

Co-Innovation: Capturing the Innovation Premium for Growth

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Companies seeking to ride the competitive wave are well advised to rethink their conception of innovation. The rules of engagement in innovation management are changing continually. And so, therefore, must companies' approach. Traditional, inward-looking innovation strategies no longer suffice. Companies must learn to co-innovate. Co-innovation enables firms to complement their internal innovation efforts with external sources, opening multiple opportunities for step-change improvement in the firm's innovation performance.

Managers today face a dilemma. They are responsible for today's results, but at the same time they must take measures for ensuring tomorrow's success. Investments in innovation to secure competitiveness in the future are charged against today's performance, while there is no guarantee that the investments will ever pay off. Strategic investments in innovation management can still make a lot of sense today, but the playing field is continually changing. For no apparent reason, time-tested heuristics suddenly no longer appear to hold.

New driving forces in the market are making companies rethink and challenge the long adhered-to traditional logic concerning the management of innovation. Traditional company-centric views nurtured the notion of the sanctity of in-house R&D and innovation. Companies have historically controlled all activities involved in the creation of new technology and products. They can no longer afford this mindset. Revolutionary advances in technology, sky-rocketing R&D costs and increasingly flexible firm boundaries are driving the emergence of a new innovation paradigm. Innovation leaders are embracing a partnering approach to innovation. They are co-innovating with strategic partner firms in a variety of inter-firm partnering configurations, ranging from strategic alliances to network-based competition. Today's innovation leaders are learning to complement their own internal innovation efforts with external sources of innovation. Co-innovation, however, clearly goes beyond partnering; it embodies a refocused internal innovation that is brought into alignment and coupled with strategic and purposeful external innovation partnering.

Let's see what it looks like – or rather catch the very taste of co-innovation. The innovative BeerTender system, initiated by Heineken and created together with Groupe SEB, brings the enjoyment of a fresh draught Heineken beer right to the consumer's kitchen. BeerTender consists of a unique draught appliance – developed by Krups, a Groupe SEB brand – and a new Heineken four-litre returnable

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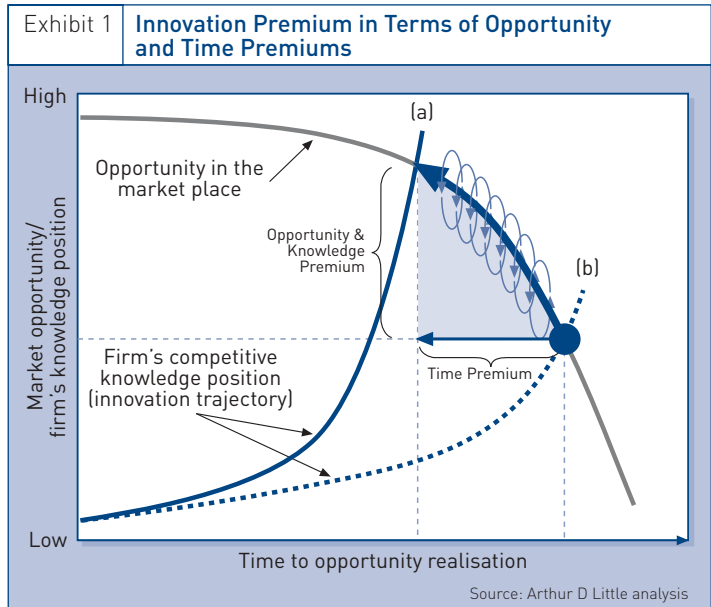
beer keg. Heineken took the initiative to find an innovative solution to meet growing consumer needs for high-quality experiences at home, including enjoying a high-quality draught beer. BeerTender is the only appliance in the world that enables consumers to do just that. The system is easy to use and keeps the compact keg at ideal temperature and high quality for three weeks.

