The Future of Git at Scale

commit-graph

multi-pack-index

git log --graph

ick Stolee

derrickstolee

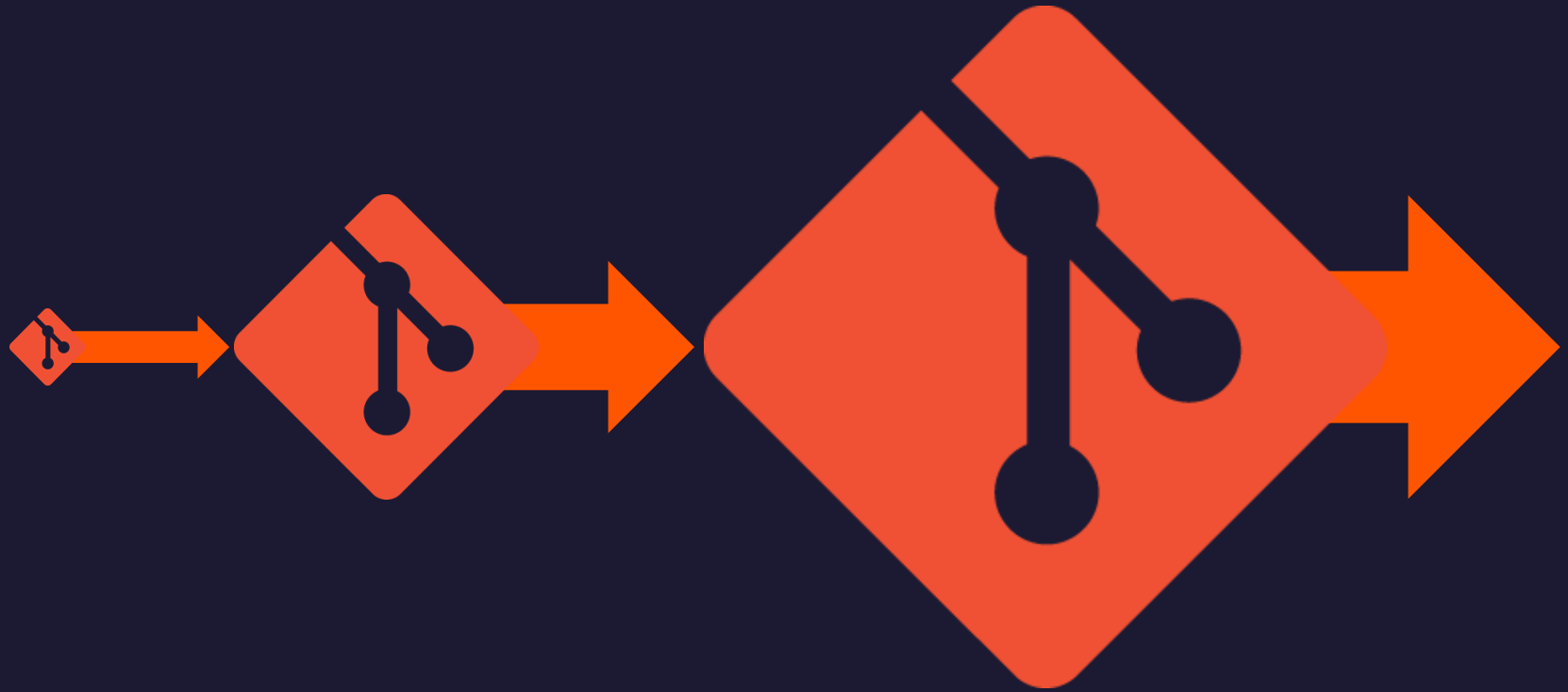
Monorepo user

Developer tools

git sparse-checkout

Lessley Der

@ldenningt



Features for any scale!

Upgrade!

Background Maintenance

```
git maintenance start
```

Customize maintenance schedule with `maintenance.<task>.schedule` values in your Git config!

GCM Core

Windows

On by default

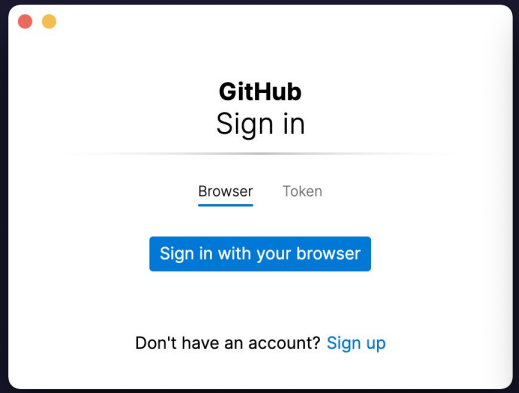
macOS

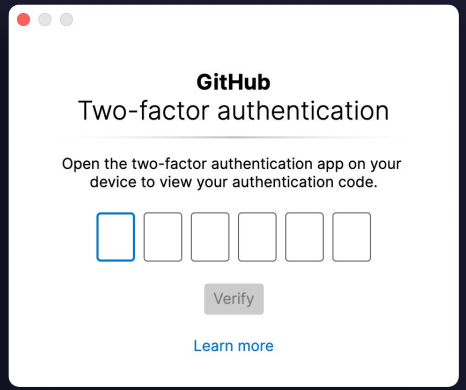
```
brew tap microsoft/git
brew install --cask git-credential-manager-core
```

Linux

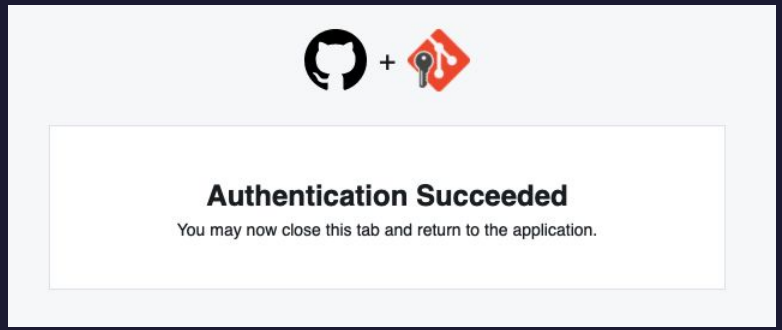
Download/install `.deb` package - or - Install from source
`git-credential-manager-core configure`

Client





Browser



GCM Core

Windows

On by default

macOS

```
brew tap microsoft/git
brew install --cask git-credential-manager-core
```

Linux

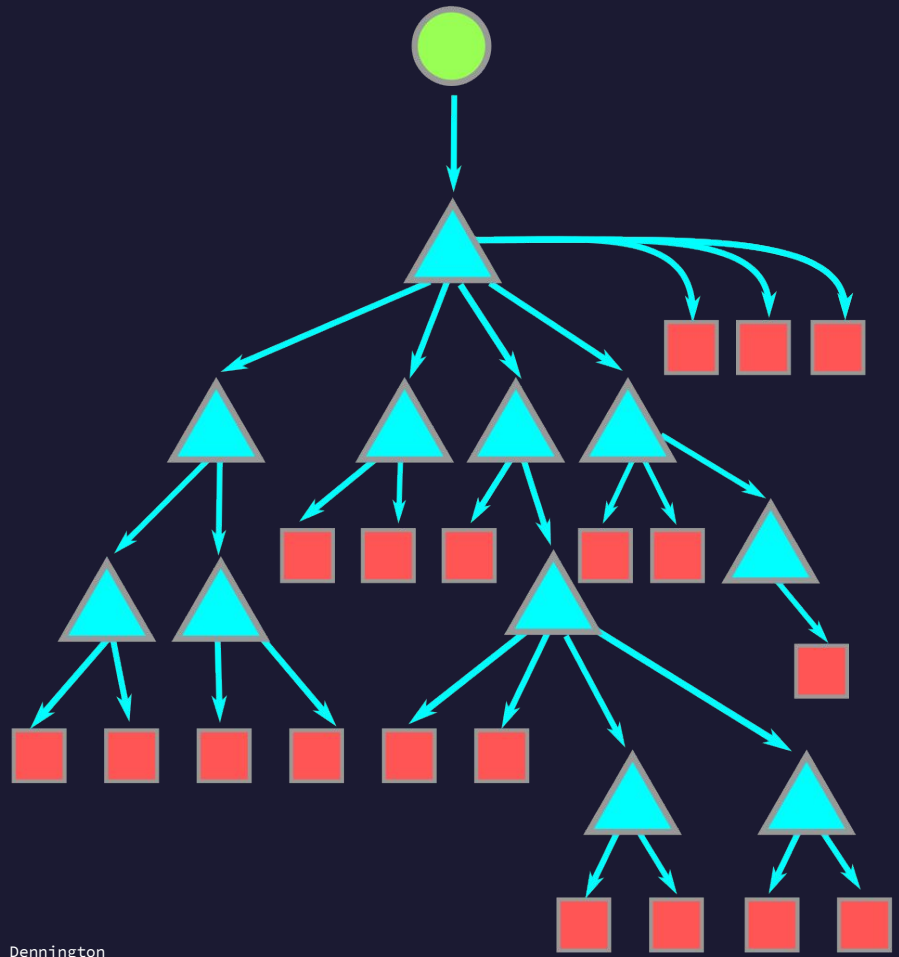
Download/install `.deb` package - or - Install from source
`git-credential-manager-core configure`

