

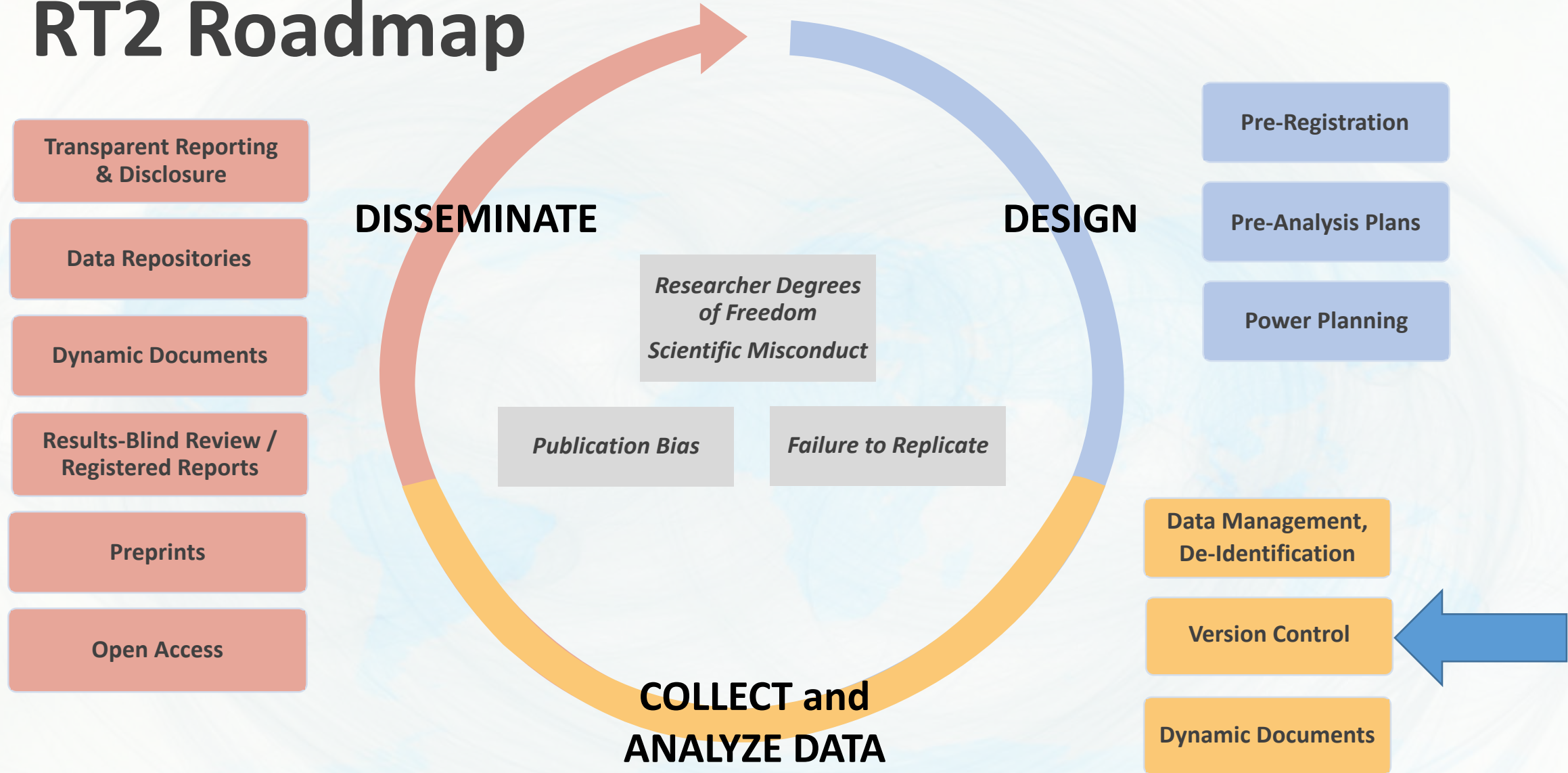
Version Control w/ Command Line Git and GitHub



Tim Dennis, UCLA/Library Data Science Center: I support researchers engaged in data-intensive scholarship primarily in the social and behavioral sciences



RT2 Roadmap



What are we covering?

