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Fusion's FAIR Data Portal

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While Fusion is one of the oldest 'official'scientific communities, it has not fully embraced modern technical solutions to ease user access and permit interoperability and findability between data generated at different experimental sites. This has been due to a number of very good reasons - different funding models, national strategic importance, differing legal frameworks. However, the FAIR4Fusion project aims to help Fusion data to become at least FAIR within the community by making data findable, accessible and citable by any fusion researcher. This project has gathered a community from 5 large European tokamaks (ASDEX Upgrade, JET, MAST-U, TCV and WEST) including data managers and users who have provided a coherent set of requirements which have been augmented with requirements from FAIR to allow us to improve present practices, allowing better interactions with the EOSC. To this end, we are embarking on the parallel development of two demonstrator projects, one making use of existing tools within the fusion community and one looking at alternative technologies, both of which will feed a reference architecture for future implementation.

The first demonstrator being prepared makes use of existing tools within the community that have been extended by the F4F project and dockerised; the JET dashboard forming the basis for the data query layer, EUROfusion's Catalog QT forming the underlying information storage and indexing power, the ITER developed Unified Data Access layer for information transport and mapping, and the ITER/EUROfusion Interface Data Structure (IDS) to provide a basis for metadata modelling. The second demonstrator that is also dockerised is designed to accommodate experimentation with technologies and approaches again using a container based approach, that could influence future developments. Its UI is also based on the JET dashboard, whereas its backend technologies are loosely coupled to, but not dependent, on the ITER technologies. By making data more accessible it is anticipated that more usage could be made of services provided by the EGI foundation, particularly use of federated cloud resources and notebooks for applications and data processing, which would further improve the FAIRness of the work undertaken by the fusion community. As it integrates with joint EUROfusion and ITER infrastructure tools it will be extendible towards future exploitation at both an extended set of European devices as well as ITER.

This demonstration will show the progress we have made so far in terms of making the Fusion FAIR Data Portal a reality. We are seeking inputs from others who have been on a similar journey.

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