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School of Economics and Management

Department of Informatics

Selection of Optimal Communication Medium Using Personas

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Authors: Einar Thor Gunnlaugsson
                Omar Mahaba

Supervisor: Imad Bani-Hani

Examiners: Paul Pierce
                Olgerta Tona

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This study is concerned with the apparent gap between knowledge management literature and persona creation guidelines. As the authors recognized that the guidelines don't seem to advise User Experience professionals to present information how users want to see it. The purpose of this study is to explore how UX professionals negotiate optimal communication medium for information representation. Based on the literature, a conceptual framework was created that consists of communication medium, Personas, and information representation that guided our field research. As such, qualitative interviews were conducted with UX professionals. The purpose being, to explore their experiences with using Personas for negotiating communication medium to present information. Key findings are grouped into two categories relating to Personas and Selection of communication medium. Findings have revealed that practitioners intuitively bridge the aforementioned gap. Therefore, in light of these findings, the Persona creation guidelines may include a point addressing the selection of communication medium for information presentation, such that they may be more in line with their practical implementation. Additionally, practitioners may benefit from adopting a more structured approach to selecting communication medium and integrating it with their Personas.

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-Omar Mahaba

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1 Introduction

1.1 Background and Problem area

Alan Cooper (2004) once wrote: *"If you want to create a product that satisfies a broad audience of users, logic will tell you to make it as broad in its functionality as possible to accommodate the most people. Logic is wrong."(Cooper, 2004, p.130)* Cooper's seminal book, **"The Inmates are Running the Asylum"** first published in 1999, describes a design method with the use of Personas. Since their inception, Personas have become widely adopted in academic and professional circles; scholars have written about them and user experience (UX) practitioners have used them as design tools. According to Vessey and Galletta (1991; 1991), when information is presented in an unfamiliar manner, an individual's mental effort to understand the information increases, resulting in a need to transform his mental model to suit the information. Vessey's idea of adapting information to fit an individual's mental model is applicable in today's world, given the increased information consumption and digitization (Bawden & Robinson, 2009).

The increased digitization in the global society, as evidenced by the exponential increase in global mobile phone subscriptions (The World Bank, 2015b), internet users (The World Bank, 2015a), and internet traffic increasing from 2000 GBs per second in 2007 to over twenty thousand in 2015 (Cisco, 2016). The implication being that the number of people being connected to the internet are increasing, and the amount of information these individuals are exposed to is accordingly increasing (Bawden & Robinson, 2009). Human-computer interaction (referred to as HCI herein) is concerned with engineering individual's experiences with software such that it becomes easier, more convenient, more intuitive, and generally more usable for users (Norman & Draper, 1986).

HCI, was first introduced in the 1980s to explain the influence of human- and computer-factors on user task performance (Card et al., 1980). The concept of user-centred design, originally conceived by Donald Norman in his seminal work **User-Centred System Design: New Perspectives on Human-Computer Interaction**, evolved from HCI (Norman & Draper, 1986). User-centred design is a mentality employed by designers to put their users at the centre of their designs by following Donald Norman's four design principles (Norman, 2002). Norman (2002) outlines that designs have to make it apparent: what the user can do, the possible alternatives, the system's current state, and provide informative feedback.

A Persona is a user-centric design (referred to as UCD herein) tool used in software development aimed at facilitating communication within software development teams (Grudin & Pruitt, 2003). Alan Cooper (2004) conceptualized that by using Personas, such teams will have a clearer image of the user's characteristics, goals, tasks, and personality traits. Despite Personas being representations of imaginary individuals, their content must be grounded in concrete research such that it would be a faithful, although somewhat generalized, representation of the target user (Cooper, 2004). There are a multitude of benefits associated with incorporating Personas into development projects such as: improved awareness and focus on users, explicating

target user assumptions, enhanced levels of team synergy, and streamlined communication of new findings within teams (Grudin & Pruitt, 2003). Grudin and Pruitt (2003) state that a Persona is not a "one-size fits all" object, but specific Personas are constructed for specific scenarios. In that sense, Personas cannot be re-contextualized and new Personas should be developed for new projects. An example can be that Personas constructed for an ERP development project, may not be reused for a fitness tracking mobile-app. The implication of reused Personas is that they would no longer represent the application's target audience (Grudin & Pruitt, 2003), leading to misinformed design decisions, diminished application usability, and user task completion.

The point of utilizing the user-centred design methodology (and in turn Personas) is to reduce the mental effort exerted by the individuals when using software to accomplish their tasks - in other words to improve system usability (Norman & Draper, 1986). Designers may improve usability by customizing their applications such that they match users' mental image of the application (Norman & Draper, 1986).

Michael Polanyi states that, *"we [humans] can know more than we can tell"(Polanyi, 1966, p.10)* acknowledging that some of the information and knowledge contained within people's mental models is easy to put into words, and other information isn't (Polanyi, 1966). Accordingly, Nonaka (2008; 1994) builds on Polanyi's notions to say that different types of information need to be transferred using different methods. Daft and Lengel's (1986) media richness theory (referred to as MRT herein) supports and elaborates on Nonaka's ideas; they postulate that the communication medium used in the transference process will change according to the information being handled. Vessey's (1991) cognitive fit theory (referred to as CFT herein) combines the aforementioned concepts. The theory claims that individual's task performance will improve when task representation matches the individual's mental task representation (Vessey, 1991).

In light of the aforementioned concepts, and this paper's selected literature (explored in greater depth in Chapter 2) a gap has been identified between knowledge management literature (referred to as KML herein) and Persona creation guidelines (referred to as PCG herein) when it comes to information representation. The interaction between previous studies, in the areas of Persona creation and knowledge management, is minimal. Even though Personas should ultimately lead to an improved UX through minimizing mental effort, their guidelines do not advise UX professionals (referred to as UXP herein) to present information how the user wants to see it (Norman & Draper, 1986). KML outlines the notion that different types of information need to be presented through different media, and specifically the user's expected medium - to reduce user cognitive load and in turn improve task performance and goal achievement (Daft & Lengel, 1986; Nonaka, 1994; Vessey, 1991).

With the growth of mobile devices and wearable technology (such as smartwatches and fitness trackers), individuals today are therefore being exposed to software more than in the past (Bawden & Robinson, 2009). With the recent introduction of the internet of things, individuals are not only being exposed to more data and information, but they are being exposed in new contexts such as smart homes, vehicles, and hospitals (Bandyopadhyay & Sen, 2011). The scope of information generation has been broadened into the physical world, where objects will create data based on their environments (Bandyopadhyay & Sen, 2011). Given that software is present in new contexts, individuals are therefore consuming information in new settings. How such software presents information influences its consumption (Kelton et al., 2010).

1.2 Purpose and Research Question

The purpose of this research is to understand UXP's mentality when it comes to Personas and information representation. The evident gap between the Persona guidelines and KML has led us to pose the following question:

How do UX professionals negotiate information representation through Personas, when creating interfaces?

The contribution of this research is to explore how UXPs practically negotiate the most suitable communication medium with their clients/organizations through Personas, and in turn represent information to users. The question is therefore concerned with UXPs, their practical use of Personas, and how they negotiate optimal communication medium for presenting information to users. By that we will clarify the identified gap between the Persona guidelines and KML.

1.3 Delimitations

We focus on UXP's methodologies of choosing information representation format, therefore we are not concerned with users' preferred representation. Additionally, given the difficulty of verbalizing and communicating tacit information, this study will delimit itself to explicit information. To adequately address our chosen research question, we will only be studying UXPs with experience in using Personas. Finally, this study does not intend to replace the existing PCGs or knowledge management theories, but to supplement them.

1.4 Structure of the Thesis

In the second chapter of this paper, we will present relevant literature concerning Personas, within HCI, and knowledge transfer within the KML. In addition, we go over the CFT in relevance of the research scope of the paper. The literature review gives a theoretical background for the field study conducted for this research paper.

Chapter 3 will present the overall methodology and research method used in for writing and conducting this research. This chapter goes in details what methods was chosen, how the research was conducted, and the collection of empirical data which is the foundation of the discussion. Additionally, the chapter goes over the research quality, where research validity, reliability, bias, and ethics are discussed.

In Chapter 4, the empirical results from the conducted field research are presented. The chapter is organized into sections based on emergent themes from the transcript coding process. Each section and its sub-sections will include our findings of the respective theme.

Based on the initial literature review and the empirical findings in Chapter 2 and 4, the fifth chapter brings them together in a discussion. The findings are discussed in comparison to the

literature review. This chapter highlights interesting topics that emerged from the conducted research and discusses them as they relate to the literature review.

The sixth and last chapter will conclude this study, where empirical findings and discussion will be set in context with the research question. Moreover, this study's implications for academia and practice, limitations, and suggestions for future research are also included in the sixth chapter.

2 Literature Review

This chapter will present a theoretical overview of the theories and concepts relevant to this study. Moreover it will serve as a lens through which data analysis and discussion may be observed. The chapter is divided into two main sections introducing UCD & Persona-related literature and KML, respectively.

2.1 User-Centric Design & Personas

Many people have been frustrated with the puzzle of small, multi-coloured, and double-labelled buttons on their TV remotes; these remotes make even the simplest tasks, such as pausing and navigating to the main menu, difficult (Sharp et al., 2007). The term "User-centred design" (UCD) is a broad concept that describes design processes where end-users influence the design and can be realized through different tools and processes (Abras et al., 2004; Junior & Filgueiras, 2005). Abras et al. (2004) continue in mentioning that UCD is a broad concept and has a variety of methods, but the most important part is, no matter the specific methodology being utilized, users must be involved in one way or another in the design process. They claim that Donald Norman is considered one of the founding fathers of the concept UCD. In his book ***"The Design of Everyday Things"*** Norman elaborates more on what UCD is and how to make design usable and understandable products (Norman, 2002).

Norman (2002), describes in four points how a design should be. In short, he describes that design should make sure that the user can figure out what to do, and the user can tell what is going on. The user is supposed to understand the function of a design with as little instruction as possible, and if he does not understand or is unclear on the instructions - the design has failed (Norman, 2002). Norman (2002), suggests seven principles of design to break down difficult tasks into simple ones as summarized in Table 2.1 below.

Table 2.1 – Seven principles for transforming difficult tasks into simple ones. Adapted from (Norman, 2002)

1.	Use both knowledge in the world and knowledge in the head.	Users should easily interpret manuals or instructions about certain actions and outcomes.
2.	Simplify the structure of task.	Tasks should be simple, minimize the amount of planning and problem solving they require. Provide mental aids for easy information retrieval from users' memories.
3.	Make things visible: bridge the gulfs of Execution and Evaluation.	Execution and evaluation on actions should be visible for users to tell the effect of their actions.

4.	Get the mapping right.	Users should be able to determine the relationship between their intentions and possible outcomes.
5.	Exploit the power of constraints, both natural and artificial.	Use constraints so the users feel that there is only one possible action, the right action.
6.	Design for error.	Plan for all possible actions that lead to errors and allow the option of recovery.
7.	When all else fails, standardize.	If it is not possible to design without arbitrary mappings, standardize the actions, outcomes, displays, etc. Therefore, actions need to be learned only once.

Ben Shniederman (1987), touched upon similar principles as Norman, in his book *"Designing the user interface: Strategies for effective human-computer interaction"* in the form of *The eight golden rules*. Jakob Nielsen (1994), as well, articulated and adapted these same concepts to create the nine usability heuristics framework (Molich & Nielsen, 1990; Nielsen, 1990; Nielsen, 1994).

Some methods that are considered UCD for example, participatory-, and ethnographic-design, put the user in the centre in the design process (Grudin & Pruitt, 2002). Participatory design is open to interpretation (Muller & Kuhn, 1993). Muller and Kuhn (1993), state that the approach can differ how the user is involved in the design, whether it is the designers who participate in the users' world or vice versa. According to Blomberg et al. (2009), ethnographic design is as well open for interpretation. They explain that there have been different views among researchers and practitioners on what is ethnographic inquiry. For some it is a keyhole for which human activities are viewed, but for others it is just another term for qualitative method (Blomberg et al., 2009). Andrew Monk (2000), talks about how important it is to get input from users early into the requirements analysis stage, and by identify all potential users, designers can create good design. Because having a broad overview of potential users, they can focus on details in the design more broadly (Monk, 2000).

When designing software, be it a website, an application, a system, etc. there may arise problems of clear definitions on who the users are and why they are going to use this artefact (Nielsen, 2004). An unclear definition can lead to miscommunication between the design team and misinterpretation of the user's needs (Brown, 2010). Including the user as an active participant in the creation of the design, will lead to that design being more intuitive and perceptual (Abras et al., 2004; Nielsen, 2004).

A Persona is nothing more than a fictional human being that is created to represent the designed artefact's target group (Grudin & Pruitt, 2003; Nielsen, 2004). They can aid design, but their greatest strengths and value is that they provide a shared understanding between the design team and clarifies communication between different stakeholders (Brown, 2010; Grudin & Pruitt, 2003). Personas, in additional to being a good communication tool, can function both as a vehicle to create empathy for designers to share emotions with users (Segal & Suri, 1997; Wright & McCarthy, 2008), and as a method to focus on a particular target audiences (Nielsen, 2004).

Many scholars have interpreted the concept of working with fictional human beings. For example: Personas (Cooper, 2004), User archetypes (Mikkelson and Lee, 2000 cited by Nielsen, 2004) User models (Hasdoğan, 1996), Stereotypes (Nielsen, 2003), and User Modelling with Personas (Junior & Filgueiras, 2005). The term fictional user varies therefore between scholars. Alan Cooper's interpretation of "Persona" in his seminal book **"Inmates are Running the Asylum"** (Cooper, 2004) is the term we will be using here on forth.

The following section will go over the main and most influential scholars who have written about Personas as well other scholars who have contributed to the body of knowledge of Personas. From our scientific readings, Alan Cooper, Grudin and Pruitt and Mikkelson and Lee, can be perceived to have the most influence on how Personas are interpreted today. We will go over these perspectives, as well others scholar's contribution and development on the term Personas.

2.1.1 Approaches to Personas

Alan Cooper (2004), states: *"If you want to create a product that satisfies a broad audience of users, logic will tell you to make it as broad in its functionality as possible to accommodate the most people. Logic is wrong."(Cooper, 2004, p.160)* In his book **"The Inmates are Running the Asylum"** (first written in 1999) he describes the usefulness of Personas and their effectiveness not only as a means of communicating users' needs but as well communication tool within the organization. Additionally, he describes a method of how Personas can aid in the design process (Cooper, 2004).

Cooper's "Goal-Directed design" introduced a new way how to look at problems by determining relevant Personas and their goals during an initial investigation of the problem domain (Cooper, 2004). He explains that designing for an actual user does not work, he emphasizes the fact that being the victim of a problem doesn't automatically make that user the problem solver. The user is naturally a valuable resource and has good insights, however never let the user direct the design (Cooper, 2004).

Each Persona is a hypothetical archetype of the actual users and have specific characteristics and details, although they are imaginary, they are defined with significant rigor and precision (Cooper, 2004). Unlike Monk, Cooper (2004) explains, it is important to narrow the design to target only one Persona and satisfy that Persona to the fullest extent. The broader the target you're aiming for the more likely it becomes that you'll miss the bull's-eye (Cooper, 2004). If a minority of the people loves your product, you have succeeded (Cooper, 2004).

What Cooper (2004) brings on is how Personas can be the distinct factor on giving a clear view for whom designers are designing for. In addition, he states that there are multiple Personas that are associated with a design, but only one primary Persona that carries more weight that the others. That is, as mentioned, designers do not lose sight of whom they are designing for (Cooper, 2004). With that in mind, he never mentions to incorporate the appropriate medium type to communicate with users (Cooper, 2004).

Grudin and Pruitt (2002), argue about how Personas enhance user-centric approaches in several aspects. Using Personas together with methods like, participatory and ethnographic design, can enhance several aspects of design practice, for example: further engage designers and users, incorporate user social and political aspects, and enhance the complexity of identifying and portraying potential users (Grudin & Pruitt, 2002). Additionally, they discuss scenario based design, where scenarios help designers organize, justify, and communicate ideas. Adding Personas to the design process does not mean scenarios or other methods are unnecessary, on the contrary, Personas are the foundation for everything that follows (Grudin & Pruitt, 2002). They are the infrastructure for engagement and a mean of communication (Grudin & Pruitt, 2002).

Grudin and Pruitt (2002), given their previous practical experience with Personas, disagree with Cooper regarding the user's role in Persona creation; they believe users themselves should direct Persona creation, where Copper believes that the user should not direct the overall design (Cooper, 2004). They state that Personas need to be complemented with a quantitative and qualitative information about the users, to improve selection, enrichment, and evolution of Personas (Grudin & Pruitt, 2002).

Although Personas have their benefits, they do as well come with risks or difficulties. Grudin and Pruitt (2002), come on points revolving around risks that Personas might bring. For example, the investment of time and user research may overcome the effort of creating new Personas, and therefore over-extending pre-existing Personas to new projects (Grudin & Pruitt, 2002). Another issue they come on is that different operations need Personas with different attributes, for example marketing and product development (Grudin & Pruitt, 2002).

Grudin and Pruitt (2002), list benefits and characteristics of a Persona method used in design. They state that the fictional setting of Personas creates strong focus on user and work context, assumptions become explicit about target audience, and that they are a great communication tool for team members. However, like Cooper, Grudin and Pruitt's (2002) statements never mention incorporating suitable medium type in Persona description.

Mikkelson and Lee (2000 cited by Grudin & Pruitt, 2002) describe Personas as "user archetypes" with abstract representation of users for design guidance. Classes are divided into "user archetypes" based on user profiles and scenarios from user research (Grudin & Pruitt, 2002). This method proposed by Mikkelson and Lee (2000 cited by Pruitt & Grudin, 2003) is to create "user archetypes" for scenario based design. They criticized the work by Carroll, Karat & Bennet, and Kaindl on scenarios, for lack of explicitness and conformity in the user descriptions (Mikkelson and Lee 2000 cited Nielsen, 2004). The main focus of "user archetypes" is to aid design with better representation of users' fundamentals features (Nielsen, 2004).

It is noteworthy to look at other contributions scholars have made to the body of knowledge about Personas. Chang, Lim, and Stolterman (2008), conducted a research on how practitioners utilize Personas in their work. Their main findings and conclusion states that designers use Personas in a creative and flexible ways and not always accordingly to their initial purpose. The study implies that the Persona tool for designers is used differently based on designer's' own thoughts and experiences, rather than on user research (Chang et al., 2008).

Nielsen (2004), claims that scholars agree on the notion that Personas are a fictional user that should describe the target users. However, scholars have different opinions of what characteristics a Persona should (or should not) include. Building on Cooper's (2004) method, a Persona

is described from the goals and observed behavioural patterns among potential users (Adlin & Pruitt, 2010; Brown, 2010; Cooper, 2004; Goodwin, 2011). They encapsulate critical behavioural data in a way that designers and relevant stakeholders can understand, remember, and relate to (Goodwin, 2011). A Persona is also given a personality, a name, occupation, families, friends, et cetera (Goodwin, 2011). They have demographic identity, age, gender, ethnicity, etc. and as well, they include a narrative that covers a set of goals, life stories, attitudes, frustrations, and any other factors that seem critical to understand behaviour pattern (Goodwin, 2011). The work from Grudin and Pruitt (2003), and Mikkelson and Lee (2000 cited by Grudin & Pruitt, 2003) bases the description about Personas on user research to help them give Personas the aforementioned attributes, they argue that their method of creating Persona makes the assumptions about the target audience more explicit. As Mikkelson and Lee (2000 cited by Nielsen, 2004) state, with the use of Persona narration, the essence of users is captured.

2.2 Knowledge Management

Knowledge is ubiquitous within society/organizations and is primarily contained within individuals' minds. The effective sharing and communication of this knowledge will allow for the creation of new, potentially more valuable knowledge (Nonaka & Konno, 1998). Our cumulative knowledge as a society falls in a spectrum ranging from the implicit to the explicit, as knowledge is usually a hybrid of both implicit and explicit knowledge (Dienes & Perner, 1999). The degree of knowledge explicitness may be measured through three constructs (Chua & Ann, 2001; Dienes & Perner, 1999).

Codifiability is the first of the aforementioned constructs. This construct refers to the ease of capturing knowledge and restructuring it into individual explicit rules, and in turn be verbally represented (Chua & Ann, 2001). Moreover these rules must be interpreted and followed independently of the individual who codified them (Kogut & Zander, 1992). The more explicit the knowledge, the easier the codifying process becomes. Inversely the more implicit knowledge is, the more difficult codification will be (Chua & Ann, 2001). Teachability, the second construct, is a reference to the relative ease of knowledge being taught to another individual; the greater knowledge's tacitness the harder it will be to teach, which is logical considering the fact that tacit knowledge is difficult to verbalize (Chua & Ann, 2001). Complexity, the final construct, states that as the number of interacting elements associated with a piece of knowledge increases, the more complex that knowledge is said to be (Kogut & Zander, 1992).

2.2.1 Types of Knowledge

Based on these three constructs, a given piece of knowledge can be categorized as more explicit or implicit. Michael Polanyi (1966) coined the term tacit knowledge in his seminal work ***The Tacit Dimension*** to describe the phenomenon of people knowing more than they can say. There are two components of tacit knowledge: the first 'causal' term and the second 'effectual' term (Polanyi, 1966). People know to associate the second term with the first after experiencing the effect multiple times (Polanyi, 1966). According to Polanyi (1966), the implication of this cause-effect relationship is that people assume the existence of the first term only because they

link it with experiencing the second term – meaning that the connection between the two is experiential, difficult to verbalize, and hence is said to be tacit. Therefore implicit knowledge is inherently personal and informal (Nonaka, 2008; Chua & Ann, 2001) as different individuals will rationalize the cause-effect relationship such that it is logical to them due to their subjective experiences of the causal and effectual terms (Polanyi, 1966). Moreover implicit knowledge is accumulated subconsciously without there being an intent to learn (Reber, 1996). An example may be that artisans such as blacksmiths or glassmiths over multiple years of practice have acquired an aptitude or "sense" for manipulating and processing their raw materials into works of art. Less exotic professions such as teachers, consultants, and salespeople also develop their tacit sense for working with other people to have the desired outcome – a sense that is hard to verbalize, codify, and teach to others (Gorman, 2002; Chua & Ann, 2001).

At the other end of the knowledge spectrum lies explicit knowledge. In contrast to implicit knowledge which, as mentioned previously, is complicated to verbalize, its explicit counterpart is more structured, formal, and organized (Nonaka, 2008; Chua & Ann, 2001). Consequentially making it more simple to codify (Nonaka, 1994), verbalize into formal documentation, computer code, and in turn transmit to others (Nonaka & Konno, 1998; Chua & Ann, 2001). The ease of codifiability and teachability of explicit knowledge may be attributed to the fact that such knowledge is objective, thus cannot be interpreted differently by individuals (Chua & Ann, 2001). Assembly instructions, workflows, and sales figures are all examples of explicit knowledge of variable complexity that could be codified and taught to other people with relative ease – irrespective of the original coder's presence (Kogut & Zander, 1992).

2.2.2 Knowledge Transfer

Given the unique natures of explicit and implicit knowledge explored in the two preceding sections, Nonaka (1994; 2008) claims it naturally follows that the methodology and motivation for knowledge transference between individuals in an organizational or personal setting will be accordingly different. As knowledge is transferred from one type to the other, new knowledge will be created. There are four ways of knowledge conversion as illustrated in (Figure 2.1). (Nonaka, 2008).

As Nonaka (1994) explains, socialization is a tacit-tacit conversion, as illustrated in Figure 2.1, where the knowledge is typically transferred from master to apprentice, or trainer to trainee through hands-on training. She also states that the process of socialization revolves around watching, mimicry, practice, and *not* language; theoretically an apprentice can become a skilled craftsman without ever speaking to his artisan. The limitation associated with socialization, being that since the information in question never becomes explicit, it cannot be easily transferred, and in turn utilized by a third party (Nonaka & Konno, 1998; Nonaka, 1994; 2008). Combination involves compiling, sorting, or re-construing distinct pieces of explicit knowledge into more complex information such that they reveal new insights that were obscured prior to combination (Nonaka & Konno, 1998; Nonaka, 1994; 2008). An example could be the combination of monthly sales and geographic information to attain an understanding of sales seasonality per country. Nonaka (2008; 1994), and Nonaka and Konno (1998) further explain that Externalization and Internalization are effectively opposites, where the former is concerned with the conversion of tacit knowledge into explicit and the latter being its inverse. They explain that articulation, where individuals are able to coherently verbalize information and experiences contained within their mental models, is essential to the externalization process such that others

have the opportunity to absorb and subsequently internalize this information into their own mental models. An individual's mental model is leveraged in making sense of one's environment (Nonaka & Konno, 1998; Nonaka, 1994; 2008).
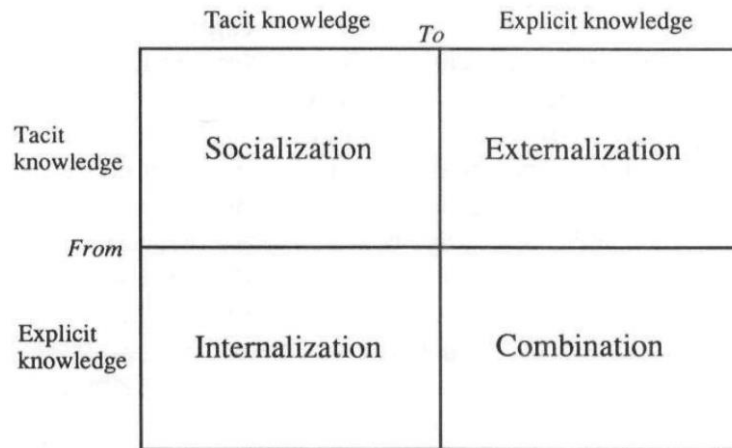
Figure 2.1 - Modes of Knowledge Creation. Reprinted from: (Nonaka, 1994).

2.2.3 Media Richness Theory

The implication of these aforementioned conversion methodologies is that knowledge cannot be treated equally when it comes to transference (Nonaka & Konno, 1998; Nonaka, 1994; 2008). This notion is supported by the theory of media richness (Daft & Lengel, 1986). Equivocal information, according to Daft and Lengel (1986) is information that is somewhat subjective, where different individuals will interpret the same message in unique ways. An implication of equivocality is the inability to ask yes-no questions due to the multiple, variable, and possibly conflicting interpretations of information, in turn causing confusion about which questions may be asked (Daft & Lengel, 1986). Unequivocal information, in contrast, is information that is objective, implying that there is minimal room for misinterpretation by individuals (Daft & Lengel, 1986). Parallelly, tacit knowledge is akin to equivocality given its personal, subjective, and difficult to verbalize nature; meanwhile explicit knowledge, considering its structured, organized, and more formal character is more similar to un-equivocality (Nonaka, 2008; Chua & Ann, 2001; Daft & Lengel, 1986).

The MRT postulates the greater a message's equivocality, the richer the communication medium needs to be for the message to be relayed accurately – in turn leading to better task performance (Daft & Lengel, 1986; Chua & Ann, 2001; Dennis et al., 2008; Dennis & Kinney, 1998; Dennis & Valacich, 1999). According to Daft and Lengel (1986) media richness is determined by a number of factors relating to the medium. Their first factor is feedback velocity, which relates to the speed of feedback between sender and receiver. A shorter feedback cycle implies that senders are more able to reactively customize their messages to better suit their receiver – increasing the medium's richness (and vice versa) (Daft & Lengel, 1986). An example can be, in a face-to-face talk, the speaker may dynamically change his tone and volume to ensure the listener's attention isn't lost, such dynamism decreases as media becomes leaner with longer feedback cycles. Daft and Lengel (1986) continue explaining that the second factor

being verbal and non-verbal cues, such as (but not limited to) vocal tone, body language, eye contact, proximity, facial expressions, and posture are known to facilitate communication; the more cues supported by a medium, the richer that medium is. Their third factor is the language used in a medium, the more conversational it is, the more intuitive and rich a medium becomes – as such telephone calls are considered to be a fuller, richer transmission medium than written letters (Daft & Lengel, 1986). A rich communication medium offers a higher degree of personalization than a leaner one, meaning that the medium's presence is non-noticeable – making the communication more similar to a face-to-face conversation, allowing the conversers to have a more fluid and personal conversation (Chua & Ann, 2001; Daft & Lengel, 1986).

Accordingly, Daft and Lengel (1986) different media may be considered 'richer' or 'leaner', based on the aforementioned factors. They rank media in terms of their richness, where face-to-face interactions are deemed richest and numeric documents being the leanest. Written media such as e-mail and memos are generally considered to be leaner, while verbal media such as telephone calls and face-to-face meetings are richer (Daft & Lengel, 1986). Taking the degree of knowledge explicitness and media richness in mind, Chua and Ann's (2001) field study has empirically proven that there is indeed a negative correlation between the two aspects – confirming Daft and Lengel's assumptions. In a laboratory experiment conducted by Dennis and Kinney (1998), where participants were required to perform an equivocal and an un-equivocal task using a rich medium and a lean medium respectively. The results of their experiment were on the contrary to MRT's assertions, where the coordination of media richness to task equivocality failed to improve participants' decision making (Dennis & Kinney, 1998). Intermediately an experiment performed by Mennecke, Valacich, and Wheeler (2000) with the intention of analysing the task-media fit hypothesis, an extension of the MRT, generated partial support for the theory. The experiment found that the MRT held true when applied to negotiation tasks but not to intellective task (Mennecke et al., 2000).

Lee (1994) observed that richness or leanness is not an inherent characteristic attached to media. He postulates that a medium's richness is a subjective social construct emanating from individuals' interaction with the medium in question. Therefore a medium that is conventionally regarded as 'lean', such as email messages, may be perceived as 'rich' by a particular group due to how its constituent members subjectively interact with their emails (Lee, 1994).

2.2.4 Cognitive Fit Theory

In her seminal paper, "Cognitive Fit: A Theory-Based Analysis of the Graphs Versus Tables Literature", Vessey (1991) conceived the notion of the cognitive fit- basing it on the general problem-solving model as illustrated in Figure 2.2 below. Her theory divides tasks (problem solving task) and information into symbolic and spatial. Symbolic tasks are best supported with symbolic information in the form of tables and numerical figures, whereas spatial tasks may be accordingly supported with spatial information in the form of charts or graphs (Vessey, 1991; Vessey & Galletta, 1991). When tasks are supported by their proper information type - it is said that a cognitive fit has been achieved and in turn individual task performance will improve (Vessey, 1991; Vessey & Galletta, 1991). Vessey (1991) explains that the improvement can be explained by the fact that when the individual is presented with a problem or information in a familiar manner, he will utilize his pre-existing mental model to process that information - reducing the cognitive load required to process the information or solve the problem at hand.

Contrastingly she states, when presented with information in an unfamiliar manner the individual's mental overhead will increase as a result of needing to transform his mental model. In turn the efficiency and effectiveness of problem solving or information processing will diminish - leading to an overall decrease in task performance (Vessey, 1991; Vessey & Galletta, 1991; Baker et al., 2009).
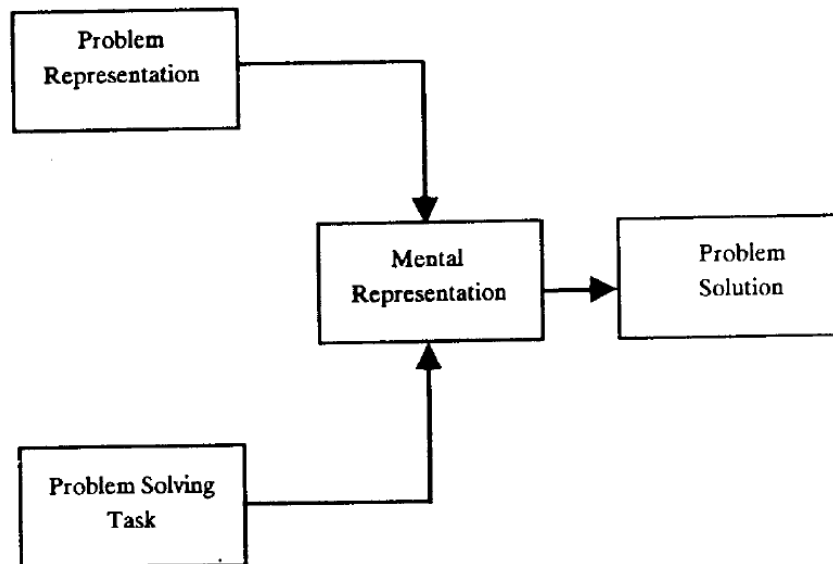
Figure 2.2 – The General Problem Solving Model. Reprinted from: (Vessey, 1991).

