# Supporting people on fighting lesbian, gay, bisexual, and transgender (LGBT) prejudice: a critical codesign process

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**ABSTRACT**
Lesbian, gay, bisexual, and transgender (LGBT) people face a range of daily struggles, including those experienced through digital media. Such issues are increasingly gaining space in software development and academia agendas. This paper addresses the subject by first providing a systematic review for both academic and mobile technical productions towards LGBT people, identifying some tendencies and opportunities. Then we show how such results have been influencing the outcome of an ongoing research which aims to build a tool to help prevent and fight prejudice against LGBT people in Brazil. Results of a critical codesign process are presented and discussed showing evidences of the methodology adequacy.

**Author Keywords**
Codesign; LGBT; critical theory; systematic review.

**ACM Classification Keywords**
K.4.m. Computers and Society: Miscellaneous.

## INTRODUCTION

Visibility of LGBT issues is increasing, as reflected by their taking into account by electoral agendas, the use of social media as an arena for sexuality and gender debates, or the recent achievement of rights in American countries. However, it does not follow that quality of life of LGBT people or social equality are universal, especially in Brazil.

It is natural that software development and, in particular, Human-Computer Interaction (HCI) research also increasingly treat related subjects. One particular approach is to seek ways of supporting LGBT people across the daily struggles. This is the goal of the project where this work is inscribed, whose intended result is a mobile application to help prevent and fight prejudice in Brazil.

Brazil is notorious for being the country with the highest amount of LGBT killing – one LGBT person each 27 hours [17], 117 people only until 2017, May 17th [12]. Such statistics are based in Non-Governmental Organizations (NGO) reports, since Brazil does not have a specific law against LGBTphobia[1], so police lacks proper ways to classify them.

This paper focus on the steps we took towards the goal of supporting people on fighting LGBT prejudice and preventing violence through a critical codesign of a mobile system. We make a disclosure about our philosophical stance, which we believe is helpful to proper frame our values and assumptions. The work characterizes the LGBT group, presents a systematic review of HCI academic productions and mobile applications targeting LGBT people and issues. Then, we describe two activities made during the intended application codesign cycle, to enrich our knowledge about the relationship between the LGBT group and a software system targeted at them.

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## SOCIAL CONTEXT

### Sexual orientation and gender identity

At the core of LGBT framework, are the terms *sex*, *gender*, and *desire*. The former is related to the gender assignment made based on newborns' genitalia – the sex of babies born with a penis, for instance, is said to be male. In most societies, including Brazil, people may be assigned to only two sexes, male or female. Feminist approaches state that different social roles and expectancies are placed upon individuals, according to their sex. Perhaps the most influent piece from last century is de Beauvoir's "The Second Sex", where she describes how regards to women's body changed throughout history, in order to investigate if there is an essential explanation to so-called female "body disadvantages" or if they are the product of patriarchal social phenomena [4].

This leads to the second term: "the socially imposed division of sexes" [31]. The exact nature of gender is subject of debate in social sciences and we will not further explore it. More important to this work is the sex/gender distinction, firstly proposed by a psychologist, Robert Stoller [34]. Although there is also debate about misleading characteristics of this distinction, it is convenient to describe transgender people – those who self-identify with a

[1] Here used as a generic term to prejudice towards LGBT people.

gender which does not entirely match the sex assigned at birth. For the opposite case, the neologism *cisgender* is used. The T in LGBT accounts for transgender people.

Finally, sexual orientation is related to one's gender and the gender of people to whom one feels emotionally or sexually attracted – the object of desire. The LGB segment encompasses non-heterosexual people, i.e., people who do not feel attracted (only) to people with a gender different from their own. In general, LGBT stands as an umbrella term for non-cisgender and non-heterosexual people. Other acronyms are used to highlight other groups such as the intersexual or asexual, but LGBT is still the most consensual form across organizations in Brazil.

### LGBT issues

Transgender people are arguably the most vulnerable group, being Brazil the country where half of transgender women homicides in the world takes place [36]. Two famous brutal episodes involving travestis[2] were the broadcast in Facebook of a video where Dandara was beaten to death by a group of guys in Fortaleza [16] and the shocking images of Veronica thrashed by policemen in São Paulo [35]. Such violence results in a life expectancy of around 35 years for transgender women [3].

Discrimination in form of bullying or moral harassment is also very common. A recent report shows that around only 19.3% feel safe in school [1]. Intolerance is not restricted to school, but also familiar environment such as in cases of home expelling or in employment market - 18% of companies in Brazil say they would put some resistance to hire gay people [33]. These facts help to explain the estimative that around 90% of transgender women are coerced into prostitution [30].

Institutionally, congressmen work (or attempts) has increasingly not matched the interests of LGBT population. Examples include the proposal of definition of family as the "union of a man and a woman" by the Federal law project (FLP) 6583/2013, the polemic religious lobby in the rejection of LGBTphobia criminalization by FLP 122/2001, the removal of the words "sexual orientation" and "gender identity" in the Ministry of Education guidance for schools curriculum in 2017, or the nationwide proliferation of projects aiming to fight "gender ideology," such as the FLP 2731/2015 which tried to establish a prison sentence to teachers debating gender and sexuality in schools.

