

GIT

Lamba Labs / 2016-11-12

SCM History

- RCS (1982)
- CVS (1986)
- Subversion/Bitkeeper (2000/1998)

GIT History

Andrew Tridgell
at linux.conf.au 2005

announced reverse
engineering of
bitkeeper



Reverse Engineering of BitKeeper

- Connect via Telnet:
- ```
telnet thunk.org 5000
Trying 69.25.196.29...
Connected to thunk.org.
Escape character is '^]'.
```
- ```
help
? - print this help
abort - abort resolve
check - check repository
clone - clone the current repository
help - print this help
httpget - http get command
[...]
```

Response to Announcement

- SourcePuller was announced
- Larry McVoy (CEO BitMover) was really
- angry about it
- huge flamewar on kernel mailing list
- free license to use bitkeeper was revoked

GIT Bootstrapping

- linux-kernel-2.6.12-rc2 was finished
- looking for alternatives for bitkeeper
- even tarball was an option
- kernel development stopped
- first version of git in two weeks

GIT Development

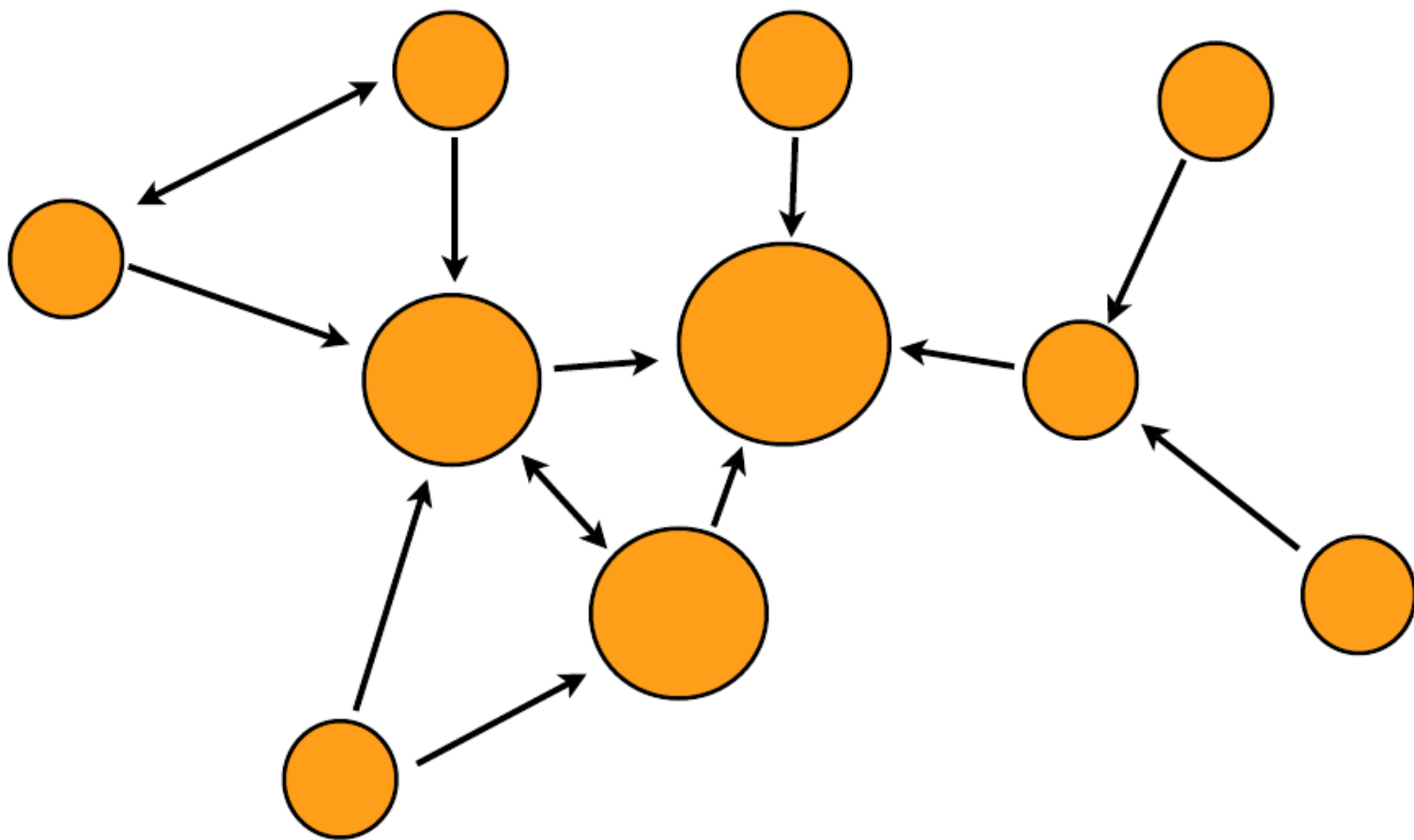
- 03. April - development start
- 06. April - first announcement
- 07. April - self hosting
- 18. April - first merge with multiple branches
- 16. Juni - Linux 2.6.12 Release – with git
- ...

