



WEAVE Environment & WEAVE Badging Program

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WEAVE Team

ASQ – WSC

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WEAVE environment

Spack-based Python virtual environment:

- WEAVE tools – open source:
 - Orchestration: Maestro, Merlin
 - Simulation and data management: Sina, Kosh
 - Simulation evaluation: Trata, Ibis
 - Visualization: Pydv
- Commonly used Python packages (PyTorch, Matplotlib, Scikit-learn, etc)
- Read-only and available to everyone on LC (in CZ, RZ and SCF)

WEAVE environment

- Users activate the environment by running one of the following commands:
 - For production/stable version of WEAVE:
 - On toss4 (no AMD GPU):
 - `source /usr/apps/weave/weave-prod-cpu/bin/activate`
 - On blueos:
 - `source /usr/apps/weave/weave-prod-gpu/bin/activate`
 - For develop version of WEAVE: (toss4 (all) & blueos)
 - On toss4:
 - `source /usr/apps/weave/weave-develop-cpu/bin/activate`
 - On blueos or cray:
 - `source /usr/apps/weave/weave-develop-gpu/bin/activate`

Create a local virtual environment based on WEAVE environment.

```
[muryanto@lassen708:~]$ /usr/apps/weave/tools/create_venv.sh -h
```

Create a virtual environment based on a spack view.

Usage:

```
/usr/apps/weave/tools/create_venv.sh -p <processor_type> -e <venv>
-h                               : display help messages.
-p <processor_type>: specify processor type 'cpu' or 'gpu'
-e <venv>           : specify virtual environment name to be created.
-v <version>        : 'latest-stable' - based on latest released spack env/view
                     'latest-develop' - based on latest develop spack env/view
                               which can change or get updated or removed
                     '1.0' - specify a specific version of spack env/view
To see available versions, run:
    ls -l /usr/apps/weave/weave-cpu/
or
    ls -l /usr/apps/weave/weave-gpu/
```

Example:

```
/usr/apps/weave/tools/create_venv.sh -p cpu -e my_venv -v latest-develop
```

```
/usr/apps/weave/tools/create_venv.sh -p cpu -e my_venv -v latest-stable
```

```
/usr/apps/weave/tools/create_venv.sh -p cpu -e my_venv -v 1.0
```

What does create_venv.sh / create_venv.csh do?

- Creates a self-contained virtual environment based on WEAVE environment:
 - Renames ~/.local temporarily
 - It saves away PYTHONPATH to _OLD_VIRTUAL_PYTHONPATH and unset PYTHONPATH
 - Creates the virtual environment
 - Updates PATH, PYTHONPATH, JUPYTERPATH
 - Restores ~/.local
- Pip installing more packages in the activated virtual environment will be installed in the virtual environment – nothing will get installed outside the virtual environment.

WEAVE Badging Program – integrate your tools into WEAVE



- Expose your tools to the community – may promote community contributions for improvements, bug fixes and new features.
- Ensure your tools are compatible with other packages in WEAVE environment.
- Make it easier to get your tools to be available on platforms on all zones – where WEAVE is deployed.
- Badged tools' owner(s) keep full control of features support and release cycle. WEAVE team only test and deploy the badged tools.

WEAVE Badging Request



- Where the tool is?
LC GitLab, WCI-GitLab or GitHub.
- List of command(s) to install the tool.
- List of commands to run tests to validate the tool installation.
- Package name as listed in 'pip list' output.
- UNIX-group for the tool to be deployed under.
- More info on the tool:
Link to documentation.
Maintainer(s).
This info wil be included in WEAVE documentation.