### Philosophical disclosure

Scientific works are enclosed within a set of ontological and epistemological stances that describe the scientist regards about how the world functions. The set of assumptions is commonly regarded as a *paradigm*. The conscious disclosure of a paradigm choice is what guides the practitioner throughout the decisions during the research process. Duarte and Baranauskas [13] point that the outline of the chosen paradigm may be useful to the academic community as a whole.

Our project stands upon the critical theory paradigm, as summarized by Ponterotto [29]. It regards reality as product of historical processes triggered by and shaper of power relations. It is also assumed that knowledge and perception of reality is subjective and mediated by values. The paradigm is summed up by the explicit directions of freedom, equality, and support for disenfranchised voices. Finally, it is intrinsic to the paradigm the will of changing reality of socially oppressed groups. Therefore, values are taken into account as formative pieces of the scientific quest itself, not as qualitative biases.

## STATE OF ART AND TECHNIQUE

### Literature Review on Systems and LGBT Issues

In order to answer how Information and Communication Technologies (ICT) for LGBT people are created or evaluated by works in HCI, we conducted a systematic literature review by the following steps:

1. Search for a string of keywords[3] in main digital libraries. The chosen ones were the ACM, Springer, and IEEE. We set the filters to consider only HCI publications from 2006 on.

2. We then removed: those which did not contain any of the search string terms string in the title, abstract, or keywords; duplicated papers; works-in-progress, conference, panel, or workshop calls, and posters.

3. Finally, we read the abstracts of the remaining publications and removed those which did not discuss the usage or design of ICTs by or for LGBT people.

### Results

The review was first conducted in 2016, but we updated the results in May, 2017 in order to complete the overview in this paper. All presented results refer to the last one. Our first step resulted in 514 publications, cut down to 32 in the second one. Our final corpus consisted in 13 publications.

### Analysis

The first call for researches about LGBT people we found was in 2007, by Blodgett *et al*. [8]. One result was found in 2010 [25], but they began to appear in a constant pace after 2014. The subject has appeared in the last 4 years of the CHI conference. It also follows a surge of Queer Theory as

[2] *Travesti* is sometimes used as synonym of transgender woman, but the word historical use in latin American countries associated the former with lower income classes and marginalized areas. The adoption of each term by women might highlight an embodied political stance.

[3] The keywords were intended to cover the LGBT umbrella in Portuguese and English, with terms like "gay," "transsexuality," "gender identity," as well as words related to the community work, such as "HCI" or "design".

a broad framework for HCI in multiple contexts not restricted to LGBT people [e.g., 9, 15, 24, 26].

Most of the analyzed papers focus on LGBT people as system users, with only two exceptions. Deen *et al*. [11] assess the impact of in-group sexual orientation diversity in design outcomes. Although it does not critically develop the context of LGBT people, they noticed that social critiques underlined the games designed by the participant groups. Beirl *et al*. [6] also describe the design of a new system, namely a mobile application to help transgender people to find a safe toilette.

All other exemplars in the corpus present works on evaluation of systems. The analyzed system was chosen *a priori* for some authors, or resulted from the feedback given by research participants. Among *a priori* choices, Kannabiran and Petersen [25] were the only ones to explicitly present critical remarks in terms of social power relations, by analyzing how they take place in the interaction between transgender people and Facebook available mechanisms. Facebook was also chosen by Haimson *et al*. [19] to assess transgender people use experience during gender transition. Other evaluations include location-based applications for gay and bisexual men [22, 37, 38] and a crowdfunding website, YouCaring.com, for transgender men [18]. Finally, Homan *et al*. [23] and Haimson *et al*. [21] investigated how data in, respectively, TrevorSpace, a social media for LGBT youth and Craigslist, a U.S.-American advertisements tool, can be used to unveil occurrence of diseases or epidemics. The remaining articles investigated the online aspect of style change by transgender people [20], the use of ICT in non-profit LGBT organizations [10], and the use of social media by LGBT parents [7].

As a subject that has recently begun to occupy HCI agenda, there are naturally several opportunities for works about LGBT people. This literature review can also be further updated including works yet to be indexed by digital libraries, such as Pereira and Baranauskas [28], which make a critical survey about how LGBTphobia might be reproduced in social media interaction mechanisms, or works published in correlated areas or which place LGBT issues in a more peripheral place in the investigation. In particular, this review was sufficient to point a gap in the HCI exploration of designing apps - despite several design recommendations, we found just two works who actually tried to materialize them into a new product. The presence of LGBT people in the design process is also hardly explored, as well as an explicitly critical approach on works to help build a more equalitarian society. Other identified gaps are presented in the Discussion section.

### Mobile Applications and the LGBT Issues

We also conducted a review with the goal of finding how support for LGBT people is currently provided by mobile applications. The first survey was conducted in May, 2016, but we repeated the process in May, 2017 to update our findings. Initially, we executed a search on Google's App Store for the terms *LGBT*, *lesbian*, *gay*, *bisexual*, and *transgender*. We then analyzed those in English or Portuguese and fit them into broad categories related to how they might fight against LGBTphobia.

