Introducing: git

Level up your VCS

Philly Lambda April Fools Day

“I'm an egotistical bastard, and I name all my projects after myself. First Linux, now git[1].”

Linus Torvalds

“I have an ego the size of a small planet” - Linus

[1] git (n): British slang for a stupid or unpleasant person

The Journey

- **SCM, DVCS**
- History
- Git
- Demonstration

SCM and DVCS

SCM

Software Configuration Management

Source Code Management

Centralized

CVS, SVN, Most Commercial Offerings

Distributed

Git, Darcs, Hg, Bazar, BitKeeper

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In the beginning...

Linus used no VCS for the Linux Kernel (!)

> “Only wimps use tape backup: _real_ men just upload their important stuff on ftp, and let the rest of the world mirror it ;) “ – Linus

BitKeeper first tried out by LinuxPPC project

Linus Adopts it “Best tool for the job”

Linus starts using a VCS in Feb 2002 (rejoice!)

The Plot Thickens

BitKeeper by BitMover

- Free use for Open Source
- …so long as you don't work on another DVCS
- …or reverse engineer the wire protocol

In steps Andrew Tridgell

```
telnet bkserver bkport
help^M
```

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→ *Revoked*

A git is born

In Steps Linus Torvalds

- *Opinionated*
- ***Needed*** DVCS
- Safeguards against corruption
- High Performance (impatience is a virtue)

Started:	2005/04/03
Announced:	2005/04/06
Self Hosting:	2005/04/07 (4d!)
First Multi-branch Merge:	2005/04/18 (15d!)

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Fundamentals of VCS

Initialize
Add Files
Commit
View History
Revert
Branch
Share [Push]
Update [Pull]

No Really, it’s different

“In many ways you can just see git as a filesystem — it's content-addressable, and it has a notion of versioning, but I really designed it coming at the problem from the viewpoint of a *filesystem* person (hey, kernels is what I do), and I actually have absolutely *zero* interest in creating a traditional SCM system. “

