Contributions of Living Labs in reducing Market Based Risk

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Abstract

Traditionally, the gap between research and innovation has been covered by startups and entrepreneurs who take on the risk and the uncertainty associated with bringing to market novel products or services. Public intervention in innovation has indeed attempted to lower that risk, but his intervention has been commonly associated to increasing the availability of factors that could trigger innovation, such as capital or research potential, rather than reducing the risks associated with the market, such as product/service or business model inadequacy. However, experience shows that are these market risks the main culprits of the failure of new ventures.

Recently a new kind of institution called Living Labs, aims to address this area, providing not only help in managing market risks but the kind of entrepreneurial spirit that could push innovation forward while helping in creating an initial demand that might foster its development.

Keywords

Innovation, Open Innovation, User Driven Innovation.

1 Introduction

Much has been written about the gap between Research and Innovation, rising quite often, a significant amount of interest in the business press [Moore G.A, 1991] and in public policy. The so-called "European Paradox" [E.C., 1995], meaning the inability of European nations to transform their leadership in research into commercial successes in the marketplace, is an example of that.

Traditionally, this gap has been covered by venture capital, being precisely its lack what has been pointed out as one of the main culprits of the European lag in Innovation. Hence, the perception of a market failure in assuming the risk and uncertainty associated with innovation has motivated public intervention in the form of public sponsored initiatives such as collaborative projects or broad National goals. And more recently with imaginative proposals like open prizes such as the NASA globe competition or DARPA "Auto Grand Challenge".

In this line, the European Commission has identified pre-commercial public procurement as an instrument in helping to cover this gap [E.C., 2006]. In order to situate pre-commercial procurement, the expert group of the European Commission has identified four different phases of innovation, ranging from research to production of products and services. The first phases are supported by a wide range of policy instruments driving a "research push", while the later ones are the result of free market initiative and materialize in a "Market pull".

However, phases two and three, corresponding to Applied R&D leading to a prototype and to a first product respectively, are characterized by a high degree of uncertainty in the potential commercial success of the proposed solution, driving potential entrepreneurs and investors away [E.C.,2006]. There is where both the gap and the lack of financial support are located.

Curiously, we can find a discussion with many points in common with practitioners. For the sake of the example let us mention the intervention of Steve Blank in the Stanford Entrepreneurship Seminar [Blank S. ,2008]. There, he mentioned that the main culprit for startups failure was not the readiness of the technology but the lack of a suitable market and customers willing to adopt

it. Blank vehemently advocated for the testing and validation of ideas in the real world, encouraging confronting real customers early on in the innovation process

Meanwhile, a new institution has been emerging in Europe, aiming to address the very same concerns: Living Labs. Living Labs are driven by two main ideas: a) involving users early on in the innovation process and b) experimentation in real world settings, aiming to provide structure and governance to user participation in the innovation process [Almirall E., Wareham J., 2008]. Living Labs have grown in the last two years to a network of institutions comprising 129 members, not only in Europe but also in Brazil, South Africa, Mozambique, China and Taiwan.

This research seeks to examine to what extent they can contribute to close the gap between Research and Innovation. Thus, in our study, we address the following research questions:

1) Does user involvement and real life experimentation provide a systematic approach to close the pre-commercial gap?
2) How and in what form do users contribute?
3) What is the role of Living Lab organizations in the process?

The understanding of these questions is crucial for both companies and policy makers that seek to promote innovation in highly complex and volatile markets where user needs or wants and business model fit cannot be taken for granted.

Our paper combines several strands of research, ranging from Open Innovation and the role of users in the innovation process to policy and management of innovation. It contributes to innovation research in several ways. First, novel ways to incorporate users in the innovation process and especially in the Open Innovation framework are identified. Second, the validity and effectiveness of an institution for involving users in the innovation process is discussed. Third, the dynamics and relevance of "mediated" user contributions where users are neither passive subjects nor the drivers of innovation, is assessed. And fourth, the main stylized traits that could inform policy and innovation management are identified.

The paper is organized as follows: first we review the literature related to our topic. Second we introduce the research approach, followed by a description of the methodologies being employed together with brief case stories illustrating their use and an in-depth analysis on the light of the research questions. Finally we discuss implications in the context of Open Innovation and innovation policy.

