

Online recruitment of cutting-edge users

A user experience study of Ericsson Labs developer portal

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Abstract

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This thesis investigates how to reach and recruit cutting-edge users to user experience studies. The recruitment of cutting-edge users is difficult since these users usually are not registered in recruitment databases. Cutting-edge users are advanced, early-adopters of technology and sometimes referred to as opinion leaders. Telecom research projects performed at Ericsson Research involve products and services 2-3 years ahead of the market; early-adopters and cutting edge users are therefore an important user group.

To test recruitment methods a user experience study was performed of Ericsson Labs developer portal. Ericsson Labs offers Application Programming Interfaces for mobile and web applications development. Internet marketing theories were used to form a recruitment method. Respondents were recruited from the Ericsson Labs user database and they were contacted individually via email. The users were invited to share their thoughts and ideas about the portal to help improve and possibly influence the direction of the site.

This thesis also assessed different online qualitative research methods applied for user experience research. Online focus groups such as bulletin boards were used to interact with users in addition to individual chat and voice interviews. Performing user experience research on the Internet is a cost-efficient way to interact with users in geographically dispersed areas.

The findings from the study show that recruitment is hard; it is especially difficult to recruit active and conversational respondents from a user database. Providing incentives and using personal communication were shown to be successful strategies to convince users to participate in a study.

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Populärvetenskaplig sammanfattning

I detta examensarbete undersöks hur avancerade användare kan nås och rekryteras till "user experience" studier. En användare är en individ som interagerar med en produkt eller tjänst via ett gränssnitt. "User experience" är således ett begrepp som ser till användares erfarenheter och tankar kring den interaktionen. Avancerade användare är speciellt intressanta i denna studie eftersom de ligger i teknikens framkant och hör till en grupp som före den vanliga användaren tar till sig ny teknik. På så sätt har de ofta ett visst inflytande över den vanliga användaren genom att bidra med förhandsinformation och råd. Ericssons forskningsavdelning Ericsson Research arbetar med forskningsprojekt som är två till tre år före marknaden. För dem är det därför viktigt att komma i kontakt med avancerade användare för att utvärdera och förbättra tänkta produkter och tjänster.

För att testa metoder för rekrytering av avancerade användare har en användarstudie med användare från Ericsson Labs utförts på uppdrag av Ericsson Research och dess User Experience Lab. Ericsson Labs är en utvecklarportal där avancerade verktyg för utveckling av webb- och mobilapplikationer erbjuds. Portalen liksom verktygen är i betaversion och förändringar och vidareutveckling sker kontinuerligt. Syftet med studien var även att bistå Ericsson Labs ansvariga team med information om användarnas bakgrund, vad de använder tjänsterna på portalen till och på vilket sätt de anser att förbättringar kan göras. Resultaten visar att svarspersonerna i studien är avancerade utvecklare som är experimentellt lagda och gärna utbyter erfarenheter med andra användare via forum på portalen.

Inom ramen för examensarbetet ingick även att utvärdera metoder för interaktion med användare på Internet. Metodstudien för examensarbetet är baserad på att all interaktion med användaren sker över Internet. Det gäller individuella intervjuer och fokusgrupper som hålls via e-post, forum på sociala nätverk eller med hjälp av andra Internetbaserade kommunikationsverktyg. Även rekryteringen av användare till denna studie utfördes över Internet. Fördelarna med att utföra användarstudier på nätet är många. Det är ett kostnadseffektivt sätt att interagera med användare, speciellt då det möjliggör interaktion med användare på geografiskt spridda platser. Dessa typer av studier tillåter även asynkron kommunikation på användarens förutsättningar. Forum, sociala nätverk och bloggar på Internet är idag vanliga kanaler för informationsspridning och för individer att göra sin röst hörd på. Det är något som utnyttjas i dessa typer av studier. Rekryteringen av deltagare till studien visade sig svårare än väntat trots att kontaktuppgifter togs från Ericsson Labs portalens användardatabas. Resultaten visade att personlig och transparent kontakt är viktig vid rekrytering av användare liksom de incitament som erbjöds svarspersonerna för att de deltog i studien.

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1 Introduction

Technology is no end in itself. It is given a meaning when seen as part of a greater system of products and services. Humans' interaction with computers and technology has since the beginning of the 1980s become an object for research. It is important to study users' interaction with technology appliances to reduce the gap between the expected and the experienced usage. A method that enables interaction studies is *User Experience* research. The concept of user experience describes the end users' interaction with a product and their perception of the design. The essential part is the users' point of view on the overall experience. User experience research may also address the usage of a service. An example of such interaction is developers that are using a developer portal; the developers are the end users of the services and tools offered on the developer environment.

The User Experience Lab at Ericsson Research is involved in performing user experience research of applications in new telecom related projects. The research takes place in the early phases of developments to support other departments within Ericsson Research. The responsibility of the Lab is to focus on the users and to interact with them throughout the research process to collect valuable information and to gain knowledge about their experiences and ideas. Ericsson Research's research projects involve technology that is 2-3 years ahead of the market. Users that are interesting in the research projects are for this reason cutting edge and share traits with early-adopters. Early adopters often influence other users as opinion leaders. They are considered more advanced and use technology tools that regular users are not using yet. It is important for the User Experience Lab to know how to reach and recruit cutting edge users as participants for research studies.

The scope of this thesis stems from a project called "the Developer Experience project" that members of the User Experience Lab at Ericsson Research have been running during 2009. The Developer Experience project focused on the developer as a user of developer platforms. The purpose was to feed the Ericsson Labs team with the knowledge gained from this study. Ericsson Labs is a developer portal that offers tools for developing mobile and web applications. The portal provides facilities such as documentations, tutorials, blogs and forums to support its users in developing and publishing new and innovative applications (Ericsson Labs, 2009). In addition, the Ericsson Labs aims to create a community where cutting edge users and experts from the Ericsson Labs team can interact.

This methodology study investigates new ways of reaching cutting edge users for user experience studies.

1.1 Thesis description

The main focus of the thesis work is to form an online-recruitment method and evaluate if the method is satisfactory to succeed in reaching the cutting-edge users. By recruiting respondents and investigating whether it is possible to bring a particular group of users to a suggested online forum, the online-recruitment method can be evaluated. The method will be assessed to investigate whether it is sufficient to get the requested people to the right forum.

As part of this method study, recruitment theories need to be considered and evaluated to further investigate how online versions can be applied. Previous investigations and reports that can be of use for this matter will be considered. The study will include an online user experience study to test the online recruitment. A number of Ericsson Labs users will be invited based on certain selection criteria. Familiarity of the developer environment Ericsson Labs is needed in order to better understand the users.

1.2 Aim

The aim is to find new channels where cutting edge users can be located and through this facilitate user experience studies. In addition, it will be an opportunity to assess different qualitative online research methods. The task is thus to investigate how to reach cutting-edge users through a set of online-recruitment methods. In order to reach this aim the following research question will be addressed:

1.2.1 Research question

How can cutting edge users be recruited for online user experience studies?

In order to respond to the research question additional research issues will be addressed during the study process:

- Identify the cutting-edge users!
- Where are the users found on the Internet?
- Through what type of online channels, such as social networks, forums, blogs, can the recruitment of respondents take place?
- What would motivate the users to participate in a user experience study?
- Can Internet-marketing methods be of use or be adapted?

1.3 Scope

To investigate how to recruit participants for online user-experience studies, this study will start with gaining more knowledge about the cutting-edge users on the Ericsson Labs portal. Obtaining information about the Ericsson Labs users will not only be of value to the User Experience team at Ericsson Research but especially to the Ericsson Labs project team as they will gain knowledge of the active and non-active users on the site. For this reason, the scope will be restricted to only include users on the Ericsson Labs portal. Considering the exploratory use of the site, these users should be particularly innovative and in the forefront of technology. Hence, the registered users on the portal will qualify as cutting-edge users and will function as the database of people to extract participants from. Further

delimitation of the thesis research is to not consider recruitment methods that utilize offline elements.

1.4 Reader's guide

The thesis is structured to give the reader a basic understanding of the concept of user experience and related research methods. As a start, the reader will be introduced to the reasoning behind usability evaluations and user-experience research. Internet research methods and how Internet marketing practices can be relevant in the recruitment of participants for user experience studies will also be covered. Next is a chapter that aims to give the reader a background to developer environments and Ericsson Labs. The Ericsson Labs users are the study objects of this thesis and as advanced developers they are an interesting group of cutting-edge users to study. There is also a description about the Developer Experience project which is a project that this thesis study originates from. After the background section there follows the thesis' methodological description. This section explains the thesis working procedure and the recruitment method as well as the interview methods that were used. Subsequently there is the findings chapter where results from the online recruitment, interview methods and the Ericsson Labs user study will be presented. The analysis and discussion section follow the same order as the findings. Last the reader will find suggestions for further research and the thesis conclusions.

In-text quotes that originate from the study's interview objects are referred to as respondent A-K, to respect the agreement of participants' anonymity. A list of the participants' code names and which interview session they took part in is found in Appendix V.

1.4.1 Definitions

The definitions below describe how terms and concepts are interpreted and how they will be used in the text:

- A *user* is an individual that is interacting with a service or product via an interface. A user can be a developer that is using a developer portal.
- A *cutting edge user* is a user that is more advanced than regular users as well as an early adopter of products and services regular users are not using yet. A cutting edge user influences the regular users through advice and opinion leadership.
- *Early adopter* is a term coined by the sociologists Everett M. Rogers. Rogers' Diffusion of Innovations theory suggests five adopter categories according to their degree of innovativeness. The level of innovativeness is a relative dimension that describes to which degree an individual is earlier in adopting new ideas than other members of a social system. Early adopters are characterized by having a high degree of opinion leadership. They are often influential since potential adopters ask them for advice and information about the innovations. By adopting an innovation and conveying a subjective evaluation to people in their social networks, early adopters decrease the innovation's uncertainty. Early adopters are for this reason sometimes considered opinion leaders. (Rogers, 1995)
- *Ericsson Labs users* are users from the developer portal Ericsson Labs.
- The *administrator* of the study is synonymous with the thesis' author.

2 Theoretical framework

In this chapter, the theory behind the reasoning in this thesis will be presented. First an introduction to user-based evaluations will be given to relate to the user-experience concept. Second, theories about Internet research will be outlined which will lead into the area of online qualitative research methods and online recruitment theory.

2.1 User-based evaluations

The necessity of user-based development has evolved since the 1980s when communications technology started to become accessible to a vast majority of people. The shift from isolated computer rooms to personal desktop computers made it possible also for non-computing professionals to interact with computers in and outside of their work setting. It became more important to provide user-friendly access to computers as the industry became more consumer oriented. It is no longer accepted to wait until the end of the development process to evaluate products from a user perspective. Subsequently, high-tech products must already in the concept stage be exposed and evaluated during user evaluations. (Dumas, 2003)

User-based evaluations should have the following characteristics:

- focus on usability
- participants are end users or potential end users
- there is some artifact to evaluate such as a product design, a system, or a prototype of either
- the participants think aloud as they perform tasks
- the data is recorded and analyzed
- results of the test are communicated to appropriate audiences (Dumas, 2003)

In order for the test to be a valid usability test, the study must include participants that are part of the target market for the product. By creating user profiles, participants may be identified. The user profiles should describe the characteristics that the users share and that separate them. The choice on which user profile to base the study on should be decided by the product management's priorities and not on how easy it might be to recruit the participants. Social skills and persistence is usually an advantage when recruiting for a usability test. (Dumas, 2003)

2.2 User experience research

The Interaction Design Association (IXDA) is an independent non-profit organization that aims to build a community for professionals involved in interaction design. The association engages over 10,000 members who frequently discuss interaction related subjects on their website. The definition of "user experience" is also discussed. The community appears to have an ambiguous stance towards the concept of user experience. (IXDA, 2010) Also, in human-computer interaction conferences such as the prominent ACM Conference on Human Factors in Computing Systems (CHI) the term has frequently been discussed among researchers and practitioners from academia and industry. In the submitted paper

“Understanding, Scoping and Defining User eXperience: A Survey Approach” (Law & Roto & Hassenzahl & Vermeeren & Kort, 2009) the heterogeneous ideas of the meaning of “user experience” is described. The fact is, there is no consensual definition. Law et al (2009) aimed to systematically gather scientific and practical views on the scope of user experience. In the article, there are suggestions given of what should be included in the definition. Four important features that user-experience should address were derived from the survey:

- Temporal: The timeframe for when the user experience should be in the limelight.
- Framework: User experience should be understood through a framework of practice that iteratively defines constructs through activities such as designing and critiquing objects.
- Elements: Relevant components of a definition are measurable aspects such as physiological responses and user-task performances, as well as subjective, psychological constructs such as passion, types of affects and consumer perception. As part of the definition there should also be a target group and the intended area of usage.
- Scoping: Some argued that the scope of the user experience stretches beyond interaction. Others claimed that the definition should address what user experience is rather than what causes it. (Law et al, 2009)

An additional comment was that the definition of user experience should not only be restricted to products or artifacts. Artifacts usually do not work in isolation; the usage of a mobile phone is for example closely knit to the operator’s services. Hence, interactions are not only made via artifacts but also by services and companies given that the interaction occurs via a user interface. The scope for the term user experience should therefore be bound to products, systems, services and objects which is shown in figure 1 below. (Law et al, 2009)

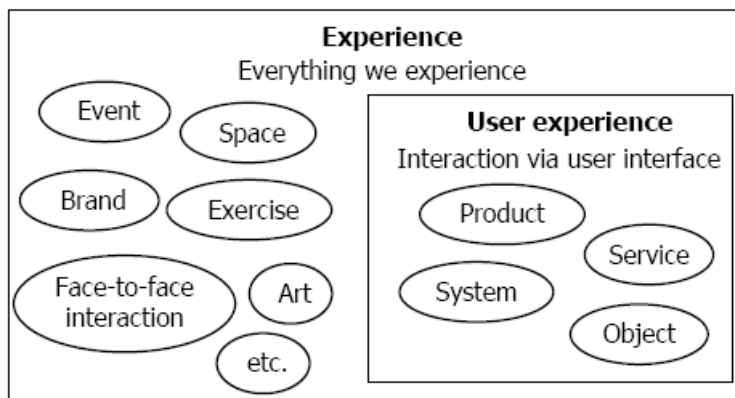


Figure 1 User Experience in relation to other experiences (Law et al, 2009)

In 2008 the International Standard Organization (ISO) Technical Committee 159/Sub-Committee 4 on Ergonomics of human-system interaction proposed the following definition of user experience: “A person’s perceptions and responses that result from the

user or anticipated use of a product, system, or service” (ISO DIS 9241-210:2008 part 210, as cited in Law et al, 2009). The ISO definition focuses on the object the user experience is related to. This is in line with the results from the survey that user experience is related to usage. The survey respondents seemed to agree that the concept of user experience is “dynamic, context-dependent and subjective” (Law et al, 2009, p. 727), a notion that originates from the many potential benefits coming from the usage of a product.

2.3 Internet Research

The Internet is not only an object of research, but nowadays also increasingly used as a tool for research. Several traditional qualitative research methods have been transferred to fit online research, some with modifications and some without. (Flick, 2009) Market research is a discipline that especially has taken on the Internet as a research arena. Internet marketing, social media and Internet opinion leaders are the basis for online recruitment and consequently Internet research. It is not as costly to perform Internet research and user experience studies online as in the offline arena where travel expenses can be high and geographical constraints may be hindering.

2.3.1 Internet Marketing

The growth of IT and communications technology allows for a more effective use of consumer-relationship management in consumer and mass markets (Merisavo, 2008). Advances in technology consequently foster changes in marketing methods (Rust & Espinoza, 2006). Thanks to information-technology tools, companies have the chance to be more customer-centric and market oriented by communicating with customers individually. The social-media explosion has also influenced the marketing community.

Viral marketing is defined as a strategy that encourages people to pass on an explicit or implicit marketing message to other people. The virus symbolism originates from the exponential growth the virus usually takes, which is what the marketing strategy is aiming for. However, these marketing campaigns are distributed through digital media. The viral marketing technique is mostly used when a product does not have the potential to generate a “buzz” itself. Instead the marketer has to create the “buzz”, pass it on and make the message contagious. By distributing contagious ads through peers, a viral message is created and the brand awareness increased. Many companies are realizing the potential in viral marketing as the most powerful selling tool of ideas. This takes place directly from consumer to consumer. The focus on the consumer’s personal experience with the brand usually adds credibility to the product. (Kirby & Marsden 2006) Snowballing techniques are based on the existence of social networks and linked to viral marketing methods of how to spread a message. Also the sampling procedure, snowball sampling, relies on the dynamics of natural social networks. (Noy, 2008)

“...having other people tell your story drives action” (Scott, 2007 p. 92)

Scott(2007, p.92) argues that when marketing companies employ viral campaigns, these rarely spread as far as messages spread by individuals. Corporate-based viral campaigns may even result in bad reputation on the corporations’ behalf when trying to interfere with something that should spread organically over the Internet. (Scott, 2007)

Online opinion leaders are experts in collecting and spreading information on the Internet. It is valuable to identify who the influential leaders are according to the frequency of involvement in activities such as:

- participate in chat rooms
- post to newsgroups
- send emails to companies
- make friends online

A common feature is the generating and participating in word of mouth activities. After identifying the opinion leaders, a company should be attentive to their ideas and dub them brand evangelists (Kirby & Marsden 2006). By monitoring blogs, companies can keep informed of what is written about them and their products on the Internet. Also online opinion leaders may be found in this way. There are trackers and blog search engines such as Technorati¹ that present statistics that can be used in the search for online opinion leaders.