The official BeerTender launch initially focuses on the Netherlands, but plans for a further roll-out are already in the making. Groupe SEB is responsible for the production, marketing and future development of the BeerTender appliances. Heineken will focus on developing the kegs even further and takes the lead in producing and distributing the kegs. “BeerTender enables Heineken to clearly underline its ongoing quest for innovation, which brings growth to the Heineken brand,” says Heineken CEO Anthony Ruys. “It enables us to distinguish ourselves from our competitors. With Groupe SEB as our partner, Heineken can count on combining specific technical knowledge with our expertise on draught beer.”¹

Innovation – and the New Rules of Engagement

It is the innovation ability of a company that investors are prepared to reward and pay a premium for. No doubt, co-innovation offers new opportunities for capturing and realising the innovation premium, setting competitive leaders apart from their competitors. The objective has always been to cash in on market opportunities earlier than the competition. Exploiting emerging market opportunities earlier involves creating a steeper innovation trajectory (see curve “a”, Exhibit 1) instead of the traditional, legacy-prone trajectory (see curve “b”, Exhibit 1) for exploiting market opportunities earlier in their existence. The rewards for succeeding in this endeavor are twofold. First, there is a time premium representing a substantially reduced time-to-market. Second, there is an opportunity and knowledge premium enabling a host of early-mover advantages.

¹ See also Interview with Anthony Ruys on page 110.



How can a company capture the premium and nurture growth given that today's business logic is rapidly making proven methodologies obsolete? Entirely new rules of engagement are emerging that suggest that it is better to "seize the unknown rather than perfect the known".

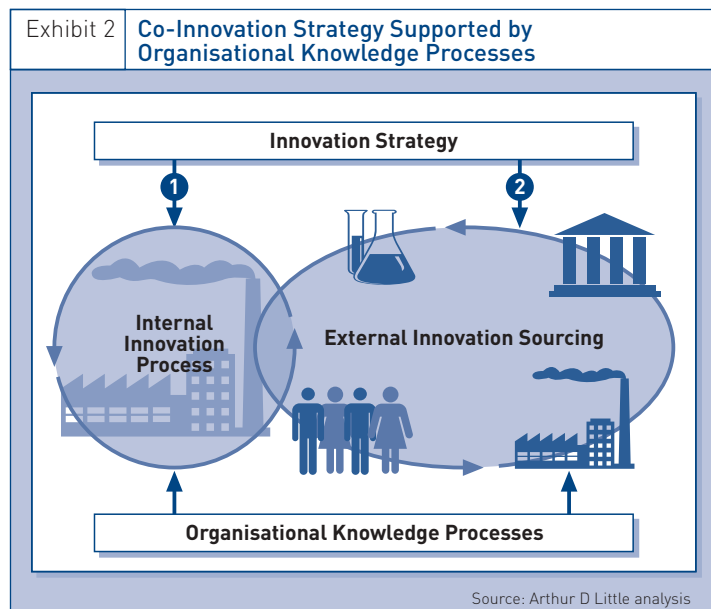
Questions that innovation leaders are pondering include:

- What are my industry's "sacred cows" – those deeply embedded assumptions that have gone unchallenged to date?
- How might our company exploit these unchallenged assumptions to create exceptional new value for customers, current and future?
- What does my company need to have in place in order to realise early-mover advantages?

These same innovation leaders are rapidly learning to play by the new rules of engagement. How do these translate into practice? Increasingly, innovation leaders are executing overall innovation strategies that seek to orchestrate a strategic balance between (1) internal innovation and (2) external innovation sourcing through collabora-

tion within strategic partner networks. The former focuses on achieving the right internal knowledge context; the latter enables the company to access new advanced technologies and knowledge from universities, entrepreneurial start-ups, supply-chain partners, customers and even competitors. Organisational knowledge processes that integrate the intelligence of the company with that of its strategic partner network are at the heart of co-innovation (Exhibit 2).

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Co-innovation does not imply that companies are neglecting their own internal innovation but that they approach it very differently. They are making a much more concerted and deliberate use of their own internal knowledge, and link this knowledge with the knowledge of their strategic partner network. What is it about co-innovation that makes it distinctive? There are at least three salient features that are causing heads to turn. First, it draws on recent management thinking and practices that have demonstrated the greatest potential for bottom-line impact, including recent breakthrough thinking in strategic partnering, flexible organisational boundaries, organisational learning and knowledge management, and the exploitation of intellectual capital for improved innovation practice. Second, it brings these practices into juxta-

position in a uniquely pragmatic way. Third, it challenges traditional management thinking on the sacrosanctity of closed, in-house innovation.

