

Helmholtz Platform for Research Software Engineering – Preparatory Study (HiRSE_PS)

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June 8, 2023



Research Software Engineering (RSE) – Why?

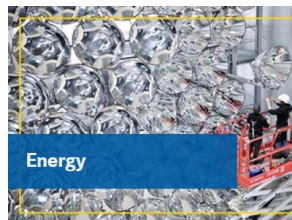


(Open Source) Software = 

- Key component of scientific work
- Software $\approx$ data $\approx$ devices
- Software = research infrastructure
- Valuable assets



in all research fields of Helmholtz



Sources: <https://www.software.ac.uk/about>, <https://www.helmholtz.de/en/research/>

Innovation pool project HiRSE_PS

<https://www.helmholtz-hirse.de>



- **HiRSE_PS** can only provide a first impetus of a RF-wide, much larger activity
 - Focus on software as an infrastructure (open, reliable, sustainable, reproduceable)
 - Testbed for structural RSE support within a research field (toward HiRSE)
 - Human-centric view: enable RSEs to work best and together on their codes/project
- **3 pillars** in 2 work packages
 - Specific **Community Software Infrastructure (CSI) groups** for already existing/established Community Codes Teams
 - NEST and FLEUR (FZJ), HeAT (FZJ/KIT/DLR/Intel), PFFRG (HZB), 4C (Hereon)
 - Central **support and consulting unit** for RSE (FZJ, KIT)
 - Open **HiRSE Seminar** for a regular exchange of information



WP 1: CSI groups (PI: Markus Diesmann)

Community Software Infrastructure Groups



■ Goals of the WP

- Establish five CSI groups (topical width across all 3 programs in the RF Information and diversity of already established and young codes)
- Fostering sustainability and long-term stability of specific codes
- Supporting the community
- Generates insights about the requirements for WP2

■ Structure and location of CSI groups

- Expert knowledge from a scientific domain
- High community trust through in-person-responsibilities in the domain-institute

■ Tasks of the CSI groups

- Coordination of the development, e.g. doing code reviews, generating releases, usage of Cx-technologies
- Taking over hard and longer-lasting development tasks (e.g. refactoring of existing codes)
- Organization of trainings and Hackathons



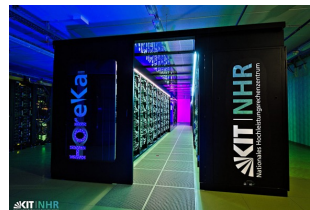
Goals and structure

■ Goals:

- Establishing the technological basis for RSE
- Supporting established CSI groups and codes in Cx environment usage and software engineering
- Taking young codes by the hand introducing modern RSE practices

■ 3 sub-WPs

1. Framework for CI/CT/CD
2. Support & consulting
3. Community building & networking



■ Usage of modern Supercomputing infrastructures

- E.g., JUWELS (FZJ-JSC) or HoreKa (KIT-SCC)
- Future Technologies Partition at KIT-SCC for CI on different HPC resources and architectures
- Cloud resources via OpenStack in the Helmholtz Data Federation



openstack®

First activities and results



- National **HiRSE Seminar Series** established (currently 17 talks, ~20-70 attendees per talk)
- Outreach and networking: regular meetings with HIFIS, joint development of the **Helmholtz Incubator Software Award**, co-chairing deRSE23 and un-deRSE23
- **HiRSE_PS Hackathon**: Sept. 2022 on Continuous Integration, Oct. 2023 on Continuous Benchmarking
- **Cross-fertilization** of CSI groups, between young and established codes
- **Software sustainability**: enabling/extending usage of Cx, code refactoring, docs-as-code
- Energy consumption as **software quality metric**, ongoing discussions on KPIs
- Recruited **RSE Community Manager** (Claire Wyatt) to support local, RF, and HGF RSE communities



CONFERENCE
2023



- **Extension of HiRSE Seminar Series**
 - special online events, e.g. HiRSE Summer of Testing
 - HiRSE Tutorials: short (2-3h) tutorials on a specific topic
- **More collaboration and outreach**
 - GI RSE interest group
 - close-by universities and local partners
- **Integration of more groups**
 - Simulation and Data Labs (SDLs) within the RF Information
 - Support for individual RSEs within the centers
- **More visibility of RSE and RSEs within RF and HGF**
- **Soon: nation-wide RSE online community!**

