

GitLab CI vs Jenkins

Ivan Nemytchenko | CEE SECR | October 29, 2016

Continuous Integration

Motivational part of CI

**Let's prevent integration
problems!**

Motivational part of CI

**Let's combine all pieces
together once a day to
check if it works!**

**No need to motivate
anyone anymore**

CI is like VC

Practical part of CI

CI used to be manual

Practical part of CI

**CI configuration used to
require separate job
position**

**Modern CI tools are
not usually that complex**

You can use CI not only in big projects

GitLab CI vs Jenkins

Напрямую сравнивать неверно

Но мы сделаем это!

Сравниваем в лоб

- GitLab CI - часть основного продукта
- Jenkins - самостоятельный продукт

- Projects
- Todos 50
- Activity
- Groups
- Milestones
- Issues 43
- Merge Requests 2
- Snippets
- Help
- Profile Settings



50 +

New project

Create or Import your project from popular Git services

Project path

Project name

Want to house several dependent projects under the same namespace? [Create a group](#)

Import project from

Project description (optional)

Visibility Level (?)

- Private
Project access must be granted explicitly to each user.
- Internal
The project can be cloned by any logged in user.
- Public
The project can be cloned without any authentication.



master gitlab-ce

Find File Download

Name	Last Commit > 1038ef54 – about 8 hours ago Merge branch 'issue-boards-keyboard-sh... History	Last Update
.github	Address feedback about wording.	3 months ago
.gitlab	Rename behaviour to behavior in bug issue template for consistency	14 days ago
app	Merge branch 'issue-boards-keyboard-shortcut' into 'master'	about 8 hours ago
bin	Use ENABLE_SPRING to use it by default	3 months ago
builds	Add missing builds/ folder to fix backup tests	about a year ago
changelogs	Add changelogs/unreleased/.gitkeep	7 days ago
config	Gitlab::Checks is now instrumented	3 days ago
db	Merge branch 'fix-old-migration-repos-path-key' into 'master'	about 15 hours ago
doc	Merge branch 'ci-quick-start-doc-improvement' into 'master'	about 16 hours ago
docker	Update Docker Hub links.	4 months ago
features	Merge branch 'pipeline-hooks' into 'master'	8 days ago



Open 4,822 Closed 7,824 All 12,646

Filter by name ...

Author Assignee Milestone Label Weight [Reset filters](#)
Last created

Create interactive explanation of GitLab Flow 0
 #22244 · opened about an hour ago by Mark Pundsack Documentation meta updated about an hour ago

Expand description area when applying template 0
 #22243 · opened about 2 hours ago by Chris Wilson Frontend UX feature proposal issues updated about 2 hours ago

Remove item from Spam Logs once "Submitted as Ham" 0
 #22242 · opened about 2 hours ago by Chris Wilson feature proposal spam fighting updated about 2 hours ago

CI: "image" do not interpolate variables 0
 #22241 · opened about 4 hours ago by Dmitry Smirnov updated about 4 hours ago

markdown doesn't render escaped single quotes correctly 0
 #22240 · opened about 4 hours ago by Allen Wittenauer markdown updated about 2 hours ago

Restoring Container Registry from Backup Results in 500 Error when pushing. 0
 #22239 · opened about 6 hours ago by Jannis updated about 6 hours ago

Cannot set Merge Request status from Jenkins with a forked set-up 1
 #22238 · opened about 6 hours ago by Ian Cordasco updated 23 minutes ago



All 27,643 Running 9 Branches Tags

Status	Pipeline	Commit	Stages	Duration	Created	Actions
passed	#4796737 by latest	8-13-stable c4cb9630 Merge branch '23258-invalid-encoding' i...		59:34	about an hour ago	
passed	#4796729 by	8-13-stable 932822f4 Merge branch '23890-api-should-accepts...		01:01:37	about an hour ago	
passed	#4796706 by	8-13-stable ef037519 Merge branch '23928-sortable-highest_la...		59:50	about an hour ago	
passed	#4796700 by	8-13-stable d31fa260 Merge branch 'sticky-mr-tabs-pinned-na...		01:04:08	about an hour ago	
failed	#4796691 by	8-13-stable a7f59275 Merge branch 'fix-8-13-changelog-gh-im...		01:03:14	about an hour ago	
passed	#4796688 by	8-13-stable 1bf622c2 Merge branch 'ee-1159-allow-permission...		55:42	about an hour ago	

- [Back to Dashboard](#)
- [Status](#)
- [Changes](#)
- [Workspace](#)
- [Build Now](#)
- [Delete Project](#)
- [Configure](#)
- [Storable configs](#)
- [Job Config History](#)
- [Set Next Build Number](#)

Build History [\(trend\)](#)

- #3 [04-Dec-2012 12:29:39](#)
- #2 [04-Dec-2012 12:13:30](#)
- #1 [04-Dec-2012 11:45:27](#)

[RSS for all](#) [RSS for failures](#)

Project 01 Members Web All Generic E2E Build and Deploy

[add description](#)

Job	S	W	Last Success	Last Failure	Last Duration	Console
01 Members Web All Generic E2E Build and Deploy	●	☀	●	●	9 min 53 sec	
<i>Members Web (Members) Build</i>	●					
Members Web Generic E2E Build	●	☀	●	●	10 sec	
<i>Members Web (LP) build</i>	●					
Members Web Generic E2E Build	●	☀	●	●	10 sec	
<i>Members Web (BalanceTransferWS) Build</i>	●					
Members Web Generic E2E Build	●	☀	●	●	10 sec	
<i>Members Web Deploy</i>	●					
Members Web Publish and Deploy	●	☀	●	●	6 min 43 sec	

Icon: [S](#) [M](#) [L](#)Legend [RSS for all](#) [RSS for failures](#) [RSS for just latest builds](#)[Workspace](#)[Recent Changes](#)

Downstream Projects

- [Members Web Generic E2E Build](#)
- [Members Web Publish and Deploy](#)

Permalinks

- [Last build \(#3\), 31 min ago](#)

Сравниваем в лоб

- GitLab CI - Ruby on Rails + Go
 - Jenkins - Java

Сравниваем в лоб

- GitLab CI - GitLab + Runners
- Jenkins - Master + Slaves

Сравниваем в лоб

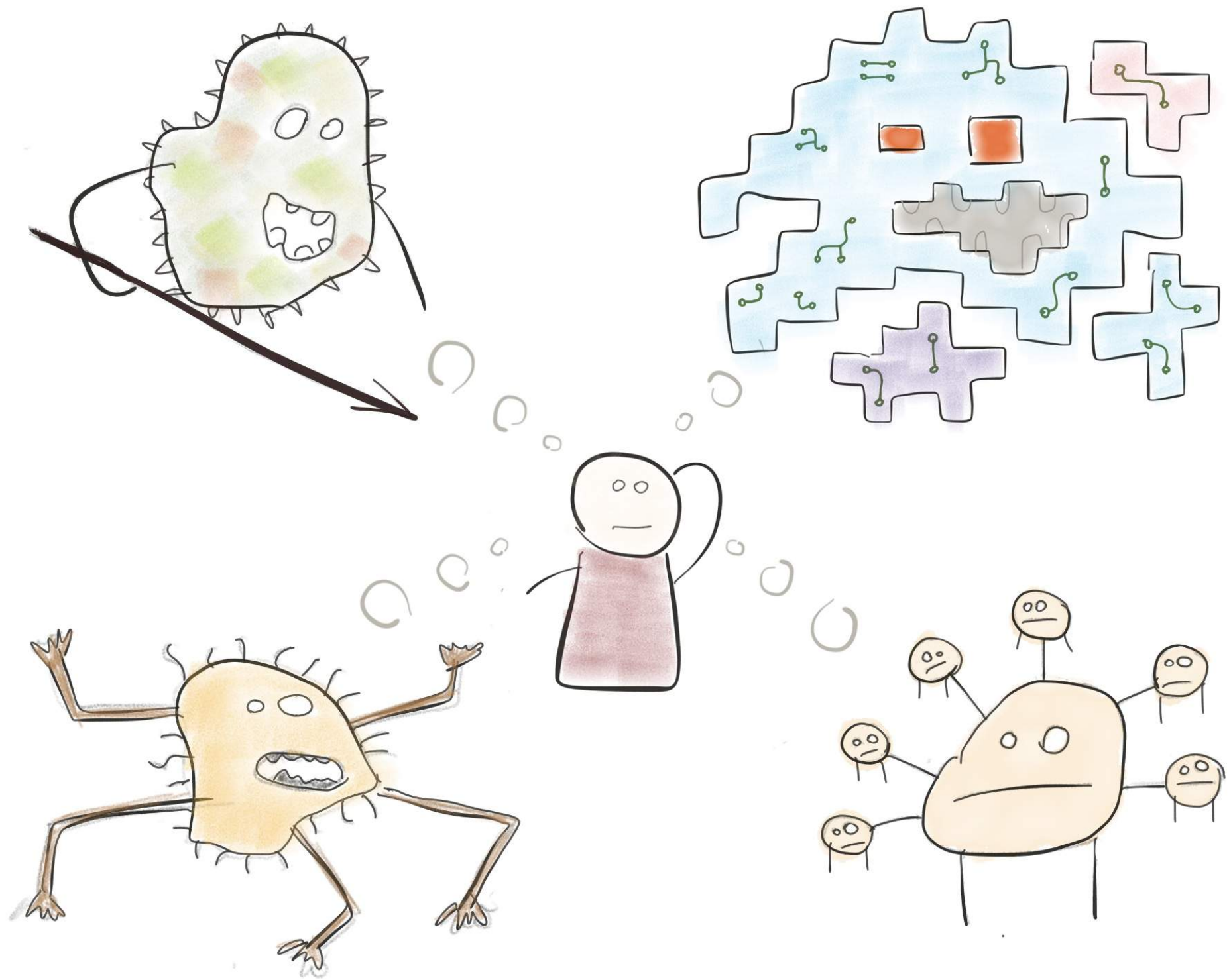
- GitLab CI - Ничего лишнего, Convention over configuration
- Jenkins - Плагины разработанные сообществом

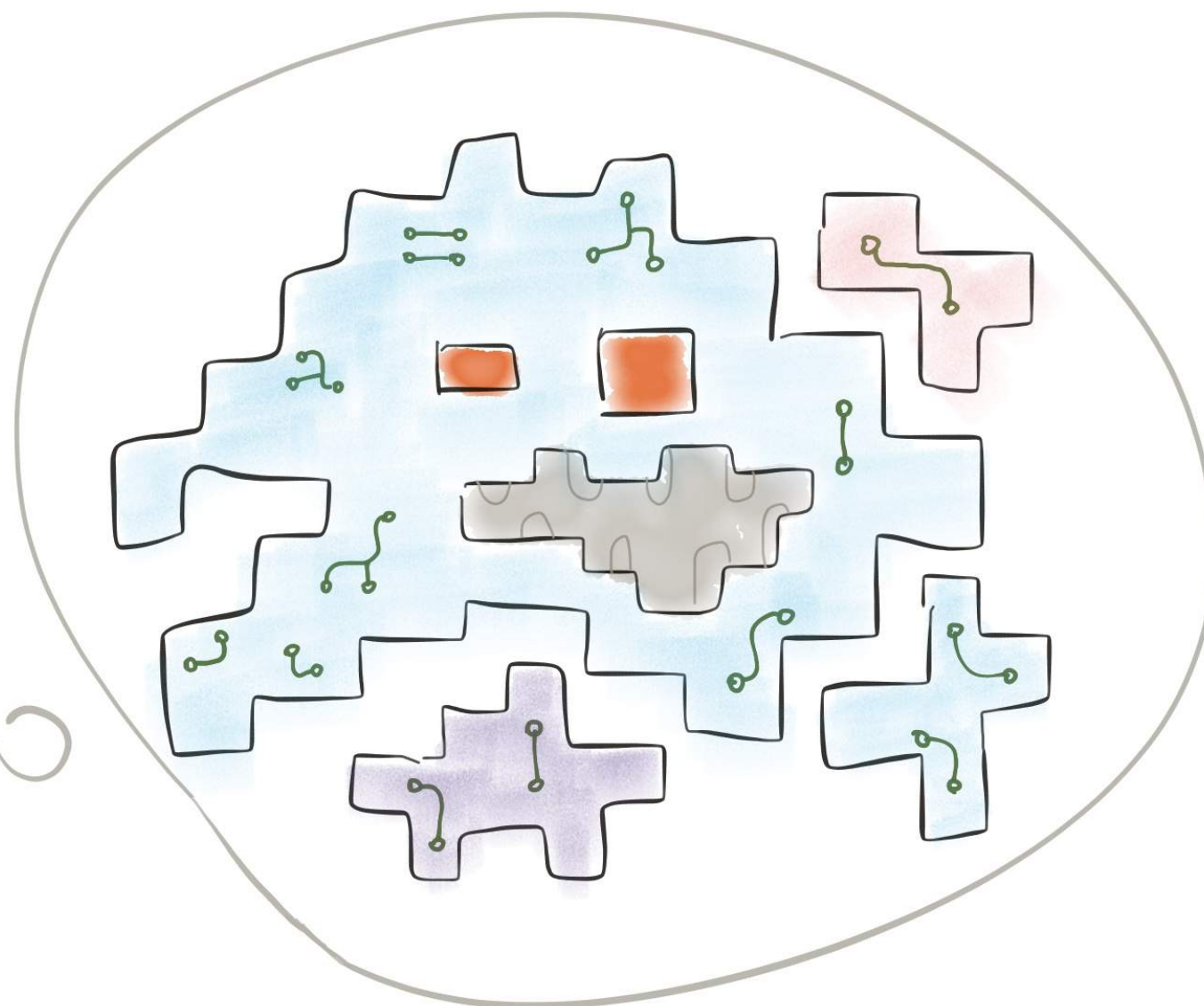
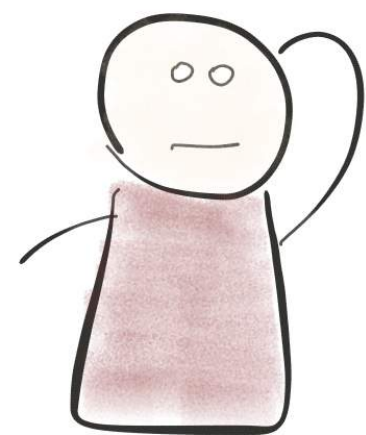
Сравниваем в лоб

- GitLab CI - Technology-agnostic
- Jenkins - В каком-то смысле тоже, но плагины

Сравниваем в лоб

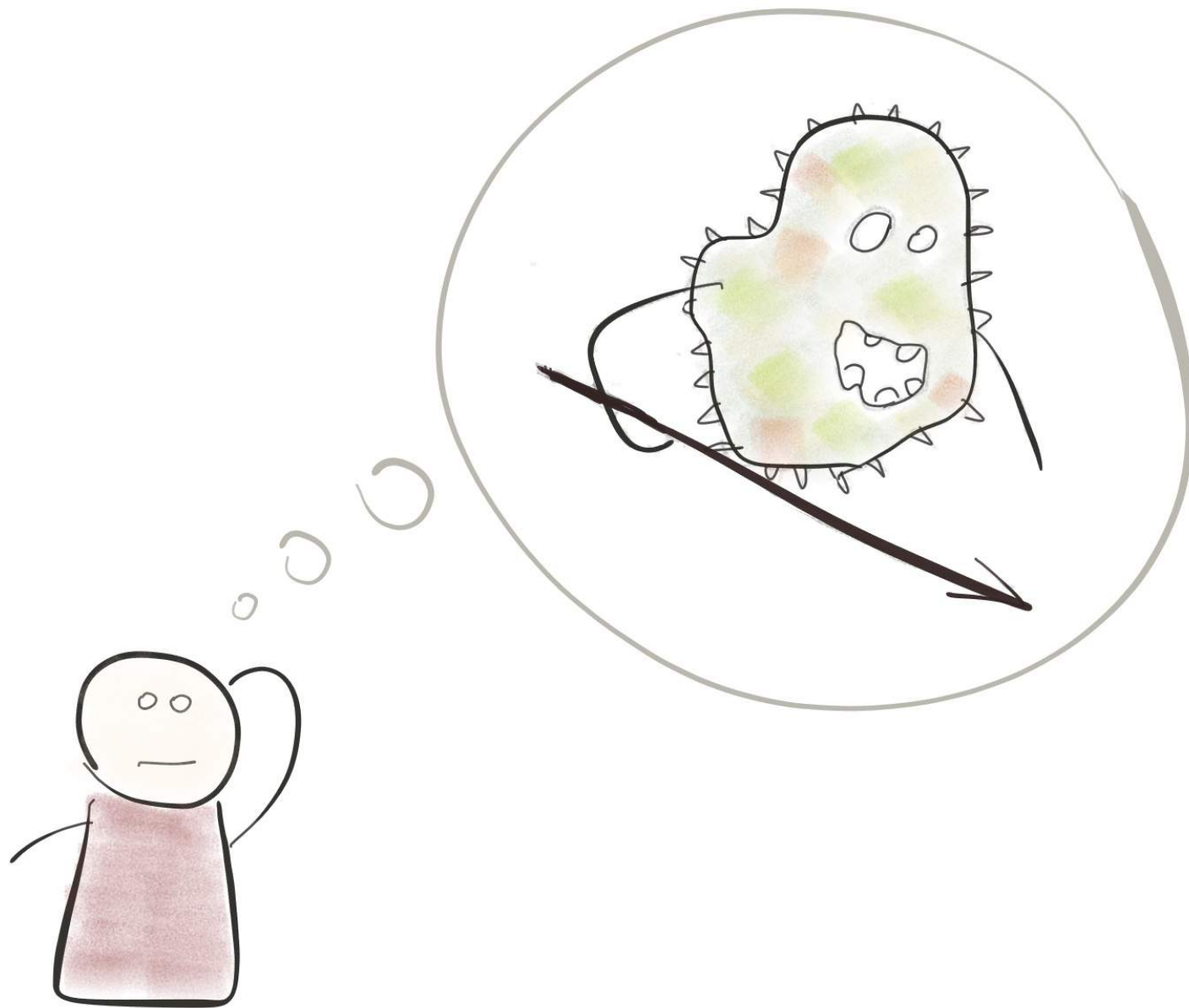
- GitLab CI - Configuration as code
- Jenkins - Настройка через UI*



