

MS&E 266 Management of New Product Development

Final Project Report

Product Initiation Processes at Google Inc.



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Introduction

Google Inc. is a privately held technology company with a core business in Internet search services. Founded in September 1998, by Sergey Brin and Larry Page, both PhD students at Stanford University, Google has grown into a company with 1300 employees. The company revolutionized Internet search and gained tremendous brand loyalty among its users. As an ultimate sign of brand recognition, Google has become a verb in place of search, just like Xerox has for photocopying. With over 200 million searches conducted each day, Google is the leader in the Internet search industry. The company generates revenue mostly through online advertisement. It also licenses its technology to over 100 companies. According to an estimate from Fortune magazine, in 2003 Google had an annualized revenue of \$900 million with annualized pretax profits of \$350 million, making it one of the fastest growing technology companies in history.

The most important element of Google's strategy is innovation. It is through innovation that Google achieved its early success: the PageRank technology developed by the two founders gave Google its fundamental competitive advantage over other Internet search players. To this day Google remains a technology-driven, innovation-centric company, and has successfully ingrained this culture into the company DNA.

We decided to investigate Google's product initiation process, as it plays a vitally important role in supporting Google's innovation-centric corporate strategy, and since the company implements a highly unique and non-standard approach to product initiation.

Organization Structure

Since Google is a very engineering driven company, the highest recognition is given to the individuals with superior skills in technology. Therefore, traditional corporate titles are not utilized in Google and the organization has a very flat organizational structure. To eliminate bureaucracy and politics, Google's organizational structure does not have middle management. The duties of middle management are shared between the directors and the engineers. Most projects consist of a technical lead and a project manager. However, project managers serve to track only project status and to provide guidance.

Product Initiation

Exhibit A reveals the flow of the product initialization process. This simple yet elegant process streamlines the entire process of product development. Essentially, the initialization is the most difficult to go through because once a project specification is defined, the development and testing of the product is straightforward. In this process, Google has divided the initiation stage into three phases: idea generation, evaluation, and resource allocation.

Idea Generation

One key component of Google's engineering organization is that employees are encouraged to devote twenty percent of their work time on self-directed research. Many ideas have been born out of the self-directed research approach. Engineers are encouraged to create prototypes and test their ideas during this time. This allows employees to pursue projects that may not necessarily add immediate value to the

business, but does generate creative thinking necessary to be innovative. Once an idea is established, the engineers are encouraged to discuss it with their peers. This serves two direct purposes: First, the peers act as the first set of customers, accurately modeling real-life customers and user scenarios. Secondly, it becomes easier to pitch the idea to higher-level management and the review committee with the backing of many people. As seen from the process flow (exhibit A), a cycle is created in which ideas are bounced back and forth between the engineers. This cycle allows the idea to be refined and conceptualized.

One strategic advantage from this process flow is the prevention of bad ideas from ever reaching the development stage. As seen in Exhibit B, there is a double funnel effect to narrow the possible ideas from following through. Two major gates are involved in this process: peers and the management team. While pitching to the peers, an unbiased feedback will demonstrate the feasibility and realism of the idea proposed. The second line of defense is the management team who has a better market perspective about the idea than those of the peers. With this safeguard in place, a bad idea that pulls valuable time and resources away from other projects will rarely enter advanced stages.

Motivation and Incentive

Motivations to initiate a project come in two forms, extrinsic and intrinsic. Extrinsic motivations consist of things such as monetary rewards, career advancement, and potential success of the company. Intrinsic motivations are represented by motivations such as intellectual stimulation derived from writing the code and satisfying the needs of a mass group of users. Because most of the innovations result from the twenty percent self-directed research time, engineers usually are motivated to work on

things of their own interests. To reward its employees for innovating, Google has a policy that allows the idea creator to be the technical lead for the project. This policy truly motivates employees from all levels in the company to innovate because a brilliant idea can allow an individual to surpass his/her peers and lead a group of senior engineers to make his/her idea a success. The other motivational factor for engineers to want to work on innovative ideas is that their products can receive very high recognition and potentially reach out to thousands of users on the Internet. For example, Google News, an online repository for over 4,000 news sources, was a personal project of an engineer. Now this feature is the one of the most important services that the Google web site offers. Some of the rewards that are associated with the innovations are more than internal rewards, for instance, another popular product, Orkut.com, an online social networking service that was launched early this year, was based on Google engineer Orkut's self-directed research. Not only did Orkut become the technical lead for the project, Google also named the site after him.

Project evaluation

Once engineers formulate their ideas, they can sign up for a time slot to pitch their ideas to the review committee. The review committee is composed of senior management and the two founders, but no members from marketing are on this committee. The sign up system is open to the entire company. Just like everything else in Google, the sign up system is an electronic self-directed scheduling system. In order to make sure that all ideas get the right amount of attention needed, there are no preset evaluation criteria. The review committee usually asks tough questions; therefore engineers need to be well prepared. Evaluation is on a purely technological basis and engineers are not responsible

for market research. Engineers who have better connections in the organization or who are more capable of selling ideas may get more attention for their ideas, but overall the system is administered for everyone to utilize equally.

