

Microservices and Monorepos

Match made in heaven?

Sven Erik Knop, Perforce
Software

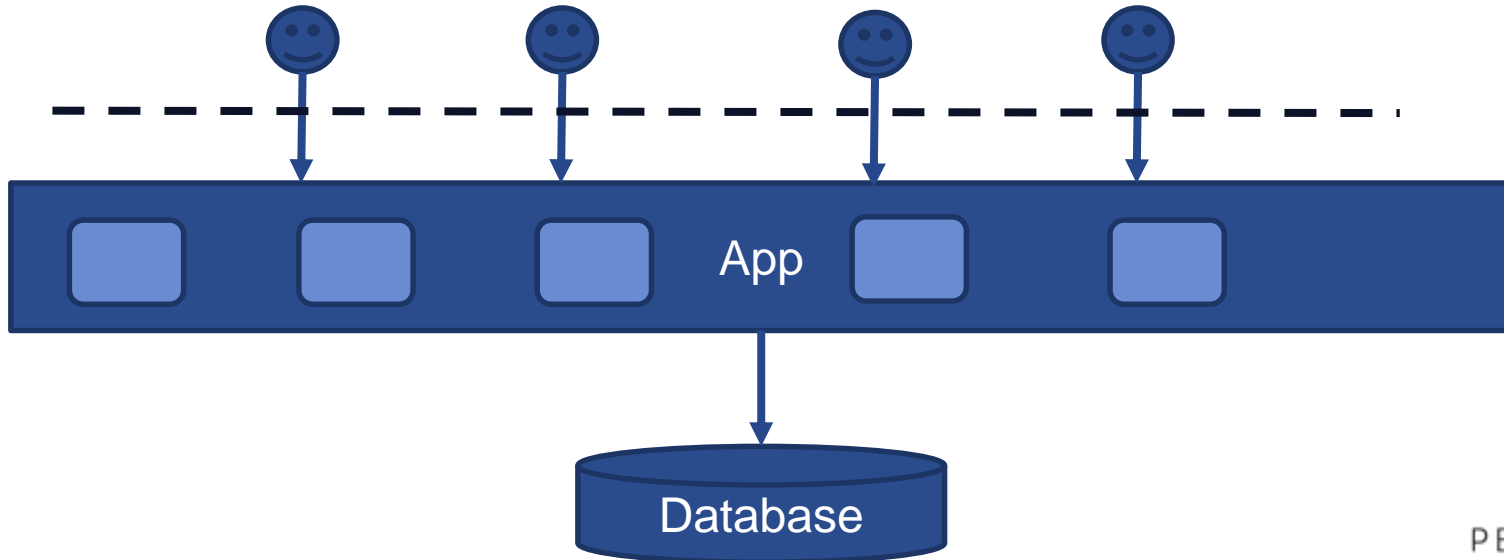
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Overview

- Microservices refresher
- Microservices and versioning
- What are Monorepos and why use them?
- These two concepts seem to contradict – why mix them together?
- The magic of narrow cloning
- A match made in heaven!

