Infrastructuring computer-supported collaboration to foster the connection between high and low-skilled people

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Abstract. The main goal of my research project is to investigate the social and technological conditions for infrastructuring computer-supported collaboration with the aim to enhancing the life condition of low-income people living on Madeira island. The idea underpinning the project is to foster the connection between high and low-skilled people, trying to find common interests that could lead them to collaborate with mutual advantages. The objective of the resulting ICT tool is to provide those usually considered merely as "low-skilled" with the opportunity to take advantage of their practical skills and informal knowledge. They will benefit from the process of re-thinking their abilities, from the possibility to interact with people belonging to other social networks and from discovering the possibilities provided by technology in terms of communication and organization.

Introduction

Since its beginning in the late '80, CSCW community mostly dealt with social groups that were internally homogeneous (Harrison, 1990) or bounded by a co-presence relation (Berg, 1999). The improvement of coordinating system in workplaces has been for years the main focus of CSCW studies (Schmitt, 2011). This goal has been pursued by reflecting on coordinative practice in order to design more effective tools as well as by investigating on the inner role and openness of coordination systems themselves.

Recently, also due to the widespread adoption of computing technology among the population, CSCW research has been widened to publics and infrastructuring (Le Dantec et al. 2013, Di Salvo et al. 2014) thus expanding the discussion to the city or on a global scale (Schuler 2013).

Research question

Due to the field based research approach of my PhD project, the research question is dynamic and will be clarified and adapted. A provisional one could be: "Under which conditions, social and methodological, can the participatory design of collaborative infrastructures foster an improvement in the life conditions of low-skilled people, connecting them to high-skilled ones (in the context of Madeira)?".

To find an answer, my attention will focus on different outcomes of my research:

1) The data collected during the community study will provide a clear description of the research fieldwork, necessary to frame the other results.

2) Analyzing the PD process I intend to extract new information about how to overcome the difficulties to include low-skilled people in the design of the artifact.

3) Focusing on the ICT tool and the PD artifacts/activities I will draw some conclusions about the specific needs of lower-income/skilled in term of design.

4) By investigating on the ICT tool fallouts, I intend to get some information about the potential of ICTs in tackling socio-economic disadvantaged situations.

Methodological approach

My research objectives are centered around the design of an ICT tool fostering collaboration and targeting the lower income population. Although inclusive design theories and methods are already widespread, ICT development could still benefit from the insights of qualitative research methods (e.g. Keates et al. 2000). For this reason, one year will be dedicated to perform a community study of Madeira island; this step is fundamental as ICT can foster disadvantaged inclusion only if it is designed to fit their needs and abilities (Cremers and al. 2014, Blomberg 2012). My research project can be roughly split in three main activities, practically overlapped but analytically distinguishable.

1 Community study involving ethnographic method

To define and understand the targeted social groups I will rely on participatory observation – a research method based on the prolonged researcher's participation in their activities. Particular attention will be dedicated to identify the gatekeepers, fundamental to obtain field access and to engage participants in the PD process, improving long term results (Blomberg and Karasti 2012). I will collect a large amount of qualitative data, mainly in the form of field notes and in-depth interviews to key informants. To strengthen my understanding I will analyze quantitative data from the local statistical offices. This data will stimulate new possible investigative directions in the early phase of the research and will then provide a quantitative framework for my main findings.

2 Participatory Design process

During this stage, I am going to focus on the core of my research: the design of a collaborative ICT tool through a PD process that will be structured according to the first year findings. Its final goal is to identify functionalities and design requirements of a collaborative ICT tool to enable low-skilled to improve their life conditions. As I want to involve both low-skilled and high-skilled in the design process, participatory activities will be carefully planned in order to identify a possible ground of common interests. Research and design techniques will be

selected in accordance with the attitudes and capabilities of different groups of participants, and considering the different skills that each group can rely on (Cremers et al. 2014, Keates et al. 2000). Particular care will be necessary for activities involving a mixed audience of high and low-skilled. I foresee that the main tools I am going to use will be workshops and focus groups.

3 Testing and evaluation of the PD process and of the artifact

The last activity will be the analysis and evaluation of the overall work carried out during the previous years through Bossen's (2016) categories: *implementation*, *output* and *outcome*. Given the core of my project I will consider the PD process as *implementation;* it will be evaluated through specific questions during the last focus groups, and by interviewing drop-out as well. The final artifact will be tested collecting and analyzing data concerning its actual use (*output*). Moreover, interviews both to strong and weak users will be performed in order to better understand: 1) the strong and weak points of technologic tool (*output*) 2) the relapse of this kind of technology on the contextual conditions (*outcome*).

Findings to date and next steps

During this first months, I started the literature review and the preliminary informal observation of the field. Due to strong fluxes of tourists, Madeira is the second richest region of Portugal (OECD, 2012). However, these resources are not equally distributed as the tourism is mostly controlled by a few families. Those are the descendants of the nobles that colonized the island bringing along their servants whose descendants still live on the island. The social dynamics of the colonial era seem somehow reflected by the current ones: few families control the main sources of income and power, while manual jobs have scarce revenues and status. The middle class does not seems particularly wide and its access requires formalized knowledge typical of clerical and professional works. Educational attainment is the main barrier to get a decent socio-economic status. This polarization and the connection between education and socio-economic status is also reflected by a certain kind of deference often displayed toward people with higher education titles. The data concerning education are not encouraging: the "actual educational attainment" rate currently reaches the 77,4% for the third cycle of primary education and just the 61,7% for the secondary education (DREM 2015). Formal education access is one of the most critical points in this territory according to the European Social Progress Index. From this first overview, Madeira seems an area that could benefit from a project whose aim is to empower its participants starting from their informal skills and knowledge.

In the next months I will proceed both with an extensive literature review and with the informal observation, in order to find and contact a high-skilled group that could be interested in the project. The possible groups that I oversee at the moment are 1) high-income individuals that are particularly attentive to ecological or ethical consumptions, and that could be interested in interacting with local artisans and farmers 2) High skilled population suffering from low or fragmented stream of income, that could be interested in sharing resources with people with a different set of skills to mutually improve life conditions. This step will allow to focus my research question and to try to frame my work in the current academic debate.

Expected contributions

Given its aim, I would say that my research can be framed in the most recent PD and CSCW debate on infrastructuring public and socio-economic activities (Le Dantec et al. 2013, Schuler 2013, DiSalvo et al. 2014). It intends to connect social groups that differ for a number of sociological variables (e.g. income, education level, employment). Moreover, being located in the third urban area of Portugal, these groups are not likely to share identities connected to "belonging to the same community", as it would easily happen in a smaller context. My aim is to find possible common interests leading low and high skilled individuals to interact, acting as a community of practice or geographic-based (DiSalvo et al., 2012).

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