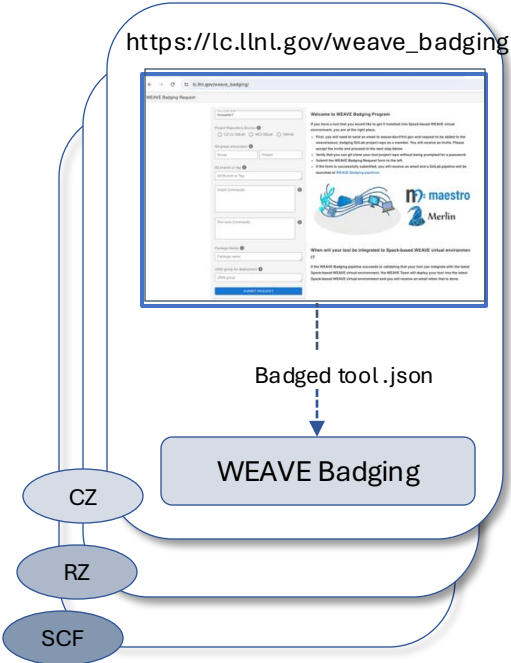
Welcome to WEAVE Badging Program

If you have a tool that you would like to get it installed into Spack-based WEAVE virtual environment, you are at the right place.

- First, you will need to send an email to weave-dev@llnl.gov and request to be added to the [weave/weave_badging](#) GitLab project repo as a member. You will receive an invite. Please accept the invite and proceed to the next step below.
- Verify that you can git clone your tool project repo without being prompted for a password.
- Submit the WEAVE Badging Request form to the left.
- If the form is successfully submitted, you will receive an email and a GitLab pipeline will be launched at [WEAVE Badging pipelines](#)

When will your tool be integrated to Spack-based WEAVE virtual environment?

If the WEAVE Badging pipeline succeeds in validating that your tool can integrate with the latest Spack-based WEAVE virtual environment, the WEAVE Team will deploy your tool into the latest Spack-based WEAVE virtual environment and you will receive an email when that is done.



WEAVE Badging Request



WEAVE Badging Request

Your LLNL OUN

muryanto1

Project Repository Source

☒ RZ LC GitLab
 ☐ WCI GitLab
 ☐ GitHub

Git group and project

Group

c2c

Project

c2c

Git branch or tag

develop

Install Commands

cd python && pip install -r requirements.txt -e .
[tools,jupyter,plotting]

Run tests Commands

cd python && nose2 -v

Package Name

c2c

UNIX group for deployment

sduser

Project documentations

☐ Build
 ☐ File
 ☒ URL

URL or full path to a file or Build Commands

https://rzc.llnl.gov/c2c

Maintainer(s)

Maintainer(s) email addresses

nissen5@llnl.gov

SUBMIT REQUEST

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WEAVE / weave_badging / Pipelines / #376663

weave badging for oun: nissen5, repo_project: c2c

Passed

Walter I Nissen created pipeline for commit [a3cfb8e5](#) 3 months ago, finished 3 months ago

For [nissen5_c2c_badging](#)

