

Usage of Personas in ERP Development: Findings from the Microsoft Case

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Abstract. Development of enterprise resource planning (ERP) systems has a high level of complexity. This complexity comes from the fact that ERP systems – as a software package - should support a wide range of organizations as well as a wide range of users in their daily work tasks. What makes this development even harder is that the developer to a high extent never meet the users and therefore have a hard time to understand for whom they develop the specific system. One approach for solving this is the usage of personas, however, the basic thoughts about personas are that software for a relatively small group of users are developed. This is not the case when it comes to ERP development – so the basic question in this paper is then how the usage of personas in a specific ERP development context differs from the original thoughts about persona usage in a software development context. The paper aims at describing this and from that description some future research questions are presented in the area of usage of personas when developing ERPs.

Introduction

Microsoft Dynamics started to use personas as a way for development of their future enterprise resource planning (ERP) products some years ago. The claim Microsoft Dynamics representatives make is that their approach differs from the conventional way of using personas in software development. This paper describes the “Microsoft Persona strategy” seen from an outsider perspective and aims at answering the questions: Does Microsoft’s usage of personas in their ERP development differ from the original personas usage, and if so, in what way does Microsoft’s usage of personas differ from the conventional way? From the answer on those questions a couple of future research questions are presented and to some extent discussed. In that way the

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aim of this paper is to build a foundation for doing more research in the area of usage of personas in the context of a standard software package development such as ERP systems. Questions that are presented and would be interesting to further investigate are, for instance, is the usage of personas successful, what problems are there in the usage and so on. However, the first question about the actual usage of personas when developing ERPs needs to be clarified, which is the purpose of this paper. It can also be stated that by delivering a description of persona usage in an ERP system development context the knowledge base of persona usage is increased in also the context of general software development.

The rest of the paper is organized in the following way: The next section defines and discusses the concept of personas – it does so from a literature study on general persona usage in software development. Section 3, presents the Microsoft Dynamics case and how they aim at using personas and actually use personas in development of their future ERP systems. In section 4 the results from a comparison between the general description of persona usage and the specific usage in the Microsoft case are presented. The final section then presents some concluding remarks on the question if Microsoft's specific usage of personas differs from the conventional way, as described in the literature, of persona usage. From these presented concluding remarks some thoughts about future research are presented.

The concept of Personas

Ever since Alan Cooper (1999) in his book “The Inmates Are Running the Asylum” presented the thoughts about personas there has been an increase of interest in personas. What Cooper described was how focus on specific personas would help developer of software applications in their design of the “user” interface. What he did was to introduce personas as a detailed abstraction of a fictitious (or real) user of a software product. Personas are often described as a tool and as such a relatively new concept describing a fictitious user (Nielsen, 2004). The first appearance of personas was Cooper's (1999) description on how they used personas at Cooper.com as “*not real people, but they represent them throughout the design process. They are hypothetical archetypes of actual users*” (Cooper, 1999). Cooper has his focus on goal-directed design (not task-directed design) seeking to satisfy specific user archetype's end-goals instead of tasks needed to be performed to reach that goal. The goals Cooper talks about can be of personal, practical, or even corporate reasons as long as they are described as end-state and not prerequisites to get to the end-state. (Cooper 1999).

Later on Pruitt and Grudin (2003) as well as Nielsen (2004) described personas as a detailed description of the user that is in focus of development of a specific system. They both describe persona as one part of a participatory design of an information system aiming at ensuring that a user-centered approach to design, development and testing of information systems takes place. To some extent this focus on one of the basic assumptions in personas namely that users of software products are

multifaceted, which means that the term “user” can hold many different kinds of users, each with very different kinds of backgrounds and needs. By referring to “the user” instead of a specific person, you end up referring to anybody who can potentially use the designed product. This is described as a common problem in software development by Cooper (1999), who argues that this ends with pleasing nobody when trying to please all. “*Trying to please too many different points of view can kill an otherwise good product. However, when you narrow the design target to a single persona, nothing stands between that persona and complete happiness.*” (Cooper, 1999). According to Cooper personas can solve the problem of the unspecified user by limiting developers’ choices in design, and thereby can personas help developers make better and more aligned decisions related to development of the system.

