Packaging and Distributing

Create, package and distribute your own python application

José Antonio Perdiguero López
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April 19, 2017

Málaga Python MeetUp

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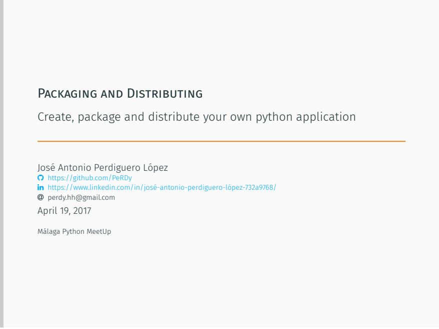

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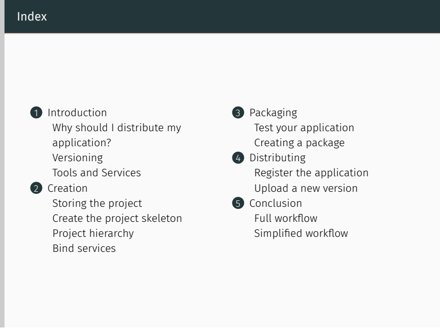
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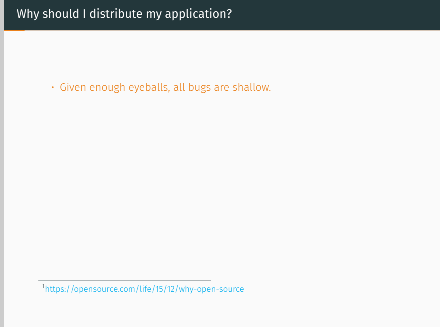
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Force multiplier: Diversity of ideas from exposing the problem.

Modular: Open source projects tend to be more modularly architected.

Great advertising: Maintainers of successful open source projects are often seen as industry leaders

Attract talent: Developers want to work on yet-unsolved problems.

Stand on the shoulders of giants

Best technical interview possible: You can hire much more confidently if, for the past six months, the candidate has been contributing to the project you want them work on, and you like their work.

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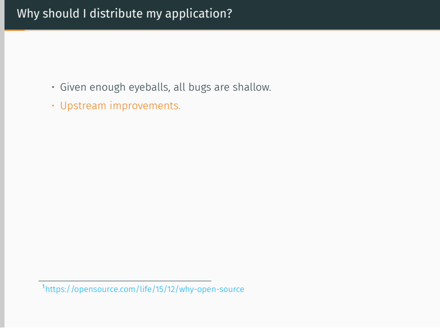
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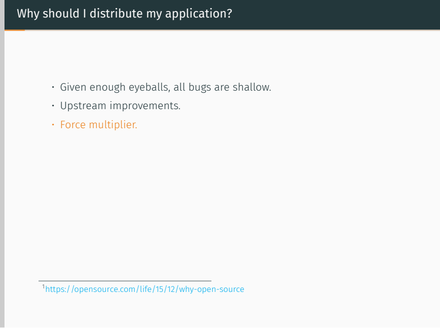
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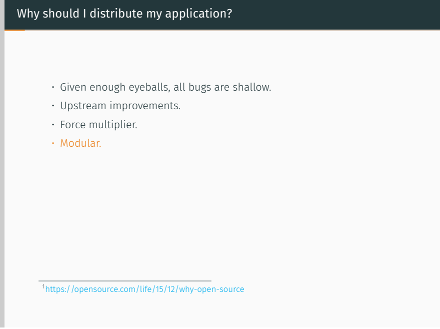
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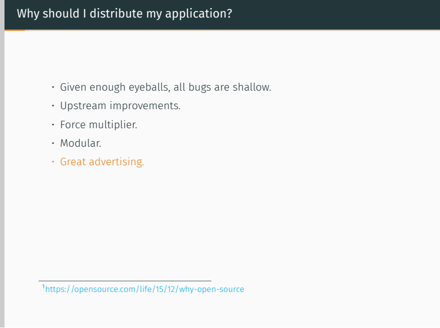

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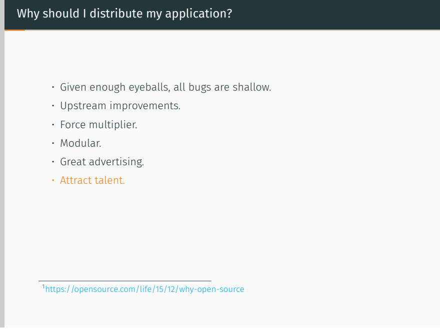
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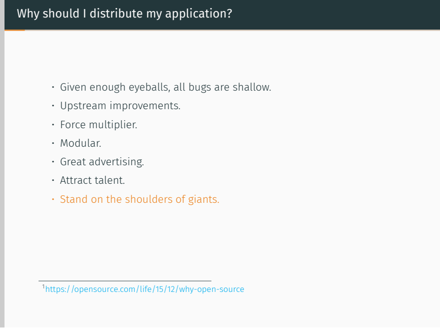
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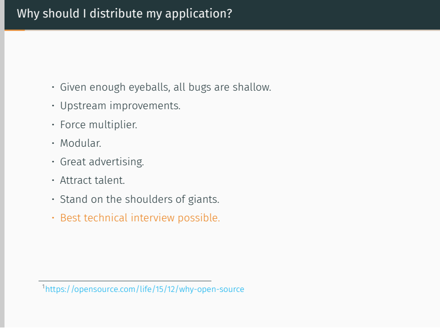

