

Introducing: git

Level up your VCS

[PLUG / May 6th 2009]

*“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



The Journey

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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
```

The Plot Thickens

BitKeeper by BitMover

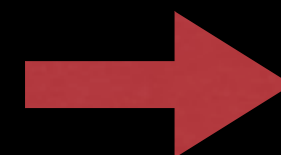
Free use for Open Source

...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
```



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!)

The Journey

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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

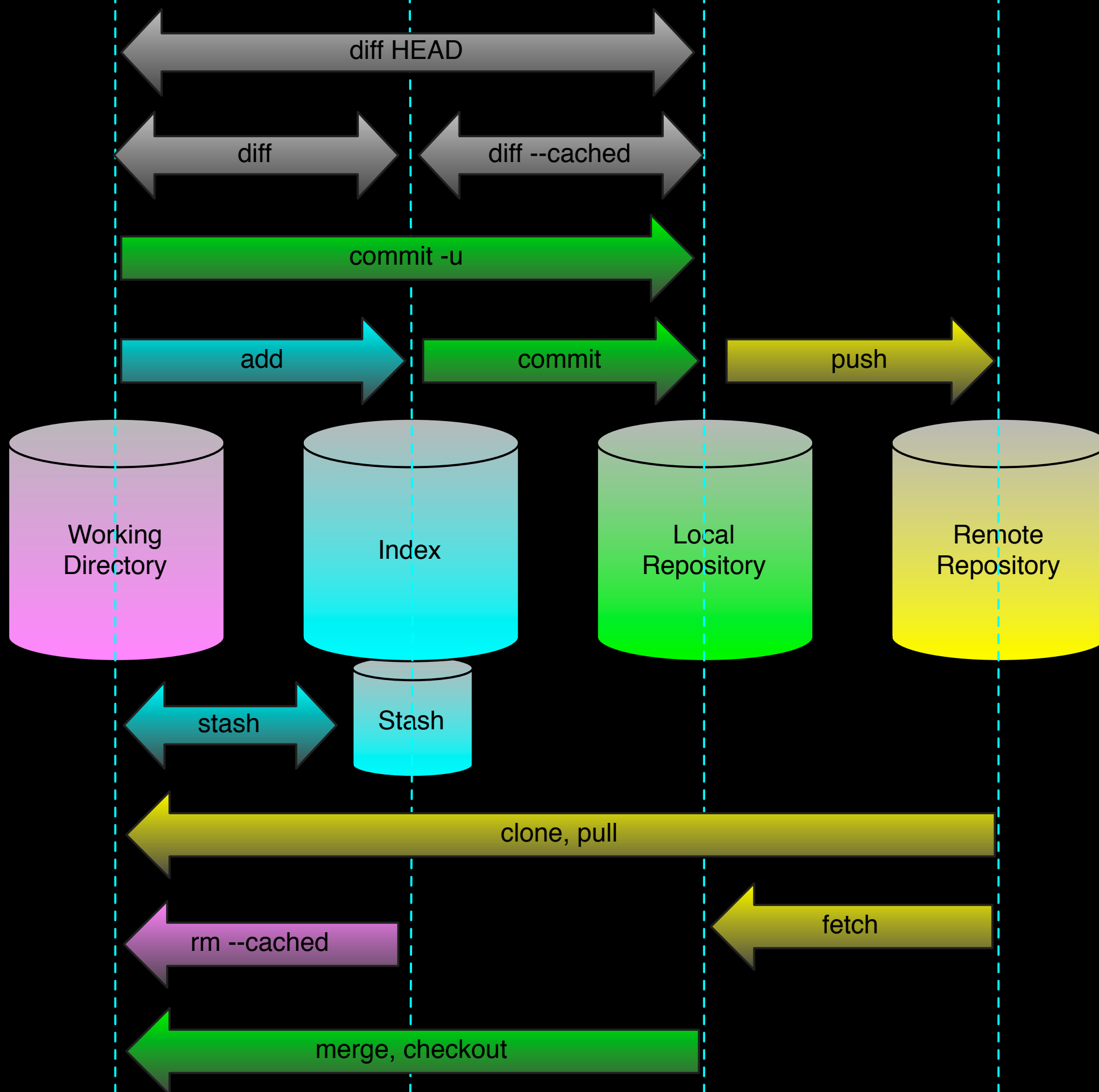
Tracks Content via SHA-1 hash

Working Area

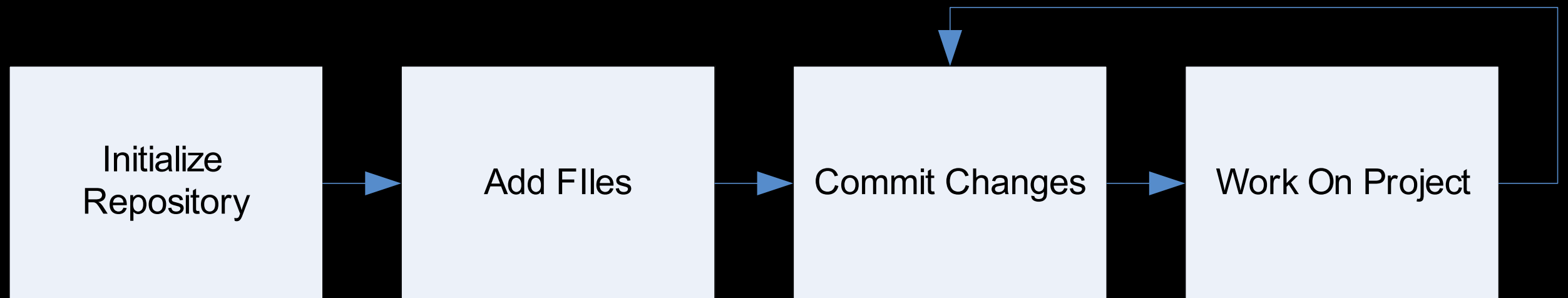
Index (Staging Area)

