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MANAGING USER EXPERIENCE DESIGN: THE ROLE OF A "STORYKEEPER"

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Keywords: user experience, user experience management, design thinking

1. Introduction: challenges of user experience design

A great example to illustrate good user experience design is the driving mode button in cars. Many manufacturers provide such an interface element to enable users to select for driving particularly sporty or energy-efficiently. Each setup influences numerous car functions and settings, which shape the driving experience. However, this complicated system is not visible to the driver. Visible is just a short description that provides the driver with all the information she/he needs. In this example, the design of a complex system delivered a simple, intuitive interface and the possibility for enjoyable experiences [Michailidou et al. 2014]. Without doubt, various stakeholders have cooperated throughout the design process to achieve this result. The driving mode interface addresses a relevant drivers' motive, which had to be identified in the beginning of design. Knowledge about users and their needs is substantial for that. There must have been several technical and qualitative requirements to specify, especially in this case of designing a new system. Examples for the multiple aspects to consider when envisioning the future system could be: Which driving situations are relevant? Which systems are affected? What is possible with available technologies? Knowledge of various experts is required therefore. Having defined a goal for the new development, first concepts can be sketched -then evolve to mock-ups and integrated prototypes. Each time a new stakeholder gets involved the intended experience needs to be presented in a comprehensible manner and in a convincing way when decisions are met. In the example of the driving mode interface, a user experience story conceptualized in the beginning of the design process (a driver can decide whether to drive sporty or energy-efficiently) was implemented in a new feature, which mediated this experience for real drivers.
This example gives a glimpse of the challenges of user experience design. User experience projects involve various stakeholders from multi-disciplinary experts to end-users. User experience is qualitative and subjective in its nature, thus difficult to capture and sometimes impossible to measure. Furthermore, experiences have to be treated holistically: An experience is a story of interaction and this story must be kept throughout the development process. Our work presented in this paper analyses the necessity of managing user experience design and its challenges. Our proposal for future practice is by establishing the role of a "storykeeper" (i.e. user experience manager).

2. Research method and objectives

The issue of defining roles and responsibilities in user experience design has emerged in previous works of the authors. Specifically, in the frame of the CAR@TUM user experience project, we first identified that ill-defined responsibilities can be a major challenge in the already complex project landscape of multi-disciplinary user experience design projects. Practitioners from the major automobile

manufacturer who collaborated in the project initiated the idea of investigating the essential roles in the practice of user experience design. The results of this effort, among other results of this project, are documented in an online guideline [Bengler et al. 2014].
Subsequent studies of the authors confirmed the relevance of this issue. A literature study (summarized in 3.1 - 3.3) concluded that particularities of user experience design highlight a need for further investigating its management. A small-scale empirical study with participants 22 practitioners of user experience design (described in 3.4) indicated the same need.
Based on all that, we formulated the research questions addressed in this work:

- What is the status quo in user experience management? Who is responsible for user experience projects?
- What are tasks of a storykeeper? What kind of skills are required?
- Who should be the storykeeper? Should it be a company-internal actor? Should the role concern an individual or a group? Could the role of a storykeeper be coupled with another role?
- Where should its strategical positioning in the company / in the organigram of the company be?

Our first proposal on how to deal with these issues is presented in section 4. Although our proposal is not yet validated, we consider its contribution important, because it highlights the significance of the topic and reveals interesting aspects for future research.

3. Status quo in (user experience) design management

The following section describes literature-based aspects of project management (3.1) and requirements engineering (3.2) that enlighten the particularities of managing user experience design (3.3). We conclude that, because quality requirements with strong interrelations are in focus of user experience design, its management needs special skills and an appropriate mind-set to pervade decisions. Figure 1 sketches important aspects of the literature study.

