*Qualitative and Quantitative Methods in Libraries (QQML) 7: 123 –134, 2018*

# Personas and Scenarios as a Methodology for Information Sciences

**Vandana Singh**
School of Information Sciences, University of Tennessee – Knoxville, USA

**Abstract:** This article describes the use of personas and scenarios as a methodology in multiple disciplines and makes a case for the use of this set of methods in information science research. Strengths and weaknesses of personas and scenarios are also discussed to highlight the appropriate use of the methodology.

**Keywords:** Information Science Methodology, Personas and Scenarios

## 1. Introduction

Information scientists explore complex issues at the nexus of people, technology, and informational content. Information scientists use a variety of tools including surveys, interviews, and focus groups, to study various aspects of user behavior related to information systems which leads to a better understanding of even the most complex problems. Persona and scenarios are powerful tools that provide the capability to disambiguate complexity by providing a means to understand user populations and how they interact with an information system, however these tools are underutilized in information science research. When personas and scenarios are combined they form a very useful and effective approach to understating the complex interaction between user information needs and systems development and hence become a very useful tool for research in information sciences.

Personas are a representation of the objectives and behavior of a real group of users; these representations are fictional and are synthesized from data collected from users via instruments such a surveys and interviews. Personas are valuable because they provide comprehensive insight into relevant user characteristics. According to Grudin and Pruitt (2002), personas have many advantages over other traditional user research methods because they are more memorable and compelling, easy to convert to design decisions, and specific. There are specific advantages to using personas in place of more traditional user research techniques. Personas enable the design team to easily memorize the

Received: 14.3.2017 / Accepted: 19.12.2017 ISSN 2241-1925
© ISAST

characteristics of their target user groups and use these characteristics to make design decisions. They also guard against the possibility of "paralysis" or "inappropriate generalizations". (Cooper, 1999; Pruitt and Grudin, 2003; Pruitt and Adlin, 2006). Personas also ease understanding through the use of stories and narratives rather than diagrams and flowcharts (Ogle, 2009). Since the late 1990s when Cooper developed the personas method, it has grown in popularity among various professions such as software and design (Chapman & Milham, 2006).

Scenarios are narratives that describe the expected flow of an activity based on the characteristics of users and systems. Scenarios are projections of expected behaviors to portray user behavior with respect to the system interface. Scenarios represent the workflow indicating usage of a product by the users in a real life situation. Scenarios are usually represented in the form of flow charts, images, and step-by-step lists of the process followed by the user to achieve desired goals. Scenarios indicate the relationship between the environment, a person, and the product. Scenarios are used to get an understanding of the way in which people use a product, the differences before and after the use of the product and, the user's reactions to it. Scenarios can be used in the product/service design stage. It gives the designer more information about the user and his or her needs to develop a better product. However, there is no limitation to the creation of scenarios. Scenarios can be refined continuously as the new information about the user becomes available.

## 2. Literature Review

The concept of the persona first emerged in 1999 when Alan Cooper defined it as a "fictitious, specific, and concrete representation" of a user to help people understand real-life users (Wang). Cooper describes personas as follows: *Personas are hypothetical archetypes, or "stand-ins" for actual users that drive the decision making for interface design products. Personas are not for real people, but they represent real people throughout the design process. Personas are not "made up"; they are defined with significant rigor and precision. Names and personal details are made up for personas to make them more realistic. Personas are defined by their goals. Interfaces are built to satisfy personas' needs and goals*. (Cooper, 1999)

Following Cooper's recommendation, personas have been used frequently in electronic design including for well-known software products such as Microsoft's MSN Explorer and Visual Studio and for hardware products produced by Cisco (Wang). In the field of software design and marketing, personas are the narrative representations of different kinds of users belonging to a particular demographic, behavior, and/or attitude involved in using a product, site, or brand. Personas usually represent the characteristics (name, work profile, age, etc.), requirements, expectations, goals, and motivations of real-life users of a specific product. Personas bring these representations to life by providing them with names, personalities, and often a photo. This

information helps the design professionals visualize what the user is like which helps focus development or improve upon an existing product. According to Porter (2008), software design teams usually create and share persona documents which describe the user's characteristics and needs in an easy-to-follow narrative form.