Linus Torvalds

No Really, it's different

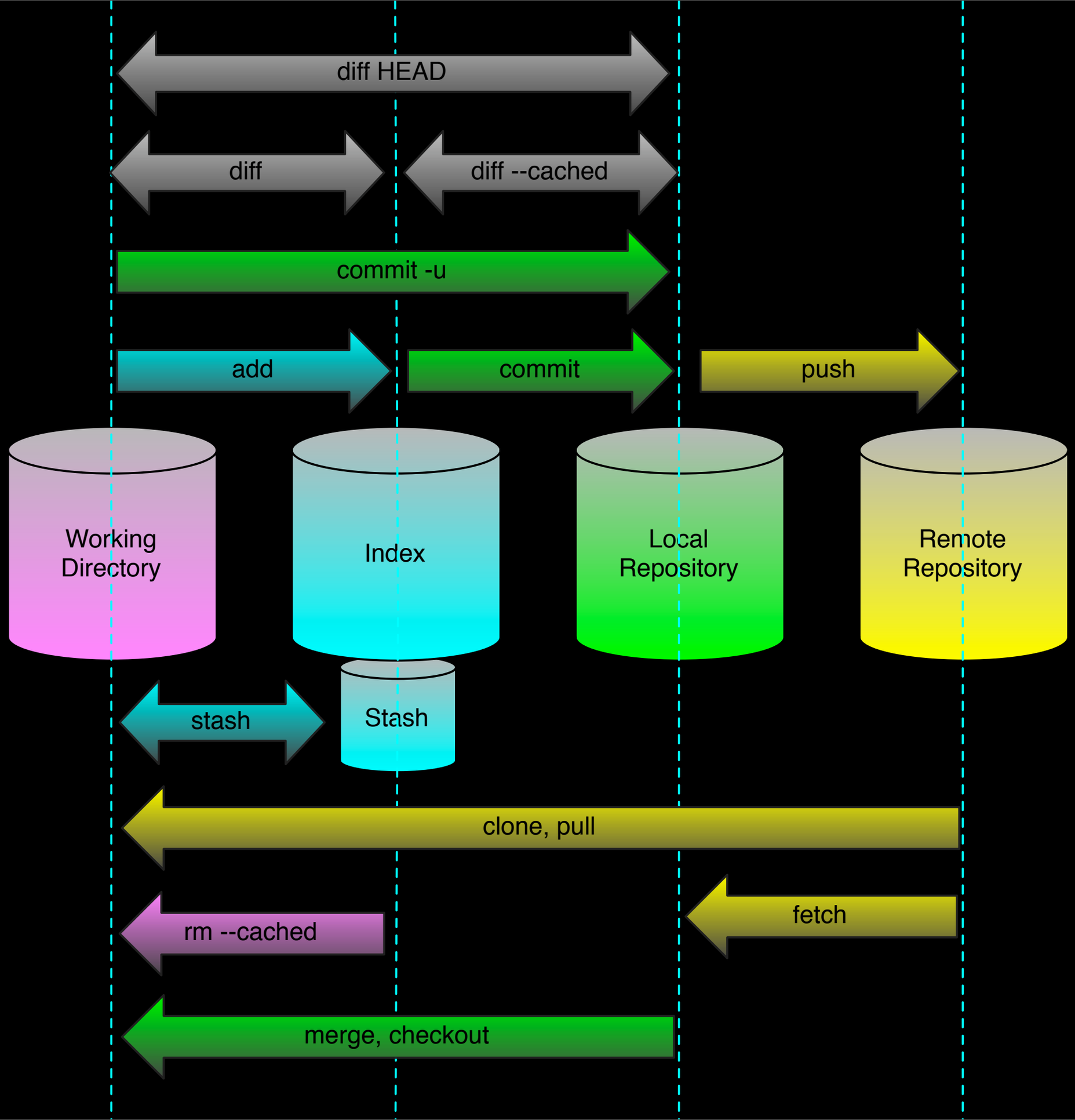
Tracks Content via SHA-1 hash

Working Area

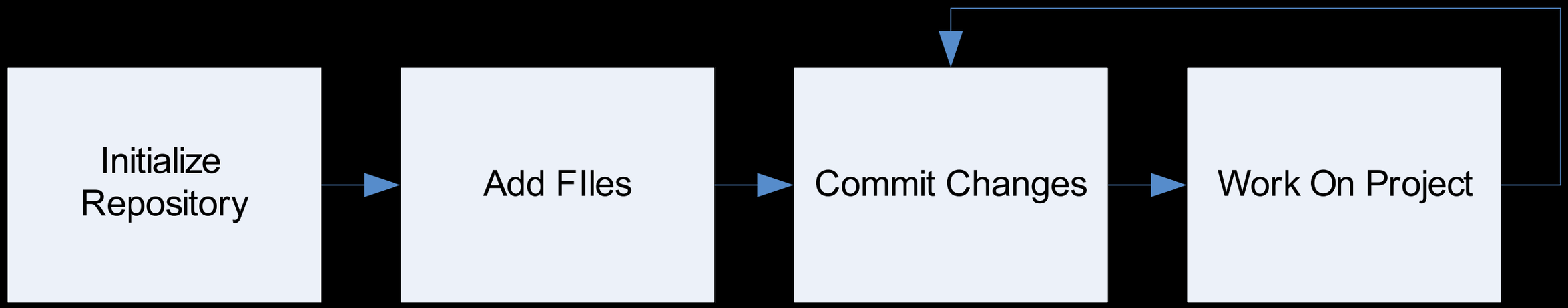
Index (Staging Area)

Repositories (http, ssh, local, nfs, git)

Stash


diff HEAD
diff
diff --cached
commit -u
add
commit
push
Working Directory
Index
Local Repository
Remote Repository
Stash
stash
clone, pull
rm --cached
fetch
merge, checkout

Lone Developer



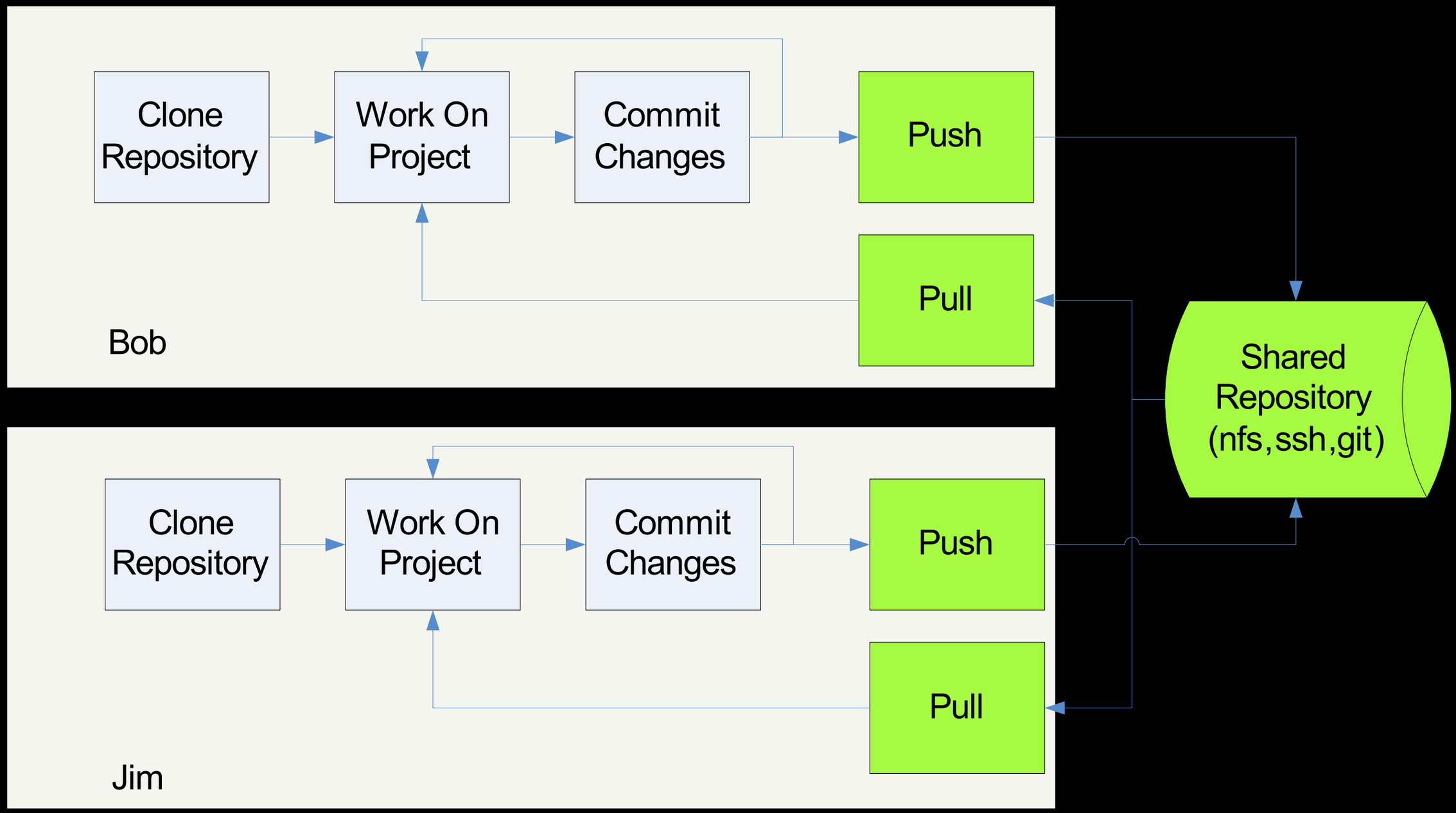
init (or clone)