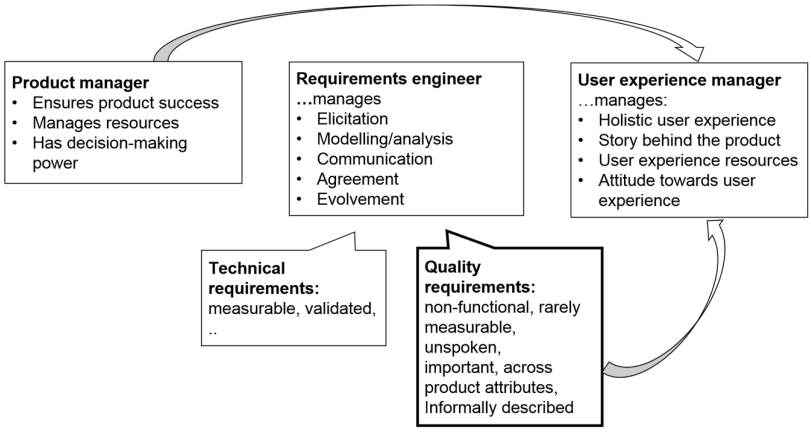

Figure 1. Aspects of product management (left) and requirements engineering (middle) that shape user experience management (right)

Section 3.4 describes the opinions of 22 user experience practitioners on management of user experience and initial insights from discussions with practitioners. This small-scale survey confirmed the relevance of further research in the topic.

3.1 Project management

According to Pahl et al. [2013, p.26], products are only successful in market if they meet the following three conditions: (1) comply essential customer benefits/requirements, (2) be timely in the sense of "Time to Market" on the market, and (3) have affordable prices. It is the responsibility of management to guard the success of a product by ensuring that required resources are available and by making decisions that contribute to the aforementioned conditions for success.
Depending on the structure of companies, management can act at different levels, which typically involve project management, senior management and top management. A multi-project landscape,

which requires the integration of senior management, calls for methods to improve the management process and developing products in an efficient and goal-oriented way [Cooper 2002]. The Stage Gate Process proposed by Cooper [1990] is a way to ensure an efficient and error-free way from idea to market and promises improved product quality, market launch and success rates [Cooper 1990]. According to the Stage Gate Process, an innovation process can be modelled as a sequence of four to six stages from idea to launch, which contain activities of a project team and information exchange. Stages are separated by gates. Gates are an art of control points, at which senior management meets a decision about the evolvement of a project according to the extent to which the deliverables presented by the project team and the project management meet certain pre-defined, project-specific criteria. Senior management plays the role of a gatekeeper.
In the stage-gate process, project teams come together from various departments and work in collaboration during the full duration of a project. Senior management consists of multi-disciplinary representatives of marketing, sales, production and finance. Their role is to control projects and decide for their evolvement, give suggestions to project teams and involve top management. They have a decision right about projects and resources.
All those aspects are relevant in user experience management and contribute to the description of a profile and activities of a user experience manager (left part of Figure 1).

3.2 Requirements engineering

Concerning the first condition for product success, i.e. complying customer requirements, the role of requirements engineering is decisive. Berkovich et al. [2012] state that the key to successful solutions is the satisfaction of wishes and expectations of customers and stakeholders described in different requirements. In recent years, requirements engineering has been established as a distinct field of investigation and practice. Nuseibeh and Eastbrool [2000] define requirements engineering as “the branch concerned with the real-world goals for, functions for and constraints on systems. It is also concerned with the relationships of these factors to precise specifications of product[1] behaviour and to their evolution over time and across product families”. Leffingwell and Widrig [1999] describe requirements engineering as a process that establishes and maintains agreement between customers and project team. Haskins et al. [2011] see the purpose of requirements analysis in the transform of a stakeholder-driven view of desired services into a technical view of a required product that could deliver those services. Clarkson and Eckert [2005, p.117] acknowledge that the success of requirements engineering often depends on the ability to proceed from informal, fuzzy individual statements of requirements to a formal specification that is understood and agreed by all stakeholders.
Kickermann [1995] describes a requirement as a specification, the fulfilment of which controls the targeted course of a design process and / or characteristics of a product. Pahl et al. [2013, p.135] classify requirements in functional requirements and non-technical (quality) requirements, while Pohl and Rupp [2009] adds the category of general conditions. Quality requirements define non-functional characteristics of products and are highly relevant in the context of user experience design. Quality requirements are often implicit. Pohl and Rupp [2009] suggests that quality requirements can and should be verified when first concepts have been developed based upon functional requirements. Because it is possible that a company's resources do not allow implementing all requirements in the same quality, prioritization is critical to resolve conflicts as well as to take account of requirements depending on their relative importance for customers. In this case, it is crucial to meet the demands of customers. Pahl et al. [2013, p.328] state that “the customer is undoubtedly the most important source of requirements, because the customer gives a product its raison d'être”. Meeting customer (implicit) wishes may give a posiibility to achieve differentiation from competitors and raise exponential user satisfaction. The effort to create a good list of requirements is comparable to the effort invested in conceptualization and implementation, because of its great impact on the product ([Roth 2000] in [Pahl et al. 2013]). In