We also made an exploratory search for terms describing forms of violence such as *harassment* or *transphobia* to seek forms of combatting prejudice in other contexts that did not appear in the first approach. In this case, we only considered apps that explicitly stated they aimed for support of LGBT people.

#### Results

We categorized the results from the surveys in 9 groups: social (dating, chat, social networks, forums, etc.), sexual (Kamasutra guides or sex toys), games, streaming (radio, TV stations, etc.), press (magazines, newspapers, news channels, etc.), geographic guides (tourist guides, map of friendly or safe places, etc.), static content portals (tips, information, blogs, etc.), mobile themes (wallpaper, keyboard, photo filters, etc.), health support (track of periods, chest binders, hormonal injections, voice exerciser, etc.). All results are from the searches made in 2017.

We considered 193 mobile apps for the search for *LGBT*, 222 for *lesbian*, 223 for *gay*, 208 for *bisexual*, and 198 for *transgender*. In all of them, the social category was the biggest, accounting for more than 50% of apps for *lesbian*, *gay*, and *bisexual*. The other most popular categories for *LGBT* were static portals, mobile theme, streaming, and geographic guides (respectively, 20%, 16%, 14%, and 10%); for *lesbian*, geographic guides and static portals (respectively, 20% and 15%); for *gay*, geographic guides (14%); for *bisexual*, games and static portals (17% and 13%, respectively), and for *transgender*, static portals and games (21% and 15%, respectively). The other categories did not reach 10% of results for each term. Remarkably, health support apps were only identified in searches for *bisexual* and *transgender* and sexual apps only for *gay* and *lesbian* (just one, in the latter).

From the violence-related terms search, we considered 5 more apps. They fit on the previously defined category: 2 social, 1 static portal, 1 game, and 2 geographic guides. We also searched for the terms *queer*, *asexual* and *intersexual*, but no new app was presented.

#### Analysis

Each category might take a place in the fight against LGBTphobia, since it can be as multifaceted as the oppression itself. The categories suggest the following tendencies for such places:

- Engagement in communities or creation of social ties.
- Rise of awareness and alterity creation through story sharing, news, and informational content.
- De-stigmatization of sexual activities.
- Report of unfriendly places, as well as the opposite.
- Self-disclosure and strengthening of self-pride.

- Health monitoring.
- Call for help.

It is not trivial to design applications with a critical goal, since the meanings produced by interaction might lead to other directions. For instance, one might wonder if it is possible to design a quiz for detecting sexual orientation or prejudiced opinions without recurring to (and hence, reproducing) stereotypes about LGBT people. The "bubble effect", i.e., the isolation of people inside clusters of like-minded acquaintances is also a possible consequence of networks targeting a very specific audience.

Furthermore, the potentiality of support can be find in each category but most of them do not explicitly consider this end. Their interaction design also may not match this possibility [eg. 38]. We did not find new directions inaugurated by apps released in between both surveys, such as the TransForma, which collects stories from transgender people and offers related information. Table 1 presents some apps self-stated as fighting prejudice to depict how each tendency might materialize in software.

## A SEMIOPARTICIPATORY APPROACH TO CRITICAL CODESIGN

In order to embody social knowledge and lessen our own biases, we opted by a Participatory Design (PD) approach with a diverse group. More specifically, we adopted codesign, as described by Baranauskas *et al.* [5] as "the action of jointly working with people, using diverse artifacts (…) to clear up meanings they build to what a product may become, engender a shared vision about the product and involve the parties, especially the most interested (…) in the design process."

| App name | Description |
|---|---|
| Binder Reminder | Helps people in process of body masculinization to monitor the use of chest binders. |
| Bullied Buddies | Network for victims of bullying. |
| Espaço Livre | Places markers in a map to show where episodes of homophobia happened in Brazil. |
| Hate Crime | Portal with laws and regulations about hate crimes in the U.S. |
| Homophobia Test | Trivia game to detect homophobe people by their answers. |
| Refuge Restrooms | Geographically display the location of safe bathrooms for transgender people. |
| Xomnet Security Buzz | A button that makes noise to alert surrounding people about an ongoing harassment. |

**Table 1. Examples of self-disclosed LGBT support apps.**

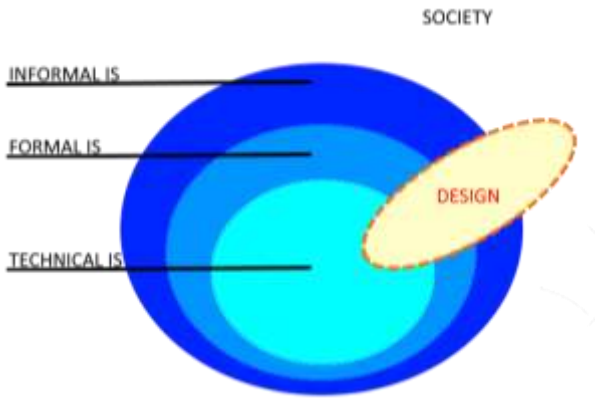


**Figure 1. Representation of the semiotic onion and the inscription of design activities in SAC**

Codesign grounds its philosophical stance in Organizational Semiotics (OS). In OS theory, an organization is said to consist of 3 different layers or information systems (IS) [27]: a broad informal one, made of beliefs, intentions, commitments, and habits; a formal one, defined by bureaucracy and rules; and a technical one, comprising the technological artifacts themselves. They are best represented by the image of the "semiotic onion," presented in Figure 1.

