Presenting the Actionable Guidelines for FAIR Research Software Task Force

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Abstract

Research software is a critical element of modern scientific research. Making it Findable, Accessible, Interoperable, and Reusable (FAIR) is crucial for fostering reproducibility, promoting transparency, ensuring sustainability, and accelerating scientific progress. The FAIR Principles for Research Software (FAIR4RS Principles) were established in 2022 through a global initiative to provide a general framework for making software FAIR.[1] Similarly to the original FAIR Principles they were inspired from, the FAIR4RS Principles remain aspirational by design and do not provide concrete implementation instructions. The FAIR Biomedical Research Software (FAIR-BioRS) Guidelines were established in 2023 to provide actionable instructions for making biomedical research software compliant with the FAIR4RS Principles.[2] These guidelines were presented at USRSE'24, where audience members suggested generalizing them beyond biomedical research. While most elements of the FAIR-BioRS guidelines are not specific to biomedical research software, it was not judicious to directly consider them generalizable since they lacked cross-disciplinary community input. Such domain-agnostic guidelines would support research software developers in making their software FAIR, as revealed by a survey of the research software community conducted in 2024 by the FAIR4RS Working Group.[3]

Acting on feedback received during US-RSE 2024, authors of the FAIR-BioRS guidelines initiated the Actionable Guidelines for the FAIR Research Software (Actionable FAIR4RS) Task Force in December 2024 under the Research Software Alliance (ReSA).[4] The Task Force is run by a diverse international team of researchers and research software developers from various fields, including biomedical research, data science, knowledge representation, and software engineering. The goal of the Task Force is to create and provide actionable and domain-agnostic guidelines for implementing the FAIR4RS Principles, through a comprehensive, community-driven methodology. Building upon the foundation laid by the FAIR-BioRS guidelines, the Task Force began by conducting an in-depth analysis of the FAIR4RS Principles and identified six key categories where actionable instructions were needed to comply with the principles: Identifiers, Metadata for software publication and discovery, Standards for inputs/outputs, Qualified references, Metadata for reuse, and License. Six dedicated sub-groups are now conducting thorough literature reviews and community outreach to identify how the requirements of each category can be practically satisfied. Some of the challenges include identifying suitable identifiers, archival repositories, metadata standards, and best practices across research domains.

By the time of our presentation at USRSE'25, we expect the first draft of the guidelines to be ready for community review. In our presentation, we will provide an overview of the Task Force, present its progress, and outline opportunities for community involvement in shaping these guidelines. We believe this effort aligns with the USRSE'25 conference theme "Code, Practices, and People", and is in particular aligned with the "Practices" related theme "Making research software sustainable" and "Creating reproducible code" topics. Given the progressive adoption of the FAIR4RS Principles[5], including by funders, we expect this presentation will provide attendees at USRSE'25 with an understanding of the FAIR4RS Principles and how they can make their software FAIR through actionable, easy-to-follow, and easy-to-implement guidelines being established by our Task Force.

References

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