Mietzner and Reger (2005) note that scenarios, which can also be seen as stories, are used to better understand complex events without trying to predict the future. Professionals in government, corporations, and the military have all used scenarios to make decisions with limited information. Warfield (1996) defines scenarios as a "… narrative description of a possible state of affairs or development over time. It can be very useful to communicate speculative thoughts about future developments to elicit discussion and feedback, and to stimulate the imagination." Scenarios are commonly described as narratives that seamlessly merge quantitative and qualitative information to help design teams imagine and develop products and their use for future planning have been described a number of ways (Mietzner & Reger, 2005). Some people see scenarios as providing pathways from current events to a possible future. Others argue that scenarios help people imagine the future and its alternatives objectively. The idea behind this approach is to establish activities for future and help the decision makers in looking at viable alternatives and possibilities for the future. In theory, scenarios are a synthesis of different paths (events and actors' strategies) that lead to possible futures. So, the developed scenarios are coherent pictures of possible futures, they are a very useful tool and can help in exploring the impacts and implications of decisions, choices, policies, etc and provide insight into cause and eddect sequences (Slaughter, 2000). In practice, scenarios often merely describe particular sets of events or variables" (Roubelat, 2000). Mietzner and Reger (2005) distinguish between two types of scenarios: scenario building and scenario planning. Scenario building involves imagining a few different futures in an attempt to overcome uncertainty. Scenario planning, on the other hand, takes the process a step further by describing how an organization's environment might change over time and how that might affect its decisions.

## 3. Creating and Using Personas

Design teams create personas by first researching real users and then using that data to develop representative fictitious personas (Calabria, 2004). After collecting demographic data from users, design teams conduct rigorous interviews to gather qualitative data about users' feelings, product usage, and motivations. These interviews include collecting stories, quotes and anecdotes to enrich understanding of the user environment and form the basis for personas and scenarios (Head, 2003). Analysis of the interviews usually reveals a few main "types" of users, usually from three to seven, which can then be given names, photos, and personalities. However, there is a well-known six-step process for creating personas, starting from conception to gestation, as described by Pruitt and Adlin (2006).

In the first step, the important categories of users are identified; the users that are important to the domain are dividend into relevant categories. In second step the data about the users in user categories is process to extract relevant information for the product and the process. In the third step, skeletons of the personas are identified and created. The categories and subcategories of users are identified and their characteristics are presented in a bullet point format. Ideally, each persona has unique characteristics that do not overlap with the others. Next step is the start of the gestation phase and at the beginning of this phase the skeletons of the personas are prioritized based on the importance to the business. This prioritization helps in narrowing down the final personas for complete development. In step 5, the selected skeletons of the personas are developed into fully functional persona, the skeletons are enriched by adding more data, concrete details and some story telling elements are introduced at this stage. One must "embody" the skeletons in narrative form with more detailed information about personalities, goals, expectations, and relationships. Once the personas are created than in the last step they are validate by real representative users or other researchers.

