

# Version Control with Git

- Please sit in pairs with your buddy
- Ensure you have a Github.com account

# What is Version Control?

- AKA revision control, source control
- Tracks changes to files
- Any file can be tracked
- Text (source code etc.) works best
  - diff / merge etc.

# Why Use Version Control? #1

- A more efficient backup
- Reproducibility



# Why Use Version Control? #2

- Teamwork

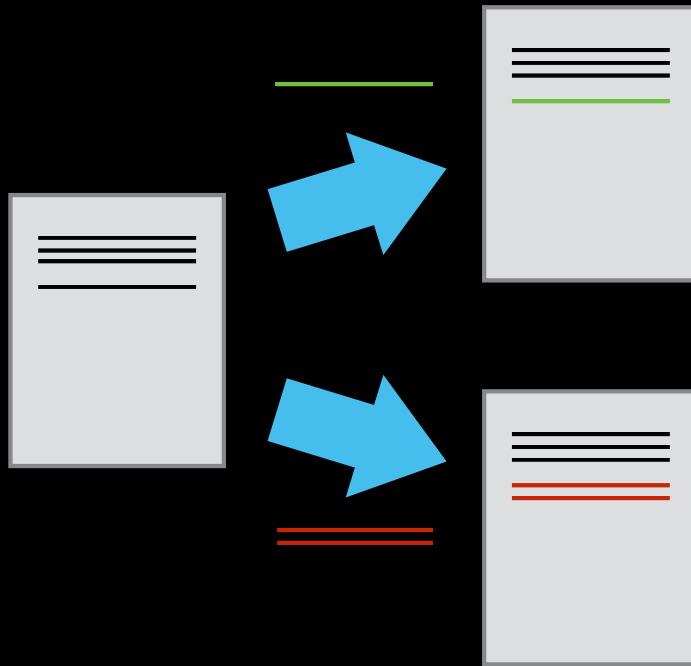


