Innovation For Growth: The Challenge Of Sustained Growth And The Increasingly Important Role Of Innovation Enablers

By Nitin Chaudhary and Neeraj Kathuria

Introduction

Is There a Way for Organizations to Stay Successful?

IBM was a hardware behemoth in the early nineties. Today, only 20 percent of IBM's business comes from its famed hardware unit. In the last two decades, it has made a conscious attempt to transform itself into a "solutions consulting company." The transformation came at a time when IBM's market share was eroding alarmingly. Apple Inc. is another organization that has redefined itself by constantly exploring new technologies and packaging them in a simplistic and intuitive manner for consumers. Apple has not only managed to survive but also to stay ahead of the competition so far. Currently, other technology companies, such as Hewitt-Packard, Google, Cisco, and Amazon, are taking the same journey of transformation.

The evolution is more pronounced across organizations where technological shifts are easily witnessed. However, other industries are also experiencing the need to re-examine their value proposition and competencies. For example, Assa Abloy, a Swedish lock company, is offering what it defines as "access systems solutions," thus providing technology-based solutions such as Near Field Communication—a far cry from conventional mechanical locks. Similarly, Western Union has managed to survive in the communication business for more than 150 years by adapting disruptive technologies—telegraph, wireless networks, phone, and the Internet—on the way.

In order to survive, organizations have realized the need to realign themselves to their customers' needs and preferences through constant innovation. While embarking on an innovation effort, these organizations often struggle with two key questions:

1. Who will be responsible for innovation within an organization?
2. How can an organization constantly bring out innovations, given the limitations of the internal R&D?

We have tried to address these questions as well as highlight the role of technology surveillance as an innovation strategy. Technology surveillances often lead to identification of external innovations that can be assimilated within the organisation. In such scenarios, licensing/technology transfer is both an indispensable and an obvious follow-up step.

A Case Study:

After experiencing declining revenues for half a decade, Apple launched the iPod in early 2001. Soon after, its revenues grew at an exponential pace. The success story repeated with the launch of the iPhone and the iPad. Currently, Apple has the highest market capitalization among all organizations. See Figure 1.

Not only did Apple innovate consistently, but it also increased the pace of its innovation. The time difference between the launch of the iPod and the iPhone was six years, whereas the time difference between the launch of the iPhone and the iPad was merely three years.

That organizations need to innovate faster and better is validated by research. A well-known scientist, Geoffrey West, specializes in studying the growth and decline of cities and organizations. His research concluded that to survive, organizations need a constant boost of breakthrough innovation. See Figure 2.

More of his research can be found at: *http://www.ted.com/talks/geoffrey_west_the_surprising_math_of_cities_and_corporations.html*

The Role of Innovation Enablers

Innovation is a cross-functional task. In a typical organization, innovation happens at three stages:

1. Research & Development (R&D): The internal research team is the "innovation engine."
2. Marketing (specifically, Customer Insights and Business Development): This function is an organization's "eyes and ears," and brings in valuable customer feedback.
3. Competitive Intelligence (often a part of the Marketing function; at times placed under the Strategy function): This function keeps track of the external developments that may impact the business, including the competitive scenario.

Working in silos often leads to effort overlap, and worse still, organizations miss out on harnessing common synergies and cross-functional experiences. Some organizations, such as AMD, Citigroup, Coca-Cola, and DuPont, have tried to address the challenge by creating a new executive management position—Chief Innovation Officer. The main responsibilities of the Innovation head are to coordinate efforts leading to new innovations and to treat innovation in the same vein as other functions.

Unlikely Crusaders

While setting up a dedicated innovation department, an organization often questions its stakeholder representation within this function. While R&D and Marketing are well-represented, two functions that are often under-represented are the patent department and the licensing division.

In the innovation value chain, the first step is ideation and the last is commercialization of the idea into a product. In between comes the important step of protecting the idea; the patent department is involved at this stage. Patent managers are well positioned to play the role of innovation enablers due to their two key associations. First, the patent department is coupled with internal research; second, accessibility to the huge patent network enables the department to monitor the research taking place outside the organization. Given these associations, a patent department can follow the evolution of technologies of interest, benchmark them against internal research, and bring new solutions/inspiration from outside. Innovation teams can thus benefit from having the patent team closely surveying the technologies of interest.

