Investigating User Typologies and their Relevance within a Living Lab-Research Approach for ICT-Innovation

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Abstract
Our contemporary ICT-environment is characterized by an innovation spiral, resulting in a lot of innovations as well as failures. Attempts to cope with the inherent uncertainty and increasing complexity in the field of ICT-innovation have influenced the rise of new, user-driven and open innovation-approaches. We contend that the Living Lab-approach can be seen as a systemic, methodological instrument incorporating a number of crucial insights linked to advances in the innovation management and user research-literature, especially the increased importance of the user. Currently however, the literature dealing with the ‘user’ as key stakeholder in the innovation process is still rather fragmented.

The main contribution of this paper is that it provides a review of a selection of user typologies that might play an important role for ICT-innovation. Moreover, the relevance of these typologies within a Living Lab-research approach and the implications of the similarities and differences between them are discussed.

1 Introduction
Within our contemporary ICT-environment, companies have ended up in the so-called ‘innovation spiral’ [42]. Because of a far-reaching globalization, growing competition and convergence, more and more innovations come to the market. At the same time, more and more of these innovations fail to reach the mass market [52]. Consumers perceive these (often merely incremental) innovations as less innovative and are less willing to adopt as they often have a ‘too much, too soon’-feeling [6],[7]. This makes the need for more user-driven and user-led innovation strategies even more apparent amongst companies [55]. In order to stand out and attract attention, they need to take users’ expectations, experiences and needs into account [42].

This new innovation paradigm has induced scholars to look for alterations and new approaches in the innovation process. Norman pleads for a human-centered product development which takes into account the user’s experience and which involves the user in the product development [39]. Haddon & Paul extend the notion of user involvement and question the assumptions about the ‘average user’. They believe in a ‘Design for All’-approach [22].

In practice however, ‘the user’ is all too often seen as a supposedly well-known archetype. We believe this is a clear case of reductionism. Due to this simplification, companies are unable to grasp the complex interactions between products, users (and their different roles) and the multiple contexts in which these products are used. In this paper, it is therefore argued that there are different and possible user typologies that should be taken into account when looking for a successful way of involving the user within the innovation process.

However, an important question remains: how can this user involvement best be put in practice? Edelmann sees a triple play of business – users – technology necessary to optimize the innovation process [11]. Hoogma & Schot argue that user innovativeness depends on the learning environment that is created in the innovation process, so they add the environment in which the user interacts with the innovation as an important factor [23]. Slater et al. argue for the blending of insights from market strategy with those from innovation management in order to come to successful innovations [52]. We will contend that the ‘blending’ of these insights has resulted in the Living Lab-concept, a state-of-the-art research methodology aimed at involving the users within the...
innovation process, taking into account most of the listed issues.

Within this paper, we aim to present a literature review, which discusses a number of relevant user typologies that might play or have already played an important role within the process of ICT-innovation. This should stimulate the discussion regarding which user to use at what stage within ICT-innovation in general and within Living Lab-settings in particular. The findings within this paper should also function as input for empirical research testing and validating the insights regarding the proposed typologies and their relevance within Living Lab-research.

The characteristics of the Living Lab-concept are introduced in the following section. Further, the third section of the paper lists a selection of different user typologies that are identified in literature on ICT-innovation processes. Some of these typologies are already backed up by a large theoretical foundation, while others are fairly new. In the discussion, we evaluate their (possible) role(s) within the innovation process and look for differences and similarities between these typologies, reflecting on how they could be incorporated within a Living Lab-research setting.

2 Living Labs

Frissen & van Lieshout argue that many ICT-innovations fail because they do not get incorporated into the social and cultural dynamics of everyday life [18]. For this integration within everyday practices and routines, they use the term ‘double articulation’. Research on ICT-adoption shows that users tend to reconstruct the innovation in terms of their current behavior, but that once the innovation finds its place in everyday practices and routines, the specific characteristics of ICT enable the potential to bring about substantial changes into those specific routines and practices. This finding suggests research into this ‘double articulation’ in order to reduce the number of failed ICT-innovations.

