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Facilitating collaborative analysis in SWAN

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SWAN (Service for Web-based ANalysis) is a CERN service that allows users to perform interactive data analysis in the cloud, in a "software as a service" model. It is built upon the widely-used Jupyter notebooks, allowing users to write - and run - their data analysis using only a web browser. By connecting to SWAN, users have immediate access to storage, software and computing resources that CERN provides, and that they need to do their analyses.

Besides providing an easier way of producing scientific code and results, SWAN is also a great tool to create shareable content. From results that need to be reproducible, to tutorials and demonstrations for outreach and teaching, Jupyter notebooks are the ideal way of distributing this content. In one single file, users can pack their code, the results of the calculations and all the relevant textual information. By sharing them, it allows others to visualise, modify, personalise or even re-run all the code.

In that sense, this paper describes the efforts made to facilitate sharing in SWAN. Given the importance of collaboration in our scientific community, we have brought the sharing functionality from CERNBox, CERN's cloud storage service, directly inside SWAN. SWAN users have available a new and redesigned interface where they can share "Projects": A special kind of folder containing notebooks and other files, e.g., like input datasets and images. When a user shares a Project with some other users, the latter can immediately see and work with the content of that project from SWAN.

The collaborative aim of SWAN goes beyond CERN borders: The European project "Up to University"(Up2U), whose goal is to create a bridge between high schools and higher education, has chosen SWAN as its main tool to produce, share, and reuse high-quality educational notebooks among students, teachers, and scientists. SWAN reaches out to the academic community and even secondary schools, helping in preparing younger students for their future career in science.

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