If the review committee approves the project, the project will go on to the resource allocation stage. However, if the project is not approved, engineers can go back to refine their idea and schedule a second review. Also, engineers can choose to work on the idea on their own time and bypass the review committee by prototyping independently.

Team formation and resource allocation

Once the review committee approves the project, the engineer who initiates the project will be assigned as the technical lead. A project plan and description will be entered in the company wide project database in order to attract resources. In Google, the managers do not assign projects to individuals since Google does not have the role of a first level manager. Engineers choose the projects that they want to work on from the project database. Product quality is foremost and project deadlines are generally flexible enough to allow very high quality control during the development process. In fact, for some of the projects, Google does not mandate a deadline. For larger projects, there will be a project manager assigned to the project to facilitate the project deliverables but not to influence its direction.

Google's project initiation process has been very successful in generating new product ideas and creating successful products. To track the large number of ideas from

Google employees, founder Larry Page maintains a list of top 100 ideas, called “Google Top 100”. Other product examples include Google Deskbars, Google Answer, etc. These success stories demonstrate the effectiveness of Google’s project initiation process

Dependencies

There are several dependencies that have made this unconventional process work particularly well at Google. Removing these dependencies may result in hindering the process of innovation. The dependencies are from four areas: employees, business model, organizational structure and corporate culture.

Employees

Google has a very rigorous and focused hiring system. Only the top percent of the skilled and experienced programmers from various industries and the top tier universities around the country are considered. As one of the most successful startups in the Silicon Valley of all time, Google has not had any trouble attracting the best-qualified engineers. Hiring decisions are made by a randomly selected group of engineers and senior managers who have to agree unanimously before a new hire is approved. Randomly selecting individuals from the engineering pool to comprise of the hiring committee avoids developing pockets of incompetence that can develop if a single group is handed the responsibility. Because engineers working at Google are very dedicated to software development, employees take advantage of the twenty percent self-directed research time and really devote their energy in creating the next big innovation. The tech savvy workforce provides employees with the best audience to present their ideas and verify the innovation.

Business Model

Engineers are able to drive innovations directly to the market without doing market research or relying on any specific channel to sell their products. The Internet allows new innovations to have maximum exposure to users quickly, which provides a mechanism for immediate feedback to the engineers to modify and enhance their innovation. The lack of a fixed cost distribution channel allows Google to motivate its engineers to work on innovations without boundary due to the fact that the cost of testing the market is very minimal.

Google's product initiation process currently lacks any upfront user input and the company relies heavily on its engineers for new innovative ideas. Often, the company introduces new products to the market without knowing where the product will go and whether the products will generate any revenue. By having this structure, it lets the technology and concepts generate a market; instead of letting the market dictate what new innovations are needed.

Organization Structure

The key characteristic of Google's organization is that it doesn't have first level management. This really assists the company to reduce bureaucracy and office politics. At the same time, the lack of direct management influence provides the freedom for engineers to generate new ideas. The absence of first level management from the organizational structure works well at Google because the organization is relatively small and many of their employees have similar backgrounds and knowledge.

Corporate Culture

The culture predicated in the search for excellence in technology innovation helps to motivate the employees in thinking outside of the box. Innovation is ingrained into the organizational DNA. Also, the company has a high degree of faith in the employees and in their ability to create innovative products. Therefore, the company is not very interested in finding out what competitors are doing. It is more focused on what it can do for the customers.

Observation and Analysis

One thing is clear: Google is different. In optimizing the company towards creating technology innovations, people in Google are not reluctant to innovate on every aspect of the business itself: people selection, organization, and processes. It is no surprise that Google has many unique elements in its project initiation process.

Overall, we believe Google has an excellent project initiation process, for three reasons: First, the process itself is well defined. The 20% innovation time, peer review system, and incentives allow many high quality ideas to emerge and develop. The executives in the review committee ensure that the projects support the corporate strategy. And the core team makes the implementation more likely to succeed. Second, at the company level, the process is consistent with the other elements of the business, including people, organization, culture, and the nature of the business. Most importantly, the process supports the innovation-based corporate strategy very well. Google's corporate strategy is mainly a strategy for nurturing disruptive technologies. The

company values technology strength over short-term market potential. This is well reflected in the project initiation process.

However, we do see areas for improvements. Google should consider adding marketing representation to the project review committee. For relatively mature product lines or markets, customer and market needs should be considered in project selection. In addition, it may be advantageous for Google to formulate a product portfolio strategy, to better manage the many product ideas its employees generate. Through resource management, the strategy will influence project selection process. Third, Google should re-examine its business strategy in areas of partnership and competition. As it brings more and more products into market, it is competing with many of its former partners, including Yahoo, AOL, Amazon, etc. Although these products do not generate much revenue for Google yet, these companies nevertheless get concerned since they are losing traffic to Google. Google should decide which fight to pick and with which competitors. The project initiation process needs to reflect these considerations.

