Combining social design with Sustainable PSS: a Brazilian case study

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Abstract: This paper aims to address the relationship between sustainability-oriented PSS (S.PSS) and social design, succeeding the "Course on Sustainable Product-Service Systems and Distributed Economy", provided by Learning Network on Sustainability. Here follows the experience of São Paulo State University, where tools of S.PSS were applied to a case study on visual impairment. The results involved a support network structured around a mobile application called *Teçá*, designed to enlarge the engagement between people with visual impairment and their communities.

Keywords: Product-Service System - Social design - Visually Impairment - Support Network - Mobile Application

[Resúmenes en español y portugués y currículum en p. 47]

1. Introduction

One of the highlights of our present time as a globalized society is the fact that many taboos are being pushed, allowing for new topics of discussion to arise. In this scenario, social design emerges as a relevant field of study, because its tendencies for innovative solutions can provide ways to better dealing with the specificities of individuals or social groups historically neglected.

In this sense, social design aims to tackle the challenges related to better understanding the real needs of the targeted population of any given solution, which means, putting the self-originated preconceptions of designers aside. It is important to consider that social challenges consist of "making the invisible, visible, and understanding that 'seeing' is socially situated and historically constituted" (Gutiérrez, 2018, p. 88).

Merging social design with sustainability-oriented PSS (S.PSS) works as a strategy for escaping the ever-tempting tendencies of falling into ego-centered solutions while designing for social purposes. That is because the tools and methods of S.PSS can guide the designers along the conception process, providing them with neutral information regarding a broader scale of the analyzed problem.

Other benefits of implementing S.PSS strategies are that it can enable companies and institutions to differentiate their offers through the integration of products and services (Vasantha et al., 2012). When done appropriately, S.PSS standard solutions have potential to provide competitive advantages, build a strong relationship with customers, and improve production processes as well as consumption patterns towards environmental sustainability (Cooper and Evans, 2000).

However, following S.PSS guidelines may prove to be challenging for some companies, requiring them to acquire different competencies or even redesign their business processes to value chains of production, for instance. In other words, the transition process towards S.PSS may represent a few barriers for companies to overcome (Besch, 2005). In this sense, a S.PSS transition requires innovative thinking to finding strategies towards systems that would combine both products and services, to fulfill the costumers needs (Unep, 2002).

The case study presented in this paper has data collected from Home-School Santa Luzia for the Blind, an institution located in Bauru, a middle city in the Midwest of São Paulo Estate, Brazil. Santa Luzia is a center of socialization where people with visual impairment receive all sorts of support and training to improve their livelihoods. The center is especially vital for those who have just lost their sight, due to their need for learning on how to readapt to daily tasks, such as cooking, cleaning, using their smartphone and the white cane. Those are important skills for acquiring autonomy.

The solution proposed at the end of the case study sought to shift the focus of Santa Luzia business model, from a local physically stablished service towards a broader, replicable, and virtual solution managed through a mobile application called *Teçá ("Teçá"* means "that with attentive eyes". It is a word derived from Tupi-Guarani, a Brazilian indigenous language). The application was designed to strengthen the already existing social network, making it accessible to a wider range of people in the community assisted by such institution.

That proposition, of a social design solution, utilized the vast library of tools provided by the S.PSS method. It is valid to point out that one of the pillars of S.PSS solutions "consists of a mix of tangible products and intangible services designed and combined so that they jointly are capable of fulfilling final customer needs" (Tukker and Tischner, 2006, p. 1552). In this sense, Teçá was developed in such a way that both physical and virtual platforms would work together, complementing each other.

Furthermore, this paper aims to present the details and complexities of the case study with the Home-School Santa Luzia for the Blind. Thus the structure of this explanation

will contemplate the following topics: social design, the social aspect on product-service systems, a throughout presentation of the case study along with the materials and methods applied, the S.PSS solution proposed and a discussion about the cited themes.

2. Social design

The definition of social design relates to processes that facilitate the improvement of human well-being and livelihoods. In other words, it seeks to contribute to a fairer and more ethical society. Redig (2011) proposes that every design solution could be considered social, given that it should address the needs of society. However, Pazmino (2007) explains the concept of the word social in social design, making an important distinction "design for society means developing products that meet the specific real demands of the poor, socially, culturally, and economically; as well as some threats such as low income or special needs people due to age, health or disability" (PAZMINO, 2007, p. 3, own translation).

The notion of embarking social discussion into design processes is not particularly new. Papanek (1972) suggested that projects should be more responsible for addressing the needs of material resources, especially to the inhabitants of the so-called underdeveloped countries. According to him, designers and its practitioners are equally responsible for carrying out social design because they have the expertise to promoting meaningful change through the development of good design.