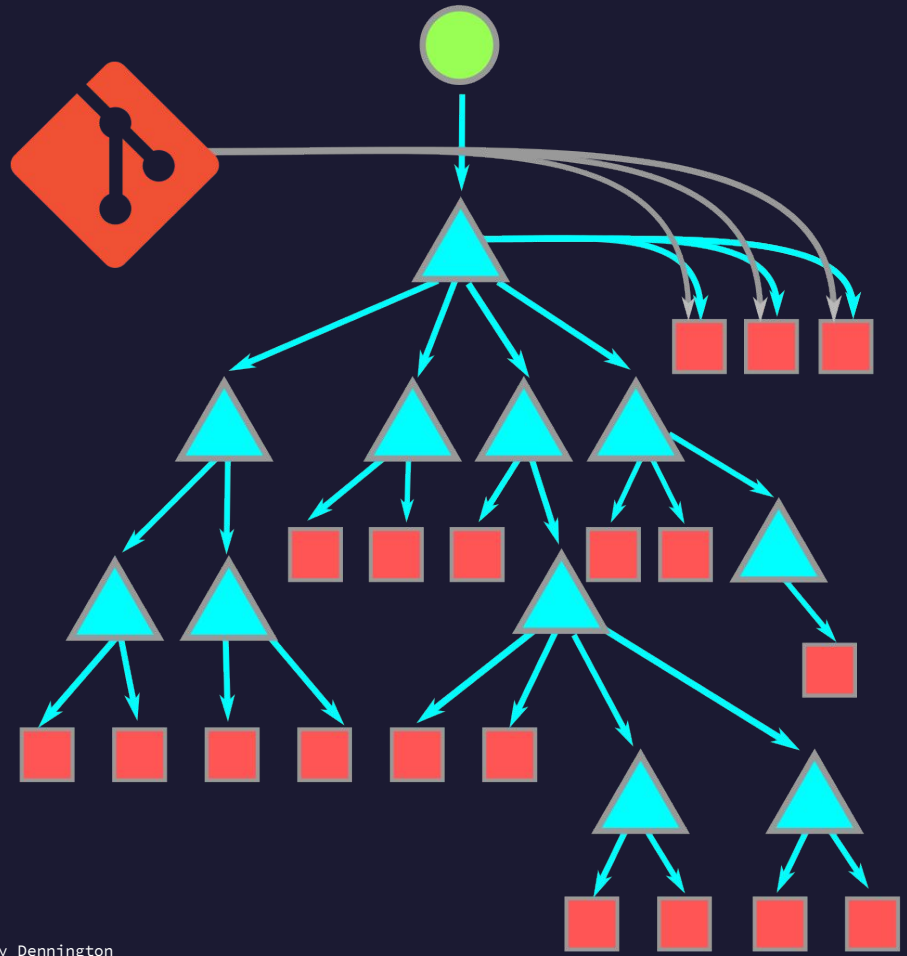
Shapes and concepts

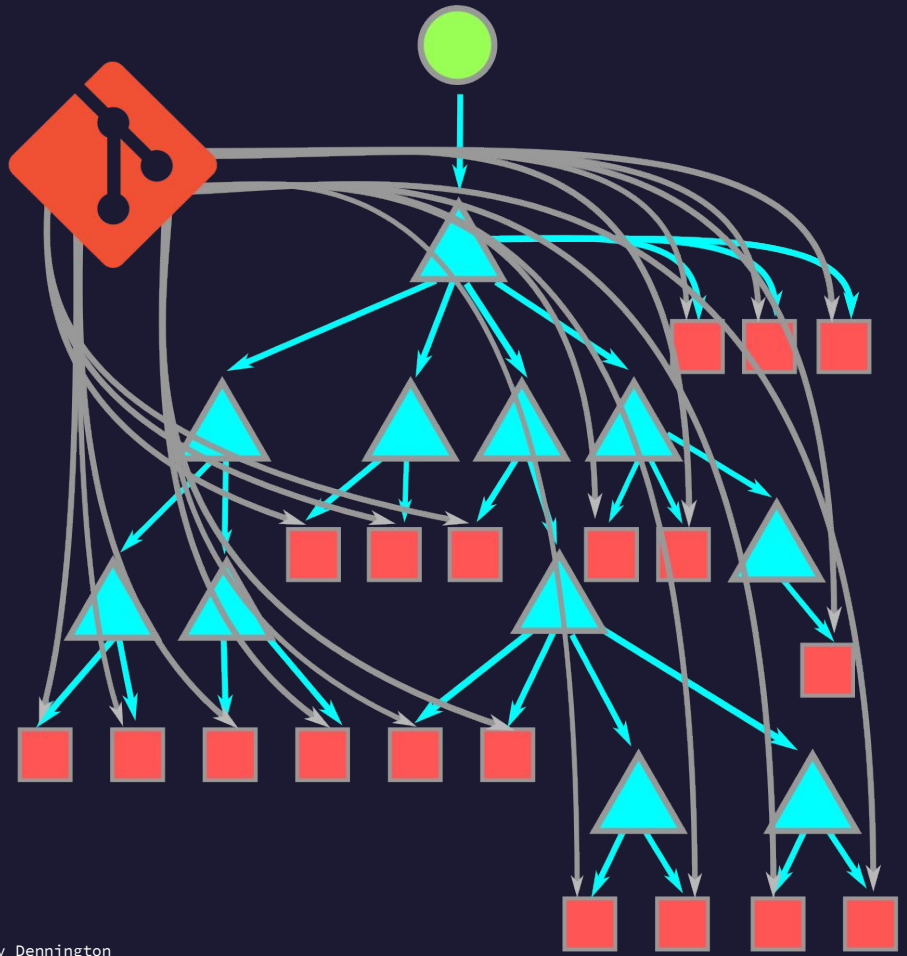
Circles are **Commits**
(Points in time)

