# A Study of User Involvement Methods and Frameworks in The Development of Social Media Applications.

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**Declaration**

I declare that the work described in this research paper is, except where otherwise stated, entirely my own work and has not been submitted as an exercise for a degree at this or any other university.

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**Table Of Contents:**

**Abstract:**

This paper presents a study of user involvement in the development of social media applications. It does this through an analysis of user involvement methods and frameworks. Some of these frameworks include, user centred design, participatory design, user led innovation and new emerging methods such as co-design, participatory design and living labs. Through the discussion of these methods and frameworks this paper provides an analysis of their successfulness in the development of social media applications. This paper then presents the concept of a potential framework for user involvement in the design process.

## Chapter 1 Introduction:

When technological breakthroughs occur it is not solely down to the designers, developers, scientists or engineers who have created the product. It is also down to the users and various other intermediaries. Many corporations and companies are becoming increasingly interested in collaborative innovation with their customers and users. This means getting users involved in their product design and development. This can be done through many processes, frameworks and methods. Each of these, allow for products to have users involved in aspects of their design. For example, one of the most popular processes is User Centred Design.

> *User-Centered Design (UCD) is a user interface design process that focuses on usability goals, user characteristics, environment, tasks, and workflow in the design of an interface. UCD follows a series of well-defined methods and techniques for analysis, design, and evaluation of mainstream hardware, software, and web interfaces. The UCD process is an iterative process, where design and evaluation steps are built in from the first stage of projects, through implementation.*
> (W3.org, 2015)

The notion of the 'user' is one that must be understood in the context of UCD. The user does not always refer to a single person, but can also be applied to organisations and persons who may use the system in the near future. The term is tightly coupled with software concepts such as user interface, user access rights and user profiles (Grudin, 1993). The role of a user is outlined in three prominent approaches to user involvement, these being User Centred Design (UCD), Participatory Design (PD) and User Led Innovation (ULI). The involvement of users is expected to lead to better user requirements, a more user friendly design and as a result a better user experience. With PD users are assumed to participate in design workshops and other co-design activities. With ULI the users create their own technical solutions and solve pressing problems which can be adopted and packed as a product by companies (Johnson, 2013). To best use information gathered by users, development teams must first decide who their primary users will be.

Despite the fact that there is a large body of literature, conferences and workshops, not much is known about the practiced methods of user involvement. The literature in this area is mostly based on normative methods and lessons learned with, it seems, a lack of attention given to method validation research. While there are a number of writers in the field of design, such as Nielsen, Norman, AllenWood & Beare and Unger & Chandler many of these writers only begin to scratch the surface of the processes of user involvement. Many companies will not release their practiced methods of user involvement for a number of reasons e.g. the protection of trade secrets or data gathering techniques (Unger & Chandler, 2013).

## 1.1 Research Area:

Social Media Applications (SMA) are web services that include user-generated content and the possibilities of communication and networking. Typical examples of popular SMA include *Facebook, Twitter, Pinterest, Blogs* and *YouTube*. The content can vary on each of these platforms, however it is always user generated content. SMA are said to be user-centred. But it is less clear whether the existence of user created content means that SMA are user centred, or designed in a user centred way. There is no clear distinction if user created content in SMA and the value of user centeredness in product development relate.

In the literature, social media applications have a variety of broad definitions, such as:

- Tools that people use to share content and to interact, and the process that this interaction creates (Erkkola, 2008; Friedrich, 2013)

- Internet-based solutions that support mutual sharing and open dialogue between users, meaning that people other than the active participants in the communication can also see the shared content or discussion and can join in (Asbjorn et al., 2011).

Many social media startups were developed without the use of typical user involvement methods. They have now expanded into prominent social media companies that have hired user experience designers and researchers to learn from their users and to increase their services.

One of the first sites to bypass this process was MySpace. In it's infancy, MySpace had no usability testings, no design features, the basic site was coded and subsequently launched it into the market. After the site was launched MySpace used their user community to find out how to improve the website. For example, through the use of user feedback it was determined that a simple URL, *myspace.com/bandname* would help music artists, bands and groups use the site to advertise themselves. In addition, MySpace allowed their users to hack code into the MySpace system (Boyd, 2007). However by providing users with a means to customise the site, this also meant that there was unstable and undocumented code on the site that could crash the system (Boyd, 2007).

## 1.2 Research Questions:

This paper aims to examine user involvement and the methods attributed with this in the creation of SMA. Whether a passive viewer, active contributor or simply wanting to keep in touch with family and friends, SMA have become a part of everyday life. They allow for instant communication between family and friends and also aid in the organization of events and promotion of movements and ideals (Hagen, 2011). This paper aims to examine the methods, procedures and frameworks that are in place for the development of these applications and propose the concept for a new framework. With these ideas in place, this paper will attempt to answer the following research questions:

1. What is the role of a user in the design process?
2. What methods can be used in the creation of social media applications?
3. How can users best be involved in the design process?
4. How can these methods be improved or combined for better results?

## 1.3 Research Structure:

Chapter 2 of this paper will present an introduction to UCD and PD. This is the background research conducted in order to gain further understanding into user involvement in the design process. The chapter will focus on the role of the user, methods of gathering user data, both online, offline and indirectly. In addition, the chapter will discuss methods of user data analysis and conclude with an analysis of these methods in the development of SMA and the overall design industry.

Chapter 3 will present newer methods of user involvement in the design process, namely Co-Design, Living Labs, Participatory Innovation and Meta Design. These methods while similar to UCD and PD, show a different approach to the involvement of users. Mainly focused on user participation in the design process, these methods can also show the different contrasts between the methods discussed in Chapter 2, while still using a number of similar data gathering methods.

Chapter 4 will introduce the concept of a framework that uses the methods and processes discussed in Chapters 2 and 3 in the development of SMA. This framework will provide strict guidelines for the involvement of users in the design process. The expected result from this is better user integration into the design project, a more friendly user interface and as a result of this a better user experience.

Chapter 5 will present the conclusions to this paper in conjunction with the research questions posed in the previous section. The chapter will then provide a brief discussion on the topic and questions of this paper.

## Chapter 2 User Involvement In Design:

In the development of social media applications (SMA) there are a number of processes and methods which can be used in order to assess user feedback and use that data to create a better user experience. Some of these approaches are *User Centred Design* (UCD) and *Participatory Design* (PD). The involvement of users is expected to lead to a richer user experience, more accurate user requirements and enhance ease of use (Kujala, 2003). The involvement of users in the design process can also eliminate costly problems that may be encountered further down the design timeline (Norman, 1998). Ultimately the role of users is to increase the success of a product by providing data that can lead to a better user experience.

This chapter will present an introduction to UCD and PD. This is the background research conducted in order to gain further understanding into the design and development process. This chapter will focus on the role of the user, methods of gathering user data, both online, offline and indirectly. In addition, this chapter will then discuss methods of user data analysis and conclude with an analysis of these methods in the development of social media applications and the overall design industry.

### 2.1.1 User Centred Design:

There is no consensus on the definition of UCD. With the absence of a precise commonly used definition most people consider UCD to mean an approach to development that involves iterative design and user involvement (iso.org, 1999). UCD is a key concept in the HCI community that is used in academic and practical work (Blomkvist, 2006).

> *But user-centred design emphasises that the purpose of the system is to serve the user, not to use a specific technology, not to be an elegant piece of programming. The needs of the users should dominate the design of the interface, and the needs of the interface should dominate the design of the rest of the system.*
>
> (Norman & Draper, 1986).

UCD is used under various titles such as Human Centred Design, User Experience Design, Usability Engineering and Human Factors Engineering (Nivala, 2005). While there are many different titles the end goal of each approach is to create applications which are easy to use and fulfil the needs of their users. UCD and similar methods do this by supporting the design process with user centred activities. The UCD process starts with the definition of usability goals and the analysis of context, users and tasks (Friedrich, 2013).

