

Firmly embed the experimentation reflex

Innovation experts agree that concretely testing new ideas considerably increases the chances for success and accelerates the innovation process. Testing makes ideas more concrete, helps gather feedback and enlightens decisions on next steps. Companies like Sony, for example, require innovative projects to be systematically supported by a prototype.

Unfortunately, experimentation is still insufficiently practiced, because teams are still unused to working in this manner, although it is becoming increasingly easy and inexpensive. Three obstacles in particular explain why the use of experimentation is still less than optimal:

Setting the bar too high

Setting the bar high is a good thing per se, but may discourage people from using experimentation. This is why some people wait for their idea to be as polished as possible before making a prototype, e.g.: *"I have an idea, but it's too early to talk about it."* Others put off testing their prototype interminably as they try to improve upon it. The underlying reason is the false assumption that, to be useful, prototypes must be as close as possible to the finished product. To the contrary, **a considerable wealth of information can be obtained**

The move toward actual experimentation is often delayed for the wrong reasons, limiting innovation potential.

ned by testing a very rough initial prototype. Pixar Studios, for instance, studies new animation ideas every day as they emerge, because it is easier and cheaper to decide to further develop or kill an idea in the rough draft stage.

Lack of familiarity with new tools

The move to experimentation long required a budget, expensive equipment and specialized research engineers. Many continue to be convinced that prototyping does not concern them, but is the exclusive preserve of R&D. Innovators in other company departments have learned to do without prototypes or use them only when a project is already highly polished. However, **cost and expertise are no**

longer obstacles in many cases. Inexpensive digital tools are increasingly available to enable anyone who wants to build a prototype, model or demonstration film. This reflex, however, is still not part of the culture in many companies.

Desire to validate the project first

The decision to move to experimentation also often follows antiquated reasoning, in which the experimentation phase is generally started only after the project has been validated. Today, however, **it is possible to integrate experimentation very early in the decision-making process, as a source of input.** Amazon might have missed out on the customized purchasing recommendation feature. Indeed, its marketing director had rejected the idea based on an analysis of the project. But the employee who came up with the idea developed a prototype to test on the company's web site during off-peak hours. In light of the convincing results, Amazon finally decided to roll out the feature, to the company's great advantage.

How can you help your teams surmount these obstacles and develop the reflex to experiment?

Five recommendations to create more room for experimentation.

- 1 Start with a prototype
- 2 Provide experimentation tools
- 3 Teach experimentation methods
- 4 Set aside time for individual incubation
- 5 Open up to the outside world

1st recommendation

Start with a prototype

Tip

Observing a tangible prototype keeps our brain from immediately passing judgment on an idea, because we are more inclined to imagine and propose potential improvements.

- Make sure that your conference rooms have a paperboard. Cognitive researchers have noted that teams with paperboards at their meetings are more creative than those without. Indeed, a diagram makes it easier for participants to share their ideas.
- Don't hesitate to put markers, sticky notepads, scotch tape, and poster boards in middle of the table to make it easier for people to share drawings or models. When people can discuss a diagram or model, they tend to have fewer interpersonal conflicts and arguments, and have more collaborative and productive interactions.

"Think with your hands"

Tim Brown, CEO of IDEO design

At most companies, the innovation process is long and arduous, and generally starts with the presentation of the idea to a validation committee. Then follows a feasibility study, a quantified business plan, and finally, a prototype.

Innovation experts now encourage companies to challenge this approach, which makes presentation of a concept a prerequisite for experimentation. Indeed, if the founder of Starbucks had had to go through a validation committee, his initial idea would probably never have been implemented.

Howard Schultz initially imagined reproducing the ambiance of la Scala, with waiters in bow ties serving coffee to customers standing at gleaming counters listening to the soft music of opera playing in the background. The first Starbucks café had nothing in common with the relaxed atmosphere that eventually made the brand so successful. All of the initial references to Italy and "old Europe" disappeared and were replaced with a more laid-back design. But because he started by testing his idea and continuously improving upon it, Howard Schultz finally got it right, while a validation committee might have told him—"It will never work."