A possible research method comes under the form of the so-called ‘Living Lab’-concept [55]. Eriksson et al. endorse to this viewpoint by stating that Living Labs could function as a means to meet the innovation challenges of ICT-providers [13]. The term ‘Living Lab’ was introduced by Mitchell and is used to describe an experimental platform where the user is studied in his or her everyday habitat [38]. It thus functions as an eco-system where users are subjected to a combination of research methodologies while they test new technologies that are still in development in their natural environment. This means that quantitative as well as qualitative research methods, with the focus on accessing the ideas and knowledge of the users regarding the tested technology, are being used within a Living Lab-setting [14].

These Living Labs are mostly established through collaboration of private as well as public research partners and can be used with multiple iterations throughout the innovation process [13]. This links Living Labs to the ‘open innovation’ perspective from innovation management literature, where innovation is seen as a non-linear and open process with cooperation and collaboration between different stakeholders [5]. In a Living Lab-setting, users are involved throughout the multiple stadia of the new product or service development [46]. In ideal circumstances, this translates into a close collaboration between designers and researchers, improving the innovativeness of the product or service [3].

By means of a large literature review, Følstad identified nine characteristics for Living Labs in the context of ICT-innovation [19].

1. Research into the usage context
2. Discover unexpected ICT-uses and new service opportunities
3. Co-creation with the users
4. Evaluation of new ICT-solutions by users
5. Technical testing of the innovation in a realistic context
6. Familiar usage context for the users
7. Experience and experiment in a real-world context
8. Medium- or long-term user studies
9. Large scale user studies

However, Følstad also found that only four of these characteristics occurred in all of the studied Living Lab-approaches: discover unexpected ICT-uses and new service opportunities, evaluation of new ICT-solutions by users, familiar usage context for the users and medium- or long-term user studies. This proves that there still exists a certain conceptual ambiguity with regards to the concrete application of the Living Lab-concept [50].

In order to stimulate Living Lab-research and further develop this research framework, several international organizations representing several industrial ICT Living Lab initiatives were launched. Some examples are the European Network of Living Labs (ENoLL), which was founded under the Finnish EU-presidency in 2006 and the Living Labs Europe-initiative (cf. [12]). These examples illustrate that the Living Lab-concept is strongly supported at the European policy-level as they are also tightly linked to
the ‘Strengthening innovation and investment in ICT research’-pillar of i2010, which is the EU policy framework for the information society and media [40].

Levén & Holmström developed a model of integration within Living Lab-research, including three stakeholders [28]: researchers, end-users and developers. The researcher is focused on the production of new knowledge. He contributes to the Living Lab by knowledge or studies of technologies or methodologies, relevant to the open innovation process. In exchange for his contribution the researcher will gain from the Living Lab-approach in terms of cases and information available through the cooperation with the other actors. The developer is a stakeholder that aims to develop products or services able to fulfill the end-user needs. He is searching for information and knowledge about the needs and opportunities important to the end-user, but his primary focus is his own market and business opportunities. He contributes to the stakeholders with new products, services and solutions, but also with important and competent management in the innovation process as a whole. The user is a stakeholder looking for better ways to satisfy his needs and better ways to handle his current situation. He can contribute by expressing his needs, expectations and use experiences as end-user of the services or products resulting from the innovation system.

Stahlbrost & Bergvall-Kareborn extend this to four stakeholders by substituting developer by ‘companies’ and ‘authorities’ [55]. As the authorities function mostly as subsidizer of Living Lab-research, we propose to call them ‘facilitator’, whereas the companies can be considered the ‘developer’. These stakeholder-models for Living Labs once more stress the close connection of the Living Lab-concept with the open innovation paradigm, as it demonstrates the symbiotic nature of the stakeholder roles within a Living Lab-approach. This is also reflected in the work of Almirall who identifies Living Labs as the first attempt to organize and structure user participation in real-life environments according to the open innovation paradigm [1]. In the next section, we will focus on different typologies of the end-user as a stakeholder within the innovation process in a Living Lab-context.

