Chapter 7

A Dynamic User Centric Framework for Enhancing eServices Effectiveness Aiming at Mass Customization

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ABSTRACT

Mass customization should be more than just configuring a specific component (hardware or software), but should be seen as the co-design of an entire system, including services, experiences and human satisfaction at the individual as well as at the community level. The main objective of this chapter is to introduce a framework, smartTag, for the dynamic reconstruction of Web content based on human factors. Human factors and users’ characteristics play the most important role during the entire design and implementation of the framework which has the inherent ability to interact with its environment and the user and transparently adapt its behaviour using intelligent techniques, reaching high levels of usability, user satisfaction, effectiveness and quality of service presentation. The initial results of the evaluation have proven that the proposed framework do not degrade the efficiency (in terms of speed

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and accuracy) during the Web content adaptation process as well as increases users’ satisfaction and efficiency of information processing (both in terms of accuracy and task completion time), while users navigating in the personalized condition rather than the original one.

INTRODUCTION

Peoples’ lives today are more turbulent and diversified. The “one size fits all” (Stonebraker and Çetintemel, 2008; Brown, 2004; Stonebraker, 2007) model could be considered out-of-date. People now want to be seen and treated as individuals and many are prepared to pay for this. They are better educated and informed; able and willing to make their own decisions (cyLEDGE Media, 2008).

Mass customization moves towards this direction and it aims to replace mass production, which is no longer suitable for today’s chaotic markets, growing product variety, and opportunities for eCommerce and eServices (also referred to as eServices or On-line services) in general.

Mass customization is a broad term. It could be easily perceived as a working and profitable business model with a whole spectrum of ways and methodologies that can companies benefit from. At the most visible end of the spectrum, companies can mass customize products for individual customers.

However, with the rapid development of Internet technologies and the imminent change of business processes and services provision, there is always the question whether mass customization and internet can co-exist, or better is it actually happening (cyLEDGE Media, 2008)?

Nevertheless, we could perceive mass customization, together with personalization, as a combination that together tend to change the business information systems offering personalized service relationships as a way of connecting with customers over a number of platforms and of differentiating their services from those of competitors.

Mass customization should be more than just configuring a specific component (hardware or software), but should be seen as the co-design of an entire system, including services, experiences and human satisfaction at the individual as well as at the community level. It is widely acceptable that individuals differ in the way they think, feel, perceive and learn. Factors that could affect individuals’ behavior range from cognitive and mental processes to visual and emotional characteristics liable to determine their degree of information assimilation and learning capacity at a given moment.

Henceforth, the research that is described in this chapter focuses on incorporating theories of individual differences in information processing within the context of eServices and the dynamic reconstruction and adaptation of any hypermedia content to the benefit of the unique user. Previous research of authors, in the field of adaptive eLearning, focused upon the enhancement of the quality of information presentation and users’ interactions in the Web by matching their specific needs and preferences with the information space. It has been demonstrated that the incorporation of human information processing factors in eLearning environments leads to better comprehension on behalf of the users and increase of their academic performance (Germanakos et al., 2008a, Lekkas et al., 2008; Tsianos et al., 2008a). The comprehensive three-dimensional perceptual preferences model used comprises of the following human factors: Cognitive Style, Cognitive Processing Efficiency and Emotional Processing. The first dimension is unitary, whereas Cognitive Processing Efficiency is comprised of (a) Visual Working Memory Span (VWMS) (Baddeley, 1992) and (b) speed and control of information
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