EXPLORATION OF DIGITAL FEATURES FOR THE SOCIAL INTEGRATION OF IMMIGRANTS IN SWEDEN: A PARTICIPATORY DESIGN STUDY.

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Abstract
This thesis looks to explore from a user-centered standpoint, which mobile application features are relevant in the social integration of new arrivals in Sweden. Mobiles are used by individuals who are moving away from home not only to stay connected to their close ones but also as a way for empowerment and adaption in their new homes. Access to information helps immigrants to face the new challenges new host societies present. Nowadays mobiles and more specifically smartphones are becoming the principal sources for new arrivals to obtain information. As mobiles become more common among immigration groups, governments and institutions are turning to them as new ways for addressing migration challenges such as integration. This thesis, through a participatory design study, explores possible mobile digital application features that could be relevant in the social integration of immigrants. The goal is to develop through a cooperative and co-design method a prototype of a mobile application that can fit better with the necessities of new arrivals and can also facilitate better ways for social integration. As a result, it could be determinate that features that provide users the ability to gather information from one source are the most important for immigrants. Additionally, users want to be able to have control over the information they are receiving according to what phase they are at the integration process. Also, digital features seem not to be enough and digital and offline cooperation are suggested. In the process, participants provided innovative ways on how integration challenges can be addressed.

Keywords
Migration, Social integration, Sweden, mobile apps, application key features, information and communication technology, participatory design, technology, lead user method
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1. Introduction

1.1 General Introduction and Research Question

For years, Sweden has detected a fast growth in their immigration flow, both from and to the country (Statistics. n.d.) leading to big challenges towards immigration. Consequently, integration has become a hot topic of debate among governmental institutions during the last years. This is due to the divided opinions towards Sweden's handling of their migration and integration strategies; meanwhile, some embrace how the country has addressed this issue, others believe Sweden still has a lot to learn towards integrating immigrants (Sweden and Migration, n.d.). Integration is an issue that is also concerning more and more other different countries with a high number of new immigrants. Thus, institutions like the Migration Policy Institution (Benton, 2014) and the European Commission (Reichel, Siegel and Tudela, 2015) are acting in the development of new ways to address migration challenges such as integration.

Originally, governments recurred to policy making to regulate migration challenges and to find possible solutions. However, many of the challenges are being poorly approach and not real solutions have been found. For instance, in terms of integration solutions institutions seem to not really understand the basic needs and priorities of new arrivals. Better research needs to be done in relation to how to make individuals feel welcomed and settled. This seems to be underseen and overshadow by other issues like migration policies changes, border controls and management of resources.

In 2014, the Migration Policy Institution came to the realization that digital tools, such as smartphones, could bring opportunities for immigrant integration (Benton, 2014). This is due to the internet easy access that mobiles provide to individuals. According, to Benton (2014) immigrants tend to prefer mobiles over computers. New arrivals usually use mobiles to keep in contact with their families back home and to obtain information about their new homes. As a result, immigrants have better access for communication and information which can be a way to hinder integration processes when moving to a new place. Thus, different institutions are starting to turn in the development of digital tools such as mobile applications for engaging with immigrant populations. Integration strategies are being developed around
informing and communicating immigrant communities about governmental processes to facilitate their first contact with the country (op.cit). Institutions are also focusing on developing digital integration strategies for education, particularly, in the learning of the language (Mattoo, et. al, 2015), and the introduction of the immigrant to the labor market (Berger, 2016). It can also be argued that a lot of the integration strategy’s investment and research has been focused in topics like economics, education, households and so forth. However, other points of integration such as socialization are being left behind (Benton, 2014).

According, to the Canadian organization P2P, finding employment its elemental for immigrant’s integration in a country, yet is not enough “to improve feelings about the quality of life, nor for retaining immigrants and their families in community or region. (...) Social networks of acquaintances, friends and services and neighborhoods are part of the capital that attracts, integrates and retains immigrants” (Pathways to Prosperity: Canada, n.d.). The development of these networks gets beneficiated from information technologies and digital social networks since these networks encourage the immigrant civic engagement, citizenship participation and political engagement (op.cit).

Thus, in this thesis I will focus on exploring the phenomena of migration, how it is presenting new challenges to institutions, the role of socialization in integration and how present digital integration strategies such as using mobile apps to address integration challenges are facilitating immigrants ‘integration processes. More specifically, I will focus on analyzing existent examples of digital app features that are meant to be used as facilitators for integration and to explore if these features are fulfilling the end-users needs and if not, to provide some suggestions on how these features can be improved or oriented in a more efficient way. Hence, this paper intends to contribute on a knowledge gap where institutions by using digital tools are trying to find new and more efficient ways to address integration challenges and to help immigrants to adapt better.

The following research question and sub-questions will be address for this paper:

**Research Question**: Are digital application features dedicated to help new arrivals social integration in Sweden fulfilling the needs of their end-users?
**Sub-question 1:** What kind of mobile digital application features are relevant according to immigrants to support the social integration in Malmö, Sweden?

By exploring and finding important features on apps, organizations and governments can better understand what the needs of their immigrants are and how to address them in more local and individual levels. This can lead to the development of more efficient migration strategies where immigrants can count with better ways of integration which can provide different benefits to the host country.

### 1.2 Structure of the Thesis

The thesis is divided in four main sections: 1. Theoretical framework, 2. Methodology: Design of the prototype 3. Discussion and 4. Conclusion. The first section focuses on exploring what migration is, the role of globalization and what is the current migration situation in both Europe and Sweden. Additionally, it addresses some of migration’s emerging challenges and explores examples of strategies that have been developed by organizations as solutions. The theoretical framework also talks about migration’s integration, information and communication technology, and how ICTs, more specifically mobiles and digital applications, are used as facilitators for integration. The next section explains the methodology and the design process of the prototype where a participatory design study is used as the base. During the methodology, participants interacted in a “Lead User Workshop” and created a prototype. For the discussion the researcher did an analysis of the results and explores possible answers for the research questions. Lastly, the conclusion presents a final answer for the research question and it opens a door for future research and possible improvements.

### 1.3 Limitations and Ethical Issues

Due to the nature of this research several limitations and ethical issues need to be considered:

**Limitations.**

Even though migration is a global phenomenon that affects countries all around the world, the following study will be limited to the area of Sweden and more specific the city of Malmö. Moreover, not all considered migration groups will be included leaving aside refugees and
asylum seekers; these specific groups have different necessities in relation to others and thus, another approach than the one taken in this thesis is needed. Due to the variety of the sample taken in consideration for this study, both the cultural and gender aspects will be excluded. Limitations regarding usability, fidelity and technology are also expected among this work due to the temporal scope of the study and the capabilities of the researcher. The prototype aims to present possible relevant features for the support of social integration of immigrants in Sweden and leaves aside the technical and technological aspects of it in detail. Consequently, the external and final appearance of the prototype will not be evaluated.

**Ethical Issues:**
During the realization of this research considerations will be based on the principles of the participatory design method and will take in consideration ethical issues that can be present in digital research.
2. Theoretical Framework

2.1 Migration

From the beginning of humanity, individuals have depended on movement as a way of adaptation to survive. In the beginning, people were not able to produce their own food, therefore the capacity to find it became a main priority. To achieve this, they tended to move from place to place searching for the most productive territories that at the same time could provide them of shelter against the weather and predators. When the food was finished, they moved to new places with the same conditions. This continued for several years until men developed a way to produce their own food (Lane, 2009; Dingle, 2014). Thanks to this, civilizations were able to form and grow. In the beginning, these movements were mostly related to the seeking of new resources and to reproduction (Dingle, 2014), but with time, people started to move for different factors (Huynh, 2013) such as:

- Principal: Density, geographic location, violent conflicts and ethnicity
- Economics: Income gap among urban and rural sectors
- Policy: Policies regarding job creation
- Environmental: Pollution, land degradation, droughts, flooding and natural disasters

Moreover, Huynh (2013) states that the role of migration is and has been essential for growth, as well as crucial strategy for economic transitions and the improvement of live hoods and wellbeing; “migration and development are complements. Development induces migration, and migration contributes to development” (p, 4). Therefore, migration has played a very important role in the formation of humanity and its history.

2.1.1 Technology, globalization and migration

The development of technology has enabled migration to succeed. As mentioned before, humans have been immigrating since the beginning of times and technology has come along since then. Thanks to the first developed farming technology humans did not need to move around as much, this changed migration’s priorities and cities, states and so forth, were able to emerge (Grabianowski, n.d.). Even though humans continue to move after the development of agriculture it was not until the Industrial Revolution that migration went again through massive changes. The Industrial Revolution marked human history from different angles since during this time humans mechanized the productions of goods and
food. Thus, massive production started, leading to the urbanization of the world (op.cit). Before the Industrial Revolution, communities tended to be somehow small and with a decentralized economy, however, with the fast development of new factories and the growth of new jobs people started to migrate from rural areas to cities.

The Industrial Revolution is neither the only nor the last example of technology´s influence over the history of migration. Technology has continued to provide people with new opportunities and ways of moving around the world through the invention of faster, bigger and more resistant transportation systems.

Moreover, the development of the internet has provided new ways of information´s flow. Thanks to this, the structure of the world is changing. Before, the spread of information was held by spatial and time limitations. Mediums like the TV and the radio had a restrained reach on audiences and were usually centralized (Hellman and Wagnsson, 2013). While nowadays, information has not only become available to everyone but also at any time. Devices like smartphones and social media are revolutionizing how people share information, communicate and interact (Benton, 2014). As consequence, governments and international entities are having difficulties to have a control over the information, the movement of investments and values across the border, and so forth (Serra, 2005). This instant information “turns the speculative capital flow continuous throughout the world markets” (Serra 2005, p. 66). According to Čiarnienė and Kumpikaitė (2008), the fast growing in communication and technology have influence how migration, nowadays, works.

2.1.2 Migration in Europe
Even though Europe has been part of massive immigration movements (colonization, great migrations, the industrial revolution), studies (Sobotka 2009; Strozza, 2010) and statistics (Boswell, 2005) demonstrate that during the past decades, Europe has seen a substantial incrementation of immigration flows like never. Consequently, there has been a "radical transformation of all aspects related directly and indirectly to migration dynamics […] flows, […] policies and the role of various countries in the continental migration panorama and the rising concerns for integration processes both at the policy and scientific levels" (Bonifazi 2008, p, 9). Thus, new destinations, regions of origin and flows emerged (Sobotka, 2009; Strozza, 2010 and Boswell, 2005). “Economic transition, political changes and ethnic
conflicts in CEE have affected the size and direction of European migration flows, while flows from non-European countries have continued to account for a sizeable part of migration in Europe” (Bonifazi 2008, p. 9). At the same time, violent conflicts in non-European countries have led to a shift from migrant workers to big flows of war refugees, asylum seekers and illegal immigrants (BBC: Why is EU struggling with migrants and asylum?”, 2016). As consequence, some European countries are changing their migration policies and therefore, certain regions are becoming more diverse in their immigration and emigration levels and trends than others (Sobotka, 2009). Furthermore, this is presenting new challenges since the number of incomers have begun to exceed the capacities of the host countries (United Nations, Department of Economic and Social Affairs, Population Division, 2017).

2.1.3 Sweden
About 10 million people live in Sweden nowadays from which 1.6 million people were not born in the country. In comparison with fellow countries, Sweden is known to have taken one of the highest amounts of immigrants on the continent; this is due to some migration policies changes and external factor (Invandring till Sverige, n.d.). There are many reasons why individuals are moving to Sweden, being the top five: love, to be with close family, asylum, work and to study (op.cit).

According to the official website of the country, Sweden´s migration history has been developed during the following periods (Sweden and Migration, n.d.):

*1940-1979: Before this period, Sweden was mostly an emigrant country, but the new flows of refugees escaping WWII changed it to an immigration destination. During this time people mainly from Germany, Nordic and Baltic countries arrived. Finish, Italians, Greeks, Turkish and Polish people moved during the following years. By this time, Sweden increased its housing development and labor opportunities. After 1970, the migration flow decreased due to new regulation polices.

*1980-1990: During this period a rise of asylum seekers emerged. People from countries like Iran, Iraq, Eritrea and South America arrived in Sweden as an effort to avoid repressive regimes.
*2000-present: In 2001, Sweden joined the Schengen cooperation where a common asylum and immigration policy took place. As a result, members of the EU opened their borders allowing other EU citizens to the country to find work and a family. After this initiative, migration in Sweden grew one more time. Lastly, in 2014, a new wave of asylum seekers arrived in the country coming from places like Syria, Eritrea and no state countries.

Due to the increase on migration activities, Sweden is presenting several political, economic and social challenges; being integration one of them (Sweden and Migration, n.d.).

### 2.2 Challenges

New challenges have emerged due to the increasing migration flows in Europe, and thus governments are urged to find solutions to the new problematics (United Nations, Department of Economic and Social Affairs, Population Division, 2017). “This unprecedented population increase has resulted in a lack of practical resources, from housing to schools to healthcare. And that’s why we can’t continue having such a large number of people coming here year after year – it’s stretching our system” (Sweden and Migration, n.d.). Moreover, in the latest years migration in general, has brought along critical political and policy challenges in matters of integration, displacement, safe migration and border management (Boswell, 2005). Matuszczyk (2017) argues that factors like the changing demographic situation in Europe and the several strategic mistakes in managing the immigrant crisis are needing to be consider when addressing migration’s new challenges; “the evidence of the contributions immigrants can make to their host communities is not widely understood or accepted […].The impact of immigration on communities is nuanced, and in many studies, we see evidence of different outcomes due to different policy and social contexts” (Omidvar, 2016). Thus, the perception of immigration has an impact in how the challenges are being address.

Omidvar (2016) also explains that one of the biggest issues faced by migration, nowadays, is the perspective of strategies implementation. Many of the strategies developed by governments in relation with migration are thought in short-term solutions, however, the real time for most immigrants is in a long-term. In other words, strategies are being developed with the idea that people are migrating to countries for reasons like displacement.
(displacement is when people are being forced to move from their houses due to factors such as armed conflicts, dictatorships, and natural disasters. In other words, people are not willingly choosing to migrate but have to), and that migrants will return to their homes after short periods, however, reality is showing that many migrants either are moving as working force or are staying longer than planned. “Planning for integration (long-term) instead of displacement (short-term), means a shift from building temporary solutions to permanent infrastructures” (op.cit.). Countries like Canada, Australia and part of Europe are in need to develop new and refresh strategies that can adapt to the new socio-economic trends that have been developed during the past years (op.cit).