Codesign is based on the realization of workshops, meetings where the most interested parties in the problem domain engage in activities with artifacts and techniques from PD and OS. The intent of the workshops is to carry knowledge from each external layer and embed it into a meaningful product, which will then produce a new effect back to society. This rationale, known as Socially Aware Computing (SAC) [5], is represented at Figure 1.

### Participants

The contact of volunteers began after the study approval by the Committee of Ethics in Research[4]. We reached candidates by posting in Facebook LGBT groups and our personal timelines and stimulating the broadcast to people interested in activism or social work. We intended to have a balanced representation of different gender identities and sexual orientations while keeping a number of volunteers suitable for the participatory activities. We also restricted the participation to people older than 18 years and living in Campinas, São Paulo. Our final group, including the researchers, had 24 people: 3 queers[5] (1 bisexual, 1 pansexual and 1 homosexual[6]), 1 homosexual transgender

[4] Certificate of Presentation for Ethical Consideration: 58185916.3.0000.5404.

[5] *Queer* is an umbrella term for people whose gender lived experience does not fit in the male/female binary, but also does not necessarily feel part of the transgender label.

[6] Personal identification and social interpretation of a gendered body are two interweaving aspects of someone

man, 2 transgender women or travesti (1 heterosexual and 1 bisexual), 5 cisgender heterosexual women, 2 cisgender heterosexual men, 4 cisgender bisexual women, 2 cisgender bisexual men, 1 cisgender lesbian, and 4 cisgender gay men.

### Methodology

We divided our codesign activities into two major groups: organization and context and codesign workshops. The former intended to clear up the problem domain, i.e., to know more about issues related to the group and use of existent applications. We will discuss it in details in the next section. The latter corresponds to the (co)design cycle and was subdivided in 3 steps: pre-design or requirements elicitation; design or product conceptualization and prototyping; and post-design or evaluation. Volunteers were asked to give a name to each one, in order to homage LGBT representative people. The activities and artifacts used are listed in Table 2. Workshops were realized between November, 2016 and May, 2017.

In order to foster participation and ease the start of activities, each workshop besides the first was preceded by an online "warm-up" task. The tasks consisted in short questions, to be answered either in Google Forms or in the discussion platform Consider.It, aimed to link the discussion from a previous workshop to the practices put in place in the next one.

### ORGANIZATION AND CONTEXT WORKSHOPS

For the first workshop, we intended to begin the creation of a comfortable and trusty relationship with the volunteers. 7 selected volunteers went to the meeting. We began it by lecturing an overview of the research and exposing our intended outcomes. They were asked to sign an Informed Consent and we encouraged them to correct us if we say something offensive. This process was repeated every workshop someone new attended.

| Phase | Workshop name | Methods and tools |
|---|---|---|
| Organization and context | Alan Turing | Storytelling; picture cards |
| | David Bowie | Exploration test |
| Codesign | Ellen Page | Stakeholders diagram; evaluation frame |
| | Dandara | Brainwriting; braindrawing |
| | Cássia Eller | Exploration test |

**Table 2. Methods and tools used in each workshop.**

self-disclosure. In this particular context, the volunteer claims the unsuitability of gender labels, but is socially seen as a man, which reflects his description as an homosexual, here referring to an exclusive attraction for men.

### Workshop 1: Alan Turing

The first workshop was baptized after Alan Turing, the highly influential British scientist who inaugurated studies in a vast range of Computer Science fields and committed suicide in 1954 after convicted to chemical castration for homosexuality.

For the main activity, we spread 50 cards on a table. Each card belonged to one of the following categories: politics, quotidian, places, occasions, society, emotions, or news. There were 20 news cards and 30 cards equally distributed among the other categories. The former contained only a headline related to LGBT or politics and the others an icon representative of some aspect of the category, as depicted in Figure 2. We chose to include politics in order to foreground formal aspects of the context.

Each volunteer was then asked to randomly pick a news card and any other one. Then, we invited them to link the cards to two stories – a positive and a negative one – permeated by one of the following themes: activism, politics, or LGBT. Even though the stories could be fictional, all participants told a real story. They are summarized in Table 3.

Finally, we proposed a discussion about how technology could be used to give an alternative path for the negative stories, if possible, linking it with public policies creation. 4 ideas were proposed: (a) Facebook as a popular and addictive source of information, where it is possible to create mutual support groups; (b) a game where children can engage in activities from all forms of gender stereotypes in order to show that there is no inherent link between the tasks and the gender; (c) a reporter of LGBTphobia episodes and mediation of solidarity; (d) a system that finds favorable legislators and judges to provide assistance and orientation in specific cases.