Internal Innovation: Orchestrating Serendipity

Innovation does not occur in isolation. Individual creativity doubtlessly plays a role in the process, but innovation is ultimately the outcome of the organisation's collective knowledge efforts. Innovation is a social process. New ideas generated collectively are validated within the organisation's social system. They then invariably meet up with existing knowledge. Recombination, conversion and integration of old and new knowledge occur, leading to validated new ideas ready to be put into practice. The role of the organisation becomes that of an intermediary between pools of otherwise disconnected knowledge. Research provides evidence that world-class innovators excel at connecting apparently disconnected knowledge into new winning combinations – just as Robert Fulton in 1807 succeeded in taking the steam engine out of the mines, where it had spent the first 75 years of its existence, to an entirely new application of powering steamboats.

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Four knowledge work processes that significantly reduce the serendipity element in the innovation process have been identified. Each of these in turn correlates closely with one of the key knowledge conversion mechanisms proposed by Nonaka and Takeuchi, as shown in Exhibit 3.

Capturing good ideas through externalisation is an innovation practice which the European mobile operator O₂ has put into practice. It defines innovation as a key element of the company's vision. O₂'s top management strives to nurture an innovative mindset and to anchor innovative thought-leadership in the heads of the firm's employees. Notably, the company has implemented an IT-based idea-management platform for capturing employees' ideas at the moment of their emergence, and to explicitly manage them through a defined idea-evaluation process. Moreover, O₂ is experimenting with the implementation of a scorecard approach to track key knowledge and innovation performance indicators.

Exhibit 3 Innovation Practices and Associated Knowledge Processes		
Innovation practices	Primary contributing knowledge mechanism	How does knowledge mechanism contribute to innovation?
1. Capturing good ideas	Externalisation (tacit to explicit)	Articulation of tacit knowledge into explicit ideas; may take the shape of metaphors, analogies, concepts, hypotheses or models.
2. Keeping ideas alive	Socialisation (tacit to tacit)	Process of sharing experiences and insights; thereby creating tacit knowledge such as shared models and technical skills.
3. Imagining new uses for old ideas	Combination (explicit to explicit)	Systemisation of ideas and concepts through exchange, recombination and categorisation into a knowledge system; driven by networking and infrastructure.
4. Putting concepts into practice	Internalisation (explicit to tacit)	Process of embodying explicit knowledge into tacit knowledge; most closely related to "learning-by-doing"; rapid prototyping and experimentation.

Keeping ideas alive through socialisation is the objective of knowledge networks that link topic experts from various business units and global entities of a corporation. The purpose of these is to nurture existing knowledge and to develop new knowledge in the respective fields of expertise. This mechanism is being exploited by global reinsurance leader Munich Re, which has implemented extensive knowledge networks connecting experts.

Imagining new uses for old ideas is what engineers and designers at IDEO Product Development of Palo Alto are probably second to none in doing. They play endlessly with anything they can lay their hands on – from glow-in-the-dark fabrics to silver-plated walnuts, and they go to bizarre places such as an airplane scrapyard in search of old ideas for new uses. The most successful of these knowledge brokers live by the attitude of nothing-is-invented-here. Openness to new ideas and a quest for simplicity is their credo. The inexpensive pump from a kid's squirt gun that is used to power a medical lavage, Reebok's Pump shoe, inflatable splints, and powered medical equipment are exemplary in this respect. However, getting closer to earth again one might think of short messaging services. Originally planned to transport small

text messages in a store-and-forward mode, today's new uses include the SMS as chat channels, to vote, to pay or to get a ticket. The mobile phone is turning into a game console.

Putting concepts into practice is more easily said than done. Internalisation at Arthur D. Little is put to practice through its Tandem Approach². External counterparts from the client's side are paired with internal project managers. Working side-by-side, these jointly define the concept and its roll-out in a workshop-based interactive approach. The tandem approach enables not only leveraged buy-in, but also allows a systematic transfer of experience and expertise, learning-by-doing, and a fair division of the workload throughout the project.