loop...

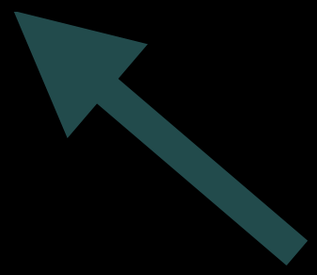
commit -a

...recur

Dev Team


Clone Repository
Work On Project
Commit Changes
Push
Pull
Bob
Shared Repository (nfs,ssh,git)
Clone Repository
Work On Project
Commit Changes
Push
Pull
Jim

git-svn



(Gateway Drug)

git svn clone

git svn dcommit

git svn rebase

(svn duplicates a lot of data, this makes the initial clone slow, but you only pay once)

Branching: Actually Useful

CVS Branching: sucks

SVN Branching: sucks

GIT Branching: FTW!

Tools and Features

```
gitk
git log --color --graph
.git/info/exclude and .gitignore
git grep ‘java.util.Map’ $(git tag -l)
```

Relative Versions

```
git diff HEAD^
git diff HEAD^^^^^
git diff HEAD~5 HEAD~10
```

Tools and Features

```
git blame <<file>>
git clean
git bisect
git add --interactive
git archive \
  --prefix=java-memcached-client \
  --format=tar 2.3 | \
gzip java-memcached-client-2.3.tgz
git gui
git instaweb
```

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Demonstration

(run off to a putty terminal, don’t forget to start X, try not to make [too much of] a fool of yourself)

Should You Adopt Git?

NO!

You just moved to {svn,Hg,darcs,*}

People Don’t like Change

Some Tools Still Immature

(honestly I couldn’t come up with any technical reasons)

Should You Adopt Git?

YES! (can't stop you)

Fantastic for local use

- $HOME and /etc

git-svn

It's *fast*

- Happy Developers == more productive
  - (if you buy into that sort of thing)

Conclusion

Fast

Geek Chic

DVCS Different

Powerful

Easier Than it seems

(did I mention it's fast?)

```
kyle@ppt:~ $ git commit -a -m 'finished presentation'

[detached HEAD a835269] finished presentations
 2 files changed, 3 insertions(+), 3 deletions(-)
kyle@ppt:~ $ git push

Counting objects: 5, done.
Delta compression using 2 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 297 bytes, done.
Total 3 (delta 2), reused 0 (delta 0)
Unpacking objects: 100% (3/3), done.
To /home/git-repo/git-presentation/
   3fd2b39..867372e  master -> master
kyle@ppt:~ $ ^D
```

References

http://www.youtube.com/watch?v=4XpnKHJAok8
http://www.gitready.com/
http://en.wikipedia.org/wiki/Git_(software)
http://git-scm.com/
http://git.or.cz/index
http://git.kernel.org/
http://kerneltrap.org/node/4966
http://jbowes.wordpress.com/2007/02/18/git-bisect-a-practical-example-with-yum/
http://github.com/bobmcwhirter/jboss-messaging/tree/master
http://www.reddit.com/r/programming/comments/80xax/sourceforge_now_supports_git/
http://www.advogato.org/person/apenwarr/diary/371.html
http://maven.apache.org/scm/git.html
http://code.google.com/p/tortoisegit/
http://osteele.com/archives/2008/05/my-git-workflow
http://confluence.atlassian.com/display/CRUCIBLE/Crucible+Git+Plugin
http://code.google.com/p/msysgit/

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http://www.flickr.com/photos/ianhampton/65178598/
http://www.flickr.com/photos/travalicando/381993996/
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