GIT Requirements

- decentral development for more than 7000 developers
- exchange of patches between each other
- fast with a code base of linux kernel
- `git log --pretty=oneline | wc -l`
 - 635045 (status today)
- 2008 average changes per day
 - 4300 lines added
 - 1800 lines deleted
 - 1500 lines modified

GIT design

- no central repository
- everyone is his own repository
- everyone can exchanged patches with everyone in all directions
- repository not get copied, they got cloned
- offline working is possible
- strong support for non-linear development



Project History

- every version (commit) creates a 20 byte (sha-1) hash
- hash including previous version
- merge tracking
- secure crypto functions

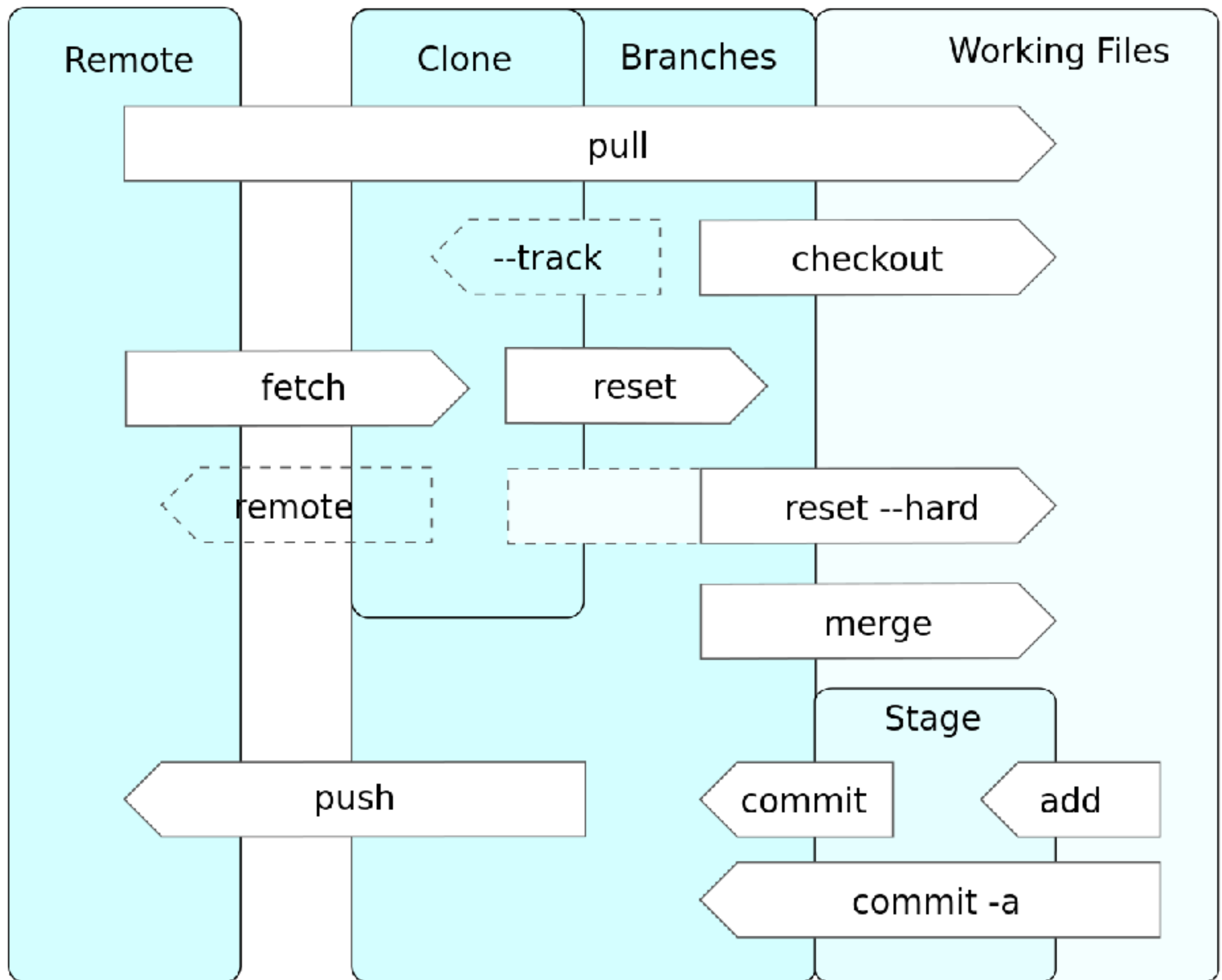
Communication

- local filesystem
- git (tcp port 9418)
- ssh (tcp port 22)
- http/s (tcp port 80 and 443)
- ftp/s (tcp port 20 and 21)
- email
- ...



A person wearing a white lab coat is working on a robotic assembly line. The assembly line consists of a grey metal frame with a white breadboard on top. On the breadboard, there is a black integrated circuit (IC) and several colored wires (red, blue, yellow, green) connected to it. A small red LED is lit. Above the breadboard, a blue HC-SR04 ultrasonic sensor module is mounted, with its two circular sensors facing forward. The background is blurred, showing a laboratory setting with various equipment and a blue bottle. The text "DEMO TIME!" is overlaid in large, white, bold letters across the center of the image.

DEMO TIME!



GIT Services

- Hosting: github.com, gitlab.com, bitbucket.org, ...
- GUI: Windows, MacOS, Linux, ...
- IDE: Eclipse, Visual Studio, ...
- Integration: Ticket Systems, Documentation, Web, Continues Integration Tools
- Concept: Wiki, Backup, CMS, ..