Neves (2011) reminds the moral, social, and professional liability that designers have of developing projects that serve for the good of society. Margolin and Margolin (2012) defend that both social oriented designers and social assistance agents can enhance their efficiency by combining their common interests involved in social work activities. Therefore, those professional fields should seek ways to merge their work together to better understanding the demands of communities. Furthermore, "to creating social impact projects, designers must also leave behind the idealization of the designer as an individual worker, investing instead in multidisciplinary teams, which often result in better solutions" (CARDOSO, 2013, p.23, own translation).

In that sense, it is possible to think of collaborative projects based on the dialogue between the community and designers, working in favor of projects mediated by social assistance agents. By doing so, designers can abandon their role of mere external observers and shift it towards a more engaged process, enabling the community members to express their needs and thus collaborate in the construction of any given project.

Shea (2012) points out some important aspects for a successful social design proposal. According to him, the first goal is establishing a trusting relationship between the designer and the targeted community. Once that bond is set, it is vital keeping it standing, by making only executable promises as not to raise exaggerated expectations in the participants, for example. Other considerable aspects in this relationship are identifying

regional resources, potentialities and community-inspired styles of thinking that are applicable to the project. Those alternatives can develop a sense of empowerment in the local population.

3. The social aspect on Product-Service Systems

Implementing a solution through S.PSS tools provide designers with a better understanding on the functioning of consumption patterns and the desires associated with those requirements. That kind of input can lead to innovative alternatives to production and consumption practices. One example of S.PSS solution is the adoption of collaborative lifestyles in communities, such as sharing resources, devices, or services among its members. In this sense, S.PSS solutions can provide economic benefits, social gains and reduce impact on natural resources.

Morelli (2006) proposes an integration of industrial logistics with a social dimension though S.PSS, which can be a strategy for displaying, refining, or expanding a vast range of initiatives that can improve the livelihoods on communities. This merge is typically set up as a semi-finished platform due to its flexibility regarding further rearrangements such as material and immaterial flow of goods and services, roles of participants, knowledge and skills acquired along the way.

S.PSS-type solutions require greater social orchestration that is necessary to create conditions for optimal use of products and services, applying a closer relationship between producers and consumers, and expending interaction between consumers. This scenario brings the possibility of better management in decision processes with greater inclusion and participation of the agents involved.

It is important to stress that caution is required here, because despite of all its advantages, not every S.PSS solution is automatically socially ethical. Judicious social criteria are necessary to accurately assessing how effective any intended S.PSS System is in achieving equity and social cohesion with the involved stakeholders. There is also a risk of diminishing the possibility of the S.PSS users to develop and implement their own requirements for everyday problems that might appear.

4. Material and methods to the case study of Santa Luzia Home-school for the Blind

The development of this study succeeds a course offered by LeNS Brazil in partnership with UNESP Bauru and four other Brazilian Universities. The course aimed to address the S.PSS System as well as develop an experimental product, service, or system for a local community. Several students composed this group, from multidisciplinary areas. The course in Bauru included presentations explaining S-PSS tools, lectures by professors – including international video conferences – an interview with Santa Luzia goers and the final experimentation leading to the mobile application presented in this paper.

UNESP Bauru has defined for its case study the institution "Santa Luzia Home-school for the Blind". Social assistant agents intermediated the acquisition of most information about the selected center and its surrounding community. The design process started officially when the students applied the S-PSS previously presented into the task of collecting and thoroughly analyzing the difficulties faced in the context of Santa Luzia.

The first tool implemented, belonging to the S-PSS method, was the definition of the personas reached by Santa Luzia. This tool helped to understand the different types of users that that center assists and, consequently, it shed light onto some of the demands that the intended solution would need to consider. In addition to visually impaired people, the students composed personas for people without disabilities, who will often be their family members and closely related people.

Once the identified demands of the personas and the definition of the stakeholders were ready, it was possible to develop a System Map synthesizing the relationships between the services, logistics and the functioning of the whole system. This reasoning expanded the perception of how the local-based institution of Santa Luzia could benefit from a virtual platform for managing – and possibly expanding – its support network. A mobile application proved to be the most practical solution, considering that most of the participants rely heavily on their adapted smartphones for accomplishing daily tasks.

The conception process of the mobile application, named Teçá, focused mainly on the briefing of expanding the boundaries of the already existing social network around Santa Luzia Home-School for the Blind. Teçá would represent a virtual hall of Santa Luzia and therefore, would provide general services for the aimed public. The services would include news about upcoming events, courses and meetings; contact and directions for medical and social assistance; connection with partner businesses; a forum for mutual support; among other functionalities for visual impaired people, aiming to better integrate them into the community and society in general.

