Technology appropriation awareness and identification

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Additional Information:

- A Doctoral Thesis. Submitted in partial fulfilment of the requirements for the award of Doctor of Philosophy of Loughborough University.

Metadata Record: [https://dspace.lboro.ac.uk/2134/27543](https://dspace.lboro.ac.uk/2134/27543)

Version: Not specified

Publisher: © Liliana Rodriguez

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Technology Appropriation Awareness & Identification

by

Liliana Rodriguez

A Doctoral Thesis

Submitted in partial fulfilment of the requirements for the award of

Doctor of Philosophy of Loughborough University

(March 2017)

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Technology Appropriation Awareness & Identification

This thesis presents the results of a research that examines technology appropriation (TA) awareness and identification in digital services start-up companies. Technology appropriation refers to the unexpected ways in which people adopt and adapt technology to make it serve their personal needs and motives. The research questions (Chapter 1) are: (1) How to identify TA within the development of digital services in the context of start-ups? (2) How aware are service providers of the phenomenon of TA? (3) What are the enablers for the appropriation of services by users?

To address these questions, the thesis presents in chapter 2 a literature review that illustrates the context of the research, and explains its key concepts: digital services, user involvement in the development of digital services, technology appropriation, and levels of user engagement. Specific research methodological choices as well as specially designed research data collection and analysis tools are subsequently explained in chapter 3. An exploratory study is then introduced in chapter 4 to demonstrate how users can be involved in the development of digital services, evidencing the need for further research in TA. This initial work is concluded in chapter 5 by the introduction of a theoretical framework for TA (TF TA).

Chapter 6 outlines the design and planning of the main study consisting of five case studies which provide empirical data for the core findings of this research. A first set of findings deriving from a comparison of TA examples found in the case studies based on the TA three levels proposed framework (TF TA) is presented in chapter 7. A second set of findings presented in chapter 8 helps to respond to the questions: (1) how aware are service providers of the phenomenon of TA, and (2) what are the enablers for the appropriation of services by users? These findings establish the level of TA awareness of each case study, outline the taxonomy of TA service types, and introduce emerging themes resulting from a thematic analysis, which also serves to propose enablers for TA within digital start-ups.
Chapter 9 and 10 identifies and presents a third set of findings and contributions to knowledge. Main contributions are: a new tested and revised TA Level Framework created by examining the empirical findings against the TA Theoretical Framework (TA TF). And a new TA Identification Method within the development of digital services in the context of start-ups, underpinned by the tools previously developed in the research.

Minor contributions explained in chapter 10 are: A taxonomy of TA services (pro-active / re-active / inactive), an account of the Key Aspects of TA Awareness, a Typology of TA Outcomes (Soft TA, Hard TA, and Hard & Soft), and a revised classification of TA Impact and TA levels. It also comprises an explanation of the relationship of TA Levels & TA Impact, a revised model of the user involvement approach, a new categorisation of TA User Actions (Expected/ Engage/ TA savvy), and an identification of TA Enablers (User Lead & Service Control).

This research has found that the Key Aspects of TA Awareness are TA Concept, Systematic Programme of User Involvement, Mode of User Involvement, Identifying TA Actions, and the TA Enablers (User Lead & Service Control). The research has also found that the users’ actions and outcomes related to the adoption and adaption the technology, can be classified in High (when the users lead parts of the service), Medium (when the users customised and personalised the service) and Low levels (when the users used the service as intended, but give feedback to the service providers about its used). Additionally, this work has determined that the services and service providers’ TA Level Awareness is determined by how much they understand and know about TA. This awareness can be classified as proactive (when the service provider understands, identifies, and knowingly foster TA within the service), reactive (when the service provider understands TA in other services but cannot identify TA and reacts to users feedback and TA) and inactive (when the service provider does not recognised and cannot identify TA within the service). This investigation also has established that the aspects of the TA Level Framework can be integrated and employed as a method for TA identification within the services.
This study has recognised that TA impact, the extent to which services are employed in the process of appropriation, can be classified as high, medium and low depending on how the service providers change and further develop their service because of their understanding and identification of TA. The enquiry also found that the level of TA impact is different from the TA Level, that the knowledge and awareness of TA impact are underpinned by the user actions and outcomes, as well as by their change and development.

Another finding of this research is that the users’ TA outcomes (this is the tangible consequence of the user adoption and adaptation of technology) can be classified as Soft TA, Hard TA and Soft & Hard TA. Soft TA corresponds to the changes made by users related to the social practices evolution of the service, Hard TA refers to the changes made by the users in the API of the service. Soft & Hard TA relates to the combination of user changes in social aspects and the manipulation of the service’s API. The study found that the service providers’ main approaches to user involvement are: listening to and collaborating, testing and experimenting and active observation. Last, this investigation determined that users’ actions concerning TA can be expected (users do nothing else other than the expected use of the service), engaged (where users are involved in the development of the service for personal motives) and TA savvy (where users are involved in in the development of the service for personal motives, but they have software and programming skills).

The conclusions section summarises the research and explains its limitations. It also presents a personal reflection and indicates avenues for future research.

Liliana Rodriguez
Doctoral Candidate
Loughborough University 2017
Acknowledgements

Special thanks to Carlos Peralta, my friend, colleague, partner, generous, loving and wonderful husband; without him, this task would have been improbable.

A mi familia: Beatriz, Anibal, Dilia, Joaco y Shannon sin su amor y confianza, este trabajo no se hubiera logrado.

To the AHRC and Loughborough University for funding my PhD.

To my supervisors Andrew May for his generous amount of time and dedication to guide me through this process and to Val Mitchel.

To Martin Maguire, my advisor at Lboro, for his very insightful guidance and genuine interest in design research.

To all the research participants for their goodwill and generosity.

To Aalto University for have hosted me as a visiting researcher during the last year of my PhD; special thanks to Samps Hyysalo and Tuuli Matelmaki; the INUSE (Users and Innovation Research), and Encore Research groups for providing me with space for discussion and debate.

To my friends in Sheffield, especially Chris Roast, Eve Stirling, Ellie Lockley, Jackie Leaver, and Kirsty Christer for her friendly support.

To the pandas, Fotis, Maria, Hamish and especially my running buddies in Brighton Stephanie and Milda.

To my friends at the Glasgow School of Art, especially Stuart Bailey and Gordon Hush.

To other friends around the world: Ana M. Cruz, Emma Dick, Sarah Drummond, Monica Bernal, Andrea Botero for support, advice and encouragement.

To Patico, Pookie, Orangita, Ratoncito and all the cottony family.
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1. Introduction

Overview of the Studies

The primary purpose of this research is to understand a contemporary and complex phenomenon: Technology Appropriation (TA). This phenomenon has many variables which can be studied. The researcher has drawn a framework that highlights a set of key elements of the phenomenon for study in this research.

This research has been structured in four main phases to investigate the phenomenon of TA. The first step is comprised of a literature review together with an exploratory case study of the phenomenon of user involvement in the development of innovation initiatives. The authors reviewed come from different backgrounds, having studied this phenomenon from different perspectives, wearing different ‘lenses’ and using various methods of research and philosophical approaches. The outcome of the first phase is the theoretical framework of this investigation, which has been constructed partially from the literature reviewed, and complemented by the results and findings of an exploratory study grounded on real-life bottom-up innovation initiatives.

The second phase is the planning and designing of the main study. It explains how the different methods and tools for collating and analysing data were applied in the research.

The third phase of the research focuses and explores the key aspects of Technology Appropriation. The study attempts to understand better the phenomenon of TA by involving several participants (service providers of digital service/start-ups enterprises). The researcher interviewed them through open-ended questioning about users’ involvement in the development of their services. Those contributors have revealed their perspectives on and experiences of the TA phenomenon. The researcher has also performed a series of observations of the digital platforms of those services, focusing on the different ways that the digital touch points were used as a platform for interaction.
between users and service providers, and users and other users. Therefore, the researcher focused on studying those services’ internet platforms where there was thought to be potential for finding TA examples.

The data for this study was collected between January 2015 and November 2016. The outcomes of this study are insights, and enablers into the way the TA phenomenon occurs, and the service providers’ perception and awareness of it within their services.

The fourth and final phase of this research focuses on critically testing the framework against the results of the investigation. The outcomes of this last phase are the contribution and the conclusions.

**Research Macro and Micro Contexts**

TA is an area underpinned by two main knowledge pivots. The first knowledge pivot is the digital economy. The digital economy is the current macro-level context in which services occur. It has changed from a traditional economy based on products and tangibles to a digital economy based on trade with bits (data), services and intangibles. Similarly, the creations of new technology categories such as the internet and social media have had a significant role in shaping the context at a micro level. This ‘micro’ context has permitted a shift in user communication. From a vertical communication paradigm (top down/bottom up), it has moved to a new horizontal communication paradigm, where users communicate with one other at the same level. As a consequence of these changes in the macro and micro contexts, more and more services are now available online. These new services are born and developed in the digital realm, and often are complemented by the use or combination of other pre-existing services (mashups). In other words, services have become Digital Services (DS).

Another main consequence of these changes is the flourishing of small enterprises and bottom-up innovation initiatives, or ‘start-ups’. The characteristics of start-ups are first that they typify the essence of digital service development in both the macro context of
the digital economy and the micro context of horizontal communication. The second is that service delivery through digital means is seen as desirable and needed, so start-ups strive for the development of services provided within the digital realm. The third point is that start-ups are hubs for exploring different business models. A fourth characteristic is that start-ups develop their services in collaboration with their end user. The fifth and last aspect is that providing services based on digital means requires less investment in physical infrastructure, thus enabling a broad range of new entrants to set up enterprises. This research project understands start-ups (bottom-up initiatives) as the perfect context in which to study this phenomenon because such companies are leading the development of digital services (DS).

The second knowledge pivot concentrates on an exploration of the areas of participatory design and user involvement in the development of services and products. It is apparent that currently, the end user of services has become more proactive than ever. The user is being engaged and empowered by digital services through ‘new’ technology categories such as the internet and social media. Although in the past end users have sometimes played a part in the development of many IT projects, they are now often seen as central to service development. User involvement in the digital service development process is essential to the development of DS. An important feature of user participation in the development of DS is Technology Appropriation (TA).

This research project begins by proposing that both knowledges pivot positively intersect and give ground for studies in an area identified as user appropriation of information-digital technology = Technology Appropriation (TA). TA occurs when end-users use services in ways that their designer or service provider did not envision at the moment of their creation.

This research explores the idea that a successful uptake of technology in the development of digital services is often mediated by end users’ appropriation of technology. This research also explores the idea that TA can help to enhance digital service effectiveness
and acceptance and could help to create new services functionalities. In other words, user appropriation is potentially an ongoing and useful phenomenon for the design and development of digital services.

If these benefits are true, it would be good to take advantage of the potential of TA to design and further develop the DS. If a DS wants to benefit from the potential of TA, it is fundamental for the service providers and designers of the DS to be aware of this phenomenon. This study examines the TA phenomenon and the state of awareness of service providers in digital services, specifically in the context of start-up companies.

The research project proposes an awareness elements framework. This framework allows the measurement of TA awareness among service providers. It also helps in the communication and presentation of the data and analysis of the research.

From the data gathered, this research project seeks to identify the enablers of TA in DS start-ups.

Based on findings regarding TA awareness and the obstacles and enablers of TA, this study outlines a strategic way to identify and a framework to foster and enable TA within the design and further development of DS in start-ups.

It is important to specify/define what the three key concepts of this phenomenon are in the context of this research: Technology Appropriation, digital services, and start-ups. The following section of this introduction elaborates on these meanings.

**Technology Appropriation (TA)**

The concept of appropriation is necessary for a broad range of disciplines and research areas, but its meaning varies significantly between them. Although a multidisciplinary understanding of appropriation is potentially useful, this research favours definitions from the literature on digital and communication development. The technology this research focuses on is the internet and social media. Even within technology literature, there are competing views on what appropriation means. However, three distinctive
ways of understanding appropriation have been identified which encompass the broad spectrum of different perspectives on the phenomenon. These three stances on appropriation are complementary to each other and integrate into an appropriation framework explained later in this thesis in the framework chapter.

1. Appropriation as the way end users adopt patterns and adapt/transform technology into working practices at a deeper level (Dourish, 2003).

2. Appropriation as personalisation/customisation/tailoring of technology to serve personal needs, personal motives (Wiredu, 2006), or to meet end user’s needs (Jones & Twidale, 2005). This take on appropriation can be considered weak appropriation (Bossen & Dalsgaard, 2005) since it implies the use of built-in system features by users for sense-making and customisation.

3. Appropriation as the way in which people use technology in creative and unexpected ways (that is, unexpected use by systems designers and developers) (Degele, 1997). This type of appropriation is strong (Bossen & Dalsgaard, 2005) and implies the modification of existing systems and the creation of new ones to replace the original system.

This research proposes that there are different levels of appropriation. The highest levels are those in which end users’ creativity plays a more significant role and in which they participate more actively in defining the characteristics and ends of the services.

**Digital Services (DS)**

Digital services are the best possible contexts for studying the phenomenon of TA (as explained before in the micro-context in this introduction). It is quite difficult to define digital services as they are an emerging discipline in the design landscape (Williams, Chatterjee, & Rossi, 2008). Reaching a definition is even more complicated as new forms of digital services are being invented for existing business processes. Also, new forms of
organisational processes and practices are emerging as a result of experimenting with the Internet and ubiquitous computing technologies (Lyttinen et al., 2004).

Several definitions of digital services were considered in defining the term for this research. The definition has built on the international bodies’ classifications of ICT and digital services and other scholars such as Tate (2014) and Weber & Burri (2012) and is fully explained in the literature review chapter. This research embraces the definition of digital services in Williams et al., (2008) as activities or benefits that are provided through a digital transaction over the Internet Protocol (IP). These activities or benefits are provided by a party (service providers) and “obtained and arranged” by another (users).

**Start-ups**

Start-ups are companies recently created that are in a constant phase of development, transformation and market search (Start-up Commons Organisation, 2013). They can be either bottom-up or top-down initiatives. This distinction depends on the amount of investment that has been made by the company, on the attention that a bigger company may pay to the small initiative company, or on the interest that a bigger company has in finding new markets or in the development of ‘new’ technologies (Rachlef, 2013).

Innovation and uncertainty seem to be essential elements that characterise start-up companies. Neil Blumenthal, co-founder, and co-CEO of Warby Parker refers to a start-up as a company that is trying to solve a problem when “the solution is not evident, and success is not guaranteed” (Robehmed, 2013). Most companies, unless they have a significant investment from a ‘father’ company, begin as start-ups.

Start-up companies play an important part in the growth of the UK economy. Existing literature shows that ‘start-ups’ are leading the development of digital services. If successful, they will grow and can play a significant and active role in people’s lives as
well as creating employment opportunities. The literature suggests that user involvement plays an important part in the development of successful digital services.

**Research Questions**

The main purpose of the research is to understand better the phenomenon of Technology Appropriation (TA), most specifically to understand how it can be identified and how aware service providers (start-ups / digital services) are of this phenomenon and what the TA awareness elements are. This research also seeks to understand the enablers of TA within digital services in the context of start-up companies. This study outlines a strategic identify and awareness framework to foster and enable TA within the development of DS in start-ups.

To get to the research questions the researcher reviewed literature mainly in areas of user involvement in the development of companies, and the digital services development. Then, with the knowledge gained in the literature review about different forms of users’ involvement such as: perpetual beta, empathic design and TA, the researcher explored the user involvement in ten innovation initiatives in the exploratory study. By comparing the findings of the study with the findings of the literature reviewed, this study produced three different modes of user involvement: including Indirect Known by service provider, Direct Known by service provider and Direct Unknown by service provider. To make sense of the findings of this part of the research, the researcher constructed a TA theoretical framework (TA TF) (Chapter 5). The TA TF helped to map the knowledge about this phenomenon and helped to identify a knowledge gap. The research questions emerged after the TA theoretical framework (TA TF) was constructed (Chapter 5). This research was set up to investigate this phenomenon.

1. **Question 1**

   How is it possible to identify TA within the development of digital services in the context of start-ups?
2. Question 2:
   How aware are service providers of the phenomenon of TA?

3. Question 3:
   What are the enablers for the appropriation of services by users?

Objectives:

- To find within the companies studied examples of technology appropriation.
- To identify those features of the service that can be appropriated.
- To understand (from service providers’ perspective) the user involvement and the relationship with the digital service through technology.
- To understand how (if at all) companies employ their knowledge of technology appropriation for further development of their services.
- To understand how companies can identify technology appropriation if it is taking place within the digital services.
- To help draw a method to identify TA.
- To investigate if service providers are aware of this phenomenon.
- To find the different TA awareness elements.
- To create a framework of TA awareness elements that will help to measure TA awareness.
- To find examples of how appropriation has been enabled in digital services.
- To understand how appropriation can be enabled within digital services.

Thesis Chapter Overview

The overview of the thesis is a brief explanation of what can be expected chapter by chapter. It explains what can be found in each of the chapters.

Chapter 1 introduces the thesis with an overview of the studies that summarises the main phases of the research. It defines the macro and micro contexts and the focus of the
research project: the phenomenon of TA. It also defines what digital services are and briefly explains the context of this investigation: start-ups. The introduction states the research questions together with the corresponding objectives. The introduction ends with a thesis chapter overview.

Chapter 2 is the literature review, divided into six parts. The first theme of the chapter is an introduction to the internet & social media technology as the macro context of the research: from the digital economy to the internet and social media. The second theme explains the micro context of this research and where the phenomenon of TA has been studied. This part of the chapter seeks a definition of services and digital services that suit this research aims and purpose. The chapter also explains the concept of service touch points; it describes how digital services are developed by studying and presenting an overview of the different digital design processes. It seeks a definition of start-ups as hubs for innovation in the digital service realm and as the micro context of this research.

The third theme discusses the importance of user involvement and participatory design approaches to the development of digital services. It introduces in this thesis the idea of levels of user involvement and its relationship with the different type of users. The fourth theme is an attempt to explain the phenomenon of technology appropriation as seen by different authors and from different perspectives. The fifth theme concentrates on explaining design for appropriation in the context of digital development services. The sixth theme focuses on clarifying the researcher definition of awareness, which is important since the concept is a major component of the research question.

Chapter 3 presents a series of methodological areas explored by the researcher, which are all related to tackling the principal research questions of this investigation. The first part describes the chapter’s aims. The second part explains the differences between post-positivism, constructivism, transformative and pragmatism philosophical approaches to inquiry and knowledge creation. These approaches are the knowledge pillars and give order or structure to the world.
The third part of the chapter describes the different methodologies underpinning the umbrella of social constructivism which was considered in undertaking this research. The fourth part describes the philosophical approach supporting this inquiry. It also explains the advantages and disadvantages of each methodological research approach given the core focus and the inquiry set by this research. Moreover, this section explains the choice of qualitative research (within the social constructivist paradigm) as the appropriate methodological approach to answering the research question.

The fifth part of the chapter describes the methods underpinning the umbrella of qualitative research such as narrative, phenomenology, case studies, grounded theory, and ethnography. This section of the chapter ends by concluding the reasons for choosing case study as the method for this research. The sixth and final part of the chapter describes the different tools used to collect and analyse the data, and the reasons behind the selection of instruments. It also describes the effectiveness of the selection of such as tools after using them in the research.

Chapter 4 presents the exploration. It is conducted together with the literature review to find a clear gap in the knowledge and opportunities to further this research. This chapter illustrates and discusses ideas from the literature review and compares it with examples of how user involvement occurs. This study highlights when user involvement currently occurs within the development phases; ten innovation initiatives have been investigated. It also identifies methods, tools, and approaches to which innovators enable and foster user involvement within this process. Additionally, it helps to define the different modes in which end users get involved in this development process.

This chapter explains the exploratory study aims, the methods, and tools used to analyse the data from the transcripts interviews and collect corresponding data. This chapter also reports the results of the data analysis in the shape of enablers to user involvement in the development of innovation initiatives and ends with a discussion that highlights the reasons for choosing an area of users’ involvement in the development of services for
further research. This debate is needed to clarify the different ideas found in this study and the possible paths for further studies.

Chapter 5 explains the construction of a conceptual framework. It begins by integrating knowledge and findings from the exploratory study and the literature review into a framework. This framework contributes to creating a set of key aspects to facilitate the thematic analysis of the pivotal study of the research.

- TA definition

- The TA level theoretical framework composed of three main parts:
  1. The three TA levels hypothesis (in the centre).
  2. The service’s provision, actions and user involvement approaches and their possible relationship with the TA three different levels (on the left).
  3. The modes of user involvement, their activities and types of users and their possible relationship with the TA three distinct levels (on the right).

- The chapter continues with an explanation of the three original TA enabling properties: User Leads, Service Change and Foster TA.

- This chapter ends by explaining the TA awareness which key aspects service providers need to have in the context of the further development of digital services.

The framework also serves as the base for the design of a set of tools that helped to analyse the data of the main study of the research. These tool are first, the TA Awareness thematic analytical tool that will help to understand and evaluate each of these key aspects of the data collected in the pivotal study. And second, the Comparative TA Awareness tables that can contribute to making a comparative analysis between the different participants and produce some research findings. Ultimately this theoretical framework enables understanding of how much service providers know about the phenomenon of TA.
Chapter 6 presents the main study (a development study) of this research. This chapter reports how the study was planned, designed and conducted and how the data were analysed. This chapter is divided into two parts a mapping of examples of TA and the planning and designing of the main study. This chapter reports and presents a mapping exercise that aims to find examples of TA from different sources: the literature reviews and systematic observations.

Chapter 7 reports the first part of the main study findings: this includes a detailed description of five case studies, and a summary of TA evidenced find in the case studies. The outcomes of this study are TA examples and insights into the way service providers perceive and are aware of the TA phenomenon within their services. These are presented through users’ journeys scenarios and personas.

Chapter 8 reports the second part of the findings of the main study: this includes the research outcomes related to the way in which service providers perceive and are aware of the TA phenomenon within their services. This chapter also presents a set of themes and TA enablers that have emerged from the analysis of data: this includes TA Concept, Users and TA and the elements of the service that can be appropriated, and the Readiness of the services to facilitate and foster TA – Facilitating Resources for TA. At the end of the chapter, the results of the content analysis based on the data collected in the main study are presented. It will revise the four key aspects of awareness: service provider user involvement approach, modes of users’ involvement, user action and service impact, and the TA enablers.

Chapter 9 outlines the method to identify TA. This method includes a set of instructions that service providers could follow: First, to find forms of TA within their service. Second, to define what forms of TA would be desirable, based on the service user groups and business objectives. Moreover, third, to show the services how their business moves from ‘what they have’ to ‘what they should have’ about TA. This method has industrial and
practical applications and the potential to have an impact in the real world. This approach could also help as a tool to initiate future research.

Chapter 10 presents the research discussion. The findings of the investigation are critically examined against some theory based on the literature. It also presents what has been learnt from this research project.

Chapter 11 concludes the thesis by presenting the research contribution to knowledge, the limitations of the study, a personal reflection and future studies in the field.
2. Literature Review

This literature review is divided into five themes, as explained in the introduction and the thesis overview. The themes are first the internet & social media technology, second digital services and start-ups, third user involvement and fourth the phenomenon of technology appropriation.

The fields and boundaries of this research:

This research is situated in the intersection (as seen on Figure 1) between the fields of digital services, Interaction Design, Systems Design, Service Design, Business Model Design and Social Sciences. The researcher has reviewed literature in the fields of digital services (Internet and Social Media), Interaction Design, Systems Design, Service Design and Social Sciences. Figure 1 was based on the work of volunteerimpact.co (Rye, 2017).
The development of digital technologies and the internet is having a major impact in the way that people interact and relate to each other. As social media and social technologies evolve, the communication and interaction between individuals, businesses and organisations are changing; it has become horizontal (Youngs, 2013), faster and broader. This global phenomenon is also transforming the services industry and has enabled the development of digital services as an emerging form of services, which are provided through digital platforms and often engages users and customers through social media and social technologies. In digital services, the relationship between the provider and the end user of the service has the potential of being transformed and enhanced, based on some characteristics of the digital platforms. Indeed, as these platforms enable instant interaction and exchange of information at a relatively low cost regardless of location and time, individuals and organisations can engage in new mutually beneficial relationships. These new forms of engagement, can affect not only the user experience of the service, but the way in which services are designed and implemented, possibly affecting the Business Model Design.

2.1 Aims:

- To understand the macro and micro context of this investigation.
- To understand the importance of user involvement in the development of digital services.
- To explain the various definitions of appropriation and technology appropriation and research work conducted before this research.
- To explain what ‘being aware’ means in the context of this study and the importance of this literature review.

2.2 The Internet & Social Media Technology Macro Context

This first part of the chapter discusses themes such as the digital economy as the macro-level context; it also explains how this setting has facilitated a shift in the economy from
a goods-centred dominant logic to an emerging service-centre dominant logic: from products to services. Hence the focus of this research is on services. This part of the chapter also describes the importance of new technological categories deriving from the digital economy: the internet and social media as a micro context for the specific research environment and the development of digital services.

It is widely recognised that a major change has occurred in the economy, the move towards more and more services being provided online. As Negroponte states we are moving from a traditional economy based on industry to a digital economy based on ‘new’ information delivery and communication, we have passed from “an economy based on processing atoms to an economy that is based (sic) on processing bits” (Negroponte, 1995). The Australian government defines digital economy as “the global network of economic and social activities that are enabled by design, services design, human-computer interaction, interaction design, participatory design, user centred platforms such as the Internet, mobile and sensor networks” (DBCDE, 2013).

“The means of production, distribution and exchange have been transformed by the application of information and communication technologies – from the telegraph to the telephone, the internet and broadband IP-enabled networks” (DigEcon, 2011).

The development of the internet and new consumer trends are transforming and leading the world of business and government processes to new wealth creation (IDA, 2012) (Vargo & Lusch, 2004). As such, the digital economy is “triggering a third wave of capitalism that will transform business and government and lead to extraordinary wealth creation” around the world (Oxford-Economics, 2012). This ‘new’ digital economy emerged from the increasing development of social media and mobile communication information technologies, coupled with a widespread adoption of activities such as online shopping, e-banking and content sharing (IDA, 2012).
As a consequence of this change in the economy, a number of on-going conceptual shifts has taken place in business and industry, moving from a traditional goods-centred dominant logic (GDL) to an emerging service-centred dominant logic (SDL) (Vargo & Lusch, 2004). The primary unit of exchange has moved from goods to services, where service is defined as specialised competencies such as knowledge and skills that people can acquire and exchange (Vargo &. The role of goods has been also transformed from being mere end-products to becoming intermediate goods used by customers/users in value-creation processes. Also, the role of the user has moved from being the recipient of produced goods, to being the co-producer of services. Another shift can be seen (Vargo & Lusch, 2004) in whoever determines the meaning of value. This has changed from the producer to the consumer; producers can only make value propositions. Furthermore, the perception of where the value is situated has moved from being embedded in the resources (goods), to be determined by customers as ‘value in use’. Value is the product of the beneficial application of services sometimes transmitted through touch points.

The interaction between services and customers has also shifted, from customers that create transactions with resources to customers as active participants in an exchange relationship and co-production (Vargo & Lusch, 2004). The authors also highlight that the source of economic growth has changed from wealth obtained from surplus tangible resources and goods to wealth obtained through the application and exchange of specialised knowledge and skills; from wealth that derives from owning, controlling, and producing resources to wealth that depends on the right to use those resources in the future. The internet has helped to shape and grow the digital economy, and it hosts the development of social media, its tools and the digital services. David Reed (Professor at MIT) describes the internet as shaped by three conceptual clouds: public, private or semi-private (Reed, 2009).

It seems that the development of social media has dramatically transformed the landscape of human interaction. According to Youngs (2007), human beings are now
living in two different spaces: a geospatial and a social-networked space (Error! Reference source not found.). For some people, there is no clear distinction between the traditional physical, social world and the ‘new’ social (media) network (Gillian Youngs, 2007). Social media (Hagen & Robertson, 2009) has become an important part of people’s lives and have had an impact in how they interact and in the way in which they communicate to each other.

![Figure 2: Geospatial and Social - Networked Space (by the researcher)](image)

**Figure 2 Geospatial and Social – Networked Space (by the researcher)**

It is difficult to classify the boundaries of social media/technology; it cannot only be seen as a new technology category (Hagen & Robertson, 2009) that can be used to create information exchange and communication tools or as a platform (context) that can be found online (house-work computer) and on the move (any mobile device). Other authors Näkki et al., 2008 & Boyd, 2009 have described “social media as social software and as Web 2.0 (O’Reilly, 2005)” (Hagen & Robertson, 2009). This diversity of explanations implies that the nature of social media is still completely undecided, since more and more ways of using them appearing every day. The most commonly understood use is that the development of social media and social technologies and its collection of tools and practices has helped people to managed and maintain their “personal
Despite Social Media being closely related to the concepts of Web 2.0 and user-generated content (UGC), Kaplan & Haenlein (2010) define Social Media as an entirely different concept. They consider Web 2.0 as the platform that allows the evolution of Social Media and see UGC as a concept that describes all the various forms of media publicly available and created by end users. Kaplan & Haenlein describe social media as “a platform to facilitate information exchange between users” (Kaplan & Haenlein, 2010). The authors comment that this definition is closer to the original purpose of the World Wide Web (WWW); hence they see social media as an evolution back to the roots of the internet. Kaplan & Haenlein define Social Media as “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content.”

Social media, digital networks and digital devices have enabled new forms of communication (Tomsen & Faith, 2003). They have allowed/permitted communication between people to move from vertical communication to a combination of vertical and horizontal (Youngs, 2007). Vertical communication (Figure 3) means communication between those on different levels of authority: from government to citizens, manager to employee, etc. Horizontal communication means communication between people on the same level of authority: citizen to citizen, manager to manager, employee to employee, etc. Nevertheless, Kaplan & Haenlein (Kaplan & Haenlein, 2010) attempt to identify six types of social media: Collaborative projects, blogs, content communities, social networking sites, virtual game worlds, and social virtual worlds. This classification builds upon theories of media research (social presence, media richness) and social processes (self-presentation, self-disclosure).
The development of technology and social media tools has facilitated an area where end users, designers and developers can meet and collaborate (Hagen & Robertson, 2009). This makes possible an exchange of information between these participants, and a knock-on effect on user involvement in the design and development of mobile and the interactive web systems and digital services (Hagen & Robertson, 2010a). To understand better how social media can be utilised in digital services, Kietzmann et al.’s (2011) social media framework can serve as a point of reference. This framework is composed of “seven functional building blocks: identity, conversations, sharing, presence, relationships, reputation, and groups”, which are individually distinctive and refer to
specific functional qualities. Accordingly, the potential uses of social media in digital services can be:

- Revealing users’ identity and, therefore, enabling service providers to tailor their service offer to their users.

- Having an ongoing conversational dialogue between service providers and users as a way of establishing user service requirements and obtaining user feedback.

- The enabling share of information so users can become distributors and receivers of content.

- Establishing users’ presence so the service provider can find their level of engagement, and interact with them in a timely manner.

- Creating a relationship to foster meaningful service provider-to-user, and user-to-user interactions.

- Developing trust in the user/service provider rapport and establishing a good provider’s reputation.

- Fostering the creation of communities linked to the provider’s service provision.

Apart from the potential uses that can be given to social media by digital service providers, it is important to identify how this potentiality can be reached and put into service. Kietzmann et al. outline a four-point guideline for the development of a strategy to allow firms’ (e.g. digital service providers’) “monitoring, understanding, and responding to different social media activities”. First, firms should be aware of their ‘social media landscape’, to understand its potential functionality and to monitor how and to what extent competitors are using it. Second, firms need to define a business development strategy that is congruent with the functional potentialities and limitations of social media. Third, firms ought to ‘curate’ the quantity and quality of social media interaction and to establish clear internal guidelines and policies for their online social engagement. Last, firms need to operate within social media in a way that they can keep
up with the speed at which interactions occur and to comprehend timely and react to the challenges emerging from them.

Mustonen (2009) coincides with Kietzmann’s view of the need for business and organisations to take a careful approach to social media, based on planning and active participation. Mustonen explains that current usage of social media in business contexts happens in marketing activities, especially in promotion and advertising. As seen in the Table 1 “the use of social media applications today” (Pg. 29) (Mustonen, 2009) below, gives a detailed specification of the current use of social media applications, identifying four main areas of impact: feedback and information channels, product innovation, advertising and promotion, and education and training.

**TABLE 1 THE USE OF SOCIAL MEDIA APPLICATIONS TODAY (MUSTONEN, 2009)**

<table>
<thead>
<tr>
<th>Forms of Social media</th>
<th>Feedback and information channel</th>
<th>Product innovation</th>
<th>Advertising and promotion</th>
<th>Education and training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blogs</td>
<td>Gives face and voice, creating trust, spreading information</td>
<td>Testing and sending ideas, getting near the customer</td>
<td>Disseminating information, PR and promotion supportive actions</td>
<td></td>
</tr>
<tr>
<td>Discussion forums</td>
<td>Problem-solving, connecting with customers</td>
<td>Gathering information for product innovation</td>
<td>Finding and keeping active customer, building customer relationships</td>
<td>Distance learning interaction</td>
</tr>
<tr>
<td>wikis</td>
<td></td>
<td></td>
<td>Online courses, idea exchange, writing deep texts</td>
<td></td>
</tr>
<tr>
<td>Virtual worlds</td>
<td>Experiments with games, designing</td>
<td>Experiment with games, designing, marketing messages</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Of importance for this study is the role that social media might have in the design and development of service provision in digital services. There is scant literature in this area, but the Finnish researchers Annanperä & Markkula (2010) have examined the role of social media in companies’ communication and service design. These authors explain that user-centred development is essential for a service business and that social media facilitates user innovation in service design and development.
Annanperä & Markkula (ibid) illustrate how social media can be used for external communication with customers, raising customer interest in the company and the brand, encouraging customers to generate and share ideas for new products and services, passing relevant information to existing and potential customers, forming customer-centred online communities, and providing customer service. The authors add that social media can be also used for internal communication between employees, providing platforms for one-to-one or group messaging and meeting, enabling sharing of information, and making available platforms for information storage, updating and consultation. The authors also describe how using social media for company communication brings advantages such as being efficient, as the tools are already available, and the fact that people are already familiar with them. Development, maintenance and training costs are therefore low. Additionally, they provide the possibility of inexpensive and effective data gathering and analysis, especially in relation to the interaction with customers, and enable a faster and wider customer reach than other traditional communication methods.

Annanperä & Markkula (ibid) also explain how social media facilitate user involvement in the development of services in companies. Utilising Alam (2002)’s service development process model, the authors focused on the five of its ten stages deemed to be most relevant for user involvement. The authors identify how users are involved in each of the stages, and how social media can be utilised to underpin such involvement. This work establishes an important reference point for a future understanding of user participation and appropriation in the development of digital services. A summary of this can be seen in Table 2 below: “Usage of social media for customer involvement in service development” (Annanperä & Markkula, 2010, Pg. 417).
TABLE 2 USAGE OF SOCIAL MEDIA FOR CUSTOMER INVOLVEMENT IN SERVICE DEVELOPMENT (ANNANPERA & MARKKULA, 2010)

<table>
<thead>
<tr>
<th>Development Step Customer</th>
<th>Input</th>
<th>Social Media Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idea generation</td>
<td>Customers involved in gathering service requirements, needs, problems, and potential solutions; evaluation of existing services</td>
<td>Company: find suitable customers from online communities. Customers: give input or feedback by discussion in the online community, or answering a questionnaire online; an ideas game.</td>
</tr>
<tr>
<td>Idea refinement</td>
<td>Customers analysing the ideas suggest desired features, reactions to concepts; information on purchase intent</td>
<td>Voting and rating systems on the company’s social media site; questionnaires</td>
</tr>
<tr>
<td>Service and process/system design</td>
<td>Customers suggesting improvements, identifying failing points, observe delivery trial</td>
<td>Discussion in the online community; multimedia content evaluation</td>
</tr>
<tr>
<td>Service testing and pilot run</td>
<td>Customer participates in evaluation of service concepts; testing of service, suggest improvements</td>
<td>Company social media site can be used to find pilot testing groups; gathering feedback from the service</td>
</tr>
<tr>
<td>Test marketing</td>
<td>Customer feedback on marketing plan, satisfaction on marketing and suggestions for improvement</td>
<td>Multimedia content evaluation; idea games for marketing; gathering feedback</td>
</tr>
</tbody>
</table>

2.3 Digital services

Definitions of service that are coming from marketing and business seem to have in common a list of service characteristics denominated as IHIP (Grönroos, 1998, Wild, 2009, Management Study Guide.com, 2012). IHIP is an acronym for: Intangible, Heterogeneous, Inseparable (consumption is inseparable from production) and Perishable. Grönroos (1998) adds another characteristic to the list the ‘intangibility’ the impossibility of keeping services in stock.

Noticeably, definitions coming from different disciplines such as design tend to define service characteristics differently. For example, Vargo & Lusch (2004) describe these characteristics as specialised competencies involving different skills and knowledge. Tomiyama (Tomiyama, 2005) does not include any characteristics in his definition of services, but defines service as various elements such as service provider and service receiver, interacting in a service environment. His service elements can be compared with the elements of the basic model of communication (as seen in Figure 4), in which there is a sender, a medium (as the context) and a receiver (Shannon, 1948)
Another important element identified in some service definitions is the interface that refers to the point of interaction between the different components of the service. These elements can be described as a person (Hill, 1977) or as a good (Stanton, 1981). But only Grönroos (Grönroos, 2000) thinks it is appropriate to mention that the service is in direct interaction with the customer. The meaning of value has changed (highlighted in green in Figure 5) from “with the agreement of the customer” (Hill, 1977) to the value of a service being in its co-creation with the user. The service provider can only create value propositions (Maglio, P.P., Srinivasan, S., Kreulen, J.T., and Spohrer, 2006).

It is noticeable that the concept of interaction is not included in any of the service definitions. However, if the interaction is considered as a two-way effect, then Maglio et al. (2006)’s definition does it. They consider service as a system arguing that they are “value co-creation configurations of people, technology, internal and external service systems connected by value propositions, and share information (such as language, laws, measures and models”. The interaction has passed from being a mere action directed at
the customer (Grönroos, 2000) to being an exchange of information between the user and the service provider (Maglio, P.P., Srinivasan, S., Kreulen, J.T., and Spohrer, 2006). The shift has not been only from a product-based economy to one based on services, but to one which specifically focuses on digital services (Williams et al., 2008). This is important and relevant for this research since the focus of interest is the further development of web and mobile interactions. If the web and mobile interactions (W&M) are the focus of how a service is delivered can be said that the service is a digital service.

It is quite difficult to define digital services as they are an emerging discipline in the design landscape (Williams et al., 2008). This is even more complicated as new forms of digital services are being invented for existing business processes, and new forms of organisational processes and practices are emerging as a result of experimenting with the internet and ubiquitous computing technologies (Lyytinen et al., 2004).

Williams at al. (2008) define digital services as “services, which are obtained and/or arranged through a digital transaction (information, software modules, or consumer goods) over Internet Protocol (IP). Digital service is ‘an activity or benefit that one party can give to another that is, provided through a digital transaction.’”

As with standard services, three entities form the digital services, as can be seen in Figure 5. The digital service provider (DSP) offers the service or activity. Kristensson et al. (2008) refer to the service provider as a technology-based service company (Kristensson, Matthing, & Johansson, 2008). The second entity and the receiver of the activity or benefit is the digital service user or end user (U or EU). And the third party is the service provided, in this case, the digital service (DS).
2.3.1 Services Vs Digital Services

Digital services seem to have characteristics that make them unique and different from another type of services. First, to be a digital service, the service should be delivered using a digital method and/or a digital platform, at least for a portion of the interaction. Williams et al. explain this by saying: “For example, the Amazon.com website represents a digital service that often includes the delivery of a physical product such as a book, but is still in many ways distinctly different from a physical bookstore. This interaction, however, is fast changing as Amazon.com now offers a host of e-books that are digital entities” (Williams et al., 2008).

The users to be connected to other human beings, need aid from computer technology such as mobile devices and use the infrastructure of the internet to be the recipient of a
digital service. Because of this a different kind of interaction arises between human beings and the computer technology in use. This interaction does not exist in normal services.

“Instant access and limitless information results in the user adoption of new integrated services” (Tomsen & Faith, 2003).

The different appreciation of tangibility is the second aspect that makes digital services different from a normal service. Tangibility is a characteristic that considers tangibles as hard assets in an organisation. Basically, everything that can be perceived by the sense of touch is a hard asset and has a financial representation in the organisation. Traditionally services as intangibles have not been represented as assets in an organisation. Another difference between services and digital services is that intangible assets can now be represented in the financial system of an organisation (Steward, 1997).

The utility model of service is when a utility company “provides water or natural gas in a community (are) referred to as the ‘water service’ or ‘gas service’ but the service consists of a physical product for which the utility company performs a coordination and delivery of the supply for example water or natural gas” (Williams et al., 2008). As Williams at al. explain, there is a similarity between the utility model of services and the ‘digital service’ since both can be services that coordinate and deliver something physical (Williams et al., 2008).

Another difference between services and digital services is related to the idea of ownership. “Ownership indicates possession, but for a digital artefact, the physical possession might not be the same as having full control. Now digital rights and ownership rights have blurred somewhat, making it difficult to know with certainty who owns what and where the rights of one party stop and the others begin.” In digital services (samples can be seen in Table 3), the notion of ownership become unclear and cannot be understood in the same terms as it would be with physical or digital goods.
Services like Flickr that crowdsource its contents has partnered with Creative Commons to deal with copyright licenses.

**Table 3 Sample list of digital service providers (Williams et al., 2008)**

<table>
<thead>
<tr>
<th>Service name</th>
<th>Brief description</th>
<th>Approximate number of users, sales, or measure of size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon.com</td>
<td>Online commerce vendor selling books, CDs, DVDs, and electronics</td>
<td>Sales of $12.2 billion</td>
</tr>
<tr>
<td>Ebay.com</td>
<td>International person to person auction site, with products, sorted into categories</td>
<td>Sales of $6.8 billion</td>
</tr>
<tr>
<td>Apple.com/ITunes</td>
<td>Website for purchase of music and video supporting iTunes software</td>
<td>Over 3 billion songs sold and has become the third largest music retailer in the U.S. (Apple.com, 2007)</td>
</tr>
<tr>
<td>Salesforce.com</td>
<td>Provides on-demand customer relationship management (CRM) software services to help companies with global customer communication</td>
<td>Over 900,000 paying subscribers (Salesforce.com, 2007b)</td>
</tr>
<tr>
<td>Myspace.com</td>
<td>Social networking site</td>
<td>70 million active monthly users (NewsCorp, 2007)</td>
</tr>
<tr>
<td>YouTube.com</td>
<td>Video sharing website</td>
<td>Fourth most visited website on the internet</td>
</tr>
<tr>
<td>Expedia.com</td>
<td>Travel products and services</td>
<td>Sales of $2.3 billion</td>
</tr>
<tr>
<td>Facebook.com</td>
<td>Social networking site</td>
<td>Over 15 million active users (Fast Company Staff, 2007)</td>
</tr>
<tr>
<td>Wikipedia.com</td>
<td>Collaborative Encyclopaedia</td>
<td>Among the top 10 visited websites</td>
</tr>
<tr>
<td>Secondlife.com</td>
<td>Provides an online society within a 3D world, where users can explore, build, socialise, and participate in their own economy</td>
<td>Over 11 million residents (Secondlife.com, 2007)</td>
</tr>
<tr>
<td>Craigslist.org</td>
<td>Centralized network of locally organized online communities offering free classified advertisements</td>
<td>More than 5 billion page views per month and 75 million users posting per month (Craigslist.org, 2007)</td>
</tr>
<tr>
<td>Worldofwarcraft.com</td>
<td>Online role-playing game</td>
<td>Over 8.5 million paying online subscribers (Snow, 2007)</td>
</tr>
</tbody>
</table>

**2.3.2 Digital Services Taxonomy**

Attempting to establish a classification or taxonomy of digital services could become a quite complex task. It can start from international and national standardisations; from the nature of the business whether it is business to business (B2B) and business to the user, or from the mode of delivery. They can also be classified by offer and demand, the type of service that delivers, the type of product from tangible products to intangible and digital ‘artefacts’, or simple actions and the exchange of different competences and knowledge.

Weber & Burri (2012) were commissioned by the European Union to help the Vietnamese government with a proposed classification of services in the
information/digital economy. In this study, they show that there are several international bodies and organisations that have generated different types of classifications of services depending on the different objectives that the organisations have. The General Agreement on Trade in Services (GATS) drafted a classification scheme for services in 1990. There are twelve main sectors and types of services in the W/120 as can be seen in the Table 4 below. The last sector of the list is ‘other services not included elsewhere’ which is a way to open the space for businesses and services that cannot be classified in the other categories. The authors comment that ‘as a consequence, new services fall more and more into the category of “other services” leading to a very large and not very coherent services category’ (Weber, R. H., & Burri, 2012)

**Table 4 Overview of classification in the W/120 List**

<table>
<thead>
<tr>
<th>Service Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business services</td>
</tr>
<tr>
<td>Communication services</td>
</tr>
<tr>
<td>Construction and related services</td>
</tr>
<tr>
<td>Distribution services</td>
</tr>
<tr>
<td>Educational services</td>
</tr>
<tr>
<td>Environmental services</td>
</tr>
<tr>
<td>Financial services</td>
</tr>
<tr>
<td>Health-related and social services</td>
</tr>
<tr>
<td>Tourism and travel-related services</td>
</tr>
<tr>
<td>Recreational, cultural and sporting services</td>
</tr>
<tr>
<td>Transportation services</td>
</tr>
<tr>
<td>Other services not included elsewhere</td>
</tr>
</tbody>
</table>

Since the GATS agreement, the rapid developments in information and communication technologies (ICT) together with their multitude of applications have reached every economic and societal norm (Weber & Burri, 2012). This has made the task of classifying
and cluster digital services rather difficult. Other classification of services including the OECD-Eurostat Trade in Services Classification that classifies digital services by trades. The ICT social dimension, including ‘new or modified means of personal communication and interaction’, has influenced new modes of individual behaviour and has generated digital products, video-on-demand, social networks and internet telephone-type services (Weber & Burri, 2012). These different ways of classifying services and digital services exemplify and demonstrate that it is very difficult to find a consensus of services classification. Moreover, the international bodies’ classifications of ICT and digital services are perhaps not the most relevant way of classifying digital services since very little can be drawn from this kind of classification.

There are other authors that have attempted to create digital services, taxonomies for example. Tate et al. (2014) in their quest for a clearer ‘research approach for reconceptualising digital services and service quality’ propose various taxonomies of digital services. The first proposition for a classification is based on the various services definitions and discipline related approaches: “Traditional” Services Marketing definitions, Service as general perspective on business, Service as Process and Outcome, Service as Temporary ownership, Hybrid and bundled services, and Co-created services.

The second proposition of a classification of digital services from Tate et al. (2014) is based on their classification of service over quality. Quality is defined as “the discrepancy between consumers’ perceptions of services offered by a firm and their expectations about firms offering such services” (Zeithaml, Berry, & Parasuraman, 1996). This classification includes: Understanding the customer role in co-creation of digital service quality, Understanding the role of cognitive dissonance in perceived digital service quality, Understanding the role of self-efficacy in perceived digital service quality, Understanding the role of community engagement and the network effect in perceived digital service quality, Understanding the role of habit in perceived digital service quality, and Understanding quality perceptions in bundled and customer compliant services.
Tate et al. (2014) proposes that a more refined digital service classification can be based on the life-cycles and value drivers of the service. The phases they describe in the value-chain or life-cycle are “strategy, design, transition (from design to operation), operation and continuous improvement”. The authors address the problem that each “new forms of digital services may have different lifecycles and value drivers” but these “offer opportunities for re-evaluating the service value chain”. While the Tate et al. (2014) classifications equipped this research with multiple options and very useful information that can help to clarify the view of digital services, they do not fit entirely with the purpose of a taxonomy that contemplates user appropriation.

2.3.3 Digital Touch Points

A fundamental aspect of the design of services is the development of touch points (TPs, TP) and interactions (Polaine, Lovlie, & Reason, 2013). Products that traditionally existed as single tangible entities are now a combination of tangible and intangible elements, existing as components of a system (Polaine et al., 2013). TPs are the key elements that generates the main interaction and communication between the user and the system. If the TP is adequately designed, it should provide a window of access to the system by the consumer and can be used by the provider to get customer feedback (Howard, 2007).

There are systems and services such as the social internet sites and mobile applications that allow users to feedback ideas to the service developers/providers. In turn, these developers/providers use this feedback to improve services and products. Indeed, TPs have also been identified as a developed design tools which allows the user to interact with a service. These tools facilitate communication and exchange of information between users and the service provider. TPs are elements that provide customers (users) with options and choices (Choy, 2008). Since there are three ways to deliver a service to the user, Product, Web & Mobile, and People Interactions it is important to define them and clarify the differences. The delivery of the service relies on the interactions generated
by the relationship between end users and TPs. These interactions can be human TPs or non-human TPs (Polaine et al., 2013). While the human TPs are people, the non-human TPs can be physical products (electronic devices, printed material, etc.) or the web and mobile interactions (W&M).

Tomsen & Faith (Tomsen & Faith, 2003) go beyond the definition of TPs and discuss the relationship between devices, services, and applications in a digital service they call Integrated Service (IS). An ‘integrated service’ is a service composed of an interactive product and a service component, which is combined into a single package for the user. Integrated services consist of the following three components, as can be seen in Figure 6: devices, networks and applications. “Each of the three components has different technologies and business models. Each component provides value to the user in a way that would be difficult to achieve independently” (Tomsen & Faith, 2003). These differences in business model can be seen for example in a mobile phone device with internet access and another without.

![Figure 6 Integrated Service Tiers by the Researcher based on Tomsen & Faith (2003)](image-url)
2.3.4 Digital Design Processes

There are currently two competing views on how technology is designed and developed (Table 5). The traditional one is based on Royce’s original Waterfall model (Royce, 1970a) and consists of two main phases: design time and use time. The design process occurs only during the design time and does not include user involvement. The second model is called Agile, and it does include the user input and strives for a unified model for user input (Maalej, 2009). This is a development technology method based on iterative and incremental development. Its basic stages are user needs studies, prototype demonstration, bug reporting, and enhancement requests (in a “perpetual beta” development style).

While the Waterfall model supports the idea that technology (software) developers should be aware of user needs at the start of every new development, The Agile model has a user-centred design focus, proposing a deeper understanding of the users, and a higher level of user participation in some stages of the development process (for example in the beta stage). The agile model is composed of iterative cycles that incorporate end users’ feedback, ideas and observations to develop or transform digital artefacts. Ardito et al. gear to identify other versions of the agile model, where user involvement increases, and the design time slowly dissolves into use time. The authors found that end users without great knowledge of programming wanted to manipulate and tailor objects in their software environments to create new configurations and designs. From this, Ardito et al. propose a ‘new’ design process: meta-design. Table 5 shows a comparison between the different digital design processes including an attempt to describe Ardito’s meta-design as a process that describes a cycle in which end users have a more active role in the overall software design and development and includes iterative loops of user feedback and design activity during both the design and design in use stages. Furthermore, this proposed process eventually merges the two ‘traditional stages’
(design time and user time) into one single ‘design in use’ stage as a continuum and lifelong process.

The ‘Design in use’ process includes “practices of interpretation, appropriation, assembly, tailoring and further development” occurring during the ‘use’ stage, and imply the ‘incompleteness” of technical artefacts and the need for “continual adaptation and further development” (Dittrich, Eriksén, & Hansson, 2002).

**Table 5 Design Process by the Researcher Based on Literature**

<table>
<thead>
<tr>
<th>Design Process by the Researcher Based on Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional</strong></td>
</tr>
<tr>
<td><strong>(Maalej, 2009)</strong></td>
</tr>
<tr>
<td><strong>UCD (Ardito et al., 2010)</strong></td>
</tr>
<tr>
<td><strong>Meta Design (Ardito et al., 2010)</strong></td>
</tr>
</tbody>
</table>

It seems that the involvement of users in the development of technology plays an important role. In fact, authors have outlined user participation in the development of technology. For example, (Mumford, 2003) refers to the development of technology systems outlining three modes in which people can be organised to enable participation, characterising specifics types of it:
-Consultative participation: In this form of participation, participants give their views to decision makers, who take these into consideration when decisions are made.

-Representative participation: This form of participation involves the transference of influence or decision making to a nominated intermediary. In this type of participation, representation fairness, selection processes and representation spread seem to be important for effectiveness.

-Consensus participation: In this form of participation all parts involved take part in the decision-making process, sometimes exerting influence and sometimes taking final decisions.

In contrast, Eason & Damodaran (Damodaran, 1996) reflect on the mismatch of human need and the provision offered by technology. By using computing systems as an example, the authors say that this kind of mismatch is overcome by people “adapting” their behaviour to the technology, but sometimes this is not enough, and the mismatch can produce undesired and negative consequences. User response to mismatch is varied. People can ‘disuse’ the technology, or can make partial use of it, leaving aside those features of the system (regardless of their potential value) that are perceived as more useful, easier to understand, or accessible. Some other times users can adopt a distant use when the technology offers a high-value service but requires much time and effort. In this case, another person - a human interface - is employed to use the technology on behalf of the user. Also, when the adoption of a human interface is not possible, users might decide short-cutting or “bending” the system, adopting practices of misuse or abuse of the system.

Dittrich’s and Eason & Damoradan’s processes can be integrated into a single model that represents two main stages of technology development about user involvement (Figure 7). The first stage refers to user involvement in the design development, and the second to user involvement in design in use. The second stage includes all variations of use
proposed by Eason & Damoradan and adds one more, in which users’ appropriate technology by making creative use of it.

\[\text{Figure 7 System Development / System Use (by researcher based on Damodaran, 1996)}\]

2.3.5 Start-ups

Start-ups are recently created companies which “are in a phase of development and research for markets” Wikipedia (2014). They can be either bottom-up or top-down initiatives. This distinction depends on the amount of investment that has been made on the company, on the attention that a bigger company may pay to the small initiative company, or on the interest that a bigger company has in finding new markets or in the development of ‘new’ technologies (Rachleff, 2013).

Innovation and uncertainty seem to be important elements that characterise start-up companies. Neil Blumenthal, co-founder and co-CEO of Warby Parker refers to a start-up as a company that is trying to solve a problem when “the solution is not obvious, and
success is not guaranteed” (Robehmed, 2013). Most companies, unless they have a great investment from a parent company, are start-ups at the beginning.