Once the surveyed technologies are found to be interesting, organisations may use them as inspiration for in-house development or by borrowing them "as is." In both these premises, the role of the licensing coordinator becomes crucial, and this responsibility should be clearly defined and allocated within the innovation team. At times, necessary contractual agreements would have to be drawn and finalized with the technology owner. Such negotiations are time consuming and can be pre-empted to a certain extent through an early involvement of the licensing team.

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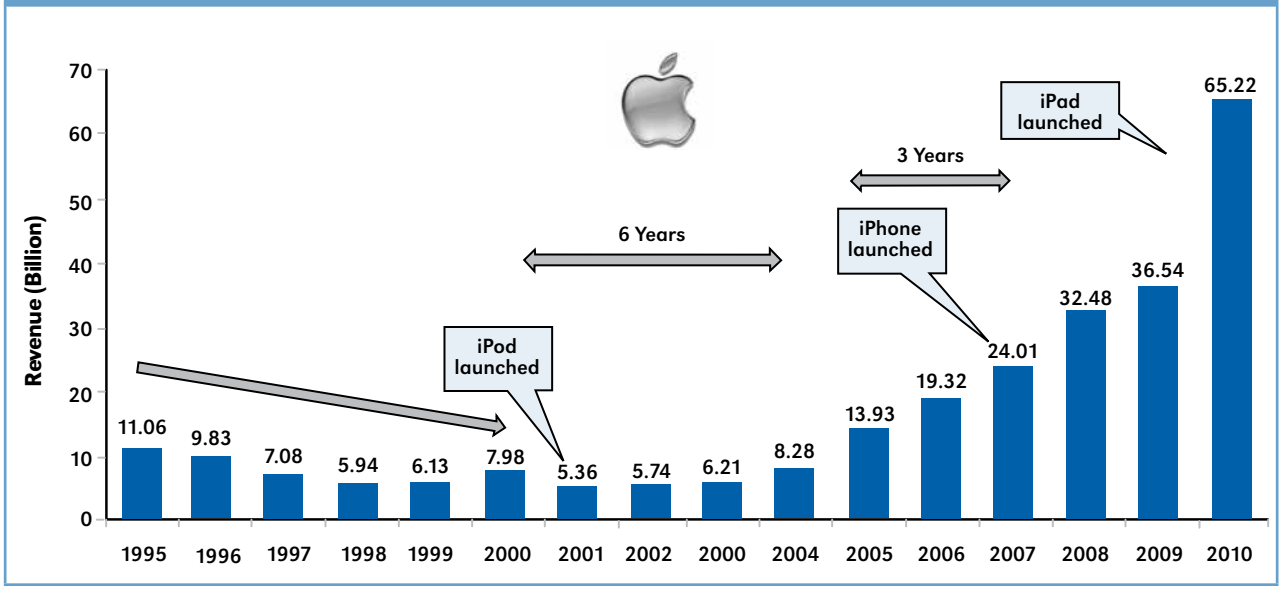
The Challenge of Sustained Innovation

To create a sustainable innovation platform, an organization needs to continuously identify opportunities.

The innovation ecosystem of Apple—which has managed, time and again, to bring out innovative

Figure 1. Apple Inc.'s Market Capitalization



Source: *http://www.wikinvest.com/stock/Apple_(AAPL)/Data/Revenue/2000*

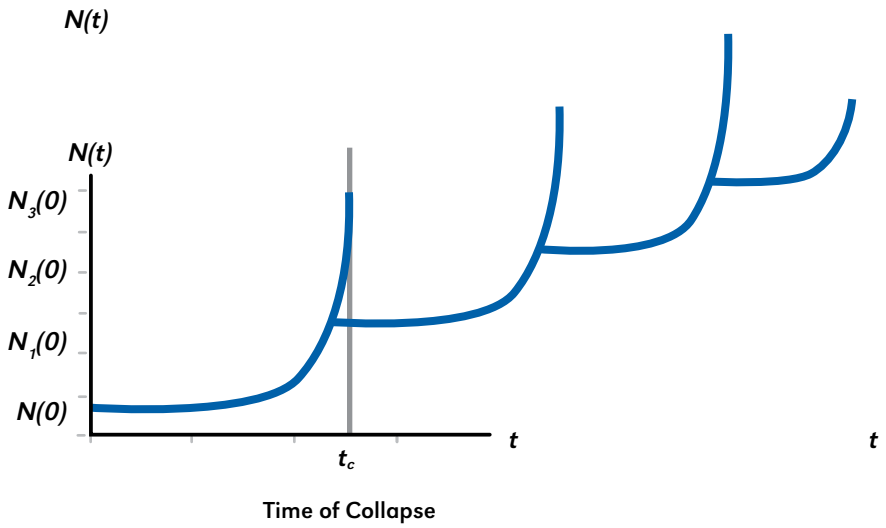
products—gives a good insight into how innovation occurs these days. Apple is associated with three key innovations (after discounting its innovations in Mac, corresponding OS, and iTunes): the iPod, the iPhone, and the iPad.

