Motivations of hybrid wireless community participants:
a qualitative analysis of Swiss FON members

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Abstract—The development of wireless communities has accelerated with the emergence of firms that incorporate this concept into a commercial business model. This hybrid community approach, where a company supports a community of individuals sharing their access points with each other, shows great promise to reach a global status as shown by the example of FON and the millions of members it has attracted. The key success factor for a community is attaining a critical mass of active members and it is thus vital to understand their motivations and develop suitable incentives to foster their participation. Because existing research is mostly limited to pure communities, this paper intends to study motivations of members in a hybrid community. To explore and understand them, it employs a qualitative approach based on 30 interviews with FON members in Switzerland. Tangible rewards appear to be the biggest motivation: the possibility to get free Internet access from other members is seen as the strongest incentive. Other utilitarian aspects like getting economical hardware or revenue sharing were also mentioned at times. A second strong motivation that emerges is the appeal of the concept of sharing, though members see it with various nuances like a reciprocal exchange, a purely altruistic act, or a way to better use existing infrastructure. Other less frequently cited motivations were utilitarian (to promote free Internet or support alternatives to commercial operators) or related to technical interest and curiosity (to see how it works and experiment). On the other hand, social and intrinsic motivations are weak: members do not really feel part of a community as cooperative aspects are restricted to sharing resources and social interaction is limited. Finally, members are generally aware of potential risks such as security, abuse and legality, but they are not really concerned by them as the presence of a firm supporting the community plays a major role in reassuring members.

Keywords: hybrid wireless communities, adoption, motivations, participation

I. INTRODUCTION

In the last ten years, we witnessed various efforts to offer mobile internet access using different technologies and business models. Surprisingly, these efforts started not with 3G networks from Mobile Network Operators but from a grassroots movement of individuals organizing in wireless communities to provide free wireless Internet access to each other using their private Wi-Fi access points [1]. Nowadays 3G networks are by far the most adopted solution, with more than 535 million users [2], yet wireless communities still are an interesting alternative even if they are less pervasive (the world’s largest Wi-Fi community, FON, claims to have 3 million members and continue to grow rapidly [3]), due to their peculiar and potentially disruptive business model.

While many observers consider wireless communities an interesting but not viable concept, others think that they may “induce a complete shift in Internet communication patterns and form a foundation for the future wireless internet” [4]. Some even envision that with their P2P-like model, wireless communities may bring a revolution in wireless telecom, allowing free wireless Internet access for anyone anywhere [5], especially if technologies like mesh network or multi-hop ad-hoc networks can extend the patchwork of WiFi hotspots to a ubiquitous network [6].

The key challenge, though, is that a community needs to involve a critical mass of members willing to share their resources to be viable [7]. It is hence important to understand why people join and actively contribute to the community. This is relevant to assess the potential and sustainability of such communities and design suitable incentives to improve their appeal.

Many researchers have indeed recognized that this is one of the most critical research issues on wireless communities (cf. literature review below). However, it would appear that existing research mostly focuses on ‘pure’ communities, which are entirely built and operated by members who share their access points with each other in a self-organized way. In reality, there are also ‘hybrid’ communities where a firm supports individual members who share their own access points by offering a technical solution and various incentives in exchange for the right to exploit the network, typically by selling access to non-members, advertising or partnerships.

This distinction is important because the presence of a firm can influence members’ motivations and participation. Moreover, while pure communities struggle to get a critical mass of members (the largest one, NYC Wireless, only has 40’000 users [8]), hybrid communities have grown much more as shown by the expansion of FON, which claims to have more than 3 million members [3]. A plausible reason of this different development is that hybrid communities are more able to motivate members and overcome their concerns by letting the underlying firm offer a proven solution along with an attractive mix of incentives.
As a result, the goal of this paper is to better understand what motivates individuals to join and actively participate in a hybrid wireless community. This paper focuses on the case of FON, which has been selected because it is the largest and most successful case of a hybrid wireless community.

II. LITERATURE REVIEW

A. General motivation theories

Understanding motivations underlying human behavior is a popular theme among researchers in many disciplines and there are many theories that attempt to explain it. Hereafter we briefly illustrate those that are most relevant to our context.

A first popular stream of motivation theories focuses on the determinants of intentional behavior. The Theory of Reasoned Action (TRA) [9] proposes that a person’s intention to behave depends on his attitude towards the behavior (his beliefs about the behavior’s consequences and evaluations of those consequences) and his subjective norm (his beliefs that relevant referents think he should or should not perform the behavior and his desire to comply with them). The Theory of Planned Behavior (TPB) [10] extends it by adding the idea of perceived behavioral control to account for the perceived ease of executing the behavior. The Technology Acceptance Model (TAM) [11] similarly states that intention of using a technology is driven by its perceived usefulness (that it enhances one’s performance) and its perceived ease of use (that it is free of effort). Finally, the Unified Theory of Acceptance and Use of Technology (UTAUT) [12] combines these theories by proposing four determinants of intention (performance expectancy, effort expectancy, social influence and facilitating conditions) and four moderating variables (gender, age, experience and voluntariness of use).