The term start-up became very popular during the dot-com bubble time around 1997–2000 since it refers to companies that develop products or services related to technology or new technologies (Rachleff, 2013). In this context, Moore (Moore, 2007)’s technology adoption lifecycle is a model worth considering when attempting to outline a development process for start-ups. Moore’s widely known model (Figure 8) describes the reception that users/customers give to new technologies, and groups them in relation to their technology adoption’s behaviour. So, in this way, Moore identifies the Innovators, which are end users that are interested and try the ‘new’ products/services in a very early stage. They are followed by the Visionaries, who are “early adopters willing to take a chance on a new product if it solves a burning problem” (Rachleff, 2013). The largest market segment are people that adopt early. Moore calls the people who adopt late the Pragmatists, who are people who buy the product after other people have recommended it. Moore identifies one last category of users: The Laggards, who are those who never buy.

The size of a business and its market might be of importance in defining whether a company is a start-up or not. For example, digital services such as Facebook, Amazon, eBay, LinkedIn, which were initially small and considered as start-ups, can now hardly be described as such, in view of the current sheer size of their operation. At their onset, these companies focused on offering just one kind of functionality associated with their product or service. But with time, these businesses evolved and added more functionalities to the services and products to “address [] a broader audience” (Rachleff, 2013) and became the big companies they are today.
There is little evidence in the literature of attempts to identify development stages for start-ups. However, it is possible to assume that the first stage of a start-up occurs if an enterprise initiative has some of these characteristics:

- It has little or no investment.
- It is initiated by one a few people,
- It is trying to develop a product or service based on technology
- It is a mash-up that uses content from more than one source to create a single new digital service
- It pursues the development of a new digital service business model

When most of these characteristics happen simultaneously, it is a 100% start-up as seen in Figure 9. This Figure 9 was created to show that when the start-ups evolve, the start-up characteristics progressively fade away, either because the company grows (by receiving investment, augmenting the size of its markets or by increasing the size of its operation), or because it achieves its goal of developing and selling its products or services. At that point, the company ceases to be a start-up, or becomes a 0% start-up.
This evolving process can be superimposed on Moore's model of the technology adoption lifecycle to illustrate the beginning and end of a digital service start-up company.

**Figure 9 Research Context: Start-ups from 100% to 0% (by the researcher based on Moore, 1991)**

The start-up development phases (Figure 10) are an infographic tool created by Valto Loikkanen in 2013 to be freely shared and to understand the start-up companies’ journeys. This tool identifies the most relevant stages of the development of start-ups and gives an overall perspective of what is needed to create and build a start-up (Start-up Commons Organisation, 2013).

The research focuses on companies that are in the stage where early adopters (end users) are using the service, or on start-ups that are in the process of expanding into a bigger segment of the market. The research aims to identify user appropriation within the stages
of evolution of a start-up company, from its beginnings until its last stages before it ceases to be a 0% start-up.

This research focuses on bottom-up initiatives and recent or new ventures by digital service companies that are developing a new business model (Rachlef, 2013) and/or a new use for technology such as social networking, applications, software development, electronic artefacts, or a new mashup digital service.

![Start-Up Development Phases](image)

**Figure 10** Start-Up Development Phases *(Start-Up Commons Organisation, 2013)*

### 2.4 User Involvement in the Digital Service Development Process

#### 2.4.1 User-centred design within IT systems design and service design

The participation of users and designers/developers in social technologies is challenging traditional roles in the design and development of the web and mobile interactive systems and digital services. As exchange of information between user and designer is
made possible through digital and social media, their roles have become interwoven, being both users and developers/designers at the same time.

Among the several differences between goods-dominant and service-dominant logics (Vargo & Lusch, 2004), the shift in the user’s role is the most significant for this research. The role of users has changed. They are no longer mere observers or recipients of goods. They have become active participants in the various stages of product, service and interactive systems development. Users are more active, participant and knowledgeable (Rodriguez & Lockley, 2012), and they can be engaged as co-producers of the service (Wild, 2009) in the development of interactive systems and digital services.

A prosumer is more than a proactive consumer. As Toffler’s future vision becomes a reality, the roles of producers and end users begin to blur and merge (Toffler, 1980); customers (users) become ‘prosumers’ when they help in the development/design of goods, systems and services rather than simply consuming the end product (Don Tapscott & Anthony, 2009). End users have been taking the role of producers as well as consumers. Figure 11 shows that users can be classified on a scale of passive, active and prosumer in relation to their level of involvement in the development of digital services, as will be further explained later.

In his book The Third Wave (Toffler, 1980), futurologist Alvin Toffler presents a vision of the future in which producers mass-produce highly customised products in order to
satisfy consumer demand. He uses the term ‘prosumer’, predicting that the role of producers and consumers would begin to blur and merge. The concept of prosumer is reintroduced in the book the Digital Economy (Tapscott, 1996). Tapscott explains that customers can become "prosumers" when they help in the development/design of goods and services rather than simply consuming the end product. This development happens in an exchange of ideas, as a process of co-creation.

The term prosumer has been used for some decades, but has only recently begun to receive full theoretical elaboration due to a widely cited article by George Ritzer and Nathan Jurgenson. They claim that even though prosumption was not invented by them on Web 2.0 it has become a salient characteristic. Perhaps the generalised use of the internet to connect people and do business has made possible the development of consumers into prosumers. As Ritzer and Jurgenson point out, “social media and user-generated content websites have facilitated prosumption” (Ritzer & Jurgenson, 2010a).

Table 6 shows some digital services in which user actions can be interpreted as examples of prosumption (Ritzer & Jurgenson, 2010b).

Ardito et al. (2010) argue that users are no longer passive customers of computer tools but have a more active role in the development of information and software ‘artefact’ producers. They also proposed a distinction between users and end users. They defined users as people interacting with software systems, including software engineers as users. On the other hand, end users are defined as people that are “not experts in computer science or willing to be those who use computer systems for their daily activities and work, as well as for entertainment”.
### Table 6: Examples of Prosumption in Digital Services from Ritzer & Jurgenson (2010)

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wikipedia</td>
<td>Users generate articles and continually edit, update, and comment</td>
</tr>
<tr>
<td>Facebook, MySpace, and social networking websites</td>
<td>Users create profiles composed of videos, photos, and text, interact with one another, and build communities</td>
</tr>
<tr>
<td>Second Life</td>
<td>Users create the characters, communities, and the entire virtual environment</td>
</tr>
<tr>
<td>The blogosphere, blogs (Web logs), microblogging (Twitter)</td>
<td>The comments on them produced by those who consume them.</td>
</tr>
<tr>
<td>eBay 8 and craigslist</td>
<td>Consumers (along with retailers) create the market</td>
</tr>
<tr>
<td>YouTube and Flickr</td>
<td>Mostly amateurs upload and download videos and photographs</td>
</tr>
<tr>
<td>Current TV</td>
<td>Viewers create much of the programming, submit it via the internet, and decide which submissions are aired</td>
</tr>
<tr>
<td>Linux</td>
<td>A free, collaboratively-built, open-source operating system</td>
</tr>
<tr>
<td>Mozilla Firefox</td>
<td>Open-source software applications that are created and maintained by those who use them</td>
</tr>
<tr>
<td>Amazon.com</td>
<td>Consumers do all the work involved in ordering products and writing the reviews. Also, the users' buying habits and site navigation are monitored to recommend other products.</td>
</tr>
<tr>
<td>Yelp!</td>
<td>Users create an online city guide by ranking, reviewing and discussing various locations and activities in their area.</td>
</tr>
<tr>
<td>The GeoWeb</td>
<td>Consists of online maps where, increasingly, users are creating and augmenting content with Google, Microsoft, and Yahoo tools. Google Maps users, for example, can fix errors; add the locations of businesses; upload photos; link Wikipedia articles to, and blog about their experiences with, or reviews of, places on the map, thereby creating social communities. Additionally, new 'location awareness' tools, often used in conjunction with 'smart' cell phones with GPS technology, allow users to track where they are at any given moment and upload this information to websites such as Facebook, Twitter or one's blog. Some examples include Google Latitude, Yahoo's Fire Eagle and the Loop mobile phone application.</td>
</tr>
</tbody>
</table>

#### 2.4.2 Levels of User Involvement and different type of users

The proximity of users to the interactive system (IS) increasingly exposes users to the possibility of altering and transforming the IS. The most frequent and studied actions range from customisation to changing software functionalities. The range of type of user goes from passive to designers and software engineers (as can be seen in Figure 12). End users use simple customisation activities to adapt the software environment to their habits. These changes include colours, selecting or creating toolbars to be visualised, selecting items to be shown on a toolbar, etc. The second level is end users who write commands and instructions (macros) to automate some repetitive operations in spreadsheets. The third level is end users who can develop web applications or websites...
with some level of HTML. In level four are developers, who use domain-specific languages. Level five consists of data-intensive researchers who intensively manage stored data and create computer programs. They are professional software developers.

**Figure 12 Levels of User Involvement & Different Type of Users (By the researcher based on ideas from Ardito et al., 2010)**

Ardito et al. highlighted two activities that the different levels of end users perform to create or modify a software artefact. The first one is parameterisation (as can be seen in Figure 13), or customisation or personalisation, referring “to activities that allow users to choose among alternative behaviours (or presentations or interaction mechanisms) already available in the application by setting some parameters”. The second action is tailoring, which “includes all activities that imply some programming in any programming paradigm, thus creating or modifying a software artefact”.
2.4.3 User Involvement in the design process of digital services

To understand end user involvement in the development of digital services, it is important to explain the different ways in which the user participates in the design and development of digital services. It is also essential to identify how end user involvement occurs in the different stages of the design process and to outline the level of user engagement in the different stages of the design process.

This research will draw on the study made by Hagen & Robertson (2009) and on the ideas from the work of Ardito et al., (2010) to explain the different ways in which the user can participate in the design and development of digital services. Hagen & Robertson establish four high-level perspectives/trends in current design practice that are emerging because of the participatory nature of social technologies and set them as categories. The four categories are divided into two groups of two (Table 7). In the categories Iterate It and Emerge It, social technologies are the subject of design. In the other two categories, Source it and Open it, social technologies are tools for design (Hagen & Robertson, 2010a).
**Iterate It:** Participation in design takes place when people from the community of users generate feedback after a digital service (system) has been released. The user can request/give some ideas for changes to the service. Changes may occur in response to these users’ requests or because developers/designers observe how users appropriate or interact with the technology. The role of users shifts from passive to ‘co-developer’, and systems are treated as services, not products. The participative design is intended and planned as a methodology to design iterations using methods such as beta releases or even perpetual beta (O’Reilly, 2005). Other online and formal feedback channels such as forums, Twitter accounts, etc. will be in place.

**Emerge It:** This category is also inspired by the philosophy of rapid development and patchwork prototyping but focuses on the use of experimental prototypes as the starting point for exploring potential practices and uses. Design phases are blended into the implementation phases, and the existing software can be re-purposed to create ‘concrete interventions’ that could be co-evolved (Hagen & Robertson, 2009). End users, described by Ardito et al. as developers, come into this category. It is not yet clear if end users without programming knowledge can take part in the co-evolution of these digital tools.

**Source It:** Another way to describe this approach is crowdsourcing. This is the best example of public involvement in design ideation and innovation. This is a good example of an open innovation business model that encourages companies to tap into user-driven innovation. It promotes co-design or co-creation with users. The user gets involved because he/she is interested in this activity or has a personal need and genuinely wants to contribute to the development of the tools.
**TABLE 7 DESIGN PARTICIPATION CATEGORIES - TABLE BY THE RESEARCHER BASED ON HAGEN & ROBERSON (2009)**

<table>
<thead>
<tr>
<th>Social technologies as the subject for design</th>
<th>Design is iterated through participation in use</th>
<th>Design emerges through participation</th>
<th>Source It</th>
<th>Open It</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iterate It</td>
<td>The software is released and iterated based on implicit and explicit feedback.</td>
<td>Seed prototypes are released to enable community co-evolution through use and feedback.</td>
<td>Initial design is outsourced to members of the public</td>
<td>Community participates throughout design</td>
</tr>
<tr>
<td>Social technologies as a design tool</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source It</td>
<td>Social technologies support the (out)sourcing of design ideas from members of the public; user-contributed ideas can form the basis of design.</td>
<td>T-shirt’s, sold by the company threadless.com, are designed by members of the public.</td>
<td>Redesignme.com and WEPC are corporate versions that encourage design contributions from members of the public.</td>
<td>SOMED (Social media in the crossroads of physical, digital and virtual worlds) is a Finnish research project that has identified the potential to use social media to support open and distributed forms of participation in design (Näkki and Virtanen, 2007).</td>
</tr>
<tr>
<td>Open It</td>
<td>Social technologies are used to open up the traditional UCD design process, allowing a form of community design as users contribute design ideas and feedback at various stages</td>
<td>The community redesign of drupal.org (the website representing open-source content management system Drupal) undertaken last year was a radical example of opening up the design process through the use of social technologies (Boulton, 2008). Boulton and Reichelt were contracted as designers to lead and facilitate the process; however, the design itself needed to be open in keeping with the community ethos. Boulton and Reichelt worked with the community, experimenting with different ways to create an open design process.</td>
<td>The software is released and iterated based on implicit and explicit feedback.</td>
<td>For example Their online lab, Owela, makes use of various social media tools to enable participation in different phases of design (Näkki et al., 2008).</td>
</tr>
<tr>
<td>Summary of design participation categories - Table based on Hagen &amp; Robertson (2009)</td>
<td><strong>Myspace (Boyd, 2007b)</strong></td>
<td><strong>Digg (Burka, 2008)</strong></td>
<td><strong>Netflix (Porter, 2006)</strong></td>
<td><strong>Slideshare (Sinha, 2007)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>T-shirt’s, sold by the company threadless.com,</strong> are designed by members of the public.</td>
<td><strong>Redesignme.com and WEPC are corporate versions that encourage design contributions from members of the public.</strong></td>
<td><strong>Doritos and Converse have taken a similar approach leveraging the popularity of user-generated video by having members of the public create product commercials (Howe, 2008).</strong></td>
<td><strong>The community redesign of drupal.org (the website representing open-source content management system Drupal) undertaken last year was a radical example of opening up the design process through the use of social technologies (Boulton, 2008). Boulton and Reichelt were contracted as designers to lead and facilitate the process; however, the design itself needed to be open in keeping with the community ethos. Boulton and Reichelt worked with the community, experimenting with different ways to create an open design process.</strong></td>
</tr>
</tbody>
</table>
Open It: This approach emphasises the appropriation of social media to open up the
traditional UCD process to the community. “Members of the public are invited to
participate in and contribute to the design, discussion, decision-making and evaluation”
(Hagen & Robertson, 2009). Designers as facilitators invite members of a community to
a series of exercises or workshops using design tools to help the community to generate
and design ideas that will help re-shape some issues in the community.

2.5 The Phenomenon of Technology Appropriation

Adjacent fields with respect to the area of technology appropriation: There
are some adjacent fields with respect to the area of technology appropriation: innovation
management, technology transfer, and user-centred design. The following summarise
the position of technology appropriation with respect to these fields:

Innovation management is a set of tools that allows organisations to bring creativity
from every individual (worker) and level within the organisation (Lee, 2016). It facilitates
the cooperation and understanding between managers and engineers. TA could be an
important part of this cooperation since it identifies and highlights how every individual
worker adapts and adopts technology within an organisation, and this information can
be used to improve the company internal provision and could affect or impact the outside
company provision too.

Technology transfer is a process of disseminating and distributing the technology
developed and originated by ingroups within organisations from its origin to a wider
audience (Grosse, 1996). This dissemination can occur in different axes: “among
universities, from universities to businesses, from large businesses to smaller ones, from
governments to businesses, across borders, both formally and informally, and both
openly and surreptitiously” (Ibid). This process is related to TA since both service
providers and users are exchanging and transferring different type of knowledge related
to the social media and internet technologies. The service provider could transfer the
technology knowledge when leaves the API’s open for users to manipulate it. The users
can share the way their unique form of appropriating the technology to help to improve the service.

**User-centred design (UCD)** is a framework process and a design philosophy (a big umbrella) (W3C, 2004). UCD tries to optimise the product around how users can, want, or need to use the product, rather than forcing the users to change their behaviour to accommodate the product. User centred design and TA are different things that are interrelated, since TA is not a process is an action. It refers at how users adapt and adopt these services and products to satisfy their needs. Understanding how users adapt and adopt services (TA) can be part of the UCD process.

**What do we know about TA?** The concept of appropriation in information and communication technology (ICT) has been widely explored. Research on appropriation in different contexts such as the area of technology by Degele (1997), mobile technology by Wiredu (2007), IT systems by Jaspersen et al (1999), component-based software development by Jones & Twidale (Jones & Twidale, 2005), and online and collaborative digital environments by Bossen & Dalsgaard (2005), all serves to illustrate some technology appropriation definitions that are useful in constructing a definition of technology appropriation in digital services that could suit this research.

Degele (1997) defines appropriation by examining the way in which people use technology in a creative manner. The author explains that **creative appropriation** of technology occurs on two levels, “at the micro-level as a technical one, at the macro-level as a social one” (Pg.90). Degele uses expert systems as an example of technology, explaining that their modular nature and flexibility allow for uses beyond of what they were intended to do, as those systems have no defined rules of usage and “force the user to shape, to invent and to create the use” (Pg.90). At the micro-level users’ appropriate expert systems by creatively adopting and adapting them to their needs. At a macro-level, managers evaluate user’s appropriation and feed this evaluation to developers for further
improvement of the expert systems. In this way, users’ use of and creative appropriation of technology can help in the development of services.

Wiredu (2007) constructs an idea of **appropriation in reference to the use of mobile technology**. He sees appropriation as the transition from using mobile devices (such as PDAs) for organisational purposes, to using them for personal purposes (Figure 14). He describes it as a process of “personalization (appropriation to serve personal motives)” (Pg. 114). Wiredu sees the need for such transition as a technology shortfall, and imagines a state of “absolute appropriation” where technology is “appropriable in both personal and organisational contexts” (Pg. 123).

Jasperson et al. (1999) examine the **appropriation moves of individuals using IT systems**. The authors underpin their analysis on the premises that “social influence enters into individuals’ IT use behaviours through appropriation moves” (p.113); such moves are individual actions which respond to peer social influence. Drawing on several authors, Jasperson et al. explain that “individual’s use of complex workflow technologies is influenced by three main factors: their IT beliefs [], their IT knowledge [], and their ability to reconceptualise (sic) their work processes to facilitate the absorption of IT into process activities []” (Pg. 113-114).

![Figure 14 Appropriation in Reference to the Use of Mobile Technology from Wiredu (2007) Pg. 123](image)

Jasperson et al. argue that individuals use their own knowledge and that of their institutions and social circles to make sense and to assign meaning to the technology they
deal with while working. The authors suggest that the processes of “interpreting a
technology’s value and manner of use” based on personal, social and institutional “…scripts, meanings and information about technology” are called appropriation moves.
They identify three types of appropriation moves:

- **Conformance appropriation moves** refer to tacit rules and expectations about appropriate behaviours of IT use. These moves “describe voluntary decisions and actions by individuals to observe the IT use norms of their social circles” (Pg. 114). Conformance appropriation moves seek to increase individuals’ affiliation to social circles. These types of moves affect individual behaviour but do not necessarily change individual IT beliefs, knowledge or conceptualisation of work processes.

- **Imitation appropriation moves** refer to “voluntary decisions made by individuals to learn from the actions of their social peers” (Pg.114). Individuals undertake these moves as a strategy to improve their work by imitating behaviours that they regard as successful in achieving individual and organisational work. Imitation appropriation moves affect individuals’ behaviour, have an impact on their IT beliefs and knowledge (only in the long term), and lead to an individual reconceptualization of work processes.

- **Mutual discovery appropriation moves** allude to “voluntary decisions made by individuals to collaborate with their peers in joint sensemaking and technology exploration” (Pg. 115). Users pursue these moves to improve their work by jointly exploring and discovering uses of the system. Mutual discovery appropriation moves impact on individual behaviour, enhancing individual IT knowledge and fostering reconceptualisation of work processes.

Even though in Jasperson et al. ‘appropriation moves’ refers to users in working environments, it may be plausible that such moves can also characterise users of digital services. As IT systems and digital services both have an instrumental and functional character for users and constitute learning challenges for users before they can make full use of them, it might be reasonable to assume that appropriation might occur in similar
ways for both cases. However, differences in appropriation can also be expected as IT systems and digital services are both different forms of technology. This might evidence the relevance of further research to identify the characteristics of appropriation in digital services in comparison to IT systems.

Jones & Twidale (2005) look at **appropriability of component-based software developments (CBSD)** which are digital environments specially designed for tailoring by users (customising, integrating and extending) according to their needs.

The authors argue that there might be a correlation between the appropriability of component-based software and the way it is presented and described, explaining how the use of higher levels of abstraction for its description can discourage appropriation. The authors comment on the difficulty of establishing such correlation considering an absence of clear criteria to measure appropriation. Jones & Twidale (ibid) adventure to propose an initial list of aspects that can “afford appropriability” and could potentially be used as parameters to evaluate or measure appropriation. These parameters will be explained later in the section Designing for Appropriation.

Bossen & Dalsgaard (2005) describe **appropriation within the context of collaborative digital environments.** The authors link the process of appropriation to aspects such as organisational context, change in work practices and acceptance by actors. They also identify aspects that influence users’ appropriation, such as the level of skill that is required to be able to use and modify systems tailored to their practice needs, or the need for an adequate conceptualisation of the systems by users. They also point to the importance of having designers and decision-makers dealing adequately with the processes of appropriation. Referring to the extent to which systems are employed in the process of appropriation, Bossen & Dalsgaard distinguish between weak appropriation and strong appropriation. Weak appropriation implies the use of built-in system features by users for sense making and customisation. Strong appropriation implies the modification of existing systems and/or the creation of new ones to replace the original
system. The authors emphasise the importance of conceptualisation (of knowledge), arguing that conflicts between systems developers’ and users’ conceptualisations can hinder the process of appropriation. To overcome this misalignment of conceptualisation and thus foster appropriation, the design process of systems requires from participants “technical abilities and close connection to practice” (Pg. 106), as well as critical conceptualisations and extended periods of use and testing.

Paul Dourish (2003) Pg. 465, describes appropriation as “the process by which people adopt and adapt technologies, fitting them into their working practices” and establishes the boundaries between appropriation and customisation, by explaining that they are similar but “appropriation concerns the adoption patterns of technology and the transformation of practice at a deeper level”. Dourish et al. (2005) (Pg.113-114), also embraces different ideas of appropriation such as user customisation and tailoring, or as an “unexpected use of technology (that is, unexpected by systems designers and developers)” and as “socially constructed meanings around technology and its use that grow out of users’ practices”. Dourish et al. (2005) Pg.114, argue that simplicity is a prerequisite for appropriation but is also fundamental that users can “instantia[te] and evaluat[e] adaptations of technology” by themselves. For this reason, the author sees self-description, self-regulation and self-reference processes as a fundamental aspect of understanding the process of appropriation. Dourish et al. also propose the notion of a continuum of appropriation, referring to the transition from spontaneous and ad-hoc behaviour to deliberate and controlled manipulation to achieve specific ends. They advise on the risks of making appropriation open and easy, as systems can be abused to the detriment of users.

2.6 Designing for appropriation and the design of digital services

As seen in the previous section, appropriation is an identifiable phenomenon that occurs in the interplay of users and technology. However, it is not yet clear that appropriation
can play a role in the development of technology, not least in the design of digital services. Before examining this, it is important to make sense of the design processes by which digital services are developed, so potential links between appropriation and the design of digital services can be established. To achieve this, this section will first examine design processes in technology, and design processes in services. This will set the context for the study of specific design processes associated with the development of digital services.

Appropriation is a contingent and changing phenomenon that depends on the nature of users, the nature of what is appropriated, and the characteristics of the context in which users experience the object of appropriation; thus, designing for appropriation in digital contexts is a challenging task that require a good knowledge of how appropriation takes place in such environments, and a good sense of the traits they should have to facilitate appropriation.

This part of the literature review focuses on what is known about designing for appropriation. This section presents aspects of design for appropriation; it starts by explaining possible parameters of how to evaluate and measure appropriation at component-based software developments (CBSD). It will then move on to aspects of designing for appropriation in online environments. Finally, it will show Carroll’s model of technology appropriation incorporating design, Muller et al. and Dourish’s design aspects for appropriation, Dourish’s design principles, and Dix’s design guidelines.

2.6.1 Designing for appropriation in online environments

Kellogg & Erickson (Ellis, Erickson, Kellogg, John, & Yu, 2005) examine online environments, and how their users make sense of them and adapt them for their own purposes. They argue that software for these environments should be created to be “intentionally malleable” so it can be easily modified to trigger and/or respond to users behaviours, and the environments should be “socially translucent” to enable user’s social interaction so they can sense “who is around and with whom [they] are interacting, be[ ]
able to observe others’ behaviour, know what others can observe about [their] own behaviour, and be able to converse with others under well-understood circumstances” (Pg.42).

The authors identify two main activities that are necessary for appropriation of online environments: 1) collective sense-making, which refers to the possibility of interacting with other users for understanding the environment, and 2) social scaffolding, which alludes to the possibility of users developing roles of social nature (the leader, the experienced user, etc.), so the users can organise themselves as social units within the environment. These characteristics give rise to social translucence “providing perceptible social cues that lead to mutual awareness and accountability” (Pg.42).

2.6.2 Possible parameters to evaluate or measure appropriation

As well as defining appropriation as the way users tailor (customising, integrating and extending) according to their needs, Jones & Twidale (2005) also ventures to propose an initial list of aspects that can “afford appropriability” to component-based software developments (CBSD) and could potentially be used as parameters to evaluate or measure appropriation.

- **At-Handedness**: This refers to the degree in which tools are easily reachable and readily available for users.

- **Granularity**: This relates to the relationship between the levels of precision and control afforded by a system and the levels of knowledge and skills required from users to use it. Ideally the right level of granularity should have the system’s levels of precision and control geared to the user’s level of knowledge and skills.

- **Playfulness**: This refers to “the degree to which a tool supports and encourages users to ‘play around’, testing variant configurations and learning about how the tool functions” (Pg.58).
- **Shareability:** This alludes to “The degree to which the tool supports sharing customizations and modifications” (Pg.58).

- **Simplicity:** This relates to the user’s ability to understand and utilise the interface of the system in relation to its complexity.

### 2.6.3 Model of technology appropriation

Carroll (2004) examines appropriation in information and communication technologies (ICT), describing it as “the way that users ‘take possession’ of a technology innovation over time” (Pg.1). Carroll distinguishes three main properties of ICT which affect/are affected by the design and appropriation process: features (built during the design process), capabilities (reflecting the “degree to which the ICT can be shaped by the user”) and spirit (the underpinning theory of use by which the ICT was designed).

Figure 15 shows Carroll’s model of technology appropriation.

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**Figure 15 Diagram of Model of Technology (by the researcher based on Carroll, 2004)**
The author proposes a model of technology appropriation (MTA) composed of 3 layers. In the first layer (Technology as designers, the ICT is designed and its features and potential capabilities defined, all underpinned by expected or predefined ways of use. Once users have adopted the ICT (or not), the second level starts in which users explore, evaluate and adapt the ICT to their own needs. While this happens, users also modify their behaviour because of interaction with the ICT, making the process of appropriation a two-way process.

At the end of this level, some users might disappropriate the ITC (choosing not to use the technology) but others will continue to the third level (technology in use) where “the technology is stabilised and becomes an integral part of users’ activities” (Pg.5), completing the appropriation process. Carroll suggests that if designers examine how the technology has been appropriated in this third level, design requirements can be drawn from it, and integrated (closing the loop) to the design stage of existing or new ICTs. This can help designers to create ICTs that are more flexible and adaptable for user appropriation. The author calls this ‘design for appropriation’.

2.6.4 Parameters for the design of digital environments that foster appropriation

Based on a study of an activity-centric collaboration digital environment, Muller et al. (2005) highlight Dourish (1999)’s key aspects of appropriation which can be utilised as design parameters for the design of digital environments that foster appropriation.

**Flexibility:** Flexibility through control, meaning that users can adjust the system to their own needs; and through openness, meaning that the system is “simply uncommitted to forms of user content” (Dourish, 1999 Pg.3).

**Community:** Appropriation takes form within communities as “specific uses only become appropriated practices when they are taken up and shared” (Dourish, 1999 Pg.3).
Visibility: Specific practices and their effect need to be visible to others to foster appropriation.

Incrementality (sic): Technologies that enable incremental development are more appropriable, as appropriation occurs incrementally as a “gradual accumulation of variation in practice and technology that build on each other over time” (Dourish, 1999 Pg.3).

Persistence: Appropriation happens easily when systems can “hold their state stably from moment to moment” (Dourish, 1999 Pg.9).

Additionally, Muller et al. identify some new features related to the appropriation that potentially helps as design guidelines. Muller et al. (2005) notice that users move fluidly from “informal dyads, to small teams, to large communities” (Pg. 69). Consequently, they argue that systems need to be designed for a “graceful adaptation to changing size and membership” (Pg. 69). They also notice that the usage and meaning of different media within the system changed through their use, and, therefore, their importance. Also, as systems become more collaborative, implying that participant numbers increase and current participants become more active, the need for user control over system attributes increases in order to control the interference of an increased amount of interaction and system activities in users’ work.

2.6.5 Design impact and principles for appropriation

Dourish et al. (2003) (2005) outline four areas in which design might have an impact on appropriation. The first area refers to visibility, “enabling users to see the consequences of their own and other’s actions”. The second relates to progression: “progressive disclosure of function [ ] help[s]”. The third refers to the need for establishing communication channels between users. The fourth brings up the concept of deixis (which means “the ability to point to a part of a technology in use”) and reference as necessary for appropriation.
Through a study of a document on management infrastructure entitled Placeless Documents’, Dourish (2003) examines aspects of the system such as document properties (“features of documents that make sense to users”, Pg.469), active properties (properties with “runnable code that will be executed when operations are performed on [a] document”, Pg.470), universal and personal properties (features on documents that are either visible and understandable to everyone or only to individual users) and content (information that users work with that is not metadata (properties) or part of the system infrastructure). Based on the analysis of three case studies of placeless documents, the author proposes three design principles to enable appropriation.

The first principle is “supporting multiple perspectives on information”, as users have a different perspective of information but can move (according to their own needs) from one perspective to another. Dourish also explains that information and the structures that describe them need to be separated to allow different views of the same information by users (Dourish, 2003 Pg.481). The second principle is “preserv[ing] visibility” as users need to understand the system, their own actions and what the consequences of those actions are, so patterns of work can be established and integrated into the system (Dourish, 2003 Pg.482). The third principle is “mak[ing] information sharing an application matter rather than an infrastructure matter” as sharing information practices emerge and develop as users “use” the system, so applications should be able to “present and employ a variety of task-specific sharing mechanisms rather than a universal general model” (Dourish, 2003 Pg.484).

Dourish also proposes that the process of technology appropriation involves the development of specific and meaningful activities within communities of practice (conformed by technology users). The author argues that appropriation relates to “the way in which technology comes to play a role within the system of meaning” (Dourish, 2003 Pg.485), and explains that it has two roles. On the one hand, it helps people to understand “how the representations that the system might offer are consequential for
their work, and how these representations incorporate and refer to other meaningful entities” (Pg. p.485). On the other hand, it becomes the vehicle by which users “can see (and then interpret and understand) the actions of others”. From this, Dourish concludes that appropriation is “the creation, management and communication of meaning, within a community of practice” (Pg. 487).

2.6.6 Guidelines for facilitating appropriation

Alan Dix (Dix, 2007a) describe appropriation as a process by which “users understand and are comfortable enough with the technology to use it in their own ways” (Pg. 27). Dix, proposes that appropriation might happen when there is not a tool for the task, or when there are alternative methods that are easier or faster to use. Dix found appropriation important because it serves to adapt technology to its specific contextual circumstances (situatedness) and to adapt it to the changing nature of needs (dynamics). Additionally, Dix explains that appropriation can bring a sense of ownership to users, and this “can be as important as the things that are achieved” (Pg. 28).

The author also highlights the possibility of appropriation in the form of subversion, as a movement towards subverting the intention and purpose of technology. Dix explains that it is difficult to design for appropriation as much of it occurs unexpectedly and is unplanned, but it is possible to design in a way that makes appropriation more likely to happen if there is a need for it. Dix proposes a list of design guidelines that might help to achieve this (or at list to reflect upon).

- **Allow Interpretation:** The system needs elements of which the meaning can be assigned to users.

- **Provide Visibility:** The system should be designed in a way that users can know the likely result of their actions.

- **Expose Intentions:** The system should state its intentions explicitly, so that users who choose to subvert its rules can appropriate it without losing its original intent.
- **Support no control:** The system should enable the completion of tasks by users by providing them with the necessary functions, instead of guiding them through a series of prescriptive steps.

- **Plugability and configuration:** The system should be composed of elements that can be combined and connected in different ways by the user.

- **Encourage sharing:** The system should provide means by which users can talk to others, ask questions, and share relevant information.

- **Learn from appropriation:** Observation of existing technology appropriation should be utilised as a reference for the design of new technology.

### 2.7 Summary & Implications

Several themes were explored in this literature review to explain the macro context of the research, including literature about the digital economy, the internet & social media technology. In addition, to explain the micro context of the research, the literature has reviewed works about the phenomenon of TA, has studied how digital services are developed, and has reviewed literature that explain and define start-ups. The literature also focused on users’ participation and its importance in the development of digital services.

The main purpose of the literature was to explain the phenomenon of technology appropriation as well as design for appropriation in the context of digital services development. Since one of the research questions is about awareness, literature on the subject was reviewed. This literature introduces the idea of levels of user involvement and its relationship with the different type of users.
3. Methodology

This chapter presents a series of methodological areas that were explored by the researcher to tackle the principal research question of this investigation.

3.1 Aims:

The aims of this chapter are:

- To understand the differences between philosophical approaches to research such as post-positivism, constructivism, transformative and pragmatism, and to explain which of those philosophical approaches this research embraces and why.

- To understand the differences between potential research methodologies and to explain the reasons for choosing the approach taken as the best possible method to pursue in this investigation.

- To explain the various options of methods available under the qualitative methodology and to demonstrate the rationale for the selection of a method for this research.

- To explain how the tools for collection and analysis of the data gathered by the research were used.

3.2 Philosophical Approaches & Worldview Paradigms

Researchers embark on a query because they care and want to make a difference in the world and a contribution to knowledge (Given, 2008). While designing their research, researchers make decisions about what might be relevant to an area of theoretical or practical understanding of the subject; those decisions are based on “some order or structure of the world” (Given, 2008). The researcher can put on “a pair of -different-glasses” (Tracy, 2013) while doing the inquiry, which could help her to look the world in a way, order, structure or different paradigm. The field of study, the personal background, philosophical orientation and past research experiences are crucial factors that determine the worldview of the investigator.
Under a big philosophical worldview umbrella (Figure 16) are different worldviews, including the chosen philosophical paradigm that will eventually influence and lead a researcher towards “embracing a qualitative, quantitative or mix method research approach” (Creswell, 2015). Paradigms are like toolboxes (Tracy, 2013) that the researcher can use in her inquiry.

Post-positivism, constructivism, transformative and pragmatism are concepts not only described as research methodologies (Ramlo & Newman, 2011) but also seen by Creswell (2015) as the kind of research and general philosophical worldviews that a researcher brings to a study. These worldviews define the research paradigms, a set of core beliefs of inquiry (Given, 2008).

**Figure 16 Key features of worldviews (by the researcher)**

To understand the differences between the philosophical approaches it is important to define what their main features are.
3.2.1 Post-positivist

Positivism is commonly called the scientific method, “also referred to as a realist or functional paradigm” (Tracy, 2013) and traditionally relates to quantitative studies and the notion of the absolute truth of knowledge. It “has led to a quest for valid instruments, technical procedures, replicable research designs, and verifiable quantitative knowledge” (Charmaz, 2006). Quantitative ways of knowing (Charmaz, 2006) and facts are objectively true in the positivist view. Positivists reject interpreting the meaning or intuitive realisations (Charmaz, 2006). The value of these other ways of knowing is seen “as subjective, undermining the pursuit of truth, and a potential source of bias and error in research” (Given, 2008).

People like Max Weber and Wilhelm Dilthey called positivism the conventional paradigm, supporting the idea that traditional “science is based on an explicit appeal to the values of truth, knowledge, objectivity, and rationality” (Given, 2008).

Post-positivism has the same positivist “certainty that reality exists and that there is good reason to try to know it” (Tracy, 2013). Post-positivism challenges the notion of positivism in that the methods used by the researcher have inherent human weaknesses and biases (Tracy, 2013) and that the analysis of data could be affected by the knowledge, behaviour and actions of humans (Creswell, 2015). Post-positivism characteristics (see Table 8) are determination, reductionism, empirical observation and measurement, and theory verification. Post-positivism is a deterministic philosophy where causes determine effects. It upholds that the world can be observed and measured. Laws and models can be created based on those observations and procedures and can be corroborated or disproved by further studies (Creswell, 2015).
3.2.2 Constructivism

Constructivism could be considered the interpretive paradigm (Tracy, 2013); it opposes positivism because it is positioned between the human and natural sciences (Given, 2008). Constructivism emphasises on understanding a phenomenon rather than on explaining it as it happens in natural sciences (Given, 2008). The social constructivism approach does not start with a theory (as in post-positivism), but the researcher’s inquiries generate or develop a theory or pattern of meaning (Creswell, 2015).

Constructivism characteristics are considerate, multiple participant meanings, social and historical construction and theory generation within the context of the participants’ social and cultural lives (Given, 2008). “Reality” in the constructivist paradigm is not something “out there” as seen in science. The reality is not something that the researcher can clearly explain, describe, or translate into a research report (Tracy, 2013). Constructivism believes that individuals’ understanding of the world in which they live and work is subjective to their experiences. Hence to understand the complexity of a phenomenon the researcher needs to involve multiple participants’ meanings that are disposed to expose their views of the situation being studied (Creswell, 2015).

The researcher recognises that the participants’ background and context shape the experiences described, and that their own (researchers) background, their personal,
cultural, and historical experiences can help to give form to the interpretation of the phenomenon studied (Creswell, 2015). Knowledge about reality is constructed by participants and individuals from communication, “through social interaction” (Given, 2008) and practice. The researcher reads and mediates (Tracy, 2013) into the event, constructing knowledge based on the exchange between researcher and participant (Given, 2008). The constructivist paradigm allows having questions that are broad and general. With these questions, the researcher allows the participants to construct their meaning of a phenomenon (Creswell, 2015). The participant context allows the investigator to negotiate their participants’ meanings socially and historically (Creswell, 2015).

3.2.3 Transformative

The transformative research approach involves research agendas where political change is needed and is used to inspire positive social change and the pursuit of justice, socioeconomic or cultural equity (Given, 2008). This type of research can alter and modify the way in which different participants and institutions live and work, as well as modifying the researcher’s own life (Creswell, 2015). This type of research is change-, power-, and justice-oriented and addresses “important social issues of the day, issues such as empowerment, inequality, oppression, domination, suppression, and alienation” (Creswell, 2015). Transformative research “includes groups of researchers that are critical theorists; participatory action researchers; Marxists; feminists; racial and ethnic minorities; persons with disabilities; indigenous and postcolonial peoples; and members of the lesbian, gay, bisexual, trans-sexual, and queer communities” (Creswell, 2015). These transformational researchers “explicitly intend […] to advance particular moral and political standpoints” (Given, 2008).

The transformative paradigm involves the use of methodologies that are practice-based: the researcher needs to move dynamically between reflection and action and between knowing and doing (Given, 2008). So as not to alienate or marginalise the people
involved, transformative research is collaborative; participants may help with the design of the questions, collect data, analyse information, and gain from the research findings (Creswell, 2015). Additionally, transformational research is described (Table 9) as “being subjective, relational, interpretive, and performative.” (Given, 2008)

<table>
<thead>
<tr>
<th>TABLE 9 TRANSFORMATIVE PARADIGM (BY THE RESEARCHER BASED ON CRESWELL, 2015 AND GIVEN, 2008)</th>
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<tbody>
<tr>
<td><strong>Subjective</strong></td>
</tr>
<tr>
<td><strong>Relational</strong></td>
</tr>
<tr>
<td><strong>Interpretive</strong></td>
</tr>
<tr>
<td><strong>Performativ</strong></td>
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</table>

3.2.4 Pragmatism

The pragmatic worldview is based on consequences of actions and not based on antecedent conditions (as in post-positivism) (Creswell, 2015) and it is real world practice-oriented. Antecedent conditions can explain the apparent relation between other variables in a cause and effect relationship. Consequences of actions are the result of an action. Pragmatic view considers reality to be in constant flux and changing. Reality is not ready-made but malleable, making pragmatism different to other world views. Pragmatism has a critical and radically democratic view of knowledge and differs from other knowledge views that see knowledge as universal and absolute (Given, 2008). It is problem-centred as it focuses on the problem instead of on the method and usually uses a mixed-method approach. It is also pluralistic since it welcomes any view or a different perspective that helps to clarify the issue (Creswell, 2015).

3.3 Research Method Approaches

Separate from the philosophy/worldview distinctions described above, there are three commonly recognised approaches to research. Those are qualitative, quantitative and mixed methods (Creswell, 2015) (see Figure 17).
It is important for researchers to understand the differences between the various ‘research paradigms,’ their language and culture (Given, 2008), to help them to develop and assess an appropriate research design. It is then crucial to recognise their essential characteristics, such as what the intents and goals of the researcher are when using a method. When designing the research, it is also important to recognise what the research outcomes might be; this could help to decide which method or tool is needed and under which knowledge paradigm. It is also necessary to understand the subject of the study, for example if the research focuses on the lives of individuals, on their personal experiences or focus on the environment. Also relevant to the study design is the type of investigation question: for instance, if the issue is a why or a how, or a how many.

### 3.3.1 Quantitative

The quantitative approach is a research methodology used for testing objective theories through the examination of the relationship among variables (Creswell, 2015). In other words, it is for investigating who has engaged in a type of behaviour, but is not designed to explain why those behaviours occur (Given, 2008). Usually, it is understood as the collection of data in numbers, often described in contrast to qualitative research (Given, 2008), which uses experiments as a research strategy and uses close-ended questions to generate quantitative hypotheses. There are two alternative research designs (Creswell, 2015) (Table 10) when using the quantitative approach: Experimental design (Keppel, 1991), and Non-experimental design (Fowler, 2013).
3.3.2 Qualitative

The qualitative approach is usually understood as a research methodology that does not use numbers, as opposed to the quantitative approach. It has its origins in anthropology, sociology and the humanities. This approach studies “the human elements” (Given, 2008) of how individuals see the world. Those human factors are personal views, experiences, and meanings. From those, the researcher can render the importance of a particular and complex “human problem” (Creswell, 2015) or a “given topic” (Given, 2008).

The qualitative methodology is well known “for addressing many of the why questions that researchers have in mind when they develop their projects, and this approach is used to explore ‘new phenomena and to capture individuals’ thoughts, feelings, or interpretations of meaning and process” (Given, 2008). Qualitative research differs from positivist methods in three main points. The first point is that positivist research is unbiased and involves a “passive observer” (Charmaz, 2006). The passive observer collects facts but does not participate in creating them. The second point of difference is that positivist research is based on the separation of facts from values (Charmaz, 2006). There is an external world “out there”, separate from the scientific observers and their methods. Knowledge about the world is the accumulation of generalisable facts. The third difference is that qualitative research uses diverse ways of interpreting meanings and can use intuitive realisations (Charmaz, 2006).
The principal criticisms (Table 11) of qualitative research are that it can be impressionistic, anecdotal, unsystematic, and biased (Charmaz, 2006). These criticisms will be further explained later in this chapter. The process of this kind of investigation involves three main stages (Creswell, 2015). The first stage is where questions emerge.

**Table 11 Critics of Qualitative Research (Based on Charmaz, 2006)**

<p>| | |</p>
<table>
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<tbody>
<tr>
<td>Impressionistic</td>
<td>Based on personal reactions presented unsystematically.</td>
</tr>
<tr>
<td>Anecdotal</td>
<td>Evidence collected in a casual or informal manner and relying heavily or entirely on personal testimony.</td>
</tr>
<tr>
<td>Unsystematic</td>
<td>Research not done or acting according to a fixed plan or system; unmethodical.</td>
</tr>
<tr>
<td>Biased</td>
<td>Tending to yield one outcome more frequently than others in a statistical experiment.</td>
</tr>
</tbody>
</table>

The second is where data is collected in the context where the phenomenon occurs, using open-ended questions to a series of participants (qualitative interview questions). In the third stage, the researcher interprets and analyses inductively, building the data collected from specific to general themes, and then the researcher reports with a flexible structure. There are five alternative research designs (Creswell, 2015) or five qualitative methods (Tracy, 2013) under the qualitative umbrella (Figure 18): Narrative Research, Phenomenology, Grounded Theory, Ethnography, and Case Study (these research designs will be explained later in this chapter). There is a very broad range of tools that can be used to gather information and to analyse it within the qualitative approach. It can include, for example, in-depth interviews, observation, diaries, and journals (again, the tools related to this research will be further expanded and explain later in this chapter).

### 3.3.3 Mixed Method

Mixed method is a research approach that involves both qualitative and quantitative research methods. Using both approaches might provide a more “complete understanding of a research problem than either approach alone” (Creswell, 2015). The researcher uses two or more forms of data seeking convergence. This method is called
triangulation (Tashakkori & Teddlie, 2010). Mixed Method uses multiple forms for collecting data such observations and interviews with traditional surveys. There are four alternative research designs when using the mixed methods approach (see Table 12 Mix-method): Convergent, Explanatory sequential, Exploratory sequential and transformative embedded or multiphase.

**Table 12 Mix-method (Creswell, 2015)**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
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<tbody>
<tr>
<td>Convergent</td>
<td>The researcher uses two different methods to collect the data, one qualitative and another quantitative, usually at the same time but not necessarily. To interpret and generate findings, the researcher integrates or can converge both (or more) sources of information.</td>
</tr>
<tr>
<td>Explanatory sequential</td>
<td>This method collects different forms of data as the convergent method, but in a sequential manner. This approach has two phases: first, data is collected quantitatively and analysed; then the results are interpreted using qualitative methods.</td>
</tr>
<tr>
<td>Exploratory sequential</td>
<td>This is conducted in reverse sequence to the explanatory sequential. In this method, the first step is qualitative. The researcher explores the participants’ views and analyses the data using qualitative methods, creating appropriate instruments tool for measure a phenomenon in the second phase. The second phase uses the information coming from the first stage and constructs a quantitative study.</td>
</tr>
<tr>
<td>Transformative, embedded, or multiphase</td>
<td>This method uses convergent, explanatory and exploratory sequential procedures. The main characteristic of this method is that the researchers see reality under a bigger design research umbrella for social justice and power perspectives.</td>
</tr>
</tbody>
</table>

### 3.4 The Research Philosophical & Methodology Approach

#### 3.4.1 Overview of the Studies

The primary purpose of this research is to understand a contemporary and complex phenomenon such as Technology Appropriation (TA). This phenomenon has many variables which could be studied. The researcher has drawn a framework that highlights a set of key elements of this phenomenon for study in this research. This research has involved four main phases in investigating the phenomenon of TA. The first step is comprised of the literature review together with an exploratory case study of the phenomenon of user involvement in the development of innovation initiatives. The
literature review authors come from different backgrounds and have studied the phenomenon from different perspectives, wearing different ‘lenses’ and using diverse methods of research and philosophical approaches. The outcome of the first phase is the theoretical framework of this investigation, which has been constructed partially from the literature review, and is complemented by the results and findings of an exploratory study grounded in real-life bottom-up innovation initiatives.

The second phase of this research is the planning and designing of the main study. It explains how the different methods and tools for collating and analysing data were applied in this research. This phase will be explaining and describe in chapter 6.

The third phase of the research focuses and explores the key aspects of Technology Appropriation. The study attempts to understand better the phenomenon of TA; this research has involved several participants (service providers of digital service/start-ups enterprises). The researcher interviewed them through open-ended questioning about the users' involvement in the development of their services. Those contributors have revealed their perspectives and experiences about the TA phenomenon. The researcher has also performed a series of observations of the digital platforms of those services, focusing on the different ways that the digital touch points were used as a platform for interaction between users and service providers, and users and other users. Therefore, the researcher focused on studying those services’ internet platforms where there was thought to be potential for finding examples of TA. The data for this study was collected between January 2015 and November 2016. The outcomes of this study are insights into the way service providers perceive the TA phenomenon within their services and TA enablers.

The fourth and final phase of this research focuses on critically testing the framework against the results of the investigation. The outcomes of this last phase are the findings and the conclusions.
3.4.2 The Research Philosophical approach employed in this study

The research contributes to knowledge by presenting further TA theory and guidelines, and by creating and developing a tool for TA identification, which can help service providers to understand the phenomenon better. These ‘new’ procedures and instruments are not the primary goal of the research but are a by-product of the research.

The research started from the researcher’s interests in user involvement in the development of services. The original research proposal sketched the notion of an empowered user who was involved in the elaboration of the services. The study (the TA phenomenon) requires an active, collaborative and interpretative researcher: in other words, a ‘subjective’ scholar rather than an entirely ‘objective’ and ‘passive’ scientific researcher in the post-positivist worldview paradigm or a quantitative type of research.

Gaining verifiable and quantitative knowledge was also not a priority or aim of this investigation. Instead, this research prioritises the qualitative value of the participants’ experiences of the TA phenomenon. The researcher has not “explicitly intended to advance particular moral and political standpoints” (Given, 2008), neither do the groups (participants) involved in this research correspond to any of the transformational worldview types.

It has been demonstrated in this study that TA is a phenomenon in “constant flux,” constantly changing; because of this, a pragmatic approach might have been thought valid to explore the TA phenomenon. However, the researcher is clear that a pragmatic approach, a critical point of view, would not have been useful to answer the central research question since the primary focus of the study was to understand the phenomenon in hand rather than take a stand or be critical about it. For the reasons mentioned above, the research’s philosophical approach cannot have a post-positivism worldview. Equally, the research does not embrace the transformative worldview approach, as it does not embrace a critical and pragmatic approach.
The research participants’ perspectives and multiple points of view of the same occurrence have given the researcher a comprehensive vision of the circumstances in which TA phenomenon occurs and of its principal component elements. This vision has enabled the researcher to confront her constructed framework about TA with the findings from the research and to generate further theory and a contribution to the knowledge of the phenomenon. For the reasons, above, this research shows all essential characteristics of the Social Constructivism worldview: understanding of a phenomenon, multiple participant meanings, social and historical construction and theory generation. Therefore, it can be said that this research embraces the Social Constructivism philosophical approach.

3.4.3 The Qualitative Approach

This research has selected the qualitative inquiry approach because its main question refers to how a contemporary phenomenon, such as TA is perceived by a very precise group of people (service providers). This research has set up an inquiry into the participants’ awareness of TA phenomenon. It has also been said that this type of investigation approach generates criticism about points such as being impressionistic, anecdotal, unsystematic, and biased. The researcher has embraced the qualitative approach and has considered the common concerns, criticisms, and limitations (Tracy, 2013).

Knowing the criticisms about qualitative studies, the section below explains how the researcher has addressed these weak points: instead of being entirely ‘objective’ and ‘passive,’ as it could be expected in a positivist inquiry, the researcher has been subjective and immersive and has used a participatory approach. To avoid being impressionistic, the researcher has reviewed and considered a context that is interested in, using the naturalistic field research approach that allows to immerse in the context where the phenomenon occurs. Replicability of the findings within qualitative research is hard to achieve. In this thesis, the researcher has described the process and the different steps
and phases that has followed, to make it possible for other researchers to continue the study or to replicate this research.

The researcher could not answer the research question just by gathering qualitative data but by gathering qualitative data. To avoid criticism of bias, has studied and presented individual perspectives and experiences of how people see this phenomenon in the context of their services. In other words, the researcher has ventured into the field where this phenomenon occurs (naturalistic field research) to gain a rich and holistic perspective (Tracy, 2013). The researcher has reported understandings of the sustained process found and not just as a snapshot of the phenomenon. To avoid criticisms of being unsystematic, the researcher has developed and designed the main study following advice from other researchers found in the literature, from supervisors and from reading the work and talking to other PhD fellow researchers. The researcher has demonstrated rigour in the methods used, by describing them and explaining how they have been applied and how the data was collected and analysed.

The researcher has followed the Loughborough University Ethical Procedures and standpoints. These procedures include: An Ethical Clearance Checklist, Participant Information and Informed Consent. Information about the research was given to the participants. They had been informed about their rights over their data and its protection. The researcher presented the research objectives to them and agreed to share the research findings with them. The participants had agreed to take part in the research and had signed consent forms. These forms have been kept by the researcher.

To avoid anecdotal criticism the researcher has focused on lived experiences of the participants, which has provided insights of cultural activities that would otherwise “have been missed in structured surveys and experiments” (Tracy, 2013).
3.5 Research Methods

Choosing the method is critical in a research project since it determines the research intentions, the type of data needed to answer a question, and the methods for collecting and analysing this data, and the way in which this can be reported.

The qualitative research umbrella (Tracy, 2013) has five recognised methods (Figure 18): Narrative research, Phenomenology, Grounded theory, Ethnography, and Case study. The qualitative umbrella covers methods and tools to collect data such as: “Interviews (group or one-on-one), participant observation (in person or online), and document analysis paper or electronic” (Tracy, 2013). Under this research, the field could be a focus group in a room, an office, or a classroom. Regarding duration, the data could be collected during one single day or over an extended period.

![Figure 18 Qualitative Umbrella (by the researcher based on literature)](image)

Table 13 compresses the main characteristics of the five most common methods used in qualitative research, which will be explained below. The main characteristics are listed in the first column of the table as: what the method does and its intention (first row), the outcomes of the method (second row), who and what the method is study (third row), the methods and tools use for data collection (fourth row), and the methods and tools for the data analysis. This chart can help the researcher to understand and approve the
reasons behind the decisions for choosing a specific methodology over the others. The same table format is used to explain the other research methods in this chapter.

