

# EasyBuild 5.0

Simon Branford

**EASYBUILD**.io

building software with ease

# Information

This talk will cover:

- code changes
- policy changes

It will also:

- provide background to decisions and changes
- tell you how you can contribute

information

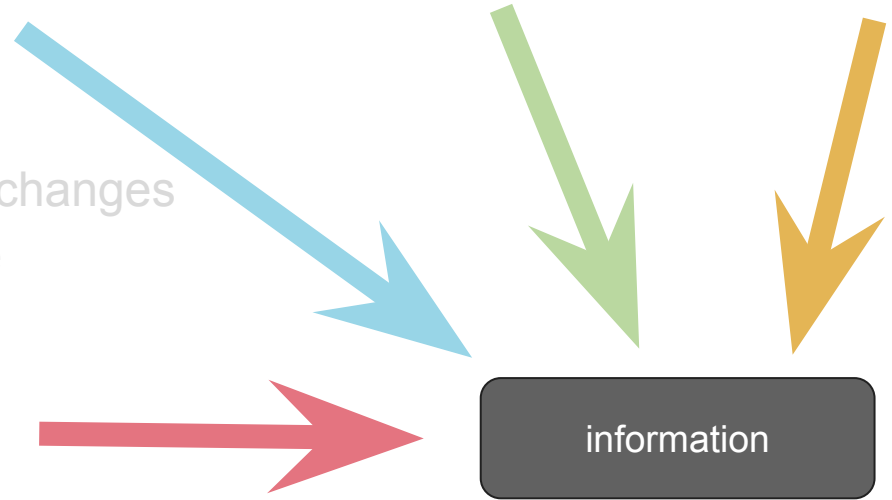
# Information

This talk will cover:

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- give ways in which you can contribute



# Change Types

breaking change

A change in how EasyBuild works

- These may impact you / require changes

enhancement

A new feature

- To make using EasyBuild better or easier

code cleanup

Code enhanced or changes

- No impact during use

information

# Status Types

idea

An idea of a change or enhancement

- Feedback desired

planned

A planned change or enhancement

- We already have a good idea of what will change

implemented

Change or enhancement is implemented

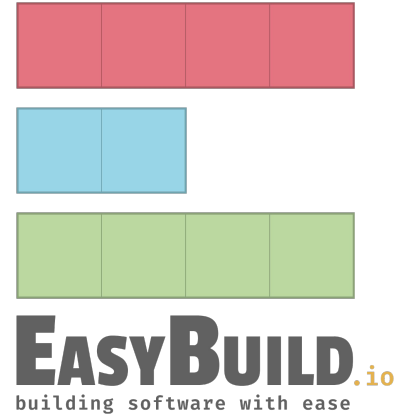
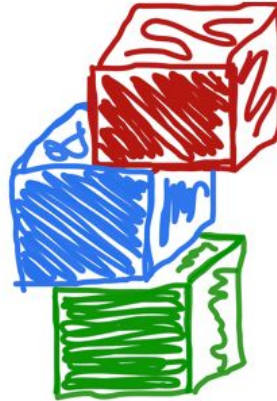
- Available for testing

information

# EasyBuild

Major versions:

1. November 2012
2. March 2015
3. November 2016
4. September 2019
5. ???



information

# General Information

There will be breaking changes

- We will try to keep impact limited
- Give you time to make changes
  - Deprecation warnings for EB 6

Documentation

- Available to support transition
- Currently a draft PR for this



information

# Changed Default Configuration

Enable trace output (--trace) by default

PythonPackage, enable:

- download\_dep\_fail, use\_pip, sanity\_pip\_check

Run prepare step before source step

- Allows use of EB built tools to unpack (some) sources

Use Slurm as default backend for --job

- Deprecate support for GC3Pie

Don't run sanity check commands in installation directory

planned

enhancement



# Code Cleanup

Remove experimental support for .yeb easyconfigs

- Dead, experimental, feature
- No improvements for years

Stop relying on distutils

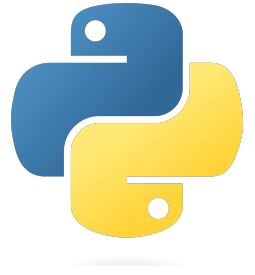
- Required to support Python 3.12
- Use LooseVersion from easybuild.tools