Kirby & Marsden (2006) suggest a road map to identify opinion leaders in a certain segment:

1. What demographic, behavioral, attitude characteristic are we looking for? Decide what group to draw the opinion leaders from.
2. What are the opinion-leader criteria? Decide what qualities to look for when targeting the influential leaders.
3. Create a list of potential opinion leaders.
4. Have the people on the list participate in a screener where they are asked questions about behaviors and attitudes in order to differentiate the leaders.
5. Analyze the study results and determine who the opinion leaders are.
6. Let the communication begin! The opinion leaders like to get first hand information before others and for that reason it is important to offer them newsletters about novel products and industry trends et cetera. Have them try your services in exchange of feedback.
7. Sustain the relationship and make sure to be transparent in the communication. (Kirby & Marsden 2006)

Instead of solely acknowledging good comments of one's brand, it is worthwhile to use both positive and negative "buzz". By creating relationships and make an evangelist the source of the brand the company shows that they value all user comments. In the blogosphere for instance, a blogger should therefore answer quickly to blog-post comments, preferably through a personal and individual message. Blogs allow for monitoring and tracking comments, there are plenty of tools to use for this and the monitoring can be either active or passive. Thus, past behaviors may be analyzed to decide future direction. (Wright, 2006)

¹ www.technorati.com

The alternative to personal messages, non-targeted messages, may be regarded as spam by the recipients (Scott, 2007). However even targeted messages are sometimes deemed as spam. "Nobody wants to be mistaken for a spammer these days – the term implies association with shady stock promoters, purveyors of counterfeit products, identity thieves and other Internet 'bad guys'" (Stoller, 2008, p. 48). According to Stoller (2008), today's automated filters unfortunately too often mark legitimate emails as spam. This is challenging for companies while they strive to keep in touch with their customers and business partners. Emails such as newsletters are not necessarily found in the receiver's inbox due to filtering services. It is no longer that common for senders to get informed of non-deliveries due to the fact that email notification delivery might reveal information that in turn can be used by spammers. The uncertainty factor, whether a message has been reached by its recipients or not, makes the company risk losing the contact with the customers as well as their interest. A common recommendation is to "avoid any kind of sending practice that could be interpreted as intrusive, coercive or deceptive" (Stoller, 2008). By making email correspondence such as newsletters optional the receiver must give his or her permission and should be able to opt out of the service at any time. Transparency in the communication is another important element that can win the receiver's trust. The address that the email is sent from and the address that the email will be sent to when pressing reply should match. (Stoller, 2008)

According to Anderson, editor-in-chief of Wired magazine, we distance ourselves from the economy of scarcity where there is not "enough room to carry everything for everybody" (Anderson, 2004). Now thanks to the possibility of online distribution the approach is the opposite, the economy of abundance. Essentially, what will be profitable is no longer only a matter of volume. Anderson coined the term *The Long Tail* (see figure 2) for this situation where everything is found on the long tail. Many businesses limit their goods to the high volume popular segments; however, many sales take place outside the popular sphere. Embracing a smaller and niche-based market will result in a great number of niches in the long tail. By applying the long tail approach, businesses can identify new markets and expand existing ones. (Anderson, 2004) In a greater extent, Anderson's theory about the Long Tail could be applied also in marketing strategies. On the Internet there is a long-tail market for content created by different kinds of groups, ranging from non-profit organizations to big corporations. There is something for everyone's unique taste. (Scott, 2007)

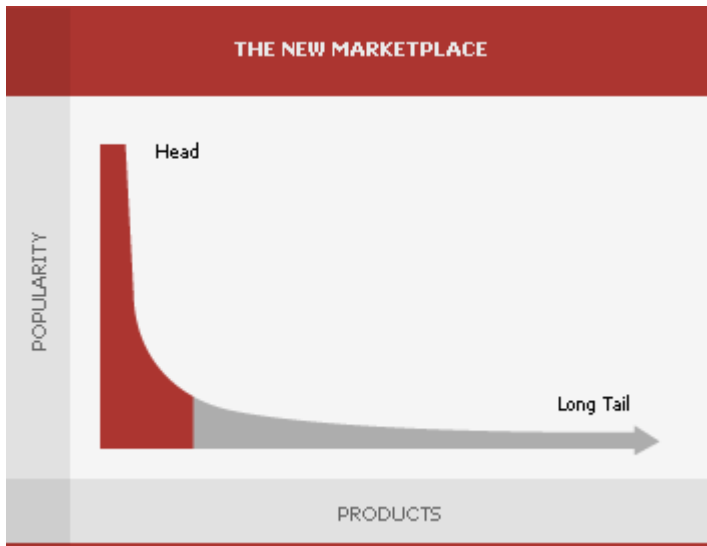


Figure 2. The Long Tail

Essentially, the long tail enables businesses to focus on a small and specific market, yet find enough of an audience to form a community while making a profit through advertising and product sales. The social media is the basis for a fundamental change in how messages are communicated nowadays. The cost of producing content and making it available to people on the Internet is marginal in comparison to producing marketing messages in the traditional offline media. The effect of low publishing cost on the Internet has subsequently shifted the power of communicating from professional writers and publishers to the everyday person. Today messages are communicated more equally by everyone, all of them with the potential of being as influential as messages distributed by news agents and such. (Comm, 2009)

2.3.2 Online qualitative research methods

Many offline qualitative research methods have been applied to fit the online sphere. However, according to Scholl, Mulders, and Drent (2002) quantitative online research is one step ahead of qualitative research. Structured surveys are easier to perform online as opposed to open qualitative interviews which require more engagement on both the respondent's part and the initiator. The advantage of using online research is the global perspective that a survey enables. Interacting with respondents worldwide without any travel expenses makes the evaluation process more efficient. (Scholl et al., 2002)

The traditional use of interviews in the offline arena embraces the face-to-face contact. Despite the lack of that key element in Internet research, the structure of online interviews should strive to resemble the same face-to-face aspect. The easiest form of online interviewing is having a conversation in a chat room, that is, in a synchronous form where direct messages can be exchanged. An asynchronous conversation is an interview structure where questions are sent out to the respondent and the respondent sends back the answers after a set time. Group interviews are also possible to conduct on the Internet. A focus group in the offline environment is usually held with a group of six to eight people who together discuss a specific topic in an interview for one to two hours. In regards to online focus groups there is, like for online individual interviews, also a distinction between real-

time and non-real-time groups. Participants in the synchronous category may take part in chat-room sessions or special audio- or video conferences where a group of respondents meet with a moderator. The asynchronous groups do not require all respondents to be online at the same time. An example of a non-real time group session is a bulletin board. A bulletin board is held in an online environment where each focus group respondent may take as much time as needed to respond to questions and read and reflect on the other respondents' responses. Additional quantitative methods online are email interviewing, virtual ethnography, and analyzing documents. (Flick, 2009)

An example of how online research methods were applied is a market research case study initiated by Canada Post. The study object was a new web-based service. The online market research firm Itracks was assigned the job to conduct the market research. Simultaneously a comparative study looking at differences in outcome between online and offline research methods were performed. In this case study a face-to-face focus group, a synchronous online focus group, and an online bulletin board were held to monitor the different outcomes that each method would provide. The outcomes showed that through the online methods participants revealed more of themselves than in the face-to-face method. This study suggested that online participants either are more expressive or that writing allows the participants to express their concepts and emotions in a greater depth. (Itracks, 2010)

In figure 3 below is an assessment of different interview methods illustrated. The diagram describes the differences in performance between offline face-to-face focus groups and online focus groups. This study was performed in Italy and the participants discussed the controversial topics HIV/Aids and smoking. The face-to-face interviews in the study did not result in the same detailed and personal discussions as the forum and chat interviews did. The physical face-to-face presence was experienced as inhibiting to the discussion. Some participants felt uncomfortable disclosing their personal experiences and feelings about the discussion topic in presence of the other participants. As a result the participants adopted an impersonal rhetorical style when formulating their comments and emotionally detached themselves from the research topic. Furthermore, the participants seemed more critical towards the research object as well as their co-participants opinions. The combination of a chat and a forum had a more balanced interaction and the participants interacted more effectively as in a real working group. (Bosio & Graffigna & Lozza, 2008). For this reason, Bosio et. al. (2006) claim that a forum is to prefer "to reach a detailed and well-mediated description of personal experiences"(Bosio et.al. 2006, slide 26). A chat-session can be used "to overcome a rational attitude and to generate new ideas or solutions" (Bosio et.al. 2006, slide 26).

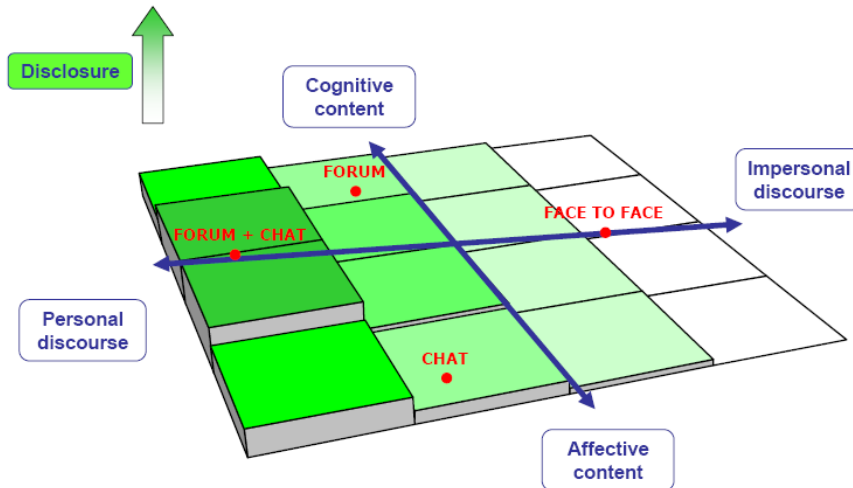


Figure 3 A conceptual map of data collection procedures in relation to participants' disclosure of thoughts and ideas. (Bosio et. al., 2006)

2.3.2.1 Online recruitment

The recruitment of respondents to online research studies is part of the Internet research process as for any research that requires a group of respondents. Even though the conditions are different for online and offline surveying, there is no specific theory explaining the issue of recruitment focusing on user experience studies. However, many books and articles give their best practice advice of how to organize and perform the recruitment.

Marketing techniques are commonly used to recruit participants online. For instance, snowballing techniques may be used. That is, the first recruited participants are asked to contribute with contact information to other potential participants. For both synchronous and asynchronous online interview methods the recruitment of participants may also be done by monitoring existing chat rooms or discussion groups. By posting information about a study and ask interested participants for their contact information participants can be self recruited. However, within a forum only a limited amount of personal information is accessible. Nicknames or email addresses connected to a membership account is usually open to the public whereas more personal information such as age, gender, location and so forth most often is not. In this case, the person initiating a research study must rely on the accuracy in the respondent's information. It is therefore important to be aware that it is difficult to know whether the participants meet your criteria and represent their personal information correctly. Consequently, this technique should focus the attention to the subject of reliability of such demographic data, and what the impact regarding contextualization this would result in. Yet this is only a problem if the aim is to create a homogenous and specific group. (Flick, 2009)

In ad-hoc recruitment, respondents are solicited via search engines, banners, links, newsletters, news groups, mailing lists, word of mouth, or through offline media. This technique is said to be expensive and unpredictable. Pre-recruitment is therefore usually preferred since it does not require identifying new potential respondents. Instead online

access panels are used. Online access panels consist of a pool of people who have registered to participate in web surveys. However, also the panelists have to be recruited at one point. (Görtiz, 2004) There are also other strategies for finding participants to focus groups. Using a list, a database of already existing participants is generally the best way to begin. Such a database could include names of clients, members, employees, or those using a certain service. Another strategy is nomination where neutral parties are asked for names. Piggyback focus groups take advantage of other events where the targeted participants are gathered for different purposes. (Krueger & Casey, 2009) Retention techniques should be incorporated into the recruitment. That involves building relationships with participants to encourage them to continue be a part of a respondent access panel.

Stimulus should be used in the recruitment process. People are more likely to sign up and participate in an online panel if a monetary incentive is offered. Nonetheless, the conclusion that the larger the incentive the more effective the approach is, proves to be ambiguous. In a study where participants were offered a chance to win the lottery if they agreed to participate, the results showed that the competition as an incentive was not sufficient enough to recruit respondents. Recruitment success might also depend on how prospective respondents are approached. Different solicitation methods such as contact through email, phone, fax and flier influence the decision to participate. (Görtiz, 2004)

In a qualitative product concept test on Philips Domestic Appliance Products, respondents were recruited through the instant-messaging program ICQ. Email addresses and phone numbers were retrieved from people's profiles. Potential respondents were grouped according to a certain criteria of qualifications and subsequently contacted via email. Despite the thorough preparations a significant portion of the chosen respondents did not show up for the evaluation session. Scholl et al. (2002) suggest that respondents instead should be recruited in the traditional way and not through a social medium as ICQ. Evans and Mathur (2005) have a slightly different outlook of that problem though. In the case of low response rates in online surveys, the number of times the respondents are contacted should be limited to avoid unnecessary spam-like emails. Respondents usually appreciate small incentives as a token of appreciation. In addition, the survey should be short, relevant, and of interest to the targeted audience. Nevertheless, the number of questions to a survey is usually not the decision factor, rather it is the amount of time required to respond to it (Evans & Mathur, 2005). If respondents are hesitant to participate in an evaluation, the initiator should send out a detailed description of the survey and about the agency performing the study as an attempt to decrease the loss of participants due to privacy issues (Scholl et al., 2002). Including a deadline and selectivity statements of the study in the invitations will most likely activate more respondents to participate. It is important to distinguish the survey contact emails from spam. If this is not done, the respondent will most likely not acknowledge the survey request (Porter & Whitcomb, 2003).

“The likelihood of responding to the request to complete a self-administered questionnaire, and doing so accurately, is greater when the respondent trusts that the expected rewards of responding will outweigh the anticipated costs” (Dillman, cited in Bosnjak et. al, 2005, p. 492). Dillman (ibid) applies a social-exchange approach to increase response rates, a concept that stems from the hierarchy-of-effects model (Helgeson & Voss & Terpening, 2002) that describes the response behavior as a process that moves from attention to

behavior: Attention → Intention → Completion → Return. Helgeson et al (2002) believe that it is of more value to study the behavioral aspects of survey responses instead of response-enhancing survey-design factors. Focusing on respondent factors such as perceptions and attitudes that underlie survey response may give a better understanding of response behavior. An example of such a factor is the respondent's attitude towards research. According to Helgeson et al (2002) attitudes toward research affected the attention, intention, and return stages. Incentives to participate were also an influence in the decision process. Attitudes toward research seemed to be the only psychological construct involved. This quantitative study aims to investigate if the planned-behavior model is useful to understand (non-)participation in web-based surveys. The usefulness is statistically measured by the predictive validity of the model. (Bosnjak, 2005)

2.4 Summary theoretical framework

This thesis theoretical framework is greatly influenced by marketing and behavioral theory combined with ideas from Internet research. Applying theories from Internet research as a means for recruitment to user experience studies is beneficial even though online recruitment is not necessarily easier than offline recruitment. Kirby & Marsden's roadmap to identify online opinion leaders is a first strategy to reach cutting edge users. Cutting edge users are often early adopters and sometimes opinion leaders who enjoy sharing their thoughts and ideas. Identifying online opinion leaders within the current discipline of technology could lead to finding the users who would be interesting to include in a user experience study. Offering incentives is a good way to influence users to participate. The incentives do not have to be monetary though. In communication with potential respondents it is vital to be transparent, preferably via personal communication. Individual contact is usually better due to the spam risk or the risk for the message to be perceived as spam. The participants must be talkative and willing to share their ideas in order to be an adequate respondent. Conducting user experience research online is a cost-efficient way to interact with users. Some online focus groups allow asynchronous communication. This is a great advantage since the respondents can plan their participation around their regular schedule.

3 Background

In this chapter the study object Ericsson Labs will be explained in relation to the developer ecosystem and the fragmented smartphone applications market. The Ericsson Labs users represent the developers in the developer ecosystem.

3.1 Developer ecosystem

There is no clear definition of what a “developer ecosystem” represents. However, a developer environment that strives for a complete user experience encompasses the developer ecosystem into the offerings. A platform or a portal should be built by and for its users. “The applications come from developers; they’re the innovation engine for the industry” (Taft, 2005). The ecosystem should care for the developers’ and its partners’ business interests. The ideas of a developer ecosystem must be inspired by the concept of the business ecosystem. The business ecosystem is an economic community based on interacting organizations and individuals. It is an environment where industries no longer are isolated entities. Instead a wider perspective is applied to embrace the suppliers, lead producers, competitors, customers and other stakeholders that are involved in the economic system. (Moore & Curry, 1996) For that reason, also a portal provider’s role is to see the user as part of a greater system of actors, partners and consumers. For example, it could be to care for interoperability or publishing facilities. A portal should provide the users with tools and support to let them engage in creating new and innovative applications. Distribution capabilities are also a service that developers may need in order to channel their apps to the right audience.