**Overall Process of Using Scenarios**

Scenarios represent the workflow indicating the usage of a product by the users in a real-life situation. The methodology of building scenarios often follows versions of the methodology created by Peter Schwartz (1996). In step one, the focal issue or decision of the scenarios is conceptualized, the design team chooses the background for the scenarios and decides who will help build them. In step two, the key forces of the local environment are identified, the group brainstorms about factors relevant to the scenarios and the known facts/history about the situation. In step three, they develop and categorize key variables that may affect the scenarios, this step builds on top of the facts acquired in step 2. Here the group develops the micro level variable that will impact the scenario. Step four involves prioritizing the key variables and driving factors by importance, one way of accomplishing that is by creating a few problem questions to determine the emphasis of the scenarios based on the information collected in first three steps. Step five involves the creation of a narrative storyline or the logic of activities of the scenarios. If multiple scenarios were created than this step is also used for consolidation of scenarios to a few most important storylines. In step six, the scenarios are flushed out in details and refined, they are compared for key differences and data gathered in step two and three is used to make these storylines concrete. Step seven involves exploration of implications of the scenario and evaluation with respect to the focal goals identified in step one. This is the stage to finalize scenarios, to ensure that all the important data points are reflected in scenarios and there are no vulnerabilities in the scenarios. You can tell you have good scenarios when they are both plausible and surprising; when they have the power to break old stereotypes. Policy implications are discussed in step eight i.e., using the qualitative and quantitative results of the scenarios to evaluate the results of various choices. Finally, what is learnt by scenarios is communicated to others..

## 4. Use of Personas and Scenarios in Different Disciplines

Our literature review revealed that personas and scenarios are used across multiple disciplines. The sections below provide a brief overview of the use of personas and scenarios as a methodology. Following these overviews, an analysis of the strengths and weaknesses of the methodology is reviewed.

### 4.1. Domain: Information Technology

Personas are used in the information technology domain by analysts, managers and designers to share their expertise with others from a different domain. IT systems development is a complicated process with a number of persistent issues. The process often involves participants with a great deal of diversity in form of educational training, geographical diversity and cultural diversity. System development teams are diverse and often not co-located and have to work together and share their knowledge, but the mechanism by which participants share and integrate their expertise is not well understood (Madsen & Nielsen, 2005). The IT systems development teams consist of developers of the system who receive functional requirements from analysts and analysts who gather business requirements from clients. System designers and usability assessment personnel work on creating and evaluating the interface for systems. Systems requirements determination from the users is a challenging process because the client or end users do not necessarily have advanced domain knowledge and so their business knowledge needs to be translated to domain knowledge by the systems development company. In this complex environment, personas and scenarios are often used to create a shared understanding and design ideas between individuals from different teams. According to Miller and Williams (2008), professionals in system requirements also use personas or "roles" and scenarios for engineering. Microsoft, for example, uses case diagrams and descriptions to understand customers' use and behavior patterns and thus to better design products.

Electronic records create unique planning difficulties because many future uses and technologies are unpredictable (Borglund & Oberg, 2007). Borglund and Oberg propose using personas and scenarios to predict future uses of electronic records and design systems that capture the necessary data in the present. They performed an experiment with police recordkeeping systems using detailed scenarios and multiple personas.

### 4.2. Domain: Marketing

The literature review suggests that there has been a great amount of work done in the area of marketing research using personas and scenarios. Astbrink and Kadous (2003) mention two main examples of this application. First, personas and scenarios for people with disabilities can help with the design of wireless devices that meet the needs of this population. Also, the Smart Internet Technology Research Centre in Australia is using a similar method to create naturally adaptive smart personal assistants.

### 4.3. Domain: Research (Ethnographic Studies)

Ethnographic researchers especially benefit from the use of personas to ensure that they represent all types of users rather than excluding them (Blomquist & Arvola, 2002). However, studies show that researchers have difficulty using personas to envision real users. They must understand not only the persona method but also how to integrate it into their own professional practices to be able to represent real users and also for the team to be able to use personas to their full potential. Ethnography can be used as a source of raw data to create personas, according to Pruitt and Grudin (2003), ethnography and persona creation are similar in the sense that ethnographer collects rich data from users during a extended period of time, the persona designer also creates an understanding of users based on rich data from multiple users, the only differentiating factor being the time – in persona creation less time is spent than in ethnographic research. Personas have striking parallels to ethnography (Grudin, 2006). Both seek to explore psychological motivations, by gathering this information from users, and sharing it via easily understood personas. Like ethnography, personas also reveal sociopolitical issues, especially when certain groups are being excluded. Design teams often develop diverse groups of personas only to realize that they overlooked a key group of users.

