Personas in the User Interface Design

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Abstract: "Persona is a user-centered design method which sets up fictitious characters to represent the different user types within a targeted demographic group that might use a site or product" [1]. In particular, using personas for user interface design helps software engineers to better understand the end users' requirements because it sets up a concrete figure that represents consistent and reliable understanding of the end user groups. This paper briefly introduces the concept of personas, explores how to create a persona and applies them to the user interface design. At the end of the paper, the benefits and shortcomings of using persona are listed.

Key Words: Personas, User-Centered Design, User Interface Design

Overview

In 1999, Alan Cooper created the notion of "personas", an emerging user-centered design method. As defined by Cooper; a persona is a fictitious, specific and concrete representation of target users [2]. The goal of persona is to help the product teams better understand the users and thus improve their products. Since 1999, personas have been applied to several projects and many of them have reported success. For example, Microsoft is one of the most notable clients that use personas on their user interface design. MSN Explorer design was based on personas. Microsoft Visual Studio development team applied a persona to some of their jobs. Personas have also been introduced in hardware product design. It was successfully implemented to Cisco's product. [3]

The remainder of this paper is layed out as follows. Section I briefly introduces the concept of a "persona". Section II illustrates how to create a persona. Section III demonstrates the approaches of using a persona to plan and evaluate user interfaces. An example is raised and waved into the section. In section IV, the reason why persona works well is discussed. The section V explores benefits and shortcomings of using personas.

Section I: What is a persona

Cooper and Reimann defined a persona to be a collection of realistic representative information which can include fictitious details for a more accurate characterization [4]. From their definition, we can find out two important facts: First, personas come from reality. It is an accurate representation of real world users. Users' important attributes that are highly related to the products are collected and represented by a persona. For example,

if the target user of a computer game is boy aged at 13-15, a persona designed for this software should be a 13(or 14, 15) year-old boy. Respectively, making a persona girl for this software might be a big mistake. If the boy who uses the computer game does not have many computer skills, the created persona should also know little about the operation of a computer. In nutshell, a persona should always mirror a group of real users.

Second, some of the elements that makeup a persona are imaginary. For example, persona's name, photo and other social attributes could completely fictitious. It is because these items do not have significant impact on the product interface design. The name of a persona, for example, be it Tom or James, does not influence the real product design. Similarly, the photo of a persona is of no use in evaluating a software interface. However, the imaginary items, although not directly benefiting the real product design, make the personas vivid and thus should be careful selected.

To sum up, a persona is composed of refined information from real life or the imagination. It is a virtual person who has a human face, a job title, an educational background, and some characteristics of real human beings. Therefore, personas are engaging and do not put unneeded stress on developers. The elements of persona, such as their purchase power and social behaviors result from raw user data which is carefully collected and analyzed from data sources. Therefore, persona reliably represents natural aspects of target users.

Section II: How to create a persona

[5] provides a complete process of persona creation. They are:

1. Identify persona data sources

Persona comes from large amount of user data. Therefore, before the creation of persona, we have to prepare enough direct users. In the following steps, the direct users will be observed or interviewed to get a first hand user data. We can also request reliable third parties, such as some research agency to provide user data. Under some circumstances, gathering user data directly from target users might be time and money consuming. This time, we can get the user data from third party reports.

2. Set up user categories

A user category means a group of users that share similar characteristics. In this step, we have to find out related user categories for our product. During this process, we can refers to user role, user goal and user segment. User role describes persona according to set of tasks, job descriptions or other external factors related to his/her interaction with the product [5]. For example, in an online bank system, the users could be divided into "account holder"," bank administrator" and "bank visitor". User role describes a user in terms of what he/she is trying to achieve [5]. For example, the online bank visitors could be divided into subcategories according to their goals of using this system. In detail, some of them want to find new services, while others want to check their own accounts. User

segment describes user in terms of characteristics he or she share with many other users [5]. The online bank users, for example, could be divided into different groups according to their gender, ages and the computer skills.

