Legion Source Control

June 2021

Legion Source Control

- Requirements and implications
- Data structures and architecture
- Roadmap

Requirements

- Unified code & data solution
- Large binary files: Central database
- Support for live workflows: Branches
- Predictable merges: Central locking across branches
- Support for distributed build tools: Shared virtual workspaces

Requirement: Unified code & data solution

- Code and data have interdependencies
- Atomic changes across code & data in a single commit
- Unified tools and processes for all crafts

Requirement: Large binary files

- Fully distributed history is impractical when dealing with large binary files
- Central database and shallow (or even virtual) workspaces are the way to go here

Requirement: Support for live workflows

- Branches!
- Git branches are very efficient in size and speed

Requirement: Predictable merges

- Conflicts are the dark side of branches
- Central locking à la perforce is not good enough with binary files
  - Only pushes back the conflict to the branch merge
- Solution: locking across branch families
  - Implicit lock domains based on explicit branch parenting
  - Attached branches share a lock domain
  - Detaching a branch creates a new lock domain
- Even better: app metadata `inside` the lock
  - Allows to override/augment lock when conflict-free merge is guaranteed

Requirement: Support for distributed build tools

Problem statement

> Hundreds of instances of a microservice are spawned to work on a small part of the data kept under source control. How can we give them efficient access in read and write?

Shared, virtual workspaces.

Like a local workspace, it's a set of modifications based on a branch at a specific revision (commit).

- Unmodified files are fetched on demand.
- No concurrency guarantees.

Non-requirements (for now)

- Access control
- On-site cache or commit servers
- CI/CD specific features
- Task tracking integration

Legion Source Control

- Requirements and implications
- **Data structures and architecture**
- Roadmap