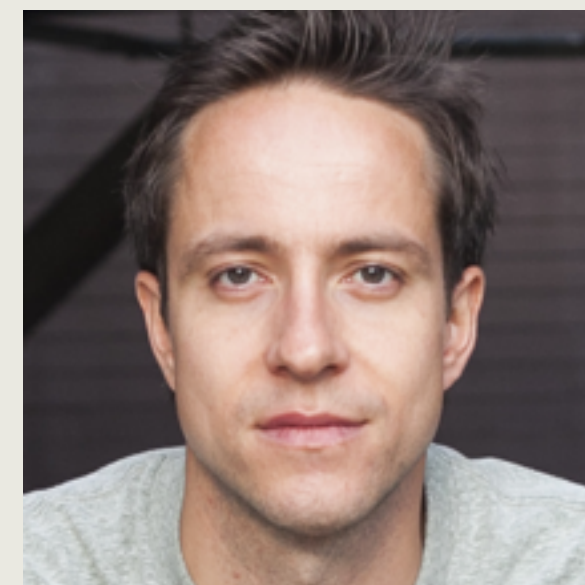


GIT LFS

- *How to handle large Git repos? -*

Technical Lead
for Git at Autodesk



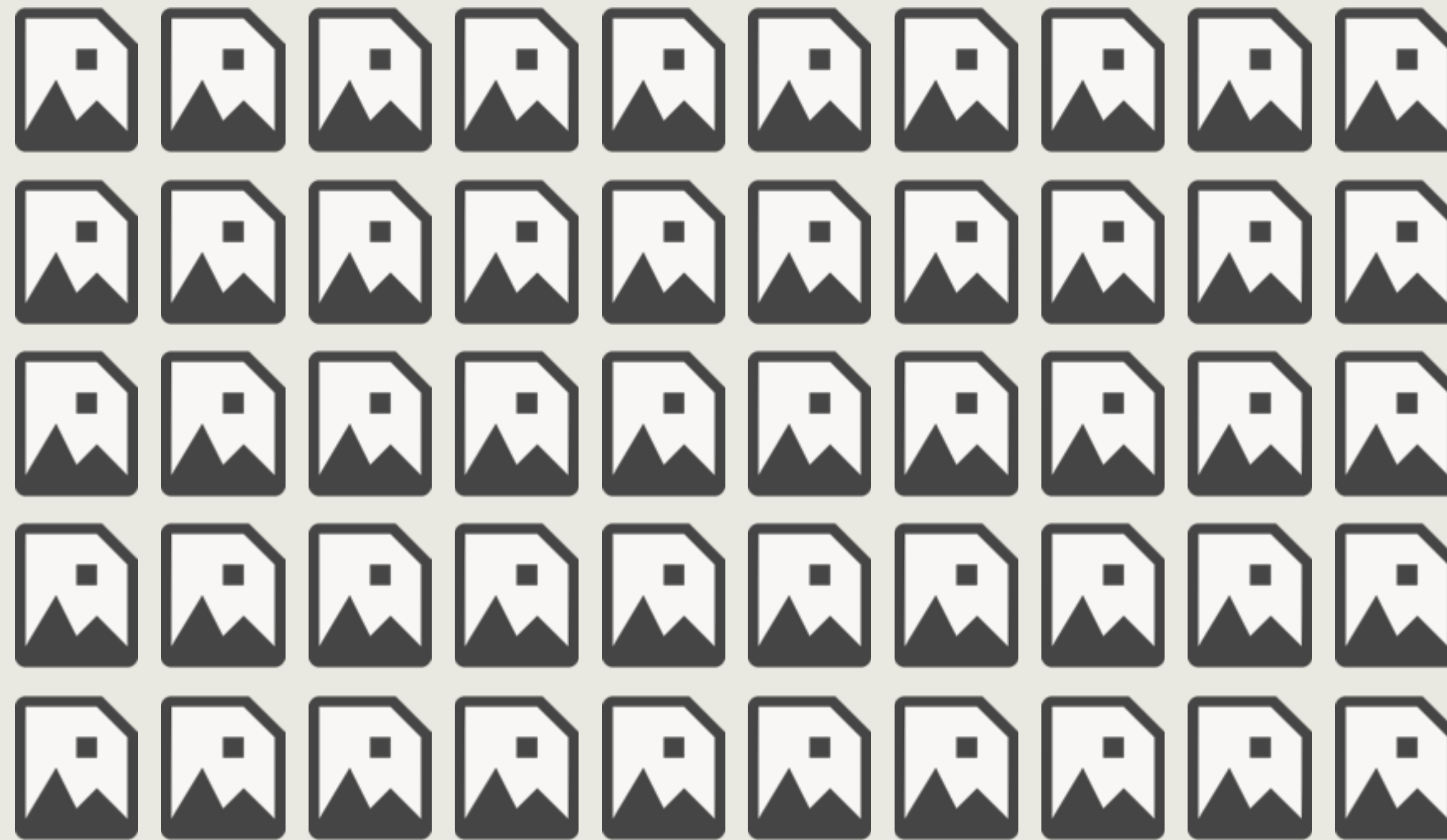
Lars Schneider



Git and Git LFS
contributor

