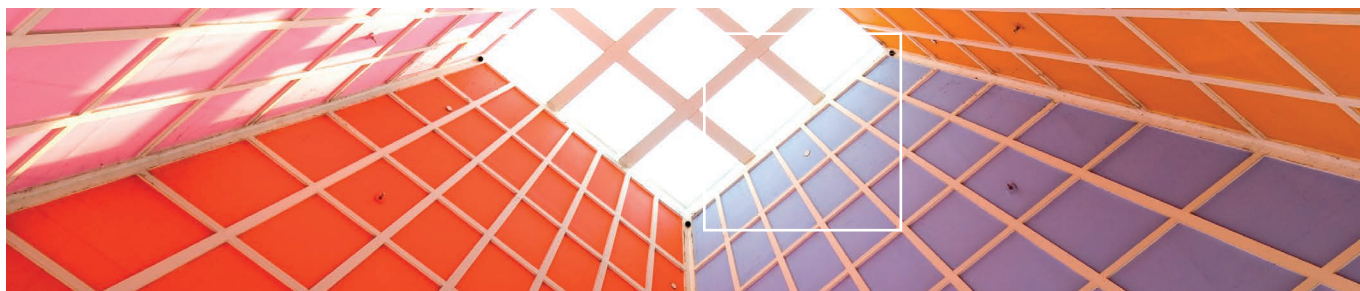


Systematizing Breakthrough Innovation

Findings from the Arthur D. Little Breakthrough Innovation Survey



It is increasingly important for companies to be able to deliver a pipeline of Breakthrough (or Radical) Innovations in order to respond to emerging competition, disruptions to core business, and increasing customer power¹. For example, in five years' time, companies in our survey expect the revenue contribution of Breakthrough Innovations to be double the current levels. Yet despite this, nearly all (88%) of companies are unsatisfied with their efforts to date. In order to achieve replicable, effective Breakthrough Innovation, our survey indicated several key success factors, including having an explicit Breakthrough strategy with clear and quantified goals, single-point accountability and commitment at top management levels, cross-functional involvement, ring-fenced funding, active intrapreneur roles and agile processes. Whilst having a dedicated Breakthrough Team is the most effective basic organizational approach, there is no one-size-fits-all model for how best to implement it – from the survey we identified four alternative models involving different functional ownership and resourcing. Companies should select the right models to suit the technology-intensiveness of the business, and the novelty of the challenges being tackled.

Arthur D. Little conducted a survey of over 80 large organizations² to explore best practices for how to deliver a consistent pipeline of Breakthrough Innovations – meaning radically-new products, performance features, business models or market space. The results were both expected and unexpected, and yielded many valuable insights. Below are some highlights:

Breakthrough Innovation is increasingly important, yet nearly all companies are unsatisfied with their performance

Companies expect the revenue contribution from Breakthrough products and services launched over the last three years to double in the next five years from 8% to 15%, whilst the expected contribution from Incremental innovation will rise much more slowly (see Figure 1).

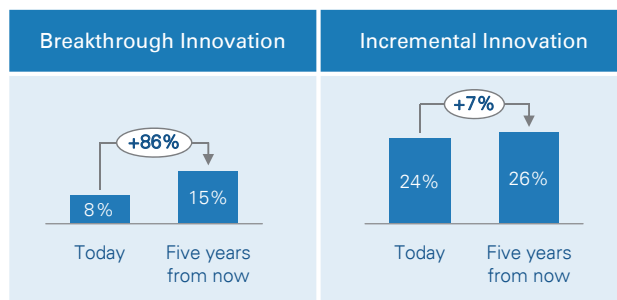
Surprisingly, our survey revealed that no less than 88% of companies were unsatisfied with their current Breakthrough

Innovation performance, with not a single respondent reporting being very satisfied. Improving Breakthrough Innovation performance is thus a high priority. The study revealed several key success factors.

Develop an explicit Breakthrough strategy with clear and quantified long term goals and dedicated resources

Although nearly 90% of companies recognized the importance of defining specific strategic objectives for Breakthrough

Figure 1: Revenue contribution from products and services launched in the last three years from:



Source: Arthur D. Little

1 Kirstetter, Eagar, Kolk & Roos. *The Creativity Era – a new paradigm for business*. Arthur D. Little Prism H2 2014.
 2 The survey sample consists of 83 companies from more than 30 different industries in 14 countries, with an emphasis on European based companies. 70% focus on B2B. Average participant turnover is €15bn.

Innovation, only about half of them currently do so. Those that do define specific Breakthrough objectives and goals are on average nearly four times more satisfied with the results than those that do not, and the more explicit the goals are, the higher the success rate. We also found that companies with longer experience of working with BI in a structured way have more explicit Breakthrough Innovation objectives than others, and that the more successful companies have specific target allocations for the resources they expect to dedicate.

The timeframe of Breakthrough projects can be long, posing challenges to sustaining commitment versus other shorter-term priorities. Over half of the survey participants quoted an average time to revenue from Breakthrough products and services of between 3 and 10 years. The main challenges quoted were conflicting short-term and long-term needs, and difficulties in assessing future value – further underpinning the need to set clear goals and challenges to be overcome, and to set out a stable investment plan with dedicated resources at least for the coming key stages of the program.

