

## Fab Labs: A Place for Innovation, Collaboration, and Creation?

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### INTRODUCTION

In recent decades, innovation has become a central issue in the survival of public and private organizations. To meet this challenge, most of them are exploring new ways of organizing work, including seeking to build on the creativity of their employees. These explorations result in the invention of new forms of coordination and cooperation.

At the same time, job tasks and employment relationships have become more complex and diversified over time and need to be redefined (Paris and Lê, 2016). Organizations are also looking for ways to increase the innovative spirit of their employees and to develop organizational innovation (autonomy, versatility, development of collective actions, team work for example). This context contributes to the creation of new forms of employment and activities. To ensure these restructurings and these new expectations, new ways of organizing work are unfolding, which has helped to make it possible to implement fab labs.

### BACKGROUND

Fab Labs are proliferating around the world and are presented as new places of collaboration and exchange open to all and in which anything is possible, but these places are more specifically oriented towards the fabrication of products with 3D printers in many cases, or other types of productions. In doing so, the place does allow for the creation of many innovations and facilitates meetings between creatives and designers. However, they can also create certain risks that are not yet necessarily documented.

In this chapter, the authors propose to draw up a synthetic and nuanced inventory of the benefits and risks created by fab labs. This assessment is therefore original, given the lack of research on the negative aspects of these places and the lack of contrasting studies on the subject in particular.

## FOCUS OF THE ARTICLE

### **The Contributions Of Fab Labs: Between Knowledge Democracy And Sharing Of Tools**

#### Fab Labs, Places Of Digital Democratization

Fab lab is the contraction of “fabrication laboratory”. Fab labs have been created within the MIT Center for Bits and Atoms to enable everyone to become the main players in technology manufacturing rather than just spectators (Gershenfeld, 2005). The first ever fab lab was established at the Massachusetts Institute of Technology (MIT) in the CBA (Center for Bits and Atom), a research laboratory founded in 2001 by the NSF (National Science Foundation). Thus, in the same way that the Internet has enabled the collaborative web and in fact the development of sharing tools, the CBA wishes to make fab labs the logical consequence of the digital revolution, by giving everyone the opportunity to manufacture digital tools, as Neil Gershenfeld, director of CBA attached to MIT (Scaillerez and Tremblay, 2017a and b) wishes. After participating in the digital revolution, MIT wants to democratize digital manufacturing. The Fab lab network, also initiated by MIT, has listed nearly 1,000 so far (Deskmag, 2017).

#### Fab Labs, Places Favorable To Open Innovation

The fab lab activity is part of the dynamics that can result from open innovation (Chesbrough, 2003 and Chesbrough, Vanhaverbeke, and West, 2006). This theoretical framework includes two main streams, the first dealing with the relationship of the concept with the use of internal skills of the company, the second dealing with external partners. Fab Labs can register their activity in this second stream of thought.

Open innovation refers to the idea that companies do not have all the skills needed to innovate internally. On the contrary, external resources, external research and development (R & D) can foster innovation in an organization. This theory of open innovation refers in a way to the work of Nonaka (1991), which also indicated that companies do not always have the best talents at their jobs, so they must seek to benefit from expertise and skills externally, including the tacit knowledge put forward by Nonaka and Takeuchi (1995). This does not mean that we must forget internal knowledge, but simply that we must also acquire intellectual property and ideas developed by others (Trott and Hartmann, 2009). It is also necessary to integrate into networks to access external knowledge, and this is where fab labs can be useful. In this respect, fab labs can then as much meet the needs of companies, as those of entrepreneurs and even anyone wishing to manufacture a material or immaterial object.

Trott and Hartmann (2009) point out that this idea of external knowledge is not entirely new but has been put forward less than internal talent as a source of creativity and innovation. Open innovation actions can contribute to the development or enhancement of a product or reflection through the use of external sources, such as the various actors associated with it (Chesbrough, 2003; Laursen and Salter, 2006). This is what we can find in a fab lab where users will take advantage of the community tools to build a prototype together. Everyone brings his skills. It is a sharing of knowledge and tools between creator and creative. In this case, open innovation relies on the intervention of external resources, but also of intermediaries (Chesbrough, 2006) with the ultimate aim of organizing the meeting between various users through the development of an innovative process. By following this reasoning, a fab lab can then be considered as an open space of innovation, drawing strength from the collaboration between its members.

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