As mentioned above, symbolic and spatial tasks are best supported by symbolic and spatial information, respectively (Vessey, 1991; Speier, 2006). Baker et al. (2009) elaborates on Nonaka, explaining that symbolic information is characterized as discrete and precise, such as numerical values from a table, as such this type of information is low in equivocality making it explicit in nature. Conversely, spatial information is more holistic and comprehensive such as charts and graphs, usually involving identifying relationships between variables, making logical conclusions, and comparing those conclusions against one's own knowledge (Baker et al., 2009). Baker et al. (2009) continues stating that using spatial information requires an interpretive process to be used and an inherent understanding of the problem area being discussed. This inherent understanding of the problem area is usually gained through experience over time, and the application of an interpretive process to draw meaningful observations (Baker et al., 2009). Therefore, spatial information is comparatively higher in equivocality - making it more tacit in nature (Baker et al., 2009; Vessey, 1991; Daft & Lengel, 1986).

A limitation of the CFT, being that the theory does not acknowledge the fact that different tasks have different complexities, assuming that supporting a task with its corresponding information type will lead to an improvement in its performance (Speier, 2006). However, Speier (2006) in empirically testing the theory found the assumption to be false to an extent. The results of her experiment confirmed that spatial media led to an improvement in simple and complex spatial task accuracy and completion time. When applied to complex symbolic tasks, spatial and symbolic media resulted in equal task accuracy and completion time, whereas symbolic representations only supported simple symbolic tasks (Speier, 2006)

2.3 Conceptual framework

Based on the literature review conducted above, and the apparent gap that exists between KML and PCGs, we've created a conceptual model (Figure 2.3 below) to guide our research. This model connects aspects of the two areas and will serve as the foundation on which we'll conduct our research. This study is concerned with the connections between communication medium, Personas, and information representation.
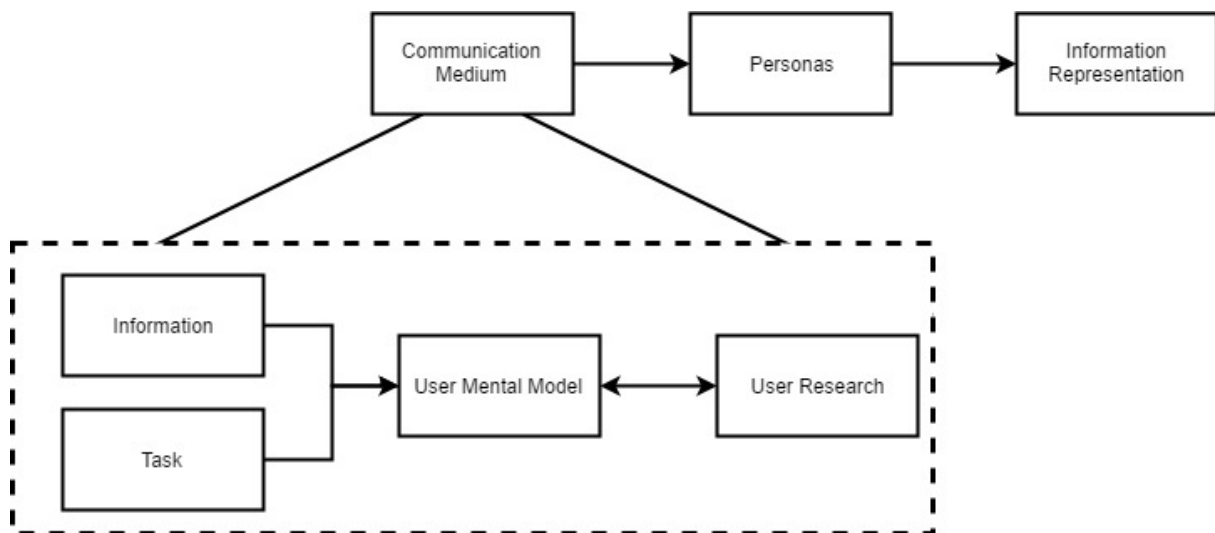
Figure 2.3 – The Conceptual Model guiding this study

The conceptual model includes aspects of communication medium, Personas, and information representation. Where we are applying the CFT to select communication medium. The CFT, as outlined by Vessey (1991), states that the information required to solve a problem (task) should be represented in a manner that matches the user's mental model of the task. The implication of this match is that the user will not need to adapt their mental model, and therefore exert unnecessary mental effort, to solve the problem in question (Vessey, 1991). Additionally, task performance will improve when a cognitive fit exists (Vessey, 1991). Individuals' mental models are unique in that when presented with similar problems, they construct different mental representations, and without conducting proper research, UXPs can only speculate what that representation will be (Vessey, 1991). Moreover, Vessey (1991) states that the CFT can be extended beyond her graphs versus tables domain.

3 Research Method

The research methodology chapter presents the overall chosen methods and approach used in this research study and the reasons behind them. The chapter goes over the research procedure, data gathering, and overall analysis that were put to use to obtain the study's findings, as well the chosen method to improve qualitative rigor on the study's findings. Lastly, the chapter concludes with descriptions about the research quality, with validity, reliability, bias, and ethical issues.

3.1 Research Approach

To gain substantial and sufficient information about the use of Personas and the delivery of communication medium in software design, a field study was conducted within the field of HCI. UXPs were asked about their experience and ideas on Personas and the delivery of communication medium in software design. The core method chosen to obtain this data and to address our research question is of qualitative nature, where subjectivity and interpretation is needed. We conducted an empirical research, where interviews were taken with UXPs within the field of HCI. Given that the phenomenon of interest, Persona use, is not measurable, a qualitative method was appropriate. As Recker (2012) explains, qualitative methods help researchers to understand a phenomena in context and enables the researchers to study the phenomenon of interest in a social and cultural way.

As mentioned above, the nature of the phenomenon of interest is not measurable, we therefore chose a qualitative study instead of a quantitative study. Also, given the subjectivity and interpretation of the phenomenon of interest a quantitative study would have restricted the reasonable inferences with logical reasoning about the phenomenon of interest.

Having said that, the theoretical method used in guiding this study was interpretivism. According to Bhattacherjee (2012), an interpretive research bases on the assumption that social reality is not singular or objective. Therefore, human experiences and social contextual circumstances are best studied with a subjective interpretation of its participants (Bhattacherjee, 2012). He further distinguishes the difference from interpretivism and positivistic research. As interpretivism employs a theoretical sampling strategy selected based on theoretical consideration (Bhattacherjee, 2012). Meanwhile positivistic approach employs a random sampling, where cases are chosen randomly (Bhattacherjee, 2012). Positivistic approach can be related more towards quantitative methods (Bhattacherjee, 2012). The chosen approach was therefore an interpretive. Given the specific contextual factors and the subjectivity of exploring Personas, and how the experience of them help UXPs to actively think about communication medium type in software design. The focus was placed on interpreting respondents' answers and draw conclusion based on their experiences.

3.2 Research Procedure

From our studies, we discovered that the Persona guidelines in HCI literature do not address the subject of the optimal information presentation. After realizing this, we needed to expand our knowledge of the Persona guidelines, their attributes, characteristics, and to further explore if the guidelines outline how information can be displayed to users. We acquired relevant literature from academic publications through Google Scholar, Lund University Library (LUB-search), IEEE Xplore, and the AIS eLibrary. Some of the keywords entered into these search engines included (but not limited to): Personas, HCI, Communication medium, cognitive fit, optimal transmission medium. We looked at these main authors (Cooper, 2004; Goodwin, 2011; Grudin & Pruitt, 2002; 2003) who were foundational to the Persona guidelines as well more recent authors (Adlin & Pruitt, 2010; Chang et al., 2008) who have contributed to the guidelines. After acquiring more knowledge on the Persona guidelines, we verified that there is little to no mention of the optimal communication medium towards users, and this is something we wanted to acknowledge. Therefore, we needed to do an in-depth analysis of the KML and acquire understanding about how knowledge/information may be best transferred. We identified several theories concerning knowledge transfer, for example, the MRT (Chua & Ann, 2001; Daft & Lengel, 1986; Dennis & Kinney, 1998), Nonaka's dynamic theory of organizational knowledge creation (Nonaka, 1994; Nonaka & Konno, 1998; 2008), and the cognitive-fit theory (Vessey, 1991; Vessey & Galletta, 1991). Eventually we decided to support our study on the CFT. Through this study, we want to contribute to the Persona guidelines, by exploring the negotiation of optimal communication medium to present information, as utilized (observed) in UXP's Persona creation methods. Followed by the literature review, and based on it, we proceeded to create an interview guide to obtain relevant insights from our interviewees, that way we can obtain an understanding relating to our conceptual model to answer our research question. From there we conducted an empirical study where we interviewed UXPs who use, or have used, Personas in their design process. The next two sub-chapters will summarize our methodology for data collection and analysis, how the interview guide was created, selection of interviewees, and our coding method of the interviews. The third sub-chapter under methodology is where we will go over the quality of our research. The chapter comes on points about reliability, validity, bias, and research ethics.

3.3 Data Collection

Our chosen method of acquiring data for this investigation were interviews. This method was most suitable because it provided us with an in-depth explanation of our participants' experiences with the phenomenon of interest (Yin, 2015). Given the subjective interpretive paradigm of this study, we decided to go with the most frequently used technique for an interpretive research (Bhattacherjee, 2012). We chose to create a semi-structured interview, or qualitative interviews as Yin (2015) calls it. The chosen method, according to Yin (2015), aims to understand interviewees holistic experience of an observed phenomenon.

Given that our aim is to observe the experience of UXPs' experiences of using Personas, the chosen method of semi-structured interviews, according to Yin (2015), have three key aspects that structured interviews lack. First, he claims they aren't strict questionnaires with a complete list of questions presented to participants, the interview is not scripted. Additionally he states,

semi-structured interviews are conversational in nature - meaning that they encourage a discussion that will naturally differ from one participant to the next, which allows the interview to be a two-way interaction. Lastly, semi-structured interview contains open-ended questions, which gives the interviewees the opportunity to elaborate further on their own experience (Yin, 2015). These attributes gave us extra room to clarify participants' answers that are somewhat ambiguous by asking additional questions, depending on the direction the interview is going.

3.4 Interview Guide

With the chosen method of semi-structured interviews in mind, we carefully constructed an interview guide to lead us through a conversation with participants. We created open-ended questions from our conceptual model that accordingly support our research question. The open-ended questions gave interviewees the chance to elaborate on their answers in as much detail as they wished. Additionally, the guide allowed us the possibility to ask additional questions depending on the conversation with interviewees. We created the interview guide to have some structure to the flow of our interview in case the discussion lost momentum or went off-topic. However, having the guide did not mean we that followed its structure strictly, as participants' elaboration may already cover later questions in the guide.

As mentioned the guide was inspired from the literature with the research question in mind. Subsequently, we grouped questions into themes that would funnel our discussion with the interviewees through our conceptual model. The interview guide is in English and was e-mailed to each of our interviewees beforehand, so they may familiarize themselves with the questions and get an idea about the research. This was done to get a better discussion once the interview was taken. In the following tables, we will cover each question of our interview guide, its relevant purpose and to what theme it belongs.

Table 3.1 – User-Centric design questions

Question	Purpose	Theme
Which user centric design methods have you used in your own projects?	This question is an ice-breaker to get the conversation going towards Personas.	User Centric Design methods

We created this question to get an understanding about how our interviewees use User Centric Design methods in their projects. It is a question to get the conversation started between the interviewers and interviewees. Once the conversation has started we shifted the focus to Personas, the interviewee's use, and experience of using them. These questions helped us understand our participants use and understanding of them, and as well get their perspectives on some of the claims stated about Personas in Chapter 2 (See Table 3.2).

Table 3.2 – Persona-related questions

Question	Purpose	Theme
How often do you use Personas in your design?	To get an overview of how often our interviewees use Personas as a tool in their design.	Personas
What are the strengths of using Personas in your design?	To know why he uses, and the relevant strengths he considers using Personas.	Personas
What are the weaknesses of using Personas in your design?	To know why he uses, and if there are weaknesses by using Personas as a tool.	Personas
Does your Personas make you more empathic towards the users?	To see how Personas, as a tool, makes our interviewees feel connected to the user.	Personas

After asking about their experience and use of Personas, we wanted to get a better understanding of their practical design methods and processes. Therefore, these questions featured Personas to observe how they relate to the overall design process. Moreover, those questions are also related to the professional's process of selecting media. The reasoning behind including these questions was to transition the conversation away from Personas toward medium choice. This gives interviewees the opportunity to elaborate on their practical experiences with both aspects. (See Table 3.3)

Table 3.3 – Practical UX design questions

Questions	Purpose	Theme
What is the design process you go through in your projects? **Is this process the same for all projects?**	To understand the logical flow from start to finish of a design project.	Practice in UX design
What is your process for creating Personas?	To get our interviewees to describe their logical flow	Practice in UX design

Is it different between projects?	of how they create a Persona for their projects.	
When designing software/apps/websites who determines which type of media will be used (Text, Audio, Video, Image, etc.)? **Is it the designer/the customer/ both?**	To determine whether our interviewees have fee reign to decide communication medium, or there is a process of negotiation to make that determination.	Practice in UX design
Would you say that some media are more used than others? Why?	To understand how our interviewees, experience what media is being used the most, and why.	Practice in UX design
How much influence does a UXD have on how content is expressed in projects?	To understand who has more power when negotiating how information is created and presented towards users.	Practice in UX design
What external factors would lead you to use a sub-optimal transmission medium for a given piece of information? (Cost, time, pressure, etc.)	To gather understanding on our interviewees experience on what are some of the factors influencing a media choice for a specific project.	Practice in UX design

With that transition from Personas in practice towards medium choice, we narrowed the questions further towards our last theme in the interview guide, Information and communication medium (See Table 3.4). Those questions were concerned with our interviewee's perception of how content is expressed and presented to users, and if they actively consider this aspect in their design processes. These questions relate to the KML, which claims that different types of information need to be presented through different types of media (See Chapter 2).

Table 3.4 – Information and communication medium questions

Questions	Purpose	Theme
Do you think about transmission medium in design?	To get understanding on how our interviewees think about medium in design.	Information and communication medium

When do you incorporate transmission medium into your Personas?	To let the interviewees, elaborate both on Personas and medium presentation, as well to get the understanding if Personas are used for the choice of medium.	Information and communication medium
What determines which medium is appropriate? (Text, video, audio, etc.) Are those decisions based on some kind of research, or based on your professional experience?	To gain understanding on what our interviewees think determines the appropriate medium, and if that is based on any research they conduct. And as well what kind of research and the reasons behind it.	Information and communication medium
Will the transmission type change when knowledge/information type changes? Why?	To understand if our interviewees think about to fit the appropriate medium type if the content presented changes.	Information and communication medium
Will the transmission type change when your Persona type changes? Why?	To understand if our interviewees think about to fit the appropriate medium type if the Persona it is being presented to changes.	Information and communication medium
Changes to transmission medium type, are they influenced by any trends?	To gain our interviewees experience on if the medium type is chosen by trends on the market today.	Information and communication medium
How would using the sub-optimal/optimal transmission medium impact the user?	This question addresses both how our interviewees perceive what happens if the optimal or sub-optimal medium is chosen.	Information and communication medium

| How do you decide which transmission medium is most suitable for a given piece of information? | To understand how our interviewees come to a decision about a medium type. | Information and communication medium |
| How do you ensure that your chosen transmission medium will help the user complete his task? | To get the understanding of how our interviewees think about medium type in compliance to what the user task is for a certain design. | Information and communication medium |

3.5 Interviewee Selection

Based on the scope of the research question and the purpose of our study, we've determined that our interviewees need to be working with user experience design (referred to as UXD herein). Additionally, we selected only interviewees who've had experience with creating or using Personas, and therefore could provide some insight into their practical experience with Personas, their strengths, and weaknesses. Since we are also looking at the selection of communication medium, we wanted to interview individuals from different organizational contexts – to maximize the breadth of opinions and insights we could obtain. Initially, we directly contacted prominent UXPs who've written various UX and Persona-related blog posts and articles, however none of those professionals chose to respond. After that approach proved unfruitful we decided to reach out to potential interviewees through social media forums dedicated to the topic of UX, which was more successful. The wide geographic dispersion of our respondents made in-person interviews an unrealistic option in terms of time, therefore we chose to conduct all interviews electronically via Skype. Table 3.5 below is an overview of our interviewees, their assigned alias (to maintain confidentiality), the position they hold in their organization, interview duration, interview date, interview medium, and their geographic location.

Table 3.5 – Overview of Interviewees & Interviews

Alias	Position	Duration (mm:ss)	Date	Medium	Geographic Location
Charlie	Co-Founder	32:31	31 March 2017	Skype	Zurich
David	Director	33:41	14 April 2017	Skype	Palo Alto, CA
Frank	UX Lead	N/A	26 April 2017	Email	New York City, NY

Greg	Designer & Director	35:41	14 April 2017	Skype	London
Jack	Senior UX Consultant	46:32	6 April 2017	Skype	Austin, TX
Joe	Director of Design	49:28	10 April 2017	Skype	Austin, TX
Mark	UX Strategist	N/A	3 April 2017	Email	Atlanta, GA
Marvin	UX Architect	28:14	14 April 2017	Skype	Bulgaria
Therese	Customer Experience Strategist	49:55	10 April 2017	Skype	Seattle, WA

Charlie is a co-founder of a multinational organization with operations in Switzerland, Japan, and Germany. The organization creates digital products, offers strategic design, and consulting services. The nature of Charlie's position means that he is operating at a higher level, but he has had considerable practical experience in designing and interacting with Personas.

David holds various positions in different organizations. In addition to being a Director, he is a scholar, and an educator. Additionally, he has practical experience as a UX architect with organizations such as Apple and Microsoft in the past.

Frank chose to remain anonymous, so the information available is somewhat limited. Frank is a UX lead at a pharmaceutical marketing company. The organization dedicates a large budget for usability testing, documentation, and deliverables. Frank has practiced UX long before it became his job title.

Greg is currently a director at a London-based interaction design studio specializing in 3D animations, human interfaces, and VR experiences. Greg is also an interaction designer, engineer, and artist with ten years of experience from various different industries.

Jack has been in UX for over 20 years, and is quite skilled at what he does – his work earning various mentions and awards from prominent newsletters and magazines. His current position has Jack working with enterprise UX. This exposes him to many different industries, and organizations operating at a larger scale than our other interviewees interact with.

Joe is currently the director of design at one of the world's largest computer companies. He has been involved in UI/UX since 1998. Joe was one of the people who pioneered the use and adoption of Personas at Microsoft. Additionally, he has written over 50 publications in the area of UX, one of which was co-authored with Therese. Joe's vast and continuous experience with UX, Personas, and improving usability will provide up to date insights on how Personas are created and used within large organization such as his own.

Mark preferred not to conduct a Skype interview opting for email communication instead, therefore the information we know about Mark is he's a UX strategist with 18 years of experience.

Marvin voiced his interest in our topic and wished to participate since he had experience in both creating and using Personas. Marvin is a Bulgaria-based UX architect, who we found through a UX-specific social media forum. He is currently employed at a large international IT consultancy.

Before contacting Therese, we knew that she has considerable experience with Personas and usability. She has created Personas for Charlie's organization and co-authored a book on the Persona lifecycle with Joe. That said she has been persistently involved in the area of UX and usability since 1996.

3.6 Interviewing

We conducted the interviews through Skype, which is a VoIP (Voice over Internet Protocol) service. As our interviewees were based around the world, but mostly in America, we could not conduct the interview in person, but we managed to schedule interviews with most of our interviewees via Skype to conduct a face-to-face interview. Before we started the actual interview, we asked for permission to record the interview for later reference and data analysis. Subsequently, we explained shortly our research and its purpose. Some of our respondents did not want to reveal their identities and wanted to remain completely anonymous. Therefore, we sent out our interview guide in an email format for them to answer. The set up was in a way so our email respondents could write as much as they wanted for each question.

3.7 Data Analysis

Transcription of the interviews started as soon as possible after an interview was concluded. This option wasn't always possible where there were back-to-back interviews. The benefit of not delaying the transcription process is that we could recall the interview with some degree of accuracy in case some of the audio was unclear due to internet connectivity issues, an added benefit is that we successfully avoided developing a backlog of interviews that needed transcribing. In the transcription process, each interview was divided amongst us. To ensure the transcription accuracy, we reviewed each half separately, making any adjustments as necessary, and finally compiled. Once a transcription was successfully completed, it was sent to the interviewee for confirmation and feedback. All transcripts were imported into Atlas.Ti for coding and analysis to have a better overview and traceability for our quotations. Additional issues surrounding this study's adherence to ethical and quality guidelines will be discussed in greater depth in latter sub-sections.

After acquiring data about our phenomenon of interest, we decided to adhere to a method to enhance our qualitative rigor. We sought to follow a data analysis method to enhance the credibility of our analysis. We decided to follow the Gioia Methodology to improve our qualitative rigor, because we perceived it to be most relevant for our study. In our coding session, we followed the method described by Corley, Gioia, and Hamilton (2013). We created a data structure (see Figure 3.1) that allows us to configure our data in a sensible visual aid (Gioia et al.,

2013). In making our data structure, we refined the analysis as outlined by Gioia et al. (2013) into abstract dimensions, which gives us a holistic overview of our respondents' view of living the phenomenon. The data structure is comprised of: first-order concepts, which are terms inspired from respondents' quotations; second-order themes, which are concepts with greater level of abstraction derived from the first-order concepts, and aggregate dimensions are extracted from second-order themes (Gioia et al., 2013).

Open coding was determined to be the most suitable analysis method as outlined by Corley, Gioia, and Hamilton (2013). The benefit of this method is that we did not start the process with certain codes in mind which could have potentially biased our reading and analysis of the transcripts. Each transcript was coded separately by each researcher in an attempt to minimize the risk of contaminating each other's codification. Subsequently similar codes (and their corresponding quotes) were merged, while unique codes remained unchanged. These first order concepts were then grouped into themes, which were accordingly grouped into dimensions. This refinement from concept to theme to dimension is meant to give us an overview of all our data, easing our analysis and linking our findings to the theories outlined in Chapter 2 of this study.
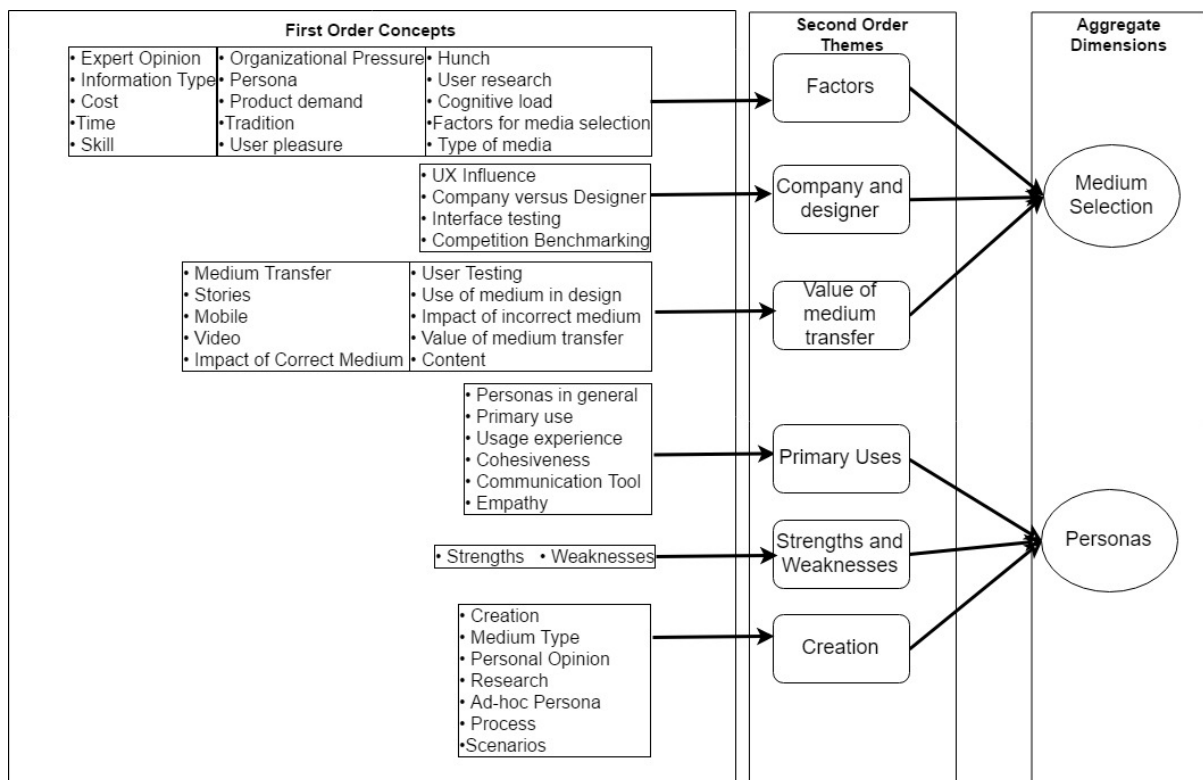

Figure 3.1 – Code data structure diagram

3.8 Research Quality

This section provides an overview of the dimensions that were observed to uphold the quality of this study to a high standard. This section is divided into four sub-sections. The validity of this study is detailed and subsequently its reliability is described. Finally the measures taken to

minimize bias and the possibility of unethical conduct are elaborated on the final two sub-sections.

3.8.1 Validity

According to Bhattacherjee (2012) internal, external, construct, and statistical conclusion validities are all components to gauge a study's validity. Considering the scope of this study, external validity is the most pertinent one. He explains that external validity is also known as generalizability, referring to the extent to which the conclusions drawn within a study are applicable to the larger population. The external validity of a quantitative study is relatively easier to derive when compared to a qualitative one, considering the larger sample sizes and analytical nature demanded by the former (Bhattacherjee, 2012). That said – Kvale and Brinkmann (2009) state that there isn't an ideal *number* of interviews that need to be conducted for a qualitative study to be deemed externally valid. Such a figure will naturally vary greatly depending on the type of interviews being conducted, the research questions being explored, their respective context, and the research project's timeframe (Kvale & Brinkmann, 2009). We decided that a total of nine interviews would be sufficient to gain a variety of different perspectives, especially since our interviewees' backgrounds differ greatly, to generate a meaningful discussion.

3.8.2 Reliability

Reliability describes whether a study is reproducible or not, which is in turn an indicator of the study's consistency and trustworthiness (Kvale & Brinkmann, 2009). Meaning that should future researchers decide to replicate this study, they would succeed in acquiring somewhat similar results – all else equal. Several UXPs who have experience with Personas have been interviewed. Our interviewees have different geographic, professional, cultural, organizational, and experiential backgrounds which gave us a wide variety of opinions regarding the issues explored in this study. To uphold research reliability, the transcription process of interviews was started as soon as possible after the interview's conclusion. Moreover, we reviewed, discussed, re-listened and corrected any segment of the interview that was not clear to either researcher to ensure the transcribed text is in fact what was said in the recording. Moreover, while transcribing we chose to omit any conversation fillers, as they do not add anything meaningful to the discussion and would reduce the coherence of the transcript (Kvale & Brinkmann, 2009).

3.8.3 Bias

Kvale and Brinkmann (2009) explain that one's prejudices are what allow for interpretive, informed judgements and are therefore unavoidable. In the transcript coding process, we chose not to have predetermined codes that could potentially bias our coding, and consequentially, analysis process. Rather we let the codes present themselves as we read the transcript in an effort to be more faithful to our informants' statements (Gioia et al., 2013). While conducting our interviews, we asked the participant to make vague points more explicit to minimize the chances of us bringing in our own bias and warping the quotation's meaning. Finally, we got

opinions and feedback from friends and supervisor about our investigation, logical processes, and content to ensure we are not contaminating them with our own preconceived notions.

3.8.4 Ethics

As mentioned earlier, the primary data collection tool that were used are qualitative, semi-structured interviews. The nature of this method and its necessity of having an audio recording of the interview (Bhattacherjee, 2012), demanded a close attention to our ethical conduct. As outlined by Bhattacherjee (2012), we are ethically obligated to disclose relevant information to the interviewee such that they can decide whether or not to participate. In email communications prior to scheduling an interview, all interviewees were informed of the purpose of this study and received a copy of the interview guide – such that they are fully informed of both the purpose and the scope of our study before agreeing to an interview. Before conducting the interview, we restated the purpose and scope of the study in case the interviewee forgot or wanted clarification. Subsequently, we asked for their permission to record our discussion and what the recording will be used for. Therefore, all participants were informed of the interview's purpose, scope, and recording several times and had several opportunities to voice their concerns.

As Bhattacherjee (2012) and Recker (2012) point out, anonymity is difficult to uphold given that interviews were conducted face-to-face via Skype. We ensured all interviewees that their identities will remain confidential to everyone except ourselves. Therefore, we chose to assign aliases to each interviewee to maintain their confidentiality. Moreover, aliases were assigned to some organizations mentioned within the transcript at the request of our participants, to keep the identities of their stakeholders confidential as well. These assurances would allow the interviewees to speak freely about their experiences without bearing the mental burden of any potential repercussions of their answers on their personal or professional lives.

The aforementioned confidentiality precautions were also integrated into our transcriptions of the interview audio recording. Each transcription was were sent to its respective interviewee to review. This gave the interviewees an opportunity to request the removal of any facts, names, terms or words from the final transcript and therefore from our study in case they perceive that information to be confidential or sensitive, as outlined by (Kvale & Brinkmann, 2009).

4 Results

The Results chapter presents our empirical findings acquired from nine interviews conducted with UXPs. The chapter is divided into two major sections: Personas and Selection of communication medium. Each section is organized into sub-sections, which emerged from our coding of interview transcripts.

4.1 Personas

After coding all interviews, grouping the codes into themes, and collecting them into dimensions some patterns emerged regarding Personas. Therefore, this section is divided into the primary uses of Personas, strengths, weaknesses, and creation. Each of these sub-sections will present our interviewee's opinions regarding Personas.

4.1.1 Primary Uses

Our interviewees, despite their geographic dispersion, unique backgrounds, and distinct levels of experiences have revealed that their usage of Personas is similar. Personas can be used as a tool to maintain cohesiveness within the organization and ensure that all team members are synced about who their target user is, such that there is a common understanding of who is going to be using the end-product being developed. Alternatively, Personas can be used as a tool to facilitate communication between designers, developers, team leaders, and other stakeholders. Finally, Personas can act as a vehicle for empathy – to help the project team put themselves in the user's shoes and contemplate issues from a perspective different than their own.

Cohesiveness
One of the reasons our interviewees use Personas is to maintain and improve cohesiveness within their organizations. All interviewees, with the exception of Mark, agree to the aforementioned notion. Charlie, Greg, Joe, Jack, Frank and Marvin use their Personas internally within their organization, such that all team members and stakeholders know explicitly their project's purpose, scope, and target audience. Charlie exemplifies by stating that he uses *"Personas to remind all the participants in the project, especially non-designers […] what the project is about. So, we remind people that they are not working for themselves or their boss or their own self-interest or anything. That they are working for the user" (Appendix 2a, L.13-16).* Therese's experience is unique in that her Personas are ultimately used by organizations other than her own. According to her, executives have internalized assumptions regarding their company's target audience, and over time these assumptions will progressively drift farther and farther apart. Therefore, her Personas *are* meant to re-align these assumptions. David asserts that Personas are valuable when it comes to maintaining product cohesiveness by keeping the product focused on a certain Persona, and therefore minimizing the chances of unnecessary features being added. He states that "*[… The Persona] is good for keeping everyone on the same page especially the marketing people and the clients, and your bosses who always want you to change it [the product] or to add more stuff" (Appendix 2b, L.117-119).*

Communication   *Tool*

David, Jack, Joe, and Marvin have dictated that their Personas are also used as a communication tool. One of the features that makes a Persona a facilitator of communication is the name it's given. Developers and designers in their organizations have an easier time conceptualizing and thinking about a problem when they know it specifically relates to "Jennifer" or "Bill". Designers use Personas to guide stakeholder thinking by asking questions such as "Does Jennifer like that?" or "Would that work for Bill?" The Persona's name helps listeners draw on the facts they've internalized about Jennifer or Bill to drive the conversation forward. Marvin illustrates this point by stating: "*I always name my Personas and it's very easy to convey information to a design team or developers and it is encapsulating, they can think of the workflow as well about this person and think of the workflow of the actual person that will be doing this*" (Appendix 2f, L.21-23). Additionally, Frank uses Persona as a mediator between his organization and clients. Frank states that the Persona will help them "to *have a shared vernacular*" (Appendix 2i, L.11). They will share the same language such that correspondence between the two is uniform and ambiguity is minimized. The implication of this enhanced communication is improved collaboration between the two, enabling them to create deliverables and artefacts (such as customer journeys).