Abstract presentations, such as traditional "PowerPoint presentations" speak to our left brain, which controls

judgment and logic. However, our rational minds are quick to assess the risks of an idea, and thus to reject it. Conversely, prototypes speak to our right brain, which controls our senses and emotions, intuition and imagination. **By combining a traditional presentation with prototyping, we can mobilize the whole brain.** A group of people from the luxury industry experienced the benefits of combining these two approaches. This team presented a new product to a very skeptical validation committee, which nonetheless

authorized employees to build a prototype to test the idea on some customers. The surveyed customers reacted very positively and

several even asked where they could buy the product. The prototype helped the validation committee reconsider its first impression.

Developing a prototype at the idea stage helps to enlighten the decision-making process. Regarded as a starting point from which to make adaptations and improvements or even radical modifications, the prototype feeds thinking with concrete, tangible data. It is then possible to create between decision-makers and defenders a dynamic that is more reliable and constructive than the one prompted by a purely abstract presentation.

It is better to use a prototype to launch the innovation process than to end it.

Facilitate and encourage experimentation

Managers have several ways to promote the testing reflex:

EXPAND EXPERIMENTATION METHODS	Promote diverse testing methods as alternatives to PowerPoint presentations: • Web pages, beta web sites; • Objects printed in 3D, models made with light materials; • Videos, photographs, drawings, 3D modeling software, etc.
SHARE EXPERIMENTS	Set up a shared, virtual or physical space to help people share useful resources, such as: • Finished experiments, to learn from the results obtained; • Ongoing experiments, to elicit suggestions and feedback; • Difficulties and obstacles encountered, to elicit potential solutions and sometimes unsuspected sources of expertise.
TRACK EXPERIMENTATION INDICATORS	Establish dedicated indicators to encourage and support experimentation, for example: • Average length of time between the proposal of an idea and the production of the first prototype; • The number of partners/customers involved in successive experiments; • Etc.

Based on **8 Ways to Democratize Experimentation**, H. James Wilson, Kevin Desouza, Harvard Business Review, April 2011.

2nd recommendation

Provide experimentation tools

3D printers, graphic design or video montage software, pre-formatted Internet sites or blogs, etc. There are more and more resources to construct prototypes easily and cheaply. Paradoxically, because they are so abundant, most of these tools are not well known to a public that could use them to great advantage. **Merely making these tools known gives great impetus to experimentation.** For example, an entrepreneurial incubator recently presented to its members a range of ten free online tools whose basic features could be used to make elaborate prototypes. The ability to make professional-looking 3D models, for instance, was a decisive step in getting appointments with prospects and gathering reactions very early in the development process.

Simple tools can considerably increase testing options.

Giving employees access to a “sand box,” i.e., a place where they can conduct tests without risk, also strongly supports experimentation. eBay and Amazon, for example, created a platform mirroring their site to use for experiments. People can use this platform to test their ideas and see whether they work in a setting close to reality. If an idea proves convincing, a more complete protocol of tests can then be conducted. Similarly, Ford gives its Detroit employees access once a week to a “*Fab Lab*,” where they can produce 3D prototypes to test ideas that are not yet officially at the project stage. One employee, for instance, tested a valve to extract air from a vehicle to accelerate defogging. In the first year alone, the number of patents registered by Ford jumped by 30 percent!

The Fab Lab

The *Fab Lab* (a contraction of *Fabrication Laboratory*) is a small-scale workshop dedicated to the building of prototypes.

Among the digitally-controlled machine tools in each *Fab Lab*, the minimum equipment includes a 3D printer, a 3D scanner and a laser or water-jet cutter.

- Often established in industrial zones, *Fab Labs* are generally based upon an open mindset. Individuals and companies can schedule time to test their ideas and use the tools freely.
- In addition to providing tools, *Fab Labs* are a collaborative space where inventors, developers, designers and others willingly share their expertise. They are thus a remarkable catalyst for innovation.

3rd recommendation

Teach experimentation methods

The means to test new ideas are now much more easily accessible in terms of both costs and required skills, thus making it easy to experiment. Even so, **designing relevant tests requires a minimum of methodology.** For example, an employee can very easily launch a market study using free online tools, such as SurveyMonkey. But there are still methodological challenges. How should you pose the questions? What types of answers should be suggested? How do you interpret the results? Experimentation thus requires great discipline, underlines a consultant, dismayed at the sight of tests conducted without control groups, leading to erroneous conclusions. Although a wide range of testing options is now available, methodologi-

Innovating through experimentation has become easy, but requires a minimum of methodology.

cal skills have not necessarily followed suit. **It is thus particularly critical to make sure that good testing practices are communicated and understood.**

How can one develop the required discipline in designing and implementing tests? Some companies organize meetings between R&D staff and operational teams to help people learn by interacting with one another. Others emphasize disciplined, high-quality feedback to build a shared body of knowledge concerning traps to avoid and recommended best practices. More formal approaches are also very beneficial, such as training in the fundamentals of experimentation, or the use of software dedicated to the design and analysis of experiments.