Similar aspects are also proposed by the Social Cognitive Theory (SCT) [13], which states that a person is more inclined to enact a behavior based on his self-efficacy (the beliefs about his ability to execute a specific behavior) and outcome expectancy (the belief that it leads to a desired outcome).

Self-determination theory (SDT) [14] offers another suitable theoretical framework. Its main contribution is that, unlike the aforementioned theories, it distinguishes different types of motivations ranging from intrinsic motivation (doing something out of enjoyment or interest, or to satisfy some basic psychological needs of competence, autonomy and relatedness) to extrinsic motivation (doing something for separate outcomes like tangible rewards, social rewards like approval and status, or psychological rewards like self-esteem and pride).

Another interesting contribution comes from theories of pro-social behavior such as helping, comforting and sharing [15]. A useful synthesis of such research can be found in the Volunteer Functions Inventory (VFI) [16] which aggregates various volunteering theories and proposes that people volunteer because it serves one or more functions like gaining knowledge, expressing values, complying with social expectations, receiving utilitarian rewards, enhancing one’s ego, or protecting oneself against negative feelings.

Innovation diffusion theory (IDT) [17, 18] describe the patterns of diffusion of an innovation in social systems and propose that its adoption depends both on the characteristics of innovations (relative advantage, complexity, trialability, compatibility, observability) and individuals (early adopters are attracted more by intrinsic reasons like the enjoyment to try new things and late adopters are more skeptical and mainly seek proven solutions with less risky outcomes).

Finally, the expectation-confirmation model (ECM) [19] complements these theories by focusing on the continuation of usage of a system after its initial adoption, which is also critical for its viability. It suggests that continuance intention is determined by perceived usefulness and user satisfaction, with the latter depending on the confirmation of expectations following actual use as well as its perceived usefulness.

B. Motivations of wireless community members

A practical starting point for describing the state of art of research on wireless communities and member motivations is a literature review from Bina and Giaglis, which examined 40 papers on WLAN that appeared before 2004 [20]. This study found 8 papers that recognized the importance of attracting and motivating members to ensure community sustainability, although only at a conceptual level. The four earliest papers [21-24] simply state the need of identifying motivations and designing incentives to attract members without concrete examples. Two subsequent papers [25, 26] go further by proposing a list of motivations (create a cooperative spirit, gain prestige in the community, challenge telecom firms and promote free communication) but do not empirically validate them. The final two papers discuss two problems arising from the divergent interests of individuals and the community: induce individuals to contribute to the community even though they may avoid the cost, and free riding on others [27] and avoid the temptation of individuals to consume as much of the community for themselves which impairs others and may lead to a community collapse [1].

Based on this, the same authors proposed a research agenda on wireless communities where “the main research question refers to the assessment of the role of individuals - visitors and members alike - in the formation, growth and survival of wireless communities” [20] and that this requires assessing “why do people voluntarily participate and put up effort in community-based WLAN?” [28].

Since then, a few authors have tried to tackle this issue. A first attempt [28] developed an interesting theoretical model to explain participation in wireless communities positing that members participate due to a mix of intrinsic motivations (it is enjoyable or satisfies needs of competence, autonomy and relatedness), obligation-based motivations (to abide norms of reciprocity or other community shared values) and extrinsic motivations (explicit rewards, external pressure, self-esteem, ego involvement, personal connectivity needs, human capital, career prospect, altruism or ideology). In contrast, members may be dissuaded by the perceived effort (time and monetary costs) needed to join and participate in the community.

The model was tested in two subsequent papers based on surveys submitted to wireless community members. The first [29] presents data from 170 community members in Greece.
suggestions that different groups of members participate for different mixes of intrinsic and extrinsic reasons, with the former being more prevalent. The second [30] replicates the study with Australian communities, confirming that their members participate more for intrinsic rather than extrinsic reasons.

More recently, a case study on wireless communities by Cho [31] shows similar motivations, but proposes that short-term motivations based on personal interest (fun, learning, social or professional networking, getting free Wi-Fi access) are complemented by long-term motivations based on public interest like promoting inclusion in the Information Society, media democracy and civic activism.

Wong and Clement [32] study those factors that hinder potential members to participate in a community. People seem to be reluctant to share their network connections because they consider it difficult to participate, lack trust in strangers, fear that this may endanger their security or privacy, and worry that this will impair their available bandwidth. On the other hand, this survey also shows that sharing would be more viable if users could be assured that it does not slow their connection, undermine their privacy or security, and may obtain tangible benefits like cost sharing or improved reliability.