The term UCD was first coined in the 1980's (Norman and Draper, 1986). The three key principles proposed at this time were; (1) focus on the user early in the design process, (2) measure the quality of the system from a user point of view, and (3) produce multiple design iterations so that evaluation results have time to influence the end product (Gould and lewis, 1985). Later, a fourth principle known as integrated design was introduced, wherein all aspects of usability evolve together (Helander, 1988). The use of these principles allowed for usability evaluation methods to emerge for different stages in product design. These measure how effective, efficient and satisfied users were with the system. Common methods to assess this were laboratory based user observations, controlled user studies and inspection techniques (Dix, 1991).

### 2.1.2 Participatory Design:

First used in the 1970's (Friedrich, 2013), PD is an approach to design that involves its users, not as test subjects, but as partners in the design process. It is not a strict method but rather an ideology of democracy and the empowerment of users in design decisions that will affect their daily working lives (Damodaran, 1996). Unlike the approach of UCD, PD aims to create a closer working relationship between users and designers. This process allows users to leave their workplace and contribute alongside professional designers in the design environment. This makes the user a member of the design team and allows them to participate in co-design activities (Kensing et al., 1998). While similar to UCD, PD is context-oriented, collaborative and iterative. It aims to improve working environments through the enhancement and introduction of new designs. As a method, PD is heavily reliant on the relationship between designers and users, both of whom contribute to each stage of the design process to ensure the constant evaluation and revision of designs (Friedrich, 2013).

Traditional methods of PD stress the importance of face to face interaction between users and designers (Kensing, 2003). However if users are unable to be reached, other indirect methods such as cultural probes can be used to gather information about their users (Gaver et al., 1999). It is through these indirect methods that one can begin to see the emergence of distributed participatory design. While some may view this as an obstacle it is also a means for design teams to use online tools for the communication between designers and users (Gumm, 2006).

## 2.2 Involving The User:

There are many reasons for involving users in the design process. In UCD, user involvement is used in the development of more accurate user requirements, new or improved features that meet the needs of a user, enhanced ease of use and the overall improvement of the system (Kujala, 2003). When users are involved at an early stage this can lead to the reduction of costs in problems that may become apparent later in the design process (Norman, 1998).

Different approaches of user involvement can be identified by the amount of interaction that a user has with a project. Kaulio (1998) categorizes user involvement methods based on longitudinal and lateral dimensions. This creates a framework by which users and methods can become related ″the longitudinal dimension can be seen as the points of interaction between customers and the design process″ (Kaulio, 1998, p142-p143). Alternatively ″The lateral dimension, in contrast, captures how deeply customers are engaged in the design process″ (Kaulio, 1998, p142-p143).

Users, while involved in UCD, are only required when professional designers and developers need their input on a project (Allanwood & Beare, 2014). Within the process of PD, the roles of the user, designer and researcher become blurred into one overall role (Frascara, 2002). To correctly analyse the data that is being captured, researchers and designers need to understand the capabilities, characteristics and goals of their users. The user's role in the design process is not limited to simply commenting on design choices, users may also be involved in the implementation process of social and technical aspects of a design (Preece & Keller, 1990). The expected outcomes of user involvement include better user requirements, a more user friendly system and through this a better user experience.

For example if a designer is creating an online camera store they may think that the purchasing of a camera is a simple four step process. The journey may appear as follows:

1. User goes onto the website
2. User finds the camera the want
3. User buys the camera
4. The camera is delivered

However through a study of the website Connscameras.ie it is obvious that the process is a much more detailed and expanded user journey:

1. User Google's Conns Cameras.
2. User is brought to the store home page with the photo option
3. User selects this option and is given the catalogue of cameras, lenses and accessories.
4. The user clicks on DSLR cameras.
5. The user is then presented with all DSLR cameras they store stocks.
6. The user refines their search based on the brand they wish to purchase.
7. The user selects the camera they wish to buy.
8. The user is then presented with the camera only price and additional options for purchasing the camera with a lens or additional accessories.
9. The user adds the item to their shopping basket.
10. The user checks out and receives a digital receipt.
11. The user receives their camera via courier
12. The user is given the choice to return the goods if they are faulty.

By using methods of data gathering, data analysis and involving the user in the design process of this store the requirements for this process increased. The journey is one that allows for more customisation of a product at the time of purchase. This journey gives the user more options incase they wish to return a product. By providing a good user experience Conns Cameras have allowed the customer to state exactly what they want, how they want it delivered and if they want to return it, the means to do this. All of these things combined created a good user experience.

### 2.2.1 Who Is The User:

When using the term user it is easy to think of a user as a single human being, instead the term user covers any number of persons who are yet to be identified. It can be the title given to the organisations who may use a system in the future (Grudin, 1993). Not everyone is a user, instead researchers and design teams use attributes to determine who their primary user group will be. There are a number of factors that will determine the identity of these primary users. For Example, the user's age, their ethnicity, experience, gender, profession and religion (Allanwood & Beare, 2014). It is considered good design practice to design for a primary or select group of users, as such, "A given product will have an informative suit of about five of six personas of which we will focus our design on one or two"(Gaffney, 2006). This can help design teams focus their research into the right roles, demographics and other variables that may impact a user's experience with a product (Unger & Chandler, 2009).

### 2.2.2 Challenges With User Involvement:

Despite the known benefits of user involvement, the integration of real users in the design of a product remains a difficult task (Kaasinen, 2012). Van Kleef et al. (2005) argues three reason as to why the involvement of users may be detrimental to a project. Users may not be aware of their needs, users might not have the ability to articulate their needs and they may not be willing to speak about these needs if they feel they cannot articulate themselves in a correct manner to the design team. The interaction between user and designer is short term, this can affect the working relationship between the two. Workshops, focus groups may not give the time needed in order to fully explore concepts and ideals (Klammer et al., 2011).

Many small and medium sized companies would benefit and have a great deal of interest in utilizing user information and involving users in the design process. However the lack of funding and financial resources available can make this an option unviable for many companies. The success of the creative process may depend on involving users at an early phase of the project. Having users involved early in the process allows for the quick reiteration of basic prototypes. This cuts cost as the functionality has not been fully implemented into a finished and working system as a result less time is spent on rebuilding something that has already had a large amount of time spent on it.

Panne et al. (2003) observes that it remains controversial to involve users in the design process, they argue that users can become prejudiced about user needs when they've become involved on a regular basis. User involvement can bias innovators towards imitative innovations as customers express their preferences in terms of products that they are already familiar with. Hekkert and Van Dijk (2001) argues that placing too much emphasis on the role of users can erode the position of a designer, whose expertise and creativity may be hindered by the attention given to user input and feedback.

Time is one of the most crucial aspects of a design process. While it is cost effective to involve users at the start of a design process this also means designers will have to be readily available to meet with these users. This in turn takes away from time spent on the design and implementation of the project. Users may not want to freely give up their time alongside full time jobs in order to participate in the design process. The amount of raw data that can be obtained from UCD research can also be overwhelming. This requires time in order to analyse the data and turn it into a readable format for the design team. There are many different methods to both gather and analyse user data (Friedrich, 2013).

## 2.3 Obtaining User Data:

There are a number of ways to gather user data. These processes and methods were the most recurrent methods found in the works of Nielsen (1993), Allenwood & Beare (2014), Nivala(2005), Hassenzahl (2011), Norman (1988, 2007, 2013) and Gould & Lewis (1985).

