Virtual Research Environments

Definition

A Virtual Research Environment (VRE) is a working platform that enables researchers to work cooperatively, regardless of time and location. It should support the whole research process – from the collection, discussion and processing of data to the publication of the results. From a technological point of view, the VRE is a combination of different software services and communication networks. [1]

Temporal solutions for situations when a researcher is not at his work place are not regarded as VREs. In this case it would only be a remote access to a research environment.
Communication media for scientists (e.g. wiki, video conference) alone do not constitute a VRE. [1]

Possible purposes of VREs [1,2]

- Improvement of national and international collaborations
- Joint efforts for the collection and analysis of data
- Access to research data and results
- Easy access to tools and services
- Access to information and training material
- Improved communication
- Avoidance of unnecessary duplication of results
- Improved replicability of methods

Requirements of VRE

Basically, VREs should provide access to real research resources e.g. data, tools for analysis and processing, scientific devices or services. [3]

Typical functions include [3]:

- ✓ Shared communication platform
- ✓ Use of local and external resources (e.g. data, software, hardware, measuring instruments)
- ✓ Collection and registration of data (e.g. remote-controlled experiments, field studies, text analysis)
- ✓ Processing of data (e.g. merging, analyses, visualisation, editing, discipline-specific investigation)
- ✓ Publication of results and data (assigning of persistent identifiers)

The functions of a VRE depend on the requirements of the users and the technical resources of the hosting institution. Therefore a close collaboration between the researchers and the institutions that are responsible for the IT infrastructure is required. [3]

While many basic functions of VREs are useful for users from various disciplines, additional discipline-specific functions are required in most research fields e.g. standards, specific tools and services, compliance with regulations (patents/personal data). [3]

[1] http://gfzpublic.gfz-potsdam.de/pubman/item/escidoc:2981916:2/component/escidoc:2981915/2011_VRE_Definition.pdf
[2] Buddenbohm et al. (2014) Erfolgskriterien für den Aufbau und nachhaltigen Betrieb virtueller Forschungsumgebungen. DARIAH-DE Working Papers 7.
[3] http://gfzpublic.gfz-potsdam.de/pubman/item/escidoc:2981904:2/component/escidoc:2981903/Leitfaden_VRE_de.pdf

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Examples for VREs for different disciplines

In the course of our research on the topic we analysed 66 projects/programs which can be considered as VREs. The complete list can be found in our materials section. In the following list, we want to present some examples from different scientific backgrounds:

Social and Cultural Sciences, Humanities

FuD (https://fud.uni-trier.de/)

Support of data collection/analysis and editing/publishing/archiving; management of access rights; integration of external applications; open source for scientific and non-commercial use; different service packages for hosted version (fee-based)

TextGrid (https://textgrid.de/)

Data management/processing (TextGrid Laboratory) and long-term archiving (TextGrid Repository); customisable tools/services; access for academic users (otherwise special admission required); free of charge; access via TextGridLab software (free of charge)

Transkribus (https://transkribus.eu/Transkribus/)

Archiving of text collections; transcription; handprint character recognition tool; collaborative editing; free access; free desktop and online version

WissKI (http://wiss-ki.eu/)

Transdisciplinary collaboration using wiki concept; storage, management and communication of knowledge; data entered via online form or free text; integration of ontologies; semiautomatic text annotation; free access; open source software

Natural and Life Sciences

BEXIS 2 (https://bexis2.uni-jena.de)

Data management over the whole data life cycle (esp. data collection, documentation, publishing); management of access rights; focus on heterogenous tabular data; can be combined with other tools (e.g. R) and various database management systems; open source; server based; local hosting necessary

OMERO (https://www.openmicroscopy.org/omero/)

Management, analysis, sharing and publication/archiving of image data (esp. microscopy); inclusion of analysis tools e.g. Matlab, R, ImageJ; free of charge, open source; server based

This fact sheet gives a short overview over a selection of Virtual Research Environments and is not a complete list.
If you have further questions regarding this topic, we offer individual advice.
Contact us: https://forschungsdaten-thueringen.de/contact.html