On the other hand, governments and institutions are starting to focus on facilitating solutions for the main problems that the immigrant faces when arriving at his new home. According to Spracklin (2017) and Nuñez (2014) some of the top problems the immigrants can face are language barriers, employment, housing, access to services, transportation issues, cultural differences, raise their kids, prejudice and racism, isolation and the weather. By finding solutions to these problems, the new arrivals have a better opportunity of integration. If countries lack a proper integration plan, new challenges in national and international levels can emerged such as economic, political costs, instability and the erosion of social cohesion. “In OECD (Organisation for Economic Cooperation and Development) countries, there are around 10 million high-educated migrants who are not employed. A further 8 million high-educated migrants are poorly matched in their job. Everyone loses out: the host country, the origin country, and the migrant” (Gurría, 2016). Thus, inclusive, cohesive and harmonious societies can help to improve development outcomes, international relations and boost the economy.

2.2.1 Solutions
International organizations like the UN and national governmental intuitions have been developing different policy changes as solutions to create progress for migration management, focusing mainly on three key terms: “1) to generate a greater action at a global level for migration 2) to create initiatives that enhance the protection of migrants and 3) the integration of international migration into global-level responses on other salient issues” (Martin and Weerasinghe, 2017). With the implementation of new technological tools institutions like the Migration Policy Institution are trying to develop new solutions for
problems of integration, such as education, skills training, work and social services of every sort (Benton, 2014). In fact, Jessica Brandt, recommends that international organizations and humanitarian communities should create new ways to provide innovative approaches to migration integration directly from the cities (McKenna and Hoban, 2017). Some cities like Bodø and Tromsø in Norway are implementing and developing new ways to approach integration challenges in the cities by using public non-commercial spaces as for activities that can facilitate a direct contact between the host society and the new arrivals. These activities are mainly art-related where participants are invited to share their art and to collaborate for the creation of fun plays and storytelling workshops. Other cities like Halsaes in Denmark are using digital platforms to open private spaces between volunteers and new arrivals (The Arctic University of Norway: Cit-egration. Sustainable Diverse cities: Innovation in Integration, 2017).

2.3 Immigrant integration

Most countries around the world are compound by a cultural and religious diversity (Jupp, J., ed. Marshall and Pietsch, 2015). However, the definition of what a nation is, and the belief of a unified ethnicity usually do not take in consideration minorities within such a nation. Thus, internal ethnic conflicts and the force of movement from certain individuals can be experienced. Additionally, the seeking for a better economic, political life and safeness have raised new changes in the world. Normally, a nation tends to present itself as a place of common cultures, beliefs, ideals in inheritances. However, most nations have a “degree of cultural fragmentation due to new mixed heritages and the growing variety of ethnic composition of populations created by mass migrations” (Jupp, ed. Marshall and Pietsch 2015, p.58), resulting in the disruption on the original assumptions of how a nation should be. Consequently, terms like multiculturalism and integration have raised attention in the development of new strategies (Jupp, J, ed. Marshall and Pietsch, 2015). During the latest years, the number of debates around topics such as immigration, multiculturalism and the failure of policies have been increasing (Kaczmarczyk, Lesinska and Okólski, ed. Marshall and Pietsch, 2015). This is because individuals and institutions of countries with high incomes of immigrants are starting to see migration as a negative impact to their nation (Gurría, 2016), leading to serious tensions, especially in the every-day interactions between

As a response, governments are turning to integration as a tool to manage diversity strategies. “Integration is the process by which immigrants become accepted into society, both as individuals and as groups. The definition of integration is deliberately left open, because the particular requirements for acceptance by a receiving society vary greatly from country to country. The openness of this definition also reflects the fact that the responsibility for integration rests not with one particular group, but rather with many actors—immigrants themselves, the host government, institutions, and communities, to name a few” (Penninx, 2003). This has led to countries developing their own "philosophies of integration". For instance, France sees integration as a process by which the ethnic difference would disappear as migrants are integrated into the community of French citizens via expansive naturalization. Germany presents a social model of integration where the labor market and welfare-state membership were recognized as the basis of integration. The model implemented in the UK is based on the concept of a community of communities where cultural and ethnic diversity is recognized as a value (Brubaker 1989; Favell 2001; Ireland 2004; Kaczmarczyk, Lesinska and Okólski, ed. Marshall and Pietsch, 2015, p. 38).

During integration, a two-way dynamic process takes place; the immigrants on one side and the host society, on the other. The immigrants contribute with their characteristics, efforts and adaptation, while on the other side, the host society provides with interactions between the new arrivals and institutions (Penninx, 2003). Nevertheless, it is the final interaction that decides the direction and final result of the process. Yet, the impact both parties have on the process is unequal, being the host society the one who has the final word to decide when somebody is integrated. Nevertheless, the integration process does not work properly when it is taking place at the level of the immigrant as individual and whom integration is determinate in relationship of employment, housing, education, social and cultural adaptation (op.cit). In other words, integration processes are interrupted when the host society evaluates if the immigrant is being accepted or not through his capacity of following certain standards that are only focused on the immigrant qualities as an individual unit instead of taking evaluations of how immigrants are resourceful to the society from different standpoints such as community collaborators and nation-economic forces.
Ideally, integration should also work from an institution ‘level. This level is divided in two general types; 1. General public institutions such as labor market, educational system, laws and regulations and 2. belongs to institutions that are part of the immigrant groups such as religion or cultural institutions. However, some difficulties can be found when addressing integration processes from an institutional level. For instance, general public institutions can hinder the access/ equal opportunities for new arrivals and even exclude them completely. When talking about immigrants’ religious and cultural institutions, the host society institutions tend to treat them and accept them in the same way as they accept other minorities like native and indigenous groups; resulting in the possible isolation, unrecognition, and exclusions of migration groups and in the obstruction of social multicultural development (op.cit).

Thus, the functionality at individual, group and institutional levels vary, even though these levels are connected. For instance, institutional arrangements determine the opportunities and scope for action of organizations. “Institutions and organizations together create the structure of opportunities and/or limitations for individuals. Conversely, individuals may mobilize and change the landscape of organizations and ultimately even contribute to significant changes in institutional arrangements”(op.cit). How the different functionalities affect other depends on the countries ‘priorities and definition of how integration should work, therefore is not surprise to see different outcomes in different nations.

At the same time, the latest growth of immigrant populations worldwide has provided common key elements that are important to attend in the development of successful integration strategies. Paraphrasing Penninx (2003) the following are some examples:

✓ Offer a vision for both immigrants and host societies: Strategies need to have a framework where common goals (both from new arrivals and receiving societies) are taken in consideration as an effort to provide “viable and livable communities”. A way to accomplished this is through the creation of guidelines and tools on how both sides can contribute.

✓ Coordinate with immigration policies: This connection is priority, since many governments keep addressing international migration and diversity strategies from a
traditional ideal of "what a nation should be". As a result, many migration and integration strategies are still being focused on defensive and control centered policies. Additionally, poor integration strategies are contributing to the bad image of immigrants which at the same time leads to the reinforcement of more defensive solutions. Transparency can be a solution to change this, especially regarding what the host society is expecting from them [immigrants] and what they [immigrants] can expect in return.

✓ Promote integration strategies that acknowledge diversity: More attention should be given to questions related on how to frame immigration and integration strategies, from a political level, as a way “to recognize and accept diversity of attitudes”.

✓ Provide for national realities: Just like nation-states ideals, integration strategies are built by national contexts. Consequently, “the scope, actors and instruments of policy action differ”. Instead, institutions can generate more general strategic frameworks, rules and tools that can “ease local actors”.

✓ Understand the importance of urban areas: Usually, there is a tension between local levels of communities, cities and their governments and institutions. This is due to the different perspectives these two groups have in relation to problematics and responsibilities. Consequently, many times marginal communities tend to be neglected or isolated. This problematic is urgent to solve since more and more cities are facing fast changes in their population, where immigrants are often "steered" to the cities by government policies, making their integration to the society more challenging. “Social segregation, social exclusion, and marginalization of (certain of these) immigrant groups can threaten the social cohesion in these cities”(op.cit).

✓ Recognize local context: When countries address integration processes from a unifying nation standpoint, local diversity tends to be left behind. As a result, the interaction between immigrants and local society is neglected. Nevertheless, for a better cohesion among habitants, local policies for integration should receive high priority. Local policies can provide more tools and “room for governments to act in ways appropriate for the locality. Thus, they should follow strategies and tactics that engage partners in the integration process at different levels which goal should be to leave room for an outcome of a society that is more diverse” and yet cohesive.
2.3.1 Cultural and Social Integration

Socialization and the sense of belonging is one of the basic needs of the human being. According to Fromm (2000), the feeling of separation can cause extreme distress. To be separated means isolation and the incapacity of being a human with others. He also argues that in some cases, to be separated from others can be look as a way of liability. Thus, it is important for individuals to feel a connection. For new arrivals, successful social integration can provide multiple advantages.

In comparison with previous decades, communities are experiencing new multiethnic developments that were not as strong before. This is presenting challenging in concerning living together as communities and thus as a nation (Ray, 2002). Places like Australia, North America and Europe are receiving an overwhelming number of new incomers per year, hence, transforming homogeneous villages to multiethnic ones (op.cit).

At the same time, it is necessary to understand that the ways new incomers adapt to their new homes changes from context to context (op.cit). While most immigrants are willing to learn and adapt to their new host society, culture and language others like people who are experiencing persecution and/or are being forced to displacement face different challenges in this aspect that later can present problematics for successful settlements. This is because in comparison with arrivals that have chosen to move to the country willingly, refugees move because the necessity of feeling safe and most likely would not leave their homes under other circumstances. The hope to return to their homeland is constantly present and the need to a full adaptation to their temporary home seems not a priority. Nevertheless, this presents different new interrogatives into how general integration should be addressed among these groups, especially from a cultural and social standpoint since the reality lays in that many of these cases last for longer terms (McKenna and Hoban, 2017).

According to Ray (2002), “the cultural and/or symbolic dimensions of integration are in some ways the most hotly debated because they are so closely associated with the quality of interactions between newcomers, their descendants, and the receiving society, as well as the adoption and/or rejection of cultural norms by newcomers and long-established residents alike”. Simultaneously, the cultural standpoint of integration can be transformed, mainly since next generations can rediscover and reinterpret their heritage as positive values in
society. The problematic presented here is to find a balance among cultural identities and the sense of belonging since these two both form part of a high complex process. “Most studies acknowledge that cultural integration or "acculturation" or "symbolic integration" -- the adoption by newcomers of the cultural patterns of the receiving society -- often is already well underway among all but the most isolated of cultural groups long before they set foot in North America or Europe” (op.cit). and thus, many new arrivals come already familiar into some point with certain cultures even before arriving to the country.

Furthermore, the cultural integration seems to be measure in relation of the level of "sense of belonging" from the new arrivals to the host society, how often and with which quality a cultural contact appears between groups and to which point certain groups endure apart. However, when developing cultural integration policies, certain limitations need to be considered; for instance, there is an existent expectation that new arrivals will easily adapt to the new laws, values and interest of the host society. This presents challenges since institutions tend to ignore the diversities that are within communities and/or societies. A clear example is how the American society is built by sub cultures that change from place to place and through social classes over the country (op.cit). Thereby, it would be not logic to assume that the immigrant cultural integration in the country is related to one single, class cultural pattern. Hence, for being able to form successful cultural and social integration strategies, policies need to be developed by recognizing that culturalization is a phenomenon that continues to change.

On the other hand, Ray (2002) describes social integration as “the capacity by governments to measure dimensions of status change such as education levels, literacy in the host society’s language, type of occupation and household income of new arrivals”. In the end, this allows governments to understand social mobility. Social integration, however, held different meanings to different people: on one side, it can be seen as a positive value that encourages cohesion between different communities in one particular society, where usually two parties take place: new incomers and the natives of the hosting society that are adapting at the same time to the presence of the incomers bringing educational, labor market, health and cultural patterns benefits (Panel on the Integration of Immigrants into American Society, 2015; Wong, 2015). While, on the opposite side, some individuals believe social integration can bring negative effects and not always lead to positive results. Questions like "would
integrating all people into the existing lifestyle of developed countries be a sustainable
development?” emerged, where institutions like the UNRISD (1994) have called for a new
consideration of how the actual process of development in which immigrants are being
integrated into would be viable or not. The UNRISD mentioned that the increasing of
integration can had negative implications of threatening to impose "an undesirable conformity
on people" (Wong, 2015).

Lastly, in order to assure a successful social integration, the idea that short-term frictions
between different cultures and communities might occurred needs to be present and at the
same time, it is important to take these issues from a long-term perspective to form and
strength relationships between the two groups. In the end, the development of successful
social integration depends on which benefits both the host country and the new incomers can
obtain in a mutual understanding. Some of these benefits could be related to economic
growth, resilience in facing adversities; enhancing creativity and innovation (op.cit).

2.4 Information and Communication Technology

In general information and communication technology (ICT) can be referred as “technology
that provide access to information through telecommunications" (Internet Terms, n.d.). In
other words, the technology that facilitates communication and transmission of information,
some examples are the internet, wireless networks, mobiles and other communication
channels. Nevertheless, it is important to clarify that there is not a one universally accepted
definition of what is an ICT; this is because, the concepts, methods, and applications used
for ICT are constantly changing according to the contexts (Tutor2u, n.d.) . In this paper, ICT
is addressed as mobile devices, networking components, digital applications and systems that
combined facilitate people and organizations to interact, providing society with new ways of
communication capabilities. For instance, smartphones, together with the internet, help
individuals to communicate instantly with others without any distance and time limitations.
At the same time, social platforms like Facebook and Twitter provide users to contact, share
and communicate with others at any moment. Hence, modern ICTs are creating new digital
spaces for society to co-exist and develop (op.cit).
Also, ICTs like smartphones have enabled the interconnection of financial markets, media, sharing of knowledge, documentation of data and access to information taking old communication patterns to evolve and with it transforming information hierarchies (Hamel, 2009). According to Castells (2004), society is changing to an information society, where it is “being structured around networks and is powered by a constant flow of information through technology” (p. 2). These networks are of importance to individual and society. In society, social networks dynamics are at the heart of social interaction and, thus, the production of meaning (Monge and Constructor, 2003; Castells, 2004). Additionally, these networks can also influence social structures and dynamics because of their connection with the directional flows of information and resources. Hence, networks affect the hierarchical flows in which information tends to move. Castells (2004) believes that this happens because the “networked form of social organization had material limits to prevail, limits that were fundamentally linked to available technology” (p. 4). However, he claims that the development of digital ICT is challenging traditional networks dynamics since digital ICTs are facilitating the development of more open channels and are providing a better availability of information to the masses. As a result, networks have been expanding more and more as technology includes more and more people into a common direction.