# Version Control Tracks Changes



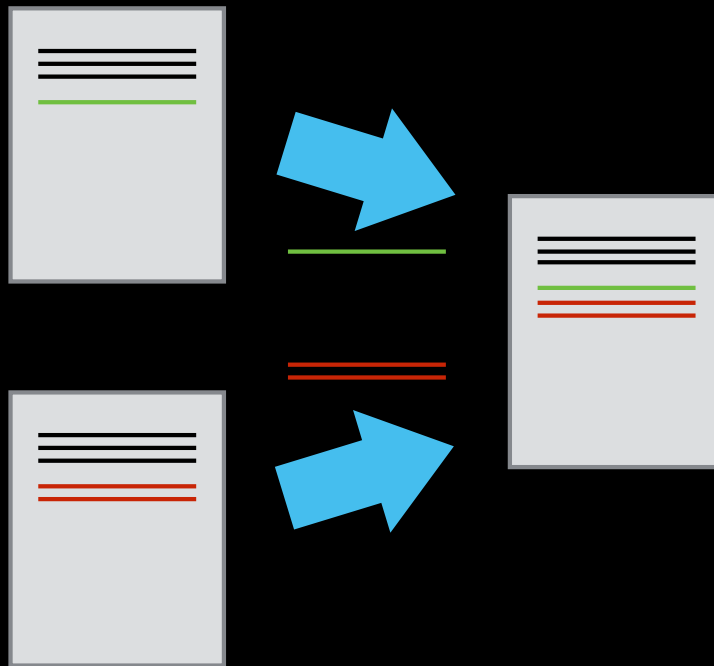
- Changes are tracked sequentially

# Version Control Tracks Changes



- Different versions can be saved

# Version Control Tracks Changes



- Multiple versions can be merged

# Version Control Alternatives

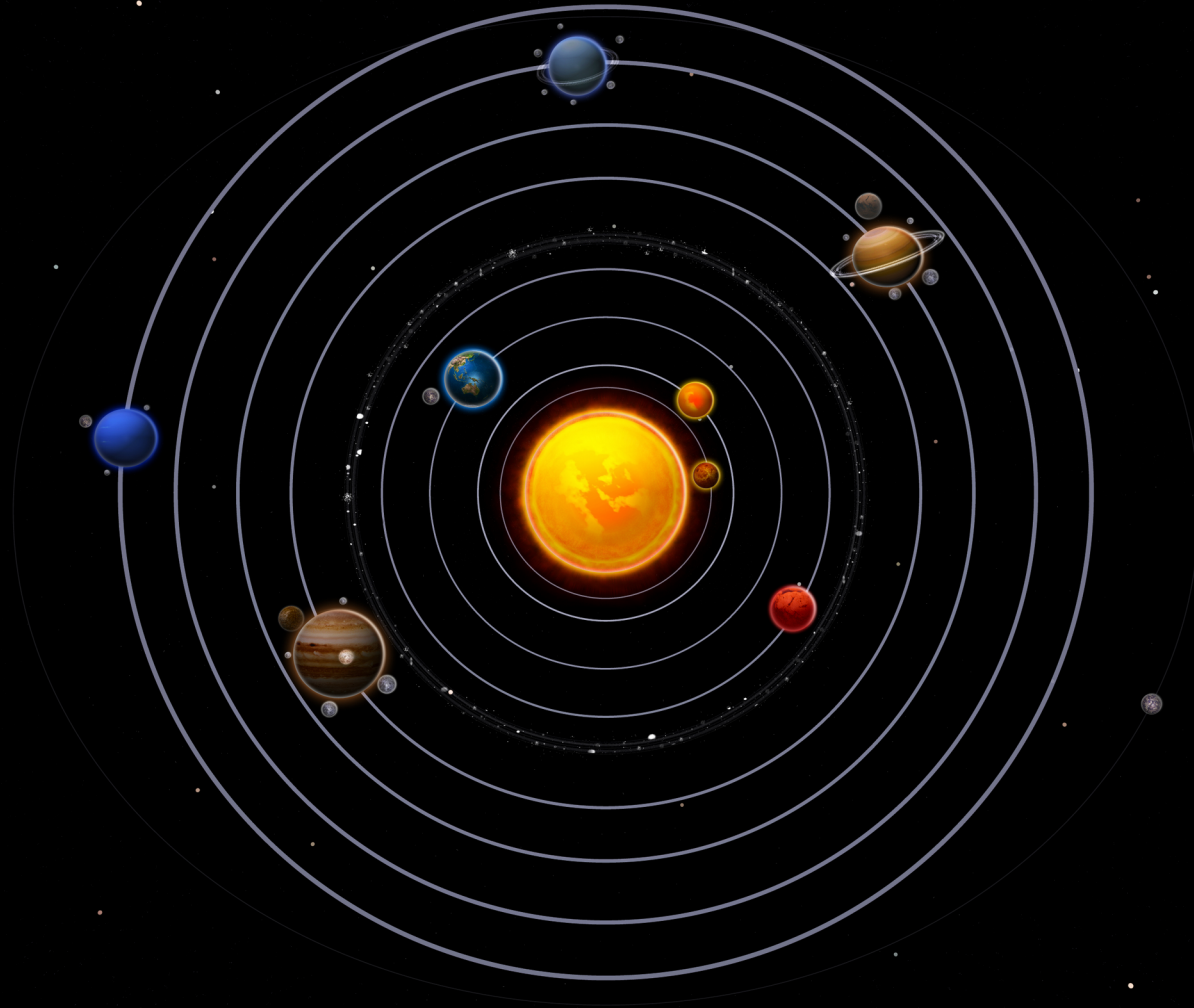
- Subversion (svn) - Centralised
- Mercurial (hg) - Distributed
- Git (git) – Distributed
  
- N.B. GitHub != git



# Monsters...



# ...in space



(?!)

