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Innovation is created by humans, not by systems. An exploration of user involvement in Living Labs: user motivation versus Lead User criteria. In *5th ENoLL Living Lab Summer School 2014*. European Network of Living Labs.

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Innovation is created by humans, not by systems.

An exploration of user involvement in Living Labs: user motivation versus Lead User criteria.

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Abstract

The past few years companies have become more interested in involving users during the production process of their products. On the other hand, a group of users started to innovate on their own. Users also became interested in becoming part of the production processes themselves. Certain users experience certain needs earlier than others and they enjoy finding solutions for these needs. They are called Lead Users (von Hippel, 2005). Living Labs are one possibility for users to realize this interest to innovate. iLab.o, the Living Lab division of iMinds, has been organizing Living Lab research since 2009. To get a better view on the motivations of this panel, we analyzed the behavior of the involved users from September 2009 to December 2013. We tried to detect Lead Users, but it is not obvious to define people as Lead Users because of the different used definitions. Instead, we divided this panel into three types of users based on the intensity of their involvement: passive, sleeping and active users. A small group of users is extremely active and are been defined as “alpha users”. Based on interviews with these alpha users in November and December 2013, a better view on their motivations to keep participating in Living Lab research was made. In this paper we focus on the participation of these different user types in one research phase type within Living Lab research, more specifically co-creation sessions. By means of a comparative case study, we tried to get a better understanding of the behavior of the different user types. It became clear that in order to keep the panel involved it is important to focus on community building.

Key words: Living Lab Research, alpha users, community building, co-creation, user motivations

1. Introduction

The fast pace of technological changes, globalization and an increased access to knowledge has induced more and more users to start innovating on their own. On the other hand, companies started to look for users to contribute to the production process of their (new) products and services as well (Bogers et al., 2010). In addition, research has indicated that different kinds of users have different kinds of needs. People generally have a higher willingness to pay for a product or service which perfectly satisfies their personal needs (Franke & Piller, 2004). Wind & Rangaswamy (2001) propose customerization as the next stage of evolution of mass customization. With customerization they mean a buyer-centric company strategy that combines mass customization with customized marketing. Thanks to the growth of Internet and related technologies, many leading companies (e.g. Dell) are beginning to deploy customerization on a large scale. To develop such customized products or services, it is interesting for users to participate in the innovation process by giving them the possibility to adapt products themselves (Franke & von Hippel, 2003).

One possibility for users to contribute to an innovation and for companies to involve users during their development phase, is Living Lab research. Living Labs are a human-centric research and development approach in which IT-systems are co-created, tested, and evaluated in the users' own private context. The Living Lab phenomenon can be viewed in two ways, as an environment, and, as an approach (Ståhlbröst, 2008). The Living Lab approach is a framework that introduces new ways of managing innovation processes. The underlying idea is that people's ideas, experiences, and knowledge, as well as their daily needs of support from products, services, or applications, should be the starting point in innovation (Bergvall-Kareborn & Ståhlbröst, 2009). The Living Lab approach is also a form of Open Innovation, because technology can be developed and tested in a physical or virtual real-life context, and users are important informants and co-creators in the tests (Kusiak, 2007).

Therefore, Living Labs are user-centric. This means that user involvement can be seen as a critical characteristic of Living Lab research. Not only are users empowered by Living Labs (Veeckman et al., 2013), Living Labs are dependent of the involvement and motivation of their panel. It is not convenient for Living Lab research to motivate possible end-users to take part in their research activities (Logghe et al., 2014) and to retain them. Few authors have focused on motivations for participants to become part of Living Lab research. Furthermore, there is not much literature on how to keep users motivated to be part of a Living Lab. This paper aims to shed light on user involvement through research on their motivation to remain part of a Living Lab compared to the community efforts which the studied Living Lab took.

2. Current understandings on user involvement and motivations

2.1. Innovation in Living Labs: a user-centred approach

As stated by Thomke & Von Hippel (2002), users are becoming the source of innovations more often than the manufacturers of technology themselves. According to these authors, one of the basic problems in product development is that the user/customer need has to be understood by the developer, who possesses knowledge about appropriate possibilities given by enabling technology. The process of translating these needs to the developer is complex. The developer normally responds with concept models or prototypes to solve the user/customer needs until they are satisfied. A Living Lab can be a way to already involve users during the development phase, so developers can interact with their potential customers before their product is produced. Living Lab research provides a platform which brings users, technology and business into an open innovative development process, that establishes real life environments (Niitamo et al., 2006). Living Labs are being set-up in an increasing number of application domains such as eHealth, Ambient Assisted Living, eInclusion, eTransportation, eGovernment, Smart City, ICT for Energy, and ICT for Environment (Pallot et al. 2010).