[1] We have replaced the word “software” of the definition of Nuseibeh and Eastbrool (2000) with the word “product” to generalize the definition. This generalization is compatible with the content of their paper.

practice, however, the importance of the list of requirements is often underestimated ([Schroda 2000] in [Pahl et al. 2013]). Ehrlenspiel [1995] in [Pahl and Beitz 2013] claims that the higher development costs of a thorough investigation of requirements are still significantly lower than costs of a possible iteration. Schienmann [2002] describes the required process in the steps of deriving, analysing, compromising, documenting and assuring of requirements. DIN EN ISO 9001 prescribes how an organization can satisfy customer requirements by effectively applying quality management. Good requirements are complete, consistent, achievable, verifiable and traceable [Haskins et al. 2011]. It must be possible that the various departments are given the opportunity in the company to review the requirements and possibly make further changes.

3.3 User experience design management

In this section, we describe the particularities of managing user experience, which highlight its importance, but also the need for special qualities/skills in management. Moreover, a different mind-set is required to cope with the challenges of user experience.

Soft aspects in focus

In user experience design, quality requirements are in focus. Michailidou et al. [2013] argue that traditional ways of capturing requirements are inadequate for integrating and communicating "be-goals", temporal and contextual aspects, as well as interrelations among components. Product specifications usually describe what should be designed and how, and not the "why" behind the design or "be-goals" [Hassenzahl 2010]. The dynamic nature of experiences and temporal aspects of product usage are very important for user experience [Roto et al. 2010], yet neglected in a requirements list. For complex products used in dynamic environments, relations among system components and their effect on the holistic experience are difficult to visualize in a requirements list. For all those reasons, Michailidou et al. [2013] conclude that product specifications should not only include a requirements list, but be extended by a user experience story, i.e. a narration describing the intended user experience. Such an informal description of requirements (in natural language) has the advantage of being universal and flexible, but the disadvantage of being ambiguous [Pohl and Rupp 2009]. Requirements managers in user experience context need to be able to cope with this ambiguity and be open for alternative ways to capture experience-related aspects. Furthermore, highlight their importance despite their informal descriptions.

Multi-disciplinary and user-centred practice

User experience-related work consistently suggest working multi-disciplinarily [e.g. Roto et al. 2010] and hand-in-hand with prospective users. The ISO standard for human-centred design [ISO 1999] states that, apart from clients and users, the following product development roles should be involved in a human-centred design project: Application domain specialist, business analyst; systems analyst, systems engineer, programmer; Marketer, salesperson; user interface designer, visual designer; Human factors and ergonomics expert, HCI specialist; Technical author, trainer and support personnel. Users have a leading and active role in user experience design. Not only are they the center of design (user-centered design approach); experience design also embraces participatory techniques.