# Local Configuration

- `git config`

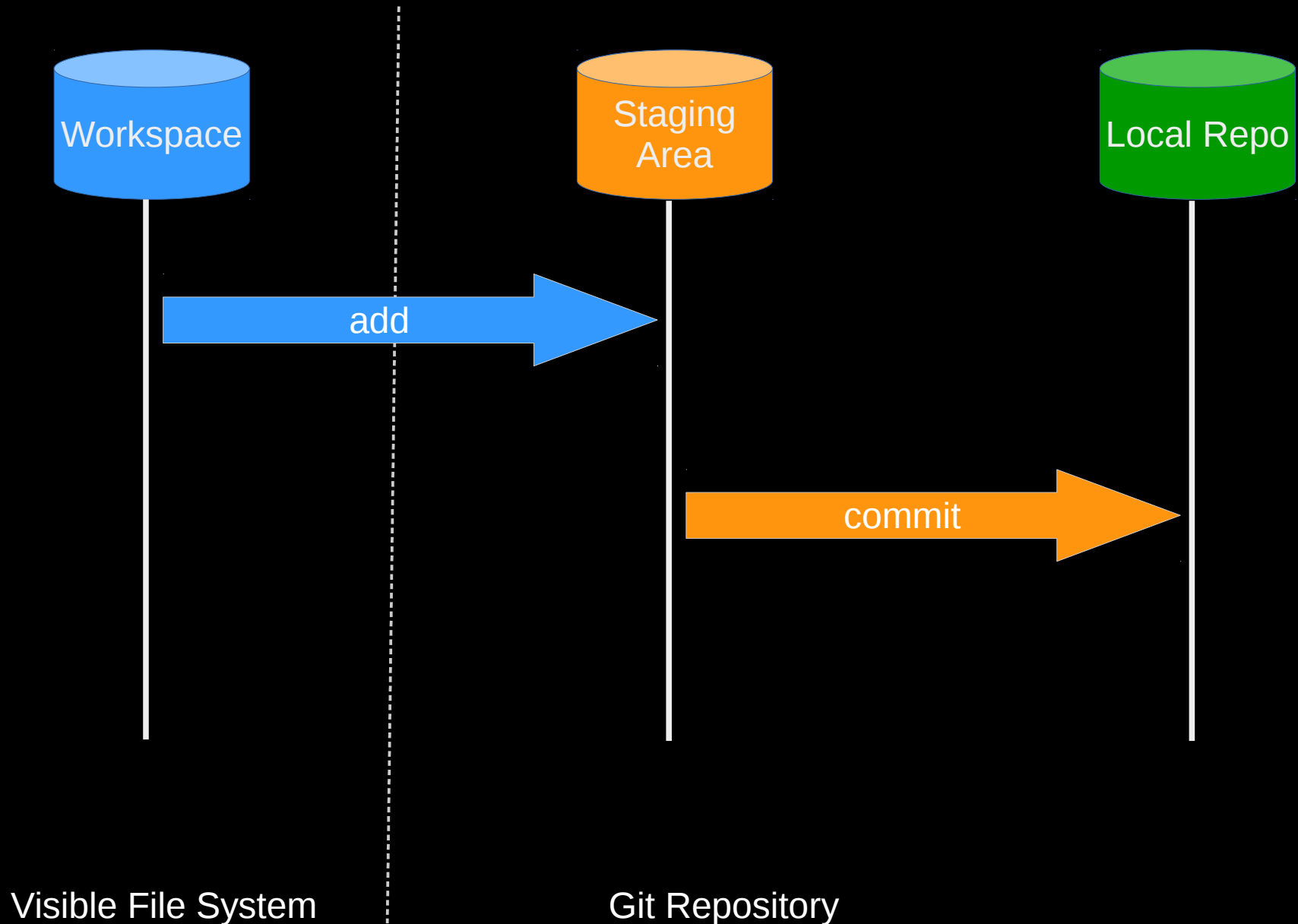
# Creating a Repository

- `git init`
- `git status`

# Tracking Changes to Files

- `git add`
- `git commit`

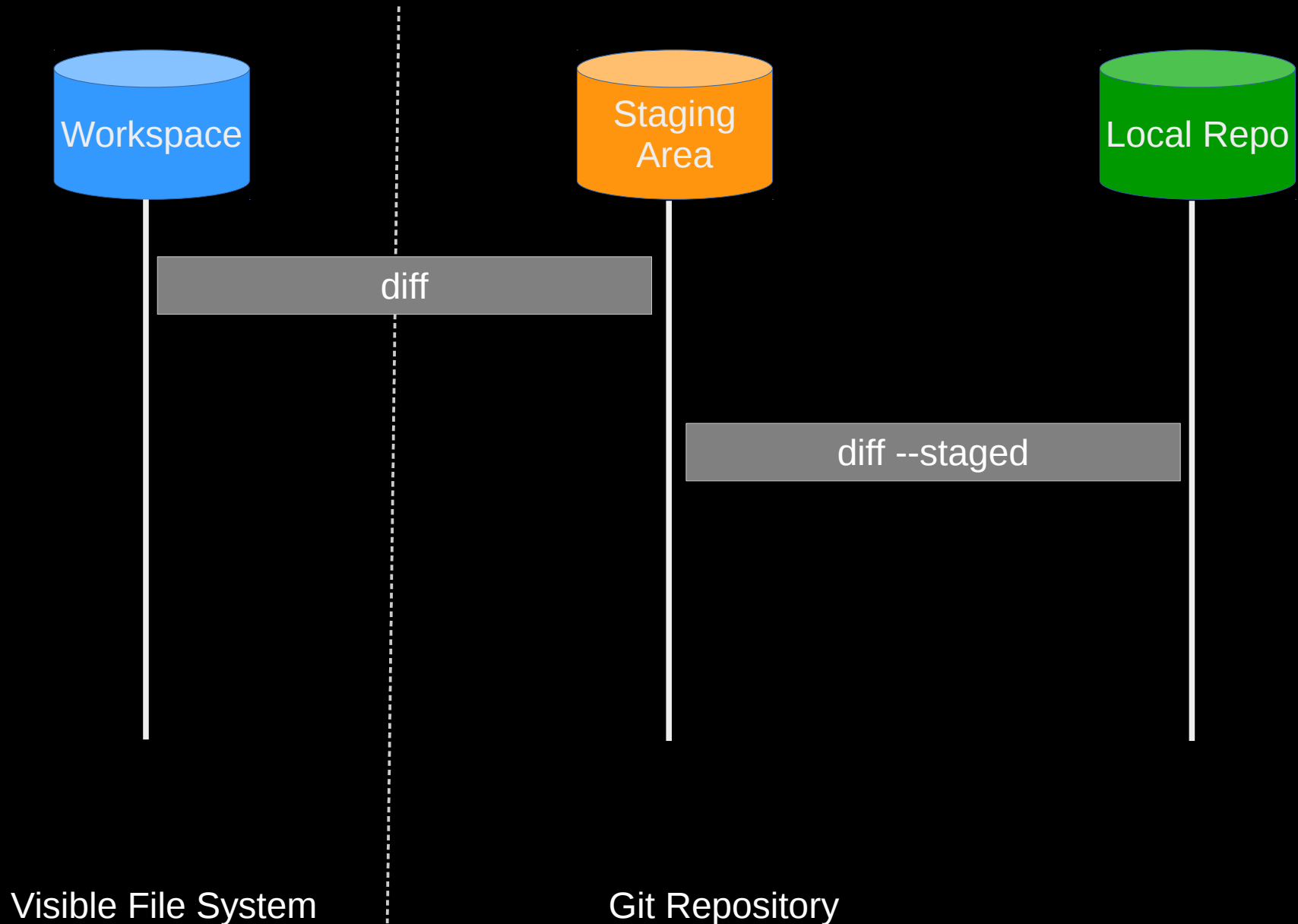