Empathy

The third primary use for Personas as clarified by our participants is empathy. The Persona serves as a channel for the design team to connect and sympathize with their user. Subsequently the design team will adjust their designs to suit their users based on the insights obtained from that empathetic connection. Charlie, Greg, Jack, Joe, Mark, and Marvin all use Personas as a vehicle for user empathy. Personas help developers and stakeholders to think of the user as an actual human being rather than some abstract entity. This thought makes it easier for designers, developers, and engineers to put themselves in the user's shoes and connect with them on an emotional level when developing or solving a problem, rather than thinking about the issue as a task to cross off their checklist. Jack explains that "*it's [the Persona] almost invaluable, because even if it makes you [the designer] stop and think for a second, is there something, she [the user] will be able to do? […] they [Personas] can definitely help you, at least make a better informed decision.*" (Appendix 2d, L.39-45)

4.1.2 Strengths

There is a consensus among many of our participants that the use of Personas leads to an improved understanding of the target user. Charlie, Greg, Joe, and Mark all attribute this improved understanding as a strength of using Personas. However, each of these interviewees associates this strength to Personas for slightly different reasons. Charlie, who is the co-founder of his studio, recalled Personas he was engaged with while working with a Geneva-based organization. He explains that the Personas allowed him to obtain a greater understanding of who the project's target audience are and what they want to do. Similarly, Greg, a designer and director in his organization, explains that one of the strengths Personas have is that they enable designers to attain an improved understanding of the target audience, because their Personas are constructed with elements of science, psychology, design, and empathy in mind. Joe, the director of design at a multi-national computer hardware manufacturer, thinks that the Persona's ability to improve understanding of users over time is due to its fictional nature, which encourages

individuals to engage mentally with the Persona. Mark, a UX strategist, finds that well-constructed Personas will provide valuable insight into the nature of user's daily tasks – such as complexity, repetitiveness, frequency, and number of interruptions.

Another common strength our interviewees associate with the Persona is empathy. Charlie, Greg, Jack, Mark, and Marvin agree that a Persona will allow UXPs to associate with their users. Charlie explains that the Personas he was engaged with, while re-designing a website allowed him to identify with different types of users and envision what each persona expects from the website – adjusting his designs accordingly. Greg explains that Personas trigger the imaginative and creative exercise of projecting oneself into the user's shoes to sympathize, emulate, and imitate the user's emotions. Greg applied the insights obtained from this exercise to his designs such that they suited users more. Similarly, Jack, a senior UX consultant, and Marvin, a UX architect, claim a Persona's strength lies in its ability to encourage designers and developers to consider the user's ability to perform the task being developed. The empathy Mark feels for his users comes from insights acquired from interacting with Personas. By getting a better understanding of what a user does and how he does it, Mark and his team are able to sympathize and accordingly make the user's life easier.

Personas are, according to our participants, also an effective communication tool between organizational stakeholders. In Frank's experience as a UX lead, Personas have facilitated communication between his agency and their clients by unifying their language – minimizing the risk of miscommunication. Where Frank used Personas as a customer-oriented communication tool, Marvin uses them internally. Marvin explains that Personas streamline communication between the development and design teams, attributing this strength to the fact that Personas are given a human name such as "Jennifer" or "Bill" – opposed to a generic label like *the user.* Similarly Therese, a customer experience strategist, cites the strength of Personas as an inter-organizational communication tool. Therese explains that Personas are used in the organization as a communication tool to ensure that everyone in the organization has no doubt about who they're supposed to be targeting. The logic being that individuals in the organization no longer have to depend on their internalized, subjective assumptions about the target audience since the Persona makes these characteristics explicitly clear.

Since Personas are meant to represent the organization's target audience, one of their strengths is that they align the organization's understanding of who that audience is and what their attributes are. Charlie, Frank, Greg, and Therese agree that Personas will allow the organization to better focus on their target. Charlie asserts that Personas are particularly useful in large, political projects that involve many stakeholders and it makes sure everyone is clear on who the project is targeting and what the target's profile is. Frank's agency uses the Persona with clients to ensure that their target audience is well-defined and consistent across the two organizations, so that collaboration and deliverables are coherent. Greg states that the Persona is "*between product strategy, marketing, product developments" (Appendix 2c, L.87-88)* and helps align all three of these organizational constituents, such that the end-consumer's experience is consistent. Therese states that *"there's a reason and the company was founded to do X for Y person, but all of them are misaligned even on that basic "for Y person" and what problem they're trying to solve" (Appendix 2g, L.33-35)*, explaining that her Persona creation process re-focuses the organization on a single target. The Persona, as an artefact, minimizes the probability that the organization will deviate from their target audience in the future.

David, the director of his organization, has a unique opinion of the strengths attributable to Personas. He explains that they are useful when used with *"a team that is spread apart by many many people to make design consistent" (Appendix 2b, L.17-18)*, the logic being that without a Persona to guide them, individuals will deviate slightly and the product will deliver an inconsistent experience to the user. Additionally, David explains that Personas can help prevent the introduction of irrelevant features to an application by posing questions such as: *"'well does Julie like that? Would that work for Henry?'"(Appendix 2b, L. 21)*

4.1.3 Weaknesses

There are weaknesses associated with Personas. David, Greg, Jack, and Therese acknowledge the fact that including irrelevant, inaccurate, or assumed information into a Persona will result in a Persona with limited reliability and usefulness. David explains that information such as *"they like ice cream, and they don't like espresso coffee."(Appendix 2b, L. 72)* is not very useful for the sake of software development. Greg, Jack, Marvin, and Therese all agree that including assumptions that are not based on hard data will result in an inaccurate Persona – that if used will give misleading insights, which in-turn may deliver a variable experience to the end-user.

Having multiple Personas may be problematic for designers, as there isn't a single accepted way of reconciling the differences between Personas. Greg explains that *"you [the designer] will have contradictory position from different people" (Appendix 2c, L. 126)*, and those contradictions were captured by the resulting Persona. Greg was left unknowing how to make a design decision that would be pleasing for all the relevant Personas. Greg's dilemma seems trivial when compared to Mark, who has *"24 Personas for one type of user for our applications [...] so it makes it difficult to know who you're designing for because you have to cover such a broad range of users"(Appendix 2h, L. 10-13),* and taking a design decision for all 24 Personas would be accordingly difficult. Mark explained that the situation was handled by making *"a specific task really easy for one Persona, but impossible for the other Personas" (Appendix 2h, L. 14-15).*

Jack claims that there is an inherent weakness in Personas no matter how well constructed they are. He explains a Persona's relatability is variable, and will change from one Persona to the next. As the distance between the Persona and the designer increases, the less relatable it becomes, limiting its usefulness. He states that *"it does not matter how great the Persona is, I can never understand, the 35-year-old single mother [...] I can have all the Personas in the world like that, but they're not going to help me, I am never going to be able to associate with that."(Appendix 2d, L. 33-36)*

Joe expands on the weaknesses he associates with Personas, explaining that their creation process is time consuming. Their creation can be a distraction from the actual work the design team must to do, this weakness is compounded by the fact that *"Personas are a means to an end, not the end in itself" (Appendix 2e, L. 35)* – they do not directly generate income for the organization. Joe explains that Personas' fictional nature can also be a weakness, as they can result in *"some kind of back-fight against Personas because they're fictional" (Appendix 2e, L. 48-49),* but this will change from one organization to the next.

Therese asserts that there is no good reason for a data-based Persona to fail, because they make sense and they're a universal language. Despite their apparent robustness, Persona efforts were

still failing. As such this is a weakness of the Personas and Persona-efforts: they are susceptible to failure because of *"political [...] social [...] sociological [...] organizational psychology problem[s]" (Appendix 2g, L. 94-95).*

4.1.4 Creation

As described in the Chapter 2 above, there is a generally accepted method of creating Personas that starts with user research and ends with a fully-fledged Persona. However, our interviewees' processes varied, ranging from complete outsourcing to a close adherence to the theoretic guidelines. One unexpected and recurring variation was initiating the process with what we'll refer to as an "ad-hoc" Persona, rather than data collection.

Charlie's organization realized that Persona creation required a particular skillset revolving around storytelling and writing. After evaluating their internal competencies and realizing they did not possess such skills – they decided to outsource their Persona creation to another company.

Analytics is the starting point for Frank's Personas. The design team conducts a discovery session to learn as much as they can about the customer. These insights are then used to map out the Persona's decision making process and the Persona's journey. The Persona and its accompanying artefacts are subsequently compiled into a PowerPoint deck, featuring "actionable goals" that are backed up with hard data and analytics.

Greg's experience in creating Personas is, as he describes, "messy" in the beginning, starting with each member of the product team subjectively defining categories of people who might be interested in the product they are working on. These categories are then compared against each other and incremented by merging, dividing, or identifying new categories. Once the team has agreed on a set of categories, they proceed to infuse them with their opinions of that category such as characteristics, technical knowledge, interests, use-cases, budget etc. Greg's process of filling out a category and defining it into a Persona is done based on one's own characteristics and therefore it is difficult not to taint and skew the Persona with inaccurate ideas. After the Persona has been defined, Greg's team does a "reality check" to see whether the Personas they defined were indeed accurate or not. This check is done by recruiting individuals who match the defined Personas and have them interact with the product being developed – if the individuals exhibit interest then the Personas are deemed to be accurate and will subsequently be actively used to guide further design decisions.

Jack, being a consultant, is engaged with different organizations on a project basis and typically his Persona creation process starts with a discussion with stakeholders. The goal of this discussion is to create an ad-hoc Persona by determining the project requirements, identifying key people, and pinpointing their goals. Jack validates this ad-hoc Persona with an employee with the organization fitting that profile, modifying the ad-hoc Persona should there be any discrepancies. To flesh out the Persona and finalize it, Jack contacts several employees belonging to that Persona and ensures that all the details he has are accurate and are in fact representative of the target group. To further enrich the Persona, Jack conducts sketch-boarding sessions with

representative employees – asking them to design six screens using a "Lego box" of both essential components that *must* be on their screens and optional features. After 10 minutes Jack asks them to present their screens to the other attendees. He compiles all the screens created by employees, their reasoning, and comments after the session – appending any recurring patterns he might have noticed to the Persona. Now, the finalized Persona along with the screens and insights obtained from the users themselves will be used to guide Jack's future design decisions while working with that particular client.

Joe explains that the Persona creation process is never the same and will vary slightly depending on the project. He has an idealized process for creating them which requires a lot of time and effort to be expended. The basic approach involves two steps, the first of which being understanding and harvesting the notions of target users held by teammates and stakeholders (such as executives, decision makers, and the people who will be using the Personas). This harvesting process is important because it gives Joe an understanding of who his colleagues think they're targeting with their projects. Joe embraces those notions, defines them, and assigns them priorities. The second step is somewhat similar in that the team explores the data at their disposal within the organization. This inventory helps the team know what new data needs to be gathered. Lastly Joe and his team conduct research to acquire the data needed to validate the Persona and give it legitimacy. In the rare occasion that the empirical data contradicts the ad-hoc Persona, Joe states it would be "crazy" to ignore the data and the Persona would be modified such that it is conforms to the data collected. The ad-hoc Persona, after being validated with hard data, is graduated into a fully-fledged Persona that may be used to make better-informed design decisions. A practical example of this validation process was a grandparent-type Persona for one of the products Joe's team was designing. The project team's intuition supported the Persona, they strongly believed in it, the data supported it, and ethnographic research confirmed it and they initially believed it to be a viable Persona. However, in the validation stage, which was conducted with data harvested internationally (the product was meant to be launched globally), revealed that the Persona did not exist outside the United States which forced the team to terminate the Persona.

There isn't a single method for creating Personas in Mark's organization. The process will change according to the project requirements, scope, and sophistication. How closely the process is followed will depend on how structured the UXP in question is. The general process followed in Mark's organization is a "*basic lean UX-style approach*" *(Appendix 2h, L. 48)* that starts with a meeting with stakeholders and the product management team to define the Persona that will be addressed. He elaborates that the Personas created from this process are *"not overly detailed or researched initially" (Appendix 2h, L. 48-49).*

Therese's Persona creation methodology is centred on and revolves around the assumptions held by individuals in the organization. These assumptions are the reason Therese's process doesn't start with conventional user research, rather she starts at the executive level – since they consider their opinions of the target audience to be as valid as, if not more valid than, hard empirical data. Therefore, presenting data to them in the form of a Persona will ultimately be disregarded. Therese's process starts with a meeting with all relevant executives in the organization where she works with them to extract all the assumptions they hold regarding the target audience. Once all the assumptions have been brought to light, all the executives compare their opinions in a "non-political" light – where no judgement would be delivered onto anyone based on their opinions. The discussion is then guided in such a manner to encourage the executives to reach a consensus regarding their target audience's characteristics, wants, and needs. The

outcome of these discussions is an unverified, opinionated, and subjective ad-hoc Persona of the organization's target market. The Persona project team will then go out into the field to conduct different types of target market research to evaluate the validity of the ad-hoc Persona's characteristics. Therese explains that *even if* the Persona is not completely representative of the target market, it should not be discarded – as it would help maintain cohesion within the organization. Therese asserts that a cohesive organization targeting the incorrect market will make more progress than an un-cohesive organization pursuing the correct market.

4.2 Selection of Communication Medium

After having gone through an extensive coding process, where codes where grouped together into themes and even further into dimensions, an empirical result started to form. From our first set of codes and our first order concepts, we worked our way down towards themes and dimensions. We identified three themes from our coding, which later was grouped into the dimension Selection of Communication Medium. These themes will be the sub headers of this chapter and are they the following: Factors for Media Choice, Company and Designer, and Value of Medium Transfer. Next, we will go over each theme and argue for them based on what we found from the interviews.

4.2.1 Factors for Media Choice

What came out of the transcript coding process and caught our eye right away was how the interviewees talked about the factors that drive their selection of communication medium. We identified a variety of factors that prompt and influence our interviewee's choice of communication medium (such as text, audio, or video) while negotiating with their clients on how to present information. Factors like tradition, organizational capabilities, cost, time, and research are only *some* of the factors we identified during coding.

From our coding session, we found a consensus amongst most of our interviewees of how information is presented towards users needs to be in a way so that user's cognitive state accepts the message being delivered to them in the best way. Charlie, David, Greg, Jack, and Marvin state in different ways that this is a factor they consider when choosing a medium to convey a message. As Charlie mentioned, he and his team try to adapt to circumstances, to convey the messages to users in the best possible way. The interview with David was special in that he talked with greater emphasis and passion about the actual users. He elaborated on the fact that the human mind's cognitive state to quickly understand information being presented, can be very different throughout the day. *"That's why I call it activity based design, you have to understand what the reason is that somebody is doing it, and the point I'm making is that, I might be very different throughout different times of the day, and looking at the very same information." (Appendix 2h, L. 258-260).* Jack as well, explained how he actively thinks about the cognitive state of the users, basing on the preferences of his Personas. However, as Jack said, there are other factors that have to be considered when choosing the optimal medium to convey a message to users.

The second factor most of our interviewees spoke about, is how the organization itself can affect and negotiate the choice of medium. Where the organization and the UXP may enter a process of negotiation to determine which medium can be used to present information to users. There can be a variety of factors coming from the organization, such as: cost, capabilities, standards, trends, internal processes, etc. These factors may play a part in the negotiation process and may result in the sub-optimal medium being chosen. Charlie, Jack, Joe, Marvin, and Therese explain that the organization can have a large influence on which medium is chosen. Both Jack and Joe elaborated that a major factor is cost. Jack said that expense is not only a factor on the engineering part for creating the chosen medium, but as well based on the content that is at hand, and therefore could it be less expensive to have easier and simpler content. Charlie, Marvin, and Therese all elaborated on the organization's capabilities and control over the chosen medium. Charlie said that he might encounter a constraint involving the control over the actual content that is going to be presented towards the users, stating that *"The problem we often encounter is that we do not really have full control over the content that will eventually be made available to the users. […] sometimes we suggest that something should be done, and we have for example also found out that in many cases that video can say more than a thousand words." (Appendix 2a, L. 40-46).* Meanwhile, Marvin and Therese expressed that an executives' goals and opinions can affect what medium is chosen. Therese explained how executives tend to follow "the sexiness of what is hot today" as she put it. *"Because as sexiness is high, then you have ridiculous executives coming in and saying we need to have a video that would land on our bank website, which is just ridiculous." (Appendix 2g, L. 213-215).*

From the coding session, we discovered that some of our interviewees try to base their selection on Personas created from user research. Charlie, Greg, Jack, Joe, and Marvin described how Personas can help determine the appropriate medium, that Personas can inform them what type of medium is optimal for a specific project. However, as Charlie mentions, that even though a Persona is constructed with a good amount of user research, at some point it is also a hunch feeling that a certain medium type works better than the other. *"We will of course try to choose it based on the Persona but it's not always possible." (Appendix 2a, L. 123).* Greg as well elaborated that a chosen medium should be decided based on the description of his Personas that have been conducted through user research.

David, Greg, and Therese as well describe how the content itself can suggest which medium should be chosen. As Greg points out, medium choice should not be done before deciding on what information is to be conveyed. He continued to elaborate that designers first need to figure out the message before choosing the medium it'll be sent through. *"I would say you really need to start to understand the need and what is the message you want to give and then you choose the medium based on this." (Appendix 2c, L. 200-201).* Jack, Joe, and Marvin describe similar situations where the project needs and requirements can give suggestions of what medium should be chosen. Joe, for example, elaborated on that some projects require a direct action, and therefore presenting that action in a different medium would not make any sense.

4.2.2 Company & Designer

The second theme within the dimension of Selection of Communication Medium, is company and designer. What we found out is that UXPs do not always have the freedom to do what they think is an optimal solution. There is a negotiation phase between the practitioner and their

client/organization to decide whether the solution will be implemented according to the practitioner's specification or not. There can be a lot of factors influencing this negotiation, for example organization capabilities, available resources, and the sheer stubbornness of decision makers of looking blindly down the road. Now we will elaborate on our interviewees' experiences and thoughts.

What we found from our interviewees is that some of them described how the organization as a whole, or a client, has an effect on decision making in the design process itself. As Charlie, Joe, and Therese explain how organizations can put branding and quality requirements on the project, so it meets the company perceived standards. As Charlie and Therese elaborate, that a company strategy can put them, as UX consultants, in a tough spot regarding their recommendations and decisions. As Therese mentioned that executives can have a major influence on where UX decision-making ends up. *"If there is a UX person on the executive team, then UX would absolutely be looked to, [...] or weigh in with a stronger impact." (Appendix 2g, L. 156-158).* Charlie mentioned on a similar note, that his clients set for him branding and quality requirements to uphold their company standards. These requirements can make the process of choosing an optimal communication medium difficult for Charlie. As Joe is not a UX consultant but the director of design at a large computer company, he elaborates on the capabilities of the design team, what they are good and bad at doing. He considers if they have the capabilities to make an animated video out of scripted text to deliver a certain message or if they can create an audio clip that delivers the same message as the animated video, etc. *"That's part of it, it's not quite engineering but it's definitely what you are capable of doing and so there's a tendency to just fall back on the stuff that you're good at or know how to create." (Appendix 2e, L. 159-161).*

Charlie, Jack, Marvin, and Therese mentions how clients can be open and flexible towards suggestions, but as well stubborn towards their recommendation about UX. Jack took an example of a project he worked on, where a client had a massive requirement regarding their content. They wanted to have over 40 inputs on the screen and no matter how much Jack explained, gave reasons, and recommendations why this was a bad idea, the client did not budge from their content requirement. In this scenario, the sub-optimal medium of information representation was forced on Jack and wasn't the outcome of a negotiation between him and his client. *"I used every piece of information and study and gave those scientific documents and all kinds of information from a bunch of different heuristic studies to say this is too overwhelming for anybody even people who use this on a daily basis, this is too much for them. And they were like "no we have to have them". So, at that point I have to step back and be impersonal. It's like ok I given you all the information, you're still willing to make this decision, so be it. Let's do it and move on." (Appendix 2g, L. 221-227).* Therese talks on the same notes how companies are always following trends of what is popular to have at each time. For example, having a mobile app is popular today and companies have in their strategy to develop non-desktop solutions. Therefore, UX decisions can be influenced by companies' strategic visions. *"So many of them are going after [...] mobile, going after anything that is a non-desktop solution or not a big-screen solution for strategic reasons – saying we need to do this on mobile." (Appendix 2g, L. 128-131)*

4.2.3 Value of Medium Transfer

The third and last theme grouped in the dimension of selection of communication medium', is value of medium transfer. Intriguing codes emerged from the data analysis about how UXPs stress the fact of how important it is the message is transferred to the user. They talked about the importance of using an effective medium and how it can impact users both in a good and bad way. Additionally, our interviewees explain that depending on the type of information, the medium selected can be optimal or sub-optimal.

Charlie describes that the media choice is not always so simple and clear. Charlie continued to explain, that from a pure UX perspective there's often few ways to do things right. Therefore, he tends to fall on the conservative side of medium choice when the objective is transferring the information to the user instead of following trends for media choice. He elaborates that users want to get things done, and if the experience is forced, following trends, might not be optimal. Additionally, Charlie describes that organizational capabilities to produce a medium can result in a suboptimal one. He says it can have a negative impact on users in the form that they do not get the job done, and the message simply doesn't get delivered. *"It can affect him (the user) negatively in the sense that it can prevent him from getting his job done, or do it really really badly. Very often it would harm your conversion, your brand perception, or simply how you get your message across." (Appendix 2a, L. 230-232).* What we also found from the interview from Charlie was his perception on how content is highly linked to the overall user experience.

David's mentality of focusing more on the user told us that content can be presented in a more than one type of communication medium. Something David found to be interesting was how individuals would have different uses for the same product or interface. David might ask himself how much time do different users spend looking at information based on their usage. He elaborates that presenting the information differently based on how the user utilizes the product can increase the value for their time spent absorbing the information. Something David calls activity based design. *"Well look I read the newspaper in the morning but there are two ways I can read the newspaper. One is I have only 5 or 10 minutes while I drink my coffee and I just want to get a feeling of the important events that have happened. The other is I have an hour and I'm going to read every single article" (Appendix 2b, L. 85-88).*

From our interview with Greg, he explained how he actively thinks about a medium type and the way to communicate information. Greg talked about how information should be presented based on user research about potential users. He elaborated on an individual that is not into mathematics and looking at statistical data, he should get a more concise and interpreted way of presentation so the information gets delivered. He as well elaborated on how the underlying user research for the need of a product can be right but the delivery of information could be wrong. Therefore, as a result, transferring the information to users will be invaluable.

What Jack believes, is hat in the future, same information will be presented in different medium depending on what the user wants, but that is going to be labour intensive. In a continuous discussion about delivering the same content in different medium, he believes that it limits the access to users if only one medium is used. Therefore, he explains that in giving the users multiple options to consume information, companies can cover a significant number of people with the optimal delivery of information. *"Giving the user the option to choose how they want to learn. […] You're going to cover a significant number of people." (Appendix 2d, L. 305-308).*

Joe describes how the value of communicating information through certain type of media is not really set in stone. However, he uses a "design vocabulary" within his design team that helps them inform users in a more natural way of what they are doing, what they should be doing next, and what they should be paying attention to. The design vocabulary Joe and his team uses is not explicitly defined to certain media types (ex: video, audio, text) but they focus more on elements between them. For example, motion, animation, and transition in the user interface itself.

There are potential hazards or benefits associated with choosing the incorrect or correct communication medium. Some of the hazards according to Marvin, that are associated with the improper communication medium is the risk of the user having an unpleasant experience, or may have a large cognitive load - impeding their ability to process information. *"The hazard to the users is of course an unpleasant experience, say having a large cognitive load, you cannot process information" (Appendix 2f, L. 147-148).* On the other hand, he elaborates, the correct communication medium will facilitate the speed and quality of user information comprehension by minimizing cognitive load.

Through our coding session, we found out that Therese looks at user experience as a linear experience. She explained in a simple way, that people start doing something, then they are in the middle of it, and finally they finish. This is the same experience when using software, even if it is between platforms. *"It's always linear, because we exist in time, so every experience, that every single user has, with every single app and every single website, is linear period." (Appendix 2g, L. 343-344).* She continues that point by explaining that if companies do not realize the linear experience, the message might not get through to the user. What we also found is how she perceives software interaction as a conversation. She explained that if a software says the right thing to the right user at the right time, then the users are more likely to do the things that makes your business thrive. She also explained that most software does not do that. *"The conversation that they (software) establish are the ones that you would never tolerated in human society. Like if you met an app at a party, you would be like "I'm getting away from this guy", just first of all he is not listening to me, he is being a total asshole, he is acting like I should already know everything about him and that he is the greatest guy on earth, and that is like how most experiences using websites and apps are, it's like a shitty conversation with an obnoxious person." (Appendix 2g, L. 310-317).* She continued her party allegory by explaining when a user steps into the party, there are all these groups of people having conversation, and when they see you, they stop talking and they all scream the topic of their conversation towards you.

5 Discussion

This section of the paper we will discuss our empirical findings, in Chapter 4, in light of the literature review presented in Chapter 2. Our discussion will be divided into three sections corresponding to the three parts of our conceptual model: Communication Medium, Personas, and Information Representation.

5.1 Communication Medium

The gap between knowledge management and PCGs is being bridged by UXPs. A majority of the professionals we interviewed are intuitively using an aspect of the CFT, to negotiate optimal information representation. The notion that different pieces of information are communicated better through different media. In their experience, a mismatch between information and its representation will place a larger cognitive load on the user, resulting in a more displeasing user experience. Our interviewees find the communication medium with the best cognitive fit through user research, trial and error, and user testing. However, one interviewee explained that an individual may prefer to see the same information through different media to achieve the same goal, depending on his level of mental exhaustion. The implication of this observation is that the cognitive fit is variable depending on the user's mental state.

Scholars of knowledge management have elaborated in their literature that different types of information should be communicated through different media types (Daft & Lengel, 1986). The impact being, the recipient can understand and internalize the presented information efficiently as suggested by the theories of Media Richness and Cognitive Fit (Daft & Lengel, 1986; Vessey, 1991). According to Vessey (1991) and our interviewees, the presentation of information in the manner users expect to see it (i.e.: compatible with the user's mental model) will reduce the cognitive load placed on the user. This compatibility will reduce the mental effort required by the recipient to interpret said information (Vessey, 1991). Our participants claim that the user having a less cognitive load will improve decision making quality, speed, user satisfaction, etc. and the users' specific benefits will change depending on the users' goals.

The PCGs, and consequently the Personas created with them, do not acknowledge the aforementioned notion. The guidelines do not advise UXPs to explore how their Personas want to see information to reduce the mental effort and cognitive strain placed on the user. The logical implication being if cognitive load is high, the user's goal completion will be hindered – and according to Joe, it may reduce the overall usability of the product being developed.

5.2 Personas

The results of our investigation indicate that, all interviewees make some use of Personas, which could be summarized into three themes. Primarily they use Personas as a cohesiveness tool - to make operations between teams and departments consistent within their organizations. Additionally, they use Personas as a communication tool - to enhance understanding within their design teams on who they are actually designing for. Finally, they use Personas to be more

empathic towards users. These findings are in line with what the literature perceives as strengths of using Personas. As Cooper (2004), mentions that the effectiveness of Personas lies in improving communication through the organization, between departments and stakeholders as well getting a better understanding of users' needs. Most of our interviewees ground their design process on Personas, as Grudin and Pruitt (2002; 2003) explain that including Personas in the design process does not mean that other tools, such as user scenarios, are unnecessary. However, Personas can be used as fundamental infrastructure for everything that follows in the design process (Grudin & Pruitt, 2002; 2003) which can include communication medium.

As defined by Alan Cooper (2004), the Persona creation process starts with an investigative process through which a Persona is defined based on its goals. The definition process is iterative in that as goals are made more specific, the Persona in question is accordingly refined (Cooper, 2004). Alternatively, Grudin and Pruitt's (2002) creation methodology deviates from Cooper's in that their process starts with customer data that has already been acquired by their organization. They elaborate that highest priority segments are identified using marketing and financial data (ex: market size, revenue). These segments are fleshed out with details such as goals, identity, and frustrations into the Persona *after* additional user research is conducted (Grudin & Pruitt, 2002). It is noteworthy to mention that, despite their differences, both methods start with data about the user (Cooper, 2004; Grudin & Pruitt, 2002).

Although Cooper's method it is not widely adopted by our interviewees. In fact, none of our interviewees' creation methodologies are similar to Cooper's, where they define a Persona from user goals identified in an investigation phase. Joe offering the explanation that such processes are very time intensive, a distraction from the actual designing, and Personas in themselves do not directly generate income for the organization.

Grudin & Pruitt's method is more widely adopted by professionals in the industry. Joe adheres very closely to this method. He performs an internal investigation with stakeholders and colleagues to know for certain who the organization is targeting. A survey of organizational data is performed to determine what data is required to validate it. The collected data, paired with pre-existing data is integrated into the Persona to make it more believable. Frank's organization harvests data and generates analytics about their target audience. The design team, including Frank, start with these analytics to inform them about the Persona. In contrast to Grudin and Pruitt's guidelines, they do not perform a subsequent data collection phase to flesh out the Persona with additional detail, they simply use what information and analytics they have on-hand.

A Persona creation methodology used by a majority of our interviewees is what we shall refer to as the "ad-hoc" method. This method is unique from either Cooper or Grudin and Pruitt's methods in that the process starts with assumptions (rather than data) from which an ad-hoc Persona is created, being validated into a fully-fledged Persona after user research is conducted. Therese's Persona creation process starts in a meeting room with executives, where they discuss all their internalized assumptions regarding the target audience. Once a set of assumptions are agreed upon, they're compiled into an ad-hoc Persona, and user research will validate it into a Persona. Therese however, in contrast to both literature and other interviewees, suggests that Personas should not be discarded if they are not completely representative of the target user. Her logic being that the organizational cohesiveness gained by using the Persona outweighs the detriments associated with its inaccuracy. Jack has a process similar to Therese, in that he also

creates an ad-hoc Persona with stakeholders that he subsequently sets out to research within the client's organization using different methods such as interviews and sketch-boarding sessions. Jack will modify the initial ad-hoc Persona based on the outcome of his research, turning it into a usable Persona. Regardless of the specific creation process used, the resulting artefact will be a Persona, which has its associated strengths and weaknesses.

From the overall conducted research, we discovered that our interviewees' motivation for using Personas are in line with what the Persona literature mentions as strengths of using them. Our interviewees use Personas mainly as a cohesiveness tool, but as well for other reasons. For example, they are used to create a strong focus on the context of design projects. Secondly, they are used to improve understanding of people, because they are a combination of psychology, design, and empathy. Finally, our interviewees use them as well for their simplicity, where people with no knowledge of the project can empathize with the Persona and take better informed decisions. However, our findings highlight that our interviewees actively take into consideration the optimal communication medium type in their negotiation with their client/organization on choosing how to transfer information to users in the best way. Like the KML points out, certain type of information need to be presented in a certain type of medium that helps users understand information with greater ease (Daft & Lengel, 1986; Vessey, 1991). However, this is not acknowledged in the Persona literature, with all of the benefits it addresses, it does not state a certain medium type a Persona prefers. There are a number of factors that our interviewees mention that influence their choice of medium type, as elaborated on in the results. The Persona may influence what medium is chosen while our interviewees are negotiating information representation with the client/organization, but that medium is not incorporated into our interviewee's Personas. As the Persona guidelines explains, Personas are a good coherent communication tool, therefore incorporating the medium type of how the target audience best receives information seems a logical aspect the PCG can choose to incorporate in the future.

