

# Maker Innovation > innovation strategies inspired by the maker movement

Heloisa Neves

*Heloisa Neves, Insper Engineering School and Insper Fab Lab*

## **Abstract**

What the maker universe/Fab Labs and the more traditional innovation sector coming from companies can achieve together? From our vision, the maker movement is full of creativity, agility, low cost processes and disruptive innovation. On the other hand, companies have the know-how on how to scale, to look for quality, to manage projects for example. Therefore, both have knowledge and practices to exchange and together they could be extremely powerful, bringing innovation to another level: faster, more disruptive and connected with the users. "Maker Innovation" is the name that summarizes that. The goal is not just to coin a term but also a process that can be useful to develop products, services or change a team's mind-set. Their application in the real world is based on five strategies: Hands-On, Collaboration and Openness, Agility and Low Cost, Collaborative Atmosphere and Prototyping. Those strategies in the practice are a response to the exhaustion of the vertical and Fordist system, which turned out to limit creativity and willingness of those responsible for new products and systems, especially in large companies. So, it is a way to bring certain vigour, provide collaboration and exchange of experiences through the motto "make". The paper is organized in three stages. First, it relies on parts of an interview with Mickael Desmoulins, manager of Renault Creative People Lab, a space similar to a Fab Lab inside the French automobilistic company Renault. Secondly, it develops the theory and details of the "Maker Innovation" strategies. In the end it show the complexity of the implementation of the strategies and the barriers to overcome.

## **Keywords**

maker movement, innovation, Fab Lab, prototyping, open innovation, hands-on, agile, collaboration

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**Heloisa Neves**

Faculty at Insper Engineering School and Insper Fab Lab Coordinator  
e-mail: [heloisaneves@insper.edu.br](mailto:heloisaneves@insper.edu.br)

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What the maker universe/Fab Labs and the more traditional innovation sector coming from companies can achieve together? From our vision, the maker movement is full of creativity, agility, low cost processes and disruptive innovation. On the other hand, companies have the know-how on how to scale, to look for quality, to manage projects for example.

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## # Part 1: Interview with Mickael Desmoulin from Renault Creative People Lab

**(researcher)** What is the Creative People Lab and why do you create the space?

**(interviewed)** Creative People Lab is a kind of Fab Lab connected to the Renault company. It began to be thought like a decompression space where employees could find a most conducive spot for creativity. And above of all, a place where they get away from the vertical and repetitive tasks that a large industry can create. Today it is connected to the movement of Fab Labs and has digital manufacturing machines as a way to expand the process. Their coordinators are connected to the global network and with similar experiences in another French companies, initiating collaborative activities. We started with Service Design and from the moment we acquired some machines, we began to receive much more "makers". There are very good laboratories at Renault with very precise machines but the access is very hard and people do not like it, is not good for the creativity. One idea needs to be materialized quickly and the bureaucracy to use the regular laboratories at Renault is killing the creativity of our employees.

**(researcher)** But, even with different concepts there are links between this new space and the traditional innovation spaces of Renault?

**(interviewed)** We have some connections. The traditional way to innovate at Renault is through Techno Push. We are trying a different way. It works something like a coaching for innovation. And we are also trying to give opportunity to people by giving them access to tools. Then, they can work easily and without complexity in the process of prototyping. This is different of the traditional way where you need to think and pay too much for the materialization of an idea. It should not be like that.

**(researcher)** Is it very different when you touch an object like a prototype, right? Why the process of prototyping is so important?

**(interviewed)** This makes the process of project simpler. You don't need a perfect prototyping every time. Sometimes perfection hinders the process because everybody think you're ready, that the project is finished and you do not need any help and comments. But the dirty prototype helps people to project themselves on the project and this also helps to understand consumer perceptions because you are actually in place of the consumer in this process. The dirty prototype can replace sometimes the Excel lists, slides and long texts because people do not really understand all this numbers and texts easily and quickly. It is very difficult to express an idea, but with a drawing, a model or an object, it is easier. This is good for developing a concept, is agile and not too expensive. What usually happens it that people do not understand deeply the project

and this is the reason that at the end we usually work with demonstration, for example, a real car which looks very nice and can make the group understand all the details but you need almost a year to do this and lot of money. And, sometimes after this one year and all the money spent the group look the object and don't recognize their ideas there because they were materialized too far from the conception and was turned in another object. Frequently what happens is that good ideas do not go ahead because people do not understand them just because you often have 4 or 2 minutes to present an idea and it is very difficult if you can not show that in a prototype, even if is a dirty prototype.