- What is version control?
- Why version control?
- Creating a Git project locally via the command line
- How to make revisions with Git
- Collaborating with GitHub



What is version control?



You might recognize:

Version History

V4 Why Box Education.pptx **current**
Uploaded Thu, Mar 27, 2014, 1:35 PM by Maria Marquis

V3 Why Box Education.pptx
Uploaded Fri, Mar 14, 2014, 1:19 PM by Maria Marquis
[Download](#) · [Make current](#)




V2 Why Box Education.pptx
Uploaded Wed, Mar 12, 2014, 11:51 AM by Jesse Evans

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2016.ods Version History

You can restore any version below to make it the current file. All other versions will still be saved.

Today

 2016.ods • 9:08 AM	Restored by jack wallen. • Web	18.85 KB	Current version
 2016.ods • 8:42 AM	Edited by jack wallen. • Web	18.88 KB	
 2016.ods • 8:37 AM	Added by jack wallen. • Web	18.85 KB	Restore

Revision history

Today, 2:33 PM
anonymous

Today, 2:25 PM
anonymous
Alice Keeler

Today, 1:59 PM
anonymous
Alice Keeler

Today, 11:16 AM
anonymous
Alice Keeler

Today, 10:27 AM
anonymous
Alice Keeler

August 25, 9:18 PM
Alice Keeler
[Restore this revision](#)

Version Control

- Version control is a system that **records changes** to a file or set of files over time so that you can recall specific versions later.
- It allows you to **compare, restore, and merge changes** to your files.
- Examples: RCS, CVS, Subversion, GIT, Mercurial
- Git and Mercurial are distributed (do not need centralized server)

Source: <https://git-scm.com/book/en/v2/Getting-Started-About-Version-Control>



GIT



- Git is a free and open source version control system **for tracking changes in files** and coordinating work on those files among multiple people (supports distributed, nonlinear work)
- Git stores the metadata and files in a directory/data structure called a **repository**.

Git vs. GitHub



Git	GitHub
a tool that allows creating a local repository	allows hosting the central repository on a remote server
a version control system	a repository hosting service



Why should we use version control?



"FINAL".doc



FINAL.doc!



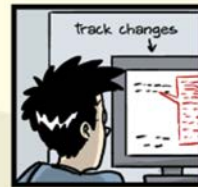
FINAL_rev.2.doc



FINAL_rev.6.COMMENTS.doc



FINAL_rev.8.comments5.
CORRECTIONS.doc



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



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WWW.PHDCOMICS.COM

Source: <http://www.phdcomics.com/comics/archive/phd101212s.gif>



PROTIP: NEVER LOOK IN SOMEONE ELSE'S DOCUMENTS FOLDER.





How does this work?



