

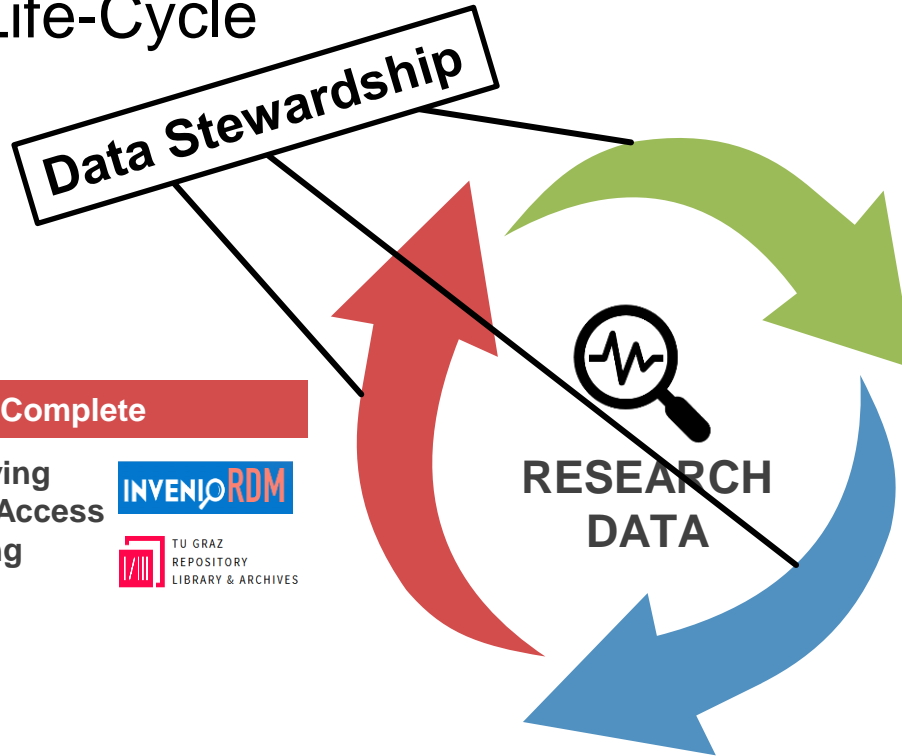
Git - Version Control not only for software developers

**GitLab, In-House Training
RDM Team TU Graz**

What is Research Data Management (RDM)?

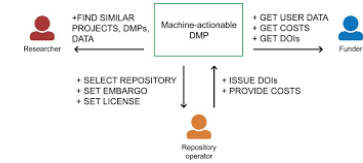
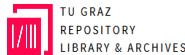
- “Good data management is not a goal in itself, but rather is the key conduit leading to knowledge discovery and innovation, and to subsequent data and knowledge integration and reuse by the community after the data publication process. “- *Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. The FAIR Guiding Principles for scientific data management and stewardship 1. Sci Data 3, 160018 (2016).*
- Research Data Management pertains to all steps taken along the **data lifecycle** to ensure that research data can be found, are accessible to others, and are described (e.g. through proper **metadata**) in such a way that they can be reused by others. (<https://www.tugraz.at/sites/rdm/home>)

Data Life-Cycle



Research Complete

- Preserving
- Giving Access
- Re-using



Research Planning

- Defining requirements from funding agencies
- Clarifying legal framework and ethical issues
- Re-using existing data
- Data Management Plan (DMP)

DAMAP

Active state of research

- Collecting
- Processing
- Analysing
- Tracking
- Sharing



RDM Department at TU Graz Library



Data Stewards @ TU Graz



Name Claire Jean-Quartier
Data Steward since 01.12.2021
Education/Experience MSc in Biochemistry & Molecular Biomedicine, MSc in Chemistry & Environmental System Sciences
 PhD in Biomedical Sciences
 Quality management
Main focus EOSC, CyVerse Austria, Data Quality



Alexander Bardel
 01.03.2021
 Dipl.-Ing. in Technical Physics (NAWI)
 eLabFTW, Data Champions, Development of RDM Guides, „Shared RDM“ Project



Hermann Schranzhofer
 01.10.2020
 Dipl.-Ing. in Technical Physics;
 PhD in Materials Science MU Leoben; Project Assistant Thermal Engineering
 TU Graz Repository, Licences, RDM in the field of Engineering Sciences

Research Data Management @ TU Graz

- DMP Support
- RDM Optimization Institute/Group: Workflows/Pipelines, Infrastructure
- RDM Individual support & support in Research Projects (Collaborations)
- RDM guidelines & policies
- Tool-dependent support
(workshops, introduction, training, assistance, development)