### Table 13 Main Characteristics of Most Common Methods of Qualitative Research (by the Researcher Based on Literature)

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Narrative</th>
<th>Phenomenology</th>
<th>Grounded Theory</th>
<th>Ethnography</th>
<th>Case Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Does/Intention</strong></td>
<td>Study lives</td>
<td>description of the live experiences</td>
<td>Grounds a theory of a process</td>
<td>understand the shared patterns of behaviours, language, and actions</td>
<td>Study units of investigation to create different cases</td>
</tr>
<tr>
<td><strong>Outcome:</strong></td>
<td>Collaborative narrative</td>
<td>Construction of Knowledge</td>
<td>Theory of a process</td>
<td>understand social communities in the context</td>
<td>Explains further a phenomenon</td>
</tr>
<tr>
<td><strong>Who/What:</strong></td>
<td>Individuals</td>
<td>Individuals</td>
<td>Individuals</td>
<td>Intact cultural group</td>
<td>Programme/event/activity/process</td>
</tr>
<tr>
<td><strong>Data Collection:</strong></td>
<td>Collection of individual stories</td>
<td>Interviews of a phenomenon</td>
<td>Interviews</td>
<td>Participant observation</td>
<td>Interviews/Observations</td>
</tr>
<tr>
<td><strong>Data Analysis:</strong></td>
<td>Creative</td>
<td>Content Analysis</td>
<td>Content Analysis</td>
<td>Content Analysis</td>
<td>Content Analysis</td>
</tr>
</tbody>
</table>

#### 3.5.1 Narrative research

Narrative research is a type of inquiry that studies the lives of individuals. The individuals are asked to narrate stories about their lives (Riessman, 2008) and in doing so they reveal and interpret their identities and experiences (Tracy, 2013). These stories are like mirrors of reality (Tracy, 2013), often retold or re-storied into a narrative chronology, usually combined with the researcher’s life stories to create a collaborative narrative (Clandinin, 2006). The data for this type of research is gathered through “field notes, interviews, oral tales, blogs, letters, or autobiographies – as fundamental to human experience (Clandinin, 2007)” (Tracy, 2013).

#### 3.5.2 Phenomenology

This kind of research comes from the fields of psychology and philosophy, and it is usually related to the constructivist paradigm or worldview. The outcome of this type of research inquiry is the description of the live experiences of individuals that had/have experienced a phenomenon. The researcher asks participants ‘to reflect on their experience of a phenomenon and describe what was essentially meaningful to them’.
The researcher interviews the participant to collect their experiences of a phenomenon, then both the researcher and participant gain insight into or construct knowledge of the experience (Creswell, 2015).

### 3.5.3 Grounded Theory

Grounded Theory inquiry comes from sociology and can use qualitative and quantitative data to develop theories. Researchers have used this methodology “almost exclusively in qualitative research” (Charmaz, 2006) and that it is why it is considered a qualitative methodology. The researcher systematically using flexible guidelines, collects, and inductively analysed qualitative data (Tracy, 2013) (Charmaz, 2006). This data is based on the views of the participants and the researcher “grounds up” (Tracy, 2013) a “theory of a process, action, or interaction” (Creswell, 2015). Grounded theory develops theories from the data gathered by the researcher in multiple ways rather than deducing the theories from “testable hypotheses from existing theories” (Charmaz, 2006). The ways in which the research can gather this data are surveys, interviews, and observation.

### 3.5.4 Ethnography

Ethnography is an anthropological approach (Kozinets, 2015b) that has been used as a research method in sociology, cultural studies, marketing and consumer research. This method attempts to study “the shared patterns of behaviors (sic), language, and actions of an intact cultural group” (Creswell, 2015) in the natural setting, over a prolonged period. It is described by Tracy (2013) as a long-term immersion in a culture. Ethnography uses a series of methods and tools that can help the researcher to collect the data and to gain personal engagement with the subject of study. Some of those methods are interviews, conversational and discourse analysis, film, and photography. The most common method used by the researcher is to engage in participant observation (Hobbs, 2006; Tracy, 2013).
Netnography and Virtual Ethnography

This method is specifically extended and is explained in more detail than the other methods in this section due to the focus on digital and online environments that are part of the specific context of this research. The internet has become embedded, embodied, and it is part of people’s everyday life. “Billions of individuals joined into networks” (Kozinets, 2015a) creating a complex world of online interactions and experiences. These interactions and experiences are playing essential and expanding roles in people’s daily routines of work and life. Specific questions about the cultural understanding of phenomena related “to human to human and human to machine interactions and experiences” (Kozinets, 2015a) are the focus of these ‘new’ methods of research.

Netnography and Virtual ethnography methodologies have been used in several research projects and for different purposes but basically for studying people’s interaction and experiences in the internet context. These methods, which are relatively new practices of research, are forms of the anthropological technique of ethnography research that have been adapted for studying online social interaction and they have been used for formative research in social marketing as methods to collect and analyse data, and now are used to study social interaction in the technologically (internet) mediated context (Belk & Kozinets, 2016).

One of the most significant differences between ethnography and netnography is that while an “ethnographer might travel great distances to understand a particular culture” the netnographer relies mostly on “a good search engine” (Kozinets, 2010). Netnography is a method that practices observation (the researcher does not interact with users) and participant observation (the researcher interacts with other users) of networked digital communication devices. It “is a form of online ethnography” (Belk & Kozinets, 2016) (Kozinets, 1998) that has helped study “field work of programmers and people who work on networked workstation” (Belk & Kozinets, 2016). Netnography has specific sets of research practices and positions accompanying practices based on online ethnography
methods (Kozinets, 2015a). These include practices involving the construction of theory around the web, the networks, and social media. Kozinets (2010) describes the process to help to set up a netnography research project consisting of five steps: 1) definition of the research questions, social sites and topics to investigate; 2) community identification and selection; 3) community participant observation (engagement, immersion) and data collection; 4) data analysis and iterative interpretation of findings; and 5) writing, presenting and reporting the research findings and theoretical and policy implications.

Virtual ethnography differs from netnography because it focuses on studying “the social landscapes that emerge through and around the Internet” (Belk & Kozinets, 2016). Netnography, as a form of online ethnography, can use online data such as data from the internet, mobile and apps. These data can take the form of photography, text from chats, or biometric information from wearable applications (Kozinets, 2013).

There are three principle formats of data in netnography: archival, co-created, and field note data (Belk & Kozinets, 2016). Archival data can be found “in text files, visual screenshots of computer and mobile phones, and downloaded data or audiovisuals captures or streams” (Belk & Kozinets, 2016). It pre-dates the netnography research and does not require the netnographer’s involvement. Co-created data has the shape of interviews, conversations or any other type of social interchange. It is created by the interaction between the netnographer with people, sites, software developers, service providers, or other relevant people related to the site. Field notes data could take the shape of first-hand netnographers’ observations and “reflections on the research related interactions and experiences” (Belk & Kozinets, 2016) about their netnography participation. These researchers’ notes can be analysed later using analytical techniques such as data visualisations, affinity diagrams, social network analysis, and conceptual mapping (Kozinets, 2015a).

The internet changes rapidly as more new forms of interaction appear between people (users) and information online; methods such as netnography and videography are
constantly adapting to this change. Therefore, there are plenty of opportunities within this research to use these methods and to develop tools for the participant and digital touch points of the service observations. There are many ways to collect the date in netnography. The most common are surveys, interview and journal methods, focus groups, and social network analysis.

3.5.5 Case study
The case study method was also used in this research. The case study is a research method where the researcher studies a programme, event, activity, process, or one or more individuals and develops an in-depth analysis (Creswell, 2015). The case study is a useful method when the research question starts with “how” and “why” and when the focus of the research is a contemporary phenomenon within a context (R. K. Yin, 2003). There any many interpretations and significances of the word ‘case,’ and this has led to the misuse of the word, which has “become distorted or corrupted over time” (Ragin & Becker, 1992). Ragin & Becker (1992) also emphasise that failure to define the unit of analysis that the investigators employ in their empirical analyses, as opposed to ‘cases’ that are presented at the end of the research as part of the findings, is an issue of great importance when defining research as a case study. It is then a priority for researchers to set the ‘unit’ of analysis and the cases. Units of analysis (Ragin & Becker, 1992) are described as “the objects of investigation.”

They have some similar characteristics between them, so they are comparable, but also have distinctive characteristics related to the phenomenon that is being studied, so they form an individual ‘case’. Another important thing when doing case studies is that the research should have multiple cases “both in the hands of the researcher (during the research and when the results are presented) and in the hands of the investigator's audiences” (Ragin & Becker, 1992). It is also important for a case to study at least two or more instances of a phenomenon in depth (Given, 2008). An important point for
researchers doing case studies is that they can collect the information using a variety of tools and procedures over time (Stake, 1995; R. Yin, 2011).

3.6 The Research Method

Table 14 summarises the reasons for chosen case studies as the method in this research. Phenomenology could have been used as a method since this investigation focuses on finding the participants’ experiences (awareness) of TA phenomenon. Nevertheless, the intention of this research is not to concentrate on those experiences, but to study some characteristics of the TA phenomenon; this is the reason for not using phenomenology as a method in this research. The characteristics investigated in this research are four key aspects (explained on the framework chapter): 1) service providers’ approach to user involvement, 2) and 3) users’ and services’ actions that foster TA within the services and 4) the TA enablers.

This research does not use grounded theory as a main method of study because the research knowledge is based on other authors’ theories and investigations of this phenomenon. In fact, the framework of this inquiry has been built from a combination of secondary data (other writers’ lenses and theories about TA) and empirical evidence coming from the exploratory study. This means that this research does not base all its facts only on the research observation and the data collected, but takes inspiration and information from other authors.
Although this research involves online communities (in the context of their services) it does not focus on understanding the communities themselves. This research could not have been done using netnography (ethnography) as a unique method of study because the main research question focuses on a phenomenon, not on the online community or the social group. The decision to not explicitly incorporate TA users’ perspectives during the data collection was taken from the very beginning of the main study. After the literature was reviewed, a knowledge gap emerged relating to the service providers therefore understanding service providers’ perspectives and being able to understand and identify TA within the services became this research priority. Also, the decision was taken to limit the scope of the research to that which was achievable in the set period.

This research gathers and codes online qualitative data to help to create a holistic picture of the key aspects of TA within the services, and it also tries to find examples of TA within those communities when possible and accessible (not every service has a community forum or a members’ platform). These observations were passive netnography, since a more core netnography-type practices would have demanded a deeper and more participative approach to the online culture and communities (Kozinets, 2010).
This research embraces case study as the research method. This section highlights the key features of case study and how this research has addressed those key features (see Table 15). The unit of analysis of this research is the service. To find enough cases to compare, the researcher invited ten companies to be participants in the initial interview. After this first interview, the research continued to study five companies for a period, in between one and two years depending of the service circumstances. During this time the researcher observed the key aspects of the phenomenon of TA. These five services have some characteristics in common. They are start-ups within the first three years of their foundation, and they provide part of the whole service using online environments. The services have a strong presence online, and they use different apps and social media tools to communicate and interact with their users. These companies are small and therefore the main participant of the study is the owner and service provider.

<table>
<thead>
<tr>
<th>TABLE 15 KEY FEATURES OF CASE STUDIES (BY THE RESEARCHER)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Study</td>
</tr>
<tr>
<td>Does/ Intention:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Outcome:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Whom/ What:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Data Collection:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Data Analysis:</td>
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<tr>
<td></td>
</tr>
</tbody>
</table>

The results of the study have shown that each company forms a different case that can be compared with the others to generate information and insight about the TA phenomenon. While the research is grounded in qualitative research and digital services theory, the theoretical and methodological framework leans towards social science and digital design studies.
3.7 The Tools to Collect and Analyse Data

The fourth and last part of this chapter describes the different tools used to collect and analyse the data and the reasons behind the selection of instruments. It also describes the effectiveness of the selection of such tools for the research query. This research uses a multi-method approach to collect the data (see Figure 19). It includes in-depth interviews plus systematic observation of services’ online platforms. Data was gathered from service providers during in-depth face to face interviews, meetings, and events such as the launch of services and gatherings with users. Recordings were used to collect the data and transcriptions to analyse it. Data was also gathered from systematic observations of the services’ most relevant digital touch points (platforms). To analyse and to make sense of the data content, the researcher has used the thematic analysis method together with the construction and visualisation of affinity diagrams.

Tools borrowed from service design such as user journey maps, profiling, and building personas, were used to create plausible scenarios of interaction between the different touch points of the services and the various service users while paying attention to the digital touch points. These scenarios have also helped to draw and visualise the services’ flow, and have been left as research by-products for use by the participants (service providers). These tools have helped to stimulate the dialogue between researcher and participants, and have contributed to gaining new insights and to complementing previous ones. The user journeys maps have also marked the research final point for data collection and served as a tool to validate the information gathered over a period about the TA phenomenon within the services. Nvivo was used as a software tool to help with the analysis of data.
3.7.1 Methods for Collecting Data:

As shown in Table 16 below, there are two phases of the data collection. Each step has used two approaches for collecting data: systematic observation and in-depth face to face interviews. The first phase took six months to be developed and executed; the second phase took another year. Each step has different data collection focus and purpose.
FIRST PHASE:
The first phase focused on the study of ten companies. Since it is hard to know if the companies selected were the perfect match to generate cases, and considering that the researcher was looking to generate four or five cases to have enough evidence to compare and produce enough findings for the research, the following criteria were set up to look for these companies. Companies need to:

- Be a start-up company, based on common start-up phases criteria (Start-up Commons Organisation, 2013) that develop digital services in the macro context of the digital economy and the micro context of horizontal communication.

The start-up delivers services through digital means and strives for the development of services provided within the digital realm. It provides a service.

- That involves the use of the internet in some way, being partly or wholly an online service.

- The start-ups are exploring different business models.

- The start-ups are companies that develop their services in collaboration with their end user.

This research project sees start-ups (bottom-up initiatives) as the perfect context in which to study this phenomenon because start-up companies lead the development of digital services (DS). Start-ups are hubs that function as labs for experimenting with new models of entrepreneurship (Lindtner, Hertz, & Dourish, 2014). Its proliferation is due to the confluence of new funding models (like crowd-funding websites), physical spaces, new platforms, tools, and publications. This has given the opportunities to anyone who has an idea to be able to get sponsorship to develop it, share it and communicate it, and create a business out of it.
After the first phase, five companies met all of the criteria above and were selected to continue in the study. The cases were drawn from them. The researcher developed tools for systematic collection of information from the most relevant services’ online platforms. The researcher generated two matrices and two protocols (Boyce, 2006), one for each interview; these protocols will be explained in more detail in the sixth chapter of the main study development and planning. The researcher focuses on getting to know and understand the companies in depth: the type of services they provide and the type of

---

**Table 16: Two Phases of Data Collection (by the researcher)**

<table>
<thead>
<tr>
<th>Phase one Getting Connected</th>
<th>Phase two Getting Immersed</th>
<th>Wrap up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focuses on getting to know and understand the type of services they provide. To access the service as any user could have.</td>
<td>Focuses on getting to know the company in depth: the process of development and the user involvement. To gain access to the online platforms hidden from the general public or exclusively for members.</td>
<td>Access to restricted online platforms Observation of these exclusive platforms. With the knowledge gained previously.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Online Observation 1</th>
<th>Interview 1</th>
<th>Online Observation 2</th>
<th>Interview 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding service provision</td>
<td>X</td>
<td>Verification of observations + info provided by participants</td>
<td></td>
</tr>
<tr>
<td>Online presence</td>
<td>X</td>
<td>Verification of observations + info provided by participants</td>
<td></td>
</tr>
<tr>
<td>Mashup</td>
<td>X</td>
<td>Verification of observations + info provided by participants</td>
<td></td>
</tr>
<tr>
<td>Service touch points/digital</td>
<td>X</td>
<td>Verification of observations + info provided by participants</td>
<td></td>
</tr>
<tr>
<td>Service User Involvement approach</td>
<td>X</td>
<td>Verification of observations + info provided by participants</td>
<td></td>
</tr>
<tr>
<td>Mode of user involvement</td>
<td></td>
<td>X</td>
<td>Verification of observations + info provided by participants</td>
</tr>
<tr>
<td>User Actions</td>
<td></td>
<td>X</td>
<td>Verification of observations + info provided by participants</td>
</tr>
<tr>
<td>Mode of User Involvement</td>
<td></td>
<td>X</td>
<td>Verification of observations + info provided by participants</td>
</tr>
<tr>
<td>TA enablers</td>
<td></td>
<td>X</td>
<td>Verification of observations + info provided by participants</td>
</tr>
<tr>
<td>-user leads</td>
<td></td>
<td>X</td>
<td>Verification of observations + info provided by participants</td>
</tr>
<tr>
<td>-TA fostering</td>
<td></td>
<td>X</td>
<td>Verification of observations + info provided by participants</td>
</tr>
<tr>
<td>service change</td>
<td></td>
<td>X</td>
<td>Verification of observations + info provided by participants</td>
</tr>
<tr>
<td>TA Examples</td>
<td></td>
<td>X</td>
<td>Verification of observations + info provided by participants</td>
</tr>
</tbody>
</table>
users. In this first step, the researcher gained first-hand insights into what kind of service was provided, how it was delivered and the type of online platforms to which only members have access.

The data for this first phase was collected in two forms:

- Exploratory observations of online platforms were done before the interview as part of the preparation.
- The first in-depth interview focused on getting to know the inspiration for the company, the process of development and user involvement in its development.

SECOND PHASE:

The second phase focused on perceiving the key aspects of the TA phenomenon within the members-only platforms and online communities, as well as understanding how aware the service providers were of the TA phenomenon. The data for this second phase was collected in two forms:

- Observation of online platforms was done to find examples of the key aspects of TA. A chart was designed (see Chapter 6) as a ‘guide’ for the observations and to help with the analysis of the data. This type of data takes the form of screen shots of the service’s different online platforms. These pictures are accompanied by researchers’ memos, notes and annotations of observations, as well as insights into the enablers of TA.
- The second in-depth interview focused on validating the information collected during the online observations. Data in this interview takes the form of a users’ journey map constructed between the researcher and the service providers. It was recorded to help with the analysis.
3.7.1.1 Naturalistic Inquiry and Systematic Observation

Naturalist inquiry is a process of analysing a phenomenon in its natural environment (context). The researcher has found an “uncontrived” (Tracy, 2013) field (start-ups digital services) and without manipulating the settings set up the inquiry. Netnography is a research method that comprises three principal formats of data (Table 17): Archival, co-create data and field notes (Belk & Kozinets 2016).

**Table 17 Netnography Data Formats (by the researcher based on literature)**

<table>
<thead>
<tr>
<th>Format</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archival</td>
<td>from old records</td>
</tr>
<tr>
<td>Co-created</td>
<td>from the relationship between the community users and the researcher</td>
</tr>
<tr>
<td>Field notes</td>
<td>the researcher's own notes and annotations of her observations of the main digital touch points of the services</td>
</tr>
</tbody>
</table>

Observation of the online services started with ten start-ups before the participants were interviewed. It was important to get to know what kind of services each of them provided and to understand their general presence online. Also, it was essential to find out what type of platforms were evident and which provided any current or potential user of the service with easy access to them. Screenshots, field notes, and annotations of related interactions and experiences were taken as data and to prepare for the first interview. These field notes were based on Belk & Kozinets’ (Belk & Kozinets, 2016) netnographer guide. These researcher's notes were analysed later using techniques such as data visualisations, affinity diagrams and conceptual mapping (Kozinets, 2015a). For this systematic observation, a form was created to facilitate these observations based on theory from the literature review (as will be further explained in Chapter 6).

In the second phase, the researcher studied the digital service platforms that were hidden to the public or they were provided for members only. A multi-method approach was used; naturalistic and systematic observation as well as, in some cases, ‘participant observation.’ In all the cases, the researcher naturalistically observed the individual participants’ online platforms, followed the different links, and took screenshots and
notes of the various services and functionalities. When possible, when the service had a members’ platform (and the researcher got permission to access it) the researcher joined the service as a user (participant observer) to have a first-hand experience of the service. The researcher kept social interchange with other users, when co-created data was not collected (conversations, interaction between users, interviews, and comments), to the minimum.

In the second phase of data collection, a new form (as can be seeing in Table 30 Second Phase Online Systematic Observation Form. Chapter 6, Pg. 212) was created to facilitate the online observations. It evolved from the previous form, with fundamental aspects of TA being added. It included the service providers’ user involvement approaches and modes of user involvement. Most of the time those observations were recorded as notes and print screenshots of the services’ digital platform. The services’ sites were observed, following some netnography practices and techniques based on Belk & Kozinets (2016) such as finding the places where interaction between members occurred, focusing the observations on the relevant research questions, and striving for generating sufficient relevant data (screenshots and notes).

3.7.1.2 In-depth interviewing

In-depth interviewing is a qualitative research technique that can be employed to explore the individuals/participants’ perspectives on a phenomenon, idea or situation (Boyce, 2006).

Initial Interview:

The main purpose of the initial interview was to get connected and to introduce the research and the researcher to the start-up services’ providers. It was also the first opportunity to talk about and understand better the motivations and the process behind the building and developing of the companies. Also, the first interview aimed to know the possible influence and involvement of the users in the development of these services.
The structure of this interview followed a strict protocol and was identical for all ten companies, as will be explained in Chapter 6.

**Second Interview:**

The second interview targeted a selected group of participants and was based on a more refined and evolved framework. It was less structured than the first one and tailored to each individual case. Since it was a follow-up the atmosphere was also friendlier: the service providers knew the researcher and her work, and the researcher felt more confident and assertive.

The questions were tailored to fill data and insight gaps from the previous interview and the online observations. The matrix protocol was designed to include an exercise of co-designing a user journey map with the help of the participants. The users journeys helped to prompt more insights and accurate information about the participants’ experiences. The design of the matrix and protocols for the interviewing process will be explained in detail in Chapter 6.

### 3.7.1.3 User Journey Mapping, Scenarios & Personas

‘Customer’ journeys (Nenonen, Rasila, & Junnonen, 2008) are a systematic approach that helps companies and services to understand how users use, perceive and experience the different touch points of the service; it can be utilised in current services or prospective services. User journey mapping is a qualitative tool that helps to visualise the ‘customer’ experience. There are many possible ways of doing these journey maps, and no two journeys are alike. The researcher has based the approach to using this tool on service design literature and previous designer practice experience. The user journey is a grid composed of the different services’ phases in the row at the top, and the different services’ channels or touch points in the first column on the left. The journey is drawn to create the blueprint of the service (Polaine, Andy; Lovlie, Lavrans; Reason, 2013). The phases that Polaine et al. (2013) recommend are typically Aware, Join, Use, Develop and
Leave; but the phases are always determined and customised by the service that it has been studying.

The creation of scenarios is a method typically used in service design SxD and in experience design UxD that describes the interaction of different users and the service (uxforthemasses, 2017). People can relate to the stories in the scenario and in this way understand the users' needs and requirements without technical jargon, as opposed to the technical or business requirements. Scenarios are suitable for use during participatory design activities (Gaffney, 2000).

Personas are fictional characters created to represent the user of a service, digital service, brand, or product (Lidwell, Holden, & Butler, 2010). Personas are usually used within a user-centred design paradigm. Personas are representations of the users’ way of interacting with the service, they highlight specific user needs and can be used as insights to prospective future scenarios of the service.

**In this research:**

User journey mapping was used as a qualitative tool that helped to visualise the different TA examples found in the research. The co-creation and construction of services’ user journeys based on the information and data gained in the digital touch points observations and the participant information was crucial (Figure 20). More data was collected that helped to validate information gained in the online observations. Another important point of doing the users’ journeys was that this exercise helped the research to make sense of the information.

Of equal importance was the creation of scenarios, building scenarios from the users’ journeys have helped the researcher to understand better certain aspects of the TA phenomenon, and to put together in one story the TA examples found within the data. As these tools (methods) have helped services designers to understand better certain
aspects of the services they are designing, building these user journeys and scenarios have helped the researcher to understand better certain aspects of the TA phenomenon.

**Figure 20 Co-designing Users' Journeys, Building Scenarios and Personas (by the researcher)**

**The constructions of the scenarios:**

The scenarios presented in each case study were build based on the data collected through the qualitative online observations and the user journeys, constructed together with the participants (Figure 20). The scenarios are anecdotal stories that involve one or two individuals (real services' users) and the real service community. Scenarios are based on qualitative observations of the TA phenomenon: real service's users using the service.
As this is a qualitative research the scenarios gave the researcher the opportunity to understand the people's perception, perspectives, and their understanding of the phenomenon within their context.

The scenarios were useful to illustrate and visualise the different interactions, focused on the digital touch points, of the users with the service, and the real context of the service where TA occurred. The scenarios were based in the information gained by observing the service in use and being a service user of the services’ digital touch points. Scenarios helped to illustrate the TA examples within each case study.

The researcher, while building the users’ journeys, encouraged the service providers to think about examples of real users and their stories. Although usually personas are fictional characters in service design in this research the ‘personas’ are disguised real users, rather than fictional characters. Building each case scenarios and creating personas has helped to anonymised the users of the service. The real TA examples and screenshots can be found at the thesis appendix.

3.7.1.4 Tools and Probes for Collecting Data

Planning and designing the in-depth interview about the complex phenomenon of TA presented some challenges and problems. Language and interpretation of complex concepts: for example, between client and user definitions, how to do the interviews without engaging with the interviewees in trying to clarify the differences between their interpretation of terms and that of the researcher, as well as explaining complex concepts such as ‘technology appropriation’ and ‘mashup’ without biasing their responses. Technology appropriation is a difficult concept to be explained since it can trigger in people preconceptions and other ideas about it. Explaining complex concepts to participants was sometimes problematic and disruptive to the interview, becoming a distraction from the main purpose of the research.
Time restrictions: time allocated for the interview was limited because the interviewees are busy entrepreneurs working in their companies, who generously agreed to give up some of their time to help with this research.

It was necessary to develop and design forms and tools to facilitate the interview process and address these difficulties. Some of those tools were visualisations and infographics to help people to comprehend a message (Lankow, Ritchie, & Crooks, 2012). Another type of tool was ‘cultural probes’ (Ehn, 2008), which are participatory design techniques useful in helping to inspire ideas from professionals and non-professionals in a design process. In research, they can be used to help to prompt ideas, values, thoughts and experiences about a phenomenon from individuals (participants). The researcher developed visualisation, infographic and probes tools to help to collect data in the interview process. A comprehensive explanation of this can be found in Chapter 6.

3.7.2 Methods for Analysing the Data:

The researcher usually gathered information in the form of textual data, transcripts or manuscripts, recorded interviews, field notes, online observations and screenshots. After acquiring all the data and information, the researcher had to process and filter it to extract relevant knowledge from it and to make sense or ‘deriving meaning’ (Given, 2008). The researcher divided and classified this information into “clusters of similar entities, or conceptual categories, to identify consistent patterns and relationships between variables or themes” (Given, 2008). This mental process of classifying and analysing the information is called content analysis or qualitative content analysis.

There are two fundamental approaches to examining data in qualitative research projects: deductive and inductive (Burnard, Gill, Stewart, Treasure, & Chadwick, 2008). The deductive approach is based on a predetermined framework. This framework uses a structure based on theory to analyse the data collected (Burnard et al., 2008). Deduction works from a series of logical principles that generate useful statements about the world (Smith, 1998). Deductive can severely limit the themes emerging and the development
of new theories (Burnard et al., 2008). In contrast, the inductive approach moves from observation of “particular instances of an empirical regularity within definitive conditions to making generalisations about the operation of this regularity in other situations with similar circumstances with the goal to establish a law” (Smith, 1998). The inductive approach is used to analyse data with “little or no predetermined theory, structure or framework” (Burnard et al., 2008). This method is used when not much is known about the phenomenon being examined.

This research has used content analysis, and since the literature review has shown that there are enough theories and previous work on this phenomenon, the researcher has taken the deductive approach to content analysis. However, Tracy (2013) calls qualitative researchers for a better communication of explicit instructions of what has to be done between collecting data and writing a polished research report. Content analysis is a method used in qualitative research that assists the interpretation of meaning to distil the relevant information from the data gathered and to understand it. Using coding as a way of classifying by themes can trigger researcher's intuitive realisations and can contribute to understanding a phenomenon. For coding to be a valid data analysis method Tracy recommends delineation and a variety of “systematic data analysis practices” (Tracy, 2013) because this approach could be specific to any one researcher in terms of how it can be implemented.

3.7.2.1 Thematic Analysis

The most widely used methods (Braun & Clarke, 2006) of analysing data are qualitative content analysis and thematic analysis (Vaismoradi, Turunen, & Bondas, 2013). These methods come from grounded theory. They are a set of rigorous research procedures resulting in the emergence of conceptual categories. These concepts/categories are related to each other as a theoretical explanation of the action(s) that continually resolves the main concern of the participants in a substantive area (Grounded Theory Institute, 2014). There are no clear boundaries between them and some authors refer to these as
one method “thematic content analysis” (Burnard et al., 2008). Both content and thematic analysis share the aim of “analytically examining narrative materials from life stories by breaking the text into relatively small units of content.” Those small units of content will be submitted to a detailed treatment (Vaismoradi et al., 2013). Moreover, both allow for a qualitative analysis of data (Vaismoradi et al., 2013). Content analysis is a descriptive approach, a systematic coding and categorising method that is used to analyse text. It also analyses “trends and patterns of words used, their frequency, their relationships, and the structures and discourses of communication” (Vaismoradi et al., 2013).

“Thematic analysis” is an independent qualitative descriptive approach that serves as “a method for identifying, analysing and reporting patterns (themes) within data” (Braun & Clarke, 2006) (Vaismoradi et al., 2013). It involves the search for “common threads” (Vaismoradi et al., 2013) within an interview or a set of interviews. Burnard et al. (2008), Braun & Clarke (Braun & Clarke, 2006) and Elo & Kyngäs (Elo & Kyngäs, 2008) perspectives were used to create this infographic that describes the thematic analysis. A parallel of the three different versions on the subject can be seen in Figure 21. According to Burnard et al.’s (2008) description, the process of coding involves identifying themes, gathering examples of those themes from the data and reducing categories and duplications. From this distilling process, explanations can be deduced. In contrast, Braun & Clarke (2006) describe the steps as becoming familiar with data, generating first codes, searching for themes, reviewing themes, defining and naming themes and producing the report. Both processes use the data collected as material that after distilling will end up delivering results as conceptual systems, conceptual models or maps, and possible new theories. Finally, in Figure 21, content analysis is described by Elo & Kyngäs (Elo & Kyngäs, 2008) as a three-stage process: preparation, organising, and reporting.

The main study of this research focuses on understanding better the phenomenon of technology appropriation. It is set up to answer the main question of how aware service providers are about TA. This study aims to identify if the service provider/developer/designer is aware of this phenomenon and, if so, if they find it desirable. This question refers to the phenomenon of TA within the context of start-up companies that deliver services using partially or entirely digital platforms.

It intends to identify the most important aspects of TA within the service and to understand when appropriation occurs within the development phases of digital services. It aims to find examples of where users have appropriated digital services developed by start-ups, as well as to identify the different types of technology appropriation that have occurred. It will pay attention to establishing if the users have created ‘new’ service functionalities and have used creativity to adapt, personalise, customise and tailor the digital service.
Thematic analysis is preferable to content analysis in analysing this data since the data has been collected specifically for this research and because it includes observation of websites, platforms of digital services and field notes. The thematic analysis method is flexible: it allows the researcher to bring the framework and the TA key aspects identified as starting themes (deductive) and it is open enough to allow new themes (inductive) to emerge from the data collected.

The research used Braun & Clarke’s (Braun & Clarke, 2006) step-by-step coding process (see Figure 22) as a guide during the process of analysing data. This process generates first codes in the search for new themes within the data collected and helps to map the different themes emerging from this data.

![Diagram of Thematic Analysis Process]

**Figure 22 Thematic Analysis in Technology Appropriation Research (By the Researcher)**

### 3.7.2.2 Affinity Diagrams

An affinity diagram is part of the seven management and planning tools” (ASQ, 2004), also called “7MP tools” (Pyzdek, 2003). These seven tools are affinity, relations, tree, matrix, arrow diagrams, matrix data analysis, and process decision programme. An affinity diagram is a tool that helps to organise disorganised data; it is usually used in business and management to analyse qualitative data as an example of “the rapidly changing face of quality technology” (Pyzdek, 2003).
Affinity diagrams can help to visualise the many variables and cluster them in “a smaller number of relevant factors” (Pyzdek, 2003). Affinity Diagrams were used as a tool for making sense of the data gathered in this research project. During this research project, this tool helped on many occasions to organise ideas and data coming from the interviews and the systematic observation, enabling the researcher to organise and group ideas and data. The tool also helped to create categories by recognising basic similarities in the data. For example, while thinking of and developing the framework of this research, the use of affinity diagrams helped with the construction of different drawings and diagrams that contributed to reducing a large number of inputs from the exploratory study, the mapping of TA examples, and the literature reviewed.

These inputs were reduced to a more manageable and intelligible set of categories. These classes have helped the researcher in the creation of the key factors for technology appropriation awareness. They also helped with the visualisation and understanding of the entire research process and its different phases, as can be seen in Figure 23. The figure shows the process of mapping TA examples leading to the development of the in-depth interviews tool (better explained on Chapter 6). The diagrams also helped with the making of meaning. The researcher used them to organise the research ideas on multiple occasions.
Figure 23 Example of Affinity Diagram used within this research (by the researcher)
3.8 Summary & Implications

This chapter has explained the differences between relevant research philosophical approaches. It has also shown why this research embraces the constructivism paradigm and its implications. It has also illustrated the researcher’s understanding of the different potential research methodologies, and the reasons for choosing a qualitative approach as the method to pursue in this investigation.

This chapter also presented various options of available methods under the qualitative umbrella, and presented the rationale for the selection of a case study methodology. Additionally, this chapter explained how the tools for data collection and analysis were employed.
4. Exploratory study: User involvement in the development process of innovation initiatives

This chapter presents the exploratory study, focusing on examining the phenomenon of user involvement within the development process of innovation initiatives. This exploration, together with the literature review, is conducted to find gaps in the knowledge and opportunities for further research.

4.1 Introduction

This chapter illustrates and discusses ideas from the literature review and compares them with examples of how user involvement occurs. This study highlights when user involvement currently occurs within the development phases of the innovation initiatives. It also identifies methods, tool and approaches by which innovators enable and foster user involvement within this process. Additionally, it helps to define the different ways in which end users become involved in this development process.

This chapter explains the exploratory study aims, the methods, and tools used to analyse the data from the transcripts interviews and to collect corresponding data. This section also reports the results of the data analysis in the form of enablers to user involvement in the development of innovation initiatives, and it ends with a discussion that highlights the reasons for choosing an area of user involvement in the development of services for further research. This debate is needed to clarify the different ideas found in this study and the possible paths for further investigation.

The first examination of the research has utilised the data of 10 interviews from previous research, the Ideas in Transit project (“Ideas In Transit,” 2012). Ideas in Transit was a collaborative project between the Centre for Transport & Society, the University of the West of England, Loughborough Design School, Ito World Ltd. and Ordnance Survey. “Ideas in Transit was a five-year project running from October 2007 to September 2012 that sought to examine, understand, support and engage with user innovation relevant to transport” (“Ideas in Transit,” 2012). The In-Transit study focused on the innovative
process and practices of sixteen novel ICT-based innovations in transport, which have emerged from grass-roots (in contrast to top-down) initiatives.

The data collected during In-Transit was thought to be relevant for further study within this Ph.D. research project for different reasons. First, most of the initiatives interviewed are mostly still up and running, which potentially allows confirmation of data and further study. Secondly, the data collected emphasised bottom-up innovation efforts, quite like start-ups. Thirdly, the interviews focus on the companies’ development processes and how the user was involved in them. Fourthly, the ones analysed all have a digital component, a digital platform to partially or entirely help to deliver the service they provide. As has been explained in the introduction of this thesis, those are areas of interest and relevance to this research.

4.2 Aims and Objectives
This study aims to improve understanding of the ways in which users are currently involved in the development of digital innovations in bottom-up initiatives. It attempts to find the methods, tools and approaches currently in use, by which innovators enable and foster users’ involvement in the development of their services. Ultimately, this exploratory study aims to find a suitable gap in the knowledge within the phenomena of the user involvement, to underpin the further development of this research project.

4.3 Method
This study uses qualitative analysis (Tracy, 2013) (Creswell, 2015) (Given, 2008) and a flexible research approach (Robson, 1993). It employs multi-methods and tools such as content analysis and observation of the digital platforms. As explained in the methodology chapter these tools help to draw a holistic picture of the phenomenon that makes it easier to understand and analyse it. The study analysis contributes to identifying and observing the events that involve the user to help in the design and further development of grass root innovation initiatives.
The researcher studies the transcripts of the In-Transit project then finds and observes the digital platforms of the services involved to collect fresh data and to build a better perspective. Content analysis (as previously explained in the methodology Chapter 3) is used for the examination of the data, and affinity diagrams and drawings of the development and timelines are used for presentation of findings and discussion.

The study examines the ten In-Transit interviews using thematic analysis and is underpinned by direct observation of the services (innovation initiatives) digital platforms. Visualisations and affinity diagrams are used as primary tools to analyse the data. The data collection was made by a Loughborough research team between October 2008 and June 2009. The data has the form of semi-structured interviews that were later transcribed. The observations of the innovation initiatives websites took place from January to June 2013.

The exploratory study process (as illustrated in Figure 24), starts with the drawing of all the innovation initiatives design processes, followed by a thematic analysis focused on methods, tools, and user involvement approaches. The results of the exploratory study are a better understanding of the phenomenon of user participation in innovation initiatives and the emerging themes for further research.

The first step in this study was to sketch and draw the different innovation initiatives design processes based on the interviews data. These design processes were visualised based on structures coming from the literature review with the data collected in the interviews. These individual processes were placed on the structure created based on the literature review. This exercise allowed an overall view of each of the initiative design processes and different user involvement approaches. These visualisations of the development process also helped to draw a comparative analysis of the various innovation initiative development processes, methods, tools, strategies, and modes.
After this, a thematic analysis process (Burnard, Gill, et al., 2008) was carried on by breaking the text from the interviews into different focus areas. The main areas aimed to make explicit who these innovators were, their professions, what they did specifically within the development process, what were the methods and tools of user involvement used within the growth of the innovation initiatives, and what the innovator knew about the users and their needs. From this thematic analysis, four themes emerged: methods, tools, user involvement approaches and modes.

Following the identification of the first themes, examples of data were gathered and selected from the interviews to illustrate those points. After this further analysis was
conducted to distil emerging issues within the user involvement area took place. The main findings of this exploratory study are:

- enablers of user involvement
- new modes of user involvement

The process ended with the outlining of some emerging themes related to user involvement for further research. Unique topics for possible further research are Empathic Design, Perpetual Beta and Technology Appropriation.

### 4.4 Tools

This study uses different tools to help with the qualitative and thematic analysis. As previously explained in the methodology chapter, the tools utilised in this study are mainly affinity diagrams, observation of the digital platforms available on-line and the Nvivo program. These tools were employed because of their flexibility and compatibility to generate comparative theme analysis that helped to distil information from the different innovation initiatives digital platforms and the data of the transcripts.

#### 4.4.1 Comparative analysis of the processes using affinity diagrams

As explained in the methodology section, affinity diagrams (Pyzdek, 2003) are a business tool that can be used to organise ideas and data in a visual manner to help with the analysis of data. In the exploratory study, affinity diagrams have been employed because they allow the researcher to have a better understanding of the information and to see different connections emerging from the data.

The first set of affinity diagrams were drawn individually for each innovation initiative by reading and coding the transcripts from the interview using Nvivo. After having all the individual processes depicted in the illustration, the empty frame of the design process based on the literature was made on a whiteboard. This empty frame was prepared to draw and present the different innovation initiatives development processes altogether. In some cases, gaps in the design process and the information provided in the
interviews were found and filled with information obtained by visiting and observing the innovation initiatives websites. Attention has been placed on identifying the primary stakeholders in each innovation initiative, as well as to outline their involvement in the development process.

This visualisation of the different processes has made it possible to make a visual comparison between all the stages of the innovation initiatives development process. This table has also made it easy to point out the differences and similarities between the innovation initiatives development phases and the different categories of user involvement presented in these developments. A comparison between the design participation categories (Hagen & Robertson, 2010a) found in the literature review also been made by the different design innovation initiatives processes to understand the type of user involvement in their development process. This identification has made possible to comprehend the nature and depth of the user participation in the design of these initiatives and to study their user involvement general approach.

4.4.2 Theme analysis of interviews data using Nvivo and affinity diagrams

After the visualisation of the processes was concluded, a more focused thematic analysis was done. The process of this analysis started by extracting and classifying different areas and clusters related to user involvement from the ten In-Transit interviews data. The main themes focused on were: methods, tools, and modes of user involvement.

The analysis concentrated on the different approaches and tools used by the innovators to involve users in their services. It also focused on observing if such participation somehow contributed or led towards the further development of the innovation initiatives.
4.5 Preparation and development

4.5.1 The sample

As previously explained, this exploratory study is based on ten interviews from the Ideas In-Transit project (“Ideas In Transit,” 2012). There are two important observations about this data. The first is that by the time the interviews were done, concepts such as applications (apps), digital services and social media (among others) were just emerging in the digital economy macro context. Secondly, although none of the interviewers and interviewees referred to the innovation initiatives as services or as digital services, all of them can be placed into the digital services category, as an essential part of the service is delivered through digital means and they all use digital platforms. These services use their digital platforms as a principal or unique way to communicate and exchange information with their users and as part of the provision of their services.

The selection of interviews ensured diversity in themes and types of innovation initiatives and services. Table 18 summarises the different characteristics of these innovation initiatives. Although all the services interviewed have in common the theme of transport, since the In-Transit project focused on that, the nature and the purpose of the services and businesses vary from digital applications to transport specific services, as can be seen in the third column of the table. The programming ability of the interviewee was identified and can be found in the fourth column of the table since it seems to influence the ways in which the innovation initiatives were developed and the focus on their digital platforms. In column fifth, the primary type of user was identified, ranging from just ‘anyone’ (as identified by the innovator of MySociety Maps) to specific community-based users such as the City Car Club. These types of user were all as specified by the innovators in the interviews. The fifth column of the table shows the primary location of the initiatives. One of the innovators interviewed created London Bus app. He is a UK-based sole trader and self-taught programmer and who previously developed Tube Status and Tube Deluxe apps.
London Bus is an iPhone application that helps to plan bus journeys. This app was a spin-off idea to complement the other fruitful Tube Status app which had a thousand downloads during the first weekend immediately after launch. The developer wanted to...
take advantage of his captive audience, who may also be bus commuters. It only took him three weeks to develop the beta cycle for testing, which was released as a free download. It took another four weeks to fix critical bugs before it was issued at the iTunes store. Some of the primary stakeholders are London Transport, Apple, and iTunes. Apple is the regulating company, while iTunes is used as a platform for sales, display, and group developer network. The primary end users are people who live and commute in London. The developer has formed a group of 12 or 15 people as beta users, to help him with very accurate feedback to correct critical bugs and usability issues.

Another of the innovators interviewed was the co-founder and chief technical officer of Frontseat. Frontseat is US-based micro enterprise that is the parent company of Walk Score. Walk Score is a web-based tool for calculating the walkability of a neighbourhood. Three software guys were involved as a team in the development of Walk Score; they used to work for Microsoft. Since its launch, the site has caught the attention of the press on several occasions, and it has been featured in the NY times. Some of its stakeholders and users include academics, urban planners, investment bankers and people who want to buy a house. They have a site in New Zealand and would like to have a place in England.

Other interviewees were the two co-founders of Cambridge Cycle Map based in the UK. One was involved in the technical development of the service, and the other deals with the public. Cambridge Cycle Map is an online cycling journey planner and campaigning tool, incorporating user-contributed photos. A partial cycling ban in Cambridge was imposed in 1992. In response to that, Cambridge Cycling Campaign (CCC) was established in 1995 as a charity run by volunteers, with the purpose of promoting safer, better and more populated cycling in the Cambridge area. The idea of a cycling journey planner came later, as well as the implementation of dynamic bike mapping for the UK. The photo map idea came as a complement of the cycle campaigns, to make it possible for users to contribute with their pictures and hot topics and to create their galleries to
illustrate a issue. The CCC uses this information to address councilors and decision makers to help them to decide where investments should go into improvements.

Another interviewee of this study is the founder of the service Parcel Pick Up who is a product designer and sole innovator based in the UK. Parcel Pick Up is a parcel holding service created to eliminate missed deliveries. This project was based on a personal story of the founder about a missed delivery and was about to enter the prototype testing stage when the interview was conducted. At the time of the interview, the founder and his wife were the only agents in the project, but they were planning to recruit multi-agents in different postcodes. They had ten customers from the local community, but they would like to expand their business with the development of a website. Although they expressed their interest in having user input, they did not have identified communication channels, and they did not have a specific plan to introduce (involve) users in the further development of the service.

One more innovator interviewed was a sole founder of EcoEscape. EcoEscape (now Green Traveller) is a not-for-profit organisation that promotes sustainable tourism. It is a community project with the benefits of the environment in mind. The idea for this web service came to the founder while she was working for East Midlands Development Agency (EMDA). She financed the project by applying and winning bids from Tourism Boards. With this funding, she published a first sustainable tourism guide. While promoting the book, she was continuously asked by the public about the possibility of finding this information on a website. Then she successfully applied for more funding and invested it in the website development, made by external developers May Kay developers. The press has been a key instrument in the success of the books and the website. She describes her end users as Guardian readers, hardcore greenies and members of the public.

Another innovator interviewed was the founder of City Car Club. The service is a members-based pay-as-you-drive car sharing scheme. The innovation initiative started
as a voluntary test system with a single car inspired by other similar initiatives in Switzerland, Germany, and Scotland. This tester plan was a trial car-cost exercise with two people. Thinking about scaling the business, the founder worked with a community group to try to solve the complex problems that a voluntary-based car club can have, such as insurance and financing for the purchase of the cars. Then he created the company. This car enthusiast’s small enterprise was first launched in Bristol as a low-tech scheme partnered by Bristol Car Club Association. They established services in London in 2001 and Brighton in 2004, and at the time of the interview he was thinking about bringing the service to Glasgow. Some of the stakeholders of this project are Coventry Cooperative Development Agency, Coventry University, Transport of London and European Regional Development Assistance.

Another interviewee was the founder of Loco 2. At the time of the interview Loco 2 was a proposal for an online resource to enable transport companies to offer demand-responsive travel solutions. Loco 2 is now a website-based service that gives and sells independent and impartial ‘advice’ on train tickets to thousands of destinations in Europe. This idea came from the founder’s sister while she was planning to travel abroad during her gap year. They mocked up a basic prototype on Photoshop. With the help of Stencil (web developers), they build the first prototype. By the time of the interview, this site was about to go into beta testing.

Another interview was the developer of Carbon Hero. Carbon Hero, now called Carbon Diem, is a digital service smartphone application tool that quantifies the impact of travel choices. It automatically calculates the end user’s carbon footprint while on the move. The developer was in his final year of Product Design Engineering at the RCA when the project started. After “several iterations in his head” he developed an app that came live for testing before he graduated. The first GUI was built with the help of students from Lancaster University. He entered a British Standards Institution (BSI) competition and
won £1000. After winning a Galileo Master award, he was offered a job at the European Space Agency at Holland. This project gave him credibility and exposure.

Another interviewee was the founder of The Man in Seat 61. The Man in Seat 61 is a website providing detailed information on train travel. The founder, based in the UK, wanted to learn how to build websites and taught himself while commuting with a book from WH Smith. He used his knowledge of train travel as something to base the website around. He had no idea that others would be interested in it. As it happens, he had identified a gap in the market and he set up his website in 2001. His idea came after realising that train operators do not provide enough information for travelling beyond end user-based country boundaries. People were not able to book trains or get accurate information if they wanted to travel from the UK to another country in Europe or beyond by combining train & ferry. The website was featured in the Guardian and has since grown. The founder discovered and adopted the Amazon affiliate scheme and later in 2004, the Rail Europe and Eurostar schemes too. He wrote a book about travelling, gaining publicity for his service. End User has contributed to the maintenance of the site by providing accurate and up-to-date data.

The last interviewee was the developer of My Society Travel Maps and MySociety. MySociety is an e-democracy charity project based in the UK. It aims to build socially focused tools with offline impacts. My Society Travel Maps was (at the time of the interview) a site under construction of an isochronic travel time map. At the date of this exploratory study, this website could not be found using an internet search, but its parent MySociety is still extant.

4.5.2 Development Design Process Structure

As previously explained, the analysis of the information of this study began by drawing and visualising each innovation initiative development process. This drawing helped the researcher to understand how the users were involved, the methods and tools associated
with user involvement, and where within the initiative development phase this participation occurred.

A new structure (template), based on the design development theories found in the literature review was designed. It was necessary to visualise and compare the innovation initiative development processes. As illustrated in Figure 25, the template structure comprised five columns. The name of the innovation initiative is in the first column. The third and fourth columns represent the traditional design process of an interactive software system based on Royce's original waterfall model, which does not include user involvement (Royce, 1970b) (Ardito et al., 2010) and distinguishes two main phases: design time and user time. The launch is placed in the middle of these columns to represent the moment at which the service became live. Two more columns added two further components to the framework: before and after. These ‘new’ elements help to understand better the context and origin of these initiatives. These additional items modify the waterfall model towards the agile model, which includes user input and strives for a unified model for user input (Ardito et al., 2010), as can be seen in the literature review under development process.

![Figure 25 Design Process Structure](image-url)
Two sets of keys were created as illustrated in Figure 26 Stakeholders Keys and Figure 27 to easily identify the different stakeholders, users, methods and tools. The key methods and tools are based on the design participation categories of Hagen & Robertson (2010). These categories have been chosen because they clearly contemplate social technologies as the subject for design and as design tools. These categories were found in the literature review.

**Figure 26 Stakeholders Keys**

**Figure 27 Methods and Tool of User Involvement**

### 4.6 Results

The analysis of data for this exploratory study was done in two parts: first, the analysis of the design development processes of the innovation initiatives; and second, the theme-focused analysis or the identification of methods, tools and approaches for user involvement in the development of innovation initiatives.

#### 4.6.1 Design development process of Innovation Initiatives

A sketch of each innovation initiative development process was drawn, and all of them were placed together on the structure to facilitate comparison between the different design processes as Table 19 shows. This chart has also helped to identify within each development process the methods and tools used by the innovators to involve the user within their initiative development process.
### TABLE 1: DEVELOPMENT FRAMEWORK

**DESIGN TIME**

<table>
<thead>
<tr>
<th>Step</th>
<th>Project</th>
<th>Before Launch</th>
<th>Launch</th>
<th>After Launch</th>
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<tbody>
<tr>
<td>1.1</td>
<td>London Bus</td>
<td>Another DS, TIME STATION</td>
<td>Live now</td>
<td>Live now</td>
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<tr>
<td>2.1</td>
<td>Walk Score</td>
<td>Inspired from Google Maps</td>
<td>Concept, Built initial site</td>
<td>Live now</td>
</tr>
<tr>
<td>3.1</td>
<td>Cambridge Cycle Map</td>
<td>Implement dynamic cycling</td>
<td>Live now</td>
<td>Live now</td>
</tr>
<tr>
<td>4.1</td>
<td>Parcel Pick Up</td>
<td>Set up company</td>
<td>Create website, Re-launch site</td>
<td>Live now</td>
</tr>
<tr>
<td>5.1</td>
<td>Eco Escape</td>
<td>Promoting bus service</td>
<td>Live now</td>
<td>Live now</td>
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<tr>
<td>6.1</td>
<td>City Car Club</td>
<td>Open it</td>
<td>Live now</td>
<td>Live now</td>
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<tr>
<td>7.1</td>
<td>Loco 2</td>
<td>Open it</td>
<td>Live now</td>
<td>Live now</td>
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<tr>
<td>8.1</td>
<td>Carbon Hero-Diem</td>
<td>Source it</td>
<td>Live now</td>
<td>Live now</td>
</tr>
<tr>
<td>9.1</td>
<td>The Man in Seat 61</td>
<td>Source it</td>
<td>Live now</td>
<td>Live now</td>
</tr>
<tr>
<td>10.1</td>
<td>My Society Travel Map</td>
<td>Live now</td>
<td>Live now</td>
<td>Live now</td>
</tr>
</tbody>
</table>

**Stakeholders**
- Interviewee
- End User
- Developer - Stakeholder
- Founder-Developer
- Beta User - test
- Community Participation in development
- Press

**User Involvement**
- Feedback from users
- Emerge it
- Source it
- Iterate it
- Traditional
- Open it

** Methods & Tools**
- User experience design
- Prototyping
- Focus groups
A comparison between each innovation initiative design process and the design participation categories (Hagen & Robertson, 2009) was made by taking precise notes from the innovators’ comments and answers in the interviews about the way in which end users were involved in the development process, and by then comparing this information with Hagen & Robertson’s. The key stakeholders were also identified and placed in the design process so they could be associated with specific stages. After placing all the different data extracted from the interview about the innovation initiative development processes and the various ways in which users are involved, as well as the list of different stakeholders, a general analysis was made.

4.6.1.1 Traditional design process (Waterfall)

The development process frame shows how a traditional design process was used for most of the initiatives in the first stage of their development (design stage). As explained before, traditional design (identified with a pink W key in Table 19) is the process where none or hardly any users are involved in the design stage of the innovation initiatives. Examples within the sample of waterfall model can be seen in the development of London Bus, Walk score, Parcel Pick Up, EcoEscape, Carbon Hero and My Society Travel Map.

It seems that most innovation initiatives interviewed do not actively involve the users in the design stage of the development process. This is because innovators tend to work in small groups or alone at the beginning of the initiative. They also find it time-consuming to deal with ideas and questions from people not involved in the development of their initiative. It can be said that in most of the initiatives studied the innovators bounced ideas off other people near them in their social circle and that they were also inspired by considering services related to their own. Another thing that emerged from the study is that the innovators initially take their inspiration from an issue, a situation that happens to them, or an unmet need that they came to recognise.
Even though it is apparent that user involvement is determined by the user’s closeness to the business, it can also be affected by how technology literate this user might be. Allegedly, the input of a more technology savvy user would be more sought for and appreciated by the initiatives as it would require less “explanation of the technology” time investment before receiving useful feedback. This division between users that are technology literate and users that aren’t, also helps to point out at two factors that might have an impact on the initiatives willingness to involve users. On the one hand, as technology literate users might be the smallest user group, their input might be unrepresentative of the whole user population. On the other hand, the input of the larger non-technology literate group might be hindered by “user fatigue”, where the user effort to provide a constructive and useful feedback may be diminished as “the gains achieved [are] frequently [ ] seen to be slight for the effort involved”. (Beresford, 2002).

The initiatives that involved users at the beginning such as City Club Car and Cambridge Cycle Map seem to have learned of the benefits of involving users from previous innovation initiatives and from observing other innovation initiatives’ successful user involvement. They have learned the value of users’ insights to help them to refine them services before launching them.