3 User typologies

Existing businesses divide the user into business users and consumers. In reality, users have one identity that consists of multiple roles in different environments, making that needs and requirements are overlapping in many areas such as work, home and public [11]. Lugano also suggests that the user conceptualization within innovation processes tends to be rather uni-dimensional and pleads for a more complete user conceptualization [31]. For instance, bad user conceptualization has led to a number of mobile applications that do not fit real user needs or practices, leading to under use of services [25]. In the next section, we will examine a selection of different user typologies, related to different theoretical insights, type of innovation and use context, that might be useful when recruiting users to fulfill different user roles within the innovation process in a Living Lab-setting.

The first three typologies, adoption diffusion segments, use diffusion segments and Lead Users, are already grounded by a large theoretical basis and have already proved useful within ICT-innovation. Especially the Lead User-concept has already been mentioned and used very often within the context of open innovation and Living Labs. The remaining selection of user typologies has a much smaller theoretical basis. However, we will contend that these concepts might play a role within ICT-innovation in a Living Lab-context.

3.1 Adoption Diffusion Segments

The first major paradigm to study innovation is the ‘adoption diffusion’-perspective with Rogers as the founding father. According to this framework, the diffusion of innovations in a social system always follows a bell-shaped normal distribution in which innovators, early adopters, early majority, late majority and laggards can successively be distinguished with fixed segment sizes and based on their ‘speed of adoption’. The central premise of this process of adoption and diffusion is that these different adopter categories each show their own unique characteristics [45].

Innovators are ‘technology enthusiasts’ who appreciate innovation for its own sake. Early adopters are also called ‘visionaries’. They look to adopt and use an innovation in order to achieve a revolutionary improvement. The early majority or ‘pragmatists’ look for evolutionary changes instead of revolutionary changes, aimed at enhancing their productivity. Late majority are ‘conservatives’: risk averse, technology shy and price sensitive. The laggards, or ‘skeptics’, only want to maintain the status quo [52].

Within the adoption diffusion-literature, these five categories are sometimes merged into a dichotomy of ‘earlier adopters’ versus ‘later adopters’ [60]. The earlier adopters include the innovators and the early adopters, while the later adopters include early majority, late majority and laggards. The rationale behind this is that ‘crossing the chasm’ between early adopters and early majority is one of the most
important obstacles for innovations [35]. The differences between the five segments are sometimes very small, while a dichotomous approach allows for a clearer profiling [7].

3.2 Use Diffusion Segments

Criticism regarding the supposed technological determinism of the adoption diffusion-perspective and the lack of attention for the eventual usage of the innovation [44] have led to the rise of a new paradigm that stresses the shaping of an ICT-innovation by social factors such as class, gender, culture or lifestyle [21],[54],[57]. This process of integration within everyday’s context is also known as ‘domestication’ [24]. The study of the ‘use diffusion’ was initially based on a social deterministic point of view and mostly limited itself to descriptive qualitative research. However, Shih & Venkatesh propose a user categorization based on quantitative research into use diffusion [51]. The categorization relies on two parameters: the variety of use, which refers to the different ways in which the innovation is used, and the rate of use, which refers to the time that is spent using the innovation.

This results in four user categories: limited users, non-specialized users, specialized users and intense users. Limited users do not spend much time using the innovation and also show a limited range of use variation. Non-specialized users can also be called ‘experimental users’, as they show a high variety of use, but only for a limited amount of time. Specialized users spend much time using the innovation, but only for a limited variety of tasks or goals. Intense users use the innovation for a wide variety of applications and spend much time doing this. It is suggested that users can shift between these categories over time.