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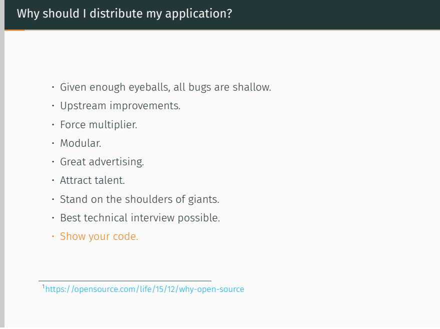
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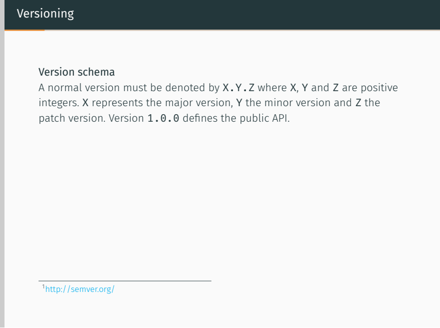
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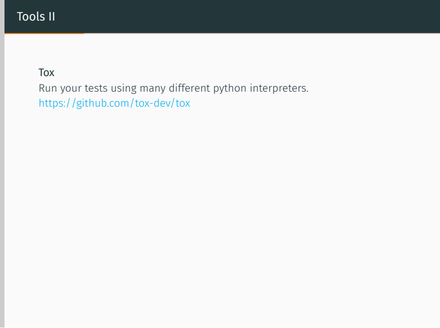
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Cookiecutter reduces the task of creates the whole project structure.

Clinner simplifies the process of create a package and upload it.

Tox will ease the testing.

Clinner is the cornerstone around the rest of tools, the build script done as example in the doc allows to define a single entrypoint for the rest of tools. http://clinner.readthedocs.io/en/latest/examples.htmlbuilder-main.

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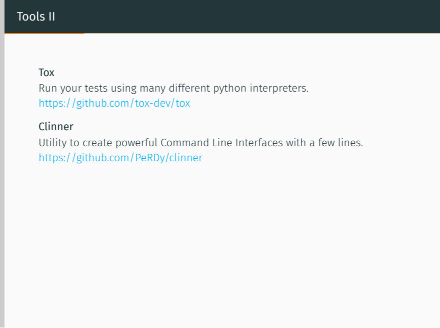

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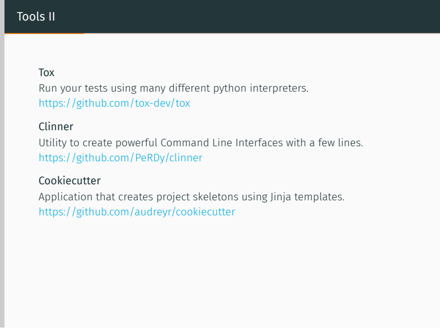
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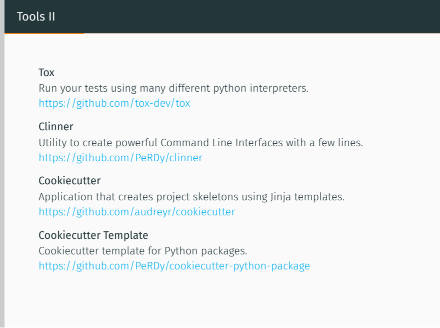
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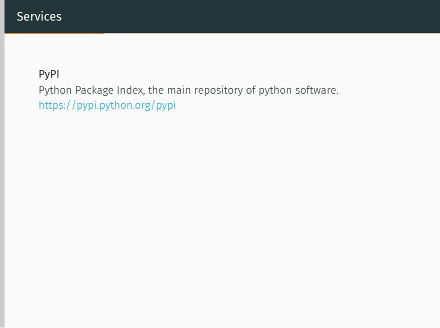
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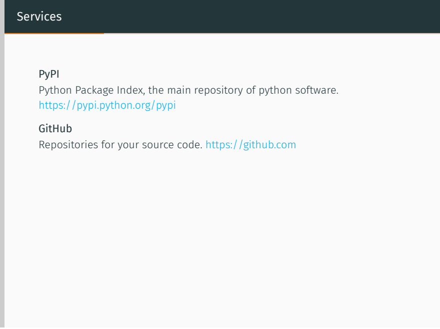
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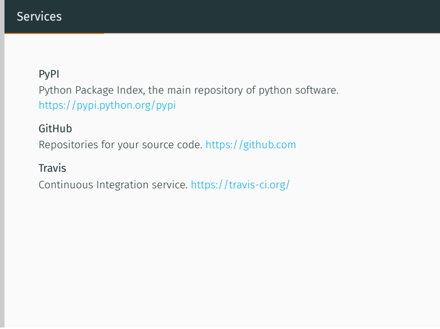
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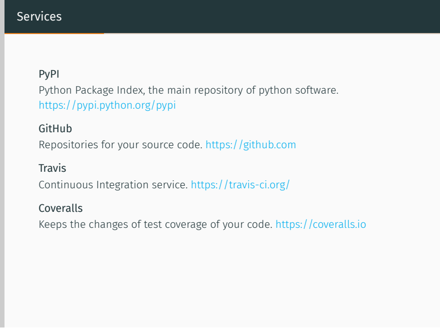
Services

PyPI
Python Package Index, the main repository of python software.
https://pypi.python.org/pypi

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Repositories for your source code. https://github.com

Travis
Continuous Integration service. https://travis-ci.org/

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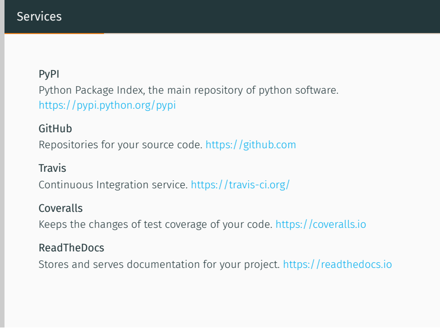
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Creation

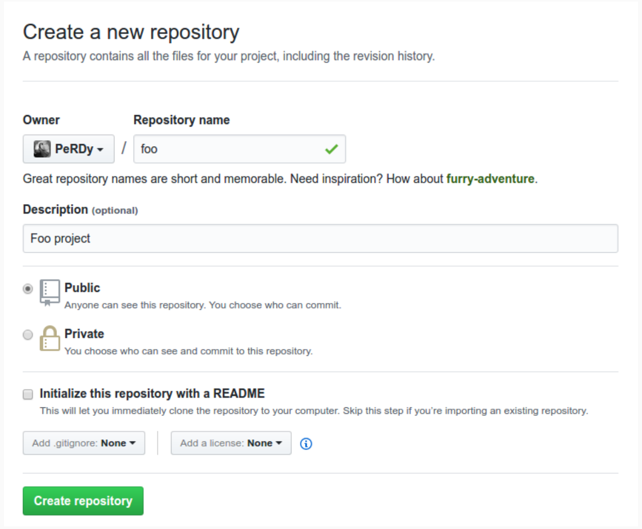
Packaging and Distributing

└─ Creation

2017-04-19

Creation

Storing the project


Create a new repository

A repository contains all the files for your project, including the revision history.