### 2.3.1 Testing Range:

Horizontal and Vertical prototyping is not to be confused with Kaulio's earlier framework for longitudinal and lateral involvement. These terms describe what type of capabilities are implemented in a prototype. Horizontal prototypes display a wide range of features that are not yet fully functional, these are top level functions. Horizontal prototypes are used for understanding the relationships between a system's features and for showing the range of abilities available on a new product. Vertical prototypes focus on a single feature in a near complete fashion. Vertical prototypes are used when complex features of a system need to be better understood and acts as a proof of concept for a systems features (Usability first, 2015).

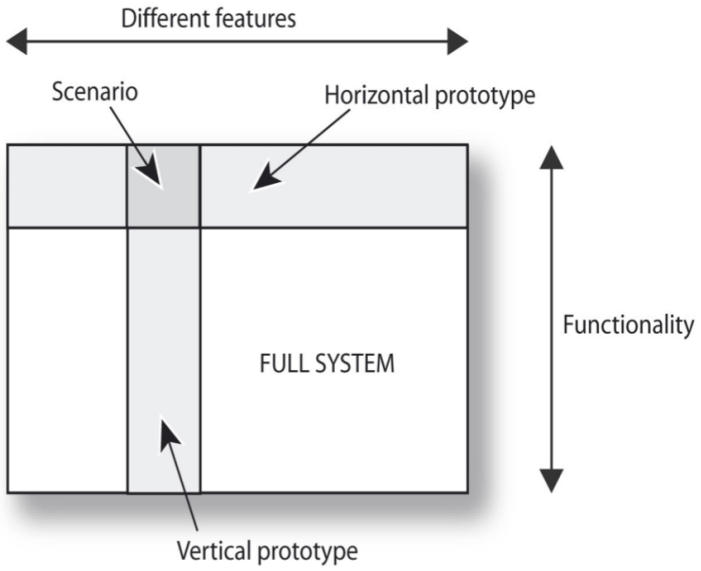


**Figure 1**

If the goal is to develop a totally new product then many of the methods discussed below can be used in the aid of brainstorming sessions in order to generate ideas about new products.These sessions can be conducted by the designers or researchers based on the user's data or it can be done with the users.

### 2.3.2 Direct Methods:

*Usability testing* is a method used to assess the quality of a design. There are five Components for usability testing, as Nielsen (1993) suggests they are, efficiency, satisfaction, learnability, memorability and minimal errors. *Efficiency* measures how much effort was put into the completion of tasks. *Satisfaction* measures the user's reaction to a product asking how they feel about an interface. *Learnability* aims to measure whether users can easily learn how to use the product and *memorability* is used to determine whether the product is too complicated or if users can remember how to complete specific tasks. *Minimal Errors* refers to how many errors are made by the user while trying to complete a task (Nielsen, 1993).

Usability Testing is the most fundamental method in the usability evaluation. Usability tests create tasks, which the user has to complete in order to test the product. The aim of these tests is to identify possible problems with the interface in a specific range of functions (Unger & Chandler, 2012). The creation of the users tasks is known as task modelling.

*Task Modeling* determines what a user needs to do in order to fully interact with a function or feature. As a method it looks at the hierarchical structure of each feature in an interface and also their progression along the development life cycle (Pribeanu, 2005). Task Modeling is an iterative process that gives users a specific goal to aim for when testing a product. Tasks can be assigned to test functionality, semantics, objectives and the time it takes to complete each task. These tests examine a single function inside a newly designed system and measure the time and ease of use with which the function is used. One problem found in the use of this approach is the limited interaction between the user and the overall application. The user is only testing one feature in the system and not the system itself (Allanwood & Beare, 2014).

*The Think Aloud* method is a dominant method in usability testing. Users are asked to test a piece of software and constantly verbalise their thoughts while working on tasks. As the data reflects the use of the design and not a user's opinions on the design it has a high face validity (Van Den Haak et al., 2003). As a research method it sets out to observe a user's cognitive process as they use an interface. While authors such as Nielsen (1993) have published detailed instructions on the think aloud method, the methods they have published are not supported by methodological research (Van Den Haak et al., 2003).

*Focus groups* bring together a wide variety of people. It is a process used to gather the initial feedback on design iterations. The people used in this come from a target audience or the design teams primary group of users (Unger & Chandler, 2012). This process allows for open discussion, allows users to talk about their past experiences with similar systems and how they found the interaction between themselves and that system. It also allows for the generation of ideas, while not allowing the group take over as the designer, it does allow for a brainstorming for new features or designs either directly or indirectly from the group. One problem is that some users may not feel at ease in a crowd and thus may not articulate their ideas to the group. While having good ideas they may be overshadowed by dominant personalities in the group. Other users may not have the technical education in order to express their ideas accurately (Allanwood & Beare, 2014). This comes back to Van Kleefs (2005) three problems with user involvement, mentioned in section 2.2.2, one of these problems was that users would not have the technical knowledge to articulate themselves. This in turn may scare the user into silence.

### 2.3.3 Indirect Methods:

If direct participation is not possible there are other alternative solutions to gathering data. The following methods can be used to gather information from users in their own contexts, homes and workplaces. As these are not laboratory controlled situations these methods allow for a more natural environment in which to observe the user's interaction with a product (Gaver et al., 1999).

*User Diaries* capture the data of users as they live their lives and use a product in their daily routines. There are two different methods of diary studies, Elicitation studies and Feedback studies. Elicitation Studies allow the participants to capture media, which is then used as a prompt for discussions in interviews, this method is more aimed towards triggering a participant's memory. Feedback studies asks users a set of predefined questions. This gets immediate answers from participants (Carter & Mankoff, 2005).

*Cultural Probes* were first introduced in the Presence Project. This project was dedicated to exploring design space for the elderly. While many of the concepts discussed until now are analytical by nature cultural probes are designed to reflect the local culture of participants. Gaver (2002) states "Cultural probes off fragmentary glimpses into the rich texture of people's lives. They allow us to build semi-factual narratives from which design proposals emerge like props for a film*"* (Gaver 2002).

### 2.3.4 Web Based Methods:

Design is a distributed social process, a collaborative activity, in which communication plays a vital role (Eriksson et al., 2005). But how can we communicate with those who are out of our reach? The introduction of web based communication provides an opportunity to overcome the boundaries of distance and time, it allows for instantaneous communication between user and designer. By using these means of communication, the selection of users is made easier for the design team. The team no longer has to limit their users based on physical location. Instead designers can now base their users on shared interests. The use of web based communication enables participation from more users than would be possible from face to face communication (Fischer et al., 2004).

There are several fields that have been developed to gain user involvement through online methods such as Remote User Research, Remote Usability Testing, Distributed Participatory Design and Open Innovation Platforms, which can also be known as open sourced software. The main aim of these online tools is to involve users in the design process in a variety of ways, the user's role in this process may vary. Furthermore the use of web based methods allows users to be involved in the design process in a variety of roles and ways.

The use of web based methods allows users to be involved in the design process in a variety of roles. Users can be seen as informants, commentators, design partners and innovators (Damodaran, 1996). One problem found with these approaches is that they are aimed towards more experienced and technically minded users. The following pages discuss the approaches of remote user research and remote usability testing.

### 2.3.5 Remote User Research:

Online, remote user research involves users as a source of information and inspiration for designers. It is tightly coupled with face to face methods of user involvement seen in the previous sections. The process is driven by professionals who attempt to understand their users contexts and activities. Data gathering methods such as online surveys, remote user inquiries and online focus groups have been used as methods for remote user research.

*Remote Contextual Inquiry* is a method by which users are observed using either telephone or web conferencing tools and screen sharing their work in real time. This allows researchers to see how users are working with an interface and allows them to see how a product is used in the user's own environment. Methods seen previously in this paper such as the Think Aloud Method are used in order to understand the users motivations for specific actions. This method allows for the use of software to record user mouse clicks and screen sharing software so a user can share their journey through an interface. However while this method of data gathering allows for the observation of a user's interaction it does not encompass the person's personality, it does not allow for an understanding as to why the users feels they have to use a certain tool, or the thought process that went into selecting a specific tool from an application.