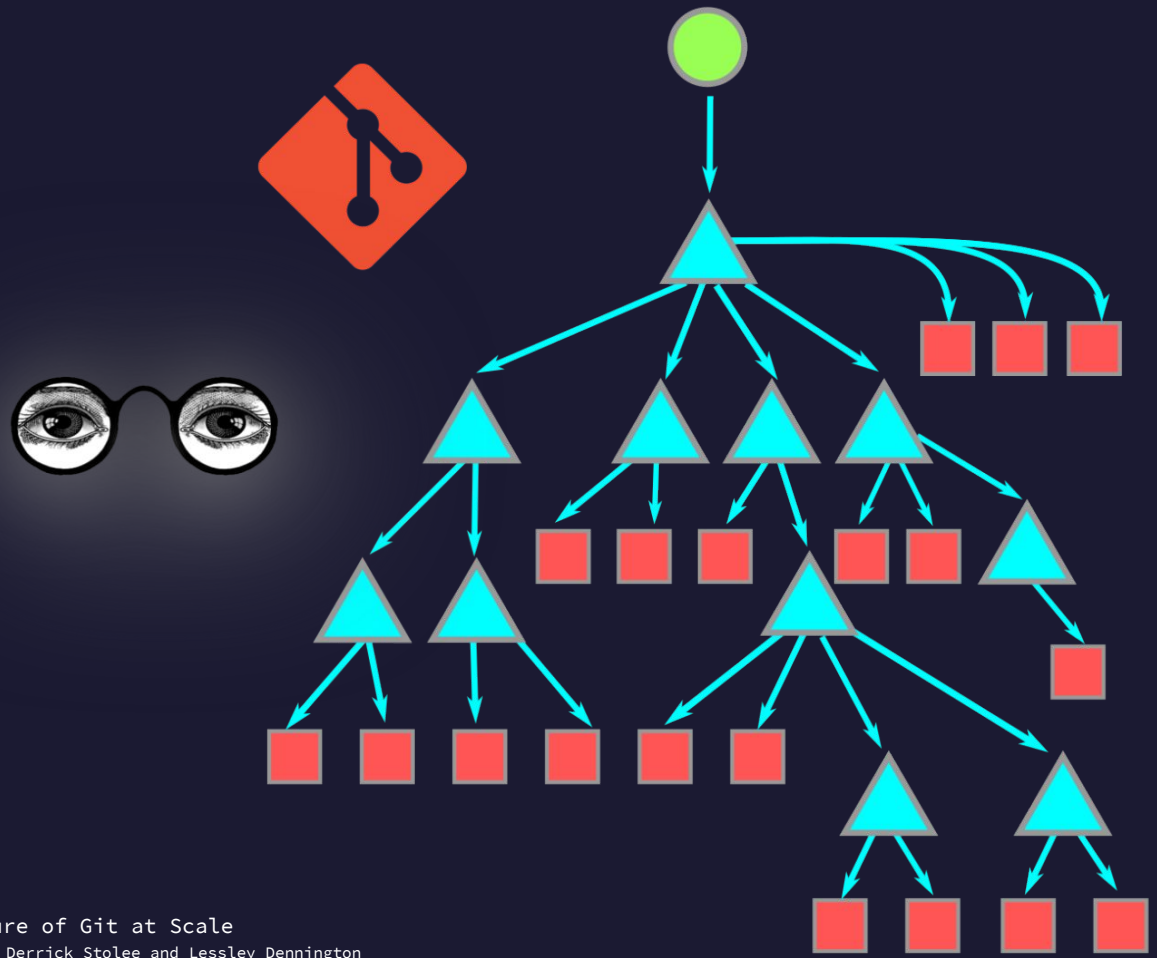
Triangles are **Trees**
(Directories)

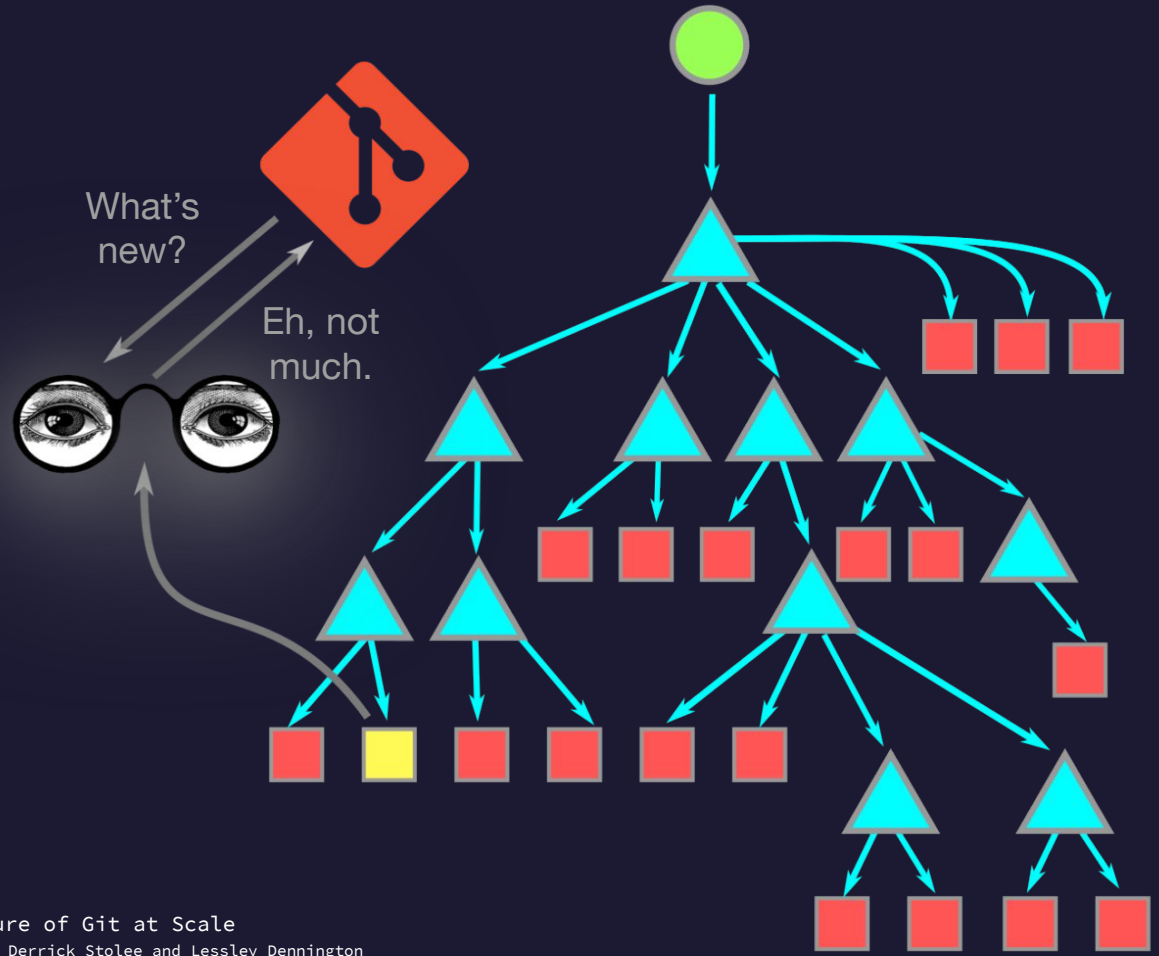
Boxes are **Blobs**
(File contents)