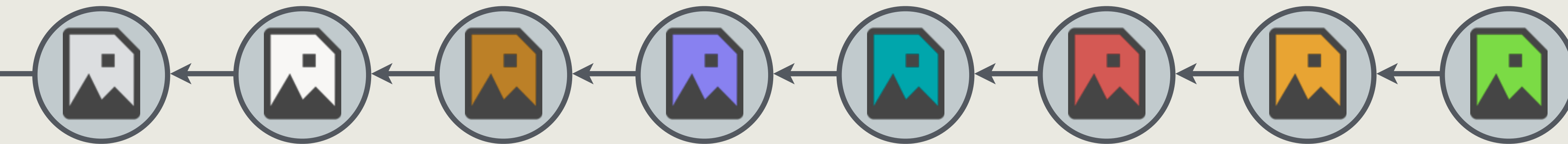
What is a
large Git repo?

Large *number of files*



<https://github.com/Microsoft/GVFS>

Large *number of commits*





Large *files*

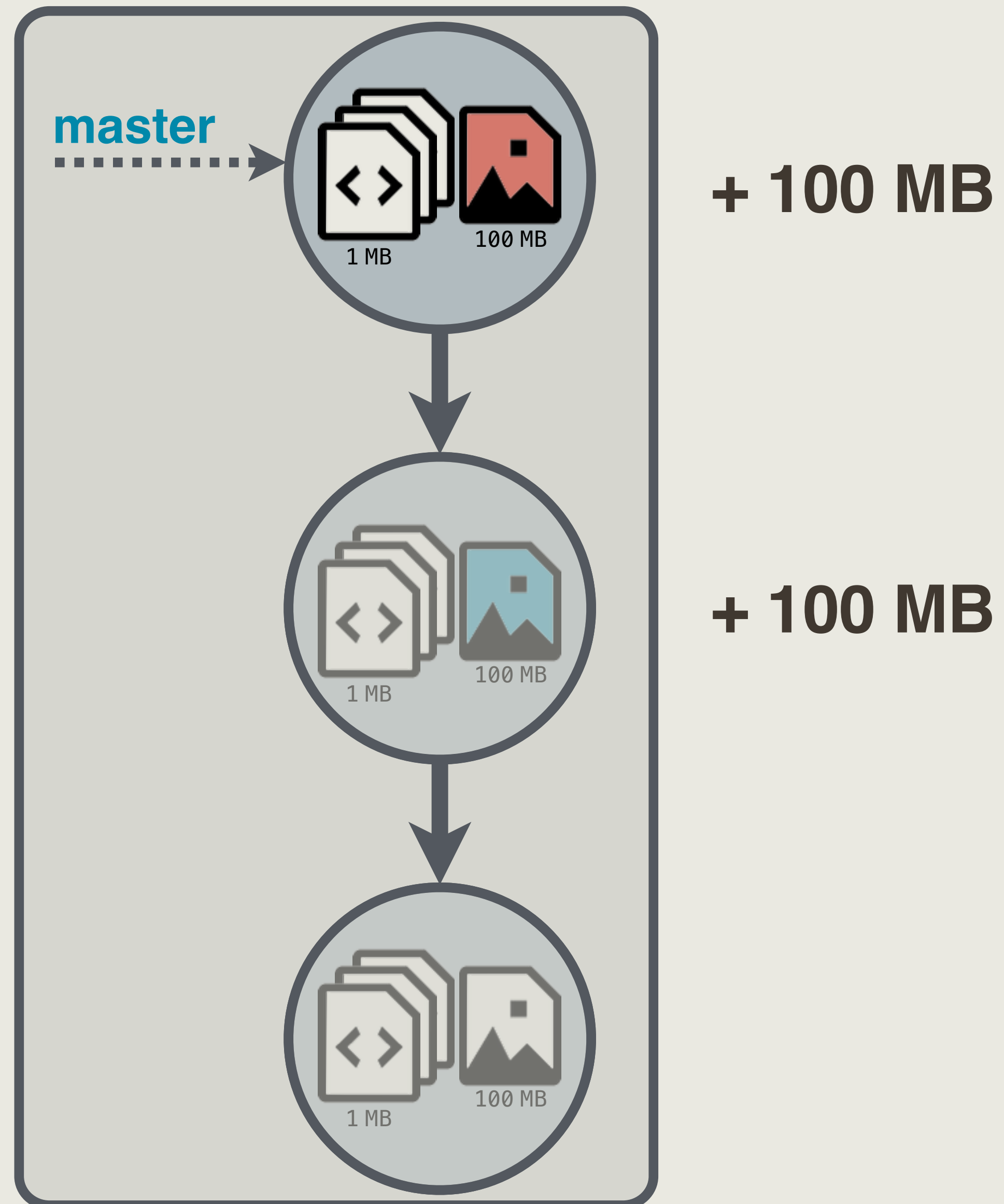
Why are large files a problem?