*Online surveys* are one of the most useful remote researching methods. Surveys are usually used in the creation of personas, the gathering of user data and can be done as a cheap method of data gathering. While it does not provide identity to those, who the research is being conducted on, they can provide inspiration during the design process. They can also help the design team to see possible problems that they may have missed. Social media sharing options are easily utilized through this method. This in turn can be an effective way of recruiting participants (Friedrich, 2013).

*Focus Groups* are typically used in social science to obtain an in depth understanding of participants perspectives and opinions as well as in the brainstorming processes of a project (Unger & Chandler, 2012). The introduction of online methods of communication offers many possibilities for focus groups. It allows access to more users and the visual anonymity and psychological distance from others can stimulate more engaging group participation. Online focus groups open new opportunities for those who may be hesitant to participate in face to face meetings. Reid and Reid (2005) compared synchronous online focus groups to face to face focus groups and found out that online focus groups allowed participants to generate ideas faster and more efficiently than face to face. There were a number of reasons they prefered online focus groups such as more time to think, openness because of anonymity and the possibility to rehearse and rethink their answers.

### 2.3.6 Remote Usability Testing:

When working with remote usability testing it leads to an approach of distributed software development. In this type of approach online tools such as emails, video conferencing, software libraries, version control systems, bug reporting tools and shared workspaces can be used in order to enhance communications and the coordination of work among the team and stakeholders (Farshchian and Divitini, 1999). But online tools are not only restricted to the team and stakeholders, they can also be used in order for users to provide feedback via online methods. This data in turn can be analysed by a researcher. The use of these tools allows researchers to overcome the boundaries that are set by geographical differences and also allows them not just to use their primary users. Instead this process gives access to users with both technical and non technical backgrounds. This allows for technically minded users to provide user requirements while non technical users provided usability testing for the system.

Remote usability testing can be an online version of moderated usability testing or an automated test in which data is automatically captured through a predetermined set of questions (Bolt, 2006). There are a number of ways in which the data can be recorded, screen recording, screen sharing, telephone conversations and using the think aloud method or video calling between the user and researcher. Aside from direct methods, specialist testing software can be used in order to record each click made by a user. This allows for the automation of reports which in turn means a higher number of users can participate in the studies without the researchers having to compile the data later (Bolt 2006). This method is expected to provide a number of positive benefits. Costs are reduced, the introduction of flexible schedules and the opportunity for more users to get involved mean that the test can be carried out without the restrictions of time or space (Baravalle & Lafranchi, 2003).

## 2.4 Analysing User Data:

The data gathering methods, discussed in previous sections produce a large amount of raw data. This raw data by itself is useless to the designers. There are a number of ways in which this data can be analysed and turned into viable usable data to aid the design team. The following methods were found in the works of Unger & Chandler (2012), Allanwood & Beare (2014) and Norman (1985). While few are mentioned these processes seem universal across the literature found on data analysis in UCD and PD.

*Personas* are one of the main ways in which this raw data is analysed. A persona is a hypothesized person. They are given a name, age, background and even a job. Their "story" is made through the correlation of data obtained from data gathering methods, such as focus groups, or user diaries (Allenwood & Beare, 2014). Personae are often a topic of debate among designers. There is no set definition of how much research is needed in order to gather any valuable insights from a persona. Personas also allow designers to be empathetic towards their end users. "You can take out personas and ask, How would this user perform this task? or what is this user going to look for in this situation" (Unger & Chandler, 2014, p130). Personas are expected to help the design team focus on their primary users. There are many different types of personas. Minimalistic personas may include elements such as a photo of the user, the users name, their age, location, occupation and a short biography.

Personae allow the design team to get inside the head of their user. If creating a coffee shop ratings app they may want to refer to persona one who works in an office and is located near a number of coffee shops. Alternatively they may also need to look at a persona who is further away from a coffee shop. The contrasting personas can give an insight into what will motivate each user to attend that specific coffee shop.

Advanced personas are simply an extension of the already made minimalistic persona. They may use graphical features instead of text based data in order to more easily convey information to the design team but also to ensure that they can be easily understood. This is only one small example but there are many ways in which, personas can be extended and advanced (Allanwood & Beare, 2014).

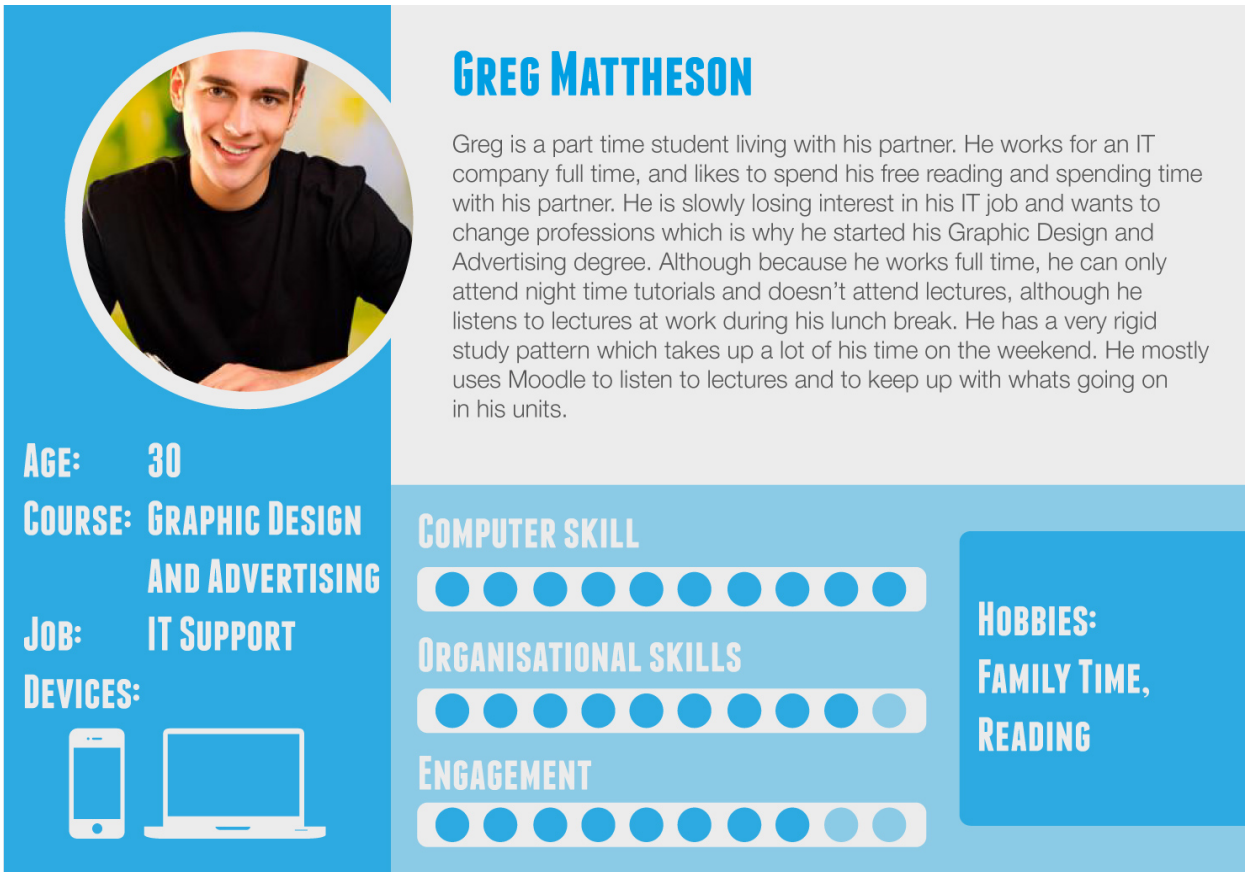


**Figure 2**

*Scenarios* are a specific case use of the personas that have been created for a product. These scenarios are created to help them see the world from the user's perspective. They are written in the third person, "*George went to the store*" or "*Susie spilled Coke on her laptop*". The scenario develops by depicting how a product delivers what the user requires in order to solve their current problem and achieve their goals (Allanwood & Beare, 2014). This in turn can lead the design team to determine the user requirements for specific functionality of an application. Through the development of better user requirements the design team can then create a better user experience within a product.