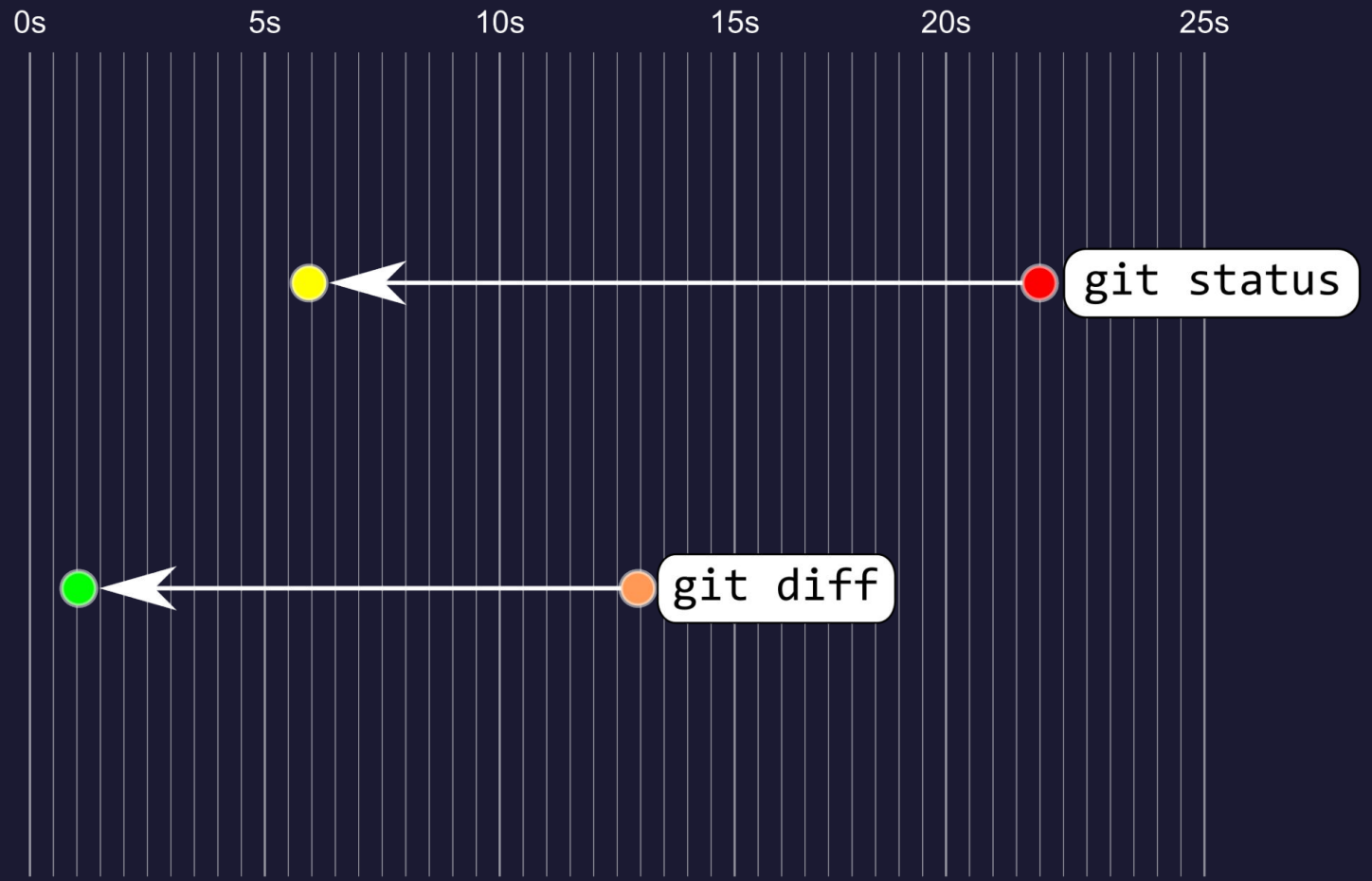









What's new?
Eh, not much.


0s
5s
10s
15s
20s
25s
git status
git diff

FS Monitor

Without daemon

With Watchman installed

```
git config core.usefsmonitor true
git config core.fsmonitor .git/hooks/fsmonitor-watchmanv2
git config core.untrackedcache true
```

With daemon

```
git config core.usebuiltinfsmonitor true
git config core.untrackedcache true
```

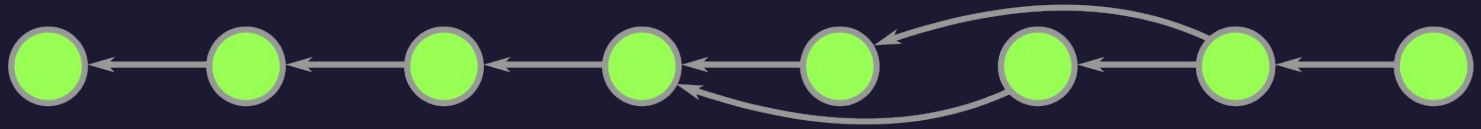
Full clone

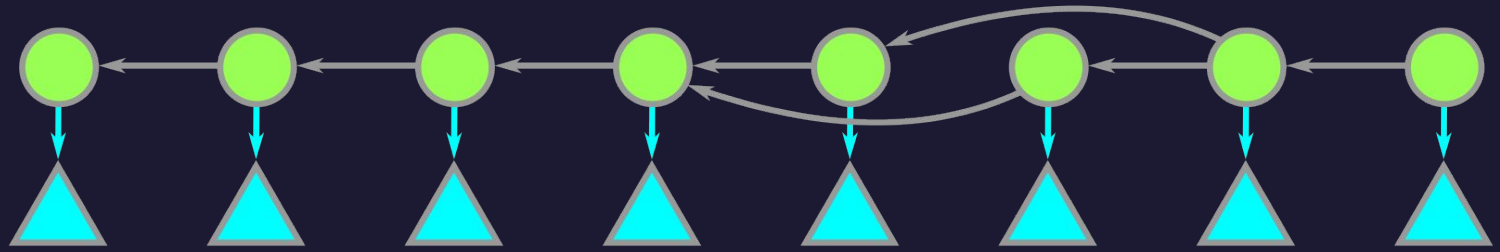
```
git clone <url>
```

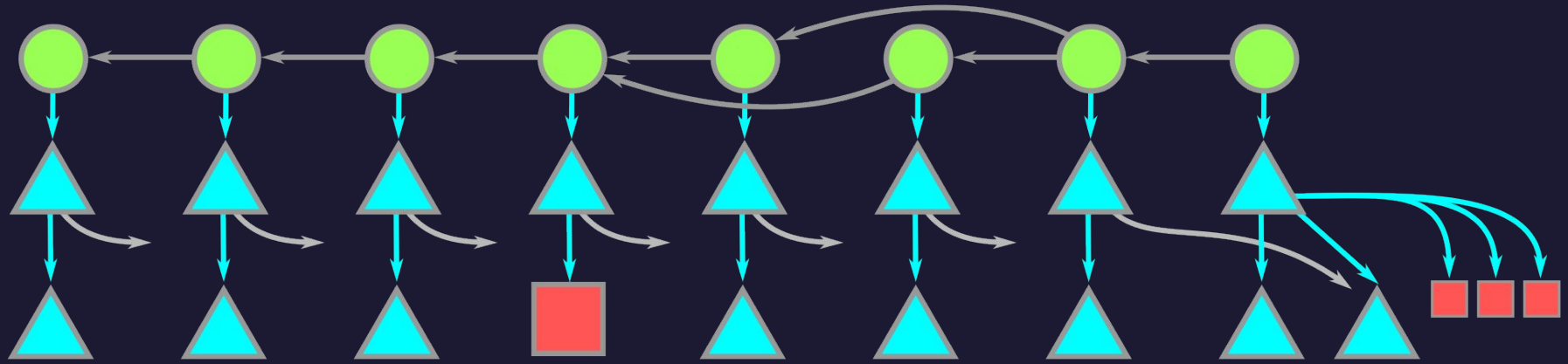
Circles are **Commits**
(Points in time)

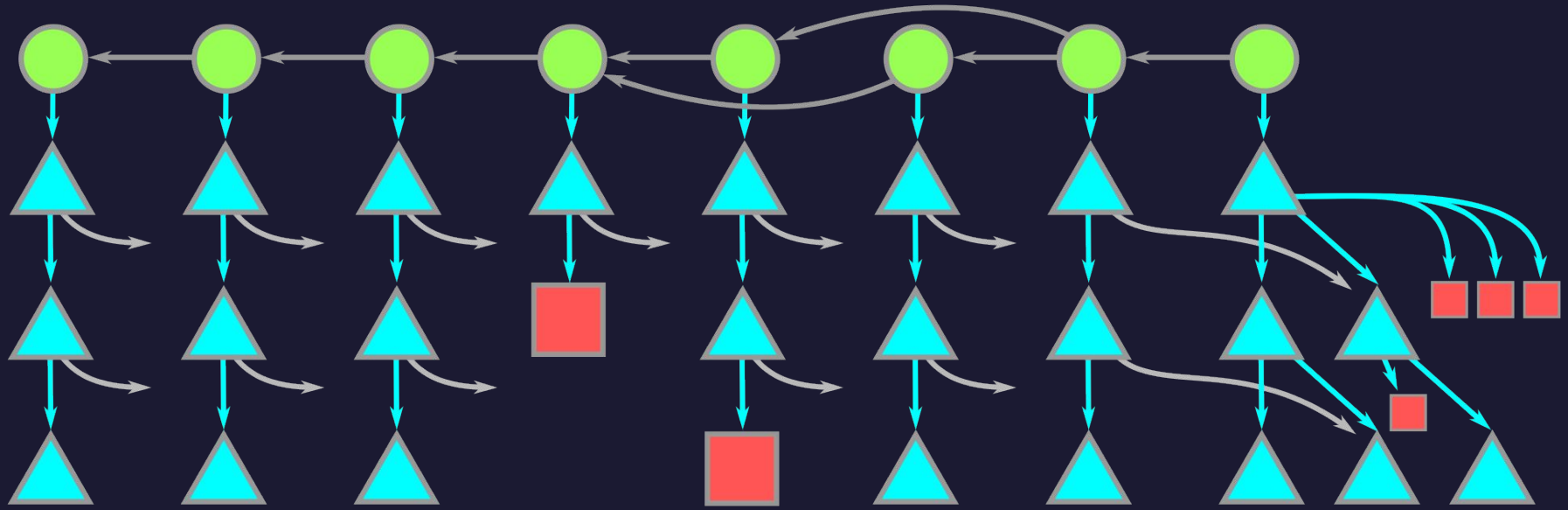
Triangles are **Trees**
(Directories)