latest

3 jobs 6 minutes 49 seconds, queued for 6 seconds

Pipeline

Jobs 3

Tests 0

Group jobs by

Stage

Job dependencies

install

install_on_toss4_cpu_rz

refresh

run_tests

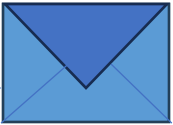
run_tests_on_toss4_cpu_rz

refresh

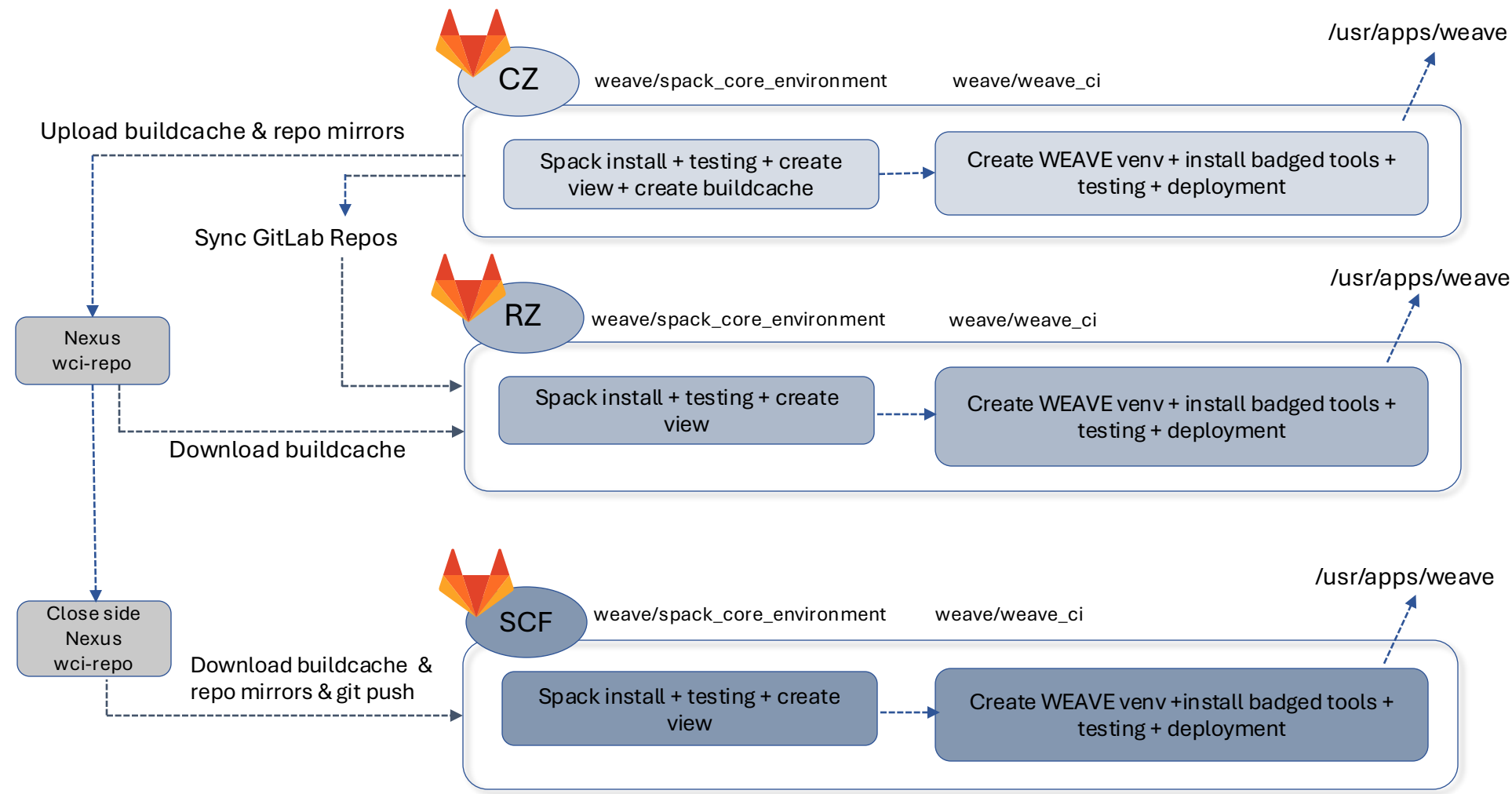
uninstall

uninstall_on_toss4_cpu_rz

refresh



WEAVE CI/CD

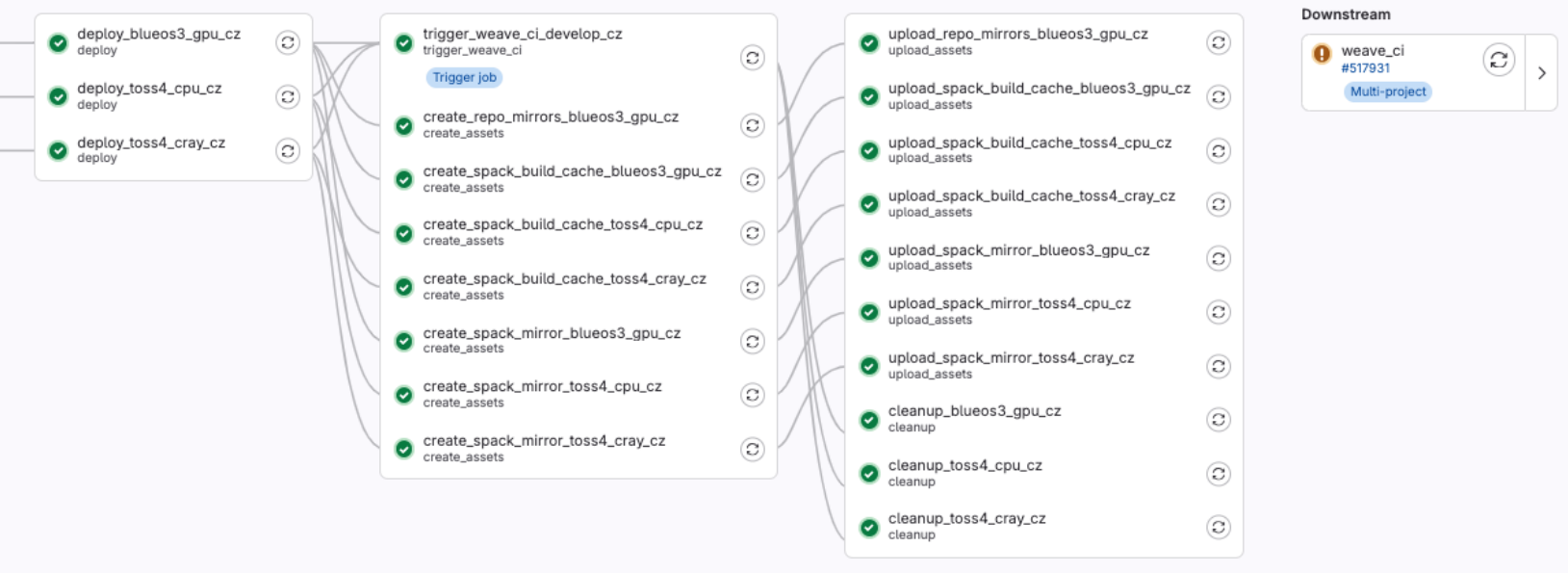
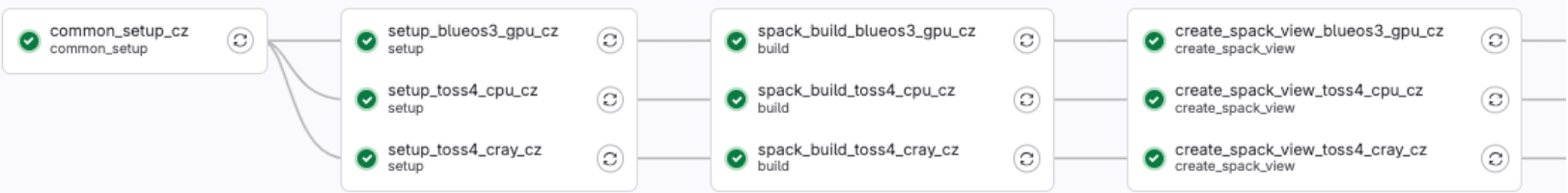


