boundaries.

This transmission of knowledge may best be accomplished using an open innovation process, which is shown in Figure 2.

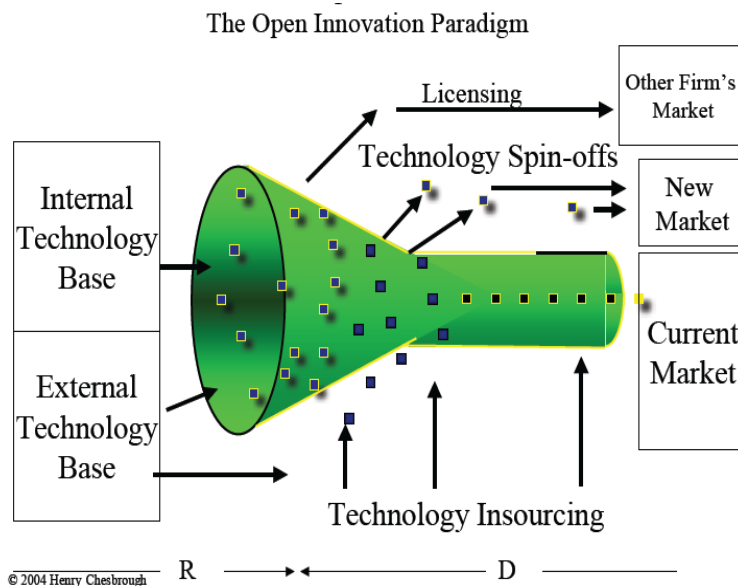


Figure 2. Open Innovation Paradigm

This Executive Insight focuses on open innovation and how to implement it, whether the innovation and its implementation be for an engineer, a constructor, or some other stakeholder in the design and engineering industry.

Open Innovation

Open Innovation offers engineering and construction firms the potential to increase their rate of innovation and the value of their intellectual property (IP). The following sections look at:

1. Requirements of open innovation
2. Sources of innovation
3. Client open innovation agreements
4. Supplier open innovation agreements
5. IP catalog

1. Requirements of open innovation

Perhaps the most important requirement for fostering open innovation is putting in place a culture that treats innovation and intellectual property (IP) as strategic assets. Innovation cannot be something that happens separate and apart from other corporate processes. It is not an after-hours activity nor is it simply a novelty idea or buzzword. Innovation must be an integral business process.

Like all business processes it must be managed and, importantly, innovation must be managed for its strategic potential. For some, innovation may represent the firm's long-term survival, developing the strategic position that is required. For those who believe they have a strong existing competitive position, innovation may help them get past competitive denial.

Open innovation requires not only a culture that can nurture it, but also skills that may be new to a firm, such as licensing, out- and cross-licensing. Innovations may be jointly owned but with different rights of use. It must have the right balance of opportunity and protection. It must be viewed by all parties as a win-win.

Successful open innovation will drive business models to evolve. These changes must be supported by both metrics and recognition and reward systems.

In summary, open innovation requires a new paradigm. Innovation shifts from a problem-solving, stage-gate process (built around constraints) to a question-answering, value capturing process (built around the abundance that then develops in a broader, more innovative ecosystem). The industry cannot simply rely on self-motivated individuals focused on problem solving. Instead, it must now challenge motivated individuals from broader and more diverse parts of the ecosystem in which the industry operates. The new innovation communities must have the latitude to self-organize. They also must recognize that success will be defined by innovations that are sustainable, not simply those that survive the stage-gate process.

Table 1. Requirements for Open Innovation

Actions to Foster Open Innovation	Supporting Questions to Answer
Stimulate employee engagement	
Support/moderate communities of interest	Ask open-ended questions
Align innovation efforts with business needs	What capabilities are desired over the next 10 years?
	What are the priorities?
	What are potential key innovation differentiators?
Identify innovation gaps	What are the unmet client needs?
	What are our competitor's differentiators?
Identify potential innovation partners quickly (competence)	
Facilitate necessary IP agreements	

2. Sources of innovation

Open Innovation offers engineering and construction firms the potential to increase their rate of innovation and the value of their intellectual property by harnessing the ideas and innovations from three distinct stakeholder groups:

- Employees
- Clients
- Suppliers and subcontractors

The method and nature of engagement with each of these three groups varies.

Employee engagement represents the opportunity to raise awareness of a firm's need to innovate. Each business segment should identify areas (perhaps two or three) where improvement or significant competitive advantage is being sought. These areas should be identified and posted in separate online communities and made available to users. These communities may take the form of simple blogs on an internal messaging system or they may be part of an established, formal knowledge system. Potential innovations are suggested by any employee. Promising ones can be challenged by the business line and encouraged to develop an innovation disclosure, moving the proposed innovation into a more formal development process. In addition to the business line challenges, several corporate business model type challenges would be identified.