Another basic assumption about personas is that personas are great means of communication, since personas present complex requirements in a way that is easily understood. Pruitt and Adlin (2006) state that when trying to understand users, data is collected about them through different methods, such as for instance interviews, usability studies, field studies, phone and web surveys, focus groups, site visits, user testing, or another method of choice. What often happens is then that all this data is analyzed and put into often big and long reports, and it definitely can be said that these reports are not always great tools to create a common understanding about the users of a product as they are often cumbersome, tedious, and difficult to apply in the day-to-day development process (Pruitt & Adlin, 2006). What they claim is that personas are great means of communicating this specific kind of data in a way so that it is easy for multiple functional work roles to understand – in this context work roles should be seen as different stakeholders in an information systems development project. Pruitt and Adlin also claim that personas are free from the jargon that can exist among a specific group of stakeholders in the development chain. In that way it can be related to the concept of *ubiquitous language*, which is described by for instance Evans (2004) to be extremely important for communication, feedback and close collaboration between users and developers.

Instead of focus on a close direct collaboration between users and developers, personas communicate information about users and their work settings, derived from the data that would otherwise go into big and long reports, by utilizing “*the power of narrative and storytelling to enhance attention, memory, and organization of detailed user data*” (Grudin & Pruitt, 2002). Everybody who can read and understand a narrative text can understand the information about a specific archetypical user represented in a persona. In this way, data from the big and long reports are made useful for people without being an expert in the specific area that the system are developed for and/or without being an expert in designing user interfaces.

The strength of personas as a powerful design and communication tool is the specificity of the personas and how that persona “comes to life for the design team”. The risk of usage of persona as screen labels is that the specificity goes to long and the system does not support the work tasks in the way so that the “real” persona sitting in front of the computer gets what he/she wants to have.

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A related concept to personas is roles and it can be said that roles and role-based ERPs have great attention at the moment. However, this attention is nothing new; for instance, SAP has had the focus on roles for several years. During the latest years Microsoft Dynamics increased their focus on roles. However, their focus differs from the SAP focus in such a way that the focus is on personas. The main difference is that personas could be described as humans that could have one or several roles. Focussing on roles could be said have a great deal of benefits but also some drawbacks. Benefits are often described from the customer perspective, while the drawbacks often are described from a vendor perspective. The attention Microsoft Dynamics have on personas is said delivering considerable potential for the development. But, the question is then what it is in personas that make personas differ from the role or the roles concept. Microsoft (Microsoft Dynamics, 2006) and SAP (SAP, 2007) have recently focused on "Role-based ERPs". When SAP describes mySAP and SAP NetWeaver they focus a lot on describing roles and how their ERP aim at being a role-based ERP. The same can be said about Microsoft Dynamics (Microsoft Dynamics, 2007) that describe it as "Role Tailored Business Productivity", gained by software designed for your people. However, while Microsoft has a clear persona approach, it can be claimed that SAP has not, and therefore is it interesting to discuss the relation between personas and roles in more detail. Carlsson and Hedman (2004) describe roles as something that determines what information, application, and service a user can access or need to have access to when carrying out its tasks and activities. According to Carlsson and Hedman SAP define roles as: *"a collection of activities that an employee carries out in one or more business scenarios of an organisation. Users access the transactions, reports and web-based applications in a role via a series of menus. Roles are specific to individual employees and match their specific tasks and service/information needs"* (Carlsson & Hedman, 2004).

Microsoft Dynamics defines roles in the following way: "A role is a specific grouping of tasks that a persona is responsible for or participates in" (Microsoft Dynamics 2006 p 8). Personas in this context should then be understood as a representation of a typical view of the people that can occur within an organization defined by the collection of roles they have. This indicates that a persona can have or has different roles.

Holst (2009) argue that depending on the application and the focus of the description of the personas, the technique can arguably be used as a form of container for the description of a role. It can be suggested that the main benefit with a role focus is that the vendor thereby attracts a wider customer base. However, the main drawback could be that the developed ERP becomes more complex and that the roles the ERP is supposed to support not are the roles the ERP users have. This means strictly that the ERP system adopted by the customer does not support the business processes that they have. Another drawback can be related to the basic assumption that Cooper (1999) states is inherent in personas as an interaction design, namely dealing with the problems of involving users by simply excluding them. One of the basic thoughts is, according to Blomquist and Arvola (2002) that users should be included only during the pre-design phase. From that statement it can be suggested that the persona concept maybe fits well into development of commercial off the shelf software package (COTS).

