The ISO/IEC 9126-1 as a supporting means for the system development process of a consumer health information web service

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Text

Introduction

Consumer health information systems are becoming more and more important as the amount of information available on the health sector increases steadily [1]. Not only the availability and increasing amount of information but also the increasing need for organising and structuring the available information determine the importance of consumer health information systems. Apart from content concerns new techniques and concepts like Web Services or the Semantic Web technology offer a whole new range of applications to consumer health information systems [2], [3]. Therefore also implicate increased demands on the development of consumer health information systems. This states that the development of consumer health information systems faces two mayor challenges [3]:

- The process of system development must comply with the increasing complexity and amount of available content.
- The development has to integrate new available techniques in the implementation process of the system.

This implies that the cooperation of persons from different fields like computer science or medicine as well as the integration of their interests is a crucial factor for the success in developing such systems [4], [5]. The need for cooperation and integration leads to the problem of organising those teams from different fields in a system development process. An integrated development demands for a method to deal with both aspects. The ISO/IEC 9126-1 offers a framework where both views can be integrated to a general view of the system and can be used as a basis for further development.

Methods

The *ISO/IEC 9126* is a considerable norm for the evaluation of software products and was issued by the International Standardization Organisation in cooperation with the International Electrotechnical Commission in the year 2001. The norm divides into 4 parts: Quality model, External metrics, Internal metrics, Quality in use metrics. The first part of the norm, the quality model, primarily deals with the establishment of a system of characteristics and subcharacteristics for the definition of software quality. The second, third and fourth part of the norm deal with the development of criteria for the actual measurement of the characteristics defined in part one. In this context only the first part of the ISO/IEC 9126 is to be considered important for the support in the development of consumer health information systems. This can be traced back to the fact that the first part provides consistent terminology through the definition of characteristics and subcharacteristics for software product quality. Figure 1 [Fig. 1] shows all the characteristics and subcharacteristics defined by the ISO 9126 for internal and external quality.

Result: Web Service for a consumer health information system

Figure 2 [Fig. 2] shows part 1 of the actual prototype implementation of the ISO 9126-1 in the development of a Web Service for a consumer health information system concering the first three characteristics. They show the characteristics und subcharacteristics of the ISO 9126 as well as an extract from the developed requirements for this Web Service going from the root to the branches of the mind map. The concept of this Web Service aimed for the development of a Web Service to assist a patient during the process of a breast cancer treatment [6]. The idea for the Web Service is based on a scenario which was developed together with physicians from the University Hospital in Innsbruck [7].

Discussion

The use of the ISO 9126 has a great impact on the system development process and helps to solve and assist respectively in solving several problems during the development process:

- The ISO 9126-1 provides the developing team with a consistent terminology and structure and offers a proofed framework.
- The norm helps with the definition of clear objectives for the further steps of the development process of the system. It can be used as a basis for a system specification.
- The ISO 9126 addresses functional as well as technical aspects in its framework. The integration of external and internal quality characteristics gives a complete overview of the system.
- The Framework can be used in different levels of development cause of the general terminology. This means that the ISO can be used as an accompanying throughout the whole development process.

However the ISO 9126 itself isn't sufficient to be solely used to describe all requirements of a consumer health information system in detail. The ISO 9126 can only be used as an initial means, to provide the further methods of system development with a structured basis of information.

The next step should be to define a complete system development process based on the use of the ISO 9126 as well as to further elaborate the characteristics and subcharacteristics given by the norm to better match the specific needs of the system development process in consumer health information system and health information systems respectively.

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