According to Taft (2005) a developer culture that emphasizes transparency has shown to be a key factor to success. It is important to show developers that are using a developer platform what the company behind the platform is doing at the moment. This could for example be through conferences where developers are invited as auditors. Sharing plans and information about where the company wants to play in the market in addition to posting an extent of technical information on the platform are additional examples of transparency. By keeping the developers who are using the platform on track with the news they will be more likely to adopt these technologies and at the same time keep the business ideas in mind. (Taft, 2005)

3.1.1 Smartphone application market

The IT research and advisory company Gartner’s glossary defines the term smartphone as: “A large-screen, voice-centric handheld device designed to offer complete phone functions while simultaneously functioning as a personal digital assistant” (Gartner, 2010). A smartphone enables additional information accessing by combining voice services with email, fax, pager, or Internet access. Smartphone and mobile applications (apps) are software programs that are downloaded, installed and perform specific tasks on a smart-phone and mobile device. There is a great selection of applications including games, social networking, productivity, utilities, (multi)media and entertainment, and education. “Mash-ups” are applications that combine one or more functions. The market research and analysis company eMarketer (2009) assesses that the competition between rival mobile platforms and operating systems will spur within the next years as manufacturers and operators will

aim for a greater control of the market. Originality, utility, and entertainment are key values to future success in the application market. (eMarketer, 2009)

Today the user is restricted to smartphone devices' application stores (app store) due to the lack of interoperability between different operating systems and the device's app stores. As a result the relation to the operator gets weaker as the device and its software platform strengthen the tie. The mobile ecosystem is complex and involves many different players. The different app stores can be grouped into three categories. The first group containing the device manufacturer or operating system (OS) based app stores. These offer apps that are functioning only on respective OS (Android Market, Apple App Store, BlackBerry App World, Nokia Ovi Store). The second group of app stores represents the operator-based stores. These stores restrict the user to only use apps from the respective operator. The last group represents the operator and device independent stores that span across multiple OS platforms. App stores may offer different options of purchasing apps, either directly on to the device or via a web channel. Hence, the smartphone application market is very fragmented. (eMarketer, 2009)

Historically, the drivers of the fragmented device market included different screen resolutions, different underlying operating systems, weak standard compliances, and many hardware configurations. Different language support and operator branding also adds to the market complexity. MacKinnon (2009) argues that the mobile programming model must realize a few basic things: that device capability will vary, wireless networks are not always available, and bandwidth and battery life are key. The difficulty lies in the inability to "write once and run anywhere" (MacKinnon, 2009). (MacKinnon, 2009)

The common actors in the mobile application market are identified below.

- *Mobile application developers* create the actual applications and they can use the provided development and testing tools for their development. Mobile application developers are struggling with the evolving fragmented smart-phone market's interoperability issues. The developers can submit their completed applications to application store providers. (Frost&Sullivan, 2009)
- *Application store (app store) providers* aggregate applications from different application providers and offer them for download. Other services that can be offered are marketing support, reporting and feedback, and billing and settlement.(Frost&Sullivan, 2009) The App store ecosystem has three main actors. First is the device manufacturer or operating system-based stores such as Apple's app store and Android market place. Second are the operator-based storefronts and third are the third-party storefronts such as Handango and Handmark (eMarketer, 2009).
- *Platform providers* are a complement to the app store providers and are formed when the storefronts partners with industry participants to jointly manage for example application distribution and billing and settlement. Platform providers are expected to become more important as more industry participants introduce their own app stores.(Frost&Sullivan, 2009)
- *Mobile operators* have their own application storefronts catering to both its consumer and enterprise segments. The mobile operators provide the wireless

connectivity to enable the process of downloading applications from a device. (Frost&Sullivan, 2009)

- *Portal providers* are similar to the platform providers although they are not operator-system specific. See the following section for a further description of developer portals.

3.1.2 Developer portals

Developer portals are offered in a wide range of structures, often hosted by operators but telecom and mobile companies are becoming more common as hosts. The portal provider offers developing tools such as application program interfaces for the developer to use. An application program interface (API) is an interface that is used to access an application or a service from a program. An API enables the use of a program within a program. Simply put, developer APIs are standardized software applications that shorten the developing process for developers. (PC Magazine Encyclopedia, 2009)

The developer portal is the interface through which the portal provider will communicate and support the developer. Suggested functionalities are tools for development, white papers, tutorials, registration facilities and deployment capabilities. Access to developer portals may either be offered as a free service or at a cost. For example, on the Google Android developer portal it is not required of the developer to register to access the SDK² and forums. However, it is required to register in order to publish an application in the Android Market. The current registration fee is \$25. Developers interested in the iPhone Dev Center and iPhone SDK must on the other hand register for a free Apple account. (Ovum, 2009)

3.2 The Developer Experience project

The Developer Experience project aimed to identify factors that impact developers' overall experience of using two major mobile application platforms. To better see the developer needs, what motivates and triggers them in their work, cutting-edge developers were invited to a user experience research study. The developers that were included in the study were advanced users of the iPhone and Android platforms, from the US, UK and Sweden. Two campaigns were held and online evaluations were used as a method for interaction with the developers. Performing evaluations online was a new method for the User Experience Lab and it proved to be a successful and cost-efficient way to interact with users. Rather than traveling to the US and the UK and meeting the developers in person, the online study enabled the research team to interact with the respondents from the home office. The interviews in the first campaign were held over Skype and the second session used a 10-day long bulletin board session on the social networking site Ning³ where one discussion topic was added each day. However, the User Experience Lab experienced a significant setback when not getting a sufficient number of respondents for the evaluations. The digital "word-of-mouth" agency Pronto communications were assigned the job to recruit participants for the campaigns. Pronto's consultants first posted ads in forums and Facebook groups where iPhone or Android developers discussed development related topics in search for potential

² SDK – Software Development Kit

³ www.ning.com

candidates. This method only resulted in an insignificant number of participants. Instead, Pronto took a different approach and by following discussion threads on forums and reading blog posts the Pronto staff contacted potential candidates who seemed suitable (active and talkative) as participants. The developers were sent a personal message asking if the person would be interested to participate in a study (Axell & Sundqvist, 2009). In retrospect, this ad hoc strategy was experienced as extremely time-consuming since the developers were hard to recruit and it required manual search work. The cutting-edge users were also found to be difficult to reach via web communities which made the recruitment even harder as they usually are not registered in recruiting databases. The recruitment difficulty is a problem that the User Experience Lab is facing. (Chincholle et. al, 2009b)

In brainstorming sessions that were held in February 2009 two groups of developers shared their ideas to help the Ericsson Research team identify important aspect of the developer experience. These developers identified themselves as coders of which one of the groups were hobby developers and the other groups were professional developers. Some of the key aspects of the developer experience according to the two developer groups are as following:

- Search engines are essential to the developers as these are the important sources of information that the developer needs to retrieve. Thus, using Google is seen as more efficient than typing URLs.
- Unofficial sites are more often visited for information gathering as opposed to official sites which are seen to be less open and have corporate policies. (Chincholle et. al, 2009a)

This brainstorming session was the introductory activity to the Developer Experience project. The knowledge gained from the Skype interviews and the bulletin boards helped to further understand the developer characteristics. Four different developer profiles were identified. *The Believers* believe in the principle of open source above anything else. They prefer developer platforms that big companies not fully control. For this reason they usually prefer Android over iPhone. *The Pragmatists* on the other hand are more money oriented which impacts their decision to optimize their time and only focus on one developer platform. They believe that going with a strong commercial actor often gives a better return on investment for the individual developer. Hence, the Pragmatists are either Android or iPhone developers. *The Cheapskates* choose developer platforms based on barriers of entry. They prefer portals that do not require investments since they often develop for training purposes. Most of them prefer the Android platform. *The Centipedes* are business oriented and base their platform decision accordingly. They are focused on distribution capabilities and diversify their company by developing on many platforms. The Centipedes are using both Android and iPhone platforms. (Chincholle et. al, 2009b)

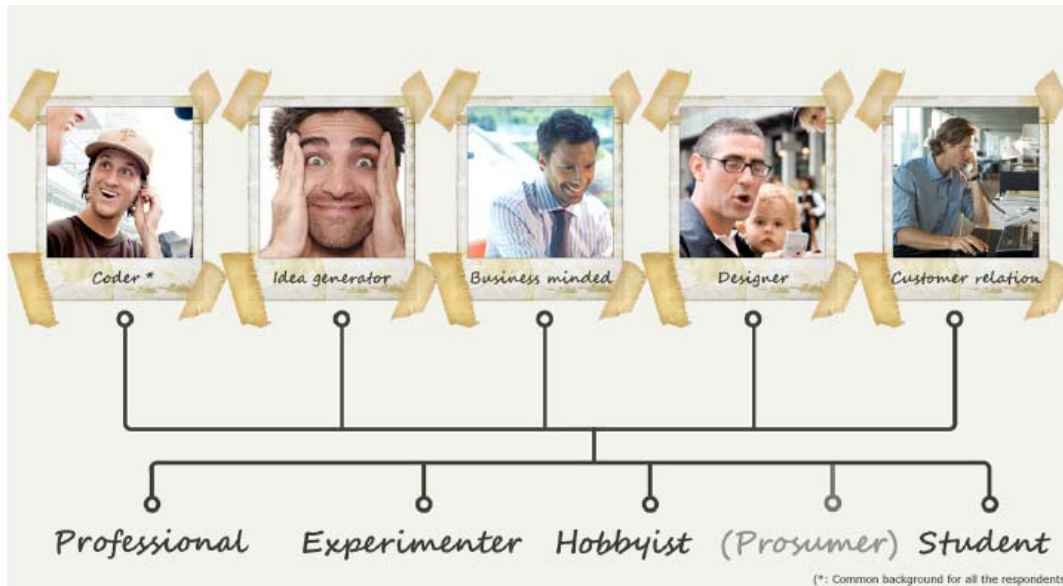


Figure 4 Developer roles extracted from the Developer Experience project (Chincholle et al, 2009)

The Developer Experience project's purpose has throughout the whole process been to feed the Ericsson Labs team with valuable information about developer patterns, needs and ideas; essentially to map the developer experience to serve the Ericsson Labs' developer community in the best possible way. In this thesis the recruitment issues will be further investigated by studying the users on the Ericsson Labs developer portal. This thesis acts as a complement to the Developer Experience project.

3.3 Ericsson Labs

Ericsson Labs is a developer portal operated by Ericsson Research, Ericsson's research department. The portal is a test environment that facilitates the beta testing of APIs in close cooperation with the developer community. Telecom and multimedia beta APIs are offered to experimental mobile and web developers. The portal's combination of web and telecom enablers is exclusive as they originally were offered separately by providers, the operators and the capability providers respectively (see figure 5). Now, such enablers are combined and offered through one portal, the Ericsson Labs. The aim is to simplify for the developer (see figure 6). In line with the ambition to create a dynamic developer community, the site also offers a back-end service. Web 2.0 features such as forums, news and blogs and other services such as registration, documentation, tutorials, and sample code are offered to increase interaction between the portal provider and the application developer. (Minde et al., 2009) For this, the Ericsson Labs team have been inspired by the structure of Google Code, the Google Android developer portal (Larsson & Sandberg, 2009).

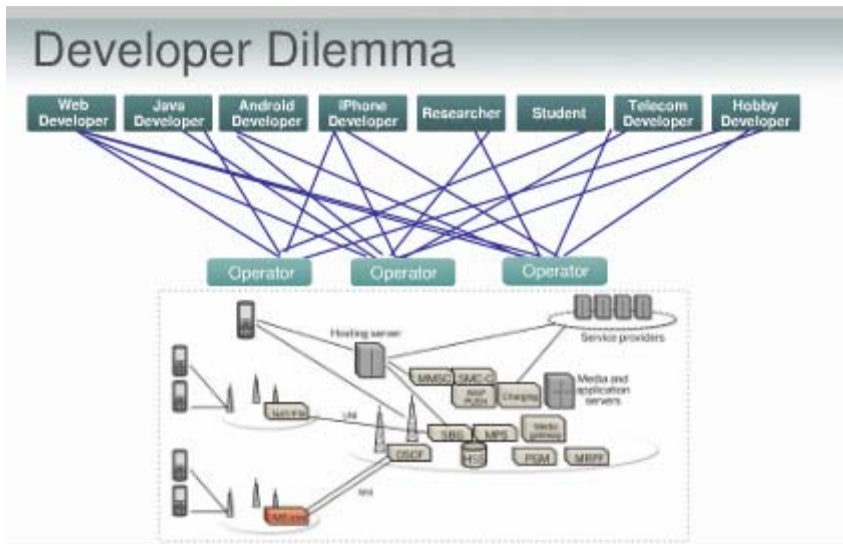


Figure 5 The fragmented developer community

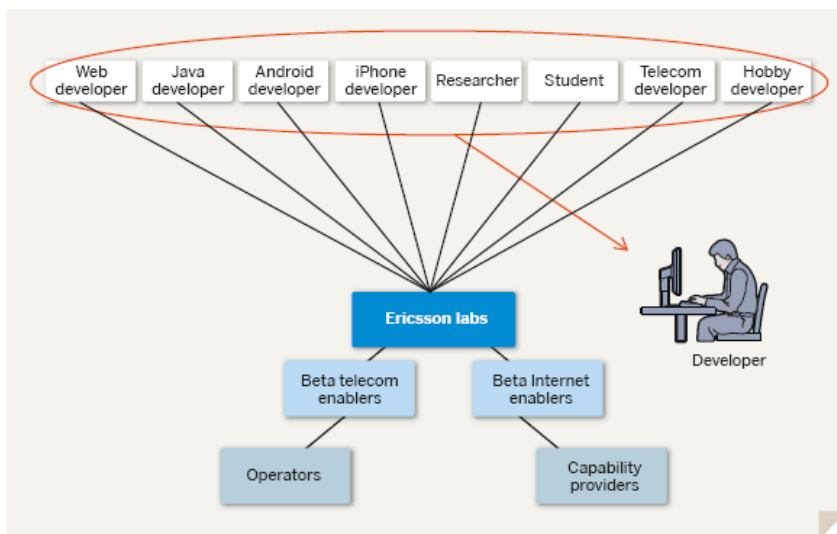


Figure 6 Ericsson Labs - a simplified work process

Mobile applications are nowadays developed by a large community of developers. Ericsson Labs' target group of users is experimental and cutting-edge developers. They include hobby and web developers along with Java and C developers that constantly are on the look-out for the newest technology appliances. Moreover, the aim is to involve researchers and students to let them use the portal for study, research, and experimental purposes, which also is a way to assure advance applications. Ericsson Labs offers the experimental developers a simplified work process, as shown in figure 6, in the combined offerings of telecom and Internet enablers. (Minde et al., 2009)

To download enabler keys and to participate in the site's forums the user has to be a registered member. However, this is not required to read posts and other material such as tutorials and documents related to specific APIs. They are open for everyone to read. The Ericsson Labs team has used marketing channels to make the portal visible to the targeted

group. These marketing strategies included web-ads, public relations through social media, and events in contexts where developers that would be interested in Ericsson Labs are found. The Twitter account⁴ that is connected to the portal is also functioning as a news and information channel, as part of the marketing and PR strategy (Twitter, 2009). The Ericsson Labs' Twitter channel has formed a large group of followers⁵ since its launch in June 2009. The Ericsson Labs' team wants to attract users with an experimental mind-set; it is not clear who the actual active users are though, what expectations they have on the portal and what their needs are.

3.3.1 Ericsson Labs offerings

The main offerings on the Ericsson Labs portal can be categorized into three groups: development support, hosting & test, and showroom. The development support is the APIs and the surrounding developer environment including expert help in forums and blogs. These services include the developer portal as well as a back-end server system. Ericsson provides technologies and communities for developers and enable them, if needed, to get in contact with experts from different fields (Ericsson Labs, 2009). Featured on the portal are interactive web 2.0 services such as forums, news, blogs, registration, openID login⁶, documentation, tutorials, and sample code (Minde et al., 2009). The back-end service provides the user with extra developer support before, during, and after the developing process. This includes API key handling, statistics, application publishing, and client distribution (Minde et al., 2009). The hosting & test offerings include deployment facilities and application servers, aside from the testing and evaluation activities that the Ericsson Labs experts offer. The showroom offering on the portal enables the users to publish their applications on the site. The applications go through a thorough evaluating process where Ericsson Labs team members evaluate and give feedback on the application before it is uploaded. All users are able to download and try the applications as they are offered for free and open to everyone. By the end of 2009 there were six applications available for download. They are built by both developers from Ericsson's research department Ericsson Research and by external developers that are active users on Ericsson Labs. All of the applications use one or more Ericsson Labs APIs, which is a requirement to be published on the portal. Additional features offered on the portal are an all-encompassing blog and forum for general discussions and news spread. (Minde et al., 2009)

Each API enabler comes with a mini site where a forum, a blog, documents with example code and tutorials are found. The separate sites are administered by different teams who are responsible for the specific API. At the moment there are thirteen⁷ beta enablers offered on Ericsson Labs (Ericsson Labs (ii), 2009). The API portfolio spans from communication enablers (Mobile Java Communication Framework, Mobile Java Push, SMS Send & Receive, and Web Connectivity) to location (Mobile Location, Mobile Maps, Web location, 3D Landscape) to multimedia services (Streaming Media). Other APIs are Tag Tool, Face Detector, and Cluster Constructor. According to Sandberg (2009), the most popular tool is the SMS Send & Receive. These cutting-edge APIs are offered to let the developers create

⁴ <http://twitter.com/EricssonLabs>

⁵ 3316 followers on December 18, 2009.

⁶ openID is a service that simplifies the login process for the user.

⁷ At the time for the sending of first contact email, only seven enablers were available on Ericsson Labs.

or experiment with advanced mobile/web services. The API is offered along with example code, tutorials and support features such as a forum. Publishing and sharing applications requires a distribution channel. Applications that are built with the tools from the Ericsson Labs APIs can thus be published in the showroom. However, only after being approved by the Ericsson Labs team. Ericsson Labs does not aim to become a big application store which is why users are recommended to also use established application front stores such as Sony Ericsson PlayNow, Android Market and Getjar.