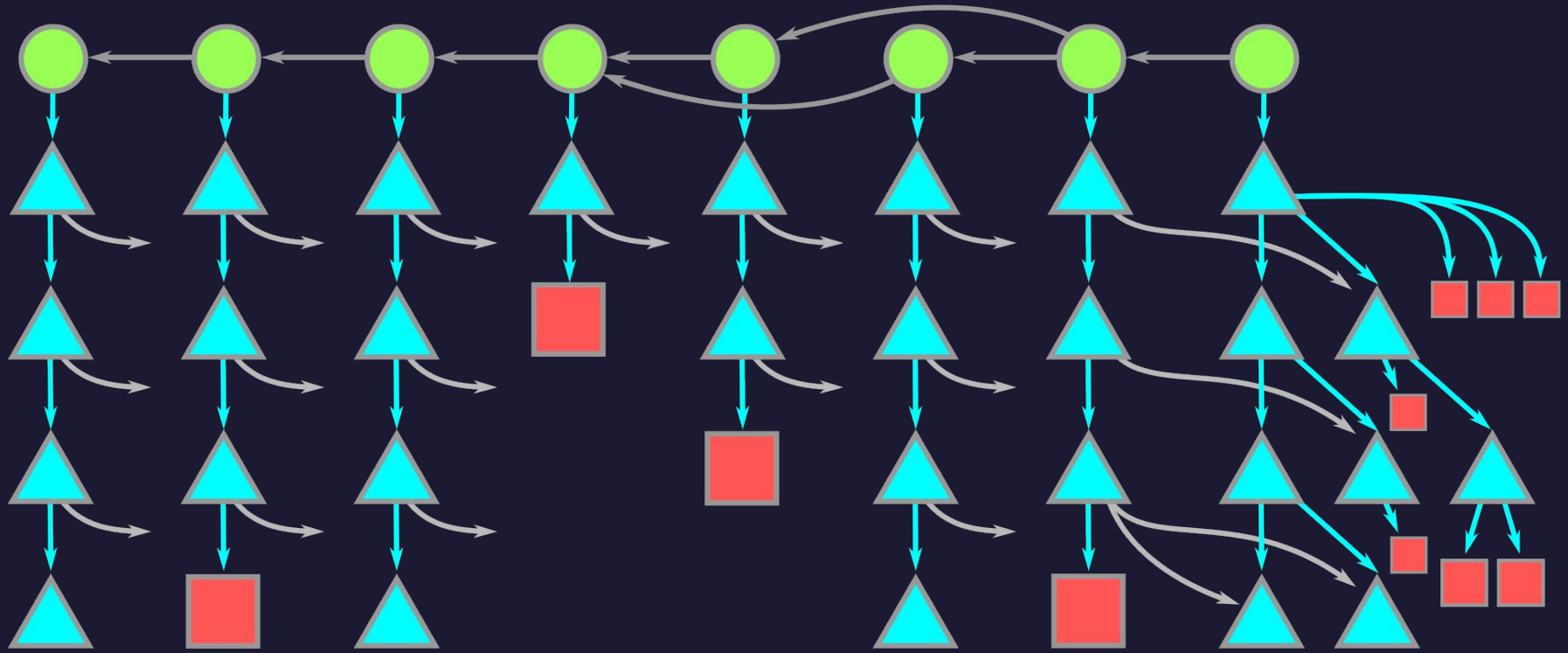
Boxes are **Blobs**
(File contents)