Badged tools with restrictive group permissions

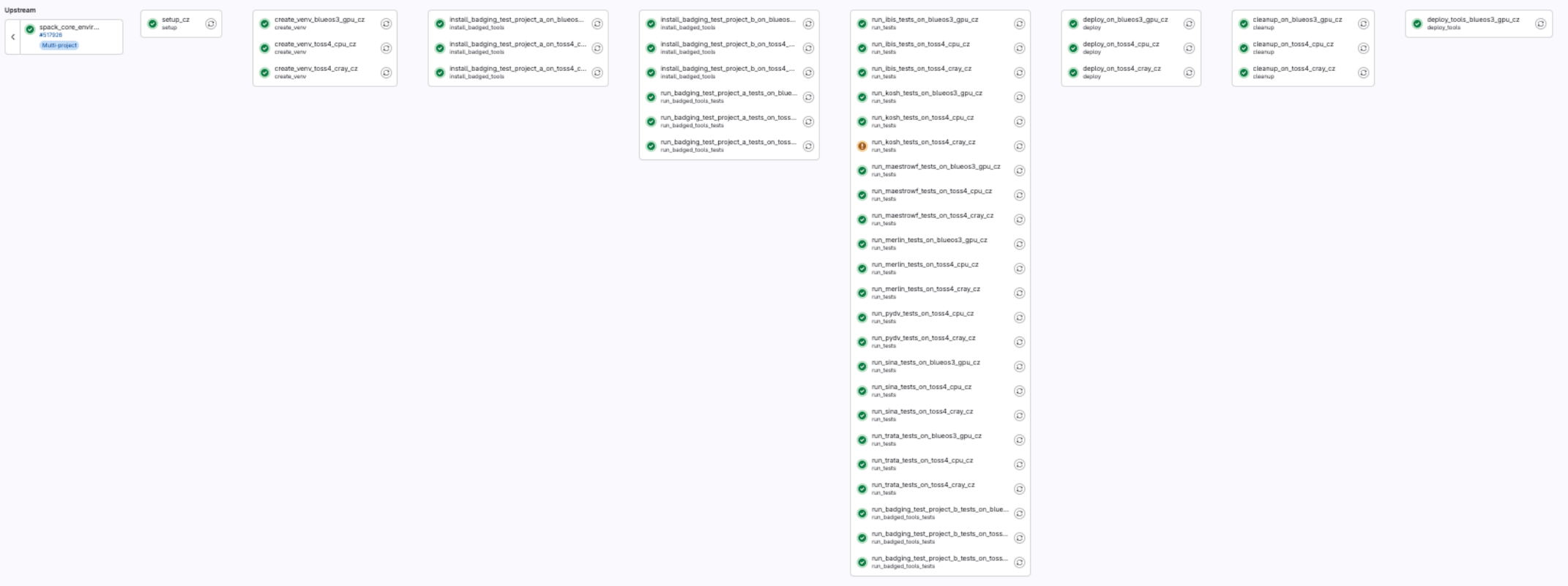
- Badged tools that are deployed with restrictive group permissions will be deployed in a separate directory with permission set to be accessible by the specified unix group.

```
|bash-4.4$ cd /usr/apps/weave/weave-develop-cpu/
|bash-4.4$ ls -l
total 36
drwxr-xr-x 3 weaveci weaveci 4096 Mar  5 08:24 badged_tools
drwxr-xr-x 2 weaveci weaveci 8192 Mar  5 08:24 bin
drwxr-xr-x 3 weaveci weaveci 4096 Mar  5 08:20 etc
drwxr-xr-x 2 weaveci weaveci 4096 Mar  5 08:19 include
drwxr-xr-x 3 weaveci weaveci 4096 Mar  5 08:19 lib
lrwxrwxrwx 1 weaveci weaveci    3 Mar  5 08:19 lib64 -> lib
drwxr-xr-x 3 weaveci weaveci 4096 Mar  5 08:20 man
-rw-r--r-- 1 weaveci weaveci  138 Mar  5 08:19 pyenv.cfg
drwxr-xr-x 3 weaveci weaveci 4096 Mar  5 08:20 share
|bash-4.4$ ls -l badged_tools
total 4
drwxr-x--- 4 weaveci sduser 4096 Mar  5 08:24 sduser
|bash-4.4$ ls -l badged_tools/sduser/
total 8
drwxr-x--- 2 weaveci sduser 4096 Mar  5 08:24 bin
drwxr-x--- 3 weaveci sduser 4096 Mar  5 08:24 lib
```