2. Literature Review

Users have been identified in a number of roles in crossing the gap between research and innovation. Maybe the most obvious of them is their role as a source of invention and ultimately innovation [von Hippel, 1998, 2005]. A review of empirical studies reveals contributions of users in the roles of inventors and /or co-developers in areas as diverse as scientific instruments [Riggs, W. and von Hippel, E.,1994], medical equipment technology [Lettl, C., Herstatt, C. and Gemuenden, H.G.,2006], sports equipment [Luethje, C. and Herstatt. C. and von Hippel, E., 2005] and CAD software [Urban, G.L. and von Hippel, E.,1998], to mention just a few. In these studies, a specific group of users is emphasized: "lead users" [von Hippel, E.,1998].

Lead users present two main characteristics. Firstly, they face needs in advance of the rest of users and secondly, they benefit significantly from obtaining a solution to their needs. Typically, lead users engage with manufacturers where they contribute substantially to highly innovative products [Herstatt, C. and von Hippel, E.,1992].

A second strand of research comes from the field of human-centered design research. There we are witnessing an evolution from a user-centered approach to a collaborative one identified as co-design.

Design research attempts to cross the gap between a great idea and a great product by tapping into the users' needs, feels and dreams by having a more exact understanding of what users explicitly say, observing what they do and inferring from what they make.

Two main areas can be identified in design research. On one side we have User-Centered Design where several clusters of activity can be found, among them: usability testing, measuring how well people can use something for its intended purpose; human factors/ergonomics, the study of how humans behave to particular environments, products or services and applied ethnography, the qualitative description of cultural practices based on observational research. The common characteristic of this area is the role of users, who are considered subjects of study.

On the other side, but sharing methods and techniques, we find Participatory Design, that aims to actively involve the people who will be served with the new product or service, in order to ensure that the final result will better meet their needs. Their roots are in the Scandinavian tradition [Bødker,S.,1996], being a key characteristic the use of artifacts as thinking tools [Greenbaum, J. and Kyng, M. (Eds.) ,1991; Sanders, E.B.-N.,2000]. A second important trait is its use very early, in the fuzzy front end of innovation.

The evolution of both perspectives towards co-design, an understanding of the user as a partner who is an "expert of his/her experience" and where the designer and the researcher supports him by providing tools for ideation and expression [Sanders, E.B.-N and Stappers, P.J.,2008] is at the core of the Living Labs approach [Mirijamdotter, A., Ståhlbröst, A., Sällström, A., Niitamo V., Kulkki, S., 2006] which also borrows tools and methods from Design research.

However, a key characteristic of Living Labs is their openness. Even the name of their network reflects that fact: Open Living Labs (www.openlivinglabs.eu). This characteristic of openness has revealed itself as a key element for innovation, giving birth to Open Innovation [Chesbrough, H.,2003]. Still, user participation in Open Innovation has emphasized individual user involvement, for example in the development or radical innovations [9] or in harnessing the collective wisdom through the use of Innovation Technologies (IvT) [Dodgson, M., Gann, D. and Salter, A.,2005].

In this context, a differentiate element in Open Innovation is the role and prominence of intermediaries which, because of their novelty and raising importance, have enjoyed significant public awareness, as in the case of Innocentive, Nine Sigma or InnovationXchange. Intermediaries have been classified so far, as agents, brokers or marketplaces. We argue that Living Labs perform also a role as facilitators of user involvement and in some cases orchestrators of the whole innovation process.

3. Research Approach

Because of the explanatory nature of our work and the novelty of this field of research we found that a multiple case-study methodology is the most appropriate for both the field and the research questions formulated in the present study.

Four cases were selected, from three different domains: health, media and industry: Opera Oberta and Cultural Ring in media, Teleictus in health and Industrial Ring in industry.

For each case in-depth interviews using a semi-structured interview guideline were conducted with project leaders, Living Lab members, users and representatives of the firms involved. The interview guideline included questions aimed at learning, not only the role of the different actors in the process but their motivations and interaction patterns in order to be able to assess the dynamics and evolution of the process from the point of view of each participant.

In addition to that, research on secondary data such as project documentation, project websites and public presentations of the projects, was used.

4. Research Findings

4.1 The hosting organization: i2Cat

i2Cat is a Foundation established as a public private partnership constituted by three universities, around ten private firms and the Catalan regional government beginning its operations in 1,999 with the ambition to promote and develop the Internet Society in Catalonia.