Abdelaal et al. [33] inspect various types of contributions from members (time, money, expertise, sharing, hardware, software) and show the importance of social capital besides technical and economic benefits, proposing that communities “were built by technology developers to obtain expertise [but] have been redirected to achieve social objectives”.

Finally, Shaffer [34] surveyed 43 members from various Wi-Fi communities (12 from hybrid communities) finding that motivations mostly involve a commitment to expanding broadband access, personal gratification from using technical skills, and selfish motivations like getting nomadic network access, but hardly to save money or challenge ISPs. On the other hand, members have concerns about signal reliability, speed, security and privacy. Shaffer also suggests ideological differences between members of each type of community.

This review shows that understanding motivations and concerns of members is a critical research issue that gets increasing attention. Yet, existing research comes short as studies have focused mostly on pure communities whereas hybrid communities have been overlooked. There are only two exceptions: a study of economic motivations of the various stakeholders of a hybrid community (members, ISPs and the community provider) using a theoretic game-theory model [4] and a paper which describes a list of motivations obtained from a content analysis of posts on three forums related to the FON community [35].

C. A motivation model for hybrid wireless communities

The distinction between pure and hybrid communities is important as the differences between them are large enough to expect the motivations of their members to differ. In fact, it is well known that the governance structure of a community (i.e. whether it is sponsored by a firm) can have an influence on its members’ motivations [36].

Accordingly, as explained in greater detail in a previous paper [35], we developed a model that is suited to explain motivations in hybrid wireless communities. In a nutshell, it adapts the model of Bina and Giaglis for pure communities [28] by considering the peculiarities of hybrid communities (namely that the governance of a sponsoring firm [36] and greater use of rewards [37] may reduce intrinsic motivation and that their larger size may undermine social motivations [38]) and broader theoretical basis (complementing SDT’s intrinsic and extrinsic motivations with UTAUT’s social influence, performance and effort expectancy, pro-social behavior suggested functions and IDT’s suggestion that late adopters are more keen on proven solutions and rewards). The resulting model is shown in Figure 1 below and briefly explained thereafter.

**H1 utilitarian rewards:** as suggested by SDT (extrinsic motivation), UTAUT (performance expectancy) and VFI (instrumental function), people can be driven by utilitarian motivations; in a hybrid community these are expected to be strong as members can get benefits like free access to a large network, cheap equipment and revenue-sharing.

**H2 social rewards:** as suggested by SDT (relatedness), UTAUT (social influence) and VFI (social function), people can be driven by social motivations like being part of a group, social status or approval by others. In a hybrid community these seems weaker due to size and resource-oriented nature of the community.

**H3 psychological rewards:** SDT (competence) and VFI (enhancement and values) suggest that people can be motivated by needs like that of feeling competent, enhancing self-esteem or fulfillment in pursuing idealistic goals. In a hybrid community these motivations are expected to be present, even though they might be limited due to the sponsoring firm.

**H4 intrinsic motivation:** as suggested by SDT (intrinsic motivation) people can be motivated by the enjoyment obtained by performing an interesting task for itself; while this is one of the most important motivations in pure wireless communities, in hybrid communities it may be mitigated by the use of extrinsic rewards which can have a negative effect on intrinsic motivation [see 37 for a brief review].

**H5 effort expectancy:** as suggested by UTAUT (effort expectancy) and SCT (self-efficacy), people are more keen to do an activity if they think it requires low effort. In a hybrid community this is expected to be unimportant as the
supporting firm make it easy to join and participate by offering low-priced, easy to use equipment and support.

H6 other concerns: as indicated by the literature review, people may be reluctant to share due to a variety of concerns like security, privacy and bandwidth consumption [32] as well as legal concerns [39]. In a hybrid community these concerns are expected to be relevant even though they may be reduced by the reassuring presence of a supporting firm which provides its own technical solutions and support.

III. METHODOLOGY

This paper is part of an ongoing research project aiming at understanding motivations of hybrid wireless community participants which is structured in three phases.

The first - described in a precedent paper [35], consisted in drawing from extant research to create a model describing motivations and hindrance factors that explain why members join and participate in a hybrid wireless community. The model was applied to the hybrid community context through a content analysis of forums of a large hybrid community.

The second – which is the focus of this paper – intends to employ a qualitative approach based on semi-structured interviews with a sample of community members to explore and better understand the motivations and constraints that influence members’ decisions to join the community as well as their participation behavior.

The third will consist of a quantitative element that aims to measure and validate the insights obtained so far using a survey sent to a larger set of members.

As mentioned before, this paper focuses on the second phase of the project, which aims at conducting a qualitative analysis of member motivation. To do so, we conducted 30 interviews with members of the FON community. FON was chosen because it is by far the largest and most successful existing hybrid wireless community worldwide.

Participants were contacted with the help of FON, which agreed to send an email to all members in Switzerland asking them if they were willing to participate in our research project. Among the responses, we selected 30 members to get a sample of members that adequately represented the three linguistic regions of Switzerland (7 from the Italian part, 13 from the French part and 20 from the German part).