5.3 Information Representation

Not fitting the information to its optimal representation can have, according to the CFT and our interviewees, negative consequences on user's goals of using software. As mentioned in the literature review, the CFT states that information needs to fit the optimal representation depending on the task (Vessey, 1991). Similarly, our interviewees state that if information is not presented properly, it can hinder users' goals and task performance; either the users won't get the message that is being conveyed, or they can interpret it incorrectly. As Therese stated, when designers are creating UX in software, they are creating a conversation. Designers are creating a lousy conversation if they are addressing an audience through the sub-optimal medium, or are delivering the incorrect message. The implications of a lousy conversation can be dire for companies, where users may stop using their software in favour for a competitor's, and putting the organization at a competitive disadvantage. Therefore, negotiating the optimal presentation of information can bring value for companies in the form of good UX of their software, however, there are limitations to which media can be chosen.

The theories of media richness and cognitive fit recommend the optimal communication medium for information purely based on the type of information, it's representation, and the type of task being performed (Daft & Lengel, 1986; Vessey, 1991; Vessey & Galletta, 1991). However, we've found that, in the negotiation process for choosing communication medium, there

are a myriad of contextual factors that will influence the UXP's choice or force it outright. Some of these factors include (but are not limited to): Organizational capabilities, product nature, organizational pressure, expert opinion, benchmarking, Persona's nature, and user research. Therefore, even though the optimal communication medium may be known, a sub-optimal alternative may be chosen during the negotiation process as a result of any one of the aforementioned influences.

5.4 Summary

To summarize, our empirical findings have shown that there is a gap between Persona guidelines and KML. Although the PCG don't appear to acknowledge or recommend adapting communication medium to task and information type, we observed that UXPs instinctively perform this adaptation. As emphasized by our conceptual model UXPs bridge this gap by presenting information the way users expect to see it, based on the task being performed. This action suggests that they intuitively apply elements from the CFT to deliver an improved user experience. Our interviewees understand the user's internalized mental representation of the information in question based on user research. This insight and the Persona is used in the negotiation process between the UXP and their client. They may reach a compromise regarding which communication medium can be integrated into the final interface to represent the information in question. In the negotiation, a sub-optimal medium may be chosen in light of the abovementioned contextual factors. What our research is providing to the PCG is a recommendation that they may consider matching communication medium to information and task type – as suggested by the CFT and our interviewees' practical experiences. That way the PCG can become more in line with their practical application in the field of HCI and UX.

6 Conclusion

In this final section, we shall present the contribution of this study to the academic and practical environments. In this section we briefly present key contributions of this study in light of our research question. These contributions are framed in terms of their applicability to the academic and practical environments. Lastly we provide the limitations of this study and the avenues for future research.

6.1 Research question

The purpose of this research was to understand UXPs' mentality when it comes to Personas and the negotiation of information representation, since the apparent gap was identified between Persona guidelines and KML. Therefore, we set out with the objective of researching UXPs' experiences with using Personas and their choice of optimal information representation in software design. With the research agenda set, we posed the following research question:

How do UX professionals negotiate information representation through Personas, when creating interfaces?

The findings of the conducted research, led to the conclusion that UXP's mentality towards presenting information to users is in line with KML. They unconsciously use aspects from the Cognitive-Fit Theory to match information with the user's mental model. Such a match will improve user comprehension, task accomplishment, and user experience. How UXPs determine the communication medium will vary based on negotiation with clients and its contextual factors such as: user cognitive load, organizational pressure and capabilities, content, and Personas. Our interviewees elaborated that deciding on a communication medium is not always possible based on Personas, because of the aforementioned negotiations and contextual factors. These findings have led us to the conclusion that UXPs fill the gap between KML & PCG in their selection of communication medium, where they intuitively take into consideration aspects of the CFT. This selection, in some cases, is influenced by client negotiations, contextual factors, and their Personas.

6.2 Implications

In light of UXPs' experience with selection of optimal communication medium and information representation, we have taken a step towards filling the gap that exists between the KML and PCG. Our contribution to the body of knowledge has implications for both the academic and practical environments.

The apparent gap between the KML and PCG appears to be bridged by UXPs as elaborated on in our results. Not only that but we also found that UXPs automatically fill this gap using elements of the CFT. However, in contrast to Vessey's research, our conclusions have found that in the practical setting there are factors that will influence the negotiation medium selection beyond just the Persona, information- and task-type. Moreover, our findings would suggest that the PCGs can include a point addressing the selection of communication medium for information representation, such that the guidelines may be more in line with their practical implementation.

There are some implications for UXPs as well. Our respondents have emphasized the beneficial impact reducing user cognitive load has on user task performance. As such they attempt to minimize this load by representing information through the most suitable medium. However, their approach to determining this medium is variable and project-based. Therefore, adopting a more structured approach, paired with user research may seem beneficial when making this selection. Additionally, UXPs may stand to enhance the benefits associated with, and the primary uses of Personas, by integrating optimal communication medium.

6.3 Limitations

A limitation of this research is that we were researching UXPs that use and employ Personas in their work. This limits the range of perceptions we could get about Personas as a UCD tool. A professional that doesn't use Personas may have a different opinion on how a communication medium is determined from a professional that uses Personas. Another limitation for this research was that some of the possible respondents contacted through social media forums wanted to remain completely anonymous, and therefore refused to participate. Finally, time was a limitation to our research as it limited the number of respondents we could have. More time would also have given us the flexibility to choose a different type of method to conduct this research.

6.4 Discussion of further research

Given the time constraints, the research method, and the contributions made by this study there are multiple avenues for future research.

Interviewee Selection: We purposefully selected interviewees who have had experience with Personas to understand their mentality for selecting communication medium. That said, it would be beneficial to explore how UXPs who don't use Personas choose communication medium, to get a better overview of how both schools of thought compare with one another.

User's point of view: The topic of information representation explored in this paper has been addressed wholly from UXPs' perspectives. Exploring user's opinions and preferences as they relate to the information representations they encounter on a daily basis may be fertile grounds for future research

Ad-hoc Persona: Our research has revealed the existence of an alternative Persona creation methodology. This methodology unique from "conventional" methods in that it creates an ad-hoc Persona that is then refined into an actual Persona. This process and its corresponding artefact may be specifically researched in future studies.

Appendix 1a: Interview Guide

UX Design (User Centric Design)

1. Have you used user centric design methods in your own projects?

Personas

2. How often do you use Personas in your design
   a. What are the strengths of using personas in your design?
   b. What are the weaknesses?
   c. Does your personas make you more empathetic towards the users?

Practice in UX Design

3. What's the design process you go through in your projects?
   a. Is this process the same for all projects?
   b. What's your process for creating personas?
   c. Is it different between projects?
4. When designing software/apps/websites who determines which type of media will be used (Text, Audio, Video, Image, etc.)? The designer/the customer/ both?
5. In your projects who determines which type of media will be used (Text, Audio, Video, Image, etc.)? The designer/the customer/ both?
6. How much influence does a UXD have on how content is expressed in the project?
7. What are the different transmission media that UXD have in their toolbox?
   a. Would you say that some media are more used than others? Why?
8. What external factors would lead you to use a sub-optimal transmission medium for a given piece of information? (Costs, time, pressure etc.)

Types of Information

9. Do you categorize content to tacit and/or explicit information? (If Yes) How do you determine the categories?
10. How do you treat explicit knowledge differently from tacit knowledge? (If you do so)

Information and transmission medium

11. Do you think about transmission medium in design?
    a. When do you incorporate them into your Personas?
    b. What determines which medium is appropriate? (Text, video, audio etc.)

    c. Are these decisions based on some kind of research, or based on your professional experience? (If yes, what kind of research?) (What is optimal transmission medium? Reasons behind it?)

    d. Will transmission type change when knowledge/information type changes? Why?

    e. Will transmission type change when your persona type changes? Why?

    f. Are these changes influenced by trends? (Hero pictures etc.)

12. How would using the "incorrect"/sub-optimal transmission medium impact the user? How would using the correct transmission medium impact the user?

13. *Do you take information/knowledge type into consideration when choosing the appropriate transmission medium for a given user/persona?* Why?

    a. Do you think certain transmission media will work for certain information categories (explicit vs tacit)? Why?

14. How do you decide which transmission medium is most suitable for a given piece of information?

    a. For example, if you are designing for a sports website and want to incorporate player statistics, how do you decide which transmission medium for this piece of information?

15. How do you ensure that your chosen transmission medium will help the user complete their task?

Appendix 1b: Email Interview Questions

Persona Questionnaire

Thank you very much for volunteering to participate! This is a questionnaire about Persona creation in UX Design and is being conducted for academic purposes. Please feel free to write as much or as little as you want.
If you have any trouble with any of the questions, don't hesitate to contact us.

Please Note: When referring to transmission medium, we are also implying communication media such as (but not limited to) audio, video, text, images, etc...

Job Title:	
Years of Experience in UX:	
Location:	

Personas

1. How often do you use Personas in your design?
   a. What are the strengths of using personas in your design?
   b. What are the weaknesses?
   c. Does your personas make you more empathetic towards the users?

Practice in UX Design

2. What's the design process you go through in your projects?
   a. Is this process the same for all projects?
   b. What's your process for creating personas?
   c. Is it different between projects?

3. In your projects who determines which type of media will be used (Text, Audio, Video, Image, etc.)? The designer/the customer/ both?

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4. What external factors would lead you to use a sub-optimal transmission medium for a given piece of information? (Costs, time, pressure etc.)

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Types of information

5. Do you categorize content to tacit and/or explicit information? (If Yes) How do you determine the categories?

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6. How do you treat explicit knowledge differently from tacit knowledge? (If you do so)

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Information and transmission medium

7. Do you think about transmission medium in design?
    a. When do you incorporate them into your Personas?
    b. What determines which medium is appropriate? (text, video, audio etc.)
    c. Are these decisions based on some kind of research, or based on your professional experience? (If yes, what kind of research?) (What is optimal transmission medium? Reasons behind it?)
    d. Will transmission type change when knowledge/information type changes? Why?

     e.   Will transmission type change when your persona type changes? Why?

     f.   Are these changes influenced by trends? (Hero pictures etc.)

8. How do you decide which transmission medium is most suitable for a given piece of information?

     a. For example, if you are designing for a sports website and want to incorporate player statistics, how do you decide which transmission medium for this piece of information?

9. How do you ensure that your chosen transmission medium will help the user complete their task?

Thank you very much for answering this questionnaire.

Appendix 2a: Charlie Interview Transcription

1   Interviewers: Einar Gunnlaugsson, Omar Mahaba
2   Place & Date: Lund/Zurich, 31 March 2017
3   Type of Interview: Skype.
4   C: Charlie
5   E: Einar
6   O: Omar

7   E: If we just go into the first question, we know that you said to us in an email that you don't
8   use Personas all that often, but when you do, how is the process and what are the motives to use
9   Personas?

10   C: The question is a bit what you use Personas for. There is an understanding that Personas can
11   be used like as a measuring or an orientation for the designer, but we do not see a lot of use in
12   that. Where we see use is if a project is large and maybe also somewhat political, we can use
13   Personas to remind all the participants in the project, especially non designers or people who
14   are closely involved in the project, and/or what the project is about. So we remind people that
15   they are not working for themselves or their boss or their own self-interest or anything. That
16   they are working for the user so we set up Personas to have this kind of image as a reminder so
17   they stand as a proxy for the… everybody who will eventually be using the project. This is
18   pretty helpful, especially in large political projects, as for us the designers, it does not really, I
19   never found a way into this, we are not like that we go in the morning and think "now I do
20   something for this Susan Miller who is at home with three kids" and it's just never stuck to us
21   this kind of approach. It helps, I remember one particular project where it really helped a lot, it
22   was a large international organisation in Geneva, and we did a redesign project for them, and
23   we made a Persona for each typical user group that they would see on their website. Like the
24   students who wants to know about their course services, the lawyer who wants to engage with
25   them, the inventor who want to file something with them and so on. That really helped making
26   people understand what the project was all about.

27   O: That's great, and Charlie, can you describe the process you go through when you are creating
28   your Personas such as the ones you have been describing?

29

30   C: We actually for our projects, we actually hired somebody, because we thought it would be
31   good to have this external service. For us they also becomes kind of a benchmark these Per-
32   sonas, and it also needs different skills from our skills, we are designing interfaces while this
33   person who creates the Persona is more of like a storyteller or a writer, so we didn't do that. We
34   hired somebody, this was actually a good external service.

35   E: We have also one question about, like when you are designing your projects and doing in-
36   terfaces for software, what or who determines which type of media will be used? (such as maybe
37   Text, Audio, Video?)

38   C: You mean for the interface as it will be on the internet, as it will present itself to the users?

39   E: Yes exactly.

40   C: So the problem we often encounter is that we do not really have full control over the content
41   that will eventually be made available to the users. So we can give suggestions, but in the type
42   of projects that we have, the organizations are so large and their setup is so complex that they
43   are usually constrained in what they can produce by internal processes, considerations of work-
44   load, costs of copyrights, of existing resources and so on. So sometimes we suggest that some-
45   thing should be done, and we have for example also found out that in many cases that video can
46   say more than a thousand words. We also use video in many project presentations, so we make
47   a short video of an interface to show how the interface actually works, how the interactions are
48   instead of showing static screens on the projector, but we cannot always enforce, we cannot go
49   and tell a large organization "now you have to create a video unit" we can recommend to do so,
50   but we cannot always force them.

51   E: Are these recommendations or suggestions, based on any research or is it just a hunch feeling
52   that this will work for this type of project?

53   C: It is not really grounded, of course we test a lot of things we do, and we make a lot of
54   spontaneous user tests, we are very good small company here in Switzerland that can recruit
55   user… within 24 hours, and we run a lot of these short and small and not very formal tests, and
56   learn a lot from those, but in the end it is also a hunch, like it is a hunch and a can the organiza-
57   tion produce such things over a long time, can they produce it in the quality we match in, if for
58   example an organization do videos but then they come up with something completely crappy
59   that it is so embarrassing that the users won't watch it, and it is not worth it to put that up, or if
60   they say "yeah we do video" they are only… hiring external video producer, they do one video
61   and a year later it still is in the same place, then it is better to say, use images or try to find a
62   new approach to stock images instead of using the stupid ones that everybody has. Go and
63   flicker creative commons and use this to spice up your content, so it's always like a complex
64   decision, what the client can do in terms of content, but we would really really love to have
65   better understanding there in the field that content is very tightly linked to the overall user ex-
66   perience, so very often we still have the situation where the client says "yeah the content is this
67   and now make a nice information architecture around it". So they are very often they do not
68   have this, there was this big talk about three years ago about a content strategy and everybody
69   suddenly started to talk about it, but it didn't really catch on to the projects we had. Very often
70   this companies see content as something that just arises from the structure they have and from
71   the teams they have, from how the company is set up internally, and we often do not have any
72   leverage to change that.

73   O: Can you elaborate more, Charlie, on some of the factors that you think at least would lead
74   an organization to choose a medium that is not the best to rely a piece of information, like you
75   already said that they don't maybe have the abilities, but what other factors are there?

76   C: Yes so, sometimes it is also just tradition… I have a special example about the website we
77   did about, it's a long time ago now I think 4-5 years for the ABC backpack company. So I don't
78   know if you ABC bags, they are made out of used tractor tarpaulins, and this has the conse-
79   quence that not a one single ABC bag is the same as the other, they all look completely different
80   because they are all cut out of different parts of these tractor tarpaulins, and on the website they

81   have and we started working for them, they were not really capable to show the bags in a nice
82   clean format, because they just had one old bad camera that they used to make photo of every
83   bag when it was finished, and to kind of have nice pictures on the website, they used beautiful
84   kind of fashion shots of some of the bags that they had done by a professional photographer.
85   And these fashion shots had the problem that they were standing for bags that were no longer
86   for sale, cause the single one bag was maybe offered to somebody or already sold a long time
87   ago, so people saw these beautiful bags and when they went to the shop and wanted to buy one
88   they saw this really crappy dirty pictures that were made with an old camera, and the company
89   said "well we cannot really change that because we do not really have the capacity and the
90   number of people and so on to make a picture of every bag when it is finished" this is.. because
91   it's harms your ecommerce so badly, you really have this big big break in your user experience,
92   when you come to the page, you see the beautiful bags you want to buy and then you see this
93   bad pictures, and they said well, let's have another look at the… then they would have kind of
94   a unit that would have to make this pictures they said no, then we would have to have the money
95   to employ another person and we don't have the money to buy these cameras, and we just kept
96   insisting you'll have to do this, and eventually they were crazy enough or innovative enough as
97   a company to say, we'll come up with a solution and they constructed a special kind of auto-
98   matic booth where they could make 360 degree view and in extremely high quality, and they
99   put that at the end of their production line, then they found out that the bags kept piling up
100 before that booth because there were more bags coming and it was enough time to load them
101 all into this photo so they bought a second one. They made a pretty high investment to get this
102 one completely crucial medium rightly done on their website. But there were other things like,
103 the same project to show an example, they have a need to tell stories of their bags, because
104 people need to understand that they look a bit used and they all look different and so on. So
105 there was always this idea that these stories could arise from within the organization, that people
106 would tell how they washed the tarpaulins in the beginning, how they try to find cool designs
107 in all these used old tractor tarpaulins and stuff like that, and there was this wish to do that and
108 we made room on the website to do that and so on. But it really never happened because in
109 everyday life the company just proved not to be able to set aside enough time to produce this
110 kind of content, people were busy, they were ashamed to show themselves in front of camera,
111 they didn't have an idea or were not inspired and so on. So that's a typical limitation that we
112 meet, and there are many others of those like, typical thing within a company is that they do not
113 even know what to take as a picture inside the company, a lot of companies just look like com-
114 panies, they have desks and computers and no matter what they do it's just boring. They don't
115 get the rights on the pictures because the employees don't want to be on the internet and stuff
116 like that, they don't want to buy good pictures, because it will be too expensive. There are so
117 many limitations, and the more complex the medium the more limitation you will deal with.
118 Video is like the most difficult medium for a company to produce, because they would need a
119 dedicated video, people or invest very large margins to make a video that is on par with their
120 typical branding requirements and quality requirements.

121 E: But is that chosen based on maybe the content itself or is it chosen because of the premium
122 target group or the Persona that you are creating?

123 C: We will of course try to choose it based on the persona but it's not always possible another
124 thing we see in texts is in that very large companies have a lot of compliance issues so they
125 will have units that say you cannot say this and this or these words or you have to add the
126 abbreviation to the name or you do have to write out the paragraph of the laws you are referring
127 to in full or you have to put the names of these persons in brackets because they need to be

128 mentioned and stuff like that, so you end up with texts that are barely readable at times or you
129 have to add this disclaimer. For example we have an issue when we worked for the internal
130 communication of the ZYX finance company that they had like documents that were basically
131 gigantic disclaimers. So when they made a recommendation for a stock for example, they didn't
132 make the recommendation first, they had first maybe 15 paragraphs that said all the compli-
133 ance rules of why you can't buy this [stock], why it's dangerous, why it's not founded, and so
134 on, then in the end they made the recommendation. We told people "hey when you go to a
135 high net worth customer who wants you to make a stock recommendation, you cannot read
136 these disclaimers to him, it just doesn't work, the people will not work like this", but they said
137 its compliance we have to do this, it the law, and so on. We couldn't really get them to do it,
138 we even showed them that their sales people don't use this disclaimers because it's not feasi-
139 ble, it's not humane but still the legal unit would say no they [the disclaimers] have to be there
140 and have to be first before making a recommendation.
141

142 Sometimes these units inside companies can make very irrational decisions toward interactions
143 with users for example. This can make for a lot of limitations, I mean that's just one example
144 with legal. Others are egos of people we had a company where one guy of one division said "I
145 will never accept a website for my division that doesn't have a black background". He didn't
146 give any reason for that, he just said I am a guy with a website with a black background, so deal
147 with it. We had to design a website that was white and for him we had to do a black background.
148 It completely stupid but it was his position and he was very influential in that company so there
149 was no way around it.

150 E: So we also have a question here that is what determines which medium is appropriate for a
151 given piece of information, so based on what you're telling us right now that's just mainly
152 limitation of what the customer wants?

153 C: I mean we determine what is necessary and we do that through typical user research. So we
154 will speak with users, we will observe, we will do experiments based on our new design ideas
155 and so on. We will of course make recommendations of what is appropriate but it doesn't always
156 work out like that. We know it, we will recommend what is right, but at one point we will have
157 to face reality and accept that some people will simply oppose what is good for the user for
158 good and bad reasons. Sometimes we also learn things that are just important, some companies
159 have good reasons for not doing the thing that will be best for the user.

160 E: You mentioned that you do a bit of traditional user research before you go into a design, can
161 you tell us what kind of methods you are using? Is it any kind of ethnography, or is it participa-
162 tory design, or user-centric design?

163 C: so we do not have one fixed method that we will always use. It depends greatly on the type
164 of project we do. In some projects it is pretty "obvious" what the user needs or wants, let's say
165 a very typical newspaper or magazine design that is quite pretty well known.

166 In some situations it might be very complex, so you might have highly specialized audiences
167 for example where we do stuff like desk shadowing or expert interviews to learn about their
168 needs. In some you might have very diverse audiences, where you will have to find the com-
169 promise between the users with very little knowledge and very deep knowledge or very sparse

170 use, somebody who uses the website once a month, and another who uses it three times a day.
171 So we have to find compromises for that. Usually we try to cover a field that is as big as possible
172 so we try to take into account all possibilities and if that needs interviews or observations or
173 website statistics/analytics or cultural analysis. For example when it comes to ecommerce we
174 need to analyse cultural differences between countries. For a website for a sports goods manu-
175 facturer we had to find out what kind of sports are relevant to what kinds of countries.

176 Sometimes we have to do brand analysis to find what the user expects in this country from this
177 client so in one client you may be a sports good manufacturer and in another you might be a
178 health care supplier. This happens so we have to know about that and we have to cover it in our
179 research. There is not one method that would work for that, there are many. Basically for us it's
180 just research, we do research with whatever means are necessary for that particular situation.

181 O: Okay, that's great Charlie. We were wondering based off of that, will you change the trans-
182 mission medium or communication medium based on the type of information you're handling?
183 How would you do that and why would you do that?

184 C: we try to adapt it to the situation so for us when we have control over it, we try to use
185 whatever will get the message across best. Sometimes its animations, sometimes it a prototype
186 or something like that, sometimes its text, sometimes it's in person. But we don't have control
187 of course, we have to succumb to reality in a way.

188 O: so taking an example, if you decide that one piece of information is best transmitted through
189 video for one persona, would that piece of information be best relayed through text to another
190 persona for example?

191 C: yeah this can happen too. There can be very diverse needs for user. Video requests certain
192 situation if it's a video with sound, requests an even more particular situation that is not always
193 there. Like maybe you're at home you want to see a video explaining a particular shoe but when
194 you want to order it at work you don't want this because you don't want to put your headphones
195 on or you don't want to have sound on your speakers. When it leads into duplication of content,
196 then the problem is one of production costs. Can you afford to produce different kinds of con-
197 tent, can you afford to produce different interfaces or delivery methods for different kinds of
198 content. It always very difficult. What we have learned also when we work internally with cli-
199 ents is that the right method can make a gigantic difference, you can bore people to death by
200 showing a prototype or get them really excited by showing them the right video.

201 E: these kinds of media you are talking about now, like depending on the person, where they
202 are: at work or home or something like that. Are they [the media] following trends? Now I see
203 a lot of really big widescreen pictures when I first go onto homepages. Is it really popular to
204 follow trends?

205 C: yeah for us this is a bit of a mixed bag. I mean web is a bit about marketing, every agency
206 tries to sell *that* next new thing because it brings them new business. They also try to talk the
207 next new talk like this one time there was this parallax images, I don't know whether you re-
208 member while scrolling you see this image behind the content. It was very very popular for a
209 short amount of time. An even older trend was having this big slide show at the top, right now
210 it's having these big full screen covering videos. For us this is a bit of a mixed bag because
211 usually just following a trend A. makes your design look very old when the trend is no longer

212 a trend and the other thing is that usually it's not very usable. Now everybody says we do "this"
213 and it's cool but if you have to use it every day and you have to click through that gigantic video
214 every day you get almost crazy so for us it's a bit of a mixed bag. We have a feeling that we
215 need to do it sometimes because the clients request it or because we have to be trendy or new
216 or inventive. From a pure user experience perspective I mean there's often only a few ways to
217 do things right, we try to do things that are right for the user and these are sometimes conserva-
218 tive. I mean there isn't really a need to change the interfaces over time and invent new stuff and
219 dazzle the user with something all the time. The user wants to get the job done and to kind of
220 force him to experience the latest and greatest that's not what the internet is about – the internet
221 is a tool, this hammer looking the same for hundreds of years now, and that's also the same with
222 some of the online tools of what works and what doesn't work. We for example know that a
223 newspaper doesn't work with one single article at the top and nothing below, but every so often
224 somebody says I have this gigantic idea, we do paper that just show one story because it's very
225 focused and very to the point and this becomes fashion again and everybody does it, but it
226 doesn't work – we know it doesn't work, we have seen the statistics, we have seen the com-
227 plaints from the users. Every so often people just do it.

228 O: along that line of incorrect or wrong way of doing things; how would you say Charlie that
229 using the incorrect medium would impact the user? How would that affect them?

230 C: it can affect him negatively in the sense that it can prevent him from getting his job done, or
231 do it really really badly. Very often it would harm your conversion, your brand perception, or
232 simply how you get your message across. I think you are really doing things badly if you start
233 interfering with what the user wants to do. Like if you have an auto play slideshow at the top
234 that the user doesn't know how to stop or there was this fashion of interfering with the scrolling
235 activity sometime, where you scrolled and the pages snap to slides – when you do stuff like this
236 you are really starting to harm the user experience, then it's really bad. Every so often you just
237 not the best you could be, you kind of don't get your message across or your texts are too
238 complicated to read or your videos are boring. Stuff like that.

239 E: Along that line as well, how can you ensure that a chosen transmission medium or commu-
240 nication medium will help the user complete his task?

241 C: through tests, we don't really know it. We make a guess and then test everything. We make
242 an approximate guess when we are uncertain and test various cases and see what happens. We
243 try to catch the breadth of the user groups and to get it right like this. We can't always guarantee
244 for it to work

245 E: so that's just like A-B testing or usability testing like those kind of tests?

246 C: yes exactly, it depends on the situation we have. We make anything from paper prototypes
247 to stuff you can click to a short video, we do interviews, we try stuff out in real life with actual
248 A-B tests. Whatever is needed in that particular situation.

Appendix 2b: David Interview Transcription

1   Interviewers: Einar Gunnlaugsson, Omar Mahaba
2   Place & Date: Lund/Palo Alto, 14 April 2017
3   Type of Interview: Skype.
4   D: David
5   E: Einar
6   O: Omar

7   O: Do you have any questions, David about our research question or our topic before we start
8   or should I just give you a quick rundown of it?

9   D: Let's go

10   O: Let's go then, why don't you start us off Einar?

11   E: basing on our readings and what our literature review has given us we wondered a bit about
12   how, in design, we could communicate in the best way and in the best medium toward users
13   and how designers could actually incorporate that into maybe as design tool like personas? So
14   if we start maybe a little bit broad, what would you say are the strengths and the weaknesses of
15   personas?

16   D: I don't think personas are of any value at all when helping you design. What personas really
17   are is a good way to communicate with you manager and maybe with a team that is spread apart
18   by many many people to make design consistent. Personas … I mean design requires lots and
19   lots of attention to detail and the persona is not about that. The persona is really when your
20   manager or client says 'oh here's another feature that I think is wonderful and I think you should
21   add' and you can say 'well does Julie like that? Would that work for Henry' or the two or three
22   personas you have – that is what it's good for. In terms of design to make people understand
23   and use it effectively, Nah. You know I have a different recommendation.

24   E & O: What would that be?

25   D: I ask, I tell the people I advise to make a persona for the device, not the person, but the
26   device. So that … so I'm working with a company doing a fairly complex computer device and
27   I'm saying you really want this one, sometimes it will do things wrong and so you want to invent
28   a persona where this is an intelligent device, but it's your assistant, and it's helping you and it
29   makes mistakes – and that's part of its persona that ohh I'm clumsy sometimes and so when it
30   is clumsy it's sort of forgiven. Second, all devices have multiple messages that they have to give
31   to the person, sometimes tell me what to do, sometimes you're in a screen, sometimes when a
32   person does something that is not understood it needs to know how to respond, and I refuse to
33   call them errors. That is something that is not understood how do you respond and often these
34   are written and developed by different people, we have a large team. In fact even with a team
35   of only 10 people you might have different people writing these different messages. Until hav-
36   ing a persona for the device, helps make them consistent – have the same tone of voice, in can
37   be very serious, or it can be kind of mechanical, or it could be funny and joyful, but whichever
38   it is the persona helps you keep consistency.

39   O: that's a very interesting idea of switching the persona away from the user to the device the
40   user is going to be using.

41   D: A persona by the way is valuable for the users by helping you keep the … you want a product
42   to be cohesive and in the old days Microsoft was a standard example of a company that did not
43   do this. Nobody would say… an engineer would come in late in the process and say 'I have this
44   new idea' and they would say 'ohh tell me about it, that's really clever, yeah we can add that'
45   but the result was completely incoherent. Apple didn't use personas but when Steve Jobs was
46   around, Steve Jobs had in his head exactly what this product was about and if one of his engi-
47   neers came in late and said 'I have this really neat idea', he'd say 'shut up, it doesn't fit the
48   image of what we're trying to do' so that's a kind of persona.

49   O: that's quite an interesting take on the whole idea. David would say that the personas as they
50   are now, would they help designers feel more emphatic or connect to them somehow emotion-
51   ally or what's your opinion on that?

52   D: What do you think?

53   O: well we think (E: that's a good question)… that is a really good question, but we think that
54   yes to some degree but there are some personas that I naturally can't connect to for example in
55   the case of a single mother with a kid, I can't connect to that really we because that's just a
56   whole different area, a whole different person. So it depends.

57   D: So let me ask you. Give me an example of something you might be building, because I don't
58   know what the range of products you're thinking about is.

59   O: We were mainly thinking about software, so websites, applications, desktop applications that
60   sort of thing.

61   D: so a website for what, you say health application? Telling me it's a website isn't enough, a
62   website for what? What does it actually do? The product you're designing?

63   O: No we haven't pinpointed a certain use-case for…

64   D: well invent one.

65   O: A sports website for example.

66   E: a sports website with statistics about players.

67   D: Okay so now you telling me that one of your users is a woman who is pregnant or has a
68   young child and you can't relate to that because you've never been pregnant. How would, even
69   if you could relate, how would that change what you do?

70   E: we don't know actually. That's the kind of thing we're looking into.

71   D: Yeah I don't think a persona helps in that case. What in fact a lot of these personas talk about
72   is what this person does, their job, they like ice cream, and they don't like espresso coffee.

73   That's not very useful. What you really want to know is what or why they're using your product,
74   what do they expect from it. If I'm using this sports website to just find out who won the game,
75   that's one thing. But maybe I'm following a particular player and I want to look at the player
76   statistics and maybe compare that with other players – that's a very very different use-case. it
77   doesn't matter whether it's a man or a woman or a teenager or an old person, its what they're
78   doing is what really matters. Someone who really follows in great detail the sports statistics
79   wants very detailed information, maybe graphs and charts and maybe the ability to say oh let
80   me plot this against that a novel thing. Whereas someone who simply follows the game and
81   wants to know who's winning, will want a very different kind of information – less information
82   and more at a higher level, like who won or lost, that's what really matters I don't think it
83   matters very much what their everyday life is like. Here is where it might matter, and its related,
84   how much time do I have? Let me rephrase that: how much time does the user have? How much
85   time do I, the person using your product have? Because… well look I read the newspaper in the
86   morning but there are 2 ways I can read the newspaper. One is I have only 5 or 10 minutes while
87   I drink my coffee and I just want to get a feeling of the important events that have happened.
88   The other is I have an hour and I'm going to read every single article and I want to know in
89   great detail about what's happening in the middle east and what's happening in Syria and what's
90   happening between Trump and Putin and so on. But actually what many newspapers do is they
91   give you both, there's a page that lists all the events of the day and each one is very short, and
92   of course there's the rest of the paper where I can read page after page or read long scrolling
93   articles in detail. But I'm a big believer in activity-based computing – I try to understand the
94   activity the people are doing and that guides the design. The traditional persona, the personas
95   could do that but most of them don't.

