



Git & Github

MiCM Workshop 2020-06-03

Hi!

Who is this guy?







GRDC

GRAINS RESEARCH &
DEVELOPMENT CORPORATION



Curtin University

304

Expectations

**This will not be an exhaustive explanation
of git.**

We will cover:

- Making new git projects
- Adding files
- Making commits
- Moving through history
- Branching
- Cloning remote repositories
- Pushing to a remote repository
- Collaboration via Github

We won't cover:

- Cherry-pick
- Rebasing
- Git hooks
- Stash
- Filter-branch
- Working with genomic data
- Writing python/js/go/ruby/R
- Using any particular git GUI



The only thing I want you to come away with is:
a better mental model for how git works

Motivation

What problems are we trying to solve?

"FINAL".doc



FINAL.doc!



FINAL_rev.2.doc



FINAL_rev.6.COMMENTS.doc



FINAL_rev.8.comments5.
CORRECTIONS.doc



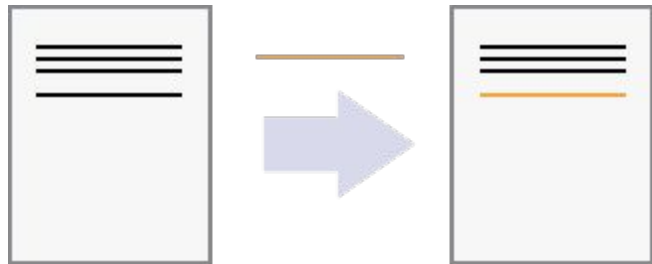
FINAL_rev.18.comments7.
corrections9.MORE.30.doc