Owner: PeRDy / Repository name: foo

Great repository names are short and memorable. Need inspiration? How about **furry-adventure**.

Description (optional)

Foo project

[✓ **Public**] Anyone can see this repository. You choose who can commit.

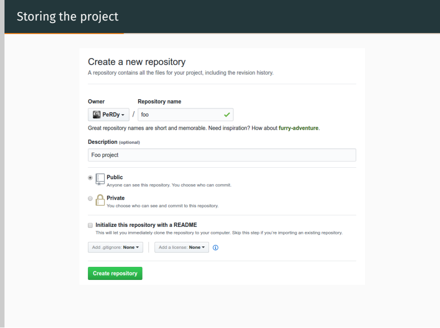
Private You choose who can see and commit to this repository.

☐ **Initialize this repository with a README**
This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Add .gitignore: **None** | Add a license: **None**

2017-04-19

Packaging and Distributing
└ Creation
  └ Storing the project
    └ Storing the project


Storing the project

This speech is focused on open source, so working on GitHub.

Create the project skeleton

Cookiecutter context

Define all variables needed by cookiecutter to properly create the project skeleton, these variables can be found in *cookiecutter.json* file.

2017-04-19

- Packaging and Distributing
  - Creation
    - Create the project skeleton
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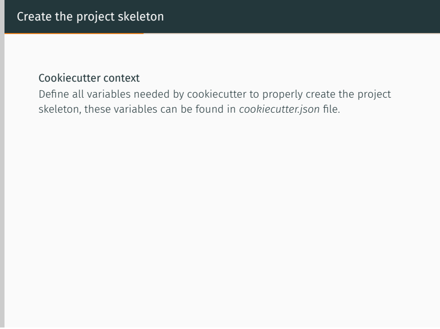

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Time to do your first commit and push to repository:

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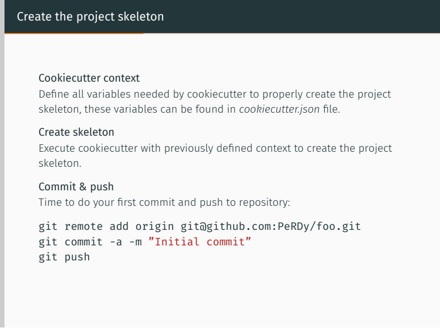
git remote add origin git@github.com:PeRDy/foo.git
git commit -a -m "Initial commit"
git push
```

2017-04-19

Packaging and Distributing
└─Creation
  └─Create the project skeleton
    └─Create the project skeleton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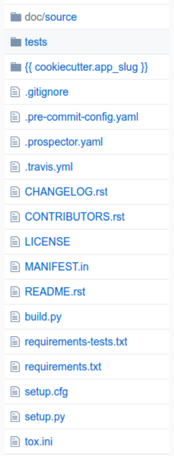
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tests
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2017-04-19

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  └─Project hierarchy
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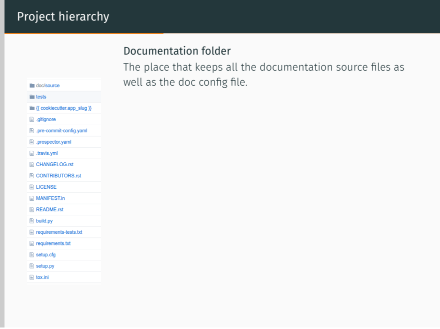
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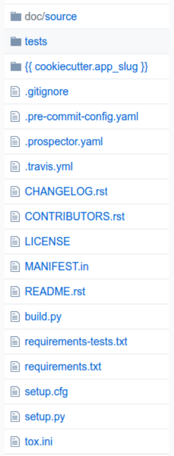
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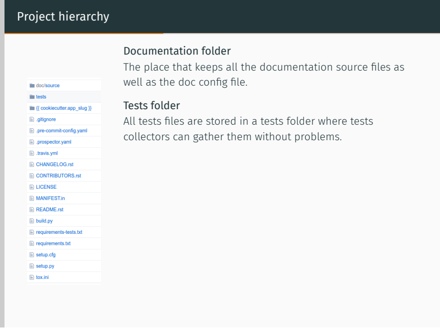
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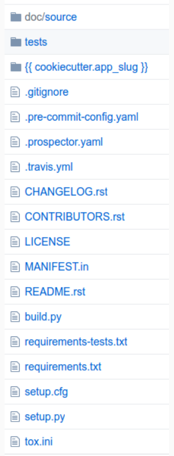
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2017-04-19

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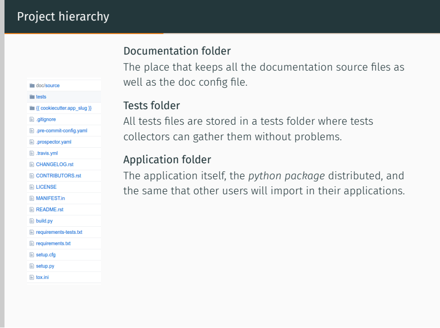
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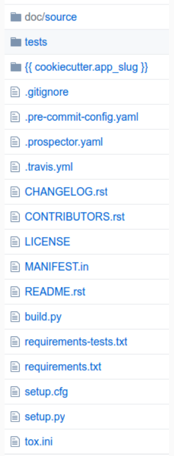
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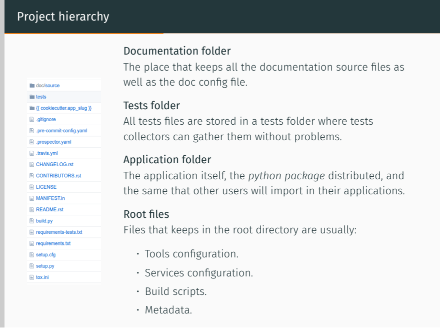
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2017-04-19

Packaging and Distributing
└ Creation
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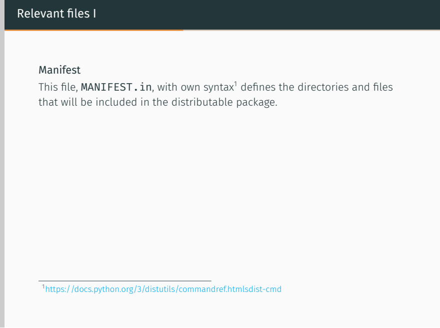
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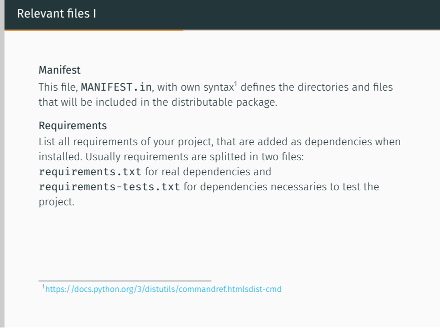

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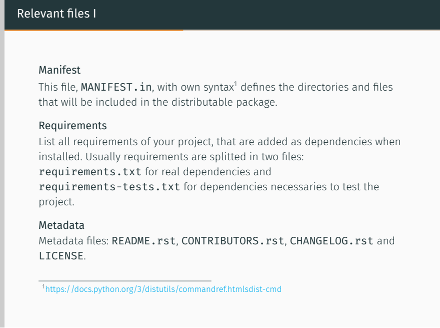
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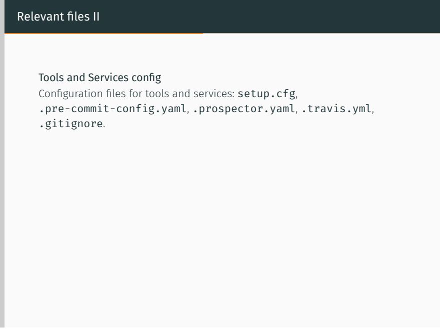
Configuration files for tools and services: `setup.cfg`, `.pre-commit-config.yaml`, `.prospector.yaml`, `.travis.yml`, `.gitignore`.

2017-04-19

Packaging and Distributing
└─Creation
  └─Project hierarchy
    └─Relevant files II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Main configuration file: `setup.cfg`. Ini-style file with sections for configuration of different tools, like *bumpversion*, *nose* and *coverage*.

Setup file keeps the requirements list, the current version, application name...

Tox is integrated with travis.

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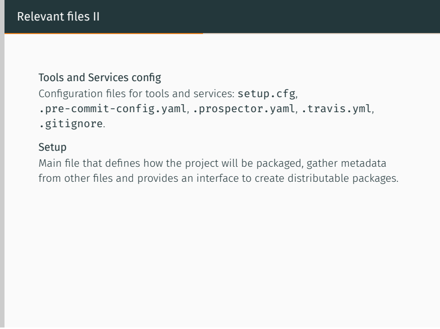
Setup

Main file that defines how the project will be packaged, gather metadata from other files and provides an interface to create distributable packages.



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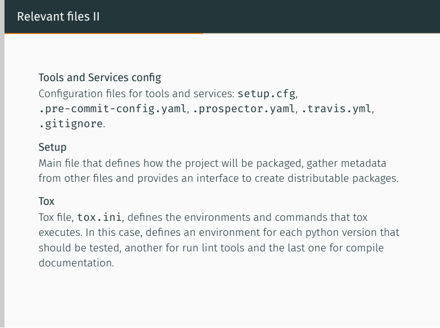
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Relevant files III

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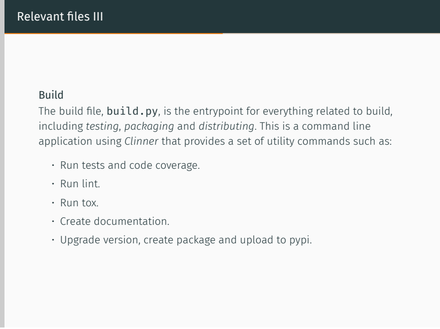
The build file, `build.py`, is the entrypoint for everything related to build, including *testing*, *packaging* and *distributing*. This is a command line application using *Clinner* that provides a set of utility commands such as:

- Run tests and code coverage.
- Run lint.
- Run tox.
- Create documentation.
- Upgrade version, create package and upload to pypi.



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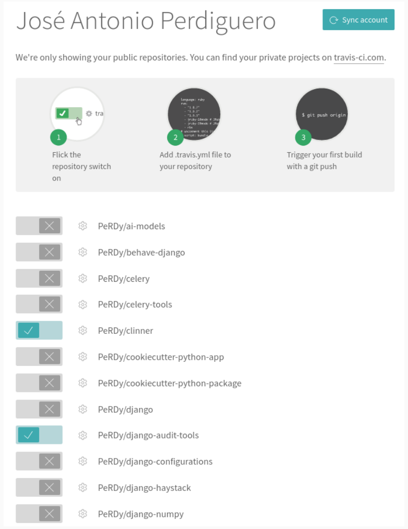
Bind Travis



José Antonio Perdiguero

We're only showing your public repositories. You can find your private projects on travis-ci.com.

1. Flick the repository switch on
2. Add .travis.yml file to your repository
3. Trigger your first build with a git push

✗	PeRDy/ai-models
✗	PeRDy/behave-django
✗	PeRDy/celery
✗	PeRDy/celery-tools
✓	PeRDy/clinner
✗	PeRDy/cookiecutter-python-app
✗	PeRDy/cookiecutter-python-package
✗	PeRDy/django
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✗	PeRDy/django-configurations
✗	PeRDy/django-haystack
✗	PeRDy/django-numpy

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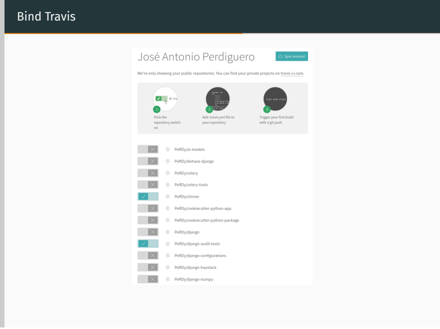
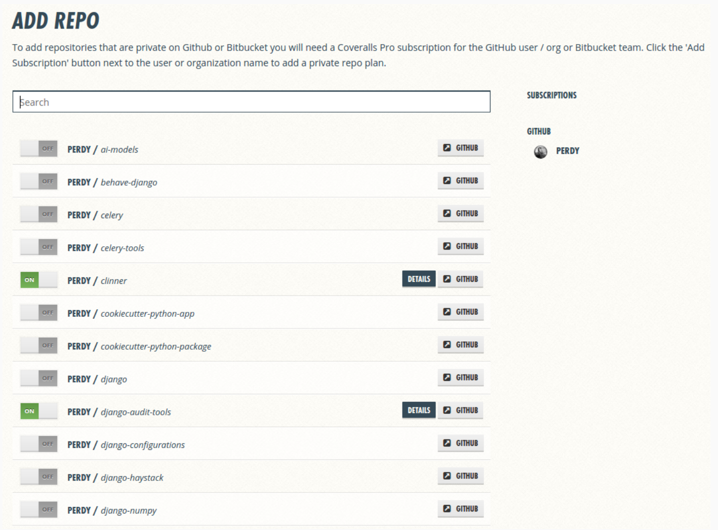
Packaging and Distributing
└ Creation
  └ Bind services
    └ Bind Travis



Bind Coveralls



ADD REPO

To add repositories that are private on Github or Bitbucket you will need a Coveralls Pro subscription for the GitHub user / org or Bitbucket team. Click the 'Add Subscription' button next to the user or organization name to add a private repo plan.

Search

OFF	PERDY / *ai-models*		GITHUB
OFF	PERDY / *behave-django*		GITHUB
OFF	PERDY / *celery*		GITHUB
OFF	PERDY / *celery-tools*		GITHUB
ON	PERDY / *clinner*	DETAILS	GITHUB
OFF	PERDY / *cookiecutter-python-app*		GITHUB
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OFF	PERDY / *django*		GITHUB
ON	PERDY / *django-audit-tools*	DETAILS	GITHUB
OFF	PERDY / *django-configurations*		GITHUB
OFF	PERDY / *django-haystack*		GITHUB
OFF	PERDY / *django-numpy*		GITHUB

SUBSCRIPTIONS

GITHUB

PERDY

2017-04-19

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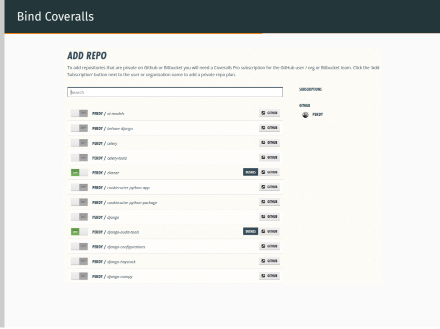

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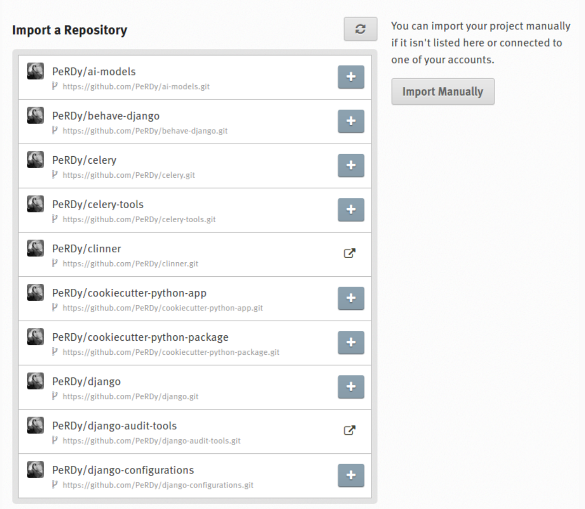
Bind ReadTheDocs

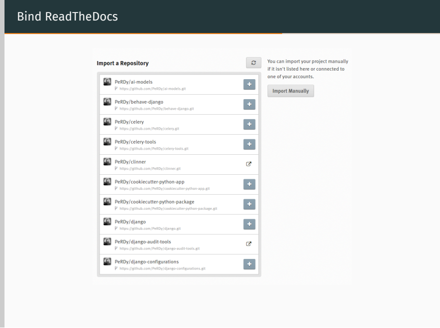

Import a Repository

- PeRDy/ai-models
  https://github.com/PeRDy/ai-models.git
- PeRDy/behave-django
  https://github.com/PeRDy/behave-django.git
- PeRDy/celery
  https://github.com/PeRDy/celery.git
- PeRDy/celery-tools
  https://github.com/PeRDy/celery-tools.git
- PeRDy/clinner
  https://github.com/PeRDy/clinner.git
- PeRDy/cookiecutter-python-app
  https://github.com/PeRDy/cookiecutter-python-app.git
- PeRDy/cookiecutter-python-package
  https://github.com/PeRDy/cookiecutter-python-package.git
- PeRDy/django
  https://github.com/PeRDy/django.git
- PeRDy/django-audit-tools
  https://github.com/PeRDy/django-audit-tools.git
- PeRDy/django-configurations
  https://github.com/PeRDy/django-configurations.git

You can import your project manually if it isn't listed here or connected to one of your accounts.

2017-04-19

Packaging and Distributing
└ Creation
  └ Bind services
    └ Bind ReadTheDocs



Packaging

Packaging and Distributing
└ Packaging

2017-04-19

Packaging

Test your application

Development

Run tests while developing using nose.

