Continuous Integration and Automated Code Review in Open Source Projects

Adrián Tóth

Brno University of Technology, Faculty of Information Technology
Božetěchova 1/2. 612 66 Brno - Královo Pole

xtotha01@fit.vutbr.cz

What is *Continuous Integration*?

What is *Automated Code Review*?

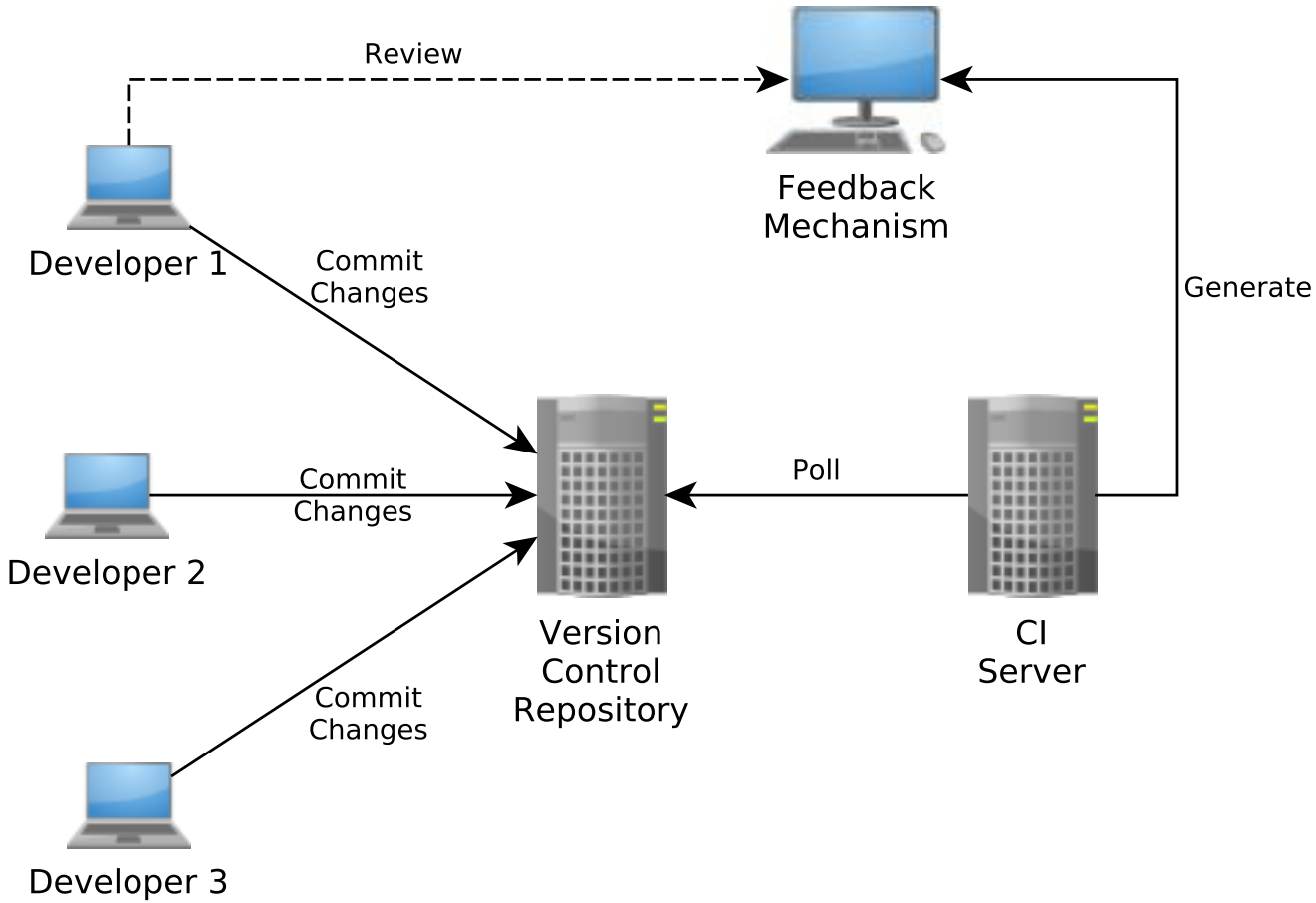
Where is it used and why?

How it works?

