Designing a FAIRification game for Research Software

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Abstract

FAIRification games are training tools used to raise awareness around the FAIR principles. They offer a low barrier entrance by providing a gamification approach where participants play to solve an overall goal. Building on top of the FAIRification Game for Rare Disease Data, here we present our initial considerations for a FAIRification game for Research Software.

Keywords

FAIRification, gamification, research software

1. Introduction

The FAIRification Game for Rare Disease Data [1] is a training resource to improve adoption of the Findable, Accessible, Interoperable and Reusable (FAIR) data principles [2]. It guides players through the process of searching patient data across diverse rare disease data providers, highlighting the challenges of non-FAIR data (e.g., lack of connection across records and resources, use of multiple natural languages, relying on free text) and showing the benefits of implementing the FAIR data principles (machine-actionable data linked via ontological terms rather than free text). The game incorporates an ontology room where the FAIR principles have been applied, underlying the importance of FAIR data and its contribution to a more effective sharing of Rare Disease data.

2. Designing a FAIRification game for research software

Similar to the FAIR (data) principles, the FAIR for research software (FAIR4RS) principles [3] address FAIRness challenges for the case of research software (RS), with metadata playing an essential role. Despite some efforts on metadata schemas for RS (e.g., Codemeta [4] and Bioschemas Computational Tool, the use of metadata and ontologies to harmonize RS descriptions is not yet a common practice. A FAIRification game for RS could become a key training resource to raise awareness, lower barriers, and promote adoption of the FAIR4RS principles. The approach to design a FAIRification game for RS was simplicity and closeness to the game for Rare Disease data (i.e., one overall task, a set of cards describing RS distributed across different registries, an ontology room where descriptors are harmonized).

The overall task for the Rare Disease case was "finding a **drug** that can be used to treat my **patient** for a specific **symptom**", "drug", "patient" and symptom" being the key elements. For the

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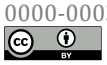

RS case, the overall task was defined as "finding a **software** that fits my **purpose** based on **some characteristics**". Initial RS cards were created using ChatGPT [5] (free version 3.5), each card with the following columns: name, URL, README (including purpose), coding language, license, task, input description,input format, input nature/aboutness, output description, output format, and output nature/aboutness, all of them optional except for name and URL. The ontology room maps descriptors to Codemeta and Bioschemas ComputationalTool properties, using a mock controlled vocabulary to harmonize key characteristics.

3. Conclusions and future work

A FAIRification game for RS will promote the understanding and adoption of the FAIR4RS principles. This game will serve an interactive and engaging learning experience, not only by emphasizing harmonization of descriptors across diverse registries but also confronting challenges for RS metadata. We will continue working on the design and development of the game with support for multiple card scenarios.

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