

CONTINUOUS INTEGRATION

& DEPLOYMENT

Improve project deployment by letting
your team focus on code quality.



GitLab

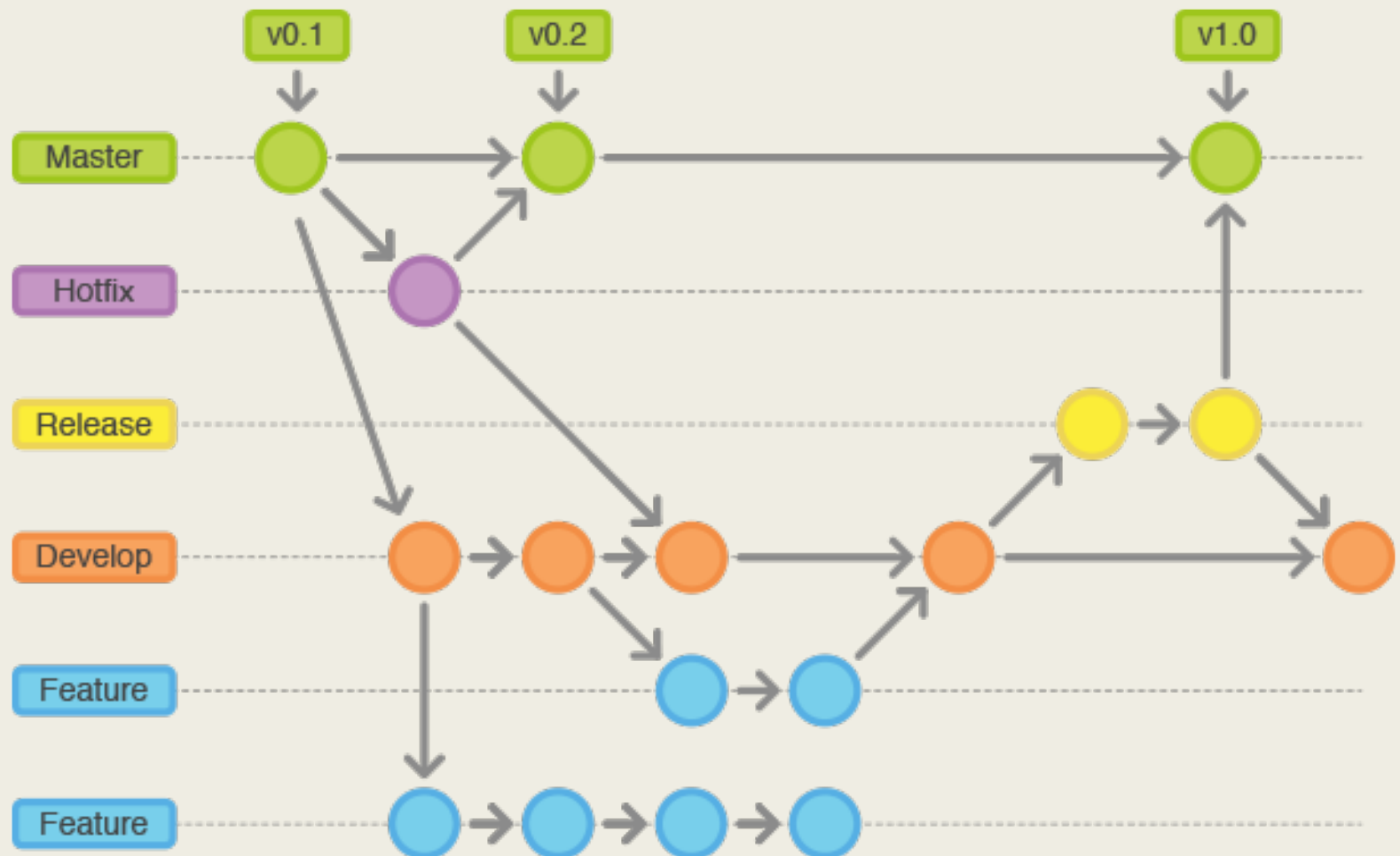


git

What is git ?

