

GIT and other Open Source tools & tips

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- Open Source :
 revolution or evolution?
- ASCL
- GIT: git: Command not found.
- “astround”

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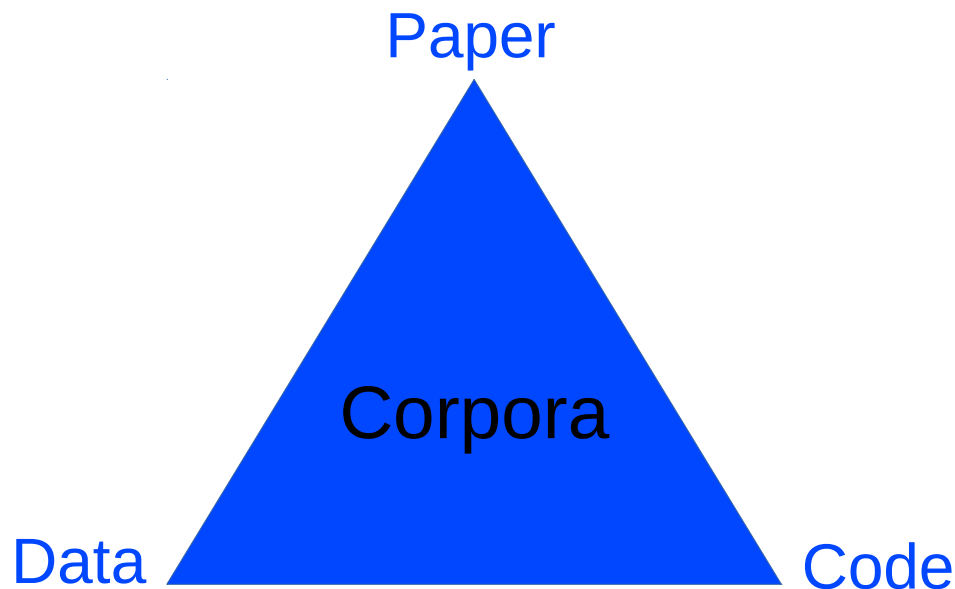
Open Source: Evolution or Revolution?

- Internet driven
 - Tools : “mail”, “ftp”, “usenet”, “gopher”, “www”, ...
- Linux (vs. minix)
 - git (vs. bitkeeper)
- Eric Raimond’s “the Cathedral and the Bazaar” (1997)
 - “19 lessons”
 - Every good work of software starts by scratching a developer's personal itch.
 - Release early. Release often. And listen to your customers.
 - Given a large enough beta-tester and co-developer base, almost every problem will be characterized quickly and the fix obvious to someone.
 - Netscape → mozilla (1998)

ASCL

Astrophysics Source Code Library

- Registry, not a Repository (cf. zenodo → DOI)
- ASCL ID: ascl:1010.014
 - e.g.: ascl.net/seren → <http://ascl.net/1102.010>