The interviews were conducted face-to-face between June 2010 and September 2010 using a semi-structured approach. This approach was chosen because it permits to gather in-depth and detailed information from participants directly from their own perspective and subjective experience. Its flexibility allows adjustments to the interview so as to follow up interesting areas of enquiry that may arise during the interview, such as unexpected or salient themes, or for the participant to explore different areas of interest.

The interviews only followed a loose interview guide containing the main topics to be discussed. Besides its utility for ensuring that all relevant topics were addressed, it also established a common basis for the two interviewers to employ a similar interview style. To do so, the first four interviews were conducted in presence of both researchers, then one person took care of interviews in German and Italian and the other focused on those in French and English.

All interviews started by asking members to talk about their general interests and introduce their person, so as to put them in the mood of talking. Then the participants were asked how they got to know the FON community (“How did you first hear about FON?”) and then the central question of our study, that is why they decided to join (“What were your motivations to join FON?”). In this part, the various motivations and concerns of the interviewees were studied in depth with appropriate probing questions. After that, other themes like interviewees’ concerns with sharing through FON, their expectations towards FON, their experience of participating and using the community network, their feelings about FON and its community as well as current developments were addressed in a flexible way depending on how the discourse evolved.

Each interview lasted between 30 and 75 minutes and was tape-recorded with the permission of the participants. In order to avoid any suspicions concerning the use of the data, at the beginning of each interview the participants were provided a guarantee of confidentiality that they would never be identified and we will therefore quote them anonymously, leaving out any indication that could identify them.

Interviews were held in the preferred language of the interviewee (German, French, Italian and English) but in the paper, we decided to translate the quotations in English to help readers understand them. Citations have been written as close as possible to how they were verbally expressed.

In order to analyze the interviews, they were transcribed and then coded by two independent coders with the software Atlas.ti. The coders followed a coding scheme based on the concepts identified in our model, and complemented it with open codes emerging directly from the text. The codes were then reviewed jointly to ensure inter-coder reliability. The citations were further categorized and analyzed to assess the importance of each motivation and concern cited by interviewees and possible relations between them.

IV. FON

FON (Fon Wireless Ltd.) is a for-profit company that was founded in Madrid in 2005 by Martin Varsavsky and financed by firms like Google, Skype, Index Ventures and Sequoia Capital. Its mission was dedicated to building the world’s largest global WiFi community bottom up, spreading the power of WiFi around the world.

FON is above all a community-empowered company. Its members, who are called Foneros, share part of their home Internet connection through WiFi with the community and in exchange they can connect for free at the hotspots of other Foneros. There are three different types of FON members. Aliens are passive members: they do not share their broadband connection with the community and if they want to access FON Spots of other members they have to purchase passes. Linus and Bill are active members: they must own a Fonera router and share their Wi-Fi connection in exchange for free roaming at other FON Spots. The only difference between the two is that Bill members get 50% of the net revenues when an Alien purchases a FON pass at their spot.

The main value proposition of FON to its members can be summarized in the “share a little WiFi and roam the world
for free” slogan. FON strongly emphasizes the global reach of its community, capable of granting “free access to over three million Fon Spots worldwide”. FON also underlines that it is “safe and secure”, claiming to ensure security by making its routers create two dedicated signals: a private encrypted signal accessible only by its owner and a public signal that is not open but accessible only by registered FON users. FON further claims that “if anyone tries to do anything illegal with your internet connection, we block them” [40]. Members are also allowed limit the bandwidth dedicated to sharing, customizing (to a certain extent) the landing page on their hotspot, view a list of the users accessing their hotspot and exchange messages with other Foneros. To help users locate hotspots, FON provides an interactive map of FON spots in its web site, the possibility to download POI files for GPS devices and an iPhone application.

The business model of FON is built on the premise that to become an active member, you have to buy a Fonera router that is specifically designed to enable Foneros to share their home access points with the FON community (although it should also be possible to use third party routers and flash them with compatible firmware). Since 2007, FON started a series of collaborations with Internet Service Providers like British Telecom (UK), Neuf (France), Zon (Portugal) and Comstar (Russia) by integrating FON’s software on their routers to allow their customers to participate in the FON community without buying a Fonera. Recently FON also partnered with mobile line operator like SoftBank.

V. FINDINGS

In this section we describe the main results of the qualitative interviews by focusing specifically on members’ motivations and their possible concerns. In compliance with the qualitative nature of our research, we focus less on counting occurrences of the different items (we only provide them as a means to get a broad idea of the overall content of the interviews) but rather try to depict and explain the various nuances which emerged from the interviews (and to do so we try to use members’ citations as much as possible).