Influencing drivers for user-centred design

A complex organization tends to have more steps and stakeholders in the product development process, which may lead to product concepts being compromised. Gulliksen et al. [2006] argue for the importance of a manager, who prioritizes usability by setting priorities that ensure usability and by supporting usability when it conflicts with other concerns. Analogous influences are present in user experience design. The work of van Kuijk [2010] is in same line, concluding that "creating usable products requires an organizational approach". Implementing a user-centred product development process is likely to require organizational changes, significant investment in resources, and support from upper management. A conscious decision on aligning the organization with user needs and establish a user-centred company culture should be made. Kuijk [2010] concludes that one of the most influential

factors to determine whether a company can successfully deal with usability is upper management. The mechanisms to influence the success of user experience design through management are the same:

- Management can influence the allocation of means to mediate experience design. Means include sufficient resources (budget, staff and time), a process that facilitates user-centred methods, as well as expertise in the project team (selection of experts, work in diverse teams, trainings).
- Management can influence decision-making and prioritization of user experience during the process and within the organization.
- A manager can influence the company culture and attitude of team members in a more positive towards user experience manner, through his/her own attitude, through communicating UX-related priorities and by rewarding positive UX results.

3.4 Initial empirical study

In order to gain a first impression about the convergence of literature findings with real practice, we conducted a survey with practitioners of user experience. The survey included questions on understanding, implementation and assessment of user experience 2. Participants of the survey were 22 practitioners with at least one-year experience in UX. The size of the sample does not allow any generalizations. However, due to the variety in participants´ backgrounds (German and Dutch companies of various sizes and domains), we could draw some initial findings in cases of broad agreement or disagreement regardless of background. Three questions of the survey are relevant for this paper: the first concerning actors of user experience (Figure 2), the second on responsibilities in user experience (Figure 3) and finally the question on challenges of user experience (Figure 4).
The results confirmed that various actors are involved in user experience practice: developer/engineer, designer, project controller, evaluation expert, manager, market - and communication expert. End-users are also considered active actors participating in experience design. This result is in line with literature and stresses the particularity of the nature of user experience design being multi-disciplinary and user-centred (or even participatory).

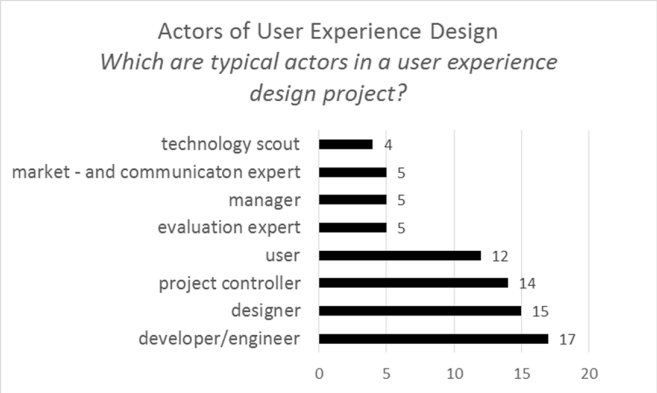

Figure 2. Survey results on actors of user experience design

Furthermore, the responses on this question showed that a project controller is a major stakeholder in user experience design, while high-level management is also involved. However, when asked about the responsible person for the coordination of user experience projects, participants rarely agreed (Figure 3). “A company-internal expert”, “individuals from various departments within the company” and “cross-departmental, company-internal division” were mentioned equally often. In two cases, “the whole company” was mentioned. “Project manager” was mentioned once. Another participant answered “different organizational units within the company, due to the company size”. With only one exception, all answers refer to a company internal entity.