4 Methodological Approach

In this chapter, the study's methodological approach will be outlined. The working procedure, how the study was conducted and the procedures for information gathering will first be described followed by an explanation of the recruitment process and the interview methods that were used.

In preparation for the recruitment process for the user experience study a literature review was performed, the Developer Experience team meetings were visited, and conversations were held with representatives from two communication and market-analysis firms. The main literature that was studied was taken from books and scientific papers within market research, Internet research, and marketing theory. In addition, independent market-analysis reports about the mobile-application market as well as articles related to user evaluations were studied. The User Experience Lab retrieved information about the Android and iPhone developer communities by using online interview methods. Attending the Developer Experience team meetings, in the beginning of the thesis work, was helpful to gain knowledge about how online evaluations may be performed. The meetings also gave a first insight into the application developer community. The communication and market-analysis companies were Pronto Communication and Augur Marknadsanalys both of which were previously hired as consultants by Ericsson Research. Pronto specializes in word-of-mouth marketing on the Internet, its CEO Gabriel Sundqvist and one of the project leaders Sandra Axell gave their insight on the recruitment of participants to the Developer Experience project. Augur Marknadsanalys focuses on market research and market analysis, one of its partners Annalena Ström Carlsson addressed the key issues in offline recruitment of participants to market-analysis studies. The purpose of these meetings was to exchange ideas and understand how the consultants worked in previous Ericsson Research projects. The knowledge gained from these sessions has been used as a foundation for further investigation about online recruitment. Throughout the thesis work regular meetings were held at Ericsson Research with the thesis supervisor Didier Chincholle to make sure the thesis work was going in the right direction. His colleagues, Caroline Hägglund among others, that also were involved in the Developer Experience project also contributed with good input and feedback during the work process.

Two graduate students from the CyLab Mobility Research Center at Carnegie Mellon University, USA performed a quantitative survey study about mobile developers during 2008. One of the students was Alberto Lia with whom email conversation was established. Their project's scope, to investigate the mobile ecosystem, is closely related to the developer focus in this thesis. Their executive summary was the only public information about the study. In confidence Lia shared parts of their thesis about the survey design and the statistical methodology they applied. The Carnegie Mellon study was especially interesting since they used social media as a means to promote their study and find participants. The interactive recruitment channels that were used were Facebook, LinkedIn, and other development related forums where information was posted about the study. They predicted that the survey invitation reached an estimation of 50 000 people (Lia, 2009).

The Ericsson Labs portal was decided as a study object since it is a beta version and would benefit from user evaluations. Furthermore, in order to attract more users and thus facilitate and support more applications a user experience study is of value to understand which improvements are needed. The portal offers advanced tools to its users and would therefore be an interesting environment to test recruitment of cutting-edge users. In order to gain a better understanding of the developer community and the portal, an account on the Ericsson Labs portal was set up. In addition, the preparatory work included establishing and maintaining contacts with the Ericsson Labs project manager John Sandberg and his team member Staffan Larsson. Via telephone meetings and email conversations they answered questions about the portal which was valuable to better understand the purpose with the portal. The information gained from the user experience study of Ericsson Labs was presented to the Ericsson Labs team in December 2009. The results from the study will only be partially presented in this thesis due to confidentiality restrictions.

In order to gain a comprehensive and deeper understanding about the Ericsson Labs users a qualitative research method is required. Reaching a vast number of users is not a goal and the findings will for this reason not necessarily allow generalization. The choice of study method was made in reference to the thesis' theoretical framework. There is a close connection between qualitative market-analysis strategies and user experience research methods. The techniques apply similar means to gain knowledge about users and consumers. This is a reason for the great emphasis on marketing theories in the theoretical framework chapter. The fundamental difference though is that user experience studies usually are made in support of research and development whereas market research describes actual consumer behavior on existing markets. Performing evaluations online was the basis for this thesis although the decision to use individual interviews and focus groups was made since it in the Developer Experience project proved to suit user experience studies well.

4.1 Execution of the user experience study

Due to the complexity in online recruitment of cutting-edge users, something that was experienced in the Developer Experience project, the idea to recruit participants from social media networks on the Internet was quickly dismissed. The consultants from Pronto Communications found it too time-consuming and the results were low in proportion to the effort the method required. For this reason it was decided to strictly use the Ericsson Labs' user database to pull participants from. The overall goal with the study is to facilitate a user experience study and thus evaluate the Ericsson labs site. Below is a description of the work process from the initial study approach to the actual study process.

4.1.1 Initial approach

Initially, the plan was to include three groups of users in the study according to the following set up:

- Group A: The first group includes active users on the Ericsson labs site. They use the APIs distributed by Ericsson, have published at least one mobile application and regularly contribute to the forum on the site.
- Group B: The second group also consists of registered users on the Ericsson labs site although they are not as active as the ones in group A. Group B's users are

defined as semi-active, they have downloaded at least one of the APIs but never published anything.

- Group C: The third group has no previous relation to the Ericsson labs portal. The non-users might have heard about the site yet never registered. They are active developers on other developing portals where they have published at least one application. For this reason they might be interested to also learn about Ericsson Labs.

The three groups were planned to be recruited in different ways. The contact information for group A and group B would be provided by the Ericsson Labs team. Group A and group B were planned to be approached simultaneously and would respond to the same screener questionnaire. Screener questionnaire consist of qualifying questions that aim to identify a target audience. The appropriate respondents should quickly be recognized by analyzing their screener responses. The screener can either be included in the complete research questionnaire or be separate. If the screener is separate the real research questionnaire will be provided if the person “passed” the screener test. (McDaniel & Gates, 1998) Depending on their screener responses, the respondents were intended to be divided into the two predefined groups (group A and B). Everyone would be contacted through individual and personal emails. Group C was planned to be contacted via forums and blogs. Furthermore, the groups should be approached in different ways and the studies should apply different evaluation methods in order to learn as much as possible about online recruitment. Screenshots of the site or some sort of visual stimuli should be included as discussion topics to initiate conversations about the usability of the portal.

After receiving more information about Ericsson Labs and considering the Developer Experience project’s recruitment difficulties, Group C was decided not to be included in the study. The reason for this is that Group C was considered too heterogeneous. Recruiting these developers would require using an ad-hoc strategy just like the recruitment method that was used by Pronto Communications in the Developer Experience project. Also, including Group C in the study would be more of a marketing strategy to gain more users rather than a method to evaluate the portal. The recruitment plans were as a consequence rearranged (see next section 4.1.2 for the actual method approach).

4.1.2 Actual approach –the recruitment process

The recruitment phase should start with analyzing which participants one wants and how to reach them. To decide who to include in the target group, the purpose of the study should be considered. That is, one has to consider who the research study should make statements about and who will be able to provide that kind of information. Having a great understanding of the targeted group is vital in order to create the right message to communicate. Krueger & Casey (2009) identifies three factors that drive the decision of who to invite: the study’s purpose, everything the research team knows about the targeted group, and the budget of the study which also sets the degree of specification. (Krueger & Casey, 2009)

In order to be able to recruit participants to any type of qualitative study, the demographic and observable characteristics of the targeted group has to be identified as precise as

possible. Without any prior experience from recruiting cutting-edge users there is no shortcut but to start from “scratch”. However, if not knowing anything about their background even starting from “scratch” is difficult. Considering the importance of understanding who the users are and what forums they are active in is therefore a must. Hence, the research plan was changed to consists of studying the users on the Ericsson Labs site. The objective is to gain more knowledge about who they are and about their background. Studying the members on the site will result in learning:

- Who the users are
- The users background
- What the users are using the Ericsson Labs site for
- The main motivation (drive) for using Ericsson Labs’ APIs
- What is missing on the portal and what improvements to make

Three different groups of Ericsson Labs users were identified. One group comprised of users who are registered on the site but have not shown any sign of activity yet. The second group consists of registered users who have downloaded a key to an API enabler but never made a request to it. The third group also downloaded the key and made at least one request to the enabler. A request could for example be to send or receive an SMS for the SMS Send & Receive API or to request a position for the Web Location API (Larsson, 2009b). The Ericsson Labs team can log the server traffic and determine how active the users are.

- Group “NONO”: Users who are registered but did not download an enabler, and for that reason never made a request to the server.
- Group “YESNO”: Users who are registered and have downloaded an enabler but never made a request to the server.
- Group “YESYES”: Users who are registered, have downloaded an enabler and made at least one request to the server.

All three groups were considered interesting to learn more about although the groups which are not that active were considered more important for the Ericsson Labs team to contact. The team needed to understand why users from group “YESNO” and group “NONO” are not as active and what could be done to make them more involved on the portal.

The user experience study was made possible thanks to a database of users operated by the Ericsson Labs team. The contact data contained information of how active the users are on the portal. A selection from the database of addresses was made and the three groups were approached simultaneously but were sent different screener questionnaires (see contact letters in Appendix I). Everyone was contacted through individual and personal emails. The first interaction with the participants was through a screener. The screener questionnaire consisted of qualifying questions that aimed to identify the cutting-edge users.

The screener questions were added to the contact email. These questions would respond to the respondents’ basic demographics such as age, gender, location and occupation. Furthermore, the screener would indicate if the users had downloaded any of the Ericsson

Labs’ APIs and if so, whether they are using them or not. They were also asked which of the APIs they were using. The screener questions were, however, slightly customized. It was already clear that the “NONO” group did not use any of the APIs, which is why some questions sent to the “YESYES” and “YESNO” users were not sent to the “NONO” members (see Appendix I).

The contact letter was carefully composed with the input and advice from the Ericsson Labs team. The letter was for that reason cautiously reviewed and the decision was made to include the screener questionnaire in the first contact email. This would decrease the number of emails the users would be sent. The reason for being so careful in the approach towards the users was that they should at no cost be distressed about being contacted. The Ericsson Labs team did not want to risk losing users. They requested that the contact information to the users consequently should be handled with extra care. The letter was composed to address each individual and to give a personal impression. The individual aspects were assured by greeting each receiver with his/hers Ericsson Labs’ nickname (usually the first name) and by sending individual emails. Due to restrictions with regards to the handling of the user database and specific requests from the Ericsson Labs team, the Ericsson Labs team was assigned as sender of the email. Thus, the email was sent from the email address survey@labs.ericsson.net and a copy was sent to sara.abramowicz@ericsson.com as the administrator of the study.

The goal was to recruit at least 10 participants per group, a total of 30 people. The first set of emails were sent October 27 2009. In total 430 people were contacted in 5 different rounds of email distributions. Due to the fact that the emails were customized and individually sent it was not possible to send all at once. For this reason several rounds of email distributions were required. Also, the request from the Ericsson Labs team was to disturb as few Ericsson Labs users as possible. It was initially expected to be sufficient with the two first batches of emails.

	Contacted		1st	2nd	3rd	4th	5th
“YESYES”	111		36	13	10	49	3
“YESNO”	130		38	30	19	42	1
“NONO”	189		50	48	20	66	5

Table 1 Number of Ericsson Labs members that were sent the contact email

The number of letters sent in the second and third email distribution rounds depended on the response rate from the first batch of emails. Some users responded the screener as if they should have been part of another group. In those cases, the groups were rearranged according to their responses.

4.2 Interview method

Focus groups should evoke conversation and the discussion questions should be formulated accordingly (Krueger & Casey, 2009). Deciding the interview method is therefore essential to establish a successful research process. Performing interviews in an online setting is beneficial since it is less costly and it makes it possible to also interact with participants

outside of Sweden. Performing interviews to evaluate the Ericsson Labs portal online is extra useful since the site has a global user base.

The thesis' qualitative method of data assembling use primary data collected from interviews and focus groups. A recommendation given in the Developer Experience study was "*There is no doubt that such methods [online methods Skype interviews and Ning bulletin boards] can be used for collecting information from - but also for interacting with - Ericsson Labs developers*" (Chincholle et. al, 2009b). However, the decision of which interview method to apply was made after knowing the number of users that responded to the screener questionnaire and thus had given their consent to participate. Initially though, the suggested interview method was that if enough participants from group "YESYES" and "YESNO" are interested, they would be interviewed through online focus groups. The group sessions would be interactive discussions where the respondents will respond to questions on a bulletin board. Bulletin boards, a type of online focus group, would be held on the social networking site Ning. In the Ning network one set of discussion questions were planned to be added during five days, 5 topics presented by the end of the session. The participants were told that the online sessions would take maximum 60 minutes of their time, a guideline that also the planning for the interview methods must follow. After that, a few respondents from the bulletin board will be handpicked and asked to be part of a second online session, performed in real time, to elaborate and go further into discussions. Group "NONO" will test chat sessions and Skype interviews which will be led by a moderator and performed individually and synchronously. The 30 minutes individual interviews using Skype's phone function was the second proposed interview method. The Skype voice call is a free service that enables phone calls to anywhere in the world (Skype, 2010). The only requirement is to possess a Skype account. This was requested of the respondents to arrange, unless they already were using one. In order to fully focus on the conversation during the interview, the Skype voice calls were planned to be recorded, with the respondents' consent, using the add-on tool Pamela. The Professional version of Pamela that enabled unlimited recording time was downloaded for a free 30-day trial (Pamela, 2009). The participants were told to give three suggestions of date and time when the interview could be held.

The discussion guides were arranged with respect to the chosen interview method. The three respondent groups were given different question topics based on their degree of involvement on the portal. (See Appendix II for group "YESYES" discussion guide, appendix III for "YESNO" and appendix IV for "NONO".) The discussion guides were prepared to gain more knowledge about:

- Who the users are
- The users background
- What the users are using the Ericsson Labs site for
- The main motivation (drive) for using Ericsson Labs' APIs
- What is missing on the portal and what improvements to make

5 Findings

In this chapter the results from the user experience method study will be presented, as well as selected parts of the Ericsson Labs study findings. The interview methods used in the user experience research will also be assessed. The Ericsson Labs study results represent the users' experience from the portal.

5.1 Online recruitment

The recruitment of users was difficult. Several rounds of contact emails had to be sent due to the low response rate in the initial email distribution. After the first 111 invites were sent, only 7 replies were received. For that reason, it was decided to send the contact email to additional members. The incentive to participate was initially stated as a voucher. When the response rate appeared to be low, extra effort was put to more clearly communicate the information about the compensation. The exact value of the voucher was not set at the start of the recruitment phase; it was now decided to 200 SEK. In upcoming conversations, and in some of the extra emails, the participants and potential participants were informed of this amount as an additional incentive to participate in the study.

An immediate result, that negatively effected the recruitment, was that the email addresses to some Ericsson Labs developers were either expired, not in use anymore, or misspelled. The email server notified of undelivered mails and contact letters were returned to the sender. The faulty email addresses came from all three respondent groups, and not only the least active one. The impact of the non-functioning email addresses was that less users were reached by the contact email. In order to login to the Ericsson Labs account the member needs the exact email address and the password from registration. Thus, another result is that there are less people than registered accounts that access the Ericsson Labs portal. In addition, some users seemed to have registered for several accounts. This is not forbidden albeit an interesting behavior. One explanation why users would have corresponding accounts could be the limited number of SMS each user is allowed to send via the SMS Send & Receive API. Users who register again are entitled to a new quota of SMS messages. This is made possible by using different email addresses, for instance name@gmail.com, name@yahoo.com and name@hotmail.com. This conclusion was drawn by identifying patterns of such behavior in the contact information from the user database. All this means that the real number of users were considerably lower than originally anticipated.

After receiving the first replies from interested users, it was discovered that the original groupings of “YESYES”, “YESNO”, and “NONO” were not definite. The original group division (based on the information from the Ericsson Labs team) did not seem to adhere with the requirements of for example having downloaded or not downloaded APIs. Some members of the “NONO” group would for example according to their screener responses fit better into the “YESNO” group and would therefore be regrouped.

The numbers in table 2 below represent the users who responded to the contact letter and thus showed interest in the study. The numbers in the table are based on the original “YESYES”, “YESNO” and “NONO” grouping, disregarding from that their screener

responses might have differed. Users who were interested in participating usually responded straight away after receiving the invitation to the study. If they had not responded within two days, they were less likely to respond at all.

Responses	Total	1st	2nd	3rd	4th	5th
"YESYES"	14	4	2	1	6	1
"YESNO"	7	2	1	1	3	-
"NONO"	8	1	2	-	3	1(2) ⁸

Table 2 Responses to contact email before regrouping

Four of the responses were from users related to Ericsson. They were either employees or involved in Ericsson projects although not part of the Ericsson Labs team. These users had registered to Ericsson Labs with their private email addresses for personal usage. The participants in the study were not intended to be Ericsson employees or in any way associated with the company which is why all users with an Ericsson address were disregarded from the start. For this reason they were not anticipated to be in the respondent groups. Perhaps due to their Ericsson connection they were more likely to respond though. These four respondents are included in the statistics above but were kept in a separate group as their ideas probably would be influenced by their experience from the Ericsson work setting. Furthermore, a few participants were added to the study after the bulletin board sessions started. These could for that reason not be included in the groups "YESYES" and "YESNO", even though they fit the group criteria. These respondents were therefore asked to participate in individual online interviews instead.

Only one user asked for more detailed information about the study before deciding whether to participate or not. This respondent was uncertain whether he was the right person for the study as he had not used all APIs. The overall objective with the study was communicated as well as the actual requirements for being part of the study. Eventually, this person decided to participate.