Ensure single-point accountability and commitment at top management levels

Half of the participating companies regarded their Breakthrough Innovation leadership and governance structure as ineffective or very ineffective, including both experienced and less experienced practitioners. The top quoted challenges were inability to commit to the cause, and allowing short-term objectives to cannibalize Breakthrough efforts.

What sets successful companies apart is not the choice of leadership model – leadership by the CEO, CTO, an Innovation Council or Committee, and the top team are almost equally adopted. The main differentiator that emerges is whether they employ a governance³ approach which ensures long-term accountability and commitment.

Choose the right organizational model: there's no one-size-fits-all

Having a dedicated Breakthrough Team is considered to be the most effective basic approach and yields 15% higher satisfaction than companies with no dedicated organization. Working with a dedicated team is also the choice of the more experienced companies. Crucial to any dedicated team's success, however, is that it is implemented in a way that suits the nature of the issue at hand (see Figure 2). The **complexity** and **novelty** of the technology, product or service for the company can provide some guidance on the best way to organize Breakthrough Teams.

For example, if the domain is known to the organization, the R&D function or an existing BU may be the best home for the Breakthrough Team. If it is unknown, stand-alone teams may be more suitable. Similarly, if the domain is highly technology-intensive or complex with high investment needs, a centralized rather than divisional or BU approach may be preferable. Large companies may choose to, and often do, use more than one model simultaneously.

We identified four generic organizational models which are effective in different circumstances:

i. Business Unit/Division R&D Breakthrough Teams are good "minimum investment" options where the ideas or concepts are not "new to the world" and the technical complexity does not require major long-term effort and investment. Such a team is however unlikely to be able to cope with high complexity and risk, and is susceptible to short-term BU reprioritization pressures.

ii. Corporate R&D Breakthrough Teams are better suited to more technology-intensive or higher investment domains where a longer-term perspective and specialist technical skills are required. However, teams parented under corporate R&D are susceptible to over-emphasis on "technology-push", becoming misaligned with the business ("ivory tower" syndrome), and being stifled by corporate control and culture which may act as a major barrier to Breakthrough thinking.

iii. Internal Dedicated Breakthrough Teams, with multifunctional membership, separate from corporate R&D and reporting directly to the top team, enjoy the freedom to operate outside core product development procedures and controls. They may be more effective in pursuing areas of more uncertainty requiring greater stretch, but they also need careful governance to avoid becoming disconnected from the business, and to ensure that they deliver short-term value. They are often susceptible to cuts as a result of short-term pressures.

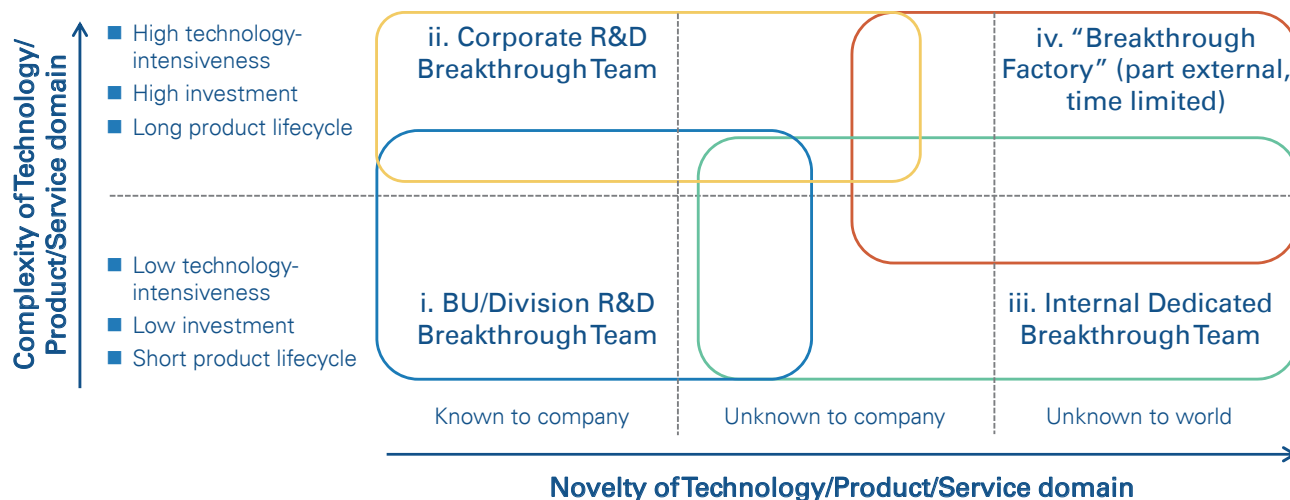
iv. The Breakthrough Factory focuses on development of a pipeline of "grand-challenge"-led radical or game-changing innovations that push the boundaries of science. It uses mainly external hires with time-limited contracts, led by an internal senior Project Leader with deep technical or scientific knowledge as well as entrepreneurial capabilities. This model is especially effective in technologically-complex domains with high uncertainty where faster progress is needed. Time-limitation means that best individuals can be hired on merit, even if they don't fit the typical corporate profile. Google ATAP⁴ and DARPA⁵ are based on similar structures.