[2] The background and results of the survey are submitted in a separate paper for consideration in DESIGN 2016

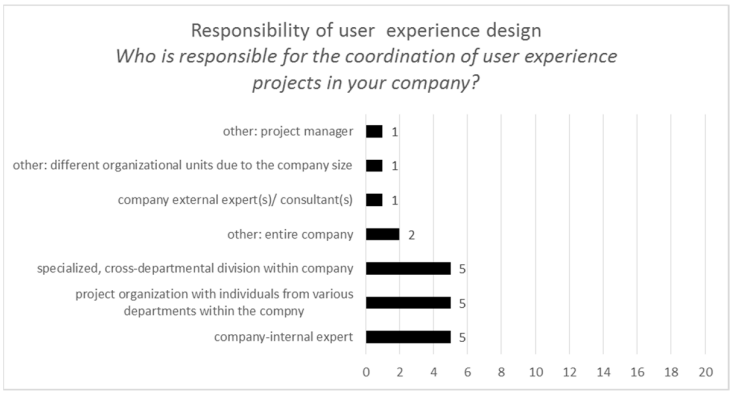

Figure 3. Survey results on responsibility for user experience design

The question on responsibilities was indeed the question of our survey with the greatest discrepancy in responses. Company-specific opinions vary from a specialized person ("company internal expert", "project manager", "external consultant") or group ("specialized division of the company", "individuals from various departments of the company") to a complete generalization ("entire company"). We could assume that it is legitimate to see big differences, because the participating companies cover a broad spectrum of sizes and domains. However, "ill-defined responsibilities" was an explicitly named challenge of user experience in another part of the survey, which referred to challenges of user experience design (Figure 4).

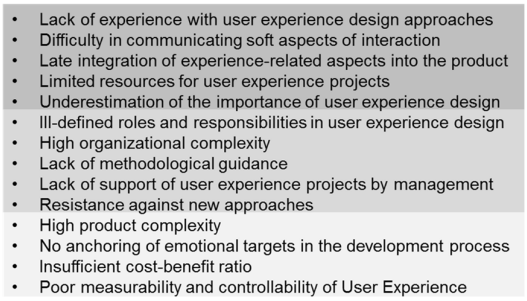

Figure 4. Survey results on challenges of user experience design

Furthermore, the challenges of "limited resources for user experience projects", "underestimation of the importance of user experience design" and "lack of support of user experience projects by management" are highly related to company culture and could be influenced by high-level management. Those implications are similar to the proposals of van Kuijk [2010].

Discussing the role of the storykeeper with practitioners

What is the added value of a storykeeper in real practice? Is user experience management challenging only in large companies? Those questions arose from the results of the survey, so we discussed possible answers to those questions with practitioners from four companies. We began the discussions by asking about current roles and responsibilities in user experience design. In one case (large company 1), a company-internal, specialized UX-department had this role. In another case (small company 2), one person had the role of user experience manager. However, this person was only assigned to support selected projects. In the two other cases (large companies 3 and 4), it was vague who is responsible for the UX-related matters.

In the second part of discussions, we asked about the possible added value and implementation of the role of storykeeper. In the case of large company 1, the role of storykeeper is already implemented in big scale through the activities of the UX-department and confirmed its importance. Additionally, the establishment of a storykeeper would influence the attitudes and opinions towards user experience in a positive way. In the case of small company 2, the added value of a storykeeper was recognized, if the

role is assigned to a person from high-level management. Unlike its current practice, company 2 could benefit from having a storykeeper who is familiar with all projects and can thus recognize across-project links and has decision making power. In the case of large company 3, many UX-related activities do take place, but are not centrally managed. The added value of a storykeeper would be in communicating and synchronizing all those activities for a more efficient result. In case of large company 4, the added value of a storykeeper was recognized in the conceptualization and implementation phases of design. Although requirements management and user experience related activities have a big role in early phases, their traceability in the subsequent phases of design decreases. A storykeeper would guard the goals until product release. Due to the large size of the company, it was considered quite unlike to have one person overtaking the role of storykeeper. However, a description of a storykeeper´ s tasks and responsibilities would help in implementing the role by different persons. A conclusion that could be drawn from this initial exploration could be that the implementation of the role of a storykeeper is strongly company-specific. However, it could be valuable for small and large companies, required that there is a clear description of this role.