3. Collect user data

Having decided the user categories, we can find out user data from data sources. During this process, persona creation team reviews raw user data documents collected from direct user observation or third party report and then converts them to factoids (a factoid is a piece of paper that records an important fact retrieved from the raw user documents) A user category, as well as related factoids form a persona skeleton which is the prototype of a persona.

4. Prioritize the skeletons

It is impossible to convert all of the skeletons to personas. Therefore, in this step, we prioritize the skeletons in terms of their importance to our product. In detail, the prioritization of user categorizes is based on "frequency of use", "size of market", "historical or potential revenue" and "strategic importance". As a result of prioritization, some skeletons are selected and ready to be a persona. This step also helps the develop team to identify the importance of different user categorizes.

5. Convert skeletons to persona foundation documents

Skeleton is abstract record of basic user data. But persona foundation document (see figure 1), as a written form of persona, is a concrete narration of a specific user. In this step, we convert skeletons to persona foundation documents. During this process, imaginary items, such as, a persona's name, persona's photo, are added to the skeletons. Abstract facts in skeletons are replaced by concrete narrations. For example, we use a boy name-"Tanner" to replace the conception-"boy" in the skeleton. And we use an exact age-12 to demonstrate he is a teenager. As a result, in persona foundation documents, the abstract user information is represented in a specific and concrete way.
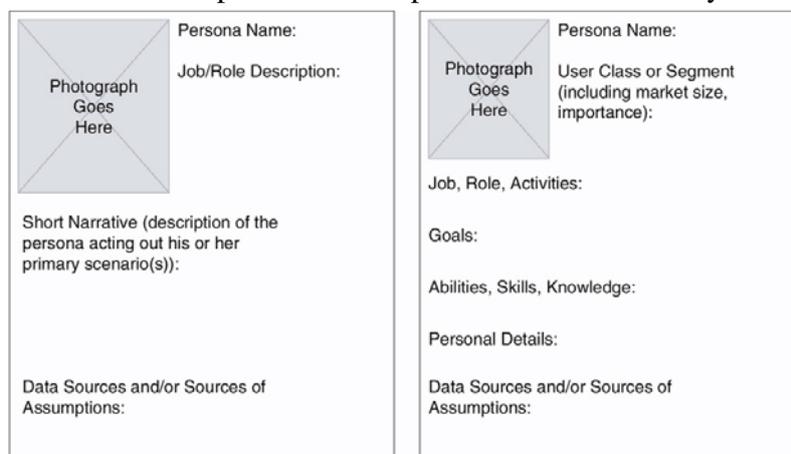

Figure1. Persona foundation documents, quoted from [5]

6. Designate persona types

In [6], Alan Cooper provided an axiom for the persona creation: "Design each interface for a single, primary persona". Therefore, as a finalization of persona creation, we will designate the persona types for each interface and thus decide which persona is the primitive one. According to [6], the persona types include:

User persona (direct product user)
1. "Primary persona" who represent primary targets for the interface.
2. "Secondary persona" who is not as important as persona but might contain some additional requirements.

Customer persona
Who might not be direct end user of the product. For example, in a supermarket POS, customers are shoppers but end users are cashiers. However, in most of system, customer personas are also user personas

Severed Persona
Who is not the end users of the product but could affect the use of the product. For example, the IT department or the Boss will decide whether their companies purchase some office software for their employees.

Negative personas
Who is not the end users of the product and definitely should not be considered in the system design. Negative personas help the develop team to avoid a misunderstanding of the system scope.

Having designated personas types, the creation process has been finished. We can now devote the personas to product development.

Section III: How personas work

The power of personas lye in two aspects, First, personas accumulate a large amount of real user data and thus effectively represents the target user's profiles. Second, persona is natural and easily remembered; thus it is very convenient to be used in a product team. In this section, I will propose 3 scenarios in which personas are applied to a product planning meeting, a user interface evaluation and a brainstorming meeting.