Continuous Integration

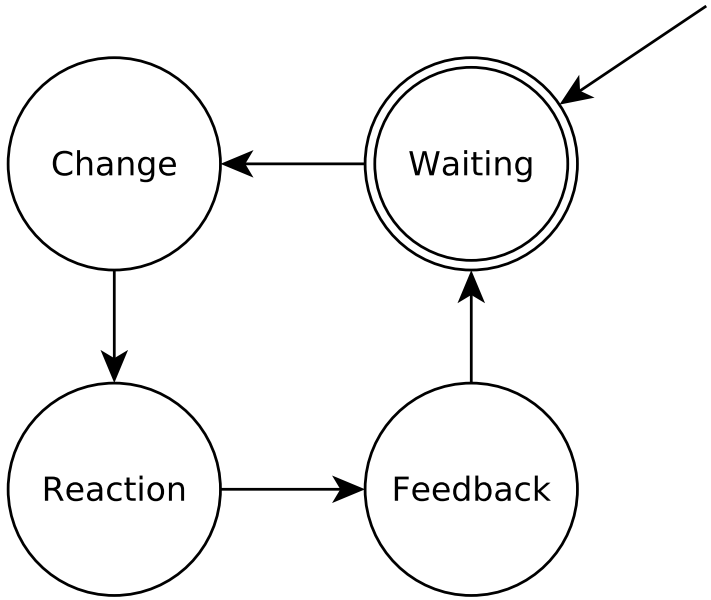
- common part of fast software development
- adaptive development technique
- reduce integration problems
- integrations are verified via automated tests and builds
- popular in open source projects which are frequently developed by a group of people
- available CI services: *Travis CI*, *Jenkins*, *TeamCity*, ...

Components of CI System

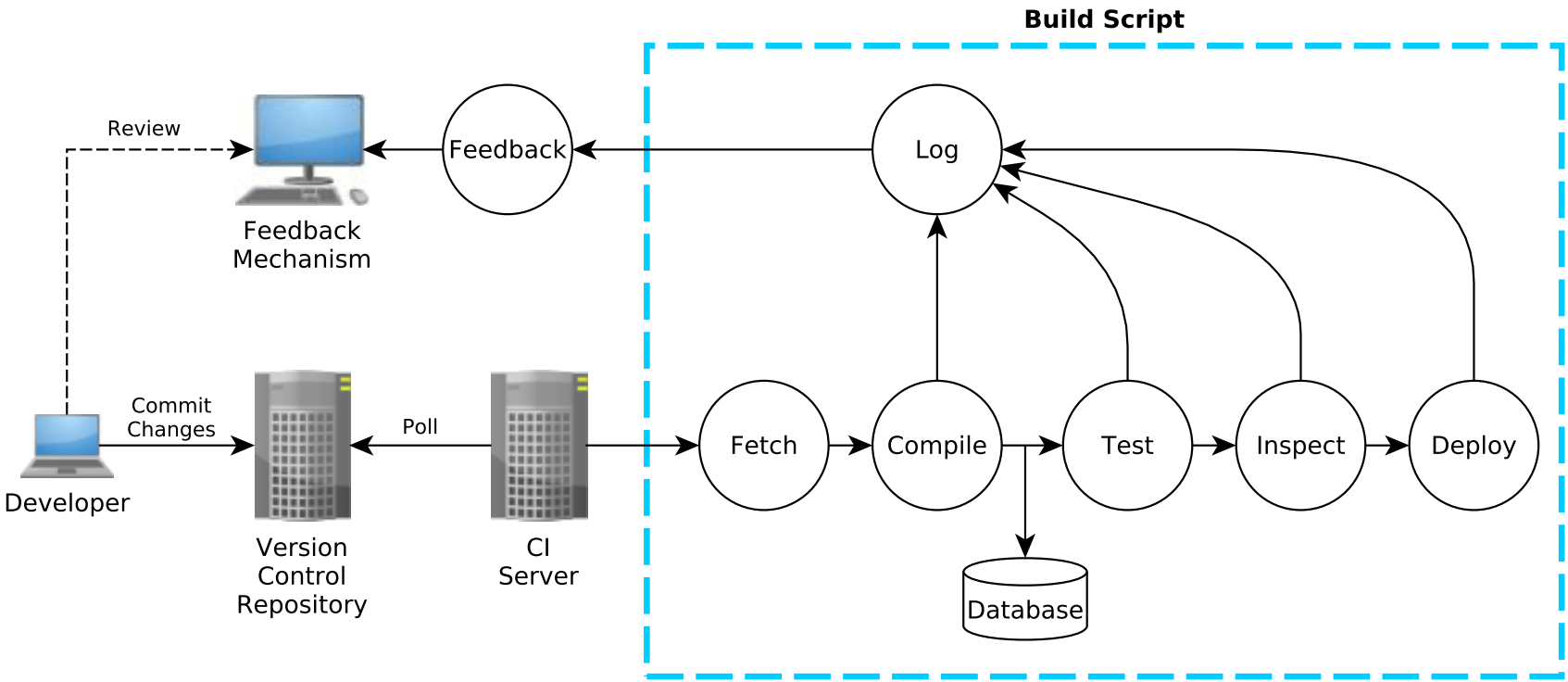


Stages of CI:

1. Change
2. Reaction
3. Feedback
4. Waiting



How it works?


