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Virtual reality systems estimation vs. traditional systems estimation

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Abstract

This paper examines the problems of applying traditional function points count rules to virtual reality systems (VRS). From the analysis of the differences between traditional and VRS systems, a set of deficiencies in the IFPUG 4.1 function points count method was detected. Due to the increasing importance of these kinds of applications, it is necessary to study how traditional function points count rules can be adapted to estimate VRS. In this paper, we are going to focus on the possibility of estimating function points accurately using a proposed guideline which was successfully applied to estimate two VRS.

Keywords; Estimation methods; Function points; Interactive systems; Virtual worlds

1. Introduction

In this article, we present an adaptation of the Albretch/IFPUG function points to virtual reality systems (VRS). This section gives a brief overview of VRS and function points.

Interactive systems, in software terms, are traditionally associated with the relationship between the user and the software product through the system's interface. Today, it is generally accepted that adequate interaction is offered by the technologies developed by Douglas Engelbart (the mouse, windows, etc.) (Engelbart, 1986); and by Alan Kay (the first graphic interfaces) (Kay and Golberg, 1997) at the beginning of the seventies. Since then, there have been many advances in this field. However, there are three features which determine the differences between past and future interactive systems (Berenguer, 1997):

- The amount of control the user has, that is, the degree of autonomy which allows the user to decide what to do, where to navigate, etc.
- The amount of interaction allowed which depends on the possibilities the user has to interact with the system.
- The presence or personal involvement of the user, that is, how immersed they are in the images and sounds. In this paper, the amount of presence is not strictly linked to virtual reality devices, but rather, to how credible the VRS is for the user.

If we take the three variables: interaction required, autonomy and presence, as the axes of coordinates, we will obtain a three dimensional space (Fig. 1) in which we can place present and future interactive programs. These programs are called VRS when the sensation of presence and immersion are high. We have used VRS in a broader sense of the term; that is, systems which have a high degree of presence and which do not imply the use of virtual reality devices to interact with the user. Today, virtual environments are the maximum representation of VRS.

The size of a project is usually measured in the first stage of the software lifecycle through the functionality required for the system. Therefore, one of the first steps

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Future studies will focus on new experiments to validate and enhance the proposed guidelines presented.

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