96   O: and in your opinion David, why do designers not do that? Why do they choose not to be goal
97   directed or task directed and do whatever they do?

98   D: a lot of the advice I give to me seems to be very obvious and I never understand why I'm the
99   one who has to think of it. I don't know the answer to that. I discovered in my life, in many
100   fields , not just design but other fields. Most people focus on the details and very few people
101   step back and say what is this all about in the big picture and that's what I do. It's just a different
102   point of view that is surprisingly rare and I think it's a very powerful point of view.

103   E: So maybe moving a bit from the persona, and that when you say that you step….

104   D: Actually no no let me ask a question. I'm assuming the reason you called me is that you
105   learned about personas and that they're supposed to be valuable and you weren't able to figure
106   out how, it that true?

107   O: We've learnt about personas, yes, and we've learnt why designers use them but what we've
108   also found is that the knowledge management literature is that different types of information
109   need to be sent in different ways and delivered to the user in different ways. But then the persona
110   guidelines and the persona authors don't acknowledge that fact, so we went out to the field and
111   tried to see well why don't they do that.

112   D: Yes and then you're saying what use are the personas, and that's exactly the question I've
113   asked. Whenever I design and I work with many many clients and design teams I don't find
114   them very useful and when I try to talk to the people who really know the most and advocate
115   personas… I remember their authors too, there's a really good book that comes out of Microsoft

116   on personas and I've talked to them, so tell me how they're really used and they end up agreeing
117   with me and I write that in one of the books in which I say that it's [the persona] is good for
118   keeping everyone on the same page especially the marketing people and the clients and your
119   bosses who always want you to change it or to add more stuff and then you can say 'will Maria
120   like that?' but in terms of design, no I really think that understanding the activity people are
121   doing. I don't know, personas came onto the scene and everybody got all excited and nobody
122   asked the critical questions about them. it was so much fun to do, you draw these posters of the
123   persona, Microsoft even have the personas sending email saying about what they're going to
124   do tonight. It was so much fun but it doesn't really help.

125   E: so basing on that you take a step back and look at the big picture on the activities that those
126   people are going to use this software or this product, how would you determine the appropriate
127   medium or media towards the user, like text or audio or video? What determines their cognitive
128   state of understanding the information as quickly as possible?

129   D: it actually has a lot to do with the information. That…. A lot of the information calls out…
130   looking at sports scores and I want to follow a team's progression, for any given game probably
131   the best way is a simple numbers, the name of the teams and the scores, and maybe the dates.
132   But if I want to know if this team is getting worse or how it's progressing over a particular
133   opponent over time, there are graphs mixed in and sometimes the graph could be animated and
134   so it's really…. It's sort of material that suggests the way it should be presented as a video or a
135   cartoon or a graph or a graph that's dynamic – dynamic graphs are very powerful because that
136   way you can ask questions about it, or just the static list of things. There's another interesting
137   … stories are really powerful so if you watch… this is what is mainly happening in the United
138   States and maybe all across the world, I'll take baseball but it doesn't matter, its an American
139   sport but it doesn't matter if it's baseball, by the way, the same thing is true when a company
140   earnings report says how they have done in this quarter, there are lots of lots of companies so
141   the newspaper itself don't write about all of them and they just try but they could not, and lots
142   of lots of baseball games you know, there is the children baseball games, the school baseball
143   games, and university baseball games, but they only write about the professional teams mostly,
144   and what they might do is in the local newspaper, they might publish a very small article with
145   the statistics... well couple friends of mine started a company that looks at these statistics and
146   turns them into a story, in the first team they were balanced and it wasn't until in the fifth inning
147   that there was a homerun and suddenly the team A was ahead and then at the eighth inning you
148   know Rodriguez steps up to bat and they had a very disappointing career so far, but this time
149   he actually managed to bring in a home run, and three runs and so his team won, and it was an
150   exciting climax, they tell the story but all they see is the statistics, so what they have done is
151   simply transform the statistics into a story, and the clever that is I illustrated, they all just look
152   at the statistics of the game, but here is a player who batted in the winning run, so they looked
153   back to see about that player's history, so here is a story which from an efficiency point of view
154   seems like it less effective because it takes a lot more wording space than just showing the
155   statistics, but if people will prefer reading it, and it's so straightforward that a computer program
156   creates them, and people really prefer them and they even did an experiment, they test profes-
157   sional journalism write stories about the same game, and they can't distinguish the two, so a
158   story is often... cause it puts it in context and makes it interesting... so for some cases a story is
159   the same with the companies. Companies performance in a small company, the same program
160   basically does a similar thing about the company sales, and performance, and it makes it easier

161 in a more interesting for people to read. Part of it is when you look at statistics, in your head
162 you have to create a scenario what does this statistics mean, do I even remember if that is better
163 or worse than normal, and the story actually does that work for you, but once again, what I am
164 telling you is this, there is no correct answer, there is no standard answer to how should we
165 present the medium as we project the information, and notice when I go from a table to a story
166 to text, so I'm not even going into some different type of medium. But that's where your crea-
167 tivity and your skills come in.

168 E: So you would say that choosing the medium, isn't really based on any kind of research about
169 users, or is it more from the creativity level of the designer itself?

170 D: No, No, No, no it's a... the people who started this company know a lot about how people
171 process information, and what people care about, and a lot of research about the power of story,
172 stories are actually a big deal today, telling things in a story format, they had done a lot of
173 research, they don't really research about the person reading the story, but they know that the
174 power of stories in general, so they had to make major decisions about how long should the
175 story be, what kind of information is relevant, "oh somebody did something wonderful, maybe
176 I should look back to see if this person always does something well, or if this was an exception,
177 if this person always does something wonderful, you can say "he came up and everybody was
178 expecting great things and he did not disappoint, if he never did anything wonderful, you can
179 say what a surprise how he changed the whole game, so again, this is based on a lot of, not sure
180 if it's dirty fundamental scientific research, but certainly a lot of observation and understanding
181 of what makes things interesting.

182 O: The idea, I'm trying to process the whole idea, and it's quite grand, and so would you say,
183 David, that there are, certain type of information, would lend themselves to certain media?
184 Would you say this type of information is best relate through text, video, or etc.?

185 D: Yeah, absolutely, yeah again, put the game I was describing, maybe you can actually show
186 a little video clip of that wonderful moment, that's what you would have, not a video of the
187 whole game, that's very boring but just of that wonderful moment, and in football where a goal-
188 keeper does a heroic save at the end, that's something people want to see.

189 E: Yeah, so as you were saying, based on these statistics of the story that you just told us, if
190 there would have only... if they wouldn't have taken the statistics and made this good, wonderful
191 story about it, it would not have been as successful as it was, so presenting the "wrong" or like
192 the "incorrect" medium, how would that impact the user?

193 D: I wouldn't say it's the wrong statistics, I would say... in fact I can imagine that... the story
194 takes more time to read, than just looking at the statistics, the statistics often I just don't care
195 about all of them, I just care about a couple and so it might very well be that would I catch up
196 on my sports game in the morning, I might actually prefer statistics, cause I can see quickly,
197 "oh yes, the teams I don't care much about but I can see just what's happening" and then the
198 team I might care about, then I want the story, and I don't know, maybe the way to do is you
199 always have simple statistics, but I can click on any given one of them and it gives me a narra-
200 tive, a narrative story about what happened, because it's wrong to think there is a single answer
201 from these questions, you know "I'm late, I have to leave but I really want to know what hap-
202 pened, so just give me the numbers" or "I woke up a bit early and I want to understand better,
203 and so here is a story".

204   E: Yeah, like maybe if I take an example, let's say if Apple buys a full advertisement page in
205   the newspaper, and want to advertise the new iPhone, and they make a story, just a full page
206   text story, no images or anything like that, just text, I mean how would that impact us as con-
207   sumers, or as users?

208   D: Well Apple would never do that without, they would have some really creative people doing
209   it, I think, or the way you phrase it is, how can they do just a story with just text, because the
210   whole point of apple is how beautiful it is, or the wonderful photographs it can take. I suspect
211   apple might deliberately just use text, because they know that you expect to see the product,
212   and you know that you want them to show you their beautiful products, so I suspect if they
213   would only use text, it would be... it would be something like... "we just released a new phone,
214   it's just as beautiful as you might imagine", think about it, "and the picture it takes, you have to
215   come into the store to believe it", so you see, that text won't need any pictures, in fact the lack
216   of picture is what makes it much more interesting.

217   O: Yeah, you already, with the sentence or two you just said, are bringing up pictures in my
218   head of phone. So we only have one or two more questions to go David, how would you ensure
219   that the chosen medium will help the user, accomplish their task?

220   D: Well I'm a big fan of, we call it iterative design where we bring mock-up, we try it out on
221   the people, and try to see what really helps them, I don't ask them, because they don't know but
222   I can try and as you know you can make prototypes really quickly and they could just be
223   sketches... and I often use PowerPoint, or keystone, it doesn't matter, but I can do quick
224   sketches, but that way I can make it, if they touch something it moves to a different screen, so
225   I don't waste much time building a prototype, but I get a good feeling whether this... if some-
226   thing that was of value to them.

227   E: We have one more question for you, how could designers, decide which medium is the most
228   suitable for a given piece of information? So based on the same web page, different information
229   have different type of medium?

230   D: The information has different importance, yes... Well there are many different kinds of issues
231   here that... if you look at the informative value and how useful it is, you might get one answer,
232   but if you also look at the fact at what people do, they have this, especially emotional compo-
233   nent, for example, when you get... there is a new article published in whatever your favourite
234   design magazine is, and you sit down and read it? I'll probably not but what you do is... first of
235   all you look at the title which gives you some hint, then you probably look at the pictures and
236   you read the caption, and you may never read the article, almost always when we write our
237   articles, we don't pay much attention to the caption, we don't spent much time, yet I started
238   realizing that is what I read first, until I started actually making them informative, so the ques-
239   tion is... so here is the question, why is that you just skim the pictures? Which is, as opposed to
240   reading the important information and the text?

241   E: Isn't that because of more interaction? That picture give more than text?

242   D: I'll let you answer that, but it's certainly is a quick way, and if you take a look at your daily
243   newspaper, there is a heavy use of photograph, and if you analyse the photograph, there is not
244   much information in it, but they make a difference in the article.

245   E: They make it interesting, and they draw you to the text, right?

246   D: Yes

247   O: Yeah, I guess the other part of it is sometimes people are just lazy and prefer to have a snap
248   than having to read through everything.

249   D: Except I don't like to use the word lazy, look, well in my example, I spend most of my days,
250   well in conversations like this one, or when I go into the university, in meetings, and talking to
251   people, and looking at people's work and commenting, and it's a full day, and when I get home
252   do you think I sit and read some technical papers? No, basically my mind is worn out and so I
253   watch stupid television, and I watch "stupid" television, I don't watch detailed documentaries
254   or something, because I don't want to think, I just want to relax and enjoy myself. There are
255   times when it's basically a mental effort, over the course of the day, I have bury the mental
256   effort, so yeah, looking at the photographs, is a quick way of finding out what is happening, and
257   does not require much mental effort, but it gives me a misleading and superficial view, but
258   maybe that is good enough. That's why I call it activity based design, you have to understand
259   what the reason is that somebody is doing it, and the point I'm making is that, I might be very
260   different throughout different times of the day, and looking at the very same information. As
261   you can tell my goal is to make you guys think.

262   E: Yes, you definitely did. We don't have any more questions for you, but is there anything you
263   would like to add in the end?

264   D: I'm afraid I have to get back to my dull routine work.

265   E: Alright, thank you so much for taking the time and speaking with us.

266   D: You're quite welcome. and thank you.

Appendix 2c: Greg Interview Transcription

Interviewers: Einar Gunnlaugsson, Omar Mahaba
Place & Date: Lund/London, 14 April 2017
Type of Interview: Skype.
G: Guillaume
E: Einar
O: Omar

1 E: If we jump right into the first question, do you use some kind of user centric design methods
2 in your designs?

3 G: Yeah, I mean, we don't say it's very organized, you know, like a method and I follow some
4 rules, but I guess, a part of you know, quite a recent school of thoughts in terms of design, and
5 so I would say everything we have been doing when I was in the Ozzie of the children's, and
6 everything we are doing now, we are always trying to look at the user first, and I got the tech-
7 nologic and what the user... to what experience we want to build for the user, so I could not say
8 that it is a very define method, but I would say that the main concept when designing anything
9 is trying to imagine the user experience... I just have to take this call... Sorry guys...

10 O: Yeah it's fine, no worries...

11 G: So yeah I don't know if I answered your first question, or was it too vague?

12 E: no no it's fine, we were just wandering, in this methods or concepts that you use when you
13 are designing, do you incorporate personas, or what is the kind of process from start to finish?

14 G: Well, for what we are doing now, in our studio, we don't although I think, indirectly, we do
15 in the way because you know take into account some kind of people, so we work with them for
16 a next round going to be an airport, things like, how would, you know, engage with an experi-
17 ence if I'm monitoring what would be my concerns, you know, so one of the thing you are
18 trying to image in, you know, if you have your luggage with you and would you want to... this
19 for like BI experience, do you want to put a mask on a face if you're travelling or this kind of
20 thing... or you cannot have a personas in the sense of, you know, it's very not well defined
21 market, it's more like anyone who is travelling would be this, would say as of today, not really,
22 it's more like context, depending on the product, just trying to put our perception in the shoes
23 of the people, but I've used it before, so like when we were working on Gravity, which is a start-
24 up I was with until last January, you know we were working on one very specific product that
25 we had to sell to people and in that case we defined Personas, and it was very very defined
26 because the product was to sketch in 3D so it was a 3D modelling too, so we were really trying
27 to define actually what are the Personas, that define different markets, so you know for instance
28 you have maybe someone who is really interesting in 3D printing and wants to create his own
29 toys, because maybe he has two kids, who are little, and he maybe wants to make his own toys
30 by using a 3D printer, he wants to be able to sketch and do 3D stuff so he can print it and play
31 with his kids. And then we have a Teacher Persona, who wants to do stuff in 3D with their

32 students, so we were trying to go really into the details of the characters or I would say in that
33 case yes we used Personas. But what we do now, which is more like designing experiences for
34 brands and for companies, we are more... we are not necessarily interested in who is the person,
35 who is going to use it directly, but more what is the context.

36 O: I was just going to ask, Greg, what's the process that you went through to come up with
37 these Personas or to define them?

38 G: Yeah, so that's a very good question, I don't really... I think it starts very messy, you know,
39 you try to do categories, but then you realize they overlap, and they don't necessarily reflect the
40 reality, so I couldn't say how we did, you know it was just incrementation, and like, you go to
41 the next meeting and like "ok guys it does not work, because this guy(Persona) is totally the
42 same as this guy(Persona), but we don't address this other guy", but what was interesting is, I
43 think at some point it was good and the reality check is... well in our case we did some user
44 testing, and we organized the user testing by Persona, so you know when you start your physical
45 people who, all who have in common what you have defined in terms of parameters, so you
46 know, maybe they are all non-technical, they are all interested in 3D printing, they all have
47 some sort of idea of what 3D modelling is about, but they don't know how to use complex tools,
48 and so when you have 10 person in your room that fits to this certain Persona that you have
49 defined, and the next day you have 10 new person that fit your other Persona, I'd say that at this
50 point, yes you know that your persona is quite well defined... but, I don't know if... I didn't read
51 any literature at the time, I got a way of, you know, this idea of Persona, because it's quite
52 common thing in a start-up, or not necessarily start-up, but for the developments world, and one
53 of our advisor in the start-up was working in a company that developed a lot of products and
54 they told us "ah we use Persona" and they showed me, you know, what this big company was
55 using as Persona, it's was pretty well done, like you know, you are the A4 with a drawing of the
56 guy, with his typical job, his typical hobbies, and other typical stuff, that's quite a cool way to
57 define a market, because when you start in a start-up you usually look at market, like you know
58 the 3D printing market, it's worth 20bn and you know you put a lot of number but it does not
59 make any sense, whereas Persona, you can eventually find the people and you are testing as we
60 did with them, and we realized that maybe we are completely wrong that they are not interested
61 in our product.

62 E: Yeah, and what do you see as maybe the strengths of having personas, instead of having just
63 talking about the market, or about users? What do you see as the strengths as you were talking
64 about, having these Personas instead of just talking about the market?

65 G: Well, I think the market is very abstract, you say there is 20bn that are being spent every
66 year on Virtual Reality, but it doesn't tell you that your product is going to be taking some slice
67 of this 20bn, or as you should say this four Persona are interested in our product for different
68 reasons, then you invite people who fit to these reasons and realize they are interested in your
69 product, then you can quantify this Persona, if your Persona is, you know, a single mom with
70 two kids, I think you can start to... and you know, and she earns, I don't know 20k per year, and
71 our budget for kind of product that you do is 100 Euros per year, you can start to quantify in a
72 much better way the market, than you should start with numbers in a market, so I would say
73 that the Persona is just to approach that sounds the most relevant when you try to, you know,
74 and understand what your market is going to be.

75 E: And maybe on the flip side, are there any weaknesses, when you are creating your personas?

76   G: Yeah, I think you can be completely wrong, like you know and that is what we realized, in
77   our user testing like, you have a set of parameters that you know define your Personas and you
78   found people who are fitting these parameters, but then suddenly you realize that none of them
79   are interested in your product, and you don't know if you were wrong with your Persona, you
80   want to strict with your parameters, you know, as any method, you fall into a system and maybe
81   sometimes it's prevents you from best, being very ready to reconsider your options.

82   O: So I'm just curious, Greg, why would you say you misjudged the Personas interests in your
83   product?

84   G: Because you define them based on yourself, that's very hard not to project your taste and
85   your idea of what the product could do, so yeah there is a lot of prediction, there is a lot of what
86   you think you know people, I mean it's a job, you know you could do marketing, I think Persona
87   is interesting because it sits in between different things, it's between product strategy, market-
88   ing, product development, but yeah it's a real job I guess and a bit of science like, a bit of
89   phycology, a bit design, a bit of empathy, just understanding other people, and you can make
90   as much hypothesis as you want at some point, you're going to need to have real people in front
91   of you, and then when you project yourself it's very... like think about you know, why you spend
92   money on something and why you don't on something else, I mean I have this very stupid trick
93   in my head, like I'm not going to buy this app it's 3 pounds , and then I'm like, "I could not go
94   out for a beer tonight, and I would save three pound" so sometimes you have to compare... it's
95   very easy to spend 3 pounds on a beer, or on whatever, and somehow it feels like an investment
96   when you are on the app store and you are like, I don't really need this app, or as you, maybe
97   you've lost an hour comparing all the apps, so it depends you know, it is already much more
98   than 3 pounds, but at the moment you are like "ah no it's too much money" and so you've lost
99   an hour of your day and you just go with the free one because you don't want to spend 3 pounds,
100   but if your friend called you at this time and said let's meet ta ta ta, you're going to spend 20
101   pounds on beers ...because it's like my friend you know, it's social, spending time with your
102   friend. all this to say it's super hard to project to understand what people are going to do at the
103   end of the day the and Persona is a part of this system, where you can be wrong with your
104   hypothesis.

105   E: You mentioned a little bit earlier, that the creation of these Personas may create empathy for
106   the user themselves, would you say that is a major key and strength of Personas that you can
107   actually empathize with your users?

108   G: Yes, I mean that sort of things, I think that the strength of the persona, it's a fun exercise you
109   try to put your feelings in the position of the people, so as a marketing approach, it's much closer
110   to design thinking, than pure market quantification and data crunching].

111   E: But when you are designing, like who determines which type of medium or media that is
112   presented to the user? Is it the designer himself or is it some kind of external factors that affect
113   what they want to be presented, and in what kind of media?

114   G: So you mean how you decide what to design?

115   E: Yeah, like, if it is a website and you have some kind of content, in what media is that content
116   going to be presented, is it video, audio, or text, and who determines that?

117   G: I'm not sure I understand the question?

118   O: So for example, you have an app and there is some content on that app, how would you
119   decide how this content should be displayed as video, audio or text etc.?

120   G: Yeah, but that's, again something you are going to... I mean for me it is a modular question,
121   that's why I was formulating, thinking just a general question about a general way of making a
122   design decision, it's your decision as a designer, or it's what you get from interviews, Personas,
123   and those methods you are using, and there is no straight answer, it's a bit complex question, I
124   think it's there are two (combination) of things, so each Person you are interviewing people and
125   doing everything based on what people want, you might probably do nothing, because, first you
126   will have contradictory position from different people so you will end up with like, "this one
127   wants this and this one wants that, this person is not interested in this, and so on" but you know,
128   every Persona will want something that is very similar to how they think things should be done,
129   and they might be completely wrong about what they want, I mean I use tons of tools that are
130   super complex, that I would never have been able to imagine myself use, and then suddenly,
131   you understand this new functionality and you think this is genius. But until you understand
132   that you have this needs, you don't understand the solution, so asking people to give you hints
133   for the solution for a need they don't understand they have now, it's very tricky. And then on
134   the other hand, being this kind of good designer like, "I know what people wants", is super
135   tricky as well because, I mean I guess Apple has a very long track of doing things like this ...like
136   you don't want floppy disk anymore you don't want USB cables anymore, now what you want
137   is this new connector and people get pissed off, but they are pretty powerful, Apple, so it kind
138   of works, that it means there are good designers. I don't know it's very hard to say, so I think
139   you need both, a good intuitions, because at the end of the day it will make you faster, if you
140   say, "ok I think people want that, then I'm going to do that but you also need to be accepting
141   you could be wrong and when people tell you're super excited about something and you see
142   that nobody supports that idea, you need to understand why will be better for you. But I really
143   think it's the job of the designer or any person who develops the product to be good at mixing
144   both intuition and feedback from the people. You cannot only follow one of the two. so to
145   answer your question we're displaying information …like at the moment we're redesigning our
146   website, one of my friends who makes websites all day long tells us like 'well sometimes it's
147   better to make a video, from what I know from making websites – I know that people want to
148   see video much more than reading every time'. And I don't know maybe he could be completely
149   wrong, he could be right but you know we're going to make a video and I don't know who's
150   going on our website, but I know more or less who I would want to go on my website and why
151   and how I want the potential plan to go and why and understand what we do to answer some of
152   their potential questions so then they'll be like 'ahh yes this designer is interesting maybe we
153   can work with them'. So that's my persona in a way and I think the theory of my friend who
154   makes website makes sense. It's like probably these guys if they see a video of 30 second that
155   shows nice images and what we do it's probably better than a super long website with text but
156   it's an assumption. I mean we could be wrong, maybe we should have this podcast that we put
157   out every week so it's much more thought through so people start to listen and think 'ahh these
158   guys are really interesting'. I don't know you can only make hypotheses and you can try but on
159   this very specific topic of our website since we won't have any feedback, if it doesn't work it

160 will be very hard to know because you shouldn't have done a video you should have done
161 something else.

162 O: It's hard to pin down why a person left the website. Is it because… it could be something as
163 simple as the colours bothered them.

164 G: but that's why the persona is important in general for product development because if you
165 have your persona right, and you get the persona to be in front of your product then you can go
166 deeper and understand what is wrong with your product. If you're completely wrong with your
167 persona, there is no way you can understand anything when you launch your product and it
168 doesn't work because you know maybe it just wasn't in the hands of the right people. I think
169 the persona or whatever name you call it, is an essential part of designing and creating a new
170 product.

171 O: Building on that point, Greg, you said there are two parts to choosing the correct medium:
172 your intuition and what your user wants. Are there other external factors that could influence
173 that?

174 G: Yeah I mean the trends. What the user wants is … you don't know what they want so you
175 can use a conclusion from your personas if you've defined it you can be like ok given you know
176 that this persona has low money, has 2 child, and this and that. You can say ok this single mom
177 wants a simple product that does this. So there is a kind of conclusion that you can draw from
178 your persona, you can do interviews which can be linked with your persona or not. And then
179 intuition, when I say intuition like recommendations from your friends fall into intuition, it's
180 something that comes to you like this not necessarily thought through, I wouldn't call it an
181 interview or something from the market, unless your friend is a very very well respected person
182 in a specific area and has a lot of success in doing so. If you have an advisor in a start-up for
183 instance, it's very often why you have them advise you, because they have experience in the
184 relevant field so their intuition is probably going to be worth much more than yours.

185 O: Given their experience.

186 G: it was breaking a bit the video, couldn't hear you.

187 O: No I was just saying their insight could be more valuable because of their intiu…experience,
188 sorry.

189 G: Yeah yeah yeah. It's a bit breaking

190 O: should we… we can turn off our video maybe that could improve.

191 G: yeah I'll turn mine off as well. Is it better?

192 O: I think so yeah.

193 G: on my side it's good as well. Ok do you have any more questions? How long do you think
194 it's going to…?

195   E: Maybe 10 to 15 minutes more?

196   G: let me just check. Yeah 10 to 15 should be fine.

197   O: Ok so Greg, do you actively think about the transmission medium in you designs?

198   G: yes at some point you do but again if I take it a bit larger than this it's usually you try to start
199   with the need and not with the solution. So if the medium choice is like the solution I would say
200   you really need to start to understand the need and what is the message you want to give and
201   then you choose the medium based on this. And then from this point yes you will think a lot
202   about the medium and the way you communicate something for instance if you're doing a web-
203   site is going to have to adapt to your medium.

204   E: So it is based on some kind of research that you've been doing maybe on users?

205   G: yeah.

206   E: like what kind of research is it? Do you out into the field and ask them or is it just some kind
207   of user testing or?

208   G: quantitative analysis by asking people is relevant only when you have super large numbers.
209   Which usually when you're a small structure you cannot do really so it's always going to be
210   qualitative like finding the right people, asking them the question, and then a lot of intuition,
211   and also benchmark. Most of the time you will have competitors so you will see what their
212   website looks like 'ahh they made a cool video, that's a cool idea'. I mean that's why people do
213   the same all the time, everybody benchmarks.

214   E: following kind of trend.

215   G: yeah.

216   O: So, Greg, would you say that for different types of content, different types of media would
217   be more appropriate?

218   G: Yes, of course. I don't know if you have an example.

219   O: like the example we took in the beginning, about statistics. Would you say that statistics in
220   general "need" to be shown in a given medium?

221   G: no it really depends on your… this really depends on your persona. If you speak with a
222   banker or an engineer … I mean most of the time bankers are going to be engineers, I think they
223   will appreciate the raw data, I mean as raw as possible so he can make his own way through the
224   data. If he's super high in the hierarchy, he'll want some kind of crunching being done for him
225   but he will still appreciate something that is giving a lot of information and that is very raw in
226   the crunching – if you show it to some people who work in… who have less of an interest in
227   mathematics and statistics and this kind of thing and who are not necessarily able to draw their
228   conclusions themselves when they look at numbers. It's probably a better idea to present them
229   with a really concise way and already kind of interpreted so that probably means in a nicer
230   format with a better graphic design being done. So this is definitely totally different depending
231   on who you are.

232   E: So you actively think of their cognitive state of understanding the knowledge as quickly as
233   possible by presenting it in a different media to different personas?

234   G: yeah.

235   O: Building on that point, Greg, how do you "ensure" that the medium you're choosing will
236   help the user complete their task?

237   G: I'd say you take a wild bet. I mean you have all these things where you can know that the
238   person will be more interested in this or that and at some point you just try and you gather
239   feedback. I'd say feedback to this to know if you're adding value, if you're creating a new
240   product that supposed to help them make a decision, at some point you have to get feedback to
241   see if people are really interested in what you do. Especially if we were taking examples that
242   were kind of B2C examples, and I think B2C is very clear because the product doesn't answer
243   very specific need or desire people are not going to buy it so you have instant feedback. When
244   you work in B2B you're selling the product to someone in the company who thinks their em-
245   ployees are going to benefit from it. They are going to pay you usually a big sum of money for
246   this product and then maybe it's going to improve the productivity of the employees or another
247   example the thing we were doing recently which was for a marketing company, you know the
248   brand is spending money on us to do something, an installation that people are going to engage
249   with the installation, I think it's going to be very hard for them to quantify how much money
250   they're going to make from this extra advertising. So in this case you really need to gather
251   feedback to see are people having a good experience, are the excited because they are not paying
252   if I come back to my example of the company, you need to understand if the employees use this
253   new software that you've sold to the boss of the company and if yes why it's better for them.
254   Depending on where you're operating you will have to gather feedback in a way or another.

255   E: I think we have one more question for you. How would you say using the "incorrect" or
256   "wrong" transmission medium, how would that impact a user?

257   G: that's a tricky one. I don't know… if I try to make the question a bit larger if you make the
258   wrong design decisions and then people don't engage with your product or in that case don't
259   understand the the data you're presenting to them or you're communicating to them, it's going
260   to be very hard to know if the general concept at the beginning that people need this information
261   or this product you're building was a good concept or not. So say you think people really need
262   to monitor… people really want to think about their health care and how they eat and how they
263   consume alcohol and grease and these kind of things, you might be completely right on this but
264   be completely wrong on the delivery of the product and you might be doing a wristband that
265   people are supposed to wear all day long and people use it for 6 months and then stop to use it
266   you know like the Apple Watch, is it because the concept is wrong or because you haven't sold
267   it to the write people it's going to be very hard to know. Probably the concept is right then if
268   your design decisions are not based on the "right" thing and when I say right it's very hard to
269   define. You will not be able to know if your initial concept was right or not.

270   O: I think that was the last of our questions, Greg, unless you have any questions or comments.

271   G: No no it was an interesting discussion, I wish you guys good luck for your thesis

272   E & O: thank you so much.

273   E: we can send you the transcription after we've done transcribing so you can go over your
274   answers.

275   G: if you want later on when it's done, if you want to send me your thesis, you can share – I'd
276   be interested to have a look.

277   O: Yeah of course! Greg before we go, could I ask you maybe for a favour if it's possible?

278   G: Yeah.

279   O: you mentioned that you had some personas from Gravity earlier in that call.

280   G: ah yeah.

281   O: is it possible for you to share them with us? For us to just look at, if it's possible?

282   G: Unfortunately. The problem is I would have to ask them since I'm not part of the company
283   anymore, and I'm almost 100% sure they will say no because they are in the process of raising
284   money and stuff. And they must think it's very valuable data

285   E: yeah of course. No worries. We were just wondering if you can provide us it would help our
286   research and so on, but no worries.

287   G: yeah sorry for that but again it was… what I told you was the essence of it, the texts are not
288   so interesting we really defined… we were doing something 3D so we defined 4 types of people
289   who could be interested in doing something in 3D. We gave them a name, so one for instance
290   was digital hobbyist so people who do stuff in 3D on their computers on the weekends because
291   it's not linked to their job. I think one was teacher, one was probably parents who want to do
292   stuff with their kids. I think there were 4 personas and they had some sentences that were de-
293   fining them they had typical jobs, typical… it was very much a story you know. It's an A4
294   where you tell a story of someone, you try to make it precise but broad at the same time. Cool?

295   E: Again thank you so much Greg, we really appreciate you taking the time to talk to us.

296   O: Yeah thank you, Greg! And Happy Easter.

297   G: Is it a bank holiday today in your country?

298   E & O: Yeah it is.

299   G: Sorry to that. It's the same here, but we're working, so...

300   O: no it was our pleasure.

301   G: nobody is there but us so it's like this. Ok cool, keep me informed of how it goes. Say hi to
302   Markus. See you next time.

303   E & O: of course we will.

304   All: bye.

Appendix 2d: Jack Interview Transcript

Interviewers: Einar Gunnlaugsson, Omar Mahaba
Place & Date: Lund/Austin, 6 April 2017
Type of Interview: Skype.
J: James
E: Einar
O: Omar

1 E: So if we start with the first question, do you use any user centric design methods, in your
2 projects, or in your design?

3 J: Yeah, I try to because I do enterprise UX, so all of my clients are enterprise level. Some of
4 the clients I have worked over the past year, three... (trying to think), right now I am doing like
5 a tax surplus system for company, it's all enterprise. It's a lot different than going to market with
6 something, somewhat a bigger uphill fight at times, because they have a captive audience, eve-
7 rything, it's essentially, they are going to use everything we build, they are not going to have a
8 choice, and so I have to go in there a lot of times and explain to them, by employing UX and
9 some of these users centric design practices, I save their employees a lot of time, a lot of head-
10 aches, and make them more efficient at their jobs, so they don't go home exhausted because
11 they spent all day fighting with software. So, typically we get to do, and we try to push forward
12 as much as we can get, as far as doing user journeys, and personas, and wireframes and proto-
13 types, and something like that, we don't always get to do the whole suite of things we want to
14 do, but we get as much as we can, because every piece of information is going to give us and
15 give them a little bit closer what they need to help save their employees.

