06 Version Control & Git Flow

Prepared by Surajai Chamroensat

Agenda

- What is version control?
- Version control tools
- Centralized vs. distributed systems (Git vs. SVN)
- Git installation
- Git command
    - init
    - add
    - status
    - commit
    - push
    - pull
- Git Branches & Merging & Git Flow
- Pull request & Code Review

What is version control

Version control systems (VCS) give software engineering teams complete visibility to the code history and a single source of documentation for all files, folders, and messages. Version control tools streamline software development and mitigate lost work and time by tracking code changes from asynchronous and concurrent work, identifying conflicting edits, sparking collaboration, and preventing overwrites.

Version control allows the developer "orchestra" to see every commit and access, review, collaborate, experiment, compare, and undo changes to ensure code integrity and faster releases.

Version Control Benefit

- Create a codebase history
- Ramp up collaboration
- Reduce errors
- Improve code quality
- Recover in a snap
- Increase coding confidence

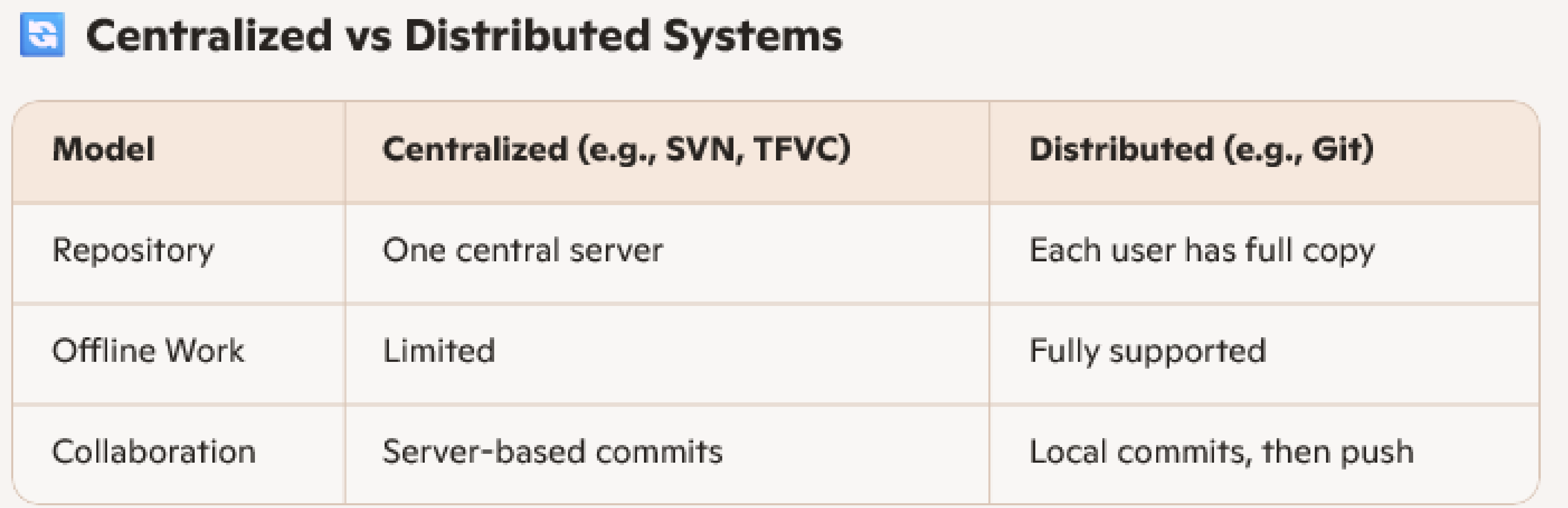
Version Control Tools

- Git
    - the modern favorite: fast, flexible, and ideal for distributed teams
- SVN
    - Reliable centralize version control
- CVS
    - Outdated centralized version control
- Team Foundation Version Control
    - Tightly integrated with Microsoft tools but is being phased out in favor of Git

Version Control Features

- Snapshots of Code
- Repositories
- Commit
- Branches
- Merge Conflicts
- Version History