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

Stash



Lone Developer



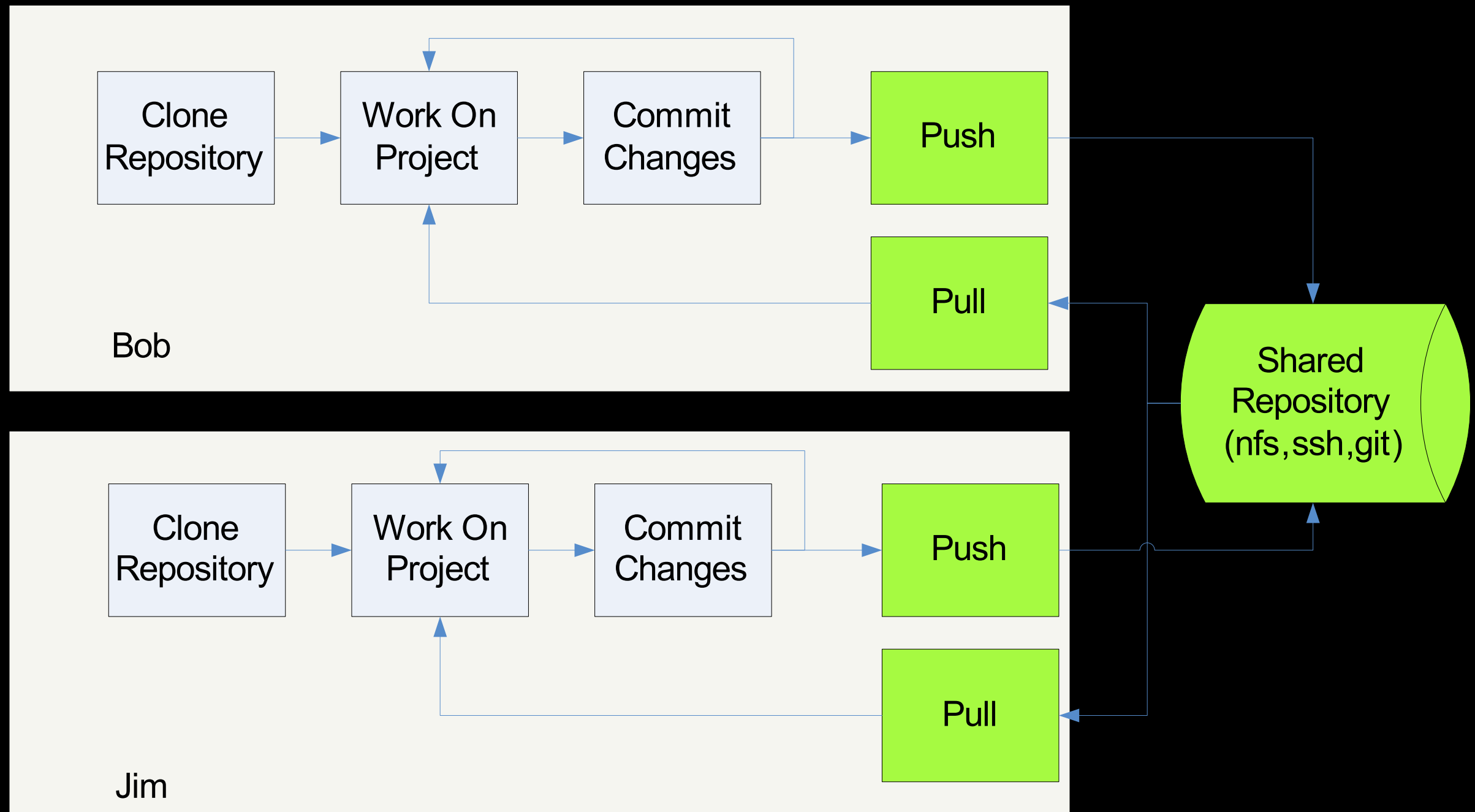
init (or clone)

loop...

commit -a

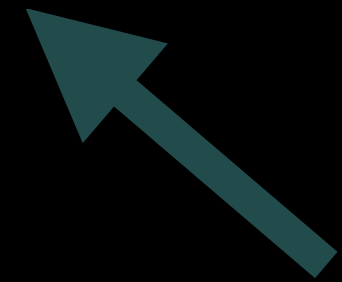
...recur

Dev Team



git-svn

git svn clone
git svn dcommit
git svn rebase



(Gateway Drug)

(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
```

The Journey

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

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://en.wikipedia.org/wiki/Git_(software))

<http://git-scm.com/>

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<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.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>

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<http://code.google.com/p/msysgit/>

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