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MDA Framework for FAIR Principles

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Abstract. This paper shows that the MDA framework can be helpful for designing and implementing FAIR principles. We reached this conclusion based on a focus group interview with six experts, during which we focused on the three MDA components: mechanics, dynamics and aesthetics.

Keywords. Design, Implementation

1. Introduction

FAIR (Findability, Accessibility, Interoperability, and Reusability) principles were published in 2016 [1] and have been used ever since. In this paper, we explore whether the MDA (Mechanics, Dynamics, and Aesthetics) framework, a tool used to analyze games during the design phase [2], can be used to design and implement FAIR principles.

2. Method

We conducted a focus group interview with three experts in database development and information architecture, and three professors of health information technology. During online semi-structured interviews, we asked one question: *Is it possible to use MDA components to implement FAIR principles?* The interview lasted four hours. Then we analyzed the expert comments using narrative analyses.

3. Result & Discussion

The MDA framework consists of three design components: mechanics, dynamics, and aesthetics. From the interviews, it follows that *mechanics* can be used to determine features and rules that can be applied in certain situations when implementing FAIR.

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Dynamics can be viewed in terms of how users navigate to a certain location; *dynamics* can also be extended by looking at users' behavior during their activities. *Aesthetics* refer to user interface design and user experience; in implementing FAIR, aesthetics are related to visual appearance. Visual design comprises all aspects relevant to the design theme, such as font face and size, color combinations, layout, images, charts, graphics, animation and videos.

The MDA framework formalizes the use of games by breaking them down into their distinct components and establishing their design counterparts. Due to the MDA components and their use in the design and implementation of FAIR, FAIR platforms can be more applicable and accessible. Widely used [1], FAIR principles have been tested in a variety of fields [3]. The MDA framework has been introduced in numerous studies as an appealing approach to website implementation [4], design and development of mobile health applications [5], and software development [6]. This shows that, because of the flexibility of the MDA framework, it can be used in various scenarios. Originally, the framework was used to design games; since games are considered as more attractive to users than other media [7], MDA can increase the level of user engagement in implementing FAIR principles.

A limitation of the study was the small number of specialists interviewed. However, in addition to their expertise, they offered a significant amount of time and involvement during the interviews. We believe that our results offer a starting point for further research on the practical aspects of applying MDA to design and implementation of FAIR principles; such research should include more experts and provide more detailed questions.

4. Conclusions

The study shows that the MDA framework can assist in designing and implementing FAIR principles.

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