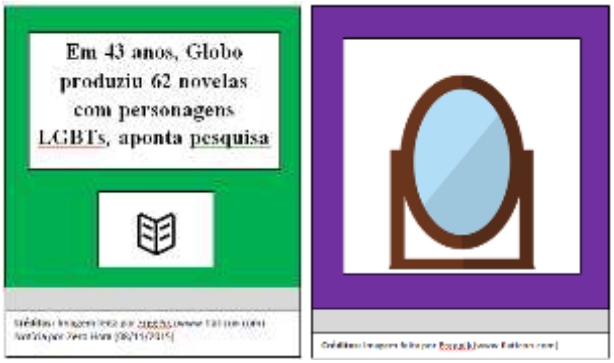


**Figure 2. A headline from Zero Hora (November, 2015), stating that 62 Globo[7] soap-operas have portrayed LGBT characters, and a mirror. Respectively, they represent news and quotidian categories.**

[7] Globo is the major Brazilian soap-opera creator for TV.

| | Positive | Negative |
|---|---|---|
| P1 | Researches that present an informed consent, since transgender people are a particularly vulnerable group, often exploited for the sake of the practitioner's career. | The headline from Figure 2 might be a misleading clickbait, because it does not say anything qualitative about the characters representation. |
| P2 | A love story about two men who faced adversities to be with each other after falling in love in a Catholic seminary. | Schools as places of many moral, social, and physical aggressions to LGBT people, even by teachers. |
| P3 | Small groups have organized to help women facing harassment or abuse. | A radio headline saying that rape of women in the city has increased. Laws are often targeted to treat the problem after it happened, instead of preventing it. |
| P4 | Presence of inclusive churches that accommodate LGBT people. | A guy was expelled from home by his priest father for being gay. |
| P5 | Facebook groups that help people to bond with others with similar struggles, although it is a hostile place. | A girl developed panic crisis after receiving death threats and having her bedroom wrecked by her mother, for being lesbian. Today they talk to each other without mentioning personal relationships. |
| P6 | LGBT people have been increasingly elected, showing that representativeness has not ceased to grow. | An 11 years old boy said he had "lost his reference of masculinity" after his father said he was dating another man. |
| P7 | Barack Obama awarded Ellen DeGeneres with the Medal of Freedom. | Dialogue has been giving place worldwide to rivalry between poles, as in Mr. Trump's election. |

**Table 3. Summary of stories shared during the workshop.**

Participants reported they did not know about any application with similar features to those suggested. Support, education, complaint, and guidance can be seen as the underlying themes of the proposals. Participants pointed out that Facebook is also a channel to broadcast of hateful content and lacks proper interaction tools to fruitful debates. Also, an educational tool must take into account the barriers imposed by society to genderless life and the negotiation everyone must engage with in order to belong to a group. Moreover, a way of preventing unprepared or malicious people of getting involved in cases of discrimination or aggression is fundamental. Finally, the generation of statistics might be helpful to fill in the lack of official reports.

### Workshop 2: David Bowie

Based on the previous activity, we wanted to further discuss the use of geolocation, suggested in proposals (c) and (d). We made the following affirmation on ConsiderIt and asked the volunteers to give an opinion as a warm-up for the workshop: "The use of geolocation can be an important resource for applications fighting intolerance against LGBT people." 14 people participated, 12 favorably and 2 opposing the affirmation. We present next the top arguments:

- In favor: it might be useful to call engaged people for help in emergency cases, as a panic button, or to find help from solidary people. It facilitates the choice of safe places to go, as well as the avoidance of dangerous ones; it is an embedded feature in most smartphones; it allows the creation of a map of violence and the further use to report statistics; it helps the creation of a network among LGBT people.
- Against: it might create a target in places marked as friendly and create a segregationist bubble effect; geolocation is sensitive information and prone to fraud.

In the workshop, we invited the volunteers to split into 2 groups and navigate in two systems: the Brazilian Chamber of Deputies[8] website and the app Espaço Livre. We chose both to assess, respectively, the search for legislative information and the use of geolocation. For the former, we invited volunteers to search 2 proposals favorable to LGBT people and for Espaço Livre, to navigate in the map the app displays, making notes about the decisions and impressions they had. 7 participants were present and the workshop was named David Bowie, in homage to the British gender-bender musician, performer, and pop icon, deceased in the beginning of 2016.

In the Chamber of Deputies website, each group adopted a different approach: one chose to search directly for parties and law projects they knew were favorable, while the other searched for keywords related to LGBT and then explored the news in the result page. None of them had previously used the website, being habituated to get informed via Facebook posts. They mentioned that it is hard to quickly identify favorable projects, because examples are presented

[8] http://www2.camara.leg.br/

mixed, the language is too technical, and news are too short. Also, they feel a disconnection between the laws being voted and the violence episodes. Such results have already been pointed out [e.g., see 14 or 32]. However, participants suggested that would be important to follow the laws proposals, if an aid to interpret the results was given.