### 4.4. Domain: Research (Human-Computer Interaction)

Personas and scenarios are especially useful in the human-computer interaction (HCI) domain when design teams need to consider movement and motion (Loke, Robertson, & Mansfield, 2005). Researchers have used a persona and scenario script along with group choreography to study the aesthetic and social experience of moving through an exhibit. Scientists use personas and scenarios in HCI to determine designs for robotics (Ljungbald, Walter, Jacobsson, & Holmquist, 2006). They conducted interviews, created personas, and explored scenarios of potential uses for novel robots or "personally embodied agents," focusing on the needs of specific user groups. Researchers are also using personas and scenarios to redesign current websites (Markensten & Artman, 2004). The Swedish National Labor Market Administration (AMV), for instance, studied the usability requirements of visitors to its website to improve its architecture and design.

### 4.5. Domain: Research (Usability Studies)

Personas are useful for software development and usability studies because they simplify large amounts of data and present psychologically compelling pictures (Pruitt & Grudin, 2003; Gudjonsdottir & Lindquist, 2008). They encourage deeper and more critical reflection and investigation of participants in research projects (Wikberg-Nilsson, Faltholm, & Abrahamsson, 2010). The literature review in this domain suggests that the persona method has been most useful for translating the users' context to be understood by the project stakeholders and for promoting the idea of user-centered design. However, it has been less successful as a design tool.

### 4.6. Domain: Research (Psychology)

The concept of personas and scenarios has also been studied from a psychological perspective by scientists, researchers, and industry professionals. Scenarios do create challenges when they are based on imagination rather than data (Grudin, 2006). This can be turned into a benefit, however, by using scenarios to create ideal and worst possible scenarios for brainstorming purposes. Personas can be used to develop a better understanding of users and their context and to help design teams communicate.

### 4.7. Strengths of Personas

Ogle (2009) lists the following strengths of personas: Personas help design teams communicate the concept of a product and its behavior in an easy-to-understand, common language. This helps to facilitate the design process. Personas help each member of a design team understand what is meant by a "user." They also make it easier to design with the user in mind. Designs can be tested on personas, similar to testing on real users, which speeds up the evaluation process.Other teams in an organization such as marketing and sales can use personas to better understand users and improve their communication with them.

### 4.8. Weaknesses of Personas

Scientists remain skeptical because while personas obviously inform the design process, how they do so is unclear (Blomkvist, 2002). Unless the persona methodology is focused on a goal, it may not be useful. Evaluating whether a persona actually represents and is relevant to real users is extremely difficult (Chapman & Milham, 2006). Personas can ignite sociopolitical conflict if they are not effectively evaluated (Chapman & Milham, 2006). Scholars have not produced systematic reviews of the persona method, and they disagree on its effectiveness (Chapman & Milham, 2006).

### 4.9. Strengths of Scenarios

Mietzner and Reger (2004) list the following strengths of scenarios: Scenarios compare several possible futures although they can never be predictive. Scenarios change the mindsets and cultures of organizations and their employees. Scenarios encourage organizations to plan for the risk of disruptive or disastrous events. Scenarios improve communication among organizational staff members by developing a "common language." By improving communication, scenarios also facilitate coordination, planning, decision-making, and organizational learning. Because scenarios are so flexible, they can be adapted to a limitless number of situations.

### 4.10. Weaknesses of Scenarios

Mietzner and Reger (2004) also list the following weaknesses of scenarios: Scenarios are time-consuming to create, and this process cannot be reduced. Data must be collected in very rich detail. Design teams need to come up with scenarios that are not predictable. Few studies have been done that analyze

whether scenarios actually lead to successful outcomes in an organization. More research is needed on analyzing scenario content versus the process, applying scenarios in small organizations, and mixing scenario approaches with other research methods.