In a software development project, such as an ERP system development, there are many ideas about what features/functionality that can be implemented, but often only a fragment turns out to be actually implemented in the final product. What often happens is that features that were initially planned for turns out to be not what were actually needed when the final product is implemented in the user organization. Initial available information and knowledge about the problem domain (Mathiassen, 2000) that functions as a fundament for deciding what features that should be developed is at first small but increases as the project gets closer to its end (Kristensen & Kreiner, 1991). It can be suggested that using personas to aid initial decisions will narrow down the choices to what fits the target personas, thus aligning decisions along the path of the target users, instead of aiming for just “the user” as something unspecific. By using personas instead of the multifaceted “user” assumptions about target users are put out in the open or in other words “the user” become explicit. Instead of arguing for design decisions from the base on what “the user” wants, personas allows you to argue for design decisions by being specific. A developer working on developing a specific product have their own personal, cultural, or corporate bias about “the user” – often without knowing it themselves or their colleagues knowing it. This means that developers have their own set of assumptions about “the user”, although these are not explicit. Personas help surface these assumptions by agreeing on a single set of them (Pruitt & Adlin, 2006). Personas can aid the assumptions and perception of users among developers, and each developer's individual images of the users are tried and replaced by a shared perception of the users that does not built on preconceived ideas but on field data (Nielsen, 2004).

Cooper (1999) states that it is important that assumptions about users described into personas are a result of an investigation process and that these assumptions, according to Pruitt and Adlin (2006) as well as Pruitt and Grudin (2003), have a foundation in real field data. One reason for why this is of importance is that when reading a narrative persona description, we use our imaginary abilities as human beings to engage into the description of that persona, which could result in some kind of empathy with users. Such diving into the minds of the personas can help the developer to understand and be aware of socio-political aspects and life qualities of the specific user (Grudin & Pruitt, 2002; Nielsen, 2004) and this is according to Nielsen (2004) a way to understand the needs of the user which is represented by the persona.

By engaging into the persona as if it was a real person, we can start to think of the persona just as we do with any other real-life person. Pruitt and Grudin (2003) state that this is a fundamental and underlying principle in personas and one reason why personas actually works when describing needs on a system. Personas “come alive” relatively effortless through our cognitive abilities so that we can anticipate their responses in new situations (Pruitt & Adlin, 2006). It could then be asked: why not use real person instead? One answer on that is probably a question of access, in the COTS case that is definitely the case. However, another reason is as described by Pruitt and Adlin (2006) that real people have quirks and peculiar twists as opposed to personas who have characteristics derived from large sets of data. This means that personas align design efforts by agreeing on a set of assumptions about the users.

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Design choices are thus constrained to follow the direction of the user assumptions and are not sidetracked by individual preferences and experiences of real people. One benefit of this is that the constraints put into personas are the ones developers believe relate to and should affect the software they develop (Pruitt & Adlin, 2006).

If this benefit should be able to gain Nielsen (2004) points out that when using personas as a method for systems design, the developer must understand the system from the user's point of view. In other words, developers must enter the life of the user by understanding the user's needs and how the needs create demands of the system. To do so the developer must also understand the user's motivation for action (Nielsen, 2004). Understanding the user's motivation for action can be achieved by engaging into the persona, which means that a developer should put oneself in the shoes of the persona. This is closely related to scenario descriptions and according to Nielsen (2004) it is possible for a developer to engage into the persona and use it as an agent in a scenario. To do so there is a need for three things in the description of the user: (1) information that enables persona construction, (2) information about the emotional status of the persona, and (3) information about what context the persona operates in that enables an understanding of the character.

What is not described by the literature on personas and in case studies on personas is for the first: 1) how to start using personas in product development that already started years before and is going to run years ahead, and second how usage of personas take place in a pre-packed software context such as ERP development. Therefore it is both of interest as well as necessary, to be able to answer the question asked in the paper, to describe the case at Microsoft Dynamics and how they use personas in the development of their ERP products, this is done the next section.

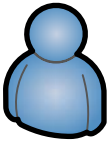
The Microsoft Case

A company that has largely picked up persona as a tool for development is Microsoft. In this section the Microsoft case of persona usage when developing future ERPs are shortly described. At Microsoft using personas is a thorough part of the Engineering Excellence Guide (EEG), which is described as being "best practices" when developing software. Using personas is a big part of the official way to develop software at Microsoft. The basic assumption which made Microsoft start thinking about using personas when developing ERPs was that they saw personas as a way of better understanding the customer for whom they developed the specific system.