3.3 Lead Users

The origin of the Lead User-concept can be traced back to von Hippel. He first introduced the customer active paradigm (CAP), which implied that under certain circumstances the user could start innovating himself, as a counterweight to the dominant manufacturer active paradigm (MAP), where the manufacturer generates all innovation by himself [58]. In later works, he extended the CAP to an interaction perspective, introducing the ‘Lead User’-concept [59]. He considered the employment of Lead Users as a counter weight for traditional market research that addresses users at the center of the market. Instead, the Lead User-approach focuses on users from the leading edge of the target market and even from markets facing similar problems in a more extreme form.

According to von Hippel Lead Users display two main characteristics with respect to a novel or enhanced product, process or service: a) Lead Users face needs months or years before they will be general in a marketplace and b) Lead Users expect to benefit significantly by obtaining a solution to these needs [59]. Urban & von Hippel state that Lead Users are especially relevant ‘[w]hen new product needs are evolving rapidly, as in many high technology product categories’ [56]. This makes the LU-concept very useful in the case of ICT-innovation and development. Schreier & Prügl follow von Hippel’s definition and add some characteristics that influence the degree of ‘Lead Userness’: consumer knowledge & use experience, locus of control and innovativeness [48]. They suggest these variables might be used as a proxy to identify Lead Users.

Moreover, as Urban & von Hippel [56] contend, detecting Lead Users can also be a proxy-method to detect user innovations. From this perspective, the similarities and differences between Lead Users and innovators, require further investigation [29]. In this respect, Schreier argues that Lead Users are very likely to be innovating users, but states that they clearly differentiate from the innovators of adoption diffusion [49]. Schoormans & De Bont on the other hand, simply equal Lead Users to innovators, as they see Lead Users as consumers that are expected to be the first users of a new product in ‘their’ market [47]. This view is however challenged by Morrison et al. who see a connection between Lead Users and innovators, but not an equation [36]. They state that ‘[e]mpirical Lead User studies […] tend to also find that Lead Users are early adopters of new products and services.’ [37]. As a result, the LU-concept should be more compatible with the ‘innovators’ from diffusionism.

Schreier et al. take another stance [49]. They think the traditional diffusion curve is not applicable to Lead Users because of significant differences between Lead Users and innovators. Lead Users experience a certain need prior to the development of an innovation to solve this need. This motivates Lead Users to search for a solution themselves. However, when an innovation that meets this specific need enters the market, it is likely that these ‘innovating’ Lead Users will not be innovators in the diffusionist sense, as this specific need is no longer present. This reasoning finds some evidence within innovation literature which sees the desire to gain status as an important motivation for early adoption (see [4], [7], [45]). On the contrary, this motivation is nowhere mentioned in LU-theory.

We can thus conclude that there exist multiple arguments to reject the simple equation between innovators and Lead Users, but also that recent
literature suggests the need for further investigation into the similarities and differences of these categories.

3.4 Pro-Ams & Outlaws

According to Leadbeater & Miller, the developments in the ICT-sector have led to the rise of the so-called ‘Pro-Ams’ [27]. These users are innovative, committed and networked amateurs that work to professional standards. When networked together, these Pro-Ams can have a huge impact on politics, culture, economics and development, and achieve things that before were only possible by large, professional organizations. This type of users especially occurs in the case of software development and gaming. Within the gaming-context, the term ‘modding’ is also coined (see e.g. [53]).

Outlaw users or simply ‘outlaws’ are a special case of Pro-Ams. They use their advanced knowledge of games or other software in order to bypass legal or technical safeguards that prevent users from unsolicited usage of the manufacturer’s product [34]. This leads to what Flowers calls ‘outlaw innovations’: “innovations will emerge from non-cooperative, non-consensual relationships in which the user may be unknown to the supplier and in which there is likely to be no free flow of information between the two parties.” [17].

Outlaws can thus be characterized as Pro-Ams operating (at least partly) in illegality. These outlaws organize themselves in Outlaw Communities, consisting of ‘Elites’ who create the outlaw innovations and ‘Kiddies’ who use the outlaw innovations to exploit the system but who cannot develop these innovations themselves [17],[34].