= 100 MB video file

Large files in Git

Clone: 301MB

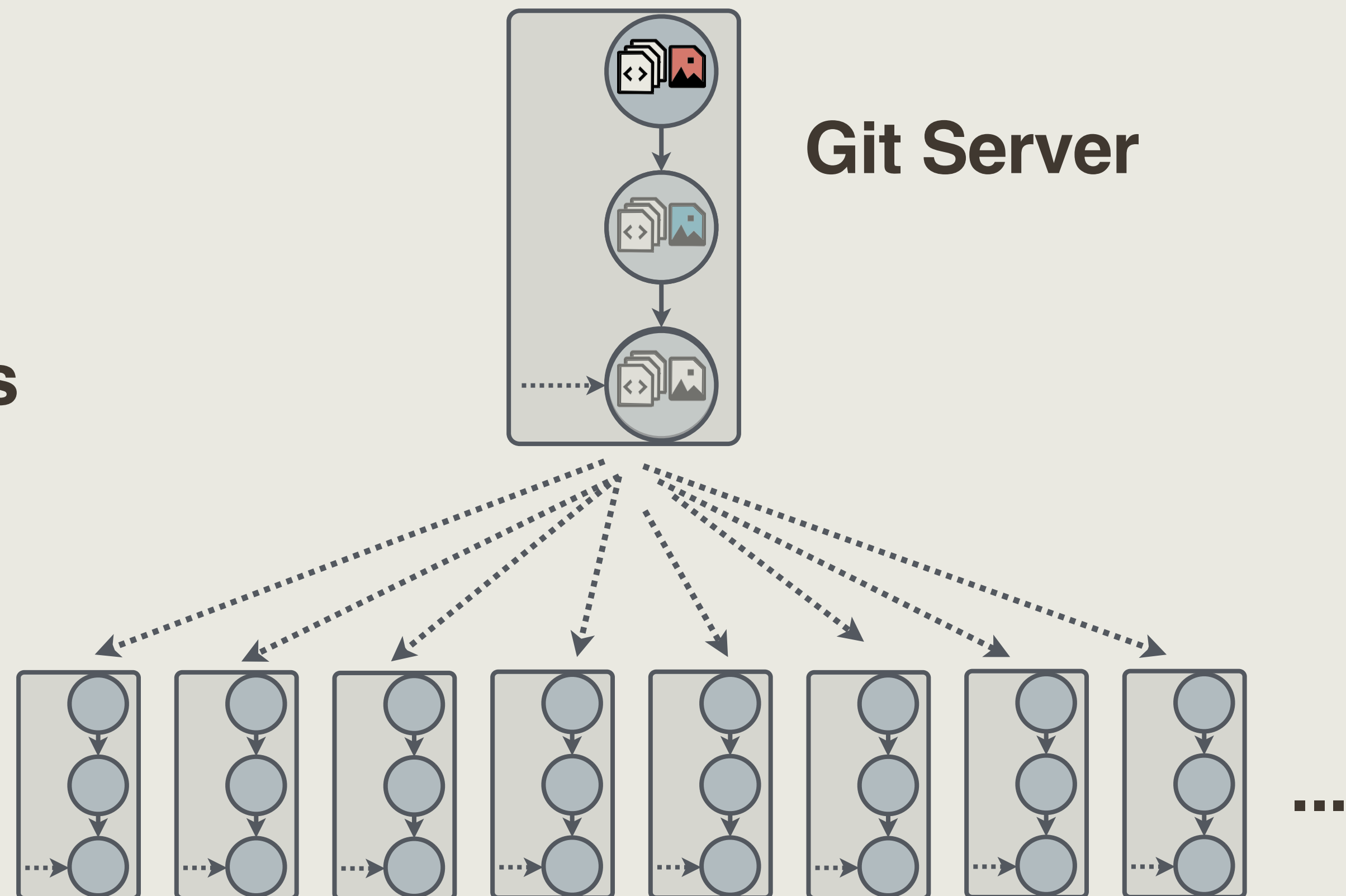


Large files in Git

Clone: 301 MB

X

Number of Engineers



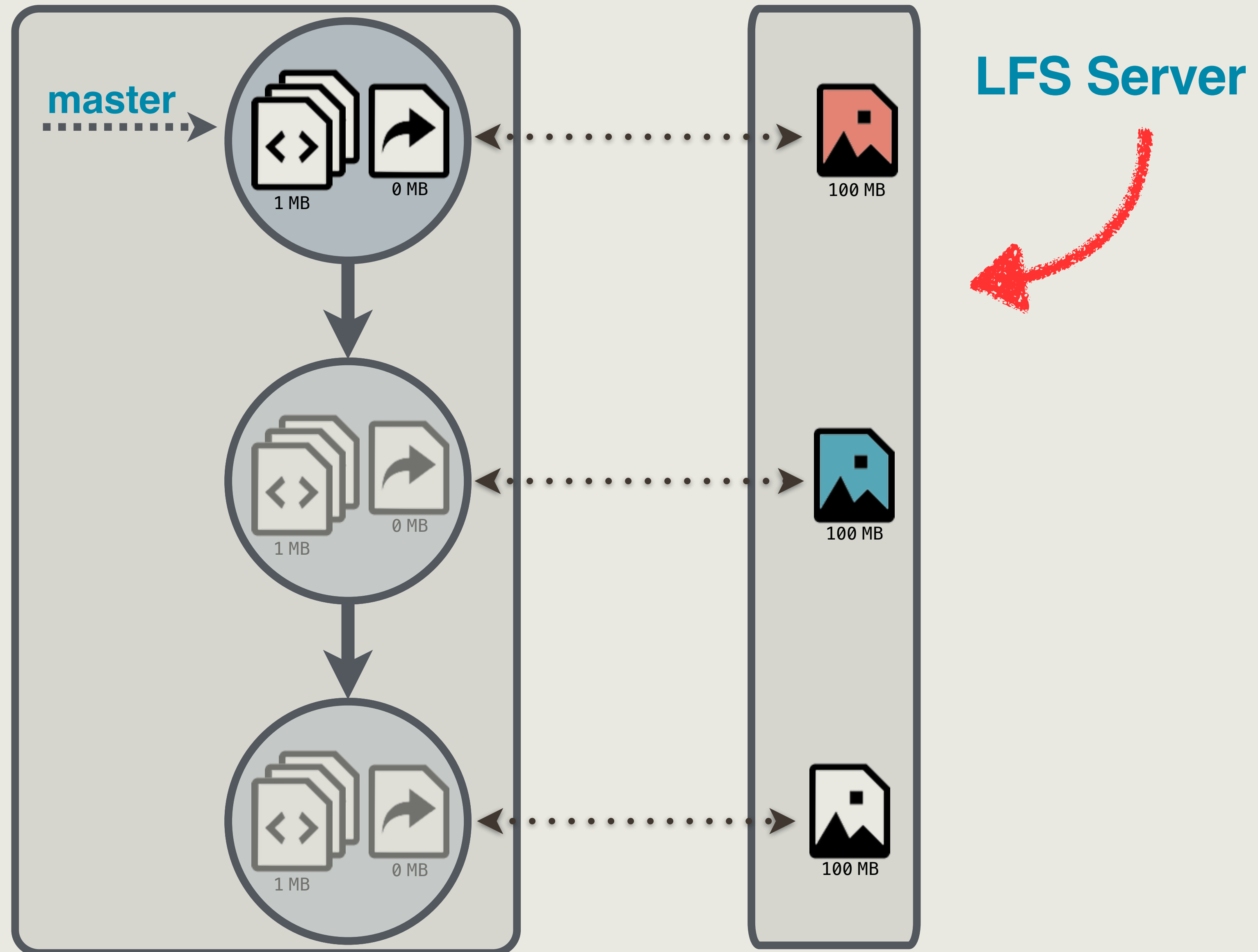
Large files in Git LFS

Large File Storage
<https://git-lfs.github.com>



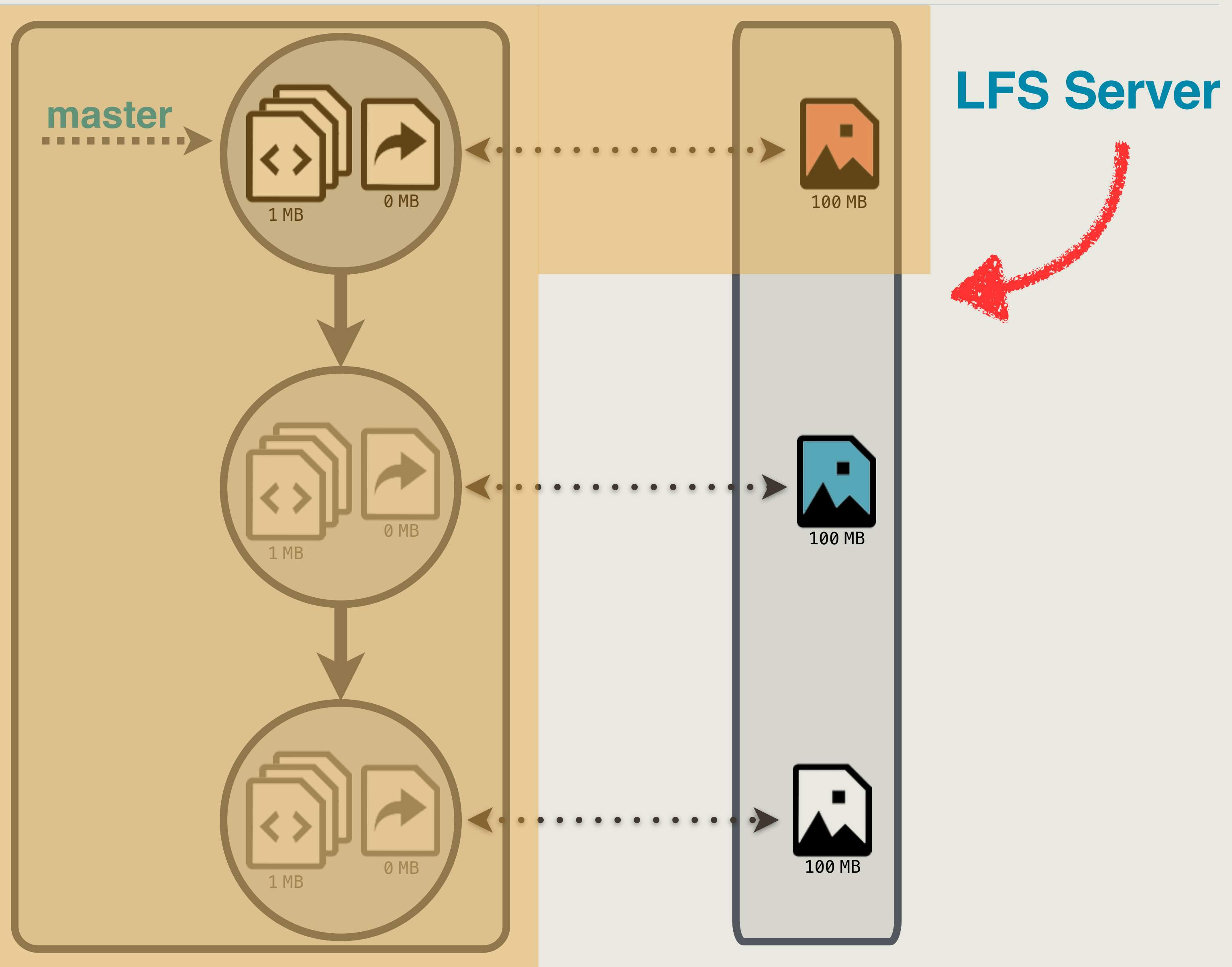
Large files in Git LFS

Clone: 1MB