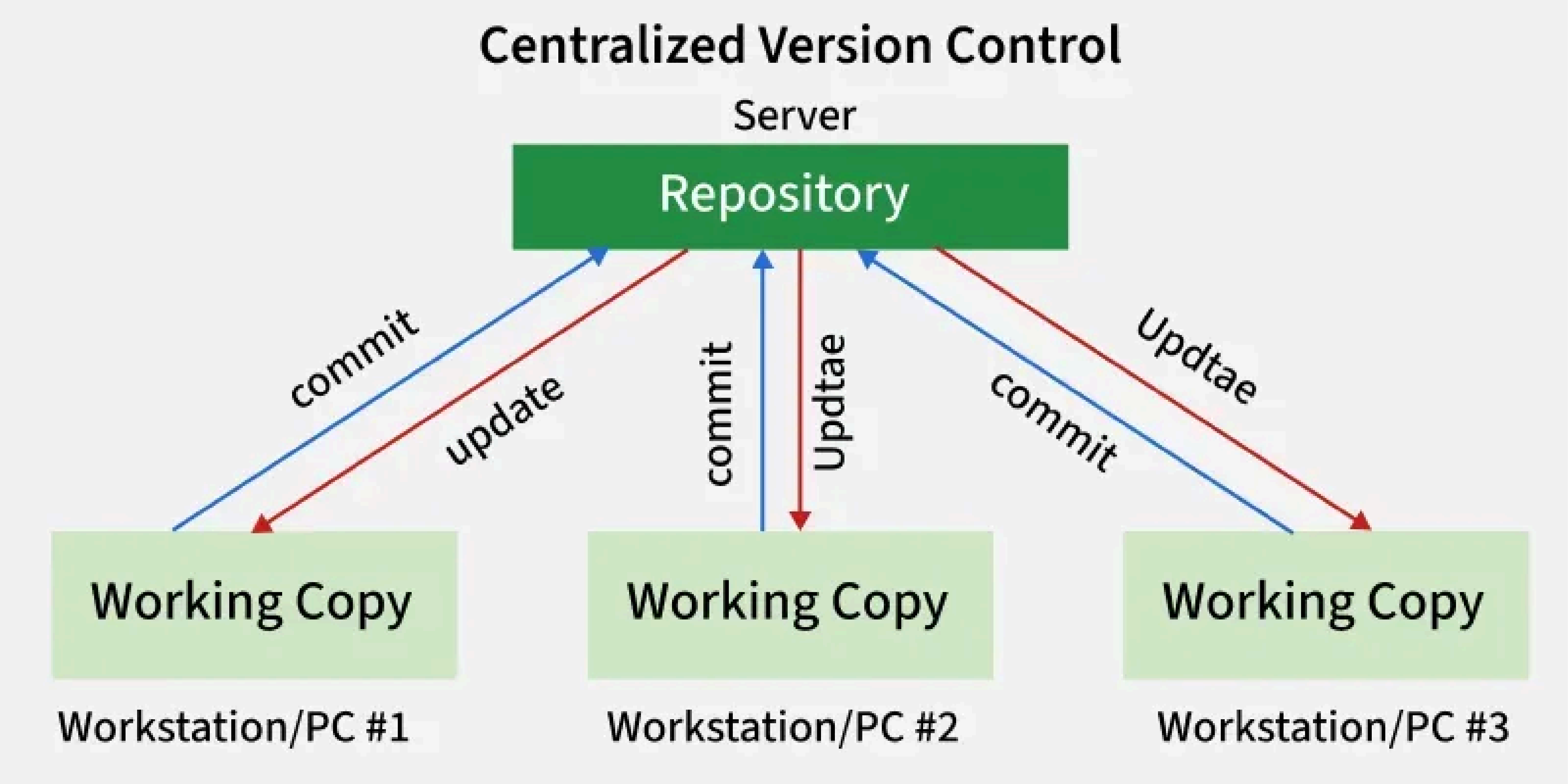
Centralized vs. distributed systems (Git vs. SVN)