**(researcher)** Do you think you could start a process by "make" directly?

**(interviewed)** A year ago, I would say certainly not, this is a stupid thing, you should see much before. But now I say it's possible. Make is a way of thinking. Hands-on has its own intelligence, there is much within you and sometimes you just can not understand. And the best way to understand is doing.

**(researcher)** So, do you believe in innovation by doing...

**(interviewed)** This is very difficult for companies, especially in France. Because we are very influenced by a sense of separation between thinking and doing. I think we need to propitiate the opportunity to build things, not only at the end of the process but also in the intermediate presentations.

**(researcher)** How to change the way of producing in a big industry like automobile?

**(interviewed)** This is not easy and will not happen so soon but this can probably change the management. At Fab Labs, for example, they have the philosophy of the agile software applied to project management. I think these new methods will impact our way of manage the production as well we are going to make more small prototypes and use more the machines such as 3d printers. With those prototyping tools and the new way of looking at the object we will change the way we conceptualize.

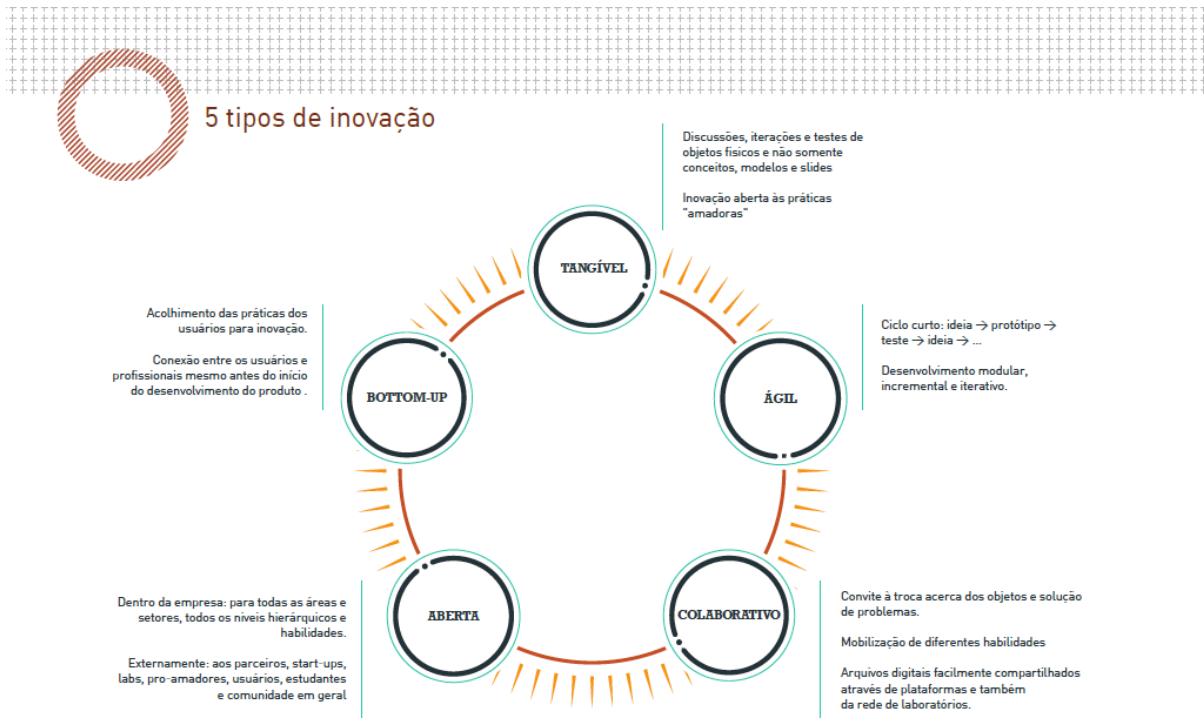
## **# Part 2: Defining Maker Innovation**

In a nutshell, Maker Innovation is the innovation by "doing." This concept arose from the experience and observation of the researcher in makers environments. At the beginning we thought that such practice was restricted just to the "makers". However, over the course of the research we realized that it was in tune with wishes of other institutions (big companies, start-ups ...) that had been feeling the need to incorporate the "doing" in their processes.