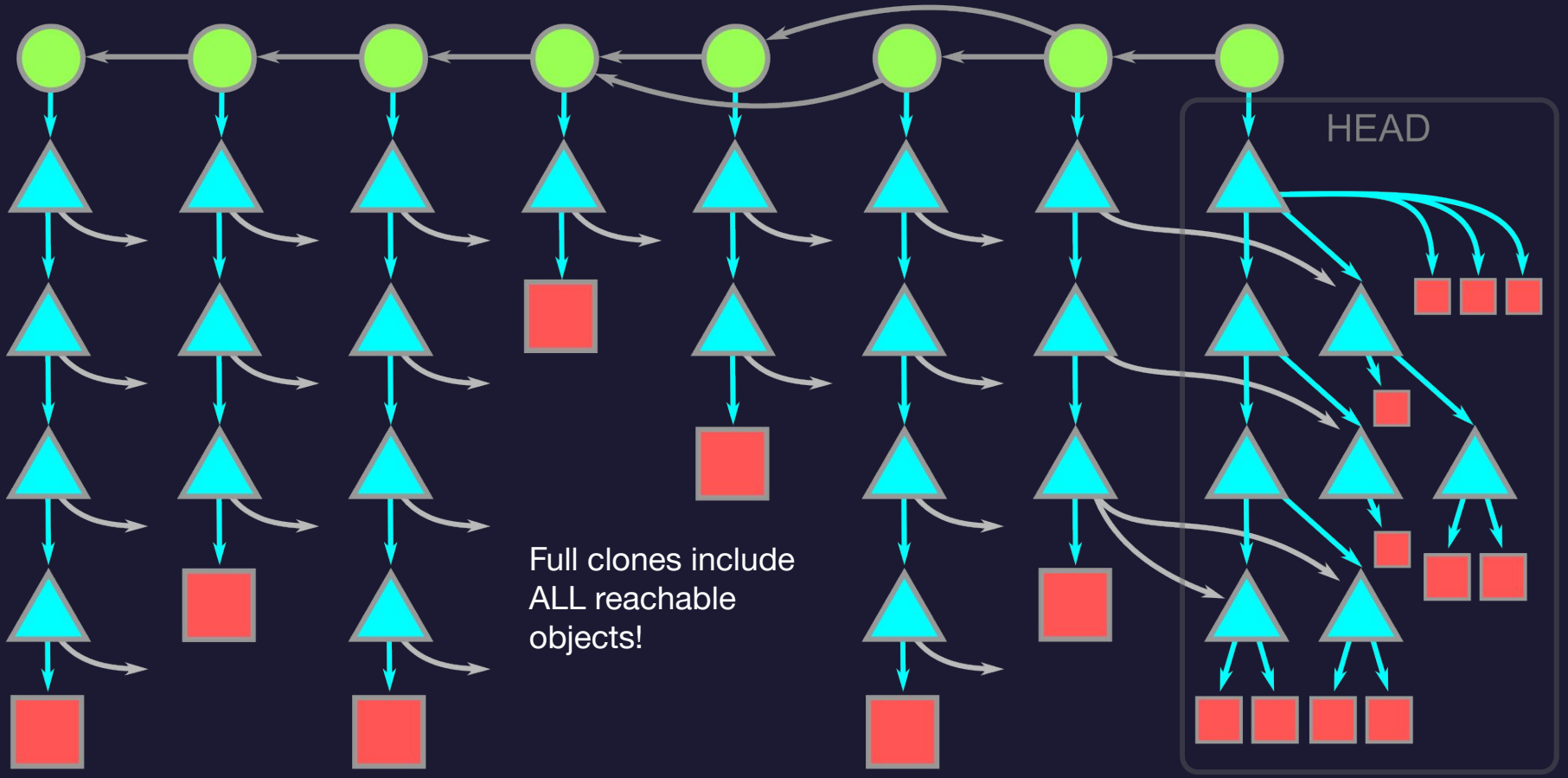










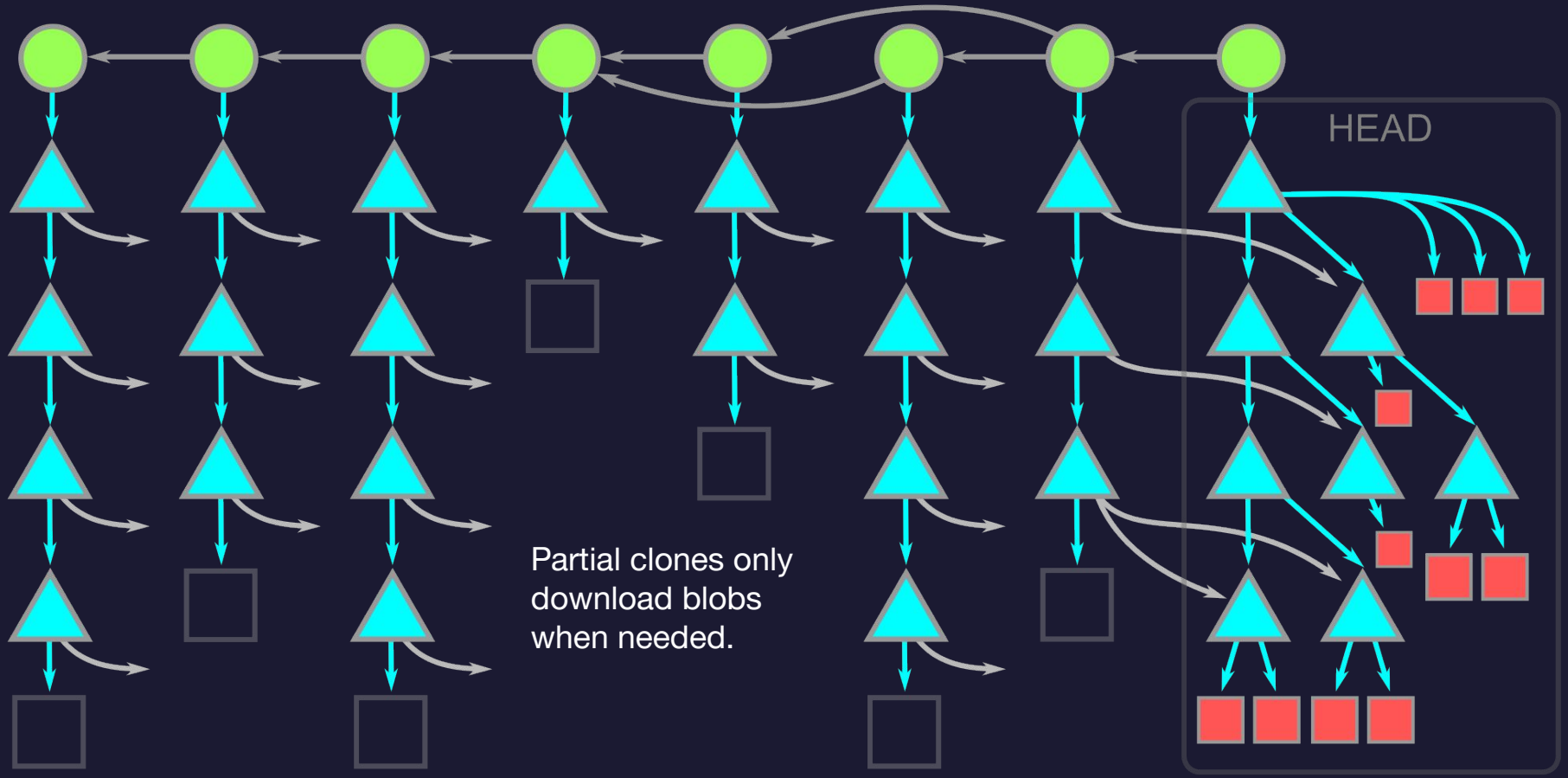

HEAD
Full clones include
ALL reachable
objects!