Nowadays, the use of ICT is being considerable extensive. According to the official website of Statista (2018), the number of internet users worldwide is of 3.58 billion, which is more than 50% of the world population. Consequently, new forms of ideologies and spheres are emerging, provoking economic, social and political changes. For instance, digital social networks are becoming new spaces of autonomy largely beyond the control of governments and corporations that had monopolized the channels of communication as the foundation of their power throughout history (Castells, 2000). Via social media networks, people with similar values, beliefs and interest can gather in order to exchange information and thoughts. When these values, beliefs and interest collide with the values behind their power institutions, conflict and challenges can emerge (Castells, 2004).

Thus, digital social networks encourage social movements as way of counterpower, unifying communities and creating public spaces. On the other hand, social movements also lead to the development of new policies. They also encourage political participation, citizen engagement, and facilitate the mobilization for collective action (Fenton, 2016). Therefore,
individuals are using ICT to promote and defend human rights and to create an impact in international laws and migration strategies. “Civil society groups and in particular transnational advocacy networks, including diaspora communities, have been some of the most active users of ICTs, such as the Internet, for information sharing, mobilization and social change” (Norris, 2001; Hamel, 2009, p. 3). Moreover, organizations and governmental institutions, in order to create and be part of a more global presence, have begun to implement ICT strategies into their own internal and external structures.

The UN, for example, has used ICT such as social media to embrace debates and discussion towards events like the 2010 MDG Summit in New York. In this example, the UN used the social network Twitter as a "vehicle through which epistemic communities create shared discourses and thus maintain their identity and cohesion which can lead to global social movements galvanize and act” (Denkus and Esser 2013, p.2). Another example, can be the use of social media by the Swedish government, for supporting their narrative strategies in relation to military and security matters. Hellman and Wagnsson (2015) explain that, the Swedish government uses blogospheres of social media to justify certain activities and practices made by their military during their missions in Afghanistan. At the same time, social media is allowing people to challenge, and contra arrest the justifications and the government decisions towards war.

Thanks to digital ICT capacity of banishing structures and spatial limitations, people’s narratives can be shared as well as their meaning. As consequence, "people’s sense of self is increasingly generating a shared sense of experience," that goes beyond any physical space” (Hamel 2009, p. 7). International networks are providing new ways of communication and media which are allowing the development of new global cultures that unify individuals through meanings, representation and identity (Appadurai 1996; Hamel, 2009).

At the same, ICT developments are also affecting the use of media and the influence of it on individuals on relation with identity, representation and ideas (op.cit). Cultural flows are moving across geographic boundaries in different directions, influencing other cultures that before were well defined by spatial limitations. As a result, new forms of multi-cultures are emerging around the world. Thanks to this, individuals can learn about external realities and ideologies, providing a more homogenous reality of the world.
However, the development of new digital ICT is also bringing problems of digital division. This means that access and use of digital ICT are still not distributed equally around the world (Hamel, 2009). According to the ICT Development Index, in 2017 the proportion of young people (71%) using the internet showed to be significantly higher in relation with the total of individuals (48%) using the internet (ITU 2017, p. 2). Moreover, in developed countries 94% of young people use the internet compared with 67% in developing countries and 30% in least developed countries (p.1). From these, mostly 9 out of 10 young individuals that are not using the internet are located in Africa and/or Asia and the Pacific. Thus, young people represent almost 1/4 of the total number of individuals that are using the Internet worldwide. As consequence, young individuals are playing a significant role in the facilitation of ICT uses to others. According to Chu (1999) they are serving as information intermediaries (Chu; 1999, Dosono, 2014). While young individuals are becoming enthusiastic adopters of ICT, older age groups are decreasing. In the 2016 ICT Development Index, was found that in most countries, people over 75´s ICT adoption is below 10%. Some of the possible explanations involve lower incomes, educational levels, social isolation, medical problems and age barriers like the development of anxiety when using ICTs (ITU 2016, p. 21).

Gender is another important contribution factor on the phenomenon of digital division. The ICT DI 2017 explains that, men access and use to ICT, like the internet and mobile phones, is higher than women in two-thirds of countries worldwide; being America the only region where a higher percentage of women than men are using the Internet. At the same time, there is a high connection between gender equality, education and the use of ICT. Resulting developing countries and least develop countries´ women the most affected. While the gender gap has narrowed in most regions since 2013, it has widened in Africa. In LDCs, only 1 out 7 women are using internet (ITU, 2017). Furthermore, Svensson and Wamala Larsson (2016) explain that women, especially in places like Africa and Middle East, tend to be at the lower end of the social economic scale, “a position determined by tradition and social structures” (p.4). To provide ICT to women in these regions could lead to an improvement in the process of empowerment. Nevertheless, the access and use of ICTs in these countries are still largely built by patriarchal power structures (Ling and Host 2011, p. 363; Wamala, 2013 Svensson and Wamala, 2016).
Lastly, Norris (2010) claims that economic dimensions and wealth are the most representant factors that leads to digital division (Norris, 2010; Hamel, 2009). Thus, countries with higher Human Development Index (HDI) represent an average of 64.1% of the internet users in the worldwide population, while only 1.8% of low human development countries use the internet (ITU 2008 and UNDP 2009; Hamel, 2009). Moreover, 33 countries with high human development represent 157.5% of telephone subscribers in the world. Meanwhile, low human development countries only represent a 15%. (op.cit). Thus, it can be expected that countries of low human development are less educated and skilled in relation to ICTs tools than those with high human development.

Some of the reasons why migration groups move are because they are looking to improve their economics, feel safer, find new jobs and to study. Moreover, many of the individuals belonging to this group come from undeveloped communities and can be influenced by the previously mentioned elements. Hence, digital division plays an important role regarding migration groups and their access and use to ICT tools. “These considerations are especially relevant in the discussion of international migration since the level of development of both origin and destination countries will have significant implications on the availability and use of ICTs” (Hamel 2009, p.5) specially since governmental and institutions are starting to explore the potential implementation of ICTs in addressing problematics that are present when a migrant arrives to a new place such as integration strategies.

2.4.1 The use of ICT in immigration policies for integration
ICTs enhances human development through the access to information and the capacity of better ways of communication. From a development standpoint, ICT can enable the share of information and assistance in better ways so individuals from medium and low developed countries can have an opportunity for progress (Potter, 2014). Additionally, "the basic purpose of development is to enlarge people’s choice" (Haq 1995, p, 14 ; Hamel 2009), which can be achieved through access of information that consequently, can conduct to knowledge. In the case of migration, such knowledge can be extremely beneficial and influential for the integration of migrants to their new homes. When arriving, migrants might have to face with new challenges such as looking for places where to live, find a steady income, socialization and lastly, news form of culturalization. According to Canadian organization P2P, resolving
these factors facilitate migrants to feel welcome and integrated in their communities (Pathways to Prosperity: Canada, n.d.).

According to Scopsi (2004), ICTs can enable migrants to accomplish several kinds of actions, such as, to read information in their native language, the possibility to be involved in cultural and national events, to promote positive cultural and national images that challenge stereotypes, access to information that can assist them in their transition experience, and overcome the distance between them and their families and friends left behind (Scopsi, 2004; Hamel, 2009). Furthermore, ICTs such as “smartphones may offer an effective platform to engage hard-to-reach populations, since disadvantaged groups often use them to access the internet instead of personal computers, and recent arrivals and temporary residents frequently use cellphones to keep in touch with family members at home.” (Benton 2014, p.1). Thus, it can be argued that ICTs can offer particular advantages for reaching diverse and disadvantaged populations (Benton, 2014). As consequence, governmental and institutions are starting to explore the potential implementation of ICTs in addressing migration challenges. For instance, Hamel (2009) explains that several NGOs in order to reduce the risks of facing uncertainty of finding jobs and a lack of guarantees in receiving wages for their work, are using ICTs as a form to offer migrant workers information on job opportunities. Moreover, the activity of migration can imply risks. These risks can be reduced by providing information to the migrant before during and after their journey. Migrants are usually vulnerable during the process of moving at a new country, meaning that they are often more in need of help and support than other groups of society. Information, thus, can work as way of empowerment.

Digital ICT tools are also providing new ways for governments to engage with their residents. "Cities across the globe are using digital tools, such as web portals and applications, to improve access to public services, enhance responsiveness, better understand the needs of the population and provide platforms for deeper civic engagement" (Mattoo et al, 2015). As a result, the relationship between new arrivals and governments can be transformed.

In general cities work as epicenters for immigration and centers for innovation in digital governance and policy’s making. Some even have started to develop digital-inclusion strategies for integration efforts (Mattoo et al, 2015). According to Benton (2014), the
opportunities that ICTs provide for immigration integration through smart cities remains in three main categories: 1) Improving access to services 2) Tailored apps for new arrivals and 3) Strengthening urban citizenship through collaborative technologies. Thus, cities like New York, London and Barcelona (Mattoo et al, 2015) are using digital ICTs like websites, mobile apps and games to optimize access to different city services for immigrants, to learn new languages, to learn about their new home laws, to train groups to use public services and/or live independently and to encourage civic activities (Benton, 2014).

The city of London, for example, has prioritizing digital inclusion for new arrivals since 2014 by launching the "Digital Inclusion Strategy" which pretends to help more people get online, decreasing digital division. The purpose of this initiative is to ensure that many people as possible can take advantage of digital tools for both personal needs and to access city services. Some of the actions taken involve the digital education of individuals. “Digital buddies fights social and digital exclusion by recruiting volunteers with strong IT skills to support residents with online activities such as setting up email accounts, applying for jobs, using social networking sites, buying goods, and accessing services” (Mattoo et al. 2015, n.d.).

However, Mattoo, et al (2015) suggest that, in order to elaborate better integration policies and to optimize the support for migrants, it is also necessary to develop new ways to bridge the digital divide and enable vulnerable groups to take full advantage of ICT.

2.5 State of the Art
2.5.1 Existing smartphone application tools used for the integration of immigrants

The digital and knowledge era is bringing new opportunities to the world. Communities and societies around the world are using digital tools for different purposes such as immigrant integration. Due to the rising migration crisis in the latest years, governments are facing different problematics; among them how to help new arrivals to integrate in better ways to the country. Thus, tools like smartphones and digital platforms are presenting new possibilities when addressing these problems.
Going digital presents potential stronger connections between new arrivals and governments as well as the development of new social, cultural, political and economic opportunities. Thus, during the last years institutions are taking special attention in the development of digital tools such as apps to help immigrants to integrate in the country, having as consequence, both benefits for the individual and for their new home.

Communities like NY and Barcelona are some examples of cities that are investing in digital strategies for a better integration. Apps like NYC311 and digital platforms supported by apps like Apps4Bcn are developed to help individuals to understand better how the city works, how to move around and the services and information provided by the government. NYC311 is both a website and a mobile app which mission “is to provide the public with quick, easy access to all NYC government services and information”(NYC Gov 311, n.d.). Their service is available 27/7, 7 days/ week and 365/ year. Their information is available in more than 50 languages online and more than 175 by calling their phone number (op.cit).

The official website of Barcelona has transformed itself into a mixed of online information and the development of different mobile apps with the purpose to help citizens to have a better access to the city services and city functionalities. Some of the apps are: Buzón Ciudadano (Citizen mailbox) -An app where citizens can report to the municipality of Barcelona any kind of incident. Cerca de aquí (close to here) - This app facilitates in an easy and quick search of the nearest services and points of interest in Barcelona such as parking lots, restaurants, taxi stops, pharmacies, museums, libraries and so forth. BCN Visual - Allows people to discover how Barcelona used to looked through old photos of the city. People can check for facts, information and even overlap the old photos on the actual places so they can see the difference, and Literapolis BCN- A game that pretends to enhance the lecture and knowledge of the city (Ayuntamiento de Barcelona, n.d.).

Moreover, Sweden, being one of the European countries with more incomes yearly, is starting to develop apps that pretend to address crucial areas for a successful integration. For example, Mobilearn is an app that focuses on social integration, employment, housing, language and education. Mobilearn provides easy to understand governmental information that is available at any time through a digital platform. It also gives the user the opportunity
to access the information in their own native language. Mobilearn also helps the user on how to build a CV and helps the user to identify their strong and weak skills. It gives information on what qualities are relevant for the country’s job market. Based on the previous information it also provides to the user with recommended jobs and offers. Mobilearn understands the difficulty of finding a good place to live and therefore it provides suggestions of housings that are near to recommended jobs for the user. Lastly, Mobilearn offers digital Swedish language courses (Sweden: Using a digital app to speed up migrant integration, n.d.).

Other apps like Welcome!, Panion and Kompisbyran, are helping new arrivals to meet new people. The app consists in matching features that can allow individuals to find compatible friends and to encourage socialization. Welcome is a digital meeting place that connects together new arrivals with Swedish citizens. In the app you can ask questions, answer questions and invite people to different activities as well as to talk with others. Additionally, Panion is a new concept app that has been developed with the purpose of helping people to find companions that share same interest. In the app, you can find people that can connect with you through certain activities. For instance, if a person likes to play tennis, the app will find a match that can play tennis together with it. Other bolder apps such as Invitationsdepartementet

Language is another recurrent topic among Swedish apps. The integration of language has long been of importance for the general immigration integration and adaptation process (Beacco, 2008; Kluzer, Ferrari & Centeno, 2009; Collin and Karsenti, 2012). By achieving a linguistic integration, new arrivals have bigger possibilities of participating in the country’s society. “It is easy to see how the inability to communicate in the host country language could make daily life difficult and at the same time hinder social, political, and economic integration” (Collin and Karsenti 2012, p. 243).

Currently, ICT are becoming of great support for new arrivals in learning new languages. According to Collin and Karsenti (2012), ICT tools, for linguistic integration causes, are mostly used for two main complementary reasons: 1) Pre-emigration. To allow potential arrivals to learn the language of their new home before arriving and to strength the learned when they move there. 2) Post-immigration. To allow immigrants to learn without any time
and geographical limitations such as a classroom. Thanks to this, immigrants can constantly learn the language throughout the day. Additionally, language ICTs can provide better opportunities in costs, personalization, flexibility and access (Benton, 2014). ICT tools can vary from simple online web classes and smartphones apps (Collin and Karsenti, 2012) to competitive and collaborative language games (Benton, 2014).