The Microsoft persona approach was first described in 2000 as User Archetypes by Mikkelsen and Lee (2000), both working at Microsoft. Later, in 2002, Grudin and Pruitt described their approach with personas, which could be said is the base for the "Microsoft persona strategy". On the contrary to Cooper (1999), Grudin and Pruitt strongly argue that personas should have strong foundation in actual field data. This could definitely be said is the case in the approach of using personas at Microsoft

Dynamics. Another important point that Grudin and Pruitt argue for is that personas is not the silver bullet solving all problems, instead, they claim that it needs to be complemented with other usability methods (Grudin & Pruitt, 2002; Pruitt & Grudin, 2003). As the methods of Grudin and Pruitt (2002) correspond with what is explained in the EEG, Grudin and Pruitt is assumed to reflect the attitudes and argumentation for persona usage at Microsoft.

What sticks out for the Pruitt and Grudin (2003) way of using personas is their view that personas should be based strongly on field data. To be able to gather and store field data Microsoft has created what they call “the Customer Model”. This could be described as a repository for field data gathered about a particular persona. Microsoft’s customer model can be perceived as a *general unified* model, *general* in the sense that it is an aggregated abstraction based on “typical” enterprises rather than on one specific company, and *unified* in the sense that the same model is used for both SMEs and large enterprises and covers several different industries at once. The customer model consists of three types of entities: People, Departments and Work. The relations between the three types are depicted in two parts. The first part, called “People and Departments”, aims at describing the general organizational structure of departments such as logistics, production, HR, etc by means of organization charts. It also describes the typical roles of the people in the departments by means of personas (Grudin & Pruitt, 2002). The second part of the customer model is named “Departments and Work” and consists of the departments, mentioned above and the typical business processes in these departments. The business processes are divided into activities and the activities are again divided into tasks which are carried out by the various roles (personas) in the departments. Table 1 shows an overview of the information used to describe a persona in the customer model.

Information	Comments
Name	<ul style="list-style-type: none"> A fictive name of the Persona
“Slogan” or “One-liner”	<ul style="list-style-type: none"> Expressing a central view or statement
 Picture of persona	
Title	<ul style="list-style-type: none"> Job title
Department	
<i>Demographics</i>	
Demographics	<ul style="list-style-type: none"> Age Educational background
Market size and influence	<ul style="list-style-type: none"> Influence on the decision making process of buying an ERP system Key viewpoints on the acquisition of an ERP system
<i>Work</i>	
Environment	<ul style="list-style-type: none"> The Persona’s physical working conditions

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Goals	<ul style="list-style-type: none"> • Key goals the Persona is trying to reach during work
Roles	<ul style="list-style-type: none"> • The various roles the Persona is fulfilling
Core activities	<ul style="list-style-type: none"> • Core activities the Personas is carrying out
Communication, Collaboration and Interactions	<ul style="list-style-type: none"> • Interaction with other Personas or roles outside the organization
Persona variables	<ul style="list-style-type: none"> • Variations of the Persona depending on size of the organization or industry
Pain points	<ul style="list-style-type: none"> • Key issues that prevents the Persona from reaching its goals or complicating its activities
<i>Psychographics</i>	
Computer Skills, Knowledge, and Abilities	
Values, Fears, and Goals	<ul style="list-style-type: none"> • General or abstract emotions and feelings of the Persona related to work
Technological Attitudes	
Observations	
Interactions	
International considerations	
Relationships	
Communication style	
Business Intelligence questions	
Get to know the Persona	<ul style="list-style-type: none"> • A short description/narrative of the Persona in first person perspective
A day in the life	<ul style="list-style-type: none"> • An overview of a typical day of the Persona
Primary roles	<ul style="list-style-type: none"> • A list of the primary roles the Persona fulfils
Secondary roles	<ul style="list-style-type: none"> • A list of secondary roles the Persona fulfils

Table 1- Persona information (Microsoft Dynamics, 2006)

The persona based ERP system

The customer model has been used by Microsoft to create what they call “role-tailored” user interface (UI) in their ERP system, NAV 2009. Each user profile is associated with a so called “Role Center” that holds frequently used activities and tasks for that particular role. There are 21 predefined Role Centers, each based on a persona in the customer model and they can be configured and customized by users to match individual needs. Figure 1 shows a conceptual illustration of the role based approach in NAV 2009.