Large files in Git LFS

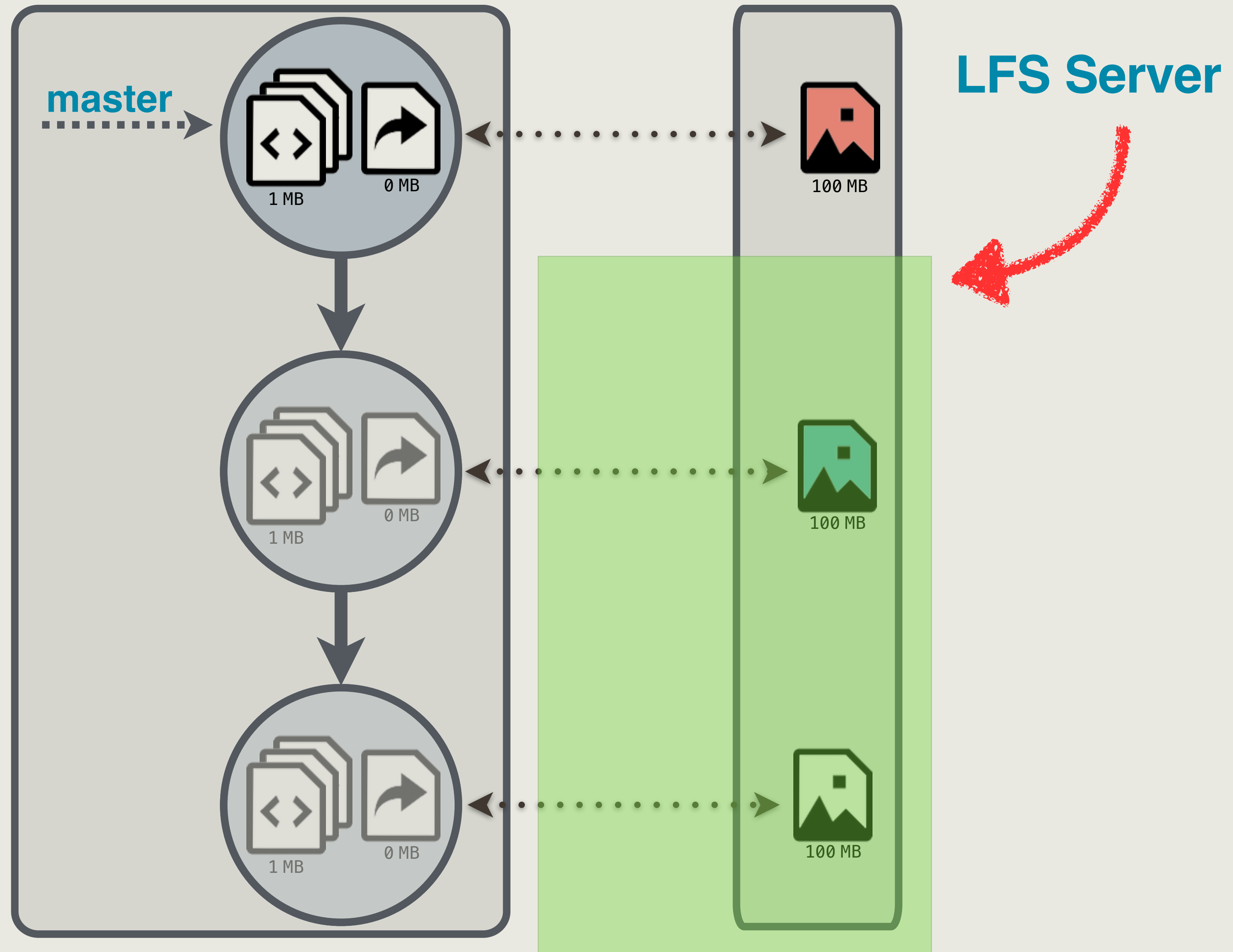
Clone: 1 MB
+ Checkout: 100 MB



Large files in Git LFS

Clone: 1 MB
+ Checkout: 100 MB

60% saving!



How to *use* Git LFS?

How to use Git LFS?



```
$ git lfs track "*.mp4"
```



*tracking only based on file name,
file size is not relevant!*

How to use Git LFS?



```
$ git lfs track "*.mp4"  
$ git add .
```

How to use Git LFS?



```
$ git lfs track "*.mp4"  
$ git add .  
$ git commit
```

How to use Git LFS?



```
$ git lfs track "*.mp4"  
$ git add .  
$ git commit  
$ git push
```

How to use Git LFS?



```
$ git lfs track "*.mp4"
$ git add .
$ git commit
$ git push
```



That's it!

Autodesk *uses* Git LFS

Autodesk

uses

Git LFS

- **Best known for AutoCAD
2D and 3D computer-aided design**
- **35 years in business**
- **4000 engineers, hundreds of products,
terabytes of code and asset data**

Autodesk *uses* Git LFS

- **Integration Test Data**
(3D Models, ...)
- **Auxiliary Data**
(Documentation, Images, Videos, ...)
- **Build Artifacts**
(not recommended)