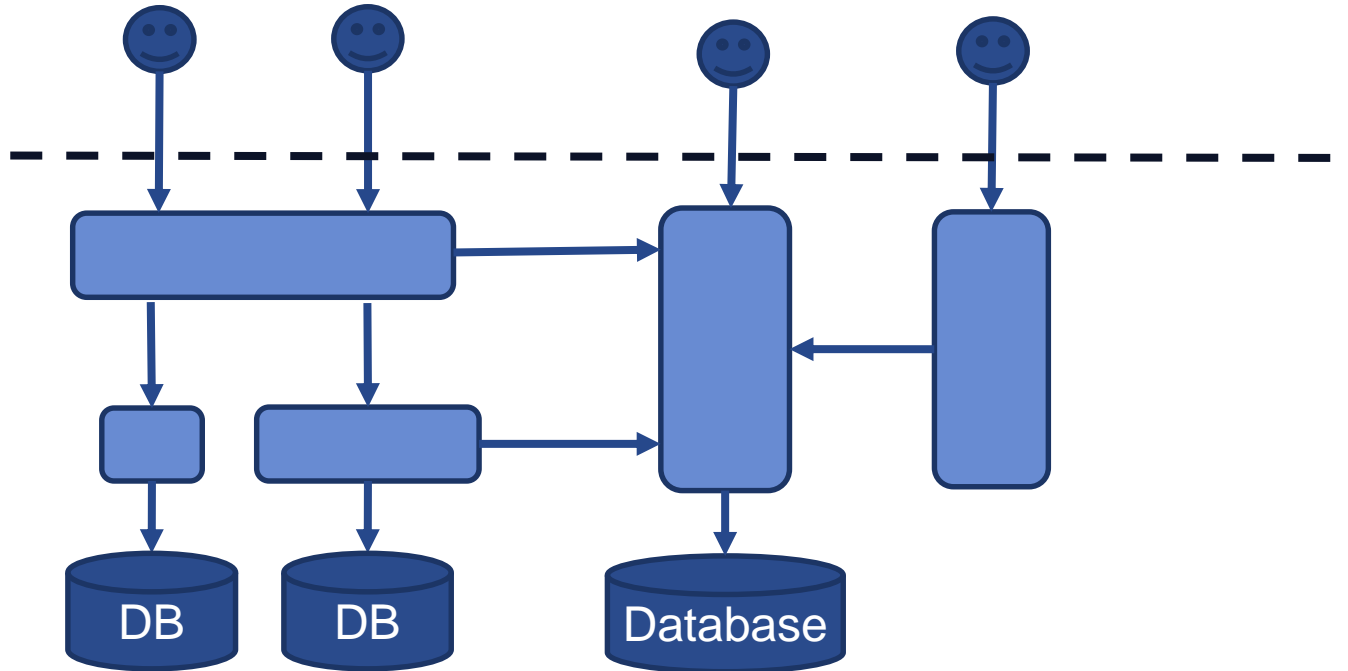
Why Microservices?

- Monolithic approach:



Microservices approach

- Individual Services



Versioning Microservices

- Code
- Executables and Containers
- Configuration
- Natural choice: individual repositories for each service → Git

- But:
 - Security
 - Visibility
 - Refactoring
 - Single change id to rule them all?

Monorepo

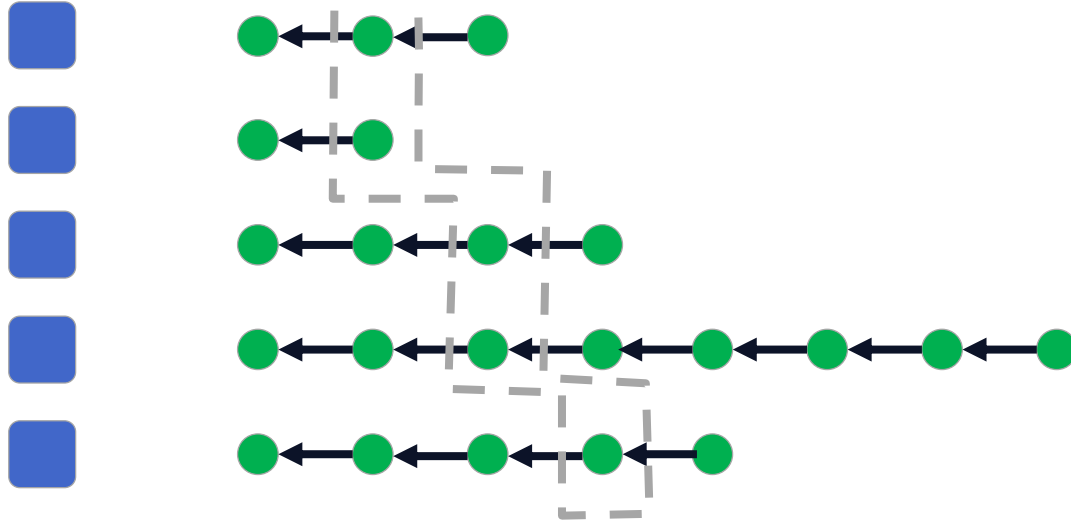
- Why would you use a monorepo?
- Who is using monorepos?
- How would you use a monorepo?

Monorepos: Why would you do this?

