# TOWARDS IMPLEMENTING THE FAIR4FUSION OPEN DATA BLUEPRINT

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## Abstract

The Euratom project "Fair4Fusion" aims to explore ways of addressing part of the Fusion community requirements regarding the accessibility and fair access to the fusion data. One of the main outputs of the project is a blueprint of the architecture that combines various elements in a way that simplifies discoverability and access to data. There are a number of elements from physical data storage, through communication channels, means of authorization and authentication to user focused interfaces - both based on Web UI and publicly available APIs. Some of these elements have been implemented as reference implementation. The paper presents these reference implementations - Demonstrator 1 (also known as Catalog QT 2) and Demonstrator 2 (exploring scalability and flexible searchability of time series for Fusion research).

These two demonstrators have different aims and therefore respond to different aspects of the blueprint. While Demonstrator focuses mostly on data acquisition, data presentation and validation of various means of exposing IMAS based data, Demonstrator 2 explores alternative technologies and approaches, especially in exploiting containerisation for adding flexibility and scalability to large-scale time-series searching and in workflow-based data transformation and analysis. Computational experiments were defined as compositions of containers, where each container provided an elementary tool for data transformation. The main advantage of defining an experiment as a transform-process-transform pipeline is the separation of DTW tool itself and steps being executed.

The paper presents design and implementation decision of the aforementioned demonstrators and discusses their position with respect to the further-reaching Fair4Fusion Open Data blueprint. It also showcases how loosely coupled components can be made to behave in concert, based on Docker-based technologies and on the composition of various containers.