# Git – add and commit



# Exploring History #1

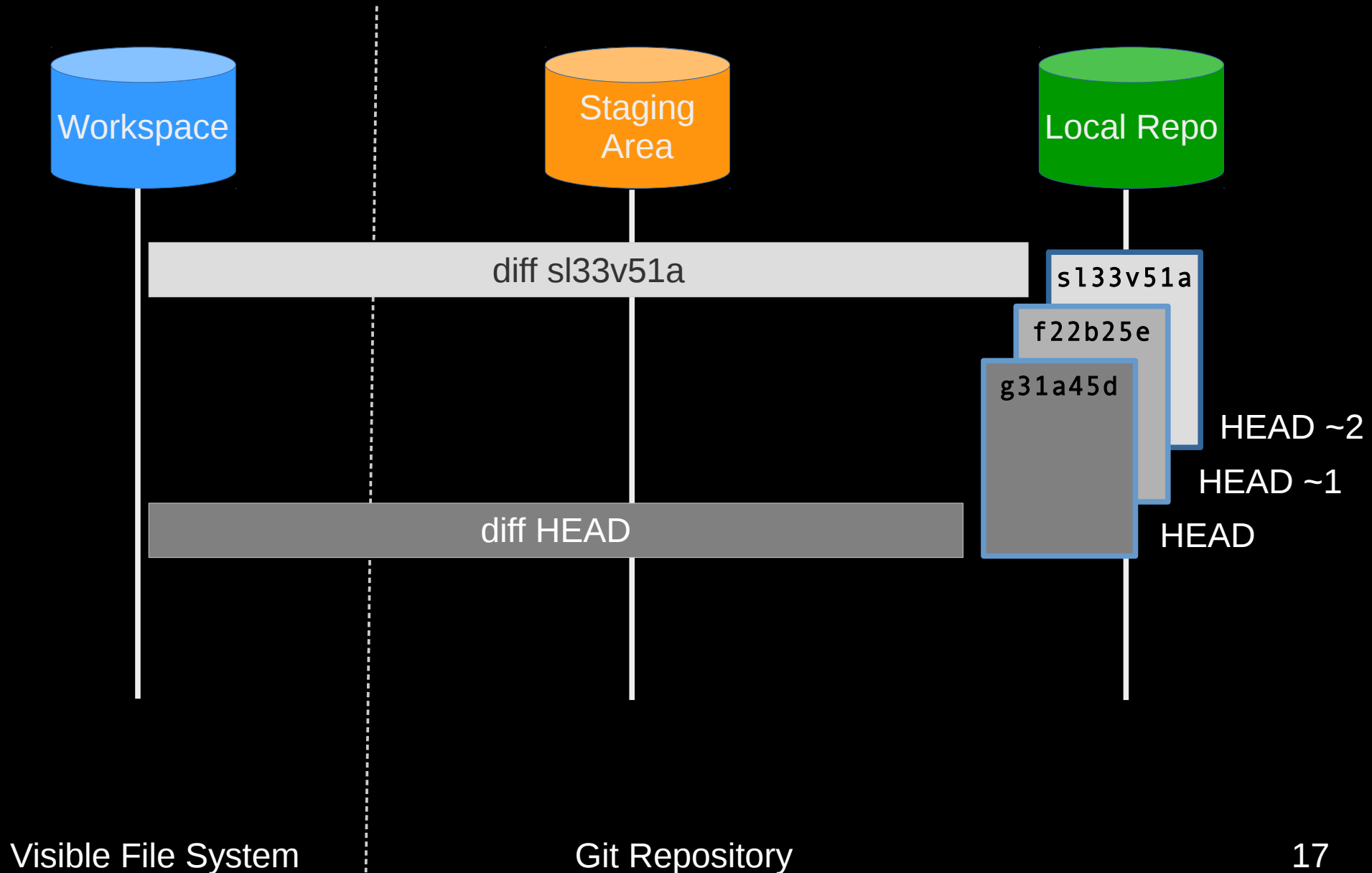
- `git log`
- `git diff`

# Git – diff #1





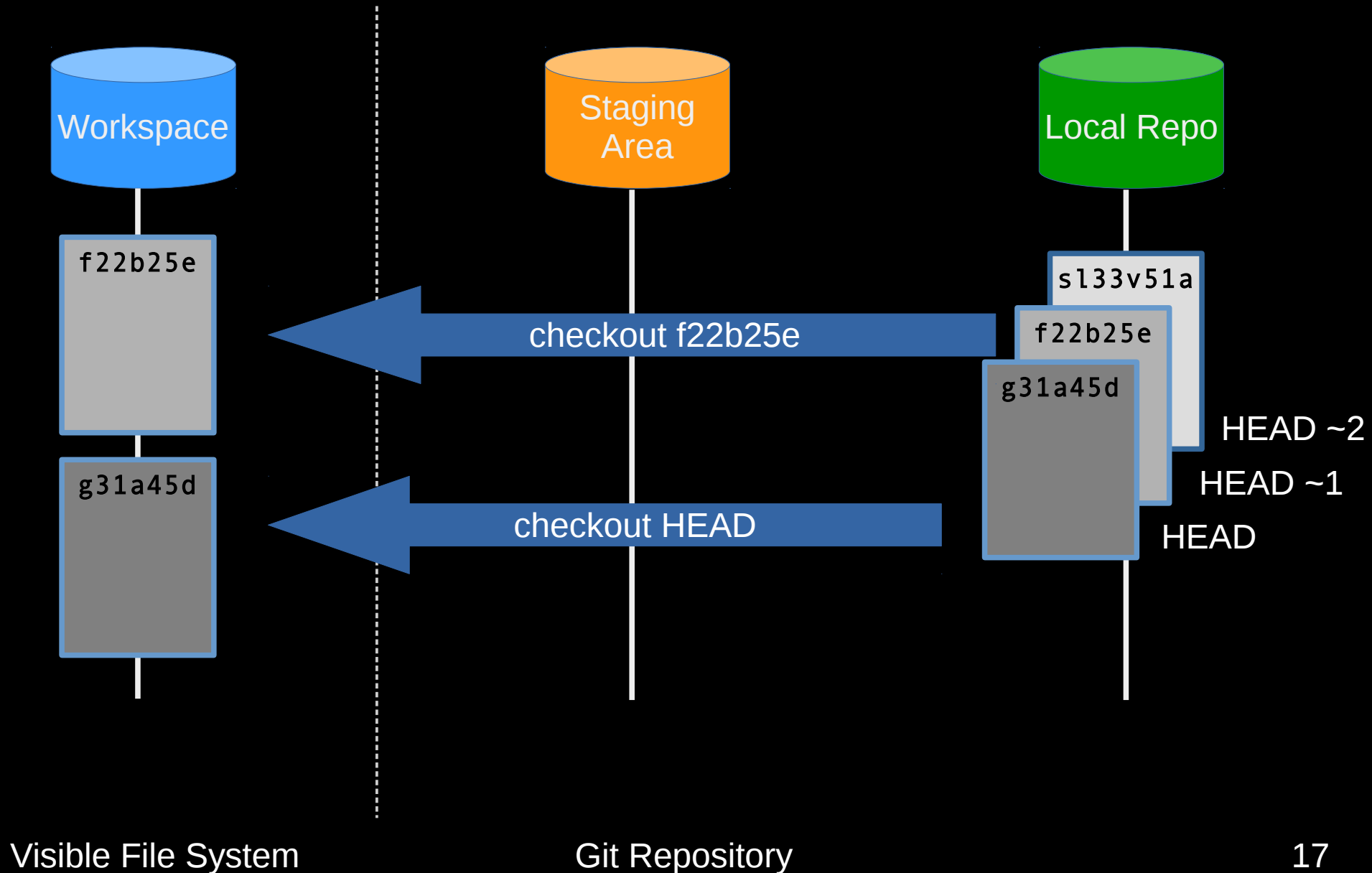