3.5 Power Users

The ‘Power User’ is a relevant concept in the context of PC-usage and networked ICT-innovations. The term is used for two categories of users. In both instances, the concept is used dichotomously, to discriminate the Power Users from the non-Power Users.

1) A Power User is a PC-user who uses advanced features of programs which are beyond the abilities of regular users, but is not capable of advanced, non-application-oriented tasks such as programming (see e.g. [33]).

2) The second definition of Power Users is situated in the field of education and (E-)learning. It is used to describe young people who learn differently due to an intensified use of ICT [43]. Power Users are advanced users and consumers of ICT that also produce information and new social interaction forms in creative ways through their innovative use of ICT [10]. Through this using, sharing, creating, producing and changing of information, they become multipliers in their own environment [32].

Powers users are also characterized as “early adopters and explorers” of ICT who know more about digital media than parents or teachers [10]. The term ‘Power Users’ is thus reserved for young people who multi-task seamlessly, seek for information to learn what they want to know and satisfy their needs and interests on a just-in-time basis [32]. This second definition of Power Users for the most part coincides with the first definition, although here it is applied exclusively for youngsters.

3.6 Bystanders

Ferneley & Light introduce the concept of the ‘bystander’ with regards to ICT-usage related user typologies [16]. This is a third user-category next to the primary and secondary users [15]. Primary users are intended to interact directly with the technology, while secondary users are consumers of the output of the technology, but do not interact with it directly. Bystanders are those who are exposed to a given technology and its outputs but are not intended to react or respond to this.

This typology is based upon a view which accommodates consideration of human agency, social interpretation and user appropriation as explanations for contradictory outcomes for the use of technology in organizations, something which is not possible within a more technological deterministic viewpoint [16]. They illustrate these three user roles, which are dynamic in nature, by means of three case studies in the field of mobile and ubiquitous computing. However, they suggest that these user roles are also applicable and useful for other ICTs.

4 Discussion

In the previous section, we identified different user roles according to different perspectives on (ICT-) innovation. We will now discuss how these typologies could be applied within the ICT-innovation process in a Living Lab-setting and how they compare to each other. We first comment on the more established user typologies for Living Lab-research: the adoption diffusion segments (ADS), use diffusion segments (UDS) and Lead Users (LU). We then evaluate the possible relevance of the other selected user typologies within a Living Lab-context. This paragraph remains for the most part exploratory. The discussion should generate input for empirical research to evaluate and back up the presented findings.
4.1 ADS, UDS & LU in Living Lab-research

Regarding the adopter segments within the adoption diffusion-paradigm, Moore identified a chasm between the visionaries (early adopters) and the pragmatists (early majority) [35]. A major challenge for all innovations lies in the crossing of this chasm [7]. Gladwell conceptualizes this as an innovation overcoming the ‘tipping point’ in order to reach a larger group of users [20]. It seems that research into the different needs and wants of the visionaries and the pragmatists is necessary in order to come to an innovation that is able to cross the chasm. Main problem is that the adoption diffusion segments of the innovation have to be predicted. This can be achieved by using the Product Specific Adoption Potential (PSAP) scale [7]-[9].

Within a Living Lab-setting, visionaries as well as pragmatists should be included in order to tailor the innovation towards the needs and wants of both groups. The visionaries seem better suited for the earlier stages of the Living Lab, as they are by definition more open to innovation and can better serve as creative input sources. To use Følstad’s terminology (cf. supra), they seem best in place for the ‘co-creation with the users’-stages while the pragmatists should be used in later stages to assess the market potential of the innovation, Følstad’s ‘evaluation of ICT-solutions by users’-stages. Methods such as the PSAP-estimation ([7], cf. supra) can be used to identify the adopter segments and should be used throughout the NPD-process to get an idea of the market potential of the innovation.