## 2.5 Changes In The Design Industry:

Designers have changed the way in which they create and design new products. Design, while once needed to create specific software for the workplace, is now moving out of the workplace and into everyday life (Friedrich, 2013). Design has changed, with the focus moving from supporting productivity to supporting creativity (Shneiderman, 2007). This means shifting from controlled task modelled approaches to long term case studies, observation and data logging to understand how people are using the applications. With this shift away from the workspace, design is no longer about encouraging productivity but instead now encourages creativity and use of a product.

Designs are no longer complete once launched into the marketplace. The goal is no longer a perfect product, but a system that can easily evolve with the needs of it's users. These systems adopt the idea of being "Good enough for now" (Dubberly, 2008). With this approach to design it becomes similar to an urban development project in which new and improved features are built above the older features. This design method allows for the continuous reiteration of specific functionality within a product. Users have learnt to expect updates and in using these updates find bugs and problems within the product (Friedrich, 2013). While UCD concentrates on the testing of products before their launch to market, many new applications test their products through live use in a marketplace.

## 2.6 Conclusions:

With current design trends it can be seen that approaches used by UCD and PD are no longer relevant. In the design of SMA, users will not be geographically centred around the design team, nor is the design finished once it is launched into market. Instead design has now taken on a process similar to urban development, where new features are built atop the old. The new features are then tested, if need be reiterated, and the cycle continues.

In conclusion to this section of research it has been found that when developing SMA the traditional assumptions of UCD no longer hold true. While PD is moving in the right direction it is still not enough to obtain the data needed to build these applications. UCD as an approach is unable to address the scale or complexity of design challenges that are faced with modern day applications. The design process is no longer about designing products for users. Instead applications must encompass the social element that creates a space in which communities and cultures can be connected and informed.

Chapter 3 will present newer methods of user involvement in the design process, namely Co-Design, Living Labs, Participatory Innovation and Meta Design. These methods while similar to UCD and PD show a different approach to the involvement of users.

## Chapter 3 Emerging Collaborative Design Approaches:

With traditional assumptions of UCD no longer relevant in the design of SMA one must ask, what processes are needed to involve users in the design process of these applications? As a means to cater for the increased amount of users and the growing role of the users in the design process a number of new processes have emerged. This chapter will present newer methods of user involvement in the design process, namely, Co-Design, Living Labs, Participatory Innovation and Meta Design. These methods, while similar to UCD and PD, show a different approach to the involvement of users. Mainly focused on user participation in the design process, these methods can also show a good contrast between the methods discussed in Chapter 2 while still using a number of similar data gathering methods.

### 3.1 Co-Design:

When discussing Co-Design one must also acknowledge the term co-creation. While these two are interchanged in literature, they are not to be confused with one and other. Co-Creation refers to any act of collective creativity, i.e. creativity that is shared by more than one person (Sanders & Stappers, 2008). Co-Design is a singular instance of the Co-Creation process and refers to the collective creativity of collaborating with designers. Co-Design in a broader sense refers to the creativity of designers and users working together in the design process. The term co-design has been used in order to describe the collaborative nature of design activities. This is done from the exploration of a concept, known as the fuzzy front end (Sanders & Stappers, 2008), to the development and prototyping of a final product. In the world of marketing, co-design is used to limit the perspective of mass customization, this concept allows users to define, configure and modify their own products (Piller et al., 2005). Co Design emphasizes customer collaboration that allows them to express their product requirements (Piller et al, 2005).

> *The most creative thing a person will do twenty years from now is to be a very creative consumer… Namely, you'll be sitting there doing things like designing a suit of clothes for yourself or making modifications to a standard design, so the computers can cut one for you by laser and sew it together for you by NC machine*. (Toffler, 1980, p.247).

Co-Design is used during the early stages of a design process. It is based upon the belief that users will know that they want and have the ability to shape it into their desired end product (Friedrich, 2013). Design no longer needs an individual one to one relationship between designer and user. Instead individuality does not always mean one to one interaction between user and designer, but instead comes from collaboration among users in online communities in order to overcome the mass confusion of a product. A problem found with co-design, is that not all users are creative, while there are methods in order to encourage user creativity, these methods do not work for all users. In business approaches to co-design the assumption is that that only 'lead' users will become co-designers (Friedrich, 2013). In the world of marketing co-design can result in the perception of added complexity and effort involved in the buying of a product. This can lead to users feeling as though they do not have the necessary skills to customise and create their own products. Another reason it has taken co-design so long to have an impact is that participatory design is seen as an academic endeavour. As it is not a well versed and practiced approach in the marketing world, marketing teams have reservations about this approach to customer and user interactions.

Piller et al., (2005) discusses some problems that may occur during the co-design process. The first of these is *Burden of choice*, users may become overwhelmed by the amount of options that are presented to them. The overload of information and choice can lead to the user not knowing what to choose. As a result of this the configuration process can last a much longer and consequently lead to users turning away from the freedom of choice. *Matching need with product specifications*, many customers can lack the knowledge as to how they transfer their personal needs into a product specification. If a customer has to design their own pair of shoes they may need to understand measurements in order to get the correct size (Neumann, 1979). *Information gap regarding the behaviour of the manufacturer*. For many users the customization of interfaces is still an unfamiliar process. (Franke and Piller, 2004). In the realm of physical products that are designed, and using the example of www.nikeid.com, the consumer will have to wait a number of days/weeks for the delivery of a product after handing over the payments for the product. This can make a user weary of the co-design process, an answer to this is to provide users with instant feedback when they implement a change on their own personal system.

## 3.2 Participatory Innovation:

Participatory Innovation is an approach that combines the strengths of participatory design and design anthropology. It retains the ideals towards users that were put forward by participatory design. To involve users and use their ability to contribute to innovation rather than, in an elitist fashion, search for lead users with expert capabilities (Burr & Matthews, 2008). Participatory Innovation projects can be seen as a dedicated activity in which people's needs and practices are the starting points for the development of product ideas and the creation of new opportunities. The ideas generated are then developed through on going collaboration between the users and designers (Sanders, 2002). These projects serve to generate knowledge about users and generate opportunities to enter the markets with top quality products. There are a number of activities that can be used to generate these ideas in a Participatory Innovation study.

Whereas UCD, PD and the other methods discussed until now have focused on the idea of obtaining data through interviews, research and one to one collaboration Participatory Innovation has a different approach to the creative process. The competitions, focus groups and idea generation workshops are thought to not represent an environment of natural thought progression for the users. Participatory Innovation instead focuses on the user's story of their interaction with a product. The activities allow for participants to bring their own perspectives into the interaction. Participatory Innovation attempts to provide a space in which the user can clearly express themselves. Not through strict interviewing guidelines, but through workshops and fun based activities (Sanders, 2002).

A problem with this approach is the limited amount of dialogue that occurs between designers and users. Larsen and Bogers (2011) claim that this type of process can be limited by the boundaries set by the overseeing organisations. This in turn limits the amount of user contribution to a project. The use of focus groups or idea platforms do not allow for a natural flow of dialogue and may inhibit the users from providing their ideas and contributions. The final problem with this approach is that ideas, which had been pre determined, can be completely undermined by the opinions and contributions of the users, resulting in a loss of work and research conducted beforehand.