William Mitchell from MIT identifies several impacts and benefits from Living Labs. According to him, the first noticeable impact of a Living Lab is the integration of users into the development process. In this way, a highly reliable market evaluation can be ensured. The second impact is the reduction of technology and business risks. The third benefit is that a Living Lab can be beneficial to an SME, micro-organizations and start-ups, since they can share resources without so much venture capital. Finally, the fourth benefit is that Living Lab research gives large companies access to a broader base of ideas (Pallot et al., 2010).

According to Schumacher & Feurstein (2007), the participation of potential customers and of all other stakeholders along the value-chain, can be seen as the foremost required element for the successful operation of a Living Lab. The ability to interact with users in their private environment is what distinguishes the Living Lab approach from other supplier-customer partnerships, or previously seen cross-disciplinary approaches (Ballon et al., 2005). In fact, Living Labs provide potential users to get involved across the entire life span of a development project (Ogonowski et al., 2013). As Bergvall-Kareborn, Holst & Stahlbrost (2009) pointed out, it is important to involve users during the idea generation stage. The user ideas can function as inspiration for new concepts, being a catalyst which helps professional developers to think outside the box. For these reasons it is important to find out why users become part of a Living Lab and how they can be motivated to keep participating in Living Lab research.

2.2. Motivation for users to become part of Living Lab research

Current understandings on user motivations to participate in innovation processes are limited, but we can rely on findings on motivation for crowdfunding projects and participating in F/OSS projects. Studies on motivations to support crowdfunding projects show that trust is important and that individuals are mainly driven by willingness to help, to support a good cause or to be part of a project realization (Berglin & Strandberg, 2013). Furthermore, almost half of the crowd funders have a personal connection with the project and many crowd funders also claim to be a

fan of the project founders. The emotional feeling of enjoyment is also a significant driver of the intention to invest. Academic theorizing on individual motivations for participating in F/OSS projects has stated that external motivations in the form of extrinsic benefits (e.g.; better jobs, career advancement) are the main drivers of effort. Lakhani & Wolf (2013) find in contrast that enjoyment-based intrinsic motivation, how creative a person feels when working on the project, is the strongest and most pervasive driver.

We can also derive information from literature on motivations to become part of communities which are hosted by companies or institutions. These studies show that end-users are mainly driven by their willingness to help, to support a good cause and to be part of a project realization. The members of these business communities are often hobbyists or people who are looking for recognition by the hosting company or institution (Jeppesen & Frederiksen, 2006). Other authors, including Füller et al. (2006), focus on the importance of interest in the innovation activity and curiosity as the main motives for consumers to be prepared to participate in new product development (NPD). The traditional NPD model, in which companies are exclusively responsible for coming up with new product ideas and for deciding which products should ultimately be marketed, is increasingly being challenged by innovation management academics and practitioners alike. Customer empowerment thus constitutes a promising positioning strategy that managers can pursue to create a competitive advantage in the marketplace (Fuchs & Schreier, 2011).

In literature on crowdsourcing, some of the main drivers to participate have an idealistic nature. Other motivations to support crowdsourcing projects are concerns of the user on his or her career (Hann et al., 2002) and also to become part of the construction of a meaningful product (Chandler & Kapelner, 2013). While these intrinsic motivations seem to be very important for participants in crowdsourcing projects (Kaufman, Veit & Schultz, 2011), Rogstadius et al. (2011) argue that there also exists interaction between intrinsic and extrinsic motivations, for instance a direct or indirect monetary compensation or recognition by others.

The main problem with this current academic literature consists of the fact that there are many reasons why users innovate, but these do not fit within one single theory. For this reason it can be useful to consult the end-users themselves to find out why they like being part of an innovation process. More specifically, in this paper we will study the motivations of users who participate in Living Lab research from an exploratory, bottom-up perspective.