The purpose of linguistic helping apps is to help individuals to practice the language without needing a physical place to study. Thus, they facilitate people to learn anytime of the day and whenever. Some famous apps in Sweden are Lingio and Let’s talk.

On one hand, Lingio is an app that counts with simple and basic features in language learning such as apps like Babbel. However, Lingio counts with the option of “new in Sweden”. This category is particularly thought for some language necessities of incomers where people can learn specific words and sentences that are elemental when arriving in a new country. For instance, it allows people to learn how to communicate with people from different services such as the migration agency, tax office, the library and so forth. While Let’s talk is more focus on helping people to find a "language friend". All you need to do is to fill an interest and to tell how good your Swedish is. Based on this information people get matched with another user so they can talk via chat or videocall (“Let’s Talk: a personal Swedish language tutor in your pocket”, 2016).

Few apps are also focusing in job assistance and culture integration. Yrkedörren: "opening doors" between new arrivals and well-established people. The purpose of the app is to widen individuals network by getting to know people from different working backgrounds. Newcomers is a place where people are matched together with employers from different backgrounds. The purpose of this app is to increase the opportunities of new arrivals to be part of the country’s labor market. Kulturkompis pretends to help individuals in meeting new people and to experience culture at the same time. However, this app does not enhance people to learn about cultural traditions but to experience proper cultural activities like plays, movies and so forth with a new friend.

Furthermore, common key features from the previous examples have been explored. The examples were chosen since they are apps that have express their concern for helping
immigrants to adapt better. Additionally, these apps were either mentioned by ICT and migration integration studies (Mattoo et.al, 2015) or were recommended by organizations like the European Commission (Sweden: Using a digital app to speed up migrant integration, n.d.) or were identified as unique features by the researcher ("Bästa apparna för ömresidig integration", 2016). The purpose is to find which aspects of integration are these apps trying to reach and how are they trying to solve specific problems. This analysis will be used later as part of the methodology as well (Table 1.).

<table>
<thead>
<tr>
<th>MAIN TOPICS</th>
<th>FEATURES</th>
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<tbody>
<tr>
<td>Service Information</td>
<td>• Access to government services</td>
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<td></td>
<td>• 50 languages information available</td>
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<td></td>
<td>• Online information to city services</td>
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<td></td>
<td>• Report incidents</td>
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<td></td>
<td>• Easy search of near services and points of interest in the city</td>
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<tr>
<td>Cultural Information</td>
<td>• Information of government services</td>
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<td></td>
<td>• Information in native language</td>
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<td></td>
<td>• Cultural information of the city</td>
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<td>• Game to enhance literature and knowledge of the city</td>
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<tr>
<td>Job Assistance</td>
<td>• Ask questions about the city</td>
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<td></td>
<td>• Meet people to share culture experiences</td>
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<td></td>
<td>• Assist in building CV</td>
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<td>• Information of skills needed in the job market</td>
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<td>Socialization</td>
<td>• Job offers</td>
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<td></td>
<td>• Recommendation of house accommodation linked to matching jobs</td>
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<td></td>
<td>• Help to wide job’s networking by meeting people</td>
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<td></td>
<td>• Match with employers from different backgrounds</td>
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<tr>
<td>Language</td>
<td>• Matches people with same interest</td>
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<td></td>
<td>• Find friends</td>
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<td></td>
<td>• Talk with others and practice language</td>
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<td></td>
<td>• Find “language friends” via chat or video calls</td>
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<tr>
<td></td>
<td>• Find friends</td>
</tr>
<tr>
<td></td>
<td>• Invite strangers to their homes for dinner</td>
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Table 1. Key Features Resume
3. Methodology

3.1 A Participatory Design Study

For this thesis and to answer the research question and sub-question, I have decided to use participatory design as my method. Participatory design can be defined as a "process of investigating, understanding, reflecting upon, establishing, developing and supporting mutual learning between multiple participants in collective reflection-in-action" (Schön, 1983; Robinson and Simonsen, 2012; Simonsen, 2014). Participatory design is often applied in the philosophical and pedagogic work of technical communication. Its methods are usually use in technical communication research and prototype, in specific, tend to be presented as “a vital part of iterative usability” (Spinuzzi 2005, p.1).

Participatory design has been seen as a design approach which main characteristic is user involvement (Johnson 1998; Spinuzzi, 2005). In this method, participants usually undertake the 2 principle roles of users and designers (Figure 1.) where "the designers strive to learn the realities of the user’s situation while the users strive to articulate their desired aims and learn appropriate technological means to obtain them" (Simonsen 2014, p. 2).

Spinuzzi (2005) argues that participatory design is by itself research. This is due to the design approach where the practical knowledge is intended to come out of the design. In participatory design, many of its methods take into consideration the interpretation of the participants in the research. "The goal is not just to empirically understand the activity, but
also to simultaneously envision, shape and transcend it in ways the workers find to be positive" (op.cit, p.2). Thus, it can be argued that the participants’ interpretation of the research is an essential part of process in participatory design.

According to Spinuzzi (2005), the purpose of this research methodology is to study the "tacit, invincible aspects of human activity"(p.2) and how these aspects can be in a productive and ethically way analyzed through a design method that makes both participants and investigators inclusive and crucial for the research. This ideology comes from a Marxist foundation (Spinuzzi, 2005), where the grounded ideals of participatory design, predominantly in Scandinavia, are concerned about the democracy at work (Björgvisson, Ehn and Hillgren, 2010). Thus, participatory design started as a way to develop collaborative research in an ethically way where, together with labor unions, workers would be able to help determining the shape and scope of new technologies in workplaces. This came handy, since it empowered workers not only to be part of a system but also to influence that systems, having as a result, positive changes in the role of the workers over their work. Nowadays, this is reflected by user-center and lead users strategies(op.cit).

From a theoretical standpoint, participatory design is founded in constructivism (Spinuzzi, 2015), which focuses in the importance of culture and context in understanding what occurs in society and constructing knowledge based on this understanding. In this case, participatory design is situated in complex of artifacts, practices and interactions that lead to the construction of knowledge. Moreover, in participatory design research, knowledge is not only object of analysis and exploration, but it can also be made along the process. Thus, it can be argued that participatory design methods are built upon a theory of interpretivism. Interpretivism in social research refers to understand reality through the eyes of the actors doing the acting (Revise Sociology, 2015). Thereby, participatory design´s methodology from participatory action research (Spinuzzi, 2015). Additionally, participatory design looks for participants to be empowered and thus, for them not only be part of the research but also have control over it. As a result, the interpretation of participants becomes essential in the research and in the construction of new knowledge.

This thesis looks to understand how ICT can, more specifically mobile apps be used to develop innovative and alternative ways for social and cultural integration. Since, the use of
ICT for the integration of immigrants is not new, for this research, a previous theoretical investigation has been made, were I have explored why ICTs are being preferred by institutions to help with this task and already existent ICT tools have been researched (Table 1.). Thus, participatory design will help me to understand how ICT tools can fulfill its purpose for social and cultural integration through the eyes and needs of the users. I believe it is important to understand the interpretation of the users and their needs in order to develop new innovative ways of integration.

3.1.1 Method

Participatory Design method is defined by using Andersen et al (1990) definition which state that any method should include elements such as Application area, Perspective, and Guidelines. (Andersen et. al, 1990; Simonsen and Robertson, 2012). Application area means what kind of type of development activities the method in intended, in other words, it refers to the field of the method. "The design of one type of system may require a different method than the design of a very different system" (op.cit, p.119). Participatory design methods tend to include design and information technology perspectives that enhance user participation. These perspectives are the basis for the guidelines, which are in short words the structure of the method.

The guidelines are suggestions for how to develop the design process. In participatory design’s methods this usually involves the kind of users to include in the method; "how to involve user in core activities, how to resolve conflicting views on the functionality and/or form of the products" (op.cit). Furthermore, techniques regularly explain how to go about doing certain activities and the tools are the instruments that help these techniques. PD techniques are used for investigating present practices and they apply tools for developing descriptions or for facilitating creative workshops. In the workshops the goal is that users and designers collaborate in creating potential work systems and information technology support (Simonsen and Robertson, 2012). Lastly, the principles of organization are used to understand how to distribute and coordinate work tasks within the design process.

At the same time, participatory design counts with different methods such as Future Workshops (Kensing & Madsen, 1991), role playing games and Situated and Participatory Enactment of Scenarios (SPES) (Iacucci, Kuutti, and Ranta, 2000), Generative Tools and
Strategic Visioning (Sanders, 2000), Focus Troupe (Salvador & Sato, 1998) and Lead User Method (von Hippel, 1992) (Vavoula and Sharples, 2007). Moreover, for this thesis, the Lead User Method will be carried on. **Lead User Method** is the method that pretends to innovate products in accordance with a target user group in order to fulfill their necessities from their perspective. “Lead users are those users of existing products who currently face needs that will eventually become general in the marketplace and also expect to benefit significantly from a solution to those needs. Meeting these two criteria makes Lead Users good candidates for drawing the attention of designers and developers to potentially important needs that existing solutions do not satisfy, and for suggesting preliminary solutions by reflecting on how they presently overcome these problems” (Herstatt and von Hippel, 1992; Vavoula and Sharples 2007, p. 6-7).

### 3.1.1.1 Ethical Considerations

Just like in any research, it is important to consider certain ethical considerations when carrying out participatory design as method.

According to the Routledge International Handbook of Participatory Design (Simonsen and Robertson, 2013), researchers using participatory design need to recognize people as active participants in the formation of reality. Thus, participatory design has "at its core an ethical motivation to support and enhance how people can engage with others in shaping their world, including their workplaces, over time" (p. 65). This means that, this ethical motivation in the essence and structure of what participatory design is as well as its development.

Thus, for being able to develop a participatory design research, the following principles need to be respected (Simonsen and Robertson, 2013) (Wagner, 2012):

1. To respect people’s expertise and their rights to represent their own activities to others, rather than having others doing this for/to them.
2. The importance of mutual learning and the development of shared understandings between designers and other participants Give people the basic right to make decisions about how they do their work and any other activities where technology might be included.
3. The need to involve multiple voices and equalize their expression, of ensuring active and emancipatory participation, of taking a stand.
4. Working with participants to represent their own actions – both current and desired future actions.

5. Recognizing that design will always be completed in use.

In other words, the basic ethical principles of PD focused on the ground reflection on "how to act well" in new situations that involve new technologies, objects of design, context and participants, resulting in an ethical commitment on how to support designers and researchers who are engaging in PD in the future, being irrelevant of what is being designed (Simonsen and Robertson, 2012).

Moreover, it is important to consider certain ethical considerations when working with others such as (op.cit):

- Who do we engage with in a participatory design project?
- How do we engage with participants?
- How do we represent participants and their work?
- What can we offer to the participants?

Other questions that PD researchers could formulate to guide ongoing ethical reflection of the PD methods, tools and techniques being used in their projects, are (op.cit):

- Do users have decision power? If so what kind?
- Does a design method, tool or process recognize and encourage participants' abilities to learn?
- Does a design method, tool or process include participant’s evaluations not just of what is being designed but of the design process itself, including the opportunities for and process of participation?
- Does a design method, tool or process deal with a justified loss or change of design focus?


1. Verify identity: Tell the participants your role within the investigation and the aim of it.
2. Public/private space: The researcher needs to considerate if the investigation is being developed in a private or public space. If it’s in a private place, the researcher needs to have a consent from the participants to expose certain information.
3. Informed consent: The participants need to agree to be part of the investigation and what kind of information can be or not used for it.
4. Deception: Lurking as a member to collect data.
5. Data protection: consent for processing of personal information.

### 3.1.1.2 Limitations

Due to the nature of the method and to the nature of the research, several limitations need to be addressed.

First, Participatory Design methods can be described as "explore, approximate, then refine" which basically goes against strict methods that can be described as "measure twice, cut once". As consequence, it tends to change how researchers/designers apply established methods (Spinuzzi 2015, p.6). For instance, Spinuzzi(2015) explains that, participatory design researchers usually rely on ethnographic methods such as participant observation - a method where the researcher becomes an active participant and records extensive field notes (Brewer, 2000). However, PD tends to be applied more loosely in comparison of trained ethnographers. Thus, PD methods implementation can be critique by other field researchers in relation to how much the precision of the method can accomplish. “Diana Forsythe, for instance, scathingly critiques these applications as "do-it-yourself ethnography" and complains that "superficial social research may confer the illusion of increased understanding when in fact no such understanding has been achieved" (Spinuzzi 2015, p. 6).

Moreover, without the element of a full objective perspective, researchers believe that it can be quite hard to know if they have actually understood anything of their informant’s idea of the world or if they have instead projected their own assumptions in the data and research. Thus, Spinuzzi (2015) argues that this critique can be valid if the goal of the study is to only extract knowledge in a traditional research perspective. However, PD (properly done) pretends to bring the analysis back to the domain who then shares it with the participants re-shaping traditional methods to meet design needs and orientation.
On the other side, PD can also count with limitations in relation to one practicality: time (op.cit). Meaning, that participatory design tends to take a lot of time, hence resources, to be achieved. “From the standpoint of a profit-oriented business, participatory design seems to provide little structure and no deadlines (Wood and Silver 1995, pp. 322-323 ; Spinuzzi, 2015). Researchers find that they have to cede considerable control to workers, who must be committed to the process and cannot be coerced” (Spinuzzi 2015, p. 7). This is a specific limitation present during this research, since the short time limited the process and thus, the results. For instance, even though three different workshops were able to take place, the possibility to find expertise in the topics was quite difficult. This is due to working schedules and other priorities that the experts needed to deal with.

Additionally, with the possibility of longer time a more in-deep analysis with potential and economic stakeholders such as community organizations could have been developed. Furthermore, “participatory design studies typically require continuous critical participation by workers” (op.cit). Specifically, the lead user method requires workshops that are supposed to last for more than a day. However, due to problems with participants ‘schedules, finding of proper places to carry out the workshops and the proximity of deadlines it was hard to accomplished.

Lastly, a bigger sample of participants could have been taken where a more homogenous representation of immigrants in Sweden could be presented.
3.2 The Artifact Design

The structure design of this thesis will be divided in the following:

**BACKGROUND**
During the background the researcher is supposed to develop a theoretical foundation that can facilitate to determinate the knowledge gap of the study. The theoretical framework of this thesis addresses the challenges and motives behind the migratory situation in Europe, and how governments and institutions are looking for solutions using cultural and social integration strategies and information communication technology tools.

