



Continue testing the Infrastructure of Xsuite using GitHub action artifact

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Introduction

Xsuite is a collection python packages for the simulation of the beam dynamics in particle accelerators. It supports different computing platforms, in particular conventional CPUs and and Graphic Processing Units (GPUs).To test whether our program supports different computing platforms, especially general CPUs and graphics processing units (GPUs), testing infrastructure is required. In this project, I extended the testing infrastructure of Xsuite using GitHub Actions to orchestrate tests across multiple self-hosted machines. Utilizing Docker containers for sandboxing, I set up consistent testing environments. The workflow involved building Docker images on one machine and then distributing artifacts to other machines to run tests efficiently.

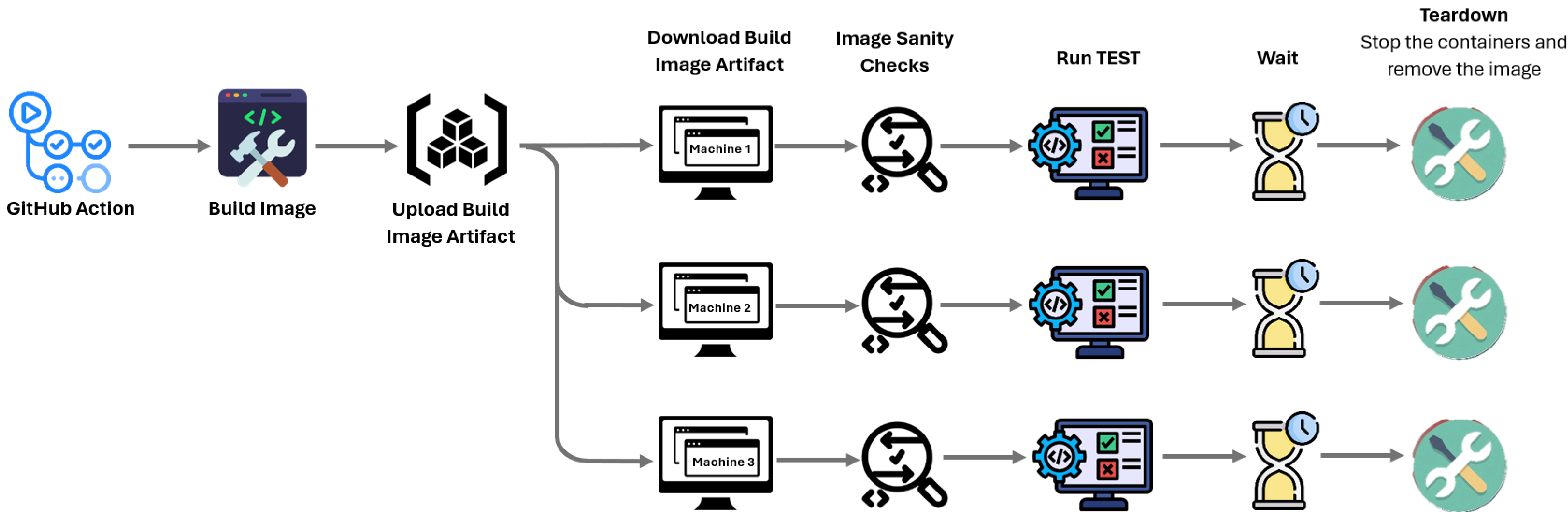
Tools



GitHub Action



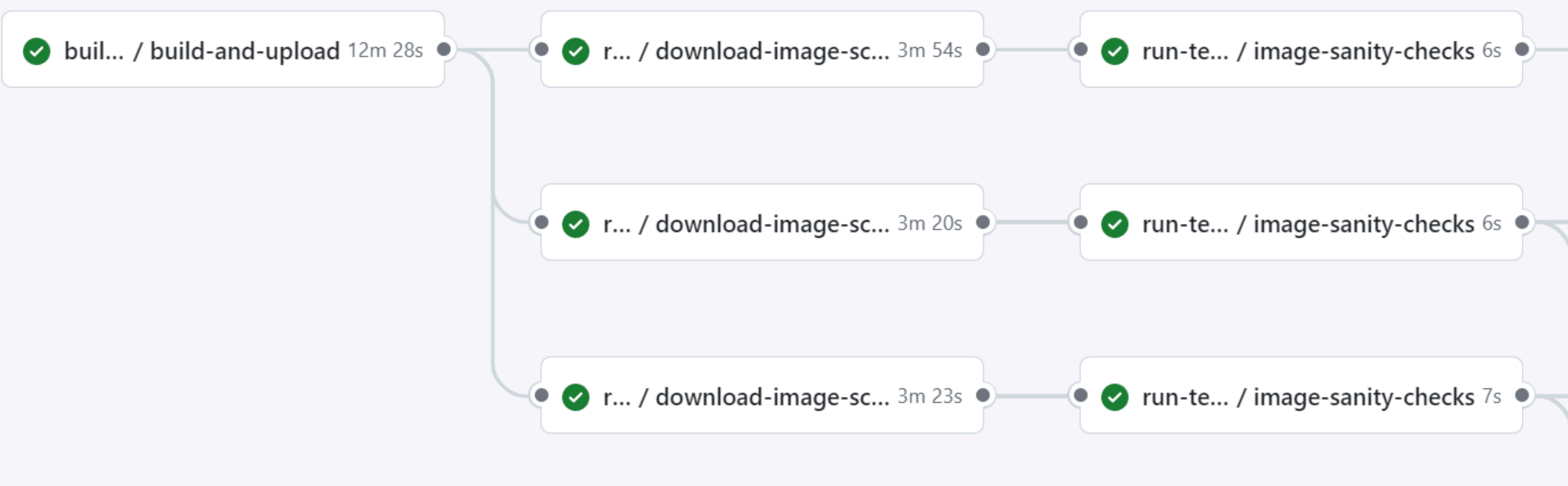
Pipeline



Example Use Case

Xsuit Daily testing

cron_test_sh_cpu.yaml
on: workflow_dispatch



- run-tests-cron-sh-cpu-xmask
- download-image-schedule
- image-sanity-checks
- run-tests (xmask)
- wait
- teardown
- run-tests-cron-sh-cpu-no-xmask...
- download-image-schedule
- image-sanity-checks
- run-tests (xobjects)
- run-tests (xdeps)
- run-tests (xpart)
- run-tests (xtrack)
- run-tests (xfields)
- run-tests (xcoll)
- run-tests (xboinc)
- wait
- teardown

Conclusion

Implementing GitHub Actions and Artifacts significantly optimized the testing process by reducing redundancy in building Docker images across multiple machines.

Limitations

- GitHub Artifact has a limitation maximum size for upload and download is 5 GB.

Future Work

- Share artifacts between workflows