As for Espaço Livre, participants complimented the ease of use, but pointed out the lack of details and reuse of information. They mentioned the fact that the buttons collect two different kinds of violence, but the map exhibits only one color of marker (see Figure 3). It also does not collect further information about the episode to inform users neither allows them to assess the reports. Participants also suggested features of warning users nearby risky areas, offering help, and messages communication. Such remarks resemble the use of technology as builder of a support network proposed in the first workshop. They also mentioned the navigation app Waze as an example of tool to collectively assess reports and moderate content.

The importance of accessing public regulation and the suitability of Waze's collaborative audit tool were subjects of the third warm-up. Considering apps directed to collect stories or reports, participants stressed the importance of having a way of auditing information to not drive people to fake safe places – it would be necessary to have a clear policy of use, a tutorial that contextualizes the functionalities, details about the occurrence and possibility of anonymity and edition. Another raised concern is the prevention of "trolls," which might perform fake validations or report fake incidents with malicious purposes. The access to legal information was said to be helpful to bring confidence in dealing with discrimination, and it would be good to have a place where it can be easily found. A new app, TODXS, launched in May, 2017, tries to fill in this gap.


**Figure 3. Screenshot from Espaço Livre – users are provided with 2 buttons, to report physical or verbal aggression. The complaint is then added as a green spot in the map.**

However, volunteers mentioned it would be palliative, since it does not replace educational campaigns. Additionally, it demands a dedicated team to translate the technical language and keep it updated, especially because Brazilian portals often do not provide machine-readable information, as demanded by law [2].

## CODESIGN WORKSHOPS

The third workshop marked a transition from the organization and context to codesign phase. We used two artifacts, the stakeholders diagram and the evaluation frame, to, respectively, list interested parties and their respective issues in the context of LGBT discrimination and ways to prevent and fight it. It provided us with a list of requirements to a possible application, though we still had not defined what this application would be. It was named after Ellen Page, a young Canadian lesbian actress and activist.

The application gained some form in the following workshop, named after Dandara dos Santos, the Brazilian travesti beaten to death in Fortaleza. In this workshop, we firstly conducted a brainwriting activity, where participants sat in a circle and wrote on a paper features or requirements about an app based on the previous discussions. After 1 minute, the paper should be given to the person beside, who had 1 minute to read the first idea proposed and comment it. The activity stopped when each paper reached back its first owner. Later, a similar activity was made, but this time participants should complete the draw of an application begun by others, in a braindrawing activity.

Cássia Eller, a popular bisexual Brazilian singer, was honored by the fifth workshop name. In this workshop, we debated the functionalities raised by the previous activities and evaluated a functional digital prototype based on the consolidation of braindraw results.

The application resulting from the workshops is under development and set to be launched by the end of 2017. It contains five main features:

- Panic button: a button which, when pressed, sends a pre-defined call for help to people nearby, authorities or selected close people, depending on the availability of service and user choice.
- Support: a place where people can state possible ways of helping other, as well as ask for help.
- Mobilization: creation of collective events.
- Stories: similar to other existing tools, but including positive stories, reports or personal sharing. Used to generate human and machine-readable statistics.
- Information: educational material about gender and sexuality.

The main goal of the app is to create a network of supportive and engaged users. A map is used to contextualize geographically stories and events, also seeable in a timeline. It should be noted that educational

and supportive aspects raised in the first workshop were carried through to the final concept, even though the participants across the activities were not exactly the same. The political participation we initially discussed underlies features such as the creation of mobilization and statistics generation, since a self-sustainable application cannot rely on current state of governmental platforms. Functionalities such as story sharing, panic button or information portal already exist in other apps, but their articulation to create a support and mobilization network constitute a new approach to LGBT apps, which we hope can be useful to provide a better quality of life to people.

## DISCUSSION

The codesign cycle we described has no intention of revealing a universal truth about LGBT demands or how to supply them. It must be noted that the methodology is an attempt to build an application upon participatory knowledge (co)construction – its expected outcome is a better contextualized app, not an undeniable solution to social problems. However, through it we were able to identify problems and silver linings of LGBT reality from sociological personal backgrounds to technical experience with applications. Moreover, the proposed activities resulted in a functional prototype with features both distinctive from the current corpus and meaningful to concerns raised by interested parties. Hence, we believe this experience helped to validate codesign not as *the* definitive method, but as *a* well-suited approach to critical socially aware design.

We were also able to identify concerns and requirements when dealing with applications directed to LGBT people. The need of moderating content is a central issue, as pointed by Pereira and Baranauskas [28]. Prejudice faced day-by-day is also transported to online interaction, what makes necessary for information systems to stand for a moral ground, namely the respect and tolerance for diversity. Although some apps offer functionalities to give voice to people, it is important for users to know if this voice is being heard and how, including in the research process. There is a form of political participation demand that requires a skilled and engaged group to mediate the access to information, as some previous works have pointed – the specific use of public data for awareness of disenfranchised people, however, seems a potential subject to be explored.