Four best practices

- Isolate the parameters to be tested to clearly identify the factors with an impact.
- Systematically include a control group which does not participate in the test to form a reliable base of comparison.
- Precisely state what you want to observe to design the test and define the observation criteria in the most relevant manner.
- Document and share your experiments, so that everyone can capitalize on past experience.

A skill to develop

Experimentation is a skill than can be learned.

- **Maintain your curiosity.**
E.g.: Disassemble an object, ask questions, attend a conference on an unfamiliar subject, meet people from diversified environments, vary your information sources, etc.
- **Go to the field.**
Walt Disney had the idea to create theme parks while visiting ornamental gardens. To be productive, the visit must be active—prepare an observation checklist, ask questions and ask yourself questions, take notes, etc.
- **Adapt tools for experimentation.**
The tools available in our personal life can help to test professional ideas (video assembly software, 3D blueprint applications, internet site mockups, etc.).

4th recommendation

Set aside time for individual incubation

To encourage innovation in their organizations, companies often believe that they need only open collective work spaces and promote group facilitation techniques such as Metaplan or brainstorming. However, **innovation also requires time for individual incubation, maturation and experimentation.** Studies show that even extroverted personalities produce more original ideas when they are allowed time for solitary reflection. This is explained by the restrictive effect which a group can exercise on individuals, who naturally take account of the judgment of others. Conversely, a lone individual can freely explore associations of ideas or initially far-out or haphazard ideas. Setting aside time for individual thought allows people to

Inventiveness and creativity require some degree of daydreaming.

go in different directions, try out their ideas, perform tests and make mistakes without constraints or consequences.

It is all a matter of balance and sequencing of tasks. Various configurations have been tested, and the most favorable is to have individuals start by thinking about, testing and solidifying ideas on their own. People can then collectively share their ideas and bounce them around, developing and enriching them in the process. Finally, individuals mature their ideas on their own once again, and often come up with new ideas.

Thus, in addition to collective spaces, this approach requires individual areas, such as flexible cubicles, where people can calmly think and experiment unobserved before sharing their ideas with others.

5th recommendation

Open up to the outside world

Involving a vast community in improving your prototypes is both realistic and highly beneficial. Web 2.0 tools are extremely helpful in this regard. When the author of *Makers* experiments with domestic drones, he relies on an international community. Using a wiki, he shares the code for his first versions with aficionados across the globe. He thus receives input and suggestions from many contributors, some of whom have a very atypical profile, such as a Mexican high school dropout who taught himself code and contributed significant improvements to initial drone drafts. For a company, opening up to external communities in the experimentation phase also provides access to profiles that the company would never otherwise have identified and certainly never have hired.

Experimentation is richer when shared with other people.

The opening of the innovation process in the experimentation phase also saves time. Using students to work on prototypes without any particular goal in mind saved eBay precious weeks in developing a dedicated navigation tool. External perspectives also considerably enrich initial experiments. 3M noted that workshops conducted with end users generate five times more innovations than those conducted with employees alone. Yet, companies still hesitate to open up their innovation process, particularly for fear that their ideas will be stolen by a competitor. This risk must certainly not be ignored. Yet, it must be weighed against the considerable advances made possible when experimentation is opened to a broader community.

Optimize feedback

Presenting prototypes to a vast panel is highly instructive. Some practices can help to capitalize more fully on this approach.

- **Aim for a heterogeneous panel:**
A wide range of personalities and experience enriches the resulting contributions.
- **Frequently modify the composition of the test group to avoid groupthink.**
- **Adopt an anthropological stance to take full advantage of the wealth of responses:** note down quotes verbatim, film responses, develop an observation checklist or grid, pay attention to nonverbal signals (body language, facial expressions, etc.), ask exploratory questions such as, "Why do you do it that way?" etc.