3 Deschamps, Nelson. Innovation Governance: How Top Management Organizes and Mobilizes for Innovation, Wiley, 2014.

4 Google ATAP is telecom focused and consists of a staff of 12 with a network of total 326 partners from 22 countries.

5 Defense Advanced Research Projects Agency, commissions advanced research for the U.S. Department of Defense.

Figure 2. Breakthrough Team organizational models



Source: Arthur D. Little

For more information on these organizational models, refer to the 2015H1 edition of Prism, our twice-yearly management journal.

Ensure cross-functionality, ring-fenced funding, and use of intrapreneurs

Whichever model is adopted, the survey revealed a number of key success factors for making it work effectively:

Cross functionality: Ensure genuine co-involvement of a wide range of functions including research & development, manufacturing, marketing and customer insight. The more successful companies actively engage and involve cross-functional resources rather than simply having cross functional steering groups.

Ring-fenced funding: Establish ring-fencing to enable stable investment over the longer timeframe needed for Breakthrough projects and prevent short-term cannibalization. Staged funding release can help to manage the risks involved.

Intrapreneurs: Employ and encourage strong intrapreneurs as Breakthrough leaders to drive concepts through to commercial exploitation. Intrapreneurs, like successful entrepreneurs, are individuals with the ability pursue a commercial vision with dedication, inspire others to join the cause, take measured risks, and protect an effort through to market, securing needed resources along the way.

Focus on effective trend monitoring and business intelligence

Trend monitoring and business intelligence were rated as the most important and most widely used practices to achieve

Breakthrough results. Traditional approaches to business intelligence involving periodic data gathering and analysis are rapidly being superseded by more sophisticated internet-based tools. Examples include continuous semi-automatic scanning using algorithms, natural language processing, modelling and simulation, and two way processes whereby information is shared as well as retrieved. Successful Breakthrough Innovators make adding to their knowledge a regular habit, in the same way that top incremental innovators do⁶.

Adopt agile processes with fast iteration cycles

Successful Breakthrough Teams apply agile processes, drawing on approaches used effectively by start-ups. In practice this means firstly being crystal clear about the goal and the technical challenges that must be overcome to achieve the goal. Rigorous quantitative analysis is often required to do this. Secondly, planning should be light and agile involving several iterations, with fast and purposeful meetings (e.g. scrum approaches). Thirdly, where possible, teams should adopt rapid prototyping and try to engage customers early with fast repetition ("Build-measure-learn"). Progress is best assessed by tracking iterations to see how they are converging on goals, revealing dead ends, uncovering scientific advances etc. Fourthly, projects should be killed in a timely way. Set back or failure is sometimes the most effective tool for discovery. The project leader should only let the team members proceed as long as they can see that the approach might ultimately work within the project constraints. If it becomes clear that an approach won't work or requires "multiple miracles", then the approach should be shut down and resources shifted elsewhere.

6 Thuriaux-Alemán, Johansson & Eagar. Getting a Better Return on Your Innovation Investment: results from ADLs 8th global innovation excellence study, Arthur D. Little, 2013.

Actively manage the innovation ecosystem

Companies in the survey indicated that active management of external networks and partners was very important for successful Breakthrough Innovation, yet on average most were only either partially satisfied or unsatisfied with their efforts.

The best performers in this area have developed a clear strategy for innovation ecosystem management and its contribution. They recognize that working within the ecosystem is a two-way process, much more than just contracting out some research projects to a university. They work to develop a shared vision within the ecosystem and they agree transparent IP arrangements and frameworks, being open to sharing information once these are in place. They look to lead and influence the ecosystem in the most business-critical areas, and they use the right “enablers” to develop and manage the network (e.g. social networking, virtual environments, physical collaboration spaces etc.).

Fail again, fail better: move on and make an effort to leverage the lessons learned

Individuals involved in Breakthrough efforts are encouraged to stretch themselves beyond their comfort zone in an environment that allows failure. Our findings confirm that a culture which does not accept failure is one of the most significant barriers towards achieving Breakthrough Innovation. Infant mortality is fairly high with radical concepts – most concepts do not make it into adulthood. This is normal and should be recognized early on. The key to success is to have a portfolio approach to Breakthrough Innovation and to ensure that there is always another project to move on to.

Conclusion

Finding the right approach for effective serial Breakthrough Innovation has become the “holy grail” for today’s companies. However, our survey shows that there is still a long way to go before companies’ efforts match their aspirations. Whilst there is no single formula for success, it is clear that there are some important key factors for success.

The first prerequisite is having a well-defined Breakthrough strategy and goals. Clear top management accountability and commitment are essential. Companies need to choose the right organizational model for the Breakthrough Team to suit the nature of the business and its challenges. And they need to have the right approaches for funding, involvement of multiple functions, intrapreneurship, ecosystem management, agile processes and encouragement of creativity. With all these components in place, and unflinching top management commitment, all the evidence is that serial Breakthrough Innovation is real and achievable for any company.

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Arthur D. Little

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