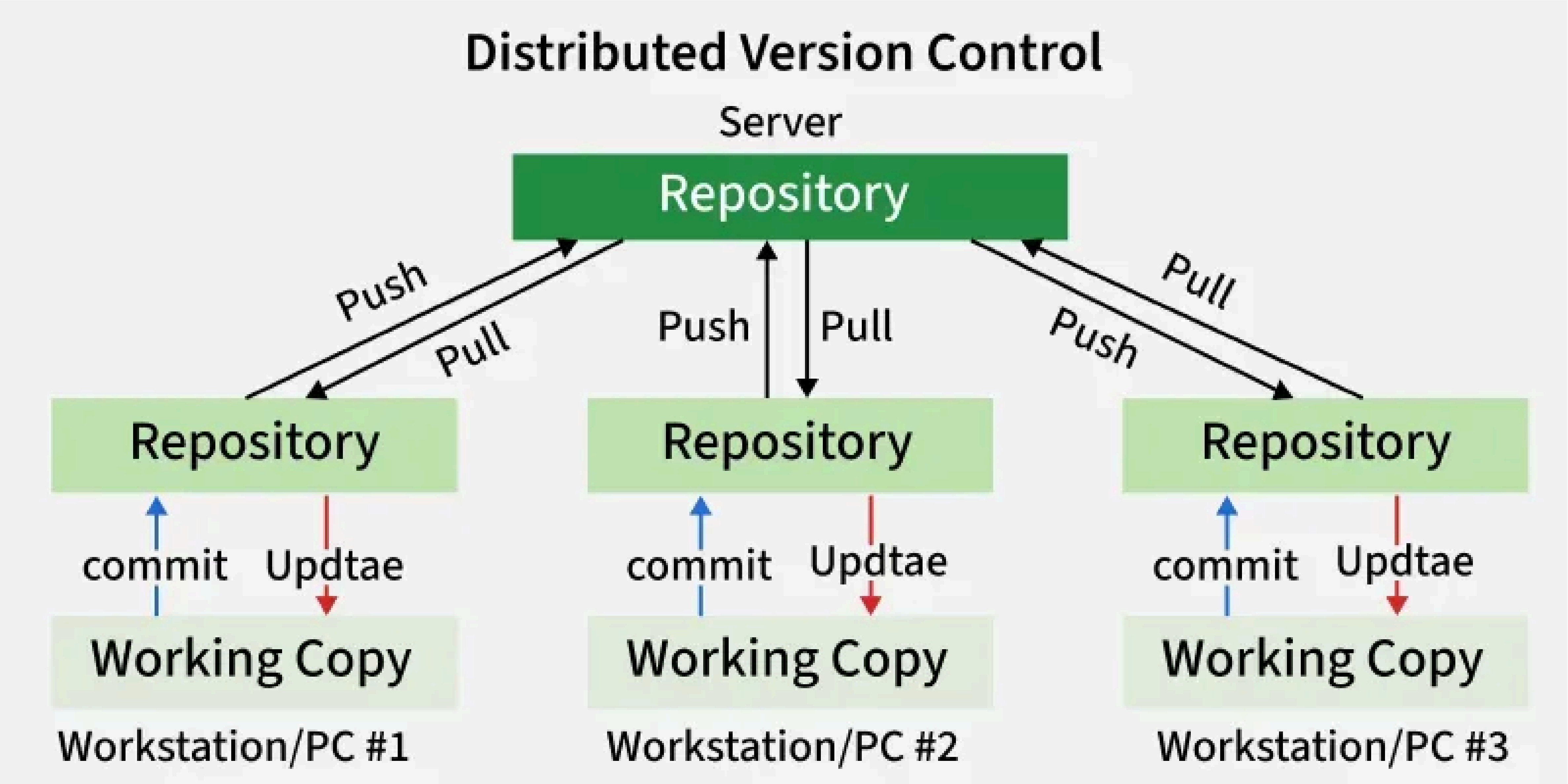
🔄 Centralized vs Distributed Systems

Model	Centralized (e.g., SVN, TFVC)	Distributed (e.g., Git)
Repository	One central server	Each user has full copy
Offline Work	Limited	Fully supported
Collaboration	Server-based commits	Local commits, then push