4.6.1.2 Agile design process

Examples of the agile model in the development of the innovation initiatives were found after the services were launched in most of the innovation initiatives studied. The following section will explain some findings based on Hagen & Robertson’s (2010) participation categories.

ITERATE IT:

An innovation initiative can be classified as Iterate It, according to the design participation categories (Hagen & Robertson, 2009), if a group of end users is in constant participation in the further development of the service while they are using it. An example of this category is London Bus. The innovator involves users in the further
development of the app, and two types of user involvement are identified; as can be seeing in the Table 19, the London Bus row shows how the service has multiple iterations. In the first, the developer set up a group of beta users for control testing of specific features and bug reporting. After the app, **London Bus** has launched

“I’ve had beta testers pick up critical bugs before being released into the store. I think it forms a vital part of the process for me, now.” MB, London Bus (Interviewed June 2009).

In the second, the developer waits for any user feedback to identify other users’ needs and ideas for new features.

“So often, they’ll come back with things I haven’t thought of or the way something works, often it’s just the way something works, they come back on and say ‘I don’t understand this’. I go, and I think, oh, of course, you don’t, yes, because it should work like this and I’ll change it.” MB, London Bus (Interviewed June 2009).

**EMERGE IT**

Emerge It (Hagen & Robertson, 2009) is a category of participation in design that happens when an initiative evolves with the help from a community. Design emerges through the involvement. **Walk Score** is an example traditional design process. Nevertheless, this initiative uses its users’ feedback (from communities of stakeholders such as real estate agents, urban planners, investment people) to improve and develop.

“Walk Score had a great viral Internet launch by about 15 e-mails for feedback and the next day 100,000 people have visited the website. People are able to compare their scores, talk about the Walk Score of various properties, and it really provides an easy way for consumers to understand and to measure the benefits of a walkable neighbourhood” ML, Walk Score (Interviewed November 2008).

**OPEN IT**

An innovation initiative can be classified as being in the Open It category (Hagen & Robertson, 2010a) when a community participates throughout the design development.
**City Car Club** is an excellent example of the Open It category since it emerged from an established community of members.

“We sort of set about as a voluntary, you know, a group of householders who were fairly active in the local community, and we set something up where we could actually do more than, two of us share a car, but a slightly larger number of people share a care on a slightly more formal basis.” CB, City Car Club (Interviewed March 2009).

They believed that is very natural to talk to people, get together and solve their community problems.

**SOURCE IT**

An innovation initiative can be classified as part of the Source It category when the initial design is out and launched, but part of the service information is sourced by members of the public and its users. **Cambridge Cycle map** is an example of how users are involved in both design (development) and design in use. This initiative has been identified as the best instance in this study of Source It (Hagen & Robertson, 2010a), the design participation category. The service aims to allow end users to contribute with their observations about issues in the community. The user can create galleries with specific problems. They have populated those galleries with their photos to help illustrate issues related to cycling. Those issues will then be presented by the campaigners (innovators) to councillors and decision makers to be resolved or to take into consideration.

“You can also create your galleries to try to illustrate a specific type of thing [...] I had created a gallery of all of the Downing Street cycling problems [...] which was the U.K.’s first contraflow cycle lane in the 70s [...]. The key problem here is that there have been lots of vehicles parking in that cycleway, unloading and so on [...]. This issue came to a head when a councillor who cycles, came along this route and found a van there, and remonstrated, had a bit of an argument with him, was edging towards violence. A taxi driver coming the other way saw this, recognised
the councillor who was on the taxi committee and started videoing the occasion. This went straight to the Cambridge Evening News. We were almost immediately able to e-mail back to the Cambridge evening News this massive gallery with lots of pictures demonstrating that the incident this councillor had is not isolated - this is what happens all the time, there is a problem here, and this is why people get frustrated.” ML-S, Cambridge Cycle Map (Interviewed October 2008).

Another example of source it is found on EcoEscape. The founder has established an expert contributors’ network. The service makes money by creating this member network, and the users gained the expertise and advice from other network members’ stories and experiences.

“I set up a membership scheme for tourism businesses so that they could join and be part of the website, they would pay to do that and so it could generate some income […] they could find (other members) online but also, couple that with some stories and content about sustainable travel”. (Interviewed October 2008)

The Man in the Seat 61 innovator involves end users in a dialogue to generate and update content on his website; this can be considered a basic way of sourcing it.

“When interviewer: Do you get comments from people who have tried to book things?

MS: Yes, all the time, 20-30 emails a day. That is the best research you can have – they will tell you rapidly anything that has changed since I last put the information up. They will make some suggestions ‘I managed to get some tickets like this […] you don’t do this on your site, how about mentioning it?”. MS, The Man in the Seat 61 (Interviewed September 2008).

4.6.2 Methods and Tools of User Involvement in the development of innovation initiatives

For this part of the analysis, some of the innovation initiatives were not selected: WalkAbout, Parcel Pick Up, and Carbon Hero. This is because some innovators did not provide much information about user involvement and methods in their
<table>
<thead>
<tr>
<th>Methods</th>
<th>Android</th>
<th>BlackBerry</th>
<th>Google</th>
<th>HTC</th>
<th>LG</th>
<th>Microsoft</th>
<th>Nokia</th>
<th>Other Brand(s)</th>
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<td>Courage and Baxter (2005)</td>
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<td>User becoming active participant during innovation as a coproducer</td>
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<td>Alam (2002)</td>
<td>User visit and meetings</td>
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<td>User’s observation and feedback</td>
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<td>Wants and needs analysis</td>
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<td>Kujala (2003)</td>
<td>Task analysis</td>
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<td>Focus group / discussions</td>
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interviews and initiatives such as **My Society Travel Maps** was no longer available to be studied.

One of the purposes of this exploratory study is to identify methods by which innovators enable and foster user involvement. As explained in the literature review in Methods, Tools, and Approaches to user involvement, the researcher has considered several authors (Courage & Baxter, 2005; Bosch-Sijtsema & Bosch, 2014; Kaulio, 1998; Alam, 2002; and Kujala, 2003a). **Error! Reference source not found.** is a compiled list of the methods and tools found in the literature from these authors. The table has been created and used as an observation tool, a template to identify within the innovation initiatives from the exploratory study sample their methods and tools of user involvement. This table (tool) has also been used in the main study of this research (Chapter 6). The following part of the chapter illustrates the different approaches and tools used by the innovation initiatives studied with quotes taken from the interviews. has classified and put together a list of most used methods and tools.

**USER FEEDBACK METHOD:**

Some initiatives build their services on user feedback.

“[… ] we launch it will have a big feedback button and just like everything we launch people will send us masses of feedback and we will read it and work out what needs doing [..]” MySociety Travel Map

“[… ] it’s just like ‘please email us’ and people do […]” MySociety Travel Map

They also state that its core development process started with them having an idea about user needs then creating a proof of concept service, then building a prototype like a “real site” and waiting for their users to give them feedback.
“As I said, you build things that people are going to find interesting enough to look at in the first place, and then you put a link on them which says ‘please tell us what we should change’ and that is about all I think you need.” MySociety Travel Map

“...it (talking about her website) has had some good feedback and especially for its first year, you know, it looks good, it is quite tidy...” EcoEscape

TAKING DIRECTLY TO PEOPLE METHOD

Talking directly to people is a method some of the innovators have used and it is important since people can express their feedback and share ideas with the innovators.

For example, EcoEscape’s innovator on different ‘green shows,’ conferences and talks she assisted to promote and public present her published book, received ideas and questions about her online service, and not so much about her book. She first got noticed by the public after press coverage of her book. People asked her to put the book online.

“I put all this effort into this book and they want to see it on line [...]”

“[...] And so, I went back to the drawing board a little bit and thought okay, so we need a better website, I had a website that I had built myself actually using Front Page and it looked quite good to be honest it was all right” EcoEscape

INTEGRATION OF SOCIAL NETWORKING TOOL

Integration of social networking is critical for some of the initiatives. They have discovered that it is a good way to promote their service and boost their website traffic; in other words, to have more presence and become more visible to other users.
WEBSITE
To have a presence on the web, it is necessary for these innovation initiatives. The digital platform sometimes seems like the only presence that these services have, as the only touch point of the service.

“I generate business for my members be it from the books [...] in terms of yes, exposure, seems the website works better because people are more at the point of making a holiday booking when they are looking online than when they come across my book and like to look through the pictures and enjoy the design of it”.
EcoEscape

USER RESEARCH / MARKET RESEARCH
In various examples, innovators said that they did not use market research but based their developments on their own ideas of user needs.

“So it is kind of, whereas market research used to be rocket science, these days it is not really [...]”. My Society Travel Map

In the ‘collaborating with users’ approach, some initiatives are very clear on when and in what circumstances this collaboration happens. Collaboration with users seemed easy to identify in most of the services studied since is evident that an innovation initiative engages their users as part of the development process, or as participant-contributors of data.

USER COMMUNITIES AS A METHOD
For some of the initiatives the creation of user communities where users can exchange information about the service is vital for the development. It can also be paramount in
early stages of the development process. A good example of this is the way City Car Club was developed from a community already in place.

“We then progressed in about 1997 to having a working group in the community I lived in Leeds which was Chapel Allerton, and we sort of set about as a voluntary, you know, a group of householders who were fairly active in the local community, and we set something up where we could actually do more than, two of us share a car, but a slightly larger number of people share a car on a slightly more formal basis.” City Car Club

Exchanging information between users and the service together with complementary data from the users is also seen as desirable in some initiatives. For example, Cambridge Cycle Map relies on data (pictures, new paths, and new routes) from the users as part of the service they provide. This type of provision is a good example of a community service growing organically from crowdsourcing information from its users and by its users’ continuous use.

“The idea for the photo map came really from the cycling campaign because we are always bellyaching about how there is no cycle parking anywhere, or there are problems e.g. poles in the way.......It is a campaigning page, tool. What we do is somebody can put, anyone can take a photograph of something to do with cycling, put it on our website, and say it was taken here. It shows a nice web page of the photograph and the map next to each other. It has a very nice clear link that you can then sent to councillors, decision-makers etc, and say look, here is the problem, that is what it is.” Cambridge City Map

Sometimes the initiatives are built on philanthropy goals concerning the communities and the environment from where they are created.
“ […] have to go back into the business, or back into the community that you are benefiting. So it was something that I decided was important for EcoEscape because I wanted to really have a business and make it look like a business, generate income, build up audience etc but also, show people that you, well you know, in terms of getting more funding or whatever, and it is kind of core purpose is to benefit the environment and the community […]”. EcoEscape

MEMBERSHIP SCHEME

Not all the initiatives wait for users’ communities to grow organically. For example, EcoEscape has created a membership scheme specifically targeting the travel operator industry. The user pays for this service; this is the way that the service generates income. The members of this scheme benefit from the fact that the service has a target audience (people who use it) convenient to their interest.

“I set up a membership scheme for tourism businesses so that they could join and be part of the website […] they could find them online […] with some stories and content about sustainable travel […] and work in partnership with other organisations as much as possible.” EcoEscape

City Car Club presents another example of a membership scheme. This method has been using to scale the service from a small community-based initiative to a commercial business.

“ […] you have a membership system with a smart card or some other device to access the vehicle, and everything is done without human contact once you are a member, based on a monthly payment for time and mileage.” City Car Club

Some initiatives go beyond the collaboration to establish testing to develop their initiatives further.

FOREVER BETA METHOD

Some of the innovators have set up beta forever as a permanent method to develop their initiatives. For example, London Bus innovator makes a prototype and releases it. Users
will report bugs and ideas about another popular service features that are missing or new features that can be implemented.

“... I kept it pretty simple {Talking about his app} in the first instance, so really I just had a map, and I had location features. It didn’t have any journey planning in the first version, and then people wanted journey planning but I really wanted to make sure that was done right, so I sat about and I did that early in this year as well.” London Bus

DEMONS AND INTERACTIVE PROTOTYPES TOOLS

Some innovators build demos. Demos are a functioning site of the service or quickly interactive prototypes. These tools can be used to get some users to test the service before launch. The user can try and provide quick feedback and insights to improve some service functionalities before the launch. For example, by the time of the interview, MySociety Travel Map got a real-time version of the service tool working.

4.6.3 Approaches to User Involvement in the development of innovation initiatives

To identify the different user involvement approaches in the innovation initiatives this study uses four different approaches according to distinctive user involvement emphasis (Kujala, 2003b). The emphasis can be on usability (user centred design), on democratic participation (participatory design), on social aspects of work (ethnography) or the context of work (contextual design).

As can be seen in Table 21, some innovation initiatives in this study seem to have an emphasis on usability and a user-centred design (UCD) approach while others mostly focus on a more democratic participation and a participatory design approach, e.g. London Bus vs. Cambridge Cycle Maps.
It is apparent in this exploratory study that none of the initiatives showed either an ethnographic or a contextual design approach. Bosch-Sijtsema and Bosch (2014), from the literature, shown two main approaches to user involvement: first, Listening and Collaborating, and second, Testing with users. These approaches are especially useful in this study because they can be related to the service development process (see Table 19). Table 22 shows how Bosch-Sijtsema and Bosch’s approaches can be linked to specific stages of the service development process.

### Table 21 User Involvement Approaches (Tool by the researcher based on Kuala, 2003)

<table>
<thead>
<tr>
<th>User involvement approaches</th>
<th>Kujala (2003)</th>
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<tbody>
<tr>
<td>User-centred design (Emphasis on Usability)</td>
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<tr>
<td>Participatory design (Emphasis on Democratic participation)</td>
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<td>Ethnography (Emphasis on Social aspects of work)</td>
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<td>Contextual design (Emphasis on Context of work)</td>
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### Table 22 User Involvement Approaches to Design Process (by the researcher)

<table>
<thead>
<tr>
<th>DESIGN TIME</th>
<th>USER TIME</th>
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<tbody>
<tr>
<td>BEFORE</td>
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<tr>
<td>LAUNCH</td>
<td>LISTENING</td>
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<tr>
<td>AFTER</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COLLABORATING</td>
</tr>
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<td></td>
<td>TESTING</td>
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London Bus, Walk Score, Conservation Olympics, EcoCity, City Cat Club, Unc12, The Work in Sight, ReUse, Senior Home Help
The researcher splits Bosch-Sijtsema and Bosch’s (2014) approach in two. Although ‘listening to users’ can happen during the whole process and even before it has started, ‘collaborating with users’ can only occur after the design stage has begun. Equally, ‘testing and experimenting with users’ can only happen after the service has been launched or some users have used it.

The researcher, for further cross-examination of the innovation initiatives, relates these ‘new’ user involvement approaches to the design processes structure. This exploratory study has helped to identify each innovation initiative general approach to user involvement (see Table 23).

**Table 23 User Involvement Approach (by the researcher based on Bosch & Sijtsema, 2014)**

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</thead>
<tbody>
<tr>
<td>Bosch-Sijtsema &amp; Jan Bosch (2014)</td>
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Most of the initiatives in this study specified that they ‘listen to their users.’ As can be seen in the previous session (methods and tools), they received and read many e-mails from users; they also mentioned many times that users had given them ideas for improving their services while giving them feedback. This study only considers that the ‘listening to users’ approach is taking place if the innovation initiative has used this method in both stages of the development process (design and design in use). Examples of this ‘listening to users’ approach are EcoEscape, Cambridge City Map, and City Car Club. Some innovation initiatives specified that they collaborate with users in the development of their services. Examples of this approach can be seen in those initiatives that involve communities and membership schemes such as EcoEscape, Cambridge City Map, and City Car Club. Testing and experimenting with the help of users is something that is clearly explained by the London Bus innovator when he establishes groups of beta users and creates a bond between the service and them.
4.7 Conclusions - Enablers of User Involvement

Some enablers to user involvement have been found in this exploratory study after studying the different development processes, the methods, tools, and approaches to user involvement used by the innovation initiatives in the development of their services. The enablers to user involvement found in this study are divided into emotional, resources and type of business.

4.7.1 Emotional

Innovator-User Trust and Value

Innovators seem to trust and value user feedback more than data from traditional market research to further develop their initiatives. This ‘listening’ approach can be clearly seen in the way My Society Travel Map uses user feedback about the functionalities of the service and relies entirely on users’ comments for improvements in their service.

“[…] it's just like 'please email us' and people do […] whereas market research used to be rocket science, these days it is not really […]”. My Society Travel Map

Those examples indicate that innovator-user trust can be an enabler of user involvement.

User Engagement, Fidelity, and Passion

Some samples from this study show that when users are interested in the service due to affinity, need, their taste, or as a hobby they tend to get involved and take part in the initiative development process.

“I have, actually, a group of beta testers, so I have a small group of 12, 15 people. [Technical minded or just users?] Mixture of both. Some are very technical and others are what you could say are early adopters […] And others are more interested in the subject matter so they're more interested in, you know, the transport geeks, really, they're interested in things being right. […] I get quite a few emails, so I get emails from people […] I can tell that by reading their email like they're quite passionate about it, they've taken, the way I look at it, if they've taken the time to write me an email and structure something logically and put it
through me and sometimes they’ll come back a couple of times and then I usually end up sending an email back saying if you’re really passionate about this, I have a beta programme, send me your device ID, and you’ll get free versions and do what you like with it. You don’t even have to pay for it at all.” London Bus

“[…] Yes, all the time, 20-30 emails a day. That is the best research you can have – they will tell you rapidly anything that has changed since I last put the information up. They will make some suggestions ‘I managed to get some tickets like this […] you don’t do this on your site, how about mentioning it??’”. The Man in Seat 61

User engagement, fidelity, and passion for the service is an enabler of user involvement. However, the sample also shows that not many users get involved or are engaged enough to give feedback or establish a dialogue between them and the service:

“So, if you look at Status, for example, has got about 3800 downloads [online reviews], Status has done over 100,000 downloads. So, there’s a very small section of the user base that will engage with you [small proportion of downloaders will review a product]”. London Bus

This low percentage of user engagement in feedback is not perceived by the innovator as a barrier to user involvement but as an advantage, since only those genuinely is interested in collaborating with the service will do so. Another point observed is that if users are engaged in the service the quality of their feedback tends to be better.

4.7.2 Resources

Time & Cost

Some innovators have made it clear that involving users, especially at the beginning within the design phase of developing the initiative, is time-consuming. They prefer to design and develop their service without any user input because they believe in this way is quicker and so cheaper.
“There’s no very early beta testing, because there’s just so much [of the application] doesn’t work and I would end up spending too much time actually just answering emails and questions and dealing with problems because it’s not there and not working” London Bus

So, it seems that involving users in the design stage is perceived as more expensive and time-consuming. Therefore, time and cost of the initiative design stage is a barrier to designing innovation initiatives involving users.

Dialogue

A dialogue between the innovator and the user is desirable for the further development of the services. The innovator can learn directly from users about their needs and get some ideas for new functionalities for the service.

“[Come across this sort of stuff by just talking to people?] Yes, is organic, people talk to you, suggest things [...]” The Man in the Seat 61

innovators propose simple rewards such as the kudos of being be the first to try new versions of the service:

“There’s absolutely no obligation, so I will push a beta to them when the product is near completion and sometimes [also] with parts that are incomplete, if I think it’s of value, and then if I hear something from them, great, if I don’t, I still send the next one along until they say, oh, no, I don’t want to part of it anymore but no one’s done that yet.” London Bus
Space for the dialogue

Both innovator and user need a space to communicate. The innovator can provide the means and platform for this dialogue to occur and the user can show some engagement. Another type of space for dialogue can be seen in the membership schemes of EcoEscape and City Car Club.

“I do in that I advertise pretty clearly, ‘please email me’, I welcome all enquiries’. So, on my outscreens I have my email address, I have my Twitter address on status, and I welcome feedback in that respect. So, I try and make it known that I’m very open to criticism and suggestions and improvement” London Bus

“I set up a membership scheme for tourism businesses so that they could join and be part of the website, they would pay to do that and so it could generate some income and point people to those sort of places so that they could find them online but also, couple that with some stories and content and about sustainable travel and you know, what it means and that sort of thing and work in partnership with other organisations as much as possible.” EcoEscape

Creating a dedicated space or a platform where the dialogue between service providers and users occurs enables user involvement.

4.7.3 Business Type

Community-based services

It is apparent that community-based services involve users in the development of the service as its core. It is also evident that when the business starts from the community, that community should be included in all stages of the development process. Thus, thinking about services that are community-based is an enabler for user involvement.
“12 drivers [from the community] were involved originally before scaling. How this could all happen on a slightly larger scale? [...] to try and do something in a more business like basis so that it could benefit more people” City Car Club

“I have not said, but last August, we also became a community interest company. It is a legal structure which means that, it is a relatively new legal structure actually, which the Government introduced for third sector organisations basically, it is the same as a limited company but has an extra angle to it, whereby you are not for profit so, all your income or any profits, have to go back into the business, or back into the community that you are benefiting”. EcoEscape

4.8 Discussion

After studying the development processes, methods, tools, and approaches of a sample of innovation initiatives the exploratory study concludes with a series of enablers of user involvement. Understanding the ways in which users are currently involved in the development of digital innovations in bottom-up initiatives is the focus of the discussion in the exploratory study. It seems that user involvement happens in different ways according to how direct the influence of the user in the process is, on one hand, and how aware the innovators are about this influence, on the other.

Three unique modes of user involvement in the development of these innovation initiatives have emerged from the exploratory study: Indirect, Direct with Innovator’s Knowledge and Direct without Innovator’s Knowledge (or User Appropriation). This exploratory study discusses and compares these found modes of user involvement with emerging themes of user involvement found in the literature to find a suitable gap in the knowledge within the phenomena of the user involvement, to underpin the further development of this research project.
4.8.1 Indirect User Involvement and Empathic design:

The first mode of user involvement as can be seen in Figure 28 is when the user is involved in the development indirectly. The innovator has gained previous knowledge of the users’ needs and insights that are exposed and evident. With this knowledge and information, the innovator develops the service. In this mode, the user has an indirect involvement in the service development.

Clear examples of this mode can be seen in the exploratory study mainly in the first stages of development of London Bus, The Man in Seat 61, My Society Travel Map, EcoEscape and Carbon Diem. These innovators have clearly commented that they took first inspiration to develop their services from their observations of people needs and understanding (sometimes intuitively) of what a popular service is, or a specific functionality of a service. In some cases, the innovators are ‘the ideal users’ of their service. It is easy now to draw a comparison between this user involvement mode found in this study and empathic design.

Empathic design is defined by Crossley (2003) as a participatory design approach that is focused on user-centred design and pays attention to the user's feelings toward a product or a service. The emphathetic design approach seems to come from the innovator's ideas and perspectives of the user’s world and its needs, but the user's role looks very passive.
4.8.2 Direct User Involvement mode and Perpetual Beta:

The second mode (Figure 29) of user involvement found in this study is when the user is directly involved in the development of the service. If this direct involvement happens with the knowledge of the innovator, then it is called direct user participation.
This mode of user involvement can be seen clearly in some innovation initiatives within the exploratory study. Some of the innovation initiatives were developed with the users’ collaboration and voluntary insights and ideas, mostly in the phases after the service was launched. In the development of London Bus app, this is the mode that clearly appeared to fit. The innovator clearly specified that he has a special group of beta users that he invites and refers to when he needs to test a functionality of his service. It is evident now that this user involvement mode can be used to identify the perpetual beta method.

Perpetual beta (O’Reilly, 2005) is sometimes called forever beta, and it is another method of participatory design. Participation by users in the design of the service takes place, for example, when people from the community of users generate feedback after a digital
service (system) has been released. The user can request/give some ideas for changes to the service. Changes may occur in response to these users’ requests or because developers/designers observe how users appropriate or interact with the technology. The role of users shifts from passive to ‘co-developer,’ and systems are treated as services, not products.

4.8.3 User Appropriation Mode & Technology appropriation:

The third mode of user involvement is also direct participation but this time it is partially or entirely unknown to the innovator. Degele (1997) defines appropriation by examining the way in which people use technology in a creative manner. Technology appropriation seems to be a major phenomenon of user involvement in the development of innovation initiatives. The user appears to have a more proactive role that in the previous modes.

As can be seen in Figure 30, the users by using the service can accommodate, adopt and adapt the service to their needs. The user can appropriate the service in a way that is partially or entirely unknown by the innovator. Examples of this mode were seen in the study as examples given by the innovators about other services they have observed. My Society Travel Map innovator mentions that one of his coders was so heartbroken about the state of the official national rail website that he developed and built a better version.

“ [...] I mean one of my coders runs the train times solver UK website [...] and if you go and check that out you’ll see someone who just thought the official national rail website was rubbish and built a better version, and he has got masses of users for no reason more complex than the fact that the public is intolerant of bad design, and rewards good design [...]”. My Society Travel Map

Some innovators in this study have explained that appropriating digital tools themselves and learning how to create websites, blogs and pages has played a major part in them becoming service providers.

The innovator of The Man in Seat 61 built his website himself by appropriating technology. He learned how to build his website from scratch without being and software
engineer or a programmer. Therefore, he could showcase and create his service. So, by appropriating technology such as website makers, internet and social media, he has become an entrepreneur with his hobby.

**FIGURE 30 USER APPROPRIATION MODE - DIRECT MODE WITHOUT INNOVATOR KNOWLEDGE (BY THE RESEARCHER)**

“Learning about the web, and putting useful content on the web – the two are separate, but one enabled the other – you get to the point where you are fed up with the commercial world not doing what you think it ought to be doing, so you think, I will do it myself. And the internet is a medium like no other that enabled me to do that.” The Man in Seat 61

The innovator of EcoEscape is also another example of this user appropriation mode. She is not a developer, but she has taken a major role in the developing her website.
The two examples of technology appropriation from the exploratory study, were services developed by innovators, who appropriated technology from other services. Within this mode, some questions have emerged from this exploratory study such as how much does the innovator know about the phenomenon of Technology Appropriation (TA) and, moreover, how this can be used in the further development of services? Studying the level of service providers TA awareness is important since being knowledgeable about this phenomenon could give the innovators the power to decide if is convenient to foster or control TA within their services. These questions evidence a gap in the knowledge within the phenomena of the user involvement, and can be employed for the further evolution of this research project.

4.9 Summary and Implications
Most innovation initiatives interviewed do not actively involve users in the design stage of the development process, but after the services have been launched. This is because innovators tend to work in small groups or alone at the beginning of the initiative, and they find it time-consuming to deal with ideas and questions of people not involved in the development of their initiative. In most of the services studied, the innovators bounced ideas with close people from their social circle, and that they were also inspired by looking at services related to theirs. Another aspect that has emerged from the study is that the innovators are initially inspired or motivated by a situation that has affected them, or by an unmet need they came to recognise.
The initiatives that involved users from the start, learnt about the benefits of involving users from previous and other innovation initiatives. They learnt the value of users’ insights at early stages before launching their services.

The study has found that there is a variety of methods and tools currently used by the innovators to enable and foster users’ involvement in the development of their services. Those approaches and tools have been identified and reported in previous and research studies by various authors.

Those methods and instruments can be used arbitrarily in the different stages of the design process. It is noticeable that the method and tool are not that important, but the user involvement approach of the innovator is decisive as an enabler or barrier of user participation. Although many innovators seemed to listen to their users, this approach is ‘rewarded’ if the innovator involved the user in the design stage of the development process before launch. Most initiatives used the collaborative testing and experimenting approach involving users after the service was launched.

The exploratory study has helped to improve the understanding of how users are currently participating in the development of digital innovations in bottom-up initiatives. From the study, three distinctive patterns of user involvement in the design of these innovation initiatives have emerged: Indirect, Direct with Innovator’s Knowledge and Direct without Innovator’s Knowledge (i.e. User Appropriation).

Discussion has taken place to find a suitable gap in knowledge about the phenomena of the user involvement and to underpin the further development of this research project. This discussion has compared the three modes of user involvement found in the study, to three distinct emerging themes within the field of user involvement, which were found in the literature review: Empathic Design, Perpetual Beta and Technology appropriation.

Empathic design is an interesting topic, but it does not engage the users in a dialogue. In empathic design, the user involvement is minimal or non-existent in some cases.
Perpetual beta, on the other hand, does involve the user in the development of initiatives. With this method, the innovator listens to what the users have to say. However, it is not always lead by the users’ initiative or genuinely based on their issues and needs; the innovator plays the leading role in this relationship.

It has also been found that users seem to create new functionalities of a service by adopting and adapting it to fit their needs and purposes. The users’ role and the high degree of user involvement are evident within the phenomenon of TA. The examples from the exploratory study show that is not very clear how much the innovators know or are aware of this phenomenon, or how much they know about how users adapt and adopt their services. It is also uncertain if users have helped or created new functionalities in the service. These are the questions emerging from the exploratory study, and these issues demonstrate that the TA phenomenon is possibly the best path to follow in this research project.
5. A Theoretical Framework for TA

The fifth chapter explains the construction of a conceptual framework. It begins with integrating knowledge and findings from the exploratory study and the literature review into a framework. This framework contributes to creating a set of key aspects to facilitate the thematic analysis of the main study of the research. The framework also serves as the basis for the design of a set of tools to analyse the data of the main study of the research. This TA theoretical framework (TA TF) enables understanding of how much service providers know about the phenomenon of TA. Ultimately this research contribution to knowledge would be based on the evolution of this framework after being confronted by empirical data coming from the main study. Ultimately testing this TA TF will produced the findings of this research.

The chapter starts with an explanation of how the framework is useful for this research. It also explains how the researcher has developed this concept structure and from where the different components derived. This chapter explains the construction of a conceptual framework that supports the research. The chapter continues to explain each element of the framework and the relevance of it to the main study. The various units of the structure are:

- TA definition

- The TA level theoretical framework composed of three main parts:

  1. The three TA levels hypothesis.

  2. The service’s provision, actions and user involvement approaches and their possible relationship with the TA three different levels.

  3. The modes of user involvement, their activities and types of users and their possible relationship with the TA three distinct levels.

The chapter continues with an explanation of the three primary TA enabling properties: User Leads, Service Change and Foster TA. This chapter ends by explaining the which
TA awareness key aspects service providers need to have in the context of the further development of digital services. It also proposes and describes two tools for organisation and analysis of the data: 1) The TA Awareness thematic analytical tool that will help to understand and evaluate each of these key aspects of the data collected in the central study, and 2) the Comparative TA Awareness tables that can help to make a comparative analysis between the different participants and to produce some research findings.

5.1 Aims

The aims of constructing a framework are:

- explain and integrate knowledge and findings from the exploratory study and the literature review;
- contributes to creating a set of key aspects to facilitate the thematic analysis of the central study of the research;
- serves as the basis for the design of a set of tools to analyse the data of the primary study of the research;

Ultimately this theoretical framework enables understanding of how TA can be identifying and how much service providers know about the phenomenon of TA.

5.2 The Theoretical Framework Design Process

Figure 31 and Figure 32 show an overview of the research stages, and the different concepts and ideas studied, that have led to the framework design and the formation of the main study. There are four phases of this research, as can be seen in Figure 31. The first phase is composed by four parts a. the Exploratory Study (explained in Chapter 4), b. the Literature Review (Chapter 2), c. the 7.4.4.6.1 SCENARIO 11 THE ORIGINAL MV IDEA: MONEY TOWARDS PENSION SCHEME (DERIVED FROM MONEYVOUCHER) (Chapter 6, page 261), and d. the construction of the theoretical framework based on the findings and analysis of the previous parts (in this Chapter). The second phase is the planning and designing of the main study (Chapter 6). The third phase is the
presentation of the cases studies (Chapters 7, and 8). The fourth and final phase is the discussion and presentation of the research contributions and conclusions (Chapters 9, 10, and 11). The first two parts of phase one, the exploratory study and the literature review of the research, have produced some first research outcomes and knowledge about the phenomenon of user involvement in small and bottom-up innovation initiatives. Because of these two stages the researcher has found a clear knowledge gap in Technology Appropriation that will be investigated in the main study of this research.

**Figure 31 Overview of the Research Stages Leading to Design Framework and Main Study**

As can be seen in Figure 32 there are four key aspects to investigate in the main study. The first three key aspects come from both the exploratory study and the literature reviewed. These three aspects are the Methods and Tools of user involvement, the Services Provider Approach to users’ participation and the Mode of user involvement.

The fourth key point to be study in this research are the TA enablers. TA enablers are User leads, Foster TA and Service Change (impact of TA). These four key aspects conformed the research hypothesis derived from the analysis of the results of both the exploratory study literature review, and the examples found in the **Scenario 11** (Chapter 6, page 261).
FIGURE 32 TA TF & TA KEY ASPECTS CONSTRUCTION
5.3 TA Theoretical framework

This theoretical framework (USC, 2016) is a novel attempt to integrate into a coherent structure the knowledge gained in the exploratory study and the literature review. This structure also helps to understand and reveal the key aspects that will lead to answering the research question. These key points will constitute part of the framework tools for analysing data to give a better understanding of how much service providers know about the phenomenon of TA. Figure 33 shows an overview of the different elements of the TA level conceptual framework:

This theoretical framework strengthens the research by:

- helping to visualise and communicate the different concepts previously studied;
- connecting the research to existing knowledge about user involvement and TA;
- helping to articulate the theoretical assumptions of the research (USC, 2016) and contributing to addressing ‘questions of why and how’ (Robson, 2002);
- being a base for creating a hypothetical TA enablers framework that helps to guide the primary study of the research; and
- helping to reveal the fundamental aspects to be investigated in the research as well and to generate a prototypical tool for their analysis.
Figure 33 TA three level theoretical framework
5.2.1 Towards a TA definition

The practice of appropriation is necessary for a broad range of disciplines and research areas, from art to landscapes, from physical environments to the digital realm. Its meaning varies significantly between those contexts, as is shown in the literature review chapter. The literature review has also been conducted to understand the various aspects of appropriation and technology adoption and the relevance of this definition to this research project.

Although a multidisciplinary understanding of appropriation is potentially useful, this research favours the definitions in the literature on digital and communication development since the digital services are the context of this research. Digital services are probably the best contexts for studying the phenomenon of TA.

Even within technology literature, there are competing views on what appropriation means. However, three distinctive ways of understanding appropriation have been identified (see Figure 34) which encompass the broad spectrum of different points of view on the phenomenon.

1. Appropriation as the way in which end users adopt patterns and adapt/transform technology into working practices at a deeper level (Dourish, 2003).

2. Appropriation as personalisation/ customisation/ tailoring of technology to serve personal needs and motives (Wiredu, 2007), or to meet end users’ needs, (Jones & Twidale, 2005). This take on appropriation can be considered weak appropriation (Bossen & Dalsgaard, 2005) since it implies the use of built-in system features by users for sense making and customisation.

3. Appropriation as the way in which people use technology in creative and unexpected ways (that is, unanticipated by service providers, designers, and developers) (Degele, 1997). This type of appropriation is strong (Bossen & Dalsgaard, 2005), and implies the modification of existing systems and the creation of new ones to replace the original system.
These three stances on technology appropriation definition are not complementary to each other. The investigator can use them separately. They describe different actions that the user performs while using or confronting technology. The above argument implies that by using technology the user’s actions somehow affect the technology in use. Then, by appropriating the technology, the user alters and changes it.

It is not clear in these definitions of TA how, or how much of, the technology is changing or being altered; it is not also clear if the different actions performed by the user change and modify the service in a variety of ways and or different intensities.

The researcher felt it was necessary to look for a series of TA examples to understand these differences in intensity. A process took place of mapping and getting samples of TA from the literature, the real-world observation and within the exploratory study. The TA mapping helped to visualise, understand and exemplify the different types of alterations, modifications and general contributions made by users within the sample of services. The 7.4.4.6.1 SCENARIO 11 THE ORIGINAL MV IDEA: MONEY TOWARDS PENSION SCHEME (DERIVED FROM MONEYVOUCHER) (Chapter 6, page 261) will be explained fully at the beginning of Chapter 6 as part of the preparations and planning of the main study of this research project.
Three distinctive intensities were identified with the help of the TA map: low, medium and high. Some services did not show signs of leaving the user any room to make alterations and did not allow the user to modify or even customise it in any way. An example of this low-level intensity is EasyJet. The digital touchpoint of this service (their main website) leads the user in one direction only. The service leads the user into their path without ‘exit’. The user should go through all the different stages to buy the tickets. The system does not allow any flexibility in their flow nor allows the user any customisation or personalisation. The system does not keep a user history as a means of tailoring an individual’s needs. Therefore, EasyJet serves as an example of low-intensity TA in the TA Map. Another example from the TA map is the game Candy Crush. The system has, for instance, a ‘fun-o-meter’ to measure how much fun the player is having at a moment within the match. It is not clear how the service providers are using the users’ feedback. This is another example of how little the user can adapt or customise a service.

In the middle range of intensity, some examples were found of platforms that were rigid. For example, Facebook is quite an inflexible platform. Its layout is rigid, the different elements that conform the page such as the banner and the profile picture cannot be moved. However, some users display their creativity by customising and personalising their banners and profile pictures to look different from everyone else.

Another example found is Netdoctor (NHS) (reviewed on Feb-15) which, despite having a linear flow like EasyJet, allows forums where users can exchange information about a health issues, allowing social interactions between the users and new ways of interact.

Babble is another example of medium range intensity. This service started as a blog for educated, urban parents (reviewed on Feb-15) grew to half a million readers per month by allowing all users to contribute and build a community. Very like Babble is the example in the exploratory study of the research: The Man in Seat 61. This platform has
grown and keeps up to date by allowing users to exchange information and by generating a community around the service. Ikea Hackers is also a service that has grown from a blog and a users’ community. It is used in the TA map as an example of high level intensity since it requires some expertise, time and labour on the part of the user which other services do not. To be part of Ikea Hackers, the user would show the process of his/her Ikea hack on video or as a series of pictures. It showcases users’ creativity and ability to create something different out of an Ikea product. An example of high intensity technology appropriation from the exploratory study is Cambridge Cycle Map, which encourages its users’ community to contribute information to build new routes and create new cycling maps.

5.2.2 The TA three level definitions

This research proposes a new definition of TA. This new definition builds on previous theoretical work, the examples found in the TA Map, the findings of the exploratory study and the knowledge gap highlighted previously.

This new definition of TA contemplates the relationship between services provision and intended design and the ways in which users can adapt and alter it. This definition of TA encompasses three different levels, and it constitutes the first part of the TA Theoretical framework (TA TF). Those three separate levels are shown in Figure 35.

1. **Low TA level**: Technology is used as intended. The definition means that the original purpose (the design) of the service is not altered or modified. Nevertheless, it is understood that the user will still adapt and adopt this technology or service in a minor way. The service does not have embedded capabilities that allow the user to personalise or customise it. The service can observe the behaviour of the user and consequently modify the service and further develop it.

2. **Medium TA level**: The technology can be altered or changed by the user from its intended design but also can be tweaked a bit to support his/her personal needs and to serve his/her motives. The service provides features that permit
FIGURE 35 TA LEVELS DEFINITIONS

Actions that contribute to further development

Low TA Level
INTENDED USE
User insights
OBSERVATION DIALOGUE
User Changing appearance and social interactions can influence change in the service
User ideas that alter & modifying the service can be used to further develop the service
User change functionalities and new systems can change and further develop the service

Medium TA Level
PERSONAL NEEDS AND MOTIVES SERVED
Can change appearance
Can change social interactions
Can alter and modify the service
Can contribute to design

High TA Level
EXISTING SYSTEMS MODIFIED OR NEW ONES CREATED
Can change functionality
New systems can be created

Actions that contribute to further development

Service Impact
User Impact

Technology Appropriation Levels & Impact
personalisation and customisation. The user can alter and change the appearances of some service features and can modify and complement some social interactions. Users’ actions and modifications can influence the service to redesign some of their functionalities or to add new ones. Thus, at this level, the user can contribute to the further development of the service.

4. High TA level: The technology is modified considerably. The users generate new functionalities and can ultimately change the original purpose (design) of the service. These changes, new ideas and new features resulting from user appropriation can influence the entire service. Service providers can use those ideas to redesign some functions or add new ones. Their future development will benefit greatly from knowing about users’ alterations, changes, and new uses.

5.2.3 Service provision, actions and user involvement approaches

The second part of the theoretical framework illustrates service provision, activities and user involvement methods and their possible relation with the three different TA levels (Figure 36). In the low level of TA will be a service which provision involves some customisable components for regular use. Its users can have customised these elements as is intended. This is the service has the minimum provision to deliver itself. Its. It is most likely that this type of service provision and users’ actions correspond to a service provider listening approach. By listening to its users’ feedback, the service can check the way they use it: basically, the service can get users’ insights. With these ideas (knowledge) the service can be further developed. This approach does not necessarily lead to changes in the service. A medium level of TA can be found when the service makes visible social agreements, facilitates social practices and their evolution, makes configurations that are shareable and adaptable by others and supports Mash-ups (A. Botero, K-H. Kommonen, 2010).
These provisions could be a cluster in two different sets of service actions: a first one that corresponds to personalisation and social interaction tools and a second one that allows the user to tailor and change the service for his/her purposes. These provisions and actions could correspond to a Collaborative approach. This method could alter and modify the service.

The researcher finds a higher level of TA when the service gives access to the source code, provides its API, is sensitive to workarounds, and provides software toolkits with reusable components (A. Botero, K-H. Kommonen, 2010). These provisions and actions could come together under the user involvement approach of Testing. The Testing approach includes listening, collaborating and testing with users (Bosch-Sijtsema & Bosch, 2014). This approach could help to change the service’s functionalities and even purpose.
5.2.4 Types of users, their actions and the modes of user involvement

The third part of the TA level theoretical framework illustrates the patterns of user involvement, their measures and types of users and their possible relation with the TA three different levels (Figure 37).

The researcher perceives a low level of TA when the pure end user (Ardito et al., 2010) uses the service as the service provider has intended it. The users customise the service by using it. Some users at this level of TA send feedback and comments to the service. As explained before, this can lead to generating insights which could result in further development. As found in the exploratory study in this level of TA, the mode of user involvement that prevails is Indirect User Involvement.

**Figure 37 Types of Users, their actions and the modes of user involvement related to TA Levels**

A medium level of TA can be found when the end user customises (Ardito et al., 2010). This customisation can involve actions such making social agreements, configuring and personalising the service and evolving social practices within it (A. Botero, K-H. Kommonen, 2010). This type of user gives feedback to the service and is be willing to participate in communities of the service. These users personalise the service and interact socially with other users and the service itself.
A medium level of TA can also be found in end users who write macros (Ardito et al., 2010). These users can integrate (make their configurations and share with others) and also aggregate and remix using different social media offered by the service (mash-ups) (A. Botero, K-H. Kommonen, 2010) or their own. These users can tailor and change the service to fit their own needs and purposes.

Both type of user in this medium level of TA contribute in different ways to varying the appearance or social interactions of the service and can alter its function and add to different designs and uses of the service. This previous point combined with a collaborative service approach could help to develop the service further.

As found in the exploratory study, in this level of TA the mode of user involvement that prevails is Direct User Involvement known or partially known by the service.

The researcher finds a higher level of TA when the end users themselves can develop web applications, are data-intensive researchers and also software professionals (Ardito et al., 2010). This type of user can assemble software components, create workarounds, use modules and libraries and can programme and write modules (A. Botero, K-H. Kommonen, 2010); and can also change the service functionalities without the service knowledge. This type of user corresponds, as found in the exploratory study, to the Direct User Involvement Unknown by the service.

5.4 TA Enabling Properties Framework

To permit TA within the further development of services, services and users should correspond to the characteristics (action, modes, and provisions) explained before in the TA three level theoretical framework (TA TF). This TA TF relates to three different levels of TA but what are the TA Enabling Properties to identify and which can be the differentiators between a higher level and a low level of TA?

A possible idea derived from the TA Map (a map with examples of TA collected by direct observation and cumulative work found in literature and examples from the exploratory study, as will be explained further in the preparations for the main study) reveals that
the examples showing a higher level of technology appropriation are those that correspond to a service that controls less and, to an extent, lets users lead parts of the service. Additionally, the TA Map shows that a high level of TA may result in major changes in the service. Another property that the TA Map shows is that further development of the service tends to occur with the collaboration of the user if the service provider understands how TA occurs and can take decisions to foster it within their service.

User leads, Service Change, and Foster TA are potentially the main enablers of TA (see Figure 38).

![Figure 38 TA Enablers (by researcher)]

### 5.3.1 User Leads

User leads is a TA enabling property; it ranges between the user leading the use of the service and a flexible service that allows this to happen on one side and the service provider having total control over the service on the other hand.

Examples of services that control user movements can be seen in the TA Map, such as the EasyJet website where the user cannot navigate freely but is controlled throughout.
Examples of permitting the user accessibility to the code and API from the TA Map are Wikipedia, Rhino plugins and community and Arduino and Processing communities.

User leads is the property by which the user can move more freely in using the service. This ‘freedom’ could generate new actions within the service’s existing features or enable people to improvise new actions and new purposes for the service.

5.3.2 Service Change

Service Change is a TA property which can measure users’ innovation impact on the further development of the service. It ranges between weak and strong changes in the service.

The TA Map has examples of service changes. Babble, for example, has changed from a private network of blogs in 2006 that reported parenting trends and personal essays into a magazine that was acquired by Disney Interactive Media Group in 2011 because the growth of its community.

5.3.3 Fostering TA

Fostering TA enables the service to be open to TA. The service has been created or transformed to foster technology appropriation, from following the service rules to services that have mechanisms in place that can foster appropriation (Dourish, 1999) (Dix, 2008). The users can create new rules for use. Their behaviours and different ways of using and adopting the service can help it to develop further.

This research presents a hypothetical framework that relates the three TA enabling properties (Figure 39) to the three levels of TA. The main study of the research will test and evaluate this hypothetical framework.

This TA Enabling Properties Framework (TA EPF) can be used to interpret the results of future field work from the main study.

Possible scenarios can be drawn to make it easy for start-ups to understand how their services are classified within this TA EPF.
5.5 TA Awareness

This chapter ends by explaining the TA key aspects which service providers need to be aware of in the context of the further development of digital services. It also proposes a TA awareness thematic analytical tool that will help to understand and evaluate each and one of these key aspects of the data collected in the main study.

To foster TA within digital services (DS), it is fundamental for the service providers to be aware of the phenomenon.
This study examines the state of service providers’ awareness of DS specifically in the context of start-ups. It draws/constructs a framework with the elements of TA awareness that allows the measurement of TA awareness among service providers.

5.4.1 TA Awareness Aspects

The key aspects of TA Awareness (Figure 40) have emerged from the TA TF. They are: Service Provider Approach to User Involvement; Mode of User Involvement; and User and Service Provider Actions Related to TA and the TA Enablers. These key aspects are taken from the findings of the exploratory study plus a comparison with the literature reviewed. User and Service Provider Actions Related to TA are a combination of the literature review and the exploratory study, and the TA Enablers come from reflection on the literature review, the exploratory study and also the mapping of TA (this will be explained in the planning of the main study Chapter 6).

1. Service Provider approach to User Involvement

The service provider approach to user involvement Figure 40 was highlighted as important in the exploratory study of this research since it connects actions and methods of the user provider with the tools and resources of the service. Even if the service provider is conscious or not about their approach, it shows the service’s vision and understanding of the importance of user involvement.

To understand how far the service provider is aware of TA it is important to establish first what the service user involvement approach is. More specifically what are the service’s mechanisms, tools and methods in place to involve the user? Is there a dialogue in place between users and service or is there is a system for listening to the users? Does the service involve the user in a collaborative situation that could lead to further development of the service? Moreover, does the service involve the user in testing new features and services?
2. Modes of User Involvement

The modes of user involvement Figure 40 are another key aspect to understand the TA awareness in services. As the exploratory study showed, it is essential to find how much the service knows about their user’s modes of involvement since this knowledge is clearly connected and related to the previous aspect. It is important to look at, for example, knowledge of users that are or are not contributing to a dialogue with the service to improve it, and of users who use the service differently.

**Figure 40 Key Aspects of TA Awareness**

It is also important to find examples of those who use the service in an unexpected manner. In this aspect, it is also important to identify if the service shows TA potential. TA potential is the possibility of the service to permit and allow TA to further develop the service.
3. User and Service Provider Actions Related to TA Figure 40

To understand how far the service provider is aware of TA it is also important to identify, as the exploratory study did, the different actions performed by users and service providers that are related to TA. It is also important to find if the service provider can identify different types of users within their service, if the service identifies itself with actions that could lead to TA, and if the service identifies some actions by the user that could lead to TA.

4. TA Enablers

To understand how much the service provider is aware of TA it is also important to recognise the TA enablers (Figure 40):

- The service features and characteristics of control and how they use them
- If the service has changed its activities/features over the period it has been in use
- The response of the service to user behaviour/actions and feedback
- If the services are facilitating resources to foster TA. (Which are those resources?)

5.4.2 TA awareness thematic analytical tool for analysis

This part of the chapter explains the design of the analytical tool (see Table 24) that will serve to analyse each of the key aspects of TA awareness for each participant in the main study of the research.

This tool could also be useful at the end of the main study and the research since it can help to communicate the findings.

The key aspects of TA Awareness that have emerged from the TA TF are narrowing the knowledge gap and could help to answer the main research question.

Data is collected to answer the main question and to understand these key concepts better in the main study of this research (Chapter 6).
By identifying and focusing on those key aspects, the tool could be used as a simpler way of organising the data from the main study. The tool comprises of five columns and five rows. The first and second columns display the key aspects (explained previously in this chapter). To analyse and organise pattern the meaning of the data from the main study.
and to facilitate the process of coding the design of a thematic analytical tool based on deductive thematic (quote-from thematic analysis) approach could be useful.

The eighth row is TA Examples. TA examples are the ability to identify examples of technology appropriation. This part of the TA awareness analytical tool relates to how far the service providers can recognise and name examples of TA within their service or in other services. To define the level of TA awareness, it is also important to know if they have used those examples in any way that helps to improve or further develop their service.

The other three columns of the analytical tool are related to the degree of knowledge by which the service provider perceives/explains each fundamental aspect. The three different degrees are unknown, conceptual understanding and practical understanding. Third Column: unknown refers to the service provider’s apparent lack of familiarity with a key aspect of TA presented by the researcher in the main study. Fourth Column: conceptual understanding refers to the service provider’s apparent knowledge or notion/idea of the key aspect of TA presented by the researcher in the main study. The service provider could explain the concept using an example from another service or a third party. Fifth Column: practical understanding refers to the service provider’s clear understanding of the concepts proposed by the main study, with examples taken from the experience and practice of the phenomenon within their service.

5.4.3 Comparative TA Awareness tables

As explained before, the TA awareness tool is used by the researcher and filled with information from each participant service and service provider of the main study of the research. At the end of the deductive coding stage, a stack of all participants’ data is identified and organised. This information is ready for a comparative analysis between the different participants and to produce some research findings. For this analysis, it is important to design Comparative TA Awareness tables (see Figure 41)
They are five tables each corresponding to a TA awareness key aspect plus one for the examples of TA. These tables consist of five columns and eleven rows. The first column corresponds to the services taking part in the main study of the research. The second column shows each of the key aspects to be compared between all the participants in the main study. The last three columns correspond to the knowledge degrees explained previously in this chapter.

5.6 Summary and Implications

The first two stages (exploratory study and literature review) of the research have produced some conclusions about the phenomenon of user involvement in small and bottom-up innovation initiatives. Among many results and findings, they have pointed out a knowledge gap around TA for this research to pursue and which can be clearly
summarised in the main research question: How much do service providers know about the phenomenon of TA, or how far are they aware of it?

The research constructed a TA theoretical framework (TA TF) that integrates into a coherent structure all the relevant findings of TA and knowledge gained in previous stages. The TA TF also helps to unveil the TA Enabling Properties: User Lead, Service Change and TA Fostering. Another important aspect for the companies is to learn from the way users’ appropriate services. This learning from TA can help to improve the provisions, features and offerings; the service could become more competitive. To do this it is necessary for start-ups to be able to identify TA. Fostering TA can be stimulated by, encouraging, education and give example to users. A customer within a TA fostering service can become an empower user (Kynigos, 2004). An empower user is whom proactively gets involve and participate in the service development. This shift and change in the user could have a positive effect on the service economics and business benefits.

This TA Enabling framework constitutes an important part of the building of the key aspects of TA awareness. The key aspects of TA awareness are defined as the Service Provider approach to User Involvement, the Modes of User Involvement, the User and Service Provider Actions Related to TA, and the TA Enablers. These four key aspects are constituting the essence for a better understanding of how much service providers know about the phenomenon of TA. These key aspects form the analytic guide and tools for the main study of the research.
6. Main Study Methods and Tools Development

The purpose of this chapter is to describe the method used and tools developed to conduct the main study of the research. This chapter reports how the main study was designed, and implemented. The analysis of its data and findings will be reported in the next chapter. The aims of the study (described in more detail below) were to learn about TA in the start-up context and to investigate the degree to which service providers are aware of technology appropriation.

The chapter begins with an introduction aims and objectives, and overview of the main study. It continues with the sampling criteria and strategy to engage participants. Moreover, it explains the data collection phase one, which includes the initial observation, interview and tools. It continues with the explanation of the data collection phase two, which includes the online observations, the final interview, and tools. The chapter ends with a summary and implications.

6.1 Main Study Introduction

Some authors (Dix, 2007a; Hagen & Robertson, 2010a; Bosch-Sijtsema & Bosch, 2014; Degele, 1997; Wiredu, 2007; Jones & Twidale, 2005) believe that it is fundamentally important for companies to involve users in the development process of their services. They think that it is also fundamental to understand in which ways and how the user appropriates and adapts a service’s technology to fit their needs following the initial launch and when the service is in use, and being design in use (Ardito et al., 2010). Some authors have defined TA as the use of technology in creative and unexpected ways (Degele, 1997). The literature reviewed and the exploratory study have demonstrated that services can potentially be developed further by taking into consideration and implementing the outcomes and ideas coming from ways in which the user appropriates technology in digital services. In addition, (Bossen & Dalsgaard, 2005) have shown how TA intensity is a key factor when describing the type of outcomes of TA, referring to using build-in features for customisation as examples of weak TA, and technical alterations
and the creation of new features as strong TA. They have demonstrated that there is a relationship between the services provision and intended design, and the ways in which users can adapt and alter it. But they have limited the examples to two intensities and fail to demonstrate if by implementing users TA ideas and outcomes the service could be further developed in different levels.

Knowing and understanding how, when, in which ways the user adapts technology, and the ideas and outcomes of this TA are important points that can help the service providers to further improve their service. Therefore, three principal points are missing that will be addressed by this research. First, the need for some TA samples that can clearly illustrate the TA intensities proposed in the TA framework, therefore to prove the hypothesis of three level TA. Second, the need for a identification procedure that could help identify the key elements of TA within the services, that can help to inform the research but that can be left as a take away to be use by service providers to identify TA within their companies.