- Single Source of Truth for all projects
- Simplified security
- Configuration and Refactoring across entire application
- Single change id across all projects

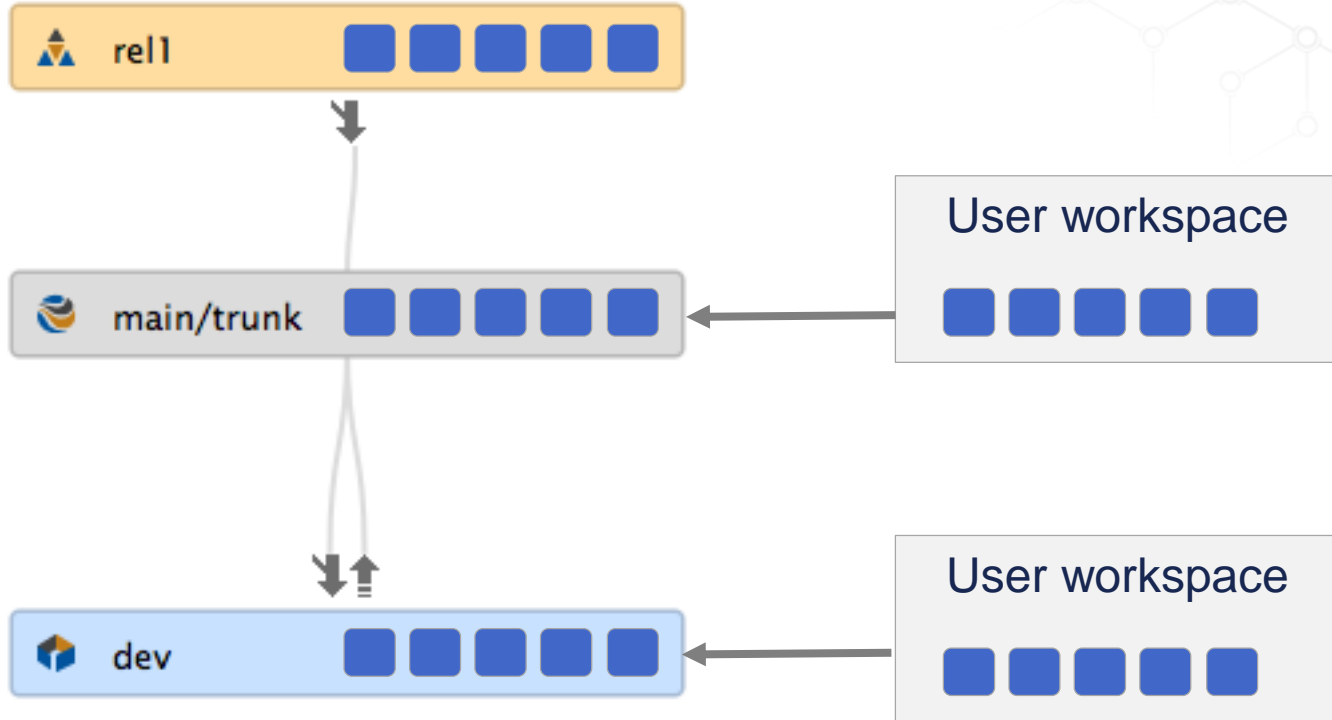
- Examples:
 - Google, Facebook, Twitter, Salesforce, ...