## 5. Examples of use in Information Science Research

There are few examples of successful use of personas and scenarios in information science research, in this section we share some of these examples from literature review and one example from our own research experience. In the first example we share from literature review (Mannes, Miaskiewicz and Sumner, 2008), researchers at University of Colorado, Boulder used personas to understand the needs and goals of information repository users. As a result of the personas developed by them, certain basic assumptions about the usage of Institutional Repositories were contradicted and hence led to an improved understanding of the user base. In reporting their finding they share that "It was assumed that the users desired an open-access archive of primarily published research materials generated by the faculty and graduate students, but the users actually desired a network where teaching and learning materials are shared, potential collaborators are identified, and participants' research is promoted to institutional colleagues." The researchers conclude that the results from personas would be useful designing insitutitional repositories and for policy making and that personas contributed to an understanding of what the real users want and not what the information acrchitects assume the users want.

In the second example of use of personas and scenarios in information science research, researchers of DataOne team developed personas and scenraios from interview data and usage scenarios and describe in detail the methodology of creation and usage of personas (Crowston, 2015). The personas were created to "communicate user needs to system developers and other personnel". The assumption in taking this approach was that software developed with specific users in mind will be more successful. In conclusion, they write that "Personas were found to be useful for helping developers and other project members to understand users and their needs. The developed DataONE personas may be useful for others trying to develop systems or programs for scientists involved in data sharing."

## 6. Our Experience of Using Personas and Scenarios

This section explores the use of personas and scenarios in information science research by sharing our experience of using these tools in a research project. In this project, IBIS (Increasing Biodiversity Information Sources), user personas and task scenarios were created to understand the various types of users and their information needs visiting an organization's website. In the process of creating and presenting these personas and scenarios, many aspects of information present on the website and its utility were discovered. We explain the details of the process for creating the personas and scenarios and the benefits from the use of this methodology.

This project involved assessing the website for the Southern Appalachian Information Node (SAIN), one of the information nodes of National Biological Information Infrastructure (NBII). It should be noted that NBII has been reorganized and integrated into the USGS information network. The objective of this project was to demonstrate the usefulness of the information present on the website and to identify the potential users. The main purpose of the research was to inform SAIN about their users in an explicit manner, to document existing users of SAIN, and to describe their typical information needs. Additional objectives included identifying other potential users and their information needs. User personas and task scenarios were the chosen methodology to accomplish these objectives. The first step in creating personas and scenarios was to identify the existing users of the SAIN website. This was done by retrieving a list of SAIN partners from the SAIN and the NBII websites. The list was comprised of names, which were then hyperlinked to the websites of the partner organizations. Once all the partner organizations were identified, all the websites of these partners were thoroughly researched to understand the type of projects these organizations were working on. Also, specific individuals in these organizations who could potentially benefit from using data and information on SAIN website were identified. Through this process, many different project and personal websites were shortlisted. The content of these project and individual websites was then used as the inspiration for personas. Characteristics and information needs of multiple projects/individuals were merged to form composite personas. Using this inspiration-based approach, 42 personas were created for the existing and potential users of the SAIN website.

These 42 personas were defined in-depth to include name, gender, location, job title, job profile, etc. The persona also included a picture of the user to give a more personalized portrait. Each persona was a representation of many people and their work. Once the personas were created, they were used to develop one or more task scenarios. The tasks were created based on the information present on the websites about the type of projects that these users were working on and the information that is present on the SAIN website. The task scenarios were worded as information-seeking questions. Based on this exercise, many useful and important pieces of information were gathered. The first benefit for SAIN was that they could visualize their users in a very clear and defined way, so they had a much better and richer understanding of their current users. Prior to this activity, the partners were a list of links to organizations, but now SAIN has a concrete picture of their diverse users. SAIN got a better understanding of the specific information needs of these existing users. They were able to identify what areas they were not addressing even though they clearly had partners who are interested in these areas of information. It was a very validating experience for them to see that the information they were collecting and organizing could play a key role in some of their partner organizations. The process exposed them to the problem areas within their website. They received a list of recommendations for improving the content organization and a list of usability issues with the website. For the many usability issues that were identified, easy