Moreover, third, the research needs to understand how much and to what extent the service providers are aware of this phenomenon, and if they currently have use outcomes and ideas from TA to further develop their services.

For a digital service to foster TA, it is fundamental for the service providers to be aware of the phenomenon. To be aware of the phenomenon, the TA should be identifiable. This study examines the state of service providers’ TA awareness within their services using the Technology Appropriation Theoretical Framework (TA TF) that contains the key aspects of TA Awareness, as explained in chapter five and propose a method to identify the phenomenon.

The context chosen for the main study of this research is start-ups. These start-ups are small and medium innovation initiatives which provide services partially or entirely using digital platforms (the reasons for chosen this type of enterprises are previously explained within this thesis in the introduction and the literature reviewed). In other
words, these services have been designed to provide their service with the help of technology in the form of Internet platforms and social media. Those start-ups are relatively young enterprises, between one and two years at the beginning of the main study, and varying from minus one to three phases based on the start-up standard Commons Organisation phases (Start-up Commons Organisation, 2013).

6.2 Aim & Objectives

The main purpose of this study is to find out how aware the service providers are in relation to the phenomena of technology appropriation. It is also important to understand and identify TA within the development of DS in the context of start-ups.

Objectives:

- To find within the companies interviewed examples of technology appropriation.
- To find how the phenomenon in relation to different start-up phases tends to occur.
- To identify those elements of the service that can be appropriated.
- To understand (from service providers point of view) the user involvement and the relationship with the digital service through technology.
- To understand how (if at all) companies employ their knowledge of technology appropriation for further development of their services.
- To understand how companies can identify technology appropriation if is taking place within the digital services.
- To help draw a method to identify TA to develop further digital services.
- To understand if service providers are aware of this phenomenon.
- To find the different TA awareness elements.
- To create a framework of TA awareness elements that will help to measure awareness of TA.
6.3 Overview of Study

The main study of this thesis (results described in the next two chapters 7 and 8) comprised a number of stages which were undertaken roughly sequentially. A series of actions was carried out to conduct the main study (see Chapter 3, Table 16, page 89). These actions included the selection of the sample, preparation for online observations, preparation for the interviews, and the design of a series of tools to collect and analysis data. These actions are summarised below, with each stage described in more detail in the sections that follow.

1. **Getting to know the participants:** In the initial company engagement and invitation to participate, this stage aimed to recruit suitable companies to take part in the study. The selection of the sample was important to enable generalisation of the findings. The companies that took part in the study were carefully selected to match a set of start-ups companies’ key characteristics (explained at the introduction and later in this chapter) required to provide the information needed it to answer the research question. The plan involves the identification of participants, contact, and an invitation to take part in the research.

2. **Getting Connected:** The first phase of data collection consists of a first online observation of the service and the initial interview.

   2.a **Online Service Observation:** The aims of the initial observation were to understand what type of service the company provides in preparation for the initial interview.

   2.b **Initial interview:** The aims of the initial interview were to get connected, to introduce the research and the researcher, to understand the motivations and the process behind the company, to determine the possible influence and involvement of the users in the development of the services, to identify appropriate case study participants, and to gain access to the suitable cases’ online platforms normally hidden for general public or that were exclusive for members.
3. **Getting Immersed:** Online Platform observation was the second phase of data collection. The aim of this activity was to observe the services' digital touch points and different online platforms in action to understand where TA might occur, to search for TA examples, to observe the ways in which the service interacts with the users, and to identify the modes of user involvement.

4. **Wrap-up**

4.a **Final interview:** The final interview focused on validation and verification of findings and insights from previous data collection actions.

4.b **User Journeys and building scenarios:** The aim was to construct, with the service providers’ help and knowledge, user journeys and scenarios that exemplify the users’ use of technology within their services.

5. **Case studies:** More detailed case studies were undertaken with five companies that displayed a preoccupation with the social impact of their businesses and the real need of building communities of users to deliver a better service. It introduces the findings of the research which will be presented fully in the next chapter.

Moreover, it is important to ensure that the research follows international and national ethical research standards. As explained in Chapter 3, under the research methodological approach) the researcher has followed the Loughborough University Ethical Procedures and standpoints. These procedures include: An Ethical Clearance Checklist, Participant Information and Informed Consent. Information about the research was given to the participants. They had been informed about their rights over their data and its protection. The researcher presented the research objectives to them and agreed to share the research findings with them. The participants had agreed to take part in the research and had signed consent forms. These forms have been kept by the researcher.

6.4 **Getting to know the participants - Sampling Criteria**

Selecting the specific study units of a research project it is important because they need to guarantee the right and specific data needed to answer the research questions. Using
purposive sampling (R. Yin, 2011) as method can help to achieve this. It is also important in the sample to find a broader selection of units that could guarantee different perspectives that enrich the data. The sampling selection needs enough participants that give opportunities to identify appropriate and enough case studies within the units (Ragin & Becker, 1992) and that help to avoid research bias (Yin, 2011).

A preliminary list of twenty-nine companies were considered as possible participants for this research (Figure 42). This list comprises existing local (Brighton) networks of start-ups companies, purposive sampled (R. Yin, 2011) plus some other companies coming from the researcher professional network as convenience sampling (R. Yin, 2011).

![Figure 42 Potential Participants Start-ups](image)

**Figure 42 Potential Participants Start-ups**

Of these twenty-nine, a sub set of twenty-three were invited to take part in the research. The companies that took part in the study were carefully selected to enable generalisation of the findings, from different business so it could guarantee different perspectives of the phenomenon, and to provide the information needed it to answer the research question. Moreover, the twenty-three start-ups companies selected matched the set of key characteristics, as explained in the thesis introduction: first they are all start-ups. Second, it was apparent that they delivered their services partially or entirely through
digital means, and they all have at least an evident digital touch point where they display and offer their services. Third, the nature of the digital services businesses on this list is very varied, from B2B companies to online communities (Figure 43); this diversity could guarantee to explore TA phenomenon in different business models and this might impact in the diversity of TA examples. A fourth desired characteristic is that these start-ups could potentially have developed their services close to the end user.

Most of these businesses are based in Brighton and are part of Wired Sussex (“Wired Sussex,” 2015) and the first cohort of FuseBox24 (G Youngs, Byford, & Jones, 2015). FuseBox24 is a business support programme for digital start-ups hosted by Wired Sussex and the FuseBox in Brighton. Wired Sussex is a membership organisation based in
Brighton. Its aims are to help their members (companies and freelancers operating in
digital media and technology) to create, innovate, and grow.

6.4.1 Gaining access to the participants

Another important factor to take into consideration while planning the research sample
is access to the companies. Convenience sampling (R. Yin, 2011) consist on selecting
research units because of their availability. Since most of the companies were part of a
network, the researcher believed that this network could facilitate the introduction and
enable access to the companies; this did turn out to be the case.

The first strategic approach was to get access to the companies through gatekeepers.
Gatekeepers from FuseBox24 and Wired Sussex were approached and interviewed.
Although promises were made to grant access and to be introduced to the individual
service providers, the strategy failed since, although the researcher insisted, those
introductions did not take place.

After the unsuccessful result of the gamekeepers’ approach, the researcher opted for a
direct approach. The researcher found that the first cohort of FuseBox24 service
providers would be meeting and presenting their achievements through the programme
at an event organised by the University of Brighton. The researcher designed, prepared
and printed a research presentation card (Figure 44).

The card asked the holder (target participant) “Is your digital service a start-up? The
companies have access to the Fusebox24 programme because they were start-ups but the
researcher wanted to be sure there were also digital. If the answer was yes, it would
indicate that this company had the two principal characteristics key to be part of this
study. Then the researcher would encourage the card holder to turn over the card and
would tease the possible participants with the written sentence “your digital service can
be more successful by knowing more about your users” together with the researcher’s
academic details. The card was used as an ice breaker tool designed to help initialise a
conversation between the service providers and the researcher.
This purposive sampling strategy worked well, and the researcher got access to most of the service providers of FuseBox24 (ten companies) plus other companies that were part of Wired Sussex and were also at the event. After the first encounter, an email was sent to establish a dialogue with the service providers, and to formally present the research aims and the purpose of the interview.

A snowball sampling (R. Yin, 2011) strategy was also used; in the course of the initial interviews the participants were asked by the researcher to identified other service providers that could potentially being research interviewees. In total 23 companies from the original list were invited to take part in this investigation. An appointment with ten companies for the first interview was set up. Data from ten companies was analysed to identify five case studies.

6.4.2 Research Participants

Table 25 describes the most relevant characteristics of the ten companies participating in the research and that were interviewed in the main study of this research. The first column displays the list of companies; the names of the companies have been changed and anonymised. Although it was only one company that explicitly asked to remain
anonymous, the decision to anonymise all the companies for the reporting of this research was taken.

The second column defines the type of business in relation to its users. Most of the companies are business to clients (B2B) and some display both B2C and business to business (B2B) models at the same time. The third column describes the nature of the services. Some services delivered tangible products combined with services, but most delivered intangible services and digital services. The fourth column contains the digital touch points of the service. All the services do own a website where they can display and showcase their services. A big majority also have a digital platform for member-only use, or one where they can work privately. Some have applications already running and some have the idea of an application in the future to run parts of their services. The fifth column describes the companies’ technical ownership level versus the use of mashups to perform and deliver their services. Half of the services own their API and half are very comfortable using mashup services to deliver their services. The sixth column defines the relation of the person interviewed within the enterprise. All the interviewees were service providers, and only one was a marketing director and not the company’s entrepreneur. The seventh column states the start-up phase of the company as explained by the interviewee at the time of the initial interview and based on the start-up common organisation phases (Start-up Commons Organisation, 2013). The majority considered their companies to be in between the first and second start-up phases; meaning that they were between showing some user growth or revenue, still looking for additional money sources and market validation, for scaling or already showing clear growing and measurable user and market traction: proof that people wanted their services, growing rapidly toward they market goal. A few of the start-ups were showing clear signs of growing and measurable market traction and were expecting to continue growing scaling.
<table>
<thead>
<tr>
<th>Start-up</th>
<th>Business</th>
<th>Service Nature</th>
<th>Digital Touch Points</th>
<th>Own API Vs Mashup</th>
<th>Person interviewed</th>
<th>Start-up phase</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>WomenIn Fashion</td>
<td>B2C</td>
<td>Community Website</td>
<td>Mashup</td>
<td>Service</td>
<td>1-2</td>
<td>London</td>
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<td>-Members only</td>
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<td>WorkPower</td>
<td>B2C</td>
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<td>J</td>
<td>C-Hack</td>
<td>B2C</td>
<td>Global Community</td>
<td>Mashup</td>
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<td>Event</td>
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<td>Designer</td>
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</tbody>
</table>
The final column describes where the company is based and where the interview took place. Most companies were in and interviewed in Brighton, three from London and one from Glasgow.

### 6.4.3 Case Studies Sample

Twenty-nine companies (Figure 45) were considered for this study first phase of data collection because they seemed to fill the criteria: they were start-ups, with a visible digital touch point. An initial online observation took place which focused on getting to know and understand the type of services they provided. After further consideration Twenty-three (Figure 45) companies seemed to deliver their service completely or partially within a digital platform. These twenty-three were approached and invited to participate in the study.

Ten companies (Figure 45) agreed to take part in the research project and were initially interviewed. The initial interview focused on getting to know the company in depth: the process of development and the user involvement. One outcome of this initial interview was to gain access to the online platforms hidden from the public or which are exclusively for members. Five companies (Figure 45) were chosen from these ten to build with them the research case studies. The decision to continue observing these five start-ups was taken after data was analysed from the initial interview. Important points to take in consideration for choosing these four companies were the start-up development phase of them, the use of mashups that support and complement their services. Moreover, these five services gave the researcher access to the communication and users exchange information (Internet) platforms. Another very important characteristic of these five companies is that they need the users’ knowledge and experiences [source it - (Hagen & Robertson, 2010b)] and need communities that openly share these experiences [open it - (Hagen & Robertson, 2010b)] to support the delivery of the service.
**Figure 45 Selection of Criteria to Find the Case Studies**
These five have at least two different types of users, they have all shown preoccupation for the social impact of their companies, and three of them are social enterprises. These five companies are WomenInFashion, C-Hack, WorkPower, MoneyVoucher and Account Me.

6.5 Getting Connected - Data Collection Phase One:
Data collection was done in two main phases as was explained in Chapter 3 (see Table 16, page Table 16 Two Phases of Data Collection89). As stated before ten companies were involved in phase one. The digital service platforms of these services were observed and an in-depth initial interview with the service provider took place. Only five companies took part in the data collection phase two. Each phase has different objectives and focuses on finding specific data about the services.

6.5.1 Initial Observation
Before the initial interviews with the service providers, and as part of the first data collection phase, a fundamental preparation takes place. A systematic observation of the service needs to be done to understand what the services provide. It is important to look/observe the services’ digital touch points and different online platforms of the companies that would participate in the research.

This preparation includes a list of criteria, based on the literature, to be used while observation was taking place. The purpose of the criteria, printed tool (see Table 26), was to guarantee that data collected is useful to answer the research question. Its purpose is also to assure that the procedure is reproducible for each case, to guarantee consistency of the items measured that would make the observations reliable. The tool guarantees replicability for future investigations.

6.5.1.1 Aims
The first online observations focus on getting to know and understand the type of services the ten companies provide, and to help prepare for the initial interviews.
6.5.1.2 Observational approach

The researcher has found an “uncontrived” (Tracy, 2013) field in the start-ups’ digital services and without manipulating the settings has set up her inquiry. This part of the investigation has been done by combining two methods: Naturalist inquiry (Kozinets, 2015b) as a process that helps to analyse a phenomenon on its natural environment (context), and netnography (Kozinets, 2010) that is a research method that specialises in an online research context and which is better explained in the methodology chapter.

Observation of the online services had started with the ten start-ups before the participants were interviewed; field notes and annotations to first observations were taken using the tools designed for this purpose (explained later in this chapter) as a stage of preparation was required before the interview. In this first observation of the sites, the researcher used field notes to collect the data. These field notes were first-hand researcher observations and “reflections on the research related interactions and experiences” (Belk & Kozinets, 2016) and were used to generated precise questions in the first interview.

Before the interviews, it was important to get to know what kind of services each of them provided, to understand the online service presence, and how accessible was the information available online to anyone that searches about the company. Also, it was essential to find out what type of digital platforms were in display, shown, and evident; some digital platforms especially working environments are usually hidden to the public.

It was also important to see if they have an exclusive sign up members’ platform, and whether it was advertised and accessible to anyone interested. It was also relevant to look at their websites for applications of the services, and what type of mashup services they were using to complement data and functionalities from other apps and sources.

6.5.1.3 Tools designed and used

For this data collection, a form (Table 26) based on theory from the literature review, was created to facilitate the online services observations. This form helped to reduced
errors in the collection of data and provided a more reliable and systematic way of collecting it. The form warranted that the observation exercise was replicable and easy to reproduce by the researcher or any other researcher interested in continuing this inquiry.

This form has been created using theory based on the literature reviewed, as well as researcher naturalistic observation points. Based on Dix (2007), the researcher looks for evidence of:

- System interpretation
- provision of visibility
- exposed intentions
- support and no control
- plugability and configuration
- encouragement of sharing
- Learning from appropriation

Based on Hagen and Robertson (2009) the researcher looks for evidence of:

- Social technologies that help design or further develop the service with user involvement:
  a- Iterate it
  b- Emerge it
- Social technologies as a design tool
  a- Source it
  b- Open it
### Table 26 Systematic Observation Form

<table>
<thead>
<tr>
<th>Based on Dix (2010)</th>
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<tbody>
<tr>
<td>- System interpretation</td>
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<tr>
<td>- provide visibility</td>
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<tr>
<td>- exposed intentions</td>
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<td>- support and no control</td>
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<tr>
<td>- plugability and configuration</td>
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<td>- encourage sharing</td>
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<td>- Learning from appropriation</td>
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<tr>
<td>Based on Pragin and Robertson (2009)</td>
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<tr>
<td>Social technologies that help design or further develop the service with user involvement</td>
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<tr>
<td>Iterate it</td>
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<td>Emerge it</td>
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<td>Social technologies as a design tool</td>
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<td>Source it</td>
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<tr>
<td>Open it</td>
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<tr>
<td>Other Observations</td>
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<tr>
<td>- Personalisation</td>
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<tr>
<td>- Customisation</td>
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<tr>
<td>- New Functions</td>
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<tr>
<td>- Encourage Creativity</td>
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<tr>
<td>- Use of other widgets - mashup</td>
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</tbody>
</table>

Additionally, to the concepts brought from the literature, other themes to observe were considered:

- Evidence of actions and services provisions that allow the user to personalise and customise the service.

- Evidence of new functions

- Proof of space that allowed creativity

- Signs of use of other digital services features and information (mashup)

### 6.5.2 Initial Interview

The initial interview was part of the data collection phase one. The first interview focused on getting to know the company in depth: The process of their development, where the
idea for the company came from and how the user was involved in the development. It was also important to know in which phase of start-up the company was at the moment of the interview. The concept of TA was introduced and explained with examples from the TA mapping exercise (this will be explained later in this chapter). The key aspects of TA were not discussed in this first interview because the focus of this meeting was to get to know the company and to introduce the research to the participants. As part of the Loughborough University Ethical Procedures, the participants had been informed about their rights over their data and its protection. The researcher presented the research objectives to them and agreed to share the research findings with them. The participants had agreed to take part in the research and had signed consent forms. These forms have been kept by the researcher.

In this first encounter, the researcher gained first-hand insights into how the service was created, delivered and what kind of service they provided. Also, the researcher gained insights into the type of online platforms that only members have access to. The researcher found out about some online platforms that were not evident in the first online observation. For example, exclusive members’ own platforms of the service and digital working environments that are used in the development of some of the services. The face to face interview was an opportunity to ask about and get access to these ‘hidden’ online and community platforms. In some cases, access to these private ‘areas’ was granted but in other cases was not possible for a variety of reasons. For example, some platforms were not ready to be joined, and others were part of a service that has not been launched.

6.5.2.1 Aims

The main purpose of the first interview was to get connected and to introduce the research and the researcher to the start-up's service providers. It was also the first opportunity to talk about and understand better their motivations and the process behind the building and developing of the companies. Also, the first interview aimed to
determine the possible influence and involvement of users in the development of these services. The aims of the initial interview were:

1. To know the development process and motivations behind the company.
2. To introduce the research and the researcher to the participants.
3. To know how the services were using the technology (Internet and social media) within the services and to develop further the services.
4. To understand and to know to what extent the user was involved in the development of the services.
5. To collect data and insights to answer the research question.

**6.5.2.2 Interview sections**

The structure of this interview followed a protocol (Boyce, 2006) (Table 27) that was used in the same way for all ten initial interviews. The protocol was printed to be used in each interview as guide allowing reproducibility. This tool could be used by other researchers guaranteeing the replicability of the procedure.

The initial interview was a semi-structured interview with open questions to allow the participant to elaborate on ideas and expose their own experiences. The questions are focused in three main themes by column: General information, User Involvement and Technology Appropriation awareness and TA examples. The matrix also facilitates the procedure of the interview since it also shows the connections between question in columns. While the interview is taking place, the interviewer can look at the protocol and easily see if there is some information still missing or some gaps in the insights that they need to re-connect to while interviewing. The designed tools and probes correspond to questions and are placed in the last column of the protocol; this place is to facilitate and remind the interviewer of the need to use them while asking a question. The initial interview consists of three parts: An introduction, the main body of questioning, and the close.
<table>
<thead>
<tr>
<th>Study 3 Interview Matrix and Protocol</th>
<th>GENERAL INFORMATION</th>
<th>USER INVOLVEMENT</th>
<th>EXAMPLES OF TECHNOLOGY APPROPRIATION</th>
<th>TOOLS TO HELP THE INTERVIEWS</th>
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<tbody>
<tr>
<td><strong>What service(s) do you provide?</strong></td>
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<tr>
<td><strong>In the graphic provided, what is the stage of the start-up cycle in which you consider your start-up currently is?</strong></td>
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<td><strong>If you have a different idea of how this cycle is, you can draw your start-up stage process, and then explain where your service is at the moment:</strong></td>
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<td><strong>Who is your user/your intended market?</strong></td>
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<td>Who are the ‘new’ markets/users?</td>
<td>Tool 3. Clients vs. Users</td>
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<td><strong>Who is doing the technical development of your company?</strong></td>
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<td><strong>Can you describe how this happens?</strong></td>
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<tr>
<td><strong>Are you aware of any technology innovation trend that may impact your service in the future?</strong></td>
<td>Are you aware of anything that can enable you to find out more about how people are using your service?</td>
<td></td>
<td>Tool 4. A sheet with most familiar logos of different social media and online social platforms; such as Skype/Facebook/Twitter, etc.</td>
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<tr>
<td><strong>Are you aware of anything that can enable you to find out more about how people are using your service?</strong></td>
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<td><strong>What online platforms do the services use?</strong></td>
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<tr>
<td><strong>Do you consider your service a mashup?</strong></td>
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<td>Tool 5. A definition of Mashup</td>
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<tr>
<td><strong>Do you have a relationship with the end user?</strong></td>
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<tr>
<td><strong>Has the service established a dialogue with the end user?</strong></td>
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<td><strong>If yes, how?</strong></td>
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<tr>
<td><strong>Has user involvement (feedback, etc.) helped to develop or change your service? (If yes, please elaborate)</strong></td>
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<tr>
<td><strong>Are there any aspects (features) of your service build to enhance communication between the users and the service?</strong></td>
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6.5.2.2.1 INTERVIEW INTRODUCTION:
The interview began with an introduction; a Participant Information sheet was handed to the interviewee. In this document, researcher and supervisors were introduced, and the purpose of the research explained. The participant was informed how the data collected in the interview and in the research will be used and what he/she will be asked to do at the interview. Time is assigned to read this information, and after reading it the participant signed the consent form.

6.5.2.2.2 GENERAL INFORMATION QUESTIONS:
The general information questions are a type of question to understand better the nature of the service and the company (start-up). The answers to these questions complemented and filled gaps in the information gathered by observing the digital platforms. They are key to understanding their services functionalities and were used when compared to the way in which users use and appropriate the service.

Type of service, Start-up phase, Market User/ Clients:
These questions’ focus was to find out details about the company: the kind of services they provide, the start-up phase that best describe the stage of their company, the company’s type of business, the motivation behind it, and the intended market.

Technical:
The user/technical infographic tool was shown to the interviewee as well as access to a definition of mashup and example of the most commonly used digital services: such Google Maps, Twitter, Facebook.

It was important to understand if they own an API for the business and if their users can access their code. It was also important to know who was doing the technical development of their company, and if the service did have its developers and how much did the service platform rely (was built on) on mashups and other different services and sources.
6.5.2.2.3 USER INVOLVEMENT QUESTIONS:

User involvement questions were there to understand and explain the relationship that the service has with their user. These questions also helped to picture the user participation in the development of the service and in which start-up phase this occurred.

The market infographic tool was placed in front of the interviewee as a reference and guide.

Questions were: About the numbers of users that they had at the moment of the first interview and their prospects, the type of users that the service envisioned at the beginning and the current users, tools or enablers that can contribute to understand how people were using their service, type of online platforms that the service used, the kind of relationship with the end user, and if the service had established a dialogue with the end user, and the aspects (features) of their service that were built to enhance communication between the users and the service.

6.5.2.2.4 EXAMPLES OF TECHNOLOGY APPROPRIATION

**Designing for a specific need and Features and different functions** were questions to understand the extent to which the service providers were aware of technology appropriation and their service being appropriated by users.

The technology appropriation cards tool was used in this part of the interview as a reference for the interviewees to exemplify the concept of technology appropriation. Examples had been carefully selected so that the interviewee could relate to other digital services and compare with their own. This last part of the interview allowed a final dialogue between the interviewee and the interviewer about the specific phenomenon of technology appropriation.

The question referred to the service providers’ experiences and knowledge about how the end users used the service and if they could think of examples where the users had used the service in a way that is different to what was intended in the beginning.
6.5.2.5 THE CLOSE

The interview closed by asking the participant:

- Is there anything else you wish to add or to comment on?

- Are there any companies that you know of that can be introduced that can help the researcher?

The interviewee was presented with two infographic tools with the list of enterprises pre-selected by the interviewer to find out if he/she knows any companies that can help in the research.

6.5.2.3 Tools and Constructs

Technology appropriation is a difficult concept to explain, as people often have their ideas and preconceptions about it. Explaining the phenomenon and the two concepts involved (technology + appropriation) was proved problematic over the research time and it was thought to be a potential disruption of the interview flow. Trying to clarify the research stance and the concepts and meanings could potentially distract the attention of participants from the main purpose of the interview and could affect the data being collected.

Additionally, it was suspected that dealing with these issues while interviewing would affect the time needed to complete the interview. Timekeeping was an important factor for the participants, who generously volunteered their time to help with this research and were busy entrepreneurial people sometimes being solely responsible for the whole service operation and who have time limitations.

Other challenges were explaining complex concepts to participants, reaching a common vocabulary between the participants and the researcher without biasing the respondents’ answers, ensuring that the interviews were replicable, and keeping the interviews exciting, appealing and productive.
Those challenges evidenced the need for the development of a series of tools that facilitate the interview process, helping to exemplify and explain the different concepts and definitions involved.

6.5.2.3.1 TOOLS AIMS:

1) To ensure that the meaning of complex and specialised concepts such as technology appropriation, mashup services, and definitions such as client and user were understood and shared between the interviewees and the researcher.

2) To ensure that there is an understanding and a reaching agreement in the definition of terms between the interviewees and the researcher when referring to a concept while they are explaining their experiences.

3) To reach this terminology agreement without biasing the respondents’ answers.

4) To be sure that the observations and interviews could be repeated time after time and could be replicable.

5) To keep the interviews exciting, appealing and productive for the participants.

6) To help to exemplify TA and the different TA intensities (levels).

6.5.2.3.2 INFOGRAPHICS TOOLS:

Infographics is a technique used to communicate complex concepts and information; the graphics allow people to comprehend a message easily by detecting unusual patterns, trends, and outliers in the data (Lankow et al., 2012). Therefore, the use of infographics technique to create the graphics for communicating information was a suitable method in the design of these research tools.

The infographic tools for the initial interview are five tools placed in two cards and printed (Figure 46). These tools relate directly to the initial interview questions as explained in the interview protocol.
Figure 46 Cards – Type One Infographic Tools for Interviewing

Tool 1: The start-up phases (Figure 47): This infographic tool was presented to the participants while questioning them about their start-up phases. Its purpose was to serve as a guide; it showed the start-up phases with a concise explanation, a definition of each step that the participant could relate to. The researcher replicated the graphic of start-up’s phases 2013 version from Start-up, Commons Organisation (Start-up Commons Organisation, 2013). Since then the infographic has changed twice and the latest reviewed version can be found in the Start-up Commons Organisation website.
Tool 2: Active/Passive User + Technical/mashup tool (Figure 48): This tool is a Cartesian coordinate infographic that was presented to the interviewee in the first interview. The coordinate axis X corresponds to the service technical savviness. The left extreme of the axis X corresponds to the services that have designed their APIs, websites, apps and digital platforms. The right extreme corresponds to mashup services. Digital services that are using features and information provided by other apps and digitals services.

The coordinate axis Y corresponds to the services that require an active user (at the top). At the bottom of axis Y, those services that do not require active users.

The participants were requested to place their services within the Cartesian plane. As they did this, they were encouraged to discuss their reasons for placing their companies in that specific spot.
**Tool 3**: Clients vs. Users tool (Figure 49): This infographic tool was presented to the participants when talking about their users. Services had different users and some referred to them as clients. This tool helped to get an agreement between interviewee and interviewer on the use of terminology.
Tool 4: Common Widgets and Mashups services tool Figure 50) This is an infographic tool that shows the most familiar logos of different social media and online social platforms. These digital services such as Skype, Facebook, Twitter and Google maps are commonly used by other services to add their features and information to their services. This tool was presented to the participants when questioning about the use of mashup services. This tool helped as a guide to illustrate the most common social media mashups that were used by digital services.
Tool 5: Definitions of complex concepts tool: The definitions of Mashup and Technology Appropriation were printed, on one of the cards, to be presented and to clarify the specific research definitions. It served as a language guide, to help to reach a terminology agreement between interviewee and interviewer.

6.5.2.3.3 TA EXAMPLES CARDS TOOL

There was a clear need for TA examples that could illustrated the TA intensities proposed in the TA framework. It was also evident that some TA examples would be presented to participants at the initial interview. The mapping TA exercise corresponded to the need of exemplifying the different TA intensities. This exercise meant the creation of a physical infinity diagram (ASQ, 2004) on the wall with a collection of examples of technology appropriation coming from the literature reviewed, from the exploratory study and from naturalistic observations. This TA mapping leaded to the development of the TA
Examples cards tool used at the initial interview. The TA Examples cards were nine cards printed (Figure 51) that showed nine of the most significant examples of technology appropriation collected at the TA mapping exercise; the examples were printed one per card to help at the initial interview.

**Figure 51 Nine TA Example Cards Printed (Picture by the Researcher)**

6.5.2.3.3.1 TA MAPPING EXERCISE

As can be seen in Figure 52, the first map was made out of post-its and notes. It started to take shape quite early in the second year of the research project, and it evolved over time as a repository of data and theory. It became an excellent source of information for the researcher, a kind of prototype where theory and data were put together and ideas coming from the TA framework could be tested with TA examples.
The first design of the map had the simple shape of an interaction matrix. The matrix consisted of three columns that corresponded to the TA levels hypothesis: Low, medium and high. Each level was divided into three parts that expanded the scope of each TA intensity and allowed at least three examples per level. This matrix was the starting approach on how to classify those examples.

In total, the table had nine columns crossed by five rows. The first row was where examples that come from the literature reviewed were placed. Another row was for TA examples coming from the exploratory study. The third row was to set examples of empirical observations. The last two rows were left, one to ‘doodle’ new emerging ideas and one to take notes on possible theories or specific criteria related to each level. At the end of the Ph.D. second year, around 40 examples of technology appropriation were...
collected. The tool evolved quite quickly and became much manageable by cleaning it up from the post-it wall prototype and by codifying the examples in the map (Figure 53).

<table>
<thead>
<tr>
<th>CRITERIA CHARACTERISTICS OF LEVEL OF APPROPRIATION</th>
<th>LOW</th>
<th>MEDIUM</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>IN LITERATURE</td>
<td>0.1</td>
<td>1.1</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td>2.1</td>
<td>3.1</td>
<td>4.1</td>
</tr>
<tr>
<td></td>
<td>4.1</td>
<td>5.1</td>
<td>6.1</td>
</tr>
<tr>
<td></td>
<td>6.1</td>
<td>7.1</td>
<td>8.1</td>
</tr>
<tr>
<td>IN STUDY 1 (PILOT)</td>
<td>0.2</td>
<td>2.7</td>
<td>3.1</td>
</tr>
<tr>
<td></td>
<td>4.1</td>
<td>5.2</td>
<td>6.2</td>
</tr>
<tr>
<td></td>
<td>6.3</td>
<td>7.3</td>
<td>8.3</td>
</tr>
<tr>
<td>OBSERVATION</td>
<td>0.2</td>
<td>2.7</td>
<td>3.1</td>
</tr>
<tr>
<td></td>
<td>4.1</td>
<td>5.2</td>
<td>6.2</td>
</tr>
<tr>
<td></td>
<td>6.3</td>
<td>7.3</td>
<td>8.3</td>
</tr>
<tr>
<td>DEFINITION OF EACH LEVEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IN STUDY 2</td>
<td></td>
<td>Soccer</td>
<td>Monkey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cyclehack</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 53 Codifying TA Examples Matrix**

In this form, the matrix was used to report the Ph.D. second-year review progress. It is clear that in this current form it was only useful to the researcher, hence logos of most recognisable digital services, with more ‘valuable’ TA Examples, were added. This addition helped to improve the communication of the tool (Figure 54) since other people would easily recognised the companies and related the TA examples to their experience of using these services.
The map evolved into a Rate Table (Figure 55) that confronted the TA examples placed in the top row against theoretic criteria based on the literature reviewed. The criteria are a mix of different concepts based on Dix’s guides for appropriation (Dix, 2007a), and Hagen and Robertson’s social technologies categories that can help designing or further developing the service with user involvement (Hagen & Robertson, 2009).

The rate table was the first attempt to systematise the observation and collection of these examples, and an effort to compare theory emerging from the literature review and TA real examples. Only the most significant nine models were chosen to rate at this point.
**Figure 35: TA Examples Rate Table**

<table>
<thead>
<tr>
<th>UNIT</th>
<th>INITIAL</th>
<th>RANGE</th>
<th>SUGGESTION</th>
<th>CAUTIONS</th>
<th>FEEDBACK (Feedback Reminders)</th>
<th>INITIATIVE</th>
<th>ISSUE</th>
<th>DEVELOPMENT</th>
<th>ENGAGE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARK INTERPRETATION</td>
<td>(The options may result in the loss of any part of the interview)</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>11</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>APPROPRIATION BY PERSONIFICATION</td>
<td>Use of the context of context to understand the context of the interview</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>APPROPRIATION BY PERSONIFICATION</td>
<td>Use of the context of context to understand the context of the interview</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>APPROPRIATION BY PERSONIFICATION</td>
<td>Use of the context of context to understand the context of the interview</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>APPROPRIATION BY PERSONIFICATION</td>
<td>Use of the context of context to understand the context of the interview</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>APPROPRIATION BY PERSONIFICATION</td>
<td>Use of the context of context to understand the context of the interview</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>APPROPRIATION BY PERSONIFICATION</td>
<td>Use of the context of context to understand the context of the interview</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>APPROPRIATION BY PERSONIFICATION</td>
<td>Use of the context of context to understand the context of the interview</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>APPROPRIATION BY PERSONIFICATION</td>
<td>Use of the context of context to understand the context of the interview</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>APPROPRIATION BY PERSONIFICATION</td>
<td>Use of the context of context to understand the context of the interview</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>APPROPRIATION BY PERSONIFICATION</td>
<td>Use of the context of context to understand the context of the interview</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

**Keys:**

Low (0-1) Medium (1) High (2)
The rate table was the first brick in the construction of other tools to help with the research observation and data collection, had contributed to reduce errors in the collection of data, and had provided a more reliable and systematic way of reviewing the data. This table had been used to develop the TA examples tool that facilitated the collection of data in the initial interview, had helped to explain the TA intensities and levels to the research participants and had enabled the collection of insights in the interviews.

6.5.2.3.3.2 TA EXAMPLES CARDS

These cards (Figure 56) were designed to be presented at any time during the initial interview to showcase the different intensities examples of digital services and technology appropriation. It was envisioned that this tool could be developed further as a TA identification tool, also as part of the strategy to help service providers to understand better how to foster TA.

The TA examples cards were composed of six different elements (Figure 57). Each item communicated different things about the TA Example. The parts are: The low-medium-high TA level banner (Figure 58) is a numbered taxonomy of the various levels of TA from zero to eight, this helped to find the right example numerically. Since the cards are physical objects, each case number has a small tab to divide, identify and file the cards. The design enables easy access to any case when they are piled together. Each number corresponds to a colour.

The colours code is based on three ranges: Cyan, Magenta, and Yellow. Cyan corresponds to the TA low samples, magenta to the TA medium level samples and yellow to high-level examples. The colour code also helps to create three triad samples on three clear levels. Each of the nine examples is represented in one card by a carefully selected picture that features how the user has appropriated the technology of that service. The picture was placed on the front of the card. The card reverse shows parts of the rate and criteria table (see Figure 57) and was used to highlight and exemplified the specific TA criterion.
Figure 56: TA Example Cards before printing
On the reverse of the card, there is a criterion coefficient number (CCN). This corresponds to the equation $A \div B = CCN$. $A$ is the number reached by marking the example against the rate criteria table. $B$ corresponds to the number of criteria rows. $A$ divided by $B$ generates the criteria coefficient number (CCN). CCN was an attempt to produce a numerical measure of the relation between these examples and the TA criteria. The CCN was and still a work in progress, and its overall importance and relevance to the research had not yet been defined.

A new simplified and distilled version of these TA examples was prepared to accompany the second interview. It was used to exemplify modes of user involvement and their actions and to facilitate the participants’ comprehension of these concepts. This version of TA examples (Figure 59) was not printed but displayed on an iPad for the participants to interact with it.
Figure 59 TA EXAMPLES CARDS TOOL
6.6 Getting Immersed – Data collection phase two:

Online Platform Observation: The second phase of data collection started after the first interviews. The time spent observing the services varied between two years in two cases, one year in another seven cases, and six months in one instance. These differences in time observation were due to some services not being launched by the time the main study started, or to the lack of online platforms’ availability.

6.6.1 Aims:

In this phase, the observation focused on perceiving the key aspects of the TA phenomenon within the members-only platforms and online communities. The researcher set out to find examples of the key aspects of TA within these online platforms.

- To find examples of different modes of user involvement
- To find examples of services resources that support the user involvement

6.6.2 Naturalistic Inquiry & Systematic Observation Multi-Method Approach

During the second phase of data collection the researcher studied the digital service platforms that were hidden or for use only by members of the service. A multi-method used was as before a combination of naturalistic and systematic observations but this time, whenever possible, with ‘participant observation.’

The services sites were observed, following some netnography practices and techniques based on Belk & Kozinets (2016) such as: Finding the places where interaction between members occurred, focusing the observations on the relevant research questions, and striving for generating sufficient relevant data (screenshots and notes).

When possible, the researcher joined the service as a user to have a first-hand experience of the service. The researcher naturalistically observed, followed different links, and took screenshots and notes of the various services and functionalities found on the individual participants’ services websites and digital platforms. Those observations were recorded as notes and print screenshots of the services’ digital platforms. The researcher kept the
social interchange (conversations, the interaction between users, interviews) with other users to the minimum, so co-created data (Kozinets, 2015a) was not a priority of this study and was not collected.

6.6.3 Tools for Online Observation

The process of collecting the online data was set up through the creation of a table. This chart was designed partly based on the literature reviewed and partly based on the findings of the exploratory study. This chart has evolved, and been improved and complemented during the two-year period of its use. The changes were possible because more theory was found that complemented the framework of the research, and more information had emerged from the observations.

This chart became a ‘guide’ for the observations and helped to make sense of the type of data coming from the online observations. The type of data coming from the online observations had the shape of screen shots of the service’s different online platforms in various time-points of the observation. These pictures were accompanied by researchers’ memos, field notes, and annotations, as well as insights about the TA enablers.

In the second phase of data collection, a new form (Table 28) was created to facilitate the online observations. It evolved from the previous form used on the first phase of data collection; fundamental aspects of TA Awareness elements were added. It included the service providers’ user involvement approaches and modes of user involvement developed in the TA framework (these concepts are better explained in Chapter 5 Theoretical Framework).
### Table 28 Second Phase Online Systematic Observation Form

<table>
<thead>
<tr>
<th>Start-Up</th>
<th>User involvement approaches</th>
<th>Website</th>
<th>Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bosch-Sijbers &amp; Jan Bosch (2014)</td>
<td>Listening to users</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collaborating with users</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Testing and Experiments with Users</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>User involvement approaches</th>
<th>Website</th>
<th>Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kojala (2003)</td>
<td>User-centred design (Emphasis on Usability)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Participatory design (Emphasis on Democratic participation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ethnography (Emphasis on Social aspects of work)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contextual design (Emphasis on Context of work)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social Technologies that help design or further develop the service with user involvement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Website</th>
<th>Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hage &amp; Robertson (2009)</td>
<td>Iterate it</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emerge it</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Source it</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open it</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modes</th>
<th>Website</th>
<th>Interview</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>This research</th>
<th>Website</th>
<th>Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect User Involvement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct User Involvement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct User Involvement - User Appropriation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Guidelines for appropriation</th>
<th>Website</th>
<th>Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diz (2010)</td>
<td>System Interpretation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide visibility</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Express Intension</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support and no control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pluggability and configuration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Encourage sharing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Learning from appropriation</td>
<td></td>
</tr>
</tbody>
</table>

---

### 6.7 Wrap-up - Final Interview

The second interview targeted a selected group of participants. Five companies, from the original ten, previously interviewed and observed, were chosen to further investigation and had become the final research cases (the cases and findings of the main study will be presented in chapter 7- Main Study Findings). These five companies not only displayed the start-up’s characteristics previously explained, but also they have in common a...
preoccupation with the social impact of their businesses and the emphasis on building communities of users. Four of these five services are registered as social enterprises.

The final interview was a follow up from the initial interview and the online observations. The atmosphere was also friendlier; the service providers knew the researcher and the research. The researcher felt more confident, more knowledgeable about the companies, the TA phenomenon, and more assertive in this second encounter. The second interview was semi-structured and based on a more refined and evolved TA framework. Although the protocol was created to structure the interview, the interviews were not identical to each participant but customised to each case. The set of questions was tailored to fill data and insight gaps from the previous interview and the online observations.

6.7.1 Aims:
- To build the research cases with a focus sample, the selected group of five start-ups.
- To construct the user journeys and scenarios that could help to present the findings of the research with the service providers help.
- To bounce ideas with the service providers to validate insights and findings.

6.7.2 Final Interview Method and Approach

The four TA key awareness elements were the focus of the second interview: Service Provider User Involvement Approach, Modes of user involvement, TA Enablers and User and Service Actions. As on the initial interview, the researcher prepared the protocol and matrix questions in advance to facilitate the interview process. The first column of the protocol corresponds to the questions. The second column evaluates the answers into levels of awareness and at the same time classify the concepts in conceptual knowledge or practical understanding. The levels of awareness are:

**Concept unknown:** The participant’s answer showed signs of unfamiliarity with the concept or perhaps complete blindness of the idea in question.
**Conceptual understanding:** The participant’s answer showed familiarity with the concept. The participant understood the concept and explained the notion with examples brought from a third party or another service.

**Practical understanding:** The participant’s answer showed clear examples brought from their experience and the practice of the phenomenon within their service.

The matrix has two more columns: Examples of the participant service and examples of service change. These two spaces were designed to pinpoint relevant observations made by the participants while talking about the specific concept in question and are designed to help with the analysis of data.

**6.6.2.1 Interview sections**

The final interview matrix and protocol consist of three parts; each part corresponds to one of the main interview’s focus themes. It was decided to facilitate the interview pairing the concepts of Service Provider User Involvement Approach with the correspondent actions and Modes of user involvement with the correspondent actions.

**6.6.2.1.1 SERVICE PROVIDER USER INVOLVEMENT APPROACH WITH METHODS AND ACTIONS**

The issues that refer to the service provider user involvement approaches are shown in Table 29. A printed copy of Table 30 with methods and tools of user involvement [based on various authors (Courage & Baxter, 2005), (Kaulio, 1998), (Bosch-Sijtsema & Bosch, 2014), (Alam, 2002), (Kujala, 2003b)] was placed in front of the participants while the interviewer was asking the following questions:

- Did you know these methods and tools?
- Do you use these methods and tools?
- Please pick the three more important for your service
- Give examples of how these have been used and why?
These last two questions were placed here with the intention of understanding better the service intentions and the service providers’ understanding of these methods and tools of user involvement.

- Can you pick a couple that you have not used, but you would like to do? Moreover, why?
- What would you need to be able to do this?

The participants had the chance to tick the approaches they felt they knew and used and had the opportunity to explain their ideas, experiences about them. They were asked the next question based on Bosch-Sijtsema & Bosch’s (2014) theories about user involvement approach. A printed copy of Table 31 user involvement approaches based on (Bosch-Sijtsema & Bosch, 2014) was placed in front of the participants while the interviewer was asking the following questions:

While developing your service, you involve users by:

- Listening: Your service has used users’ feedback to ...
- Collaboratively: Your service has collaborated with users in which ways...
- Testing and experimenting: Your service has a group of users that always helps you by testing some features or ideas before you launch them.

The next question is about the methods of user centred design based on Kujala (2003).

Are you familiar with methods such as...?

- User-centred design (emphasis on Usability)
- Participatory Design (emphasis on democratic participation)
- Ethnography (emphasis on social aspects of work)
- Contextual Design (emphasis on context of work)

These last two questions aimed to better comprehend the service intentions and the service providers understanding of these user centred design concepts.
- Can you pick a couple that you have not used, but you would like to do? Moreover, why?
- What would you need to be able to do this?

**Table 29 Second Interview Protocol Part One**

<table>
<thead>
<tr>
<th>What do they know about ..........?</th>
<th>Level of Conceptual and practical understanding</th>
<th>Examples of the participant service</th>
<th>Lc. of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Provider User Involvement Approach + services actions (methods and tools)</td>
<td>Unknown</td>
<td>Familiarity</td>
<td>Practical understanding</td>
</tr>
<tr>
<td>Do you know these methods and tools?</td>
<td>Conceptual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you use these methods and tools?</td>
<td>Practical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Please pick three more important for your service. Give examples of how these have been used and why?</td>
<td>Practical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can you pick a couple that you have not use, but you would like to do? Moreover, why?</td>
<td>Conceptual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What would you need to be able to do this?</td>
<td>practical</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**While developing your service you involve users by:**

- Listening: Your service has used users’ feedback to ...
- Collaboratively: Your service has collaborated with users in which ways...
- Testing and experimenting: Your service has a group of users that always helps you by testing some features or ideas before launched them.

**Are you familiar with methods such as ...?**

- User-centred design (emphasis in Usability) | Conceptual |
- Participatory Design (emphasis on democratic participation) | Conceptual |
- Ethnography (emphasis on social aspects of work) | Conceptual |
- Contextual Design (emphasis on context of work) | Conceptual |
- Can you pick a couple that you haven’t use, but you would like to do? And why? | Conceptual |
- What would you need to be able to do this? | practical |
### Methods and Tools of User Involvement

#### Table 30

<table>
<thead>
<tr>
<th>Methods</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Courage and Baxter (2005)</strong></td>
<td></td>
</tr>
<tr>
<td>User requirements gathering</td>
<td></td>
</tr>
<tr>
<td><strong>Kaulio (1998)</strong></td>
<td></td>
</tr>
<tr>
<td>User-oriented product development</td>
<td></td>
</tr>
<tr>
<td>Concept testing</td>
<td></td>
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<tr>
<td>Beta testing</td>
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<tr>
<td>Consumer idealised design</td>
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<tr>
<td>Lead user method</td>
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<tr>
<td>Participatory ergonomics</td>
<td></td>
</tr>
<tr>
<td><strong>Bosch-Sijtsema &amp; Jan Bosch (2014)</strong></td>
<td></td>
</tr>
<tr>
<td>Ethnography</td>
<td></td>
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<tr>
<td>Interaction with lead users or leading edge customers</td>
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<tr>
<td>User becoming active participant during innovation as a coproducer</td>
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<tr>
<td>Agile software development</td>
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<tr>
<td>Crowdsourcing design and development techniques</td>
<td></td>
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<tr>
<td>Problem solving processes (trial and error processes)</td>
<td></td>
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<tr>
<td><strong>Alam (2002)</strong></td>
<td></td>
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<tr>
<td>User visit and meetings</td>
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<tr>
<td>Brainstorming</td>
<td></td>
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<tr>
<td>User’s observation and feedback</td>
<td></td>
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<tr>
<td>Phone, faxes and e-mails</td>
<td></td>
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<tr>
<td><strong>Courage and Baxter (2005)</strong></td>
<td></td>
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<tr>
<td>Surveys</td>
<td></td>
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<tr>
<td>Wants and needs analysis</td>
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<tr>
<td>Group card sort</td>
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<tr>
<td>Group task analysis</td>
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<tr>
<td>Field visits</td>
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<tr>
<td>Product tests</td>
<td></td>
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<tr>
<td><strong>Bosch-Sijtsema &amp; Jan Bosch (2014)</strong></td>
<td></td>
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<tr>
<td>Task analysis</td>
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<tr>
<td>Prototyping</td>
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<td>Usability evaluations</td>
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<td>Workshops</td>
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<td>Observation</td>
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<td>Video-analysis</td>
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<tr>
<td>Contextual inquiry</td>
<td></td>
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<tr>
<td><strong>Kujala (2003)</strong></td>
<td></td>
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<tr>
<td><strong>Alam (2002)</strong></td>
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<tr>
<td><strong>Courage and Baxter (2005)</strong></td>
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<tr>
<td><strong>Alam (2002)</strong></td>
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<tr>
<td><strong>Courage and Baxter (2005)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Bosch-Sijtsema &amp; Jan Bosch (2014)</strong></td>
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<tr>
<td>Face to face interviews</td>
<td></td>
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<tr>
<td>Focus group / discussions</td>
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</tbody>
</table>
6.6.2.1.2 MODES OF USER INVOLVEMENT AND ACTIONS

Table 32 displays the questions referring to the modes of user involvement and actions. A new simplified and distilled version of TA examples was prepared and was ready to be shown to the participants to exemplify the users’ actions and to facilitate the participants’ comprehension of these concepts. This version of TA examples was not printed but handed out on an iPad or tablet (this tool was explained before in this chapter).

- Are you familiar with the follow users’ actions related to your service?
- Make social agreements
- Configure / personalise
- Evolve social practices
- Integrate any parts of your service
- Aggregate/remix any parts of your service
- Spin-off
- Assemble components
- Create workarounds
- Use modules and libraries
- Programme / write modules
- What are the users’ needs that your service satisfied?
- Can you think of an example of user insights that has had an influence on the development of your service? Alternatively, can you think of one that has helped you to implement something different?
- Can you think of an example when you have used a service in a way that was not intended? Give examples.
- Could you think of any different way that your users can use your service?

**TABLE 32 SECOND INTERVIEW PROTOCOL 2**

<table>
<thead>
<tr>
<th>What do they know about ............?</th>
<th>Level of Conceptual and practical understanding</th>
<th>Examples of the participant</th>
<th>I.e. of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Modes of user involvement + User actions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you familiar with the following users’ actions related to your service?</td>
<td>Conceptual practical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make social agreements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Configure / personalise</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evolve social practices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrate any parts of your service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggregate/remix any parts of your service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spin-off</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assemble components</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create workarounds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use modules and libraries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Programme / write modules</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What are the users’ needs that your service satisfied?</td>
<td>Conceptual practical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can you think of an example of user insights that has had an influence on the development of your service? Or that has helped you to implement something different?</td>
<td>Practical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can you think of an example when you have used a service in a way that was not intended? Give examples.</td>
<td>Conceptual practical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could you think in any different way that your users can use your service?</td>
<td>Conceptual practical</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.6.2.1.3 TA ENABLERS

Table 33 displays the questions referring to the TA Enablers:

Those are examples of different concepts (referring to a small group of ‘cards’ with a selection of TA examples).
- Which is ideal for your service?
- What will facilitate the implementation of this situation within your service?
  o Control
  o User leadership

**TABLE 33 TA ENABLERS QUESTIONS**

<table>
<thead>
<tr>
<th>TA Enablers</th>
<th>Level of Conceptual and practical understanding</th>
<th>Examples of the participant service</th>
<th>I.e. of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Those are examples of different concepts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which is ideal for your service?</td>
<td>Conceptual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What will facilitate the implementation of this situation within your service?</td>
<td>practical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User leadership</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Changes In the Service</th>
<th>Low level of Change by users’ input</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medium level of change by users’ input</td>
</tr>
<tr>
<td></td>
<td>High level of change by users’ input</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facilitating Resources Does your service...?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make visible social agreements</td>
</tr>
<tr>
<td>Facilitate social practices and their evolution</td>
</tr>
<tr>
<td>Make configurations that are shareable and adaptable by others</td>
</tr>
<tr>
<td>Support Mash-ups</td>
</tr>
<tr>
<td>Make Toolkits and components</td>
</tr>
<tr>
<td>Sensitivity to workarounds</td>
</tr>
<tr>
<td>Provide an open API</td>
</tr>
<tr>
<td>Give access to the source code</td>
</tr>
</tbody>
</table>

- Changes in the Service
  o Low level of Change by users’ input
  o Medium level of change by users’ input
  o High level of change by users’ input
- Facilitating Resources. Does your service...?
  o Make visible social agreements
  o Facilitate social practices and their evolution
  o Make configurations that are shareable and adaptable by others
  o Support Mash-ups
  o Make Toolkits and components
  o Sensitivity to workarounds
  o Provide an open API
  o Give access to the source code

6.6.2.1.4 USER JOURNEYS MAPPING

The matrix protocol in the final interview included an exercise of co-designing a user journey map with the help of the participants. A user journey is a qualitative tool that contributes to visualising the 'customer' experience. The participant and interviewer partnered to build the service user journey. The user journeys helped prompt more insights and accurate information about the participant's experiences about TA.

The researcher has based her approach to using this tool on service design literature and on her previous experience as a designer. User journey (Figure 60) is a grid composed of the different services’ phases placed in the top row. In the sample shown the first column is divided in two digital and non-digital touch points. Positioned in the second column are the different services channels or touch points. The journey is drawn to create the blueprint of the service (Polaine, Andy; Lovlie, Lavrans; Reason, 2013). The typical phases that Polaine et al. (2013) recommend are: Aware, Join, Use, Develop and Leave, but the phases or stages of the journey will always be different and customised to the service that is being studying.
6.8 Summary and Implications

This chapter reported and presented the TA mapping exercise that aimed to find examples of TA from different sources: the literature reviewed and systematic observations. This chapter has explained in detail the different actions, methods, and tools that were carried out to plan, design and conduct the main study and the data collection. These actions included the selection of the sample, the preparation for online observations, the preparation for the interviews, and the design of a series of tools to collect and analyse data.

The next chapter will explain the methods and tools used to analyse the main study data and the first part of findings of the main study: this includes a detailed description of the case studies and a summary of TA evidenced in case studies. The second part of the findings will be reported in chapter 8.
7. Analysis and Findings 1: Case Studies, Summary of TA Evidenced in Case Studies

7.1 Introduction

This chapter reports the first part of findings of the main study: this includes a detailed description of the case studies and a summary of TA evidenced in case studies. The second part of the findings will be reported in chapter 8. The outcomes of this study are TA examples and insights into the way service providers perceive and are aware of the TA phenomenon within their services. These are presented through case studies.