Moreover, the previous research allowed the researcher to develop a state of the art of digital apps that are being used and developed to facilitate new arrivals’ transition to their new homes; with the state of the art as foundation, a key features card deck was developed (See Chapter 3, Existent ICT section). The key features card deck is going to be introduced at the workshop to the participants as part of the first step in the participatory design process.

**PARTICIPATORY DESIGN PROCESS**
During the participatory design process, the researcher will use as method the Lead User workshop and will use as guidance the recommended steps by Spinuzzi (2015). Moreover, the workshop will be split in two sub workshops and one final workshop. This decision was made since by dividing the number of participants in smaller groups it will be easier for the researcher to observe and interact with them. In the final workshop, two representants of the
sub workshops will gather and together will evaluate the initial prototypes and develop a final prototype.

Step 1. Initial exploration of work
The initial step tends to involve examining the technology use on site or in this case the state of the art which are the key features card deck. The purpose of this is to provide participants with a start point for the development of a future co-design prototype. Usually, this stage draws from ethnographic methods such as observations, interviews and workshops. Interactivity and co-work spell a primordial role in this stage.

Thus, during the first step the researcher will ask the participants to answer a survey regarding personal information about why they moved to Sweden and their experience as new arrivals (See Index 1), the purpose of the survey is to understand the context of the participants.

Following, the participants will begin the Lead User Workshop. For the first part of the workshop the people will have the opportunity to interact with the key features card deck. The card deck pretends to help the participants to visualize and understand the key features found during the state-of-the-art research in a better way and at the same time it pretends to encourage creativity and interaction when designing the prototype. According to Cousins (2015) cards are made in a style that facilitates the design of mobile apps. These cards can be used for different purposes such as Card-Style Interfaces. This style helps to layout information such as images, text, buttons and to replicate actions. “One of the reasons cards became a popular design choice is their compatibility with mobile screens. The digestible chunks are a perfect match for most mobile user scenarios while the rectangular aesthetic also works well for the UI design” (Cousins, 2015). Thereby, Card-Style Interfaces can simulate in a more realistic way the actions that the app is intended to do and to understand their dynamic.
Cousins (2015) also explains that there are two main uses for this style. The first one is using cards as the interface (Figure 3). The cards simulate the interfaces that are usually one-touch elements. For instance, to tap or swipe the screen for an action to happen. The second use is related to use cards as "distractions". This means that cards can also be used for mobile and in-app advertising using interfaces that cover all or almost all the screen. Usually these cards are divided in two elements. The large one that sends you to the product being announced and the small one that takes you back to your original screen.

Another kind of cards are those that work well with content (Figure 4). In this case, the cards are being design as containers that would hold almost anything. "Because cards can work with various type of content, they are perfect for content-heavy sites and apps"(op.cit). The cards can contain photos, text, video, coupons, music, payment information, game data, social media sharing, links and the combination of all (op.cit). When placing content in cards, users have the capacity to quickly scan and swipe the information in a more digestible way. Additionally, cards are usually place as equal players on the screen. Thanks to this, users have the power to engage in any way they want.

Thus, it can be argued that cards help the development of app design due to their capacity of mirroring reality through a digital interface. "When users interact with cards, they fall into a handful of behavior patterns" (op.cit). As a result, cards can save, tease users and/or alert the users with information. Cards can also allow content to naturally reveal itself. Spotify uses this characteristic to show different songs, suggestions and music matches. Cards can as well simulate communication flows by simulating conversations. Lastly, cards are easier to organize and to be presented visually, this gives the users and designers an opportunity of better control of how the interface works and looks. Cards can be also used in design thinking methods. Companies mostly use cards to plan workshops (Morrow, 2017).
For the workshop and using the IDEO Method Cards as inspiration (IDEO, 2003), I created the following cards-style deck key features (Figure 5.). The cards represent in a more visual and interactive way the information found in the state of art analysis (Table 1.).

Figure 5. 30 Key Features Card-Style Deck
The card deck will also provide the participants an insight of already existent applications and tools that are being used to address the integration challenges that new arrivals face when moving to Sweden. The main goal is for the participants to analyze these apps and to discuss if the features are fulfilling their main purpose and if not, how they could work better.

**Step 2. Discovery processes**

This step is where researchers and users interact the most. The purpose of step 2 is to cooperatively make a meaning out of the work rather to describe it. Usually participants rely for this step on tools such organizational games, role-playing games, organization toolkits and storyboarding.
The participants will interact with and discuss about the key features and how they can be improved. They will also discuss which of the different key features are considered more important and why.

**Step 3. Prototyping**

Lastly, this step refers to the development of techniques for iteratively shaping artifacts. Some of these techniques are mockups, colleagues, paper prototyping, cooperative prototyping and so forth. The prototype pretends to be the result of a co-design among participants, ideally the users together with the experts are asked to co-design a new mockup or prototype of what they would consider an innovative solution/idea to the problem presented. Due to the lack of time, only users and the researcher will be able to interact for this paper.

Furthermore, the participants will be divided in two sub-workshops and one final workshop. Therefore, the participants will be asked to develop an initial prototype that later on will work as foundation for a final prototype.

**EVALUATION**

During this part, the researcher collects the data resultant from the previous work. According to Spinuzzi (2015), collaborative development is essential in the participatory design process, hence, the collection and analysis of data should be done with the participants. For this study, the previous means that the final evaluation should be done together with the workshops’ representants and thereby, the final workshop will not only involve the development of the final prototype but also the evaluation of the initial prototypes.

Ideally, a final evaluation should also take place where both participants, users, expertise and even companies work together. During this evaluation, participants would use tools like role playing, bodystorming and storyboard. However, due to the lack of time this last part will have to left as part of a future work.
3.2.1 Workshop

As previously mentioned, this study follows a participatory design approach, moreover, the approach counts with different methods as tools. During the realization of this paper, the researcher relied on a Lead User Workshop as method and used as guidance the following Lead User Workshop principles by Herstatt and von Hippel, 1992:

- Step 1: Specify the characteristics a lead user will have in the product/ market segment of interest.

Before the workshop begins the researcher explores what are the characteristics that the participants or lead users need to have in order to be able to participate. A way to achieve this is by investigating what are the current trends in the market the lead users belong to.

  a) Identification of trends:

In this case, the goal is to identify the main common features among digital apps which purpose are to facilitate immigrants a smoother arrival to their new home. For this study, the identification of trends is the same as the state of the art presented in Chapter 3 (See Table 1.). Based on the state of the art, the researcher identified five main trends.

**Trend 1:** Governmental institutions are starting to digitalize information in an effort to reach faster and more direct the audience. Additionally, they hope that through apps new arrivals can access basic information that can help them better when moving.

Reason of trend: When moving to a new place, simple information such as which bus to take or how to pay certain bills can become overwhelming.

**Trend 2:** Products are being develop where people can learn from simple words to fluent sentences in new languages. Apps give the possibility to migrants to learn the language whenever and wherever. Moreover, some apps focus on teaching new arrivals with words and sentences that can facilitate the communication of individuals with first-contact institutions like the Migration Agency, libraries, the police and so forth.

Reason of trend: To be able to communicate with others is important. To be able to communicate with others can help immigrants to have an easier life in their new home. Even
though for many is enough to communicate in English, not all count with that advantage, especially if they are coming for developing countries.

**Trend 3:** Sometimes it can be difficult for new arrivals to meet new people, thus companies are developing apps that can facilitate individuals to have first contact with others. Therefore, matching friends is becoming a popular function among apps that pretend to help for the socialization of immigrants.

Reason of trend: In countries, specially places like Sweden, can be harder to find friends and meet new people. According to the Expats Index 2017, Sweden is rank in the last place of making new friends.

**Trend 4:** To find a job in a new country can be challenging, thus with the development of new apps, migrants can find new jobs and can assistance with their CVs.

Reason of trend: One of the multiple factors that help arrivals to settle in their new country is financial stability. Thus, it is important to give resources where migrants can access to labor information.

**Trend 5:** New apps are being developed with having the cultural factor of integration in mind. Their main function is to connect people through cultural interests. However, nothing has been found yet in relation to teach the migrant about culture and traditions of their new homes.

Reason of trend: To learn about the culture and traditions of a new country is of extreme importance, particularly for new arrivals. One of the top issues that migrants face when arriving to a new place is the cultural shock.

b) Identification of high benefit expectations; what it is expected with this innovation? These apps seek to help new arrivals to adapt in a didactic way to their new home in the easiest way possible and to try to fulfill the necessities of an immigrant when moving to a new place through digital and mobile devices.
• Step 2: Identify a sample of lead users who fit these criteria

For the workshop, individuals with the following common characteristics are needed:

1. Individuals that weren’t born in Sweden or in Scandinavian countries: The study looks to understand how people that are born outside the country are adapting to Sweden as their new home. Due to the similarity of context between Scandinavian countries, Denmark, Norway and Finland are being discarded as well.

2. Individuals between 20-35 years old: According to the ITU 2017 individuals between this age gap count with a major digital literacy.

3. Individuals who had lived in Sweden no more than 5 years and no less than 6 months: The living time in Sweden was assigned randomly by the researcher since there are still not studies related to how long a person takes to adapt to new places.

4. Individuals who had come to Sweden for reasons of love, work, education and/or to be with a close family: The previous reasons are counted as the top four reasons of why individuals come to Sweden.

*For this study individuals who had come to Sweden seeking for asylum were discarded.

*Since the research is being taken in English, it is necessary for the participants to have knowledge of this language as well.

In total, 10 have been selected to participate in the workshop.

Table 2. Overview of Participants Information

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>Nationality</th>
<th>Mother tongue</th>
<th>Occupation</th>
<th>Time in Sweden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woman</td>
<td>25</td>
<td>Eritrean</td>
<td>Tigrinja</td>
<td>Student</td>
<td>&gt; 3 years</td>
</tr>
<tr>
<td>Woman</td>
<td>34</td>
<td>Greek</td>
<td>Greek</td>
<td>Journalist</td>
<td>6 months- 1 years</td>
</tr>
<tr>
<td>Man</td>
<td>27</td>
<td>Dutch</td>
<td>Dutch</td>
<td>Student</td>
<td>6 months- 1 years</td>
</tr>
<tr>
<td>Man</td>
<td>29</td>
<td>Indian</td>
<td>Telugu/Hindi</td>
<td>Student</td>
<td>&gt; 3 years</td>
</tr>
<tr>
<td>Woman</td>
<td>30</td>
<td>German</td>
<td>German</td>
<td>Project Assistant Ikea</td>
<td>1-3 years</td>
</tr>
<tr>
<td>Man</td>
<td>34</td>
<td>Mexican</td>
<td>Spanish</td>
<td>Graphic Designer</td>
<td>&gt;3 years</td>
</tr>
<tr>
<td>Woman</td>
<td>28</td>
<td>Mexican</td>
<td>Spanish</td>
<td>IT service operations team</td>
<td>&gt;3 years</td>
</tr>
<tr>
<td>Woman</td>
<td>23</td>
<td>Polish</td>
<td>Polish</td>
<td>Student</td>
<td>6 months- 1 years</td>
</tr>
<tr>
<td>Woman</td>
<td>26</td>
<td>American</td>
<td>English</td>
<td>Writer</td>
<td>1-3 years</td>
</tr>
<tr>
<td>Man</td>
<td>27</td>
<td>American</td>
<td>English</td>
<td>Engineer/ Executive</td>
<td>&gt;3 years</td>
</tr>
</tbody>
</table>

*Due to time limitations the only collaboration will be among users and the researcher. Nevertheless, a future collaboration with experts can be expected

• Step 3: Lead User Product Concept Development.

A group of 10 Lead Users had now been identified. The next task is to bring some of these Lead Users together in a concept generation workshop. The workshop stage will be divided in 2 sub-workshops, each one having around 4 to 6 participants. In the end, one representant
of each sub-workshop will gather together for a final workshop were the evaluation step will take place. Moreover, all users agreed that any inventions or ideas developed during the workshop would be proper of the research. The workshop is organized as follows:

PART 1| Time 30 mins
For this part, the participants explore the key feature card deck. Afterwards they debate which features they like the most and the worst. They also discuss the key features functionalities and how the interaction with them can improve. Participants should also identify if any features are missing and why are they important.

PART 2| Time 30 mins
In this part, the participants make a brainstorm of new ideas on how to use the previous key features in a more efficient way that can fit better to their necessities as lead users. Following and choosing a final idea they develop an initial low-fidelity prototype.

PART 3| Time 30 mins
Lastly, with the help of design methods such as crazy eights, story boards and so forth, the participants can explain the functionality of their prototype by simulating scenarios where the app could be handy and can test how effective it is.
Both sub workshops and final workshop follow the previous steps. The only difference is that for the final workshop the participants will already be familiar with the key features card deck so a in depth analysis of the deck will not be necessary. Instead, the participants will focus more in analyzing the two initial prototypes to later develop a final one. The purpose of this workshop is to incorporate the best of both prototypes features in one prototype.

Step 4: Evaluation and testing whether lead user concepts appeal to typical users
Ideally, for this step a final evaluation should also take place where both participants, users, expertise and even companies work together. During this evaluation, participants would use tools like role playing, bodystorming and storyboard. However, due to the lack of time this last part will have to left as part of a future work.

Additionally, since the Lead User Workshop method was divided in two sub workshops where two initial prototypes were developed, a final workshop was needed. The final workshops will not only involve the development of the final prototype but also the evaluation of the initial prototypes.
3.3 Prototype
3.3.1 Initial Prototype

During each workshop an initial prototype was created, the following describes the development of such prototypes:

Workshop group 1:
The first group prototype is meant to help people who have just arrived alone at Sweden due to reasons like studying, love and working. The purpose of the app is to help migrants “how to Swede”. New arrivals could use the app for finding information, to know how to go around the city and for communication. During the workshop, the participants highlighted that it was very important for them to get information of all the different aspects that involves in adapting to a new country such as how the government works, what are their services and laws, practicalities like how to say hi and how to approach new people and what people in Sweden use to make their life easier, for example the Skanetrafiken app, swish, bank ID and so forth. For them the hardest part is to understand how the city works and how to communicate with Swedes. They also believed that an online-offline mix app would be a good idea where offline activities can support online features like for instance, planning introduction meetings and/or weeks, organize events so people can meet and so forth. Lastly, they suggested a strong promotion of the app, so immigrants can know about their services.

