

Design Artefacts as Business Decision Prompts: Tackling the Design and Business Values Gap

Joanna Kwiatkowska¹, Agnieszka Szóstek², and David Lamas¹

¹ Tallinn University, Narva Mnt 25, 10120 Tallinn, Estonia

² Academy of Fine Arts, Krakowskie Przedmieście 5, 00-068 Warsaw, Poland
{joan.kwiatkowska, aga.szostek}@gmail.com, david.lamas@tlu.ee

Abstract. This paper focuses on ways of supporting business in staying focused on the identified design values throughout the entire product or service development process. Based on literature review we propose design artefacts as business decision prompts. This consideration is used to structure and discuss probes artefacts as business decision prompts.

Keywords: design artefacts, probes, User-Centered Design, prompts, design values, business values.

1 Introduction

It is undoubted that design is of great importance for companies at present [28, 14, 10]. It is source of innovation, competitiveness, problems solving approach as well as mean for differentiation. Design supports development of products and services, and, as stated by the ICSID (International Council of Societies of Industrial Design, 2005), “it is the crucial factor of cultural and economic exchange”. Furthermore, it assists management in organizations [14].

1.1 Approaches

There are several ways that designers might apply to tackle design problems, e.g. User-Centered Design (UCD), Activity-Centered Design, Systems Design or Genius Design [25]. User-Centered Design is perceived as a dominant approach, thus it is often accepted as the only right method while elaborating a new product or service [23, 4]. Therefore, an increasing number of companies outside of the IT domain value more and more the user-centered approach in the development process of their products and services [1, 2]. Some of these companies decide to establish User Experience (UX) departments with the goal to align their offerings with user needs and desires and deliver recognized design values in final products or services.

1.2 Roles and Values

The role of the UX department in the company is to understand users, create concepts of products or services which will bring real value to target users, monitor the

development process so that the design values will remain in the final product or service (embed design values in designed solutions) and, finally, indirectly bring money for the company [12, 13]. On the other hand, the role of business is to deliver profitable products or services, which bring return or investment as well as meet other company requirements (e.g. fit corporate culture).

The presented roles of UX and business teams determine values appreciated by them as well. The UX departments promote design values which cover user needs, desires, concepts that meet user requirements, functionality and usability aspects that are favourable for users [12]. Business values, by contrast, regard “*creating products for which a good business case can be made*”[12] (ratio of invested money to the return on investment).

These two systems of values (design vs business values) are competing and there is a gap between design and business values (see: Fig. 1).

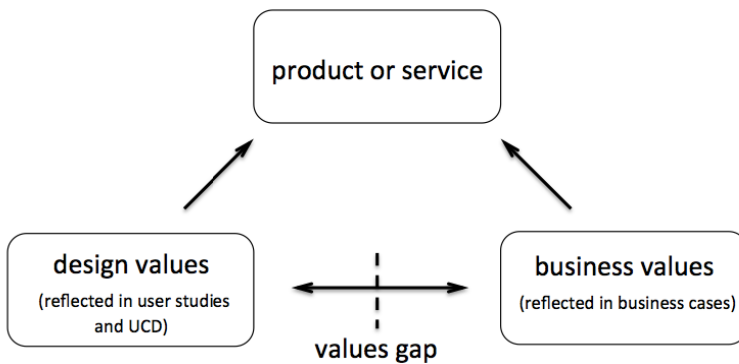


Fig. 1. The user and business values relations

1.3 Outcomes and Consequences

Although a high interest in UX department’s deliverables might be distinguished [1, 2], in practice User-Centered Design values tend to fall behind business decisions and an overall low awareness of user needs can be observed throughout the company [15, 16].

UCD places users at the centre of design decisions and engages them into design process within design research activities [29]. However, according to Cockton UCD is: “*strong on problems, but weak on solutions*” [6]. Therefore, instead of definite products or services, the UCD activities might bring outcomes in the form of artefacts defined as information which let us imagine how a design would appear or behave [6]. Thus, since the form of such information is not precise, there is a risk that UCD deliverables might be misinterpreted by business teams members, e.g. they might support immediate business decisions instead of guiding the whole design and development process. In consequence, it causes unbalance between business and design focus in the resulting solutions, often to the disadvantage of the user [15, 16]. Therefore, the gap between design and business values is strengthened.

2 Problem Statement

Even if the results of user research are viable, currently business teams are unable to effectively utilize them in the development process. Henderson et al. recognized the following problems resulting from the design and business value gap (see: Fig. 2):

- the implications from user studies and UCD are not included in final products or services (not included early enough or in enough depth),
- design values are lost in development (misunderstood, cost-reduced),
- design values never reach final use [12, 13].

Therefore, we argue that there is an increasing need to provide effective tools or solutions to support stakeholders in paying attention to the discovered user needs in order to deploy products and services which use of knowledge generated by research. This article focus on exploring possible ways to support business teams in staying focused on the identified user needs and design values throughout the entire development process.