In i2Cat, a great deal of effort is devoted to more exploratory innovation. Not only because of the public and firm involvement in the i2Cat consortia, which clearly pushes the organization in that direction, but also because the i2Cat's response to the problem of the seemingly unlimited technological choice that IT has ushered in recent decades is experimentation; concretely, experimentation in context-rich social environments.

4.1.2. Opera Oberta – Opera Learning

Opera Oberta (Opera Oberta, 2001) explored the use of high definition video-conferencing and high speed Internet in the context of live Opera. The driving force behind the project was Angel Fernandez, at the time Director of Technology of the Opera Theater Liceo in Barcelona. Angel was aware of the experimentation in high definition video conferencing that was taking place at the time and contacted i2Cat, together with its support they were able to settle a team comprising technology providers like Thomson Multimedia (cameras and equipment), Barco (projection), Video Digital (MPEG2 coding), etc…, telecom operators (Telefónica and Menta), public infrastructure networks (Cesca, i2Cat, Red Iris, Terrassa City Hall) together with commercial exhibitors (Cinesa Diagonal) and a network of universities where Opera performances were retransmitted.

On December 18, 2001, La Traviata was transmitted in HDTV using an HDSI link at 1.5Gb to a large movie theater in Barcelona (Cinesa Diagonal), while the same signal was broadcasted through SDI at 270Mb in multicast to a network of 4 universities around Catalonia.

Building on the success of this first experience and with the support of i2Cat, the project continued with additional retransmissions and evolved in three main directions. The first one was Opera Learning that extended this effort until 2004 with regular programming of elective Opera courses done through HD on-line video conferencing. First with a small network of Catalan universities but later on with the participation of Spanish, European and Latin American universities in the program. In order to carry on this effort, Opera experts and educators joined the project.

The second line of evolution was its transplant beyond Opera to other artistic manifestations beyond opera. Cultural Ring (Cultural Ring, 2003-2008), linked a dozen of Catalan centers and encompassed around twenty groups that regularly used the scientific high speed Internet2 network deployed in Catalonia for art interaction.

Pre-commercial Gap

The problem in 2001, and to some extend today, lies not in the technological readiness but in connecting the dots that make the implementation of this technology real. This involves steps that range from legal aspects like securing the digital rights of the performances (the fact that Liceo had these rights made the project feasible) to technological ones such as connecting cameras and broadcasting equipment to an IP network, or readiness in terms of infrastructure deployment by being able to use a high speed network large enough for the project to finding viable services and business models able to sustain the project.

The Contribution of Users

In terms of taking advantage of the technology, we can distinguish two types of users in this project, one upstream and another one downstream.

The first role that we should emphasize was the one of Angel Fernandez, CTO of the Opera Theater Liceo at that time, who can be better described as a lead-user [Bhidé, A.,2008] and was, together with i2Cat, orchestrating and pushing the project forward.

Secondly, the network of universities and the exhibition theaters who didn't play a passive role, but they contributed and shaped the innovation process in many ways behaving as co-creators. An example of that was in raising the demands for bandwidth in order to achieve levels of quality in both image and sound that they considered appropriated (particularly in sound).

The role of the Living Lab organization

In contrast to other type of technologies like software, High Speed Internet was not (and is not yet) readily available to users neither can be implemented by a single firm or a couple of firms like in lead-user driven innovation. Therefore, an organization, or a group of organizations like in this case, is needed to put these technologies into the hands of users.

The first role of the Living Lab consist in creating and innovation arena and involving the relevant actors and technologies enabling the exploration of an space of possibilities that were before beyond their reach because the lack of a suitable platform (high speed networks) and the need of multiple contributions to form a value chain. Both elements were beyond the reach of any single actor or even a group of them.

The second role that we can identify is the one of orchestrating and coordinating the experimentation while facilitating the identification of reachable targets (real products or services to validate) where to concentrate the efforts.

There is however a third role and probably the most distinctive of Living Labs: mediating between users and the rest of actors. In this case this was materialized in two ways: first involving from the beginning the representatives of universities and exhibition theaters in the process and secondly capturing the end user experience (mostly using qualitative methods) and introducing them as an input in the process.

4.1.3 Teleictus

Teleictus (Teleictus, 2007) is the brain child of Dr. Ismael Cerdà working in Vic General Hospital and addresses the problem of having round the clock expertise in diagnosing and treating strokes. The project implements HD video conferencing system together with a tool for sending CT images (MIO from C2C – http://www.c2csis.com) and the MEDTING platform (http://medting.com) for sharing clinical stories , linking a reference hospital (Hospital Vall Hebron in the initial test) with a satellite hospital (Vic General Hospital in the initial test), together using high speed internet for the diagnosis and continuous monitoring of patients.

