Introduction to CI

Just the first steps

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DESY.

Motivation

Why We Need a CI?

Consistency, Reproducibility

- Local environment independence
  - Do I know all dependencies when I build locally?
- Reproducibility
  - Can you still build after OS update? After another package is installed?
- Process documentation
  - Do have documentation how to build? Do you keep it up-to-date?
  - Do you need all build dependencies at runtime?
- Testability
  - Do you regularly test your software? Can others do it as well?
- How I get your software

Why We Need a CI?

Consistency, Reproducibility

The **CI** gives a common framework to get stuff done with a **predictable and reproducible result**.

What We Want to Achieve?

Our steps

Build

- Select target platform(s)
  - X86_64, ARM, ...
  - RHEL9,Ubuntu, ...
- Identify dependencies
  - Libraries, Header files, ...
- Install build tools
  - GCC, Python, ...
- Specify build steps
  - Make, Cmake, ...

Test

- Runtime environment
  - Extra tools, experiment software, ...

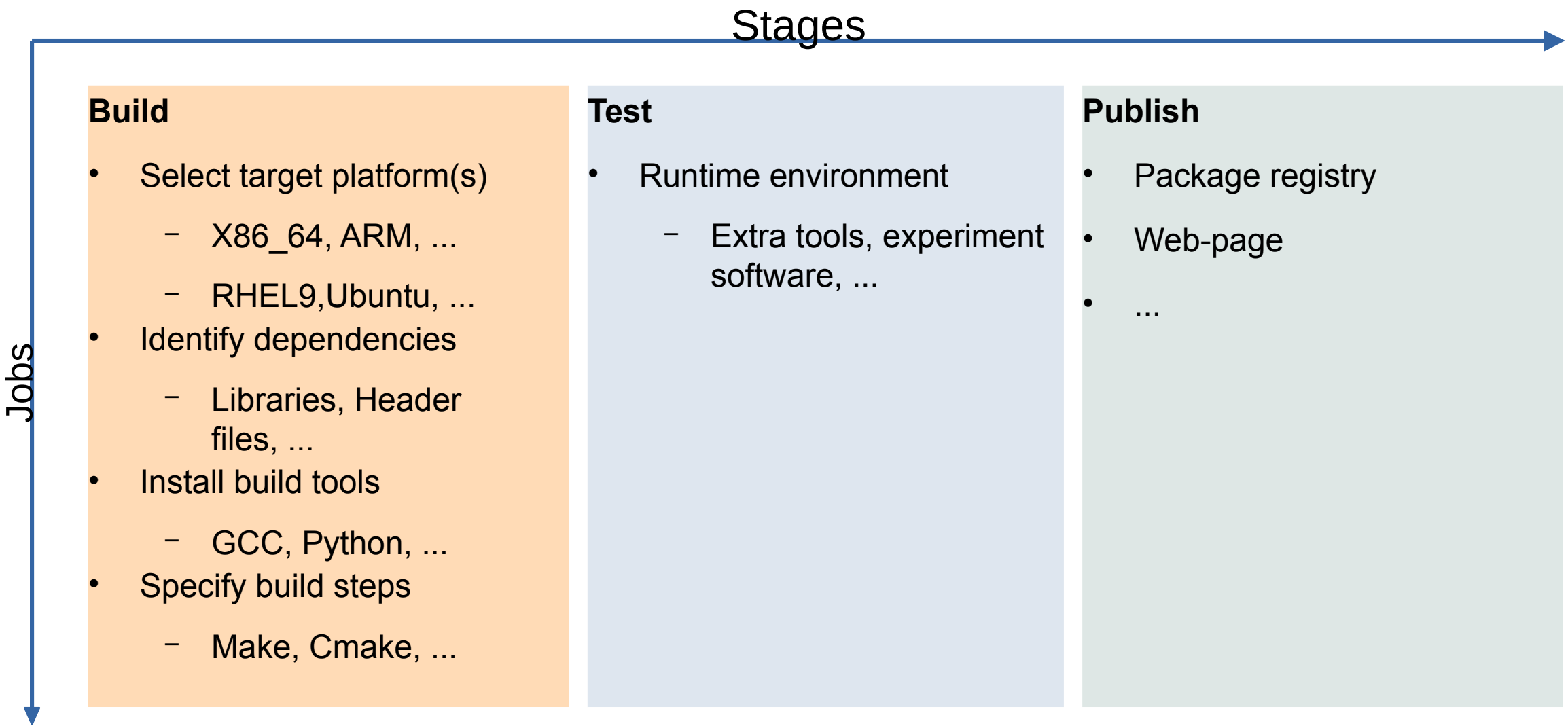
Publish

- Package registry
- Web-page
- ...

Gitlab-CI

Gitlab-CI on One Slide

All you need to know :)



Gitlab-CI on One Slide

All you need to know :)

- Jobs defines an action at a particular stage
  - All jobs run a script action
  - Jobs are executed by *runners*
- A job belongs to a single stage
  - Stage defines when job should run
- Stages might consist out of multiple jobs
  - All jobs in a stage must succeed to before next stage can start
- Stages run sequentially
- Jobs in a single stage run parallel
- Jobs can pass artifacts to each other
- Jobs can depend on each other

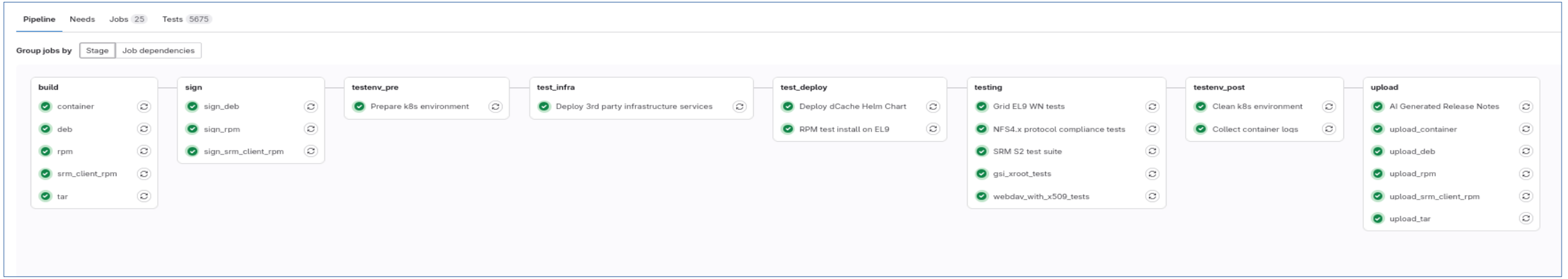
- One or more stages build a *pipeline*
- *Pipeline* triggered by:
  - Event: push, merge, …
  - Scheduler
  - Manually
- Default stages:
  - *build*
  - *test*
  - *deploy*

Pipeline Examples

~~One size fits all~~

Simple pipeline

Advanced pipeline



Hands-on

More Info

- Tutorial
  - https://gitlab.desy.de/fh-sustainability-forum/sustainable-coding-tutorial/gitlab-ci-tutorial
- Gitlab-CI official documentation
  - https://docs.gitlab.com/ee/ci/yaml/

Thank you

Contact

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