# Git – diff #2



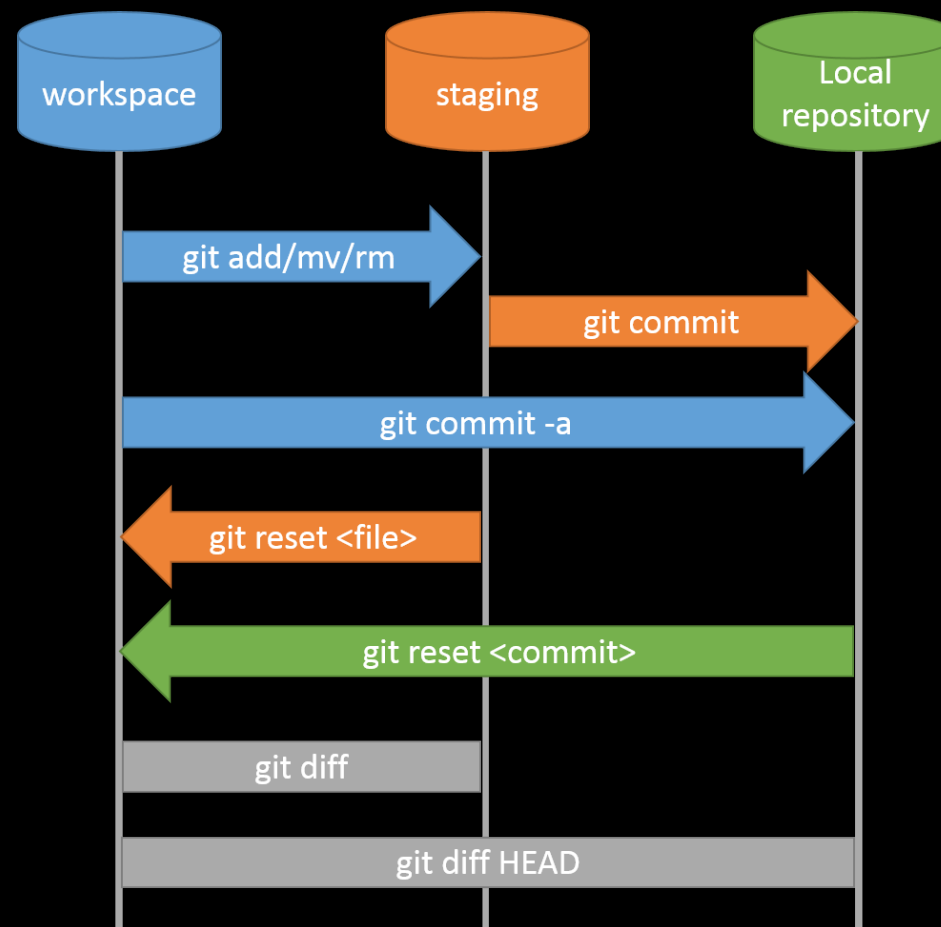
# Restoring Files

- `git checkout`

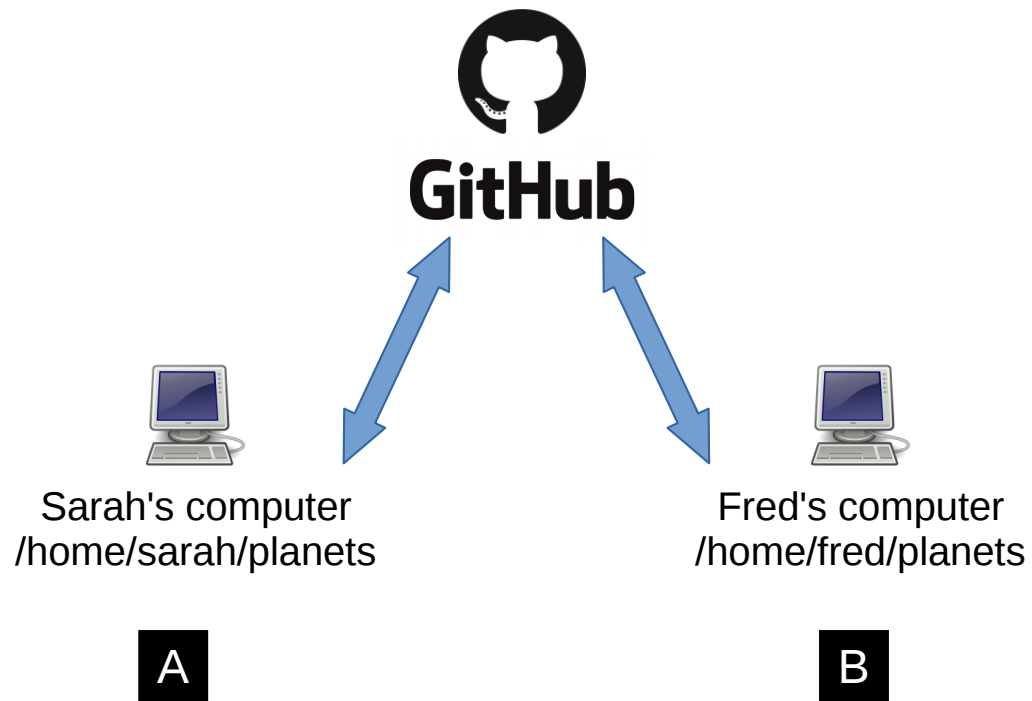
# Git - restoration



# Git Workflow – Local Repo.



# Collaboration



# Collaboration

- **Let's collaborate via remote repo**
- **Working in pairs:**
- **Developer A / Developer B**

# Collaboration:

## Remote Repositories #1

- Developer A
  - Sign in <https://github.com/>
  - Create repository
  - `git remote add`
  - `git push`
  - Add Developer B as a collaborator

# **Collaboration:**

## **Remote Repositories #2**

- **Developer B**
  - Clean up
  - git clone
  - git add
  - git commit
  - git push