But are these three innovations independent, or are they correlated? See Figure 3.

When Apple launched the iPod in 2001, iPod was not the first digital music player in the market. Companies such as Creative Labs and Sony had launched digital music players. However, these devices had failed to generate much interest. Apple launched a better device, and received an overwhelming consumer response. A little later, improvement in flash storage helped Apple come out with sleeker versions of the iPod, which became clinchers in the market.

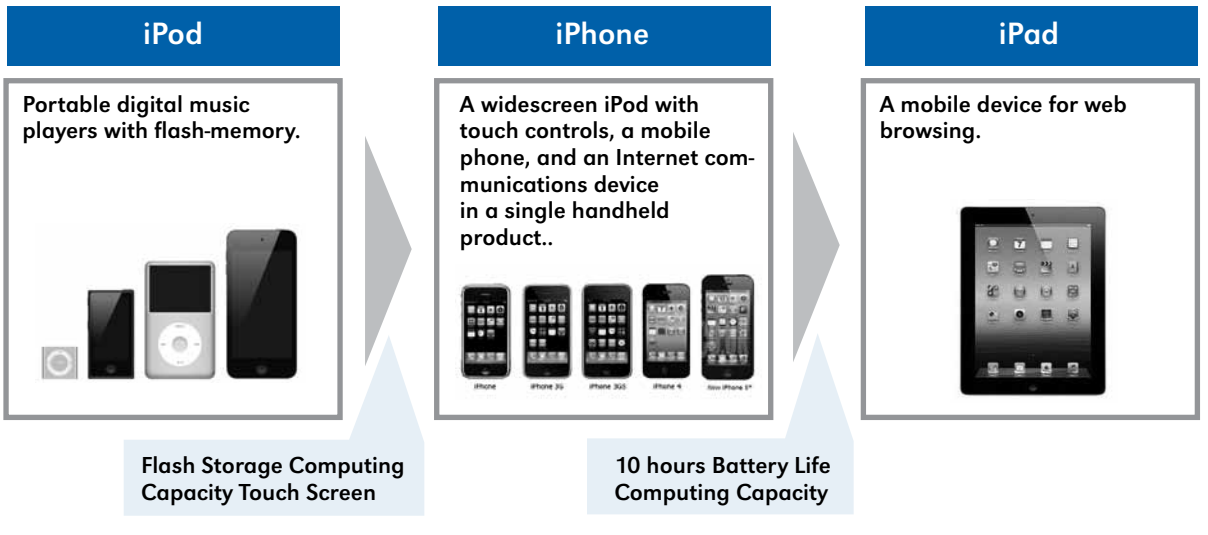
In 2007, Apple launched the iPhone. The iPhone was made possible by blending the features of the iPod with technological advances of that time, leading to gains across computing capacity, flash storage, resolution and user-interface (enabled by vast improvement achieved in touch-screen technology). When the iPad came out in 2010 it resembled iPhone in features. iPad was made possible by uniting the technology used in the iPhone with in-

Figure 2. Research Results: Every Innovation Cycle Grows And Eventually Collapses



Source: Geoffrey West, *http://www.ted.com/talks/geoffrey_west_the_surprising_math_of_cities_and_corporations.html*

Figure 3. Exploring Apple's Innovation Ecosystem



Source: *http://en.wikipedia.org/wiki/File:IPod_family.png, http://en.wikipedia.org/wiki/File:IPod_family.png*

novations (such as better computing capacity, lighter weight, and longer battery life) already achieved by Apple in its McAir category of laptops.

In brief, Apple did not create one breakthrough product and restart the whole process of innovation. Rather, it created an ecosystem where each new product was a combination of the existing technologies and new technological breakthroughs that took place within or outside Apple.