A. MOTIVATIONS

From the interviews, it appears that members have a broad set of motivations which can be classified according to their nature:

- **Utilitarian motivations** (like getting connectivity from other members, getting economical hardware or earning money from revenue sharing);
- **Psychological motivations** (like feeling good through sharing, being altruistic, or contributing to some idealistic goals such as promoting free Wi-Fi);
- **Social motivations** (like getting in contact with other members or feeling part of a community);
- **Intrinsic motivations** (like enjoyment in doing an interesting activity, learning or applying one’s technical skills).

The following graph shows the number of occurrences for each category of motivation, which are explained in more detail below.

1) **Utilitarian motivations**

**Connectivity** appears as the main motivation for members to join the community. This motivation has indeed been cited by 26 members out of 30. In most cases it is described as their main motivation and for a few members this is the only relevant reason they joined FON (“only one, fundamental for me: to get access to the hotspots all around the world. This is the only reason why I am still part of FON. To me it is essential to be able to travel around the world and know that there are communities, which I belong to, that allow me to get Internet access”).

This is expected and coherent with the marketing approach of FON which above all emphasizes the benefit of free access to millions of hotspots. Individuals’ increased mobility and need of having Internet access anywhere make FON attractive to its members. Due to network externalities, the value of the community network is expected to increase as the community grows, since more members imply more hotspots and hence a higher possibility to get connectivity. Members motivated by connectivity do indeed care a lot for coverage and expect FON and other members to make an effort to expand it by getting more spots active and making them more accessible. They typically favor actions that help expand the community network, and in particular they welcome agreements with commercial operators as long as they increase the number of spots they have access to. They would also like FON to make more advertising through traditional channels and stores in order to attract more members (who are almost exclusively people with an IT background). On the other hand, they often complain that FON spots are not always easy to find (mostly because of problems with the FON map, accessibility of the signal outside the buildings or because they are not always turned on), operational or accessible from a public area: they think that the range of the Fonera (the access point sold by FON) should be increased, members should be educated on how to install it so that it is accessible from outside their building and a few would favor stricter incentives to induce members to make their access point truly active and accessible.

It is also worth noticing that while members appreciate extensive coverage in general, they specifically care for areas that are useful to themselves. For a majority of people this
means having access in places like city centers, train stations, restaurants, parks and so on: they think FON should make an effort to go “much more into public space. You only need to have a look at the map, where all the routers can be found. They are usually in residential areas. There they are not useful to me”. In contrast, other members see FON’s potential exactly in that it offers access where no one else does: in residential, industrial or rural areas. In these areas FON spots are often the only possibility to get Internet access through Wi-Fi, suggesting that FON “might be useful in an area outside city centers, where I am and where I need an Internet access” and “on the countryside, that is in places where otherwise you cannot find much other Wi-Fi”.

On the other hand, many members also told us that the prospect of getting free connectivity through FON was more relevant in the early days due to the lower diffusion and high price of alternatives like 3G or free Wi-Fi hotspots. With the uptake of 3G smartphones and flat-fee data contracts, getting free connectivity is seen as less attractive inside Switzerland but still relevant abroad due to the high roaming fees charged by mobile operators. This is well explained by a member: “today it is mainly relevant abroad: within Switzerland I have an internet connection over the mobile phone, so it is no longer such a problem, but abroad it is still very useful as the mobile phone cannot be used to access the Internet because it is unbelievably expensive”. 3G roaming fees are still very high and people tend to invest more effort looking for free Wi-Fi hotspots. It is also worth noticing that these members consider FON as just one option among others and just take the first free Wi-Fi connection available when they need it, including open private WLANs: “if there are so many open spots, there is not really a reason to focus on FON”. The usefulness of FON may thus also depend on the evolution of Wi-Fi: it certainly benefits from the growing protection of private WLANs, but a potential diffusion of free Wi-Fi in hotels and other public places could be a threat.

Besides connectivity, many members recognize that the cost of hardware plays a role. Most of them do not refer to it as a motivation (only a few members told us they joined FON because “at that time, the router cost even less than the competing models” or had interesting functionalities like the two separate networks or some features of the new Fonera 2.0), but it is a facilitating condition as a low price lowers the entry barrier to many. Actually, many members got their Fonera at a low price, either when FON distributed them (“it was at the beginning, when they made a large distribution of Fonera and then we decided to give it a try [...] we ordered a few, it was a few Euros, really nothing”) or bought it via a promotional offer. Price is mostly seen as a disincentive: a few members would not have joined FON if the cost was higher (“at the beginning it did not cost much financially. I ordered the router for about thirty Euros, if it was more than 150-200 francs, I would never have joined”). Some wonder if the prices of the new Foneras are still low enough, relative to other routers on the market, to attract members. Quality of hardware is also important: while some members are happy with their hardware, others are not satisfied with the stability, range or performance of their own Fonera.