In a case similar to the previous one, an initial idea of a user, Med. Dr. Ismael Cerdà, who got supported by i2Cat and together assembled a team comprising telecom operators, equipment manufacturers, doctors and nurses, hospitals and funding agencies of both the Information Society and the Healthcare system that by experimentation, trial and error, materialized an initial experience that was rated as very successful.

The team managed to deploy a high-speed fiber connection (300Mb) between a central and a satellite hospital early on in the project and installed some off the shelf equipment beginning to discuss possible modifications and adaptation on it. In addition to that, software allowing the sharing of CT images together with clinic stories was enlisted.

Surprisingly, one of the first discoveries was that the high speed connection was not really a requirement, together with the high importance of the activation protocol and the mechanisms of

coordination between partners due to the fast pace and the critical importance of time in the deployment environments (emergency rooms and emergency like situations).

Building on that success, more than 100 patients have been already treated with the system that is now expanding to a second phase comprising more than 20 satellite hospitals and some reference centers. A third phase covering the whole Catalonia is already planned.

Teleictus has been awarded with the National Health Spanish Quality Award in 2007 (Premio Nacional de Calidad del Ministerio de Sanidad 2007) and with the BDigital Award to Digital Innovation in 2008 (Premi BDigital a la Innovació Digital 2008).

Pre-commercial Gap

Solving the pre-commercial gap in this case meant solving a number of additional problems beyond the technical ones such as the development or the plausible expectation of an initial demand able to cover for the development or ensuring that the solutions fits and into a medical protocol widely accepted and is in line with the standards and restrictions of the hospitals addressed.

Therefore solving the pre-commercial gap in this case means solving a number of additional problems beyond the technical ones.

1. The availability of a high speed network.
2. The development or the plausible expectation of an initial demand able to cover for the development.
3. Ensuring that the solutions fits and into a medical protocol widely accepted and is in line with the standards and restrictions of the hospitals addressed.

Teleictus solved this problematic forming a team that could be able to address all the issues together, meaning ensuring the participation of the Catalan Health Care Service (CatSalut), a telecommunications operator who agreed to lie down a high speed connection (Al-Pi) and a provider of HD videoconferencing equipment (Technotrends).

As a result, the team of companies and public institutions involved, have been able to capture value from the project, ranging from tailoring high-def video conferencing equipment to the health sector, to opening a new specialized commercial service for high speed internet, a substantial reduction in cost, simultaneously with a service quality increase for the hospital, a public award and recognition for both the Living Lab (i2Cat) and the entrepreneur and a gain in influence that will pay in the future, in the own words of Dr. Cerdà: “next time will be easier!”.

The Contribution of Users

The contribution of users to the project was twofold. On one side we can find the role of a “lead user” in the figure of Dr. Cerdà, who from his position in a public hospital greatly contributed to the project with an entrepreneurial attitude.

On the other side, we can find that the solution was shaped not only with the collaboration of doctors from both hospitals but also with the active participation of nurses and personnel from the computer departments of both institutions. Examples of their contribution in that second area can be found in the activation protocol, the physical placement of the instrumentation, the administrative circuit and in general the model of collaboration between hospitals and departments.

Once again, validation in real life conditions was a key element for success, not only for ensuring the validity of proposed solutions but for busting the morale of the team involved.

The Role of the Living Lab organization

Again, lowering the risk associated with innovation by selecting participants and providing an arena where technological proposal could be operationalized was the key element for the success of the project. Together with that, the division of the project in phases (first 2 hospitals, next 5 hospitals, etc …) and reachable milestones has revealed very important. The existing habits in both hospitals of collectively creating protocols and the homogeneity of part of the groups involved greatly facilitated the integration of the rest of the members in the project, making easier the co-creation process.

4.1.4 Industrial Ring

The Industrial Ring (Anella Industrial, 2008) is the youngest and probably the most ambitious project. Building on the success and the experience gained with the Cultural Ring, it aims to explore the benefits and services that high speed Internet connectivity can bring to large manufacturing companies.