- A version control system (VCS)
- It is distributed:
 - *Local & Remote (optional) directory*
- Letting developers contribute together:
 - *Keep track of changes*
 - *Ability to rollback to previous versions*
 - *Sync code between fellow developers*
 - *Develop features independently*

git workflow



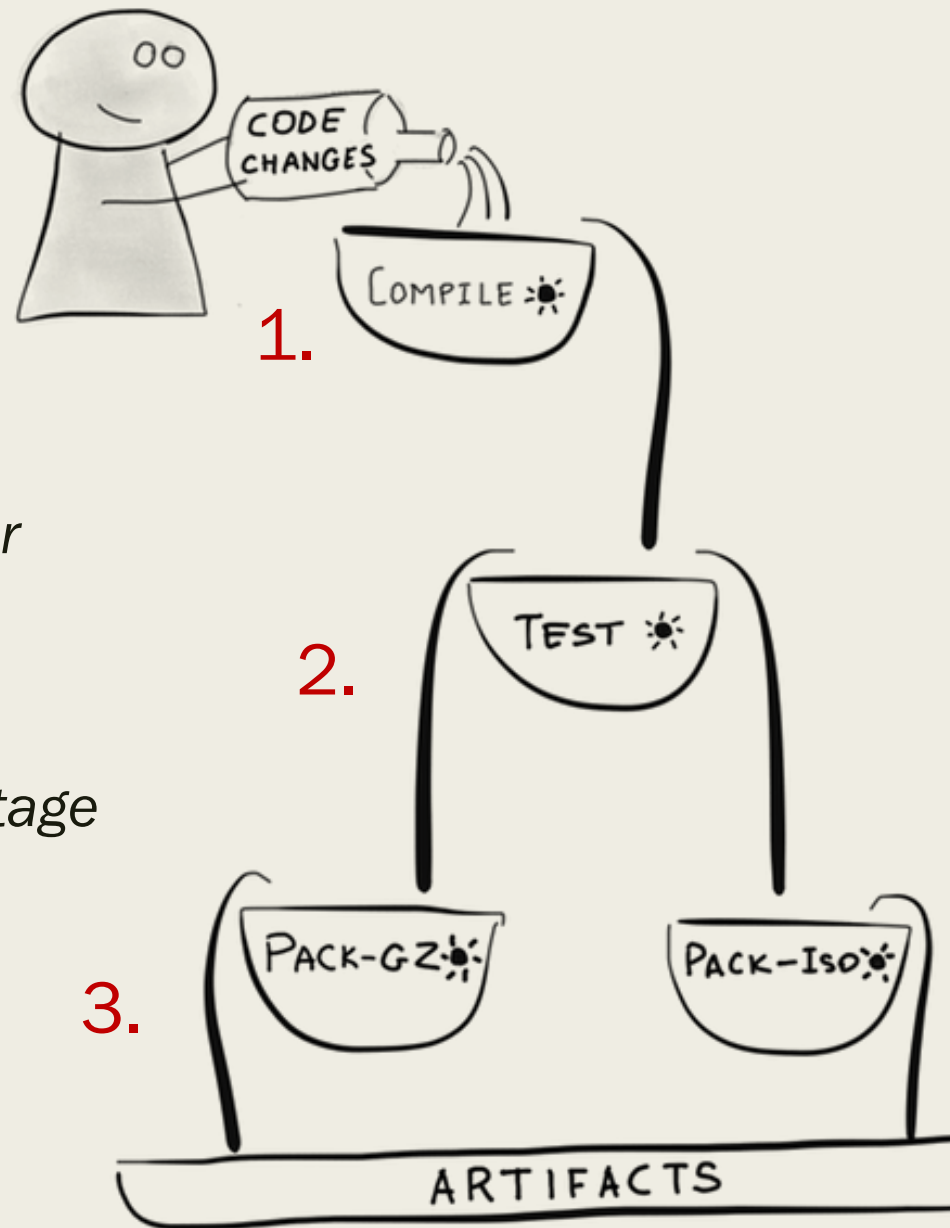
Continuous Integration (CI)