2.3. Towards community building

As the involvement of the users into the creation process is one of the most interesting aspects of Living Labs (Eriksson et al., 2005), it is important to understand what user involvement means. Following the definition of Xu et al. user involvement can be described, as “a determinant of the level of participation and the degree of engagement to a task or object of a person” (2009, p. 152). User involvement can be determined by two primary sources, which were investigated by Xu, Jones & Shao (2009), namely motivations and community factors. Motivations, which encourage the user to participate in Living Lab research, are already discussed above, so the focus in this part will be on community factors. Users who participate in

a Living Lab are part of a community, in particular they belong to “innovation intermediary communities”. This means that users can participate in innovation activities hosted by a neutral party. Those users mostly don’t know the company that drives the innovation process and they cooperate as private participants in their spare time. According to Ståhlbröst & Bergvall-Kareborn (2011) it is not sufficient to merely implement an innovation community in an organization to make a user innovation approach successful. It is important to take the user motivations to be part of this community into account. Wenger (2000) suggests to look at the following elements when designing a community:

- **Events:** As a community, you have to decide about the type of activities and the rhythm of these events.
- **Leadership:** Who takes the crucial role of “community coordinator”? Veeckman et al. (2013) share this view. They conclude that Living Lab research not only needs a standard set of users but also require a strong community support. This will enhance the efficiency and knowledge of the Living Lab. A study of Ogonowski et al. (2013) pointed out that not only is there a need of strong leadership, they also state that it is important to communicate informally with the project staff and to let the participants get to know you better so you can build up trust and the feeling that researchers are also ordinary people.
- **Connectivity:** There must be connectivity among people through multiple media. Participants want to know everyone within the community (Stahlbröst, et al., 2013). The same conclusion was made by Ogonowski et al. (2013), according to them participants want to know why other participants cooperate and how they use the technologies.
- **Membership:** In this light, Stahlbröst et al. (2013) discovered that participants mainly look for groups and individuals where they can identify themselves with. They want to feel “*part of the tribe*”.
- **Learning projects:** The community has to take its responsibility for a learning agenda. Panel members need to be informed and get continuous feedback by the Living Lab researchers (Ogonowski & Hess, 2010).
- **Artifacts:** The community needs its own products such as documents, tools, stories, symbols, websites,...

We can conclude that all six determinants are important for a good working community to remain participating in Living Lab activities. User motivations, as well as user communities are important factors which determine the level of user involvement. It is the task of the community coordinator to take all this into account while installing a Living Lab project because user involvement is a critical characteristic of a Living Lab.

3. Methodologies

3.1. Division of the panel

To get a solid understanding of the users within the iLab.o test panel, the behaviour of 19.403 respondents was analysed within the time frame from 2010 to 2013. In total, X Living Lab projects took place during this period with a total of XX research activities in which panel members could participate. According to the frequency of their Living Lab participation, the panel members were divided in three groups: active, sleeping and passive panel members. Every research project consists of multiple phases. The frequency of participations is the

number of research phases in which the user took part. This can be different phases in one project, or different phases in different projects or a mixture of these options.

Passive panel members are defined as people who participated in only one research phase of one Living Lab research project. There are 14.929 individuals who were part of one research phase for a certain research. When we look at the types of research phases the passive panel members typically engage in, 14.801(99.14%) filled out one survey.

Sleeping panel members are individuals who participated in several research phases, but not on a regular basis. Mostly, these users are no longer participating. We define them as individuals who participated in 2 to 5 research phases. The three Living Labs together consist of 4.385 sleeping panel members (22.6%). These participants are mostly active within a single Living Lab and within a single research project. In terms of the terminology of Schuurman & De Marez (2012) these users can be labelled as ‘defectors’. This type holds opportunities to identify barriers that prevent them from further participation and to look for drivers to re-activate them.

Active panel members are people who participated in at least six research phases. 217 of the 19.403 panel members can be defined as active users (1.1%). They are active in different research projects, but often in a single Living Lab only. This type of users fills out surveys and takes part in co-creation sessions. 48 of the 217 active users took part in more than 10 research phases. We define them as *alpha users* (0.25%). Within this group of users we noticed a high activity within a single Living Lab, supplemented by some participation in different research phases of the other Living Labs. The maximum number of participations by one alpha user is 14.

Type of user	Number of members
Passive panel members	12.521 (62,4%)
Sleeping panel members	6.686 (33,3%)
Active panel members	686 (3,4%)
Alpha users	166 (0,8%)

Table 1 A division of the iLab.o panel into different user types

3.2. Interviews with alpha users

As a second part of this research, 15 of the identified alpha users were interviewed to find out their motives for their multiple participation in Living Lab projects. These interviews were conducted between November and December 2013. To compare the alpha users with the broader panel, the motivations from a comparative case study of the regular users (Baccarne et al., 2013) were used as a guidance for the interviews. The in-depth interviews demonstrate that personal interest (94%) is the most common motivation for alpha users to participate in Living Lab research, followed by learning (78%) and first contact with innovation (73%). These motivations differ from the most important motivations of ‘regular’ users. Only personal interest is an important motivation for both regular and alpha users.