Maker Innovation has the goal to synthesize strategies from maker universe and connect them with innovation processes enabling contact between makers and corporative entrepreneurs. Those strategies in the practice are a response to the exhaustion of the vertical and Fordist system, which turned out to limit creativity and willingness of those responsible for new products and systems, especially in large companies. So, it is a way to bring certain vigour, provide collaboration and exchange of experiences through the motto "make".

Focusing our vision in some examples of this approach, Fabien Eychenne (2013) says that many companies consider to rely on a type of maker device type Fab Lab to explore and test new and more open forms of innovation, more agile and unexpected. Thus, the union between maker practices and innovation in companies can be summarized: innovate differently and in a world more open, seeking ideas, energies and skills where they are, encouraging intersections and experimenting the ideas as soon as possible.

For a variety of reasons the companies formalized their innovation processes in a way that is hard for the ideas to come and survive. Environments such as Fab Labs and maker processes are one of the ways to ventilate and look for other ideas, other solutions to the problems. Thus the maker process may contribute in the rework of five types of innovation (Eychenne, 2103).



The five innovations by a Fab Lab in companies, by Fabien Eychenne, 2012

Acting in these innovation fronts, the approach with maker processes can attract a transdisciplinary team, motivated by “try” and “make”. The company can also open a crack and have some distance of the bureaucracy that is part of a company and have a chance to develop more agile and collaborative projects. It can also be a way to support independent projects that may arise during the process and can with this support create spin-offs. This process of rapprochement of these universes can also act in the direction of building a regular user community that may consider this environment as a space for expression, breathing, decompression and professional exchange of ideas. Thus, much more knowledge can be generated and many ideas can be born because there is a breeding ground.

### # The five Maker Innovation strategies

Through this first study of the connection between maker movement and innovation we have created a number of strategies / Maker Innovation pillars. They are:

- 01: “Hands-On”
- 02: Collaboration and Openness
- 03: Agility and Low Cost

- 04: Collaborative Atmosphere
- 05: Prototyping

// **estategy\_01: "Hands-on"**

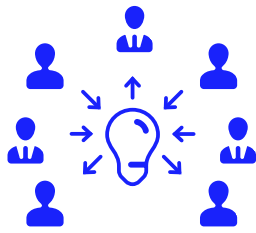


One of the makers action engines comes from the fact that they perform something for fun, through desire. This is however not the only factor to understanding this culture. Central object of the book of Matthew Crawford, "Shop Class the Soulcraft: An Inquiry Into the Value of Work" (2010), the question of "doing" is inherently and therefore connected to a larger movement. The process of doing, which has been understood as something noble in other times, was being left to the technicians by an understanding that this is not an intellectual function. The maker movement, with its current strength returns this "making" connected to "thinking".

Within a development process the aim is to make ideas tangible in a short time instead of a long initial stage of purely abstract and intellectual conception. It means the design phase must necessarily involve the making: either through drawings, prototypes, glue, scissors or more advanced machines, replacing "Power Point" presentations and spreadsheets. Therefore, we define the first approach which is part of Maker Innovation strategy: incorporating the "doing" through some ways:

- "Make" is a mantra shared and should be put into practice by the whole group;
- The rapid activation of concept stage through materialization (drawings, prototypes, computer code, glue and scissors, 3D fingerprint etc.) reduces or eliminates the incomprehensible long presentations and slides;
- The "change" of the abstract design phase by "doing" makes it more fun and easy to be understood by a wider audience from different areas and even less specialized;
- The game, the own fun as part of the project becomes part of a virtuous dynamic collaboration;
- The "doing" leads to learn in a more active way;
- The reflection after making can bring valuable contributions to the process.

## // estategy \_02: Collaboration and Openness



Another point that characterizes the maker movement and contaminates extremely positively Maker Innovation is its openness and collaboration. These concepts have roots in two different movements: the DIY (do it yourself) / Diwo (do it with others) and Open Source Software.

With the creation of the internet the DIY that before existed, but off-line, exploded. The distance communication was facilitated and offered the possibility to people who were already using the DIY in different locations to share information, exchange ideas and processes. The name given to this movement was then repositioned, winning a collaborative nature. This is base of the Diwo (do it with others) which puts the collaboration as a "core". The Open Source movement was also a great inspiration for what we have nowadays at the maker movement.