Single change across projects



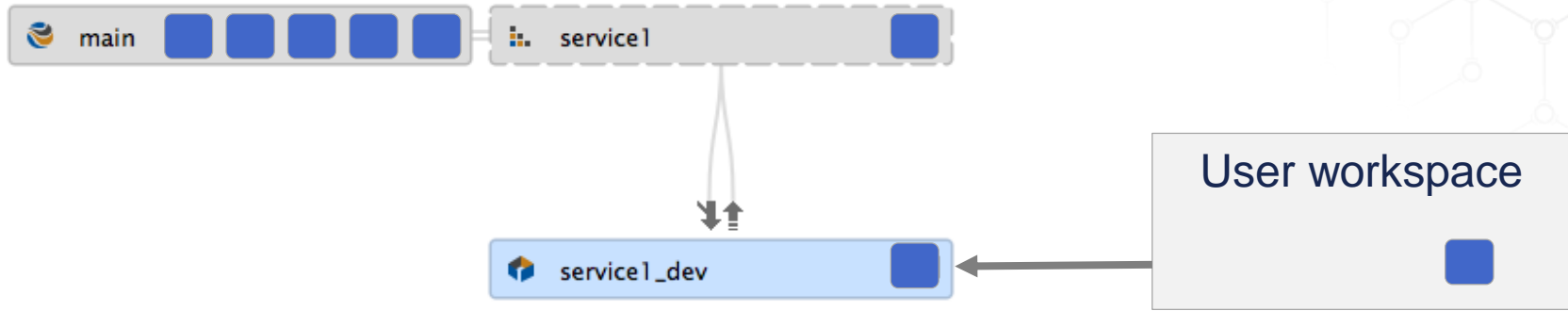
change 314156

Monorepos: Antipatterns



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Monorepos – view mapping



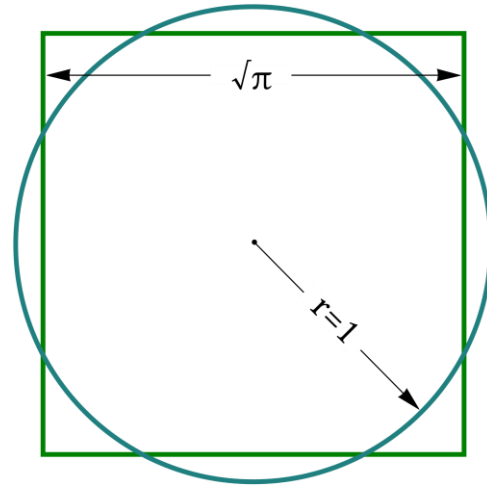
- Map one or more services
- Users only access files they need
- Simplified pushing of changes

What does this have to do with Git?



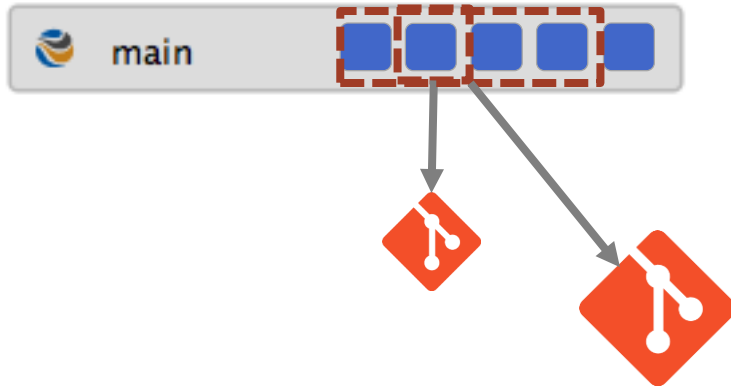
- Git does not support Monorepos
 - Limitations on number and size of files, history, contributing users
 - Companies have tried and failed
- Android source spread over a thousand Git repositories
 - Requires **repo** and **gerrit** to work with

How can we square this circle?



https://en.wikipedia.org/wiki/Squaring_the_circle

Narrow cloning!



- Clone individual projects/services
- Clone a group of projects into a single repo

Working with narrowly cloned repos

- Users work normally in Git
- Fetch and push changes from and to monorepo
- SHAs preserved within the same repo
- SHAs for compound repos will differ
 - But: common change id in the monorepo

So what does Perforce have to offer?

- The vendor talk bit ...

Who we are

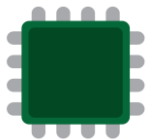
- Perforce helps delivery teams build complex products collaboratively, securely and efficiently.
- Commonly used for...
 - Software
 - Games
 - Electronics
 - Animations
 - Chipsets
 - Medical Devices
 - IoT

Global 24x7 Support



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Managing IP for market leaders