Advertising unexpectedly emerges as another possible utilitarian motivation, though only by a few members. FON spots can be personalized to give free access to a web site and may contain some descriptive text. Some Foneros use this feature to promote their business (“for sure it would show FON advertising and at the same time, we too would have advertised so that people would say: oh wow, that is really a cool PR agency, it even offers us free Wi-Fi”) or gain some business (“we are now about to conclude something with a customer, who is in a datacenter and got to know about our presence in there thanks to the FON spot we have placed. A little advertising! This was of course the purpose, that the others can see our name and see that we are present and think that we might be able to sell something or have a service which could be useful”).

Finally, members don’t seem to be particularly motivated by the possibility of earning money by sharing their Internet access with other members. In fact, a large majority of members choose a Linus membership, thus declining the possibility to get a share of revenues earned by FON at their spot. For a few members, many of which have an open source background, the idea of getting financial pay-off is completely irrelevant because they see the concept of community and sharing as an altruistic act, as the following quotation states: “I am very much motivated by idealism. This means that I am a Linus type. Money aspects do not interest me at all”. Some members however like the idea of earning money but are discouraged by the perception that they would not get enough users in the location they live to make it interesting. A fairly common comment is that “the financial aspect doesn’t interest me; firstly because I know that the location is not interesting, no one stops in front of my house [...] I don’t think that I have a lot of users, I am not in the city-center”. Some of them told us that if they lived in a more central position or near a point of interest with more traffic, they would be appealed by the idea of getting some money back to pay their Internet connection. A member told us that “if there would be a tourist attraction down here, where lots of tourist pass by, who do not have anything better to do than accessing Internet, then one could take it into consideration”. A few members actually choose a Bill membership to get part of the revenue earned by FON via their spots and often make an effort to extend the signal of their Fonera to reach more people. They mostly do so to share their connection fees (“I give it a try, I told myself that perhaps it could repay my Internet connection ... but I only had two months where it worked”) or out of curiosity (“I would like to see how much earning it would generate”).

2) Psychological motivations

Sharing is cited as much as connectivity as a motivation (26 members out of 30) but it typically is not as strong. For some members this is a side aspect they kindly accept to get other benefits (“My main motivation [was for own use] yes, then the idea that someone passing by my house, can have the possibility to connect to the Internet, never disturbed me and so I did it”). This is coherent with the value proposition of FON: “when we are trying to sell the idea of FON, we are
not telling people share your WiFi because it is good for your community [...] we are saying share your WiFi because it is good for you because when you’re going to move around, when you’re going to leave your home and you want to connect to the Internet, you can” [41]. This sometimes causes an unwillingness to make an effort to truly share one’s own hotspot with the others given that it does not generate any benefit for the sharing member (“this does not interest me, because the idea is that I am willing to share my Wi-Fi, no problem on that, but I won’t make additional investments when that’s not useful to me at all”).

Luckily, a majority of interviewees appreciate the idea of sharing and support it by always keeping their Fonera on and by offering enough bandwidth to visitors, especially as they realize it does not cost them anything (“I just found it a great idea, not to use the own broadband connection only for oneself but to be able to share it with other people. You do not lose anything by doing so. I really liked this idea”).

A significant number of members further embrace the idea of sharing with a more altruistic attitude and are motivated by the concept of sharing per se. A few of them are even willing to make an extra effort to make their Fonera accessible to others by well-positioning it (“I positioned it on the edge of my flat, so that it can give the maximum signal towards the parking. It is positioned so that it can spread at a maximum outside”) or by using high-gain antennas to strengthen the signal and reach more people (“I specially set up an additional external antenna, because if the signal comes only to the next corner, that’s nothing”).

The fact that not all members make this effort does not necessarily imply they do not care: some seem to be rather unaware of radio communication limits and many think FON should give better instructions on how and where to place the Fonera to improve its reach.

Some of the members that like the concept of sharing also associate it with one or more idealistic motivations. Many members have an open source background and therefore like the philosophy of freedom and sharing that they associate to FON (“I believe that it’s a young and dynamic enterprise which has an open source and community philosophy”; “I really like the open source spirit and so I was motivated by the sharing [...] it’s the philosophy underneath that I really like”). However, a few of these members are a bit critical that FON is not entirely open source (“At the beginning the approach of FON with the open source community was not fully clear [...] one thing that I don’t like, but that I fully understand from a commercial viewpoint, is that the software used in the Fonera is free and they sign it, but they are, maybe less than other firms, a little closed when there are to implement other things that users would want”).

Many members similarly like sharing because it helps better exploiting resources like Internet connections that are scarcely used and would be more useful if shared (“the fact of sharing the connection, which most of the time remains unused, because a person who works is always out during the day and consequently the Internet connection is there, and you pay a certain amount per month but only use a minimal part of it”; “I don’t like to use things halfway, if I use something I use it 100%. I use my Internet connection less than 100%, so if someone else can benefit from it, then I like that. That’s really the community idea, the sharing”). It is also a way to avoid wasting a useless deployment of infrastructure (“I thought it was stupid that in buildings there are 36 ADSL, when with Wi-Fi one can get organized, it is known that in certain buildings they got organized”).