Scenario 1: Planning meeting

When we use a persona to do a product planning meeting, we can ask the personas to "tell their stories". The needs, goals and contexts that we have carefully included in persona creation process will allow us to generate helpful stories which will be used for the product design. [5] These stories will demonstrate the best way the product will be used and the user actions it should elicit. Moreover, the stories help us envision design opportunities. For example, an internet company is going to create a website that provides the games and educational software to the kids. Tanner, a 9-year-old school boy is their persona. The following part is quoted from "persona tanner".

Tanner thinks computers are really really fun and actually prefers the PC to the TV. **[1]** *He uses the PC mostly to play games and surf the Web for "stuff" but occasionally does research for school projects.***[2]** *His favorite computer game of the moment is The Sims 2***[3]***— his uncle gave it to him for his birthday (his mom and dad usually just buy him educational games). He also really likes Moneybags, which he just got for his birthday, and Roller Coaster Tycoon 3. Since his dad likes computer sports games* **[4]** *like NBA Live 2005, Tanner sometimes plays those with him. But it is really his mother that spends the most time online with him***[5]***. Tanner has a GameBoy Color and saves up his allowance to buy new games for it, but his parents say he can only play GameBoy for half an hour each day (they tell him "it will rot his brain" [6]).*
The above paragraph is quoted from Appendix A of [5]

Analysis:
[1] means we really have a large potential market for the internet game and education for the kids.
[2] For kids like Tanner, the educational parts in a website might not be attractive. Therefore, if Tanner is the major user, try not to make him feel bored. Do not set the educational part to be the main element of the website (that will annoy tanner).
[3] What is SIM-2, why does it attracts Tanner? Study it, and simulate it.
[4] His dad might also be a potential user. We can create some games that involve the dad and son. That might be potential market.
[5] The role of mother is more important than dad, if we want it to be accepted by Tanner, it should be accepted by his mother first!
[6] Why do parents not like GameBoys? Find out the reasons and avoid them.

From the above example, we can realize that the stories narrated by personas contain very important user information and should not be ignored. Moreover, the persona stories help us to find the potential markets and new features that can greatly benefit the product.

Scenario 2: User interface evaluation

Persona can also be applied to the user interface evaluation. For this task, we always assign one "core persona" team member who takes part in the persona creation to act as a persona. During this process, the "persona" (who is acted by a selected team member) first goes over and understands all of the details that the persona contains, the "persona" then conducts a simple walkthrough and analyzes the interface design through his/her eyes.

The following example is a cognitive walkthrough. The user of the system (a website) is persona-Tanner. The task is to find the "kids" hyperlink from the main page and then visit the "kid" web page. During this walkthrough, a group of observers will record and analyze the persona's operation and dialogue.

User: Persona Tanner

Task: Tanner log onto the main webpage of G4K website. He wants to find out the contents for Kids. During this task, Tanner is required to think aloud and make comments on what he saw.

Action Sequence: Tanner has to find the Hyperlink named "Kids", press it and go to the "kids" interface.