A possible explanation for the difference between motivations of ‘regular’ and alpha users is the fact that 10 alpha users are employed in an IT or communication related sector. This explains why personal interest (94%) is such an important motivation for alpha users. The users want to learn about innovations (learning: 78%) through Living Lab participation and enrich their personal interest in this way. Also, perhaps they are more curious for IT-related innovations because of their jobs. This can also count for the high score (73%) on the motivation to be the first to get to know an innovation as a reason to participate. It seems like the two main

motivations for the broader panel are more socially inspired (collaboration and solving challenges), while the reasons for alpha users to participate (personal interest, learning and first contact with innovation) are mainly for self-interest, and have a rather individualistic nature.

Besides the difference in most important motivations to participate in Living Lab research, alpha users also expect a financial or material reward more often (48% of the alpha users compared to 39% of the 'regular' users). However, according to the interviewed alpha users, it is more important to give their opinion and being heard. The ideal reward for these users is receiving the results of the research phase they participated in and a clear overview of the direct adaptations which were made because of the user input. In other words, the main motivations for alpha users to participate in Living Lab research are also of intrinsic nature but based on a personal non material benefits.

Motivation	Interviews alpha users (n=15)	Comparative case study (n=728)
Personal interest	94%	78%
Learning	78%	52%
First contact with innovation	73%	69%
Curiosity	72%	57%
Influence on the innovation	67%	43%
Contribute to society	64%	58%
Fun	64%	41%
Collaboration with others	63%	83%
Solving challenges	57%	81%
Feeling part of a community	52%	55%
Use of skills	51%	54%
Financial or material reward	48%	35%
Expanding the social network	48%	39%
Expected professional advantage	40%	37%
Doing friends a favour	38%	26%
Duty	36%	3%
Peer influence	16%	14%

Table 2 A comparison between the motivations of normal and alpha users to participate in Living Lab research

3.3. Comparative case study

The fourth step in this research is the comparison of the behavior of panel members of the iLab.o test panel regarding co-creation sessions. The data for the comparative case study were collected from three different Living Labs within iLab.o: (1) the Flemish Living Lab Platform¹, (2) Mediatuin Living Lab² and (3) LeYLab³.

¹ The Flemish Living Lab Platform (<http://vlaamsproeftuinplatform.be/en>) is a panel-based Living Lab which was started in October 2010, to support the development of innovative information, communication and entertainment (ICE) products and services, focusing on three domains: Smart Cities, Smart Grids and Smart Media.

² Mediatuin Living Lab (<http://mediatuin.be/>) is a panel-based Living Lab focusing on the optimization, co-creation and validation of media and ICT innovations.

³ LeYLab (<http://www.leylab.be/english>) is a Living Lab which offered fibre internet access to a panel of households and organizations in two geographically restricted areas in the City of Kortrijk. The goal of LeYLab is to stimulate innovation and to measure the relevance of new services for the personal lifestyle and living environment of the test users.

According to the different user types pointed out above, a breakdown was made of the participants of different co-creation sessions. Eight cases, carried out by iLab.o, were selected. They were selected based on the similarity in development, recruitment strategy, remuneration and community efforts. The co-creation sessions of those ten cases were held during January and June 2014. A comparison was made between the panel members who registered for the session and the panel members who were actually present at the co-creation session.

We introduced an extra user type called “Other”. These participants are so-called *friendly users*. This group consists of colleagues, friends and family who were invited to participate, mostly a few days before the session. It is important to differentiate this group because they have other motivations than the regular panel members.