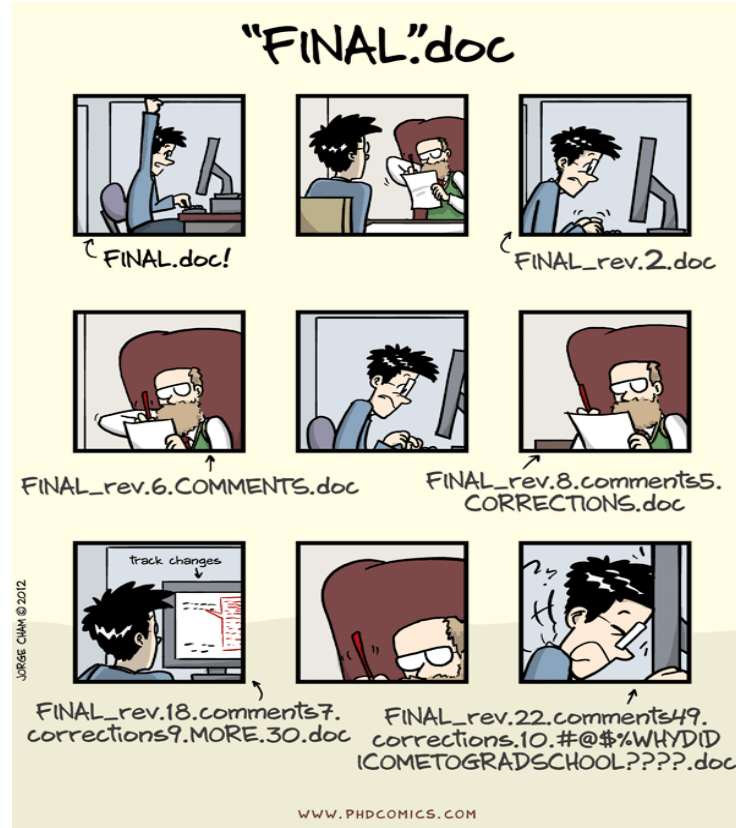
RDM Tools

- DAMAP (<https://www.tugraz.at/sites/rdm/tools/tu-graz-dmp-tool>)
- CyVerse (<https://www.tugraz.at/sites/rdm/tools/cat-cyverse-austria>)
- GitLab (<https://www.tugraz.at/sites/rdm/tools/gitlab>)
- eLabFTW (<https://www.tugraz.at/sites/rdm/tools/elabftw>)
- TU Graz Repository (<https://www.tugraz.at/sites/rdm/tools/tu-graz-repository>)

Workshop overview

- **A bit of theory: Concept of Git**
- **Just get started: A practical exercise with TU Graz GitLab and GitHub Desktop**
- **Alternative use and Q&A**