The aim of all these structures is the collaboration as intensification of the process, greater access to knowledge, search for global teams. So today we are no longer alone. And if we are at all times surrounded by ideas and people in different locations and with different realities, why do not really work with them, make them part of our projects, bringing with it a positive complexity to the project? From processes developed in the world of software, faithfully commented by Eric Raymond in his book "The Cathedral and the Bazaar" (2010) the opening of the process has been part of a new strategy working in both the software universe and maker movement but also in the business world through the development of Open Innovation projects.

## // estategy \_03: Agility and Low Cost



Agility and low cost in the process development of a product or system is something sought by all. And are viable practices when using processes based on the maker movement. We can cite several well-known companies such as Google, Facebook and Amazon, for example, that use

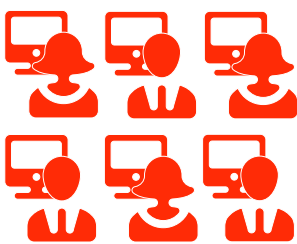
agile and low cost practices. The strategy in all of cases is to start the project with very low cost, making the product available on the market quickly, which it is customary to call "beta version". The agile approach is based on basic rules of conventional development (requirements, design, implementation, testing and maintenance).

The "agile" model is widely used in the world of makers. The makers have the characteristic to publish the project very quickly, involving the community and sharing with them, thereby creating a common interest. The willingness to work together is something really important, but that's not the only reason. The maker universe adhered to this strategy also for reasons of cost because publish the project help to understand without charge if it has potential and if there is market for it. If no positive result, the cost to start or re-create is not high.

Within this process a mantra is repeated continually, "fail early, fail cheap, fail always." Not fail just for fail, but to learn, to know the market and create a better product. To summarize this section on the agility and cost factor, bringing visions of the maker movement, we have:

- Practice of share and publish quickly the project, even if it is not a final version, both to show it to others, and to develop a community and help, or have the user feedback;
- Agility in the creative process, very close to the stage called "fuzzy front end" (beginning of creation);
- Acceptance of failure, the failure being valued in the sense that he brings experience.

#### // strategy\_04: Collaborative Atmosphere



We have already talked about the importance of new spaces for the ecosystem that has been forming. We would like to reinforce this idea since they are also one of the Maker Innovation principles. Not a common space, typical of a traditional working system with tables and chairs lined up where the goal is to block the collaboration and integration. What we are trying to define goes even beyond space, is an environment for innovation. An environment means a physical space + practices / experiences. So we understand the environment as a creative propellant, collaboration, experiences and why not also fun and relaxation.

According to Julie Fabbri, PhD student at the “Centre de Recherche en Gestion de l’École Polytechnique” and general secretary at “Institut pour l’innovation et Compétitivité” in Paris, currently the creative and independent are looking for places that allow them to connect to other people, they are always close to the news and in an environment that encourages this creativity formula that could help in the innovation process. Innovation comes, these days, from a process of trial and error and a creative game that is played with the limits. This new way of working has changed the space of a corporate and closed structure for a collaborative and open structure. Co-workings, incubators, Fab Labs or a mix of all these models fulfills this function.

The literature cites a term that can be applied to these places, the "third place". This concept was created by the American sociologist Ray Oldenburg in the book "The Great Good Place: Cafes, Coffee Shops, Community Center, Beauty Parlors, General Stores, Bars, Hangouts and How They Get You Through the Day" in 1989. The author stresses the work the need for independent and mobile workers have to meet in a public place in order to relax and socialize, instead of staying at home or work in a private office (the first and second places, respectively).

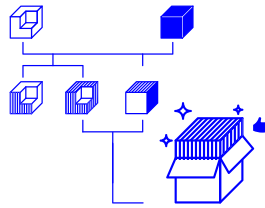
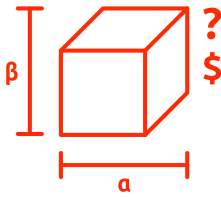
An example of this kind of place is the Creative Lab People Renault, object of the interview of the beginning of this paper.

"Today we have workshops being held every week, we have all the tools and methods to help people make the ideas become more concrete through videos, CK method, drawings, story boards, canvas business model, where we can make our machines own cards, 3D printers, laser cutter and the like. Our laboratory is creative and inspired by the philosophy of Tech Shop and the concept of Fab Lab. It is both a creativity room, as a coffee or a Fab Lab. "(UNGER, 2012).



