The Emerging Requirement for Digital Addiction Labels

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Abstract. [Context & motivation] Digital Addiction, e.g. to social networks sites and games, is becoming a public interest issue which has a variety of socio-economic effects. Recent studies have shown correlation between Digital Addiction and certain negative consequences such as depression, reduced creativity and productivity, lack of sleep and disconnection from reality. Other research showed that Digital Addiction has withdrawal symptoms similar to those found in drug, tobacco, and alcohol addiction. [Question/problem] While industries like tobacco and alcohol are required by certain laws to have a label to raise awareness of the potential consequences of the use, we still do not have the same for addictive software. [Principal ideas/results] In this study, we advocate the need for Digital Addiction labels as an emerging ethical and professional requirement. We investigate the design of such labels from a user’s perspective through an empirical study, following a mixed-methods approach, and report on the results. [Contribution] Our ultimate goal is to introduce the need for labelling to both researchers and developers and provide a checklist of questions to consider when handling this non-functional requirement.

Keywords: Digital addiction · Ethical and professional requirements · NFR

1 Introduction

Digital Addiction (hereafter DA) is becoming a serious issue which has a variety of consequences such as reduced involvement with their real life communities [1] and lower Grade Point Averages due to its negative impact including procrastination, distraction, and poor time-management [2]. People who feel insecure in real life often try to compensate in the digital world [3]. When that later option fails, it reduces even more their self-confidence and self-esteem [4]. Studies showed that addiction to Facebook has a negative impact on romantic relationships (leading to divorce in some cases) due to disclosure of private information, cyber-stalking and electronic surveillance by one’s partner [5].

Young [6] classifies online addiction into five types: Computer (games) addiction, Information overload, Net compulsions, Cyber-sexual addiction, and Cyber-relationship addiction. Social network addiction, which is relatively new, would map to the last category but it may still include elements of the others, e.g. games. Such DA has characteristics similar to those found in “traditional” addiction such as mood modification, salience, tolerance, withdrawal symptoms, conflict, and relapse [7]. This paper will take social networks and games as exemplar addictive software.
However, in spite of this increasing recognition of the phenomenon of DA, there is still not enough data to decide whether the medium, in this case software and online space, has the main responsibility for addiction or whether personal characteristics is the genuine source and the medium is just a facilitator or a tool [4,5,7]. That is, the fundamental reason, at least in the beginning, may not be necessarily the subject of addiction, i.e. the software in our case. In all cases, awareness that a medium could facilitate an addictive behaviour should be a moral requirement if not a legal one.

DA is still an under-researched concept especially in the software engineering community. In our previous work [8], we defined DA from a requirements engineering perspective as “the excessive use of certain software-mediated operations to reach certain requirements. This includes the case when the use itself is compulsive or impulsive and also the case when the user cannot switch to other available alternatives to reach the same requirements without a good reason”. The impulsive and compulsive use could lead to unconscious and hasty actions, which exacerbate the consequences and necessitate even more a sort of warning and awareness messages.

In this paper we explore the responsibility of the software industry in raising awareness of the potentially addictive nature of their products. Unlike industries like tobacco\(^1\) and alcohol, which are required by law to raise such awareness through labels, software is still not seen subject to such social and ethical requirement. We confirm and enhance our initial argument and discuss thoughts on utilising the perception of users to best design DA labels. We follow a mixed-methods approach starting with a qualitative interview-based phase and following with a quantitative survey-based phase. We draw conclusions that we believe will inform further research on the topic and draw attention to this emerging professional non-functional requirement.

The paper is structured as follows. In Section 2 we describe the study design phases. In section 3, we report on the results of the first phase together with the degree of agreement of the larger samples involved in the quantitative phase. In Section 4, we present a set of research challenges with regard to the engineering of the labelling requirement. We conclude the paper and present future work in Section 6.

\section{The Study Design}

We study DA labels from a user perspective. Users are the ultimate target of such warning or awareness messages and thus their perspective is premium. Labelling is different from controlling. Labelling is to raise awareness and aid certain perceptions and behaviour change. Thus, it is a sort of recommendation similar to the Nudge approach to behaviour change in the health and social field where the recommender attempts to encourage people to make a better choice but do not actually attempt to control them. An example is to put health warnings on cigarettes but not make smoking illegal [14]. In [9] we conducted a study to understand how users would like recommendation messages to be delivered. The study concluded that besides the basic feature of having a relevant message in terms of content and presentation, users

\footnote{\url{http://www.tobaccolabels.ca}}