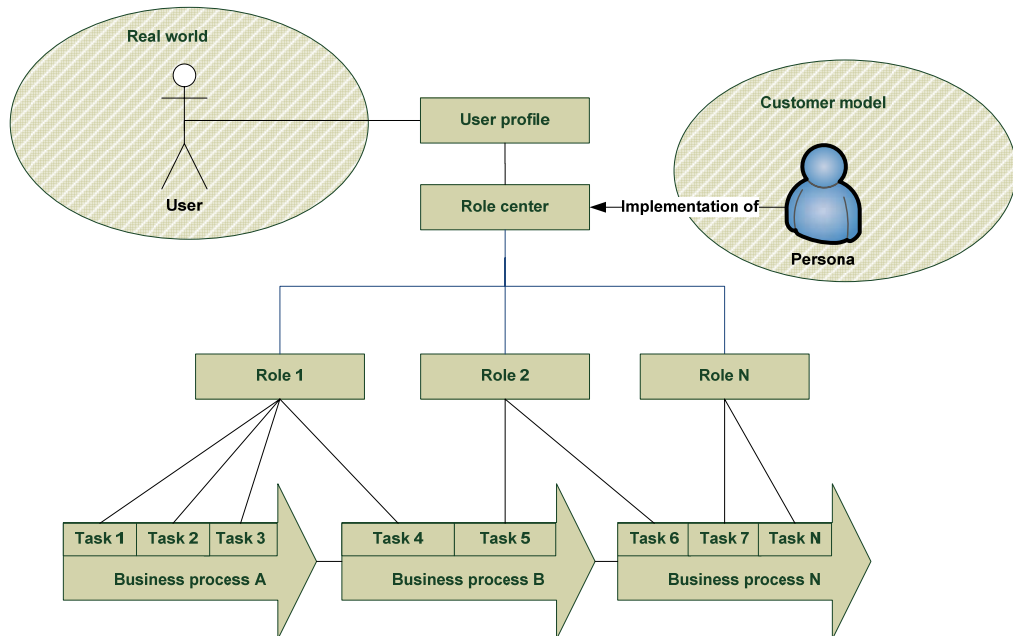


Figure 1 The role based approach in NAV 2009 (Holst, 2009)

Personas are presented to developers at Microsoft in several ways. The most comprehensive presentation is the persona website, which also holds the customer model. The customer model is a collection of personas that together form the staff of a model-company that is to be designed for at the development center. The number of personas has increased to a high extent during the latest years, at the moment (2009-07-15) there are 67 personas described in the customer model. The customer model also holds a collection of fixed processes that make the tasks performed in the model company. This collection of processes is called the work model. Each persona in the customer model has direct connections to one or more processes in the work model. Two other main persona artifacts are the work model poster and the persona poster. The persona poster has a picture of each of the customer model's personas as well as that persona's name and job title. Each persona also has a very short description of what that persona does in the model company. The persona poster is seen in corridors, cafés, and offices across Microsoft's development sites. Furthermore, the posters are distributed during partner and customer conferences and publicly available through the website [microsoft.com](http://www.microsoft.com/customermodel)¹.

¹ <http://www.microsoft.com/customermodel>

The work model poster shows the processes of the work model. These represent the observed business processes at site visits. At the moment, personas are not mapped to the business processes of the work model, although this is an ambition for the future.

Comparison of original Persona thoughts and usage in the case

A major difference between Microsoft's persona strategy and the conventional persona usage is that a "Microsoft" persona is not specific to one project of a few months duration, but many individual projects concerning the same products. The same personas are therefore used over several years for varying contexts. This fact also supports the statement that persona in the Microsoft case could be said supports that there are two sides of personas. It can be said that when referring to Cooper there are only one side of personas. However, when interpreting the usage of personas at for instance Microsoft Dynamics it seems to be at least two different sides of personas. It can be said that personas can have at least two different roles in software development. First, it can be used as a design technique. Second, it can be used as something the development aim at. This latter usage, which actually not is direct usage, could be described as that development of for instance ERPs aims at developing a system with a specific user interface for a specific persona. This can also be related to role-based ERPs and the focus that for instance SAP have had when they develop its ERP for specific roles. However, the main question in this paper is if it is possible or even desirable to combine these two sides of personas. It can be concluded that it is possible to combine the usage of personas as a design technique with the usage of personas as a goal for development of role specific user interfaces of ERPs, however, more research is needed to be able to identify problems with this and how to deal with potential problems.