In total, 29 users were interested in participating in the study. They responded to the screener questions and sent their answers either to the external address survey@labs.ericsson.net or directly to sara.abramowicz@ericsson.com, in some cases to both addresses. They were in turn notified about the exact details of the study. The respondents that were asked to suggest a time and date for an interview were more likely to show up for the interview since they had suggested a time slot that suited them. Furthermore, those who did not respond at all did not suggest a time for the interview. Only once, a respondent forgot to be online so that the session had to be rescheduled.

Viral marketing methods were applied as one of the recruitment strategies. A couple of respondents mentioned in the interviews that they knew other Ericsson Labs users. In one of the cases, the respondent was asked to tell his friend or co-worker about this study and to contact the administrator of the study if interested. This request did not result in additional respondents. The other case was when a professor replied that he himself did not use the

⁸ This contact resulted in two participants in the study

account, but rather his students. He forwarded contact information to the students who were subsequently sent a contact letter about the Ericsson Labs study. This process resulted in gaining two more respondents.

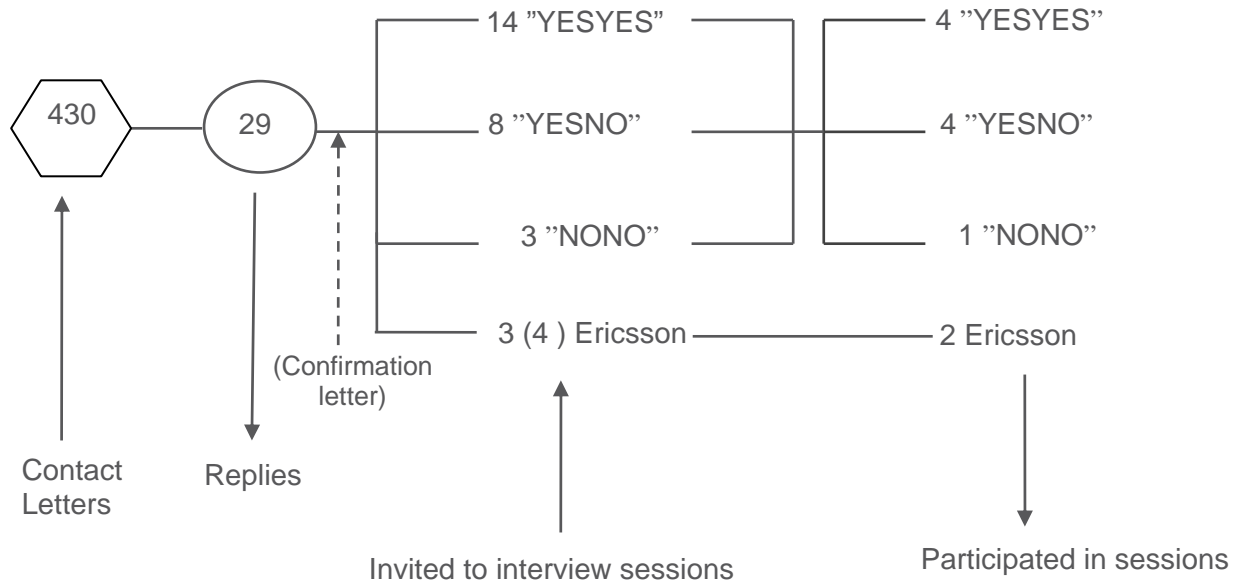


Figure 7 Visualization of the recruitment procedure

A considerable number of participants dropped out of the study. They had agreed to participate but did not show up for the session. Most of these users were supposed to be part of the online focus group. In figure 7 above the recruitment procedure from sending the contact letters to performing the interview sessions is visualized. As seen in the picture there were four Ericsson employees that responded to the letter with their screener results attached. However only three of them were invited to the interview sessions, the fourth respondents' screener results did not qualify him for the study. In the table below the recruitment procedure is summarized. The participation rate is based on the number of people who responded to the contact mail and the number of actual respondents in the interview sessions.

Summary of the recruitment procedure	
Received the contact email	430
Responded to the contact email	29
Respondents in the interview sessions	11
Participation rate	2,6%

Table 3 Summary of recruitment procedure

5.2 Interview method

The interview methods were decided after receiving the screener responses. Before deciding which method to use it was important to have an idea of the number of interested

participants. The group criteria for “YESYES”, “YESNO”, and “NONO” were kept the same for the interview sessions in order to separate the real active users from the non-active. However, as previously mentioned, the original groupings were not definite. The group members were therefore regrouped. For example, one member of the “NONO” group had according to the screener answers downloaded an API and was therefore regrouped to the “YESNO” group. After considering the number of users that responded to the contact email it was decided to invite the groups accordingly:

- “YESYES”: 12 participants to an online focus group bulletin board session on Ning.
- “YESNO”: 7 participants to a bulletin board session on Ning.
- “NONO”: 3 participants to individual online voice interviews using Skype.
- Ericsson employees: 3 participants to individual chat sessions using the Ericsson internal meeting tool Sametime.

Additional users were contacted after the bulletin board session had started and three more users were gained to the study. These participated in individual Skype interviews.

- “YESYES”: 2 participants
- “YESNO”: 1 participant

5.2.1 Bulletin board

Two Ning networks were prepared for the bulletin board sessions; a blue network representing the “YESYES” group and a green network representing the “YESNO” group.⁹ In order to set up a network on Ning the administrator registered to become a member of the site. In order to keep the sessions without advertisements a fee of \$ 24.99 per network was paid. Via an email sent through the Ning site, the participants were invited to the Ericsson Labs study network and asked to register and create a profile. In addition they were asked to post a profile picture of themselves on their profile page. When logging on to the Ning forum the respondents were welcomed by a message that asked them to respond to a few short questions on their profile page. The questions were for example: “How did you first hear about the Ericsson Labs?”, “What is your technical background”, and “Which API(s) have you downloaded?” (see the developer background section in Appendix II-IV). Most of the questions had already set answers that the respondent could choose from a pull down list. By responding to the profile questionnaire the users shared information about themselves to their fellow network members. This was expected to stimulate the discussion and increase networking. Below is an example of a respondent’s answers to the profile question. The picture is a screenshot from the respondent’s profile on the Ning “YESNO” network.

⁹ <http://ericsson-labs-study.ning.com/> YESYES network
<http://ericssonlabsstudy.ning.com/> YESNO network

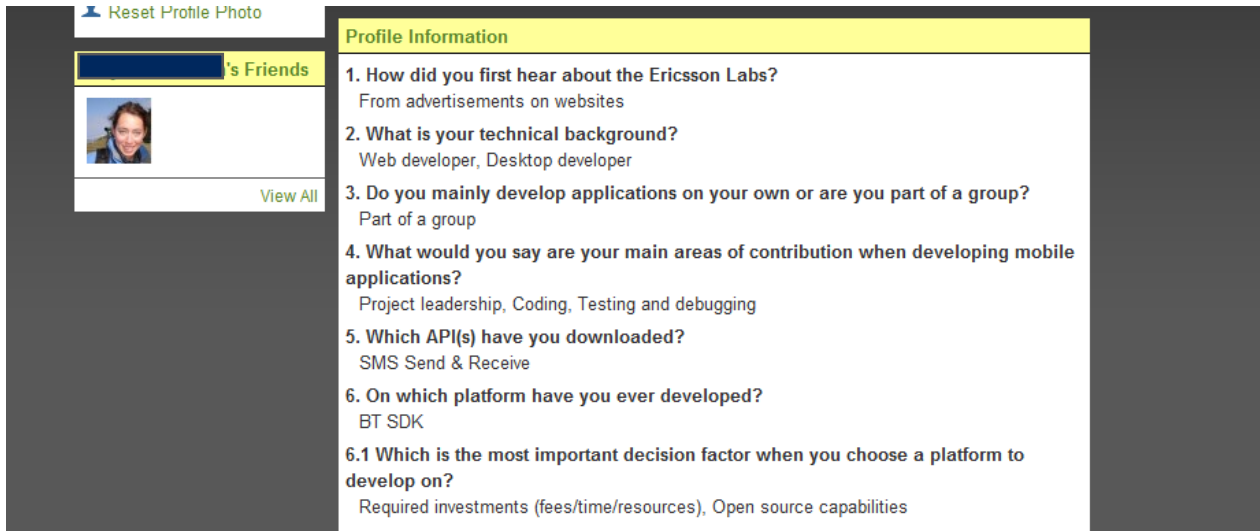


Figure 8 Profile questions belonging to Respondent K from the “YESNO” network

The activities on the bulletin board forum did not proceed as predicted. In the Developer Experience study the bulletin board sessions had high response rate. The invited participants registered and followed the discussions on a day to day basis. Reminders were, however, required during the two week period to sustain the activities. The reminders had an effect and the participants answered the discussion questions in response to the notifications. The experience gained was that the bulletin board was a successful tool for this type of study. For this reason, the Ericsson Labs bulletin boards were expected to function in a similar way. Nonetheless, the participation appeared to be extremely low. In the “YESNO” network the discussion questions only received brief replies, if they were discussed at all. There was no interaction among the respondents, in spite of that they answered the questions after each other. The first and second discussion topics had a couple of responses. The three following days of the study the discussion topics did not receive any feedback. Below is a screen shot from the first discussion topic about the starting phase of development. The respondents were asked about their main motivation to register on Ericsson Labs and how easy they thought it was to get started on Ericsson Labs.

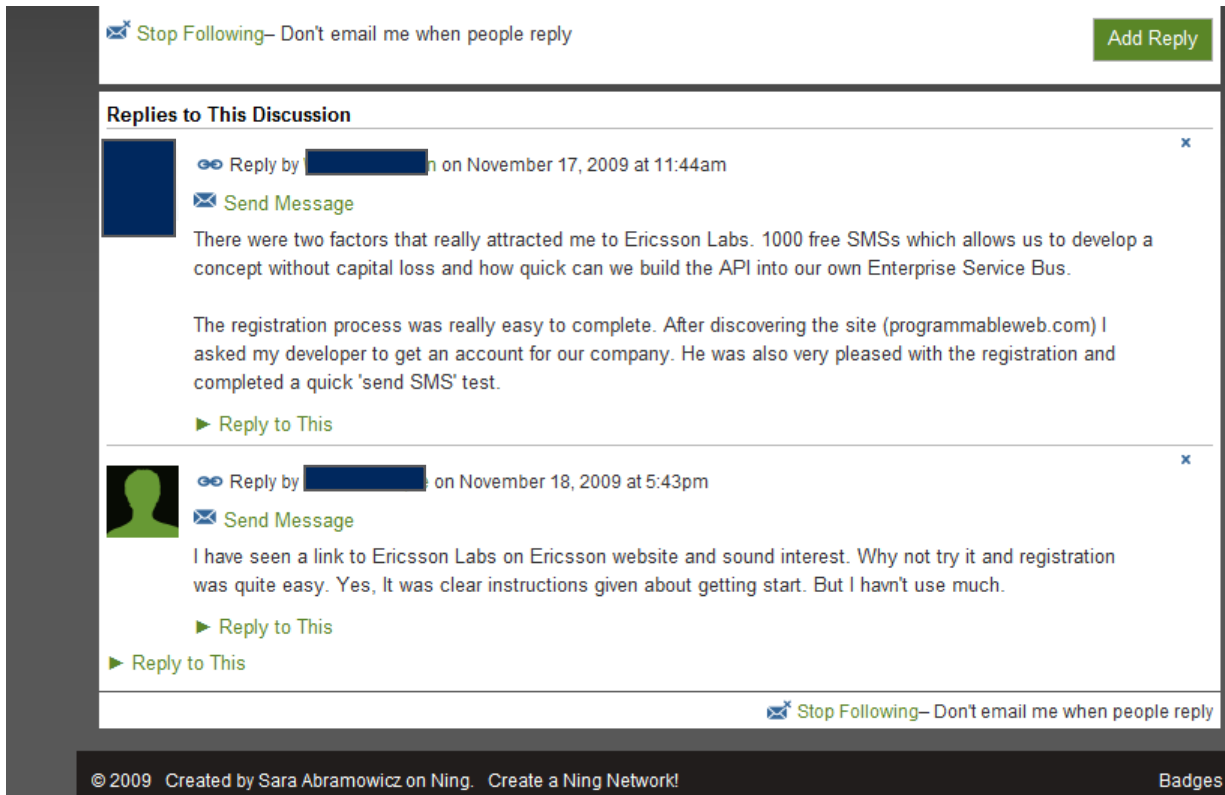


Figure 9 Screen shot of replies to the first discussion topic in the “YESNO” network.

In the “YESYES” network there was only one persistent respondent. Despite that none of the other users joined the discussion, this respondent continued throughout the week to write responses to the topics, exactly as it was intended. Halfway through the session this user was, in a separate message, encouraged to continue answering despite the non-existing interaction from the rest of the participants. Below is a screenshot from the “YESYES” Ning network’s forum page. In the forum section the discussion topics are compiled and the number of replies and the date for the replies are indicated. Each discussion topic had only one reply; they came from the persistent respondent previously mentioned. The dates for the replies show that the respondent logged in to the network daily to respond to the topic of the day.



Figure 10 Forum overview from the “YESYES” network

Participants were lost before registering on Ning or after registering and answering the profile questions. Reminders were sent to the lost participants and to those who had already registered but not shown any sign of activity yet. They were reminded about the time for the bulletin board session and what was expected of them as respondents. If they experienced any problems they were asked to contact the administrator. Also, the information about the voucher compensation was more clearly communicated. Reminders were also sent to users who first agreed to participate but never registered to the network. In addition, the participants who had not yet participated after the five days were given three more days to respond and reflect on the questions. These measures only resulted in a couple more registered participants. One person who did not register to the Ning network informed the administrator that due to company restraints and confidentiality restrictions he could no longer be part of the research study. Another person had Internet connection problems and was instead rescheduled for a telephone interview. The participants who had not yet participated after the five days were given three more days to respond.

5.2.2 Individual interviews

The individual interviews were at first decided to be held via Skype using the free voice-call service. However, only one of the three participants from the “NONO” group responded to the email where they were supposed to suggest a time for the interview. All three participants were sent reminders. In the voice-call Skype interviews, the interview experience was positive and the audio quality was excellent but Skype is forbidden at many work places and universities (Respondent H). The add-on tool Pamela worked excellent as a recorder, the audio quality was great. One of the “YESYES” bulletin board participants

could not participate in the focus group due to a temporary lack of Internet connection. Instead, this participant was asked to be part of a telephone interview. The call was held via Skype using the pay-as-you-go service since the call was made to the participant's mobile phone. Also for this call Pamela was used to record the conversation. These were the only voice interviews that were held. The rest of the individual interviews were held with Ericsson employees and participants that were recruited after the bulletin board sessions had started.

The interviews with the Ericsson employees were held in the internal online meeting tool Sametime since using Skype generally is not allowed within Ericsson. In Sametime it is possible to start online private chat sessions which were used in these interviews. The chat was easy to use but it was difficult to know when the respondent was writing a message. There is an indication when one is writing a message. However, this indication is misleading due to time delay. This resulted in excessive waiting time in between posts, both on the administrator's part and on the respondent's part. According to Respondent J, the Sametime desktop client is preferred since it supposedly is more user-friendly.

For the remaining individual interviews Skype was also used. In the email conversation leading up to the interviews, a couple of the respondents expressed a sense of self-consciousness about having to speak English in the interviews since they were not native English speakers. On their initiative, the interview method was therefore changed to chat sessions. Chat interviews were perceived as less intimidating thanks to the constraints of a chat window interface. A chat allows for delays in the discussion which enables the respondent some extra time to reflect on the answers. It lets the respondent take as much time as needed to phrase a reply whereas verbal interviews expect a more immediate answer. In the Skype chat interviews the waiting time in between messages was therefore condoned, especially since the indication when one is writing and editing a message works better than in Sametime. In the chat transcript in figure 11 below the waiting time between chat messages is clearly indicated by exact time and date. There the respondent took almost two minutes to reflect on the question and phrase an answer. (For more examples of chat transcripts see Appendix VI).

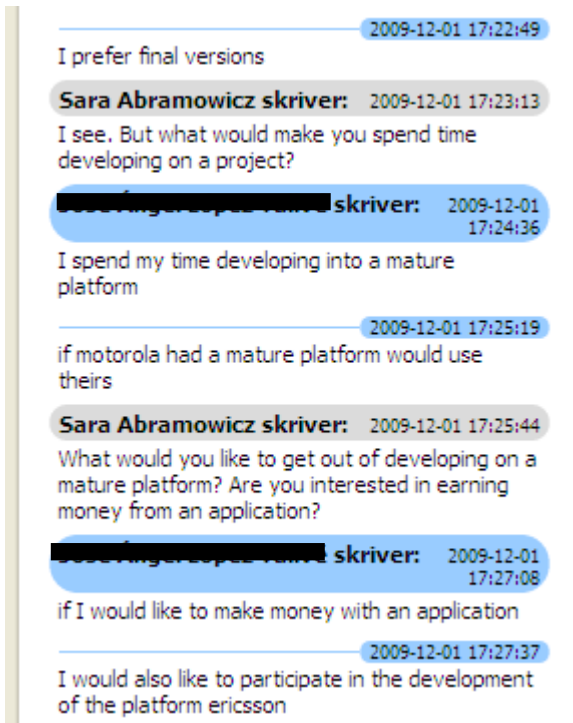


Figure 11 Chat transcript from individual interview with Respondent G using Skype

The chat conversations were recorded by saving the complete chat transcripts. In the chat interviews emoticons¹⁰ were sometimes used. This made the conversation feel more personal and made the discussion have an easier flow. The respondents from the chat interviews seemed to be more interested in the study since they were exposed to a more personal interaction. During the individual chat interviews small talk was necessary to start up the conversation and to feed it. However in the verbal interviews, the discussion was more or less kept to the discussion guide and the conversation did not allow for side tracks. Hence, the chat interviews were more informal than the verbal interviews.