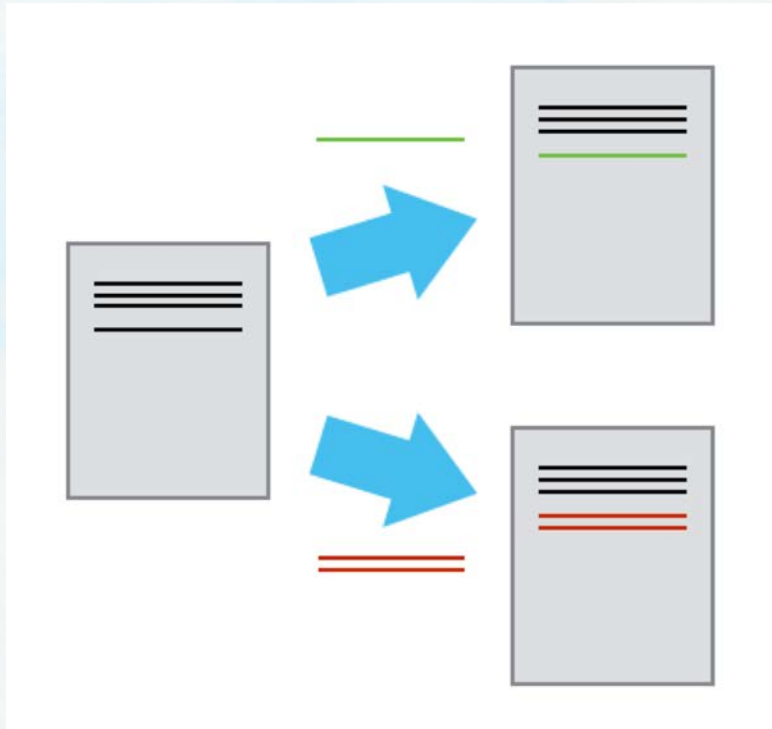
www.bitss.org

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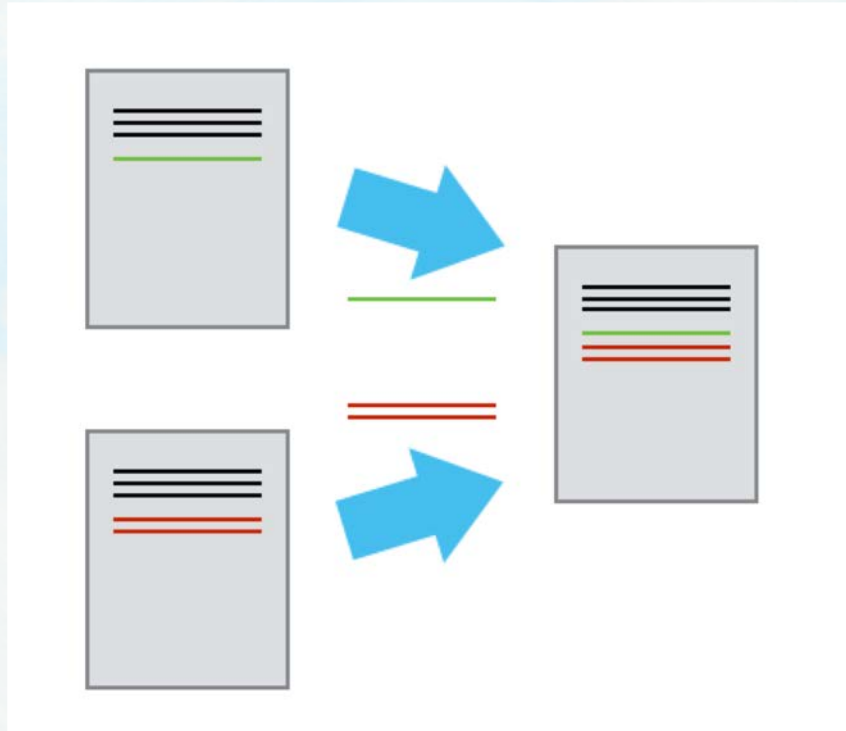
Changes Saved Sequentially



Divergent Versions



Merging



Brief Glossary

- **Version Control** - A tool for managing changes to a set of files. Each set of changes creates a new commit of the files; the version control system allows users to recover old commits reliably, and helps manage conflicting changes made by different users.
- **Commit** - To record the current state of a set of files (a change set) in a version control repository
- **Repository** - A storage area where a version control system stores the full history of commits of a project and information about who changed what, when.
- **Merge** - To reconcile two sets of changes to a repository



Today: Hands-on Carpentries Style Lesson

After this workshop you'll be able to:

- Configure and set up Git
- Create a local repository
- Add files and create revisions (commits)
- Understand how commits and exploring diffs work in Git
- Explain what remote repositories are and why they are useful
- Push to or pull from a remote repository
- Make a pull request and describe a basic collaborative workflow



Lessons, Materials, and Prerequisites

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

Etherpad: <https://pad.carpentries.org/rt2-la>

(collaborative document)

GitHub: <https://github.com/join> (get an account)

Git: <https://git-scm.com/book/en/v2/Getting-Started-Installing-Git>