Build Script
Review
Feedback
Log
Feedback Mechanism
Commit Changes
Poll
Developer
Version Control Repository
CI Server
Fetch
Compile
Test
Inspect
Deploy
Database

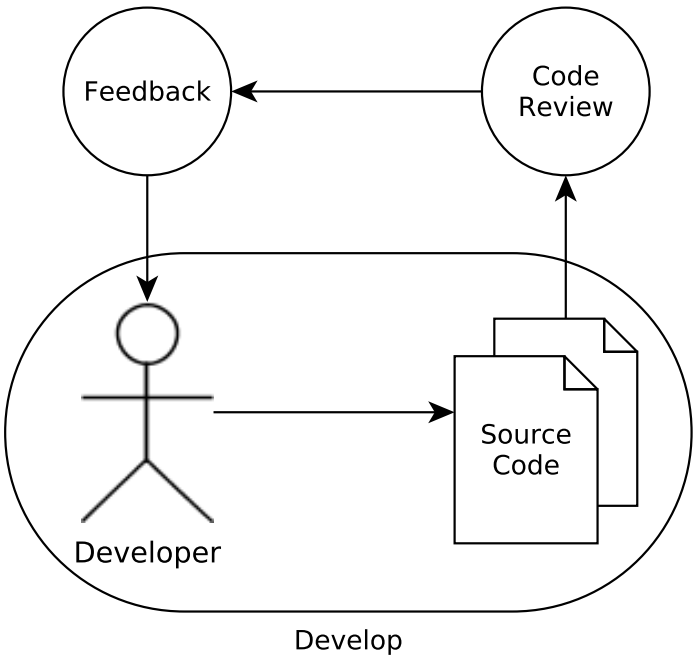
Types of code review:

- manual code review
  - collaborative inspection and discussion with project members
  - slow (nearly 100 lines of code per hour)
  - pair programming
- automated code review
  - ...

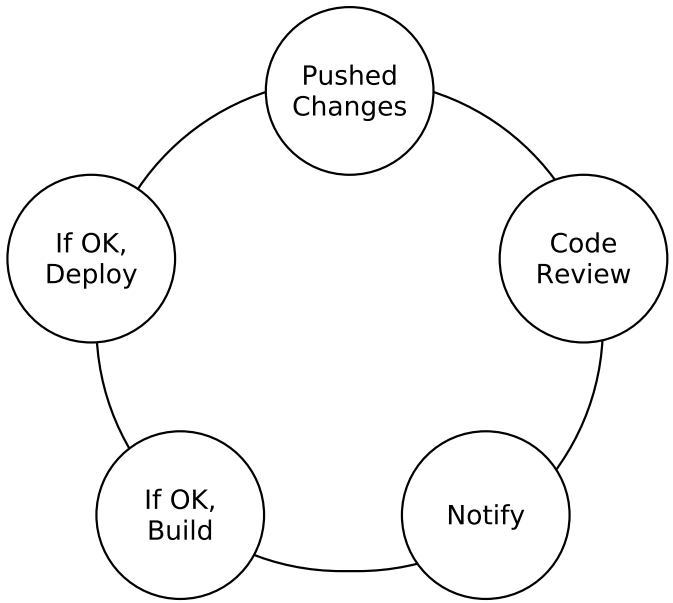
Automated Code Review

- inspection of code quality
  - coding standards
  - trailing spaces
  - code duplication
  - not enough / too many comments
  - ...
- detection of basic mistakes and vulnerabilities
- matching set of rules providing static analysis
- Code Climate, RuboCop, SonarQube, RIPS, FlexeLint

Manual



Automated



Objectives

- *Pronto*[1] integration
- *Webhooks*[2] integration
- Request for review command implementation
- *Gitter* integration (yell if master is broken)
- *Pull Request Processor*[3] integration
- *Github Status API*[4] integration
- Track dependent pull requests (comment if merged)

[1] github.com/prontolabs/pronto
[2] developer.github.com/webhooks
[3] github.com/theforeman/prprocessor
[4] developer.github.com/v3/repos/statuses

Thank You For Your Attention !