Several interview methods were used in the user experience study. Table 4 below describes the number of respondents that contributed to the study in each interview method.

Active participants	
Ning bulletin board	4
Skype to Skype voice call	1
Skype chat	3
Sametime chat	2
Skype to phone voice-call	1

Table 4 Actual participants distributed over the interview sessions

After all interview sessions had been held and after the bulletin boards were closed down, a follow-up letter was sent to the respondents in the beginning of December 2009. They were

¹⁰ Emoticon is a text rendition of a face viewed sideways often used to denote an emotion (Gartner, 2010).

asked to respond to the following short questions about how they were approached and the interview method they were exposed to:

- Why did you decide to participate in the study?
- How do you feel about the way you were contacted for the study?
- What did you think of using the Skype voice call/Skype chat/Ning bulletin board /Sametime chat for the interview?
- What did you think you would get out of the evaluation session? Did the session meet your expectations?

These questions were included in the email with information about the voucher the respondents would receive as compensation. Not every participant responded to these questions, those who contributed the most to the study also gladly answered these final questions. 8 of the 11 participants gave their thoughts on the interview methods. In mid January two of the respondents notified the administrator that they had not been able to accept the payment of the compensation on PayPal in time. This problem was solved by resending the respondents the compensation. At the same time they were reminded about the follow up questions. Most of the respondents were positive towards the study and thought that using the respective interview method was a good idea. Even though the bulletin board turned out differently than expected, a comment was *“It was a very good idea to use a bulletin board instead of same old poll structure. I think your main purpose was to start up a forum where developers could exchange experiences and ideas even after the end of the study... Unfortunately it didn’t work. But I still believe it was a good and original idea.”* (Respondent B). Some expressed that the interview methods they were exposed to functioned well whilst others suggested different tools such as MSN messenger and Pidgin. When asked about what they thought about using a chat as an interview tool, one respondent answered: *“I use MSN, Skype, ICQ for fun and Sametime in the work time. I think it was good, mainly because I write/read better than I talk”* (Respondent I). The respondents’ decision to participate was mainly based on a will to improve the portal, to network with other in the same field and to get the chance to discuss and share opinions. The respondents seemed to have understood why Ericsson Labs initiated the study. *“I think the dialogue and interaction are the most important things for building a relationship and grabbing attention from an Internet crowd”* (Respondent J). Two of the eight respondents that contacted the administrator in January were sent an updated version of the follow up questions. They were in addition to the questions above also asked why they thought other Ericsson Labs users decided not to participate in the study. Respondent I answered *“I think they do not want to ‘waist’ time. Time is money. Did they know they would earn 200 SEK? :-)”*.

The participants that did contribute to the Ericsson Labs study are represented in Table 5 below:

	Total # of active respondents	Registered on Ning	Active on Ning
"YESYES"	6	4	1
"YESNO"	4	5	3
"NONO"	1	-	-

Table 5 Actual participants distributed over the three respondent groups

The recruitment and the interview sessions took different directions than expected. They are summarized and visualized in figure 12 below.

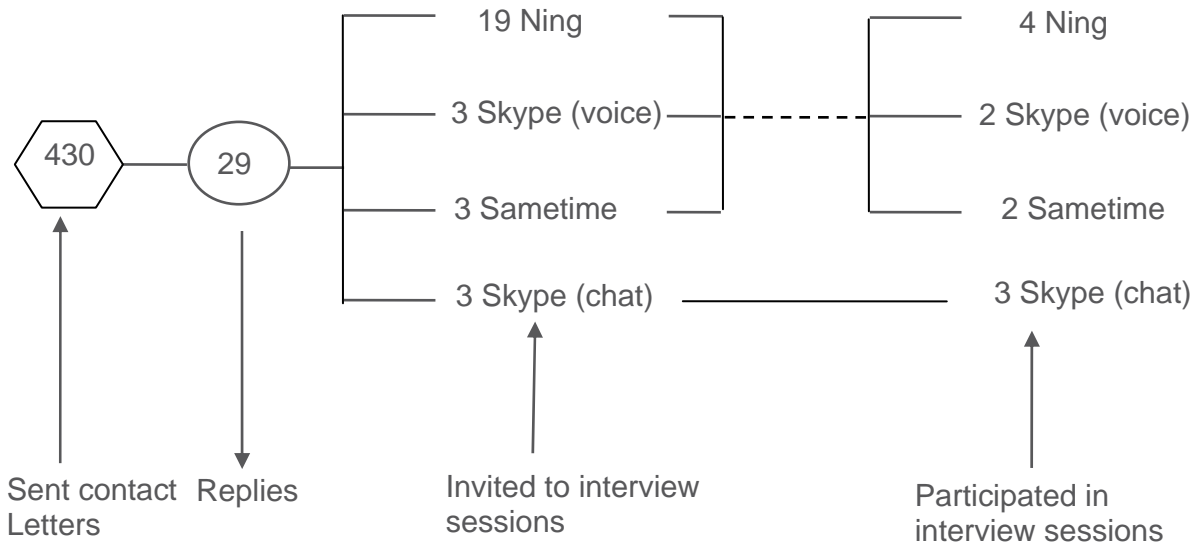


Figure 12 The interview process

5.3 Ericsson Labs

The results from the Ericsson Labs user experience study will now be presented. The Ericsson Labs related comments in the study were either specific to for instance regarding a certain API or they were more general. The respondents' thoughts and ideas expressed in this study may only reflect the APIs that they have used, except when discussing general concepts. Most users had only tried one or two APIs. The recruited participants were a diverse group of users. The group consisted of one female and ten males in the age ranging from 20-21 years old to 40-49 years old:

- 20-21 years: 2
- 25-29 years: 5
- 35-39 years: 3
- 40-49 years: 1

The age distribution reflects the participants' occupation status; four of the respondents were students and other examples of professions were software designers, web developers, a CTO, tech support. The users have an advanced technical background, and they therefore appreciate the cutting-edge technology offered on the portal. Many of the users have a background in software development, in either mobile or web development. When asked about their technical background and more specifically which platform they have developed on, these are some of the platforms that came up. Microsoft .Net, Netbeans IDE, J2ME, C, Linux, Ruby on Rails, Visual Studio C# and British Telecom (BT) SDK, a broad mix of operating systems, languages, and platforms. The Ericsson Labs users are advanced developers with experience from either studying related subjects or working in related fields.

The diverse group of users implies different needs and motives. Nevertheless, they all share a great interest in new and advanced technology. Some work individually whereas others work in groups which also mean that there probably are more people active on the site than what the numbers of registered members show. The respondents are interested in networking and in the exchange of ideas. Moreover, they are experimental, curious about the site and like to try new things. “... *the site gave me access to numerous SMS messages for free for my ‘experiments’* ” (Respondent F). A few of the users have business motives. Ericsson employees were found to be members and registered with personal email addresses. These are developing on their spare time working on projects aside from their work.

The two most common ways to find out about Ericsson Labs was either by searching for a specific function or service and thus be redirected to Ericsson Labs or by recommendation from a professor or a professional social contact. A few learned about Ericsson Labs through the Ericsson Labs Twitter channel. The users, who were actively searching for a service, used a search engine such as Google or the database Programmableweb.com which lets developers keep track of a large collection of APIs and mashups. Most of the respondents registered on the portal because they, although in different ways, were interested in the offerings. This connects to how they found the portal.

“I registered to Ericsson Labs when I was looking for alternatives to my concluding [post grad. IMS & Multimedia Networks] project. I thought I could reuse some code and was looking for new ideas as well” (Respondent I)

“There were two factors that really attracted me to Ericsson Labs. 1000 free SMSs which allows us to develop a concept without capital loss and how quick can we build the API into our own Enterprise Service Bus” (Respondent K)

The APIs that the participants are using and that were mentioned during the evaluation sessions are found in figure 13. At the time for the first email, there were only 7 APIs available on the portal. APIs such as the 3D Landscape API was only recently added to the portal at the time for the interviews, yet had already been experimented with by one of the users. But as the respondents had only tried one, or sometimes two APIs, their comments were most often directed towards a specific API. This makes their experiences difficult to generalize to the other APIs.



Figure 13 Ericsson Labs APIs mentioned in the interviews

Some Ericsson Labs users seemed to be registered several times, a result that was soon revealed. Either due to misspellings or because they use different addresses such as gmail/yahoo/msn or other company related addresses. According to Larsson (2009a), members are only allowed one key per API which means that they might use several addresses to get access to for instance more SMS traffic if they are using the SMS Send & Receive API.

“The send and receive SMS API is easy to understand. Quick and reliable deployment.”(Respondent K)

The respondents considered it easy to understand how to approach the APIs. They did not require extra assistance as the information that already existed on the portal was sufficient. The users could for this reason use their time for more innovative activities. Users are using the Ericsson Labs portal to get inspiration and to retrieve new ideas for potential projects. *“Ericsson Labs it’s [a] very good place to start play around with ideas”*(Respondent J) Furthermore they use the portal to experiment and understand new concepts. *”[About the Mobile Java Push API] it helped to understand the ‘PUSH’ concept...it was helpful but in the end I didn’t use it... only for testing and educational purposes”* (Respondent F). If the developer had a specific need, the tools offered are a solution to their problem. These users are more focused with their presence on the site as they found that the offerings on Ericsson Labs can be useful for them whereas others visit the site regularly to be up to date with new things added to the portal. The main motivation for using Ericsson Labs’ APIs is first and foremost the ability to experiment with the technologically advanced APIs that the portal is offering. *”On my point of view, its [Ericsson Labs] technological side is by far the most important and successful”*(Respondent B). In addition, the branded name Ericsson equals trust. Another decision factor is the help from experts in the Ericsson Labs team that is offered on the portal via the development support offering.

Many of the respondents had specific ideas of what they are missing on the portal today. The portal is missing the international scope in spite of that the registered users come from all over the world. The functionality in certain APIs is geographically restricted and explanations are only found in English. Several of the respondents are non-native English speakers and therefore requested explanations in other languages. Meeting the needs of those users with varying English skills could be done with explanations in other languages or by incorporating more visual or graphic support with less advanced English. The respondents’ varying English skills were experienced while planning for the interviews. A couple of the respondents specifically requested not to be part of a verbal interview due to them feeling uncomfortable speaking English. Instead they suggested participating in a chat session. The international scope that is missing also relates to the APIs’ functionality. *”APIs should be applicable worldwide especially for the mobile maps”*(Respondent A). Be allowed to send more SMS for free. One respondent claimed that it is not specified that a user is restricted to a certain amount of free SMS. Another suggestion was to show which platform capabilities there are for the specific APIs. An Android developer was interested in the 3D Landscape API but later realized that it only is capable with Java ME technologies.

The API documentations are straightforward and it is easy to start developing, but updates are needed. The users also asked for additional examples of usage for each API. The details should be well explained with examples and simulations of many situations. By adding more examples of usage and step by step explanations, the APIs will become even more intuitive to use. Errors in the example code were discovered, these should be documented along with other mistakes. More detailed explanations and examples of usage would facilitate a better developer experience on the portal. Another issue with the documentations for the different APIs is that they seem to lack uniformity. It is evident that there are many members of the Ericsson Labs team that write blog posts and administer the API forums differently. In addition to the lack of uniformity, there is also varying quality. Considering the great number of contributors to the blogs and forums, it is not obvious who actually represents the team.

Additional comments related to the developer community. Several respondents commented on the almost-dead forum. *"[An] active forum is the main indicator of popularity"* (Respondent J). The portal would benefit from a more active community where both users and experts engage in stimulating discussions. *"As a developer I would like to see a well organized portal with a community of users that discuss related topics on the APIs and experts [that] give solutions and advice"* (Respondent F). The users agreed that a forum should be quick and reactive when help is needed.

There is an unclear description about the portal's future strategy with respect to APIs and support. The respondents did not seem to want to waste time developing in a non-mature environment. *"Spending time on a project requires one has certainty about stability of the platform and continuance of service... Things that a Beta version with some limitations cannot give you"* (Respondent B). To avoid misunderstandings it should be better communicated what the Beta version implies. If the users know that the portal is a beta and that the site is strictly experimental, their expectations will be set accordingly with respect to updates and quality standards. *"Users (developers) also demand that even a free service should meet a set of quality standards, especially with a brand as Ericsson behind it"* (Respondent H). Descriptions about the APIs' history could be interesting to add, as well as the progress, in order for the users to know if the APIs are still under development or not. *"Will the service be there in the future or is this just a fad that will blow away with the wind?"* (Respondent K) Another misconception was that Ericsson Labs is the same as Ericsson IP Multimedia Subsystem (IMS)¹¹. Some respondents found no clear connection between Ericsson Labs, Ericsson IMS and Ericsson Developer Connection¹². The programs are not integrated nor is there a description of how they are related, or complement each other. Integrating the programs was suggested as a possible improvement, especially regarding the forums.

¹¹ Ericsson IMS is a network solution offered to operators as a tool for building networks that cost-effectively allow combination of ongoing communicating sessions with multimedia elements to for example share live video while talking (Ericsson IMS, 2010).

¹² Ericsson Developer Connection is a market service offered to Ericsson customers to channel their applications to operators (Ericsson Developer Connection, 2010).

6 Analysis and Discussion

In this chapter the experience gained from the online recruitment and from performing interviews on the Internet will be analyzed and discussed in relation to the Ericsson Labs user experience study.

6.1 Online recruitment

The online recruitment did not proceed as expected; this was presented in the findings chapter. It is important to understand the recruitment method's flaws and why it did not provide the expected results. It is also essential to discuss what improvements are needed in order to better sustain future user experience studies with respondents. Below are some ideas regarding the recruitment to the Ericsson Labs user experience study.

Access to participants to the user experience study was made possible through the Ericsson Labs user database. The recruitment of participants in this way was similar to using an access panel. Both methods give access to contact information and a great number of potential candidates. A significant difference though is that members of access panels voluntarily sign up to be contacted by market research firms. The Ericsson Labs users had not agreed to be sent emails about evaluating studies when registering for an account on the portal. It is likely that some users therefore were reluctant to participate.

The contact email was prepared to be personal in accordance with the summary in the theory chapter, being transparent and personal in the communication is always preferred. Exactly as planned, the receiver was greeted by his/her name and the emails were sent individually. However, due to the Ericsson Labs team's restrictions the sender's email address was non-personal. This may seem like an insignificant issue. In fact though, the receiver noticed only the sender in an unopened email. By using the survey@labs.ericsson.net address as sender, there is a potential risk that the email was perceived as spam or a non-directed message. It is irrelevant that the carbon copy address was personal if the receiver did not open the email. One explanation for the low response rate is therefore the issue of transparency in the email communication.

To add to the individual approach the letter was also composed and directed with regards to the receiver's activities on the portal. The aim was that this would make the users feel specifically chosen for the study and influence them to participate. It is possible though that some considered it an intrusion of privacy that their activities had been mapped. It is likely that the users therefore were extra apprehensive towards the contact letter and that they experienced the information that was communicated to be too directed. This is also one of the reasons for the Ericsson Labs team's restrictions. The pro-active measures that were taken to handle this potential barrier were to emphasize the study's research focus and the beta status of the portal in the communication. The hope was that the users would see the focus of the study and the opportunity to influence and improve the portal as a justifiable act to withdraw information about the users. However, the Ericsson Labs team has received no complaints about the contact emails. Another likely dimension of the low response rate is that the users simply did not have the time to participate. As one respondent reflected on

why users decided not to participate “*I think they do not want to ‘waist time’. Time is money*” (Respondent I). Providing the right incentives to participate is therefore essential.

Using the Ericsson Labs user database did not guarantee adequate respondents. In a qualitative and evaluating study, active and talkative respondents are ideal. The recruitment strategy did unfortunately not assure this and the outcome of the study was therefore at risk since the study is based on active participation. The screener where the respondents indicated their basic information did not ask them if they are active in communities, whether they enjoy testing new things and sharing information about their experiences and it did not investigate if they are familiar with user experience research and similar evaluations. The screener should however only ask the important questions that determine if respondents qualify for the study or not. But for this study an exemption should have been made and additional questions should have been added to the same form or been put in a separate form. In retrospect, recruiting participants from a user database like this was not necessarily a preferred strategy for a qualitative study albeit the only available method to reach the Ericsson Labs users by.

Seeing that some users had double or triple accounts on the portal and that several email addresses to other users were non-functioning, the 430 users that were contacted were in fact fewer. For this reason the response rate of 2.6 % can not be seen as a valid number. Nevertheless, few users seemed interested in the study. Participants were allocated from only one place, the Ericsson Labs user database. As a complement, respondents could have been recruited from other communities. But since there is no unofficial site where Ericsson Labs users meet and interact this was never an option. The developer portal is still fairly new to users and the beta status means that it is continually being improved. It may be that engaged users, users that are familiar with the study object and actively use the products or services, are more likely to share their ideas and thoughts. The low activity among users on the portal may explain why so few of them agreed to participate in the study. According to the results from the Developer Experience study, developers prefer to interact with each other on unofficial sites to official ones since they are less dependent on corporate policies. If this is valid also for Ericsson Labs users, an unofficial site will most likely eventually be established organically.

Participants in research studies often want to make sure that they have enough knowledge to be part of the evaluation. However, being familiar with the topic is usually enough. In the Ericsson Labs study where also the non-users were important source of information it was not necessary to be familiar with Ericsson Labs offerings. Users only had to pass the screener criteria. What was important for the Ericsson Labs team was that the non-users were involved in applications development on other similar portals. They would contribute with a valuable outside perspective and ideas regarding their requirements in general developer portals.