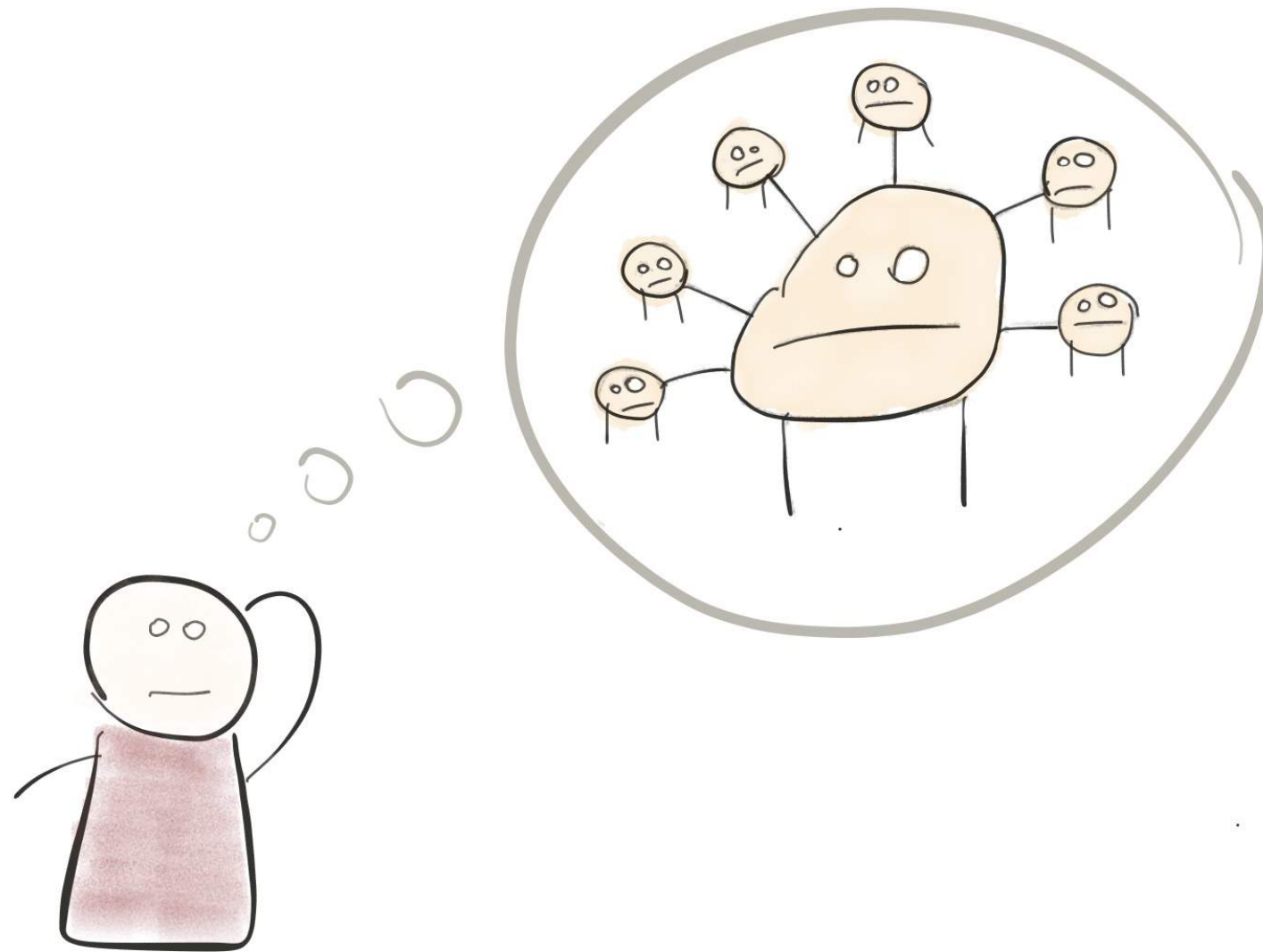


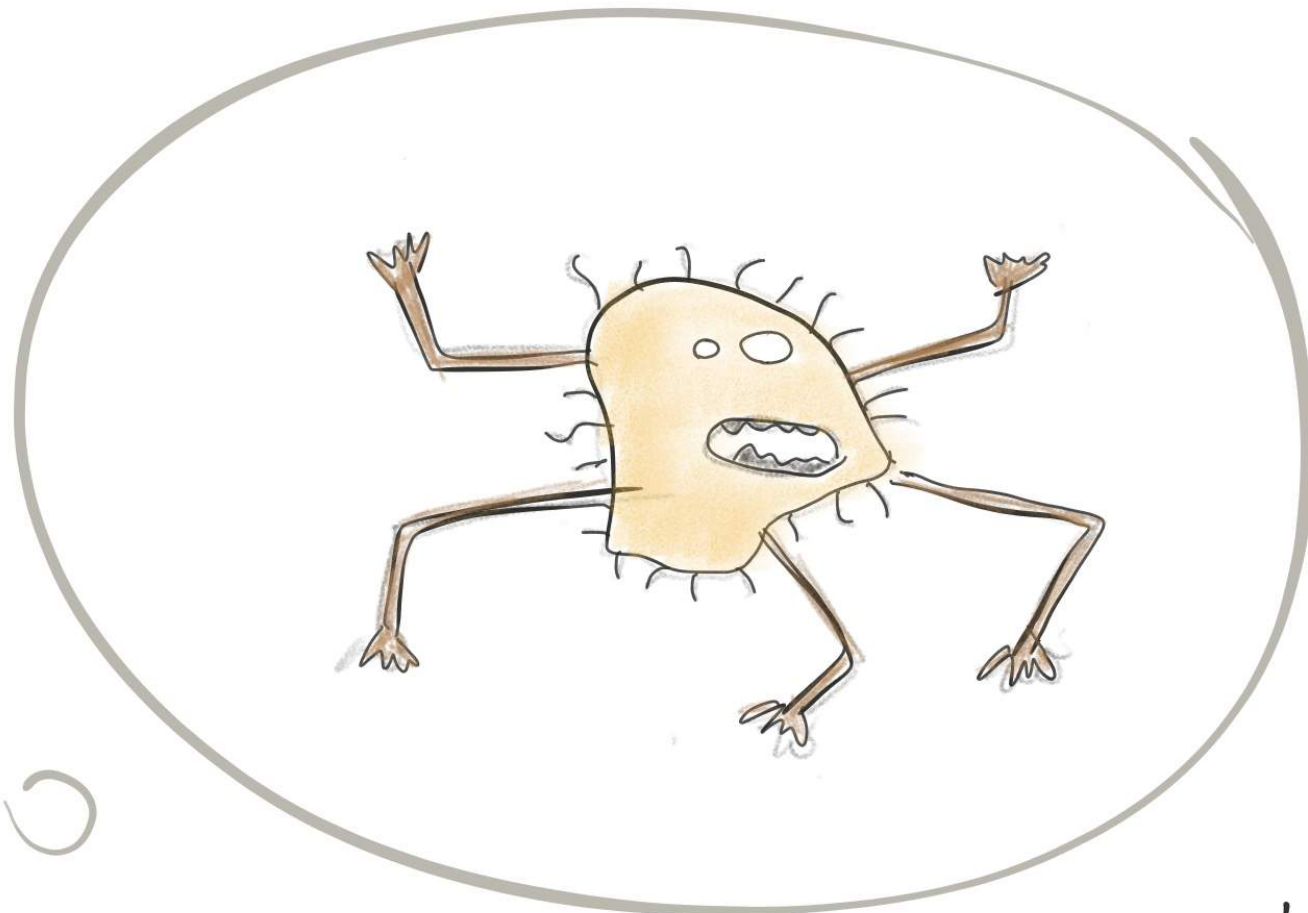
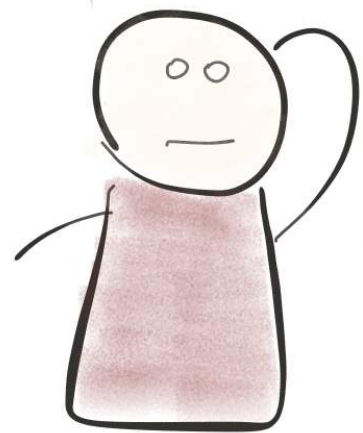
Install new tool