A common approach when using personas is to combine personas with the usage of scenarios. But, the combination is more or less natural since in scenarios actors are identified and actors could be seen as personas. Scenarios are also used to describe what the specific persona does. This means that scenarios are used as both input to development of personas but also as a result from the description of what the personas work tasks. In the Microsoft case scenarios are not a separate part of the development, instead, scenarios could be said is a major part of the description of each personas as described in Table 1.

Another way that the Microsoft persona case differs from the original thoughts about personas is the number of personas. There are statements about personas that the number of personas in a specific system should not exceed four personas. Nielsen (2004) states that not more than four primary personas in a specific system should be considered, and she states that if more there will be considerable problems with complexity. One way to deal with this is according to Nielsen (2004) to have cast of

characters, which is a collection of personas that to some extent have the same goals. It could be said that Microsoft's personas to some extent are cast of characters, however, the number of personas are much higher and the "individual" personas are also to a high extent different from each other. Personas can help create a consistent and shared understanding of the target users. When a consistent and shared understanding of the target users is in place, these users can be discussed as well as how the users interact with future features. In this way, personas serve as a common ground for discussion. As everybody can engage into a persona and understand his or her motive for action, it is easier to create a consistent and shared understanding of why certain design decisions has been made. Personas can help explain the rationale behind design decisions.

Microsoft Dynamics approach to personas is clearly task oriented which makes that the usage differs from Cooper's goal oriented persona approach. This means that Microsoft persona approach has much to offer in requirements debates. A specific requirement suits some personas more than others. By selecting which personas are the most relevant to design for, the most important requirements are implicitly also selected. A requirement might benefit one actual user, but not specifically the personas selected to aid the design (Cooper 1999), which represent the archetypical users and not just one user. Pruitt and Grudin has taken this even further by prioritizing requirements by personas, giving each requirement a weighted score depending on how important it is for each persona (Pruitt & Grudin, 2003).

Concluding remarks and future research directions

There are indications that the original thoughts, presented by Cooper (1995), about personas have been drifting away, and it can be claimed that the usage of personas shows a certain level of "persona mania". In the Microsoft case this is shown in the fact that personas not only are used as an interaction design technique, but also that the usage of personas more and more are used for describing "screens" in the final product. It can be suggested that this two different directions are closely related to each other, but it can also be suggested that there are difficulties in the relation between these. In the paper these two sides of usage of personas are described and scrutinized. It can be stated that there are two sides of personas and that there exist difficulties in how to combine these in a development context of developing enterprise resource planning (ERPs) systems. One reason for why there are difficulties with personas in the context of development of ERPs is that ERPs are systems that definitely are used by several personas, and that ERPs are software package that should support all business processes in an organisation, but also different organisations within different industries and countries. This means that there are problems when using the concept of personas since ERPs are systems that should support a great diversity of personas. This also reflects the main difference between Microsoft's persona approach and the original Cooper thoughts about personas. According to Cooper (1999) a persona should be specific. But, the problem in all standardized software applications development such as for instance ERP

development is how to describe this specific persona or personas that are so general that it could be used as a design tool in the creation of a software package which fit the huge variations of customer organizations.

The Microsoft persona approach seems to provide a new way of increasing benefits of persona usage in software development, however, there are a couple of question which definitely would be of interest to do more in-depth research about. For the first, it can be argued that the use of personas is merely an abstraction of a user and not a role, and it would be of interest to follow further development and implementation of the persona based ERP system to see how the personas that acted as the basic input in the development fulfills what the organizations which implement the ERP system want to have. Another related question is if the Microsoft persona approach is a way of excluding end-users in the development or if it is a way of increasing the engagement of end-users in the ERP development. This also relates to a research question that are extremely interesting for ERP developers and that is how to gather and store future ERP requirements, in that direction it would be interesting to investigate in what way personas could be used as a way of not only understanding the end-user but also if personas could be used as a communication and storage tool for future ERP business requirements.

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