## 3.3 Living Labs:

While UCD and PD allow for the acquisition of user data, these methods do not cater for the systematic foundation of innovative systems (Eriksson et al., 2005). ISTAG (Information Society Technology Advisory Group), recommended a set of measures to enhance the usability and allow for better incorporation into everyday life. They propose the creation of science and technology centers, feasibility and usability centres, demonstration and evaluation centres and field trials. However this does not cater for the newer ideals of the user as an innovator.

The idea of the living lab represents a user-centric research methodology for sensing, prototyping, validating and refining complex solutions in the setting of everyday life. Living labs are a new type of innovation and design environment, which allows new products to be tested in contexts familiar to users. It allows researchers to observe products in use in an environment more natural to the user (Følstad, 2008). Eriksson (2005) describes living labs as "A user centric research methodology for sensing, prototyping, validating and refining complex solutions in multiple and evolving real life contexts" (Eriksson et al., 2005, p.4). Living labs can be seen as a methodology, an organization, a system, an arena, environment and systematic innovation approach. It is argued that a living lab is both a milieu and an approach to user innovation (Reborn & Holbrost., 2008). Living labs use similar approaches to UCD and PD, in the gathering of user data. These approaches, such as focus groups, field tests, interviews and co-design workshops are similar in many methods for user involvement (Friedrich, 2013).

However living labs differ in their approach to these methods. Living Labs emphasise the openness of the innovation process. Instead of being done in laboratory conditions these tests are carried out in the user's natural context. A problem with this method is that when first introduced these labs were created to study new technology being used to create Smart Homes. This allowed researchers to observe the use of products in a home environment. However, this presented a problem as it only gave access to the context of home life. It did not cater for the difficulties of society. For example, work, entertainment and the user's social life. Living labs are creating a space in which innovation, inclusion, usefulness and usability can be enhanced (Eriksson et al., 2005).

## 3.4 Meta Design:

Meta-design is an approach to user involvement, based upon the idea that future use and problems cannot be seen before a product is launched and used. Therefore designers should not create complete solutions, but rather, design open platforms that allow user modifications based on their needs and allow the user to overcome problems that may be caused by the system (Fischer, 2010). This idea means that not only must designers create the product but also "design the design process", which will enable users to participate in design activities that can lead to the enhancement and customization of a product (Fischer et al., 2004). By providing users with social and technical tools, the product allows them to create and reshape their own system. This passes the ownership to ordinary users who contribute to fixing problems without any specialist computer skills (Fischer et al., 2004).

This approach is closely related to end-user development. Meaning that users can modify or develop parts of their own system. This allows for the customization of software without knowledge of programming languages. Examples of this include the Wordpress blogging system which, through the use of widgets and an extensive backend interface allows for full customization by the user. Users with no prior knowledge of website programming or website authoring can create a site with premade customizable templates (Wordpress.com, 2015).

This approach has a number of requirements for involving users and continuous participation in the meta design process. One is embracing the users as co-designers, providing a common platform for users to share with each other and implement their own design solutions. This enables legitimate peripheral participation for newcomers and recognition of their contributions. This is dependent on the user's level of involvement, promoting mutual learning and support and finally fostering a social reward and recognition scheme (Fischer & Ye, 2007).

## 3.5 Conclusions:

The new emerging processes discussed in this chapter expand on the methods of UCD and PD discussed in Chapter 2. While these older processes meant that users were involved they did not allow for the full integration of users into the design process. There were a number of restrictions created by the requirement of face to face participation.

The processes discussed in this chapter involve the users as co-designers, innovators and do not limit their role to one of a test subject. The role of the researcher becomes one of a facilitator, who instead of translating between the user and the design facilitates open communication between both parties and innovation by the users.This allows users to express their own creative ideas in the design process (Sanders & Stappers, 2008). A similar recurring theme within the processes discussed in this chapter and Chapter 2, is that the aims are to create a more user friendly interface. Both sets of methods do this by involving the user, either as a test subject or innovator and producing user and design requirements based on user input and feedback. While the emerging processes are a step in the right direction there is still one problem. No single process accounts for the full lifecycle of a design project. For example, while Co-Design caters for the pre launch stage of a design process, it does not feature in the later testing stages of a product.

From research conducted, it can be seen that there is a need for a framework that encompasses a number of these methods in order to fully integrate the user into SMA design. There are a number of challenges this framework will have to deal with, such as, how to involve a large number of unknown users in the design process, how to support direct participation among globally distributed users and developers and finally how to integrate user participation and use user innovativeness in the UCD process.

Chapter 4 will introduce the concept of a framework that encompassess many of the approaches and methods discussed throughout the past two chapters. This framework is one that can enable to easy integration of users into the design process.

# Chapter 4 A New Approach To User Involvement:

The main focus of this paper thus far has been on the methods and approaches that allow for user involvement in the design and development of social media applications. With the knowledge gained from the past two chapters it is clear that there is room for improvement and a need for a new framework to combine these approaches into one overall approach to user involvement in the design process. This chapter presents the concept of a five phase framework for user involvement in the design process.

## 4.1 Research Gap:

With knowledge of how the design of social media applications need user involvement, there is a clear need for new procedures and methods that enable user involvement. The context of design itself has changed since the approaches of UCD and PD were introduced. This presents a number of issues which new emerging frameworks must address. These issues include, how to involve a large number of users, how to support participation by geographically dispersed users and how to include the user's innovations in the design process.

There are a number of examples of how these methods have already been established to address these issues. Approaches, such as open innovation, allow for the involvement of large user groups. However, this approach failed to bring together PD and open innovation and as a result was not a viable option (Bergvall-Kåreborn et al., 2008). Other avenues included computer supported methods for Co-Design. While this allowed for users to be involved at a larger scale, it also meant that data had to be analysed per individual (Storey et al., 2010). Consequently, it is determined that the amount of time spent was not worth the amount of data gathered. The use of web based methods introduces a problem: while able to see what a user is interacting with within an application, researchers cannot understand the user's motivation behind it.

On their own, many of these methods fail to create a framework that can fully integrate the user into the design process. With this in mind the concept of a potential framework is introduced later in this chapter. This five phase framework allows for the integration of users for testing and innovation. It allows users to become co-designers if needed.

## 4.2 What Is A Framework:

In the context of design, a framework is a means to enforce consistency, encourage creativity, speak the same language and inspire a designer (Vries, 2013). But what does any of that mean? Once accustomed to a framework, it can act like a style guide. It can provide consistency during the design process and ensure that the end product sticks to a strict set of rules and regulations. Frameworks allow the designer to be creative without massive amounts of time spent concentrating on every little pixel of every single component. A framework can create a better user experience. Involving users will mean that they must learn the language of design. A common example may be a dropdown field on a form. While designers call this a dropdown field, developers may call it a listbox (Vries, 2013). With the use of a framework users, designers and researchers can be unified by a common language. Frameworks are present in all aspects of the design world. Frameworks allow for creativity to be shared amongst designers and developers. It is not a means of simply copying someone else's work, rather, one can capitalize on what is already there and make it better.

## 4.3 Current Frameworks:

At present there are very few frameworks built that are made to deal with the development of social media applications. The Activities, Objects and Features (AOF) method, first introduced by Joshua Porter (2013), is one that concentrates on building social media applications around a single activity. For example, Flickr is a social media website that is based around the activity of sharing photos and Monster is a website based around the activity of finding a job (Porter, 2013). As a method, AOF concentrates on simple questions such as, what is the primary activity of a site, what is the user doing and what are the social objects of a site. Objects are features on an application that a user must interact with. The final concentration of objects is the applications core feature set. This allows the designers to determine which objects progress into the final application and which ones should be removed from the application. With the lack of literature and documentation on frameworks that are built for developing social media applications it is a difficult task to theorize a framework that can fully integrate users and provide a user friendly product.

