Chapter 87
The Role of U–FADE in Selecting Persuasive System Features

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ABSTRACT

Although persuasive technology continues to impact behavioral and attitudinal interventions, research has demonstrated that existing design approaches are faced with limitations that impede their effective usage. Mostly, they become obsolete, as user needs change during the use of the persuasive application. This research therefore proposes the unified framework for analyzing, designing, and evaluating of persuasive systems (U-FADE). The proposed framework integrates concepts from various existing models to provide a systematic approach that facilitates persuasive design. It addresses the issue of changing needs of users by considering external and internal activities that may promote or impede persuasion before and during implementation.

INTRODUCTION

Behavior Change Support Systems (BCSS) are systems that combine properties of interpersonal interaction and mass communication with the support of technology to change or alter human behavior or attitude (Oinas-kukkonen, 2013). It originated from Persuasive Technologies (PT) or Captology; which is the use of interactive technology for changing human attitude or behavior to a predetermined one (Fogg 1997). Due to its ability to adapt to individual differences, it is considered to have a greater potential for changing human behavior and/or attitude. This is because, it is capable of employing both animated and non-animated objects to persuaded its user. Thus it has been applied in areas of healthcare (Mateevitsi et al., 2014; Rana & Saleem, 2014), leisure and recreation (Sra & Schmandt, 2013; Tieben, Sturm, Bekker, & Schouten, 2013), energy saving (Emeakaroha, Ang, & Yan, 2012; Wunsch, Stibe, Millonig, & Seer, 2015) Information security (Kegel & Wieringa, 2015; Yeo, Rahim, & Ren, 2009), etc. Nonetheless, BCSS development is faced with a number of challenges and one of the most prominent is that majority of designers fail to use appropriate methods for its design (Wiafe, 2013). As a result, some BCSS applications become obsolete with time[2]. In addition, most of the existing frameworks or design

approaches do not provide adequate information that can be used for analyzing and designing applications that address changing needs of users during useADDIN CSL_CITATION { "citationItems": [{ "id": "ITEM-1", "itemData": { "DOI": "10.1007/s00779-014-0782-3", "ISSN": "1617-4909", "author": [{ "dropping-particle": "", "family": "Wiafe", "given": "Isaac", "non-dropping-particle": "", "parse-names": false, "suffix": "" }, { "dropping-particle": "", "family": "Nakata", "given": "Keiichi", "non-dropping-particle": "", "parse-names": false, "suffix": "" }, { "dropping-particle": "", "family": "Gulliver", "given": "Stephen", "non-dropping-particle": "", "parse-names": false, "suffix": "" }], "container-title": "Personal and Ubiquitous Computing", "id": "ITEM-1", "issued": { "date-parts": [["2014", "6", "29"]] }, "title": "Categorizing users in behavior change support systems based on cognitive dissonance", "type": "article-journal" }, "uris": ["http://www.mendeley.com/documents/?uuid=0d5cf669-445e-4c55-b4d9-ecef84f1fc75"] }, { "id": "ITEM-2", "itemData": { "ISBN": "9781605583761", "author": [{ "dropping-particle": "", "family": "Torning", "given": "Kristian", "non-dropping-particle": "", "parse-names": false, "suffix": "" }, { "dropping-particle": "", "family": "Hall", "given": "Cordura", "non-dropping-particle": "", "parse-names": false, "suffix": "" }, { "dropping-particle": "", "family": "Oinas-kukkonen", "given": "Harri", "non-dropping-particle": "", "parse-names": false, "suffix": "" }], "id": "ITEM-2", "issued": { "date-parts": [["2009"]] }, "title": "Persuasive System Design: State of the Art and Future Directions", "type": "article-journal" }, "uris": ["http://www.mendeley.com/documents/?uuid=f00c12db-e11f-47da-a8f1-71424dd8fe10"] }], "mendeley": { "formattedCitation": "[1], [2]", "plainTextFormattedCitation": "[1], [2]", "previouslyFormattedCitation": "(Torning et al., 2009; Wiafe, Nakata, & Gulliver, 2014)" }, "properties": { "noteIndex": 0 }, "schema": "https://github.com/citation-style-language/schema/raw/master/csl-citation.json" }.

Recently, the Unified Framework for Analyzing, Designing and Evaluating persuasive systems (U-FADE) was proposed (Wiafe 2013). It incorporated key concepts from existing persuasive design models such as the Functional Triad (B. Fogg, 1998)(Wiafe et al., 2014), the Behavior Wizard (B. J. Fogg & Hreha, 2010)[4], the 3-Dimensional Relationship between Attitude and Behavior (3D-RAB) model (Wiafe, Nakata, & Gulliver, 2014) [1], [2]and the Persuasive System Design (PSD) model (Oinas-kukkonen & Harjumaa, 2009)ADDIN CSL_CITATION { "citationItems": [{ "id": "ITEM-1", "itemData": { "author": [{ "dropping-particle": "", "family": "Fogg", "given": "B J", "non-dropping-particle": "", "parse-names": false, "suffix": "" }, { "dropping-particle": "", "family": "Hreha", "given": "Jason", "non-dropping-particle": "", "parse-names": false, "suffix": "" }], "id": "ITEM-1", "issued": { "date-parts": [["0"]] }, "title": "Behavior Wizard: A Method for Matching Target Behaviors with Solutions 1 . Overview of Behavior Wizard 3 . The Need to Better Classify Behavior Types", "type": "article-journal" }, "uris": ["http://www.mendeley.com/documents/?uuid=8ba74f7f-e3ef-4ef5-83a2-4f19c9f8b4f6"] }], "mendeley": { "formattedCitation": "(B. J. Fogg & Hreha, n.d.)", "plainTextFormattedCitation": "(B. J. Fogg & Hreha, n.d.)", "previouslyFormattedCitation": "[5]" }, "properties": { "noteIndex": 0 }, "schema": "https://github.com/citation-style-language/schema/raw/master/csl-citation.json" } to address design challenges associated with previous design methods. However, the framework has not been applied in developing any application to ascertain its practicality, although it has been demonstrated conceptually that it provides a more compressive approach for BCSS analysis and design (Wiafe 2013)(B. J. Fogg & Hreha, n.d.).

This chapter therefore presents an evaluation of the Unified Framework for Analyzing and Designing Persuasive Systems using the case of a weight management system. The various stages of the U-FADE was followed to redesign an existing mobile application known as ObiMo Pet (Wiafe, 2013). The objec-

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