



NeuroFedora

A ready to use Free and Open source platform for neuroscientists

Ankur Sinha @ Fedora

7/12/2018

Philosophy

Users should have the freedom to **share, study, and modify** software¹.

¹Free software foundation

Users should have the freedom to share, study, and modify software¹.

The user is free.

¹Free software foundation

Everyone should have the freedom to share, study, and modify scientific material².

²Open source for neuroscience

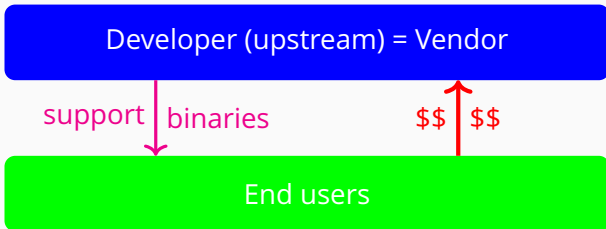
Everyone should have the freedom to share, study, and modify scientific material².

So, scientists, hobbyists, students ... should all have access to scientific material—irrespective of social status, location, age, nationality

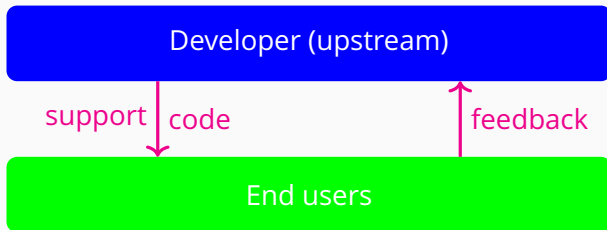
²Open source for neuroscience

A platform?

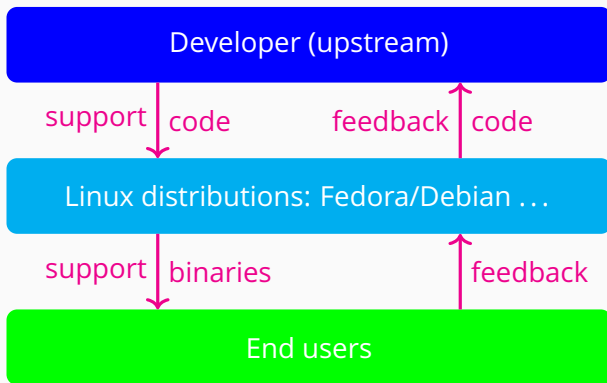
The developer—user relationship: proprietary software



The developer—user relationship: free software



The developer—user relationship: distributions



Distributions: package maintainers

- Build software:
 - including all dependencies.

³Fedora project: staying close to upstream.

Distributions: package maintainers

- Build software:
 - including all dependencies.
- Check for correctness (!).

³Fedora project: staying close to upstream.

Distributions: package maintainers

- Build software:
 - including all dependencies.
- Check for correctness (!).
- Keep up with upstream: updates, security fixes

³Fedora project: staying close to upstream.

Distributions: package maintainers

- Build software:
 - including all dependencies.
- Check for correctness (!).
- Keep up with upstream: updates, security fixes
- Connect upstream to users.

³Fedora project: staying close to upstream.

Distributions: package maintainers

- Build software:
 - including all dependencies.
- Check for correctness (!).
- Keep up with upstream: updates, security fixes
- Connect upstream to users.
- Enable upstream to improve their software³.

³Fedora project: staying close to upstream.

NeuroFedora

Goals

- Enable free science:

Goals

- Enable free science:
 - researchers (end-users):
 - ready to use tested tools.

Goals

- Enable **free science**:
 - researchers (end-users):
 - ready to use **tested** tools.
 - upstreams:
 - feedback from users.
 - software improvements.
 - implement standards.

Goals

- Enable **free science**:
 - researchers (end-users):
 - ready to use **tested** tools.
 - upstreams:
 - feedback from users.
 - software improvements.
 - implement standards.
- Help make science **“default to open”**.

NeuroFedora example I: NEST (★★★★★)

- Build requires⁴:
 - **Compulsory:** Python+, Cython, GSL, Ncurses, CMake, GCC.

⁴Fedora project: nest SPEC file.

NeuroFedora example I: NEST (★★★★★)

- Build requires⁴:
 - **Compulsory:** Python+, Cython, GSL, Ncurses, CMake, GCC.
 - **Optional:** libneurosim (for PyNN), MUSIC, MPICH, OpenMPI.

⁴Fedora project: nest SPEC file.

NeuroFedora Example I: NEST: usage

```
$ sudo dnf install python3-nest  
$ sudo dnf install python3-nest-mpich  
$ sudo dnf install python3-nest-openmpi
```

NeuroFedora example II: PyNN (★★★★)

- Build requires⁵:

⁵ Fedora project: PyNN SPEC file (WIP).

NeuroFedora example II: PyNN (★★★★)

- Build requires⁵:
 - **Compulsory:** Python+, Ncurses, CMake, GCC.
 - **At least one of:** NEST, Brian, NEURON.

⁵ Fedora project: PyNN SPEC file (WIP).

NeuroFedora Example II: PyNN (WIP): usage

```
$ sudo dnf install python3-PyNN
```

Installs PyNN and NEST, Brian⁶, NineML (and NEURON⁷).

⁶ Requires Brian v1

⁷ WIP: Requires upstream improvements.