Chips

Games
& Animation

Cloud/SW

Electronics

Systems

Automotive

QUALCOMM®

EA
GAMES™

salesforce

SAMSUNG



Mercedes-Benz

NVIDIA

P X A R
ANIMATION STUDIOS

amazon.com



EMC²

SCANIA

intel

UBISOFT

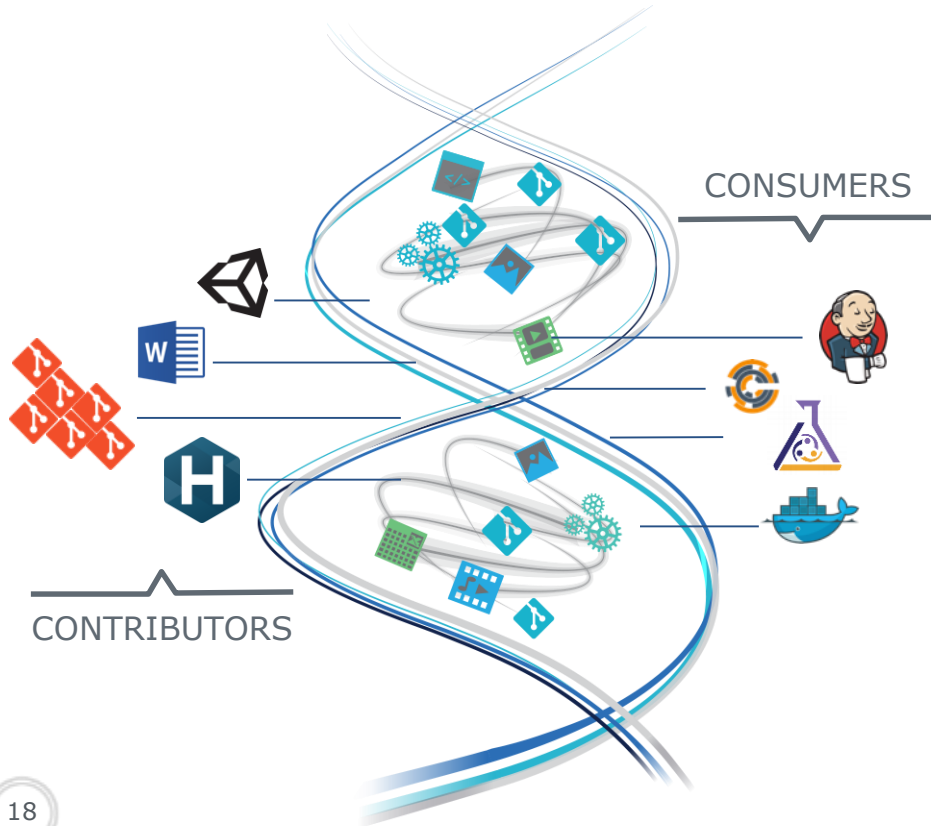
NETFLIX

TOMTOM

NetApp

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Perforce Helix



- **Hybrid Workflows**

- Distributed & Centralized Version control, code reviews, simple file sharing
- Happy developers & contributors

- **Every File**

- Efficiently handles large, often binary, data

- **DevOps Stay Happy & Productive**

- A mainline source for all builds even with distributed development

- **All IP Safe & Secure**

- Granular permissions, theft risk monitoring

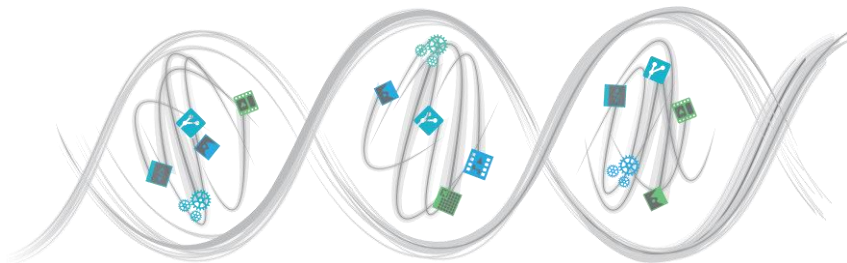
Serves developers

- More code
- More frequently
- More freedom
- More flexibility
- All text
- Small files
- Code anywhere
- Local repos