Client engagement would have different motivations. Specifically, the client engagement process would seek to:

- Improve the current intellectual property (IP) frameworks that engineers and constructors are presented with by clients during the contract execution stage. This is best done by incorporating a

company-specific, defined open innovation process as part of a contractual offering. The elements of the framework would contain:

- Increasing the client's perception, at the selection stage, of the extent and value of the intellectual property and know how that engineering and construction companies are bringing to the client.
- Provide a firm with clear re-use rights for innovations and intellectual property developed under the open innovation agreement.

Supplier and stakeholder engagement can proceed at two levels:

- General level - open to all company suppliers and subcontractors meeting defined threshold conditions
- Strategic levels - for select partners

General level engagement takes the following form:

- Suppliers and subcontractors above a threshold level would receive an organizational access code that would give their employees (required to register with unique ID) access to the innovation site (blog or online community) for a defined period of time.
- Suppliers receiving the access code would acknowledge that it is part of the firm's open innovation effort and that submissions from the supplier's employees should not contain IP. Also, any idea submitted will be required to certify no existing IP transfer.
- Registration would require individuals to accept an agreement with respect to usage and rights indicating anything they enter into consideration on the site, including all descriptions, drawings, and so forth, immediately becomes property of the firm and is unrestricted in its use.
- Submissions of particular innovations for consideration would require certification that no IP of any form from the individual's employer (access code linked) or other source is being provided in the submission.
- After review of innovations submitted, ideas not of commercial interest to the firm but of broader interest to the industry would be published on an associated online newsletter that is broadly available. This publication should limit any subsequent patentability and potentially foster improvements across the supply chain. The publication should be copyrighted.

Strategic level supplier engagement is reserved for select partners. It occurs under an open innovation framework that would be subsequently developed but generally similar in scope to the client open innovation agreement.

3. Client open innovation agreement

The client open innovation agreement includes the following core elements:

- Preamble – defining open innovation, its characteristics, the general benefits it represents, and the partnership type relationship required for its success.

- Definition of covered parties – defining who the covered parties are and to whom rights under this agreement are extended to and who may concur on behalf of covered entities
- Purpose of this open innovation agreement:
 - Client – limit it to the specific facility or if necessary to a narrowly defined class of facilities
 - The firm – defined broadly as executing this project and facilitating know how in this field of practice
 - Identified customer and project needs anticipated
 - Current technology gaps
 - Anticipated contributions by each party
- Specific challenges and opportunities contemplated under the agreement
- Background IP
 - The firm
 - Pre-execution IP (separate IP catalog document – discussed separately)
 - IP developed independently during the term of this agreement, including IP from one’s own internal open innovation network or a supplier open innovation network; method and timing of disclosure
 - Client
 - No implied license to background intellectual property
 - No implied license to derivative works
 - No rights to be conveyed to third parties
- Non-disclosure agreement
 - No disclosure of confidential, copyright, know how, or trade secret information
- Creation of a Protected Commons
 - Protected Commons defined as “a secure platform where discussion concerning an innovation, invention, or improvement can take place without the invalidation of future patent applications, or the misappropriation of information by third parties.”
 - Patent rights flowing from this open innovation would be similarly deposited in this Protected Commons, whether those rights are jointly or individually owned as discussed below.
 - Parties agree not to assert IP rights against each other outside the use of this agreement.
 - Ownership of the Protected Commons website (a client open innovation website) is exclusive, but licensed for use under this agreement. No rights to underlying IP or copyright is transferred. Management of the website is by one’s own firm.
 - Ownership of any enabling technologies, tools, or reference documents provided to the Protected Commons will convey no transfer of IP or an implied license for use other than in connection with the scope of the agreement.
- Management of the open innovation process
 - The open innovation process is a value improving process (VIP) and managed in accordance with the VIP and this agreement.
 - Both parties will agree to a joint innovation strategy and assigned responsibilities.
 - Benchmarks will be mutually agreed to measure success of the open innovation program.

