

Abstract

Currently, more than two billions people access the Web for various purposes. The majority are people without programming or modelling background. Part of these people (called end-users) also likes to create their own Web applications to meet their daily needs. Mashup Makers are tools to create such end-user's Web applications. As such, Mashup Makers could become the dominant environment for end-user development of Web applications. Existing Mashup Makers promise that creating a Web Mashup is very easy and just a matter of a few mouse clicks. However, there is no evidence that this is indeed the case. On the contrary, research has already revealed usability problems with Mashup Makers.

Therefore, this thesis concentrates on the usability of Mashup Makers as development environments for Web applications for end-users. Usability is a key issue for the success of software artifacts, and especially if the artifacts are intended for non-technical users. Therefore, we target the achievement of a consolidated approach, model, and framework for the evaluation of the usability of Mashup Makers for end-users. Such a framework will not only allow evaluating the usability of existing Mashup Makers, but it will also provide key issues concerning usability (i.e. usability impact factors) that developers of Mashup Makers and of other future end-user development tools can take into consideration when developing new tools.

To come to such a framework, first two initial experimental studies, a pilot study and a user experiment, have been performed. These experiments revealed that existing usability problems could be the basis for deriving usability impact factors and afterwards deriving a conceptual evaluation model and evaluation framework.

Both the pilot study and the user experiment were designed to evaluate a variety of Mashup Makers from different usability perspectives. The literature investigation of the usability of Mashup Makers, as well as the results (findings) of both experiments suggested that the usability of Mashup Makers for end-users is affected by three main aspects: the user interface aspect, the functional aspect, and the user interaction aspect. This suggests that evaluating the usability of Mashup Makers should depend on the evaluation of those three main aspects, resulting into three types of impact factors (indicators). Those impact factors were refined using more detailed evaluation criteria and subsequently the criteria are refined using metrics that link to raw usability data.

A conceptual model of usability factors of Mashup Makers has been developed. This conceptual model reflects the conceptual approach taken and identifies the main aspects (indicators) of the usability evaluation of Mashup Makers for end-users. Furthermore, a usability evaluation framework has also been devised. As already indicated, this usability evaluation framework can be used to guide usability practitioners in the evaluation of Mashup Makers, as well as designers of new end-user tools. Experts in the domain have evaluated the proposed framework using an experimental study.