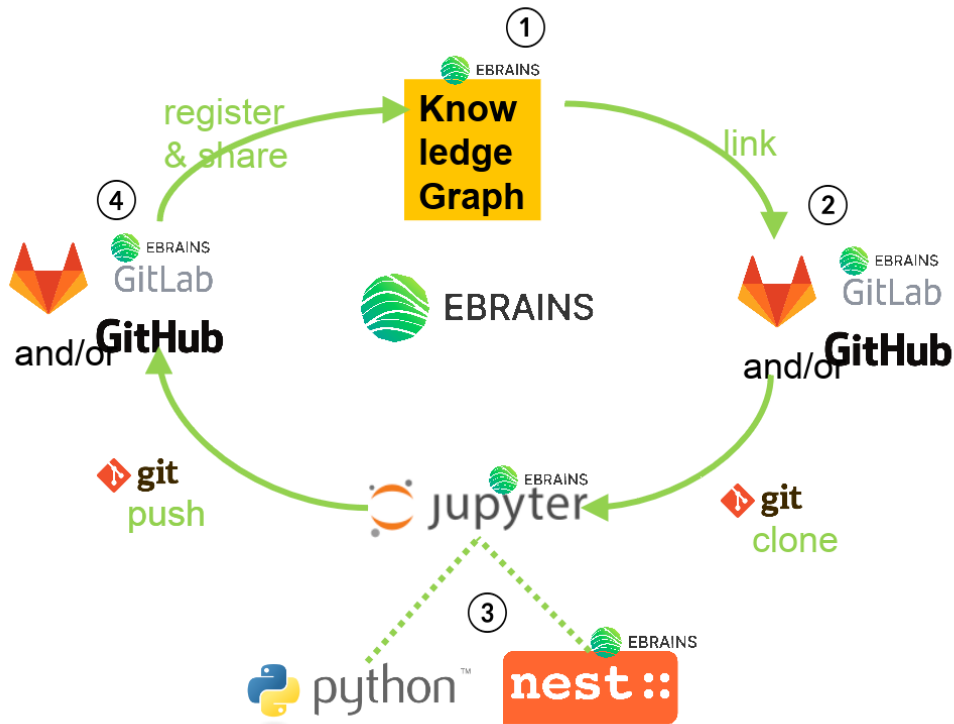


Workflows and 'wf-*' Packages

1st ESD Hackathon Heidelberg – 2024-11-26..29
ESD team, Didi Hou, Renan Shimoura, Dennis Terhorst

- Model re-use workflow example
- Make it work
 - Single click link
 - dependencies
 - testing (tomorrow)

MODEL RE-USE WORKFLOW EXAMPLE



Alice wants to study dynamical properties of the visual cortex.

- ① As the starting point she therefore queries whether a corresponding model is **already available on EBRAINS**.
- ② She **transfers it to her own workspace**.
- ③ After **interactively running and improving** it in Jupyter, she pushes the model back to her repository.
- ④ Updates **can be merged back** to the original repository and **new releases are published** in the KnowledgeGraph.

(Bernstein Conference 2022, Dennis Terhorst)

Aspects of the example

- central/decentral storage of models and data
 - links and metadata
 - own, group, or public
- installed, reproducible, comparable setup
 - tested, transitive, citable
- exploration and evolution is part of the process
 - access, availability and curation

Applications of the process

- Reproducibility
- Examples for users
- Workshops / tutorials / schools
- Use-cases

Look and feel

Repository README

Try it on EBRAINS

Want to start using or simply run the model? Click the button below.


Please note: make sure you check and follow our [User instructions](#), especially if you plan to make and save the changes, or if you simply need step-by-step instructions.

⇒ Try it on  EBRAINS

search for the “Multi Area Model”

Jupyter opens

Synchronizing [git repository](#) before sending you to `lab/tree/multi-area-model/multi-area-model.ipynb...`



Obfuscating Quigley Matrix

[Click to see more details](#)

Notebook opens

Filter files by name

/ multi-area-model /

Name	Last Modified
config_files	seconds ago
figures	seconds ago
multiarea_...	seconds ago
simulations	seconds ago
tests	seconds ago
_config.yml	seconds ago
CITATION	seconds ago
config_tem...	seconds ago
framework...	seconds ago
FZJ_logo...	seconds ago
HBP_logo...	seconds ago
LICENSE...	seconds ago
M2E_pop_...	seconds ago
M2E_stati...	seconds ago
model_con...	seconds ago
• multi-area-...	seconds ago
README...	seconds ago
requireme...	seconds ago
run_exam...	seconds ago
run_exam...	seconds ago
run_simula...	seconds ago
start_jobs.py	seconds ago

Launcher multi-area-model.ipynb

Markdown git

Down-scaled multi-area model

Local connectivity

Cortico-cortical connectivity

The code in this notebook implements the down-scaled version of spiking network documented in the following publications:

How to make it work

Repository

Have a public* repository with your code.

Try it on EBRAINS

Want to start using or simply run the model? Click the button below.