Creative People Lab Renault, FourSquare, 2012

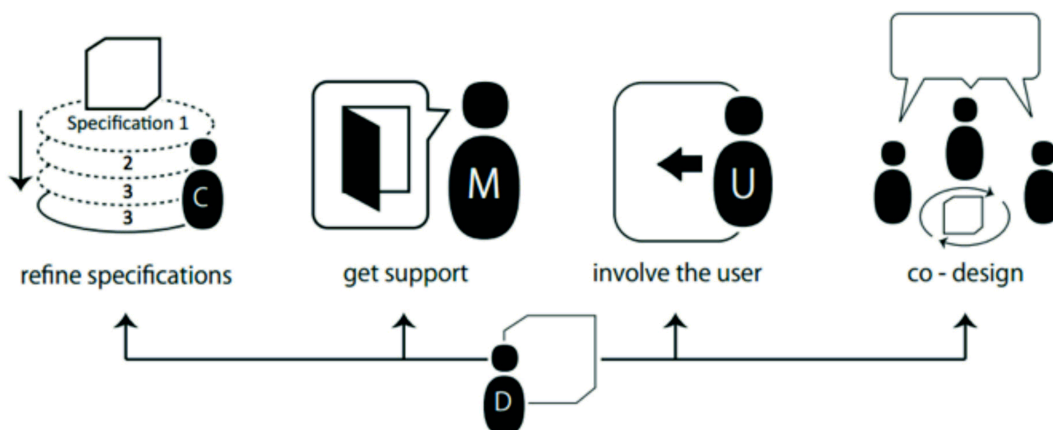
// estategy\_05: Prototyping



One of the most important points of the Maker Innovation is the strategy of "making", the "hands-on". Prototypes exist to materialize the theory that there is behind these points. In this context, for us, the prototypes are the materialization element that brings wisdom developed by the maker movement, inserting it in an innovation context. We are interested in the idea of prototype because it is a common object in a collaborative process which usually involve people from different areas and different references.

"The prototype allows to renew the philosophy of "doing". It allows you to leave the conceptual phase and go fast to the essentials of a project. It is a tool that can take many forms, according to different situations and take on roles during the game. The prototype is the incarnation of a project at a specific time and in this sense, a strong cohesive factor of a group.  
 "(NOD-A, Makestorming, s / d)

Most of the time, in a traditional system of product development, a prototype is seen as the ultimate representation of the ideas of a project. It appears at the end of a chain of abstract ideas. However, several studies has shown that it is quite effective in the early stages of developing an idea and should be seen through new eyes. It should be located in the "heart" of the project. But for this to happen, a change in mentality in order to understand it is necessary as a process object and not only as a representation of the object in high fidelity. He must be more than a tool, a work philosophy, a way to do an open object to the trial and error.



In the contemporary world is worth what an organization does than what she says (Schrage, 2000) and the prototypes are perfect tools to communicate the character, intentions and proposals of the same. According to the author:

- The most important question that must be asked to work a prototype is: who will benefit from it. A prototype can inspire collaboration, but also threaten other groups not involved if the collaboration between the whole team is not well conducted;
- Measure the results brought by strictly prototypes is a critical step. We need to measure the benefits of this action and his reflection in the group's values it wishes and values of users;
- Fail early and often is good and allows unravel problems and solve them early, at a time to go back still has a low cost;
- To manage a diversified portfolio of prototypes can also be a good strategy. Thus, one can emphasize the interaction between different types of prototypes representing the same problem from different perspectives;
- The benefits of a prototype should offset the cost of its manufacture and use;
- A prototype should be an invitation to play, they should create a dialogue and encourage stakeholders to explore new possibilities and create suggestions;
- Create markets around the prototypes and prototyping processes can be quite interesting. The prototype should help create subsidies for the organization in the form of money and knowledge;
- Adopting the client's perspective or other members of the team can prove the value of a prototype. This will also create a collective consciousness;
- Organizations must learn from their own prototyping, looking at how they are built and used.

### **# Part 3: Final Reflections and Conclusion**

About Maker Innovation and their practices: during some lectures with an audience of designers, creative, and even makers and also innovative professionals from big business, we note that the issue is still unexplored and difficult to access for many because although to bring up topics that are not new, mix them in an unusual way and adds the differential "make" (we're not used to do, we used to think).

As a second point of analysis, and perhaps most importantly, we realize that during the research practices that two structuring concepts: the terms "collaboration" and "openness", are extremely powerful. Although many people today call themselves adherents to these terms, your practice is



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