GIT Tips

- Adapt to the concept - use it for more than just code.
- Think different - share more often and early
- Automate your life with hooks

Thanks for listing and Q&A
Jens Muecke
jens@nons.de

projects /



☐ re

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Project	Description	Owner	Last Change	
buildbot.git	LEDE buildbot configuration	Git	6 days ago	summary shortlog log tree
feed/packages.git	Mirror of packages feed	Git	17 hours ago	summary shortlog log tree
feed/routing.git	Mirror of routing feed	Git	2 weeks ago	summary shortlog log tree
feed/telephony.git	Mirror of telephony feed	Git	4 months ago	summary shortlog log tree
keyring.git	Public key files of the LEDE...	Git	3 months ago	summary shortlog log tree
lede/blogic/staging.git	John Crispins staging tree	Git	4 weeks ago	summary shortlog log tree
lede/dangole/staging.git	Staging tree of Daniel Golle	Git	5 weeks ago	summary shortlog log tree
lede/hauke/staging.git	Hauke Mehrtens staging tree	Git	7 weeks ago	summary shortlog log tree
lede/jogo/staging.git	Staging tree of Jonas Gorski	Git	22 hours ago	summary shortlog log tree
lede/jow/staging.git	Jo-Philipp Wichs staging tree	Git	3 days ago	summary shortlog log tree
lede/lynxis/staging.git	lynxis staging tree	Git	4 months ago	summary shortlog log tree
lede/lynxis/staging/omap.git	lynxis staging tree for omap	Git	4 months ago	summary shortlog log tree
lede/mkresin/staging.git	Staging tree of Mathias Kresin	Git	2 days ago	summary shortlog log tree
lede/nbd/staging.git	Felix Fietkaus staging tree	Git	3 hours ago	summary shortlog log tree
lede/neoraiders/staging.git	Staging tree of Matthias Schiffer	Git	2 days ago	summary shortlog log tree
lede/noltari/staging.git	Staging tree of Alvaro Fernand...	Git	4 weeks ago	summary shortlog log tree