Interface:
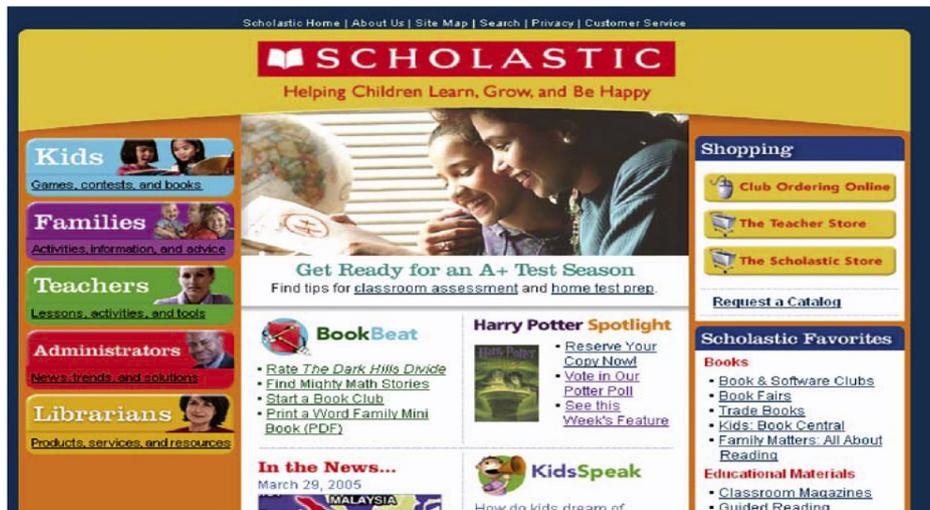
The dialog between the "Tanner" and observers are recorded:

Tanner (James): Well, this is kinda boring. What am I supposed to do here? Get ready for an A+ test season? What test? I hate tests. I'm outta here. But if I have to stay, let's see what else there is. Harry Potter, that's kinda cool. But I already have all those books. There's shopping stuff over here but who has money. Besides, who the heck would spend it here anyway. Maybe my mom, I guess. There's a Kids button over there with some dorky kids on it. I guess I could click that. What are the other ones? Families, Teachers, Administrators, Librarians…whatever. But hmmm…wonder if there is any cool secret teacher and administrator stuff behind those. Nah. I guess I'll try the Kids one.

Observer: What would you expect to see if you click that button?

Tanner: I don't know. I guess something for kids.

Observer then clicked on the Kids button, which projected the page
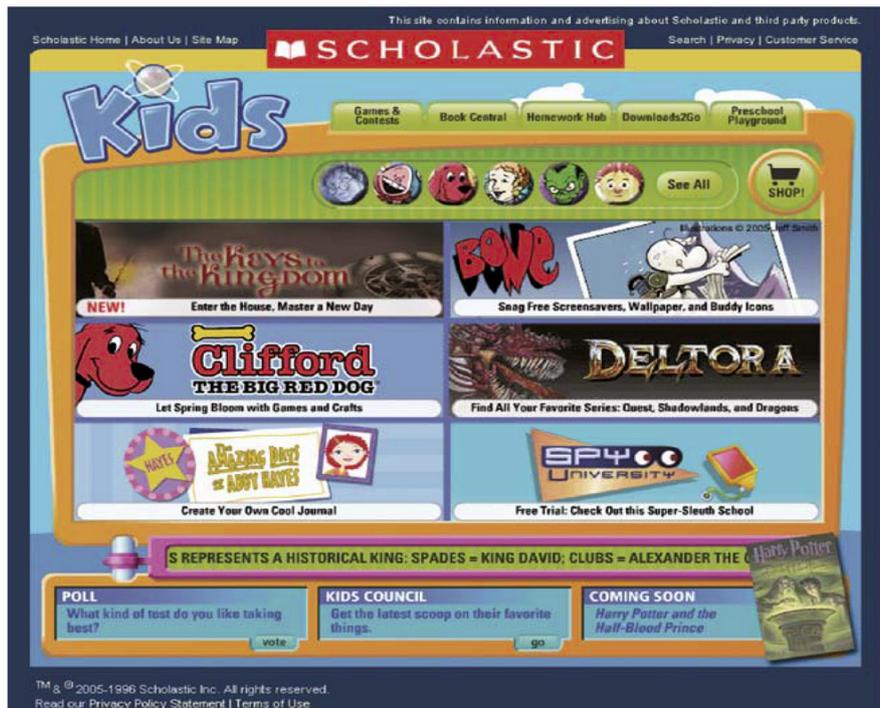
Tanner: Oh, this is better. Looks like it's got some cool stuff on it. I like the looks of that Deltora dinosaur thing. And there's a Harry Potter poster? I don't have one of those! There's definitely stuff I can do here.
The dialogue and pictures above are quoted from [5].