- Integrates very well with  **git**
- Enables automated builds:
 - *Detect errors quickly and easily*
 - *Lets developers focus on code quality*
 - *Spend more time on adding features*
- Continuous deployment (CD)
 - *Releasing every good build to end-users*
 - *Release software at a higher pace*



GitLab CI/CD

- Define your stages:
 - *Are executed in given order*
- Define your jobs:
 - *Multiple jobs per stage*
 - *Parallel execution within stage*





GitLab CI/CD

```
Skipping Git submodules setup
$ source /mnt/various/profile/cigene.sh
$ module load anaconda3/2.4.1
$ pip install --user -r requirements.txt
Requirement already satisfied: nose>=1.3.7 in /mnt/various/local/genome/packages/anaconda3/2.4.1/lib/python3.5/site-pack
Requirement already satisfied: py>=1.4.32 in /home/gitlab-runner/.local/lib/python3.5/site-packages (from -r requirem
Requirement already satisfied: pytest>=3.0.6 in /home/gitlab-runner/.local/lib/python3.5/site-packages (from -r requir
Requirement already satisfied: coverage>=4.3.4 in /home/gitlab-runner/.local/lib/python3.5/site-packages (from -r requi
Requirement already satisfied: lxml>=3.7.3 in /home/gitlab-runner/.local/lib/python3.5/site-packages (from -r requirem
Requirement already satisfied: python-libsaml>=5.13.0 in /home/gitlab-runner/.local/lib/python3.5/site-packages (from -r
Requirement already satisfied: scipy>=0.18.1 in /home/gitlab-runner/.local/lib/python3.5/site-packages (from -r require
Requirement already satisfied: numpy>=1.12.0 in /home/gitlab-runner/.local/lib/python3.5/site-packages (from -r require
Requirement already satisfied: cobra>=0.5.11 in /home/gitlab-runner/.local/lib/python3.5/site-packages (from -r require
Requirement already satisfied: pandas>=0.19.2 in /home/gitlab-runner/.local/lib/python3.5/site-packages (from -r require
Requirement already satisfied: setuptools in /mnt/various/local/genome/packages/anaconda3/2.4.1/lib/python3.5/site-packa
nts.txt (line 3))
Requirement already satisfied: six in /mnt/various/local/genome/packages/anaconda3/2.4.1/lib/python3.5/site-packages (f
Requirement already satisfied: pytz>=2011k in /mnt/various/local/genome/packages/anaconda3/2.4.1/lib/python3.5/site-pack
Requirement already satisfied: python-dateutil>=2 in /mnt/various/local/genome/packages/anaconda3/2.4.1/lib/python3.5/si
$ cd src/suite
$ python3 pytest_multirunner.py -m ../../models -c -a v log-json=../../public/json/model_performance.json log-commit=$(g
===== test session starts =====
platform linux -- Python 3.5.1, pytest-3.0.6, py-1.4.33, pluggy-0.4.0 -- /local/genome/packages/anaconda3/2.4.1/bin/pyth...
cachedir: .cache
rootdir: /home/gitlab-runner/builds/96b3a26b/0/digisal/mod-mtask/src/suite, inifile:
plugins: cov-2.4.0
collecting ... collected 19 items
```

passed Pipeline #7851775 triggered

Improved test result mes

...readme updated with 'How to: Add t

4 jobs from dev in 27 seconds (queued for 1 second)

9d990837 ...