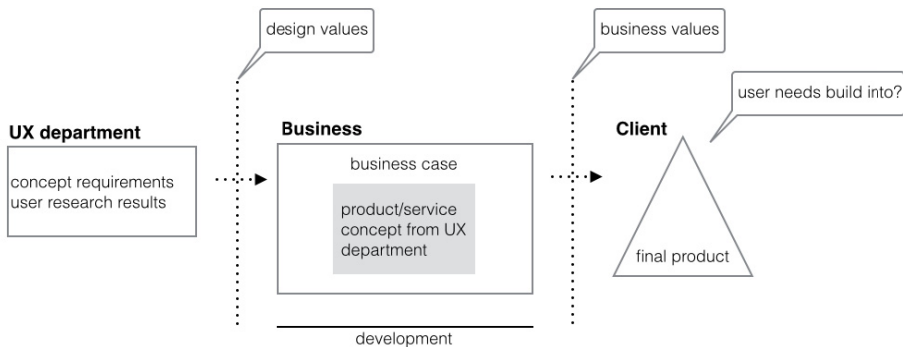


Fig. 2. Research problem

Development in the context of the given article means the overall process of creating new products or services: idea generation, strategy, product creation, marketing as well as evaluation.

3 Related Work

The topic of transferring user data to business has been discussed since the dawn of the HCI domain. The problem has traditionally been approached from two angles: organizational and communicative. In the first approach both the teams and processes are created within the company to support UCD process throughout business

development [18]. In the second approach various communication tools and artefacts are developed to remind the teams about design values, motivations and goals. The most known artefact is probably persona [7] widely used in various types of business from marketing agencies to software houses. Yet personas seem to be insufficiently successful in what they aim to convey [25]. It may be due to the fact that personas are quite complex and one needs to be trained to use them properly [22]. We argue that simpler tools and artefacts could prove to increase the overall sensitivity to user-centered insights outside of the UX teams.

4 Design Artefacts as Business Decision Prompts

The term artefact comes from Latin *arte factum*, which means something made with skill [8]. Primarily artefacts indicate something made or given shape by human, e.g. tools or works that might be of archaeological or cultural interest. Furthermore, artefacts might be perceived as symbolic higher-order tools of the designers [11], e.g. prototypes, sketches, user stories, probes, etc. Artefacts provide different design perspectives as well as communicate values while conducting design activities [3]. According to Vyas et al. [30] design artefacts improve efficiency, bring quality and richness to people performance by supporting their creativity and invention. In line with Zimmerman et al., “*design artefacts (...) can transform the world from its current state to a preferred state*” [31]. Particularly, material artefacts are likely to play an important role in cooperative work. Vyas et al. [30] showed an experiential role of artefacts, particularly physical ones, to be used as prompts supporting collaboration among designers. They help to mediate design activity, i.e. conception, communication and cooperation during the design process.

What we want to bring into question is since design artefacts are quite effective in communicating values within design activities and prompting designers, would they act similarly within business teams and support application of design values in developed products or services? Thus, we propose design artefacts as business decision prompts, where term *prompt* comprises anything that serves to remind: spur, cue, hint or stimulus.

To address the posed question, the literature review has been conducted with the goal to verify the possible applicability of design artefacts as business decision prompts. The artefacts qualities and characteristics have been identified where on the basis of the conducted affinity diagramming the four clusters have emerged representing the dimensions where artefacts might influence:

- **personal** dimension defines how artefacts influence individuals who interact with an artefact,
- **group** dimension describes the intermediary artefacts qualities,
- **design activity** dimension characterizes how design artefacts mediate design activities,

— **outer** dimensions presents what are the prospects of further design artefacts application – beyond the design activity.

The parameters of the particular dimensions have been presented in Figure 3.

personal	group	design activity	outer activity
<ul style="list-style-type: none"> • improve development [5] • bring quality and richness to people performances [30] • support creativity and innovation • provoke insights [11] • provoke reflection [11] 	<ul style="list-style-type: none"> • improve social development [5] • align collaborative efforts [3] • evoke empathic relations [3] • enable divergent and convergent thinking [24] • support discussions [5] • provoke insights [11] • provoke reflection [11] 	<ul style="list-style-type: none"> • frame design even in specific way [3] • applied in participatory design, co-design, HCI research, collaborative activities • support goal-oriented actions [5] • provoke design changes [11] • enable rapid transformation [11] • document, e.g. discussion [11] • support communication among designers and users 	<ul style="list-style-type: none"> • support discussion [5] • support goal-oriented activities [5] • provoke reflection [11] • act as boundary objects [24] • play important role in stakeholders understanding [3]

Fig. 3. The artefacts dimensions

In the design artefact as business decision prompts context, the emergence of the outer activity dimension is crucial. Particularly the *support goal-oriented activities* as well as *act as boundary object* parameters bring the opportunity for a solution which facilitate embedding design values into products or services throughout the development process.

4.1 Probes

To address the research problem, the literature review aimed as well at finding research methods, which by its nature provide the results in the form of design artefacts and deeply engage users. Such assumption guarantees that the given artefact would act as design values carrier. Therefore, the probe research methods have been indicated as a first approach for further design and business gap investigation.