Some members see it as a contribution to promote free Internet access, recognizing that this today is a general need and a resource to which everybody should have access to (“Yes, because in my opinion, having an Internet connection is fundamental nowadays. Let’s say that it is like having electricity or water. It’s right that it is there. If it was free of charge, it would be even better.”).

Finally, a few members perceive FON as a way to reduce the grip of commercial operators (“My ideas go towards liberalization of information, meaning that the monopoly that is currently held by large telecom operators is so large that they can maintain prices that I find absolutely unjustified and these [community] networks are means, in my opinion, to break that monopoly”).

3) Social motivations

Social motivations of FON are weak. It clearly appears that people do not join FON to get social contacts and interactions. Hardly any of the interviewed Foneros cares to know or interact with other community members. The only community aspect used in some cases is the Forum, but then mostly only when there are technical problems. But also in this case, it cannot be compared with the engagement and commitment of other communities like open source, social networks or even pure wireless communities. Hardly any member has real community feelings towards FON as the following quotation shows: “We are a bit part of it because we share our connection, we receive a newsletter three times a year, but... no. If I speak for the beauty of gesture, I can say yes, but it doesn’t really have [a community spirit]. I don’t have a feeling of belonging to a community”.

Surprisingly, many members told us that they like FON’s community aspect (“It is cheap and there is this community part, which may be interesting”). Yet, it seems that members consider reciprocity to be the basis of the FON community. (“It is the goal, to know that it is not one-way, that’s the principle of exchange at this level”). It is tightly correlated to sharing and having connectivity. One shares one’s own Internet access in order to have access to other spots. If this part of the community disappears, the community aspect would get lost completely. It seems that through the fact that each member both gives and takes, he is in a way related to the other members. Reciprocity is thus an important element of the FON community. In fact, members for example only appreciate commercial agreements between FON and other ISPs if they result in reciprocal use of all FON spots. (“so Neuf is effectively part of the FON community, but that’s one-way, that is Neuf subscriber can use a FON spot [...] but on the other hand, FON members cannot connect on Neuf spots; I don’t know if that has change, but I find it dishonest that it is only one-way”).
In this sense the Fonero’s community perception mainly consists in the fact that different people share something among them without the need of necessarily interacting with each other “it is not the community aspect in this sense, it is more a community without interaction among each other, where you simply share something with others”.

A few members also suggest that a stronger community feeling could be developed at a more local level such as a building with several flats or a neighborhood where it is decided to share one Wi-Fi signal.

4) **Intrinsic motivations**

Different to what most research papers about motivation in pure wireless community suggest (see literature review above), *enjoyment* cannot really be considered a motivation for participating in the FON community.

On the other side, **technical interest** in the FON solution and its router is mentioned by several members. This can in part be explained by the fact that nearly all members come from an IT background and therefore want to see how it works (“It was also much for curiosity, working within IT, I am quite a geek and so I wanted to see how this worked, how it was made”) or tinker with it to understand its limits. However, technical interest does not seem to be as dominant as in pure communities. This can be explained in part by technology diffusion theories: when FON emerged, wireless communities were not really a new thing. This is reflected in our interviews given that the number of members with a technology diffusion theories: when FON emerged, wireless communities were not really a new thing. This is reflected in our interviews given that the number of members with a technical motivation is higher among early adopters than late members. It is also reasonable to argue that the control exerted by the company on the hardware-software solution somewhat inhibits technical motivation.

B. **Concerns**

In addition to investigating member motivations, we also asked interviewees if they had any concerns in joining or participating in the community. No major concerns emerged from the interviews, as shown by the following graph. In general, it is possible to say that concerns do not really hinder participation even though most people are aware of them.

![Concerns of interviewed FON members](image)

Unexpectedly, **ecological and health thoughts** related to radiation and electricity consumption emerged as the most salient aspect, although both in favor of and against FON participation. On the one hand, people say that if they already have a wireless router at home, they would not want to keep a Fonera too, as for ecological reasons they want to keep the number of their devices to a minimum (“And beyond being an Apple fan, I am also oriented towards ecology. As a consequence I try to reduce to a minimum the number of devices that I have at home. So for me it didn’t make sense to have an Apple router (...) plus in addition a Fonera, because this would mean having to run an additional device”). On the other hand, FON is seen as an efficient alternative to having a lot of private WLANs in the same area in order to diminish radiation and waste of devices and electricity. “First of all I think that it is ridiculous and dramatic, and it reflects partly the European spirit of greed, when you live in a house and you have 20 or 30 WLANs available and all of them are closed. I really think that this is ridiculous, it is superfluous. You also radiate everything, because then you have 20 radiating devices, you waste 20 times the electricity and you have to produce the router 20 times”. Furthermore, the Fonera 2.0N positively emerged as it allows downloading by keeping the PC turned off, thus consuming less power.