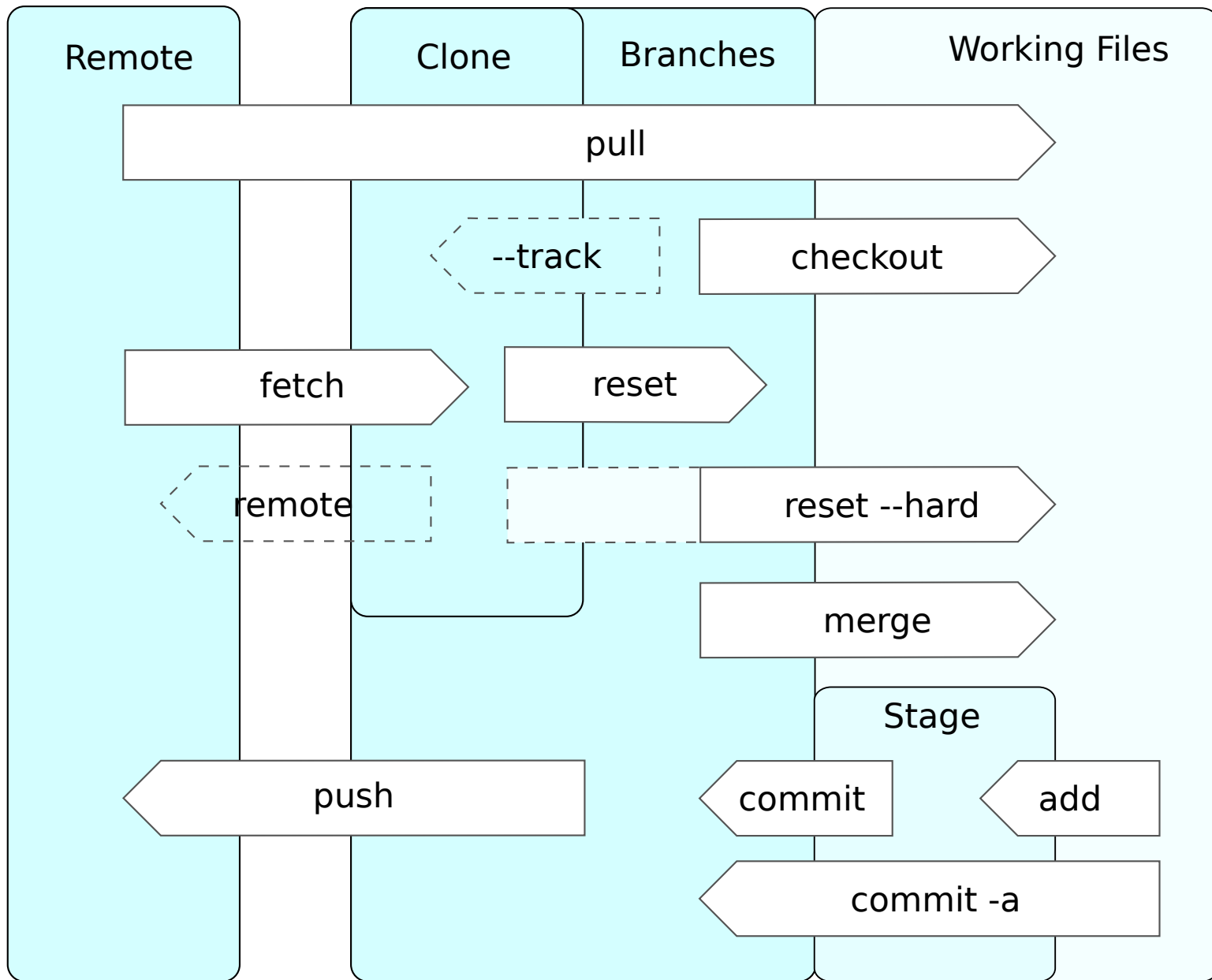
Version Control?

- Add a feature to a program that broke it badly
- Advisor wants results **NOW!**
- Work on a program or document with one or more people or computers?
- ?? Old Unix Backup Solutions ??
- ?? Write custom scripts ??

GIT

- **Version Control System (VCS):**
 - RCS/SCCS (old 70s unix)
 - CVS, subversion (svn) (client/server)
 - Mercurial (hg), GIT (git) (distributed server)
- “git is a better dropbox”
- Keeps all versions of all files (even removed files)
- Every git is a server → (nice for 35,000ft work)
 - after a “local” commit, a “remote” commit (push) is still needed.
- CLI git:
 - git <CMD> [<OPTIONS>] [<args>]
- GUI git:
 - “github desktop” (mac and win)
 - “gitk” and “gitg” (linux)

<https://github.com/astroumd/AstroUMD>



“astround”

- GitHub only has open repositories (but...\$\$\$)
 - Local ssh based git www.astro.umd.edu/~teuben/git
 - BitBucket has private repos
 - GitLab: free git hosting
- GitHub organizations: (free for “edu”)
 - Allows private repo’s (takes some time to vet you)
 - We have <https://github.com/astround>
 - And docs <https://astround.github.io>

...and now it's DEMO TIME !!!

Adding a new repo on “astround”

- Get a github account
- Get added to “astround” org
- Click on “New” (top right in github.com/astround)
 - Pick a name (google for it), license, README etc.
- Terminal session:
 - % `git clone https://github.com/astround/talk`
 - % `cd talk`
 - % `tar xf ../src.tar`
 - % `git add src`
 - % `git commit src`
 - % `git push`

Modifying a repo on “astroumd”