Figure 10. Mockup of Initial Prototype, Group 1
Workshop group 2:
The second group’s prototype is also developed with the idea to help people that just arrived alone to Sweden for reasons like studying, love and working. The purpose of their app is to help the migrants to find information related to services, jobs, governmental processes and so forth. Moreover, they wanted to create a simple app that could guide immigrants in the transition of adapting to their new home. More important, they all agreed that information can be confusing and therefore their app will help people to find in an easy and simple way all kind of information from one source.

They have suggested that offline activities can also be important complements to the app. According to the participants one of their struggles has been to find Swedish people to be friends with. They believe that the presented features might not be able to fix that problem, thus, they came with the idea that the creation of a group of volunteers would be appropriated. This group could teach immigrants about how Sweden works and what are the elementary factors a new arrival needs to know when meeting new people such as cultural traditions. As a solution, governmental services could use an app or add a feature where immigrants could contact these volunteering groups. For example, when people have to register to skatterverket (the tax agency) or talk with the migration agency, these institutions could match them with a Swedish volunteer that could help them to meet new people and at the same time they could learn about the language, traditions and so on.
Moreover, from the different key features participants found information services features extra useful. This was because they believed its very handy to have information together from different topics. Thus, they decided to develop a prototype inspired by the service information features.

Name: Not given
Style: Dashboard
Main features: Service information, civic services, education, environment, housing and development, Health, Job Assistance
Subcategories: About, 3rd party services, topic filter, rate the app and overview

![Prototype](image)

![Storyboard](image)

Figure 12. Mockup of Initial Prototype, Group 2

Figure 13. Storyboard, Group 2

Figure 14. Storyboard, Group 2
3.3.2 Final Prototype

During the realization of the final prototype, features from both initial prototypes where collected. Moreover, the final prototype pretends to provide users with relevant information without confusing the users when searching for it. First, the representants made a low-fidelity mockup which later was transform as a medium-fidelity mockup by the researcher.

Low-Fidelity Mockup

Figure 15. Low Fidelity Mockup, Final Workshop
Home screen: On the home screen the user has access to different notification windows/pop-ups. The notification represents a function. The functions are related to the main topics of interest found in the state of the art.
The user can filter the kind of information is more relevant to him according to which stage he is at within the integration process.

On their profile, user can select options like what language they are interested in learning, and interest. This helps the app to find relevant information for the user.

As the language feature, the users can learn daily words according to the different topics they have chosen. Additionally, videos, audios and test are available, so the users can have a more fun and interactive way to learn.

The application also provides external information, so the users can obtain better information related to courses and schools.
The application has also the option of finding new friends. Unlike other applications, this application focuses on helping immigrants to find friends through common interests.

The functionalities are like dating applications like Tinder, however it filters the information according to common interest.
Another feature is the option to ask questions. The users can look around to common questions and make their own. They can also contribute with comments sharing their experience. Videos and external links are provided as a way to give the most possible information to users.

It provides the user with alerts about different events such as festivals, concerts, plays and so forth. These alerts are according to the user preferences.

When choosing the event, the app will take you to the official website where the user can buy the tickets.

Additionally, when clicking on the name of the venue the app takes you to google maps, so you don’t get lost.
4. Results

4.1 Results from the key features

The state of art in this research was to identify existent features from apps that are dedicated to help new arrivals with a smoother integration to their new home. In total, 15 apps were found. From these apps, their different features were resume in important key features depending on the features purposes resulting in 5 main key features: Socialization, language learning, job assistance, service information and culturalization (See table 1).

4.2 Results from the interviews

In the beginning of the workshops, the participants answered several questions as part of an interview. These questions were made with the purpose to understand the background of the groups (To see the questions, go to appendix 1 and to see the individuals ‘answers go to appendix 2).

The majority of the participants come from European countries, while countries from Asia and Africa only had one representants each one. Additionally, the predominant age group is 26-30 among participants. Lastly, the participants mother tongues vary from six people speaking different languages, two people speaking English and two more speaking Spanish.

On the other hand, half of the participants have been living in Sweden for more than 3 years, second by three individuals living between 6 months to 1 year and two more had lived in the country between a year and 3 years. It can a be observed that most of the participants came to Sweden due to love and to study. Moreover, most of them rate their experience on meeting new people as average, being number 3 the most common ranking while 3 ranked it as below average and only1 ranked its experience with a five. Also, all of them had used digital devices such as smartphones and computers to facilitate their integration in the country. From the different tools mentioned the app Duolingo, Meetup, Facebook and other social media platforms were used the most.

Among participants, language was the most important factor when moving to a new place
following by meet new people. Some of the struggles participants mentioned to faced when moving to Sweden are adapting to the weather, cultural shocks, finding a job, meeting people, earning enough money, understanding the language, adapting to society and understanding the rules and regulations of the country.

All of participants use digital devices like cellphones and most of them use them always, very often or often and the main purposes for using digital devices are: 1. To communicate with friends and family home, 2. use social media, 3. for information, 4. for work, to read both national and international news, to check places where to go and 5. to meet people.

### 4.3 Results for workshop and initial prototypes

During the workshop, individuals were asked to analyze the existent key features, to discussed them and to create what they would consider a better app with features that they consider more suitable for their needs. The following are the observations, comments and suggestions the participants did:

**Workshop 1**

During the first workshop most of the participants came to Sweden to study. They came alone and had not knowledge of the country. According to them, one of their main struggles is to know what helping tools are out there and how they can use them when adapting to Sweden. They believe that even though there might be many options for a better integration, very few is known about them. Thus, they would recommend the promotion of these apps and tools through high-contact points for new arrivals like airports, busses, schools, libraries, migration agencies, tax agencies and so forth. In other words, a partnership between the community services.

They designed an app that can help people to find information on how to “go around the city” and to communicate (Figure 10.). Moreover, they said that for them as new arrivals the need of information was primordial and thus, as a person who just came to the country they would recommend the app to fulfil these needs. However, they believe that integration is a long process that cannot be facilitated with just one app, therefore, different features and different apps are needed according to the stage of integration the person is. For instance, in the
beginning people are looking for basic sources of information on how to know the city, the services given by the government and so forth, however, after this need is fulfilled new ones appeared, like to meet new people, find economic stability, learn the language, and so on. Thereby, a whole project of developing different apps and assisting the new arrivals during the integration process was recommended. In relation to what kind of information they would find relevant, the said governmental services and practicalities are what they look for the most, for instance what do people use in the country to make their life easier?

Lastly, they suggested that an app would work better if combined with offline features such as the company planning events like “introduction weeks” and events where Swedish and international can meet.

**Initial prototype 1**

The first group developed an initial prototype with the following features:

The prototype represents an app that helps new arrivals to deal with what they considered information of what it is basic for them to adapt. It starts with a home screen where headlines or newsfeeds show in relation of what the user’s personal interest and data are. Thus, a profile is needed where the user needs to fill information in relation to its persona and what he is looking for.

On the bottom of the home screen several options will appear as interactive icons or footers. From them you can choose among the menu, language, match, events and how-to Swede. When clicking to the chosen option, the app will send you to a new interface where you will able to learn and practice the desired language, read information about events, match you with new friends and give you interesting information about Sweden such as how their system works to topics like what is fika?

After the user becomes familiar to the app and has used it for a while, newsfeed will pop up in the home screen in relation to the topics the app provides in a way to help you constantly with new information (Figure 10.).
Workshop 2

In the second workshop, people discussed their point of view on the different features presented to them, being the “service information key features” (Figure 5.) the one they liked the most. According to them the information was very useful since it presents different sources, and it is also easy to understand. They commented that one of the struggles on the city is the transportation system were problems in trains and busses seem to make their life harder. Also, since they considered that the Swedish system is very rigid and many times a lot of processes or conditions are require, they appreciate to have access to information that can help them to avoid jeopardies when doing paperwork. They suggested that the possibility of making questions through an add-on would optimized this key feature.

They also commented that among the different features presented, socialization and culturalization are those that need to be improved the most. On one side, the culturalization key features were considered not interesting since that kind of information can be found in other places like the opera and theater official websites. Plus, it does not count with user interaction and they recommend it more for tourists coming to visit.

Concerning socialization, they mentioned that even though the “tinder” mixed features for meeting new people is very good and are easier than other apps like Meetup, the features present the same problematics than other apps. How do you get to Swedish people participate in it? Are these features meant for all people in general? Would Swedish people use them as well? If, so, why?. The previous questions are important to address as an effort to integrate in a more effective way new arrivals and the host society. Thus, they recommended that in order to encourage Swedish people to participate a strategy to change the immigrant’s image would be necessary as well. This could be by doing public events or enhancing interaction between the two groups in places like schools, work, parties, festivals and so forth. Another suggestion is that a group of volunteers could interact with international people in order to show them the city around, to teach them about traditions and how people live in Sweden. This could be by NGO’s or by implementing a “Pay pal friend” initiative.

Initial prototype 2

The second workshop group developed initial prototype has the following features:
The prototype imitates an app where new arrivals can find information related to governmental, civic and health services, education, the environment, housing and development, and job assistance. The app has as main screen different headlines and sub icons where the user can click on and the app will either send you to new links in relation with the topic or to more interactive content such as images, infographics and videos.

On the bottom footers are located with information of the app, 3rd party services, topic filter and rate the app functions. Lastly an overall bottom is located so the user can go back to the main menu. Additionally, the tiles will work like Netflix style where the user can swipe the information. The introduction of personal information is not needed for this app (Figure 12.)

### 4.4 Results from final workshop and final prototype

**Final workshop**

For the final workshop, the two-sub workshop representants exchanged ideas and explained how each prototype work. At the same time, they discussed about the others group prototype. At the end, they concluded that the first group prototype (Figure 10.) was more interactive and might look more attractive to the users than the second one (Figure 12.). Thus, they chose to keep the first group initial prototype as a foundation and extend certain features.

The prototype is to help new arrivals in their homes since the moment they come to Sweden. Socialization came one more time back to the table, as both believe it might something hard to achieve through an app. The app came as a mix of key features presented in the previous workshops with personal elements that the participants believe are more educate to their needs. In addition, they added the different services the first group had on their prototype with the intention to have a more informative feature in the app.

Discussions on how to encourage people from the home society to participate with the new arrivals took place. In these discussions, participants explained that many time when they come close to host society individuals one of the biggest problems was to make a real contact with them and eventually, develop a friendship. They believe this can be due to the bad image immigrants have gotten due to different circumstances such as bad policymaking decisions, war crisis, ignorance and so forth. Moreover, they also expressed that it might also lay on the
culture, since some societies are more reserved and tend to keep them more for themselves than others. Resulting in very close societies and communities and thus, limiting multiculturalism, socialization with others and integration. Therefore, they have decided to have socialization as not the main feature when developing the final prototype but to add it as a subsection like the other topics.

Finally, a conclusive prototype was developed by two representants of each previous workshop. The purpose of this was to combine both opinions and prototypes into one final, having as a result, the following features:

The final prototype counts with a home screen (Figure 16.) where the logo of the app shows; by pressing the logo, the user can read about the product, the purpose of it and how it works. A profile icon can be also appreciated(Figure 17.). The purpose of the profile is for the app to gathered information about the user and thus, developed information in accordance with the data. The profile will have specific questions such as your name, age, nationality, language, place of living, personal and specific interest, language the user wishes to learn, what kind of events he is interested in, music, and so forth. Additionally, the profile will count with the option of filtering the user’s information. This means that the user will have the opportunity to decided what kind of information will be shown on their home screen news feed. For instance, if I already know the language and how certain services work, I would be able to change the settings into other topics that I am more interested about such as matching with new friends or learning about different aspects of Sweden.

The main screen (Figure 16.) has also a searching layout, where people can search around internet and/or the often-specific information. After the searching bar, a group of newsfeeds will pop up. These newsfeeds are in relation to the different topics the app provides as well as the personal interest of the user. Just like the previous example, newsfeeds in relation of matching people (Figure 19.) and asking questions (Figure 22.) about Sweden will be the more likely to appear. Then, the user has the option to click on the newsfeed or not, to save it to check it later or to swipe to the right to check other newsfeeds related to the same content. The user can also scroll up and down in order to check all the different newsfeeds the user has. This of course depends on the personal settings of the user. The newsfeeds are going to be generated in accordance of the data the user generates and in addition with the information
that is already given in the profile. Thus, if the user is into Lady Gaga, the newsfeed will notify the user about activities related to the artist in the area selected (Figure 21).

Down in the app, the user can find a footer (Figure 17.). The footer will provide the different topics and icon the app provides. Just like the newsfeeds the user will be able to choose which topics are of their interest and will be able to swipe right or left to check the topics. The topics the app will contain are:

**Language (Figure 18.):** This topic will have basic language features where the users can learn about the words of the day/week. Learn from audios/videos, do test and more important it will provide with extra links for other apps that can complement the experience, links to learning videos and links to websites where the user can receive information on what schools to attend and how to do it.

**Meet friends:** For the socialization part, the features shown in the app Panion where chosen. In this case, the users can meet people with common interest. When clicking on this option, the user is taken to a layout where people can see how many other users around the area are interested in one of the different topics you choose on your profile (Figure 19.). Then, the user will have the chance to make a match with them. The user then has the chance to see some photos and an introduction information about the others (Figure 20.). When a match is done, the other user will send you either their phone number, Facebook profile or email as a contact point. This is with the goal of not adding messenger features to the app.

**Events:** When clicking on the events, information in relation to the user´s data will pop-up. That can be concerts, festivals, activities and so forth. The user has to opportunity to read about the event and save it in their calendar. If the user needs to purchase a ticket, the app will guide you to external links such as Ticketmaster (Figure 21.).

**Ask questions about Sweden:** In this section, the user has the opportunity to ask about Sweden. This can be questions that the information in the app has not been able to resolve to more questions focused on understanding the Swedish society, the culture and traditions (Figure 22.). For instance, the user wants to know about what is fika. He can either introduce a new question or check if the question has already been done through the different topics.
Other users can answer your question, or the app will generate one answer for you. This can be by traditional links or by presenting photos, videos and even infographics. The user has also the chance to rate the content. If the content gets a high ranking then it will be save so other can read it as well, if not it will delete. This is with the intention of avoid fake information or information that is not good enough for the users.

**Saved information:** In this section, the user has the chance to archive the different newsfeeds. This is because sometimes people can find information interesting but does not have the time to read it in that moment. At the same time, this information can become useful for the user in specific moments. The saved information will be archive in accordance to the main topics the phone provides so the user can find it in a faster way. Additionally, the user will have the chance to mark information that is important to them or more helpful than others (Figure 16.).