External Innovation: Nurturing the Cat's Cradle

Strategic partner networks are a natural response in environments that are risky and uncertain.

Increasingly, innovation leaders are viewing the innovation process as a cat's cradle of inter-relationships feeding on clusters of companies that collaborate on a particular technology or technologies. Indeed, strategic partner networks are a natural response in environments that are risky and uncertain. These can take a variety of forms. The Microsoft-Intel PC partnership is one of the better known; it has brought forth a technology platform and an entire desk-top computing technology standard. The partnership has brought together hardware and component makers, software developers, channel partners and training partners.

All strategic partnerships offer a range of potential advantages, including: reduction of own resources requirements, leveraging greater intellectual input and creativity from diverse sources, leveraging more holistic approaches to problem-solving and process optimisation, and risk minimisation through sharing. However, successful external innovation partnering requires embedding a new business logic in the organisation. In essence, to make partnering for innovation a success, companies must adopt a new way of thinking about innovation. They must

² See F. Kirschnick, G. Gustafson and S. Odenthal (2003). Knowledge Management – Are You Inspiring Innovation? Prism, Second Semester 2003, p. 56.

Co-Innovation: America's Cup Winner Alinghi Shows How

Team Alinghi, the Swiss sailing team that won the prestigious America's Cup race in 2003 is made up of sailors, boat builders and scientists. It brings together close to 100 people who are among the finest specialists in their respective fields. The members of the Alinghi sailing team alone have taken part 47 times in the America's Cup, with 18 victories, and they have also won 67 world championship titles between them.

Alinghi has a single goal, according to Grant Simmer, Team Alinghi's chief technical designer. At the end of the day, everything comes down to "winning that race". The traditional product development and innovation paradigm beset by slipping deadlines and delayed market introductions is entirely irrelevant in Simmer's highly competitive, performance-driven world. Alinghi must "come to market extremely quickly". The date of the race sets the pace for innovation and there is absolutely no room for compromise or negotiation on delivery time. The stakes are high, and Alinghi consistently prepares to take high risks for what amount to relatively modest gains in racing time. But even a few seconds' advantage are often all that are needed to win the race.

According to Simmer, the Alinghi design team's position is clearly established at the cutting edge of knowledge when it comes to designing and building world-class, winning racing yachts. Also scoring high in Alinghi's secret to success, however, is its ability to co-innovate within an innovation network consisting of other world-class boat builders and technology providers. Alinghi has established a very successful collaborative relationship with the Swiss-based Décision SA boatyard and the Lausanne-based Swiss Federal Institute of Technology (EPFL). Décision SA has built two of Alinghi's racing yachts in the recent past. The firm specialises in integrating the newest research on composite materials into its boats.

In periods of intense co-innovation, such as in the period preceding a major race, the boatyard in essence becomes a part of the extended Alinghi team. The EPFL fulfils a slightly different role in the Alinghi co-innovation network: it provides Alinghi with a window on new technological innovation. Currently, the partnership is focused on three dimensions: optimisation of composite materials and their processing, advanced numerical flow simulation and innovative measurement systems. Alinghi specifies and defines research projects that are allocated to respective EPFL research teams. Alinghi team members also interact closely with various members of the EPFL faculty, opening opportunities for the absorption of new external knowledge through faculty briefings and the attendance of EPFL faculty members at Alinghi design team meetings.

no longer wait for isolated creative minds to have their “Eureka” experience, but give employees free access to fresh knowledge from external sources.

Innovation leaders are achieving this in a number of ways:

Strategic innovation network partnering

New thinking on strategic partnering is laying the groundwork for step-change improvements in innovation. Independence and proprietary research were once prized attributes of research laboratories. This is no longer the case. Refocusing on external innovation does not diminish the importance of internal innovation. The focus is different, however. Co-innovation poses new management challenges. The company’s internal innovation efforts will inevitably produce intellectual property that other partners in the innovation network may covet. Trust in the discretionary exchange of knowledge within the partner network must be built and fostered.