**Abuse**, in the sense that someone can use one’s access point to do illegal activities or accessing questionable content, is probably the most felt concern: most members are highly aware of this risk and have at least once thought about it. However they perceive that FON as a company offers enough guarantees to overcome the fears: they consider it important that there are logs of the people who connected to their spot and think that if necessary they can be used to identify who generated illicit traffic (“I informed myself a little bit. Security, in the sense of someone doing something illegal with this network. Yes, the risk exists. But then it would be possible to identify this person through its username”). In addition, the fact that they are mostly located in residential areas with low traffic of passers-by reassures them further as they perceive the risk that an ill-intentioned user abuses of their network connection is minimal.

**Legal** concerns, in the sense of infringing contractual clauses imposed by their ISPs like the prohibition of sharing one’s internet connection, are mentioned by several people. Many members have not even thought about this aspect and they simply assume that, because a company is behind the community, they do not have to bother about legal issues: “I was never interested in the legal aspects. I went on the safe side, thinking that if you can buy a router, it means that the access can be free and that there would be no legal problems”. Some are further reassured by the fact that some authorities, such as the city of Geneva, were involved with FON: it therefore seems clear there would be no legal issues. A few members, however, are not sure about the contractual clauses of their ISPs and others have already heard about legal actions against people sharing their Internet in other countries. Among these, many are unsure of their contractual terms, but still consider that “ISPs don’t have any interest in pursuing their customers”. Finally, a few members know that “we don’t have the right to share Wi-Fi with neighbors, even less to make money with it, so I was a little bit illegal
against their contract. I even wrote to them to know their position and they clearly said that it was in their contractual clauses so I could almost expect them to keep an eye on me, but I didn’t see their interest in telling me that I had not the right to do so when I hardly generated traffic... I was not a threat to them”.

Security is surprisingly less of a concern: although being aware and reasonably concerned by security threats in general, most members perceive the solution offered by FON as secure enough and especially appreciate the feature of the Fonera that offers two separate and independent networks: a public one for sharing their Wi-Fi and a private one for their personal use of Internet (“I have no doubt, I have read what they described on the Internet and I saw that one can be quite safe, knowing that the access is separate from the one which I have on the home PC and so I felt quite secure”). However, some members still use additional security tools such as firewall and VPN. This makes security issues even less of a concern for them when joining the community.

Finally, it is interesting to see that bandwidth is never mentioned as a concern. This is in contrast with other studies [32], but can be explained by the fact that FON allows members to restrict the bandwidth dedicated to sharing and that members generally have large broadband connections which they only use to a small extent.

VI. CONCLUSIONS

This paper employed a qualitative approach to investigate motivations of members in a hybrid wireless community like FON.

Most motivations that emerged from the interviews were already known from research in pure communities. However their importance and emphasis seem to be quite different in hybrid communities (even though in our comparison with previous studies, there are also other factors like country and time of the studies that differ). While in pure communities idealistic and intrinsic motivations appear to be prevalent, utilitarian motivations seem to prevail among FON members. In particular, the possibility of having free access to Internet from other members at a worldwide level is seen as the major incentive for participation. Other, less strong tangible aspects such as getting cost effective hardware, being able to get a share of the revenues and using the community for advertising are also mentioned by some members.

Although hybrid communities are more commercially orientated than pure communities, the aspect of sharing is important to most of its members, even if it appears less strong. The commercial nature of hybrid communities has some influence about the perceived meaning of sharing, as many members understand it as a simple reciprocal exchange for connectivity, which has not much to do with altruism. However even among FON members, there are several with a strong altruistic orientation. An interesting aspect related to sharing is that people see it as a means to better exploit the already existing infrastructure of WI-FI.

Idealistic motivations are slightly less relevant compared to pure communities although, despite being a business itself, several members see FON as a way to effectively promote the idea of having free Internet access for everyone and to may be able to offer a preferable solution, less focused profit-making, to ISPs.

Whereas in pure communities the social aspect is more felt by a majority of members (members often have closer social ties and more frequently interact through forums, meetings and cooperation for developing the community), in the FON community it only plays a marginal role. Members seem to define FON’s community aspect as the sharing of Internet signal among its members meaning that each member both gives and take from other members without necessarily getting in contact with them. This may be explained in part by the fact that FON is much larger than pure communities, and is also the reason why reciprocity is very important to most interviewees.

Among intrinsic motivations, only technical interest emerged as a motivation, albeit less intensely than in pure communities, whereas the enjoyment aspect of being in the community is negligible.

The fact that behind FON there is a company may explain why concerns are generally quite weak. Most interviewed members are aware of possible threats such as security, abuse and legality but think that the company behind the community offers enough safety and support that they do not have to worry about them. This is why, in hybrid communities such as FON, concerns are less strong than in pure communities.

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