16 E: So you would say that you conduct a user research and create personas for the jobs you are
17 doing now?

18 J: In a lot of cases we do, most of the time the personas, we get a lot more value out of them for
19 the developers, and some of the stakeholders, because the personas help them focus that it is an
20 actually human being.

21 E: Yeah, so it serves as a communication type?

22 J: Absolutely. Because I found it is a lot easier to get especially the developers and engineers
23 to understand that this is a problem for Jennifer or Bill, as opposed to "as a user I want to log
24 in", they can't make an emotional connection to that, so it is ok. If it's meet the criteria, it's ok,
25 but if they have that Persona attached to it, they can't help to feel a little empathy for that person.

26 E: Exactly, one of our question is "does the personas make the designer empathic towards the
27 actual end users? and to create a better design overall for better user experience?

28 J: I think they(personas) do, I think it's a really fine line though, because... I've had this problem
29 for a while so I basically been doing websites from the year 1995, and for the longest time we
30 just "I'm the designer, I know" and then it is like "No you don't" you need to talk to users, and
31 so we started talking to users, and then all of a sudden the personas came along and started

32   getting popular and the persona was for me for a while just another way to label "I'm a designer,
33   I know what is right", because it does not matter how great the persona is, I can never under-
34   stand, the 35 year old single mother who wants to walk in and change something. I can have all
35   the personas in the world like that, but they're not going to help me, I am never going to be able
36   to associate with that. It does allow you to at least visualize that person, and at least get a little
37   more empathy for what she has to deal with.

38   E: And would you say that it is important for a better design?

39   J: Absolutely, it's almost invaluable, because even if it makes you stop and think for a second,
40   is there something, she will be able to do? if you go on and think "ok it is good" and maybe it
41   is not something she can do, but it will at least get you thinking about it and that's the biggest
42   part about it. Because it's too easy to sit and write code and do the design, and never let it enter
43   your mind, because it's "oh this is beautiful, it's a beautiful Photoshop document, great" but can
44   it be used? If you don't stop and think, you know, they can definitely help you, at least make a
45   better informed decision.

46   E: Would you say that personas have any strengths or any weaknesses as well?

47   J: The weaknesses, assumption, again writing a persona for this 35 year old single mother with
48   a job, I'm still making assumptions, because I don't know that person. As opposed to... I'm a big
49   fan and I have done a couple talks, local tech fest talks, about guerrilla usability test. I go set up
50   at Starbucks, and a couple of Starbucks know me by now when I go in there, and I'll basically
51   spending 50USD today, when somebody goes up and orders his coffee, the barista says, "if you
52   have a few minutes, we have a guy that liked to talk to you, he is willing to pay your coffee if
53   you're willing to give him a few minutes, and then they send them to me, and every time I got
54   an empty chair, the barista knows to send another person. Having that conversation with some-
55   one there, I am more apt to get an actual actionable item from a 35 year old single mother than
56   from that persona. So, that would be the weakness, but again the strength is making somebody,
57   to take a second to think a little bit more about that other than, a basic user story and agile is, as
58   a user I want to be able to log in. Well it is UX people, we know there is a little bit more to log
59   in, is my password obfuscated, are you telling me what the criteria for my password, what hap-
60   pens after I log in, what happens if I don't log in, and when you attach the persona to that, as
61   Jennifer, "I Want to be able to log in" and now all of a sudden it makes them think of all those
62   scenarios, it's a weird little magical device. Giving the persona a name, as opposed to "user" it
63   makes it human, and makes the team start thinking about human that is actually going to have
64   to do the actions.

65   E: Could you describe a little bit your design process when you get a project on your desk, from
66   start to finish, just a little description?

67   J: So we have a variety of projects, we have some that are completely greenfield, whether it is
68   just "we need an app" and it's "we don't have anything, what do we need?" and then we have
69   some that are more of a "we got this system, it has not been updated in 10 years, and you could
70   imagine what that gives your project. So like, a greenfield project, we take a look at the require-
71   ments, I usually try to get with the stakeholder and identify a couple key people, a key personas
72   to establish, even if they are not fully fleshed out personas, so "who is going to be using it, the

73   mobile app we just finished for Emerson (company) which is a manufacturing management,
74   they own 2/3 of the manufacturing plants on the planet, whether it is pharmaceutical or elec-
75   tronics, or whatever, they do that whole process, but they wanted an app for their, the people
76   that monitor everything, and they have a control room in every one of these plants, and if your
77   job is to monitor, you have to sit in front of a desktop, and that's your 8 hours, you can't take a
78   break unless somebody is sitting in front of that monitor, because if something flashes warning,
79   it means the plant is on fire etc. and somebody has to take action. So when I spoke with the
80   stakeholders, I asked them for a theme, I call it the ATM thing, I love ATM machines, if you
81   take a look at a typical ATM machine, it allows you to do all the things you can do on the bank's
82   home website, but you only get presented with 4 items at a time on an ATM machine, they
83   never overload you, because they know we can't give you 40 options, because then you're going
84   to sit there and get confused, you go to the bank's website and they give you all 40 options, but
85   at the ATM line or drive thru, they know they got to keep you moving, so they give you 4
86   options at a time, you can still check your balance, you can do deposits, you can do withdrawal,
87   you can do all of it. But, what's the function of an ATM, it's to get cash, so for the mobile app
88   is what our "get cash" is? and he was like "I want this guy who is monitoring to get up and get
89   some coffee". So ok, that's what we got to figure out, how can we get... ok let's call him Greg,
90   so we started generating the persona right there with the stakeholder, Greg is our guy, what do
91   we got to do to get Greg to be able to get up and get some coffee and still be able to take action
92   while he is getting coffee and an alert comes on his phone. He needs to get an alert, and Greg
93   cannot miss that alert on his phone, whether he got it on silent or whatever, we are going to
94   vibrate, and do everything you can within the OS to make sure Greg cannot miss it. And the
95   stakeholder was pleased with that, so from that point on, we had at least one persona started,
96   Greg. And, did a couple phone calls, with some Greg's to flush that out, and once we've estab-
97   lished our key personas, one thing I like to do is sketchboarding sessions, make templates. So
98   what the sketchboarding, and especially for enterprises, like I'm not going to have enough do-
99   main knowledge to know... I know nothing about manufacturing, so me coming back with a
100   bunch of interviews and doing wireframes... typically wireframes don't change after the first
101   iteration, because if the software hasn't been touched in 10 years and I do a wireframe, just
102   intrinsically going to be better than what they have, but it maybe not necessarily what they need.
103   And there is no way for me to know what they need, unless I actually make them have a con-
104   versation, so sketchboarding process I use, we have a template that have six boxes on it, and I
105   can email you guys the template if you want to take a look, the first section is time boxed to 10
106   minutes, and I kind of give them what I call a Lego box, a box of Lego, and here are the pieces
107   whatever the stakeholders have deemed the important things, so in the case of this apps, they
108   needed alerts, and they needed to be able to monitor certain things. So here is your box of Lego,
109   these things have to be on the screen, other than that, you can do whatever you want to. But
110   they have 10 minutes and each one of these little boxes, and they only get to use a sharpie, so
111   they don't focus on details, but each one of those should be a different version of that screen.
112   And, everybody is like, "well that's six screens, I can't do six screens" and I was like "do as
113   many as you can, and if you get stuck, do one of them how apple would make that screen look,
114   how would google make that screen look" kinda prompts them, so they all go through that, and
115   then the biggest important part for me, is that I make them share that with the class, it is usually
116   group of seven, no more than seven, but I put them up on a board, and I make them talk through,
117   "well I thought this would be great, I like this" whatever, and inevitably that conversation starts
118   to uncover the needs that they have, that they did put in the stake of work, or whatever, but it's
119   like "wouldn't it be really nice if we had this" and I take notes about that throughout the entire
120   process, once everybody has presented their versions, and in the whole time we are doing it, we

121   are keeping the personas in mind, and it is funny how for groups how don't understand personas,
122   they immediately grasp the holdup so Greg can come and do this, Greg will do this, you know,
123   and again it immediately allows them to empathies, "well we want them to do this and so users
124   can do this" and Greg is... I mean they all know a Greg.

125   E: But from that test or this situation you just described, will you learn what is the best type of
126   media to be sent to this persona, Greg? Is it text, video, audio?

127   J: Yes, so one of the things that we determine, as we are going through some of these sketch-
128   board sessions, so what does Greg need in order to go get coffee and still get back, for him, he
129   has to have information to let him know whether he has to get back right now, or he's got 5
130   minutes, so in that case, we know Greg needs to see a real time data chart that shows him the
131   last 30 minutes of whatever that particular item that's giving the alarm. The other hand, Bob his
132   supervisor, gets the same alert, but he does not need that same information, he just needs to
133   know that Greg has gotten and acknowledge this error. So he does not get the real time chart,
134   he doesn't get that notification and does not have to look at that stuff, he just needs to know
135   that an alert happened, Greg has seen it and acknowledge it, or has not acknowledge it, and he
136   needs to able to notify Greg "you need to look at this".

137   E: So these two types of personas, if I understand correctly, and they have different types of
138   medium transfer to them based on the information they need, right? and is that something you
139   incorporate into the persona? or is it just as the design goes? or is it a hunch feeling that this
140   type of medium is the best?

141   J: It's not in the initial persona, but as we have these conversations, the persona kind of flesh
142   out. So before we get to development, we have a pretty good idea, so that they know the direc-
143   tion, because we are not going to build a separate app for each persona, but there are going to
144   be different pathways of different data, depending on which persona, so identifying, in this case
145   the Greg persona who needs the most information to do his job, you know it needs to be some-
146   thing actionable, then we scale it back for each level above Greg, because they don't necessarily
147   need that level of data.

148   O: So, do you just scale down, based on what Greg needs? or do you decide ok Greg needs to
149   see this, and then you research Bob and he needs this?

150   J: Yeah, we don't just assume that it can scale down, once we have decide or determine what
151   "Greg gets cash" moment is, then we move to the next persona, what is this persona "gets cahs"
152   moment, and I try to by basically.. it's really hard to get them to do it, but once they get going,
153   they completely forget... by getting them just to write down what does Bob need, you know do
154   these sketchboard sessions for Bob, or just thinking about Bob is the guy that runs things, what
155   does he need?, and then taking all of those sketch boards and matching them up, ok what do we
156   have, where do we have overlaps, what can we match things up with. Inevitably, because it
157   sounds like it will be a nightmare of every one of these users having a different app, but they
158   are inevitably as always commonality, if we can kind of matchup and scale back so it does not
159   need this, but he needs this, and then we start moving those pieces around.

160   O: Would you say, Jack, that there are more media being used more than other in general?

161   E: Like in general for projects, is it text, audio, or video, or other types of media? Do you guys
162   if I see now on Facebook, all of it are videos, for some reason I don't know?

163   J: Well, I think, to that point, people respond significantly higher to video. Text, sadly, text
164   takes an effort, well you want me to read??? and especially Facebook posts. I can read 140
165   characters but then there's the 'read more' then you click then its "ohh no I can't read this".

166   O: Yeah the infamous Facebook wall of text

167   E: I can relate to that very much

168   J: that's why video is being used more because it takes significantly less effort on my part as
169   the user. I can click the button and you're just gonna tell me, even horrible video with just voice
170   over a picture. I don't have to put in any effort to read. Not that it's a lot of effort, but evidently
171   it is for some people. I think in the case of… to get back to that app, it really comes down to
172   what is the medium is going to deliver the biggest impact to the user. Alerts and stuff like that,
173   they don't need to be video because they don't need to eat up bandwidth, or whatever else.
174   Sometimes there's no better way to get the point across than moving images with sound.

175   E: would you say though there are some kind of factors that would lead to maybe the wrong
176   medium type, so like external factors such as cost or time or pressure from the clients or what-
177   ever it is.

178   J: ohh absolutely. So again video, it's easy for people to post video on Facebook there's just
179   there 0 production value and that's ok for you and I to post pictures of our dog or cat or kid
180   playing, whatever. As companies though, they really can't do that – at least not many. There's
181   a few that can get away with that, but even the ones that look "no production value" have pro-
182   duction value. Bigger brands like google, apple, etc... They can't just go out and shoot a video
183   and post it.

184   O: Yeah, it has to be up to a certain standard.

185   J: it has to be a specific brand standard, and for a lot of brands that's an awfully high bar.
186   Production cost now you know a decent digital camera, somebody that can actually properly
187   edit, licensing, and everything else – all of a sudden cost goes up.

188   E: yeah of course.

189   J: 30 seconds of video, let alone a 5 minute video. So I guess I didn't really answer your ques-
190   tion. Video is always going to be the more effective medium, but because of that effectiveness
191   it's got a higher entry rate.

192   E: Would it also depend on the type of task, for example like the 'Greg' scenario we have going
193   on, the app needs to alert him so maybe a video or text message isn't the best way to do it.
194   Maybe it's a sound and vibrating phone.

195   J: Right. Absolutely. Perfect example, Greg – it doesn't do us any good to just give him a text
196   message, it needs to be a text message, a sound, and vibrating. We have to ensure that he gets
197   that message. For "Bob" he doesn't need all three of those, he just needs to get that notification

198   that there was an error. One of the things we are actually working on right now is for pharma-
199   ceutical cocktails. Whenever you get an IV, it's made of a certain percentage of different drugs-
200   they're all manufactured. All prescriptions are written by licensed pharmacists but they have
201   technicians that put these things together. The technician has to basically get the recipe, and
202   then do it all with an overhead camera and a tablet in front of them that has the recipe and then
203   they have a foot pedal to where they can move to the next step and the camera snaps a picture
204   of what they've got underneath the hood. So the pharmacist can watch. The pharmacist is get-
205   ting real-time video/photo to ensure that it's being properly mixed throughout the entire process.

206   E: we want to talk a little bit about information and the content that UX designers get or get to
207   use when they're designing interfaces and artefacts. We would like to ask you, do you catego-
208   rize different types of information into tacit or explicit information and how does that affect the
209   design overall?

210   J: we don't do that very often here because most of our clients are pretty much… if it's not
211   explicit then they have problems. There's nothing that they… one of the 3M interfaces that I
212   struggled with they had over 40 inputs on the screen and try as we might, they can't get rid of
213   anything. So there was no room without overly cluttering it, as it was already cluttered for any
214   sort of tacit information. They were accepting that there was going to be a learning curve and
215   that's just all there was to it.

216   E: also how much influence does a UX designer have on the content that presented on the web-
217   site itself for a client?

218   J: it varies for every client. When we have a client that we are able to get across and explain so
219   that they understand the value we're bringing to them, we have a lot of say – they're very open
220   and flexible to our suggestions and recommendations. At the same clients you know don't care
221   and "we need this on the page", and 3M is a perfect example. I mean I used every piece of
222   information and study and gave those scientific documents and all kinds of information from a
223   bunch of different heuristic studies to say this is too overwhelming for anybody even people
224   who use this on a daily basis, this is too much for them. And they were like "no we have to have
225   them". So at that point, and it's one of the tougher parts of being a consultant, I have to step
226   back and be impersonal. It's like ok I given you all the information, you're still willing to make
227   this decision, so be it. Let's do it and move on.

228   E: Would you say that the medium, as we're trying to research, will that change anyhow if the
229   information or the content changes?

230   J: it's an interesting question. Honestly, my quick answer will be no. since starting doing web-
231   site since '95, man has the world changed. Just since 2007, that was that long ago, the iPhone
232   first came out and we're so ridiculously different now than we were then. The funny thing or
233   fascinating thing to me, and one of the things people continually say that never holds true, is
234   that people are becoming more adapted to technology, people are finding it easier to use tech-
235   nology and according to studies, they're not. Actually they're less tech savvy now than we give
236   them credit for. People are good at using the one or two apps they use frequently. Not technol-
237   ogy. I don't think the availability or the ease, since then we've gone from… I thought that the
238   coolest thing in '95 was when I got a 56k modem that was just like we're all opened up, it took

239   only 30 minutes to download a song! How awesome was that! Now I get upset because 30
240   seconds! But fundamentally the speeds, I've got fiber at home so I'm getting gigabyte down-
241   loads, as a human beings we're not changing fast enough for the technology. So it's going to be
242   great, video is going; now you rarely ever see buffering, especially on YouTube. There's a
243   whole generation of people growing up having no concept of buffering. We're going to get
244   more and more video because speeds are picking up and everything else. At the end of the day,
245   people still aren't advancing as fast as the technology.

246

247   E: the next question is mainly in the same category, so would the transmission media type
248   change when you change your persona type?

249   J: yeah I mean absolutely. It depends on the persona. You could have several personas that are
250   going to prefer video. There's going to be some personas no matter how great speeds, connec-
251   tions, and everything else are … they'll still want 140 characters. If you can get your point
252   across in 140 characters then that's all I need, I don't need your 5 minute video. Depending on
253   the persona, your message could be delivered like that. For one persona we know they only
254   want basically a tweet. So we have to condense our message to that. For another persona, they
255   want some more background information, so we're going to give them a little bit longer, and
256   for another persona they're going to get a 10 minute video.

257   O: and this holds true even if we're talking about the same piece of information.

258   J: Yes. Absolutely. There's an article not long ago about how NPR has done that. Their podcast,
259   their website, and some of their videos… it's all the same content, it's just scaled down for
260   whichever platform you want to consume it on. So the podcast is like a 3-4 hour conversation,
261   the video is a 30 minute conversation, and then the article is like a 5 minute read.

262   E: and they all include the same information?

263   J: Yes. It's all the same information, on the same topic it's just their scaling it to whichever
264   device you want to consume it on. Which I think is just absolutely brilliant.

265   O: it is quite interesting.

266   J: I think slowly but surely we'll get to that point where everybody is doing that but it's going
267   to be labour intensive.

268   O: and do you think that's the barrier that's keeping us from getting to that point? The labor and
269   possibly the production cost.

270   J: Yes. Absolutely. One of the things I say a lot with our clients: somebody has to do the work.
271   If you want it automated, that means we'll do the work, we're going to write the program, we're
272   going to write all the backend that automates the process for you – that's going to cost you. OR
273   you can have somebody sit at the desk and do data entry, one way or the other somebody has
274   to pay to get the work done. It doesn't just automatically happen. I think that's the big discon-
275   nect, like the NPR thing: somebody is sitting there and carefully crafting a 30 minute video
276   from a 4 hour podcast, and then they're taking that condense and putting it into a 5 minute read
277   article online. That takes a significant skillset to be able to do that effectively.

278 E: and on that note, with the NPR thing, how would you say the incorrect or "wrong" medium
279 would impact the user? So if they only had the podcast, how would that impact the user who
280 wants a video or wants just a 5 minute read?

281 J: the only way I can answer that is with an anecdote. I've been contemplating the podcast, and
282 most podcasts are like an hour, hour and half, two hours long. I don't have that kind of time to
283 commit. I want to be able to listen and learn, not background noise. If I can get it in a 30 minute
284 video or a 30 minute podcast – opposed to an hour podcast, I'm more likely to choose that as
285 the way I consume it, but if its available only as a 2 hour podcast or 30-minute video – I'll go
286 find the video because that's closer to the time I've got available. If it's not done properly,
287 there's a reason the podcast goes 2 hours, there's maybe not 2 hours' worth of solid information
288 but being able to pick the good information and turn it into a 30 minute piece of video is pretty
289 complicated. The risk of missing some key features or background, what are the pieces used to
290 build up to that point that you make in the two hour podcast? You have to find the ones that
291 really make your point in the 30 minute podcast, you don't have time to expand on.

292 E: would you say using the if it's a requirement to use some application or some kind of system
293 in your work or whatever it is, if the medium type is wrong to the user how would that actually
294 impact him? Is it frustration, it takes a longer time to do his job or impact the enterprise itself
295 as a whole?

296 J: I was going to say. I mean between the three of us, we probably have three completely dif-
297 ferent learning styles. I may learn a lot better by seeing somebody and just being able to watch
298 a video and absorb it. While you Omar may be able to pick up a book read it and go. So if you
299 narrow it down and say we're only going to provide this method, you're limiting the number of
300 people that can access it. You're assuming that everybody learns that particular way or con-
301 sumes information that particular way. If we know nothing else, we know that's not the case
302 with people.

303 E: So how could the designer possibly ensure that the chosen transmission medium will help
304 users complete their tasks in an efficient way?

305 J: basically until machine learning really takes off and AI, giving the user the option to choose
306 how they want to learn. We provide this content in a number of ways, we have a video, we have
307 a pdf, and we have a podcast or whatever. Choose. Allow the users to choose. You don't have
308 to give them 40 choices but video, audio, and whitepaper. You're going to cover a significant
309 number of people. Each one of those takes a little bit of effort to scale to whichever medium. If
310 you choose to do video, you're going to have those artifacts for the others, you're going to have
311 a transcript of the video, and you're going to have whitepapers. So I think it would be best to
312 encourage the clients, even though it's a higher cost for the video. Especially in e-learning it's
313 a one-time cost: once you do it, the video is there, it can go, you can have that class thousands
314 of times, and it's never going to cost you as much as that first time. Then you have the artifacts
315 of audio transcript and printed transcript that can be used for the different learning methods.

Appendix 2e: Joe Interview Transcript

Interviewers: Einar Gunnlaugsson, Omar Mahaba
Place & Date: Lund/Austin, 10 April 2017
Type of Interview: Skype.
J: John
E: Einar
O: Omar

1　E: now we've started our recording. So I'll just jump right into the first question. We know
2　from our literature review we read some papers you've written while you were at Microsoft, so
3　I just wanted to ask you: how does the process work when you're creating your personas or how
4　often do you use personas when designing an artifact?

5　J: yeah so that answer really depends on the project. Every time I do personas the process varies
6　a little bit and exactly how we use them varies a little bit. So generally speaking I have an
7　idealized process I like to do, but to do the whole thing can take a major effort and a lot of time.
8　Most of the time I've found that these kinds of efforts kind of happen later in the game and so
9　we really don't get to do the idealized version, but you know my basic approach is to attempt
10　to do two things and one is to understand and harvest the notions of target users that my team-
11　mates have and my stakeholders have (executives, decision makers and the on the ground folks
12　that are going to be using the personas) to really understand who do they think we're designing
13　for, for this particular product or project and try to embrace that and to use that to have some
14　methods that try to put some order to that and put some priority and definition to those and
15　that's kind of a first step and then the second step is to do a similar kind of exercise with data
16　we already have as a kind of a "discount" technique of getting real empirical data and to the
17　persona definitions. The third step, and I rarely start with this, we do our own data gathering
18　exercises, so even though I rarely start with it I think it's very important to finish with – it can
19　either be part of the validation of the personas to begin with and at the very least it puts a bit of
20　authority behind them when you can talk about the data collection efforts that went into creating
21　them. so that's the creation side and then on the usage side, you have this very strong notion of
22　personas not being a one time kind of communication, not a single document, not just a poster
23　and you have to be very proactive in communicating them. the most important thing is that your
24　colleagues know about them and you're building their understanding of your target users over
25　time and not the campaign notion and then explicitly involving personas in the variety of activ-
26　ities you have going on as a team and that can vary a lot but from doing storyboarding and very
27　simple scenario and user stories kind of definitions and understanding based around the per-
28　sonas to doing user testing with profiles that were recruited from your personas, heuristic eval-
29　uations, and product walkthroughs, those kinds of things. So that's it at a high level.

30　E: What are the strengths of conducting this whole process you just described just now? Also
31　what is the weakness of doing this?

32　J: yeah so weakness wise, I found a few different things. One is it can be fairly time consuming
33　and a little bit of distraction to do personas, where nobody's company or product team really
34　makes personas as the thing they sell or that's what their business is. So personas are a means
35　to an end, not the end in itself. So there can be a tendency to spend too much time focusing on

36 the persona process I think, so that's a downside. There's a lot of goodness in keeping yourself
37 honest, is this thing I'm working on really important and how am I getting the most out of the
38 time that I spend doing definitions of target users and bringing them into the design process. So
39 that's one thing, the second kind of downside is personas as a tool has become almost a dirty
40 word in some circles, they are by definition a fictional character, when I do personas myself
41 and when I advise others on doing personas I typically, I was just at a company a couple of
42 weeks ago, Indeed.com, who does this kind of recruiting and job finding company that's up and
43 coming. They're in the process of doing some target user definition and I advise them in partic-
44 ular, there's no reason to call these personas. There's no reason to actually do personas neces-
45 sarily. Personas specifically as a process or as a thing have a lot of power, the fictional side of
46 it can really draw people in and make them generative and useful and memorable in a way that
47 just market segmentations or kind of stripped down user profiles can't do, so I think there's a
48 lot of value in them. If their team is having some kind of back-fight against personas because
49 they're fictional, then they should stay away from them. In some places by just saying the word
50 persona people go like "oh no we're not doing personas" and I think that's fine, I wouldn't force
51 it on people.

52 O: John I had just two extra questions on points you've made. So you said that personas are a
53 means to an end, what is that end specifically?

54 J: for me the end is always around making a product. I've been on product engineering team
55 throughout the bulk of my career and particularly doing UI design and experiential design, and
56 so personas help us tease apart what that experience should be and what the flow through the
57 experience should be, potentially how it's branded and tone of voice those sort of things. More
58 so it helps us think through the design problem, what is that user task and flow, what's important
59 so personas help prioritize those things, help push away features, tasks, and activities that may
60 be less important so that the more important stuff is well understood and well designed. It's
61 designing stuff and designing products. For me its designing software almost always employ
62 them against software.

63 O: and the second question I have is about a point you made earlier about data collection after
64 designing your personas, what happens if the data you collect is different from your personas,
65 do you change your persona or what do you do?

66 J: Yeah definitely. So you know I think you'd be crazy to ignore the data and I have usually
67 found, and I can't think of a case that wasn't like this, changes are rather minimal so they're
68 kind of course corrections because the process that happen up front looked at existing data and
69 looked at I'll call them assumptions, but a lot of times your team mates have more than just
70 assumptions, they have experiences with users and sometimes are users themselves. Their intu-
71 itions are really educated about the variety of target users that might be out there so the initial
72 kind of provisional personas get refined with the data that's at hand and that gets further refined
73 with your own data collection. Let me say a couple of things also the data collection that hap-
74 pens in your own hands need to be of two sorts and one is or can be qualitative kinds of research
75 and quantitative kinds of research and I've found the qualitative stuff more ethnographic style
76 user interviews and definitely observation and really understanding people and their context,
77 helps with the story telling side of it, sort of the fictional aspect of creating a persona get richer
78 through ethnographic processes and sort of how well you can count on them gets further fleshed

79   out like what's the size of this market, how many of this type of user is there out there and how
80   strongly do they feel on these things get better described through qualitative-type data. For me
81   that's almost always resulted in a more minimal change. I can think of one time where a persona
82   that we believed really strongly in was generated with a US, very America-centric, process and
83   we had one persona that was very prevalent in the US and there was data to support it and our
84   own intuition, ethnographic research supported it, but when we looked internationally – we
85   started to looking at this persona set internationally and we discovered that this particular per-
86   sona just didn't exist in most other countries and we ended up killing that persona for that rea-
87   son. It was a very simple reason that it didn't exist in other countries, it was a grandparent-type
88   persona that didn't live with their connected family, so their children and their grandchildren
89   were not in the same home and in a lot of other countries at that time, and it still may be the
90   case, grandparents typically lived in the homes of their children. So we found that in India and
91   a bunch of other places, so we were looking at a product to keep people connected and so forth
92   and that persona was just kind of a no-go internationally.

93   E: Thank you John, so like you have been describing your process of user research, you have
94   your personas and you gather your own data on that, but what determines which type of media
95   will be used on the interface itself like text, audio, video, image? Is it the designer himself, does
96   it come out of user research, or is it like both?

97   J: so you mean who that persona is?

98   E: no like in the actual interface itself after you've created your persona and you're creating
99   your design what determines the information you're getting out to the actual users? What de-
100   termines if that is going to be in text or audio or video?

101   J: I see. I'm trying to think how the question applies to the kind of things I work on. So for
102   most of the products that I build, they're software enablers I guess is what I'd say. They're
103   things like the control panel for your touch pad, we recently created for some android tablets
104   we're working on, a new camera interface and a new gallery with some additional capabilities
105   to it. We had a 3D depth camera on the device. The interface for that was determined by the
106   need of the product. We did do an introductory kind of first use tour that was a set of graphic
107   images and some motion and animation to call out major features that were different. But we
108   didn't use the personas to make that determination, it was more of a 'what was possible with
109   our development team given the time we had for development' and what seemed appropriate,
110   because there was also a cost factor. We're doing a similar effort right now for a product that
111   Dell is about to release called the Dell Canvas, it's a large display that sits flat on your desk and
112   works in conjunction with a regular display and Microsoft has a similar thing called Surface
113   uhhh [John can't remember the exact name] anyway it is a very large all-in-one that can lay flat
114   so this is kind of a similar concept, also similar to the Wacom Cintiq. It's essentially a pen
115   interface with a very large display that sits flat and as part of the first power-on experience
116   we've been creating some introductory materials, not quite tutorials – it's not that deep, but it
117   is bit of a tour around the product and some helpers to help get you started. We definitely went
118   back and forth on the use of video versus the use of still images and some text and animation
119   or text and annotation. Again that product, we were leaning towards videos, personas again
120   weren't used to help define that material but at the end of the day it ended up being a cost thing
121   where we wanted to do a bunch of elaborate videos and we had one of our internal crews that
122   does a lot of video stuff for dell.com but is as just too expensive to go that path, we did some
123   but not fully.

124   E: do you think that these sort of things should be thought through in the persona creation or in
125   the user research?

126   J: I think it depends on the product. In cases where the product is about direct action in a space,
127   the use of video may not even be a relevant medium for anything, but for other things if you're
128   talking about website design we have a user-experience team at Dell that does dell.com, a fairly
129   large one, and you know they're constantly re-evaluating how do they present product infor-
130   mation and so we sell laptops and tablets and all kinds of things and really looking at what tells
131   the story of that device to the user: what does it do, what it is capable of/. We have a fairly
132   robust 3d modelling capability so we do a lot of CGI and modelling and let users do a 360 tour
133   around their products. We've got a video editing suite and do a lot of that. Some of those product
134   teams do use personas in their work and some of them don't, so definitely I think that can help
135   with that question.

136   E: We were thinking about a scenario of a sports website, or something like that, we have all
137   these player statistics or something. Maybe the target group or personas are like 20-30 year old
138   guys. What determines what the best medium is? Is it a hunch feeling that designers have or is
139   it some kind of user research that is being done to find that out?

140   J: yeah so I think most design tasks should be approached with a good amount of user research
141   to understand it, that's not to say it always happens that way and can personas help inform that?
142   Yeah, absolutely. I think there comes this point at which engineering and cost become a factor
143   in it.

144   E: Are there a lot of external factors that lead design?

145   J: Yup.

146   O: what are some of those factors, john, other than cost and engineering?

147   J: well cost and engineering definitely. Capability related to can you design it? So do you have
148   the ability to say…

149   We've actually designed recently several animated video kind of things, so they're not quite at
150   the level of live-action video but we use some CGI and modelling techniques to create a video
151   flow as part of a tutorial experience in some of our stuff and one of the things we've found is
152   that there is not all designers that are designing these things have a good sense of how to create
153   a script, which is a movie-production kind of talent. Here's a scene, here's the point of that
154   scene, here's the next scene, here's the flow between those two scenes, here's the visual dialog
155   that would happen, here's the written dialog, and so really putting together that structure of
156   video and designing it both a different kind of design task that within my team I don't have a
157   large collection of motion designers and video production experts, I have graphic designers and
158   interaction designers that are trained in very much more traditional techniques. So we've had
159   to outsource some of these products. That's part of it, it's not quite engineering but it's definitely
160   what you are capable of doing and so there's a tendency to just fall back on the stuff that you're
161   good at or know how to create on the engineering side there's just a technical feasibility. We've
162   hit limitations for some of our products that are just around what is the size of the footprint of

163 the product, so we created a tour for one of our products, with a video oriented tour... our de-
164 velopment team once they started building it, decide the footprint was going to create even with
165 the proper coding was going to be too large and so, they made an executive decision with mar-
166 keting to reduce it to a set of still screens that transition between each other, and it dropped the
167 size of the payload by in order of magnitude, and the reason that was an important decision for
168 them was that this product got delivered onto a machine via stream download, and so a large
169 payload was across tens of thousands of devices was not something that they wanted to, incur
170 the cost of. So that deserves a factor that was more of a... not a technical feasibility, but a part
171 of an operational reality of how the thing was getting delivered that made a design decision and
172 an experiential decision happened, not ideal, but that was happened.