```
python build.py test
```

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Multi-environment

Once development is done, run tests against all different interpreters supported to check compatibility.

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python build.py tox
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2017-04-19

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Continuous Integration

Development is done, tests pass in every environment, so code can be uploaded to repository safely. Once a commit is done:

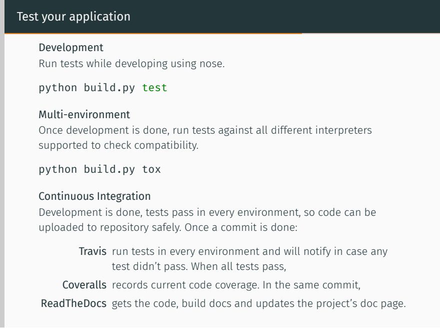
Travis run tests in every environment and will notify in case any test didn't pass. When all tests pass,

Coveralls records current code coverage. In the same commit,

ReadTheDocs gets the code, build docs and updates the project's doc page.

2017-04-19

Packaging and Distributing
└Packaging
  └Test your application
    └Test your application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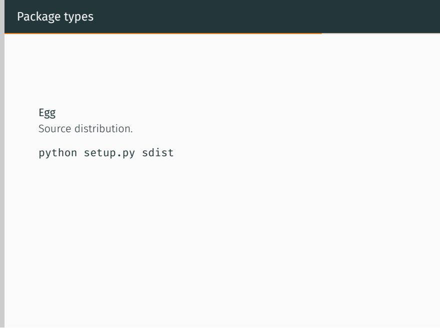
Package types

Egg
Source distribution.