planned

implemented

code cleanup

# Python 2 (for running EB)



EOL for 3 years

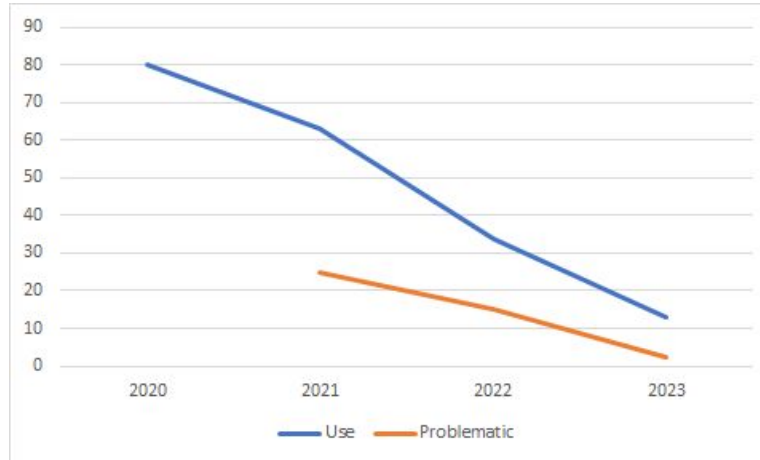
Deprecated in EasyBuild since Jan'23 (EasyBuild v4.7.0)

EB Use:

- 2020: 80%
- 2021: 63%
- 2022: 34%
- 2023: 13%

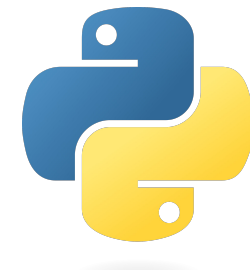
Removal Problematic:

- 2021: 25%
- 2022: 15%
- 2023: 2.5%



information

# Python 3 (for running EB)



## 3.5

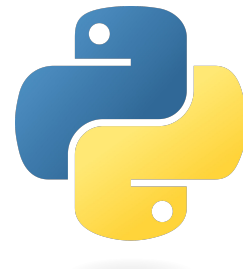
- EOL for 2.5 years
- Rarely used Python 3.5 to run EasyBuild

## 3.6

- EOL for over a year
- Most commonly used Python
  - ~53% in EasyBuild User Survey

information

# Python Support (for running EB)



Drop support for

- Python 2 and 3.5

Allow use of Python features only in  $\geq 3.6$

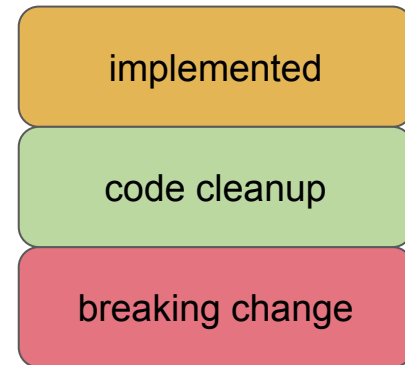
- f-strings, pathlib, ...

Code simplification

- No longer using py2vs3 in central repo (framework/blocks)

python\* commands considered by 'eb' command

- Drop python2
- Favour python3 over python



# Toolchain Support Policy

## Central repository:

- References easyconfigs
- Generally one version of a software per toolchain generation
  - There are exceptions, but aim is to keep them limited

## Site specific:

- Own repository
  - Add via robot paths
  - See [https://docs.easybuild.io/using-easybuild/#robot\\_search\\_path](https://docs.easybuild.io/using-easybuild/#robot_search_path)

information

# Toolchain Support Policy

In year X (example using 2023):

- Accept PRs only for toolchains X-2
  - Currently: 2023a/b, 2022a/b, 2021a/b
- Deprecate toolchains X-3
  - 2020a/b
  - => Close PRs
- Archive easyconfigs using toolchain version X-4
  - 2019a/b (and older)
- Actively close issues for toolchains X-3 and older

idea

# Toolchain Support Policy

## Possibilities:

- Last N common toolchain versions
  - review (last N); deprecate and close (N+1); and archive (N+2)
- +1 on the years
  - review (X-3); deprecate and close (X-4); and archive (X-5)
- Close PRs backporting versions of software into older toolchains
  - Exception where it is to support software that *requires* an older toolchain
  - Available to others, but not requiring maintainer time or effort

idea

# Module Tool



Lmod:

- Drop support for Lmod v6 (and v7?)
  - 7.x first release November 2016
  - 7.x last release March 2019
- Availability
  - EPEL has 8.7.x (for EL7/8/9)
  - Ubuntu 20.04LTS and 22.04LTS have Lmod 6.x 😞
    - Lmod packages for Ubuntu available via <https://github.com/surak/Lmod>
- No strong motivation for dropping support for Lmod 6.x/7.x
  - Other than motivate community to adopt Lmod 8.x

idea



# run function

Replace `run_cmd` and `run_cmd_qa`

More direct and natural options

Better error reporting

- context-aware wrappers around run function

Keep `run_cmd` and `run_cmd_qa` for now

- deprecate them
- stop using them in central repositories

planned

enhancement

breaking change

# Error Reporting / Improve Log Files

Sadly, builds will fail 😭

Help identify why a build failed

More meaningful error messages

- Clear path to log file
- Command being run (see --trace)

Context-aware error reporting

- config.log when configure fails
- Error pattern matching and colours

Easier to navigate log files



planned

enhancement

# Installing Python / R



Base easyconfig will be just Python / R

- Equivalent to the current -bare
- No need for a separate easyconfig for using as a build dependency