PD is traditionally associated with specific contexts, such as shared workplaces. In our case, the only shared background was the city we live and the goal of fighting against LGBTphobia, which might partially explain the small quantity of people participating in the workshops. It might seem a lack of engagement, but the online participation in warm-ups, the formation of a small group, which attended most workshops, the contact between researcher and participants about the work in between workshops, and the almost constant presence of at least one person going for the first time suggest the opposite. The willingness to talk about the subject is also reflected in the sharing of only real stories during the presented activities. This process also reflected the effect of variety in features in the app that seem applicable to other vulnerable groups, since volunteers' experience also interlaced with other groups besides the LGBT. Being reality apprehensible only through personal interpretations according to Semiotics tradition, it is likely that activities with other people result in new knowledge to be added.

The states of technique and art reviews illustrate some opportunities to research. Firstly, the apps stores enclose a vast corpus of knowledge interpretable by a critical read on how the results for a term and the social views about it dialectically relate to each other, perhaps throughout a timeline. Such contextualization might provide scientists with rich sociological data to better understand the technical productions around LGBT people.

Also, each result or category might be seen as a source of investigation. As we described, HCI works are dominated by mobile location-based apps, but there is a wide range of other categories that might be evaluated – especially those targeted at improving people's lives – as well as other LGBT particular contexts of use. In particular, lesbian and bisexual women and non-U.S. citizens are extremely underrepresented in studies about the LGBT spectrum, but there is also room for new takes on support of disenfranchised people by focusing on different goals (e.g., other unexplored ways of support), groups (e.g., other categories, places, economic conditions), technologies (e.g., the Internet of Things), or design and evaluation methods.

## CONCLUSION

LGBT people face a range of daily struggles. Few mobile applications have been developed with the explicit goal of supporting them and HCI still lacks both evaluation and design works on the issue. In this paper, we presented the experience of a critical codesign methodology to this end, focusing in the lessons learned in every one of the workshops. Some problems with existent applications were suggested, as well as potential paths to be refined or explored. Finally, we briefly describe a new application (co)conceptualized with a sexually and gender diverse group and link it to experiences raised during the workshops.

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## REFERENCES


1. ABGLT (Associação Brasileira de Lésbicas, Gays, Bissexuais, Travestis e Transexuais). 2016. Pesquisa nacional sobre o ambiente educacional no Brasil 2016: As experiências de adolescentes e jovens lésbicas, gays, bissexuais, travestis e transexuais em nossos ambientes educacionais. Retrieved May, 2017 from https://goo.gl/8AU3eB.
2. Pierre Andrews; Flávio S. C. da Silva. 2013. Using Parliamentary Open Data to Improve Participation. In *Proceedings of the 7th International Conference on Theory and Practice of Electronic Governance*, 242-249.
3. Pedro P. S. Antunes. 2010. *Travestis envelhecem?*. MSc Dissertation. Pontifícia Universidade Católica de São Paulo, São Paulo, SP.
4. Simone de Beauvoir. 1986. *Le deuxième sex*. Gallimard Education.
5. M. Cecilia C. Baranauskas; M. Cecilia Martins; José A. Valente. 2013. *Codesign de redes digitais*. Penso.
6. Diana Beirl; Anya Zeitlin; Jerald Chan; Kai I. A. Loh; Xiaodi Zhong. 2017. GotYourBack: An Internet of Toilets for the Trans* Community. *In Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems*, 39-45.
7. Lindsay Blackwell; Jean Hardy; Tawfiq Ammari; Tiffany Veinot; Cliff Lampe; Sarita Schoenebeck. 2016. LGBT Parents and Social Media: Advocacy, Privacy, and Disclosure during Shifting Social Movements. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, 610-622.
8. Bridget M. Blodgett; Heng Xu; Eileen M. Trauth. 2007. Lesbian, gay, bisexual and transgender (LGBT) issues in virtual worlds. *SIGMIS Database* 38, 4: 97-99.
9. Samantha Breslin; Bimlesh Wadhwa. 2014. Exploring Nuanced Gender Perspectives within the HCI Community. In *Proceedings of the India HCI 2014 Conference on Human Computer Interaction*, 45-54.
10. Ryan Champagne; Julio Guerra; Chun-Hua Tsai; Jocelyn Monahan; Rosta Farzan. 2015. Fuzziness in LGBT non-profit ICT use. *In Proceedings of the Seventh International Conference on Information and Communication Technologies and Development*. Article no. 30.
11. Menno Deen; Frank Nack; Mata Haggis. 2015. Diversity through specificity: design lessons learned from the Games [4Diversity] Jams. In *Proceedings of the 12th International Conference on Advances in Computer Entertainment Technology*. Article no. 5.
12. Pedro Diniz. 2017. Brasil patina no combate à homofobia e vira líder em assassinatos de LGBTs. *Folha de São Paulo*. Retrieved May, 2017 from https://goo.gl/JIcavi.
13. Emanuel F. Duarte; M. Cecilia C. Baranauskas. 2016. Revisiting the Three HCI Waves: A Preliminary Discussion on Philosophy of Science and Research Paradigms. In *Proceedings of the 15th Brazilian Symposium on Human Factors in Computing Systems*. Article no. 38.
14. Cristiano F. Faria. 2010. Can people help legislators to make better laws?: the Brazilian parliament's e-democracia. *In Proceedings of 4th International Conference on Theory and Practice of Electronic Governance*, 301-306.
15. Cally Gatehouse. 2016. Feral Screens: Queering Urban Networked Publics. In *Proceedings of the 2016 ACM Conference Companion Publication on Designing Interactive Systems*, 99-104.
16. G1 CE. Travesti Dandara foi apedrejada e morta a tiros no Ceará, diz secretário. *G1*. Retrieved May, 2017 from https://goo.gl/p2KUr5.
17. GGB (Grupo Gay da Bahia). 2015. Assassinato de LGBT no Brasil: Relatório 2015. Retrieved April, 2017 from https://goo.gl/Hq5qZO.
18. Amy Gonzales; Nicole Fritz. 2017. Prioritizing Flexibility and Intangibles: Medical Crowdfunding for Stigmatized Individuals. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*, 2371-2375.
19. Oliver L. Haimson; Anne E. Bowser; Edward F. Melcer; Elizabeth F. Churchill. 2015. Online Inspiration and Exploration for Identity Reinvention. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, 3809-3818.
20. Oliver L. Haimson; Jed R. Brubaker; Lynn Dombrowski; Gillian R. Hayes. 2015. Disclosure, Stress, and Support During Gender Transition on Facebook. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*, 1176-1190.
21. Oliver L. Haimson; Jed R. Brubaker; Gillian R. Hayes. 2014. DDFSeeks same: sexual health-related language in online personal ads for men who have sex with men. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 1615-1624.
22. Jean Hardy; Silvia Lindtner. 2017. Constructing a Desiring User: Discourse, Rurality, and Design in Location-Based Social Networks. In *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work and Social Computing*, 13-25.
23. Christopher. M. Homan; Naiji Lu; Xin Tu; Megan C. Lytle; Vincent M. B. Silenzio. 2014. Social structure and depression in TrevorSpace. In *Proceedings of the*