This chapter is divided into three parts. First, there is a description of the main study method of analysis and the tools developed to help tackle the research questions. Second, the chapter describes five case studies. Each case study describes the company (start-up), their type of business and services they provide. It also describes who the service providers are and the motivation behind the enterprise. After this, there is a description of the main milestones in the development process and the research main data collection moments, a description of the main digital touch points of the service, and the main users and stakeholders. A users’ journey is also presented for each case study. These user journeys were constructed based on data gained by observing the online digital touch points of the services and complemented by the data from the interviews with the service providers. Each case displays between two to four scenarios, fifteen in total. These fifteen scenarios are constructed based on observable TA examples found in the study. Some stories have been altered and modified to demonstrate the TA examples better. The TA examples are showcased, and insights into TA discovered in each case are explained in detail at the end of each scenario. The third part of the chapter presents the TA mapping with TA examples found in the research. The chapter concludes with a summary of TA examples evidenced in the case studies. The TA evidence found in the main study is shown in relation to the TA three level conceptual framework (Chapter 5, page 152). The research findings demonstrate that TA examples found in the main study correspond to
the TA three level conceptual framework. It also describes the ‘new’ elements of the service that can be appropriate and that have emerged from the main study. The first part ends by confirming the TA enabling properties presented in Chapter 5 (page 162) and explaining the TA service impact and its relationship to the TA three-level framework.

7.2 Aim & Objectives

The chapter focuses on the qualitative analysis of data and extracting the research findings. This chapter will present the five case studies and the examples of technology appropriation found in each case study. The cases and the TA examples will be used in Chapter 8 and 9 to help to answer the research questions: How is it possible to identify TA within the development of digital services in the context of start-ups? And how aware the services providers are about this phenomenon?

7.3 Method of Analysis for the Main Study Case Studies

7.3.1 Structure of the Case Studies

The research case studies are presented in this chapter in a structured way. Figure 61 shows the various sections in which each case study is divided. The first part is a description of each start-up. This description includes the purpose of the company, the service provider’s motivation to develop the business and the type of business. A description of who the service providers are is also presented. Moreover, a short account of the company’s main milestones is given. The development process is followed on a parallel line which represents the main stages of the research data collection in relation to the company milestones. Each case also presents a description of the main digital platforms and social media services that the start-up uses to deliver its service. This description is followed by a concise portrait of its users and main stakeholders. After each general case description, a case study users’ journey that was co-created with the information from the service providers and the researcher information gathered is
presented. The scenarios coming from the users’ journey are presented after the user journeys.

7.3.2 Co-creating Users’ Journeys

Users’ journeys are a common method/tool used in service design SxD and experience design UxD. As explained in the main study’s methods and tools development chapter, a user journey is a qualitative tool that contributes to visualising the ‘customer’ experience. It also helps to explain the different interactions that the user has with the service. Building the users’ journeys could help to highlight issues with the current service, and it has been useful in helping to analyse and identify the service now and to help to highlight areas for further development of services.
The researcher has based the approach to using this tool on service design literature (Polaine, Lovlie and Reason, 2013) and previous experience as a designer.

The users’ journey or user journey map is a grid composed of the different services’ phases (stages) placed in the top row of the grid. In this study, the researcher placed in the first column the digital and non-digital touchpoints of the services. Positioned in the other columns are the interactions that users have with the service at each stage.

The final interview with the participants of this research included an exercise of co-designing a user journey map. The service provider and interviewer partnered to build each service users’ journey. The users’ journeys helped prompt more insights and accurate information about the participant’s experiences about the phenomenon of TA within their services.

The construction of each case users’ journey has helped the researcher to understand better all the information and data gathered by the online platforms observation and the data from the interaction with the service providers.

A users’ journey was built for each case. Constructing services’ user journeys based on the information and data gained in the observation and the second interview was crucial for the researcher since they served as a tool for validation.

Since these journeys can be used in both current service review and future service envisioning, the researcher shared them with the service providers (participants of the research) as a reward for helping with the research.

### 7.3.3 Reporting TA Examples by Creating Scenarios

The scenarios presented in each case study were build based on the data collected and the user journeys, and there are anecdotal stories that involve one or two individuals (real services’ users) and the community. The scenarios are using a digital touch point of the service in the real context of the service in use. Scenarios were created to complement the information given by the service providers and obtained through the online
observations, and helped to construct the research cases as well as to highlight and
demonstrate the TA examples. Scenarios are based on qualitative observations of the TA
phenomenon: real service’s users using the service. As this is a qualitative research the
scenarios gave the researcher the opportunity to understand the people’s perception,
perspectives, and their understanding of the phenomenon within their context.
Scenarios are based on the user journeys constructed by the service providers, plus
insights from the observations made by the researcher.

These scenarios were created paying attention to the services’ digital touch points. The
scenarios helped to identify different type of users within the service by building
‘personas’ from real cases determined by the service providers. The scenarios were also
useful to illustrate and visualise the different interactions of the users with the service,
and the possible context where TA could occur. Creating scenarios has allowed the
researcher to test the framework (explained in Chapter 5).

The scenarios are constructed around personas. Personas are fictional characters that
represent and resemble different services’ users found in the research (real examples and
screenshots can be found at the thesis appendix). The researcher, while building the
users’ journeys, encouraged the service providers to think about examples of real users
and their stories. Building each case scenarios and creating personas has helped to
anonymised the users of the service.

The creation of scenarios is a method typically used in service design SxD and in
experience design UxD that describes the interaction of different users and the service
(uxforthemasses, 2017). People can relate to the stories in the scenario and in this way
understand the users’ needs and requirements without technical jargon, as opposed to
the technical or business requirements. Scenarios are suitable for use during
participatory design activities (Gaffney, 2000). Building scenarios from the users’
journeys have helped the researcher to understand better certain aspects of the TA
phenomenon, and to put together in one story the TA examples found within the data.
7.4 Case Study Summaries

The main study comprises five case studies. It is important to give a context in which the TA occurred or might have occurred. Each case study describes this context by first introducing the service: the service providers’ motivations, the development process, and the service business model. Identification and description of the main digital platforms used by the service is necessary since the TA examples found in the study were coming from the observations of these digital platforms. Each case study presents the users’ journey and personas distilled and built from all the data collected, followed by the various service-user interaction scenarios. After each scenario, the TA examples found in the scenario will be explained.

7.4.1 C-Hack - Case Study One

7.4.1.1 Purpose of the company/Motivation/Type of business

C-Hack is a 48-hour annual event for the creation, sharing and prototyping of design ideas that can help to improve cycling.

“Bring together people, skills, spectators and talents in the same place to think about barriers for cycling, to design and hack ideas that enable cycling” (C-Hack’s Kickstarter campaign video).

The C-Hack team have taken inspiration from the annual Global Service Jam event (GovJam, 2017) and the experience of quickly prototyping ideas in other hacker-type events.

The event’s agenda is divided into three days. On the first day experts in cycling and related industries and from city councils are invited to present insights, and ideas to remove barriers, ideas and their city context for cycling. At the end of the first day the participants help to bring to light the existing barriers and ideas to solve these issues to be developed the following day. The second-day participants think of possible solutions to the barriers to cycling, develop their ideas and build prototypes. The third-day
participants design a way of communicating their solutions, present it to each other and upload their hacks to the digital catalogue.

C-Hack’s current services include these events, the design tank and education. One of their services is the annual programme of innovating events that commission a C-Hack challenge. Another service is the design tank which works as an ideas incubator and supports people that want to develop innovative services, products, brands, and policy in the cycling world.

“C-Hack showed how design could shape the way in which people experience where they live, how it can create new collaborative communities, and empower them to make their city a better place” (MI Open Glasgow & Glasgow Future Cities).

C-Hack’s education service’s mission is to teach young people C-Hacking skills: global citizenship, creativity and design, sustainability, placemaking and engineering. Its final aim is to help young people to become more engaged citizens wherever they live.

7.4.1.2 Who are the Service Providers?

SD is a product designer, creator and director of a bottom-up services design consultancy based in Glasgow.

JH works at the MasterCard Foundation Scholars Program at the University of Edinburgh.

ML is a product designer currently based in Canada. He is Co-Founder and Director of Global Events & Networks at C-Hack. He focuses on products with impact in the design of services.

7.4.1.3 Development Process & Research Data Collection

The service started in 2014 with the idea to run one C-Hack event in Glasgow. The fundraising team started a campaign on Kickstarter and contacted Glasgow city council. They got enough funds to start, and they were encouraged by the Glasgow City Council to invite other cities to join the initiative. Melbourne and Beirut joined Glasgow in the
2014 event. After three years of running successfully, C-Hack has now become a global movement involving around 25 cities across the world.

Table 34 describes milestones in the C-Hack development process from their initial idea in 2014 with three cities participating to the sustainable, global business and social enterprise that it has become today. Now, they are planning the kick-off the fourth C-Hack event in 2017; 65 cities are "interested in getting involved" (SD, 2016). Table 34 also shows how the research data collection stages are related to the C-Hack development process.

**TABLE 34 C-HACK DEVELOPMENT PROCESS & RESEARCH DATA COLLECTION**

7.4.1.4 Different digital platforms

C-Hack has a digital platform repository for its hacks and a website, and it uses various platforms for working and liaisons with various stakeholders and users. The first touch point of the service is the site. It was an initial mock-up done by SD and JH in December 2013. It has become the main point of communication and the service showcase. Between other services, the website curates the Digital Hacks Catalogue (DHC). DHC is an open catalogue that is the repository of the hacks produced in the C-Hacks events.
The main website and Digital Hacks Catalogue (DHC): Its development is an ongoing process. After three C-Hack events, DHC has 237 C-Hacks uploaded. This platform is mainly used during the events. There is the potential for another type of user that could download the hacks, produce prototypes and models of the hacks and upload the evidence of their hacks. The DHC seems an ideal placed for the public (indirect service user) to appropriate the technology the ideas and hacks developed in the events.

Digital Organiser's Pack: After the first event, the C-Hack team prepared and an organisers’ pack and update it every year. The organisers’ pack facilitates the work of a new host (city) with interactive tools to help in the design, organisation and plan for the event. This pack contains tips to get sponsorships and funding.

‘People are coming forward. We encourage them to engage with a local design school, we give them packs with design tools and tips to help them understand what a service design experience looks like’ (SD, 2014).

The organiser's pack is presented at a Basecamp meeting and each year is developed further with the comments and feedback from previous years.

Basecamp: The C-Hack team has chosen Basecamp as the collaborative working environment. Basecamp is used as a project manager system (on-line) where C-Hack team and new hosts have gathered to organise and work before and after each event. They can have discussions, add as many users as they need, collaborate and have a Q&A session that can be shared between different cities hosts. The C-Hack team are trying Slack Community for the first time this year (2017), hoping for easily searchable communication between team members. However, they will most likely continue using Basecamp for the tracking, visualisation and date management part.

Multiple-digital-platform Event - Facebook / Twitter /Instagram / Flickr / Kick-Started: These social media are used to keep users and fans of the event in the loop and up to date, and the C-Hack team has adopted and appropriated many other
mashups and digital platforms. They have several hashtags on Twitter associated with C-Hack events and news. They have an Instagram and a Facebook pages. Kick-starter has been another important digital platform used by the C-Hack team. It was fundamental to the first C-Hack in January 2014 ‘to raise some funds’ (SD, 2014) and it ended up being very successful. The kick-starter video shows some of the hack samples the team prepared to explain to different people what a C-Hack event is all about.

7.4.1.5 Users & Stakeholders

C-Hack has a variety of users. Users’ motivations to join the service vary depending on the type of user. Users’ main motivation to participate in C-Hack activities is “because they want cycling to be easier” (SD, 2014), and to help promote behavioural change towards cycling within their communities. They see that it takes a long time to see fruition in the planning of infrastructure for local authorities. SD talking about people motivation to come to C-hack events said:

“One is probably most people who cycle and that come up with a hack and implement it or people that can get involved in two ways. They can come to hack or develop something and put it in place or it can be someone from another country or from the cycling community that gets interested” (SD, 2014).

The hosts of the other C-Hack cities are considered users of the service and seen as reliable people that can be trusted to become C-Hack associates around the world.

‘What happens to them is like what happens in Service Jam organisers, that they become a centre point in their community’ (SD, 2014).

Hosts’ main motivation is promoting cycling in their respective city. They come from all backgrounds and do not all have experience in design. The non-design background of new hosts has motivated C-Hack team to create a digital organisers’ pack to training, and to set up a collaborative environment where they can work together, are prepared for the events, and learn how to be a C-Hack host by sharing experiences.
The Indirect Service User (ISU): this type of user can appropriate the service hacks in unforeseeable ways. For example, in Scenario 4 (described later in this chapter), they may not even know where the hack comes from, or if it is a prototype of a road sign. They may think it is an official sign or feature placed by their city council. There is another type of indirect user, people who visit the DHC (digital hacks catalogue) and can take ideas and hack them. At the moment, the service does not provide a digital platform where these users can share how they have appropriated the C-Hacks. C-Hack has other stakeholders. These are people from cycling organisations, sponsor companies, local authorities, City Councils and Mayors, people from government institutions, and individuals who look at C-Hack for ideas.

7.4.1.6 C-Hack Users Journey

The C-Hack user’s journey (Figure 62) includes in the first row the different service stages: Discovery, Research, Contact Us, Sponsor, Host a city event, Event, After-event. These stages were defined by observing the service online, with data from the service providers’ interviews and by participating in a C-Hack event. The first two columns displayed the touch points (digital and non-digital) while the rest of the columns show the users’ interactions with the service. Each user (persona) is represented by a different post-it colour, and they all have a corresponding column per stage in case they were involved with the service at that stage.

The C-Hack user's journey has helped to build four main C-Hack scenarios. These scenarios are a description of four different users' interactions with the service constructed as possible from the user’s perspective.
7.4.1.6.1 SCENARIO 1 DIFFERENT CITIES DIFFERENT PRIORITIES (DERIVED FROM C-HACK) (Appendix page 370)

**Personas & Needs:** Beirut Host: Karim A. is an architect and co-founder of several innovations and design organisations in Beirut. He is invited to host and run a C-Hack event in his city. Although he has organised other types of design events in the past, he has never been part of a Global Jam, and this event organisation is a big commitment for him. Melbourne Host: Jani M. is a service and experience designer with experience in digital strategy working at a digital innovation company in Melbourne. He understands the power of service design and likes to guide companies into a more user-centric approach. Although his background is in web and graphic design he is trying to move outside the digital world and from designing screen and wireframes into a more holistic perspective of the user experience.

**Scenario 1 Description:** The first event involved three cities Glasgow, Melbourne, and Beirut. Glasgow had the C-Hack team designing, creating and planning the event with service design backgrounds and experience in participating in other types of global jams. Melbourne and Beirut hosts were new to this kind of international event. Melbourne had a very different outcome from the event compared with Glasgow and Beirut, which had an enormous amount of different ideas and hacks uploaded to the digital hack catalogue (DHC).
‘Melbourne did not produce any physical hacks, they only produced journey mapping and brainstorming’ (SD, 2014).

Although the outcome was beneficial to the needs of Melbourne and the participants were happy, Melbourne did not use the DHC.

By holding this first hack event in parallel cities, the C-Hack team has learned from the other hosts’ experiences and feedback about the need for a much more defined and refined digital organiser’s pack. They concluded that a digital host’s pack should be designed to help new hosts in future cities to facilitate and to run future C-Hack events. This would include the research, insights, a sample of hacks and examples of previous work done in the first event.

‘We cannot really control them, we can only advise on how to run it and facilitate it’ (SD, 2014).

Analysis and Insights - TA Example from the Scenario 1:

The previous scenario exemplifies Technology Appropriation (Appendix page 370) since the idea for the creation of a digital organiser’s pack (DOP) comes from the Beirut and Melbourne hosts because of experiencing the service for the first time. They struggled to understand the C-Hack service intentions and information received. They tailored the service to their needs. This TA example corresponds to medium TA level since the users have modified the services to their needs. This direct users’ involvement known to the service has contributed to the DOP design.

In this TA example, user’s appropriation of the service has been taken into consideration by the service provider through observation and dialogue with the users. The users’ experiences of the service have helped to modify and improve the service. The DOP can be transformed and altered while being used by the future hosts of other cities, and it simplifies and facilitates the C-Hack team training of future hosts. By having this organiser’s pack, the service has a new feature that:

- Supports users (hosts) and gives them control.
- Allows personalisation and customisation to each city (for example the logo, etc.)
- Exemplifies the social practice but it leaves room to evolution and change.
- Has different components that can be aggregated and remixed; in this way, the new host and city can alter them according to their needs.
- Requires from the users a level of expertise to allow them to modify and alter the different components. This level of competence includes knowledge in service design, product and experience and a vast knowledge of design computer programs such as Illustrator and Photoshop.

7.4.1.6.2 SCENARIO 2 - YOURSKIRT4CYCLING & VIRAL HACKING (DERIVED FROM C-HACK) (Appendix page 371)

**Personas & Needs:** C-hack event participant MaJo manages an award-winning internationalisation project aimed at enhancing the global experience of the University of Edinburgh student community. She is also the editor of her blog called ‘Cyclable MaJo’, an online space which captures and shares cycling stories from Edinburgh and beyond. She started cycling a couple of years ago as means of commuting when she moved further from work. MaJo got involved with C-Hack due to her recent interest in cycling.

**Scenario 2 description:** MaJo was invited to participate in a C-Hack event. She joined a group of people that focused on the barriers to cycling and clothing. They developed a YourSkirt4Cycling prototype, a small accessory that allows women to convert her skirts into 'shorts', so it is easier to cycle with a skirt. They created a video of the hack and uploaded it on the DHC. C-Hack friends and users were tweeting with the C-Hack hashtag and with the YourSkirt4Cycling hashtag. Within the first week after the event, it had around 100,000 - 200,000 hits. The hack was featured in Slate.com and STV Glasgow, and that gave them one million hits. It went viral. It was featured in Cosmopolitan as the fashion hack of the summer. The video with the hack had 3,117,085 social media impressions in 48 hours.
Analysis and Insights - TA Example from the Scenario 2:

Participants in the event have used social media technology and features such as those that DHC provided and recommended for developing their ideas and sharing with the C-Hack community. This scenario exemplifies an intended use. The C-Hack team has supported users and not controlled their intended use of social media.

‘The hacks are at the Catalogue on the line for anybody else around the world to download them, try it, test it, model it and change it in a kind of creative commons debate’ (SD, 2014).

The users’ appropriation of the social media had an unplanned outcome: the viral effect. The viral effect has demonstrated the commercial value of the YourSkirt4Cycling hack and the business potential for other future hacks. This is an example of low-level Technology Appropriation. Even though users only use the service as intended, it illustrates how the service has learned from this experience and consequently has expanded the scope of its business from a mere repository of hacks and events to a business incubator and facilitator of C-Hack spin-off business.

7.4.1.6.3 SCENARIO 3 - THE UNICORN CHALLENGE (DERIVED FROM C-HACK) (Appendix page 372)

Personas & Needs: Participant and part of a Team hosting a C-Hack event in Helsinki:
Krista is a UX designer that lives in Helsinki. She likes cycling and wants to develop hacks ideas that involve creativity and group work.

Scenario 3 Description: Krista joined Basecamp after the C-Hack team launched the new coming C-Hack event. It is clear to her that the Basecamp platform is seen by other city hosts as the unique point for the exchange of information and communication between them and the C-Hack team before, during, and after the event. She has familiarised herself with the collaborative environment tools and C-Hack way of communication. Within the C-Hack event, Krista and some of her collaborators decided to launch a hosts’ challenge: each city would create a Unicorn and shoot a video with it,
then post the video on Basecamp and share it between organisers to boost morale and engage with them in a different form.

**Analysis and Insights - TA Example from the Scenario 3:**

This scenario is an example of TA because it showed not only how each city could have personalised and customised the event to their needs, but also how they can be creative, and evolve the service’s social practice. It is an example of social agreement between a community of users. Although her challenge was partially answered by teams in some of the cities involved in the C-Hack event, it has inspired C-Hack team to create an ‘official’ challenge in every event and to create a system of different awards such as the best City C-hack Logo, etc. This users’ appropriation has been used by the service to evolve its social practices and further develop the service.

7.4.1.6.4 SCENARIO 4 - THE UNEXPECTED USER (DERIVED FROM C-HACK)

(Appendix page 373)

**Personas & Needs:** Public walking and cycling in Glasgow the day of the C-Hack event.

**Scenario 4 Description:** The unexpected user phenomenon is first observed and noticed by SD in their first event: ‘One of the prototypes that went out was a little triangle sign with a bike on it that was based on the standard signpost model’ (SD, 2014). A hack developed in the first C-Hack event was a street sign that used the same semiotics of the official triangular road warning signs. This hack purpose was to warn pedestrians that cyclists can turn over a corner in a specific location. When they went to prototype that hack, they observed some people and realised by their behaviour that they should put another sign ‘on the other side of the road so the people that were waiting to cross the road can see it’ (SD, 2014). After a few weeks, the C-Hack team realised that some of the hack signs were still where they left them and that people were using them; people have appropriated the hack.

‘We were expecting them to be vandalised and torn down, but they were not. That was an interesting action: people appropriate them’ (SD, 2014).
Analysis and Insights - TA Example from the Scenario 4:

The hack was a mock-up, not a real sign; this exemplifies TA because people were using the trials for a different purpose (real use) than it was intended to (simulation use). The service learned about users’ appropriation but did not lead to further development of the service.

7.4.2 WomenInFashion - Case Study Two

7.4.2.1 Purpose of the company/Motivation/Type of business

WomenInFashion (WIF) is a UK foundation that seeks to empower women and artisans in fashion and textiles. It aims to empower entrepreneurship, ignite inspiration and further fashion locally and globally by providing training and mentoring to these women and link them to business opportunities. WIF is formed by a series of textiles networks, called ‘circles’.

WIF applies to development funding within the UK and USA government gender equality priority agenda. The focus of these projects is to work with women in developing countries or different regions of the world. Through this funding, the team has to lead various types of programmes in partnership with the United Nations Agency and The International Trade Centre (ITC) in Central America and Central Asia. The outcomes measure the success of these type of projects. The results of these funding projects could be very varied. For example, in one project in Central America twenty women in Guatemala have received training and feedback on their products. They have been linked to ten different business connections in other parts of the world, have received specific feedback on five of their products and have managed to introduce a product to a buyer from the fashion and textile industry. The service cannot guarantee that these women’s textiles will be bought and sold in the international market, but there is the potential for that to happen.
7.4.2.2 Who are the Service Providers

RG founded WIF as a non-profit organisation in 2009 in the Netherlands; she worked at an international development organisation in the United Nations. She partnered with ED and established WIF in London as the headquarters. ED is a fashion lecturer and runs WIF. There is a third member, DD; his specialism is business and entrepreneurship.

WIF has different types of services:

- London Business Mentoring Programme: partnered with a UK Bank, WIF offers a new cohort of around 15 to 20 women every six months.
- Host and held events: fairs and exhibitions (Europe, Central Asia, America) where the members can display their work and network with potential buyers.
- US AID Founding Projects: each project is different and focuses on a goal.

7.4.2.3 Development Process & Research Data Collection

As can be seen in Table 35, WIF was founded in 2009 in the Netherlands and became a legal entity in London in 2012. In 2010 WIF signed on as a founding partner of the Global Platform for Action on Sourcing from Women Vendors (GPASWV). In 2011 WIF runs a pilot project with women in Arequipa, Peru with the United Nations agency and the International Trade Centre (ITC). The project conducted the first Buyer Mentor event at UN Women in NY. The same year WIF connected with women in textiles and fashion businesses in Kyrgyzstan and Tajikistan in partnership with the US Department of State at the ‘Strategies for Success Central Asian and Afghan Women’s Economic Forum’. Also in 2011 WIF showcased activities at The Source in London with the Ethical Fashion Forum (EFF). In 2012 WiF held the first live mentoring and networking event at HUB Kings Cross, London; more than thirty participants attended, including designers, entrepreneurs and mentors from fashion, finance, IT and sales. In 2012 WIF became a legal entity. In 2013 the WIF Breakfast Club was launched. Table 35 also shows how the research data collection stages are related to the WiF milestones development process.
7.4.2.4 Different digital platforms

WIF uses different digital platforms for various purposes, as follows

**WiF Website:** WIF has an official website; it is administered by them but hosted by a website provider; WIF does not own an API. Since the research started this site has not changed a lot, only updates about their activities and an additional Tweeter and Facebook feed was added to the main page (March 2016). The main purpose of the site is to showcase the foundation. It highlights the services they provided, main events, and their history. WIF showcases some members’ work. At the main page, there is a link to main mashup services WIF pages: Twitter feeds, Facebook page.

**Members’ Only Platform (MOP):** This platform has not been modified since the beginning of this research. WIF wants to engage the users and has created a Facebook ‘spin-off’ type members' only platform (MOP). To join in MOP, the user needs to pay a yearly fee. They had around 100 members at the time of the initial interview. The structure of the platform is very similar to Facebook’s structure. It is not well advertised on the home page, but it can be found under the ‘engage’ label in the home page main menu.
**Viber & WhatsApp:** They used these mashups to communicate with users and people from Central Asia and Central America that for various reasons might not have access to computers.

**Other Mashups and Digital Services:** The service uses other mashup services, WIF uses Twitter especially when there is a project that is abroad. They have a Facebook Page; users can join WIF’s Facebook community for free. The Facebook page has more members that the MOP.

(WiF) “And then we did ... So, we’ve got the main WiF Facebook page, which has got about 5,000 followers, but then we tried to create a private group on Facebook to see if people would join that, rather than our own MOP. But what we did was we confused people because then we’ve got a private group on Facebook and people are not sure what’s the difference between that and the page [...]” ED, 2015

WIF also used Eventbrite, LinkedIn, Google, Google translates, and Instagram.

### 7.4.2.5 Users & Stakeholders

**WIF users are women designers, artisans and entrepreneurs:** from London to Central Asia, to South America.

Other WIF stakeholders comprise:

**Buyers:** Retailers around the world, designers that need skills artisans.

**Business professionals and experts:** These professionals form a forum of mentors that provide advice to a group of business women (the class cohort every six months).

**Supporters and partners:** WIF and the US State Department had worked together to showcase the fashion work of Kyrgyzstan women. WIF has linked women in fashion and textiles to a global market in partnership with the United Nations Agency and The International Trade Centre (ITC).

### 7.4.2.6 WIF User Journey
The different stages of interaction between users and WIF are placed in the first row of the WIF user journey grid. These steps were defined by the service provider at the final interview (as can be seen in (Figure 63): Discover WIF, Contact, Meet, Relationship is established, Conversion (when a user becomes a member of the private platform), Active digital member & user, and Collaboration between members. As in previous scenarios, the rest of columns displayed digital, non-digital touchpoints of the service, and WIF users.

Three scenarios have been extracted from the WIF users’ journey. Each of these corresponds to a TA example found in the service digital platform observations and data from the interviews. These three scenarios allow the research to study and observe the phenomenon of TA.

7.4.2.6.1 SCENARIO 5 - CONNECTING ARTISANS WITH BUSINESS (DERIVED FROM WIF) (Appendix page 375)

**Personas & Needs:** Zatima is a female artisan from Khujand, Tajikistan. She needs mentoring, advice and support to help her developing her business and to be advised on routes to market. She needs to be shown ways to sell her designs and to ensure that her motifs appeal to a global market. Fashion Brand (FB) in London needs to source artisans
with different skills, opportunities to meet them, communicate and work with them, support collaborations, making money.

**Scenario 5:**

Zatima is a woman from Khujand, Tajikistan. She is a member of the Women’s Artisan Association in Khujand (WAA-K). WAA-F has partnered with WIF and runs an artisan training event in Khujand funded by US Aid. At the event, it mentors artisans in promoting their traditional products and improving their skills. US Aid referred Zatima to WIF through someone in the women’s association, via e-mail. WAA-K telephoned Zatima to tell her about the event, along with the rest of the artisans. She met face to face with WIF while still in her country and showed them her work.

After leaving the country, WIF continued mentoring, advising, and supporting her through the WAA-K communication via Facebook private message and Viber. This was the easiest way to keep in touch because she does not have easy access to a computer with internet, is not computer-literate and lives in an isolated region, so it is hard for her to visit the WAA-K headquarters. A series of private messages on Facebook and Viber, around 150 over a period of three months, was exchanged between WIF and the WAA-K. Zatima sent pictures of her work to be published by WIF on their website. From time to time WIF showcases private members’ work on their website to all members, the general public and business people.

Furthermore, a Fashion Brand (FB) company in London wanted to understand what WIF did and contacted them through e-mail. WIF invited the FB to come to a private (invitation only) event in London organised by them. The FB got to know how WIF supports collaborations and sourcing opportunities via their website. Through the WIF website, FB found Zatima work and became interested in a possible collaboration for their future spring-summer collection. WIF enabled and supported the cooperation between Zatima and the FB. Zatima created a set of garments for the FB to sell in their brand spring-summer collection.
**Analysis and Insights - TA Example from Scenario 5:**

This scenario showcases a series of off-line and online interactions that has led to the desired outcome (an ideal user-service scenario) between a WIF member (user) and another WIF stakeholder. In this scenario, the user actions were to adapt and use any technology available to communicate with the service. The service responds by self-adapting and appropriating the technology. The service providers use any social media and digital technology available; they adapt to suit the diverse range of users, and the different technology available in the users’ countries. Without these interactions, the service would not be delivered.

This scenario is an example of extreme ‘Mashupness’. Mashupness is the service’s ability to adapt and use any social media available to satisfy their communication and interaction between them and their users. The service has developed a new ‘functionality’: Its Mashupness capacity to adapt using social media, the internet and any other digital service available. This mashupness becomes an evolved social practice and a benchmark for future actions and interactions with other members and stakeholders. The social media and mashups became a service ‘kit tool’ that can be aggregated and remixed to the convenience of the users and the service.

**7.4.2.6.2 SCENARIO 6 – PRIVATE GROUP AT MEMBERS ONLY PLATFORM MOP (DERIVED FROM WIF) (Appendix page 375)**

**Personas & needs:** Laurie is a young entrepreneur. She needs help to create a business strategy, to build her brand awareness and to understand market business in the UK and abroad. She would like to interact globally with other professionals like her.

**Scenario 6 description:**

Laurie lives in Sheffield, UK. She is a young fashion business entrepreneur. She is seeking business and market advice; she hears about the WIF school for social entrepreneurs (SSE) through a friend. She looked at WIF website and saw that there was an open event in London while she needed to buy some materials for her work in London. She arranged
an appointment with WIF via a short Twitter message. She came to London and reached WIF, enrolled and joined the SSE course. At the first school day in London Laurie met other female entrepreneurs like her and decided to join WIF’s MOP. She created a ‘private’ group on the MOP for her school cohort to exchange information and to discuss what they were learning. Soon she realised that not everyone on the SSE school is a member of the platform. She decided to join WIF Facebook page where she found most of her school mates. At the end of the course Laurie continues following WIF occasional updates on Twitter, the Facebook page becomes dormant, and she continued being a WIF member but without any interaction with the WIF MOP.

**Analysis and Insights - TA Example from the Scenario 6:**

This scenario showcases the user’s needs that led her to want to appropriate the service technologically. This scenario is a simple case of customisation of the service features. Since this customisation did not fulfil the user’s needs, it becomes an example of the potential to create new functionalities within the MOP. The scenario highlights that the MOP is not as flexible, modifiable and adaptable as a Facebook page could be.

The user finally adapted the Facebook page to her needs and the needs of her school cohort. This scenario questions the relevance of the MOP; the service providers could learn from this ‘missed-appropriation’ by re-focusing the MOP in a different way or even promoting it. The MOP is a controlled environment, where not all the service users co-exist. Perhaps the service should prioritise and understand the uses of different social media and adapts to the media that best delivers this flexibility.

7.4.2.6.3 **SCENARIO 7  VIBER AND GOOGLE TRANSLATE APPROPRIATION (DERIVED FROM WIF) (Appendix page 376)**

**Personas & needs:** Alina is an artisan who lives in Kazakhstan. She speaks Russian but not English. She needed advice about her textiles work but also sought to broaden her professional and friends network. Alina heard about WIF training sessions and
went to a meeting. From time to time she needs reassurance and support to continue with her work.

**Scenario 7 description:**

The service provider went to training events in Kazakhstan several times and Alina met face to face with the service provider. Over the years they have exchanged their Viber accounts and from time to time Alina communicates directly to WIF by Viber by sending two words in English and a photo. Then WIF replays by sending her back one or two words in Russian using Google Translate and a sticker.

**Analysis and Insights - TA Example from the Scenario 7**

This scenario showcases a recurrent service issue, the disparity of the connectivity and access to the internet and social media technologies between the different members of the service and potential user groups.

“We obviously are a digital service, the level of Digital-ness of our service for our users will vary a lot, depending on their access to technology... [] ...We are dealing with a whole range of countries like we will have people in one of the poorest countries in the world, who have amazing textiles ... [] ... however, access to the internet there is not good ... [] ... and also have members from the most developed nations in the world, where they get broadband internet, and Wi-Fi from their phone.” (ED, 2015)

This scenario is an example of TA: it shows how the service is willing to adapt and is prepared to use any social media available to help with user's and possible members' communication and social interactions. Without these interactions, the service would not be delivered. As in scenario five, the use of social media technology in this way modifies the service because it becomes an evolving social practice and a benchmark for future actions and interactions with other users and stakeholders.
7.4.3 WorkPower - Case Study Three

7.4.3.1 Purpose of the company/Motivation/Type of business

WorkPower is a freelance marketplace. It connects small firms or individuals (the clients) who are looking to hire a professional for a short-term project, with professionals (the worker) working from home. The client posts a job advertisement that specifies the type of skills and hours required. The freelancers receive e-mails with job adverts that correspond to their profile. The freelancer applies for the job. The client reviews the applicants and hires a freelancer. The work is done. The worker raises an invoice for the client based on their agreement. The worker pays a service fee to WorkPower once the client has paid an invoice.

Originally it aimed to connect small businesses with stay-at-home mothers who could do short-term projects or run small businesses. The idea for WorkPower is inspired by seeing how mothers leave work to raise children, then after a while become disconnected with the workplace and their careers. It is not very difficult to imagine how much the work world could change in that period and how difficult it is to try and get back into their previous job and career. WorkPower service allows them to stay connected with the workplace, and earn a bit more money while they are at home.

Having been launched for a year, and understanding better their users’ and clients’ needs and listening to queries, Work Power opened its services to other users, not only mothers. WorkPower became a freelance marketplace service. Two years after launch the service had a third major shift. Now it has clear definitions of professional areas and the service focus on promoting specific people’s skills. It has launched Pro service - a direct link to a service adviser (customer support) that could create and match a project for users.
7.4.3.2 Who are the Service Providers

TW is WorkPower founder. He has a BSc in computer science with artificial intelligence. JM is WorkPower co-founder. His background is predominantly commercial, so he focuses more on talking to investors and potential partners and clients.

7.4.3.3 Development Process & Research Data Collection

After leaving university (see Table 36), TW went to work for an investment bank writing trading systems, working on the corporate technical side of things. In the summer 2013 TW started his own software business focusing on building software for recruitment agencies, and spent six months working on a product in that area, which was unsuccessful. During that time, he developed Statica a separate product, a software and service tool for other developers to use that is still running. This business did well, and the product gave him the idea for WorkPower.

He decided to work on this, and in 2014 he joined the Fuse Box 24 programme that focuses on innovators (i.e. not only on the innovations themselves). WorkPower started in 2014 with a small market, a niche in mind, something tiny and focused on differentiating itself from other services to get some initial traction.

**Table 36 WorkPower Development Process & Research Data Collection**
In January 2015, by the time of the initial interview, WorkPower had a service prototype with the minimum viable product out there and ran, and had around 150 users and a small number of clients. They had some very early initial traction and some preliminary pilot work under way, they were looking to find the proper product market fit, and they were not yet in a scaling mode (Start-up Commons Organisation, 2013). The research data collection stages are presented in Table 36 in relation with WorkPower milestones development process.

7.4.3.4 Different digital platforms

**WorkPower Main Website:** Since the research started, it has changed considerably three times. The last main change was registered on Nov 2016 when this research stopped collecting data. The service and the website have been transformed from a small digital platform with very little user interaction to a vibrant ‘hub. Now users can identify a clear platform for their needs: as clients or freelancers. The website clearly shows two customised paths, guides and advice. In this ‘new’ hub, both types of users can easy get access to information that can help them in creating a healthy working relationship.

The WorkPower website is the main source of information about the service. It explains how it works and provides resources, directs the users (workers) to one area for freelancing and clients and business to another area for hiring. For freelancers, for example, it gives advice on how to create a freelancer profile, how to write a great application and a freelancer’s guide to creating successful client relationships. For the businesses, it explains what a freelance marketplace service is, and gives advice about the type of projects that they can outsource. Users can register for free and need to choose between interacting with the service as a freelancer or as a client. After registering, freelancers can customise their profiles and search for job offers, and the clients can post jobs and search from the pool of freelancers’ profiles.

**E-Mail:** WorkPower has an automated e-mail system. The moment that people sign up, it will send them an initial welcome e-mail which explains the three steps users need to
do to get started with the service. They use push e-mails after three days if the users do not complete the conversion. E-mails are the main method of interaction between the service and its users. Freelancers receive customised job offers and clients receive freelancer matches to their job offers. Then both are redirected to their profile sites, and the interaction with the service can continue.

**Towards a future get together communication platform:** The service has implemented an online direct chat with users. The service provider has the idea to build an online community, where users can interact with each other and give each other tips on how to be a successful freelancer, for example:

“Yeah, we have discussed whether we should have, whether we should form communities within our community, based on particular skill, based on a particular skill base. So for example, we might have, you know, lots of people who are social media managers and getting them to talk to one another. At the moment there's a slight... at this time, we do not have the volume of work to justify and maintain that in a positive manner... [] ... So the fear at the moment, the honest fear at the moment, is if we were to set up something like that, it would just be lots of people saying, has anybody got a job?” (TW, 2015)

**Incorporation of other mashups and digital services within WorkPower:**
The service is active on Twitter. It is not very active on Facebook. It uses LinkedIn to promote the service by posting information on there, and they use information from LinkedIn to supplement people's work profiles on the site.

“Yeah, Google Maps not really, we are not localised at the moment, and Pinterest, Flickr, we are not very visual at the moment, so ...” (TW, 2015)

**7.4.3.5 User & Stakeholders**

**Freelancers & Home “Mums” (TW, 2015) – workers:** WorkPower predominantly focused on stay-at-home mothers, who need a flexible working environment that can function around their childcare arrangements. Before being mothers, they previously
were in some form of a professional job, left work on maternity leave and to raise their children, and are looking to do small parcels of work. They are not looking for a full-time contract or regular hours, but still desire to contribute something and participate in some work activity. The service needed to comply with employment laws and discrimination in the UK; this meant that anyone, not only mothers, was free to join their site and anybody could sign up for his or her service. WorkPower appeals to people who enjoy work and want to get back into work, and want to contribute something to their households.

“Workers are the people carrying out the tasks” (TW, 2015)

**Small Business – Clients:** “clients, which means people are looking to hire somebody” (TW, 2015). The main WorkPower clients are small businesses who do not want to hire a full-time employee for a task but need to get something done by an expert. These clients are looking for highly motivated people who want to work on their projects.

“So, for us, the kind of understanding of who, what a user is, is very important and is quite challenging because we have to simultaneously appeal to people with two very different requirements and two very different ways of interesting with the system” (TW, 2015).

**7.4.3.6 WorkPower User Journey**

The WorkPower user's journey in Figure 64 includes in the first row the different service stages in which the users interact with the service: Discovery, Understanding WorkPower, Research, Conversion-Join in, Personalisation, Interaction platform between clients and job seekers, and the Regular user. These stages were defined by observing the service online, with data from the service providers' interviews and by registering with WorkPower as a freelancer. The first two columns display the touch points (digital and non-digital) while the other columns show the personas that help to build the scenarios.
The WorkPower users’ journey has helped to produce three scenarios where the phenomenon of TA could be studied and observed. These scenarios are a description of four different user’s interactions with the service constructed as possible from the user’s perspective and with the service provider help.

7.4.3.6.1 SCENARIO 8 VERY TRANSACTIONAL PIECE OF WORK (DERIVED FROM WORKPOWER) (Appendix page 378)

**Personas & Needs:**

- **Client:** David has a small company in need of a short burst of high-intensity social media project work. They need this done by the end of the week, and they estimate that is going to take the freelancer six hours a day to get it done.

- **Worker:** Amy was working as a social media manager before she left work to have her first child, she then decided that she wanted to stay at home and raise her son. She has heard of many friends that after a period of raising children would like to come back to work, only to find out that their skills are not up-to-date. She wants to work from home, but she does not know how to be a freelancer.

**Scenario 8 Description:** With all the necessary skills, Amy got the job and delivered to excellent standards. It was a very transactional piece of labour, and the relationship between them is over. The client paid, but although Amy did a good job and managed to tick off those priority items, the company feedback was negative. As a social media
manager expert, Amy failed to suggest to David other complementary marketing tasks and extra work that naturally followed her job. Amy missed out on extra work that David would have been happy to pay her for.

**Analysis and Insights - TA Example from the Scenario 8:**

This scenario highlights several users’ needs and future service features. There is a need for visualisation of the interactions between the client and the freelancer. For example, visualisations when the project is progressing. It could also mean creating a new interaction with a strategic list of expectations from their customers and worker perspectives: expectations related to how flexible they want their relationship to be, tips and advice about offering extra work, availability and skills of both the freelance perspective and the client, their demand for and disposition to be offered more work when it is needed.

“And because we had no visibility into how the project was progressing or how many hours somebody was working in that particular week, there was nothing we could do to step in and help either party until the project was finished and it was too late.” (TW,2015)

This scenario exemplifies TA since it clearly shows ideas coming from the users’ perspective that can be used by the service provider to modify, alter, and create workarounds, and more features of the service. In other words, the service provider will create new features inspired by the experience and needs of users that can complement the service. The service is developed and improved by the learning opportunity provided by the users’ appropriation of the service.

“So, what we are looking to do is to change that to bring communication within the system, so that we can, if needed, see more information on how the work is being carried out.” (TW,2015-16)
7.4.3.6.2 SCENARIO 9 ON-GOING WORKER FOR THAT PARTICULAR CLIENT (DERIVED FROM WORKPOWER) (Appendix page 378)

Personas & Needs:

- **Client**: Mark has a start-up company in a scaling (growing) mode. He needs someone who can do some accounting work each week for his business.

- **Worker**: Alicia she is studying to be an accountant. She needs a flexible but steady job.

**Scenario 9 Description**: Alicia joined WorkPower and applied for several jobs within the service. Eventually, she got hired by Mark’s company to do some accountant work. The client uses WorkPower as a method of essentially hiring a regular worker for an extended period, and for a very small number of hours a week. Alicia has been working two hours a week for Mark and has been doing this for the past four months. She has become a regular, an on-going worker for that client.

In this system, once WorkPower have done the original introduction, they are essentially just a payment processor and guarantor of the work, as opposed to being a matching service. The value that WorkPower provides to both parties is upfront, in the introduction. Once they have been introduced, the value that the service provides diminishes. The service then becomes an easy method of payment processing and keeping all their records in one place.

**Analysis and Insights - TA Example from Scenario 8**: This scenario is an example of TA that clearly shows how users appropriate the service by interacting and creating new social practices, differing from the original service proposition and offer. The users have created a different type of relationship between them, and different use of the service. The service directors can learn from this scenario and further develop and expand its features and offer.

“So, how we handle and differentiate between short-term projects and long-term retainers, is something that we have not really solved yet. Moreover, it is
potentially not what we [...] it is not what we originally designed the process for.” (TW, 2015).

7.4.3.6.3 SCENARIO 10 ADVISING COMMUNITY (DERIVED FROM WORKPOWER)
(Appendix page 379)

**Personas & Needs:** Amy is a freelancer as in the scenario 8. [...] She does want to work from home, but she does not know how to be a freelancer.

**Scenario 10 Description:** Amy joined WorkPower six months ago. Although her profile is entirely up to date showing her skills as suggested by the service, she wonders what can she do to make her profile stand up against other freelancers to secure a job offer.

**Analysis and Insights - TA Example from Scenario 10:** This scenario shows the need for a service feature that allows the user to customise and further personalise their profiles and make them stand up against their competitors. It also illustrates the necessity of a place for users to interact with each other and share their experiences, exchange tips for working as freelancers and share good practice. It is a TA example since the needs are coming from directly from the user. This information can be used to develop the service further. The service can learn from it and develop its provision, for example allowing users to build a community where they can exchange good practice and information. Another feature could be to create some guidelines and expert advice.

“Yeah, we have discussed whether we should have, whether we should form communities within our community, based on particular skill, based on a particular skill base. So for example, we might have you know lots of people who are social media managers and getting them to talk to one another. At the moment there’s a slight, at the moment, we do not really have the volume of work to justify and maintain that in a positive manner.” (TW, 2016)

7.4.4 MoneyVoucher - Case Study Four
7.4.4 MoneyVoucher - Case Study Four

7.4.4.1 Purpose of the company/Motivation/Type of business

MoneyVoucher is a Brighton-based social enterprise whose mission “is to make money work better for the local community”. In September 2015, they launched a gift voucher that can be spent with independent local businesses. The money they receive from any gift vouchers that expire or are unspent has generated the idea to fund community projects and to help local charities.

“Our vision is a new kind of financial services organisation that provides services designed around the needs of the local community. Our current work includes education workshops about money for young people in schools and colleges.” (MoneyVoucher, 2016)

MoneyVoucher started with DW’s intention to use his experience and tacit knowledge in finances to do something socially responsible which would be purposeful and useful to individuals and communities. His initial idea was to have an account which collects cashback and rewards from lots of different sources, such as loyalty points (marketing incentives from various shops and businesses). These ‘reward points’ create a connect (DW, 2015) value that would make a useful contribution each month to a person’s pension. The system would involve a new type of complementary currency such as electronic money.

The technology could combine staff cards; people could load money from their payroll onto their employee’s card, spend it and then earn some cash back that goes into their pension. The idea evolved into a system where people could have lots of different alternative currencies that are designed to do different things. When DW got involved with people that shared his vision they soon realised that it was not possible only to develop the technology and hope for other people to bring in the currencies. They needed to start bringing and creating the complementary currencies to start with and then work towards that system. In this context, the idea for Money Voucher came to life as the first step towards a better finance system.
He based his ideas on a couple of different models. The first model is accepting time as credits: this consists of exchanging someone’s time with someone else in the form of time credit. The second was the agency model, where organisations with excess capacity in fields such as training, education, and leisure could have an extra member of the class without costing any money. Both models display social responsibility - they provide access to excess capacity and end up rewarding and encouraging positive behavioural change.

7.4.4.2 Who are the Service Providers?

DW has a background in finance. He started working at a local stockbroker when he was a teenager. He worked his way up until he got a position where he was trading bonds for one of the American investment banks. He moved to Brighton and set up a mortgage brokershhip, then the financial crisis came. He realised that the mental model he had of how the economy and the financial system worked was incomplete. He started an MBA and it was whilst studying that he had the idea for Money Voucher.

7.4.4.3 Development Process & Research Data Collection

While DW was studying for his MBA (see Table 37), he discovered that money is just created by banks as debt and started reading about alternative economics and how different types of currencies work in the world. He came to the conclusion that the kind of money in use has characteristics of transferring wealth up the chain to the wealthiest people. DW started exploring and got involved with the complementary currency movement. A business idea arose from this which evolved into Money Voucher.

The initial development of the company occurred in 2014-15, and in November 2015 MV launched the gift voucher to coincide with the seasonal holidays as the first of many other projects for the social enterprise. Table 37 also shows how the research data collection stages are related to the MoneyVoucher milestones development process.
### 7.4.4.4 Different digital platforms

**Money Voucher Main Website:** The MV website is the main digital touch point of the service. Users can join the service as gift vouchers buyers or as a local business. The main website displays local offers, a gift voucher on-line shop, a list of directories (places where to spend the gift vouchers with a map to locate them and MV business involved), ways to get involved with the social enterprise, and about the company link.

**MoneyVoucher App:** MV is currently developing an App to buy the gift vouchers. This tool vision is to be the main digital touch point of the social enterprise. It has the potential to feature several services and the new finance system that is being developed for people by MV.

**Other Mashup and Social Media Services:** The company uses Twitter and Facebook only to communicate important dates in their calendar, such as business members’ meetings. The company is not very active on these social networks.
7.4.4.5 User & Stakeholders

MV has two main types of users: gift voucher buyers and local businesses.

**Gift Voucher Buyer:** Anyone in the Brighton community is a potential gift voucher user.

**Local Business:** Local shops in the Brighton and Hove area are welcome to be part of the MV community. They need to sign up to become a business member and be part of the MV directory, then gift voucher users can find the business and special offers.

**Other Stakeholders:** MV works with different charities and the Brighton and Hove city council.

7.4.4.6 MoneyVoucher User Journey

The MoneyVoucher user’s journey in Figure 65 includes in the first row the various stages at which users interact with the service. These steps are: Discovery, Research, contact us, buy a voucher/use it/ forget about MV, Interaction between buyers and shop owners, and MV further development. These stages were defined by observing the service off and online, with data from the service provider interviews and by registering with the service as a business offer. The first two columns display the digital and non-digital touchpoints while the rest of columns show the users' interactions with the service. The service users are each represented by a post-it colour, and they have a corresponding column per stage in case they were interactive with the service in that step.
The MoneyVoucher users' journey has helped to build three main scenarios. These scenarios are a description of three different users' interactions and ideas that can contribute to improving and develop the MV service further. These scenarios have been constructed with the service provider’s support and always with users of the service’s perspective in mind.

### 7.4.4.6.1 SCENARIO 1 | THE ORIGINAL MV IDEA: MONEY TOWARDS PENSION SCHEME (DERIVED FROM MONEYVOUCHER) (Appendix page 382)

**Personas & Needs:** A group of employees working at XBrighton company. Dan is a member of staff at XBrighton company. He has many colleagues, and all have families that need to buy groceries each month.

**Scenario Description:** Dan heard about the MV pension plan at a local community meeting. He went to the MV website and saw examples of people that have used the pension scheme. The pension plan involves people that could load money from their payroll onto their employee's card, spend it and then earn some cash back that goes into their pension. Some of their payroll money goes on to their MV staff card each month. Then when they spend this money on a local supermarket to buy groceries, the supermarket will give them 5% cashback, as they do now with other payback schemes. If
they have a family that spends £500 on groceries per month, the saving towards their pension is £25 a month.

Dan contacted MV by e-mail, and MV came to his company to explain the pension scheme to Dan’s colleagues as well. They all decided to join the ‘new’ rewards towards pension scheme at XBrighton.

Dan realised that they are many local businesses that are part of the MV community and he started only buying local produce and promoting his colleagues to do the same. Dan went back to MV with many ideas coming from his meetings with colleagues that could help to improve the service and proposed to create a group of users that can help MV to develop further the service.

**Analysis and Insights - TA Example from the Scenario 11**

This scenario is not real, is based on what the MV service provider envisions the company to be. This scenario is a case of TA since it contributes to the exploration of new ideas for the developing of an alternative electronic money system that uses digital technology, and new services features.

**7.4.4.6.2 SCENARIO 12 THE GIFT VOUCHER NOT SPENT (DERIVED FROM MONEYVOUCHER) (Appendix page 381)**

**Personas & Needs:** Cloe lives in Brighton. She is finishing her BA in Arts and Design at the University of Brighton. Buying her a present is always difficult because she has her own taste.

**Scenario 12 Description:** Cloe received an MV gift voucher as a graduation present from her boyfriend. She went to the MV website where she found the different shops and services within the offering. Cloe wanted to walk to the city centre and soon realised that her favourite jewellery shop was part of the service. She bought a necklace with some of the gift vouchers but kept one £5 gift voucher as a souvenir to remember her graduation and her boyfriend’s present.
Analysis and Insights - TA Example from the Scenario 12: This scenario highlights an unexpected outcome of the MV gift voucher scheme. Many people who bought gift vouchers did not spend them. MV has money now that can be devoted to charities, at the local community, and to sponsor people projects. It is an example of service appropriation since it demonstrates how users can do something unexpected and creative with the service features.

The service has learned from this example and has developed further by creating a ‘new’ community/people sponsor project plan with the money coming from unused gift vouchers. This new feature of the service is a spin-off, a new business, coming from the users’ appropriation. The service can also create a new feature that provides a way not to forget about the gift voucher, as this might why it was not spent.

“... []... And then as I learnt more about the, how the financial system sort of works and how other different complementary currencies that have been successful in the past, then I started thinking, so my kind of ideas were adapting I think and actually if we had one system where you could have lots of different alternative currencies that are designed to do different things, because you have like the time (sharing) banking schemes, where people exchange directly with one another in a network. There are other time credits, where ...” (DW, 2015)

7.4.4.6.3 SCENARIO 13 SERVICE BETA TESTER GROUP (DERIVED FROM MONEYVOUCHER) (Appendix page 382)


Scenario 13 Description: Dan had volunteered to create a beta tester and service ideas development group for the MV service. Dan has been inspired by the pension scheme and the ideas coming from his colleagues for improving the service. Cloe, already a designer, could see the potential for this service and had asked to join Dan’s beta tester
both developed some ideas and invited James to help them to put together a pilot of a new service feature in his shop.

**Analysis and Insights - TA Example from Scenario 13:** This scenario is not real, is based on what the MV service provider envisions the company to be. This scenario highlights the potential for further development of the service by involving the users in the service development process. The service could be ready to support these types of user initiatives. The users, with the service support, lead the development of the service.

### 7.4.5 AccountMe - Case Study Five

#### 7.4.5.1 Purpose of the company/Motivation/Type of business

They are a technology and financial services accountancy company based in Brighton. From an accounting software start-up, the service has not only grown but has diversified into some business advisors from professional insurance, office space, and legal support. Other services include a more general sort of advice service for people who want to be business owners or people who already are business owners, and they need some support. They help people through blog posts, and through guides sent to them, and through downloading templates and software from the website. They are building a community and from time to time create events where accountants will provide one-to-one surgeries for people.

#### 7.4.5.2 Who are the Service Providers

Two partners started the company: SC, a very experienced accountant, and DF, an entrepreneur.

#### 7.4.5.3 DEVELOPMENT Process & Research Data Collection

In 2007 both partners wanted to change the bad experiences both had had with accountants in the past and created this start-up (see Table 38). They developed software that offers a flat price ‘all-inclusive’ account service for everyone. In 2009 Account-me was created, with very much success in 2016 they were at the top 100 accountancy firms in the UK. The initial interview was done at the beginning of 2015. As with the other
start-ups, observation of the website was made at different times between 2015 and Nov. 2016.

**Table 38 AccountMe Development process**

7.4.5.4 Different digital platforms

**Main website:** All the information about their services can be found there. They offer business guides and expenses, free invoice software and templates, a business incubator, a take-home calculator, a date rate calculator and making digital taxation.

**Online bookkeeping software:** This software is tailored to help companies to bookkeep. It is supported by accountants that are certified, who give advice both online and in person (surgery events).