The following topics (Government Services, Health, Education, Housing, Job and transportation) are presented in the same way. This means that, all of them will contain helpful information in relation to the different institutions. Within each topics links to official websites and videos will be present. Also, images and infographics can support the information provided. A summary of how each institution will work as well as a ranking of what are the most essentials for new arrivals will come.

Other information like phone numbers, emails and important deadlines will be presented. The only one that can count with a more interactive interface is the transportation section since it can notify users of delays and complications. The information shown can be also filtered by the data provided by the user.
5. Discussion

This study aimed to explore what features and/or services can be considered important or should be a priority when developing ICT tools like mobile applications to support the social integration of new arrivals in Sweden. Furthermore, it aimed to investigate the potential possibilities of using ICT in developing better ways to support the social integration of immigrants in Sweden.

From a theoretical standpoint, several researchers from different areas and countries have dedicated to analyzing and understanding the ICT’s influence in immigrants. However, and due to the diversity of ICT’s research context an uniform validation has not been reached. Among the different fields, perspectives and theories the Internet is the one that has been explored the most (Nie et al. 2002). Thus, it is argued that theories on how immigrants use the Internet and social media as a source of information, social outlets, empowerment tools and communication points are allowing governments and institutions to mold policies and strategies regarding migration integration challenges. More specifically, governments are focusing in understanding the impact of ICTs like social media in migration and what are the benefits and contras of it (Panagakos and Horst, 2006).

On one side, social media and the internet can bring challenges to the integration process of immigrants by isolating the individual. This means that ICTs allow migrants to remain in contact with friends and family at long distances and can sacrifice the potential for the individual to create proximate relationships in the new host society (Nie et al. 2002). This has, in some ways, created the assumption that certain migration groups are harder to integrate or are not interested in being part of the country’s host society. Which can be a problematic specially in relation to stereotypes of the immigrant and the perspective of how individuals of host societies decide to approach them. As a result, tensions between long-term citizens and new arrivals can emerge.

During the workshops, the different participants express that one of the biggest difficulties for them is to approach and meet new people that are not internationals like them. In the case of Sweden, this can be the result of two main factors; In general, Sweden can be considered as a close society, where people are not as open to foreigners. During the 2017 InternNations
Expat Insider report, Sweden was ranked at the top bottom in relation to terms of “friendly” and “welcoming” (InterNations, 2017). Additionally, Sweden’s society tends to have an assumption that certain migration groups do not want to be part of their culture and society. Thus, participants suggested that in order to address social integration, institutions need to develop strategies that can improve the image of new arrivals in the country and to encourage Swedish people to participate and connect with them. These can be through online and offline campaigns, the organization of different events, gathering people to volunteer or to find common needs in both groups and present solutions through a common tool. For instance, USA counts with a big issue of elderly isolation. This means that elders feel more and more lonely. While in Brazil, people who is learning English need someone to practice the language with. Thus, an initiative was made where students from Brazil were paired with elders in USA via video calls and/or online chats. As a result, students have the possibility to practice the language with English native speakers and the elders would feel less lonely when talking to the students and could meet new friends (Peppers, 2014).

On the other side, researchers argue that social media can make the integration process easier to new arrivals thanks to their mobility, connectivity and no limitation of time and space. “by using the Internet, they are not so dependent upon finding friends and developing social networks in their geographic proximity, and regard online friends as being just as adequate as the people they meet face-to-face” (Brekke, 2008, p111). Additionally, it is likely that social media platforms can work as coherent online communities that can assist integration. “There is a plethora of online forums, Fb groups, twitter feeds and blogs that can provide both official information by governments and local migrant support services” (Tammsaar, & Sousa; Laanpere, 2011; McGregor and Siegel, 2013). However, this research shows that in Sweden social meeting tools for immigrants seem not to be a priority. From the existent ICT tools in this thesis, very few apps where found in relation to socializing immigrants and more important to connect them with citizens of the host society. This is a concern that most of the participants shared during the workshops. For them the problem also did not relay in the lack of digital sources to find new people but in the society itself. They believe that even though different apps can be developed with the purpose to help immigrants to meet new people a constant problematic will appear: How will these apps encourage Swedish citizens to participate?
Moreover, according to the results of this paper, institutions like the Migration Policy Institutions and smart cities like Bacerlona are not only turning to social media but also are putting more effort to the development of applications for mobiles and smart tools. Some of the main services were to provide governments and institutions information to new arrivals in an easier and more understandable way to encourage citizen engagement and participation. From the different key features founded, this was the favorite among the workshop’s participants. Participants felt more attracted to apps that can provide different sources of information from one point in simple and easy ways and that can be supported by interactive features such as videos, photos and infographics.

Participants commented that when arriving to a new country, everything can become overwhelming and the amount of information that needs to be learn can become confusing and messy. Therefore, they expressed that a tool where the information can be filtered and organized can be very helpful regarding to learn how their new society works. At the same time, they commented that for them to be able to filter and prioritize the information can result handy specially since their needs change by time. For instance, a participant explained that when he arrived was priority to learn the language, find a job and get an apartment. However, after a while and when these needs were fulfilled, new ones emerged like meeting new friends and learn more about the Swedish culture. Thus, just like Omidvar (2016) explains, integration is not static instead institutions need to provide tools that change together with the immigrant’s integration processes and changing needs. For instance, the final prototype developed in this research provided immigrants with the possibility to choose what source of information they want, to filter the information according to what they need in that moment. The user can find information from governmental services, health, education, language, socialization, events and questions. At the same time, the app provides external links to further information that can be helpful to the user, hence, making the app a useful and resourceful tool for new arrivals that covers different perspectives and stages of their integration process.

The possibility of asking questions was another favorite feature among participants. During the workshops, the participants commented how helpful is to search for more specific topics and have an insight from different sources and other new arrivals’ experiences and opinions. According to Vale (2013), to ask questions allows individuals to make sense of their
surroundings as well as to explore and understand assumptions and learn new things. Moreover, Vale (2013) explains that in a new digital area, the access to information has not limits and as consequence, valid and not valid information can get intertwine in the sources presenting problematics for the integration and filter of information. “The most important skill for the twenty-first century, in my opinion, is learning how to judge and integrate information from multiple sources to generate conceptual understanding or a new idea”. Thus, by providing a common place of information where users can have a better control of what they want to receive can motivate them to learn more and thus, feel integrated in an easier and faster way.

Participants believed that by adding the “Ask a question” they can find answers for questions that might be overlooked by general websites, government services or information that generally is not available as easy for them. Additionally, they argue that usually questions regarding the host society´s culture, traditions and habits are not addressed like other kind of information. For instance, one of the participants explained that for him it was a cultural shock the tradition of taking off the shoes at someone´s house. This was something that he did not know until meeting a Swedish person. However, due to certain circumstances and contexts not all immigrants can have as much contact with the host society than others, making it harder for them to learn and adapt to the new culture and traditions, even if they want to. Another participant explained that only after several years in the country she learned about important information related to Sweden´s traditions and practicalities such as what Blocket –Sweden’s largest online shopping and sales market (Blocket.se)- was or how to find apartments for rent.

Furthermore, asking questions can be used as a way of interactive computer technology where the designer can encourage users to engage in better ways. As Sebrechts and Swartz (1991) suggest, these kinds of tools promise to provide the user its own learning environment. In other words, it provides users with an online facility that gives information as curiosity/problems arise (p.293), allowing the user to develop their own learning system. Instructional design theories like the sociocultural learning theory claims that elements like culture, language and the zone of proximal development have an important influence in the individual’s learning development (Pappas, 2014). This means that the surroundings and most importantly the user´s peers (in this case digital communities) can impact the way users
learn about new topics, environments and acquire different kinds of information. An example can be the functionality of customer products’ reviews. According to digital marketing expert Giuffra (2018), reviews count with a major influence on the potential clients’ decisive process to try new products. Lastly, the Ask a Question feature can provide a sense of community to the new arrival since he will be able to learn from others who have gone through the same difficulties and experiences. According to Aretxabala and Riezu (2012), there is a theoretical argument that proposes that the building of a coherent migrant community can also help integration processes. (Aretxabala and Riezu, 2012; McGregor and Siegel, 2013).

Another issue that was pointed out during the workshops was that even though the tools might be out there, many times new arrivals does not have a contact with them due to the lack of awareness. In other words, immigrants have no knowledge of the tools and sources made for them. A report (Diminescu et.al, 2009) shows that even though the needs of immigrants have started to be addressed with ICT measures, the institutions ad governments working for integration facilitation of the immigrant do not promote the ICT use and integration sources among them. According to Diminescu et.al (2009), specific programmes combining ICT promotion with actions to integrate immigrants are needed. “These programmes could support public internet access points (probably in collaboration with local associations) in addressing their customers' growing demands for more personalized and needs-oriented support” (op.cit). As a solution, participants suggested that when a person arrives to a new country, many questions, confusion and challenges come along, therefore guidance in the process is imperative. Communities, governmental services and public spaces could and should enhance information to the immigrant. This can be through infographics, posters and the promotion of the different offline and online tools for integration. Governments can also have introduction weeks for new arrivals where they can be provided with all the information necessary regarding apps, links, websites, contact and so forth so people can adapt better to their new home. Diminescu et.al, (2009) contributes by saying that in order to develop initiatives of this kind, it would be also necessary to establish partnerships with local social centers and immigrant associations, as well as creating more public internet access points in immigrant neighborhoods.
However, after the development of this study I have come to the realization that the creation of more public internet access points will only beneficiate specific migration groups such as those denominated economic immigrants and digital literacy immigrants. During this research theoretical framework, the phenomena of digital division was addressed and even though it did not affect directly the results, it is something that needs to be taken in consideration when developing ICT integration strategies. As it can be observed, the group of participants that took place in the workshops lay more towards individuals with at least a basic knowledge of technology and can be referred as economic immigrants. It is important to emphasize that this was with no intention and that the sample was taken randomly with only the characteristics mentioned previously in the methodology section. Nevertheless, it has come as a reflection that when developing ICT tools such as this study’s prototype, researchers need to understand the influence of digital division and the impact the phenomenon has on the development of integration strategies.

For instance, it has come to observation that in order to develop more successful integration strategies the simple introduction of ICT to immigrants it’s not enough, instead it has been found that teachers in countries like France are being obligated to offer constant assistance to new arrivals in the topic of ICT usage (Diminescu et.al, 2009). This is a pattern that seems to remain in other countries like England and the US, and even though it is predicted that future generations will be able to avoid digital division it is still a present problematic. “The European Commission (2007) emphasizes as key factors for a successful integration and social participation of immigrants into society, among others, the need to increase efforts in formal education (…) to empower them to become active participants in society” (Redecker, Haché and Centeno, 2010). In other words, to seize the possibilities offered by ICT, basic digital skills and competences also need to be promoted.

Authors like Codagnone and Kluzer (2011) argue that digital inclusion should be framed mainly as contributing to structural incorporation, meaning skills, jobs, information and access to legal rights and public services and most importantly immigration groups should be treated as a whole with other target groups of digital inclusion. However, as it can be observed with the sample for the workshops and with the digital division theory within this research, not all immigration groups have the same problematic in relation to digitalization.
For instance, Chiswick’s immigrant labor market adjustment explains that the knowledge of ICTs provides favorable selectivity for economic immigrants. This means that usually it is economic immigrants those who have bigger probabilities to know and use ICT tools, giving an advantage over other immigrant groups in both integration and economic aspects (Chiswick and Miller, 2005). This is a fact that have affected the results of the research’s prototype where the general assumption that immigrants count with certain digital literacy was made.

This is something that came as a limitation during the development of this paper, were most participants where young adults and have certain digital literacy. As consequence, it is hard to understand what other gap ages´ necessities are and how can these necessities be approached by an application. Most individuals within the workshop came from reasons like studying/ working and/or love. This means that they have come alone to the country. Having this scenario in mind and in order to make the application more effective another perspective can be suggested for further research. Questions regarding “how groups with family deal with integration?” or “what roles does certain members of the family play for the integration process of others?” should be taken in consideration.

Lastly, the sample used in this research lacks to represent different ethical groups that live in the city of Malmö. Thus, a bigger sample must be collected. In order to have a better representation of the immigrants living in Malmö, the sample needs to be proportional to the individuals and nationalities living in the city. However, would this sample be biased by certain nationalities? Since some countries are more predominant than others. For instance, people from Arabic countries seem to have a bigger presence on the city and thus, more people with this background would influence the sample. At the same time and because the larger number of individuals, aspects like finding friends and jobs can become easier for them than to others, isolating them from their new host society. Even more important is to ask if they are interested in being more involve with their new society. Having this in mind, would their participation be relevant for the study? Would the study be biased by predominant countries and are these groups in real need for this kind of apps? These questions can help to develop a better fitting app that can help specific groups or at least it can provide a better insight of other existent problems that were no considered during this research.
6. Conclusion

Upon the completion of this thesis, I conclude that even though governments and institutions in Sweden and around Europe are dedicating efforts to find new strategic solutions through digital tools such as digital applications, researchers and critics have found the effort not enough. A better understanding of the immigrants needs requires more research and exploration. Just like mentioned before, in order to obtain better results, it is necessary to understand how immigrants live their integration processes and how it changes. Additionally, immigration groups’ needs change according to context, therefore, more than one solution is needed when talking about integration processes. Furthermore, to assume that all immigrant groups process integration in the same way can bring more challenges than solutions. For instance, the sample for this paper found in specific relevant an application that could help them to source multiple information together through interactive and fun ways.

A multi-feature app would help the user to have easy access to all kind of different information according to what stage of integration they are at. For this specific group (with the characteristics already mentioned), it was of importance to learn the language, count with governmental and institutions service information among others. For them, the app should also allow the user to decide what type of information is relevant in the moment by providing topic filters as services. Moreover, the features could count with interactive and fun ways of receiving the information as well as clarity and simplicity to avoid confusion and frustration, feelings that are easy to get when a lot of information is being received. One specific feature that all participants found extremely helpful was to Ask Questions since this facility can be transcendental in all the stages of integration.