Pipeline Jobs 4

Test

code

Validate

structure

Release

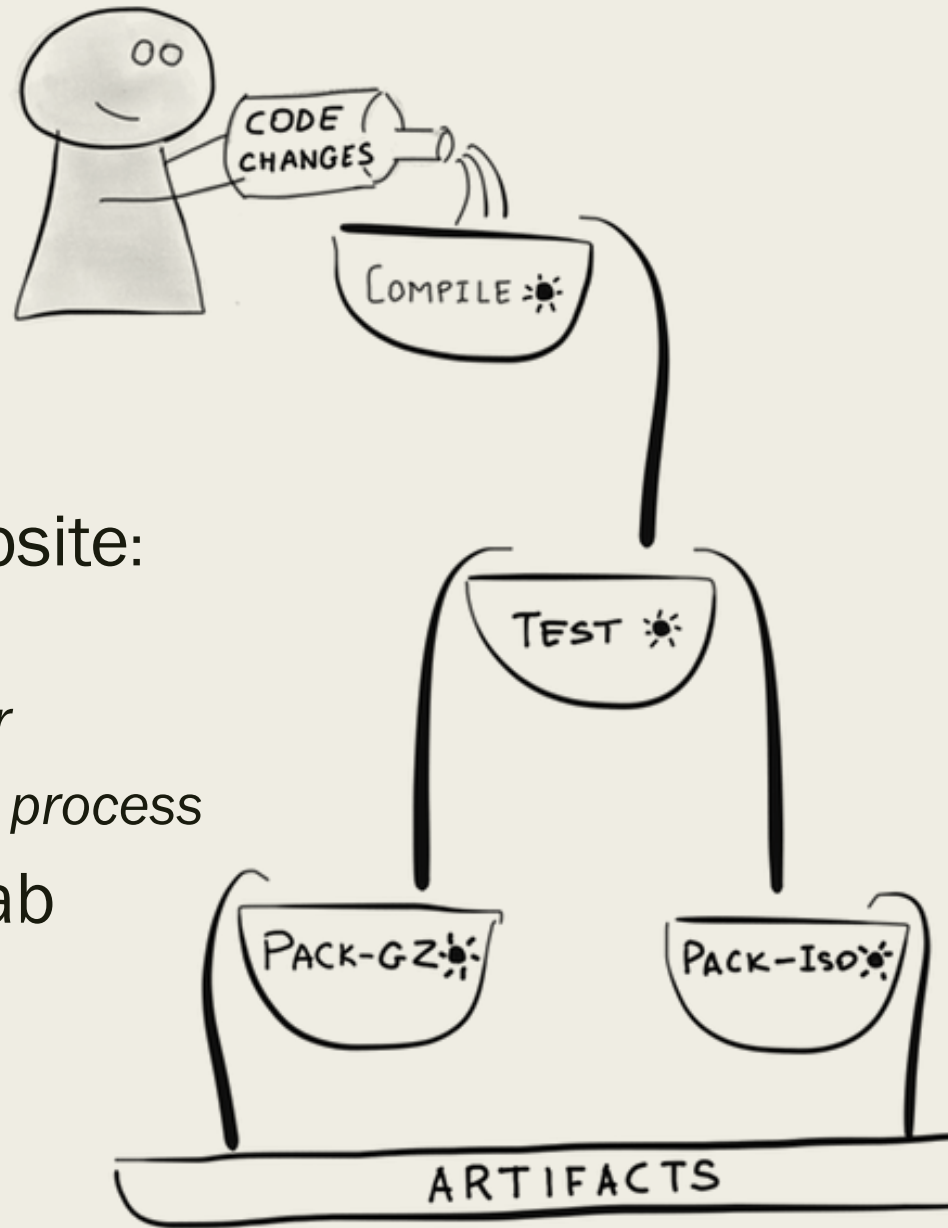
pages

Deploy

pages:deploy



GitLab Pages



- Specified as CI job
- Deploy project to website:
 - *Display project results*
 - *Possibility to use generator*
 - *Give user insight on CI/CD process*
- Host for free on GitLab