Integrate CI with
the rest of tools

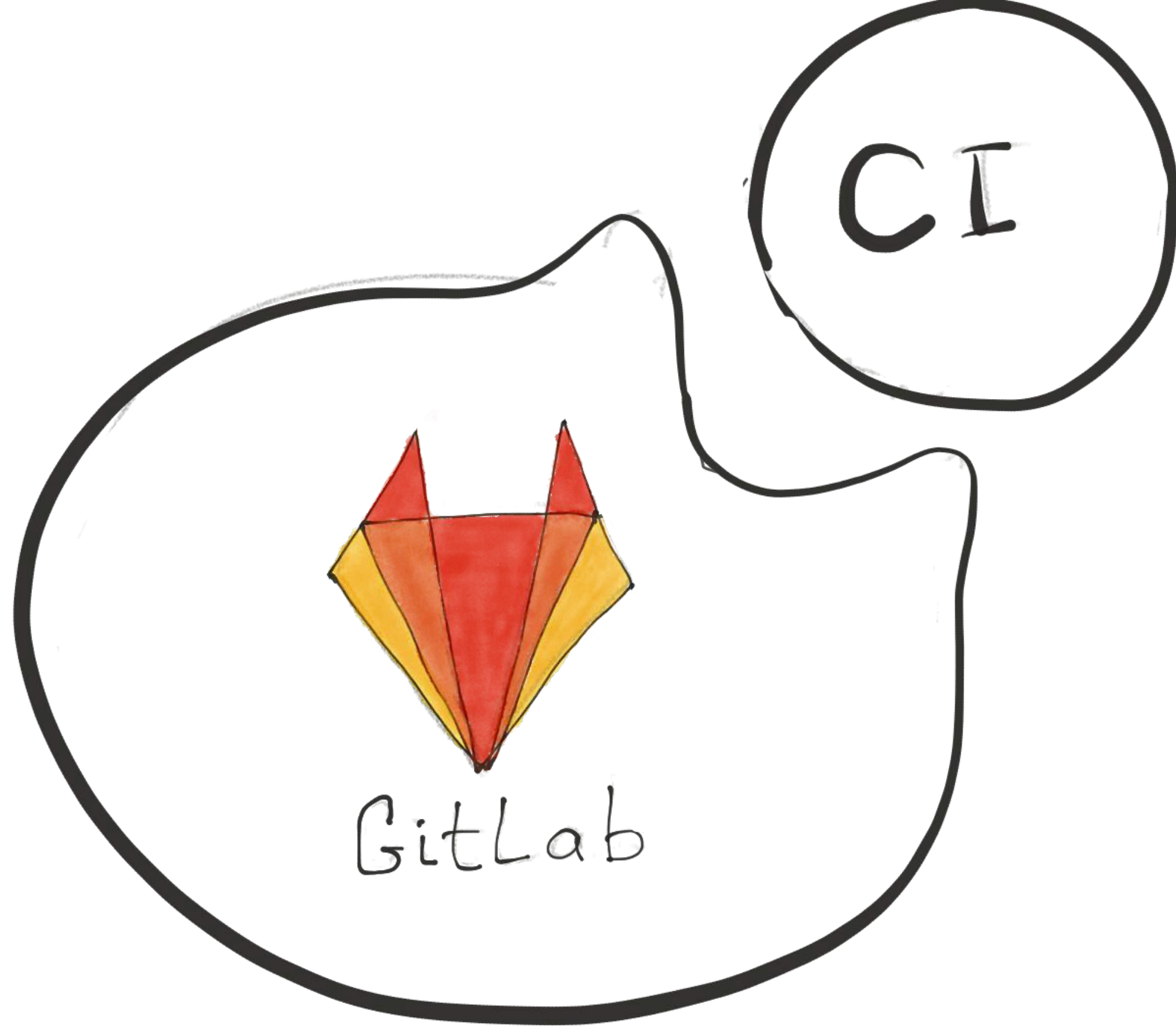


Convince all the colleagues
to register in new service



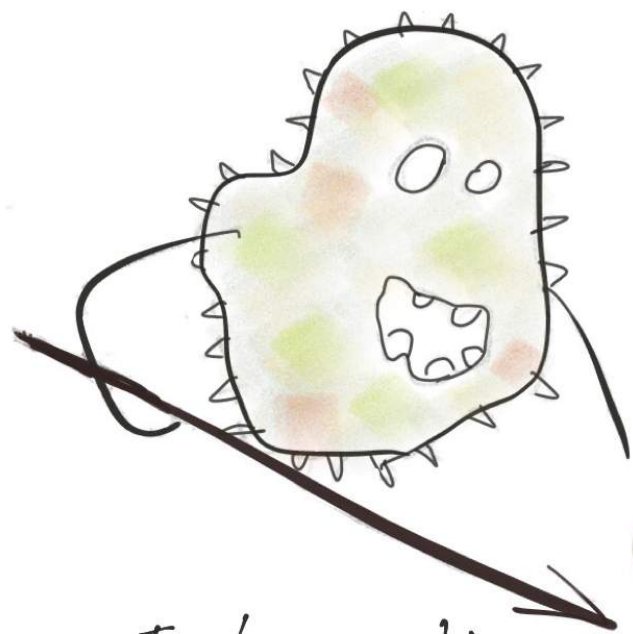


Learn how to use and
configure CI tool

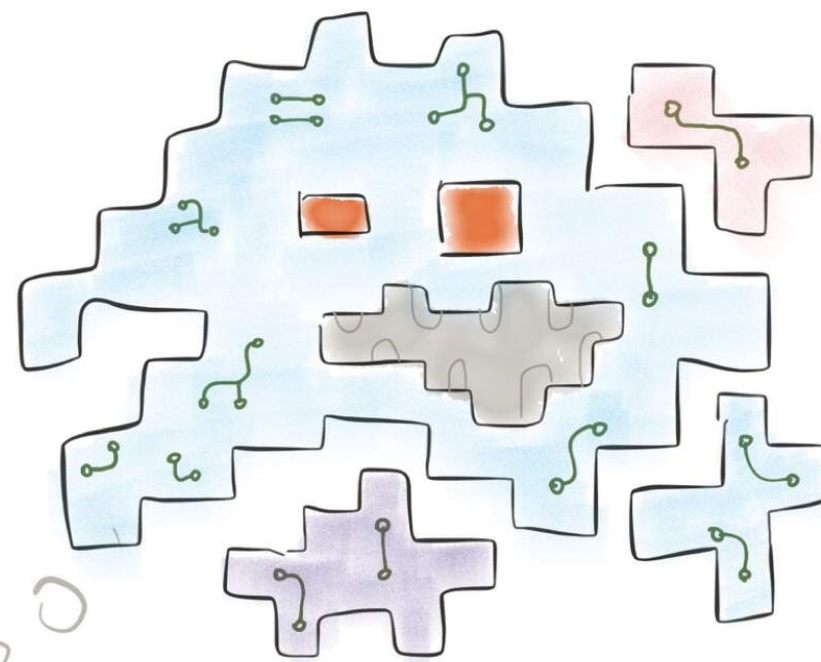


CI

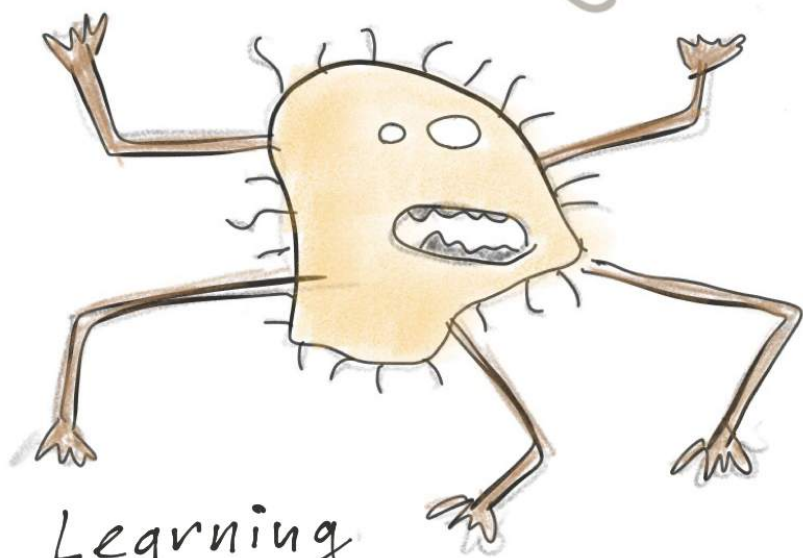
GitLab



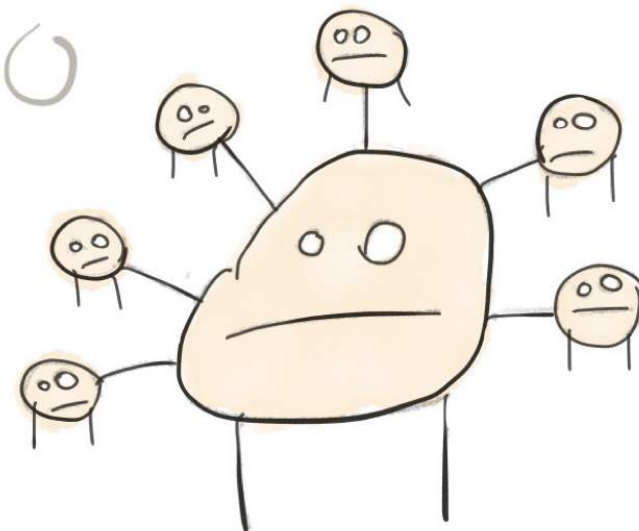
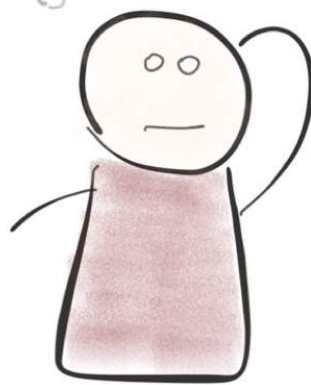
Integration



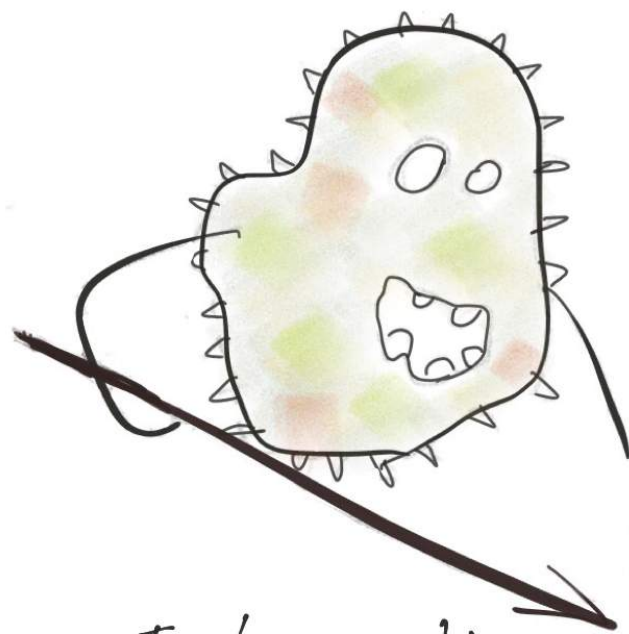
Installation



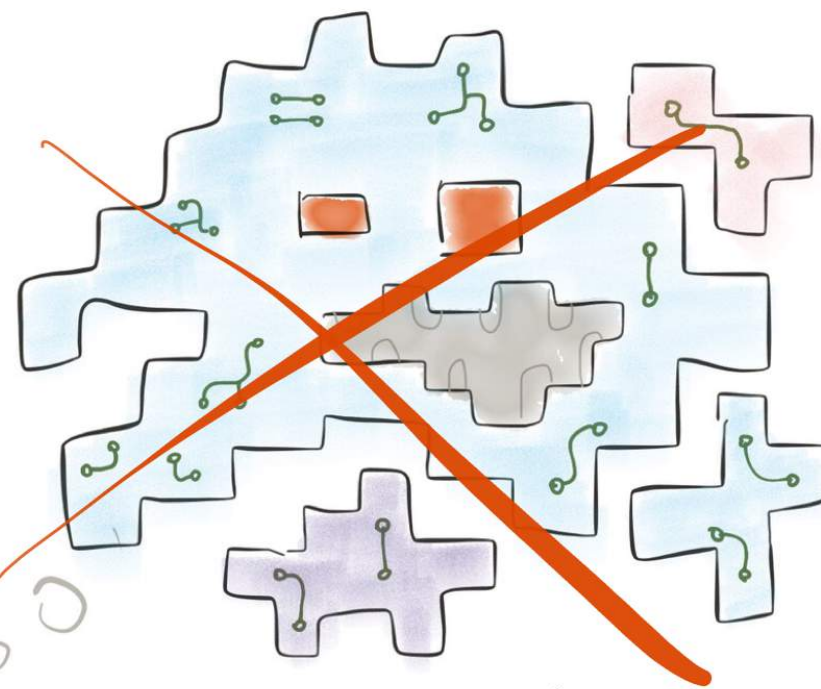
Learning



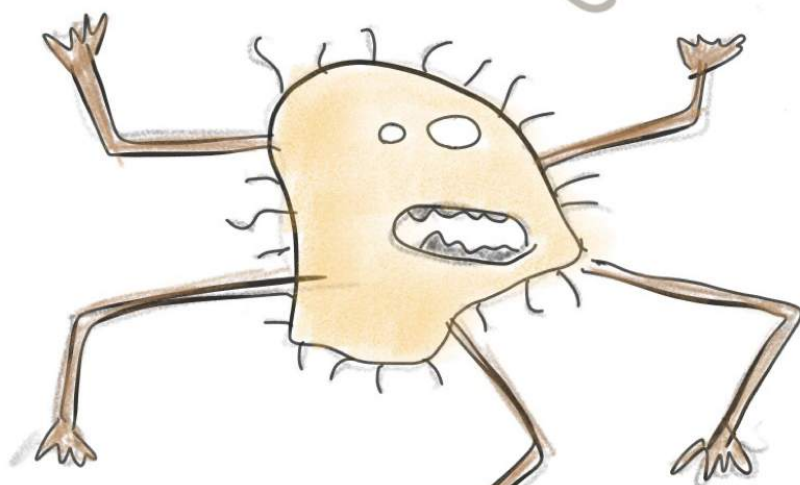
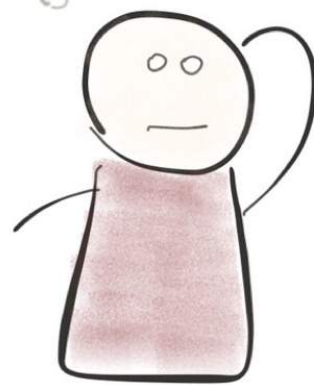
Registration



