SuLMaSS - Sustainable Lifecycle Management for Scientific Software

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The SuLMaSS project [1] will advance, develop, build, evaluate, and test infrastructure for sustainable lifecycle management of scientific software. The infrastructure is tested and evaluated by an existing cardiac electrophysiology simulation software project, which is currently in the prototype state and will be advanced towards optimal usability and a large and active user community. Thus, SuLMaSS is focused on designing and implementing application-oriented e-research technologies and the impact is three-fold:

- Provision of a high quality, user-friendly cardiac electrophysiology simulation software package that accommodates attestable needs of the scientific community.

- Delivery of infrastructure components for testing, safe-keeping, referencing, and versioning of all phases of the lifecycle of scientific software.

- Serve as a best practice example for sustainable scientific software management.

Scientific software development in Germany and beyond shall benefit through both the aforementioned best practice role model and the advanced infrastructure that will, in part, be available for external projects as well. With adding value for the wider scientific cardiac electrophysiology community, the software will be available under an open source license and be provided for a large share of people and research groups that can potentially leverage computational cardiac modeling methods. Institutional infrastructure will be extended to explore, evaluate and establish the basis for research software development regarding testing, usage, maintenance and support. The cardiac electrophysiology simulator will drive and showcase the infrastructure formation, thus serving as a lighthouse project.

The developed infrastructure can be used by other scientific software projects in future and aims to support the full research lifecycle from exploration through conclusive analysis and publication, to archival, and sharing of data and source code, thus increasing the quality of research results. Moreover it will foster a community-based collaborative development and improve sustainability of research software.

SuLMaSS will provide a web platform to the community which integrates Gitlab and a question and answering system for collaboration. Providing the foundation for a modern software development, the system will be extended by a scientific test framework to

indicate unexpected changes in the outcome of the simulations and therefore ensure the correctness for each software build. Jointly with the software platform, related information like documentation, metadata, scientific setup of the simulation etc. will be extracted and joined into one package following the open archival information system model. This package will be moved to a long-time archive and will get a persistent identifier assigned for referencing. By adding context information to build a self contained software package, it will improve the verification and reusability independent from community platform as well as ease sharing of scientific software.

Literaturverzeichnis

[1] http://www.dfg.de/dfg_magazin/aus_der_wissenschaft/impulse_fuer_das_digitale_lis_jb17/02_aus_der_foerderung/index.html