```
python setup.py sdist
```


Package types

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There is two types of python packages: *egg* and *wheel*. Source distribution needs a build step, built or binary distributions only need to move the package in the right path. Case of *numpy*, *scipy* and *pandas*.

Package types

Egg
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```
python setup.py sdist
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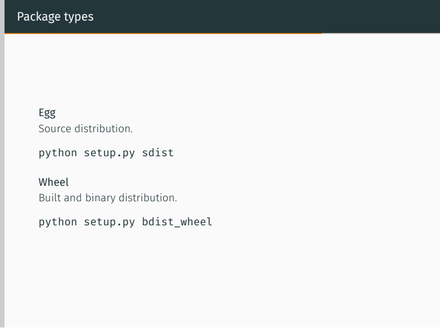
Wheel
Built and binary distribution.

```
python setup.py bdist_wheel
```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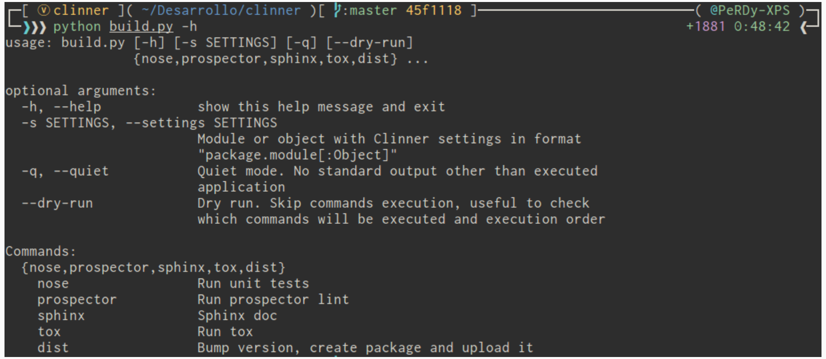
Builder



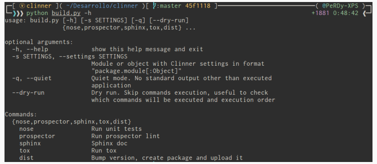
```
┌[ ⓥclinner ]( ~/Desarrollo/clinner )[ :master 45f1118 ]────────────────( @PeRDy-XPS )┐
└❯❯❯ python build.py -h                                              +1881 0:48:42 ⮐┘
usage: build.py [-h] [-s SETTINGS] [-q] [--dry-run]
                {nose,prospector,sphinx,tox,dist} ...

optional arguments:
  -h, --help            show this help message and exit
  -s SETTINGS, --settings SETTINGS
                        Module or object with Clinner settings in format
                        "package.module[:Object]"
  -q, --quiet           Quiet mode. No standard output other than executed
                        application
  --dry-run             Dry run. Skip commands execution, useful to check
                        which commands will be executed and execution order

Commands:
  {nose,prospector,sphinx,tox,dist}
    nose                Run unit tests
    prospector          Run prospector lint
    sphinx              Sphinx doc
    tox                 Run tox
    dist                Bump version, create package and upload it
```

2017-04-19

Builder



Distributing

Packaging and Distributing

Distributing

2017-04-19

Distributing

Register the application

PyPI account

Create a PyPI[1] account. Configure `.pypirc` file with PyPI credentials.

[1] https://pypi.python.org/pypi
[2] https://github.com/pypa/twine

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Application register

Use twine[2] with a package of your application to register it in PyPI:

```
twine register dist/project-name.whl
```

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2017-04-19

```
Packaging and Distributing
└─Distributing
   └─Register the application
      └─Register the application
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[1] https://pypi.python.org/pypi
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Upload a new version

Upload packages

Use twine again to upload all packages to PyPI:

```
twine upload dist/project-name.whl
twine upload dist/project-name.tar.gz
```

2017-04-19

Packaging and Distributing
- Distributing
  - Upload a new version
    - Upload a new version