FINAL_rev.22.comments49.
corrections.10. #@\$%WHYDID
ICOMETOGRADSCHOOL?????.doc

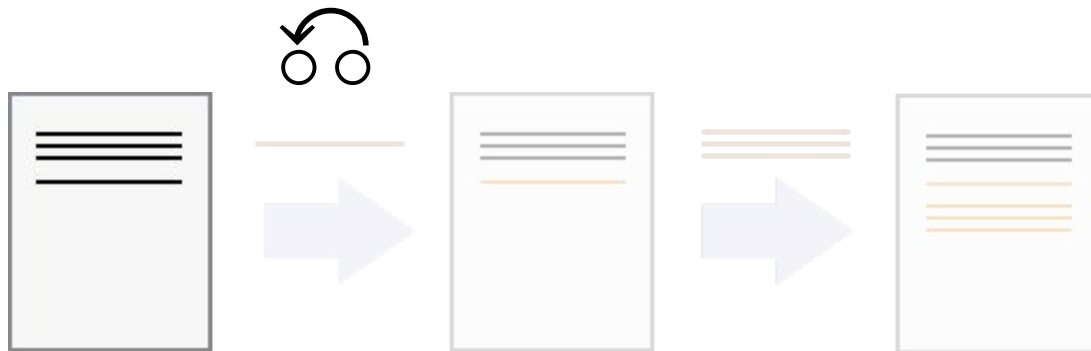










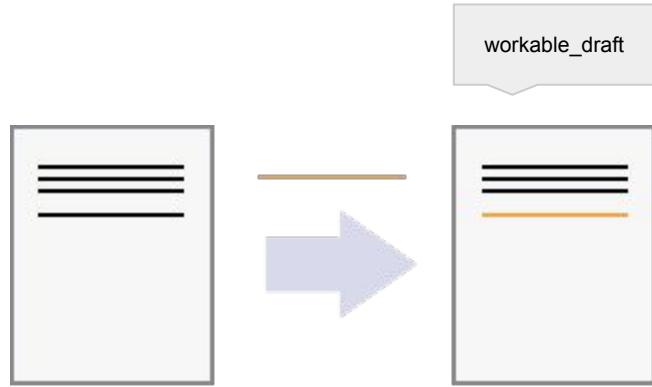


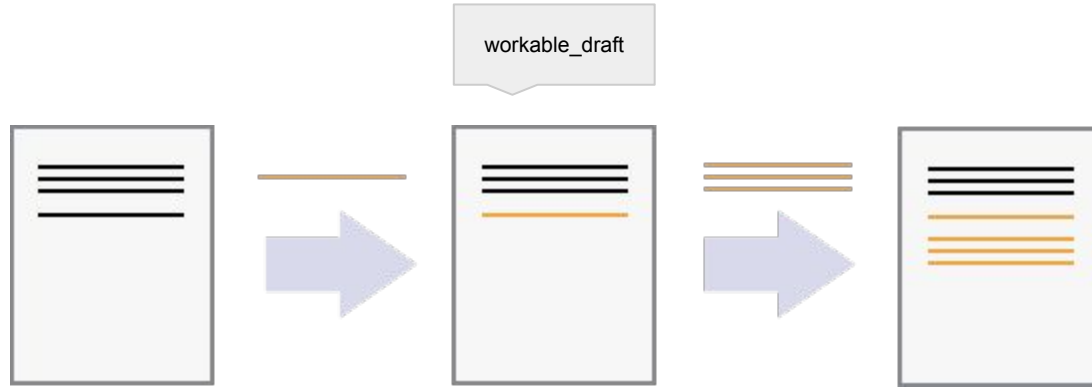




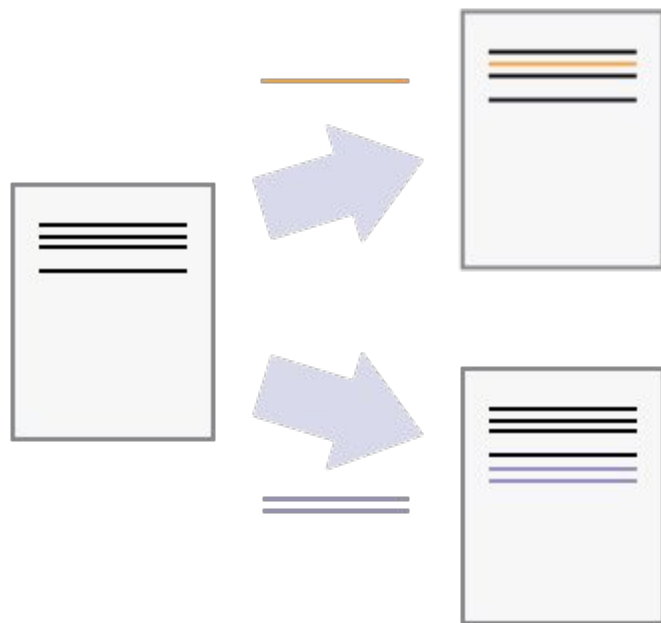
Git helps solve the problem of linear histories - letting us try out new ideas without losing old work.