**API software for users to build add-ons:** users can build add-ons on top of this API.

**Other Social Media:** They answer many questions on Twitter and Facebook and promote the surgery events. Twitter is used for a lot of customer support, but also to interact with the public. For an in-depth advice and tutorials, they have many customer support videos on You Tube and do webinars.
7.4.5.5 User & Stakeholders

Freelancers, contractors, start-ups, one person businesses, any small business up to ten people. The technical term is micro businesses.

7.4.5.6 AccountMe User Journey

As in previous cases the AccountMe users’ journey (Figure 66) was constructed with the information coming from the online observations and data from the interviews.

**Figure 66 AccountMe Users’ Journey (Full size see at Appendix page 386)**

7.4.6.1 Scenario 14 Lunch Add-on: Money (Derived from AccountMe)

(Appendix page 384)

Personas & Needs:

Mario is a software developer; he is also a AccountMe client. He has a small development software start-up.

Scenario 14 Description:

Mario claimed his lunch every day as a business expense, but every day he had the exact same lunch from the exact the same place. He was just doing the same thing in the AccountMe software repeatedly. Mario uses AccountMe API and he built a little app called ‘AccountMe Lunch' Add-on Lunch’, which meant that he could just go on his
phone and press a button to claim his lunch. Mario has used the tools that the service gave him to make his experience better. The ‘AccountMe Lunch’ was added to the add-ons tools to be shared by the community.

**Analysis and Insights - TA Example from Scenario 14:**

This a TA example which demonstrates that when the service is willing to give up some control and put in place enough tools the users will appropriate the service and the service eventually benefits and develop further.

**7.4.4.6.2 SCENARIO 15 THE BANK STATEMENT UPLOADER NIGHTMARE SOLVE (DERIVED FROM ACCOUNTME) (Appendix page 385)**

**Personas & needs:**

- Shannon owns a small events and entertainment company with eight employees working with her. Her bank account is from a small bank.

- Mario (as in scenario 14) is a software developer, also an AccountMe client.

Both have their account in the same bank account.

**Scenario 15 Description:** Shannon is an AccountMe client. Every month AccountMe needs her bank statement. One way of doing this is to download her bank statement from her bank and then upload it to AccountMe. The AccountMe software will pick out all the information needed from this report. Her bank changes the format of the statements all the time, so Shannon should be sure that the information gets accurately to AccountMe. Usually, AccountMe development team spend ages fixing this kind of problems. Shannon’s bank was small, only a few users used, the development team did not have any time to fix the statement uploader. Mario built a little web app ‘statement uploader’. Now the service recommends all its clients to use his plug-in. Mario has a web page that AccountMe users and the public could go to download his plug-in.
**Analysis and Insights - TA Example from Scenario 15:** Scenario 15 is a TA example since it showcases how a user can solve his needs by technology appropriating features of the service. It can also help the service community.

### 7.5 TA evidenced in case studies

Five different services have been studied and scenarios have been developed that span those services. Each case study has shown some examples of users’ appropriation of social media and the Internet. To better understand the TA phenomenon found in this study and the TA examples, it is important to create a summary of all the different types of TA described in the scenarios.

Table 39 shows an overview of TA examples evidenced in the case studies with the correspond TA service impact. The summary is a matrix constructed from the original three intensity levels, explained in Chapter 5, page 152 as part of the initial framework, and the TA impact explained in Chapter 5, page 166 as part of the TA four key elements. The research presents those TA examples and TA service impacts coming from the main study against the TA three levels framework (see Table 39) to support the hypothesis with empirical work. The three levels are placed in the first column. All the TA examples are put under the corresponded scenario and case. All the examples are conceptually distinct, and they can help the researcher to build TA theory.
### Table 39 Summary of TA Evidenced in Case Studies

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<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
<th>Scenario 4</th>
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<th>Scenario 7</th>
<th>Scenario 8</th>
<th>Scenario 9</th>
<th>Scenario 10</th>
<th>Scenario 11</th>
<th>Scenario 12</th>
<th>Scenario 13</th>
<th>Scenario 14</th>
<th>Scenario 15</th>
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<tr>
<td>Different OSes Different Interfaces</td>
<td>Two SmartCycling Bikes of Different Types</td>
<td>The unissued eKite</td>
<td>The unspecified User</td>
<td>Connecting Parking with Social Media</td>
<td>Mobile groups: All Users</td>
<td>Mobile and Google Maps</td>
<td>Very transactional, poor of work</td>
<td>On-going work for the particular Client</td>
<td>Advising Community</td>
<td>Optional Rooftop Money Transaction</td>
<td>The offerer and service</td>
<td>Service Bites Taster Group</td>
<td>Lift-Statement onboard.</td>
<td>High TA Level</td>
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</table>

**Low TA Level**
- Intended Use

**Medium TA Level**
- Personal Needs and Motives Served

**High TA Level**
- Existing Systems Modified or New Ones Created
7.5.1 TA Outcomes Types

There are three clear TA outcomes types found in this study: one could be described as ‘soft’ TA, the other as ‘hard’ TA, and the third is a combination of soft and hard TA. The TA outcomes can come from the users, from the service, or from both.

**Soft TA** is a TA outcome based principally on the evolution of social practices. This development comes from users’ social interactions and social agreements. This type of outcome could be a set of rules and guidance, a new business proposition or a spin-off from the original service. This type of TA outcome could correspond to the creative way at macro-level (social) in which people use technology proposed by Degele (Degele, 1997).

For example, in scenario 3, the users proposed a ‘challenge’ for organisers. They were adapting the online working environment (Basecamp) and proposing a ‘new’ social practice within it. Although some of the outcomes of that challenge were ‘hard’ objects (unicorn mockups and videos), the final service outcome was to establish an organiser’ challenge for each event and to structure an awards system to motivate and reward event organisers.

**Hard TA** is a TA outcome that is a ‘tangible’ artefact. It does not have to be ‘physically’ tangible, but it needs to be seen and manipulated like an application on a mobile phone for example. These TA outcomes can be a new individual tool or set of tools and features. Even though these objects can be a piece of software they are tangible as they can be used directly by people. Hard TA outcomes can be for example an add-on, a software app, a kit of tools for the users to use, or a bit of software that can be uploaded to a computer and can be used as an interface to deliver the service.

This type of outcome seems to correspond to the creative aspect of micro-level (technical) classification proposed by Degele (1997), in which people use technology. For example, in scenario 14, the user wrote an add-on ‘AccountMe Lunch’ that works within the company software. It was shared with the users’ community by the user. The service has
developed further this add-on and other similar ones based on the ‘AccountMe Lunch’ for users to use.

**Hard & Soft TA outcomes** are a combination of social practices evolvement and a software product that can be manipulated, or one type of TA outcome could be the consequence of the other kind. For example, in Scenario 11 (Chapter 7, page SCENARIO 11261), the service has been developed and designed, so new social practices should be thought and addressed and a ‘hard’ artefact should correspond to these needs.

A summary and classification of the research TA outcomes has been produced and can be seen in Table 40. This summary has helped to visualise and understand the different TA results in each case and to compare the results. As can be seen in most of the main study scenarios, a combination of hard and soft TA outcomes is commonplace. It can be said that a new social practice would often need a correspondent ‘hard’ outcome, and conversely, a hard TA outcome might need a new social practice to be used and implemented. For example, in scenario 10 (Chapter 7, page 256) the user needs a service that advises on how to be a freelancer. The user will benefit with a users’ community. The service could provide a freelance guide (hard TA outcome) but it will also need to provide a space (hard TA outcome) for the users to share and exchange good practice (soft TA outcome).

Only one case comes up as not having any combined hard & soft outcomes. WiF seemed to only have two examples of soft and one of hard TA outcomes. This case could be due to the nature of the service, mainly training in situ business and face to face.

“We obviously are a digital service, the level of digital-ness of our service for our users will vary a lot, depending on their access to technology” ED, (2015).
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<tr>
<th>C_Hack</th>
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<td>Soft</td>
<td>Different Cities, Different Priorities</td>
<td>YourSkit,Cycling &amp; Viral Hacking</td>
<td>The unicorn challenge</td>
<td>The unexpected User</td>
<td>Connecting Artisans with Business</td>
<td>Private group at members only platform</td>
<td>MOP</td>
<td>Very Transactional Piece of Work</td>
<td>On-going Worker for that Specific Client</td>
<td>Advising Community</td>
<td>The Original MV idea: Money Towards Pension Scheme</td>
<td>The Gift Voucher not Spent</td>
<td>Service Beta Tester Group</td>
<td>Lunch Add-On</td>
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<td>Hard</td>
<td>DOP Digital Organisers' pack</td>
<td>The hacking went viral</td>
<td>The sign post hack is a physical object - the passbyers change behaviour</td>
<td>Personalising a platform provided by the service</td>
<td>The service needs to develop tool that allows visualisation on the users' interactions</td>
<td>The service can create new features, and offer a payment processor system</td>
<td>Service better to customise and personalise users profiles</td>
<td>Technology that can assist these new social practices</td>
<td>Not spending and keeping the voucher</td>
<td>The service creates a new spin-off business (charitable Money)</td>
<td>Potential for user involvement. Service could be ready to support these users initiatives</td>
<td>Technology that can assist these new social practices.</td>
<td>Technology that can assist these new social practices.</td>
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<td>Soft &amp; Hard</td>
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However, it could also be related to the level of ‘digital-ness’ (Chapter 8, page 309) of the company, as ED clearly states in the initial interview, and to the context of some of its members, who often do not have access to internet or social media. Another particularity about this case is that it exemplifies the blurring boundaries between the traditional physical, social world: the geospatial and the ‘new’ social (media) network as exposed by Youngs (Youngs, 2007).

### 7.5.2 TA Enabling

This research proposed three main TA enabling properties as explained in the framework in Chapter 5, page 164: User leads, user’s innovation impact (creativity activity), and fostering TA. These TA enablers are based on the four-point guideline for the development of a strategy to allow firms’ (e.g. digital service providers’) “monitoring, understanding, and responding to different social media activities” work of Kietzmann et al.’s (2011).

These three TA enablers were the basis for the research hypothesis: the TA higher examples found in the first TA mapping (explained in Chapter 6, page 203) corresponded to services that controlled less and, to an extent, let users lead parts of the service. Additionally, the TA Map showed that high TA levels might result in major changes in the service (more impact). Another finding of the TA mapping shows that further service development seems to occur more often when the user appropriation is known and understood by the service provider. If the service provider knows and understands how TA occurs, he/she can take decisions to foster it within the service. After the main study took place, some inferences were made about these TA enablers:

#### 7.5.2.1 User Leads vs. Service Control:

The concept of User Leads (as described in Chapter 5, page 162) is a TA enabling property. User leads (action) is seek during the main study because it allows the researcher to understand if service providers are aware of the TA users’ actions. TA users’
action as how users make sense and adapt in the online environments the service providers provided. User leads ranges between the user leading the use of the service, (while the service is flexible enough to allow this to happen), on one hand, and the service provider having total control over the service on the other. This research based this user leads notion upon theory about how the users make sense and adapt online environments for their own purposes by Ellis et, al. (Ellis et al., 2005). 1) the users interact with others to make sense of the online environment 2) users developed roles, some are leaders.

This research based the notion of service control on theories about key aspects of appropriation which can be utilised as design parameters for the design of digital environments that foster appropriation (Paul Dourish, 1999): Flexibility, Community, Visibility, Incrementality (sic), and persistence. The study finds evidence of a link between giving the users some control over some features of the service, and a higher possibility that TA occurs. To understand better how social media can be utilised in digital services Kietzmann et al.’s (2011) have proposed “seven functional building blocks: identity, conversations, sharing, presence, relationships, reputation, and groups”. Kietzmann et al. also proposed a four-point guideline for the development of a strategy to allow firms’ (e.g. digital service providers’) “monitoring, understanding, and responding to different social media activities” (Chapter 2, page 21). Building on this theory this study proposes that the service should recognise the features that can be appropriate, such as community forums, spaces with users interact with the service and between other users, and give the users some control over these features.

Adding to this theory, this research proposes that there are three main types of service functions that can be controlled and could be derived from the TA findings enabling property: services that manage interactions, services that control their features (API code), and services that monitor social practices. These are described below.
Control of interactions: this is a linear type of service or a ‘one-way layout’, inspired by IKEA’s “long natural way” designed to encourage the customer to see the store in its entirety” (Wikipedia, 2017). Here the service controls all the users’ ‘movements’ as in the EasyJet website for example (as illustrated in the TA map examples on page 202 in Chapter 6). Linear services could be described as services that maintain control over their interaction, forcing the user to move in one direction to the next, step by step. These services do not give the users an alternative path, and usually are very difficult to customise and personalise.

Control the features: This type of control refers to services that have full control over the features and functionalities, that can control their API code. Some services chosen not to share this API, some do share some features and some share the whole. In the main study AccountMe is an example of a service that share with users some features of the API code with the purpose for users to appropriate.

Control the social practices: Some services allow users communities to flourish. If the service displays, prepares and encourages a space for sharing, the users’ social practices can evolve, and TA actions can be share. If the service ‘monitors’ these spaces the service can learn from the users appropriation. However, there are services that do not create or allow room for users to share and contribute to one another and the service.

7.5.2.2 TA Level Vs Service TA Impact

Service Change is a TA property (as described in Chapter 5, page 163) which indicates users’ innovation impact on the further development of the service. This TA property was outlined in the framework as being divided into weak or strong. Referring to the extent to which systems are employed in the process of appropriation, Bossen & Dalsgaard (2005) distinguish between weak appropriation and strong appropriation. Weak appropriation implies the use of built-in system features by users for sense making and customisation. Strong appropriation implies the modification of existing systems and/or the creation of new ones to replace the original system. The main study findings suggest
that a better range for the TA impact would need to include low, medium and high rankings for TA.

The level of appropriation does not necessarily indicate the level of TA impact in the service. For example, while high level TA might occur, its impact on the service can be low, as it is possible that the service provider has decided not to implement any changes based on this appropriation. Also, the service provider can be unaware of any ongoing TA and is therefore unable to take advantage of them.

The sample in the study shows a discrepancy between the TA levels and the service TA impact (see Table 40 and Figure 67). Most of the cases show that the level of TA does not correspond to the TA impact level. The study shows a difference with the original hypothesis of both TA (users’) actions and TA service impact as equally leveled or corresponding to high, medium or low TA levels (see Chapter 5, page 157). After confronting the hypothesis with empirical evidence (the study findings), it can be say that:

- The user TA actions and TA service impact do not necessarily have the same TA level.
- The service TA actions could be of a higher or a lesser level of the TA users’ actions, they could have different degree of TA.
- This evidence (findings) could be interpreted as that unless the service proactively seeks to understand TA, find it, use it to alter and create new functionalities of the service for all the users of the service to use based on these findings, the user TA actions might not have any impact in terms of future development of the service.
In consequence, if the users have the means to share their actions of appropriation with other users and with the service, this could have an indirect impact on the service. For example, in Scenario 6 (Chapter 7, page 245), the user creates a group at the MOP as the service intended, but she finds that most of her cohort classmates were not members of the platform. She created a group on Facebook where she found most of her classmates. The user’s need is finally met, but there was no direct positive impact on the service. If there was an impact, perhaps it was negative, since the user was willing to pay to use the MOP might be uncertain about the significance of being part of this service feature, and just use the Facebook page instead.
The study seems to highlight that there are more examples of this discrepancy where the TA level seems lower than the service impact, 11 out of 15 to be exact. Those Scenarios are 1, 2, 3, 5, 6, 8, 9, 10, 11, 12 and 13. This finding could demonstrate that TA plays a significant part in the further development of services, since ‘great’ impact can occur without a high level of TA users’ actions.

Scenarios 4, 7, 11 and 14 show an equal balance between TA levels and service impact. For example, in C-Hack - Scenario 4 (Chapter 7, page 238), an unexpected user was found. This type of user is not involved with the event, however could benefit greatly if the Digital Hack Catalogue (DHC) was develop further. C-Hack has not taken further action to develop the Digital Hack Catalogue (DHC). This could have many reasons, one could be that this is not a priority at this stage, or it is not the right moment to make changes. In C-Hack case the priority is to become a global organisation and a new business incubator.

Scenario 15 (Chapter 7, page 267) appears to be the only one that shows both a high TA level and a lower impact. This may be because the AccountMe service has put resources in place to foster TA. The service has created a growing community of users, has left parts of the API open for users to find, and has created tutorials (YouTube, webinars) that explain to users how to build new features that meet their needs. On superficial inspection this example shows that fostering TA would show TA-related outcomes that have less impact on the service. However, what it actually shows is that if TA is fostered by the service the users will create new ways to satisfy their needs, and by setting up the space for sharing the service will be aware of whether this appropriation is occurring and how user TA actions might not have any impact in the service.

To briefly summarised, TA Impact are actions from the service perspective that lead to the future development of the service, improvement, and change. TA Levels is related to the users’ actions that lead to TA. They both can be classified in three different levels but
they do not necessarily match the same level. They both help to understand the influence that TA have in services.

7.5.2.3 Resources to empower and motivate user creativity:

TA occurs with or without service help. However, if the service wants to encourage TA within its provision need to put in place the necessary resources: TA enabler resources. These resources could be such as user training, open some API features, and encourages building community and sharing experiences between users. In the main study, AccountMe is a case that exemplifies TA enabler resources: the service provider understands that the service benefits from this openness. expecting great benefits to the further development of the service and its users' satisfaction

AccountMe: “Well I think from our point of view it is quite straightforward because of our company benefits by, you know, people’s experiences because we, the tools we build are quite a generalist for, you know, all business types. But if people have the tools to improve their own experience, for their specific needs, then that’s great because there’s always, there will al … you know if one developer builds something, we have you know 1,000 developers who are clients, and then they can all use that tool. So, I mean I... [] ... from my point of view it is, the benefits are obvious I think! (laughs)” JN, 2015

The AccountMe case provides evidence that if the service provides the technical resources for user appropriation, the users and the service will benefit. Each AccountMe Scenarios 14 & 15 (page 274) shows that both the service and the user benefits from this openness.
7.6 Summary & Implications

This chapter reported the first part of the main study findings: this included a detailed description of five case studies and a summary of TA evidenced found in the case studies. The study found within the companies studied 15 TA examples. To analyse and present the data gathered the researcher and the participants (service providers) created personas, users’ journeys and scenarios. These scenarios (TA examples) were presented in a summary that helped and facilitated the visualisation of the data. From this summary the researcher has built some theory about TA: the TA Outcomes Types, and TA enabling.

The next chapter will present the second part of the main study findings. Chapter 8 focuses on presenting the research outcomes related to the way in which service providers perceive and are aware of the TA phenomenon within their services.
8. Analysis & Findings 2: TA Awareness, & TA Themes Emerged with TA Enablers

8.1 Introduction

The previous chapter has shown several examples of TA examples derived from the data. These TA examples are the main outcomes of this research. The data has also demonstrated that enabling TA, observing, and learning from it can be beneficial for the further development of start-up companies.

This chapter focuses on presenting the research outcomes related to the way in which service providers perceive and are aware of the TA phenomenon within their services. More specifically this chapter attempts to answer the research questions that focuses on the service provider's awareness of the TA phenomenon and the enablers for appropriation.

This chapter has two parts. Part one describes case by case the state of service providers’ TA awareness. The service provider TA awareness is explained by positioning the TA examples scenarios from each case study within the TA Awareness Framework. The answers are based on a comparison between the insights drawn from the case studies and the TA Awareness framework developed in chapter 5 (page 150) and the findings of the main study. The TA awareness framework is composed of four key aspects. These results enable verification of existing theory and make it possible to identify this research’s contribution (1) in respect to the service providers’ TA awareness and (2) in general, regarding TA.

Part two of this chapter presents a set of themes that have emerged from the analysis of data and can be cluster into these concepts: TA Concept, Users and TA and the elements of the service that can be appropriated, and the Readiness of the services to facilitate and foster TA – Facilitating Resources for TA. These concepts have been extracted (distilled) from the data and are presented together as TA enablers.
8.2 Aims:

The aims of this chapter are to present the results relating to the following:

- To identify those elements of the service that can be appropriated.
- To understand (from service providers point of view) the user involvement and their relationship with the digital service through technology.
- To understand how (if at all) companies employ their knowledge of technology appropriation for further development of their services.
- To understand if service providers are aware of TA.
- To find the different TA awareness elements.
- To create a framework of TA awareness items that will help with its measurement.
- To understand how appropriation can be enabled within digital services.

8.3 TA Awareness

To understand the degree of TA awareness that the service providers have it was necessary to define what information/knowledge service providers must have to be or not be aware of the phenomenon. TA is a very complex phenomenon comprised of different parts, multiples elements, which involve a variety of stakeholders. Each stakeholder affects and is affected by this phenomenon in various ways. TA can be looked at from different research perspectives, and it can be perceived in a different way by each stakeholder. These issues have highlighted the research need to have some clear boundaries to observe this phenomenon. In this research, TA is being examined from the service provider perspective, and not from the users’ perspective. Additionally, another decision was taken to concentrate the research efforts in observing elements of the phenomenon. However, what are the different elements of TA that can be important in understanding the service provider’s degree of TA awareness? That is why creating a framework based on the literature review and the exploratory study was important as explained in Chapter 5. The framework helped to divide the TA phenomenon into four elements (Chapter 5, page 166): service provider approach to
users’ involvement, mode of users’ involvement, users & service provider actions, and
the TA enablers. These parts/elements can make it easy to identify the service providers’
degree of TA awareness.

Each scenario is studied in relation to the TA key awareness elements. The scenarios per
case will be compared between them to give an overall TA awareness degree per service.
Then this will be presented to help to understand the level of service providers’
awareness. The degree of awareness (as explained in Chapter 5, page 168) uses the three
different TA awareness degrees: (1) unknown, (2) conceptual understanding and (3)
practical understanding. Unknown TA awareness degree refers to the service provider’s
apparent lack of familiarity with a fundamental aspect of TA presented by the researcher
in the main study. Conceptual understanding relates to the service provider’s apparent
knowledge, familiarity or notion/idea of the key aspect of TA presented by the researcher
in the main study. The service provider could explain the concept using an example from
another service or a third party. Practical understanding refers to the service provider’s
clear understanding of the concepts proposed by the main study, with examples taken
from the experience and practice of the phenomenon within their service.

The comparative TA Awareness tables (explained in Chapter 5, page 168) were modified,
and a simplified version was created with the four key TA awareness elements and five
case studies. The table to compare TA awareness is a simplified version of the one
explained in Chapter 5, page 168.

Some questions per TA awareness aspect had risen:

- What is the service providers’ user involvement approach? Moreover, how aware
  are they of their user involvement approach?
- What is the users’ involvement mode per scenario? Do the service providers
  understand how users are involved in the service development?
- What are the users’ TA actions and the service providers’ TA actions (provision)?
  Moreover, how aware are the service providers of the TA impact in their service?
- How aware are the service providers about the three TA enablers?
  
  o Service control vs. users’ lead
  
  o Service change / TA impact
  
  o Fostering TA by facilitating resources

8.3.1 C-Hack TA Awareness

As can be seeing in the comparative TA Awareness Table 41, C-Hack has shown a practical understanding of the users’ involvement approach that is characterised by actively observing, listening, collaborating, and testing with users. The service has a conceptual knowledge of the user actions but does not necessarily relate them to TA. For example, in the Scenarios 1 and 3: The TA actions (adopting the information about the event to their own city’s needs and the Unicorn challenge) had a direct impact on subsequent design and development of the service. During the first (pilot) C-Hack event, the C-Hack team did listen to the users’ feedback, and after the event, they collaboratively developed the digital organisers’ pack (DOP). The DOP has been used in all the subsequent events, and it always gets modified. After the second event and the unicorn challenge, the C-Hack team decided to implement a challenge per event and a programme of hosts rewards.

C-Hack is not aware of the different modes of users’ involvement, but they are clearly observant of what users do, want to foster it, and put in place resources for users to lead. For example, Scenario 1 shows the C-Hack team and hosts tested Basecamp as a working environment. In this first event, it was not fully used, but the C-Hack team learned of its importance, and it has been crucial to a digital environment to discuss, plan and execute the different subsequent events.

In Scenario 2 (see Chapter 7, page 236), although the service team saw the impact of the users’ action, it is not clear how much they understood that this is also an instance of TA or related to TA. They do however understand that those ideas generated by users within the events can be further developed and could have a direct impact on the service. The
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<td>The Unicorn Challenge</td>
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<td>Have designed the digital organizers' pack (DOP)</td>
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<td>They clearly see the opportunity for further development and business diversification</td>
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<td>They know the users had a great impact in this change</td>
<td>They clearly see the opportunity for further development and business diversification</td>
<td>Clearly understand the new ideas and incorporate them to the service</td>
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<td>Foster TA, facilitating resources</td>
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</table>
C-Hack team clearly saw the opportunity for further development of the service and business diversification and created a spin-off: The business incubator.

“We are now... helping people think about how to take forward their idea ... [] ...like this manufacturing process or this is, you might want to go and get some business advice or whatever that might be. So, that’s quite informal at the moment, but we’d like to formalise that more as a service to people” SD, 2015.

In Scenario 4 (see Chapter 7, page 238), the TA action shows users appropriating a mock-up hack, and indirectly participating in the C-Hack event. The service provider understood this upon reflection but was clearly surprised by this unexpected use of the service. C-Hack team is always on the lookout for new digital services (mashups) that are complementary and that they could use to improve the service.

“The user appropriating the service, ... [] ...a little triangle signal ... [] ...going out and prototyping that... [] ...put it out, like none of the user group looked at it. And then we realised that you had to put it on the other side of the road so that when people were waiting to cross the road, they could see it... [] ...So like that kind of interaction was quite new and unique... [] ...things, we didn’t expect that... [] ...some of the prototypes we put up were still there three weeks later.... [] ...we expected them to be vandalised, torn down” SD, 2015

8.3.2 Women in Fashion (WiF) TA Awareness

As can be seeing in the comparative TA Awareness Table 42, WiF learns from their experiences, is responsive, and adapts to its members’ needs on the spot. WiF does not planned its user involvement approach. Nevertheless, the service provider talks to users and listen, and this has a clear impact on the delivery of the service.
“I feel the take-up amongst our users is not what we’re like it to be anyway. So if anything they’re not using it in a way that we would like them to, rather than using it differently. They’re kind of ... I think they follow Facebook; they follow Twitter, they like, they re-post, they share, those kinds of things. I don’t actually think I get proactive requests from members saying can I do this, can I suggest this for, can we do this, can we do this, it is quite from us out” ED, 2015.

In occasions, WiF collaborates with users to deliver the service, but there are not indicators that WiF uses or knows about user centre design and participatory design methods.

WiF does test some service features with users e.g. new ways of communicating but without knowingly understanding that this is TA. The service does not have a clear plan to involve users in the process of further development of the service.

Scenario 5, WiF does listen and test new ways to communicate and to work efficiently with users. However WiF apparently does not see the connection of these actions with TA. WiF mixes TA with connectivity, this action still TA even that the service provider is not aware of it. The user participates directly in this process, and WiF it is aware of this.

WiF reacts to the needs of the user, but there is not a plan but rather a level of improvisation. The service would benefit with the creation of social media protocols that can be used in different countries. For example, Viber, that works better in central Africa. If the current service provider leaves WiF, they will take all that knowledge with them away from the service.
<table>
<thead>
<tr>
<th>WomenInFashion</th>
<th>Scenario 5</th>
<th>Scenario 6</th>
<th>Scenario 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Service Provider approach to users’ involvement</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Unknown</td>
<td>Conceptual Understanding (Familiarity)</td>
<td>Practical understanding</td>
<td>Unknown</td>
</tr>
<tr>
<td><strong>Mode of user involvement</strong></td>
<td></td>
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<tr>
<td>Service control vs users lead</td>
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<tr>
<td>Service control</td>
<td>Service controls</td>
<td>Service controls</td>
<td></td>
</tr>
<tr>
<td><strong>Actions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Actions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP understands the users needs</td>
<td>User proactive uses the service resources</td>
<td>User proactive uses the service resources</td>
<td></td>
</tr>
<tr>
<td><strong>Service Actions</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Reacts</td>
<td>nothing</td>
<td></td>
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<tr>
<td><strong>TA Enablers</strong></td>
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<tr>
<td>Foster TA / facilitating resources</td>
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<tr>
<td>Connecting Artisans with Business</td>
<td>Private group at member only platform (MOP)</td>
<td>Viber and Google Translate Appropriation</td>
<td></td>
</tr>
<tr>
<td>Listening, testing</td>
<td>SP understand the need but not know how to involve users</td>
<td></td>
<td></td>
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<tr>
<td>Direct user mode with SP knowledge</td>
<td>Direct user mode with WiF knowledge</td>
<td>Direct user mode with SP knowledge</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>Collaborative, Testing</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>User leads</td>
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<tr>
<td>Service proactively seeks different social media</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>User is learning about TA</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Resources in place</td>
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</table>
In Scenario 6, WiF understands the user needs but does not know how to involve the users in creating a better service with their ideas. The user proactively appropriates the service resources with WiF knowledge. WiF does understand that there is an issue related to what the MOP can deliver and what the ideal service would be but does nothing to resolve the issue. Perhaps the service is not ready to change or does not know how to involve users in incremental improvement:

“And at the moment, my job is a bit of an uphill struggle because every time we start a new cohort of women at the mentoring programme that we run in London, so that’s every six months. We get a new influx of people, and they get very excited, and they join. But you know the ones who are early adopters of technology are the ones who are very capable, use it. The others haven’t joined yet or are a bit slow, so the ones that are very active immediately get a bit, they lose interest a little bit because the others aren’t being active on it. And I have to really try to them to actually use the platform” ED, 2015.

In Scenario 7, both users and WiF test new ways of communicating. They both adapt the social media available, the service provider is learning about TA.

**8.3.3 WorkPower TA Awareness**

As can be seeing in the comparative TA Awareness Table 43 WorkPower TA Awareness, WorkPower (WP) has shown a conceptual understanding of TA. The service provider feels that the volume of users in the service is minimal for users to appropriate the service.

“I think because of the way that the product is now, the actual uses of it are minimal and therefore the ways that you can sort of subvert our intended use of it is also minimal, if that makes sense” TW, 2015.

WP does not have a practical understanding of TA; TA is seen as an extra task and very
challenging - another thing to tackle that could reduce the time to dedicate to the business goals:

“It’s very easy to allow kind of anything goes, but to do it in a coherent manner that works towards your business goals is a very challenging thing to do” TW, 2015

WP understands that TA could help to develop further the service but lacks understanding or willingness to involve users in collaboration or to use them to test new ideas to develop further the service:

“I’m definitely aware of kind of more advanced analytics tools than we’re currently using. So at the moment, from a tracking point of view, we’re not very sophisticated, we do very basic you know Google Analytics tracking, and we have e-mail open tracking, so we send through you know welcome e-mails and complete your profile e-mails and we do track the open rates and click rates and conversions of people from, you know, us sending that e-mail to them completing the action that we’re looking to do. But, within the site, we are not doing individual tracking, so we’re not tracking actions to a user, in terms of how they navigate round the site. And we haven’t set up a way of interpreting that data. So even the Google Analytics stuff that we’re gathering, we’re not really using it at the moment. So, now, we’re still fairly blind” TW, 2015.

WP has shown a technical understanding of the users’ needs, but it is not clear if WP understands the different modes of user involvement. There is evidence that WP does not have knowledge of user centre design and participatory methods:

“For us, it’s a balance between allowing people to express themselves. So as a designer you might want something to look pretty as a way to accentuate your skills, without letting it turn into a kind of a MySpace. Visual assault on the eyes, where everybody just puts up something that looks very incoherent and makes it very hard to find the information” TW, 2015.
<table>
<thead>
<tr>
<th>Table 43 WorkPower TA Awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WorkPower</strong></td>
</tr>
</tbody>
</table>
| **Service Provider**
**approach to users'**
**involvement** |
| **Mode of user**
**involvement** |
| **Actions** |
| **User Actions** |
| **Service Actions** |
| **Service Controls** |
| **Service change / TA**
**impact** |
| **Foster TA /**
**facilitating**
**resources** |
| **TA Enablers** |
| **Scenario 8**
*Very Transactional Piece of Work* |
| **Scenario 9**
*On-going Worker for That Particular Client* |
| **Scenario 10**
*Advising Community* |
| **Unknown** |
| **Conceptual Understanding**
(Familiarity) |
| **Practical understanding** |
| **Unknown** |
| **Conceptual Understanding**
(Familiarity) |
| **Practical understanding** |
| **Unknown** |
| **Conceptual Understanding**
(Familiarity) |
| **Practical understanding** |
| **Unknown** |
| **Conceptual Understanding**
(Familiarity) |
| **Practical understanding** |
| **SP listening to users but does not know how to collaborate or test ideas.** |
| **Indirect known** |
| **Direct known** |
| **SP does not know what can happen** |
| **SP clearly understand the impact of knowing the users' actions** |
| **Unknown** |
| **SP knows that a new** |
| **SP understand the importance of community but fears** |
| **Very Transactional Piece of Work** |
| **On-going Worker for That Particular Client** |
| **Advising Community** |

**Service controls** |

**User leads but Sp don't know**
For example, in Scenario 8, WP understands that implementing a set of guides and a section for users’ advice can benefit the service. WP also recognises that the system needs a better visualisation of the activities perform by the freelancer and the needs of the client. This knowledge understanding is developed by listening to users’ needs, but WP is not willing to involve users in the further development of these new features.

In Scenario 9, WP knows that the service could incorporate additional features and could offer more to its users. However, WP does not have in place a way of developing and testing ideas with its users.

In Scenario 10 (Chapter 7, page 256), WP does understand the importance of building communities, nevertheless, fears the idea of encouraging or implementing one within the service. Since the service provider feels that the service is not performing as it should, not many workers with work from client at the moment of the interview. The service provider fears that the users would all negatively be commenting on this issue.

### 8.3.4 MoneyVoucher TA Awareness

As can be seeing in the comparative TA Awareness Table 44 MoneyVoucher TA Awareness, MoneyVoucher (MV) has a conceptual, and some practical understanding of TA. For example, in Scenario 12, MV listen, collaborate and test with users’ new possibilities and a charitable spin-off business with the unspent money off vouchers.

“We’ve got lots of plans but the thing we’re launching to start with is a gift voucher, and people use it in, it’s used in behaviour change and rewards, vouchers are. So it would be interesting for us to see, you know, we’re selling them as vouchers as presents and stuff, but it might be that volunteer organisations use them to thank their volunteers or companies start using them... [] ... it might be like a pub quiz, so that’s giving them away as a prize, and so we’re keen to track all the uses and then promote those uses to other” DW, 2015.
<table>
<thead>
<tr>
<th>MoneyVoucher</th>
<th>Scenario 11</th>
<th>Scenario 12</th>
<th>Scenario 13</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The Original MV Idea: Money Towards Pension Scheme</strong></td>
<td><strong>The Gift Voucher Not Spent</strong></td>
<td><strong>Service Beta Tester Group</strong></td>
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</tr>
<tr>
<td><strong>Service Provider approach to users' involvement</strong></td>
<td><strong>User Actions</strong></td>
<td><strong>Service Actions</strong></td>
<td><strong>Service Control vs users lead</strong></td>
</tr>
<tr>
<td><strong>Mode of user involvement</strong></td>
<td><strong>Actions</strong></td>
<td><strong>User Actions</strong></td>
<td><strong>TA Enablers</strong></td>
</tr>
<tr>
<td><strong>Service Actions</strong></td>
<td><strong>Service Control vs users lead</strong></td>
<td><strong>Service Control vs users lead</strong></td>
<td><strong>Service Control vs users lead</strong></td>
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<tr>
<td><strong>TA Enablers</strong></td>
<td><strong>Service change / TA impact</strong></td>
<td><strong>Service change / TA impact</strong></td>
<td><strong>Service change / TA impact</strong></td>
</tr>
<tr>
<td><strong>Unknown</strong></td>
<td><strong>Unknown</strong></td>
<td><strong>Unknown</strong></td>
<td><strong>Unknown</strong></td>
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<tr>
<td><strong>Conceptual Understanding (Familiarity)</strong></td>
<td><strong>Conceptual Understanding (Familiarity)</strong></td>
<td><strong>Conceptual Understanding (Familiarity)</strong></td>
<td><strong>Conceptual Understanding (Familiarity)</strong></td>
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<tr>
<td><strong>Practical understanding</strong></td>
<td><strong>Practical understanding</strong></td>
<td><strong>Practical understanding</strong></td>
<td><strong>Practical understanding</strong></td>
</tr>
<tr>
<td><strong>Listening, collaborate and test with users.</strong></td>
<td><strong>Observing and listening, collaborate and test</strong></td>
<td><strong>Listening, collaborate and test with users.</strong></td>
<td><strong>Direct unknown that becomes direct known</strong></td>
</tr>
<tr>
<td><strong>Direct unknown that becomes direct known</strong></td>
<td><strong>Direct Known</strong></td>
<td><strong>Direct unknown that becomes direct known</strong></td>
<td><strong>Direct Known</strong></td>
</tr>
<tr>
<td><strong>MV knows that involving user could have a great impact in the service development</strong></td>
<td><strong>MV clearly understand that this could have an impact in the service</strong></td>
<td><strong>MV does not know how to do this</strong></td>
<td><strong>MV clearly understand that this could have an impact in the service</strong></td>
</tr>
<tr>
<td><strong>MV does not know how to do this</strong></td>
<td><strong>User lead</strong></td>
<td><strong>MV does not know how to do this</strong></td>
<td><strong>MV clearly understand that this could have an impact in the service</strong></td>
</tr>
<tr>
<td><strong>It is not clear what was were the resources</strong></td>
<td><strong>It is not clear what was were the resources</strong></td>
<td><strong>It is not clear what was were the resources</strong></td>
<td><strong>It is not clear what was were the resources</strong></td>
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</tbody>
</table>
In Scenario 12, there is evidence that MV did not expect users not to spend the vouchers. The MV ability to transform its user’s ideas and actions into new features of the service is also apparent in this example. In this case, the TA impact is evident in the service.

The other two Scenarios (11, and 13) are not based on real users but are based on service provider visions of the service derived from the interviews with them. This vision of the service clearly shows that MV has TA conceptual understanding. Currently an app it has been developed to help with the other MV services; the research did not have access to the running application but is understood that all the experience gained with users using the new currency (gift vouchers) has been considered in this development.

8.3.5 AccountMe TA Awareness

Both Scenarios 14, and 15 (see Table 45 AccountMe TA Awareness), show evidence that AccountMe understands TA not only as a concept but has had practical experience with it. Its approach is actively observing users, listening, collaborating and testing ideas to develop the service with them further.

“We have had instances where people have used it in strange ways. For example, so we have an API in our software that other people can build other things on top of, so they can build and that sort of stuff” JN, 2015.

There is not clear evidence whether AccMe is aware of the different modes of user involvement, but they understand that users appropriate the service in unexpected ways, and AccMe is prepared to engage the user, look for users’ actions and facilitate this appropriation. It is also evident that the service relies on its user collaboration and it is getting ready to help its users to build spin-offs that can be used by other users.

“And there was one that, it was, I can’t remember, it was a very small bank that only a few users used, so our development team didn’t have any time to fix the statement uploader, so one of our clients built one instead. And I think that we
## Table 45: AccountMe TA Awareness

<table>
<thead>
<tr>
<th>AccountMe</th>
<th>Service control vs users lead</th>
<th>Service Actions</th>
<th>Service change / TA impact</th>
<th>User Actions</th>
<th>TA Enablers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scenario 14</strong></td>
<td>Lunch Add-On</td>
<td><strong>Unknown</strong></td>
<td><strong>Unknown</strong></td>
<td><strong>Active observation, Listening, Collaborative and testing</strong></td>
<td><strong>User wrote the add-on and used it then communicated</strong></td>
</tr>
<tr>
<td><strong>Scenario 15</strong></td>
<td>The Bank Statement Uploader Nightmare Solve</td>
<td><strong>Unknown</strong></td>
<td><strong>Unknown</strong></td>
<td><strong>Active observation, Listening, Collaborative and testing</strong></td>
<td><strong>User wrote the add-on and used it then communicated</strong></td>
</tr>
</tbody>
</table>

**Service Provider approach to users' involvement:** Direct unknown that became known

**Mode of user involvement:**

**User Actions:** Celebrate, communicate and help to share the add-on with other users

**Service Actions:** User leads

**TA Enablers:**
- Foster TA / facilitating resources
- AccMe understand the impact to the business
- Community, training, open API
sort of recommend using his bit of software now because he built this little web app” JN, 2015.

It is also apparent that AccMe has created spaces where people could meet in real life (nurseries) and online to share different ways to use the service and to adapt it to their specific needs.

“People can suggest new features and then all of our others users can vote on which features they would like to see” JN, 2015

AccMe fosters TA within the service by providing various digital platforms and resources such as guidance and user training. This training is not only to enable individuals to use the service but to appropriate some features technologically.

“... [] ... so we have, in our, in the software, we have a layer called the Health Centre, which is where we have like those tutorial videos and explain how to use the software. But then there’s a sub-section of that, called the, which is like a feedback area, where people can suggest features or say you know this is broken, can you fix it sort of thing” JN, 2015.

8.4 Themes Emerged from Main Study & TA Enablers

Empirical evidence was collected in the interviews with a range of start-up service providers; this research has produced some new knowledge about the TA phenomenon in start-ups and digital services. Different themes have emerged from the analysis of the data gathered in the main study. Some of these findings are also barriers to and enablers of TA. Below there is a summary of the main themes related to TA emerged that from the data analysis.

8.4.1 TA Concept

The phenomenon of TA is a very complex concept (Chapter 2, page 153) as explained in its triad definition (Chapter 5 page 154). TA is seen and described by service providers in
different ways within the research, some of these perceptions are positive, and some are negative. It can be said that a positively phrased definition of TA serves as an enabler of it and that a negative perception of the concept could affect the resources that the service provider facilitates and that could hinder TA. For example, it could be described either positively as users adapting a service for their needs, or as users not using it as it was intended (negative implication). Below there is a description of the service providers’ TA concept perceptions.

8.5.1.1 Recognising TA in other services

One service provider’s way of conceptually understating TA was to recognise the phenomenon in other services rather than in their own.

The MoneyVoucher service provider describes TA with an example, one of his friends has set up a website for housing prices. Potential house purchasers could find out how much houses sold in the area they were interested. This site had an excellent address searching tool, so he described how he did use it to find a postcode (although he was not interested in buying a house).

“Yeah, and it was an easier, you can, the same information is available from the Royal Mail, but it wasn’t such a quick process” DW, 2015.

WorkPower service provider showed some understanding of the TA concept when recognising that understanding how some digital services have treated TA could be used as recommendations for his service.

“So for EasyJet, you know, is it always that more appropriation equals good, or is it that, you know, the level of user appropriation that you allow depends on some factors. I’m interested to hear what those factors are” TW, 2015.

8.5.1.2 TA vs. Connectivity:

Talking about the TA concept, WIF related TA to Figure 1 (see page 14). When talking about TA WomenInFashion finds examples of its users’ having “good or bad
connectivity”. It is evident that the concepts can be related since connectivity and TA, both talk about constant communication through the web with users for example. However, differ that connectivity focuses on the connection. Instead, TA concentrates on the users’ adaptation of the service. It is easy to understand WomenInFashion position to TA since some of its members do not have access to the internet they do not have the potential to appropriate such a technology:

“So definitely there’s a huge disparity of the connectivity and the access to technology over potential user group I think” ED, 2015.

8.5.1.3 TA is a frightening concept:

For some companies, the TA notion could be frightening, other services have expressed that they struggle with dealing with technology, and in these case, the TA concept could become challenging and time consuming to understand and incorporate.

At the beginning of the life of a start-up, the priority is the design of the service itself. Some service providers envisioned engaging an audience during their development, but at the end of the day, are more concerned about the business model and the productive part of the enterprise. It seems in the cases sampled in this research that there is not a clear understanding of how the services can be developed successfully from the beginning with real user engagement. WorkPower, for example, understands that TA can be useful, demonstrating that it is aware of the concept but perceives TA as subversive and contrary to its business goals.

“So generally, I think my sort of overall thoughts around this is that the higher level of appropriation that you allow, probably the more complexity you are introducing and the more things you have to think about to get it right. It’s very easy to allow kind of anything goes, but to do it in a coherent manner that works towards your business goals is a very challenging thing to do” TW, 2015.
WomenInFashion felt that every time a new cohort of women at the mentoring programme starts in London the service gets a new influx of people. These women are all different. In any one starter group, it seems that some women get very excited by the possibilities, are early adopters of technology and usually, join the member only platform (MOP). This group of women could be those that would be helping to develop the service further. However, there are also others that are slower to participate, and they have not joined MOP yet. The users who are very active immediately lose interest. The service provider feels they struggle with this situation and are frightened of fostering TA within the service.

“And I have to really try to ... [] ... Because the whole value of the platform is that these women can connect each up to each other, you know, a whole kind of secret, not sec ... not secret, that’s not the point of it, it’s the fact that it is a protected network ...” ED, 2015.

8.5.1.4 curiosity about TA and the outcomes of this research:

When talking to the service providers, there was a clear interest in, and curiosity about, TA and how TA can help them to develop further their service. For example, WomenInFashion, after the initial research interview, started to research actively in digital telephone programmes instead of just the internet. WomenInFashion is researching about training that can help the service and its users become more accessible and connected in a world with a diversity of levels of internet connectivity.

“I just started to research actively training programmes rather than the web. Some of those hard to find users are more comfortable using telephone technology than they are used Internet technology...[]...training and capacity building network activities that we can use to trying to bridge, like gender, language but also technological things that need to be developed, or to understand how to use technology better” ED, 2016.
Another example of interest in TA was manifest by WorkPower. Following the initial interview, they were interested in a set of TA “recommendations and factors” that would come out of this research, and that could potentially be applied to the service.

“I mean I am interested regarding will your research be putting together recommendations for what, when is it appropriate to go higher up that scale. So, for EasyJet, you know, is it always that more appropriation equals good, or is it that, you know, the level of user appropriation that you allow depends on some factors. I’m interested to hear what those factors are” TW,2015.

“What would be interesting for me is seeing a comparison between a peer group of services that on the base of it do the same thing, but have gone to different levels of user appropriation and how that has changed their success or value” TW,2015.

When drawing and building the scenarios, WorkPower was keen to understand how the visibility of users’ TA actions could help to develop its service further. A discussion about different ways to involve users to know how they appropriate the service took place.

8.5.1.5 Fostering TA Benefits

Some companies perceived that fostering TA brings benefits for the business. If users can adapt the service to their needs, this means they are improving the service to have a better experience. The users that have better experiences can share their way of adapting the service with other users. User sharing their appropriations means that other users could benefit from this adaptation, and the service would benefit too. Within the study of AccountMe is a clear case of how being aware of TA and purposefully fostering TA benefits the service and its users:

“Well I think from our point of view it’s quite straightforward because our company benefits by, you know, people’s experiences because, the tools we build are quite generalist for, you know, all business types. But if people have the tools to improve their own experience, for their specific needs, then that’s great because there’s
always, there will al ... you know if one developer builds something, we have you know 1,000 developers who are clients and then they can all use that tool. So, I mean I ... from my point of view it’s, the benefits are very obvious I think! (laughs)”

JN, 2015.

Other service providers seemed to understand the inherent benefits of TA but also appeared not to have enough confidence or knowledge of how to use TA to benefit their business. For example, WorkPower did find a TA action between two users as was described in Scenario 9. The service provider recognised that this was an unexpected appropriation of the service, but apparently does not see this as an opportunity to diversify its service offer but rather as a problem that was just identified.

“In a long-term working relationship between a client and a freelancer, you could sort of view our value diminishing down to a certain point. Which is a challenge because our fee is currently fixed, so the charge is fixed, whether you do ten hours up front or whether you do ten hours spread over a six-month period, it’s still 15% of your hourly rate. So how we, how we handle and differentiate between short-term projects and long-term retainers, is something that we have not solved yet. Moreover, it is potentially not what we ... it is not what we originally designed the process for” TW, 2015.

8.4.2 The elements of the service that can be appropriated

Because of this research, two principal components of digital services have been identifying, as highlighted by the different scenarios in Chapter 7, as being able to be appropriated: the social content and the programme or code. The investigation has found that both the social content and new social dynamics can be powerful drivers for the change and further development of services like that to change, modify, developed or extend the service code. For example, C-Hack evolved social practices based on TA coming from its users. In one example, the service had created a new spin-off business
incubator. This new business incubator is one of the three most important features of the service.

A different instance is that of AccountMe. The examples of TA found in this company were all related to the appropriation of its code. The level of TA that occurs within the companies studied is not related to the type of user nor related to the components of the service over which the action stance. However, the level of TA can be linked to the degree of impact that the actions have in the service. It is a challenge to measure which of those two types of changes generates more impact within the companies; this could be the subject for a different research project.

8.4.3 Users and TA

8.4.3.1 Understanding users’ needs and differentiating types of users and other stakeholders

Understanding user needs and motivation is crucial in the development of services. Understanding user needs is a challenge for service providers, particularly when the service needs to take care of, and provide for, different users’ requirements. WorkPower, for example, finds having two separate types of users (employers and employees) very challenging since it needs to provide two distinct ways to relate to each of them separately. The user groups also interact with each other, and the system should help with this interaction. Being aware of these differences and providing a resource for them is important.

“So, for us, the kind of understanding of who, what a user is, is critical and is quite challenging because we have to simultaneously appeal to people with two very different requirements and two very different ways of interacting with the system.” (TW, 2016)

Other services do not find having multiple users as a challenge; instead, this is an opportunity to learn and to improve the service. C-hack is a good example of this, since C-Hack team deal with many types of users:
“One of the prototypes that went out was a little triangle sign with a bike on it that was based on the standard sign post model” SD, 2014.

After a few weeks, the C-Hack team realise that some of the hack signs were still there as they left them and that people were using them.

“We were expecting them to be vandalised to torn down, but they were not that was an interesting action people appropriate them” SD, 2014.

Another difficulty for understanding users’ needs is when the context in which the service is delivered changes entirely. For example, WomenInFashion serves women from different parts of the world. For some WomenInFashion users, the internet is a barrier, and this has made the service to look and explore for alternative ways of connecting and accessing to their users. By the time of the last interview WiF were researching for alternatives to the mobile technologies and connectivity.

“The Internet is a barrier; although in the different parts of the world the Internet exists, the artisans might not know. Depending on the age, young artisans probably know how to use the internet and probably feeling confident by using it, but older artisans living in a rural area is very unlike to want to have anything to do with the internet. They may have access to the internet in their village, but they would have fear to access it… [ ] …developing some system technologies that can help to bridge some of these barriers.” (ED, 2016)

Some WomenInFashion users generally have good access to internet, social media and digital technology, and some have none.

“So, this is something to do with technology access in countries like Turkmenistan because actually access to the internet there is not good. So, for those women, actually what we do is we send one e-mail to one woman in that country, and when she manages to check her e-mail, which is not regular, she then gets the message
from us and then she tells the other women. So that’s, you know ... And then we have users in Mongolia ...” ED, 2015.

### 8.4.3.2 User engagement

AccountMe serves as an example of how a service can facilitate resources to engage users. The service helps the training of users to technology appropriate the service and to develop tools that address their needs and has space for users’ community to grow and to share this appropriation.

“I think we found that most of the things that have been built on our API are people addressing their own needs, rather than trying to build things for everybody if that makes sense” JN, 2015

The phase of the start-up and priorities of the business (money/time/resources) can hinder the user engagement. At the initial interview, WorkPower saw user engagement as one-directional communication, from the service provider to the users, ignoring the possibility of dialogue. When the business was starting out, user engagement as a means of getting ideas from the way users adapted the service to help to build the service was seen not as a priority. There was also fear of creating a community of users since it was not enough users’ in the service to be able to share their experiences. By the data collection cut off point in November 2016, WorkPower seems to have changed its priorities. The beginning of a new phase in the service can be identified in the service provision to engage its two type of users in different users’ groups. The service has set up guides to facilitate the process of service engagement. MoneyVoucher has had an open conversation since the beginning with users and understood that it could learn from them. MoneyVoucher has adapted its business tactics after consulting with its users.

In WomenInFashion, there is evidence that users of the MOP have tried to engage with the service (Appendix page 375) and the service had to ignore this, as explained in Scenario 6. However, there is also evidence that the service providers do not seem to understand how to engage the users digitally:
“They’re actually kind of ... I think they follow Facebook, they follow Twitter, they like, they re-post, they share, those kinds of things. I don’t actually think I get proactive requests from members saying can I do this, can I suggest this for, can we do this, can we do this, it’s quite from us out” ED, 2016.

8.4.3.3 Empathic approach

The empathic approach usually refers to putting oneself in the user’s shoes. If the service provider is an active internet and social media user, this experience can be related to their service and users. For example, in two of the Scenarios (5, and 7) WomenInFashion has an empathic approach. The service provider could have related to the users by also being a user of digital services such as Viber and Facebook.

The empathic approach could easily be mistaken for marketing research. For example, at the beginning of the service WorkPower used to call each user after they did the conversion (became users/sign up). Although this could look to better understand its users, it appears to be more a marketing strategy than an empathic approach:

“So we’ve changed a bit. So when we originally started the project, I would personally speak to them on the phone. So I would send them a kind of a welcome e-mail and say that you know I’d like to get a bit more background about your current situation and what you’re looking for from us, and set up a phone call with them. So 15 minutes to half an hour’s worth of phone call.... []... So we did that initially, but it’s very time intensive and ... it’s useful to get a broad picture of the type of person that you’re signing up, but you tend to find that once you go above a certain number of people, information starts repeating itself” TW, 2015.

8.4.3.4 Level of User Participation

Another important aspect of the research participants is a level of user participation in the delivery of the service. This involvement refers to the service that needs user data to operate successfully (source it), and a service that iterates its provision and functionalities with the help of their users (iterate it) (Hagen & Robertson, 2010b).
Figure 68 shows that most companies in the sample required their users to help them to perform a better service. Another important point of the sample is that the companies need other digital services to provide their services. As can be see half of the sample relies on mashups (information and other services providing from a third party service) to deliver their services.
8.4.4 Readiness of the services to facilitate and foster TA – Facilitating Resources for TA

The readiness to facilitate and foster TA can be determined by the service resources available to users.

8.4.4.1 Personalisation and customisation

Personalisation and customisation about business goals could be a barrier for WorkPower: There is a fear that personalisation and customisation can create an incoherent space within the digital service. The WorkPower position at the beginning of this research was that having all the technical knowledge about personalisation and customisation provides the temptation to incorporate many aspects into the service. However, unless that aspect is a coherent approach and in balance with the business goals, they are not a necessity or priority.