NeuroFedora Example II: PyNN (WIP): usage

```
$ sudo dnf install python3-PyNN
```

Installs PyNN and NEST, Brian⁶, NineML (and NEURON⁷).

```
$ sudo dnf install python3-PyNN-nest
```

Installs PyNN and NEST.

⁶Requires Brian v1

⁷WIP: Requires upstream improvements.

NeuroFedora: package metrics

- 67 packages available in total⁸.
- ~130 in queue⁹.

⁸src.fedoraproject.org: Neuro-SIG

⁹[Pagure.io](https://pagure.io/Neuro-SIG/issues): Neuro-SIG: issues

- Available: NEST, NineML, moose, Brian2, PyLEMS.
- In queue (26)¹⁰: NEURON, PyNN, Brian1, NetPyne, Genesis, NeuroMLlite, pyNeuroML, pypeg, HNN, libSBML ...

¹⁰Neuro-SIG: computational neuroscience

- Available: biosig, dcm2niix, gifticlib, InsightToolKit, libminc, dipy, fsleyes, mne-bids, pydicom ...
- In queue (40)¹¹: Nistats, FEAT, TrancToR, FSL, SPM, connectomeviewer, nipype, itktools ...

¹¹ Neuro-SIG: neuroimaging

- Available: nilearn, scikit-learn, klusta, lazyarray, neo, nitime, patsy ...
- In queue (25)¹²: spyke-viewer, stimfit, pyelectro, pyspike, pymc3 ...

¹²Neuro-SIG: data analysis

- Available: texlive (full), duecredit, chaospy, ...
- In queue (37)¹³: spiking-circus, pingouin, spykeutils, PsychToolbox, tridesclous, uncertainpy, neuroshare, Btmorph ...

¹³Neuro-SIG: utilities

- Continue package imports.

¹⁴[Pagure.io: Neuro-SIG: Documentation](https://pagure.io/Neuro-SIG/Documentation)

¹⁵registry.fedoraproject.org

NeuroFedora: plans

- Continue package imports.
- Update documentation¹⁴.

¹⁴[Pagure.io: Neuro-SIG: Documentation](https://pagure.io/Neuro-SIG/Documentation)

¹⁵registry.fedoraproject.org

NeuroFedora: plans

- Continue package imports.
- Update documentation¹⁴.
- Docker images¹⁵!

¹⁴[pagure.io: Neuro-SIG: Documentation](https://pagure.io/Neuro-SIG/Documentation)

¹⁵registry.fedoraproject.org

NeuroFedora: plans

- Continue package imports.
- Update documentation¹⁴.
- Docker images¹⁵!
- Announce to research community.

¹⁴[pagure.io: Neuro-SIG: Documentation](https://pagure.io/Neuro-SIG/Documentation)

¹⁵registry.fedoraproject.org

NeuroFedora: plans

- Continue package imports.
- Update documentation¹⁴.
- Docker images¹⁵!
- Announce to research community.
- RHEL/CentOS/Scientific Linux support (our cluster runs Scientific Linux).

¹⁴[pagure.io: Neuro-SIG: Documentation](https://pagure.io/Neuro-SIG/Documentation)

¹⁵registry.fedoraproject.org

NeuroFedora: plans

- Continue package imports.
- Update documentation¹⁴.
- Docker images¹⁵!
- Announce to research community.
- RHEL/CentOS/Scientific Linux support (our cluster runs Scientific Linux).
- BoFs/Hack sessions at scientific conferences (workshop at CNS 2019?)

¹⁴[pagure.io: Neuro-SIG: Documentation](https://pagure.io/Neuro-SIG/Documentation)

¹⁵registry.fedoraproject.org

- More package maintainers¹⁶.

¹⁶Fedora: Join the package maintainers

¹⁷Fedora QA: testing updates

NeuroFedora: requirements

- More package maintainers¹⁶.
- Testers—end users who are happy to test packages and provide feedback (QA)¹⁷.

¹⁶Fedora: Join the package maintainers

¹⁷Fedora QA: testing updates





















NeuroFedora: requirements

- More package maintainers¹⁶.
- Testers—end users who are happy to test packages and provide feedback (QA)¹⁷.
- Documentation writers/proofreaders.

¹⁶Fedora: Join the package maintainers

¹⁷Fedora QA: testing updates

NeuroFedora: current team

10 Members		
	ankursinha	
	zbyszek	
	ignatenkobrain	
	ilgrad	
	pac23	
	lbazan	
	sergiopr	
	mhough	
	linuxmodder	
	blackfile	

NeuroFedora: get in touch

- Landing page (until a website/docs are set up) on Fedora wiki¹⁸.
- IRC channel: #fedora-neuro on Freenode.net¹⁹.
- Telegram channel: @NeuroFedora²⁰.
- Mailing list on lists.fedoraproject.org²¹.
- Software suggestion form²².

¹⁸[Fedora wiki: NeuroFedora](#)

²⁰[#fedora-neuro on Freenode](#)

²¹[@NeuroFedora on Telegram](#)

²²neuro-sig@lists.fedoraproject.org

²³[NeuroFedora: suggest software for inclusion](#)



<https://fedoraproject.org/wiki/SIGs/NeuroFedora>

Creative Commons Attribution-ShareAlike 4.0 International
License.