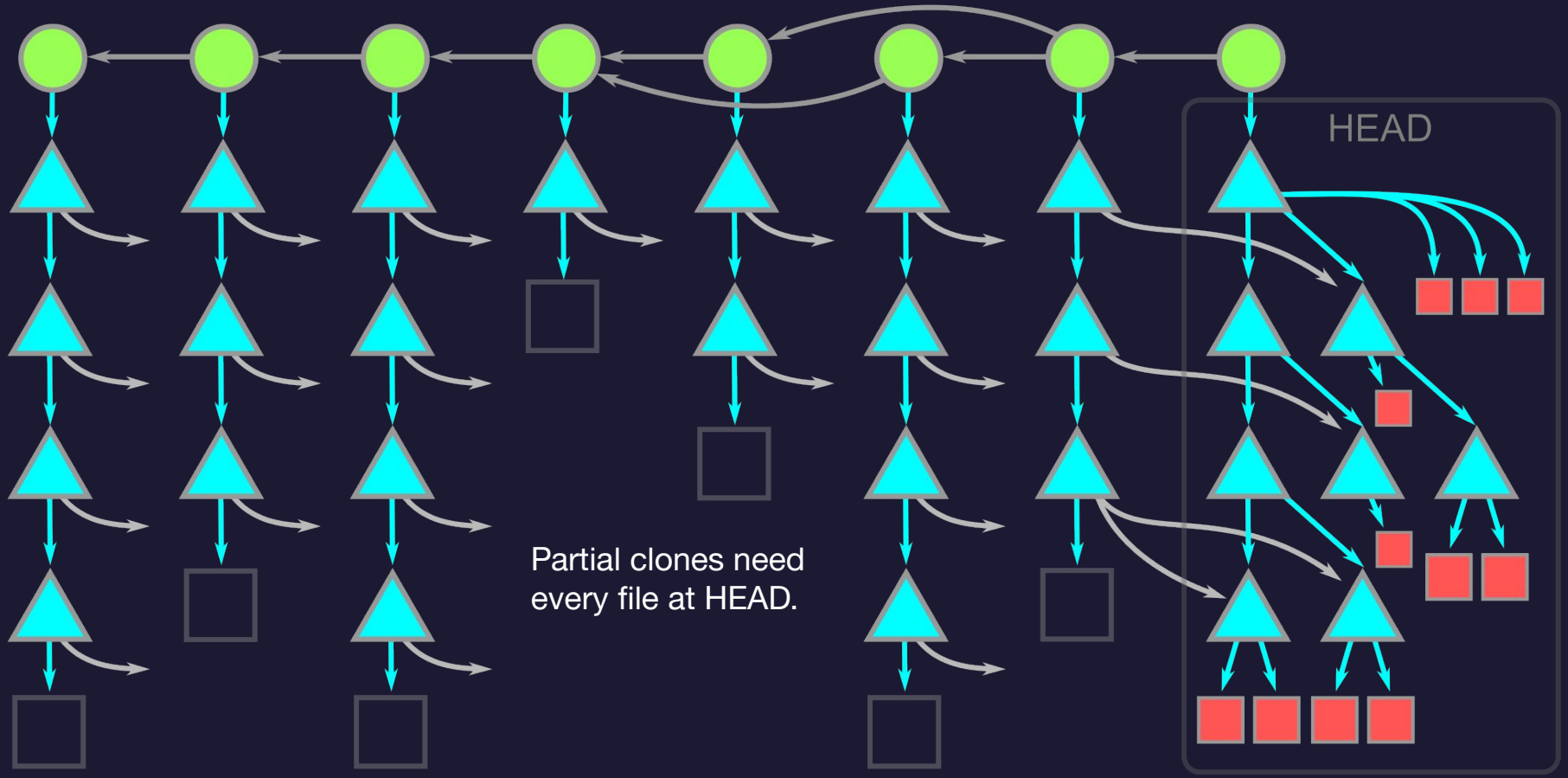
Full clone

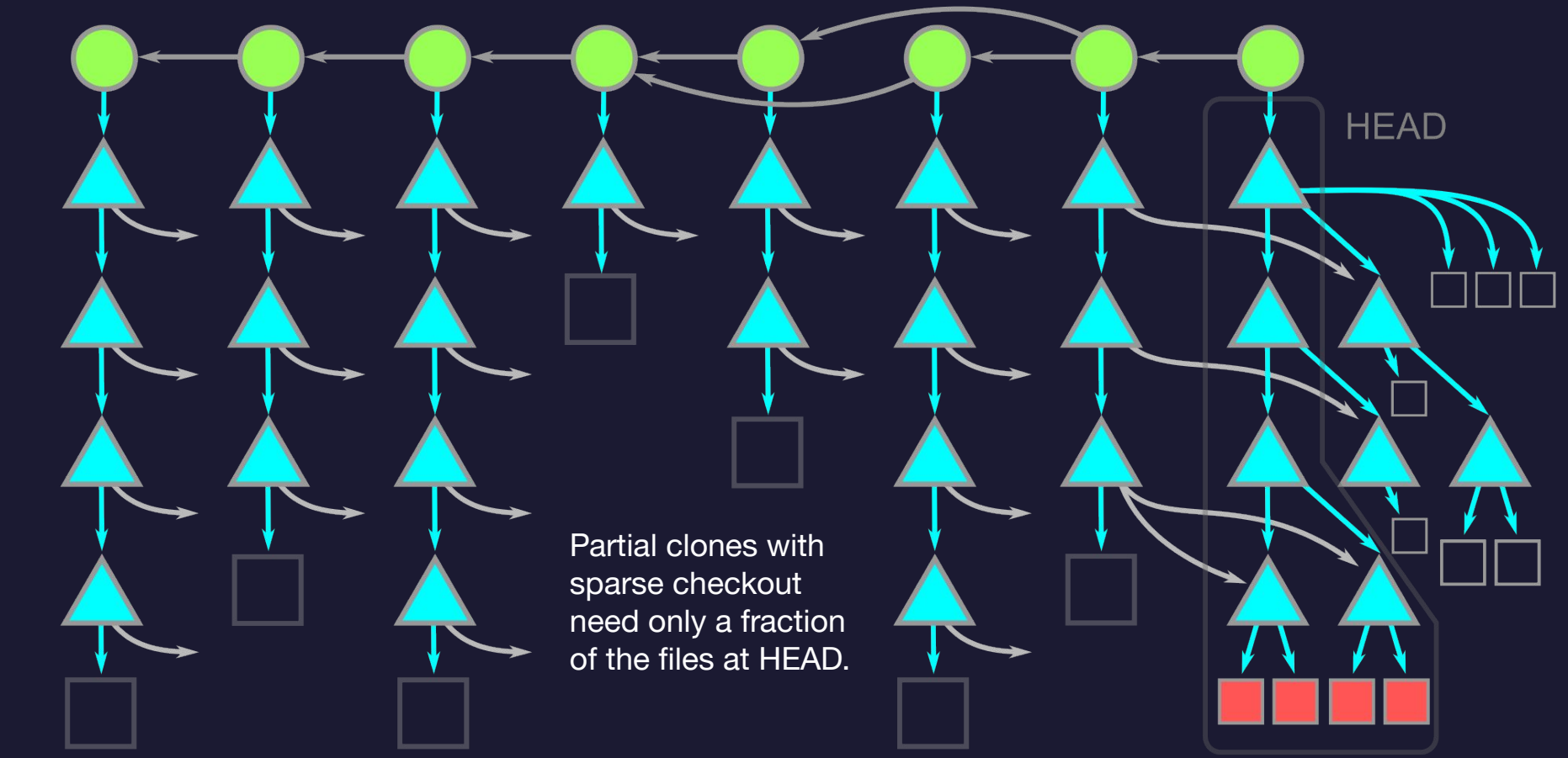
```
git clone <url>
```

Partial clone

```
git clone --filter=blob:none <url>
```


HEAD
Partial clones only
download blobs
when needed.


HEAD
Partial clones need
every file at HEAD.


HEAD
Partial clones with sparse checkout need only a fraction of the files at HEAD.

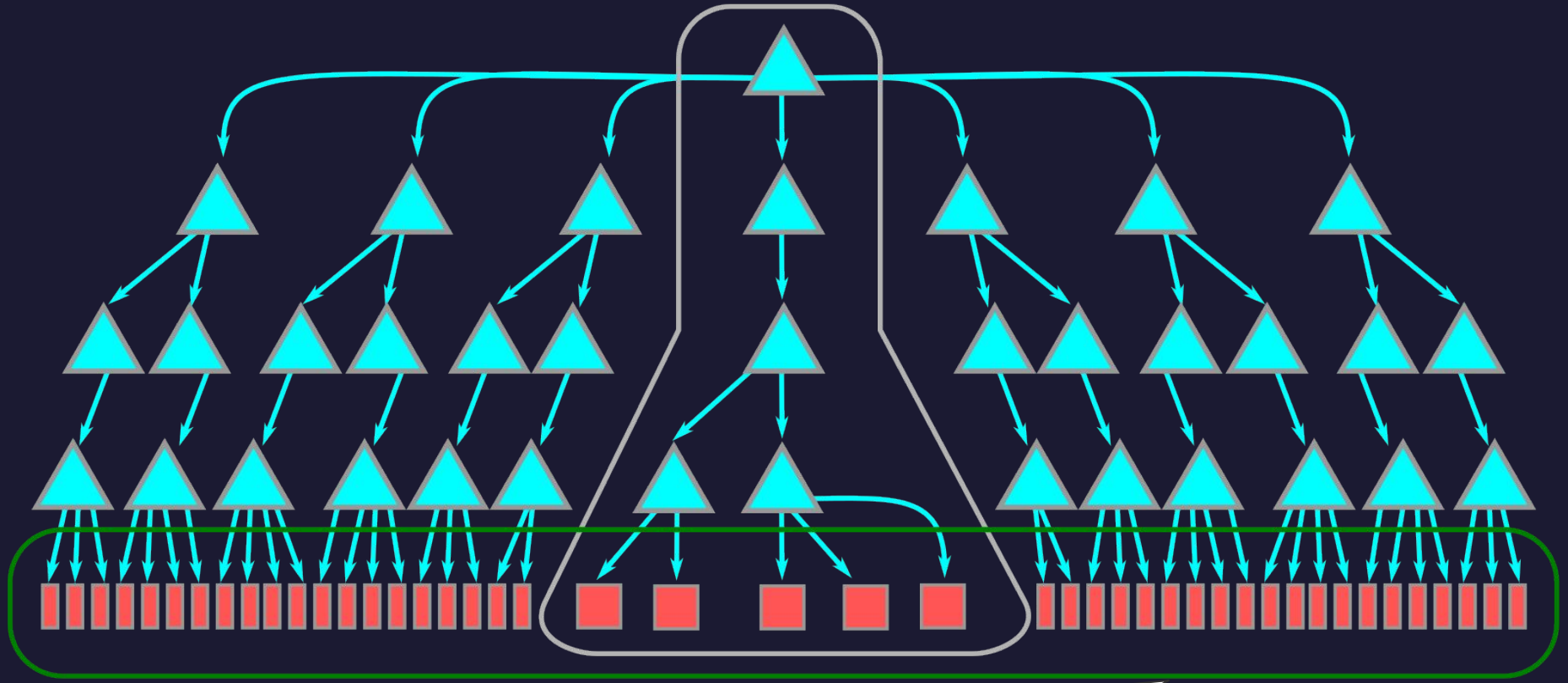
Sparse Checkout

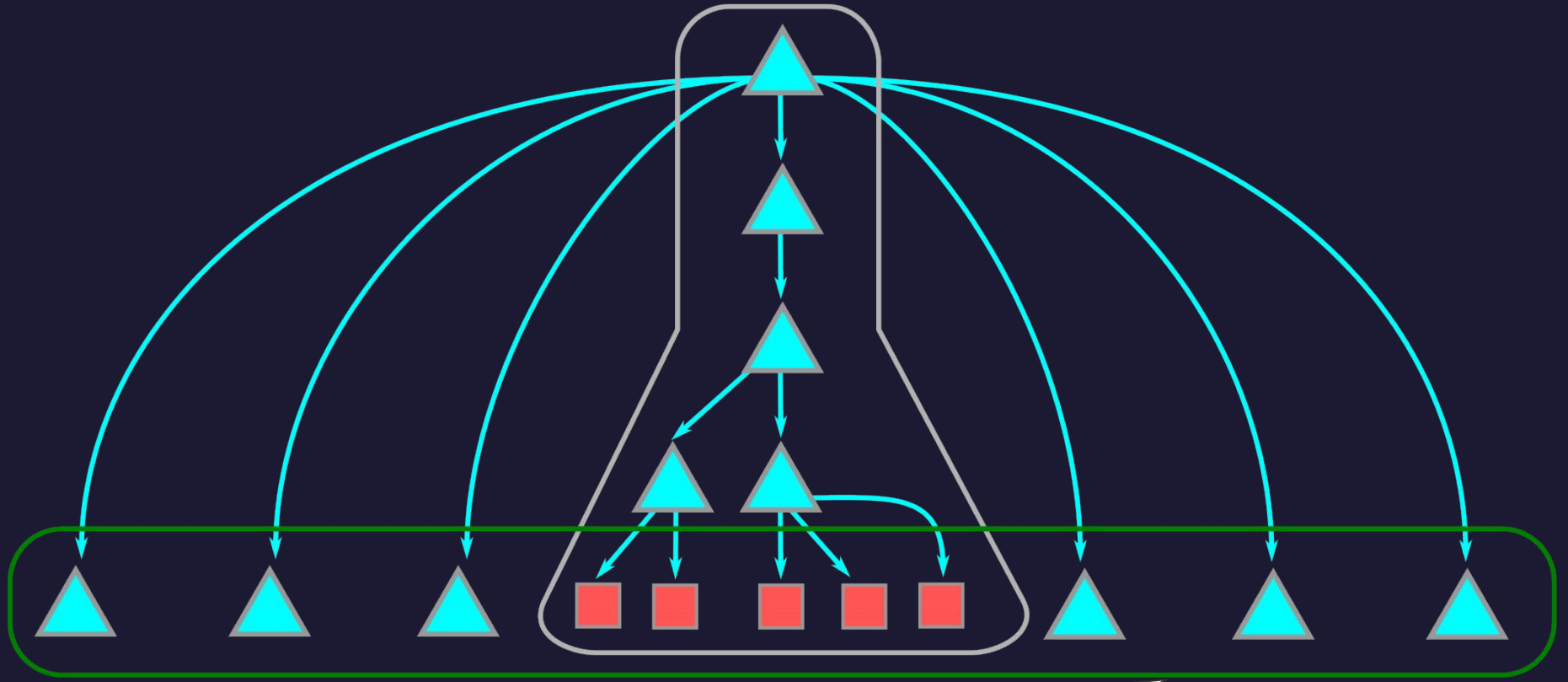
```
git sparse-checkout init --cone
git sparse-checkout set <directories>
```