GitLab Pages

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Pipeline Jobs 4

Test	Validate	Release	Deploy
code	structure	pages	pages:deploy

MOD-MTASK
Modelling Metabolic Tasks Test Suite

Centre for Integrative Genetics

GitLab - DigiSal / mod-mtask

Search for model

e_coli_core

Original: 04/25/2017 14:27:42
Latest update: 04/25/2017 15:51:50

iJO1366

Original: 04/25/2017 14:27:44
Latest update: 04/25/2017 15:51:52

iMM904

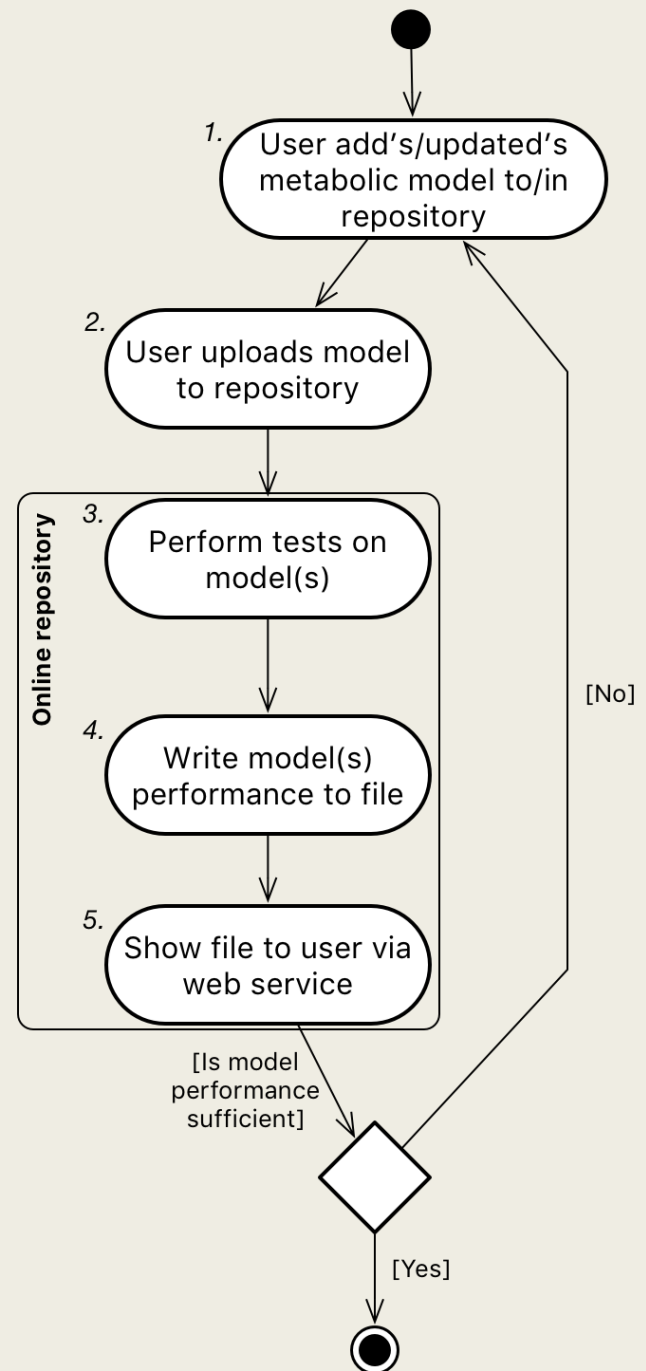
Original: 04/25/2017 14:27:45
Latest update: 04/25/2017 15:51:53

MOD-MTASK:

Validating metabolic models

■ Requirements:

- *Test a metabolic computer model*
- *Automated testing*
- *Accessible model performance information*
- *Iterative model updates*



MOD-MTASK:

Validating metabolic models

■ Model performance per test:

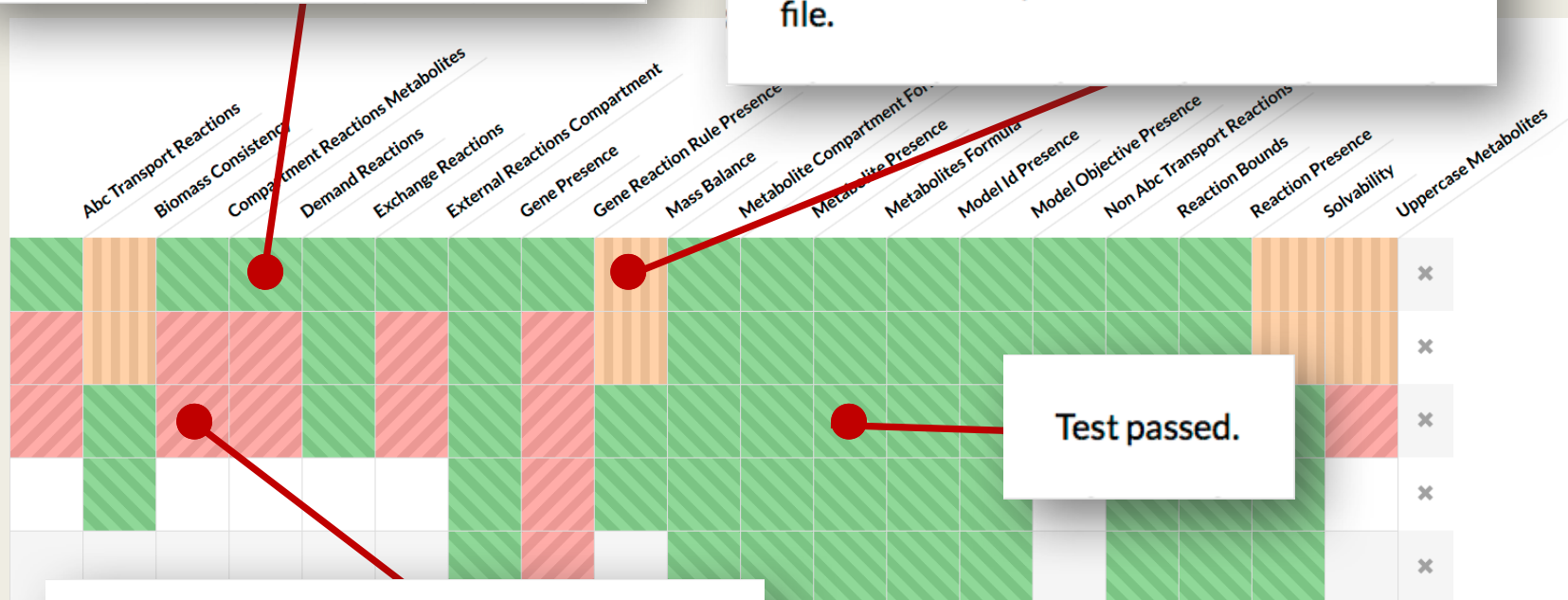
× iJO1366 Original: 04/25/2017 14:27:44 Latest update: 04/25/2017 15:51:52 Search for commit											
Commit	Created ^	Passed	Failed	Skipped	Errors	Abc Transport Reactions	Biomass Consistency	Compartment Reactions	Demand Reactions	Exchange Reactions	External P
9d99083799b2bec6e907902f78603431ab4f4602	04/25/2017 15:51:52	15	0	4	0	Passed	Skipped	Passed	Passed	Passed	Passed
6622966b033720979e8d4bcfb963cff501a8a638	04/25/2017 15:43:29	10	5	4	0	Failed	Skipped	Failed	Failed	Passed	Failed
c2500b31d688853093c3e5b6ed6427d6e461bfc9	04/25/2017 15:35:13	13	6	0	0	Failed	Passed	Failed	Failed	Passed	Failed
e3006909d117815f823363248d1ffe1ea8d40a82	04/25/2017 14:28:20	11	1	0	0		Passed				Passed
dc32cbd3ffd652ae11360c1e622d5133e5b37b6f	04/25/2017 14:27:44	9	1	0	0						Passed

MOD-MTASK:

Validating metabolic models

Test was marked to fail and failed as expected.

Test was skipped, while it was not specified in the comma separated values (CSV) tasks file.



Test passed.

The following reactions in compartment e are tagged to do not contain metabolites from that compartment: FE3HOXUtex.

MOD-MTASK:

Validating metabolic models

■ Future:

- Biologists and mathematicians to implement tests that are biologically relevant for the stated focus of the metabolic model
- Models to test the test suite with like for example canonical salmon metabolism model