173 E: I was thinking about switching a little bit over from talking about the design itself to the
174 content of that what's being designed, so do you categorize information into implicit or explicit
175 knowledge? and based on that do you choose a transmission medium towards the user?

176 J: In these cases I am describing, no, the teams that were doing this kind of design is definitely
177 veers into the world of instructional design and educational design and the people that were
178 designing this were not trained in that kind of mentality, in that kind of expertise, so I would
179 say it was much more bootstrapped and kind of pulled together in a very rough fashion, nothing
180 principled towards it.

181 O: So, John, would you change the transmission type, or transmission media, based on the type
182 of content you have? and why would you do that?

183 J: Based on kind of content that we have? Yes, probably so, generating that content can be very
184 expensive, if that what's your question is. We do have the luxury here of having a large team
185 that does do digital assets for us, and so we can request for video and animation kind of content,
186 visual graphical content, less so in something that is pure audio, or pure sound, but there is some
187 capability around that too. But, I'll just say there is usually, cost is a factor that's heavily con-
188 sidered, so that the team that generate that kind of collateral, it's really an expensive endeavour
189 so we wouldn't have changed our plans on what we are going to deliver towards, something like
190 that, based on the content that is at hand, so we have opted towards simpler content and less
191 expensive content.

192 O: Building on that, assuming you would have the same piece of content, would you change
193 the transmission medium, when you change the persona? For example, if you have a sample of
194 statistic that you are delivering to Greg, and Greg likes to see those statistics as a image, if you
195 change from Greg to Jack, would you change the transmission medium?

196 J: Yeah, if the persona calls for it, yes. And just thinking about some product that I use, for
197 example, there is a big trend around fitness monitoring, like fitbit and apple watch, and those
198 kinds of things have movement and heart rate, and other kinds of measurement, GPS in some
199 cases, and how that data is presented back to the user can either make the data really interesting
200 and insightful, or almost pointless, and so I don't work on those products, but I can imagine
201 different presentations of that fitness data depending on the persona at hand so it is kind of a
202 casual consumer, you know, wanting a very simple graphical read out of it, charted over time
203 kind of thing, vs. someone who is doing some analysis or need to make a comparisons of that
204 so maybe that is a health expert or a doctor or something like that, wanting that information in
205 a slightly different format that is manipulative in a different way. I know there are preferential

206 type for people that either prefer audio, video, or textual kinds of read outs for information and
207 I think honouring those and for a particular persona strongly leans to one of those, that would
208 make a lot of sense.

209 E: How would you, building on changing the media type, if the wrong or the incorrect trans-
210 mission media will be chosen, how would that impact the user?

211 J: Well, probably it would impact them in terms of effort, to consume it or, just their overall
212 interest in today's websites and mobile apps, that are dime-a-dozen it's easy to move on to the
213 next thing because the current product isn't engaging you in the right way, and I think it used to
214 be a less of a cost, because there weren't that many options and so companies, probably can get
215 away with, not necessarily viewing an interface in the best way for its users, and I think now
216 people move on quickly and if a product does not present things in the right way, I have been
217 exploring different podcast apps, and there is a lot of them out there for mobile, and they present
218 the podcast in a different way, the timeline of the podcast, how you fast forward, and bookmark
219 things, there is a lot of minor differences that if there weren't 10 or 20 different options from
220 apps, you'll probably live with them, but for me I am looking at the different ones and really
221 making a choice of, "hey which one do I prefer, which one gets to my stuff in the right way and
222 the fastest and that has a lot to do with how that data is laid out, and kinda what is immediately
223 available. It is about the medium for sure.

224 O: So the increase in customer power or consumer power is forcing designers to make more
225 concise design decisions

226 J: Yeah that is what I would say, I don't know if designers are doing that, I'll just say it's going
227 to force them to, or people will abandon their products, I think that the opportunity to abandon
228 products is higher than ever. So yes.

229 O: So on the flipside of that question, John, how would using the correct communication me-
230 dium have an impact on the user?

231 J: Yeah, again I think it is sort of the opposite of the things that I have said, so very likely their
232 sense, or the ease of consuming information is probably the first thing, their sense of liking a
233 product, and then coming back to a product is likely being increased. So firstly, cognitive effort
234 generally, but the second is in the sense of product loyalty or product likeability is there, those
235 two things and, you know, probably along with cognitive effort, is this notion of, are they actu-
236 ally making correct assumptions or assertions or making the right inference from the data that
237 they are seeing, so if a data on your fitbit watch, and it's ability to track your sleep cycle, and
238 are you able to make inferences from that, and is this kind of activity, or eat this kind of meal,
239 and here is my sleep pattern related to the thing, and it's like can you really make inferences
240 from those and then change your behaviours, and so with data that is laid out in the right me-
241 dium, laid out in a kind of informational structure, you can make those inferences, and make
242 them easily and when it is not, you are more likely to make an error or make the incorrect in-
243 ference or it is just a lot of work.

244 E: So you would say that like if the increase in cognitive fit towards the interface, would the
245 interaction and the overall user experience be better?

246   J: Yeah.

247   O: So I think we have one or two more questions, so how would you ensure that a given medium
248   would help the user complete their task?

249   J: Well, my answer to that is through user testing so we do a lot of strategic research work and
250   strategic design work where we explore a variety of solutions in an advance and I have a devel-
251   opment team that works under me as well, coders, running developers, that build UI prototypes,
252   experiential prototypes, and sometimes usability prototypes, and we get to spend a lot of time
253   in an advance playing with an interface, designing it, thinking it through, looking at how re-
254   search, using research to focus in and shape that I guess. But, once we are building a product
255   we spent time doing data collection against it, and at the moment our ability to do that kind of
256   testing in the field is limited but our abilities to do it in a lab is pretty robust, so we do a lot of
257   traditional usability testing I would say, in our labs with products that we are developing, we
258   look at everything we can look at about the interface, and sometimes those are very measured
259   kinds of techniques, we are really look at time on the task, and target acquisition, and those kind
260   of things, depending on what we are studying, and another case it is just a more task oriented
261   usability with less rigorous metrics but really trying to understand through conversations and
262   user commentary feedback, the appropriateness of a given UI. So, through user testing is what
263   I would say.

264   E: Thank you, I think we do not have any more questions, is there anything you would like to
265   add here at the end?

266   J: Yeah tell me a little bit about yourselves and what you guys are working on?

267   O: Well I am Omar and I am from Egypt, I've started of my bachelor studying Business and I
268   discovered Information Systems quite late on in my bachelor, and made the switch, and decided
269   to do my masters here in Sweden, where I met Mr. Einar.

270   E: Yeah, It is pretty similar for me, I took my bachelors home in Iceland, studying Business
271   administration, and I wanted to specialize in more technical field, so I chose the Information
272   System program here in Sweden, and here, me and Omar got a good interest in HCI, and we
273   decided to write our master thesis together on Personas.

274   O: Yeah, so we have been in our studies, both in our bachelors and in our masters, we saw that
275   the knowledge management literature says that different type of information and knowledge
276   need to be transferred to users in different ways, but then when we looked over UX and User
277   design, User Centric design guidelines, there was no mention of that (J: Yep), so we decided,
278   "ok this is interesting" and we decided to go out into the field to see what actual designers do
279   and how they think about these things.

280   J: Yup, so you have done, or have been out doing some kind of observational kinda ethnographic
281   type of methods of looking at designers, watching designers in their roles? interviews? So you
282   have done mostly interviews with designers or mostly looking at literature around that?

283   E: Yeah, we have been looking at a lot of literature for the most part, and now we are conducting
284   our actual research, we mostly only done interview, we have been thinking about doing obser-
285   vations, as you just said, sitting on meetings where personas are being created, but there is a
286   time limitation on that, because we need to had in the thesis in late may of this year. So, if it is

287 possible, of course we would love to do it, but unfortunately we maybe won't be able to. So that
288 basically is our research for now, and we are trying to see and fill the gap we have found be-
289 tween these two literature. Knowledge management and HCI literature.

290 J: Yeah, that's very neat, sounds like a great project. One thing I'll mention, that we're spending
291 a good bit of time investigating and really thinking through is, inbetween the notion of medium
292 for presentation of information, it is not captured so explicitly in how these things are defined,
293 you know is it imagery, is it video, is it textual, or is it voice, but the things that are in between
294 for us, is just the motion, animation, and transition, in the User Interface itself. So, and that as
295 a UI mechanism that inform users in a much more natural way of what are they doing, what is
296 the next thing that they should be doing, what should they be paying attention to on the page,
297 and we are in the process of actually building this into our... we have a design language, that all
298 of our software across Dell, starts with as kind of a style and set up interaction and behavioural
299 patterns, but it doesn't include at the moment, motion, transition, and animation, and those are
300 things like, when you design a page, you're loading a page for example, and how does that page
301 load? and kind of traditionally a page in a user interface just loads, the whole thing just goes
302 BANG, and there it is, so what we are looking at, well if you took a little more structured
303 approach to how that page loads, the last thing that moves on the page, the last thing that builds
304 on the page, through research, has shown is what the users eye gets drawn to, so if you use eye
305 tracking data and what not, but what are they physically looking at, well it's the last thing that
306 comes onto the page, so when we know our pages where doing things like we load the frame
307 first, we load tertiary and secondary data second, and then we load the stuff that is the primary
308 content last, and that might animate in in a different way, so it comes from a particular location.
309 Those kind of things, we are paying attention to, how does the menu draw itself out, or when
310 you click on a link, or manipulate an object, where does that object go, does it have a sense of
311 location, and physicality, and transition, does it just disappeared, or does it actually do some-
312 thing or go somewhere? So, those things we are trying to build in out design language, and it's
313 a fascinating area, and again it's kinda in-between these things, it's the use of those mechanisms
314 to really help build a better user interface.

315 O: It is quite interesting just how these things work.

316 J:Yeah, well so are you in Stockholm or where are you at?

317 O: No we are in the south of Sweden, we are in a small town called Lund, a little bit north of
318 Malmö.

319 E: Yeah it is a really small student town, I think during summers it becomes a ghost town pretty
320 much.

321 J: I've been out there a couple of times and it has always been in the late spring, and it was chilly
322 but beautiful.

323 E: Yeah, especially now right before the summer, it is getting really beautiful outside, and
324 longer days. But thank you so much for taking the time to talk to us, it is really appreciated.

325 J: Thank you guys. bye bye.

Appendix 2f: Marvin Interview Transcript

Interviewers: Einar Gunnlaugsson, Omar Mahaba
Place & Date: Lund/Bulgaria, 14 April 2017
Type of Interview: Skype.
M: Marvin
E: Einar
O: Omar

1 E: So Marvin in your processes and in your work and in your design have you used any user-
2 centric design methods for your own projects?

3 M: pretty much always as a UX Architect I mostly do the product design phase. I do user re-
4 search and so on. It mostly consulting for projects in a design sense so it always at least some
5 user-centric design methods are included.

6 E: could you maybe give us an example of a method that you would typically use in your pro-
7 cess?

8 M: well persona definition is one method.

9 E: Maybe too broad of a question

10 M: yeah that's what I mean but generally as a process always part of it is researching the us-
11 ers, and trying to adapt whatever it is we are making if it an application, interface, or whatever
12 it is as specified to the needs of a specific group of users and in accordance to their technical,
13 how they use and to what degrees.

14 E: yeah the connection is a little bit bad

15 M: no I was getting a call, sorry about that.

16 E: we can hear you now thank you.

17 M: so when you use personas, what do you see are the strengths or weaknesses when using
18 them?

19 M: Well I like using personas, personally. There is always the jobs done approach but it kind
20 of depends on partially on the general use of the product, and the concept the product intends
21 to deliver. As a benefit I always name my personas and it's very easy to convey information
22 to a design team or developers and it is encapsulating they can think of the workflow as well
23 about this person and think of the workflow of the actual person that will be doing this and I
24 think in my opinion this is the better quality of a product

25 O: and would you say that your personas make your developers or designers more empathetic
26 towards your users or connect to them emotionally somehow?

27   M: I think so, at least they connect especially with developers, and designers try to at least in
28   that last few years trying to think about the user more than about themselves. But developers
29   when it gets down to them the project is broken down into small pieces and so far away from
30   the actual users that they think about blocks of functionality that they have to deliver and how
31   these blocks integrate with one another and form a flow for a user it's so far away from them,
32   that unless they actually see this as a person using it and I think that the personas and devel-
33   opers talking about them like there a person whose job is to set up a new account or some-
34   thing like that and it actually helps them think of this as an actual workflow for a person and
35   not just an authentication part of the interface.

36   O: that's quite interesting, and Marvin when you get a new project like what the design pro-
37   cess that you go through. What's step 1 and what's the last step?

38   M: well it's always old but it depends on a lot of things of how you're getting your infor-
39   mation, on how close you can get to actual users, on what stage the project is at and does it al-
40   ready have customers or not, on whether you can go talk to actual people who are using it, is
41   it a new product that has a new concept that has never been tested – there are no competing
42   products for this so you can't even do interviews with someone who has done something even
43   remotely similar to this to get an impression of what's working for them and what is not. And
44   if it's a new product, you're breaking ground just have to make assumptions on people even
45   though they end up not being users and it's more complicated but as a… largely it's rare, at
46   least for my company, to develop completely new ground-breaking products. We've had a
47   couple in the last few years but it's largely because it's… these both were internal software and
48   made for specific, defined clients who we actually know who they are, know the users, and
49   there was a degree of expertise on the part of the people who are defining the product so they
50   understood the needs up to a point of the end users very well because they were actually the
51   people delivering this service just not as an application but it was basically a paper to com-
52   puter kind of transfer digitalizing kind of process. So it was good because we could actually
53   go to these companies and other users and interview them about what's working in the pro-
54   cess they're using right now and what's not. So from there we make an assumption and go
55   through a set of wireframes, maybe some kind of testing with them, some with the end user,
56   and testing with the stakeholders to get an impression of feedback and then to mockup phase
57   we'll work with the visual designers to generate these static visuals sometimes and sometimes
58   not, sometimes we go straight to prototype and to be specific and prototyping being just… we
59   define prototyping as a kind of… because we largely do applications and portals, so define
60   prototyping as these HTML, CSS almost pixel-perfect interactive models that they [the users]
61   can actually go and click and give us a feedback that is almost up to the product level even be-
62   fore starting the development of the backend services and so on.

63   E: ok so basing on what you were just saying, you go and talk to people and make these kind
64   of assumptions based on some kind of user research… does it unfold from the type of
65   knowledge requirements of what type of media should be used for this software or this type of
66   system you're creating for this company or these individuals?

67   M: what kind of media, as a general rule I would say that, that's why I asked you initially
68   about why you are so interested in transmission media, but I would say that it generally
69   shouldn't be linking anything should be interactive I wouldn't define it and granulate it into

70   anything that is so specific. I would say that anything that is intractable is an acceptable media
71   but not necessarily. I mean of course there are physical constraints on the project in terms of
72   technology and so on

73   E: but is there nothing that indicates that certain type of media works better for certain types
74   of personas?

75   M: I would say that it would be the other way around, maybe a specific need to transfer infor-
76   mation in a specific manner for a group of people because basically a persona is an abstrac-
77   tion, a generalistic abstraction of a set of people who use whatever it is you are delivering, the
78   product, in specific ways, their goals and ways of using can be defined as a persona. Maybe
79   sometimes the information that is being delivered or the way it has to be delivered can define
80   a persona, it can be so characteristic that it's something that defines them and granulates them
81   into a separate persona.

82   E: so would you also say that some external factors about the system itself or from your cli-
83   ents that they insist on certain types of media?

84   M: yeah. Often in one application you can't use tactile media or whatever. I mean it's a physi-
85   cal constraint of course in that sense at least. It's something you have to take into considera-
86   tion, it shouldn't be limiting basically if it's valuable to the user you can consider it as a media
87   and what makes it valuable is that it generates less of a cognitive load on the person who is
88   receiving the information. The most efficient way to transfer information should be the infor-
89   mation transmission medium you are selecting. Or maybe not just transfer information be-
90   cause user experience is usually not just the information transfer it's partly the experience, the
91   pleasure of using a software. It can be considered that even if one way may be more efficient,
92   another transmission medium may be more pleasurable or engaging for the user to utilize.

93   O: so we can call that an external factor to choosing your medium, but what other factors,
94   Marvin, would you say influence your media choice besides what's more pleasurable to the
95   user and the pressure the client may be placing on you?

96   M: well I don't know if that's external, I wouldn't know how you define internal then… I
97   would say that the goal of the product, the physical constraints, and the efficiency of infor-
98   mation transfer – the least cognitive load.

99   O: and how much influence do you have on that choice, like for example if you're saying for
100   example we should be using video, and your client or someone else is saying no we should be
101   using audio … how much influence do you have versus how much influence the other party
102   has?

103   M: that depends on a lot of factors, of course other than other expert positions, User Experi-
104   ence is a very soft field and most clients if you can prove to them and convince them that you
105   have solid reasons for using specific whatever, not necessarily just transmission medium, it
106   could be a solution you're proposing to a specific problem they would be open to choose... I
107   mean they should be willing to submit what is better for their users, and make their product
108   better which is your expectation as a user experience designer or whatever your job is, but
109   that's better for them as well. You are setting them benefits.

110   E: Yeah, but when you set them these kinds of benefits, and you say this type of transmission
111   medium is best, whether it is video, audio, text, whatever, how do you get to that conclusion,
112   is that just a hunch feeling that something works better for a certain type of medium?

113   M: Any design phase should be followed by a research phase, even you're making assump-
114   tions about the … you're making about this product, but you are making these assumption
115   based on ...user research, that you take your experience and you go and investigate users to
116   see if this is actually a good assumptions.

117   E: And would you say that, basing on different Personas, would the transmission medium
118   change from Persona to Persona?

119   M: Again, it maybe that it takes... In one way, it may be that the Persona requires a specific
120   transmission media that generates a less cognitive load for them, it's easier for them to get, for
121   example children who learns better by watching video rather than reading textbooks, so yeah
122   this may ...this transmission medium may define, if it's so specific that you can correlate the...
123   you have let's say a teaching portal or a learning portal, and have users who want to watch
124   video and users who want to read text, and you have users who want to, I don't know, listen to
125   audiobooks or something like that, and these functionalities... these sets are so increasingly
126   integral to these groups of people, in this abstraction of the Persona, that it defines them as a
127   group and defines the Persona.

128   E: And you can maybe also say the same thing about, if the content itself changes for the soft-
129   ware itself, then the transmission medium would change as well?

130   M: Mmmmh, define content?

131   E: Just the type of information that is being presented to users.

132   M: The type, yeah, possibly, yeah, maybe, of course again...

133   E: Is that maybe influenced by some trends or something like that?

134   M: Trends, products are influenced by trends, tools not so much I would say, I mean if you
135   want to have a trendy product you lean more into use tools that are used in a trendy products.
136   But, yeah the tools basically remain the same, maybe the frequency of their use can be defined
137   by trends.

138   O: And would you say, Marvin, that how would using the incorrect, or the sub-optimal, trans-
139   mission medium impact the user?

140   M: It is a crucial thing, of course it's like any bad user experience decision that you make
141   when creating a product design, it can be of course totally detrimental even the smallest thing,
142   and if the transmission media in this case a key factor, or something that embeds your entire
143   interface, or whatever and you are wrong, yeah sure it can impact the users.

144   O: Yeah, but I mean how so, what is the hazard from that?

145 M: Well, the hazard to the users is the relations he become a bad experience of course I
146 mean... (O: Marvin can you repeat that, sorry because your voice went out?) Okay, so yeah,
147 the hazard to the users is of course an unpleasant experience, say having a large cognitive
148 load, you cannot process information that's that is the only way for the users … as a user, and
149 so it's a bit of an creation of a product that is unstable.

150 E: So maybe on the flip side, using the correct transmission medium that maybe eases the
151 cognitive load of understanding the information, so that impacts the user in a way that he un-
152 derstands it a lot better, and more quickly?

153 M: Yeah in a more positive way.

154 O: And would you say, Marvin, that there is a process that you go through to decide that this
155 piece of information would be best related through this medium or do you base that on re-
156 search or is it based on experience or how do you do that?

157 M: You mean of assigning a transmission medium to a specific content? (O: Yes) I wouldn't
158 say there is a process, at least not that I use, but again, my products are sometimes very spe-
159 cific I mean you don't have that much choice in... of course the driving force should most of
160 the time be the cognitive load, the efficiency of information transfer, but sometimes at least in
161 my case you don't really get that choice that much because you have like a giant table of infor-
162 mation and, yes you are trying to break it into something that sometimes can be created in a
163 more efficient organizational in a way, but a table of information, at the end of the day, is a
164 table of information, so there are a lot of constraints, but it's something ...there may be a way
165 to define what will be efficient or as the stick of characters set for us a specific Persona to
166 consume. For example if you're designing for a younger audience basically building text
167 maybe regardless for your content, maybe you want to transform the content to a more video
168 oriented content or something like that.

169 O: And, Marvin, how do you ensure like I'm using air quotes here, how do you ensure that the
170 medium you are using will help the user complete their task?

171 M: How do user complete their task... well users should have a goal generally not a task. I
172 mean, task is someone that is set upon him so, but yeah, ensure, I mean I think ensure should
173 be covered by during the user research and testing your assumption that you have made dur-
174 ing your design phase, and ensuring would be getting positive feedback on your transmission
175 media that you have chosen, basically, and the user is mending to complete whatever, and
176 completing tasks is something that you do in user research, but when you release your prod-
177 uct, the user usually does not have a task, he has a goal he wants to accomplish, and that's why
178 heuristics interview should always be taken with with a grain of salt but basically, during re-
179 search you should be able to verify that whatever choices you have made are the most optimal
180 ones for the users.

181 E: So, we don't have that much more questions left but, lastly I would like to ask you about,
182 like in your opinion, what would you say about, by incorporating transmission media into Per-
183 sonas, when you are building your Personas in the user research phase, would it help the over-
184 all experience as an outcome? In your opinion?

185   M: I guess, not necessarily, I mean it depends very much on the case, I mean it's... if your Per-
186   sona is defined by what's their focused on, onto the transmission media, it can be taken of
187   course to consideration, but it may not be that important to them specifically to accomplish
188   their specific goals that they are going to use your product for, it is centric to the user and to
189   the goal of the product, yeah sure, put a lot on betting on good transmission media deliver to
190   your information efficiently, but at the same time, if any information transfer would be effi-
191   cient, would be acceptable, then maybe, yeah, don't put so much weight on it, that maybe
192   there are other things that define your Personas better than the transmission medium specifi-
193   cally.

194   O: We are basically done Marvin, but I was wondering if you could share with us some Per-
195   sonas that you have made, or best practices that you use to make Personas, or guidelines or
196   something along those lines?

197   M: Well, I really personally am in favour, based on user research, and I'm quite fluid on this, I
198   mean I have not defined a set Personas, and never change them until the product is done, and
199   a lot of times a keys would pop up, and a set of keys that defines Personas, and that can be
200   clearly identified, with their goals and their functionalities that they require, and so always
201   stay flexible when building Personas, don't set your mind on a set and be keen on being right
202   always question what you assumed initially ..also anything I think Personas help everyone in-
203   volved is getting the Personas names, it's a lot easier to associate a set of information with a
204   name, and it's like a person you know, so this person likes this and this and this, and it can be
205   easier not only to explain the functionality that you are going to deliver, but also explain the
206   characteristics of this Persona, because you can for example have a Persona that is an abstract
207   of the Managers, a manager that is going to use your software for something, supervising the
208   employees, and this Persona has characteristics that he wants the information to be in one
209   place, he wants to see everyone about everything, and he doesn't like very large statistics, or
210   he doesn't like tables of text read, so yeah it's very good to call him something to associate his
211   characteristics, and people can think about him in the way that they think about alive person,
212   he doesn't like this, he likes this, and maybe when they reach a point to make a decision about
213   something, even without the input of UX designer or someone how does UX, because at some
214   point processes just passes you by, so maybe they all remember the set of information and the
215   decision that is considered on that.

216   E: Marvin, thank you just so much for taking the time and talking to us, is there may be any-
217   thing lastly you want to add?

218   M: No, not really, thank you it was fun talking to you guys.

219   E: Yeah, likewise, we will transcribe this interview and we will send it to you and you can go
220   over it.

221   M: ok guys, yeah good luck with your research

222   O and E: Thank you Marvin, have a good day.

223   All: Bye bye.

Appendix 2g: Therese Interview Transcription

Interviewers: Einar Gunnlaugsson, Omar Mahaba
Place & Date: Lund/Seattle, 10 April 2017
Type of Interview: Skype.
T: Therese
E: Einar
O: Omar

1 E: ok so you said in an email and just now that you do personas a little bit differently than the
2 "normal" process or how it has been perceived as a "normal" process, could you describe for
3 us the process from when a project comes to your desk from start to end, how your process is?

4 T: Sure. So as you know I wrote this book with my colleague called 'the persona lifecycle and
5 the essential persona lifecycle' and in that we talk about preparing for a persona project and
6 creating personas and we advocate for the use of data in creating personas We have this sort of
7 'adulthood'. 'Birth' and 'maturation' is where you introduce them and then use them and sort
8 of when you're done with them and retire them. all of this stuff that is in introducing the per-
9 sonas and in using the personas and thinking about it beforehand is all pretty much the same
10 but in my projects now, I don't actually use data per-se to create the personas and that's because
11 I'm a bit of an "odd bird" I'm a consultant but it's just me. I don't have an agency, I never will
12 have an agency, I will never have employees as much as anything else people hire me because
13 they want me to do personas but really what I am is somebody who is a strategic consultant and
14 I'm consulting as much on business goals and on focus of goals and clear communication from
15 the executive-level down as I am doing anything else. So for me sure I believe that personas
16 should create data but if it was a timeline of sophistication of the companies – most companies
17 don't realize that their executive teams are talking but they are not thinking the same things at
18 all, because you can create business goals in January for the whole year but every time two
19 executives meet, something shifts a tiny little bit and that's natural but nobody ever writes it
20 down and so very quickly all these little differences in assumptions can snowball until nobody
21 below the executive team really knows exactly what they're supposed to be doing and why, and
22 the executive team has no idea that they're being unclear and there's some really basic human
23 reasons that this happens nobody who's an executive wants to admit that they don't really know
24 or they're a little confused or they don't remember what the business goals are – that suicide
25 but all of them are just human and none of them have superhuman powers of knowing that "if
26 we do X feature versus Y feature, our company will succeed." So I've said all of this stuff but
27 basically what I'm saying is the executive team is usually so misaligned that the first problem
28 to solve is that misalignment. Trying to solve that misalignment with data doesn't really work
29 because … so it's like all of them think they know who the customers are and all of them think
30 that they're smart and they have great ideas … so executives tend to think "I know who our
31 customer is" and they usually have a pretty good assumption of that because there's a reason
32 that our company was started. Our company was started to " create athletic socks for really
33 intense athletes", there's a reason and the company was founded to do X for Y person, but all
34 of them are misaligned even on that basic "for Y person" and what problem they're trying to
35 solve, so trying to say well we have personas here with data, personas with data cannot get rid
36 of assumptions that people hold dear until you get those assumptions out into the light and

37   everybody realizes what their own internal assumptions are, then you can say well here's what
38   we found out and actually your assumptions are correct or incorrect in these ways. So basically
39   my philosophy is the only assumptions that can hurt your product are the ones you don't know
40   about, and sort of the opposite of data is assumptions. So what I do is you can think of me as
41   doing something that's appropriate to do before creating data-driven personas, you can call ad-
42   hoc personas or personas that are a hypothesis and then you go look at data to confirm or inval-
43   idate your hypothesis.

44   So what I do is ad-hoc personas, there is no data or just executives in the room together and I
45   take them through a process where I ask them to get all of their assumptions out on the table,
46   and they all see each other's assumptions in a non-political way and then we align those as-
47   sumptions so we go from thinking about who those users are, you know from "elite athletes" to
48   what are their wants and needs: 'I need an online way to track my sweat output' or 'I want to
49   know how many calories I'm actually burning' or 'I want a system that's better than all the
50   other fitness trackers in X, Y, and Z ways', and then we have these ad-hoc personas that are
51   based on these wants and needs and now we can go out and see if these people actually exist or
52   if they really do want and need these things. So what I'm saying that before you introduce data,
53   you better "erase the chalkboard", get the assumptions out on the table first and the reason I
54   think that is so important and I'm talking so long about that is that I believe what you guys are
55   saying is once you have the personas … you know you're farther down the path – you're saying
56   that once we have these personas, we understand what they want and need, whether that's based
57   completely on assumptions or its based on data, that is helpful to think about which channels
58   they'll tune into or listen to. So now I'll let you talk because I've talked enough.

59   E: basing on what you just said right now about your process and getting the assumption out
60   before we go into the data gathering and confirm your hypothesis and assumptions. What do
61   you say are the strengths of doing it that kind of way instead of going right away into the data?

62   T: because the reality is that persona efforts fail because even if you present them to executives,
63   executives think their internal impressions or assumptions are just as valid or more valid [than
64   the data] because they are sort of the fundamental reasons why… they might not even be as
65   detailed. It's like trying to throw seeds on soil that's dry, they will not take root because there's
66   something in the way. There's a ghost in the machine, there's an internalized assumption, and
67   it doesn't matter how much data you throw at somebody who thinks they're right.

68   E: They will always have these assumptions

69   O: you have to break the assumptions first so the data can get through.

70   T: or not break it, but at least you have to know what it is. My assumption is that rabbits are
71   awesome house pets. You can throw as much data as you want at me to "prove" they are not,
72   until you know why I think that, you will never break my impression that rabbits are awesome
73   house pets. Ever. The same thing with executives, you will never break their internal assump-
74   tions about who they're really building this for and why until you know exactly what they [the
75   assumptions] are and they [the executives] can have the chance to discuss them in a non-polit-
76   ically dangerous way.

77   E: Taking the other aspect of it, do you see any weaknesses with this kind of process compared
78   with the other one?

79   T: the potential weakness is that all their assumptions are wrong – that athletes don't want to
80   track their sweat output and athletes don't want a better fitness tracker, right? And that data will
81   prove that nobody wants this, however they're already there at the company and they're already
82   dedicated to the company and the company exists for some reason – somebody had an idea, and
83   it could be building something that nobody knows they want yet, so my philosophy is focus is
84   better than non-focus. Even if you're focused on the wrong thing, at least you're all pulling in
85   the same direction.

86   Picture these are 4 horses, if these 4 horses are executives and each of them is pulling in a
87   slightly different direction, the carriage won't go anywhere. At least if they're all going in the
88   same direction, the carriage will move. What I've seen as a consultant over and over again is
89   *this* [holds up 4 fingers pointing in different directions] even a tiny bit of this [pulling in differ-
90   ent directions], the carriage will nudge along because so much energy is being pulled in slightly
91   different directions. So to me that's a problem you have to solve. One of the reasons this came
92   up was that so many persona efforts were failing and there's no good reason for a persona to
93   ever fail based on data that makes so much sense, they're a universal language, right?, who why
94   are they failing? To me this is what I saw, it was a political problem, it was a social, a sociolog-
95   ical, an organizational psychology problem and to me this works to solve it.

96   O: that point is very interesting, Therese, because we were just having another interview a few
97   hours ago and our interviewee said that personas have become somewhat of a "taboo" in organ-
98   izations and that's a very good explanation as to why they've become like that.

99   T: Yes! Because organizations will spend a gazillion dollars going out and gathering data, they
100   will know their personas are correct, they will create beautiful documents, and posters, and
101   coffee mugs, and websites, and all of these things and the personas will. Not. Work. And it is
102   because the best seed in the world will not grow in dry soil and the best horses in the world…
103   honestly it's because no persona built on data is strong enough to compete with assumptions
104   that may not even be fully articulated in people's minds. If you ask people who they're building
105   the product for, they won't really be able to articulate all of their assumptions and by the way
106   assumptions is a bad word, people who have been working in a company for a long time think-
107   ing about customers for a long time it's not 100% just raw assumption, it's embedded in their
108   experience. Until you give them a chance to really let those out into the light and discuss them
109   and then translate them all into the same language, you cannot get rid of them. If they still exist,
110   there's no room for the new ones, no matter how excellent they are. That's why so many com-
111   panies have failed because the soil is dry and cracked so that's the problem that really started
112   to interest me. That's why my process is what it is now, I don't do any user research anymore.
113   Companies think they're going to go out and prove or disprove the hypothesis but they're so
114   relieved to be focused on the same ad-hoc persona, that they never do it. It's really interesting.