Its inception is similar to the rest of projects previously discussed. A lead user, in this case a professor of the Engineering School (Emili Hernández) in charge of students' projects and heavily involved with the automobile industry, enlisted i2Cat and both begin to put the project into motion.

Its first incarnation is in the automobile sector, connecting auto companies (Seat-Volkswagen and Nissan), component suppliers (Gestamp, Ficosa), testing services (Applus-Idiada, Iteuve), engineering and integration companies (T-Systems, Sener, Ansys and Esi) with the two supercomputing centers of Catalonia (Cesca and BSC-CNS) through the participation of telecommunication providers (Albertis and Al-Pi).

Even if the project is still in its early stages we can already see how involving end users directly influences its outcome. In this case, building on the needs of the most advanced users, resulted on two services that again build more on Mid-Low knowledge than on High-level one.

These were the development of a service for large file transmission (typically CAD files are larger than 1GB) and remote car testing providing immediate results for telemetry and the integration for High Definition videoconferencing and monitoring.

Pre-commercial Gap

In a case similar to Opera Oberta, we can see how the lack of a widespread infrastructure prevents the birth of initiatives aimed at its use. However, in that case this factor goes together with the perception of a low and scattered demand because of the target group focuses on companies and professionals rather than the general public. Also a perception of an undefined and unclear business model in an environment dominated by free services further increases uncertainty.

4.2 Analysis

We summarized our findings in the cases in table 1, our findings are divided in four sections: methods used to close the per-commercial gap, role of users, role of the so-called living lab organizations and how value was captured by the different actors.

One of the means used to reduce the pre-commercial gap was enhancing technological availability, providing different options for solving the problem together with access to pre-commercial infrastructures when needed (high speed Internet2 networks). Also collaboratively exploring user-acceptance and business feasibility greatly contributed to discard some solutions

while accepting others. Finally, in almost all cases, we described how projects managed to mobilize some kind of public procurement creating an initial demand for the proposed service.

The role of users was threefold. First, in all cases they were involved in the validation of the product or service and the associated business model in real life trials. This was a key element for the projects to succeed. This venturesome [21] engagement of users provides an opportunity for exploration and allowed learning while sustaining the dynamics of the project itself.

Value was captured in many cases by means of the new product or service developed, but also we have seen evidence of multiple spill-overs through the process.

	Opera Oberta	**Opera Learning**	**Teleictus**	**Industrial Ring**
Pre-Commercial Gap				
Reducing technical uncertainty	X	X	X	X
Use of pre-commercial infrastructure	X	X		X
Exploration of user acceptance	X	X	X	X
Validation of Business Models		X	X	X
Creation of an initial demand		X	X	X
Role of users				
Existence of a “lead-users”	X	X	X	
Users involved in co-creation	X	X	X	X
Validation of user needs	X	X	X	X
Users involved in exploring business models		X	X	X
Role of Living Labs organization				
Enlists participants	X	X	X	X
Orchestrates the process	X	X	X	X
Facilitates access to technology	X	X	X	X
Mediates between users	X	X	X	X
Capture of value				
New products/services		X	X	X
New processes	X	X	X	X
Value captured by public organizations	X	X	X	X
Value captured by private companies			X	X
Spillovers administration			X	X
Spillovers public companies	X	X	X	
Spillovers private companies	X	X	X	X
Public awards			X	

Table 1. Summary of the findings.

Reducing Uncertainty

A common characteristic of the cases described is that they manage to reduce the uncertainty, hence the risk, at both personal and team level.

At personal level, establishing a project as a framework for developing the initiative allowed that lead users obtained the allowance to use time and resources for the project from the organization where they were working. Therefore they have been able to pursue their endeavor without having to quit their jobs or making major sacrifices. Therefore, the framework of a project created by the Living Lab organization allowed them to integrate their initiatives as actual duties in their respective organizations.

Beyond technology, there are two main types of uncertainty remaining: user acceptance and business model feasibility. Again, the living labs organization contributed to lower these risks by providing a group of users and a context where to experiment, almost risk free.

The Entrepreneurial Role of Living Labs

However, the Living Lab organization assumed more than a role as an enabler. They established and managed, many times in collaboration with a "lead user", the innovation networks required to transform users' needs into real products or services. It has been in all cases the Living Labs organization who was in charge of providing the necessary funds and who invested a significant amount of time and effort in convincing partners, the administration or participating in competitive call for projects in order to secure funding.

