EOSC EVERSE: Paving the way towards a European Virtual Institute for Research Software Excellence

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Research communities have created numerous software applications that are essential to scientific progress. A common theme is that considerations about the reliability of these applications, including how effectively they can be reused and their long-term sustainability, are critical aspects to keep track of. This necessary trust in research/community software longevity requires a transparent display of good engineering and clear organisational processes that enable a transition of maintainer roles. To ensure research software curation, quality, preservation and adoption of best practices tailored to developers at all levels, from researchers who code to **Research Software Engineers (RSEs),** we need to adopt an approach that accounts for the varying complexity of research software and its development. The three-tier model for research software, i.e., **analysis code, prototype tools and research software infrastructure**, aims to capture this complexity and can be used as a basis for research software excellence. Importantly, credit and recognition for both developers and software are essential components of our strategy to promote sustainable software practices.

The European **EVERSE** project aims to create a framework for research software and code excellence, collaboratively designed and championed by the research communities across the **five EOSC Science Clusters** (https://science-clusters.eu/) and **national Research Software Expertise Centres**, in pursuit of building a **European Network of Research Software Quality** and setting the foundations of a **future Virtual Institute for Research Software Excellence**. **EVERSE** starts in Spring 2024 and will run for 36 months with 18 partners across 10 countries.

EVERSE will address challenges involving community curation, quality assessment, and best practices for research software. This collective knowledge will be captured in the **Research Software Quality toolkit (RSQkit)**, an open knowledge base to gather and curate expertise that will contribute to high-quality software and code across different disciplines. By embedding the RSQkit and services into the **EOSC Science Clusters**, **EVERSE** will demonstrate improvements in the quality of research software and maximise its reuse, leading to standardised software development practices and sustainable research software.

Furthermore, **EVERSE** will drive recognition of software as well as support training and career progress for developers, from researchers who code to RSEs, raising their capacity to guarantee software quality. Doing this will also help researchers of research software engineering processes who are focussing on understanding quality measures for research software, and understanding adoption of practices through empirical software engineering approaches.

EVERSE, as the project umbrella for developing this **European Network for Research Software Quality**, aims to cross-fertilise different research domains, act as a lobbying organisation, and raise awareness of software as a key enabler in research, with the overall ambition to accelerate research and innovation through improving the quality of research software and code. **EVERSE's** ultimate ambition is to contribute towards a cultural change where research software is recognized as a first-class citizen of the scientific process, and the people contributing to it are credited for their efforts.