

Supporting Research Software Development at DLR

Policies für Forschungssoftware, 06.05.2020, ONLINE

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<http://www.dlr.de/sc>



Knowledge for Tomorrow



(Research) Software Development at DLR

Some context

- More than 9000 employees, ~20% of DLR employees involved in software development
- Variety of fields, maturity, and technologies:
<https://doi.org/10.1145/3387940.3392244>

Brief history of DLR`s Software Engineering Initiative

- Activities started in 2005 as part of DLR`s quality assurance program
- Since 2017 focus moved more and more on research software development aspects
- Work is driven by the DLR institute for Software Technology and funded by DLR IT



Software Engineering Initiative for DLR

Software Engineering Initiative for DLR

Policy
Development

Guidelines
and
Tools

Training
and
Consulting

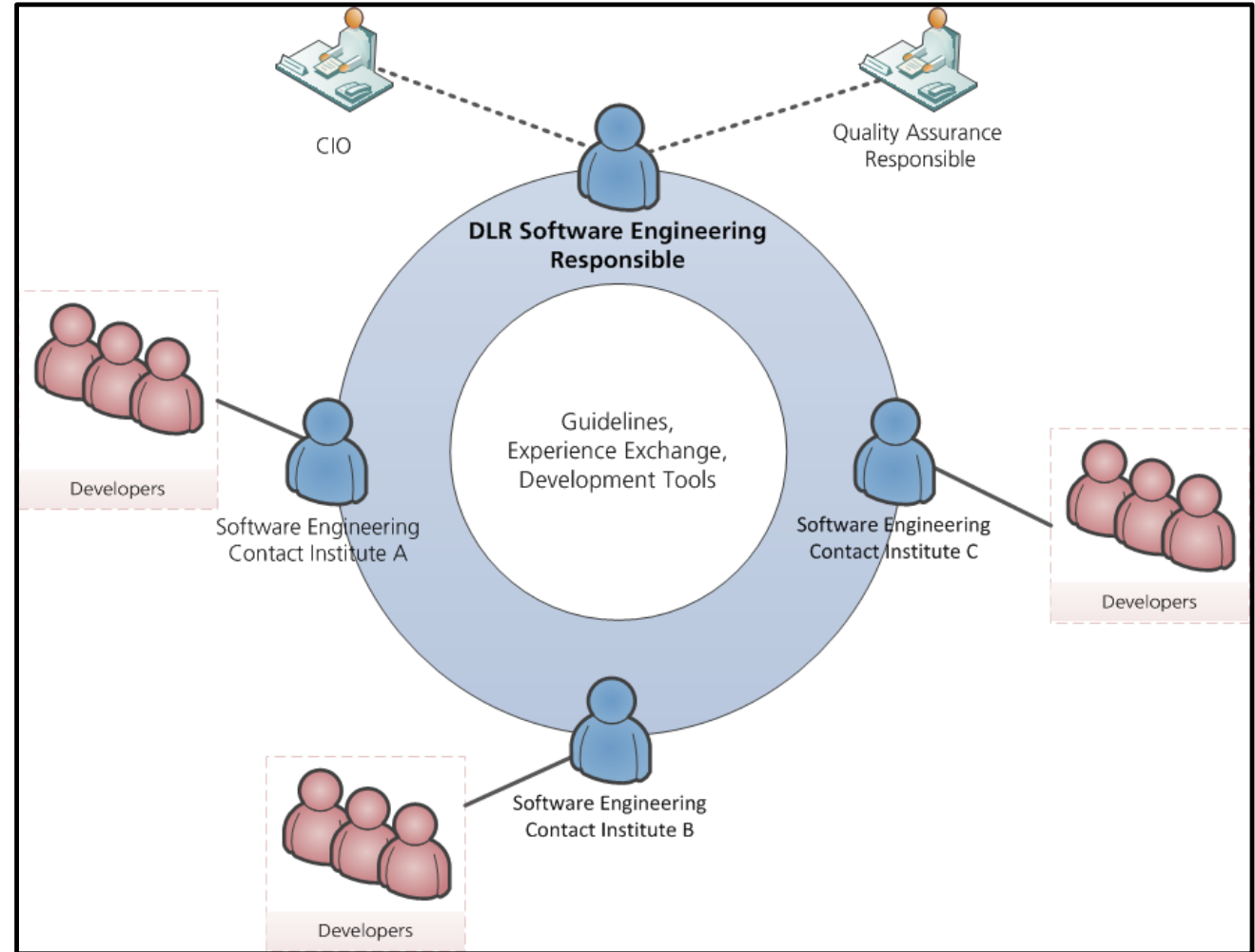
Community
and Experience
Exchange



Policy Development

Focus is on DLR-internal and external policy development:

- DLR Software Engineering Network
- DLR Quality Assurance Program
- DLR IT
- DLR Research Data Management Program
- Helmholtz Open Science



Guidelines and Tools

- Focus is on **good practices** and **essential documentation**
- For more information, please see: <https://rse.dlr.de/>

Checklists for different maturity levels			Reasoning and further advice	
Change Management				
Recommendation	Comment	Status		
EÄM.2: The most important information describing how to contribute to development are stored in a central location. <i>(from application class 1)</i>	Build steps are missing	todo	<p>The repository is the central entry point for development. The main artifacts are stored in a safe way and are available at a single location. Each change is comprehensible and can be traced back to the originator. In addition, the version control system ensures the consistency of all changes.</p> <p>The repository directory structure should be aligned with established conventions. References are usually the version control system, the build tool (see the Automation and Dependency Management section) or the community of the used programming language or framework. Two examples:</p>	
EÄM.5: Known bugs, important unresolved tasks and ideas are at least noted in bullet point form and stored centrally. <i>(from application class 1)</i>		ok		
EÄM.7: A repository is set up in a version control system. The repository is adequately structured and ideally contains all artifacts for building a usable software version and for testing it. <i>(from application class 1)</i>		ok		
EÄM.8: Every change of the repository ideally serves a specific purpose, contains an understandable description and leaves the software in a consistent, working state. <i>(from application class 1)</i>		ok		