Furthermore, it was also the Living Labs organization who recruited experts from research institutes, companies and universities to provide the necessary know how and expertise. It also convinced companies to invest in the projects, showing them the reduced amount of risk and the potential opportunity at their reach.

Finally, it was the Living Labs who coordinated the innovation network, either alone or in cooperation with lead users or companies.

These three characteristics of selection, formation and coordination of the innovation network are representative of an entrepreneurship attitude, in that case of the Living Labs organization.

Creating and experimentation arena

Both innovators and scientists highly rely in experimentation in order to accomplish their objectives. However, the nature of experimentation in both cases is absolutely different. While scientists seek to understand reality by uncovering casual relationships and use experimentation to falsify previous hypothesis, the innovator experiments are aimed to understand if the product or service works in a certain context, if it is worth enough for customers to pay and how much or to grab any idea that could help to improve the product.

Living Labs provide and innovation arena, a risk free area, for experimentation where innovation trials can develop. Its dynamics is succinctly captured by the common expression "try it, fix it", meaning fail fast, try again and learn something in the process.

Developing an initial demand

New products cannot be successful without a user community eager to try and use this first version many times full of flaws, lacking important functionalities and with some or sometimes many technical glitches. This initial demand is generated by involving either public organizations (health care and education are mostly public services in Spain) or corporations in the project. Therefore, they act as market creators.

In this paper, all cases but one (Industrial Ring) rely on public procurement to ensure this demand. Industrial ring relies on the willingness of the big corporations involved in the project to go forward with it.

This initial demand is thus generated by involving either public organizations (health care and education are mostly public services in Spain) or corporations in the project. Therefore, they act as market creators.

It is important to note that this process can be of considerable size. In the case of Teleictus for example the service is, at the moment of the writing, being deployed to the whole network of Catalan hospitals.

5. Discussion and Conclusion

In this paper we described with the help of four cases how a new type of intermediary: Living Labs organizations, manage to close the gap between research and innovation.

They accomplish that with the help of two mechanisms: by bridging between mid and low level of knowledge involving users who possess it and by creating an innovation area where experimentation, understood as a fast sequence of trial and error exercises, becomes possible.

However, under the description of theses mechanisms we can glimpse the underlying need of marrying high-mid level of knowledge that is becoming progressively global and readily available with mid-low level knowledge that in many cases remains local. And we can also indicate that this marriage probably materialize better in local agglomerations of industries, academia and research institutions a.k.a. clusters that nowadays are better described as hubs in a network where geographical distance is although still important, far from determinant.

Is in this context where Living Lab organizations make sense filling a need for connecting and orchestrating small innovation sub-networks where users play this dual role of providers of mid-low level of knowledge and therefore sources of innovation and at the same time, innovation enablers because of their willingness to try and use innovative and many times flawed solutions, allowing that way the existence of a next, less imperfect, generation.

However, before finalizing this work a caveat has to be raised. Living Labs is probably better portrayed as a fuzzy, ill-defined concept rather than one where coincidence in meanings and methodologies can be easily found. This fact alone prevents the generalization of the conclusions, at least as characterizing the majority or Living Labs organizations or trials. However, the insights remain valuable and its contribution worth in terms of best cases that could help in modeling practices and shaping policies.

Arriving to that point, the reader will have probably noted a number of similarities between the cases described and the ways of acting that we find in highflying start-ups.

This coincidence is not casual, they are nevertheless confronted with the same type of problems and difficulties and although in one case an individualistic approach is used while Living Labs favor a collaborative one, both approaches have similar objectives.

What we have been describing in this paper is the rise or transformation (depending on the case) of a new type of intermediary in the innovation process, one that while building on the previous know how, tries to adapt to the new circumstances of the innovation landscape. Globalization has made knowledge, even highly specialized one, readily available and to some extent, easy to trade. High level knowledge availability is therefore no longer being regarded as the single most important problem in innovation.

On the other hand, the expansion of technology and the raise of new business models largely enlarged the space of solutions that innovators have to deal with. The problem is therefore more one of fit: finding the right combination of factors that fits a certain context at economic, technological and user experience levels.

Therefore, finding the right fit is increasingly replacing finding the right technology as the key concern of innovation.

As we have shown in this article, there is evidence that Living Labs can successfully address the gap between research and innovation. Although this approach is probably far from a universal solution, it certainly is one that could help in updating technological intermediaries and methodologies to the problems raised by the changing face of innovation.

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