The categorization of users based on use diffusion can be used as a constructive way to visualize the market [51]. This way, a segmentation based on use diffusion can also prove to be fruitful during the innovation process. However, a similar problem arises as with the adoption diffusion segments. As the innovation is not yet available, these segments have to be predicted.

A Living Lab-approach can possibly provide a solution here. When an innovation can be used in a Living Lab-setting by a large enough user group, measures regarding usage intensity and usage diversity can be obtained from the Living Lab-participants. This would allow to categorize them into the four given usage diffusion-segments and further segmentation could be applied to describe the differences between the segments. However, in order to make this possible, Følstad’s characteristics 8 (‘medium- or long-term user studies’) and 9 (‘large scale user studies’) should be present within the Living Lab-setting, otherwise an adequate categorization based on use diffusion seems awkward.

The behavior of these different use segments should provide vital information regarding the innovation in development. In earlier stages of the Living Lab-setting, proxy technology assessment (PTA) [41] could be used to identify some users within the different use segments, which could be used later on in the innovation process.

A number of authors have already discussed the involvement of Lead Users in Living Lab-research. In this respect, Eriksson et al. explicitly argue for a better integration of Lead User-theory within Living Lab-approaches [13]. Löh makes a first attempt and sees living labs as an alternative for the classical innovation approach, grounded within three theoretical backgrounds: involving the customer, open innovation and Lead Users [30].

Almirall also pairs living labs with open innovation and Lead Users [1]. He considers user involvement as an emergent process without governance and without any attempt to systematize it and sees ‘Lead Users’ as one of the possible forms of this involvement. Living labs, on the contrary, represent the first attempt to organize and structure user participation in real life environments. In this view, living labs act as facilitators for the massive filtering problem, i.e. selecting the most appropriate partner or the most suitable idea; a problem that companies have to cope with in an environment characterized by ‘open innovation’. Almirall also suggests that Lead Users are more willing to participate within Living Lab-research because they are motivated to be involved [1]. We agree with this statement, but suggest to include other user typologies as well within Living Lab-settings, as they will also provide extra value to the innovation process. Some of these user types are also highly motivated to participate (cf. infra).

Kusiak explicitly mentions the use of Lead Users in two stages of the ICT-innovation process: idea generation and concept evaluation [26]. This coincides with Følstad’s ‘co-creation with the users’- and ‘evaluation of ICT-solutions by users’-stages. Shih & Venkatesh also propose a link between Lead Users and intense users [51]. They found that intense users represent the highest level of use innovativeness and argue that they can thus be linked in many respects to Lead Users. This suggests that the identification of intense users, for which we proposed a methodology (cf. supra), can thus be used as a proxy to detect possible Lead Users.
4.2 Other typologies Pro-Ams, Power Users & Bystanders

Pro-Ams seem to be a relevant user category to include in Living Lab ICT-innovation, especially in the case of software development and gaming. Because of their professional standards, they seem well in place to function as co-creating or co-developing users in Følstad’s ‘co-creation with the users’-stage. As they tend to form and engage in user communities, e.g. for exchanging their own user innovations, this might also reduces the problem of identifying and selecting users to participate within a Living Lab that was already discussed earlier on. On top of this, Pro-Ams possess a certain status because of their activities, which makes them very likely to function as opinion leaders within the eventual adoption diffusion-process when the innovation comes to the market. However, this extends beyond the Living Lab-setting.

Outlaw users create or make use of outlaw innovation. Flowers mentions five possible organizational responses to outlaw innovation [17]. Firms can simply monitor outlaw innovation in order to react or appropriate what they observe. Firms can also adapt outlaw innovations in order to modify or recreate their own innovations. A third response is trying to influence the outlaw users, for instance by stimulating their activities. Firms can also absorb outlaw innovations and/or users by simply integrating them within the company. The final and most drastic response is the attack, which indicates that aggressive action is undertaken against outlaw users and their innovations.