Analysis:
1.   Tanner first noticed the center element of this web interface- an A+ Test
Failure story: This element does not seem to be a good center for the interface. It attracted Tanner's attention. However, Tanner hates tests. He is reluctant to continue staying on the website.
2.   Tanner made comments on the "shopping" part.
Failure story: The "shopping" part really attracted Tanner. However, Tanner is only a 9-year-old boy who does not have any money. For Tanner, this part does not make any sense.
3.   Tanner found the "Kids" hyperlink
Successful Story: The button seems OK. Tanner can understand its meaning well and thus make a right selection.
4.   Tanner made comments on the "Kids" website
Successful story: The style and contents of this interface seems OK. Tanner did not feel bored, and he was attracted by some elements of this interface.

Key problem discovered
1．   The web page contained too many elements for Tanner's parents than for Tanner. Therefore, Tanner might feel bored and leave this page before he can find the "Kids" hyperlink. In the persona documents, we can find the fact that "Tanner does not have

enough patience". Therefore, we cannot wait Tanner to find the interesting things by himself.

2．The shopping part does not make any sense to Tanner.

Way to improve:
The center picture of the first web interface has to be changed., and the shopping part has to be rearranged to save the valuable spaces of this webpage.

Scenario 3: Brainstorming meeting

Personas are an excellent user data collection tool. In a persona, the user data is carefully analyzed and refined. We can use the persona to organize a brainstorming session, on which team members explore possible features of the product. At this time, the persona plays the roles of "knowledge repository" and "judger". Team members could be inspired by the narrations of a persona and thus propose good ideas. Meanwhile, the ideas proposed could be sent back to the persona for validation. Simply speaking, it is an interactive process between personas and product teams.

Section III summarized three basic usages of persona in the user interface design. They are "making the persona tell stories for the user interface plan", "evaluation of the user interface with persona's eyes" and "the persona based brainstorming for the new features of the product". In fact, all of the functions listed above are based on large amounts of accurate user data collected by the persona approach. This is one of the most important reasons that personas work so well on user interface designs.

Section IV: Why personas work

Personas are created, managed and used in a container named persona lifecycle. The persona lifecycle is a mature process that covers a persona's birth, maturity, adulthood and retirement. From the first phase- persona family planning to the final phase- persona retirement, there are many deliverables that are released to help persona creation and usage. For example, on user data analysis, the "skeleton" is introduced to organize and refine raw user data. "Persona foundation document" is another type of artifact that illustrates the basic information of persona, Persona foundation document lists a persona's name, photo, goal, fear and context. In the persona lifecycle, there are also many procedures that guarantee the validation of personas. For example, when collecting the user data, user observation, interview and other qualitative and quantitative methods are conducted. Furthermore, third party reports are also included to demonstrate some important facts of the users. When identifying user subcategories, the "frequency of use", "size of market", "history of revenue" and "strategic importance" are adopted. Therefore, a persona that is defined by this lifecycle is regarded as an accurate representation of target users. .

Another important aspect that makes personas work well is a persona's believability. Many software developers pointed out that persona looked natural and easy to accept in a product team. Jonathan Grudin conducted research about this topic from the

psychological perspective. In her chapter (chapter 12 of [5]), she illustrated that the persona was a natural model of human being and thus, psychologically, easy to understand. Moreover, she proved that the model of fictional people (persona) could be as engaging as model of real people so that the personas are always regarded as a real member of the product team.

Section V: Conclusion

A persona consists of widely collected user data. Therefore, applying personas to real projects will help us better understand the user's requirements. Moreover, the process of creating a persona is nothing more than a thorough investigation of target users. During this process, potential markets and user groups will be found.

Under some circumstances, it is hard to observe the real users using the product. For such times, personas can be quite effective for replacing real users in software design. Furthermore, because persona represents a large user group, it might be more effective than using real users.