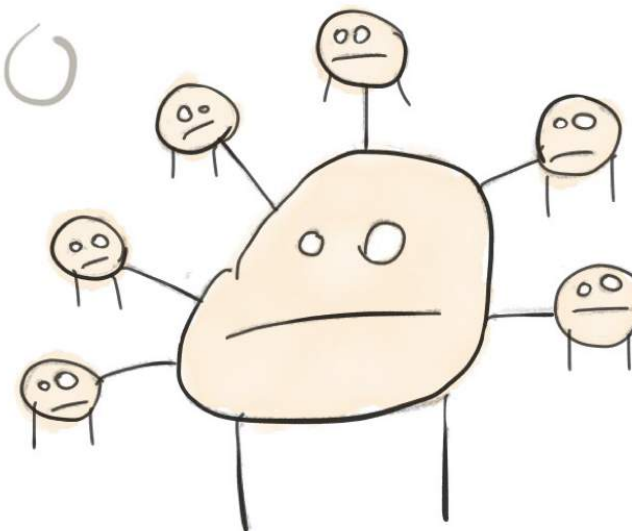
Integration



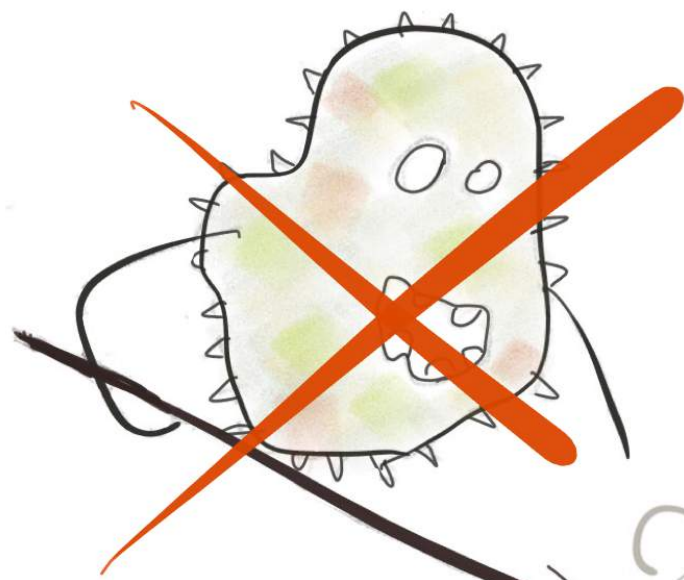
Installation



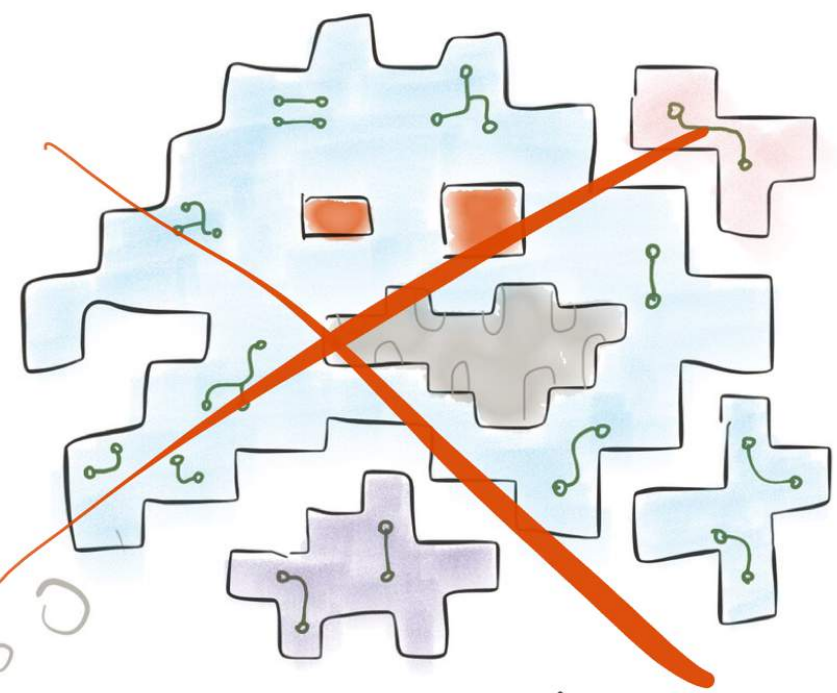
Learning



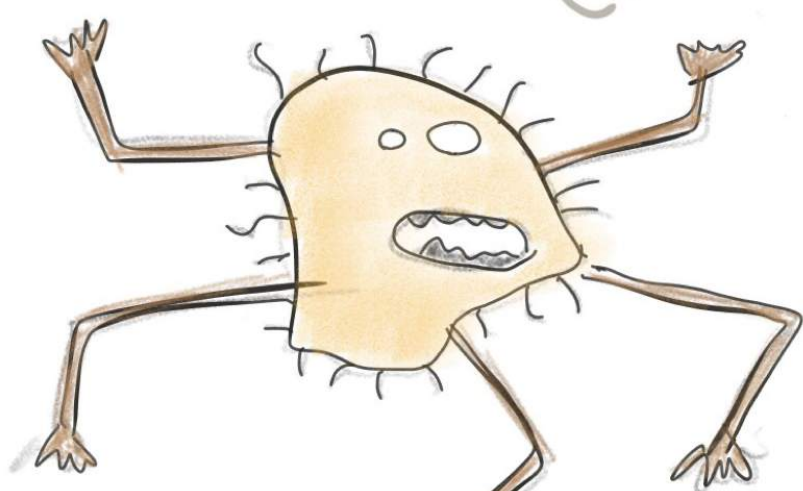
Registration



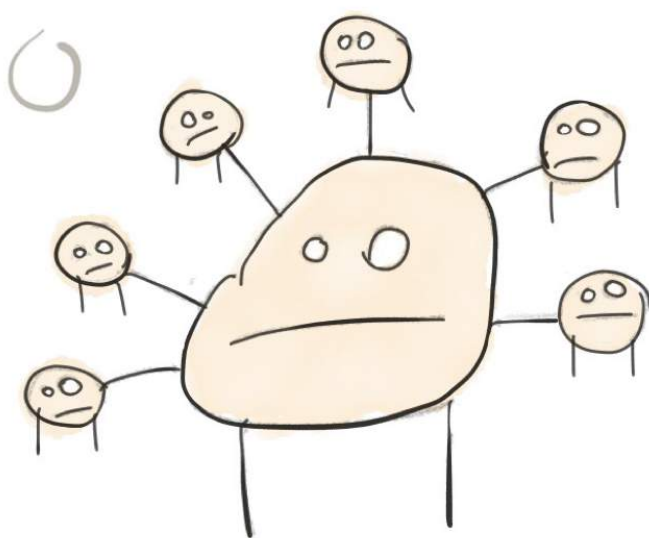
Integration



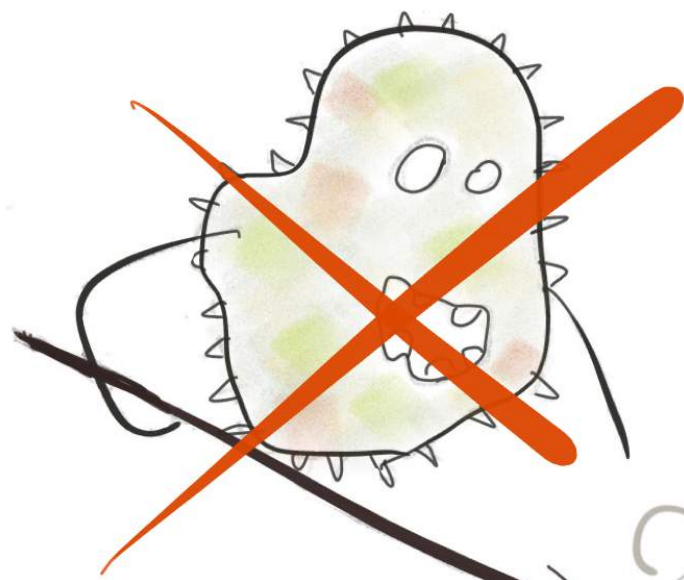
Installation



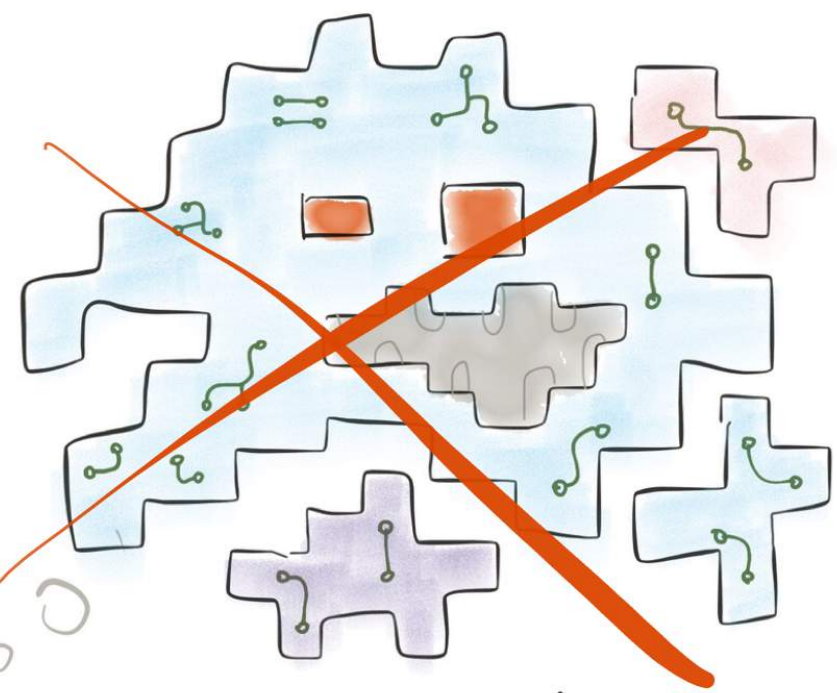
Learning



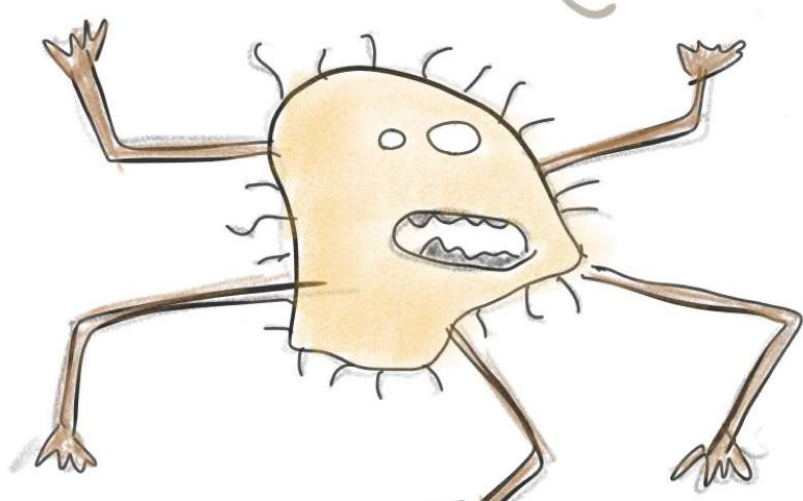
Registration



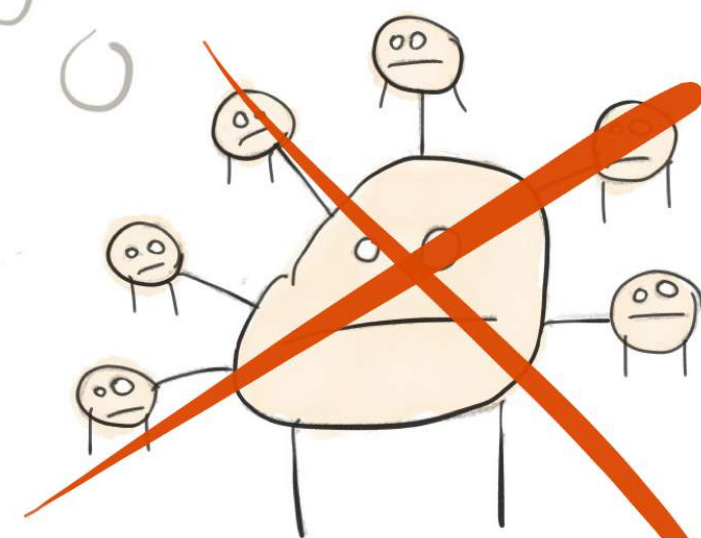
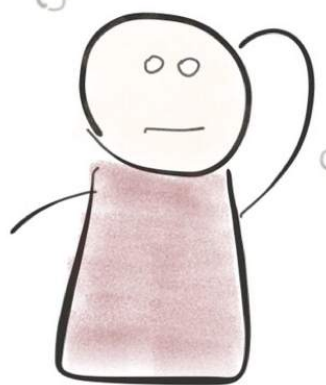
Integration



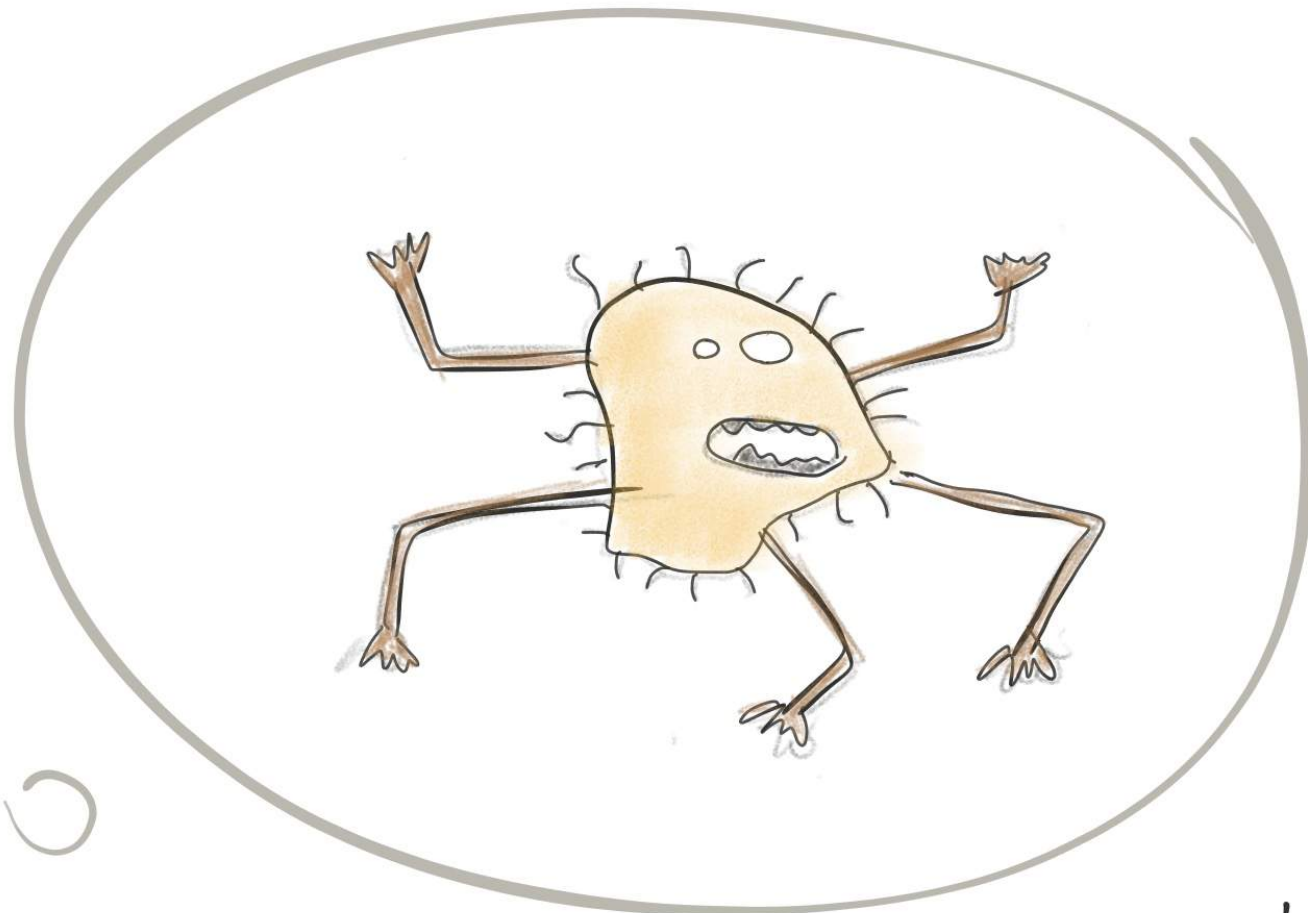
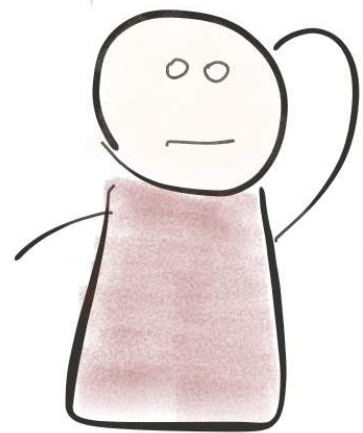
Installation



Learning



Registration



Learn how to use and
configure CI tool

CatGrep Sophisticated Technologies inc.

→ file1.txt
→ file2.txt

CatGrep Sophisticated Technologies inc.

The code is on [GitLab.com](https://gitlab.com)

Requirement #1

**Concatenation result should contain
"Hello world"**




```
cat file1.txt file2.txt | grep -q "Hello world"
```

Run first test inside CI

Run first test inside CI

`.gitlab-ci.yml`

Run first test inside CI

test:

```
script: cat file1.txt file2.txt | grep -q 'Hello world'
```

Run first test inside CI

✓ passed

Build #2346110 for commit f8a26206 from master by  @inem about an hour ago

```
gitlab-ci-multi-runner 1.3.2 (0323456)
Using Docker executor with image ruby:2.1 ...
Pulling docker image ruby:2.1 ...
Running on runner-8a2f473d-project-1398078-concurrent-0 via runner-8a2f473d-machine-1468420047-2374f4cc-digital-ocean-4gb...
Cloning repository...
Cloning into '/builds/inem/ci'...
Checking out f8a26206 as master...
$ cat file1.txt file2.txt | grep -q "Hello world"

Build succeeded
```

Run first test inside CI

✖ failed

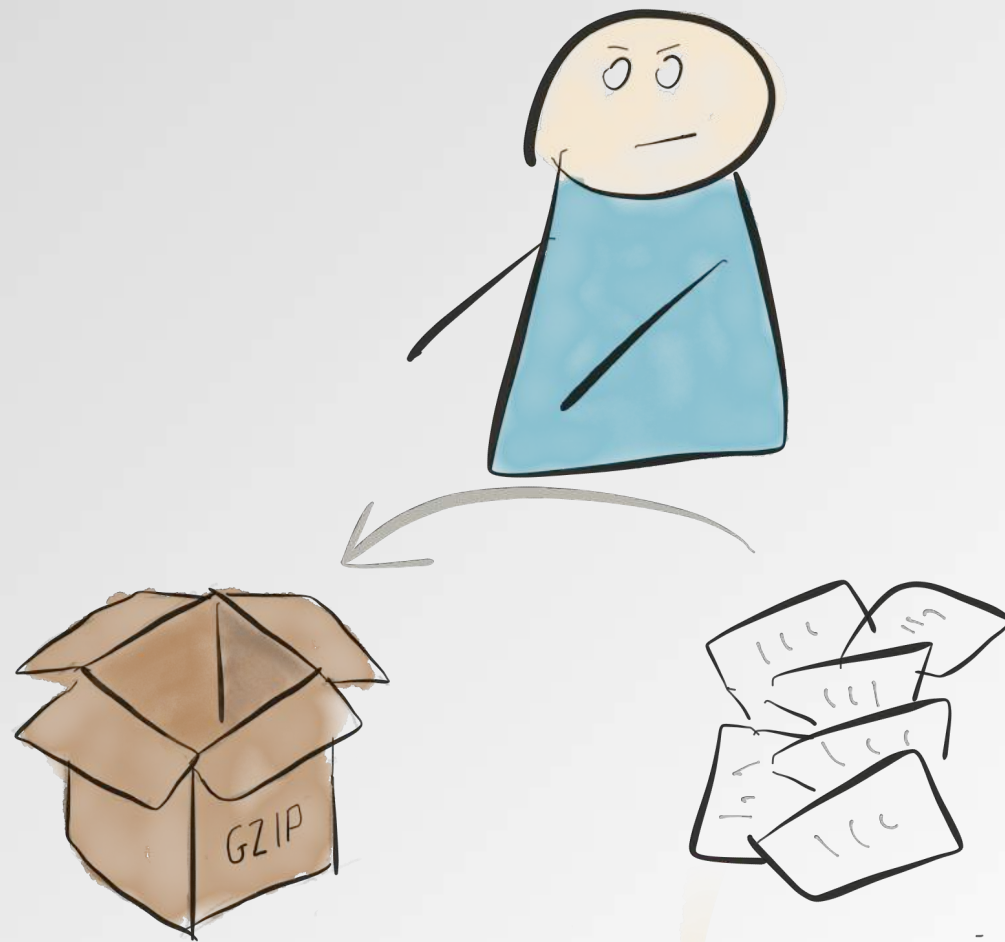
Build #2346623 for commit **b978b9f6** from **master** by  @inem about an hour ago

```
gitlab-ci-multi-runner 1.3.2 (0323456)
Using Docker executor with image ruby:2.1 ...
Pulling docker image ruby:2.1 ...
Running on runner-30dcea4b-project-1398078-concurrent-0 via runner-30dcea4b-machine-1468421193-15f1e5c5-digital-ocean-4gb...
Cloning repository...
Cloning into '/builds/inem/ci'...
Checking out b978b9f6 as master...
$ cat file1.txt file2.txt | grep -q "Hello world"

ERROR: Build failed: exit code 1
```

Requirement #2

Package code before sending it to customer



Package code

test:

```
script: cat file1.txt file2.txt | grep -q 'Hello world'
```

package:

```
script: cat file1.txt file2.txt | gzip > package.gz
```

Package code

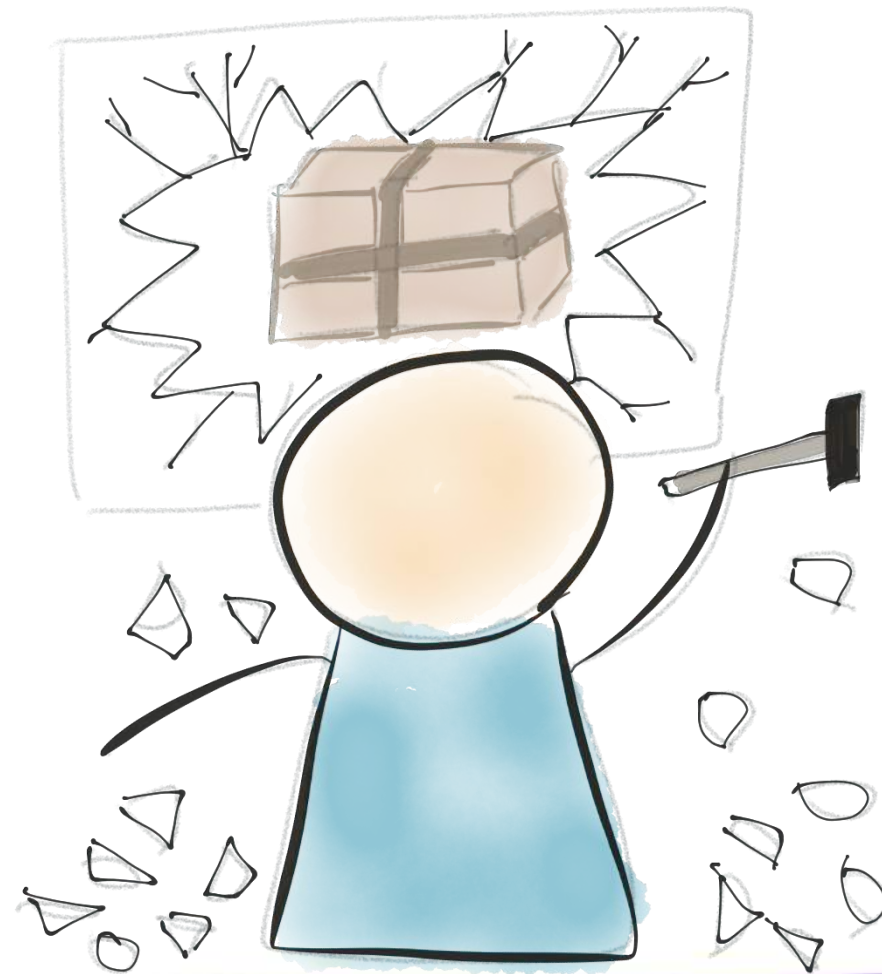
✔ test ✔ package



```
gitlab-ci-multi-runner 1.3.2 (0323456)
Using Docker executor with image ruby:2.1 ...
Pulling docker image ruby:2.1 ...
Running on runner-8a2f473d-project-1447361-concurrent-0 via runner-8a2f473d-machine-1469549805-b2f018ac-digital-ocean-4gb...
Cloning repository...
Cloning into '/builds/inem/ci2'...
Checking out be833f45 as master...
$ cat file1.txt file2.txt | grep -q 'Hello world'

Build succeeded
```

Make results of your build downloadable



Make results of your build downloadable

test:

```
script: cat file1.txt file2.txt | grep -q 'Hello world'
```

package:

```
script: cat file1.txt file2.txt | gzip > packaged.gz
```

artifacts:

paths:

- packaged.gz

Make results of your build downloadable

passed Build #2630934 for commit 0e99231d from master by @inem 2 minutes ago

test package

```
gitlab-ci-multi-runner 1.3.2 (0323456)
Using Docker executor with image ruby:2.1 ...
Pulling docker image ruby:2.1 ...
Running on runner-30dcea4b-project-1447361-concurrent-0 via runner-30dcea4b-machine-1469550348-1f5e7833-digital-ocean-4gb...
Cloning repository...
Cloning into '/builds/inem/ci2'...
Checking out 0e99231d as master...
$ cat file1.txt file2.txt | gzip > packaged.gz
Uploading artifacts...
packaged.gz: found 1 matching files
Uploading artifacts to coordinator... ok      id=2630934 responseStatus=201 Created token=7PE1aQwt
Build succeeded
```

Build artifacts

Download

Browse

Build details

Retry

Duration: 49 seconds

Finished: about a minute ago

Runner: #21099

Raw

Erase

Commit title

Update .gitlab-ci.yml

Make results of your build downloadable

test:

```
script: cat file1.txt file2.txt | grep -q 'Hello world'
```

package:

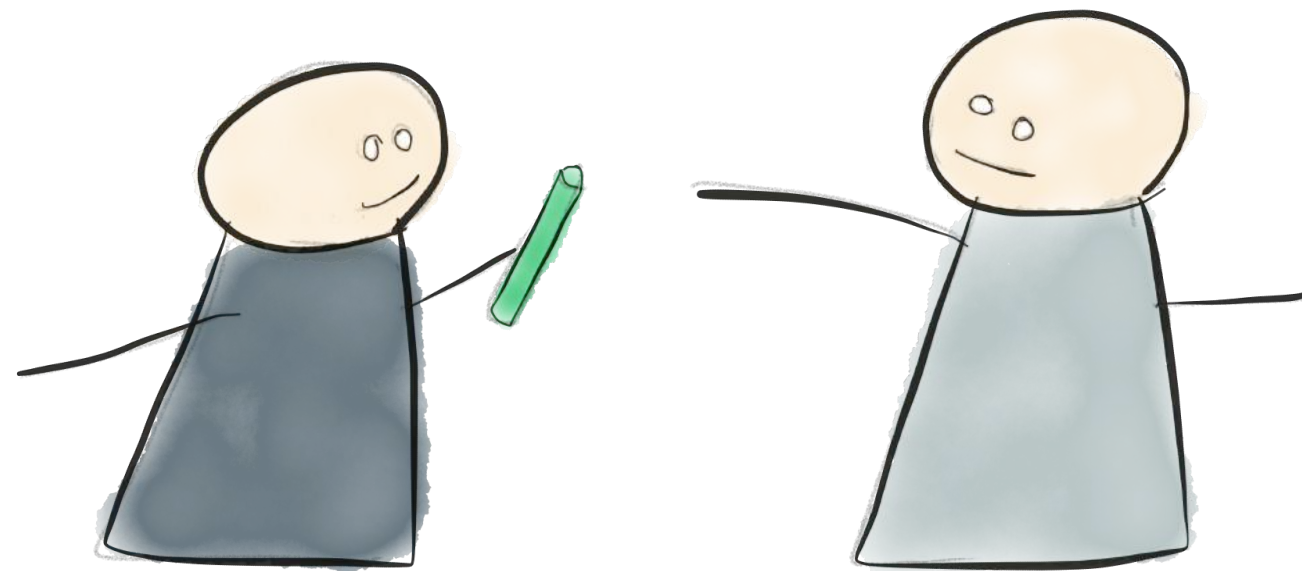
```
script: cat file1.txt file2.txt | gzip > packaged.gz
```

artifacts:

paths:

- packaged.gz

Run jobs sequentially



Run jobs sequentially

stages:

- test

- package

test:

stage: test

script: cat file1.txt file2.txt | grep -q 'Hello world'

package:

stage: package

script: cat file1.txt file2.txt | gzip > packaged.gz

artifacts:

paths:

- packaged.gz

Speeding up the build



Removing Duplication

stages:

- test
- package

test:

stage: test

script: cat file1.txt file2.txt | grep -q 'Hello world'

package:

stage: package

script: cat file1.txt file2.txt | gzip > packaged.gz

artifacts:

paths:

- packaged.gz

stages:

- compile
- test
- package

compile:

stage: compile

script: cat file1.txt file2.txt > compiled.txt

artifacts:

paths:

- compiled.txt

test:

stage: test

script: cat compiled.txt | grep -q 'Hello world'

package:

stage: package

script: cat compiled.txt | gzip > packaged.gz

artifacts:

paths:


- packaged.gz

Learning what Docker image to use

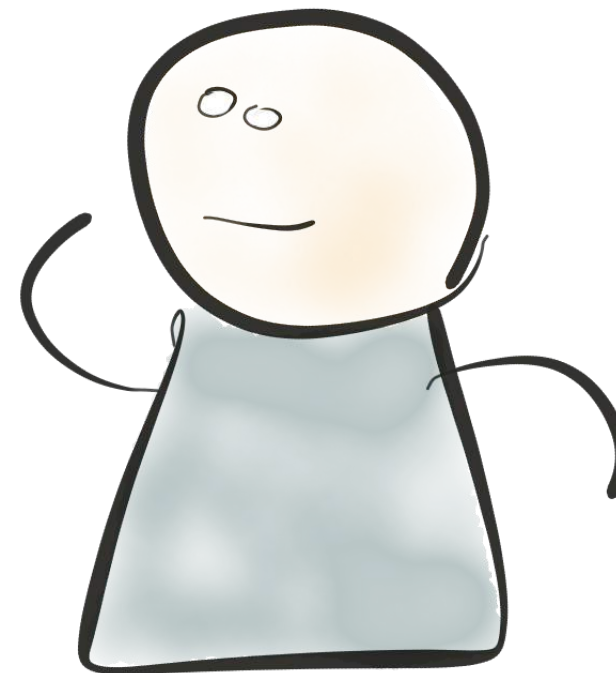
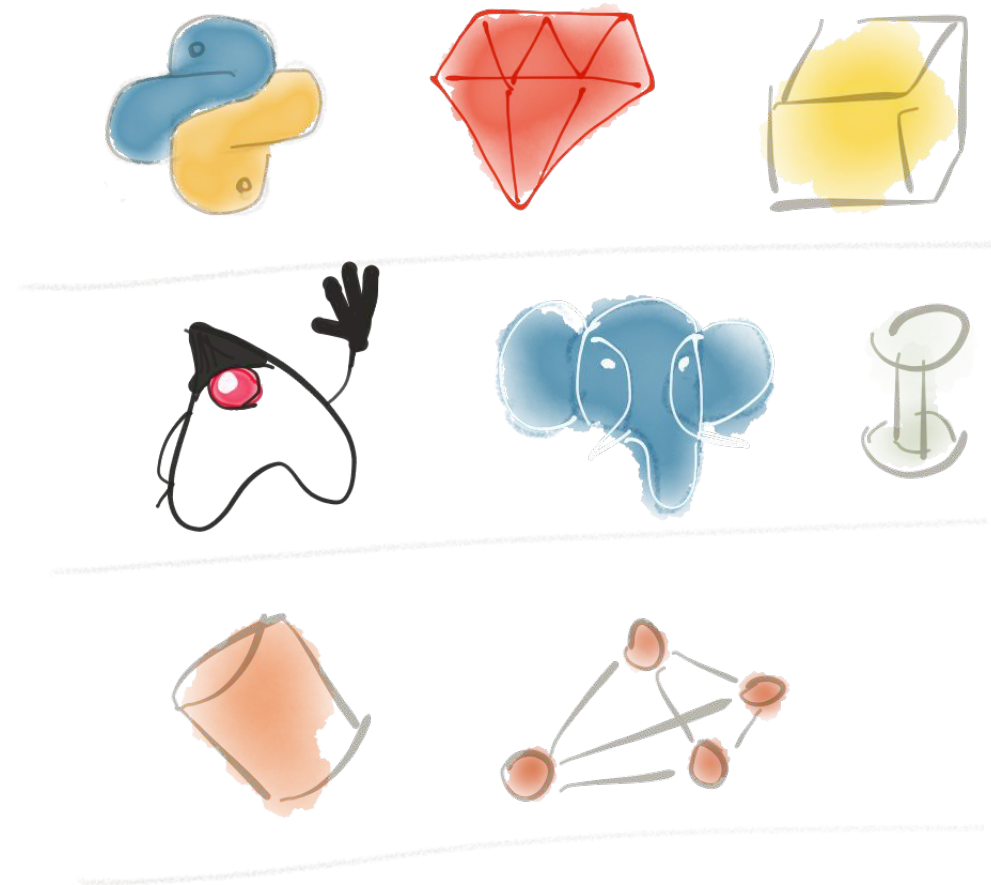
✓ compile 🔄 test

```
gitlab-ci-multi-runner 1.3.2 (0323456)
Using Docker executor with image ruby:2.1 ...
Pulling docker image ruby:2.1 ...
Running on runner-30dcea4b-project-1398078-concurrent-0 via runner-30dcea4b-machine-1469178408-7ba044d5-digital-ocean-4gb...
Cloning repository...
Cloning into '/builds/inem/ci'...
Checking out bdc26c45 as master...
$ cat file1.txt file2.txt > compiled.txt
Uploading artifacts...
compiled.txt: found 1 matching files
Uploading artifacts to coordinator... ok          id=2545753 responseStatus=201 Created token=39RXWAPw

Build succeeded
```



Learning what Docker image to use



Learning what Docker image to use



`image: alpine`

Learning what Docker image to use

```
image: alpine
```



















```
stages:
```

- compile
- test
- package

```
compile: ...
```

```
test: ...
```

Learning what Docker image to use

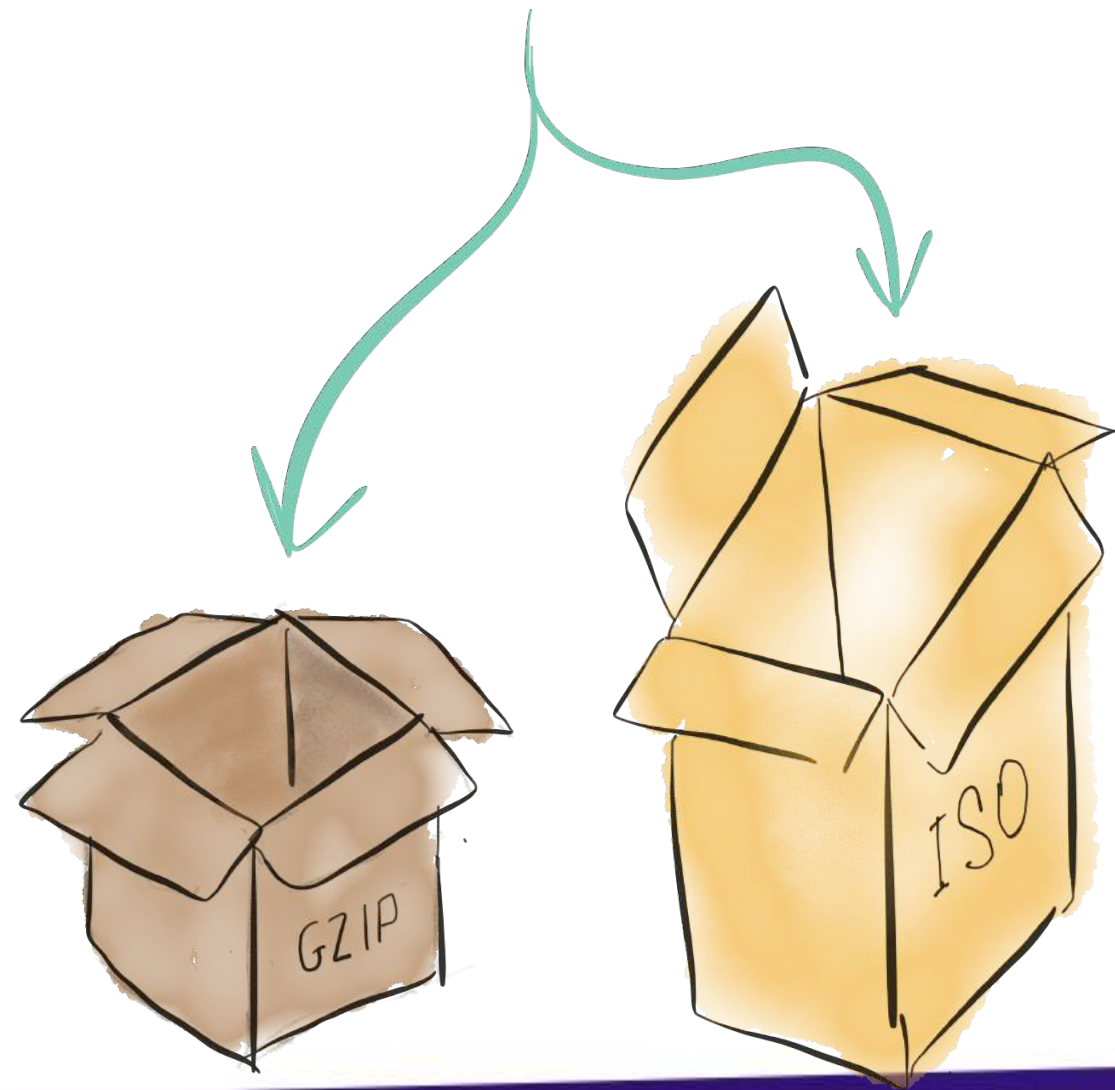
Status	Commit	Compile	Test	Package	
 passed	#3795973  master  628c2511 latest  Update .gitlab-ci.yml				 <u>00:35</u>  about a minute ago
 passed	#3792115  master  4b5604cc  Update .gitlab-ci.yml				 <u>03:27</u>  about 14 hours ago

Requirement #3

ISO instead of GZIP



Dealing with complex scenarios



Dealing with complex scenarios

script:

- apk add -U cdrkit
- mkisofs -o ./packaged.iso ./compiled.txt

image: alpine

stages:

- compile
- test
- package

compile: ...

test: ...

pack-gz:

stage: package

script: cat compiled.txt | gzip > packaged.gz

artifacts:

paths:

- packaged.gz

pack-iso:

stage: package

script:

- apk add -U cdrkit
- mkisofs -o ./packaged.iso ./compiled.txt

artifacts:

paths:

- packaged.iso

```
image: alpine
```

```
stages:
```

- compile
- test
- package

```
compile: ...
```

```
test: ...
```

```
pack-gz:
```

```
stage: package
```

```
script: cat compiled.txt | gzip > packaged.gz
```

```
artifacts:
```

```
paths:
```

- packaged.gz

```
pack-iso:
```

```
stage: package
```

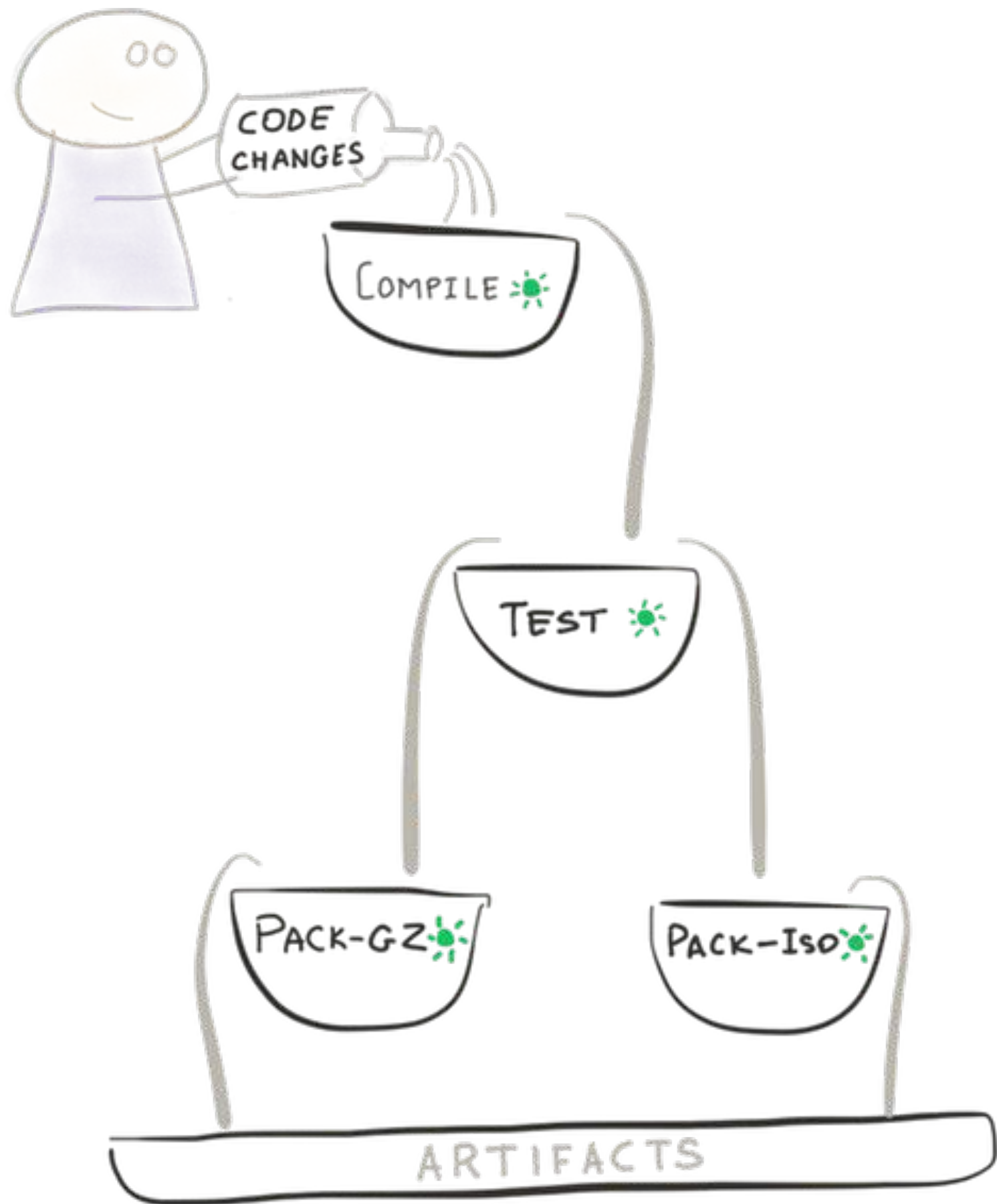
```
script:
```

- apk add -U cdrkit
- mkisofs -o ./packaged.iso ./compiled.txt

```
artifacts:
```

```
paths:
```