Centralized vs. distributed systems (Git vs. SVN)



Centralized vs. distributed systems (Git vs. SVN)



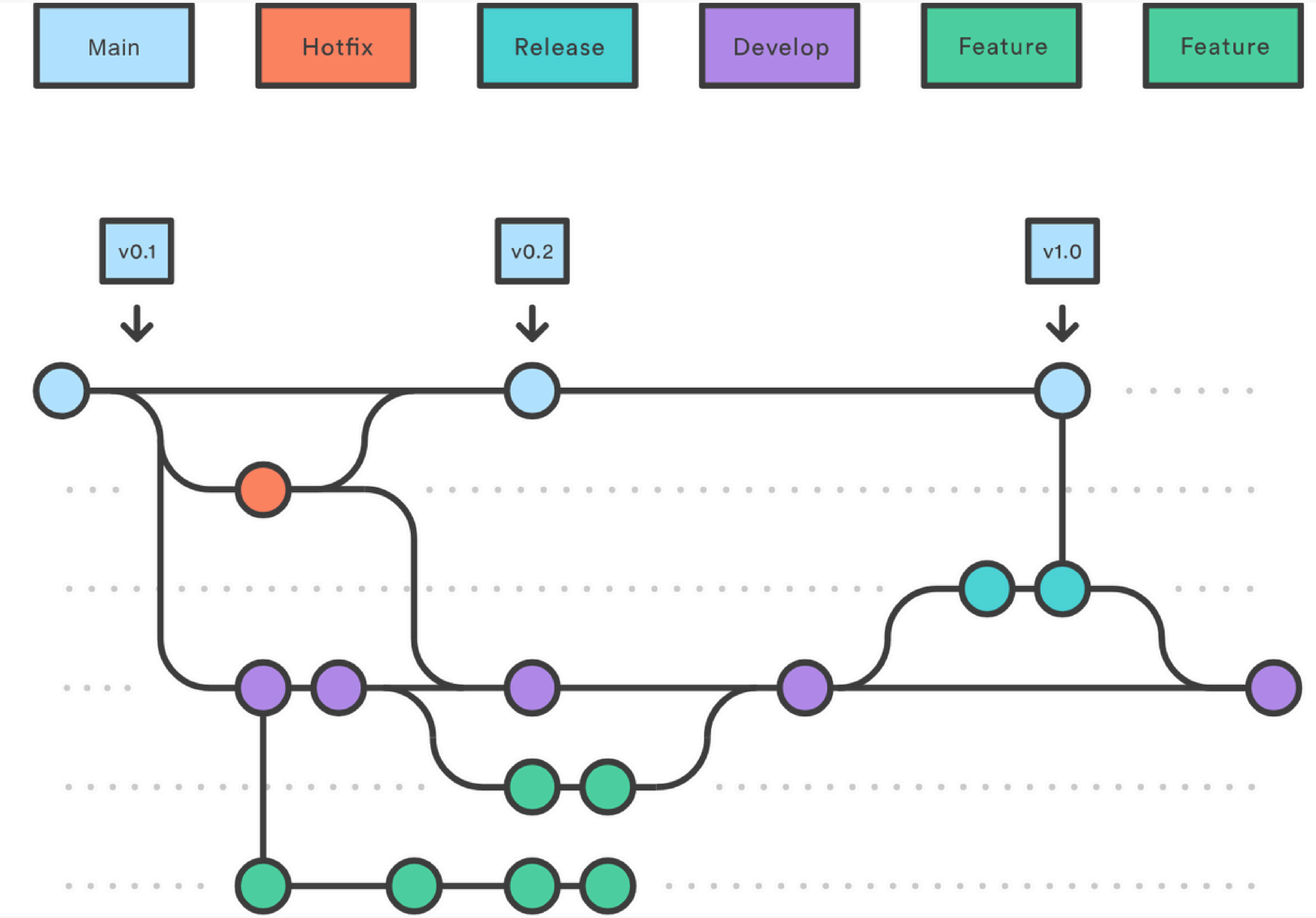
Github Desktop

- https://desktop.github.com/download/

Git Command

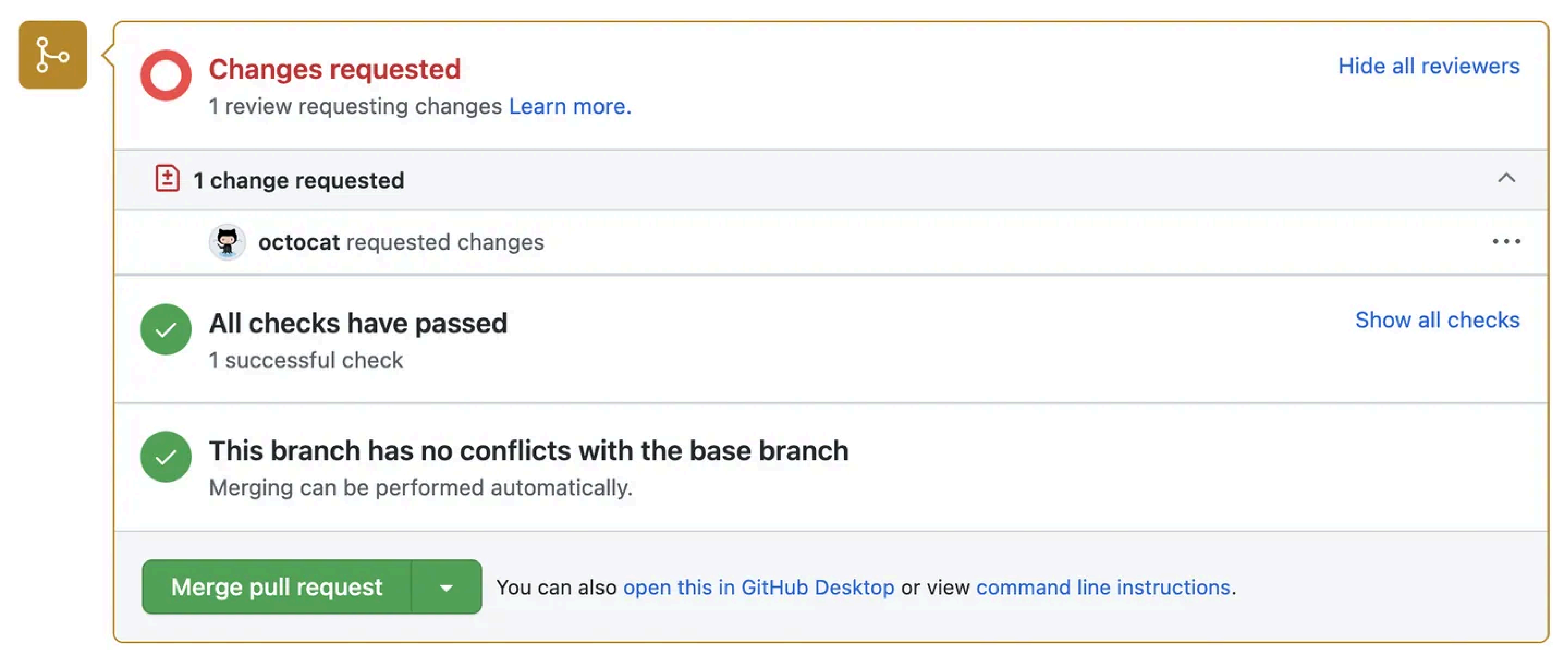
- Git command
  - init
  - add
  - status
  - commit
  - push
  - pull

Git Branches & Merging & Git Flow



References: https://www.atlassian.com/git/tutorials/comparing-workflows/gitflow-workflow

Pull Request & Code Review



Changes requested

1 review requesting changes Learn more.

1 change requested

octocat requested changes

All checks have passed

1 successful check

This branch has no conflicts with the base branch

Merging can be performed automatically.

You can also open this in GitHub Desktop or view command line instructions.

References

- https://github.com/resources/articles/software-development/what-is-version-control
- https://git-scm.com/
- https://www.geeksforgeeks.org/git/version-control-systems/