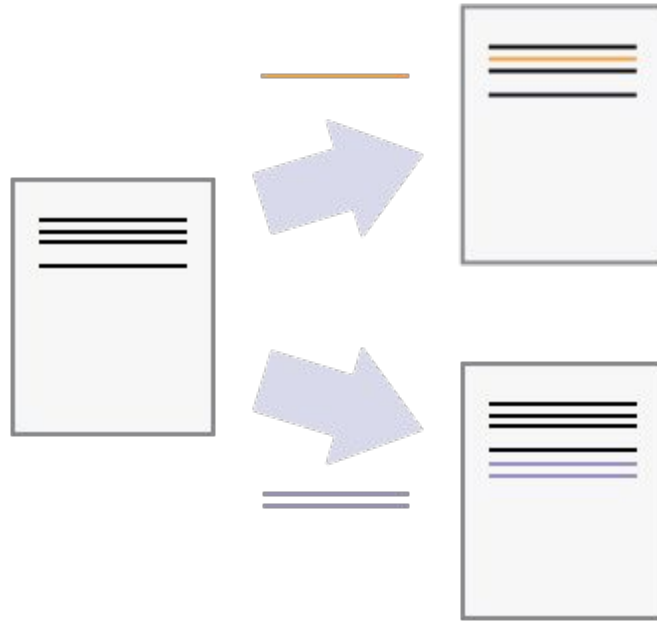






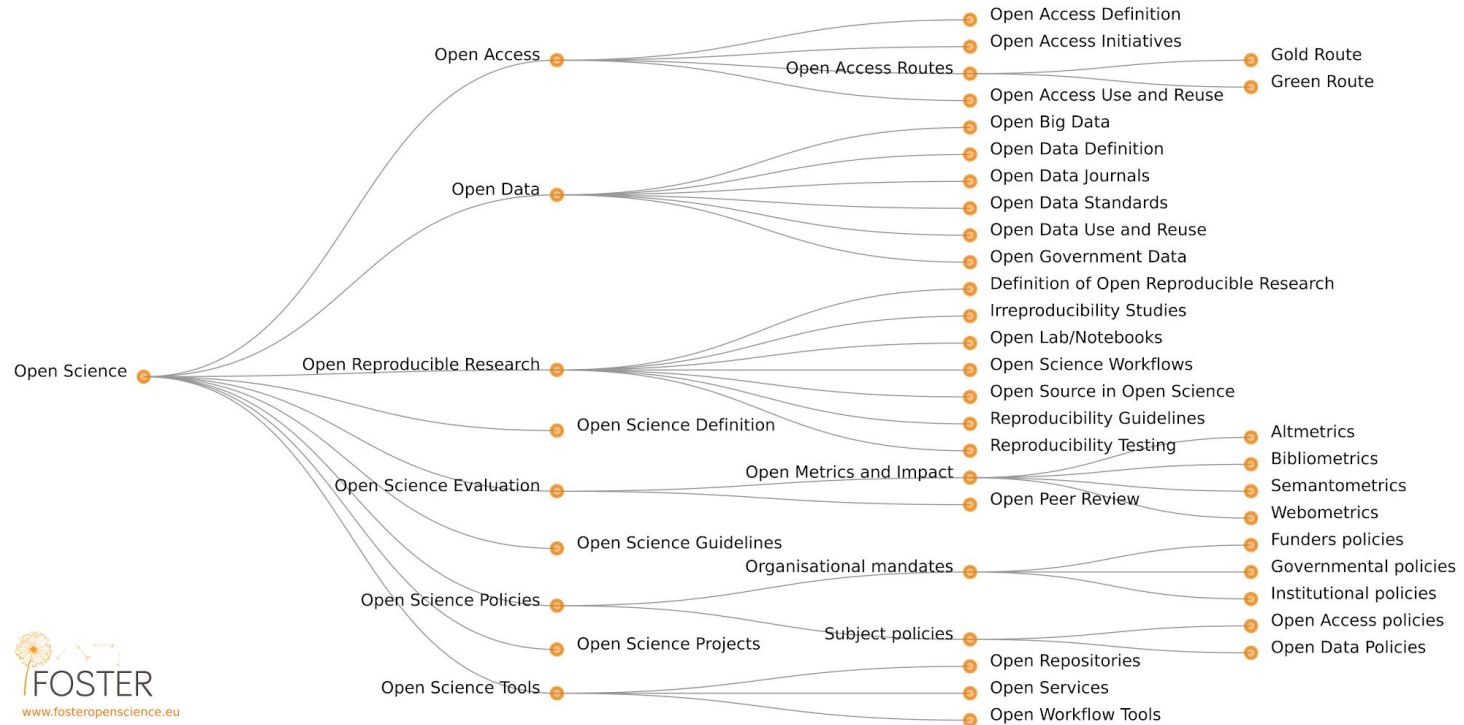
Git helps us organize complicated history by assigning tags to both specific versions (as shown above). Git also allows us to label whole branches of edits (to be shown later).





Git helps us collaborate by keeping a consistent history of edits, even when collaborators are working concurrently.

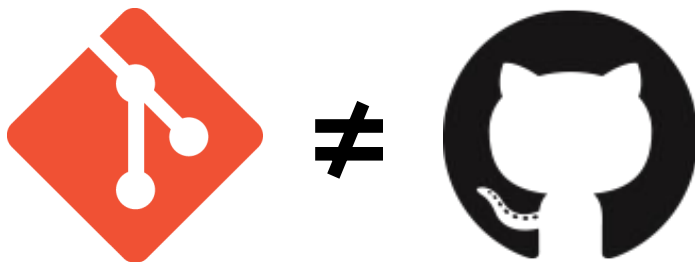
Open Science Taxonomy



Git and Github have become an important component of open science and open source software.

What git is *not*.

Git ≠ Github



Git is an open source software project, Github is a commercial business now owned by Microsoft.

Imagine you drafted an excellent paragraph for a paper you are writing, but later ruin it. How would you retrieve the excellent version of your conclusion? Is it even possible?

Imagine you have 5 co-authors. How would you manage the changes and comments they make to your paper? If you use LibreOffice Writer or Microsoft Word, what happens if you accept changes made using the Track Changes option? Do you have a history of those changes?

- Version control is like an unlimited ‘undo’.
- Version control also allows many people to work in parallel.
- Git was originally designed to keep track of raw text, but is still useful in other contexts

UNIVERSAL MISSIONS



ID =

Content/code

+

Author

+

Date

+

Message

+

Parent commit ID

Every ID is unique

Every commit is unique

Commits never change

branch feature
checkout features



pull = fetch + merge



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