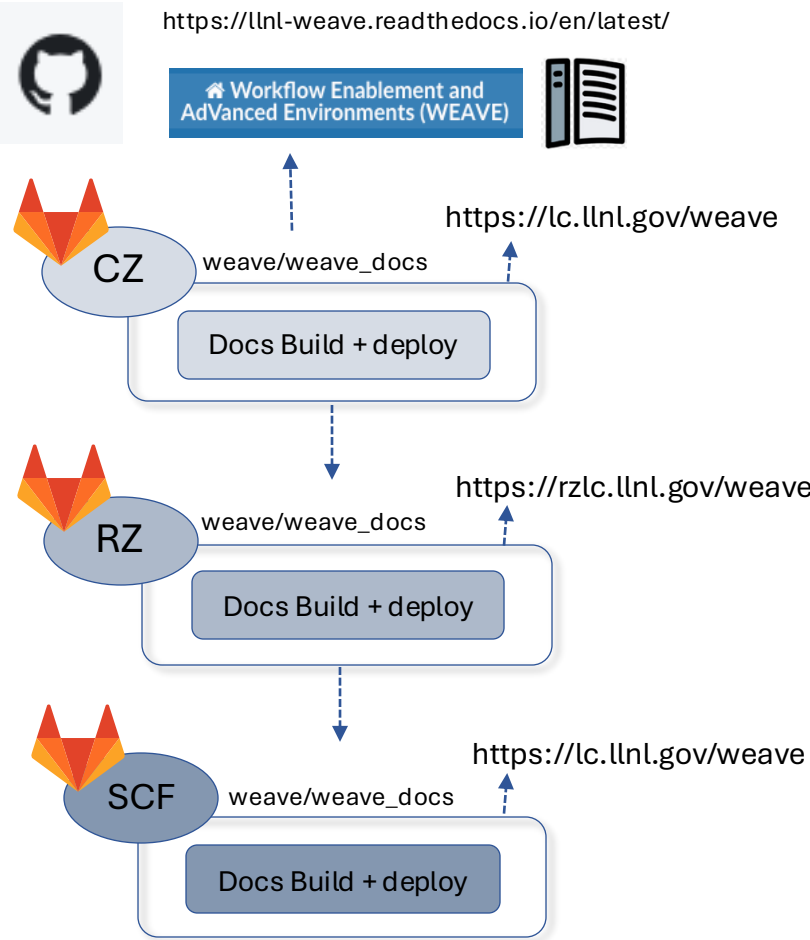
WEAVE CI/CD – weave/spack_core_environment



WEAVE CI/CD – weave/weave_ci



WEAVE Documentations



TUTORIALS

- Public
 - A Typical Workflow
 - Ball Bounce
 - Ball Bounce VVUQ
 - Ball Bounce LSTM RNN
 - Ball Bounce Transformer
 - Ball Bounce Metadata Machine Learning
 - Rayleigh-Taylor UQ Study

TUTORIALS

- Public
- CZ
 - Encore Optimization
 - AMD GPU oversubscription

TUTORIALS

- Public
- CZ
- RZ
 - GPU Oversubscription with select WSC Codes

Summary

- Contact us at:
 - weave-support@llnl.gov
 - MS Team [WEAVE | General | Microsoft Teams](#)
- Documentations:
 - <https://lc.llnl.gov/weave> (CZ & SCF)
 - <https://rzlc.llnl.gov/weave> (RZ)
- WEAVE Badging Request:
 - https://lc.llnl.gov/weave_badging (CZ & SCF)
 - https://rzlc.llnl.gov/weave_badging (RZ)

Teamwork - Thanks!

- WEAVE Team
- Robert Blake, Nicholas Sly and Loic Pottier
- Spack team
- LC GitLab: Neil J. O'Neil
- LC
- SD Platform: Kevin Athey, Kevin Gardner
- Jeff Long, Stephanie Choate