## 4.4 Five Phase Framework:

The framework proposed below is one that aims to include users in the design process from day one. There are five phases in this framework, innovation, iteration, testing, launch and sign off. Each phase has different levels to user involvement within a project. In phase one users are heavily involved in the creation of ideas and requirements. In phase two users may be required as co-designers. In phase three users are heavily relied upon for usability testing and feedback on products. In phases four and five users are no longer needed, however without their previous input these phases would not be reached.

### 4.4.1 Phase One Innovation:

Phase one of this framework is the innovation phase. This is a phase dedicated to the generation of ideas, user requirements, and data required to create personas and scenarios. This phase is heavily reliant on user input in the innovation stages to create the idea behind a new feature or application. To do this a number of methods, previously seen in the approach of UCD, are used. For example, workshops, focus groups and interviews are carried out in order to obtain user data. In addition to this new methods such as participatory innovation and co-design can be used to further the involvement of users.

This phase presents a number of possible advantages. The first being the early identification of a target audience, building user and designer relationships, finding problems early on and the development of good communication between users and the design team.

However there are some possible disadvantages, the amount of time dedicated to researching and analysing user data can increase costs. If online tools are not used in order to facilitate focus groups or other idea generating activities then many users may be unable to attend workshops and as a result not contribute their ideas. Without a large number of primary users researchers may have to use secondary users. This phase may introduce ideas that are unwanted or not up to standard.

### 4.4.2 Phase Two Iteration/Reiteration:

Phase two is dedicated to the iteration and reiteration of design. This phase mainly involves the design team and minimal interaction from users. If users are involved at this stage of the design process, it is in the role of a co-designer and not a test subject. This phase builds the features that are, either concepted in Phase one, or features that have failed testing in Phase three. There are two stages to the building of features in this phase. The design stage and the coding stage. There are a number of possible advantages to this phase. It ensures that the design team have time to implement high quality designs and allows for the reiteration of failed features. By not involving users, this phase can reduce the cost of involving a researcher.

The possible disadvantages to this are the cost of the design team. While many concepts may be proposed for design from Phase one, not all of these concepts will be worth pursuing. This in turn means a rise in costs for the prototyping features. As this phase is about iteration and reiteration, designers may be working on new features or failed features. As a result, time involved in the design process, and thus the cost of this phase, rises.

### 4.4.3 Phase Three Testing:

Phase 3 of this framework is the testing phase. There are three testing criteria: new feature testing, beta testing and alpha testing. To clarify, new features are features that start from phase one and progress through phase two, into phase three. Beta testing are features that have been launched in a beta state, in phase four, and are being tested with real users. The beta testing stage is used in order to find bugs and problems within a feature. The final alpha testing stage is when a feature has been debugged, passed beta testing and is a long term case study of the features performance within the live testing environment. Through the use of these three different testing types features can be continuously improved. This method has the highest level of user involvement.

*New features* are features that have been innovated, iterated and have now arrived in the testing phase. By using usability tests, task modelling and the think aloud method, features are tested with selected primary users. The feedback and user insights during this phase determine whether or not a product of a feature is launched into alpha launch, or sent back to

Phase two for reiteration. This testing stage allows for both horizontal and vertical testing of a feature to determine its ease of use along the features full “user journey”, or how it integrates with the system as a whole.

*Beta Testing,* tests features in a live environment with real users. Methods such as online surveys, online bug reporting and error reporting allow for user feedback from a live environment. For more specific testing a select number of users may be asked to keep a User Diary, these methods allow researchers to track how users use the feature and in what context. Depending on feedback obtained from users, errors reported or its contribution to the user experience, beta tested features are brought back into the iteration stage where problems are resolved within a feature. Once this has been done the feature is launched into the alpha testing stage.

*Alpha Testing* is based upon long term study of use. It is one of the most important type of testing as it determines, if the now debugged feature, is popular enough to encourage use on an application or if it should be redesigned or removed. A popular method to gather this information is the use of user diaries. In addition to this, web tools such as google analytics can aid in testing how users are interacting with the product. Analytics allow for the automatic accumulation of data about the feature and its use. If the feature passes the alpha test it is signed off and live for full use by the user communities.

There a number of possible disadvantages to this testing approach. Due to the level of user involvement and the looping of iterations it can increase the cost of a product. The amount of user data captured through all three stages of testing may prove invaluable or unnecessary in the design.

However there are also a number of possible advantages. The thorough and rigorous testing phase will ensure that a feature is one that can generate use, maintain a high standard in live use, ensure that any feature being launched is bug free and can generate a more positive user experience

### 4.4.4 Phase Four Launch:

Phase four helps to establish the testing methods that features will undergo during their launch. These are Beta and Alpha Launches. As discussed in the previous section the difference between these two is the severity of how the feature is treated after user feedback has been generated.

*Beta Launch*, is dedicated to testing products, finding bugs and finding errors within a system. It is a means by which a product can test the waters of the marketplace and allows for a quick analysis of its performance. The timeframe on a beta launch is no more than a month. This provides enough time for users to find and report problems and provide feedback through online forms, online surveys and error reporting methods. In addition to this, specific users may be asked to test the beta products in specific contexts. For this, living labs must be established to view the beta product in their context of use.

*Alpha Launch*, is the next launch phase of a product that has undergone rigorous beta testing. This is the launch of a bug free and reiterated version of a feature or product. The time frame of an alpha launch can be anywhere between 6 months to 1 year. This allows for full testing of a product in the market place. As discussed in section 4.4.3 if a product can pass the alpha launch tests it is then moved into phase 5 where it is signed off. There are a number of advantages to these launch types. The first is that it allows designers to quickly see if a feature or product is working while in beta launch. It also allows for products to be fixed through live user feedback. It then allows for a longer term study of the product to ensure its viability and longevity in an application or market.Possible disadvantages to this are the amount of time it may take to test the full functionality and popularity of a feature.

### 4.4.5 Phase Five Sign off:

Phase 5 is the final phase of a product's design and development process. A product only reaches this stage if it passes the testing stages as outlined in phase 3. There are no users directly involved in this phase, however without previous user input products and features would not make it to this stage of the framework. The sign off phase of a product marks the end of testing, design and reiteration. It is when, if working with a client, the client signs off on the product.

## 4.5 Conclusions:

This is an early draft concept for a framework. It attempts to provide easy integration of users and reiteration of features. The idea behind this framework is to ensure maximum testing and user involvement to ensure a product's longevity and viability in an oversaturated live marketplace. Through the use of user involvement, it is expected that a higher quality product can be produced (Norman, 1988). This framework provides a strict guideline as to how users are involved, what stages of the design process they should be involved in and, by following these guidelines, this framework is expected to cut costs for design teams, while increasing productivity and quality.

While the main focus of this paper is on methods needed to involve users in the design and development of SMA, this framework is one that is not limited to the construction of SMA. The graphic presented on the following page illustrates how this framework flows, how users are involved in each stage of the design and is colour coded to indicate whether a product is progressing between phases or needs to be reiterated or renovated.

