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DEVELOPMENT OF ISO 25010 STANDARD FOR EVALUATING THE QUALITY OF HEALTH CARE SYSTEMS BASED ON PERVASIVE COMPUTING

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ABSTRACT

Introduction: The usage of pervasive computing in the field of health care is one of the latest progressions. The sensitivity of this field enhances the evaluation's importance of the quality in these systems. This paper has studied this issue based on ISO 25010 standards and tried to develop it in order to have an evaluation with high precision. As a result, we have achieved three characteristics—privacy, communication among stakeholders, and compatibility with culture—in order to develop this standard.

Methods: The library and field research methods are used. For this reason, related articles, papers, and books in prestigious journals and databases are used. To complete the investigation and to obtain a series of data, Shahid Kamyab Hospital, Mashhad, was studied. After providing the required content to stakeholders (staff of the health care centers, including doctors, nurses, patients, etc.), comments and data received from them were collected. The first step was to select the appropriate standard; therefore, after reviewing the presented standards, we understood that the standards provided by IEEE and 2501n are related to quality models. These series provided quality models for software products, systems, and data. Among these series of standards, ISO 25010 was finally selected. In order to show the scheme of the system, we needed to provide a number of scenarios. For this purpose, we provided four scenarios and presented them at the beginning of each interview with stakeholders, so they became familiar with the system. Finally, some questions were designed according to the GQM method.

Results: After investigating the opinions of stakeholders and studying their needs, the following characteristics were reached: 1) Privacy: This important feature is not in the standard ISO 25010. The definition of privacy is the covering of tasks, situations, and personal issues pertaining to individuals. This feature was demanded by all stakeholders. 2) The communication of stakeholders with each other: stakeholders noted that the magnitude of this feature enables the system to provide physicians an awareness of the nurses' tasks, and when problems occur nurses are not questioned about their delays and performances. 3) Compatibility with culture: stakeholders, particularly women, insisted that in the culture of each country or city there are some issues that must be considered in pervasive health care systems. They also stated that, if the system does not have this feature, they will not accept to work with it.

Conclusion: Due to the sensitivity of health care systems, quality is important. One of the methods for measuring and evaluating quality is to use quality models, which were used in this study based on ISO 25010, and developing them provides an applicable standard for such systems. Finally, we reached three quality attributes—privacy, communication among stakeholders, and compatibility with culture—which do not exist in this standard and are also helpful for raising security issues.

KEYWORDS: Pervasive computing, Heathcare, Quality, Evaluation, ISO 25010

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