Personas are very believable. A persona is more likely to be accepted and remembered than other user-centered design methods because a persona owns many natural attributes of human beings, for example, a name, a photo, a job title and other social behaviors.

A persona is an important tool for team communication. Creating a persona is equivalent to setting up a shared topic for a product team. For example, in a persona involved planning meeting, it is quite common to hear "Are you sure James (a persona) will be satisfied with this new feature? ". "Well, let's ask James and see what he wants!" With the assistance of a persona, team communication becomes natural. It is just as easy to discuss a persona as to discuss one of their friends. Personas become the core of the product team, and user-centered design is better implemented as a result.

Personas have a complete lifecycle and a good reusability. Applying a persona to a project is very easy because in persona's many lifecycle phases are provided to help with creating and using the personas step by step. Once a persona project is finished, the created personas will be stored in a persona repository and ready for future use.

However, we cannot ignore shortcomings of using personas. Investment to persona creation and usage varies a lot. Under some circumstances, it might be very easy and cheap to propose a persona and devote it to the system design. But in some projects, composing a persona might be time, money and human resource consuming. In [7], MSN Explorer team reported that the creation of the personas took them about 2 months (duration of the project is 10 months), 22 people and large amount of money spent on technical writers, usability engineers, products planners and market researchers.

A persona can only survive in a well communicated team. In a poor communicated or non-user centered design environment, it is easy to forget the persona. If a persona is no longer discussed by the team members, the persona has effectively died. Therefore, the

implementation of persona requires good communication, otherwise, using personas is a waste of time and money.

To sum up, the persona approach is a good user interface design method. It provides a vivid and accurate representation of target users. Personas also help to put the users truly at the center of the system design. However, we must realize that persona is not a light weight design method. Before devoting large amounts of money and time to personas, we had better inspect and improve our environment if we are to have any hope of making a persona a reality.

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Annotated bibliography of key resources

John Pruitt, Tamara Adlin. (2006). The Personal Lifecycle, Mogen Kaufman
This book illustrated a complete persona lifecycle, including the persona planning, creation, usage and finally retirement. Large amount of details and real project examples are shown in this book. Therefore, it is a good handbook for those who want to implement persona lifecycle for their projects. However, I do NOT recommend using this book to know about persona because it is very easy to be confused by so many details so that learners cannot depict a clear and overall picture of personas. Novices of user centered design are also NOT recommended to read this book because in this book, many important UCD backgrounds are seldom mentioned. Therefore, for novices, it is quite difficult to understand some narrations in this book, much worse, easy to form misunderstandings to persona lifecycle.

Alan Cooper, Robert Reimann. (2003). Chapte 5 of About Face 2.0: The Essentials of Interaction Design, John Wiley & Sons
Chapter 5 of this book proposed a brief overview of persona usage and construction. In this chapter, the author explained why we need a user modeling, what is persona, what the goal of persona is and how to construct a persona. Meanwhile, many similar user modeling methods are introduced. Compared with above book, this book provided a solid knowledge background for readers to know about the personas. Therefore it is much easier to reach a correct understanding of persona.

John Pruitt, Jonathan Grudin. (2003). Personas: Practice and Theory, http://research.microsoft.com/research/coet/Grudin/Personas/Pruitt-Grudin.pdf
John Pruitt and Jonathan Grudin are experts working for Microsoft. In this paper, they reported the usage of persona in MSN explorer project. Many problems on using persona are listed, such as the lack of communication, the shortage of reliability of personas, software developers' misunderstandings to personas and lack of support from the project leaders. Based on analysis of the problems, the authors proposed some questions that deserved to answer, for example: What is the best approach to do user abstraction? How many parts of persona are allowed to be imaginary? How many parts must be from reality? Via reading this paper, readers might understand the potential problems that will be encountered by their own projects. The reader could also be informed the risks of using personas.