Despite that the study attracted only 11 developers, their profiles were in fact fitting the demanded criteria. The recruited users were cutting-edge and involved in advanced technology development. The respondents seemed to want to interact with other cutting-edge developers to exchange ideas and find job opportunities. For this reason, online recruitment is still a valid method to use in future user experience research. The 11

respondents were sent follow-up questions to evaluate the recruitment and the interview method. The respondents had an overall positive attitude towards the Ericsson Labs study. Sending an invitation via email was perceived as a good way to get in contact with the users. One of the users was surprised to have received such an email and another one did not remember how he was contacted “*so at least it did not bother me*” (respondent D). The information in the letter was said to be clear. All of the respondents were interested in the study and genuinely wanted to contribute to this project to help improve Ericsson Labs. The most active respondent in the bulletin board expected to “*...learn something useful and new from other more experienced developers*” (Respondent B). A motivation to participate was also to see the interactive session as an opportunity to gain more knowledge about mobile-applications development. In hindsight, more time should have been allocated to the evaluation of the study method and the follow-up questions. Due to the low participation rate, and the extra correspondence that was needed to keep the participants in the study, it would have been interesting to further investigate why the respondents thought others did not participate, under what circumstances they themselves would not participate, and how important the incentives are. The monetary incentive also seemed to have been a decision maker for the respondents to participate in the study. About two months after the follow up letter was sent two of the respondents notified the administrator that they had not been able to accept their payment on PayPal yet. Their compensation was resent and in turn they replied to the follow up questions.

6.2 Interview method

Interacting with the developers in an online environment was initially regarded as a good method. The User Experience Lab had a positive experience from using online focus groups in the Developer Experience project. In the Developer Experience study, the participants were specifically selected from forums and blogs. These developers stood out for being involved in discussions and active, and thus suitable for the study. Participants who are writing messages in forums, asking questions or commenting on posts are usually good interview prospects. They are outspoken, well formulated and like to share their ideas. The fact that discussions in the Developer Experience bulletin boards were more interactive and lively is therefore understood. This was not the case for the participants in the Ericsson Labs study. There was no information available about the users on Ericsson Labs and the forums on the portal did not activate that many users. Although it was possible to match user-id names to posts in the forums, users are not bound to indicate their nickname in the forum posts. This made it extra difficult to match the active users that were found on the forums with their user details in the user database.

In the Ericsson Labs study, the main issue with using online focus groups in the form of bulletin boards was the lack of interaction among the respondents. The bulletin boards were expected to encourage respondents to interact and network with each other. The low number of respondents is a likely reason for the missing interaction. In the “YESNO” forum no person took a consistent lead in responding to the discussion questions. There was no established continuous flow in the discussion. This forum had the most registered respondents. Five out of the seven invited participants set up an account on the Ericsson Labs study’s Ning network and answered the profile questions. Only three of the five registered participants responded to at least one discussion topic. However, it was difficult

to nourish the conversation in the bulletin board as the conversation was minimal already from the first day. Participants were encouraged to visit the network site daily to keep up with the discussions and respond to the topic of the day. Also the “YESYES” forum struggled with the discussion. In this bulletin board where the most active users on Ericsson Labs were included, only four of the twelve invited participants registered on the Ning network. Out of the four registered users, only one person responded to the discussion topics. The active respondent seemed to have understood the purpose with the bulletin board. The responses were written in a continuous flow, one for each day, and they included detailed thoughts and ideas. In both Ning networks all discussion topics were added. On the online session’s fifth day the registered participants were notified that they were assigned three more days to respond to the questions. The fact that none of the participants took advantage of the extra time during the weekend, means that it is not that likely that the low participation is correlated with scheduling issues.

The discussion responses eventually declined in the “YESNO” network and answers for the three last topics were missing. In comparison, the “YESYES” network had less participants involved but received more responses of quality. The fact that the respondents in the Developer Experience bulletin board sessions were handpicked was an important reason to why they were more successful. When being handpicked, these respondents showed signs of having good participant qualities. That is, being talkative, conversant with cutting-edge technology, and interested in sharing ideas and thoughts.

It is likely that most of the participants did not fully understand the concept of bulletin boards or the procedure for participating in them. Either they did not see the commitment the participation required during the five-day session or what kind of information the Ericsson Labs team was seeking to gain from the sessions. The contact email did not explain the interview procedure. It was not clear for the participants how the interviews would be performed when they signed up for the study. This was in retrospect an unfortunate strategy. It did not appear to be intuitive to understand how online bulletin boards are performed even though they in fact are similar to regular online forums where a question is posted and subsequently responded to. It could be that the participants were not familiar with the forum concept either. In any case, it is a matter of discretion how much information to provide participants with. If there is too much detailed information messages risk being ignored. Also, a too detailed explanation of for instance the demanded participant criteria might result in losing adequate respondents if the users themselves do not think they possess all. In contrast, if there is too little information there is a risk that a message is perceived as unclear and thus misunderstood.

Measures were taken to convince more to register on the Ning network and to make the already registered participants to also engage in the discussions. The reminders did not have an effect though. Only the last reminder led to a few participants notifying the administrator that they no longer were able to participate and for some of the registered respondents to enter the discussions. Also in this case it is a matter of discretion how much information is considered adequate before risking the information being ignored by the receiver.

The individual interviews performed better. The interaction was more successful and resulted in gaining more in-depth information than the bulletin boards. The respondents

were more likely to show up for the interview since they had been involved in deciding when the interview would take place. They also might have felt more obliged to show up if the interview session was individual. It is easier for a participant to not show up in a group session with many respondents such as the bulletin board, especially if the session is asynchronous and held over a longer period of time. The email conversation that was needed to decide a date for the individual interview led to establishing a more personal contact. This was valuable for the interview sessions. A couple of the respondents requested to add the administrator on Skype or Facebook, which is a positive sign of the personal and informal relationship that was established during the interviews. The participants that did not show up for the focus group could have been given the opportunity to be part of an individual session instead. Especially if they realized that they did not have the time to be active in the focus group discussions every day for five days. A drawback though is that the individual interviews required a Skype desktop client and a Skype account. If the interviews are to be performed during work hours, which most of the Ericsson Labs individual interviews were, participants have to be allowed access to Skype. However, some work places do not allow their employees to use Skype which therefore can pose problems to the interview administrator. If for instance Skype is not allowed the participants should be asked what other communication tools are possible to use, or persuade them it is better to perform the interviews after work hours.

6.3 Ericsson Labs and its users

The overall results from the Ericsson Labs study show that the portal has both usability issues as well as concept issues. Considering the great number of non-native English speakers active on the portal, it becomes a usability issue when the language is a barrier to usage. The concept issues mostly concerns the misunderstanding about the portal's purpose. Many respondents requested a more stable developing environment where it is clear what the purpose with the portal is. If not, they cannot guarantee their customers, friends, colleagues and whoever they share their applications with a trustworthy service. In addition, there are posts in the forum that also indicates this misunderstanding of the beta status and the implications of that. For instance, users ask why they are only allowed a certain amount of free SMS for the SMS Send & Receive API. They believe that the functionality is not enough for delivering a reliable SMS application. One of the participants commented on this, saying that if users would have known that the site is strictly experimental then they would have set their expectations accordingly. It is however not possible to meet all the quality standards in a beta test version that one would expect from a more mature, stable and commercial environment.

From the interviews, it is evident that the portal's purpose has not been clearly communicated to the users. Since the respondents did not understand the purpose, they believe that Ericsson Labs will function as if it was a mature portal. This was especially so for the expectation of support around the clock. From the findings some suggested improvements for the portal were drawn. The purpose should be clearly stated and communicated and the forum should be activated by for example initiating discussion topics. The Ericsson Labs team should also make sure to identify the Ericsson Labs team members on the site and to increase uniformity in their blog and forum posts. Desired functionalities according to the respondents are to transform the portal to a place where

networking is possible and where job opportunities may be found. Companies that are looking to hire developers with a specific competence or developers looking for business partners would find such a site useful. This could also be an advantage for Ericsson to get in contact with and hire cutting-edge developers. Adding a forum thread where career opportunities can be discussed might be a sufficient measure. The respondents believed that it is important that a developer portal also offers a community that enables connecting with other developers and the exchange of ideas.

Most of the users interviewed in the study use Ericsson Labs as a side activity; they are experimental developers and students (see figure 14 below). The participants are technology oriented advanced developers. In connection to the Developer Experience project's identified developer roles, the role the respondents possess is for the most part the coder and the idea generator. They either have a specific need or are constantly on the lookout for new ideas. This creates different demands on the portal. The users who seek a specific service wish to develop in a mature and stable environment whereas the users who are looking for inspiration and ideas demand other things. Which user to focus on is something the Ericsson Labs team should consider. The experimental users claim that the portal does not offer a stable and mature environment with a clear future strategy.

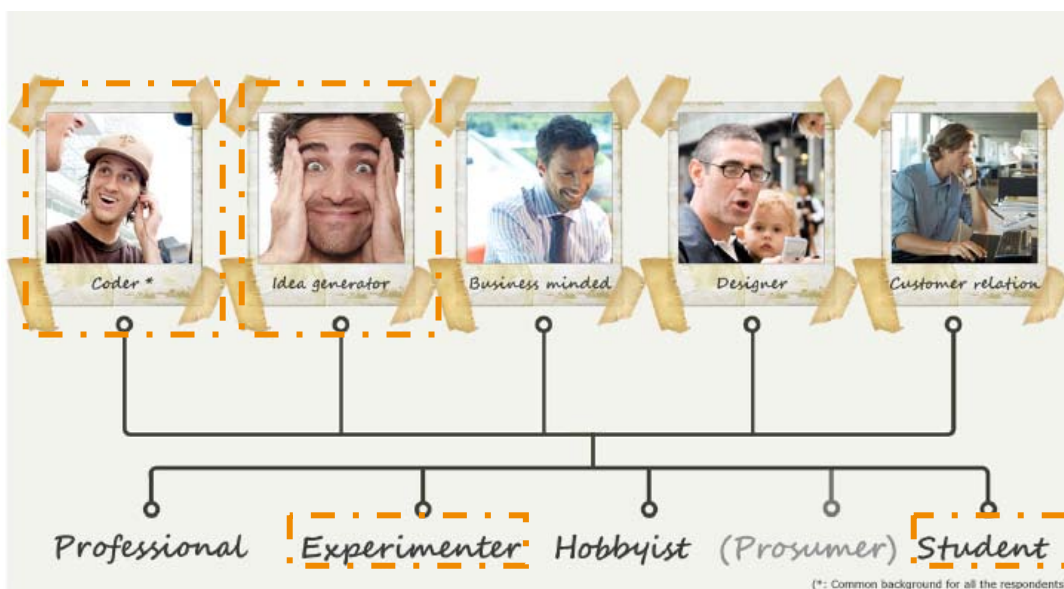


Figure 14 The Ericsson Labs users identified (Chincholle et al, 2009b)

Most of the respondents demanded the portal to be a place to connect with other developers, find job opportunities and share ideas. A successful portal is a portal that has an active community, either on the official site or on unofficial pages. There is probably not enough focus on the Ericsson Labs site which unfortunately was reflected in the difficulties in recruitment and the preparatory work of the study. Ericsson Labs developers were hesitant towards participating in the study and thus difficult to recruit. The respondents were a diverse group of users which reflects the Ericsson Labs users as a whole. For that reason it is important to understand that their needs vary. Another aspect of the heterogeneous user group also connects to the difficulties in the recruitment of participants

to the user experience study. The difficulty to recruit respondents can have been a reflection on Ericsson Labs' lack of a cohesive community. If there was togetherness among the users they could have influenced each other to participate in the user experience study.

Also in connection to the Developer Experience project, the four developer profiles *the Believers*, *the Pragmatist*, *the Cheapskates*, *the Centipedes* were considered with respect to the Ericsson Labs users. The respondents from the Ericsson Labs portal possessed some traits from the Believers. The users get access to core technologies on Ericsson Labs and from what the respondents said in the interviews they seem to prefer open source development. The respondents also have some features from the Cheapskates who develop for training purposes and often are students. Nevertheless, it is not certain that a comparison between the developers in the Developer Experience project and the developers in the Ericsson Labs study is valid. The respondents from Ericsson Labs focus on the technology whereas the developers from the iPhone and Android study seemed to be much more business oriented. Ericsson Labs caters to a different segment of developers that are more "tech savvy" and experimental. The Developer Experience project on the other hand focused on different operating-system based platforms and respective developer affiliations. The Ericsson Labs is in contrast a developer portal. The platform affiliation is not a crucial decision factor since application programming interfaces (APIs) operable with different operating systems are offered.

7 Further research

Below are described suggestions of further research concerning methods for user experience evaluations, and especially online recruitment. Potential respondents can be contacted with personal email addresses as opposed to non-personal to investigate the impact of direct communication and possible differences in reaction. Another suggestion is to not offer any monetary incentive during the recruitment. It could be interesting if the initiator would emphasize other, non-monetary, advantages with participating in a user experience study. This is a way to explore the incentives' effect. In future research it could also be meaningful to test other recruitment methods as a comparison. For instance, to test recruitment using only snowballing techniques where interesting users are approached in forums and asked to participate in a study. They are subsequently asked to spread the message about the study hoping to reach a greater number of users than are accessible through online forums. For additional Ericsson Labs user experience studies it could be interesting to for instance use the well-established Ericsson Labs Twitter channel to spread information. The Ericsson Labs Twitter profile has a great number of followers, many that may be "NONO" users of the portal who are specifically interesting to the Ericsson Labs team to interact with.

8 Conclusions

The aim with this thesis was to test and evaluate online methods for recruitment of cutting edge users to user experience studies. In order to meet this goal it was necessary to gain knowledge about the characteristics of cutting-edge users; this would simplify future recruitment processes. To learn about advanced users, a user experience study was performed of the developer portal Ericsson Labs.

Although the recruitment was challenging, 11 users were recruited and they provided valuable information about the developer portal that was forwarded to the Ericsson Labs team. Considering the concept issues that were found with the portal, it is not surprising though that there were difficulties in the recruitment. It was a challenge to encourage users to participate in the study. It was difficult to communicate what the study would do for the portal when the users had not fully understood the portal's purpose. The learning from this is that, in order to succeed with recruitment it is particularly important that the area of research is clear to the participants. It is unfortunate if users do not understand why they are asked to participate in a study and if it is unclear what they can contribute with. The users should know why their thoughts and ideas are important for the study. For instance, the contact letters to the "NONO" group resulted in the least number of respondents in spite of that this group was sent the most contact letters. The "NONO" users would have provided important information to the Ericsson Labs team. It is possible that the team would have gained even more valuable insight from the non-users than from the active users. An additional drawback was that not all participants turned out to be adequate respondents; this was especially a problem in the bulletin boards.

In order to inquire that user experience research participants are adequate respondents, it is preferable that they have a track record of activities in forums and blogs. If users are active in discussions on the Internet they are more likely to be active in discussions as respondents. Users' activities on forums and blogs should therefore be a decisive factor whether they would qualify to a study or not and thus be added to the screener. Previous to this though, the potential participants should first hand have been allocated in recruitment databases. If this is not possible, if the user profile is too specific, it is worth the extra effort to manually identify the online opinion leaders in the "blogosphere" or from leading forums and social networks on the Internet. Despite that online recruitment in this form is time consuming by acknowledging their activities on forums, the respondents are more likely to show up for the interview sessions and provide great depth to discussions. In future user experience studies, the User Experience Lab should balance the benefits of recruitment like this against the costs the method entails. To succeed in reaching and recruiting cutting edge users the following road map should be considered:

1. *Identify* the cutting edge users; determine how specific their profiles are and whether they could be found in recruitment databases or not.
2. If the users are not found in recruitment databases, the identified user profiles will be helpful in order to find them in online forums and social networks.

3. Users' digital footprints and contents created on online forums and blogs should be *tracked* to make sure that they are adequate respondents. That is, that they are talkative, willing to share ideas and eager take the lead in discussions.
4. Use *personal messages* to contact the users. Transparency is important to succeed with the recruitment since the users would like to know who is behind the study and what the results will be used for.
5. Provide *incentives* to convince users to participate and be explicit about what the compensation is. Monetary incentives are usually a "good bet" although providing firsthand information and insight to new and upcoming products and services can also be of interest to participants. Stressing that their participation is of value not only to the initiator but also could be beneficial to the users is an additional useful argument.
6. Keep the communication on a *moderate level* to not overflow the participants with information and thus risk information being ignored.
7. *Clearly communicate* which interview methods that will be used. For instance, thoroughly explain the procedure of bulletin boards. Like this the respondents will know what is expected of them as respondents and they can determine if they have the time to participate or not.

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Sandberg, J., 2009. In personal communication, October 9 2009

Larsson, S. & Sandberg J. 2009. In personal communication, November 10, 2009

9.4 Figures

Figure 1. User experience in relation to other experiences retrieved from Law, E. L-C., Roto, V., Hassenzahl, M., Vermeeren, A. P., Kort, J., 2009, “Understanding, Scoping and Defining User eXperience: A Survey Approach”, *In proc. Conference on Human Factors in Computing Systems*, pp.719-728

Figure 2. The Long Tail retrieved October 8, 2009 from <http://www.pontisblog.com/2007/12/11/long-tail-short-head-unprecedented-cross-selling/>

Figure 3. A conceptual map of data collection procedures in relation to findings productions, retrieved from Bosio, A.C., Graffigna, G., Lozza, E., 2006, “The influence of setting on findings produced in face to face and online focus groups” Retrieved January 13, 2009, http://www.mytlab.com/focus_groups.pdf

Figure 4. Developer roles extracted from the Developer Experience study, retrieved from Chincholle et al, 2009b, *Android Developer Experience*, Ericsson AB

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10Appendix I Contact letter

To the “YESYES” users:

Hi [NAME],

Supporting you the best way we can is important for us at Ericsson Labs. We are therefore initiating a study to evaluate and improve the Ericsson Labs offering.

