Human-Centric Design of Unified Communications:

e-Collaboration Features

Carolina Abrantes, Instituto de Telecomunicações, Universidade de Aveiro, Aveiro, Portugal

Óscar Mealha, Universidade de Aveiro, Aveiro, Portugal

Diogo Gomes, Instituto de Telecomunicações, Universidade de Aveiro, Aveiro, Portugal

João Paulo Barraca, Universidade de Aveiro, Aveiro, Portugal

José Ferreira, GoTelecom, Wavecom, Aveiro, Portugal

ABSTRACT

This article describes a co-design process in the context of user experience (UX) and usability testing and analysis of a first proof of concept of e-collaboration features based on unified communications, co-designed within an organization aiming to optimize users' communication cognitive load. An initial digital prototype with a detailed graphical interface, and simulated user narratives was established and the qualitative validation process is described and discussed. The implemented R&D process is mainly supported on user-centred design (UCD) methodology, namely action research with service design thinking method and co-design techniques. Qualitative data was gathered with concurrent think-aloud activities (CTA) stimulated by user experience expectation questions, observation notes, with integration in an eye tracking technology system. The UCD process and results are discussed, substantiating the added value due to the individual contributions and consequent usefulness of a final unified communication service for the organization.

INTRODUCTION

This paper describes a co-design, development and assessment process of a first conceptual, low fidelity prototype with an innovative UX and Usability test analysis for "Smart Entercom" project. This project runs in collaboration with GoContact, a company dedicated to solutions for Business to Client (B2C) interaction. The project's goal is to co-create a human-centric novel Unified Communications & Collaboration (UC&C) service aiming to optimise the company's human interpersonal communication and interaction, consequently, the performance of each individual with the optimization of their cognitive load. The project's transdisciplinary research team is divided in different work packages, such

as: context awareness, software defined networks communication systems, interaction and interface design, and product development. The work hereby reported was coordinated by the Interaction and Interface Design team.

For the first co-designed proof of concept, research was based on iterative Service Design Thinking methods (Stickdorn & Schneider, 2011) inferred on the direct contact with stakeholders, in their working environment, for concept and interaction narrative validation. The present paper also adds an innovative feature to a UX and usability evaluation technique, with an eye tracking setup, which determined narrative and interface changes for the final version of a conceptual prototype. Since a self-reported, explicit opinion may not match with the corresponding implicit attitude (considering the social desirability influence), and because 'verbalizations are manifestations of thoughts and not necessarily thoughts themselves' (Elling, Lentz, & De Jong, 2012, p. 212), the reported interface improvement was not only based on the explicit data provided verbally by the participants during UX test sessions, but also sustained by the implicit data registered with an eye tracker and computer system that hosted the UX tests.

BACKGROUND

The current technological market displays a progressively increasing number of communication solutions in the form of tools and services (Riemer & Wulf, 2010). Although every solution may improve or solve one communication problem, its proliferation is also creating a new problem: how to identify and select the ideal service for each communication setting. According to Fuze (2017), communication tools should empower productivity, though it increases the need for organizations to analyse each solution, rejecting redundant apps and tools. As depicted, 'IT leaders are battling a productivity threat in the form of application sprawl: workers navigating between tools and devices to share, connect, and communicate' (Fuze, 2017, p. 11), which can lead to failed communications attempts, lost time, disruptive work interruptions and frictions in team collaboration (Riemer & Wulf, 2010). Furthermore, having to juggle between diverse modes of communication has been associated to interaction overload (when the level of interaction an individual needs to engage in exceeds his communicative and cooperative capacity) and communication deficiency (when a communication is established through an undesired mode of communication) (Ljungberg & Sørensen, 1998). Summing up, while a recipient wishes to be constantly accessible, the way in which a communication is carried out might not be desirable.

Also relevant in this context of research is the cognitive load theory (CLT). This theory is based on the notion of a limited working memory capacity related to an amount of information expected to be processed. Some research has been done in order to relate CLT to Human-Computer Interaction (HCI), mostly concerned with the development of educational interfaces (Chalmers, 2003; Hollender, Hofmann, Deneke, & Schmitz, 2010; Oviatt, 2006). As a usability goal and to succeed in the creation of an intuitive and usable interface, aiming to reduce memory load and decrease irrelevant load (extraneous) (Hollender et al., 2010; Oviatt, 2006), frees up mental resources that allow to perform main tasks better whilst remaining attuned to the surrounding context (Oviatt, 2006).

LITERATURE REVIEW

Unified Communications

One future challenge in areas such as mobile, ubiquitous, and multimodal-multisensor interfaces is for human-centered design to adequately model human communication and activity patterns more broadly, as well as usage contexts. (Oviatt, 2006, p. 872)

16 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/article/human-centric-design-of-unified-communications/231632

Related Content

KMmaster® for Collaboration and Knowledge Management
Tobias Müller-Prothmann (2009). *Handbook of Research on Electronic Collaboration and Organizational Synergy (pp. 516-530).*
www.irma-international.org/chapter/kmmaster-collaboration-knowledge-management/20195

A Case Study of Web-Based Collaborative Decision Support at NASA
Irma Becerra-Fernandez, Martha Del Altoand Helen Stewart (2006). *International Journal of e-Collaboration (pp. 50-64).*
www.irma-international.org/article/case-study-web-based-collaborative/1946

Integral Communication Tool: What It Is, How It Works, Where It Helps
Ozren Rafajacand Alen Jakupovi (2017). *International Journal of e-Collaboration (pp. 1-21).*
www.irma-international.org/article/integral-communication-tool/207355

An QPSL Queuing Model for Load Balancing in Cloud Computing
Shadab Siddiqui, Manuj Darbariand Diwakar Yagyasen (2020). *International Journal of e-Collaboration (pp. 33-48).*
www.irma-international.org/article/an-qpsl-queuing-model-for-load-balancing-in-cloud-computing/256534

The Importance Role E-Collaboration Capability and Information System Maturity on Knowledge Sharing and SMEs Marketing Performance
Elia Ardyan, Andri Nurtantiono, Budi Istiyantoand Berta Bekti Retnawati (2018). *International Journal of e-Collaboration (pp. 43-65).*
www.irma-international.org/article/the-importance-role-e-collaboration-capability-and-information-system-maturity-on-knowledge-sharing-and-smes-marketing-performance/230885