115   O: Therese would you say that when designing software, who determines which type of media
116   is going to be used in that? Is it you as the consultant or is it your customer or who does that?

117   T: so tell me more about what you mean with what media is going to be used in that.

118   O: so by media we mean text, audio, video, that kind of thing.

119   T: you mean as a solution or as part of the software or?

120   O: As part of the software.

121   T: whether they're going to deliver the software on a phone or on desktop or?

122   E: Yeah, pretty much anything like for example for the tracking for the sports person, who
123   determines what kind of media is the user going to see? Is it going to pop up like a video or is
124   it going to be text messaging on your phone? Who determines?

125   T: that's an interesting question. To be quite honest right now, I think this will probably change
126   within the next few years, but I would say right now that is a company strategic decision and
127   the reason it is right now is that mobile is still both so hot and growing and also because it's not
128   fully utilized especially in the united states by companies and so many of them are going after
129   text, going after mobile, going after anything that a non-desktop solution or not a big-screen
130   solution for strategic reasons – saying we *need* to do this by text, or we *need* to do this on
131   mobile.

132   E: is that just a hunch feeling they think will work or is it based on any research? Ok based on
133   this persona which is maybe a 20-30 year old male, a sports person, this type of medium will
134   fit more with him.

135   T: you know honestly I think it's … you know the analogy that coming into my head right now
136   is a weird one. But you know at some point in time indoor plumbing became possible and so a
137   few houses were ahead at the time and they were built with it, but now that everyone else has
138   seen it and seen how well it works now every house had to be retrofitted with interior plumbing
139   and now from a certain point forward all houses were built with indoor plumbing from the very
140   beginning.

141   I think right now we are in this stage where the popularity of indoor plumbing is and the value
142   of it is clearer, like nobody can argue that we should go back. Everybody's even used an indoor
143   toilet, they're like of course! I have it with me all the time in my phone and on my texts and
144   whatever and my kids are on Instagram. I see it being used around me even if I don't fully
145   understand it, if I go on the news or if I read any newsletter that in my professional communi-
146   cations or societies, *everything* is about mobile. So if was just to answer your question if you
147   had asked who's deciding that mobile delivery of any communications or media, which is not
148   exactly what you asked, is important – I'd say companies are deciding it strategically and so
149   many of them are so behind in that regard that they're having to retrofit. I think in a few years
150   it will become more of a design question like are we going to do…. Like today it's a design
151   question whether we're going to do a video that plays inline or a video that comes up in a light-
152   box – your executives won't really get into that, but 10 years ago when streaming media was
153   new and even video was newer, these executives might've gone into that.

154   O: Therese, how much influence do UX designers have on that kind of thing on how content
155   should be expressed or "should" be expressed in projects?

156 T: I think that it depends on another issue that very much interests me, which is how politically
157 powerful the UX organization is within the organization. If there is a UX person on the execu-
158 tive team, then UX would absolutely looked to, and would hope to make that decision or weigh
159 in with a stronger impact than some of the others. If UX is not at the table with the "big dogs"
160 as my friend Emily calls them, with the c-level people, then often engineering will get to decide
161 that kind of thing because they're the ones who have to code it and/or they'll just use whatever
162 platform … you know like if they're using a platform or open-source or whatever is easiest.

163 O: So simplicity sometimes can be the determining factor?

164 T: it depends on how central the communication or media is to the product if you're talking
165 about HBO that's going to be different than the sports app that maybe has to have a tutorial.

166 E: so there are a lot of external factors that may influence these types of decisions?

167 T: yes and I think that there's something that I talked a lot about over the years which is there
168 are different "hot" buttons over the years. You guys are too young to see this yet 'cuz you're
169 just babies! So when I started my career in '94 and in '96, '97, '98 everybody was all about
170 streaming media. We have to have streaming media and then in 2003 or 2004 everybody had to
171 have community features. They had to have forums and chatrooms and all that, even a bank
172 website – I mean who the hell wants to hang out on that in a bank website? It doesn't make any
173 sense, right? As those 'fads' … I mean to me that's like saying we need more concrete in the
174 parking lot, it's part of the … as they evolve they just become part of the system. Like streaming
175 media, you don't have to have streaming media, when it's appropriate to have it you have it.
176 You don't *have* to have community features, if it's appropriate to have community features you
177 have it. Right now it is … I think mobile is going to become … *of course* you have to have
178 mobile, you have to have help that's offered on text or SMS and of course you have to advertise
179 on Instagram and of course you have to advertise in snapchat and of course you have to have
180 custom filters for your company, who knows. But that is the evolution that at first it's a fad that
181 everybody wants because it's the latest, greatest, sexiest thing and then it sort of settles into its
182 correct track which is … if you're going to do video you either preload it or you stream or its
183 live and you choose the one that's most appropriate.

184 E: and is that based on users?

185 T: huh?

186 E: like when you said you have to choose what's appropriate, is that based on the users or is
187 that based on just what is simple?

188 T: Well you know I'm not really … I don't know only… I can't really answer that only… I
189 mean I can have my own opinion on that and yes. I think it really does depend on how central
190 this feature or functionality is, how important it is, how central it is to whatever you're devel-
191 oping and in fact the less central it is to what you're developing, the more impact the UX team
192 will have on it probably.

193 O: I have a question, Therese, about the fad point you're making. I just want to clarify and make
194 sure I'm understanding correctly. So different media come out and there's buzz surrounding
195 them…

196   T: …Yes, buzz. Sexiness. They're not a fad because they don't go away.

197   O: Yeah. They decrease in their popularity

198   T: yes in their sexiness.

199   O: as that appeal comes down they become used more "correctly" or in the manner they
200   "should" be used?

201   T: I think that's true. I think that's true. Because people figure it out, too. I think the way that…
202   you know another interesting thing that maybe you guys could think or talk about is as they
203   evolve from sexy to fundamental, and as we get from everybody has to have a video on their
204   website to these are the things you use videos for- somewhere in between those UX people and
205   the UX community not in a single organization but as a whole helps to determine this is when
206   you use streaming video and this is when you don't. So as a whole I think we are powerful in
207   that regard because as things are experimented with and new UX patterns emerge, more exam-
208   ples are out there to look at, successes and failures are evaluated. I think we're the ones who
209   are looking at what has worked and what hasn't and I think we do have an impact because then
210   the UX designers sort of put in the correct one in the correct place, based on what other UX people
211   have determine works best. So as the sexiness goes down, our influence I think comes up, and the
212   standards are set, and I think our community as a whole, is very impactful in setting those standards.
213   But that goes up as sexiness goes down. because as sexiness is high, then you have ridiculous execu-
214   tives coming in and saying we need to have a video, that would land on our bank website, which is
215   just fucking ridiculous, right, literally I had a bank that I worked with that said "we have to have
216   community features where people can have community discussions and bla bla bla" and I'm like, It's a
217   BANK, nobody wants to hang out at a bank, but they launched this anyway, and it crickets, ghost
218   town, nobody showed up, and they were really surprised that no one showed up, everybody else had
219   community, so they had to have community.

220   E: But do you see that in a lot of companies, that they follow trends?

221   T: Well not start-ups, but the big companies, the bigger companies are more susceptible to the sexi-
222   ness factor. Start-ups, are more about what their DNA level stuff is, they have some idea and they
223   want to go do it, and sometimes it's related that is super sexy or the next sexy thing or whatever. Big
224   companies though... it's like grownups saying "groovy", right?, and the do that because all the kids are
225   into it today, and that's where things get really messed up.

226   E: Ok, so moving on to a related but different topic, but I want to talk a bit more about content, or
227   the actual information that UX designers use to design, so when you get something from a company
228   or as a consultant, do you categorize the content into implicit or explicit information? You know, to
229   help you decide what kind of media is best to use and where to put the content in the actual design
230   of the website, or of a system?

231   T: Well, in my experience, I work a lot with companies that are start-ups, or e-commerce companies,
232   that are a bit larger and struggling, for some reason, so, your question is built on an assumption that
233   you get content early enough to decide how to distribute it, and unless it's a content company, that's
234   not true. I mean content is the same as UX was 15 years ago, it's an afterthought, in most companies,
235   because it's expensive, they think anyone can write it, or deliver it, or develop it, if it's text they
236   think they can just quickly do it or it should be inexpensive, if it's video then it's much more difficult
237   and expensive. I don't know that... I think what typically happens is, in my experience, which is
238   limited, is that first they decide how they want to say something, and then they decide what they
239   want to say. So, often what I do is I say lets figure out what we want to say first and then decide how

240   we want to say it, but in real life that's not how it works, in real life they are like "we want to put a
241   video here, now we have to figure out what is going to be in it" so I think you are giving them more
242   credit. The reality is just not the way companies function, unless they have a really strong content
243   department, which very few have, I mean in the land of e-commerce, content is merchandising and
244   advertising, or it's written by buyers, or whatever, it's not a department.

245   E: But as the content changes, if you want to run a website that is up to date with their products or
246   whatever, does the transmission medium change, based on what content is being presented, or maybe
247   to whom?

248   T: Not in my experience, I think that is still more sophisticated, I'm thinking of there is a website in
249   the US that got launched recently that is called fatherly, and which is for young fathers, and it is a
250   100% content, it is basically an online magazine, I don't know how they decide whether they are going
251   to create something as an article or as a video or whatever, I have no idea, they probably do think
252   about that. I would bet though that it starts with an idea that a writer has will turn into an article,
253   an idea that a videographer will turn into a video. I don't think it is as thoughtful as your question
254   implies.

255   O: So they do this as you are saying, on an ad hoc bases, like ok this week Jack came up with an video
256   idea, so we are going to make a video this week?

257   T: I think so, or we have decided we need a video on this page we have to go create something to put
258   in there, we need a tutorial video, we need an intro video, I've seen many of those, there was this
259   company that I worked with that had this sort of 90 second intro animated video, and once that is
260   created, that's done, that's money spent and it's almost impossible to get it off the page, because it
261   was money that they spent.

262   O: Yeah they are going to milk it for every cent it is worth.

263   T: and why do we do it, you know, it's not like they have data on people being underserved by it, it's
264   not until someone like me comes in and says "why the hell do you have this weird video here?" then
265   they get all defensive.

266   E: But you as a consultant, do you try to make them realize that certain type of media like improves
267   the cognitive state of understanding what is being presented to the users?

268   T: It's less about them having a better chance of understanding than it is about this is where they are,
269   their on text, their on the phone, whatever. You need to have the materials available for wherever
270   they are, if they are texting you a question to your call centre, and you respond with a blurb, that's
271   designed for a email, it's going to be way too long for text. But I think currently, the content creation
272   follows from something else, it's not that there is good strong thinking of what you (us) are talking
273   about, I think it is a good thing to write about because I think in the future that is going to become
274   part of a content conversation, but the reality as it is today... I think it is more driven from... we
275   have this hole we need to fill, as opposed to we need people to understand X topic and let's think
276   about which medium is a good one.

277   O: So in your opinion, Therese, how would the user be impacted if we use the "wrong medium" to talk
278   to them?

279   T: Well, ok so let me give you an example again, with a start-up that I worked with, that has 90 second
280   animated "here how it works" video, nobody is going to watch it, because it is not that fun to watch,
281   and the beginning of it is all about here is the old way to do this, and it's only the second 45 seconds
282   where the new exciting way shows up, so they have a system that has a new way to give gifts, so first
283   the video talks about look at all these ways of today's ways of giving gifts isn't that interesting, well
284   who wants to watch 45 seconds of that?, so to answer your question the risk is that the message, the
285   key message, that is all the way on second 65-79, simply just won't even ever been played.

286   O: Yeah, so there is a risk of the user not even getting the message you want to get out there?

287   T: That's right, and, in my example, we had the video on the screen so why would we repeat that
288   message below, users would think that is stupid, so it's a double whammy we already have it in this
289   medium, we will not repeat it in this other medium on the same page, or whatever, they assume they
290   have already seen it over here, so why do we need it also to repeat when they access us by SMS, or
291   Instagram, they assume that people are paying way more attention than they are, one of the things
292   that I tell my clients, you get one brain cell, one, and if they even remember the name of your
293   company, you're lucky. So, you thinking that they are going to have all your different categorise and
294   merchandise memorized, in your advertisement companies and all your value propositions and bla bla
295   bla, and even remember who the hell you are when they get an email from you, it's slim to none, just
296   look at yourself as a consumer, right, so I think the problem is hubris as much as anything else, if you
297   deliver it in one medium, the organization is unlikely wanting to repeat it in any other medium, so if
298   it is a long medium, there is a lot working against you, they don't see it, and they aren't likely to see
299   it anywhere else, maybe that's a good quote.

300   E: So taking the other aspect as well, choosing the right transmission medium towards users, how
301   would that impact the user or consumers?

302   T: Well, I think every interaction design challenge, every website, every mobile app, every HC inter-
303   action as a conversation, and the user, or the app, will say "Hello" then the other one the app, if it
304   was the user who said hello, then the app will go "well Hello, how are you?" (user) "well I'm ok, I'm
305   looking for some socks" (app) "well here are some socks", it's a conversation back and forth, so if you
306   say the right thing to the right user at the right time, then they are likely to do the things that will
307   make your business thrive. So that's another one of my quotes that I put in to my presentation decks
308   which is, if you say the right thing, to the right person, at the right time, they will do the things that
309   will make your business thrive. Whether it is purchased stuff, whether it is creating a rating, just
310   whatever, and most conversations... most apps or websites, or whatever, the conversation that they
311   establish are once that you would never tolerated in human society. Like if you met an app at a party,
312   you would be like "I'm getting the fuck away from this guy", just first of all he is not listening to me,
313   he is being a total asshole, he is acting like I should already know everything about him and that he
314   is the greatest guy on earth, or you guys maybe it's like total high maintenance girl, who wants me to
315   do all this stuff and isn't giving me any good reasons why, and she is talking like she is drunk anyway
316   and not really knows who she thinks she is, and that is like how most experiences using websites and
317   apps are, it's like a shitty conversation with an obnoxious person.

318   O: That's a great analysis.

319   T: I mean think about it, often when you go to any website, especially if it is sales or something, it's
320   like you are walking into a party, and there are like twelve little groups having a conversation and
321   the second you walk in, all them stop having conversations, stare at you and YELL the topic of con-
322   versation at you, "YOU SHOULD COME OVER HERE AND LOOK AT THIS" and it's like "dude, first of all,
323   shut up and second of all, you can't yell me out of the thing I came here to do, and most apps and
324   websites try to yell at you loud enough so you forget the reason you came there in the first place.
325   And if you think about it in a fundamentally human way, if this app or this website was another human
326   being and they were doing this crap in a regular conversation, you would be like"fuuuuuck you", and I
327   think that is kinda what you are saying in your paper, or your research, I think that is kinda what you
328   are getting at, which is, if the medium is wrong and or the message is wrong for that medium and you
329   create this lousy conversation.

330   E: That was our, maybe not in those words, but it was like our thoughts and what we have been seeing
331   when reading all of the literature review.

332   T: I think it's true, I think it is a really hard problem to solve, because just like UX, it's part of UX, and
333   it's really hard to express the value of that, and often the only way I get across these people is by

334   being funny, like I just was with you guys, and then giving them a really fundamental way to think
335   about it if this was a conversation, does it make sense? Conversation that is about a secret little topic
336   on stage in front of thousands of people? No, or whatever, you guys can play with that.

337   O: It's interesting the way you put it, Therese, it's like companies and organizations don't think of their
338   website or their app or whatever as a conversation medium with people, and it their face to the user
339   is.

340   T: That absolutely is true, and the other thing is, people think about apps and websites as these
341   modular thing that you interact with one piece and then interact with another piece, but the truth
342   is, any human being sits down, they have a start to something that they are doing, they are in the
343   middle of it, and then they finish it up, it's always linear, because we exist in time, so every experi-
344   ence, that every single user has, with every single app and every single website, is linear period. So
345   if you don't at least look at how it feels on a linear experience, even if you cross channels and cross
346   platforms, like if I'm going to go place an order on Amazon, and then I check my order on mobile, that
347   is linear experience for me even though it is totally different departments doing those two.

348   E: And when you elaborate on this, that it is a linear process moving through the experience, how can
349   you ensure that you choose the right media, to ensure that the user actually follows that linear process
350   or completes his task?

351   T: Well one way is through testing and prototyping and see if it works at all, and another one is... if
352   it's already out there the way to prove that something is wrong, is to show them a bunch of linear
353   experiences that are messed up and not working, a way to do that, if you want to inspire people to
354   do it better the next time, is to show them a competitor who is terrible, so another thing I can tell
355   you is that many large corporations look at their competition as if the competition was smarter than
356   they are, and had done all the research, so they all follow each other around like puppies, like there
357   is an industry, you know what timeshare is, it's vacation timeshare, so you basically are renting an
358   apartment for one week a year instead of renting an hotel room, well I worked at a timeshare product
359   many years ago, and what we found out was, the most profitable way to find good prospects to buy a
360   timeshare, was to get someone with kids to rent one of their apartments instead of renting an hotel
361   room, which totally made sense, because then they would have a kitchen and 2 bedrooms and all of
362   the stuff, instead of a hotel room where there is a microwave if you are lucky and how are you going
363   to get breakfast and whatever... we went to every single major timeshare website, and none of them
364   even say on the homepage, "you can rent this just like a hotel room" none of them, and it's another
365   reason why sometimes … would do research, they just knew that Franny family was a critical im-
366   portant Persona for them, she was a young mother, haven't had a vacation since their second kid was
367   born three years ago, or actually since their first kid was born, and know their second kid is three,
368   and they want to go somewhere, a hotel room is no longer useful, she's just having that AHA moment
369   now, "I need a fridge, where am I going to put the cheese sticks" and you go to all of these timeshares
370   who are like "explore Belize" and they do not say "hey guess what, you can have a two bedroom
371   apartment with a kitchen for the same price as a hotel room" but they all look almost identical, they
372   have the same tabs, because they all follow each other around like puppies, and they think the other
373   one has done all this research.

374   O: I guess that's where Airbnb succeeded where others failed?

375   T: Sure, and that's the reason why disruption comes in, I just want to ride, I just want some place to
376   stay, that's cheaper, I mean timeshare should have gotten together and done an ad for timeshare, it's
377   not the crappy experience you think it is, there is no sales pitch, and you get a two bedroom apartment
378   instead of a hotel room, wouldn't that be great, to have a place to put your cheese sticks? I mean
379   that's one reason why they are open to disruption.

380   E: Alright, I don't think we have any more questions, is there anything you want to add in the end?

381 T: I mean if there is a recording of this, it would be cool to maybe have it, because I need to publish,
382 and write up the ad hoc process and why. Anyway there might be some stuff I could use, I don't know.

383 E: Yes we can send you the recording, and we are also going to transcribe it and send that as well.

384 T: It has been really fun to talk about it and again, it's just like I've been saying, until I say it out
385 loud, I don't really know what's in my head, same thing with executives, and it's super helpful
386 just to have a chance to say it, and talk about it, and it brings your thinking forward, you guys
387 have made me think about things I haven't thought about, like "Ohh my god! Nobody is thinking
388 about the right medium, first" and it's kinda of a face palm, that's a good idea.

389 O: That's actually very nice to hear.

390 T: Yeah it's almost impossible to fix, but that does not matter, it's not like you are trying to get a job
391 or something.

392 E: But yeah, thank you so much for taking the time and talk to us, we really appreciate it.

393 T: Yeah my pleasure, and thank you this has been really fun.

Appendix 2h: Mark Interview Response

Job Title:	UX Strategist
Years of Experience in UX:	18
Location:	Atlanta, Georgia, USA

Personas

1. How often do you use Personas in your design?
   a. What are the strengths of using personas in your design?
   b. What are the weaknesses?
   c. Does your personas make you more empathetic towards the users?

1 At my current company, we aren't terribly strict on really defining a persona for every project,
2 mainly because we have so many different personas that use our software it generally comes
3 down to what are the features this person needs or the task they need to accomplish and make
4 it as quick, efficient, and user friendly as possible. I think personas, when created correctly and
5 containing the appropriate info, can be a great asset in the design process. They can help inform
6 you about things like a person's day, e.g. are they always rushing, do they tend to do complex
7 tasks repetitively, do they get interrupted a lot while trying to accomplish their job throughout
8 the day. They really allow you to build empathy for the user and understand more about them
9 and what might be going through their head. The problem is they can also get too granular…we
10 have 24 personas for one type of user for our applications, but it doesn't stop there because the
11 individual business units also tend to create their own personas which are even more specific
12 so it makes it difficult to know who you're designing for because you have to cover such a
13 broad range of users. I think because of all this variety we begin to lose sight of the original
14 80/20 rule and instead make a specific task really easy for one persona, but impossible for the
15 other personas regardless of the ratio. I think on most days having empathy for our users isn't
16 difficult for UX, it's trying to build that empathy with other stakeholders to the point that they're
17 willing to do something right instead of something quick. I would say more recently we're been
18 going the route of not really building detailed personas but more so empathy maps to really get
19 stakeholders in the right mindset.

Practice in UX Design

2. What's the design process you go through in your projects?
   a. Is this process the same for all projects?
   b. What's your process for creating personas?
   c. Is it different between projects?

20 I would say it depends on who you work with because some UX practitioners tend to be more
21 structured than others. Generally we start with strategizing what we are trying to accomplish or
22 setting goals…really it's about defining the problem we're trying to solve because far too often
23 we haven't identified the root cause, we've got a symptom and are trying to treat the symptom
24 rather than the true problem. Then we have discovery & analysis where we really begin to
25 understand the user needs, business needs, requirements, and gather/research any additional
26 information we need to accomplish our goals at the moment. We'll have workshops, journey
27 mapping sessions, and also talk about personas at this point and define them as best we can with
28 the knowledge we have. Next we get into this kind of design/validation cycle which may include
29 additional discovery because once we design something and begin to get feedback, either from
30 stakeholders or users, we tend to uncover new learnings we weren't aware of before. Given the
31 new information we'll adjust designs and also take that information back to stakeholders and
32 possibly inform them our initial thinking about how our user works or how the system should
33 work needs updated. Usually at this same time, development has already started building what-
34 ever we've been designing and sometimes they can pivot with the changes and sometimes they
35 can't. Finally we get to the point where we launch the feature and ideally we continue to gather
36 feedback and monitor the reception of the feature by our users to make future enhance-
37 ments…this doesn't always happen though.

38 I wish I could say we always follow this same process for all projects but not all projects are
39 created equal, so sometimes you have to adjust your approach. If it's a smaller project or shorter
40 project, there may not be time to do all these steps to the degree you would on a larger project.
41 Sometimes it's just a minor bug fix so we tend to use our experience as UX practitioners to
42 make a decision on the best way to fix the bug…maybe it's changing a label or moving a column
43 in a grid, but for small things like that we don't need rounds of user testing to tell us status is
44 the most important column in that grid and should be the first column, not the last column that
45 doesn't even show without scrolling.

46 Our process for creating personas can differ from project to project…it just depends on the
47 needs, size, and complexity of the project. Generally we have a meeting with stakeholders and
48 product management to define the personas, basic lean UX style approach style so not overly
49 detailed or researched initially.

3. In your projects who determines which type of media will be used (Text, Au-
   dio, Video, Image, etc.)? The designer/the customer/ both?

50 Since our product is more of a software as a service model, we don't tend to cover multiple
51 media types. Our app is all about data entry and accomplishing a task. The place where we see
52 different media being made available is in our help documentation. It started as text, now we've
53 incorporated videos for help and I've also heard of some using podcasts. We try to incorporate
54 imagery where it makes sense, but again most everything is text based. Given our products are
55 so complex and have so many groups working on stuff, there are any number of people who
56 may decide what media to use and UX is not always involved in the process. I would say rarely
57 is the client involved in that process either…it's usually someone saw a problem and decided a
58 video would solve that problem. My problem with that is that most times we're again solving
59 for the symptom and not digging into the actual problem of the workflow or something like
60 that…we're putting a bandaid over a gushing wound hoping it stops bleeding when it really
61 needs stitches or in some cases amputated so we can just start fresh with a clean slate.

4. What external factors would lead you to use a sub-optimal transmission medium for a given piece of information? (Costs, time, pressure etc.)

62 Unfortunately in our company UX isn't very high on the food chain so it is far too easy for us
63 to get overridden on things. We typically don't succumb to pressure, usually what happens is
64 we just get bypassed in favor of time and cost, usually time. Meaning they'll do anything we
65 throw out there if they can do it by their deadline, if they can't, then they don't and generally
66 show very little remorse about putting out a lesser experience.

Types of information

5. Do you categorize information? (If Yes) How do you categorize information?

67 I'm not totally sure what this question is asking but I'll take a guess with how it relates personas
68 and process. We do tend to try to map out info using an affinity diagram, experience map, or
69 some other process at our disposal to not only help us understand the info better but also gain a
70 common understanding and hopefully empathy among our stakeholders. The various tools in
71 our arsenal allow us to break down the info and rearrange in a way that makes sense to everyone.

6. How do you treat explicit knowledge differently from tacit knowledge? (If you do so)

72 We usually try to gather as much info as we can from as many sources as we can and then begin
73 to compare that information and internally rate it as to how much we trust it. We tend to have a
74 lot of subject matter experts internally, but honestly their info isn't always correct or can be
75 outdated so it's kind of a game of cat and mouse, they tell us something and we have to begin
76 to validate that rather than being able to rely on it outright.

Information and transmission medium

7. Do you think about transmission medium in design?

      a.   When do you incorporate them into your Personas?
      b.   What determines which medium is appropriate? (text, video, audio etc.)
      c.   Are these decisions based on some kind of research, or based on your professional experience? (If yes, what kind of research?) (What is optimal transmission medium? Reasons behind it?)
      d.   Will transmission type change when knowledge/information type changes? Why?
      e.   Will transmission type change when your persona type changes? Why?
      f.   Are these changes influenced by trends? (Hero pictures etc.)

77	I don't feel we typically consider transmission medium first and foremost in a project...that
78	usually comes about later as we start to solution what we're trying to accoplish and putting a
79	design together. I can't think of a single time we've incorporated a medium into our personas
80	because usually our personas information is more about habits and a day in the life, and from
81	there we infere/determine that person is busy so maybe a 2 minute video would be good, but I
82	don't think something that concreate should be part of a persona unless the persona is a blind
83	person so then we need to think about that stuff but still I think it becomes the solution not part
84	of the persona info. As I mentioned earlier the medium is generally determined as part of the
85	design process and research, if it's anything more than our usual text method. Like most things
86	in UX, I don't want to say any of this is set in concreate, because things constantly change and
87	evolve in our world. We probably tend to be less trendy because we provide software to handle
88	complex workflows and processes, so usually we're not following trends as much as trying to
89	create a solid, easy to use workflow that is visually appealing. So in general, yes things may
90	change as we learn more information, but it's more about our workflows and process than de-
91	ciding on the transmission medium, that's more just a byproduct of the design process, not a
92	key question we ask up front and I would say this is true for all the companies I've worked at.

      8.   How do you decide which transmission medium is most suitable for a given piece of information?
         a.   For example, if you are designing for a sports website and want to incorporate player statistics, how do you decide which transmission medium for this piece of information?

93	To me this would have to be researched. We would probably do some discovery first to under-
94	stand how people generally consume or want to consume this information…things like are they
95	typically on mobile, are they in a particular setting or context like in the venue itself or sitting
96	at a stop light? I would say based on that, then we decide the best way to convey the information.
97	If they're sitting at a stop light looking this stuff up when they shouldn't be, we wouldn't want
98	to distract them with a big grid of values, we would want audio or something else they don't
99	have to look at or at least provide that as an option, but probably not the primary medium since
100	more people tend to be visual than audible learners/listeners for comprehension.

How do you ensure that your chosen transmission medium will help the user complete their task?

101

102   Test, test, and test again. The more testing we can do the better. Gathering feedback in some
103   form is better than nothing so if we don't have time to test, maybe it's a survey or a focus group
104   or some other method for gathering feedback on what's being delivered

Appendix 2i: Frank Interview Response

Job Title:	UX Lead
Years of Experience in UX:	6 (practiced 'ux' well before it was my title)
Location:	Near New York City

Personas

1. How often do you use Personas in your design?
    a. What are the strengths of using personas in your design?
    b. What are the weaknesses?
    c. Does your personas make you more empathetic towards the users?

1 *First, with my new job I am in pharmaceutical marketing. Comes with many benefits*
2 *(large budget for usability testing, documentation, deliverables, etc) and plenty of*
3 *drawbacks (crazy amounts of red tape, regulation, never ending glossary of terms).*

4 We start all of our projects with a discovery phase that is mostly based on personas.
5 They're not typical personas but more of a generalization of each of our target audi-
6 ence. Almost always we have to pull the client back a few steps and explain that the
7 customer is on a journey on their specific path/channel (social, email, display ads,
8 PPC, search, etc) and that each touch point is unique to where the customer is at in
9 the process.

10   a. Personas help strengthen our design because it allows the client and
11   agency to have a shared vernacular. We're able to generalize our audi-
12   ence to make a common customer journey.
13   b. I don't see any weakness, even if vague by design.
14   c. Yes, we're able to envision their steps along the way.
15

Practice in UX Design

2. What's the design process you go through in your projects?
    a. Is this process the same for all projects?
    b. What's your process for creating personas?
    c. Is it different between projects?

16 Always starts with analytics--anything backed up and proven with data will win any
17 subjective argument. With analytics we perform a discovery session where we learn
18 as much we can about the customer (and in most cases doctors too). We map out
19 every step in the decision and customer journey process (look up anything "David
20 Edelman customer journey"; YouTube videos are transformative) for any channel.

21 This culminates into a massive PowerPoint deck that has many journey mapped out
22 that has actionable goals backed up with analytics.

23   a. Yes all projects start with this level of detail.
24   b. Loosely detailed above.
25   c. No.
26

    3. In your projects who determines which type of media will be used (Text, Audio,
        Video, Image, etc.)? The designer/the customer/ both?

27 Depends on the client and their goals. Almost always the delivery medium is pro-
28 posed by the agency. Mostly by designers but sometimes by account people.

    4. What external factors would lead you to use a sub-optimal transmission medium for
        a given piece of information? (Costs, time, pressure etc.)

29 Client pushing back on deadline. Not feasible to complete desired transmission in
30 time allotted.

Types of information

    5. Do you categorize content to tacit and/or explicit information? (If Yes) How do you
        determine the categories?

31 Some items are implicit but all else is documented for reference by the team.

    6. How do you treat explicit knowledge differently from tacit knowledge? (If you do so)

32 Through documentation that's shared among the teams.

Information and transmission medium

    7. Do you think about transmission medium in design?
            a. When do you incorporate them into your Personas?
            b. What determines which medium is appropriate? (text, video, audio etc.)
            c. Are these decisions based on some kind of research, or based on your professional
                experience? (If yes, what kind of research?) (What is optimal transmission me-
                dium? Reasons behind it?)
            d. Will transmission type change when knowledge/information type changes? Why?
            e. Will transmission type change when your persona type changes? Why?
            f. Are these changes influenced by trends? (Hero pictures etc.)

33 Depends, but typically no. Communication is transmission agnostic. It's up to the clients most
34 converting medium that dictates where we focus (ie, if email converts 10x the website, then
35 we will focus on email)

36   A. At a high level, if ever.
37   B. Whichever reaches the target audience most effectively.
38   C. Both data and experience. Analytics guides us but we can infer a lot from our experi-
39   ences.
40   D. Yes. Always looking for most effective ways to communicate and target customers.
41   E. Not sure yet.
42   Somewhat. Also based on best practices, aesthetics, and what's proven to work by analytics
43   and a/b tests.,

8. How do you decide which transmission medium is most suitable for a given piece of information?
   a. For example, if you are designing for a sports website and want to incorporate player statistics, how do you decide which transmission medium for this piece of information?

44   We're a digital agency. We stick with web sites, social, and email primarily. Although VR is
45   quickly being implemented.

9. How do you ensure that your chosen transmission medium will help the user complete their task?

46
47   Proven through analytics and customer intervie

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