Closing Thoughts

We analyzed Google Inc.'s product initiation process in detail, and evaluated it in the context and environment of the Internet search industry and Silicon Valley culture. Google has successfully implemented a highly innovative and organic process that is optimized for innovation and technology growth. As with most Internet startup companies, Google faced the dilemma of adding structure to its product development process without stifling creativity. The process that has been implemented appears to be a

successful middle-path between the two extremes. However, we do have some misgivings about the robustness and sustainability of the process in the face of increasing competition from established players, and growth within Google. The project was completed in a period that has seen increased activity in the Internet search engine industry and we are looking forward to following the field closely and understanding the developments in the context of this project.

Exhibit A

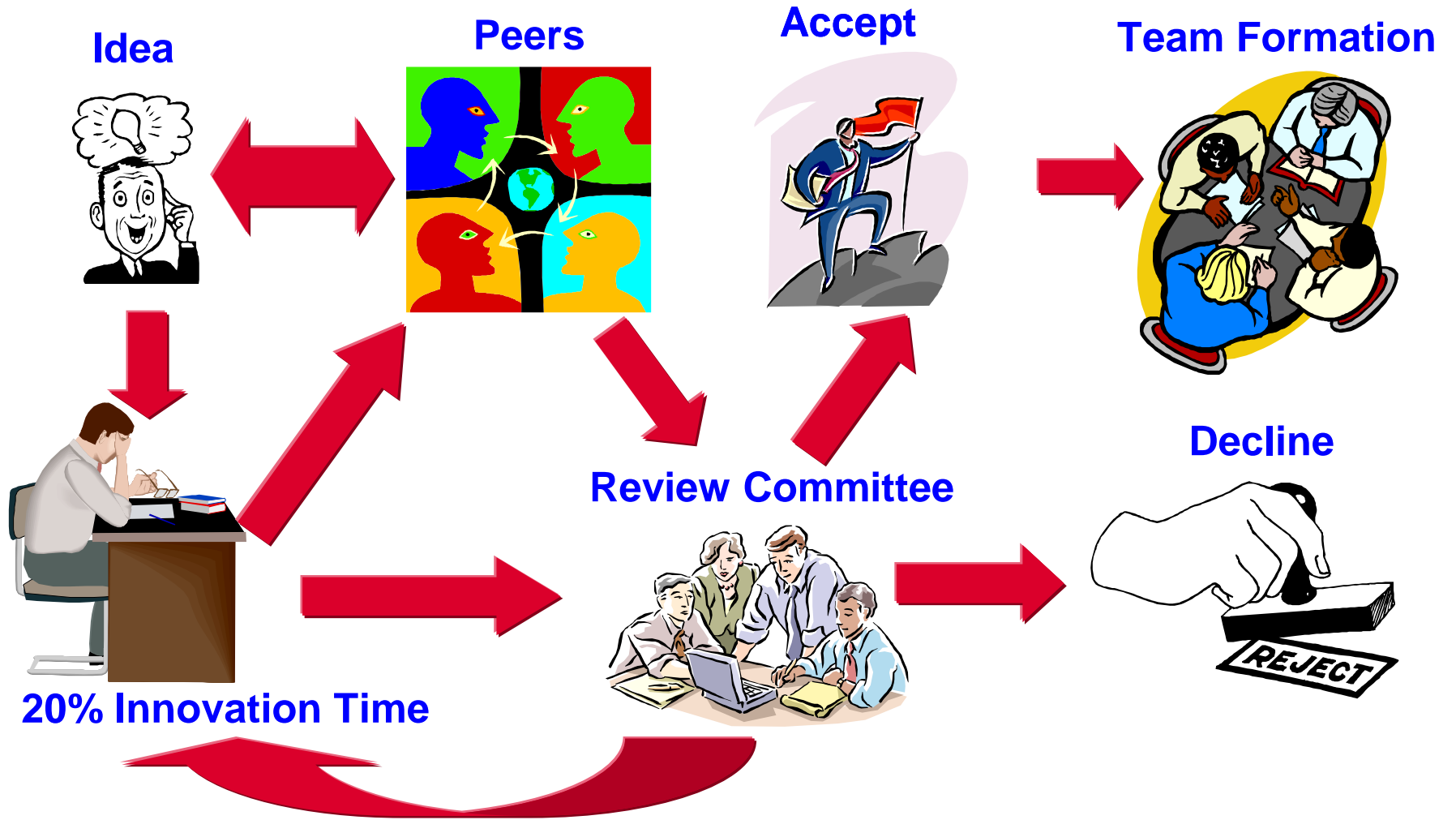


Exhibit B