5. Results and discussion

The main result of the course "Design of Sustainable Product-Service Systems towards a distributed economy", in UNESP Bauru, was a network of social support targeted for visual impaired people, their relatives, closely related people, supporters of the cause for disabilities, Santa Luzia Home-School for the Blind and its community. The restructured network proposed in this case study, would integrate its audiences through a mobile application called Teçá. The application would not extinct the need for the services offered in the physical building of Santa Luzia. Instead, Teçá would manage the current demand for assistance by either handling some of them digitally or redirecting people to nearby locations – besides Santa Luzia itself – according to each user request.

Thus, the intention of Teçá is optimizing the efficiency of the services provided by Santa Luzia through a combination of both physical and virtual interfaces. With

such an enhanced and distributed business model, it is expected an expansion in the influence posed by the institution in the community, allowing more people to participate by offering support and being supported. At the same time, handling the minor tasks digitally, it the application would free up space for new activities in the physical space of Santa Luzia.

Aiming the success of Teçá application, its development process targeted embarking as many solutions and functionalities as possible. According to Kraut and Resnilk (2018) the secret of success for a digital social network lies in the diversity of uses that this platform allows for its users. The more possibilities for use, the greater the chances that more people will be able to identify with at least some of their services and consequently feel attracted by its proposal. This broad approach can also enhance the longevity of an application.

However, several difficulties can affect the establishing of a social network or virtual support community. Firstly, there must exist strategies for identifying and encouraging potential members who have the characteristics, skills, and motivation to contribute with the platform (Kraut, Resnilk, 2018). Other concerns consist of finding ways for engaging new users with existing dynamics of older users; creating healthy reward systems to stimulate use, some kind of benefit that exceeds those of the services themselves provided directly by the application; encouraging contributions from members of the social network. It is also highly recommended foreseeing behavior management of individuals in the environment of interaction promoted by the application, aiming at inhibiting excesses, disrespect, and prejudice, for instance.

Conclusion

This paper sought to present a study case derived from an experimentation with the tools of the S.PSS method combined with social design. The results involve the development of a mobile application named Teçá, designed to be a simple yet effective solution to optimize the social network of Santa Luzia Home-School for the Blind. With that solution, the students involved aimed to improve the quality of life for visually impaired people and to promote their engagement within their communities. The tools presented here to develop this S.PSS solution comprehended the creation of personas, tomorrow headline, storyboard, stakeholders map, system map, as well as interviews with Santa Luzia goers.

Although the proposed solution might appear relatively simple and therefore replicable to other communities, the study considers that there are difficulties and challenges related to its implementation. Besides realizing the idea itself, there would be a need to attract stakeholders to the platform, find ways to engage users and attract new ones, think of mechanisms for moderating the behavior of users and providing assistance to the application such as design and secure updates, among others.

Ultimately, this study made possible perceiving the importance of the social dimension within the S-PSS method. It also permitted noting the need to seek reliable

tools for acquiring social data as not to fall into egotistic solutions that deviate from the real demands and desires of a community. Social design combined with S-PSS tools shows promise to facilitate and improve the welfare in a population, allowing for optimized relationship between services and the people assisted by them. In addition, a key point for social design is propagating a culture of selfless design thinking, which can generate significant change through creative solutions.

7. Acknowledgements

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Resumen: Este artículo tiene como objetivo abordar la relación entre el PSS sostenible (S.PSS) y el diseño social, siguiendo el "*Course on Sustainable Product-Service Systems and Distributed Economy*", del *Learning Network on Sustainability*. Aquí sigue el estudio de caso realizado por la Universidad Estatal de São Paulo con el *Lar-Escola Santa Luzia para Cegos*. Los resultados incluyen una red de apoyo estructurada por una aplicación móvil llamada Teçá, destinada a las personas con discapacidad visual y sus comunidades.

Palabras clave: Product-Service System - diseño social - discapacidad visual - red de soporte - aplicación móvil

Resumo: Este artigo objetiva abordar a relação entre PSS sustentável (S.PSS) e design social, succedendo a "*Course on Sustainable Product-Service Systems and Distributed Economy*", oferecido pela *Learning Network on Sustainability*. Será apresentado aqui o estudo de caso realizado pela Universidade do Estado de São Paulo com o Lar-Escola Santa Luzia para Cegos. Os resultados envolvem uma rede de apoio estruturada através de um aplicativo móvel chamado Teçá, desenvolvido visando o engajamento entre pessoas com deficiência visual e suas comunidades.

Palavras chave: Product-Service System - Design Social - Deficiência Visual - Rede de Apoio - Aplicativo Móvel

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