4. Introducing the storykeeper

In this section, we describe the tasks and characteristics of a storykeeper, based on relevant tasks and characteristics of managers, requirements engineers and design thinkers. The profile of a storykeeper is a unique combination of those three aspects. Concerning the matter of who should be the storykeeper, we conclude that it is highly company-specific and therefore decide for defining the role itself rather than its holder.

4.1 What are tasks and characteristics of the storykeeper?

The essence of the role of a storykeeper is the responsibility for monitoring the continuous development process of user experience, making sure that the story behind the product is preserved throughout the process and along decision-making. Aspects of management, requirements engineering and design thinking practices synthetize the profile of a storykeeper.

Storykeeper as high-level manager

A storykeeper is the gatekeeper (cp. Cooper) of user experience. He/she is the person to make or influence decisions about the future of projects in ways that guard the success of user experience design. Pahl et al. [2013, p.34] see the management as responsible for leading the project team and planning their (complex) tasks. Required characteristics are attention, continuous observation of “is” and “should” situations, early detection of conflicts, communicative skills, and ability to compile information. Furthermore, a storykeeper should be able to understand interests of various stakeholders as well as across-projects-relations in order to make sure that the stakes related to user experience are preserved.

Storykeeper as requirements engineer

A storykeeper is responsible for ensuring that the product described through requirements would mediate the conceptualized experience. In other words, is responsible for understanding and translating needs of prospective users and generate a convergence between requirements and story. Pahl et al. [2013] define characteristics of requirements engineers, which are relevant for a storykeeper:

- analytical thinking to understand complex issues from various perspectives, abstract requirements
- empathy to understand deeper needs and to be able to understand group dynamics
- communicative skills to interpret and communicate needs: be able to listen, understand what is important, ask the right questions, lead discussions among parties
- conflict management and persuasion skills to forward interests and make decisions

Furthermore, in the context of user experience, it is important that the storykeeper pay attention to soft aspects of interactions expressed in qualitative requirements and have a good knowledge of methods and tools to support that.

Storykeeper as design thinker

While principles can be formulated to express fundamental values and characteristics of an approach [Carlgren 2013], a mind-set is individually linked to a person. Through appropriate education and experiences, a person can incorporate the principles of design thinking and have a mind-set that enables its successful application. We could not identify in literature an exhaustive list of design thinking principles or a certain desired education background, however collected some aspects, which are relevant for shaping the mind-set of a storykeeper. Human-centeredness is crucial to support human components of systems and selection of methods, which increase empathy. A design thinker encourages iteration and experimental work, early process outputs and tolerates failure. Another characteristic is the enthusiastic and positive attitude towards collaborations bringing diverse teams together to encourage synergies. System thinking in problem understanding, solution creation and impact of new solutions would benefit user experience projects. Abductive thinking and a positive attitude towards "new", as well as "visual" thinking are further valuable characteristics of a storykeeper. Kleinsmann and Snelders [2015] describe a design thinker as integrator and orchestrator of functions; boundary creator and gatekeeper of initiatives; advocate of user and of human desire. Those are all aspects that we consider relevant for a storykeeper.

4.2 Who should take over the role of the storykeeper?

An insight from our discussions with practitioners (section 3) was that the way in which the tasks of a storykeeper are executed is strongly dependant from company-specific structures. We therefore decided to describe a role rather than the person or persons to incorporate it. A role describes "what the holder of it will do in the process, what responsibilities s/he has, what skills and expertise are required, what the other project members can expect from him/her, etc. The description is independent of the individual role holder" [Gulliksen et al. 2006]. Nevertheless, two aspects of our initial study could give useful hints about implementing the role of storykeeper. Building on current practices (Figure 3), a storykeeper should ideally be a company-internal actor with access in all matters of a company. Secondly, due to the required decision-making power, a storykeeper would ideally be part of high-level management. As suggested by company 4, the role of storykeeper could be held by different persons throughout the design process or be coupled with another role.