# **Collaboration:**

## **Remote Repositories #3**

- **Developer A**
  - **git pull**

# **Collaboration:**

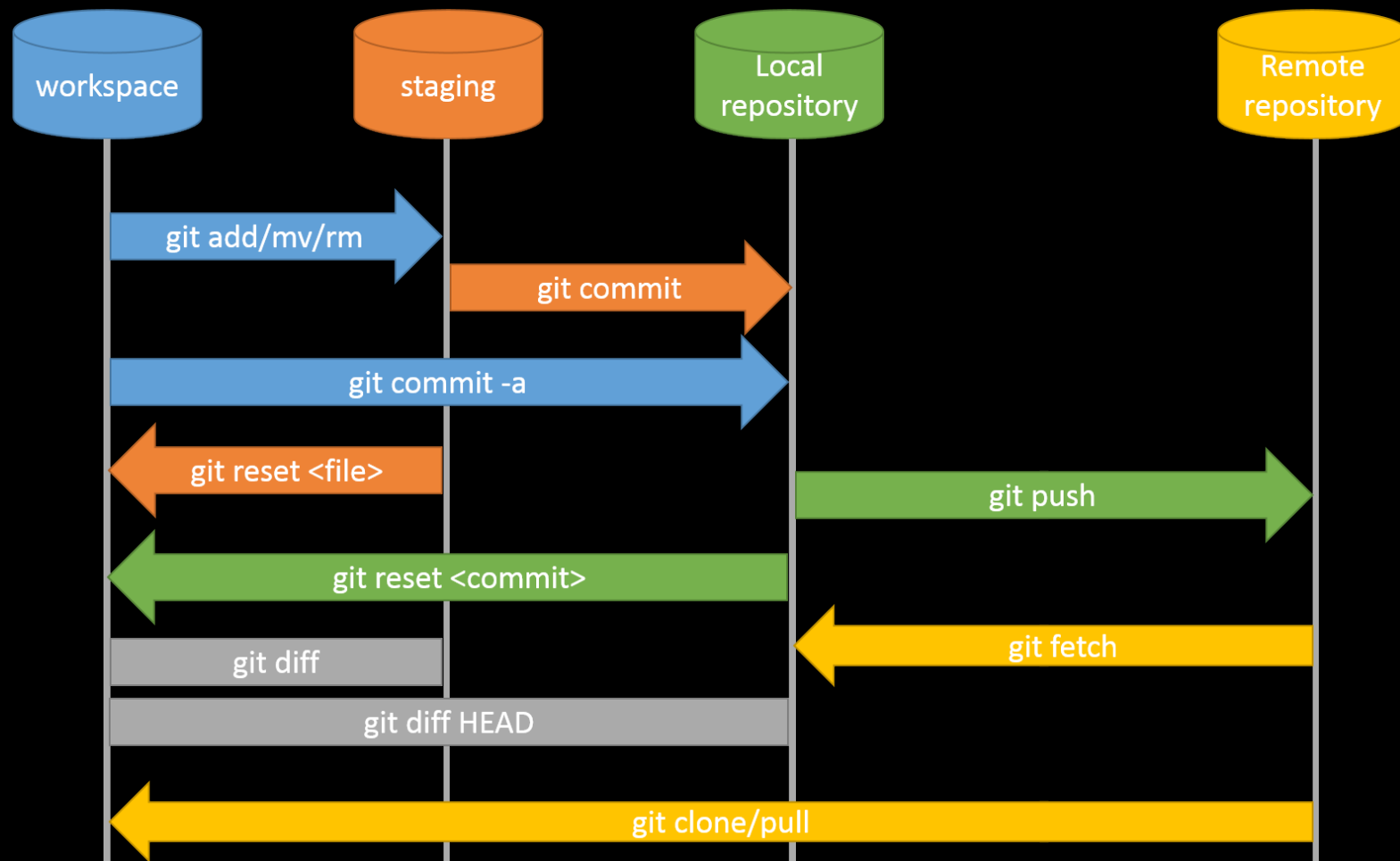
## **Remote Repositories #4**

- **Exercise**
  - **Developer A – Note your thoughts on Neptune as a destination**
  - **Developer B – sync up your repository**

# More git

- Branching / Merging
- This material:
  - <http://southampton-rsg.github.io/2015-09-17-southampton/novice/git/>
- <https://www.atlassian.com/git/tutorials/>

# Git Workflow – Remote Repo.



# What next?

- **Branching / Merging**
- **<https://software-carpentry.org>**