Upload a new version

Upload packages

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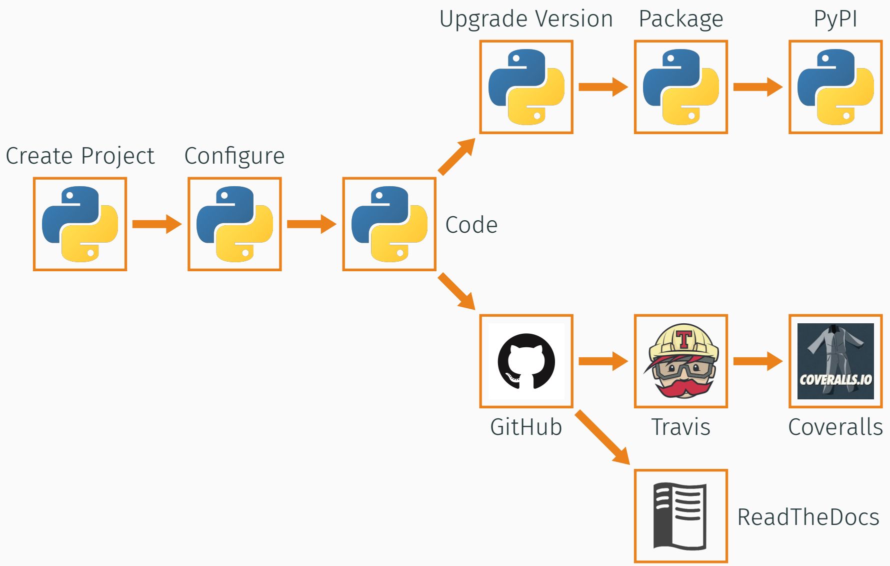
Conclusion

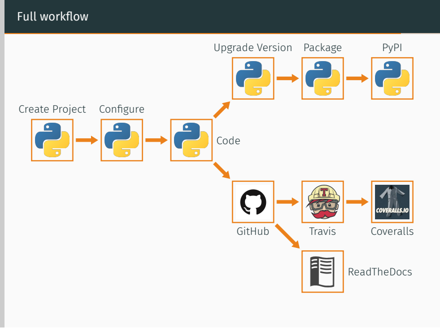
Conclusion

Full workflow



2017-04-19

Packaging and Distributing
- Conclusion
  - Full workflow
    - Full workflow



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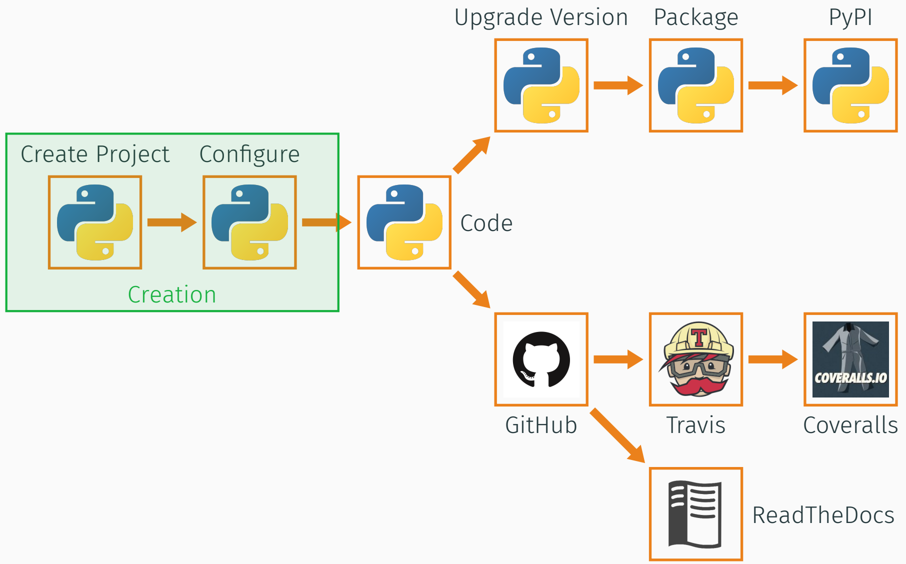
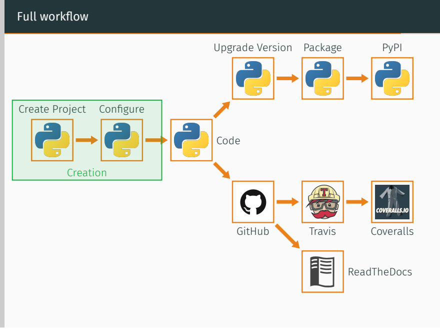


2017-04-19



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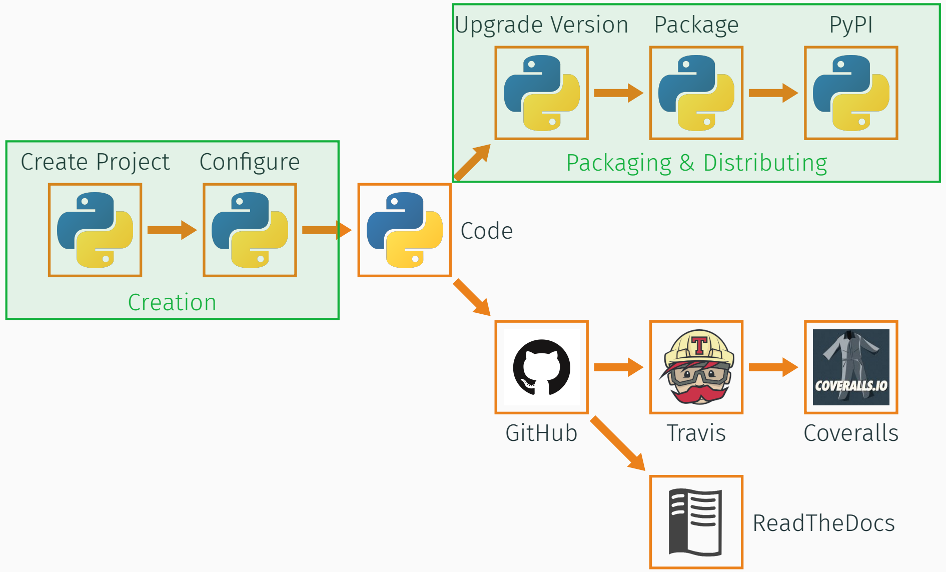