Please note: make sure you check and follow our [User instructions](#), especially if you plan to make and save the changes, or if you simply need step-by-step instructions.

⇒ Try it on  EBRAINS

- place a link in your README
- (optionally) use a central image

*) non-public is possible.

Single click link




+ ⇒ Try it on  EBRAINS

nbgitpuller.readthedocs.io + TryItOnEBRAINS.png


```
1 [
2   ![] (https://nest-simulator.org/TryItOnEBRAINS.png)
3 ] (https://lab.ebrains.eu/hub/user-redirect/git-pull?repo=https%3A%2F%2Fgithub.com
4   %2F...model.ipynb&branch=v1.2
5 )
```

 works.



On-Demand H100 SXM GPUs for \$3.49/hr/GPU with Lambda 640 GB of vRAM in one 8x instance

Launch now

Ad by EthicalAds · 



nbgitpuller link generator

Use the following form to create your own `nbgitpuller` links.

Note

Consider using the [nbgitpuller link generator browser extension](#) instead! Available for [Firefox](#) and [Chrome](#).

JupyterHub [Launch from Canvas](#) [Binder](#)

`https://lab.ebrains.eu/hub/user-redirect/git-pull?repo=https%3A%2F%2Fgitlab.ebrains.eu%2F` Copy

JupyterHub URL ✓

The JupyterHub to send users to. [nbgitpuller](#) must be installed in this hub.

Git Repository URL ✓

branch ✓

Use `main` instead of `master` for [new GitHub repositories](#)

File to open ✓

This file or directory from within the repo will open when user clicks the link.

Application to Open

- Classic Jupyter Notebook
- RetroLab
- JupyterLab
- RStudio
- Shiny
- Custom URL

Named Server to open ✓

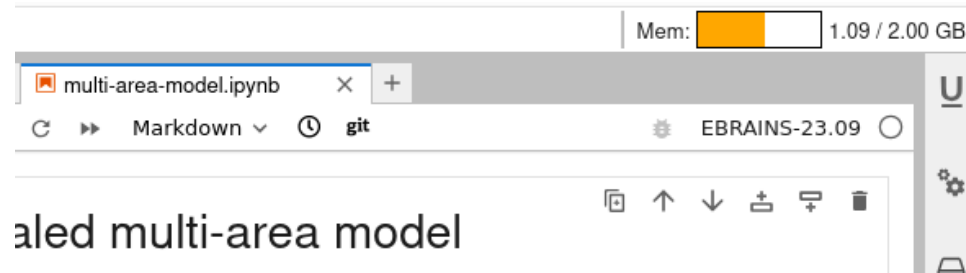
Use for specific [named server](#) Jupyter server instance.

Good to know

- Point to *releases*, not “main” branch
- Note we didn’t specify the *kernel* to use
- Central image can be changed when EBRAINS decides to change logo or color scheme, etc.
(see [issue #51](#) 🚧)

Set kernel

Kernel is saved with the notebooks



in the code:

- LICENSE.md
- M2E_pop_rates_ref.npy
- M2E_statistical_test.ipynb
- README.md
- _config.yml
- config_template.py
- framework_sketch.png
- model_construction.png
- multi-area-model.ipynb
- requirements.txt

```
710 ],
711 "metadata": {
712   "kernelspec": {
713     "display_name": "EBRAINS-23.09",
714     "language": "python",
715     "name": "ebrains-23.09"
716   },
717   "language_info": {
718     "codemirror_mode": {
719       "name": "ipython",
720       "version": 3
721     },
722     "file_extension": ".py",
723     "mimetype": "text/x-python",
724     "name": "python",
725     "nbconvert_exporter": "python"
```

Sanitize dependencies

```
•[1]: !pip install dicthash  
  
[ ]: %matplotlib inline  
import numpy as np  
import sys  
import os  
from IPython.display import display, HTML
```

- no '!pip install ...' lines in your notebooks



- know which version *ranges* are likely to work

```
depends_on('py-numpy@:1.16.99', when='@:2.14.99+python', type=
```

Create a 'wf-*' package

→ <https://ebrains.eu/esd> → ebrains-spack-builds/packages/wf-*/package.py

```
class WfMultiAreaModel(Package):
    """Meta-package to collect all dependencies of the Multi-Area-Model."""

    homepage="https://inm-6.github.io/multi-area-model/"
    git = "https://github.com/INM-6/multi-area-model"
    maintainer = ["terhorstd", "didi-hou", "rshimoura"]

    version("1.2.0", tag="v1.2.0")
    version("1.1.1", tag="v1.1.1")
    version("1.1.0", tag="v1.1.0")
    version("master", branch="master")

    depends_on("py-nested-dict", type=("run", "test"))
    depends_on("py-dicthash", type=("run", "test"))
    depends_on("py-matplotlib", type=("run", "test"))
    depends_on("py-numpy", type=("run", "test"))
    depends_on("py-scipy", type=("run", "test"))
    depends_on("py-future", type=("run", "test"))
    depends_on("nest", type=("run", "test"))
    depends_on("py-neo", type=("run", "test"))
    depends_on("py-elephant", type=("run", "test"))
    depends_on("r-aod", type=("run", "test"))
    depends_on("py-notebook", type=("run", "test"))
```