- packaged.iso



- 3 stages
- passing files between stages
 - downloadable artifacts
- optimized execution time
 - custom pipeline



@inemation

ivan@gitlab.com

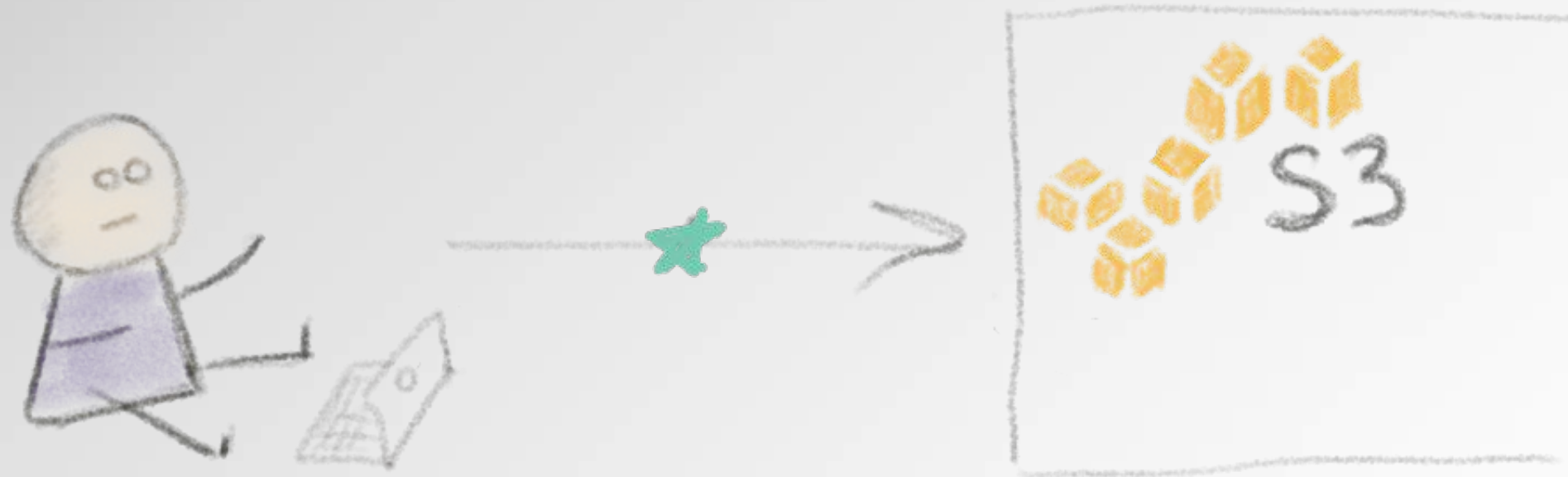
→ bit.ly/gitlab-ci1

→ bit.ly/gitlab-ci2

- Environment variables
- Environments (Staging, Production)
 - GitLab Pages
 - Roillback
 - Manual deployment

Requirement #4

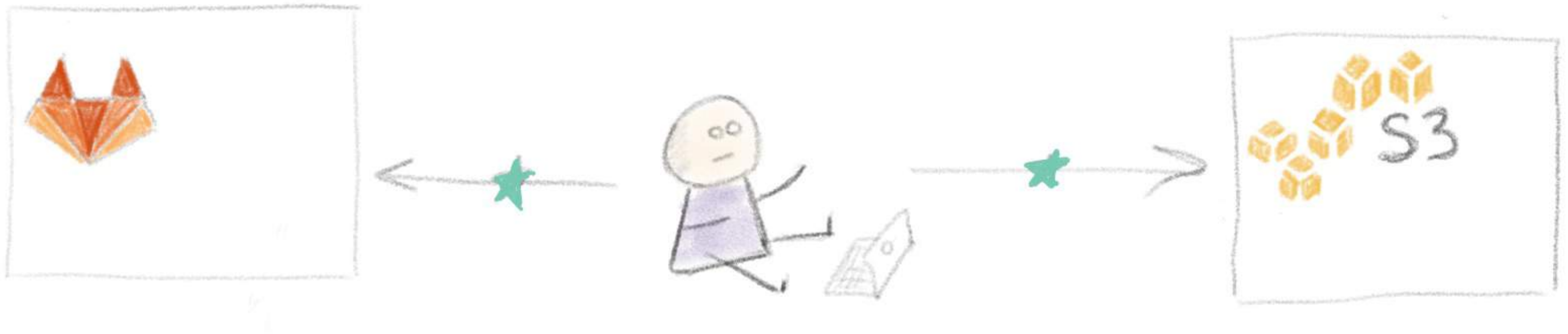
Publish a website, containing packages



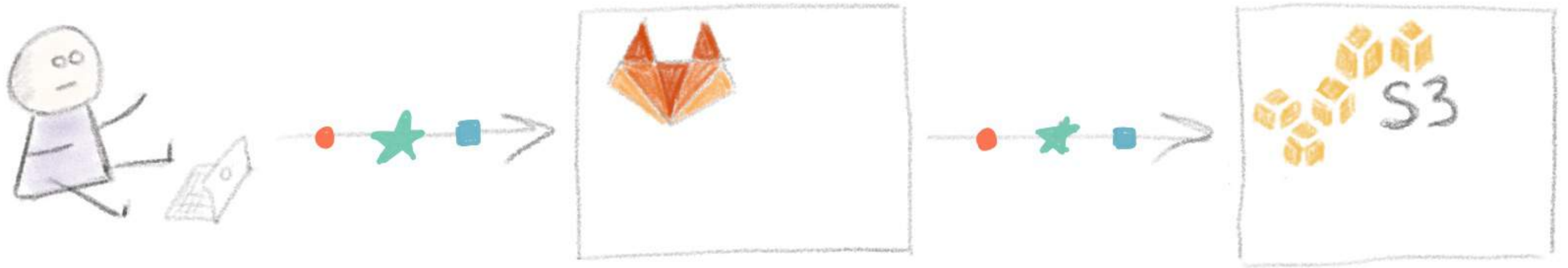
Publish a website

```
aws s3 cp ./ s3://yourbucket/ --recursive
```

Publish a website



Publish a website



First Automated Deployment

- **awscli** can be installed using **pip**
- **pip** goes together with **python**

First Automated Deployment

```
s3:  
  image: python  
  stage: deploy  
  script:  
  - pip install awscli  
  - aws s3 cp ./ s3://yourbucket/ --recursive
```

First Automated Deployment

AWS_ACCESS_KEY_ID and **AWS_SECRET_ACCESS_KEY**

First Automated Deployment

variables:

AWS_ACCESS_KEY_ID: "AKIAIOSFODNN7EXAMPLE"

AWS_SECRET_ACCESS_KEY: "wJalrXUtnFEMI/K7MDENG/bPxrFiCYEXAMPLEKEY"

s3:

image: python:latest

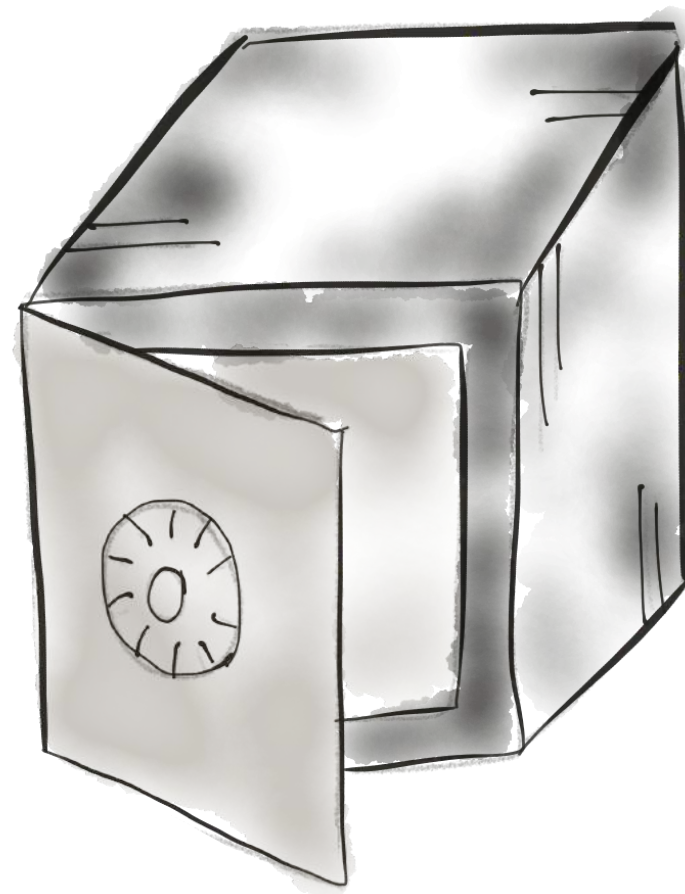
stage: deploy

script:

- pip install awscli

- aws s3 cp ./ s3://yourbucket/ --recursive

Keeping Secret Things Secret



Keeping Secret Things Secret

Settings → Variables

These variables will be set to environment by the runner.

So you can use them for passwords, secret keys or whatever you want.

The value of the variable can be visible in build log if explicitly asked to do so.

Add a variable

Key

Value



Keeping Secret Things Secret

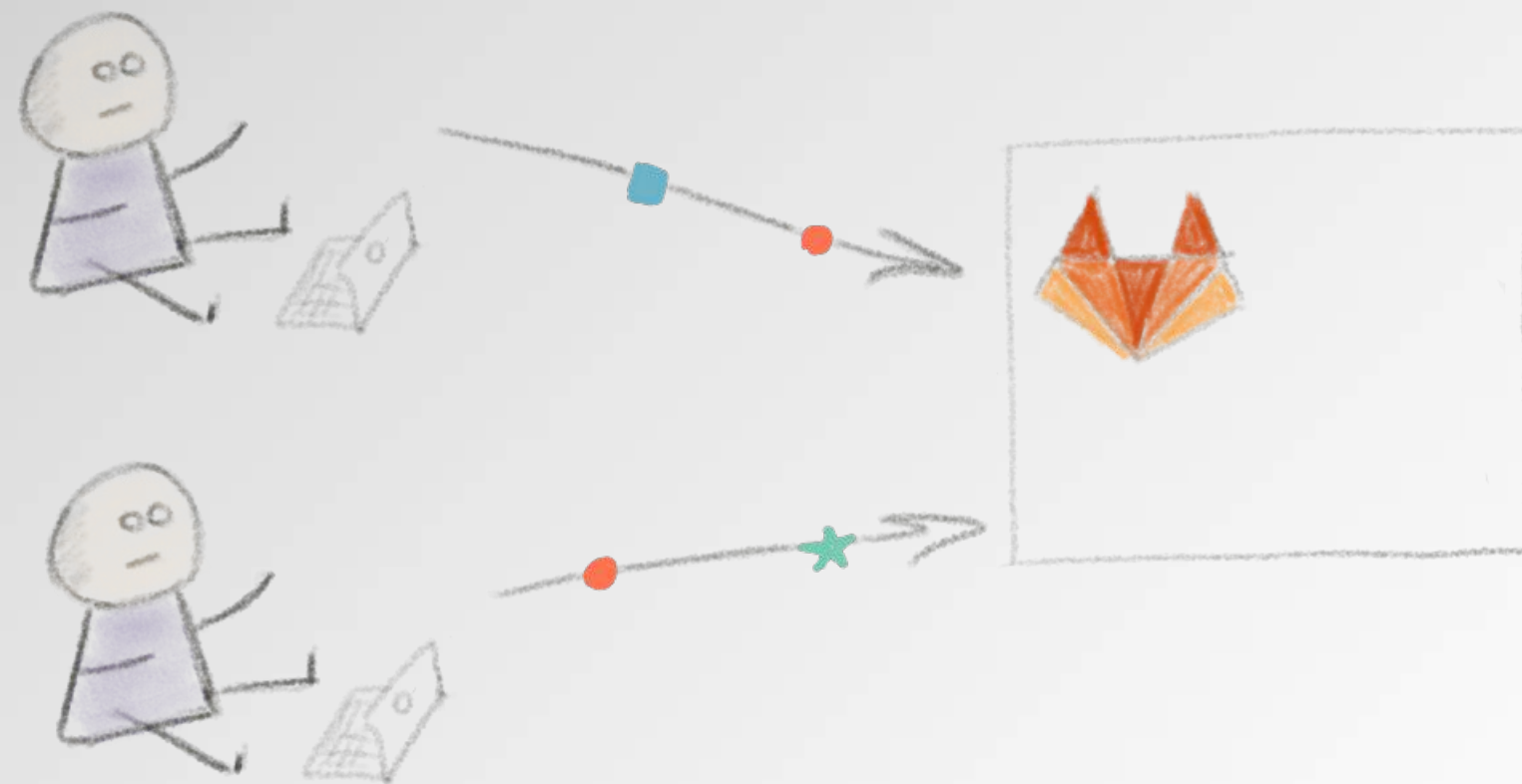
```
s3:  
  image: python  
  stage: deploy  
  script:  
  - pip install awscli  
  - aws s3 cp ./ s3://yourbucket/ --recursive
```


Keeping Secret Things Secret

```
Running with gitlab-ci-multi-runner 1.4.2 (bcc1794)
Using Docker executor with image python:latest ...
Pulling docker image python:latest ...
Running on runner-8a2f473d-project-1481102-concurrent-0 via runner-8a2f473d-machine-1471200526-cead9c82-digital-ocean-4gb...
Cloning repository...
Cloning into '/builds/inem/deploy'...
Checking out f9cb2128 as master...
$ pip install awscli
Collecting awscli
  Downloading awscli-1.10.56-py2.py3-none-any.whl (986kB)
Collecting rsa<=3.5.0,>=3.1.2 (from awscli)
  Downloading rsa-3.4.2-py2.py3-none-any.whl (46kB)
Collecting s3transfer<0.2.0,>=0.1.0 (from awscli)
  Downloading s3transfer-0.1.1-py2.py3-none-any.whl (49kB)
Collecting colorama<=0.3.7,>=0.2.5 (from awscli)
  Downloading colorama-0.3.7-py2.py3-none-any.whl
Collecting docutils>=0.10 (from awscli)
  Downloading docutils-0.12-py3-none-any.whl (508kB)
Collecting botocore==1.4.46 (from awscli)
  Downloading botocore-1.4.46-py2.py3-none-any.whl (2.5MB)
Collecting pyasn1>=0.1.3 (from rsa<=3.5.0,>=3.1.2->awscli)
  Downloading pyasn1-0.1.9-py2.py3-none-any.whl
Collecting python-dateutil<3.0.0,>=2.1 (from botocore==1.4.46->awscli)
  Downloading python_dateutil-2.5.3-py2.py3-none-any.whl (201kB)
Collecting jmespath<1.0.0,>=0.7.1 (from botocore==1.4.46->awscli)
  Downloading jmespath-0.9.0-py2.py3-none-any.whl
Collecting six>=1.5 (from python-dateutil<3.0.0,>=2.1->botocore==1.4.46->awscli)
  Downloading six-1.10.0-py2.py3-none-any.whl
Installing collected packages: pyasn1, rsa, docutils, six, python-dateutil, jmespath, botocore, s3transfer, colorama, awscli
Successfully installed awscli-1.10.56 botocore-1.4.46 colorama-0.3.7 docutils-0.12 jmespath-0.9.0 pyasn1-0.1.9 python-dateutil-2.5.3 rsa-3.4.2 s3transfer-0.1.1 six-1.10.0
$ aws s3 cp ./ s3://gitlab-deploy/ --recursive
upload: ./index.html to s3://gitlab-deploy/index.html
Build succeeded
```