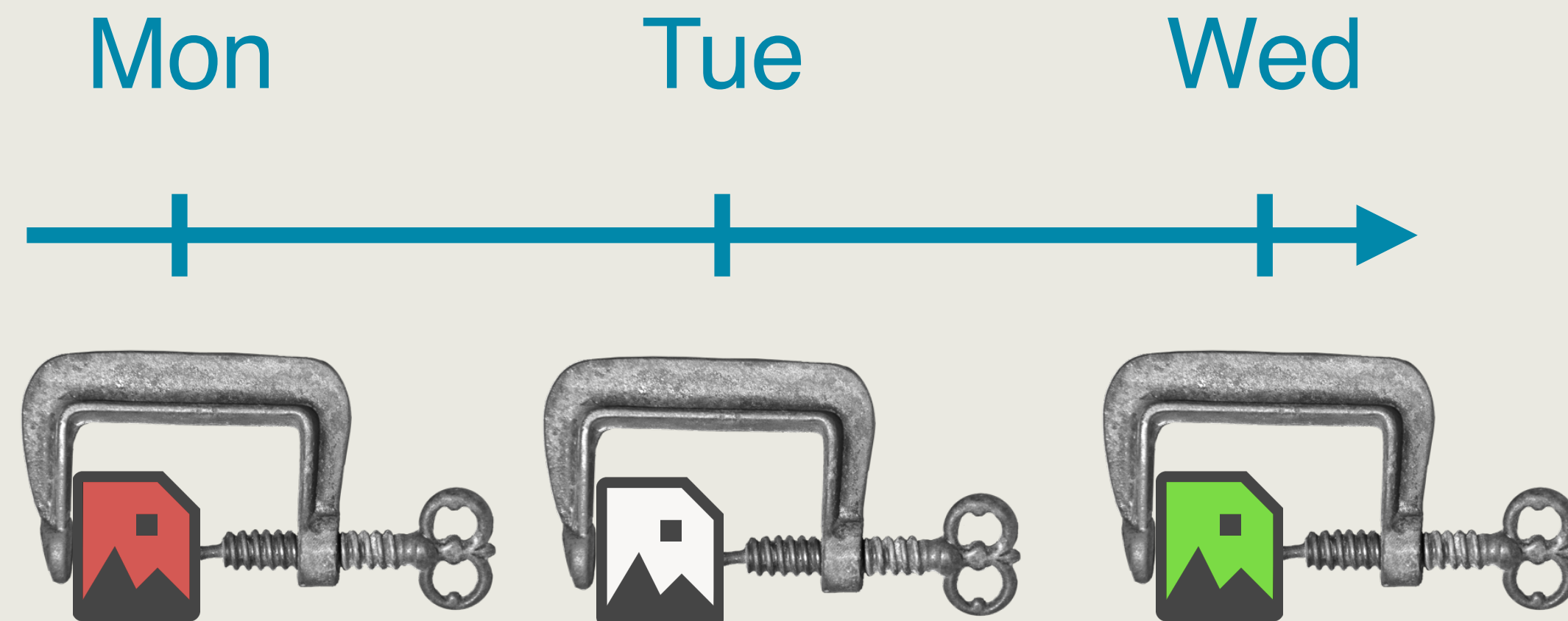
What have we *learned* ?

Developer

(INCLUDES DESIGNER, TESTER, ...)

What is *too large* for Git?

What files should go to LFS?