Details

[→ https://ebrains.eu/esd](#) → ebrains-spack-builds → [Wiki](#)

Home

Edit



Last edited by **Dennis Terhorst** 3 months ago

EBRAINS Software Distribution (ESD)

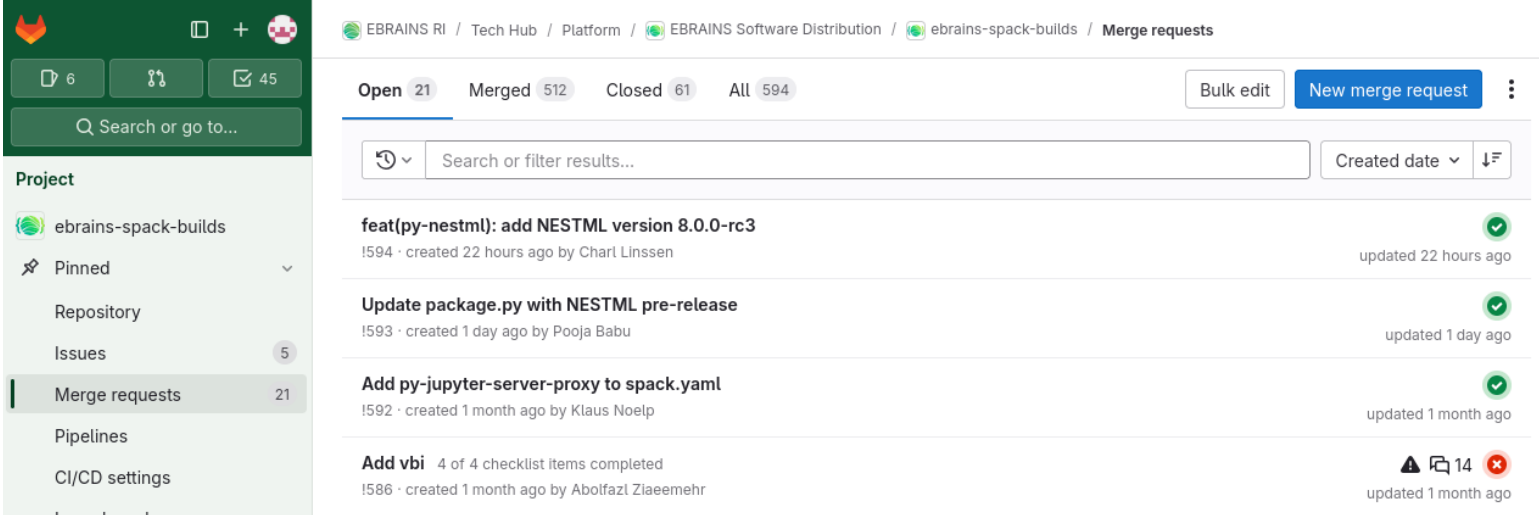
This wiki collects materials around the operational parts of the package definitions, releases and build mechanics.

- Conceptual steering of the work is done in the [EBRAINS Software Distribution Integration and Quality](#) work group meetings (aka "ESD meetings").
- HPC deployment related points are discussed in the [ESD-on-HPC](#) working group.
- [Software Quality Checklists](#)

HowTos/Guidelines

- [Adding a new EBRAINS tool](#)
- [Adding a new EBRAINS wf-package](#)
- [Loading the ESD on GitLab CI](#)
- [FAQ](#)

Create a merge request



EBRAINS RI / Tech Hub / Platform / EBRAINS Software Distribution / ebrains-spacak-builds / Merge requests

Open 21 Merged 512 Closed 61 All 594

Bulk edit New merge request


Search or filter results... Created date

- feat(py-nestml): add NESTML version 8.0.0-rc3**
!594 · created 22 hours ago by Charl Linssen updated 22 hours ago
- Update package.py with NESTML pre-release**
!593 · created 1 day ago by Pooja Babu updated 1 day ago
- Add py-jupyter-server-proxy to spack.yaml**
!592 · created 1 month ago by Klaus Noelp updated 1 month ago
- Add vbi** 4 of 4 checklist items completed
!586 · created 1 month ago by Abolfazl Ziaemehr updated 1 month ago

when merged

 deployment to EBRAINS-experimental kernel next Friday

Summary

- Single line change in your README 
- Understand dependencies
- Declare in a [package.py](#)

Next

- Version bump and release procedure
- Specify tests (see presentation tomorrow)

Backup

⇒ Try it on  **EBRAINS Examples**

- <https://nest-simulator.readthedocs.io/en/latest/examples/>
- <https://github.com/INM-6/multi-area-model>
- <https://github.com/APE-group/WTA-states>

Version bump considerations