Experimentation has always been at the heart of knowledge conversion leading to innovation. Experimentation, however, is tedious and costly.

STMicroelectronics, the product of the 1987 merger between the state-owned Italian SGS Microelettronica and the French electronics giant Thomson Semiconducteur, is an example of industry leadership in the area of strategic innovation partnering. The firm has succeeded in making a significant impact on the semiconductor industry by demonstrating the possibility of turning loss into profit. In a co-innovation alliance linking three of the world’s leading players in semiconductor research and process development, STMicroelectronics is joined by Motorola and Philips in creating an unprecedented move to develop future-generation semiconductor technologies and solutions more quickly and cost-effectively. At the heart of the co-innovation effort is the new US\$1.4bn research facility at Crolles, France, where the three partners are aiming for nothing less than world leadership in nanometric technology applied to system-on-chip solutions. The triple alliance is being joined by the world’s largest semiconductor foundry, Taiwan Semiconductor Manufacturing Company (TSMC), for enhanced production capacity. The combined resources of the four partners will be dedicated to the development of future generations of CMOS

(Complementary metal-oxide semiconductors) process technology from the 90-nm node down to 32 nm over the next five years. The resulting reduced circuit-geometry sizes will enable the partners to continue to meet customer demand for integrating more intelligence into smaller packages.

Enlightened experimentation

Experimentation has always been at the heart of knowledge conversion leading to innovation. Experimentation, however, is tedious and costly. New advanced technologies are providing new opportunities for circumventing the age-old cost dilemma by radically changing the way in which companies are approaching experimentation.

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Biotechnology is a case in point. Traditionally inward-looking, biotechnology in many ways is now leading the way in new developments in experimentation. A new generation of drug makers, including Millennium Pharmaceuticals and GlaxoSmithKline (GSK), are redefining research using the latest in high-tech tools – ranging from computerised gene sequencers that unravel DNA to automated machines that screen thousands of compounds per hour.

Millennium Pharmaceuticals has developed what has become the industry's leading set of integrated capabilities for genomics-driven drug discovery and development. This claim is supported by the list of major companies that have sought access to its capabilities, either indirectly through major R&D alliances or directly through technology transfer alliances.

GSK has radically restructured how it discovers drugs as well. Early in 2000, CEO Jean-Pierre Garnier dismantled GSK's rigidly hierarchical research pyramid and essentially reinvented the way the company discovers drugs. GSK

has invested in three state-of-the-art drug-delivery factories, located in Tres Cantos (Spain), Harlow (UK) and Upper Providence (US), at a total cost of \$270 million. Fully automated testing facilities at Tres Cantos allow up to 300,000 screening tests to be carried out daily. Garnier's investments appear to be paying off; whereas prior to the restructuring a budget of \$4bn was producing only 10 to 15 promising molecules for early-stage testing as drugs, a streamlined GSK is now producing candidates at a rate of 25 to 35.

The UK's InsightFaraday programme is another example of a next-generation initiative that couples new, revolutionary technologies with strategic partnering for accelerated innovation. The purpose of InsightFaraday is to promote the development and exploitation of High Throughput Technologies (HTT) for product and process development for the benefit of UK industry and the science, engineering and technology base and promote greater interactions between them. InsightFaraday aims to achieve this through:

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1. Multi-disciplinary partnerships between academia and industry to stimulate and enable new product and process development;
2. Enabling research on processes for rapid production, characterisation and performance evaluation of products using HTT platforms, and processes for handling the resulting information and knowledge.

Capturing the Premium Through Co-Innovation: Managerial Implications and Challenges

Enabling strategically relevant knowledge

Innovation relies on knowledge creation. Knowledge creation results from exploration and exploitation activities within the company's boundaries, and the fusion of this knowledge with incoming new knowledge from the company's external environment. Much of the strategically relevant knowledge created resides in the form of tacit knowledge.

Innovation is driven primarily by tacit knowledge. It draws on highly subjective insights, intuitions and hunches that form an integral part of tacit knowledge. These factors are soft and qualitative and therefore defy traditional mechanistic management approaches. Therein lies the managerial challenge. It involves building the requisite social capital and putting in place appropriate integration mechanisms that enable people with ideas and experience to connect with others and exchange anecdotes. The manager's challenge lies in creating the proper organisational context and inter-functional climate for knowledge creation.