8.4.4.2 A systematic programme of users’ feedback

Some service providers considered that the service does benefit from a systematic programme of users’ feedback. Not all the services studied understand the importance of this systematic programme; some services occasionally use user feedback to understand how the users adapt the service to their needs. AccountMe is an example of how a systematic programme of users’ feedback can help to build a better service.

“We have, in our, in the software, we have a layer called the Health Centre, which is where we have like those tutorial videos and explain how to use the software. But then there’s a sub-section of that, called the, which is like a feedback area, where people can suggest features or say you know this is broken, can you fix it sort of thing [...] ... So it’s ... Basically people can suggest new features and then all of our others users can vote on which features they would like to see. And then we develop the most popular ones.” IN, 2015

However, other services seem to believe that is not necessary to incorporating a system for feedback, for example, WorkPower has put in place different ways for the users to reach them but there was not a formal way of gathering the users’ feedback.
“So people can contact us but there is no formal way of gathering feedback, and there’s no public view of feedback.” (TW, 2016)

8.4.4.3 Space where communities Can Grow

The study has shown that in those cases where user communities or working environments were set up, the service providers were more aware of the user way of appropriating the service (TA actions) and how these were related to changes in the service. These cases were C-Hack and AccountMe.

“So it’s, we basically wanted to build an on-line version of that, so that freelancers, small business owners, wherever they were, felt like they had the support network that they could turn to.” (JN)

WorkPower is an example of a service reluctant to promote a community within its service; the service provider felt conscious about the fact that users will talk to each other and at that moment the service did not have the volume of work to keep the users ‘happy’.

“Yeah, we have discussed whether we should have, whether we should form communities within our service, based on skill, based on a particular skill base... [] ... the honest fear at the moment, is if we were to set up something like that, it would just be lots of people saying, has anybody got a job?” TW, 2015.

8.4.4.4 Service Change, Impact and Spin-off business

The study has shown that in each case, knowingly or unknowingly by the service providers, TA has helped to reshape the services. This research did not set out to find the degree of differences in impact between the TA examples but to collect the data and report the findings.

Examples of TA impact can be found in C-Hack in three of its scenarios. TA actions had influenced a large or small change in the service: Scenario 1, the design of the DOP, Scenario 2, a business incubator, Scenario 3, a system of event rewards and a challenge by the event. Examples of TA impact can also be found in WomenInFasion in Scenario 5, and 7, the use of mashups as a tool to deliver the service. Scenario 6, could be
potentially an excellent example of TA if the service creates digital events, and webinars with its users, for instance. Nevertheless, the service has not done anything yet to address the situation.

Examples of TA impact can be found in the WorkPower website. In the last digital platform observation (Nov. 2016) the researcher has concluded that, after the user journey session, WorkPower has made some changes on its website. The service now has two different paths - one for the freelancer and one for the clients. A guide and advice system is also available now, to customise a personalised original offer (page) augmenting the chances to get picked by a client. It is thought that the research might have influenced these changes. The researcher contacted the service provider regarding the research impact of those changes, without response.

Examples of TA impact can be found in MoneyVoucher Scenario 12. The business has created a new feature that involves using the unspent money off vouchers for charitable purposes. An example of TA impact can be found in both scenarios in AccountMe. In Scenario 14, the service has helped to share the AccountMe Lunch add-on with its users, but also have developed similar add-ons based on users’ preferences. In Scenario 15, the service could proudly show how it has helped to build the business of one of its users.

**8.4.4.5 Service level of ‘Mashupness’ and ‘Digital-ness’ degree**

‘Mashupness’ is a new term that describes the service’s ability to adapt and use any available social media and other digital services for communication, interaction, and part of the provision. Start-ups services (and other services) adapt and technology appropriate other digital services to deliver all, or partially they provision. Mashupness could be considered a form of TA since the services are the users of other services (mashups). Mashupness is a form of TA where Start-ups appropriate technology from other digital services.

In Scenario 5 (WomenInFashion), the service started using social media depending on the country and what was convenient for the member. In this way, this practical and
flexible way of using social media becomes an evolved social practice and a benchmark for future actions and interactions with other users and stakeholders.

(WomenInFashion) “Internet is a barrier; although in the different parts of the world the Internet exists, the artisans might not know, depending on the age, young artisans probably know how to use the internet. And they probably feeling confident by using it, but older artisans living in a rural area is very unlike to want to have anything to do with the internet. They may have access to the internet in their village, but they would have fear to access it… [] …developing some system technologies that can help to bridge some of these barriers.” (ED, 2016)

**Mashupness level:** In the study (as can be seen in Figure 69) it was found that some services have their API, have built their website or have an application designed exclusively for them to deliver most of the digital part of their provision. It was also found that the services without own API seemed to rely more on mashups to deliver their provision. It was also found that the services that have their API used mashup services to provide some of their provision too, especially social media to communicate with users and to promote their services. For example, AccountMe relies on YouTube to hold its training videos. The level of Mashupness does not need to be quantifiable nor to be measured precisely. It might also be worth a new research enquiry on its own, a new study for future research. This research treats Mashupness as a qualitative concept that can help and be defined by the services when in need to identify TA.
‘Digital-ness’ can be explaining as the degree of digital literacy and digital knowledge that a service, a service provider, and a user have. Moreover, digital-ness can be the service capacity of delivery the provision through developed digital platforms. The degree of technology development ownership, digital-ness refers to the service own technology development (API). API specially designed and wrote to perform the service. As can be seen in Figure 70, the cases have shown a very different combination of digital-ness. For example, C-Hack service provider does not have a technological (IT) background. However, the service has inside the technical team that likes to explore and try different digital services.
8.4.4.6 The Start-up Development Phases

The companies of this sample were all at different phases of their development Figure 71. This research takes the start-up development phases from Start-up Commons as the system to help the research to classify the different start-up's phases. At the first interview, more than half of the cases were in the validation phase. The other two, one was scaling, and one was in the establishing phase. The phase of the service is clearly an important factor when related to TA. Because involving the users in the first stages of the development it might see not as a priority. However, when the service has passed the validation, and towards scaling, the service has a bit more experience users, and it is within this service knowledgeable users group where TA can be found.
8.5 Taxonomy of TA Services

The study shows that service providers’ TA awareness varied immensely from one service to the other. Moreover, within each case (service) and the individual TA examples (different scenarios) for each service provider, the degree of TA awareness also changes. It is hard to assess or give a single value that represents the service provider TA awareness degree. Furthermore, the usefulness of this is questionable. However, the comparison between the cases awareness could be helpful to create service classification that contemplates the TA phenomenon.

Creating a taxonomy is a challenging task, as has being heightened by the work of Tate et al. (2014). They propose that a more refined digital service classification can be based on the life-cycles and value drivers of the service. The phases they describe in the value-chain or life-cycle are “strategy, design, transition (from design to operation), operation
and continuous improvement”. The authors address the problem that “new forms of
digital services may have different lifecycles and value drivers” but “these offer
opportunities for re-evaluating the service value chain”.

While Tate et al. (2014)’s classifications equipped this research with multiple options and
very useful information that can help to clarify the view of digital services, they do not fit
entirely with the purpose of a taxonomy that contemplates user appropriation (Chapter
2, page 32). Moreover, the findings of the main study have helped the researcher to
outline a service taxonomy based on TA principles. As can be seen in Table 46 the TA
service type taxonomy template is presented. The table is a simple matrix where services
are in the first row. Below, in the next row are the degree of knowledge by which the
service provider perceives/explains/is aware of each TA fundamental aspect.

The three different degrees are unknown, conceptual understanding and practical
understanding (as explained in Chapter 5, page 168 as part of TA awareness thematic
analytical tool for analysis). The order of the different degrees of understanding has
changed starting with Practical knowledge and so on. The ‘new’ five TA the main aspects
including TA Concept are placed in the first column. The Comparative TA Awareness
tables (analysis tools) proposed in Chapter 5 (page 168) have been modified. This table
synthesis these tools and contains the new TA key element: TA concept.

8.5.1 TA Service Type

**TA Proactive** is a service that understands the TA concept from a practical perspective.
This service type recognises the importance of involving users in the development
process and has a systematic programme to observe, listen, collaborate and test with
them actively. A TA proactive service does not need to know the modes of users'
involvement theoretically. However, it understands that the visible and recognisable
users’ needs and actions are just a fraction of the appropriation that is taking place. It
also identifies that collaborating with users could make visible hidden actions,
appropriations and adaptations. Moreover, if the service knows these appropriations this could have a significant impact on the further development of the service. A TA proactive

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### Table 46 TA Service Type Taxonomy Template

<table>
<thead>
<tr>
<th>TA Key Aspects</th>
<th>Practical understanding</th>
<th>Conceptual understanding</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA Concept</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systematic programme of user involvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mode of user involvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identifying TA actions</td>
<td></td>
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</tr>
</tbody>
</table>

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**Digital Service**

**TA Key Aspects**
- **TA Concept**
- Systematic programme of user involvement
- Mode of user involvement
- Identifying TA actions

**TA Enablers**
- User lead
- Identifying TA impact
- Facilitating Resources

TA Proactive

TA Re-active

TA Inactive
service enables TA to come about. It gives the user the resources and space to lead processes that allow TA to occur. These resources are training, guides and advice to use the service, partially or entirely open API, promote a space where social practices can be developed between users and users and the service. This kind of service understands that these social practices can evolve and are observable and recognisable and could lead to further service development.

**TA Re-active** is a service that conceptually understands TA. However the service provider does not show evidence of knowing practical TA examples within the service. This service type recognises the importance of conceptually understanding the users’ needs in the development process. However it does not have a systematic programme to actively observe, listen, collaborate and test with them, even though occasionally it may do this.

A TA Re-active service does not know the modes of users’ involvement theoretically, but from time to time observes and recognises ‘new’, unseen users’ needs and actions. Then it re-acts by creating, designing and further developing the service based on these unseen users’ needs. A TA re-active service does not always identify the impact that users’ actions can have in the development of the service. It could be missing opportunities to develop further the service based on the possibilities that TA presents. A TA re-active service could enable TA without clearly knowing that it is happening. It may or may not give the user the resources (as the list in the previous type of service) and space to lead processes that allow TA - however, this service type does not recognise these as TA enabling resources, but perhaps as mandatory provisions that the service should have. This kind of service might not acknowledge that social practices can evolve and are observable and recognisable and could lead to further development of the service.

**TA Inactive** is a service that does not recognise the TA concept nor have practical examples of it. This type of service might or might not recognise the importance of
involving users in the development process, however, it does not have a systematic programme to observe, listen, collaborate and test with users actively.

A TA Inactive service does not know (from a theoretical viewpoint) the modes of users’ involvement. Moreover, it might have missed some of the visible and recognisable users’ needs and actions that can lead to TA. This type of service does not know that these appropriations could have a significant impact on the further development of the service. A TA Inactive service does not enable TA. Nevertheless, TA could be found as well in this type of service. The service might have some resources in place to enable TA but does not take advantage of this to further develop the service.

8.5.2 Case Studies TA Service Type Comparative Table
Examples of the different TA service types can be found in the case studies, as can be seeing in Table 47. To exemplify a TA proactive service, AccountMe showed practical understanding of each aspect of TA. There is evidence in the data that AccountMe has a regular user involvement plan and process in place; there is also signs of practical understanding of the type of users’ actions and the elements of the services that can be appropriated. There is also evidence that AccountMe put in place resources to encourage and to foster TA. AccountMe can identify the TA impact and has clear examples of this impact. C-Hack and MoneyVoucher could also be considered TA Proactive cases even though there is evidence that they have a conceptual understanding of some key point rather than practical understanding. Nevertheless, they show practical understanding of the impact that is collaborating and testing ideas to develop the service further has in the service. The study also shows two clear examples of TA reactive services. WomenInFashion and WorkPower both showed evidence that they correspond to this type of TA service. WomenInFashion shows proof that it is not aware of some of the TA key aspects and TA enablers. WorkPower shows a conceptual understanding of all the TA key elements and TA enablers but only shown practical understanding of modes of user involvement and the users TA actions.
### Table 47: Case Studies TA Service Type Comparative Table

<table>
<thead>
<tr>
<th>TA Service Type</th>
<th>C-Hack</th>
<th>WomenInFashion</th>
<th>WorkPower</th>
<th>MoneyVoucher</th>
<th>AccountMe</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA Enablers</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Linear lead</td>
<td>TA Proactive</td>
<td>TA Reactive</td>
<td>TA Proactive</td>
<td>TA Reactive</td>
<td>TA Proactive</td>
</tr>
<tr>
<td>Identifying TA impact</td>
<td>TA Proactive</td>
<td>TA Reactive</td>
<td>TA Proactive</td>
<td>TA Reactive</td>
<td>TA Proactive</td>
</tr>
<tr>
<td>Facilitating Resources</td>
<td>TA Proactive</td>
<td>TA Reactive</td>
<td>TA Proactive</td>
<td>TA Reactive</td>
<td>TA Proactive</td>
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<tr>
<td>TA Key Aspects</td>
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<tr>
<td>TA Concept</td>
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<tr>
<td>Systematic programme of user involvement</td>
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<tr>
<td>Mode of user involvement</td>
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<td></td>
<td></td>
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<tr>
<td>Identifying TA actions</td>
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</tr>
</tbody>
</table>

**Legend:**
- **Unknown**
- **Practical understanding**
- **Conceptual understanding**
This way of classifying TA services could be useful not only to help to measure awareness but as a measure of Identifying TA. The ability to identify TA is important because it enables service providers a better understanding of the service potential, and gives them new business ideas that can lead to the diversification of their provision, and to control TA.

8.6 Summary and Implications

This chapter reported the second part of the findings of the main study: this included the research outcomes related to the way in which service providers perceive and are aware of the TA phenomenon within their services.

This chapter presented a set of themes and TA enablers that have emerged from the analysis of data: this includes TA Concept, Users and TA and the elements of the service that can be appropriated, and the Readiness of the services to facilitate and foster TA – Facilitating Resources for TA.

This chapter presented a review of the four fundamental aspects of TA awareness, discussed originally in chapter 5 (page 166), in the light of the main study findings: service provider’s user involvement approach, modes of users’ involvement, user action and service impact, and the TA enablers. It also, proposed a new ‘fifth’ key aspect, the TA concept, that was missing in the TA TF.

The chapter ends by drawing a ‘new’ taxonomy of TA services that is derived from the TA awareness main study findings. This taxonomy contemplates TA: TA Pro-active, Re-active and Inactive service.

The next chapter will outline a strategy to identify TA, based on the lessons learned in this research.
9. Identifying TA

9.1 Introduction

The literature has shown that learning from appropriation could be beneficial for companies. Dix (2010) has presented design guidelines for facilitating appropriation when designing IT artefacts. However, to be able to apply these guidelines, service providers need to be aware of the potential impact that appropriation might have on their business, and in their service provision, to understand how rooted TA is in their start-up, and what would be the best way of embedding TA practices in the further development of the service.

This demonstrates the need for TA identification within business and a method to undertake it. This study proposes a TA Identification Method based on the tools that were developed and used to understand TA awareness in this study. These tools are: TA examples Map Cards tool, Mashupness and Digital-ness Cartesian tools, Elements of the Service Template Tool, and a TA Examples Classification tool.

The main study of this research has shown several examples of TA, as can be seen in chapter 7, page 269; and how enabling and studying it can be beneficial for start-ups. The main study has shown the significance of service providers TA awareness and presented the themes that have emerged from this research, as can be seen in chapter 8, page 296. These findings can lead to a design strategy to identify TA. A strategy to identify TA is one of the main aims of this research project. It also considered to be one of the main research contributions. Learning from the way users’ appropriate services can help to improve the provisions, features and offerings; the service could become more competitive. To do this it is necessary for start-ups to be able to identify TA. Fostering and learning from TA can also benefit other users, and this could have a positive effect on the service economics and business benefits.

This chapter outlines the process to identify TA in start-ups and digital services. The research sets out some methods for companies to recognise TA and for them to use this
as a means of improving their service offerings. The TA identification is built on top of
previous theoretical work done in relation to this phenomenon. This chapter ends by
presenting an outline of the proposed process to identify TA.

9.2 Aims

The aims of this chapter are

To answer the research question: How is it possible to identify TA within the
development of digital services in the context of start-ups?

- To help illustrate a method to identify TA with these companies.

9.3 TA Identification Method

The method is a step by step set of instructions (see Table 48) that service providers could
follow to do the above. This method has industrial and practical applications and the
potential to have an impact in the real world. This method could also help as a tool to
initiate future research.

Aims of a TA Identification Method: A method to identify TA should help:

- To find what forms of TA are already present in the start-up.
- To define what forms of TA would be desirable, based on the service user groups
  and business objectives.
- To show the services how their business moves from ‘what they have’ to ‘what
  they should have’ in relation to TA.

1. TA Concept introduction

Objective: Familiarization of service providers with the concept of TA and with
examples of TA. To identify TA, first it is vital to conceptually understand the TA
phenomenon, the forms of TA that the service can come across, and to see TA examples
in other digital services. It is also important to become familiar with the TA themes
(Chapter 8, page 296) and challenges.
## Table 48 TA Identification Process

<table>
<thead>
<tr>
<th>Steps</th>
<th>Purpose</th>
<th>Tools</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TA Concept Introduction</td>
<td>Familiarization of service providers with the concept of TA and with examples of TA.</td>
<td>TA Examples Map Cards Tool / TA themes and challenges</td>
</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Recognition of existing TA within the service</td>
<td>Detection of TA examples within the service. This involves the identification of associated TA actions, detecting services changes &amp; improvements, and if they come from TA or from another source. To identify the Modes of user involvement</td>
<td>Digital-ness degree and Mashupness level Modes of user involvement templates tool User Journey</td>
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<tr>
<td>3</td>
<td>Recognition of the Service TA potential</td>
<td>Identify elements of the service that are appropriable (social practices, interactions and features (API code)). Identify service match-up-ness and digital-ness to understand the business readiness for fostering appropriation.</td>
<td>Questionnaire / TA Examples Map Cards Tool</td>
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<tr>
<td>4</td>
<td>Existing TA preparation</td>
<td>Evaluation of existing appropriations to see if they can be developed and be integrated within the service, and if they are worth of implementing.</td>
<td>Questionnaire / Service change and Impact tool</td>
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</table>

Following completion of the identification, services providers can proceed to 1) further developing the service by integrating existing selected TA appropriations 2) implementing systems to foster TA and to facilitate TA detection.

### Further develop the service
- Evaluate the ideas and insights against the business goals and priorities
  - Evaluate the ideas and insights
  - Pilot those ideas
  - Implement them – service change
- Service Change

### System of users involvement
- To create a system of users involvement
  - Participatory and co-design - beginners guidance - webinars and web links / Workshops seminars
- Practical service user involvement approach
2. **Recognition of existing TA within the service**

**Objective:** Detection of TA examples within the service. This involves the identification of associated TA actions, detecting services changes & improvements, and if they come from TA or from another source. The following questions are relevant: How to identify TA within the service? What are the things to look for?

The second step is start actively observing and listening to the service users’ interactions for signs of TA. This service provider action eventually will become part of a systematic user involvement approach. It is necessary to:

- To identify user TA actions. To identify the users’ actions a service provider approach of active observation is needed.
- To identify the service changes, improvements and understand where they come from. This is to clearly identify what changes could have come from TA and what have not.
- To identify the TA service resources and how the service delivers its provision. This will allow the identification of the elements of the service that can be appropriate already in place and the ones that are missing too.
- To identify the technical level of the company (Digital-ness degree) and the different mashups and their purpose (Level of Mashupness).
- To understand the TA service type, their motivation and the different features and services that the service offers.
- To build service users journeys, developing of personas, creating real and ideal scenarios and focusing on digital touch points.
- To identify the TA elements of the service, the parts of components of the service that can be appropriated.
- To identify the ‘space’ i.e. to identify the different digital platforms and the purpose of these platforms in relation to the service. For example, if the platforms are for communication between the service and the users, or between the users
and users, they are a tool (like an app) that performs a specific feature of the service. The outcomes of these procedures are the forms of TA that are already present in the start-up.

3. **Recognition of the Service TA potential**

Identify elements of the service that are appropriable (social practices, interactions and features (API code)). Identify service matchup-ness and digital-ness to understand the business readiness for fostering appropriation.

- To identify the TA examples, using the TA three level tool to map the service TA examples with the TA examples classification tool. Visualise the users’ actions to understand the type of TA that could occur.
- To identify the TA example against the modes of user involvement. This will help the service to gain valuable insights about the users’ activities, TA and ideas to further develop the service.

4. **Existing TA preparation**

Evaluation of existing appropriations to see if they can be developed and be integrated within the service, and if they are worthy of implementing. This study also proposes that the TA identification method can incorporate some of the tools (see Table 49) developed and employed in this research. However, this study recognises that these tools, which were developed for academic research purposes, might need tailoring to fit business contexts.

| **Table 49 TA Identification Tools** |
|-----------------|------------------|
| Step            | TA Identification Tools                                      |
| 1,2,3,4         | TA Examples Map Cards Tool                                   |
| 1,2             | TA emerged themes and more ask questions template/questionnaire |
| 1               | Mashupness Cartesian tool                                    |
|                 | Digital-ness Cartesian tool                                  |
| 1               | Elements of the service that can be appropriate template tool  |
| 1,3,4           | Service Providers User Involvement approach (Kit to be designed) |
| 1,2,3           | Modes of users’ involvement template tool                    |
Following completion of the identification, service providers can proceed to 1) further developing the service by integrating existing selected TA appropriations 2) implementing systems to foster TA and to facilitate TA detection. In relation to TA-based further development of the service: The service can evaluate the ideas and insights against the business goals and priorities. The developer should find one that could be piloted. They should then pilot those ideas, implement them, and have service change as outcome. The developer should also implement a systematic users’ involvement procedure within the service, and engage the users with a clear brief (purpose) which could be based on collaboration and ideas generation. The developer should then form a users’ beta group that can help to pilot ideas and new features of the service.

9.4 Summary

This chapter has attempted to answer the research question: How is it possible to identify TA within the development of digital services in the context of start-ups? This chapter has presented an illustration of the proposed process to identify TA within start-up digital services. This is one of the research outcomes from this thesis. The following chapter will discuss the findings of this research in relation to the literature review, and will introduce the tested & reviewed TA framework.
10. Discussion

10.1 Introduction

The discussion will examine the findings of this research against the TA Theoretical framework (TA TF) proposed in chapter 5 (page 150) and highlight the links to existing literature. The TA TF had outlined the background for this investigation, and it has been tested through the main study. This discussion presents what has been learnt new about TA, and what existing findings have been supported while the framework is been tested. The discussion also highpoints new ‘items’ that have emerged from the main study.

The discussion is the fourth and final phase of this research as explained in the methodology chapter 3 (page 89). It focuses on critically testing the framework against the results of the investigation. The outcome of this last phase is new knowledge about the TA phenomenon that ultimately leads to the conclusions and the research contribution.

This chapter is divided into two parts: First, the researcher compares the learnings and arguments found in the literature to the learnings and findings from the main study of this research project. Second, this chapter presents a comparison and contrast between the initially proposed a TA TF and a new revised version after it was tested against the main study findings. The hypotheses set up at the beginning of the study are addressed and hopefully a more accurate picture of the TA phenomenon emerges.

10.2 Aims

The main purposes of this chapter are:

- To explain the main findings of this research project.
- To describe what those findings mean in relation to existing literature.
- To explain their value in understanding the TA phenomenon.
10.3 Findings and their relation to existing literature

About TA Phenomenon

Tate et al. (2014) in their quest for a clearer ‘research approach for reconceptualising digital services and service quality’ propose various taxonomies of digital services (chapter 2, page 32). These service classifications are focused on the perspective of the user, and users’ quality perceptions of the service. Tate et al. (2014)’s work on digital services classifications has multiple options and useful findings that have helped to clarify the research view of digital services. However, these taxonomies cannot be used with the purpose of finding a classification that considers user appropriation.

This study has demonstrated that start-ups can have different attitudes towards TA. This is illustrated in the different definitions and the service providers’ understandings of the TA concept (see Chapter 8, page 296). Some firms do not take any action regarding fostering appropriation, to discover how their users may appropriate their services, or to incorporate the appropriations their users may develop into their services provision. Some other service developers, when discovering user appropriation, may be open to understanding its value and to try incorporating this into their service. Other service providers actively make efforts to foster and detect TA, and purposely pursue the incorporation of TA into their services. This study sought (with little success) for references in the literature illustrating discussion or taxonomies of service providers about their level of effort to adopt new approaches including TA appropriation. This study proposes therefore, a taxonomy of TA services underpinned on the notion of their activity towards the understanding, detection, fostering and utilisation of TA for services further development. This taxonomy distinguishes three main categories for service providers:

**TA inactive:** this is a service that does not recognise the TA concept nor have practical examples of it.
**TA re-active:** this is a service that conceptually understands TA. However the service provider does not show evidence of knowing practical TA examples within the service.

**TA pro-active:** this is a service that understands the TA concept from a practical perspective.

Dix (2007) explains that it is difficult to design for appropriation as much of it occurs unexpectedly and unplanned, but it is possible to design in a way that makes appropriation more likely to happen if there is a need for it. Although this research’s focus is not on the users of the service or on how to “design for appropriation” as Dix’s does, it identifies a phenomenon that relates to the preparedness of start-ups service providers for appropriation. The research findings complement Dix’s thesis, as TA awareness and identification can be instrumental actions to take by service providers that want to foster TA within their services. These actions might become a tool to make appropriation more likely to happen.

As illustrated in AccountMe and C-Hack cases: These cases have shown that having a practical understanding of TA (TA Concept as one of the five TA key awareness aspects) has helped the service providers to take decisions to foster and enable TA. In addition, there is evidence that having only a TA (definition) conceptual understanding without a practical understanding can limit the resources that the service provider sets in place to allow and enable TA.

Degele’s categorization of creative appropriation of technology highlights social and technical influences on technology appropriation when people use technology, and outlines two levels of interaction between the domain, person and field subsystems: A macro-level (technical) and a micro-level (social) (Degele, 1997). This research employs Degele’s levels to propose a classification by type of the outcomes of TA, underpinned on
the idea that these outcomes are part of a TA creative iterative process. In this categorisation, TA outcomes can be *soft* as they are manifested in the evolution of social practices or *hard* as they evolve as ‘tangible’ artefacts. Hard & Soft TA outcomes are regarded as a combination of social practices evolvement and software product that can be manipulated. Any type of TA outcome could be the consequence of the other kind.

---

**TA Service Impact**

In relation to the extent to which systems are employed in the process of appropriation, Bossen & Dalsgaard (2005) distinguish between weak appropriation and strong appropriation. Weak appropriation implies the use of built-in system features by users for sense making and customisation. Strong appropriation implies the modification of existing systems and/or the creation of new ones to replace the original system.

Bossen & Dalsgaard’s distinction proposes an on-off situation in which users, either employ or not the service’s built-in system features. As both situations are clearly distinguishable, it would be reasonable to think that the levels of TA impact in the service correspond to a binary type of categorisation.

However, this study demonstrates that the level of appropriation does not necessarily indicate the level of TA impact in the service. For example, while a high level of TA might occur, its impact on the service can be low, as it is possible that the service provider has decided not to implement any changes based on this appropriation. This can be seen in the TA examples evidenced in the case studies with the corresponding TA service impact in Chapter 7, page 277. In addition, the service provider can be unaware of any ongoing TA and be therefore unable to take advantage of them.

Because of this, and the empirical evidence in the main study findings, this research proposes a slightly wider range for TA impact that allows low, medium and high rankings. In this way, those situations in which users develop new service functionalities - but are not formally incorporated by the service providers, or where new functionalities
are incorporated but they are not strong enough to modify substantially the overall service offer -can be ranked in an intermediate level. This provides a finer grain of analysis help analyse TA within companies.

**Service Providers Users’ Involvement Approach**

Bosch-Sijtsema and Bosch’s (2014) identify two distinctive user involvement approaches in firms within high tech industries. On the one hand, firms can be listening to and collaborate with users. In the other hand, they can involve users in testing and experimentation.

This study has observed that these forms of user involvement are also present in digital services start-ups as illustrated in the TA Awareness analysis of the five cases (see Chapter 8, page 282). However, the investigation has also identified a “new” form of user involvement approach. It entails service providers actively observing how the users adapt and appropriate their services: they (service providers) adopt an attitude of alertness for TA examples. This approach is different from Bosch-Sijtsema and Bosch outlined approaches. While they involve direct interaction between companies and their users, the new approach does not. Companies can observe their users’ activities through monitoring carefully the different digital platforms, using their service (being a user), and creating tracking systems specifically targeted to understand users’ actions.

Kietzmann et al. (2011) (see Chapter 2, page 21) propose a four-point guideline for the development of a strategy to allow firms’ (e.g. digital service providers’) “monitoring, understanding, and responding to different social media activities”. These points include being aware of their ‘social media landscape’, defining a business development strategy congruent with the functional potentialities and limitations of social media, ‘curating’ the quantity and quality of social media interaction and establishing guidelines and policies for their online social engagement, and keeping up with the speed at which social media interactions occur.
This investigation proposes an expanded set of service providers’ user involvement approaches. The ‘new’ model of service providers’ users’ involvement approach that combines the Bosch-Sijtsema and Bosch’s (2014) and Kietzmann et al. (2011) approaches. This is comprised of three key elements:

- Listening to and collaborating
- Testing and experimenting
- Active observation

Types of Users, TA Users’ Actions & Modes of Users’ Involvement

Although this research initially looked at user involvement in the development of digital services and the concept of the “prosumer”, it eventually shifted its focus exclusively towards technology appropriation within start-up digital services. This happened as the literature review and the exploratory study showed that appropriation can be a high manifestation of user involvement, making the phenomenon of appropriation a useful subject of study. In addition, as the literature on how digital services start-ups could foster and take advantage of user appropriation was scarce, it evidenced a knowledge gap that could be filled.

However, this study still considered the ways in which users could be involved in the development of digital services, because they were initially thought to influence specific levels of TA (see discussion Exploratory Study Chapter 4, page 138, and the framework in Chapter 5, page 152). These modes of user involvement were identified from Botero’s user action clusters (Botero, 2010) and Ardito et Al’s user type classification (Ardito et al, 2010).

The revised TA framework proposed in this study presents a newer and simpler form of user categorisation. It integrates the initial user actions from Botero and the user classification from Ardito et al. into three main categories: Expected involvement (where
users do nothing else other than the expected use of the service), Engaged involvement (where users are involved in the development of the service for personal motives) and TA savvy involvement (where users are involved in the development of the service for personal motives, but they have software and programming skills).

User leads

Ellis et, al. (2005) have theorised on how the users make sense and adapt online environments for their own purposes by 1) the users interact with others to make sense of the online environment 2) users developed roles, some are leaders. This research based the TA Enabling category of user leads upon these theories.

Service Control

Kietzmann et al. (2011) (see page Chapter 2, page 21) propose a four-point guideline for the development of a strategy to allow firms’ (e.g. digital service providers’) “monitoring, understanding, and responding to different social media activities”. Kietzmann et al.’s guideline points are potentially helpful to enable service providers to have a closer interaction with their users through social media, and to set up an online environment to foster appropriation. However, their model does not include guidance on specific actions that allow service providers to control their social media activities so to foster appropriation. As explained in User Leads vs. Service Control (see Chapter 7, page 277) start-up service providers have different approaches in relation to controlling actions.

They can be grouped into three main categories:

Control of interactions: this is a linear type of service or a ‘one-way layout’, inspired by IKEA’s “long natural way’ designed to encourage the customer to see the store in its entirety” (Wikipedia, 2017). Here the service controls all the users’ ‘movements’ as in the EasyJet website for example (as illustrated in the TA map examples on page 199 in
Linear services could be described as services that maintain control over their interaction, forcing the user to move in one direction to the next, step by step. These services do not give the users an alternative path, and usually are very difficult to customise and personalise.

**Control the features:** This type of control refers to services that have full control over the features and functionalities, including their API code. Some services choose not to share their API at all, some do share only some features, and some others share the whole. In the main study, AccountMe is an example of a service that shares with its users some features of the API code so their users can appropriate it.

**Control the social practices:** Some services allow users communities to flourish. If the service displays, prepares and encourages digital sharing spaces, the users’ social practices can evolve, and TA actions can be shared. If the service ‘monitors’ these spaces, the service can learn from the users’ appropriations. C-Hack and its use of the digital working environment (Basecamp) is an example of this (see Scenario 3, Chapter 7, page 237).

Consequently, the research proposes a new set of control actions that need to be taken by service providers to detect and enable user appropriation practices, they are:

1. Control of interactions
2. Control of features (API code)
3. Control and monitoring of social practices.

**TA Identification**

The literature has shown the advantages of appropriation and how establishing “communities of practice” enables it (Dourish, 2003). It has also illustrated that digital technology and social media enable users, designers and developers’ collaboration (Hagen & Robertson, 2009), hence facilitates digital formation of communities of practice. This aligns with Annanperä & Markkula’s view that social media can be utilised
for the development of services in companies (Annanperä & Markkula, 2010). In addition, Dix shows that learning from appropriation can be beneficial for the development of services, proposing design guidelines that facilitates appropriation (Dix, 2010). However, to be able to apply these guidelines, service providers need to be aware of the potential impact that appropriation might have on their business, and in their service provision, to understand how rooted TA is in their start-up, and what would be the best way of embedding TA practices in the further development of the service.

This study demonstrates that businesses can be at different levels of TA, therefore requiring different type of actions to foster TA. Because of this, the need for a TA identification method become apparent, so digital services start-ups can understand how embedded TA is in their businesses and how ready they are for TA.

This study proposes a TA identification method consist of a sequence of steps as follows:

1. **TA Concept introduction**: familiarization of service providers with the concept of TA and with examples of TA

2. **Recognition of existing TA within the service**: detection of TA examples within the service. This involves the identification of associated TA actions, detecting services changes & improvements, and if they come from TA or from another source.

3. **Recognition of the Service TA potential**: identify elements of the service that are appropriable (social practices, interactions and features (API code)). Identify service match-up-ness and digital-ness to understand the business readiness for fostering appropriation.

4. **Existing TA preparation**: evaluation of existing appropriations to see if they can be developed and be integrated within the service and if they are worthy of implementing.
This study also proposes that the TA identification method can incorporate some of the tools (see Chapter 9, page 324, Table 49) developed and employed in this research. However, this study recognises that these tools, which were developed for academic research purposes, might need to be tailored to fit business contexts. For example, the TA Examples Map Cards tool could be used to illustrate and defined TA to the service providers or other beneficiaries, but the language could be clear of jargon related to social science, service design, and the research and be more related and suitable to business people.

Following completion of the identification, service providers can proceed to 1) further developing the service by integrating existing selected TA appropriations 2) implementing systems to foster TA and to facilitate TA detection. Table **TABLE 50** presents a summary of the discussion and the contributions: Main & minor. It also presents the relation between the different minor contributions to the construction of the new TA Levels Framework.
### Table 5.0: Summary of Research Discussion and Contribution

<table>
<thead>
<tr>
<th>TA Phenomenon</th>
<th>TA Service Impact &amp; TA Level</th>
<th>Service Providers' Users' Involvement Approach</th>
<th>Users and Types of TA Users' Actions</th>
<th>User Lead</th>
<th>TA Enablers &amp; Service Control</th>
<th>TA Identification</th>
<th>TA Level Framework</th>
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</thead>
<tbody>
<tr>
<td>Design for appropriation as much as it occurs unexpectedly and unexpectedly, but it is possible to design in a way that makes appropriation more likely to happen if there is a need for it (Blaauw, 2012). This research focuses on the users of the service or how to design for appropriation (Blaauw, 2007), but it does not focus on the awareness of the service providers in relation to TA.</td>
<td>Weak appropriation and strong appropriation: The extent to which systems are employed in the process of appropriation (Bouson &amp; Outland, 2005). The TA impact would need to include low, medium, and high rankings for TA. The level of appropriation does not necessarily indicate the level of TA impact in the service.</td>
<td>User involvement approaches: Listening to users, Collaborating, and Testing and User-eliciting, propose a four-point guideline for the development of a strategy to allow firms (e.g., digital service providers)’ monitoring, understanding, and responding to different social media activities (Gartner et al., 2013).</td>
<td>Users do: Make social agreements/Configure/persuasion/Explain act at practices/Aggregate/merger/integrate/Program/write modules/Use modules and libraries/Construct workarounds/Assimilate components (A. Botero, K.H. Komarcani, 2015). Users make sense and adapt offline environments for their own purposes, 1) the users interact with others to make sense of the online environment 2) users developed roles, some are leaders. (Gibs, Eriksen, Helge, Joh, &amp; Y., 2015)</td>
<td>To understand better how social media can be utilised in digital services: “monitoring, understanding, and responding to different social media activities” (Kotkanta et al.’s (2013).)</td>
<td>The development of technology and social media tools has facilitated an area where users, designers, and developers can meet and collaborate (Hagell &amp; Roberts, 2009). Communities of practice (confined by technology users) (Kovalev, 2005 p.466). Social media facilitate user involvement in the development of services in companies (Amarapur &amp; Markula, 2010).Learning form appropriation could beneficial for the development of services (Nk, 2001)</td>
<td>This study proposes a TA Identification Method (outline)</td>
<td>This study proposes a New, test &amp; revised: TA Level Framework</td>
</tr>
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</table>

**Inspired by this theory**

**This research contribution**

1. Taxonomy of TA services: pro-active / re-active/ interactive
2. Key Aspects of TA Awareness
4. TA impact classification (revised model) & TA Level classification
5. Explanation of TA Levels & TA Impact relationship
6. Create a ‘how model’ by merging two different theories
7. New categorisation of TA User Actions: Expected/ Involve/TA savvy (based on other authors’ models)
8. Identification of TA Enablers: User Lead & Service Control
9. This study proposes a
10. New, test & revised: TA Level Framework
10.4 Tested & Revised Framework

Initially this research proposed a preliminary framework (see chapter 5, page 152), Figure 72 below shows a simplified version of this initial framework. The research framework hypothetically presented a TA definition that consists of three levels and is based on the literature review (see chapter 5, page 150). The theory of TA based on three intensities: low, medium and high TA, was partially probed and tested by the TA mapping exercise (see chapter 6, page 202) with examples also found in the literature and based on the researcher observations. However, more empirical evidence was needed to support or disprove the TA three intensities hypothesis. The main study has provided the research with examples of users’ appropriation of social media and the Internet coming from the case studies that has proved more efficiently the central part of the theoretical framework.

Moreover, these TA examples found in the services studied have helped to define the TA outcomes types: Soft TA, Hard TA (Chapter 7, page 270) and a combination of Soft and Hard TA (also presented in this chapter, page 329). These TA outcomes seem to correspond to the creative aspect in which people use technology at macro-level (social) and at micro-level (technical); this classification proposed by Degele (Degele, 1997).

Other hypothetical stands presented in the initial framework were that the service impact was related to the user impact and both would correspond to a TA intensity. The user impact initially proposed that some specific users’ actions would have a low, medium or high specific TA intensity, and that this would correspond to the same level of TA services impact. The study has shown evidence that this is not the case, and developed a better understanding of the TA service impact and the users’ actions was reached.
Figure 72 TA Three Level Theoretical Framework Simplify
The main study has also reached a better understanding of the importance of what is termed users’ lead (page 162). In this, the users lead the TA actions that could change the service. These actions do not correspond to a TA level, as a user action can have a low, medium or high TA service impact and vice versa, as all the TA examples found in the study have shown (page 271). The new TA framework (see Figure 73) simplifies these concepts by placing the TA service impact and the users leads side by side within the TA three levels central panel.

Side by side within the central panel, the service developer actions and users' actions are located in two parallel columns. Although the users’ actions correspond to the service provisions (actions) they do not correspond directly to the TA level. This means, for example that a social interaction could impact the service at a low, high or medium level. The same is true with the service provisions, for example just by allowing and providing some specific tools for customisation the users could appropriate the service to a low, medium or high level.

The initial TA framework was described based on the exploratory study findings (Chapter 5, page 157) – ie. the modes of users’ involvement. The main study corroborated this theory with TA examples found in the different cases. These examples of the different modes of user involvement can be found in each case in chapter 7.
**Figure 73** New Technology Appropriation Levels, Service Impact & User Leads
Another variation of the original TA framework is the type of TA services and the type of TA users. This research proposed a new taxonomy for TA services (page 318): ‘TA Proactive’, ‘TA re-active’ and ‘TA inactive’. This classification corresponds to the TA awareness that the service displayed at the time of the initial interview.

10.4 Summary & Implications

This chapter presented a summary of the research findings and a discussion comparing the literature review and these findings.

This chapter also presented the tested and revised framework. The framework outlined in chapter 5 was confronted with evidence found in the case studies. This confirmed the TA three-level hypotheses and created ‘new’ knowledge about TA including: TA outcomes types, and support for the three TA enablers.
11. Conclusions

This work presents the results of research aiming to understand better the phenomenon of Technology Appropriation (TA) within digital services start-ups. It explains how it is possible to identify the existence and degree of TA within start-ups, how service providers can develop awareness of this phenomenon, and what the TA key awareness elements are. This research also seeks to understand the barriers to and enablers of TA occurring naturally within digital services in the context of start-up companies. This study outlines a strategic identification and awareness framework to foster and enable TA within the development of digital start-up services. Ultimately, this study responds to the research questions:

1. How is it possible to identify TA within the development of digital services in the context of start-ups?

2. How aware are service providers of the phenomenon of TA?

3. What are the enablers for appropriation of services by users?

11.1 A summary of the research project:

The researcher designed, developed and planned the main study. The main study was designed to collect empirical data. These data were gathered using in-depth interviews and netnography methods. The service providers were interviewed and the service digital platforms were observed for a period. The data gathered was analysed using the tools designed to do this and presented in chapter 6, and following a thematic analysis process.

This study examines five start-ups digital services and found several examples of TA. This has allowed the identification of the services features that can be appropriated. These findings and the TA examples can be found in chapter 7. Part of the outcomes of this study are TA examples and insights. These findings are presented through users’ journeys, scenarios and personas. The TA examples can also be classified in the three
different TA levels (see chapter 7 & 8). This supports with empirical data the TA three-level hypotheses explained in chapter 5.

This research project also set out to understand (from the service providers’ perspective) the way they perceive and are aware of the TA phenomenon within their services. Moreover, the research required the creation of a framework of TA awareness elements that will help to measure TA awareness. For this, a theoretical framework (see chapter 5) was created based on the literature reviewed and the findings of the exploratory study. This theoretical framework consisted of four TA awareness elements: the service providers’ user involvement approach, the mode of users’ involvement, the TA users and services actions, and the TA enablers. The study found that it is possible to measure TA awareness using these four key TA aspects (see chapter 8). However, it also discovered a new key aspect to be added to the original TA Awareness framework: termed ‘TA concept’.

This research sought to understand how (if at all) companies employ their knowledge of technology appropriation for further development of their services. It determined that start-ups do employ (knowingly or unknowingly) their knowledge and understanding of TA to change features and develop further the service: examples of TA service impact are explained in chapter 7 and chapter 8.

The research needed to find examples of how appropriation has been enabled in digital services. For this, the data has been theme analysed and this exercise has produced a set of themes and TA enablers. These themes can be cluster by: TA Concept, Users and TA and the elements of the service that can be appropriated, and the Readiness of the services to facilitate and foster TA – Facilitating Resources for TA (see chapter 8).

The research required an understanding of how companies can identify technology appropriation if is taking place within the digital services. For this, the research has reflected on the process followed in the research about TA awareness, and based on this inspiration and work has developed a method to identify TA (see chapter 9).
11.2 Contribution to Knowledge

The main contributions of this research are (Figure 74): the new tested and revised TA Level Framework (10), the TA Identification Method (9).

This research has also produced some minor contributions:

- A taxonomy of TA services that includes: pro-active / re-active / inactive (1)
- Key Aspects of TA Awareness (2)
- Typology of TA Outcomes: Soft TA, Hard TA, and Hard & Soft
- TA Impact classification (revised model) & TA Level classification
- Explanation of TA Levels & TA Impact relationship
- Revised model of user involvement approaches (6):
  - 1. Listening to and collaborating
  - 2. Testing and experimenting
  - 3. Active observation
- New categorisation of TA User Actions (7): Expected/ Engage/ TA savvy
- Identification of TA Enablers: User Lead & Service Control

The TA Level Framework is a main contribution. The TA level framework can be assembled with the help of the other minor contributions, as can be seeing in Figure 74 Research Main.

This research shares with Dix (2010) similar preoccupations about design for appropriation and the way TA occurs unexpectedly and unplanned. Nevertheless, this research focus and scope are dissimilar to this previous work; the focus is not on the users of the service or how to “design for appropriation” (Dix, 2007), but instead is about the awareness of the service providers in relation to TA.

This research proposes the new notion of TA outcomes. It also proposes, new, that there are three types of TA Outcomes: Soft TA, Hard TA, and Hard & Soft (hybrid). The research relates these TA outcomes to the creative aspects at macro-level (social) and of
micro-level (technical) classification in which people use technology proposed by Degele (1997).

In addition to the three types of TA outcomes described above, this research discusses a three level TA framework which builds upon Bossen & Dalsgaard’s theory about “weak appropriation and strong appropriation”. Their theory talks about the extent to which systems are employed in the process of appropriation (Bossen & Dalsgaard, 2005). In this research, the rankings for TA impact includes low, medium and high levels. This reach also found out that the level of appropriation does not necessarily indicate the level of TA impact in the service.

This research has proposed a 'new' model for the approach taken by service providers for users’ involvement by merging two different theories: Listening to users, Collaborating, and Testing and Experimenting by Bosch-Sijtsema and Bosch (2014) and Kietzmann et al. (2011) “monitoring, understanding, and responding to different social media activities”. The new model developed within this thesis adds Active observation to the previous service provider’s user involvement approaches: Listening to and collaborating, and Testing and experimenting.

This research focus was on service providers and not on the users of the service. Nevertheless, the process of TA cannot be separated from the users, so this research synthetises the type of users (Ardito et al., 2010) and the users’ actions (A. Botero, K-H. Kommonen, 2010) based on three new categories: the ‘expected user’, the ‘engaged user’, and the ‘TA savvy user’.

Users make sense and adapt online environments for their own purposes, and two key practices emerged: 1) the users interact with others to make sense of the online environment, and 2) users developed roles – and some are leaders (Ellis, Erickson, Kellogg, John, & Yu, 2005). Adding to this theory, this research proposes that the service could: Control interactions, Control the features, and Control the social practices.
**Research Contributions**

1. Taxonomy of TA services: pro-active / re-active/inactive
2. Identification of TA Enablers: User Lead & Service Control
4. TA Impact classification (revised model) & TA Level classification
5. Explanation of TA Levels & TA Impact relationship
6. Revised model of user involvement approaches:
   1. Listening to and collaborating
   2. Testing and experimenting
   3. Active observation (based on other authors’ models)
7. New categorisation of TA User Actions: Expected/ Engage/ TA savvy (based on other authors’ models)

10. **New, tested & revised: TA Level Framework**
9. **TA Identification Method (outline)**

**Figure 7.4 Research Main Contributions**
This study proposes a new TA Identification Method. This method is built upon theories about the development of technology and social media tools (Hagen & Robertson, 2009) and has facilitated an area where end users, designers and developers can meet and collaborate, and social media also facilitates user involvement in the development of services in companies (Annanperä & Markkula, 2010). The TA Identification method also takes into consideration theories about communities of practice (conformed by technology users) (Dourish, 2003 Pg.485), and that learning form appropriation could beneficial for the development of services (Dix, 2010).

This study is important for researchers because it has identified some outstanding questions from current literature about TA. It sought answers to these questions by following an investigative approach, and has used the research methods and tools in a resourceful mode. This research work could be used as an example for others design researchers since it integrates and explains the use of some design tools within a research project.

The outcomes of this research project should also have an impact in the commercial world (as opposed to academia). This research is important for service providers and for the service industry since it proposes a TA Identification method that service providers could follow if they considered that appropriation can be enabled within their digital services.

11.3 Limitations of the study

11.3.1 Scope and limitations

In this research, TA is being examined from the service provider perspective, and not from the users’ perspective. There were some opportunities during the data collection, where the researcher met some users, but a decision to not explicitly incorporate TA users’ perspectives was taken from the very beginning of this study. This was to limit the scope of the research to that which was achievable in the set period. In addition, at a
certain stage, after the literature was reviewed, a knowledge gap emerged relating to the service providers – therefore understanding service providers’ perspectives and being able to understand and identify TA within the services became this research priority.

11.3.2 Methodology Limitations

As was highlighted in the Methodology Chapter 3 (page 75), the qualitative approach has some limitations. Amongst critics, the most common stated limitations are that they are: impressionistic, anecdotal, unsystematic and biased (Tracy, 2013). The researcher has followed precise guidance from the literature and senior researchers to avoid and address these common issues. As explained in Chapter 3, page 75, these are as follows:

- To avoid being impressionistic; the researcher has used the naturalistic field research approach that allows her to immerse herself in the context where the phenomenon occurs.
- To allow replicability of the findings; the researcher has described the process and the different steps and phases that she has followed. This makes it possible for other researchers to continue the study or to replicate this research.
- To avoid criticism of personal bias; the researcher has studied and presented a range of individual perspectives and experiences of how people see this phenomenon in the context of their services.
- To avoid criticism of being unsystematic, the researcher has developed and designed the main study following advice from other researchers found in the literature, from her supervisors and from other experts. The researcher has demonstrated rigour in the methods used, by describing them and explaining how they have been applied and how the data was collected and analysed.
- The researcher has followed the Loughborough University Ethical Procedures and standpoints. These procedures include: An Ethical Clearance Checklist, Participant Information and Informed Consent.
The researcher has presented the research objectives to the participants and agreed to share the research findings with them.

To avoid criticism of if being based on anecdotal evidence, the researcher has focused on lived experiences of the participants, which has provided insights including those related to cultural activities that would otherwise “have been missed in structure surveys and experiments” (Tracy, 2013).

This research gathered and coded online qualitative data to help to create a holistic picture of the key aspects of TA within the services, and it also tried to find examples of TA within those communities when possible and accessible (not every service has a community forum or a members’ platform). These observations cannot be considered as core netnography-type practices because that would have demanded a deeper and more participative approach to the online culture and communities (Kozinets, 2010). There was also not an opportunity for second person coding of the data, and therefore it was not possible to assess inter-coder variability (and hence the reliability of the methods).

11.4 The Research Beneficiaries

The research will benefit other researchers in the field of HCI, Digital Service and Service Design since it summarised the literature about TA and should be gave a different perspective of the phenomenon, not focusing on the user but focusing on the service provider. It benefits Service Design, Digital Services since it should be presented real cases where the phenomenon occurs and presented a TA theoretical framework (TA TF) that have been tested and that can be used to build upon it.

The TA TF can be used by other researchers, as well as the methods used in the research since these are clearly explained. The exercise of identifying TA could be repeated and replicated by other researchers and could lead to different result in different context. The TA Identification Method could be used to further be tested and be improved. This new work could modify The TA TF, leading to the creation of new knowledge. It also benefits
Service Design and Social Sciences since it combines the use of services design and social science tools and methods for research. This research can be also benefit areas such as design management and business design, since it proposes a new method that can be use by business managers and service providers as part of a strategy to improve and develop their services with the help of its users.

11.5 Personal reflection

I have learned great lessons by undertaking this research project:

- I have learned to be an investigator, or at least I have tried. I feel I am still learning. I have ‘played’ with the researcher utensils: the philosophical paradigms, the methods, and the tools. I read literature about a phenomenon, and then I created hypothesis. I designed and planned a main study, collected empirical data from real people, analysed this data and reported it.

- I have learned to trust what I know: even though I feel I am a developing researcher, I am still a designer. I know the design process, and have an extensive experience using design tools. Without applying this design knowledge and experience, this research would not have been possible to produce.

- I have learned how to write better in an academic style. Before this thesis I had written very little in my life. Writing has been a very tough task and the journey to finish this thesis has been quite arduous. I have often struggled trying to put my thoughts together and writing them down. As a designer, I am used to ‘white canvases’, but finding a white piece of paper in front of me was very challenging.

- I have learned to be more efficient with my time and the resources available and to apply my previous experience. When recruiting the research participants, I used my experience working with commercial business and as a designer.
Also, I was delighted to have used my design skills for designing the tools for data collection and the TA mapping Cards. These skills have also facilitated the construction of diagrams and helped me to make sense of the data. I did use a lot of affinity diagrams to make sense of my ideas and thoughts. Without these visualisations, completing this thesis would have been very difficult to me. Moreover, the service design skills and methods I have, were at hand when I needed to create users’ journeys, personas and scenarios.

11.3 Future Research

This research and its outcomes could be use as spring board for future research. Some of the ideas, directions and opportunities for future research are:

First, to study the five TA awareness key aspects from the perspective of the service end users. This could be a good opportunity for trying netnography research methodologies and building topic-based and methodological knowledge on this relatively new research field.

Second, the outcomes of this research have the potential to have an impact in the commercial world. Therefore, a possible research project would be based on testing the TA identification process, TA identification tools, and TA concepts with service providers. The service providers would be trained in the identification process and how to use the tools, and the researcher will be a participant observant of the process. The aims of this would be to assess the effectiveness of the identification tools, and to iterate them further if necessary.
Bibliography


Botero, A. (2010). *Expanding Design Space (s) design*.


E. Annanperä, & Markkula, J. (2010). *Social Media as Means for Company*
http://portal.acm.org/citation.cfm?id=1795248


Hagen, P., & Robertson, T. (2009). Dissolving boundaries: social technologies and
participation in design, 129–136.


Ideas In Transit. (2012). Retrieved from ideasintransit.org


characteristics-of-services.htm

http://doi.org/10.1073/pnas.0703993104


http://doi.org/10.1036/0071415963


http://libguides.usc.edu/writingguide/theoreticalframework


analysis: Implications for conducting a qualitative descriptive study. Nursing and

http://doi.org/10.1177/1094670503262946

2017, from https://www.w3.org/WAI/redesign/ucd

(Springer, Ed.).


http://doi.org/10.1057/ejis.2008.38


and design properties. Information and Organization, 17(August 2005), 110–129.
http://doi.org/10.1016/j.infoandorg.2007.03.002


Youngs, G. (2007). Global Political Economy in the Information Age: Power and
Inequality.
http://eprints.brighton.ac.uk/15211/

Zeithaml, V., Berry, L., & Parasuraman, A. (1996). The Behavioral Consequences of  
http://doi.org/10.2307/1251929
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Appendix

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