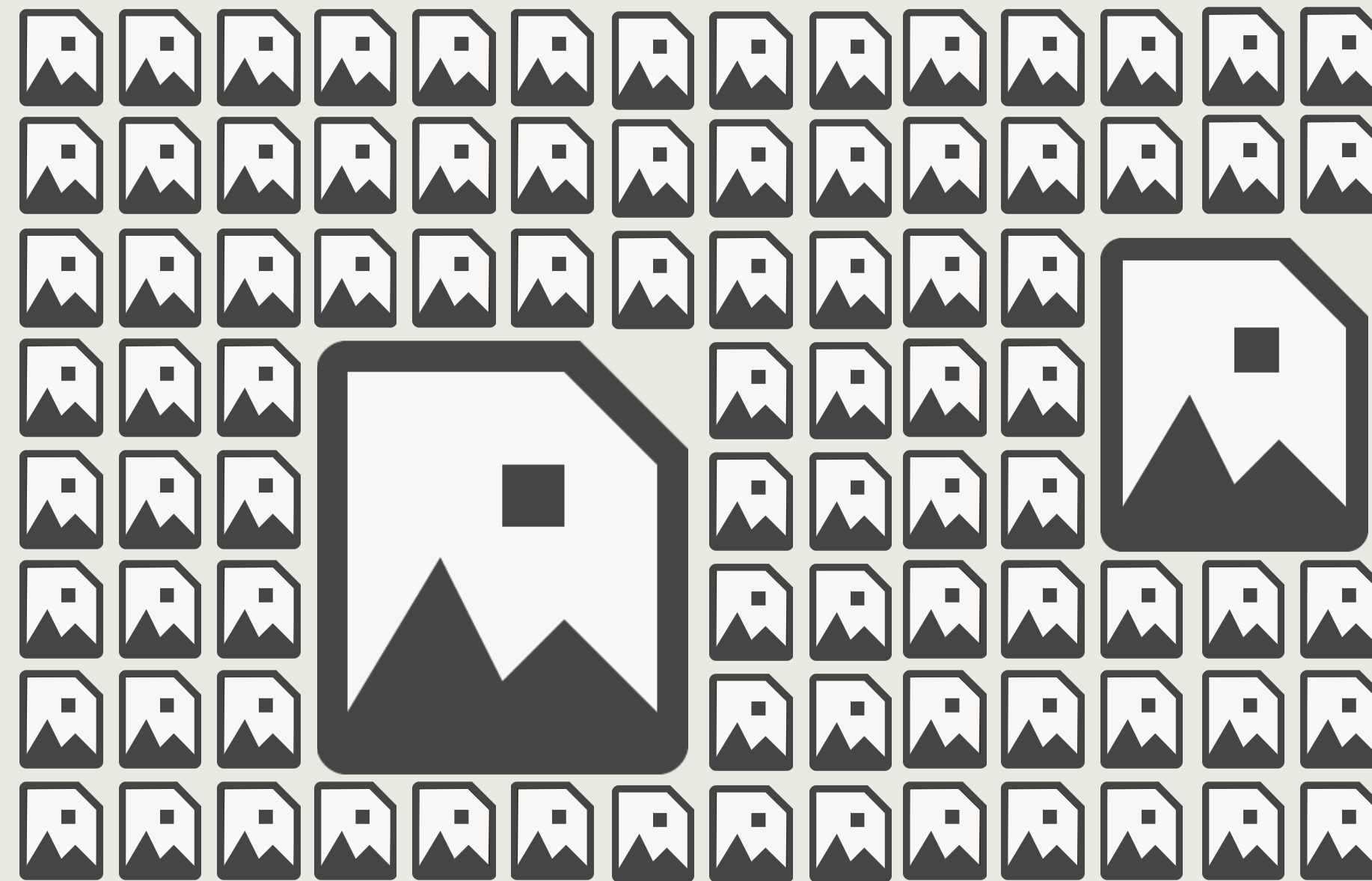
Files that
do not compress well
and
change frequently

*Don't worry about files
smaller than 500kb*



How to track Git LFS files?

`git lfs track "*.png"`



*Use Git 2.11+ and Git LFS 1.5+
for 80x speed improvement!
<http://autode.sk/git-filter>*

How to track Git LFS files?

```
git lfs track "*.lfs.*"
```



e.g. `/images/mountain.lfs.png`

How to track Git LFS files?

`git lfs track "/big/*"`



e.g. `/big/mountain.png`

How to track Git LFS files?

git lfs track "/mountain.png"



How to track Git LFS files?

Case sensitive:

git lfs track "*.png"

Win/macOS: demo.PNG ✓

Linux: demo.PNG ✗

How to track Git LFS files?

Case sensitive:

```
git lfs track "*.png"
```

Case in-sensitive:

```
git lfs track "*. [pP][nN][gG]"
```

Win/macOS: **demo.PNG** ✓

Linux: **demo.PNG** ✓



*Use "git lfs ls-files"
to check what
files are tracked!*

Git LFS *Gotchas*

Gotchas

Speed up Clones

git lfs clone <URL>



*I'm working on making
this wrapper obsolete!*

Gotchas

Setup your *Git credential helper*
(or use SSH)!

Gotchas

No *line ending conversions*
on Git LFS files!

macOS

```
FirstLine  
SecondLine
```

Windows

```
FirstLine␣Second  
Line
```

Gotchas

```
$ git <command>
```

```
Your branch is up-to-date with 'origin/master'.
```

```
Encountered 2 file(s) that should have been pointers, but weren't:
```

```
  path/to/some/file.PNG
```

```
  other/image.PNG
```

Administrator

MANAGING GIT REPOS

Setup Git LFS on dev machines!

Enterprise Config for Git

<https://autode.sk/git>

Distribute *recent*
Git / Git LFS versions

Configure a *file size limit* on
your Git server!

Takeaways

- Git LFS *works* at scale
- Use *smart tracking* patterns
- *Speed up* clones with `git lfs clone`
- *Reject* large files on the Git server



Questions?