5. Discussion and future work

The motivation for this work was initiated within the "CAR@TUM user experience" project. Working with multiple disciplines and in collaboration with a large company, we identified the importance of management through a storykeeper in many phases of our project. One aspect that we identified early on in the project was the importance of concentrating on positive future experiences, instead of conventionally focusing on problems and deficits of current technical solutions. The methods we used in the project, i.e. mainly storytelling and scenario-based methods, certainly facilitated this new to us way of thinking. However, we often had to be reminded of focusing on the experience by our "storykeeper", the project leader. Another aspect, which occupied our work for at least one year, was the importance of dealing with experiences in a holistic way. During the conceptual design phase, many ideas about new experiences and features occurred. It was the storykeeper's task to verify, whether those ideas were compatible to our overall goal (i.e. contribute to a positive experience), if they were compatible/supplementary/contradictory to each other and build a meaningful whole. Our way to address that issue was by creating a framework [Kremer et al. 2014] in the beginning of the process. The framework was the common starting point for new ideas and the storykeeper would consistently proof if the artefacts developed throughout the process fitted into the framework. The feedback from the side of the company was that this task is crucial in actual practice. There should be a responsible person (1) for ensuring that not too many features are integrated, because that would increase the complexity of the system as whole; (2) for rejecting even a good idea when does not fit to the whole; (3) for having an overview across borders of single projects or departments and recognising touchpoints. A third aspect we acknowledged during the whole project duration was that experiences and thus stories describing them are subjective. A storykeeper should communicate the core of the experience [story] and ensure that it is interpreted in the right way. Our industry partners confirmed the relevance of this point for

actual practice: they recognized the danger that the story could get "lost" (misinterpreted, too technical, or lower prioritized) during the process and through its journey across departments -the consistency and continuity of story should be ensured through the storykeeper. Finally, it was the explicit proposal of our industry partners to describe a role with tasks and skills of an ideal storykeeper, because such a description would be more flexible for implementation in other contexts/companies.
The ideas and proposals presented in this paper reflect our experiences and insights. This is a clear limitation of this work. Future work could focus on validating this proposal, mainly in industrial settings. Nevertheless, we strongly feel that the issues described are relevant and important and hope to inspire future research. An interesting aspect that could be considered in future work concerns the implications on design management education, in order to prepare future user experience managers better for challenges they might face. The ideas presented here could also inspire ideas for company internal trainings.

6. Conclusions

Particularities of user experience design highlight the need for effective management but also special skills from the side of the manager. A gatekeeper of experience should be able to cope with demanding requirements engineering, user-centred or participatory methods and multi-disciplinary teams, but meanwhile have the authority to influence decision-making and company culture in a positive towards user experience way. Based on a small-scale empirical study on current practices of user experience, we can say that the person or group who will incorporate the role of storykeeper should be a company internal actor from high-level management. Each company could decide depending on their capacities and needs for a best specific implementation. A storykeeper´ s main responsibility is to ensure the success of experience design, i.e. that the conceptualized experience story would be mediated through the new product and that users would have an enjoyable overall experience. Analog to a requirements engineer, the storykeeper should ensure that quality, experience-related requirements are elicited, captured and highly prioritized through decision-making. It is his/her responsibility to ensure that the means and resources required for that are available. Resources include personnel with user experience knowledge, as well as user-centred processes, methods and tools. Finally, a storykeeper should influence decision-making, but even the company culture in a positive towards user experience way. Inspired from desired competences of managers, requirements engineers and design thinkers, we summarized attributes of an ideal storykeeper: attention, communicative skills, system thinking, analytical thinking, empathy, conflict management and persuasion skills, tolerance towards ambiguity or failure, networking skills, abductive thinking and “visual” thinking. We see the essence of the role of a storykeeper in the unique combination of those characteristics. Being aware of the limitations of this work, since it only presents a first proposal, we want to highlight the relevance of this topic and hope to inspire future research.

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