2017-04-19

Packaging and Distributing
Conclusion
Full workflow
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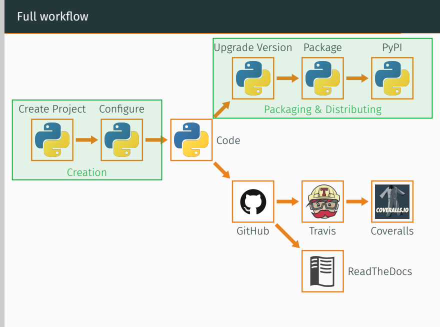

Full workflow

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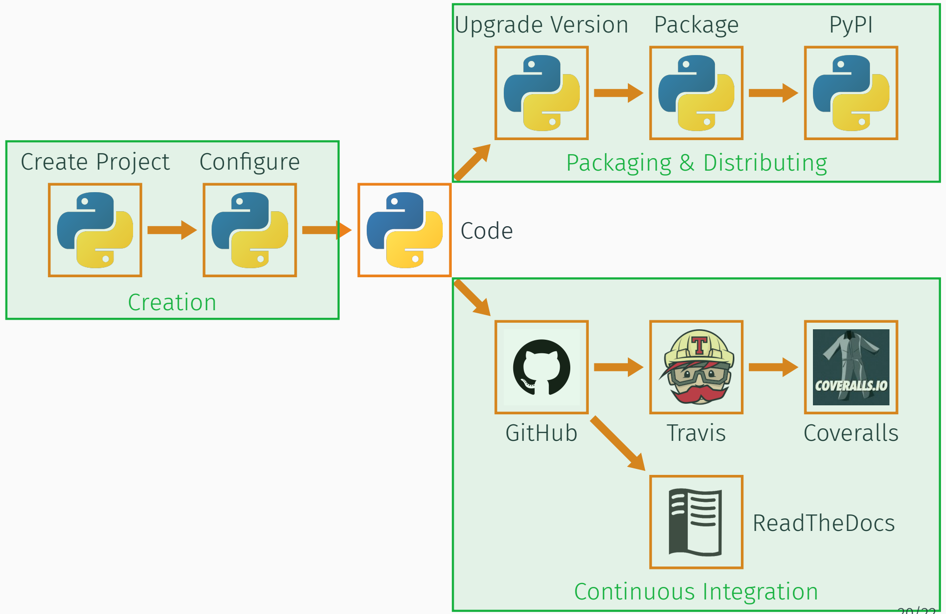
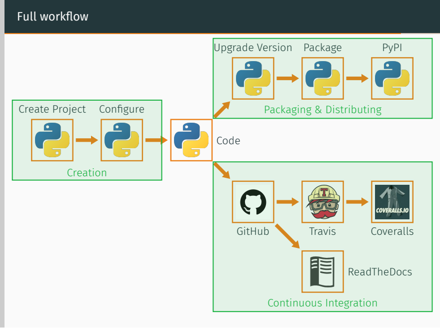
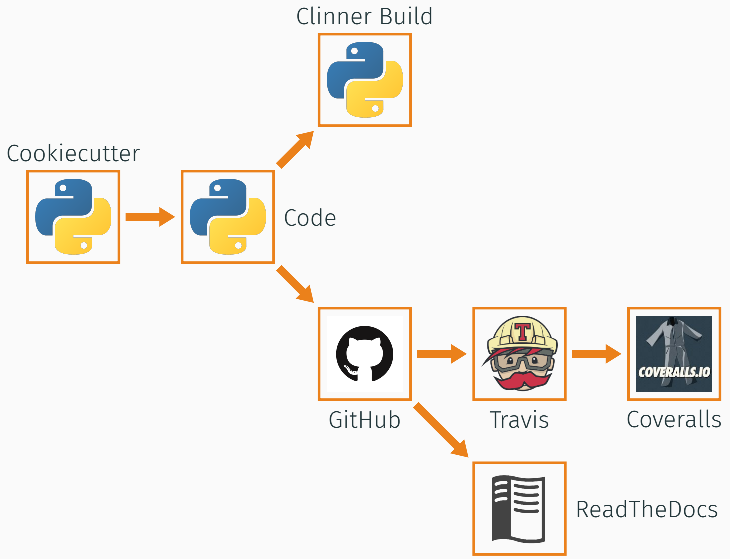


2017-04-19



Simplified workflow I



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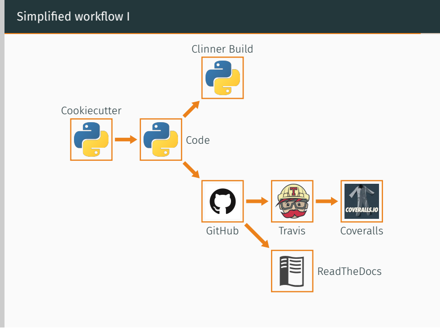
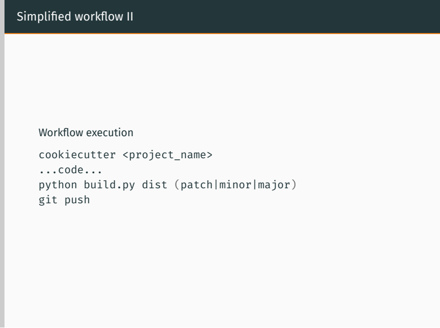
- Packaging and Distributing
  - Conclusion
    - Simplified workflow
      - Simplified workflow I



Simplified workflow II

Workflow execution

```
cookiecutter <project_name>
...code...
python build.py dist (patch|minor|major)
git push
```



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Open source your code !

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