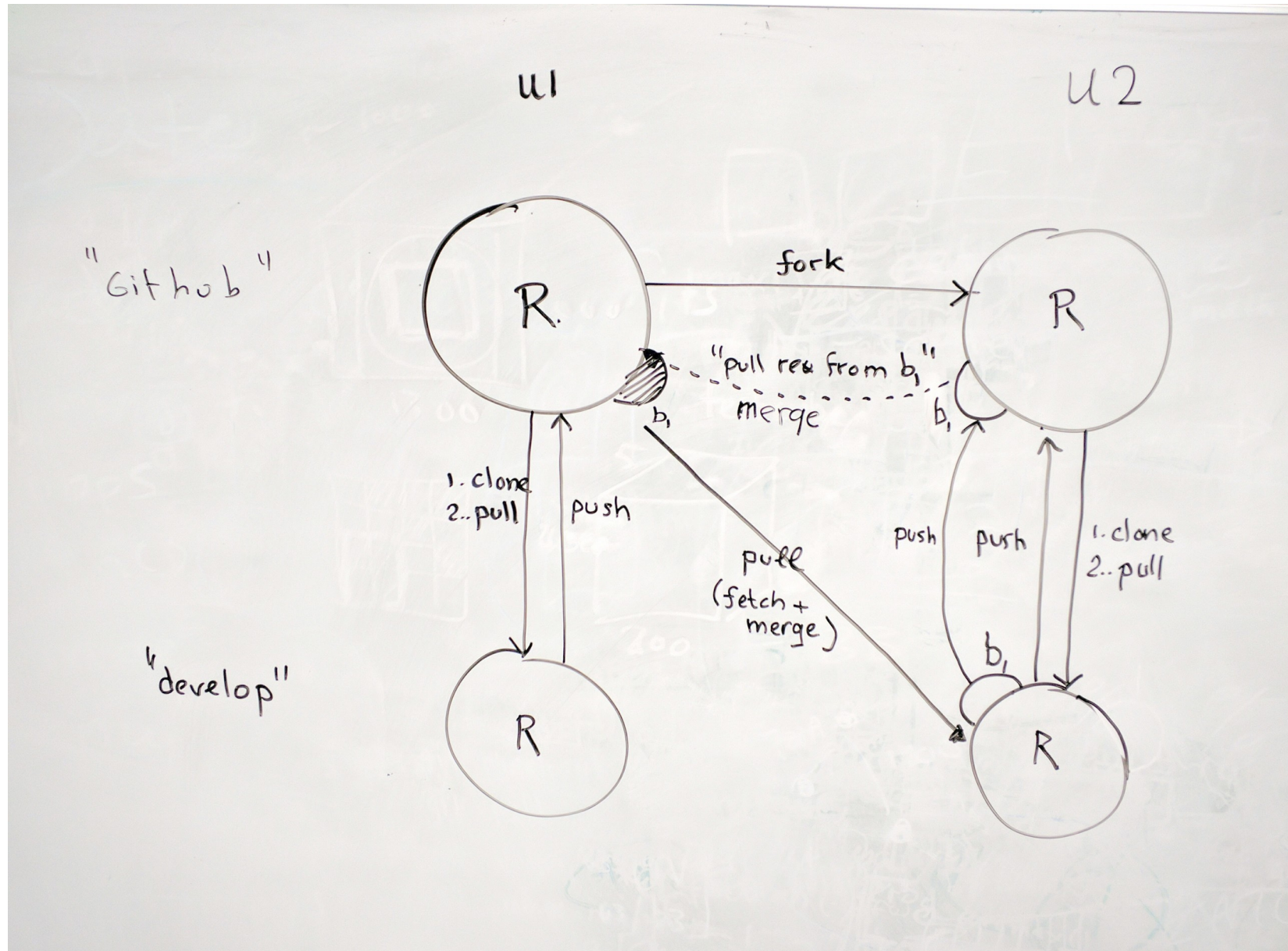
- Terminal session:
 - % `git clone https://github.com/astroumd/talk`
 - % `git pull`
 - % `cd talk/src`
 - % `echo line2 >> hello1`
 - % `echo line1 >> hello3`
 - % `git status`
 - % `git add hello3`
 - % `git commit hello1 hello3`
 - % `git push`

- Other useful git commands:

- % `git log`
- % `git grep`
- % `git diff`
- % `git config --list`
- % `git config --global user.email "teuben@gmail.com"`
- % `git config --global alias.ci "commit"`
- % `git config --global credential.helper "cache --timeout 100000"`

There are a handful more git commands but watch the next screen first

“pull request from a branch”



Jupyter Notebooks

- Combines Julia, Python and R
 - cf. with beakernotebook.com
 - <http://jupyter.org/>
- Used in GradMap, ASTR288P
 - cf. software-carpentry.org (and data-carpentry.org)