Another aspect that was mentioned during the workshops was the limitations participants have found when meeting new friends, specially friends that are long-term citizens in the Swedish host society. By observing the discussion, theoretical framework and the methodology it can be concluded that social media plays an important role within social integration and is being focused as one of the main topics among ICT and immigrant’s social integration research. However, when talking about digital applications it can be argued that only few are attending socialization between new arrivals and citizens as priority. Thus, participants encourage the development of more and better social features within
applications. Furthermore, elements like social context and cultural structures might affect the way both groups interact. For instance, countries like in Sweden, where societies and communities are more closed need to develop strategies from both digital and offline standpoints as a way to change cultural context and stereotypes. Thus, features like finding matching friends and organization of activities are not enough since other problematics are constant like how to encourage citizens from the host society to interact with the new arrivals. For these features to succeed initiatives against the bad image of immigrants and to encourage socialization as part of the country’s culture need to be addressed as well. Some possible answers are the development of features that can facilitate the solution of common problematics in the society for both groups and features that gather common interests. Offline activities are also encouraged to support digital features. For instance, a meeting app can have offline services where the digital community can participate in different activities such as festivals, parties, movie nights and so forth. The apps should also present themselves as services to both groups without making exceptions and separations.

Moreover, a better promotion for these apps both online and offline is needed; specially in high contact points for immigrants and host society such as public spaces, airports, governmental services and so forth. Due to how close community countries like Sweden are developed, many of the long-term citizens might also face similar social problems like the new arrivals such as having difficulties to find friends. This is a common topic that digital apps can try to solve. Nevertheless, to be able to understand more about how these elements’ influence in the usage of digital apps a further research is recommended.

**Further research**

During the elaboration of this paper, several points of discussion were taking in place leaving room for many areas of development towards methodology, content and prototype. As consequence, this thesis can be considered a pre-study to a larger study on the subject. Although, this study covers a knowledge gap there is more that can be done. The theoretical framework could be expanded, and more in-depth theories can be revised. Due to the nature of migration as a phenomenon more relevant theories and research can be complementary. Additionally, research topics like ICTs influence on general migration integration are still very fresh and therefore, more theories and exploration are expected to be done in a future.
Thus, the validation of the topic can be debatable depending on the field context is being approach.

Concerning the methodology and the realization of the workshops, the participation of expertise and the realization of a final evaluation with stakeholder and sponsorships was not able to be done due to time limitations and thus, it would be necessary their realization for further investigation. However, it is important to have in consideration for future workshops what role will the expertise and stakeholders have within the process since, once more, their influence could affect the results in negative ways by pre-conditioning participants. Thus, expertise could work as guidance for participants regarding in solving questions about design, if certain ideas are more doable than others and how to create specific interfaces. On the other side, expertise intervention can also guide the researcher and the participants in relation of design theories and technicalities that need to be considered when developing a prototype. For instance, if the prototype developed for this research would be taken to a final product, certain aspects of software and storage would have needed to be revised by design expertise since some functionalities might have been difficult to perform.

Similarly, and even though they did facilitate participants´ interaction with the key features, using cards can limit the creative thinking of the people in specific cases. According to Spinuzzi (2005) sometimes the introduction of pre-establish materials can have a side effect on participant´s collaboration since it borders individuals to specific ideas. For instance, during the workshops specific key features were presented to the groups, as a result, participants limited themselves to only choose from the features and they only did very small changes. Consequently, there was a lack of innovation and none new features were brought to the table.

It is also interesting to see that both groups chose the same key feature (Information services) and that this key feature was the most developed in comparison with the others. So, this makes me wonder if this was due to the influence of the cards or it is because that is what immigrants really need when arriving to Sweden? If the cards were done differently, have the results been similar? What would have been the results if random feature´s cards were presented instead of theme feature´s cards? Additionally, I wonder if by exclusively looking
for apps that are done to help immigrants other features were excluded, that might not properly been use for this target group but that could ´ve been helpful anyways?

Another factor that could also affect the results of the research is the process time. While the time invested in the workshops was of 3 hours, Lead User workshops can usually take over a week. However, this can be a disadvantage since participants were already getting anxious and impatient during the few hours the workshops for this paper lasted. At the end of the workshop’s participants were really just looking to go home and their attention was not anymore on the tasks. As consequence, the reflections were weak and could have been more constructive regarding the development of the mockup.

Since the research has shown that one of the still existent challenge in the social integration of immigrants in Sweden is the closed society context in the country, the recommendation of a further study in relation to this would be beneficial. Questions regarding how Swedes interact as a host society with new arrivals, the reasons behind, how it could be improved and how digital features could motivate them regarding to socialization can be researched. A final workshop with both Swedes and new arrivals can be organized having as purpose to find common needs and how an application can bring common solutions to both groups.

This study can also be extended to group of immigrants that have been excluded from this research such as refugees and asylum seekers. Additionally, limitations like digital division need also to be considered when developing integration tools, therefore, a further research regarding this phenomenon can be convenient so researchers can understand and explore the consequences of using ICT on certain migration groups and how to solve it.
7. Appendix

1. Format of interviews

Name:                                              Nationality:                                   Mother tongue:                          Age:                                              Occupation:

1. How long have you lived in Sweden?
   □ More than 3 years   □ 3-2 years   □ 1 year -6 months

2. For what reasons did you come to Sweden?
   □ Love   □ Study   □ Work   □ To be close with family

3. From 1-5 (being 1 the lowest and 5 the highest) how could you rate your experience on meeting new people in Sweden?
   1               2                3                4                5

4. Have you use any digital devices to facilitate your integration in the country? If so, what are their names?

5. From the following factors which one do you consider the most important for a better adaptation of your new home?
   □ Language   □ Job   □ Meet People   □ Learn about the culture
   □ Knowledge about their governmental services
   And rules

6. What has it been your biggest struggled when moving / adapting to Sweden?

7. Do you use digital devices like cellphones?   □ Yes   □ No

8. How often do you use them?
   □ Always   □ Very Often   □ Often   □ Once in a while   □ Hardly

9. For what purposes do you use your mobile devices?
   □ Social Media   □ Information   □ Communicating with friends/ family home
   □ Work   □ Meeting People   □ Read the news: local   □ or international
   To check where places to go (Restaurants, services, etc)   □
2. Answers for the interviews

- Name: Deepak Reddy, Nationality: Indian, Occupation: Student, Mother Tongue: Telugu and Hindi, Age: 29
  1. More than 3 years
  2. Love/ study
  3. 3
  4. Language meetup, dualingo
  5. Language
  6. Money, weather
  7. Yes
  8. Often
  9. Social media, information communicating with friends/ family home, work, read the news both local or international

- Aida Kidane, Eritrean, Tigrinya, 25, student
  1. More than 3 years
  2. To be close with family
  3. 4
  4. No
  5. Language and meet people
  6. The culture
  7. Yes
  8. Always
  9. Social media, information, communicating with friends/ family home, work, read the news both local and international, check places where to go

- Despoina Lappa, Greek, Greek, 34, journalist
  1. 1 year- 6 months
  2. Study
  3. 3
  4. Websites- official Swedish site, student blogs, linked to the university website
  5. Language
  6. Language
  7. Yes
  8. Always
  9. Social media, information, communicating with friends, read the news: local and international

- Jacob Busser, Dutch, Dutch, 27, student
  1. 1 year-6 months
  2. Study
  3. 2
  4. Duolingo, mr translate, google maps
  5. Meet people, knowledge about their governmental services and rules
  6. Not having a car
  7. Yes
  8. Always
  9. Social media, information, communicating, work, meeting people, to check places to go

- Enrique Sanchez, Mexican, Spanish, Graphic Designer, 34
1. 4 years
2. Love
3. 2
4. Platforms, lexkon, meetup, social media
5. Language
6. Cultural shock
7. Yes
8. Always
9. Social media, communicate, information

- Lena Löfling, Germany, German, Project Assistant IKEA, 30 years
  1. 1.5 years
  2. Study
  3. 3
  4. Meetup, dulingo
  5. Meet people
  6. Finding a job and meet people outside university
  7. Yes
  8. Very often
  9. Social media, communicating, check places where to go

- María García García, 28 years, Mexican, Spanish, IT integration
  1. 5 years
  2. Love
  3. 2
  4. Yes, phone, computer, fb, meetup
  5. Language, meet people
  6. Adapting to society and meeting friends
  7. Yes
  8. Always
  9. Information, communicating, social media

- Anna, Poland, polish, student, 24 years
  1. New
  2. Love
  3. 5
  4. No
  5. Language
  6. Language
  7. Yes
  8. Often
  9. Communicating with friends

- Julia Schall, 26, USA, English, writer
  1. 3-2 years
  2. Love
  3. 3
  4. Yes, fb and meet up
  5. Language
  6. Adapting to the weather
  7. Yes
8. Very often  
9. All of them  
* Eric Griess, American, English, 27, Engineer/ Executive  
1. More than 3 years  
2. Work  
3. 3  
4. Yes, cellphone/ internet and app meet up  
5. Job  
6. Weather, rules/ regulations, conveniences/ finances  
7. Yes  
8. Always  
9. All the above  

*All participants signed a written participation agreement where they were notified of the aim of the workshops, the purpose of the thesis and the assurance that any information and ideas will not be use for economic and personal purposes.

### 3. Analysis Table of Key Features

<table>
<thead>
<tr>
<th>APP</th>
<th>NATURE</th>
<th>GOOD FEATURES</th>
<th>WEAK FEATURES</th>
</tr>
</thead>
</table>
| NYC311         | • Service Information       | • Accessibility to information about different services  
|                |                              | • Easy to understand  
|                |                              | • Makes easier to move around the city  
|                |                              | • Covers almost every information needed for new arrivals in relation to how the city works  
|                |                              | • More than 150 languages                                                    | • Might be confusing with all the different links  
|                |                              |                                                                              | • The city could have the same format for each service                                            |
| Barcelona / Apps4BCN | • Service Information  
|                | • Cultural Information     | • Good when tourist and new people wants to know the city  
|                |                              | • The features are from different apps, so people can choose better what fits for them  
|                |                              | • Easy to understand                                                        | • In order to get the apps, you need to check the website in the touristic section, this can be confusing  
|                |                              |                                                                              | • Not all apps seem to work properly                                                              |
|                |                              |                                                                              | • The need of downloading to many apps individually that can be confusing and take space in the mobile  
|                |                              |                                                                              | • The information is only on 2 languages                                                           |
| Mobilearn      | • Service Information       | • Clear information with government services, however NYC apps counts with  
|                | • Job Assistance            | more information and has easier and useful features.                        | • Not easy to find                                                                                  |
|                | • Language learning         |                                                                              | • Very standard features                                                                           |
|                |                              |                                                                              | • Not difference between a normal job website                                                     |
|                |                              |                                                                              | • All the information you can find it on other websites.                                           |
|                |                              |                                                                              | • Not too many different languages options                                                        |
| Welcome!       | • Socialization and information service | • Ask citizens of the host country about questions in relation to topics like culture, socialization, traditions and so forth  
<p>|                |                              | • Direct contact with Swedish people                                                   | • Cannot make real and personal contact                                                            |
|                |                              |                                                                              | • Only works for asking questions when would be nice that since this is a way to                  |</p>
<table>
<thead>
<tr>
<th>App</th>
<th>Category</th>
<th>Features</th>
<th>Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get Panion</td>
<td>Socialization</td>
<td>- Like other matching apps but this one is specialized to meet FRIENDS&lt;br&gt;- Choose common activities&lt;br&gt;- Easy to understand&lt;br&gt;- Easy to use&lt;br&gt;- Good way to meet new people</td>
<td>- How can you get guarantee you will meet Swedish people?&lt;br&gt;- Not available in Android</td>
</tr>
<tr>
<td>Lingio</td>
<td>Socialization, Language learning</td>
<td>- Topic-specific&lt;br&gt;- Useful to talk about very specialized topics in common process for new arrivals&lt;br&gt;- More basic language learning features&lt;br&gt;- Use video and chat to practice with others</td>
<td>- Needs to implement with basic language learning features&lt;br&gt;- Show the possibility to meet people in reality to practice as well&lt;br&gt;- Lacks information for language coffees and classes</td>
</tr>
<tr>
<td>Let’s Talk</td>
<td>Socialization, Language learning</td>
<td>- Connects you to companies and people working in the same market as you&lt;br&gt;- More basic language learning features&lt;br&gt;- Use video and chat to practice with others</td>
<td>- After waiting for a month to be matched, no feedback or whatsoever have come back&lt;br&gt;- Lacks information for language coffees and classes</td>
</tr>
<tr>
<td>Yrkesdörren</td>
<td>Job Assistance</td>
<td>- Connects you to companies and people working in the same market as you&lt;br&gt;- You invite strangers for dinner</td>
<td>- After waiting for a month to be matched, no feedback or whatsoever have come back&lt;br&gt;- Not all cities are included.</td>
</tr>
<tr>
<td>Kompisbyra/Kompis Sverige</td>
<td>Socialization</td>
<td>- You get match with someone, this can be a Swedish person or international one</td>
<td>- Not all cities are included.&lt;br&gt;- You don’t have context or information over the person you will meet&lt;br&gt;- People can find cultural information on official websites&lt;br&gt;- Do not address the culture and tradition integration problematic</td>
</tr>
<tr>
<td>Invitations departementet</td>
<td>Socialization</td>
<td>- You invite strangers for dinner</td>
<td>- You invite strangers for dinner</td>
</tr>
<tr>
<td>Newcomer</td>
<td>Job Assistance</td>
<td>- Connects you to companies and people working in the same market as you&lt;br&gt;- You invite strangers for dinner</td>
<td>- After waiting for a month to be matched, no feedback or whatsoever have come back&lt;br&gt;- Not all cities are included.</td>
</tr>
<tr>
<td>Kulturkompis</td>
<td>Socialization, Culturalization</td>
<td>- Matches you with a partner to do cultural activities together</td>
<td>- Not all cities are included&lt;br&gt;- You have no context or information over the person you will meet&lt;br&gt;- People can find cultural information on official websites&lt;br&gt;- Do not address the culture and tradition integration problematic</td>
</tr>
</tbody>
</table>
8. References


• Retrieved from https://courses.edx.org/courses/course-v1:GalileoX+PCPMK01x+2T2018/course/


• Internet Terms: ICT Definition. (n.d.) Retrieved from https://techterms.com/definition/ict


integrated in Europe, Southeast Asia, and Australia: a comparative perspective. (p.25-43). Amsterdam University Press.


• Nuñez, C. (Dec 12, 2014) Los mayores retos que enfrentan los refugiados e inmigrantes en los EE.UU. Retrieved from https://www.globalcitizen.org/es/content/the-7-biggest-challenges-facing-refugees-and-immig/


• Sweden and migration. (n.d.). Retrieved from https://sweden.se/migration/


• Yrkesdörren.(n.d.). Retrieved from https://www.yrkesdorren.se/