No-shows included	All Things Talk (n=30)	CTP (n=15)	Djubble (n= 13)	For Good (n=8)	Media ID (n=18)	Smart Seats (n=11)	iCinema (n=9)	Twickey (n=6)	neo Scores (n=18)	TOTAL (n=128)
Passive	0%	0%	8%	13%	6%	0%	33%	0%	33%	10%
Sleeping	13%	53%	8%	38%	33%	18%	22%	17%	39%	27%
Active	33%	20%	8%	13%	22%	9%	0%	33%	0%	15%
Alfa	40%	20%	69%	38%	39%	45%	22%	33%	11%	35%
Other	13%	7%	8%	0%	0%	27%	22%	17%	17%	12%
	100%	100%	100%	100%	100%	100%	99%	100%	100%	100%

Table 3a A comparison of the participation degree at co-creation sessions between passive, sleeping, active and alfa panel members over different cases: Before the co-creation sessions

Without no-shows	All Things Talk (n=21)	CTP (n=10)	Djubble (n=11)	For Good (n=8)	Media ID (n=13)	Smart Seats (n=11)	iCinema (n=9)	Twickey (n=6)	neo Scores (n=15)	TOTAL (n=104)
Passive	0%	0%	9%	13%	8%	0%	33%	0%	33%	11%
Sleeping	14%	60%	9%	38%	15%	18%	22%	17%	40%	26%
Active	29%	10%	0%	13%	23%	9%	0%	33%	0%	13%
Alpha	43%	30%	82%	38%	54%	45%	22%	33%	13%	40%
Other	14%	0%	0%	0%	0%	27%	22%	17%	13%	10%
	100%	100%	100%	100%	100%	100%	99%	100%	100%	100%

Table 3b A comparison of the participation degree at co-creation sessions between passive, sleeping, active and alpha panel members over different cases: After the co-creation sessions

This analysis shows that alpha users (35%) are in 6 out of 9 cases, the most participating user type in co-creation sessions. Followed by sleeping panel members (27%), active panel members (15%), other (12%) and passive members (10%). Taking into account the presence of panel members at the co-creation session itself, the situation slightly changes. The alpha-users present 40% of the group, followed by the sleeping panel members (26%), active panel members (13%), passive members (11%) and others (10%). We can conclude that alpha-users

are not only the biggest group of participants in co-creation sessions, they are also the group that is less inclined to not show up at the session, together with the passive members.

4. Conclusions

Products that better satisfy the different needs of users are preferred by consumers, and people are willing to pay more for these goods (Franke & Piller, 2004). For this reason it is important to involve users in the innovation process by giving them the possibility to adapt products themselves (Franke & von Hippel, 2003). Users nowadays have more opportunities to become involved in the research and development process of innovation (Bogers et al., 2010), and it was suggested that their motivation to participate are mostly intrinsic by nature (Lakhani & Wolf, 2005). However, we have discovered that only a small number of users –which we label ‘alpha users’- is willing and motivated to keep on actively participating in different research projects and during multiple research phases.

To supplement the publications on the concept and theory of Lead Users, we searched for motivations and characteristics of participating users. We discovered that the alpha users were not necessarily Lead Users according to the classic Lead User definition, i.e. having unfulfilled needs and a high motivation to find a solution for these needs, but they rather showed high interest in the innovation domain, had a high usage expertise with current solutions and/or had a high technical knowledge within the innovation domain. In terms of the typology of Schuurman & De Marez (2012), the frequently participating users were more likely to be extreme users or expert users than classic Lead Users or user innovators. This finding can be interpreted in two ways: or within the studied Living Labs, research and recruitment processes are not able to detect and identify Lead Users, which results in other motivated users to participate in co-creation sessions, or there are Lead Users among the inactive and sleeping panel members, but they are not motivated to participate in the co-creation sessions.

Based on motivations of alpha-users, we can conclude that alpha-users are more engaged to participate in research phases, online as well as offline, that demand more effort, like co-creation sessions. Those sessions are time-intensive (a session lasts minimum 2h) and the user needs to move themselves to the place where the co-creation session is held. A possibility why alpha-users are more eager to put effort in a research phase is their motivation. Alpha-users are more motivated by personal benefits and are rather individually oriented. The regular users seem to participate for social aspects of Living Lab projects (Logghe, Baccarne & Schuurman, 2013). In this light, we can conclude that it's very important to invest in community building and to direct our research messages to all panel members to ensure they stay motivated and involved during the Living Lab project.

Future research should dig deeper into these preliminary findings. On the one hand, other ways could be explored to identify and engage classic Lead Users and user innovators for each project individually. This would mean an extension of the current panel for each new case. However, because in general the innovating companies from the studied use-cases appeared to be satisfied with the outcomes of the co-creation sessions, it might be equally worthwhile to further explore user motivation as primary recruitment criterion. This would mean taking actions

to extend the number of active and alpha panel members, i.e. looking for more generally interested users for innovation participation.

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