Partial Clone
+
Sparse Checkout

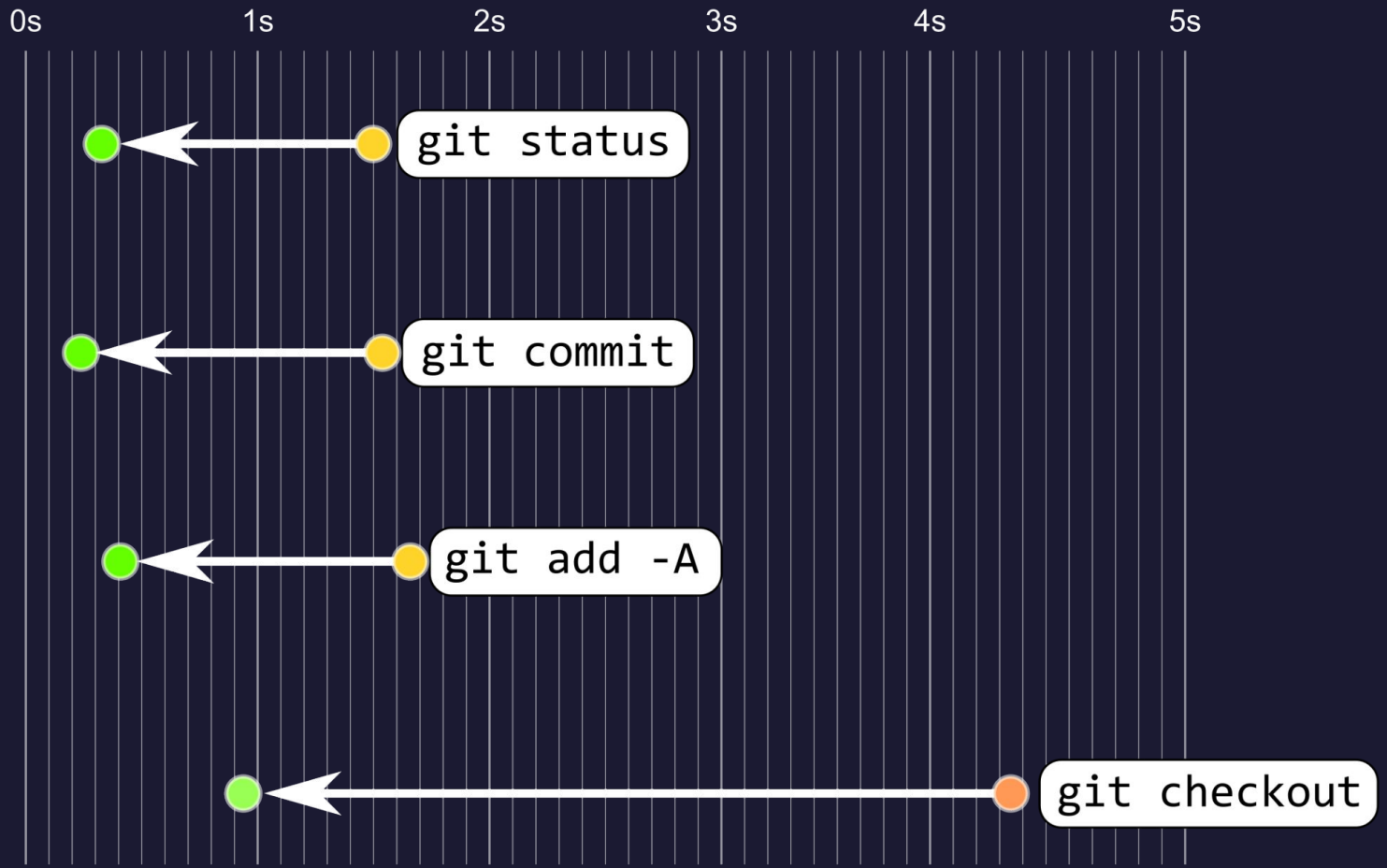
Sparse Checkout requires good repository architecture!

The Office Monorepo Experience

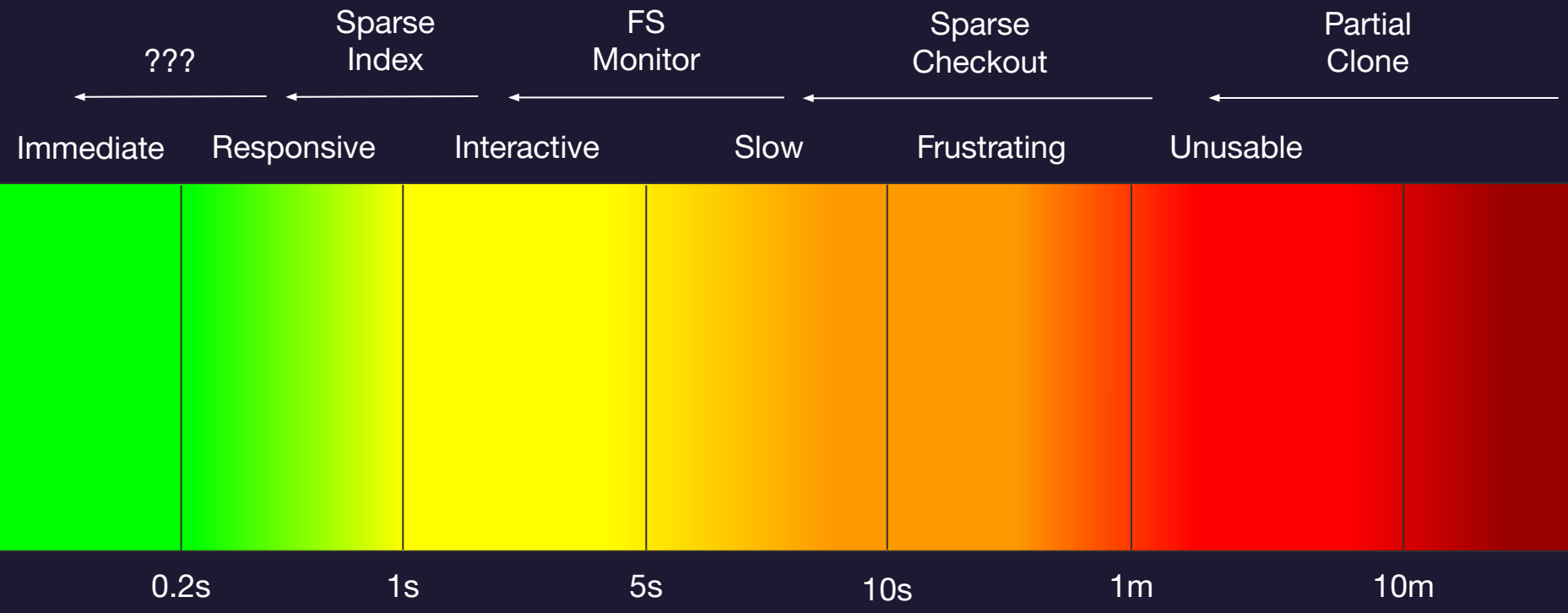

The index lists every file at HEAD



A sparse index contains trees at the sparse-checkout boundary.


0s
1s
2s
3s
4s
5s
git status
git commit
git add -A
git checkout

Evolution of the Monorepo User Experience



Thanks! From the Git Fundamentals Team at GitHub

Stars
Nova 2021