The understanding of the term *probe* might be associated with a solution, where a given object is sent to the areas where human researchers cannot go, so data might be collected automatically. The probe approach has been proposed by Gaver et al. [9]. Probes in this context are specifically designed toolkits applied in user research based on self-documentation and self-reflection. Such toolkits (material packages) are given to users to provoke them to reflect and document their experiences, emotions, feelings, needs, values, thoughts as well as to inspire them to visualise their actions or ideas [19]. The probing approach enables users to become active participants of the design process. The main goal of probes is to create dialogue between the designer and user. Further purposes of the probe research method application and its role have been presented in Table 1.

Table 1. Probes' characteristics

		Probes
role		<ul style="list-style-type: none"> - inspire - provoke - collect data - explore new opportunities - ask open questions - reveal future needs - study users in their own environment - orient the design - with exploratory goal - document the present - predict future; look for future possibilities - self-documentary
purpose of application		<ul style="list-style-type: none"> - communication medium for ideation - stimulate imagination - empower users as well as designers creativity - support reflection - collect information about users - create insights - capture design ideas - facilitate participatory workshops - support non verbal thinking - support dialogue between the designer and user - gather ethnographic information - gather empathetic data - get data on usability issues - understand the potential for new technologies
critical issues		<ul style="list-style-type: none"> - ambiguous and fragmented data - no guidelines for designing probes - lack of formal analysis

The context of the method application determines the probe form:

- cultural probes –applied to explore users cultural setting (Gaver et al. (1999): “designed objects, physical packets containing open-ended, provocative and oblique tasks to support early participants’ engagement with the design process”),
- design probes – aim to provide inspiration for designers and gather insights,
- empathy probes – enable to collect the data concerning experiences, attitudes, life-styles. The self-documented material is discussed with users in personal interviews after the probing task to support its understanding (Mattelmaki (2006)),

- technological probes – introduces technologies to collect self-documented data from users (Hutchinson (2003))
- mobile probes – the method applies mobile device to probe users actions in mobile contexts (Hulkko et al. (2004))
- urban probes – applied to find new opportunities for technology in urban spaces (proposed by Paulos and Jenkins (2005)) [14],
- informational probes (Crabtree 2003) – collect information about users: their experiences, needs, etc.,
- reflective probes (Loi 2004) – enable users to reflect around the examined experience,
- primitive probes (Loi 2004) – this approach assumes that we enable users to design probe kits for themselves or for other users.

4.2 Business Decision Prompts

The goal of the given research was to provide effective tool or solution to support business in staying focused on discovered design values throughout entire product or service development process. On the basis of the results from the literature review on artefacts' and probes' characteristics, the following working hypothesis has been formulated:

The result of the probe research method in the form of design artefact constitutes an effective business decision prompt, where effective refers to high applicability of design values into product or service development (see: Fig. 4).



Fig. 4. The artefacts dimensions

To test if probe artefacts might serve as business decision prompts, their identified characteristics have been mapped on artefacts dimensions proposed in section 4 (see: Fig. 3).

On the personal dimension, probe artefacts support mainly the creation of insights as well as reflection. Group dimension qualities support dialogue between designers who work in the same team (e.g. work on the same project and analyse the data coming from probes' artefacts). Within the framework of design activity, probes' artefacts facilitate dialogue between users and designers. Furthermore, they evoke designers' empathy for probe activity participants [21]. However, the most essential is the emergence of overlapping characteristics in outer activity dimension where probe artefacts might be a mean of user-centered dialogue promotion [20] (e.g. probes'

artefacts as promotion of research results in companies) as well as empathy tool (the probes artefacts could evoke empathy among business representatives).

Therefore, we propose probes' artefacts as business decision prompts to address the following areas:

- promotion of user-centered dialogue in companies,
- tool for evoking empathy with participants of design activities.

Probes' artefacts as a tool for promoting user-centeredness would:

- act as *in-house marketing* tool for research results promotion [20],
- increase the engagement in design activities through the fresh approach of user studies,
- orient business towards user context,
- increase commitment to the research results.

On the other hand, probes artefacts as empathy tool could:

- build up a discussion,
- support dialogue: *involve organization into dialogue* [19],
- support learning and understanding users,
- create interaction among different groups of stakeholders.

5 Closing Remarks

The article discusses the notion of design artefact and probe artefact as related concepts. The probes' characteristics and context of their application have been presented as well. Furthermore, article attempts to define the unique properties of design artefacts that determine their success in supporting business teams in staying focused on the discovered user needs.

Finally, on the basis of the literature review, probes artefacts properties applicable as business decision prompts are indicated: probes artefacts as a tool for promoting user-centeredness and evoking empathy towards design values in companies.

In the next study we aim to analyse further types of artefacts and concepts with respect to their potential for engaging business in the product or service design process, e.g. boundary objects or generative tools. Furthermore, a case study would be conducted to test the effectiveness of probes' artefacts as business decision prompts.

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