It is argued that outlaw users in some instances conform to the definition of Lead Users [17], and the Elites are by definition innovating users, however outlaw users are always using the innovation in ways that are unintended by the producers of the innovation. They could play a crucial role in the concept testing-phase of Living Lab research (Følstad’s 5th characteristic, ‘technical testing of the innovation’), and they could help to identify (and anticipate to) the emergence of unintended, unexpected (and therefore unpredictable) uses of innovations (Følstad’s 2nd characteristic). As the past has already proven (e.g. in the huge success of SMS, which turned out to be an unexpected killer-application), anticipation can be an important strategic weapon in this respect. However, as outlaw users are mostly involved in (partly) illegal activities, they tend to operate anonymously and are therefore difficult to identify in order to make use of them within an innovation process.

Bae et al. explicitly link Power Users to the ‘tipping point’-concept (cf. supra), but they also equal Power Users to innovators [2]. Because of their advanced usage of ICT, we would rather expect a link with the segments specialized or intense use diffusion segments. Contrary to Pro-Ams, Power Users do not seem suited for the role of co-creator (Følstad’s 3rd characteristic) as they lack the ability to perform advanced, non-application tasks. An evaluator role within a Living Lab-context (Følstad’s 4th characteristic) seems more in place for this user category, especially in the case of networked ICT-innovations.

As the second definition of Power Users suggests, youngsters might be an important factor within the innovation process as they tend to deal with ICT in a different way. This way, it seems appropriate to always include a sample of youngsters within a Living Lab-setting.

Finally, the bystander user role, as described by Fernley & Light, stresses the fact that ICT-innovation can also impact non-users under certain circumstances [16]. It is also argued that user roles can change according to context and modalities of usage. Within the innovation process, possible implications for bystanders could be considered by testing the innovation in a Living Lab-setting. This way, the user roles of primary user, secondary user and bystander can be identified in a real-life environment. To allow for bystanders to play a role in the ICT-innovation process, Følstad’s 7th characteristic ‘experience and experiment in a real-world context’ should definitely be present within the Living Lab-setting.

5 Conclusion

Within this paper, we have argued that more and more companies are adopting a user-centered approach towards ICT-innovation in order to reduce the number of failures and optimize the innovation-process. Within the contemporary ICT-environment, the Living Lab-approach can be seen as the state-of-the-art research methodology incorporating important insights from the advances in innovation management and user research literature. However, literature regarding ‘the user’ within the innovation process provides us with a wide array of different user typologies depending on the type of innovation, the use context and the theoretical approach. We have examined a selection of different user typologies: three already quite established (the adoption diffusion segments, the use diffusion segments and Lead Users) and a few ‘newer’ user typologies (Pro-Ams & Outlaws, Power Users and Bystanders).

It appears that most of them share a lot of common ground and tend to coincide with each other in specific cases. Based on Følstad’s Living Lab-
characteristics, we evaluated the relevance of each of these user typologies for Living Lab-settings. It seems that an incorporation of specific users in specific stages of the Living Lab-process provides significant benefits over simply involving ‘a’ user. Especially the ‘co-creation with users’ and ‘evaluation of new ICT-solutions by users’-stages within a Living Lab-setting seem suited for specific kinds of users. Insight into the different user typologies could also provide solutions for the recruiting and selection of users to participate within Living Labs.

Within this paper, we have contended that the involvement of different types of users, corresponding with distinct user roles, at the various stages of the innovation process could help to yield those insights that are crucial for the success or failure of the innovation. Moreover, we believe that it would enable researchers and companies to gain a deeper understanding of the complex interactions between products, users (and their different roles) and the multiple real-life contexts in which these products are used.

To this end, more empirical research into the coincidence and difference of these typologies should be undertaken, eventually leading to an optimization of the ICT-innovation process and innovations that are better suited to overcome the current challenges posed to ICT-innovations coming to the market. The next step within our research will be the construction of a large scale user survey that makes it possible to identify the different typologies described within this paper, allowing for a segmentation of users so the possible co-occurrence of these roles could be investigated and the propositions made in this paper could be validated empirically.

6 References