- Foreground IP
 - Definition of foreground IP to include any IP developed under this open innovation agreement, but specifically will exclude:
 - IP developed independently during the term of this agreement.
 - Improvements to existing background IP.
 - Specific areas of exclusion:
 - Improvements to existing background IP would be available for royalty free use under this agreement, but no conveyance of future rights is derived.
 - Specific areas of exclusion would be defined in the narrowest possible terms.
- Patenting of Foreground IP
 - Foreground intellectual property as defined above may be jointly patented and owned under this agreement except to the extent that both parties agree that such IP should be classified as a trade secret and held as a trade secret by both parties during and subsequent to the term of the agreement.
 - If one party is not interested in participating in the patenting of an innovation in one or more jurisdictions, the second party may pursue exclusive patenting of the innovation, providing a royalty free license for the use contemplated by this agreement.
 - Patent costs, including post-agreement maintenance costs, will be borne under this agreement by the patenting party (singular or joint).
 - Management of the patenting process for jointly owned patents will be mutually agreed to under this agreement.
 - If neither party is interested in pursuing a patent on an innovation developed as Foreground Intellectual Property, either party may pursue publication unless the other objects. Any publication will cite its development under the open innovation agreement and grant unrestricted use of the copyrighted material to both parties, subject to any limitations by the selected publication. No restrictions on third-party publishing efforts are intended.
- Trade secrets in Foreground IP
 - Non-disclosure of IP mutually categorized as trade secret
 - No disclosure to third parties
 - No right to disclose in patent
- Form of license
 - Unrestricted use of license in connection with this agreement
 - Unrestricted use of license by covered parties
 - Limitations of licensing to third parties except as otherwise agreed
 - Protection against infringement
 - Unilateral right to protect against infringement
 - Obligations of party initiating infringement suit
 - Reasonable assistance in litigation of non-litigating party
- Limited warranty/hold harmless
- Dispute resolution
- Termination of the agreement
- Surviving rights

4. Supplier open innovation agreement (general agreement) – non-strategic suppliers above threshold criteria

The supplier open innovation agreement includes the following core elements:

- Preamble – defining open innovation; its characteristics; the general benefits it represents; and the role suppliers and subcontractors can play in strengthening current and future offerings, creating potentially mutual benefits
- Definition of covered parties – defining who the covered parties are (the firm and designated supplier or subcontractor)
- Purpose of this open innovation agreement
 - Improve the competitiveness and quality of offerings from one’s valued supply chain, which supplier is an important member of.
 - Identify current industry challenges as well as challenges and opportunities faced, which the supplier may be able to help address.
- Assurance to supplier that no IP will be solicited or rights transferred under this agreement.
- Supplier’s right to authorize participants by providing the access code obtained on execution of this agreement.
- Agreement to publicize authorized supplier staff inputs on the supplier innovation network newsletter or other company managed forums or publications. Such recognition may create other opportunities for supplier internally within the firm and its supply chain.
- Acknowledgement and agreement to the individual registration and submission processes.
- Individual registration
 - Agreement with respect to usage and rights establishing that anything they enter into consideration on the site, including all descriptions and drawings, immediately becomes the firm’s property and that it is unrestricted in its use.
- Submissions of particular innovations for consideration would require certification that no IP of any form from the individual’s employer (access code linked) or other source is being provided in the submission.

5. IP catalog

It is essential to know and manage the IP. If open innovation represents offense, then the IP catalog represents defense. The IP catalog is also a great way to demonstrate innovativeness to a firm’s potential hires, clients, and partners.

The elements of an IP catalog include:

- Description of IP catalog content and applicable uses.
 - Content includes all provisional patents, patents pending, and patents issued with brief descriptions and other relevant information.

- Applicable uses include preliminary incorporation in proposals and other communications with current and prospective clients in whole or in part; inclusion in its entirety in the open innovation agreements.
- Completeness of catalog as of date certain.
- Process for notification of a firm's background IP up to the date of open innovation agreement execution.
- Rights to subsequent issues of IP catalog during term of open innovation agreement.
- Copyrighted, with limitations on reproduction in any form without consent.
- Disclaimer on accuracy and reliance.

Summary

Intellectual property rights are generally designed to exclude others from using a firm's ideas and inventions. Open innovation implies a willingness to allow knowledge produced within the firm to spill over to others. There is an expectation of receiving knowledge spillovers from others; out-license for revenue (leverage innovation); and in-license for open innovation (accelerate innovation).

IP value is created when open innovation is leveraged through partners with complementary assets or different IP needs.

Open innovation has the potential to change business models, both a firm's and participants in the firm's supply chain.

The scope of innovation is broad, as seen in the following figure. Readers should consider potential innovation partners and select only those who can cover the potential landscape. (The darker the color, the greater the activity or value).

Types of Innovation									
Finance		Processes		Offering		Delivery			
1. Business Model - How to make money	2. Networking - structure/value chain	3. Enabling Process - assembled capabilities	4. Core Process - proprietary that adds value	5. "Product Performance" - basic features, performance, functionality	6. "Product System" - extended system around an offering	7. Service - how we service our customers	8. Channel - how we connect our offerings to our customers	9. Brand - how we express our offerings benefits to our customers	10. Customer Experience - how we create an overall experience for our customers

Prior Innovations

Typical Innovation Focus



Money Making Innovation Focus (2% of projects produce 90% of value)



About the Author

Bob Prieto was elected to the National Academy of Construction in 2011. He is a senior executive who is effective in shaping and executing business strategy and a recognized leader within the infrastructure, engineering, and construction industries.

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