Given the influence of external factors, how should organizations create a platform that promotes innovation through technology surveillance?

Creating an Ecosystem—Defining Boundaries

Organizations considering surveillance programs to aid innovation are often stuck at the first step—structuring the surveillance program. Given that the essence of surveillance is to bring inspiration from a vast variety of technical areas, scoping out the monitoring field is often a challenge.

To narrow down the field and define boundaries for research, the first step is to create a technology-application ecosystem (referred to as ecosystem, henceforth).

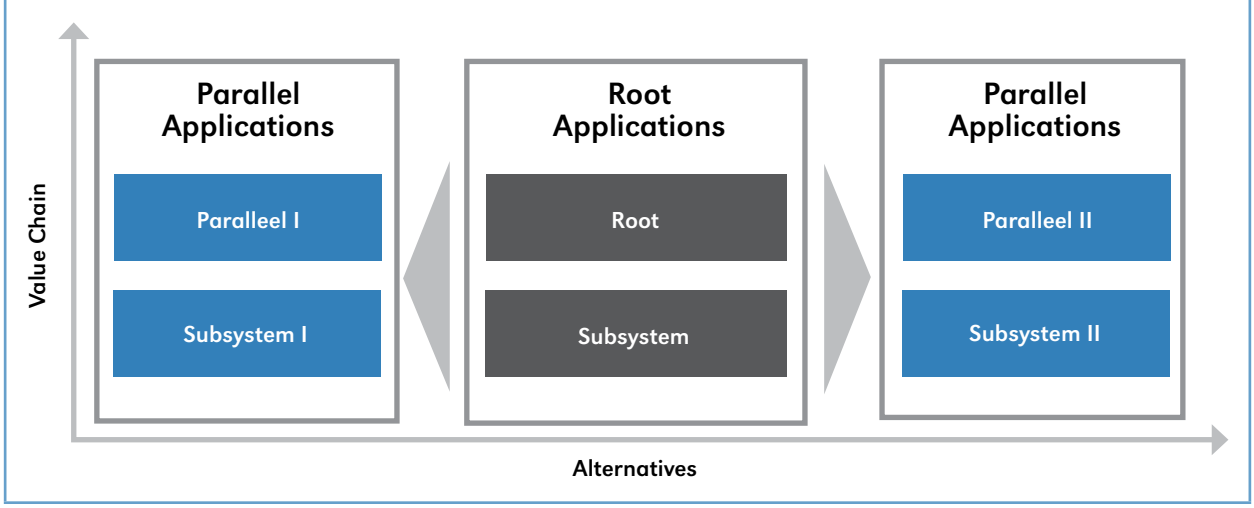
Consider a product, for example, a mobile phone. This product is made of various components and sub-assemblies. The mobile phone, for example, includes a battery, an antenna, a casing, a screen, and so forth. Each component can similarly be torn down into further sub-components and technologies. An ecosystem can be created for any of these components and technologies.

In one exemplary scenario, the battery can be referred to as a "root" component. This root component will have various contributing components and technologies; the battery will have an anode, a cathode, and an electrolyte. Similarly, the root component will have multiple application areas. The battery would include various consumer electronics applications, including the mobile phone. Together, the root component, its sub-components, and applications can be referred to as a "root ecosystem." Any development taking place within the technology playfield of the root ecosystem will have a direct bearing on the subject product (as improvement in battery life will have a positive impact on the functioning of the mobile phone).

Organizations should clearly lay out the root ecosystems for each of their critical products/components and monitor them closely. For instance, any improvement in the commercial rubber industry (root component) that could reduce the wear and tear of rubber will be of interest to a tire (product) manufacturer. Organizations are often good in monitoring the root ecosystem as it encapsulates their core technology. See Figure 4.

Unanticipated innovation ideas might also come from outside the core competencies of an organization. Therefore, the root ecosystem should be enhanced to include parallel ecosystems that represent ecosystems of any technology that may replace the root component/technology in the short or long term. For example, parallel technology for a Li-ion battery could be hydrogen cells that serve the same purpose, that is, to deliver power. Any root compo-

Figure 4. Define Boundaries By Creating An Ecosystem



Source: Inspired by Triz-based technology intelligence model, Markus Grawatsch, Günther Schuh.

nent/technology may have multiple parallels. These parallels may be designated as "close" or "remote" depending on the ease with which these technologies may replace the root technology, or depending on the technical similarity they share.

