

Research Data Management and Virtual Research Environments. Presentation of new collaborating E-Science Projects

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One of the challenges for scientists today is how to handle research data in a way that makes their research reproducible and transparent. This includes storing data, tools and environments, as well as publishing them and making them available for re-use, so experiments can be reproduced under similar conditions at a later date. The four E-Science projects CiTAR, SARA, RePlay-DH and ViCE of Ulm University and its partners aim to provide answers to support scientists in the areas of Research Data Management and Virtual Research Environments.

1 CiTAR

The CiTAR project (Citing and Archiving Research) develops a scientific service for the long-term archiving of Virtual Research Environments. The service focuses on the reproducibility of research data, which scientific publications rely on. Archiving Virtual Research Environments allows long-term traceability of scientific experiments after their original realization. For users in the field of High Performance Computing (HPC) the project will deliver new tools which can be easily implemented into well-established scientific workflows. With these tools data centres extend their service provision and will be able to provide a long-term citable and reproducible availability of research data, tools and scientific methods. This new and interdisciplinary service is developed by three of the four bwForCluster operators of Baden-Wuerttemberg and operates in the field of scientific High Performance Computing.

Web page: <https://www.alwr-bw.de/kooperationen/bwzwm>

2 SARA

The SARA project (Software Archiving of Research Artefacts) aims to develop a new scientific service to make research data as well as software tools generating the data available in the

long-term. In the discipline of biology measured data is captured and processed with the aid of computers. In electrical engineering and information technology, source code of software is generated numerously and must be stored in its different versions. The scientific service planned in the project reflects the workflows of the scientists and allows them to record their intermediate results already during the research process. Thereby scientists will be able to access immediately the process history and the versions of the research tools, which are often modified by the scientists themselves. The new service aims to make the gained research data and the different versions of the involved software tools also comprehensible for later scientific research. The service, in the long term, is intended to be available for other scientific disciplines as well.

Web page: <https://www.alwr-bw.de/kooperationen/bwfdm-soft>

3 RePlay-DH

The RePlay-DH project realizes a platform and surrounding services in Research Data Management for the scientific community of the Digital Humanities. Scientists of the Digital Humanities are supported in their scientific work with scripts by the RePlay-DH platform in the publication and archiving process to provide citable long-term research data. This enables the re-use of research data and the easy tracking of changes (“Replay”) with no extra effort for scientists such as learning of complex version control systems. The RePlay-DH graphic user interface operates on the surface of these systems, simplifies the application and provides completeness and compliance. Metadata, which is important for the re-use of research data, will be archived during the scientific process. The platform can be used by different scientific disciplines as an open source instrument for long-term available research data.

Web page: <https://www.alwr-bw.de/kooperationen/replay-dh>

4 ViCE

The ViCE project (Virtual Open Science Collaboration Environment) supports scientists in various disciplines in providing and adapting Virtual Research Environments. As an important basic infrastructure a comprehensive collaboration platform is built, which provides a long-term re-use of research results especially with regard to new scientific issues. Scientists are supported in the documentation of various versions of their Virtual Research Environments and research data and are able to share them with others during the origination process. The platform is provided exemplarily for the communities of English Studies, Business Information Systems, Life Sciences and Particle Physics by the infrastructure partners Freiburg, Tübingen and Mannheim (HPC, bwCloud, bwLehrpool). The scientific service will be also available for other disciplines and can be deployed in teaching and in the future integration of junior scientists.

Web page: <https://www.alwr-bw.de/kooperationen/vice>

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