*17th ACM Conference on Computer Supported Cooperative Work & Social Computing*, 615-625.

24. Gopinaath Kannabiran; Shaowen Bardzell; Jeffrey Bardzell. 2012. Designing (for) desire: a critical study of technosexuality in HCI. In *Proceedings of the 7th Nordic Conference on Human-Computer Interaction: Making Sense Through Design*, 655-664.
25. Gopinaath Kannabiran; Marianne G. Petersen. 2010. Politics at the interface: a Foucauldian power analysis. In *Proceedings of the 6th Nordic Conference on Human-Computer Interaction: Extending Boundaries*, 695-698.
26. Ann Light. 2011. HCI as heterodoxy: technologies of identity and the queering of interaction with computers. *Interacting with computers* 23, 5: 430-438.
27. Kecheng Liu. 2004. *Semiotics in information systems engineering*. Cambridge University.
28. Guilherme C. Pereira; M. Cecilia C. Baranauskas. 2015. Opressões de identidade de gênero e orientação sexual percebidas em interfaces de usuário de sistemas digitais: um estudo exploratório. In *Proceedings of the 14th Brazilian Symposium on Human Factors in Computing Systems*, 93-102.
29. Joseph G. Ponterotto. 2005. Qualitative Research in Counseling Psychology: A Primer on Research Paradigms and Philosophy of Science. *Journal of Counseling Psychology* 52, 2: 126-136.
30. Marina Rossi; Marina Novaes. 2015. Os direitos básicos aos quais transexuais e travestis não têm acesso. *El País Brasil*. Retrieved April, 2017 from https://goo.gl/58BqJQ.
31. Gayle Rubin. 1975. The traffic in women: notes on the "political economy" of sex. In *Toward an anthropology of women*, Rayna R. Reiter. Monthly Review Press.
32. Rodrigo Sandoval-Almazan; Fabro Steibel. 2013. Benchmarking Mexico & Brazil open government websites: model and metrics. In *Proceedings of the 7th International Conference on Theory and Practice of Electronic Governance*, 372-373.
33. Wanderley P. Sobrinho. 2015. Duas em cada dez empresas se recusam a contratar homossexuais no Brasil. *Carta Capital*. Retrieved April, 2016 from https://goo.gl/wFKHhC.
34. Robert Stoller. 1968. *Sex and gender: On the development of masculinity and femininity*. Science House.
35. Kleber Tomaz; Cíntia Acayaba. 2015. Travesti fica desfigurada após prisão; Defensoria diz haver indício de tortura. *G1*. Retrieved May, 2017 from https://goo.gl/8CISN3.
36. TransgenderEurope. 2015. Trans murder monitoring 15. Retrieved April, 2016 from https://goo.gl/0oYrdY.
37. Chad Van de Wiele; Stephanie T. Tong. 2014. Breaking boundaries: the uses & gratifications of Grindr. In *Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing*, 619-630.
38. Tien E. E. Yeo; T. H. Fung. 2016. Relationships form so quickly that you won't cherish them: mobile dating apps and the culture of instantaneous relationships. In *Proceedings of the 7th International Conference on Social Media & Society*. Arcticle no. 2.