Getting a grip on unwritten rules

Enabling knowledge to cross organisational boundaries is a key managerial challenge. Bridges must be created so that knowledge can cross boundaries that separate cultures, whether within the organisation or between partner networks. In order to build social capital, management must understand the unwritten rules of the game that regulate the behind-the-scenes processes of the organisation and between organisations. Unwritten rules are particularly important in the context of innovation. Rules like “wait-and-see” or “avoid-proactivity” often conflict with innovation initiatives and the inherent change imperative accompanying those initiatives. Failure to resolve the conflicts and proceeding blindly to force change upon the organisation regardless of its disposition to change are often the cause of failed innovation initiatives.

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Finding the right organisational form

Co-innovation is not so much about doing more of the same, only faster, as it is about doing things fundamentally differently. This implies that the traditional perspective of internal innovation must change from depth to breadth and integration. Co-innovation demands organisational forms that open the company to developing and adopting new technologies that embrace and extend existing intellectual property across the partner network – even those that are “not invented here”.

New networked organisational forms must meet two fundamental requirements:

1. Flexibility and adaptability to generate and deliver value along multiple dimensions and multiple network partners.
2. Power to allocate resources that are widely distributed and closely aligned with various points of intelligence within the organisation and its network.

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Moreover, strategic capabilities and enabling mechanisms need to be nurtured in the new organisation for balancing group dynamics between internal and external partners for fast decision-making; by permitting conflict over content, but with deep social bonds for limiting interpersonal conflict. This requires smart working of the organisation's cultural levers and might include pragmatic approaches such as calling frequent meetings to build familiarity and trust; enabling exchange of data-rich information to develop shared intuition (establishing common technology platforms); and, last but not least, clarifying turf boundaries to keep politicking to a minimum.

Reappraising cost and performance

Can the returns on co-innovation be measured?

Traditional approaches to calculating cost and benefit are rapidly becoming irrelevant. The new co-innovation paradigm demands new approaches to accounting for innovation returns. The innovation premium holds the promise of early-mover advantages associated with flexibility and versatility. The former enables time-based competition, facilitating rapid response, reducing product development times, redefining a position and re-focusing in the midst of a dynamic engagement. The latter enables the firm to do different things and apply different capabilities in varying situations.

Insights for the Executive: Capturing your Innovation Premium

The path to profitable growth is changing fast.

Companies' ability to innovate differently has become more important than ever before. In the past most companies focused – if at all – on their internal innovation process. But the rules of engagement have changed. Innovation leaders are learning to align their own innovation efforts with those of innovation leaders outside the boundaries of the company. Co-innovation is the name of the new game.

Co-innovation requires a new approach to innovation that succeeds in coupling and aligning the firm's internal and external innovation processes. Organisation knowledge, in its many possible forms, is at the heart of innovation and the single most important driver of co-innovation. Companies' ability to absorb new knowledge from their partners' networks and the ability to fuse this knowledge with existing internal knowledge is the key to the success of co-innovation. Astute management of the firm's knowledge and its organisational enabling factors thus provides the right organisational prerequisites for capturing the innovation premium through co-innovation. This requires getting a grip on the unwritten rules in an organisation and enabling ideas and new concepts to flow between the partner companies. Lastly, co-innovation challenges prevailing management thinking. It provides a unique opportunity for reframing organisational structures and aligning these to the continually changing competitive environment.

References

- Hargadon, A., R.I. Sutton (2000). Building an Innovation Factory, Harvard Business Review, May-June Issue.
- Kelly, K. (1998). New Rules for the New Economy.
- Maira, A.N. (1997). Rethinking the Organization: New Structures for Global Competitiveness, Prism, Second Quarter Issue.
- Nonaka, I., H. Takeuchi (1995). The Knowledge-Creating Company.
- Odenthal, S., Säubert, H., Weishaar, A. (2002). Strategische Partnerschaften.
- Scott-Morgan, P. (1994). The Unwritten Rules of the Game.

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