fixes were recommended to SAIN. The content issues identified mostly included dated content, content not labeled correctly, or simply missing content. All these recommendations and identifications of problems were very helpful for SAIN members as they indicated in their feedback to the research team. They really appreciated the depth that this persona method brought in the understanding of their users. Based on the recommendations from these personas and task scenarios, the resulting information presentation and organization of their website would vastly improve. This would allow them to meet the information needs of their users. Once they were presented with the scenarios, they realized that they could use these scenarios for display on their website. They believed that displaying the scenarios would help their partners to see how they can use the SAIN website and all the different types of information presented.

## 7. Conclusions

These successful examples demonstrate the value that these methods can bring to the information science research. We look forward to using this methodology in other research settings and futher improving our understanding of the value that personas and scenarios can bring to complex research topics at the intersection of humans, technology and organizations.

**References**

Ackerman, M., Cranor, L., & Reagle, J. (1999). Privacy in e-commerce: Examining user scenarios and privacy preferences. *ACM Conference on Electronic Commerce*, 1-8. Retrieved from citeseerx.ist.psu.edu

Astbrink, G., & Kadous, W. (2003). Using disability scenarios for user-centred product design. In G. M. Craddock, L. P. McCormack, R. B. Reilly, & H. T. P. Knops (Eds.), *Assistive technology – Shaping the future* (pp. 696-700). Lansdale, PA: IOS Press.

Blomkvist, S. (2002). Personas – An overview. Extract from the paper The user as a personality. Using personas as tools for design. Position paper for the course workshop Theoretical Perspectives in Human-Computer Interaction, IPLab, KTH. Retrieved from http://cursos.iteso.mx/moodle/file.php/153/A_Usuario/persona/Persona-overview.pdf

Blomquist, A., & Arvola, M. (2002). Personas in action: Ethnography in an interaction design team. *NordiCHI Conference*. Retrieved from http://courses.washington.edu/dmedia/2005a/pub/acm-p197-blomquist.pdf

Borglund, E., & Oberg, L. (2007). Scenario planning and personas as aid to reduce uncertainty of future users. IRIS 30: *The 30th Information Systems Research Seminar in Scandinavia*.

Calabria, T. (2004). An introduction to personas and how to create them. Step Two Designs. Retrieved from http://www.steptwo.com.au/papers/kmc_personas/index.html

Cooper, A. (1999). *The inmates are running the asylum.* Indianapolis, IN: MacMillan.

Crowston, K. 2015. ""Personas" to Support Development of Cyberinfrastructure for Scientific Data Sharing." *Journal of eScience Librarianship* 4(2): e1082.http://dx.doi.org/10.7191/jeslib.2015.1082

Grudin, J. (2006). Why personas work: The psychological evidence. In J. Pruitt & T. Adlin (Eds.), *The persona lifecycle: Keeping people in mind,* 642-663. Burlington, MA: Morgan Kaufmann.

Grudin, J., & Pruitt, J. (2002). Personas, participatory design and product development: An infrastructure for engagement. PDC 2002, 144-161. Retrieved from http://research.microsoft.com/en-us/um/people/jgrudin/publications/personas/pdc2002.pdf

Gudjonsdottir, R., & Lindquist, S. (2008). Personas and scenarios: Design tool or a communication device? COOP 08: Proceedings of the *8th International Conference on the Design of Cooperative Systems.* Retrieved from ftp://ftp.nada.kth.se/IPLab/TechReports/HCI-49.pdf

Head, A. J. (2003). Setting the stage for building usable information sites. Information Today. Retrieved from http://www.infotoday.com/online/jul03/head.shtml