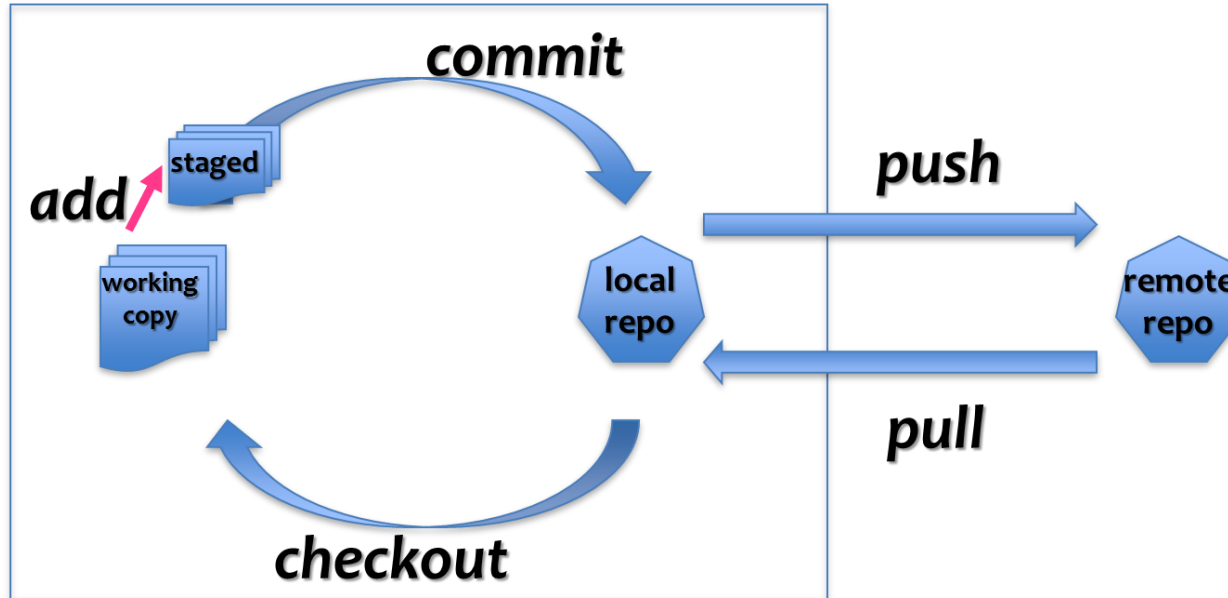
Git basics



Git basics

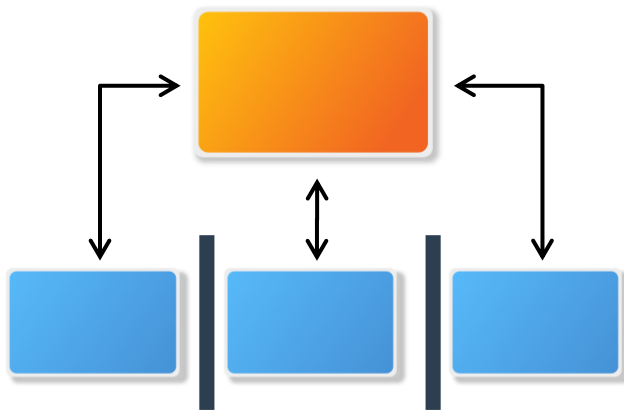


Git basics – repositories



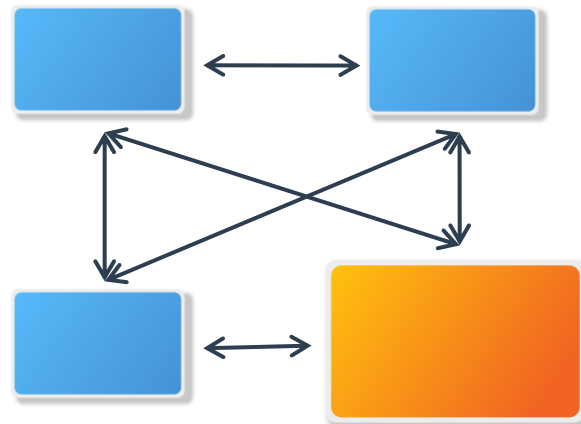
Centralized vs. distributed repositories

Centralized (e.g. svn)



complete repository on server
work copy on clients

Distributed (e.g. git)



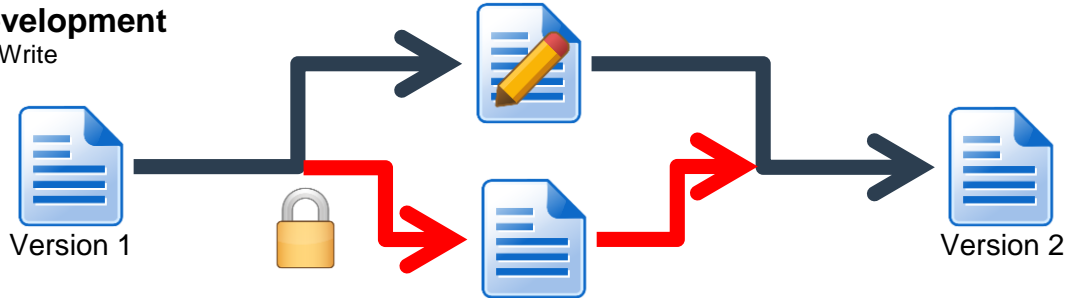
Clients = Servers
complete repository on each client/server
One can be a gitlab-instance

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Linear vs. non-linear development