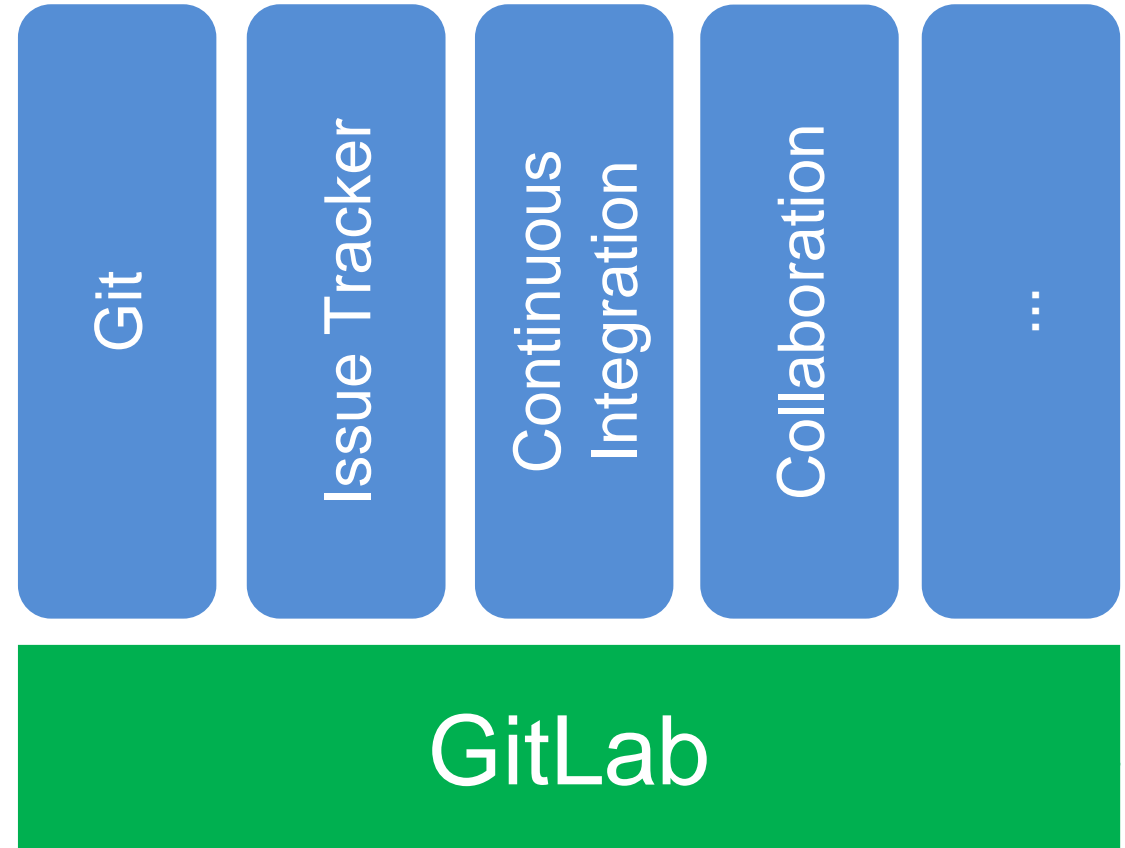
Guidelines and Tools

DLR GitLab Instance

- Focus is on collaborative software development
- Basis for the practical implementation of the guidelines
- Driver for technological advances concerning software development

Numbers

- About 3.000 active users
- 9.697 project and 1.600 groups
- 57.163 issues and 581.648 notes



Training and Consulting

Training

- Training courses are part of DLR`s educational program
- Courses cover different topics such as publication of research software, Git, GitLab, Python, Open Source

Consulting

- Direct questions
- Open source
- (Internal) projects



Community and Experience Exchange

Support for DLR-wide networking concerning Software Engineering via:

- **SoftwareEngineering.Wiki** and **DLR Software Mattermost Team** to share knowledge / experiences / news, to find contacts and to ask questions
- **Annual knowledge exchange workshops** for specific software engineering topics to actively involve everyone
- Support of **self-organized groups**



The screenshot shows the homepage of the Software Engineering Wiki. At the top, it says "Software Engineering" and "Welcome to the SoftwareEngineering.Wiki!". Below this, there is a paragraph explaining the purpose of the wiki and a list of instructions for users, including visiting the "Get Involved!" section, asking questions, and seeking general information. A yellow starburst graphic is overlaid on the right side of the page with the text "Software Engineering .Wiki".

Software Engineering

Welcome to the *SoftwareEngineering.Wiki*!

The *SoftwareEngineering.Wiki* is the place to create, share and discuss software engineering content with colleagues on a working-level! We aim for an open and constructive exchange of ideas. Therefore, feel free to share your knowledge and encourage others to do so as well!

- **Before you start:** Please visit the *Get Involved!* section and subscribe to our Blog!
- **Any Software Engineering related question?** You can ask it directly in the *Ask a Question* section!
- **You require more information how you can approach the topic software development in general?** This document [provides an overview about general recommendations](#) (German only, chapter 4). In addition, your *Software Engineering Contact* [is able to support you!](#)

This Wiki space is moderated by *Simulation and Software Technology*. In addition, this work is supported and funded by DLR's central IT department.

Get Involved!
Learn about specific SE Topics!

Ask a Question
Ask a Question

Topics
Learn about specific SE Topics!

Literature
Find out about useful SE readings!

Tools
Learn about specific SE Tools!

Best Practices
Programming recommendations, how-tos and more!

Software Engineering Guidelines
Learn how to organize your software development!

Events
Find out about upcoming workshops, presentations, or trainings!

Latest Questions

- Recommend & free IT learning resources
question software-engineering
- Migrating an old SVN project to the DLR SVN
question software-engineering svn subversion
- bazaar -> git
question software-engineering bazaar git

Latest Changes

- Themengruppen Interaktive Session Tag 2 - EAW SE V updated

Next Step: Establishing Policy „Nachhaltige Forschungssoftware“ at DLR

- **DLR policy will be closely orientated on the template:**
 - Link to **DLR Framework Directive Software Engineering** and (updated) **DLR Software Engineering Guidelines**
 - Link to currently developed **DLR Open Source Policy** and the (updated) **DLR Open Source Brochure**
 - Consolidate and extend available **support activities**
- **Open topics:**
 - Which indicators should be included into the reporting?
 - How to further honor efforts put into research software development activities?



Source: [sacks08](#), "[Road that leads to the Valley](#)", License: [CC BY 2.0](#)



Thank you!

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