Requirement #5

Two developers on the project



Two developers on the project

s3:

image: python:latest

stage: deploy

script:

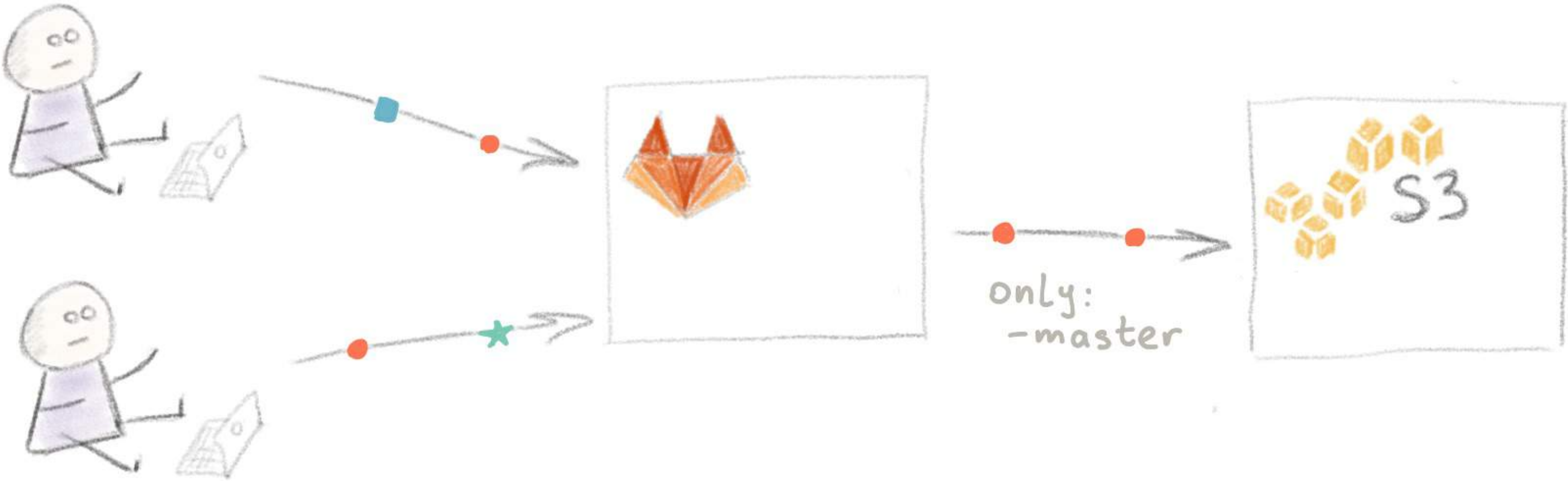
- pip install awscli

- aws s3 cp ./ s3://yourbucket/ --recursive

only:

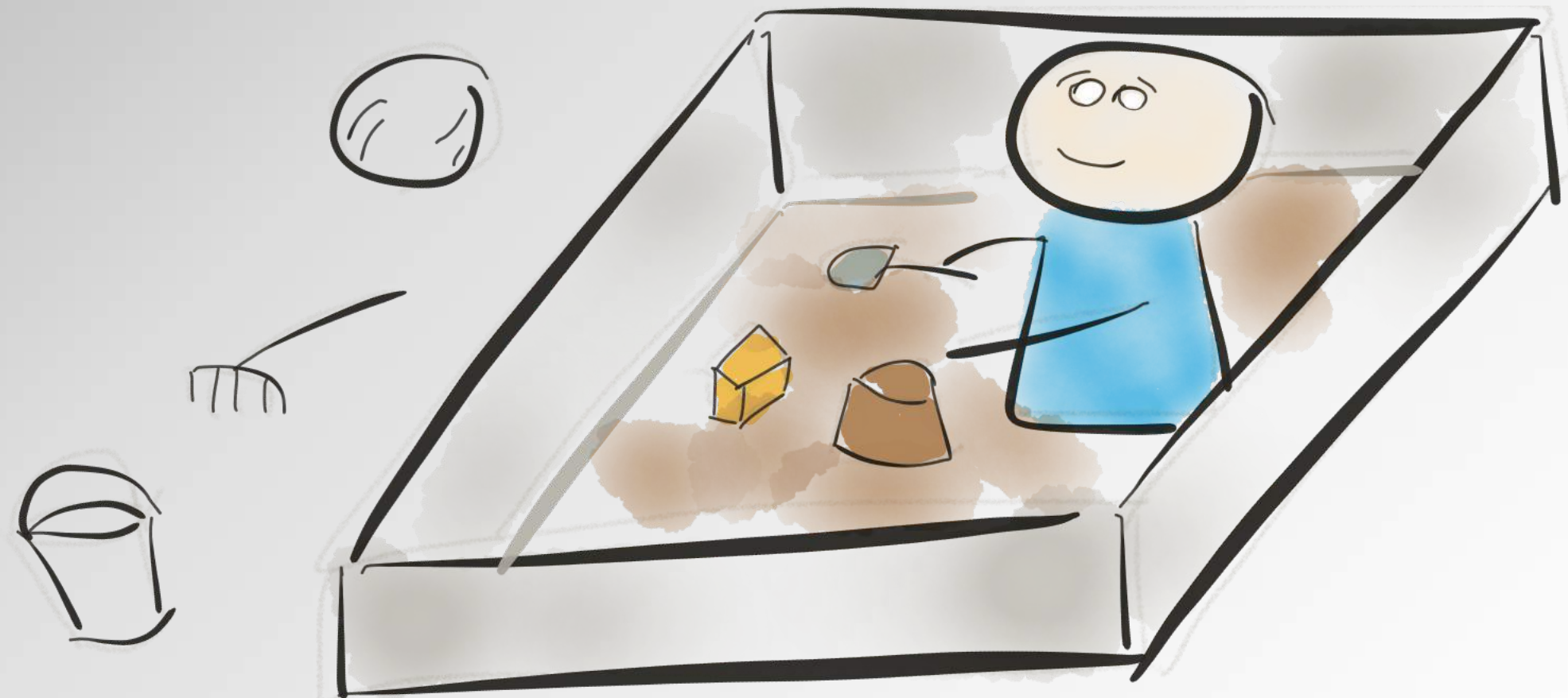
- master

Two developers on the project



Requirement #6

**Need a separate place
for testing**



Separate place for testing

GitLab Pages

Host website using GitLab Pages

- your job should be named "**pages**"
- put your files into "**public**" folder
- specify "**artifacts**" section with this "**public**" folder

Host website using GitLab Pages

<http://<username>.gitlab.io/<projectname>>

Host website using GitLab Pages

pages:

stage: deploy

image: alpine

script:

- mkdir -p ./public && cp *.* ./public/

artifacts:

paths:

- public

except:

- master

Separate place for testing

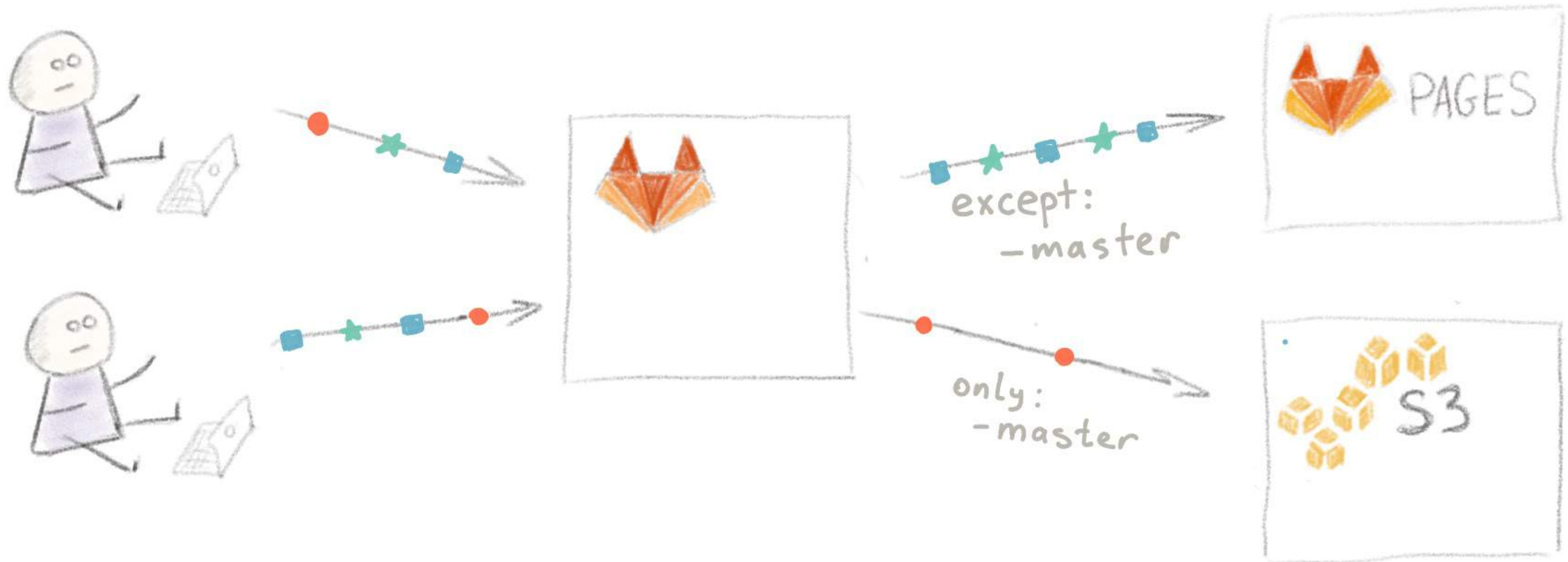
s3:

```
image: python
stage: deploy
script:
- pip install awscli
- aws s3 cp ./ s3://yourbucket/ --recursive
only:
- master
```

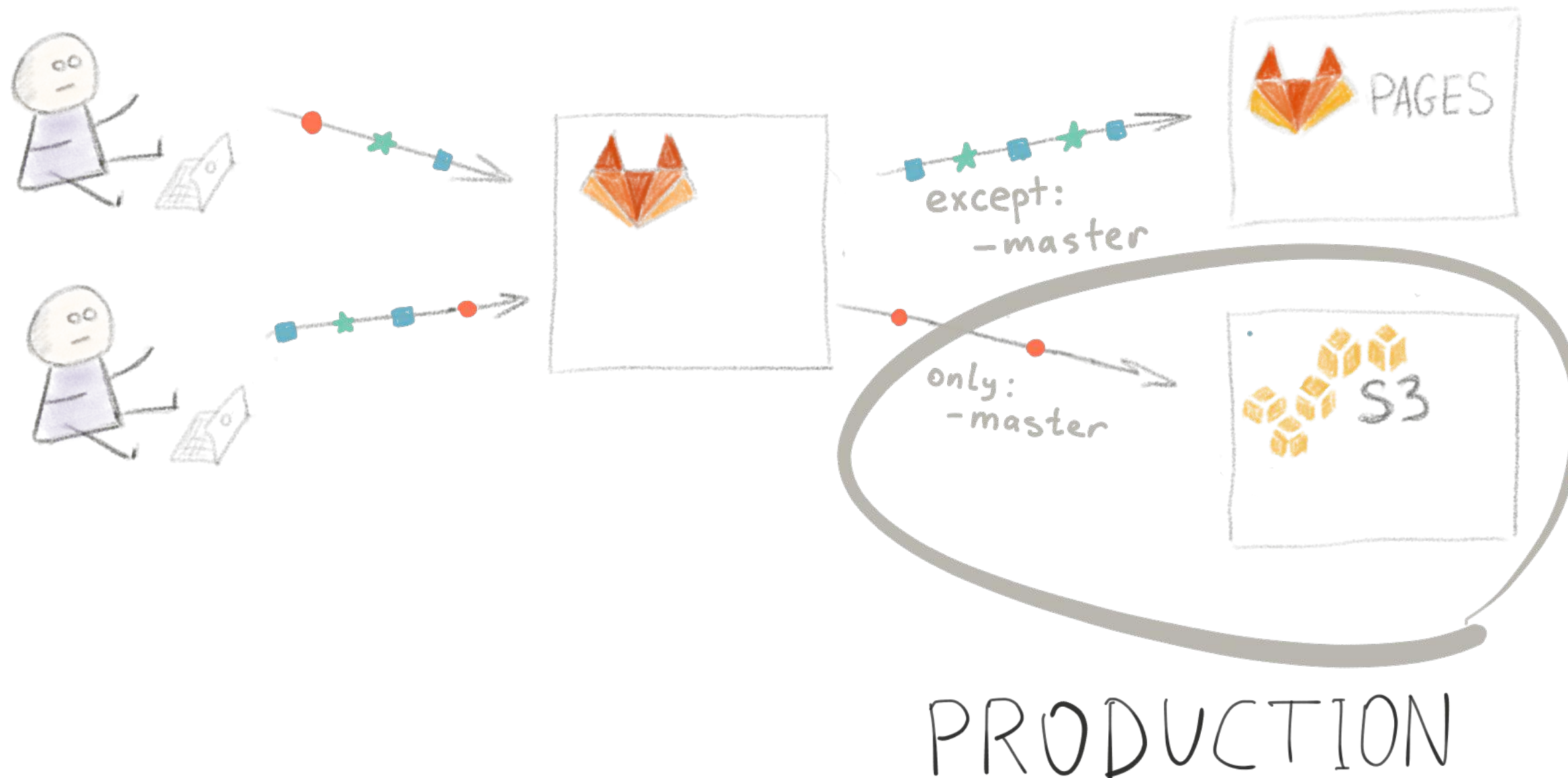
pages:

```
image: alpine
stage: deploy
script:
- mkdir -p ./public && cp *.* ./public/
artifacts:
  paths:
  - public
except:
- master
```

Separate place for testing

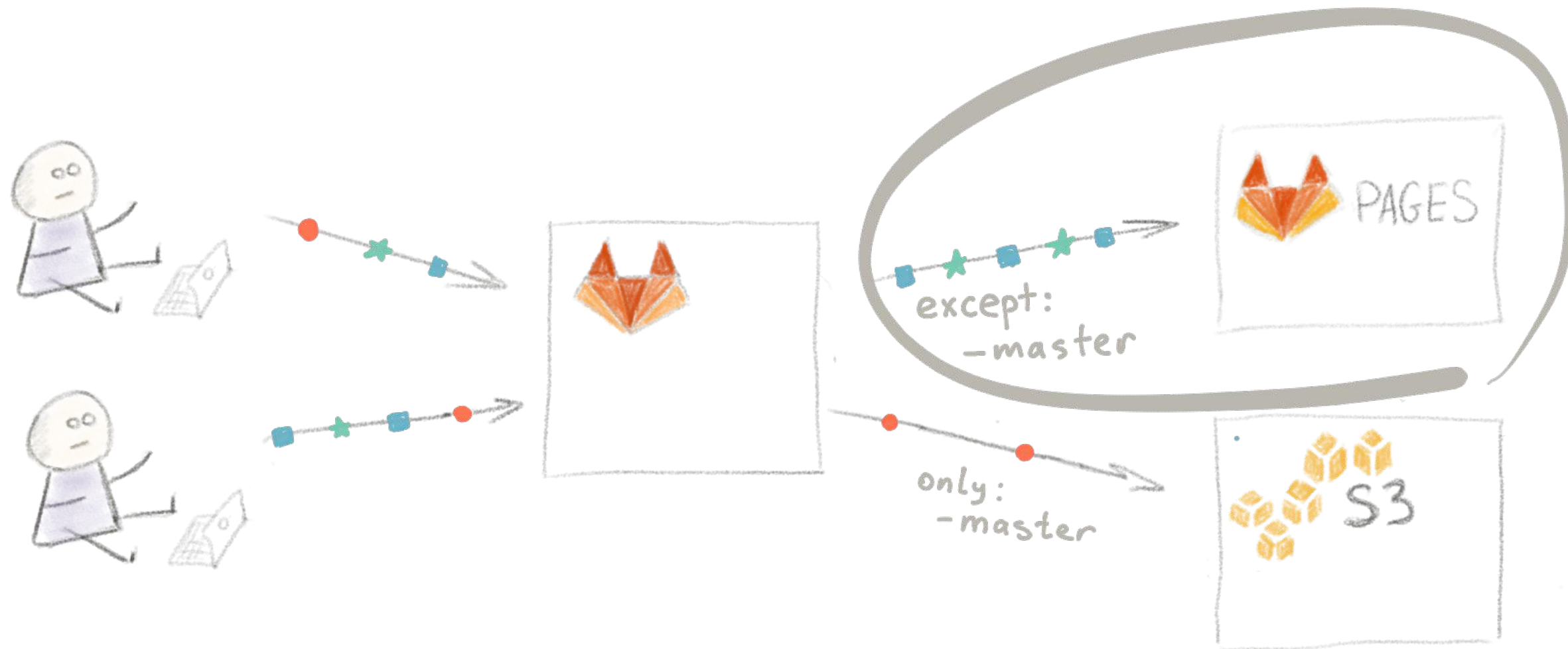


Separate place for testing



Separate place for testing

STAGING



s3:

environment: production

image: python:latest

stage: deploy

script:

- pip install awscli
- aws s3 cp ./ s3://\$S3_BUCKET_NAME/ --recursive

only:

- master

pages:

image: alpine:latest

environment: staging

stage: deploy

script:

- mkdir -p ./public && cp *.* ./public/

artifacts:

paths:

- public

except:

- master

Using Environments

Pipelines Builds **Environments**

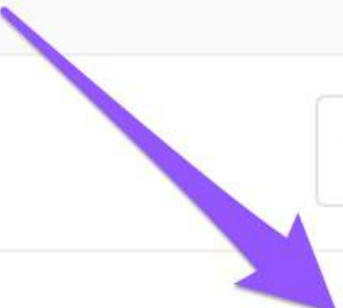
New environment

Environment	Last deployment	Date
production	master · 9e09ec35 added environments	2 minutes ago
staging	experiment · 9e09ec35 added environments	5 minutes ago

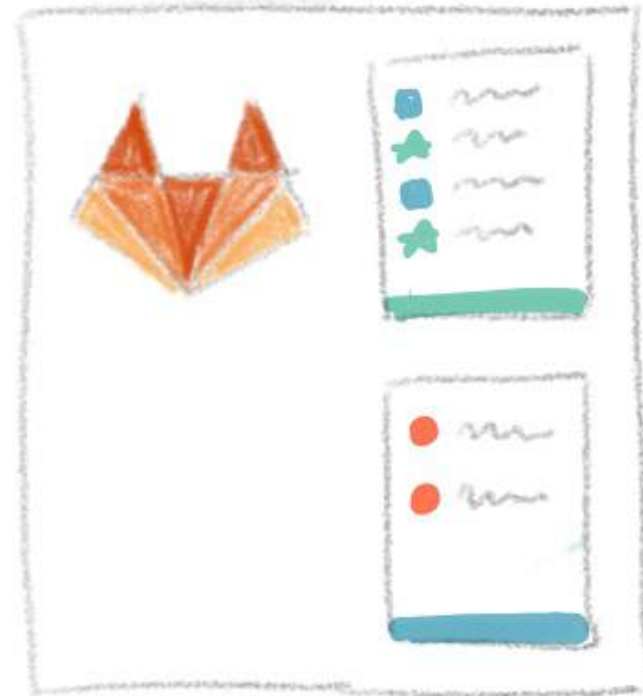
Using Environments

Production

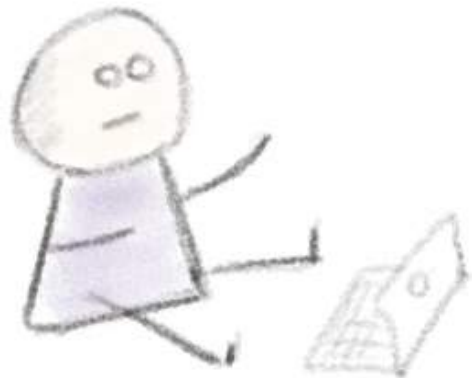
ID	Commit	Build	Date	
#10	master · e9964eb3 production	deploy to production (#3061414)	5 days ago	<input type="button" value="Re-deploy"/>
#8	master · 9e09ec35 added environments	deploy to production (#3011226)	6 days ago	<input type="button" value="Rollback"/>



Using Environments



except:
-master

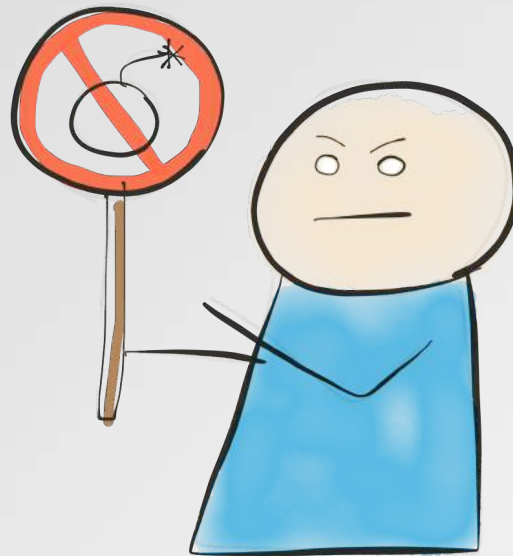


only:
-master



Requirement #7

Do not mess up production



Do not mess up production

s3:

image: python:latest

stage: deploy

script:

- pip install awscli

- aws s3 cp ./ s3://yourbucket/ --recursive

only:

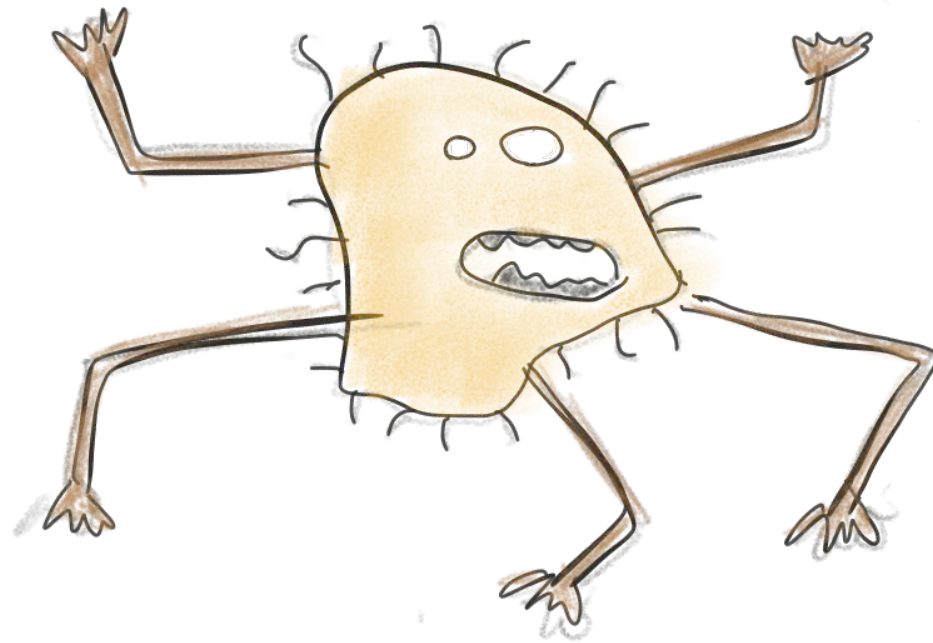
- master

when: manual

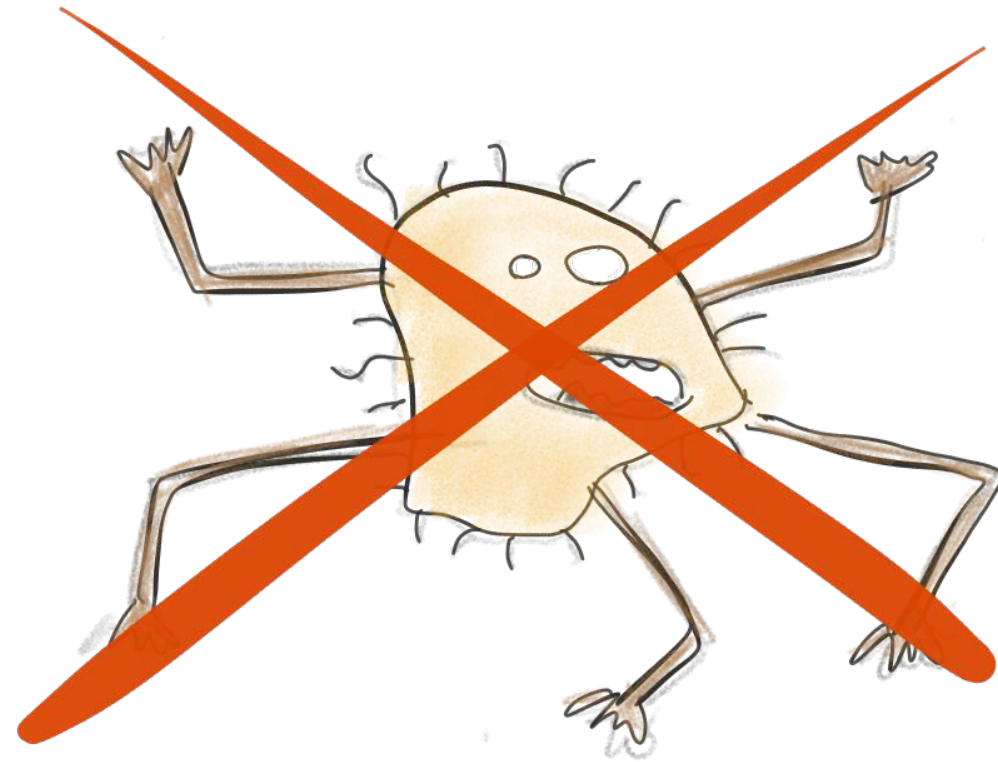
Do not mess up production

Status	Commit	Stage	Name	
⌚ skipped	#3170577 🔗 master ↻ 7e3f7a6e	test	deploy to production	





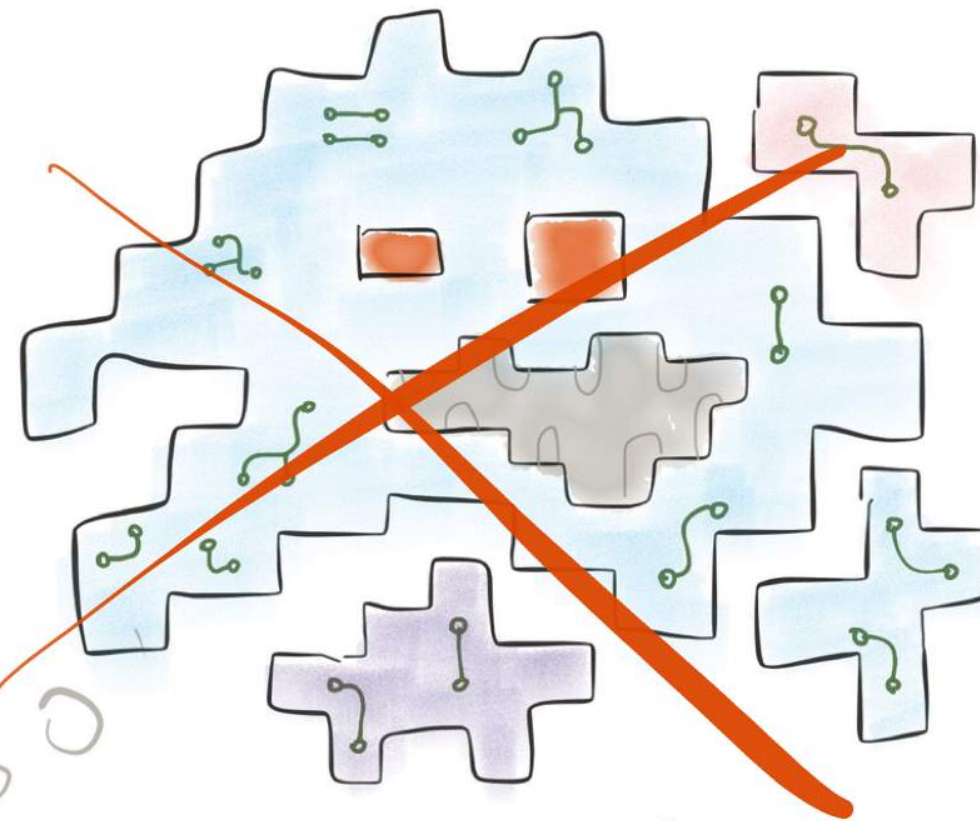
Learn how to use and
configure CI tool



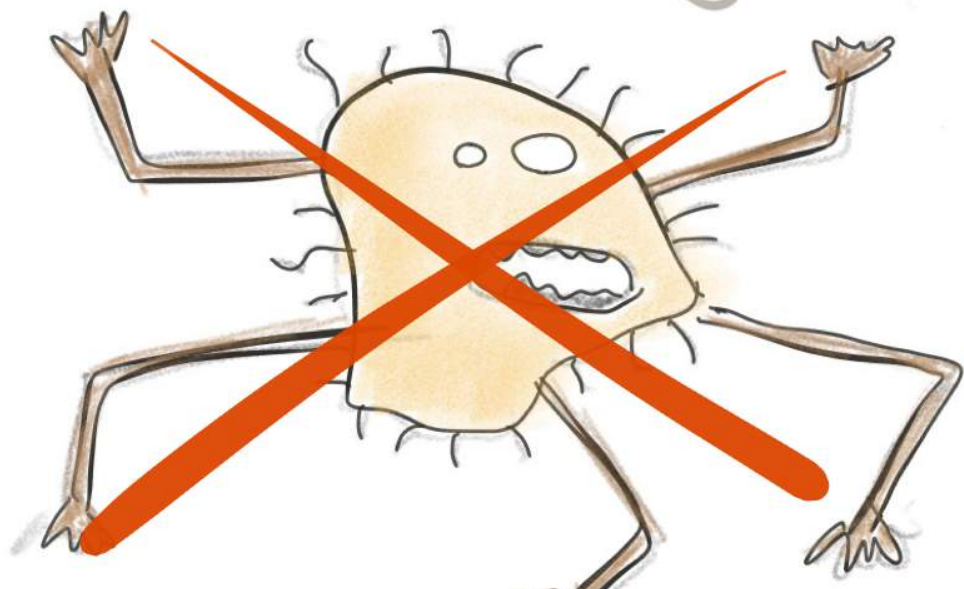
Learn how to use and
configure CI tool



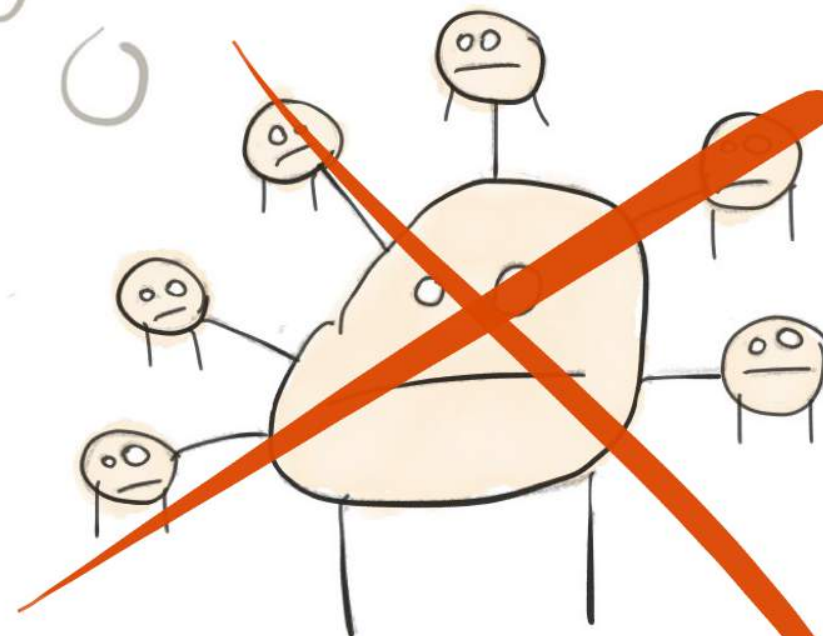
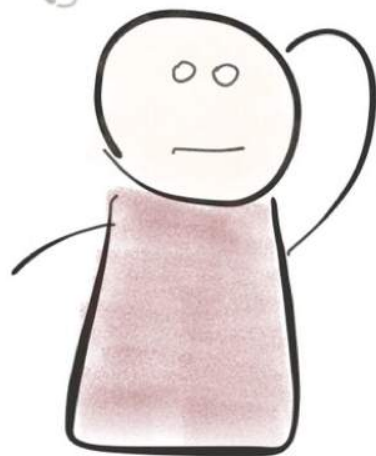
Integration



Installation



Learning



Registration



Questions?

@inem

ivan@gitlab.com

- bit.ly/gitlab-ci1
- bit.ly/gitlab-ci2