Ljungblad, S., Walter, K., Jacobsson, M., & Holmquist, L. E. (2006). Designing personal embodied agents with personas. ROMAN 2006: *The 15th IEEE International Symposium on Robot and Human Interactive Communication*, 575-580. Retrieved from http://ecagents.istc.cnr.it/dllink.php?id=286&type=Document

Loke, L., Robertson, T., & Mansfield, T. (2005). Moving bodies, social selves: Movement-oriented personas and scenarios. Proceedings of OZCHI 2005. Retrieved from research.it.uts.edu.au/idhup/wordpress/wp-content/uploads/2009/10/Loke_OZCHI2005.pdf

Madsen, S., & Nielsen, L. (2005). Exploring persona-scenarios – Using storytelling to create design ideas. Human work interaction design: Usability in social, cultural and organizational contexts. *Advances in Information and Communication Technology, 316*, 57-66. doi:10.1007/978-3-642-11762-6_5

Maness, J. M., Miaskiewicz, T. and Sumner, T. Using Personas to Understand the Needs and Goals of Institutional Repositories. Digital Libraries Magazine Volume 14, No 9/10 doi:10.1045/september2008-maness. Retrieved from http://www.dlib.org/dlib/september08/maness/09maness.html

Markensten, E., & Artman, H. (2004). Procuring a usable system using unemployed personas. *ACM International Conference Proceeding Series*, *82*, 13-22. Retrieved from http://kth.diva-portal.org/smash/record.jsf?pid=diva2:377092

Mietzner, D., & Reger, G. (2004). Scenario approaches – History, differences, advantages and disadvantages. *EU-US Seminar on Technology Foresight, Forecasting & Assessment Methods*, 13-14. Retrieved from http://foresight.jrc.ec.europa.eu/fta/papers/Session%201%20Methodological%20Selection/Scenario%20Approaches.pdf

Mietzner, D., & Reger, G. (2005). Advantages and disadvantages of scenario approaches for strategic foresight. *International Journal of Technology Intelligence and Planning, 1*(2), 220-239. Retrieved from http://www.lampsacus.com/documents/StragegicForesight.pdf

Miller, G., & Williams, L. (2008). Personas: Moving beyond role-based requirements engineering. *CiteSeerX.* Retrieved from agile.csc.nscu.edu/SEMaterials/Personas.pdf

Ogle, D. (2009). Designing with personas. Fluid. Retrieved from http://wiki.fluidproject.org/display/fluid/Designing+with+Personas

Porter, J. (2008). Personas and the advantage of designing for yourself. Retrieved from http://bokardo.com/archives/personas-and-the-advantage-of-designing-for-yourself

Pruitt, J., & Grudin, J. (2003). Personas: Practice and theory. DUX 2003: Proceedings of the *2003 Conference on Designing for User Experience.* Retrieved from http://research.microsoft.com/en-us/um/redmond/groups/coet/grudin/personas/old%20versions/pruitt-grudinold.pdf

John Pruitt, Tamara Adlin (2006) The Persona Lifecycle: Keeping People in Mind Throughout Product Design Scenario development: Methodology steps to build scenarios. Retrieved from www.asb.cgir.org

Schwartz, Peter. 1996. *The Art of the Long View: Planning for the Future in an Uncertain World.* New York: Currency Doubleday.

Wang, X. Personas in user interface design. Retrieved from http://pages.cpsc.ucalgary.ca/~saul/wiki/uploads/CPSC681/topic-wan-personas.pdf

Wikberg-Nilsson, A., Faltholm, Y., & Abrahamsson, L. (2010). Reframing practice through the use of personas. *Reflective Practice*, *11*(3), 285-298. Retrieved from http://pure.ltu.se/portal/en/publications/reframing-practice-through-the-use-of-personas(15112760-4b8a-11df-a0f4-000ea68e967b).html