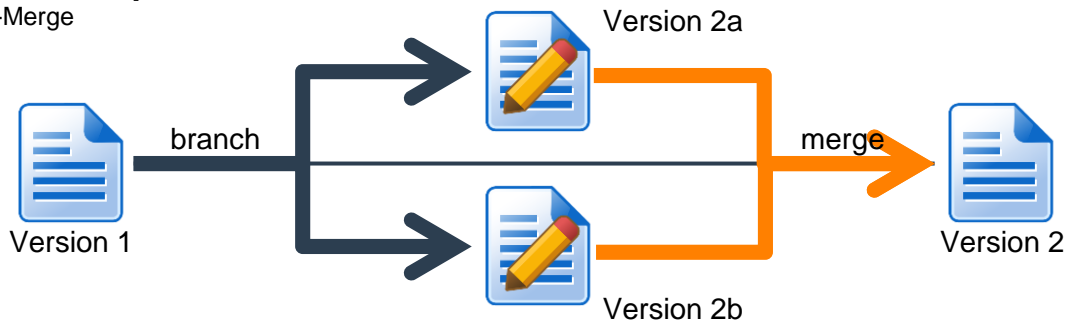
Linear development

Lock-Modify-Write



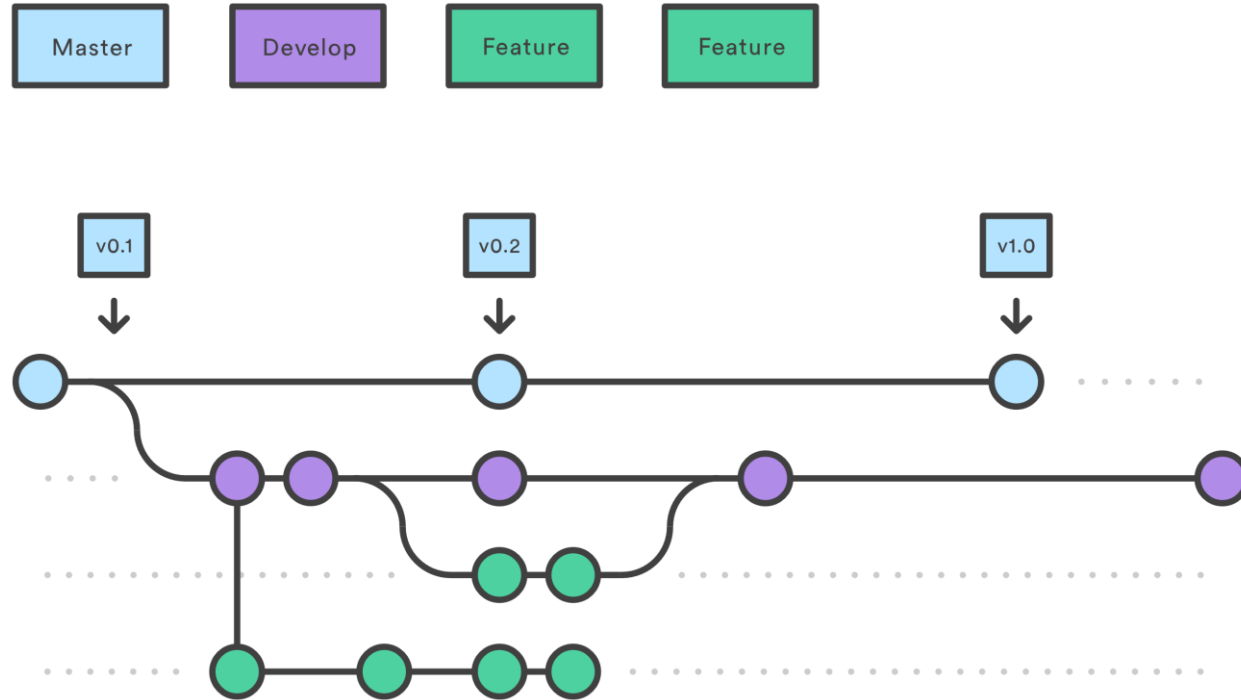
Non-linear development

Copy-Modify-Merge




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Git basics - branches




What is GitLab?

- **Repository Manager** like GitHub
- Accessibility and work via any browser
- Suitable for work-related and/or commercial projects
- Instance available for TU Graz members
- Login via LDAP: <https://gitlab.tugraz.at>
- Cloning to local device possible



GitLab

LDAP AD	Standard
LDAP AD Username <input type="text"/>	
Password <input type="password"/>	
<input type="checkbox"/> Remember me	
<button>Sign in</button>	



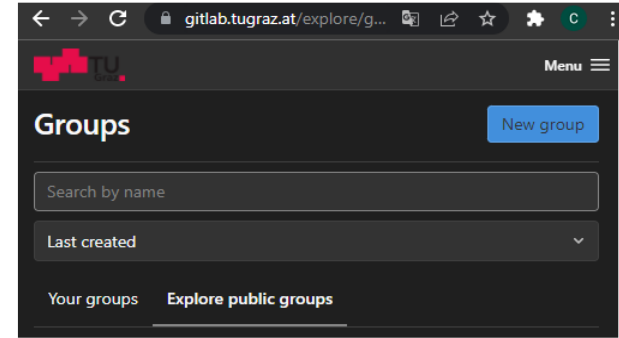
A complete DevOps platform

GitLab is a single application for the entire software development lifecycle. From project planning and source code management to CI/CD, monitoring, and security.

This is a self-managed instance of GitLab.

Differences from GitHub

- No registration for **TU Graz members**
- GitHub: Just “private” or “public” option
- Viewable internally, for institution, authentication required
- **Fine-tuned permissions** for different team members
- Advanced **issue tracker** to which attachments can be added
- Worldwide community smaller, rather TU Graz community relevant



Additional resources – Git tutorials

<https://swcarpentry.github.io/git-novice/>

<https://www.atlassian.com/git/tutorials>

<https://open.hpi.de/courses/git2020>