## 4.6 Five Phase Framework Outline:

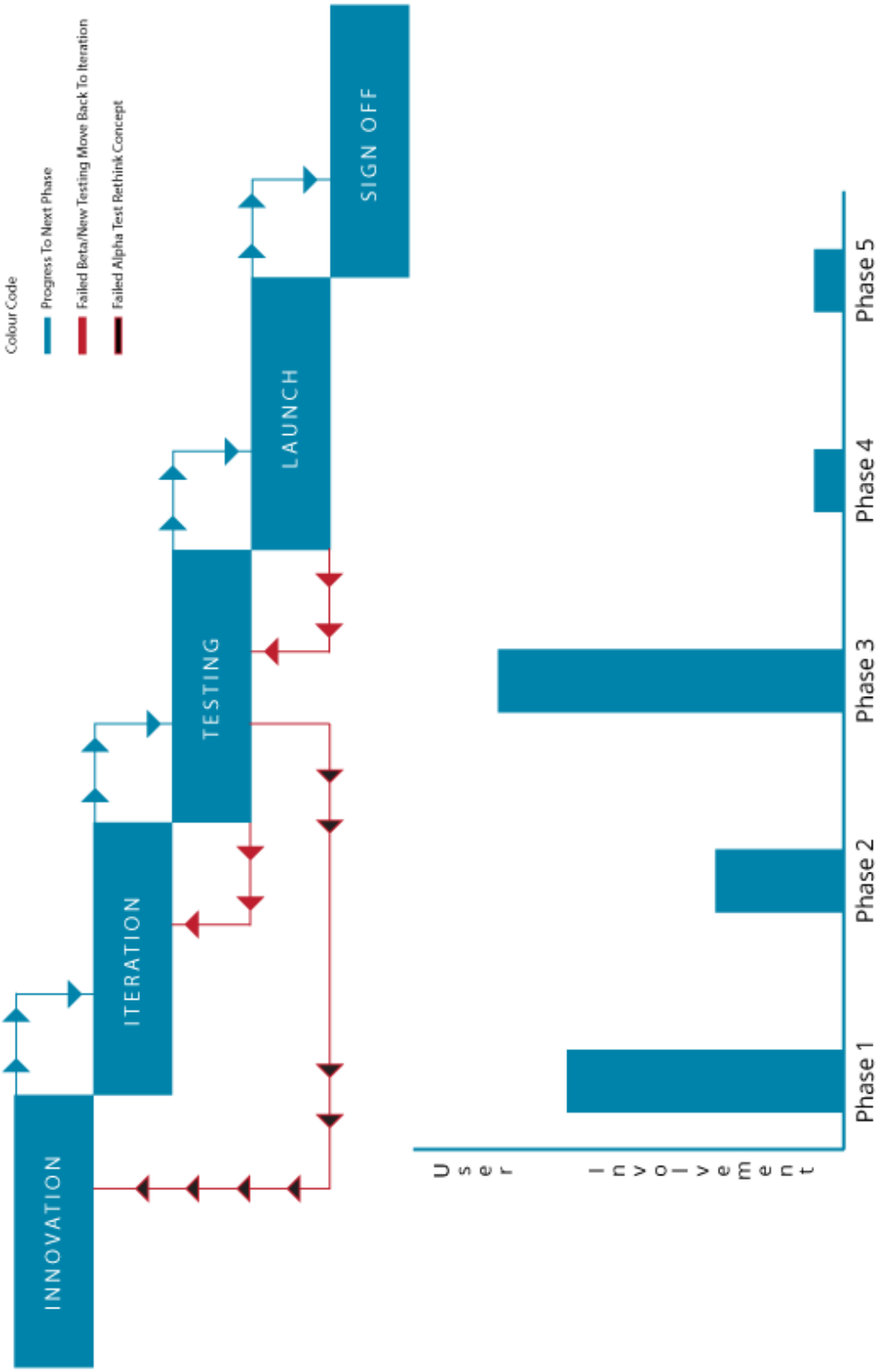


**Figure 3**

## Chapter 5 Conclusions:

This paper has presented a range of methods and means by which the design process of SMA can be enhanced through user involvement. This is done through moving design away from laboratory controlled conditions and into the user's daily environments This in turn allows researchers to gain an insight into the world of their users. This chapter aims to analyse the findings by concluding each of the original research questions.

1. What is the role of a user in the design process?

2. What methods can be used in the creation of social media applications?

3. How can users best be involved in the design process?

4. How can these methods be improved or combined for better effect?

### 5.1 What is the role of a user in the design process:

The conclusion presented is that the user does not have one singular defined role in the design process. Instead there are now multiple roles, which a user can undertake. The user can contribute to the design process by assuming the role of a tester, innovator, commentator, use case study and co-designer. While many of the methods discussed in the paper concentrate on one job for the user, in each singular process, the scope and variety of processes available show that users are able to contribute in a number of ways.

### 5.2 What Methods Can Be Used To Design Social Media Applications:

Within the framework of UCD there are a number of methods for obtaining user data, the analysis of user data and involving the user in the design process. However these methods are mainly based on face to face communications and therefore can prevent the design team from involving a large number of users. There are ways around this, such as the introduction of online methods of user involvement. Through the introduction of online communication methods many problems presented by face to face interaction can be eradicated at the start of the design process. The use of these methods allow wider access to users.

These tools also allow for better communication between designers, users and researchers, which can improve relationships and interactions. This can lead to the production of better quality applications and products. Through the use of online tools, geographic dispersity can usually be overcome. Users once unavailable to the research team can now be easily contacted. The level of user involvement can dramatically increase when the tools for instant communication are present.

Chapter 3 presented a number of new emerging methods to enhance user involvement. These methods were a step away from the idea of UCD and focused more on involving the user as a co-designer, innovator and tester. While these methods were a step in the right direction, on their own each method did not fully provide the means for users to be involved in the full project. As a result Chapter 4 introduced the possibility of a new framework in which, users and user involvement methods were implemented at key stages in the design process to enable user participation, feedback, innovation and commentary. The adoption of this framework is expected to produce higher quality products and provide more user friendly applications.

## 5.3 How Can Users Best Be Involved In The Design Process:

The use of online communicative tools and online methods of research, has been found to be the most beneficial methods of user involvement. As stated in section 2.3.5 the use of online focus groups, compared to face to face focus groups gave users more time to think about their answer without the worry of being overshadowed by the more dominant members of the focus group. This in turn led to more user interaction and better user feedback. Providing users with a means of participation, that does not require a full time commitment of travelling, can help users to be motivated towards their involvement. In section 3.1, the idea of co-design was discussed. While some users may have been nervous faced with the responsibility of decision making in co-design, it is also a means of ensuring users feel like equal members of the team who can actively contribute to the design process. Contributing users can also witness how their feedback can influence and change the design of features therefore increasing their sense of achievement from their participation. Using this to encourage users to continue their involvement can increase a user's capabilities and ensure a higher quality of feedback in future endeavours.

## 5.4 How Can These Methods Be Improved/Combined For Better Effect:

Chapter 4 presented the concept of a new design framework. There are existing frameworks such as agile, waterfall and UCD. The concept of a five phase framework is one which combines multiple methods of user involvement to ensure users are involved at the right stages of the design process. The difference between this framework and those existing is the level of testing that it involves and the integration of users through the testing stages. With the waterfall method once past a testing stage the design team can not proceed back up the waterfall, with this five phase framework it allows for iteration, testing and reiteration of a feature or product.

## 5.5 Closing Arguments:

This paper presented a study of user involvement methods and frameworks in the design of social media applications. It was found that social media applications depend on a higher amount of user interaction and innovation in order to succeed. The methods studied for this paper, by themselves, did not provide enough scope for user involvement. With this fact in mind this paper then presented a potential framework for user involvement that will allow for full user integration. This paper focused mainly on social media applications but this proposed framework can be applied to many different projects. While it is not the key to unlocking user involvement in the design process, it is the beginning of a concept that with more work could be developed and provide the means of better user involvement. Future work with this framework could include: testing with real users, testing with a design project and finally a more detailed and annotated study of how this framework performs in the design process.

This framework, while combining old and new methods, is a development and combination of many methods and processes. The original principles of UCD are still used in the core ideology of the new framework. It is hoped that this framework may further assist in the design of social media applications in the future as it provides a new means incorporating traditional and emerging methods of user involvement

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