We would appreciate if you could take the time to participate in the study. This would be a great opportunity for us to get to know your opinions and thoughts regarding the site. Your feedback is of great value to us and will most definitely have an impact on the future direction of the site as the portal is still in its beta stage. Information retrieved from the study will be handled anonymously and will be for internal use only. As a participant you will be compensated with a voucher. Online sessions will be held during November 16 to 27, 2009. They will take approximately 60 minutes of your time.

The research process will be administered by the Master thesis student Sara Abramowicz under supervision of the Ericsson Labs team. If you would like to participate, please answer the questions below and reply to this email as soon as possible (no later than November 2). If you have any questions, feel free to send them to this address:
sara.abramowicz@ericsson.com

Kind regards,
The Ericsson Labs team

.....
..

1. Specify your age

- <15.....a
- 15-17.....b
- 18-19.....c
- 20-21.....d
- 22-24.....e
- 25-29.....f
- 30-34.....g
- 35-39.....h
- 40-49.....i
- 50-59.....j
- 60-69.....k
- 69+.....l

2. Specify your gender

- Male.....1
- Female.....2

3. Where do you currently live?

4. What is your current occupation?

5. Have you downloaded any of the Ericsson Labs' APIs?

YES.....1
NO.....2

6. Are you using any of the downloaded Ericsson Labs' APIs?
YES.....1[continue with Q.6a]
NO.....2[continue with Q.6b]

6a. Which Ericsson Labs' APIs are you using?
Mobile Java Communication Framework.....1
Mobile Java Push.....2
Mobile Location.....3
Mobile Maps.....4
SMS Send & Receive.....5
Streaming Media.....6
Web Location.....7
Web Maps.....8

6b. Do you have an informed opinion why you do not use the Ericsson Labs' APIs?
YES.....1
NO.....2

To the "YESNO" users:

Hi [NAME],

Supporting you the best way we can is important for us at Ericsson Labs. We are therefore initiating a study to evaluate and improve the Ericsson Labs offering.

We would appreciate if you could take the time to participate in the study. This would be a great opportunity for us to get to know your opinions and thoughts regarding the site. Your feedback is of great value to us and will most definitely have an impact on the future direction of the site as the portal is still in its beta stage. Information retrieved from the study will be handled anonymously and will be for internal use only. As a participant you will be compensated with a voucher. Online sessions will be held during November 16 to 27, 2009. They will take approximately 60 minutes of your time.

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Kind regards,
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- 35-39.....h
- 40-49.....i
- 50-59.....j
- 60-69.....k
- 69+.....l

2. Specify your gender
 Male.....1
 Female.....2

3. Where do you currently live?

4. What is your current occupation?

5. Have you downloaded any of the Ericsson Labs' APIs?
 YES.....1
 NO.....2

6. Are you using any of the downloaded Ericsson Labs' APIs?
 YES.....1[continue with Q.6a]
 NO.....2[continue with Q.6b]

6a. Which Ericsson Labs' APIs are you using?
 Mobile Java Communication Framework.....1
 Mobile Java Push.....2
 Mobile Location.....3
 Mobile Maps.....4
 SMS Send & Receive.....5
 Streaming Media.....6
 Web Location.....7
 Web Maps.....8

6b. Do you have an informed opinion why you do not use the Ericsson Labs' APIs?
 YES.....1
 NO.....2

To the “NONO” users:

Hi [NAME],

Supporting you the best way we can is important for us at Ericsson Labs. We are therefore initiating a study to evaluate and improve the Ericsson Labs offering.

You are registered on the Ericsson Labs site and we believe that you have ideas to share concerning why you are using/not using the site. We would therefore appreciate if you could take the time to participate in the study. This would be a great opportunity for us to get to know your opinions and thoughts regarding the site. Your feedback is of great value to us and will most definitely have an impact on the future direction of

the site as the portal is still in its beta stage. Information retrieved from the study will be handled anonymously and will be for internal use only. As a participant you will be compensated with a voucher. Online sessions will be held during November 16 to 27, 2009. They will take approximately 60 minutes of your time.

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Kind regards,
The Ericsson Labs team

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1. Specify your age

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- 20-21.....d
- 22-24.....e
- 25-29.....f
- 30-34.....g
- 35-39.....h
- 40-49.....i
- 50-59.....j
- 60-69.....k
- 69+.....l

2. Specify your gender

- Male.....1
- Female.....2

3. Where do you currently live?

4. What is your current occupation?

5. Have you downloaded any of the Ericsson Labs' APIs?

- YES.....1
- NO.....2

6. Are you using any of the downloaded Ericsson Labs' APIs?

- YES.....1
- NO.....2

.....

11 Appendix II Discussion questions “YESYES”

Developer background

- How did you first hear about Ericsson Labs?
- What is your technical background (Desktop/Web/ mobile development)? If other please specify!
- Do you mainly develop applications on your own or are you part of a group?
- If you get the following to choose from, what would you say are your main areas of contribution when developing mobile applications? (Idea generation/Project leadership/Funding or commercialization/Program logic design/Graphic design/Coding/Testing and debugging/customer relation)
- On which platforms have you ever developed? Which, among the following, is the most important decision factor when you choose a platform to develop on? Required investments (fees/time/resources), available distribution channels, open source capabilities, expected return on investment

The developing process

Planning phase: Getting started

- What made you decide to register on the Ericsson Labs site? What is your main motivation with being active on Ericsson Labs, considering the exploratory (Beta prototype) status of the site?
- How easy is it to get started on the site? What did you need to know in order to get started? How can the starting phase (getting a key/access to source code/start coding) be made easier?

Downloading and using tools

- What requirements do you have on APIs? How does the Ericsson Labs’ API that you are using fulfill those requirements?
- Is it easy to understand what the APIs offered on Ericsson Labs can be used for? What are you using the Ericsson Labs’ APIs for?
- In what ways does Ericsson Labs fulfill your requirements on a portal (technological/business related/community wise) and in terms of offerings (example code/tutorials/support)?

Developing phase: Help and support

- What do you think about the documentation/ tutorials /example code offered for the specific API that you are using?
- What do you think about the quality of the forum to get help or feedback from the Ericsson Labs team or another member on the site? Is the response time in the forum and email quick enough? Is there a need for moderation in the forum?

Publishing phase

- Where are you in the developing process? What is your plan after finishing the developing phase?
- How do you plan to expose your application? How important are showroom, publishing facilities, and payment support on a developer portal?
- Do you plan to make money out of your application?

Overall evaluation of Ericsson Labs

- What is good/bad/working/not working on the Ericsson Labs site? What is missing on the site today?
- What direction would you like the Ericsson Labs portal to take in the future?
- What expectations do you have on the Ericsson Labs' APIs in the future, in terms of updates etc.?
- What are your thoughts on the structure of the site (combining mobile and web application development)? How easy is the site to navigate due to that?

12 Appendix III Discussion questions “YESNO”

Developer background

- How did you first hear about Ericsson Labs? (From people in my personal social network/From people in my professional social network/From posts on social media forums/From Ericsson labs Tweets/Through a developer event/Advertisements on websites/Other)
- What is your background (technical)? (Desktop/Web/ mobile development)?
- Do you mainly develop applications on your own or are you part of a group?
- What would you say are your main areas of contribution when developing mobile applications (Idea generation/Project leadership/Funding or commercialization/Program logic design/Graphic design/Coding/Testing and debugging/customer relation)?
- On which platforms have you ever developed? Which is the most important decision factor when you choose a platform to develop on? Required investments (fees/time/resources), available distribution channels, open source capabilities, expected return on investment

The developing process:

Planning phase - Getting started [1st topic]

- So to begin with, I would like to know about your first experiences with Ericsson Labs!
- What was your main motivation to register on Ericsson Labs, considering the exploratory (Beta prototype) status of the site?
- How easy is it to get started on the site? How can the starting phase (getting a key/access to source code/start coding) be made easier?

Downloading and using tools [2nd topic]

- Why are you using/not using the APIs offered on Ericsson Labs? What would make you start using them?
- Is it easy to understand what the APIs offered on Ericsson Labs can be used for?
- What requirements do you have on APIs? How does the Ericsson Labs' API(s) that you are using fulfill those requirements?

Cont. Downloading and using tools [3rd topic]

- In what ways does Ericsson Labs fulfill your requirements on a portal (technological/business related/community wise) and in terms of offerings (example code/tutorials/support)?
- What expectations do you have on the Ericsson Labs' APIs in the future, in terms of updates etc.?

Developing phase – Help and support [4th topic]

- What do you think about the documentation/ tutorials /example code offered for the specific API(s) that you downloaded?
- What do you think about the quality of the forum to get help or feedback from the Ericsson Labs team or another member on the site? What about the response time in the forum and via email?

Overall evaluation of Ericsson Labs [5th topic]

- What are your thoughts on the structure of the site (considering the combination of mobile and web application development)? How easy is the site to navigate due to that?
- What is good/bad/working/not working on the Ericsson Labs site? What is missing on the site today?
- What direction would you like the Ericsson Labs portal to take in the future?
- Is there a need for moderation on the portal's forums?

13 Appendix IV Discussion questions “NONO”

Developer background

- How did you first hear about Ericsson Labs?
- What is your technical background (Desktop/Web/ mobile development)? If other please specify!
- Do you mainly develop applications on your own or are you part of a group?
- If you get the following to choose from, what would you say are your main areas of contribution when developing mobile applications? (Idea generation/Project leadership/Funding or commercialization/Program logic design/Graphic design/Coding/Testing and debugging/customer relation)
- On which platforms have you ever developed? Which, among the following, is the most important decision factor when you choose a platform to develop on?
Required investments (fees/time/resources), available distribution channels, open source capabilities, expected return on investment

The developing process

Planning phase: Getting started

- How come you registered on the site?
- Did you experience any difficulties registering on Ericsson Labs?
- What was your main motivation to register on Ericsson Labs, considering the exploratory (Beta prototype) status of the site?
- How easy is it to get started on the site? How can the starting phase (getting a key/access to source code/start coding) be made easier?

Downloading and using tools: offerings on Ericsson Labs

- Why are you using/not using the APIs? What would make you start using them?
- Is it easy to understand what the APIs offered on Ericsson Labs can be used for?
- What requirements do you have on APIs? How does the Ericsson Labs' API(s) that you are using fulfill those requirements?
- In what ways does Ericsson Labs fulfill your requirements on a portal (technological/business related/community wise) and in terms of offerings (example code/tutorials/support)?

Developing phase – Help and support

- What do you think about the help and support features offered on the site (forum, documentation/tutorials/example code)?
- What do you think about the quality of the forum to get help or feedback from the Ericsson Labs team or another member on the site? Is the response time in the forum and email quick enough? Is there a need for moderation in the forum?

Overall evaluation of Ericsson Labs

- What are your thoughts on the structure of the site (considering the combination of mobile and web application development)? How easy is the site to navigate due to that?
- What is good/bad/working/not working on the Ericsson Labs site? What is missing on the site today?
- What direction would you like the Ericsson Labs portal to take in the future?

14 Appendix V List of respondents

Respondent A, bulletin board on Ning, YESNO
Respondent B, bulletin board on Ning, YESYES
Respondent C, Skype chat interview, YESYES
Respondent D, telephone interview via Skype, YESYES
Respondent E, bulletin board on Ning, YESNO
Respondent F, Skype chat interview, YESYES
Respondent G, Skype chat interview, YESYES
Respondent H, Skype verbal interview, NONO
Respondent I, Sametime chat interview, NONO
Respondent J, Sametime chat interview, YESYES
Respondent K, bulletin board on Ning, YESNO

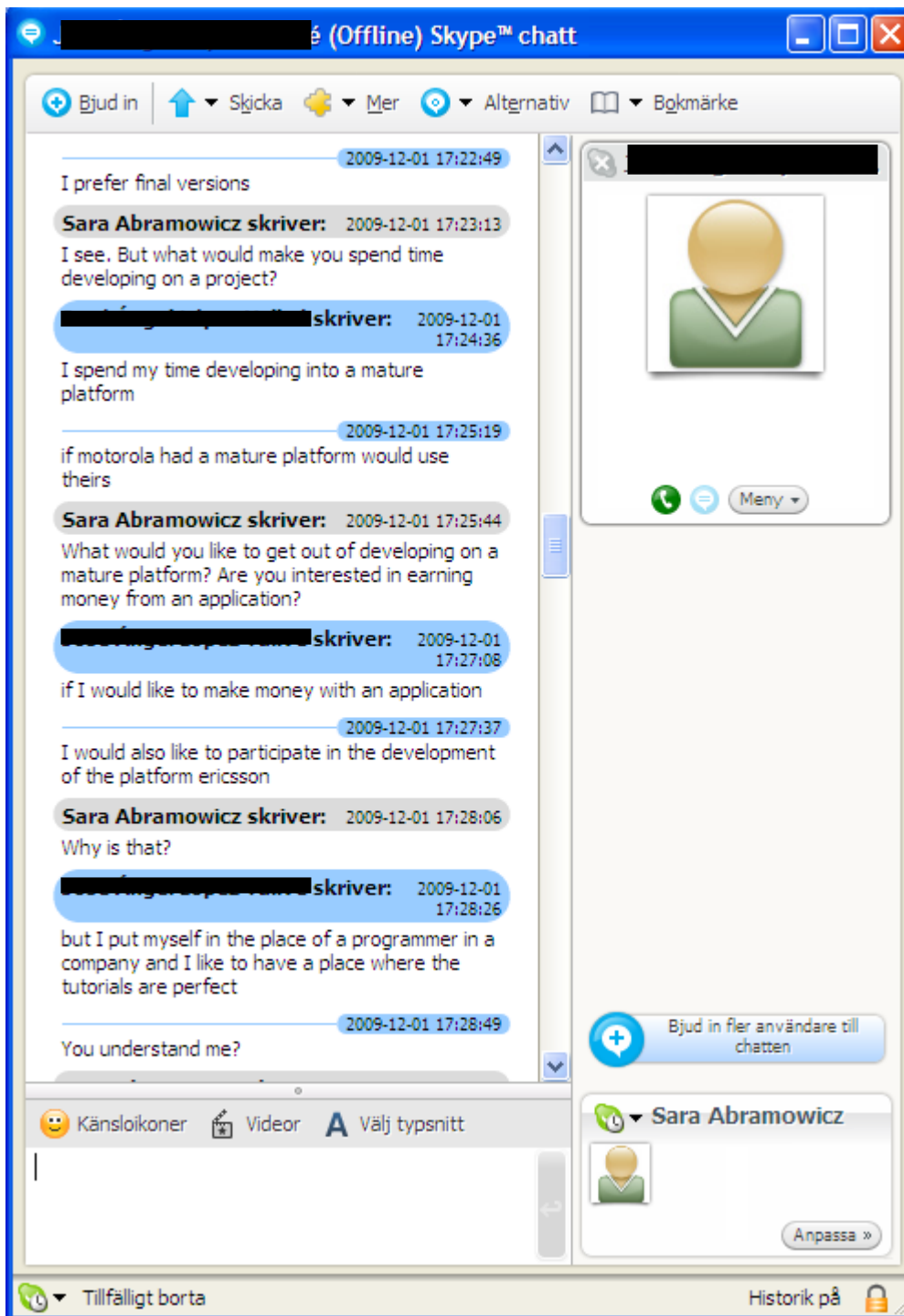
15 Appendix VI Skype chat transcripts

The screenshot shows a Skype chat window titled "(Offline) Skype™ chatt". The chat history includes the following messages:

- Sara Abramowicz skriver:** 2009-12-02 17:19:23
Well, if'd look at what is offered on Ericsson Labs as a whole.. aside for the API's, are features like tutorials, community, and business opportunities important in a portal? What is important in your opinion to include in a portal?
- 2009-12-02 17:19:30
a portal such as Ericsson Labs
- [Redacted] skriver:** 2009-12-02 17:21:38
all the things you mentioned are correct... Ericsson labs are famous and do a lot of work so as a developer I would like to see a well organized portal with a community of users that discuss about related topics on the APIs and experts give solutions and advice.
- 2009-12-02 17:22:45
also it could be shown the progress of the work for each API, what are the new APIs that are coming and when each one will not be in beta version any more
- Sara Abramowicz skriver:** 2009-12-02 17:23:34
You said earlier that you like the ideas in the site.. could you please explain a bit further!
- [Redacted] skriver:** 2009-12-02 17:23:47
yes
- 2009-12-02 17:24:43
The JavaME technology is not powerful enough for developing apps... there is much work that need to be done if someone starts from the beginning....
- 2009-12-02 17:25:36
these APIs are frameworks that give solutions for modern apps... there is no need from the developer to re-invent the wheel

The chat interface includes a top menu with options like "Bjud in", "Skicka", "Mer", "Alternativ", and "Bokmärke". On the right side, there is a profile card for the contact, showing a placeholder profile picture and a "Meny" button. At the bottom, there are controls for "Känslöikoner", "Videor", and "Välj typsnitt". A status bar at the very bottom shows "Tillfälligt borta" and "Historik på".

Respondent F



Respondent G