Move existing extensions into a bundle

- Decision to be made on how to split up
- Have one package that is equivalent to what is available now
- (R) Parallel extension build to work

idea

# EasyConfigs

## Simplify toolchain (and toolchain options)

- Current: `toolchain = {'name': 'foss', 'version': '2022b'}`
- Proposed: `toolchain = ('foss', '2022a')`
  - `toolchain = ('foss', '2022a', {'usempi': True, 'pic': True})`

## Specifying name to check

- Current: `options = {'modulename': 'foo'}`
- Want to rename: `load_ext_as = 'foo'`

idea

# EasyConfigs

## Specify module conflicts

- X/1 and Y/1 with Y/1 having a component or extension of X/2
- Currently no report that loading Y/1 will change available version of X
- Software depending on X/1 might break

## Licenses

- Specified in all

## moduleclass

- Not required

idea

# EasyBuild Docs

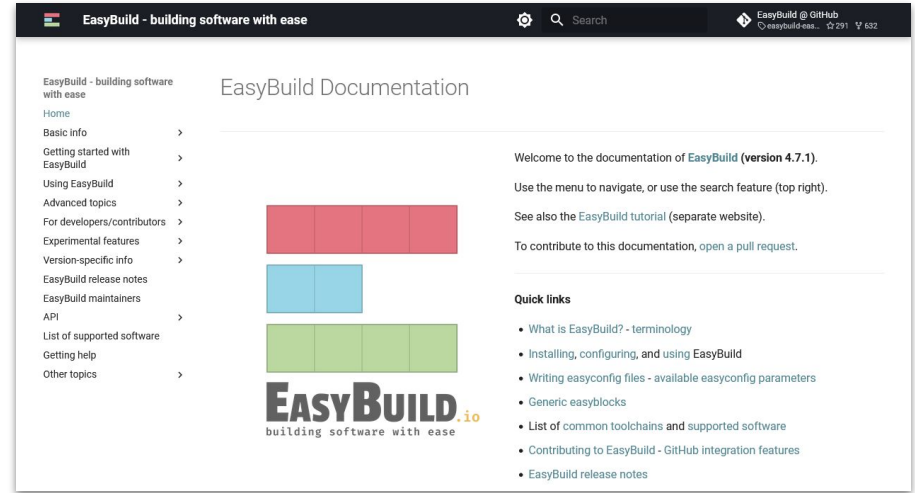
Launched earlier this year

- <https://docs.easybuild.io/>
- MkDocs

Plans:

- Yearly review
- Integrate tutorial into docs

Not specifically related to EB5...



The screenshot shows the EasyBuild Documentation website. The header includes the title "EasyBuild - building software with ease", a search bar, and the GitHub repository link "EasyBuild @ GitHub". The main content area is titled "EasyBuild Documentation" and features a navigation menu on the left with categories like "Home", "Basic info", "Getting started with EasyBuild", "Using EasyBuild", "Advanced topics", "For developers/contributors", "Experimental features", "Version-specific info", "EasyBuild release notes", "EasyBuild maintainers", "API", "List of supported software", "Getting help", and "Other topics". The main content area contains a welcome message for "EasyBuild (version 4.7.1)", instructions on how to use the navigation and search features, and a link to the EasyBuild tutorial. Below this is a "Quick links" section with a list of links: "What is EasyBuild? - terminology", "Installing, configuring, and using EasyBuild", "Writing easyconfig files - available easyconfig parameters", "Generic easyblocks", "List of common toolchains and supported software", "Contributing to EasyBuild - GitHub integration features", and "EasyBuild release notes". The EasyBuild logo is prominently displayed in the center of the page.

planned

# Working group

For people actually getting their hands dirty

- Coding
- Reviewing
- Testing
- Writing documentation
- Coordinated in #eb5 Slack channel

Monthly sync meeting on current work being done towards EasyBuild 5.0

- Every 1st Wednesday of the month at 14:00 CE(S)T
  - 3 May, 7 June, 5 July, 2 Aug, ...



information

# Progress and Timeline

Aiming for this year (2023)

Prioritize issues / PRs via GitHub

- <https://github.com/orgs/easybuilders/projects/18>
- EasyBuild-5.0 label
- 5.0 Milestone

5.0.x branches

- Created in framework / easyblocks / easyconfigs repositories
- Are different to develop
- Available to use



information



# Feedback on Ideas

## Proposals

- Posted on GitHub by a maintainer
- Notification + request for feedback
  - Mailing list
  - Slack (#general)
- Discussion via #eb5 Slack channel
- Period for feedback
  - Four weeks
  - End of May?



information

# Observation

Survey is important

- Allows us a snapshot of usage
  - Architectures, Python, OS, etc.
  - Decisions are made from this information

information



Photos (unsplash): CHUTTERSNAAP, Etienne Girardet, Randy Fath, airfocus, Jon Tyson, and Ana Municio