By identifying these parallels and linking them to the root ecosystem, a comprehensive monitoring space can be created. Through these linkages, the task of scanning a vast space is narrowed down to a few relevant technologies and applications. Any shift within this space should be carefully examined to assess any potential impact on the root technology. For example, advanced ceramics have the capacity to hold three times more energy than traditional electrolytes in Li-ion batteries, and General Electric is investing heavily to bring out ceramic-laced batteries that can be used in electric cars and heavy-duty vehicles. On the other hand, start-up Sakti3 is conducting research that could lead to the complete replacement of the traditional liquid electrolyte battery. Such possibilities emerge by monitoring other metals that show similar properties as those in Li-ion batteries and following the performance improvement in these other metals/components over time. Energy start-ups find it useful to start with the periodic table (ecosystem) to identify other metals that could overturn an existing technology by providing enhanced performance.

Defining an ecosystem requires an understanding of all the potential technologies that may impact the industry. For example, an automotive company could follow industries such as marine, aerospace, energy (renewable and non-renewable both), plastic, chemicals, glass, rubber, and even biotech (in this case, to follow the developments that could lead to creating synthetic material; DuPont's and Goodyear's collaboration on synthetic rubber is a good example). A deep understanding of an organization's core competencies is required among the stakeholders involved in the project. A widespread knowledge of various parallel industries is also required. Such understanding and knowledge may not be fully present within every organization. Hence, organizations should not shy away from taking external help to create comprehensive ecosystem(s).

How Should an Ecosystem be Monitored?

Once an ecosystem is defined, the next step is to devise a monitoring scheme, essentially encompassing channels that could be tapped to provide any update on technology progression. One of the most useful channels is tracking relevant patents both within the root and the parallel ecosystems. Despite the 18-month gap between filing of a patent and its publication, patents are often the first indicator of any technology shift in the making. Patent monitoring can be complemented with a general tracking of industry developments, such as product launch news and scientific literature search.

The actual process of gathering the research and ranking and filtering the useful results could be tedious if a structured approach is not followed. A structured approach could include creating a taxonomy that captures essential innovation spots throughout the ecosystem and across technologies. By mapping the research against the taxonomy, the innovation team will be better placed to quickly scan the innovation hotspots.

Experts in the technology domain should conduct the monitoring, so that a fair assessment on new developments and their applicability can be reached. The frequency of monitoring will depend on the evolution of technologies, which may at times mean employing a varying monitoring frequency for different branches of the ecosystem.

In Conclusion

Accelerated innovation is less of an option, but more of a necessity for growth. Fusing core products/technologies with unanticipated technological shifts has redefined the innovation process and has moved it beyond the environs of brick and mortar R&D labs.

Consider the communication revolution that has taken place in the past five years. A vast majority of the population now carries with it powerful handheld tools that enable not only connections, but also access to and transfer of a large amount of data. This new reality has already created a fertile ground for innovations such as Facebook and Twitter. At the same time, it holds the potential of transforming every existing business model within manufacturing, services and even agriculture. The scope of advancement is immense.

Organizations prepared to tap the dynamism outside their boundaries should consider a systematic and process-driven innovation framework. A guided approach, enabled by focused stakeholders (including patent and licensing functions), will simplify this otherwise obscure and chancy activity. ■

References

- *http://www.ted.com/talks/geoffrey_west_the_surprising_math_of_cities_and_corporations.html*
- Markus Grawatsch, Günther Schuh Triz-based technology intelligence.

- *http://www.rucbc.ca/publications/The_Innovation_Equation.pdf*
- *http://knowledgecities.eu/uploads/files/Helsinki-presentations/The_Work_of_an_Innovation_Manager_CB2.pdf*
- *http://www.innovationexcellence.com/blog/2011/02/07/what-is-your-innovation-equation/*
- SEC Reports-Apple, Nokia, RIM.
- *http://asianvu.com/digital-library/elearning/elearning_failure_study-romiszowsky.pdf*
- *http://earth911.com/news/2011/03/31/battery-innovations-could-improve-charge-time-in-electric-vehicles/*
- *http://www.oilgae.com/energy/nn/bat/bat.html*
- *http://www.pharmaceutical-technology.com/contractors/drug_delivery/ypsomed/*

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