Perforce Helix

Coordinate Development & Operations at Scale

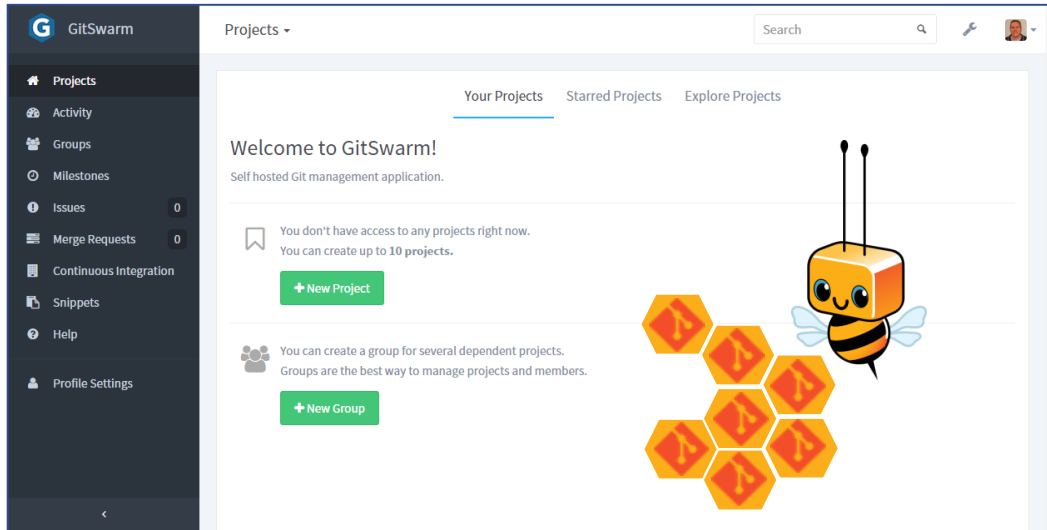


Serves operations

- More performance
- More uptime
- More control
- Better coordination
- Binaries
- Large files
- Protect IP
- Regulations/audit



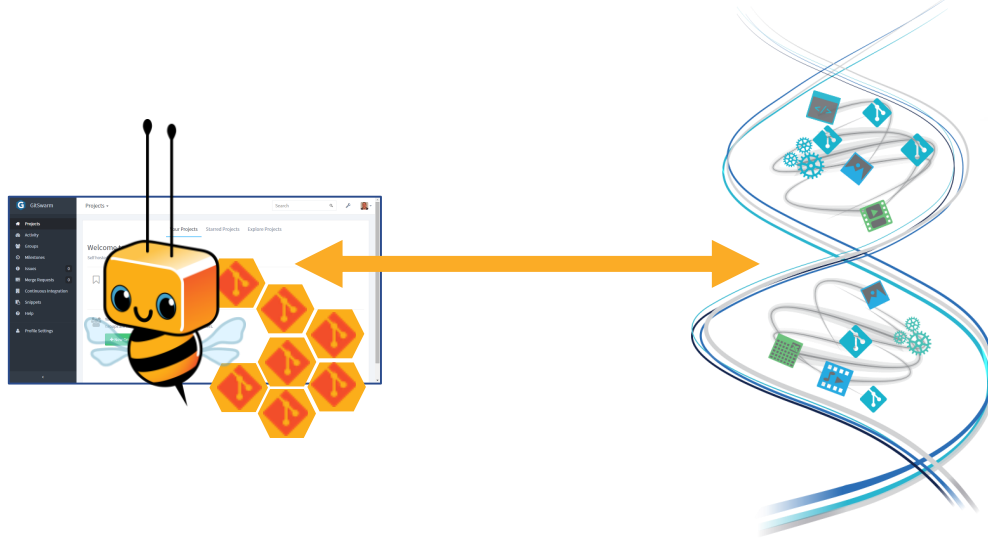
GitSwarm: Integrated Git Management



- Self-service repos
- Merge requests
- Permissions
- Issue tracking, etc.

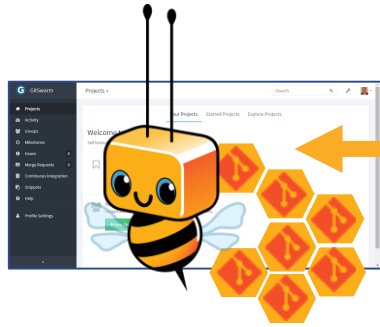
 *Based on GitLab CE*

Mirrored to the Helix Versioning Engine



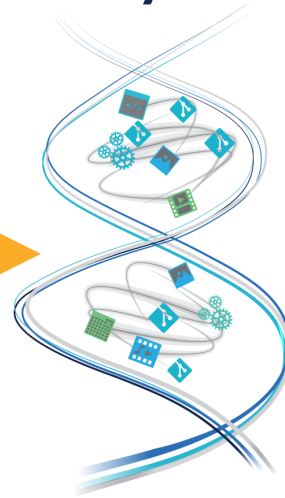
- Automatic bidirectional mirroring with Helix servers
- Helix enforces security, down to the file level if needed
- Immutable content for audit trails, regulated industries, etc.
- Support for Git LFS that works for DevOps

Work Locally, Scale Globally



GitSwarm

- Distributed environment for developers
- Git experience and workflow equivalent to well known tools



Helix

- Single source of truth
- Perform reliability and stability protecting your assets

Microservices and Monorepos?



Narrow cloning ...