NeuroFedora

FOSS and open (neuro) science

NeuroFedora contributors

FOSS and Free/Open Science

Free/Open Source Software

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[1] Free software foundation

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The user is free.

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Free/Open Source Science?

Ideal: Everyone should have the freedom to share, study, and modify scientific material[2].

[2] Open source for neuroscience

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

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Free/Open Source Science?

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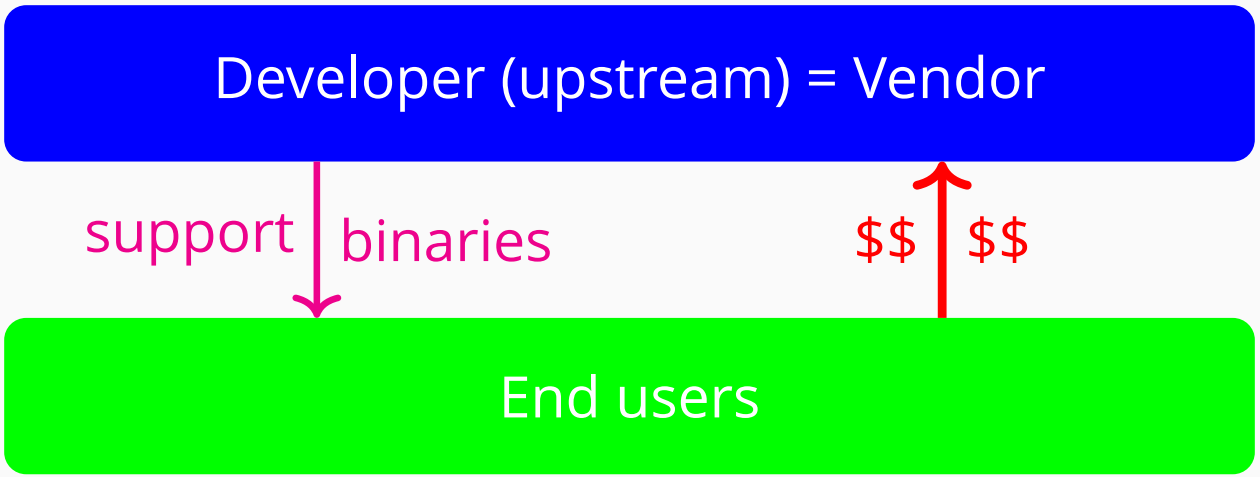
So, scientists, hobbyists, students . . . should all have access to scientific material—irrespective of social status, location, age, nationality . . . .

Especially given that social policy must be evidence based.

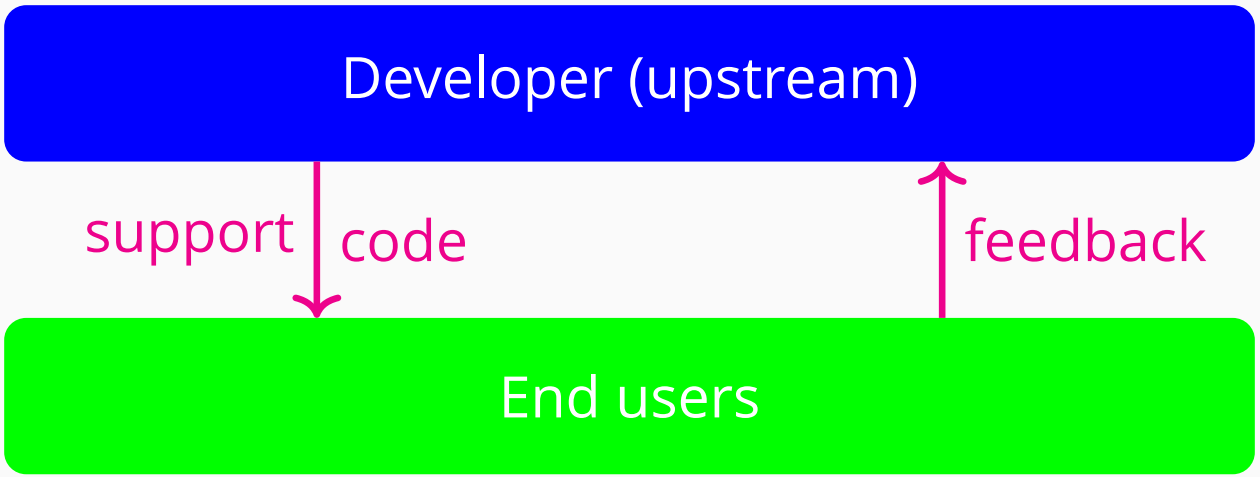
[2] Open source for neuroscience

A platform?

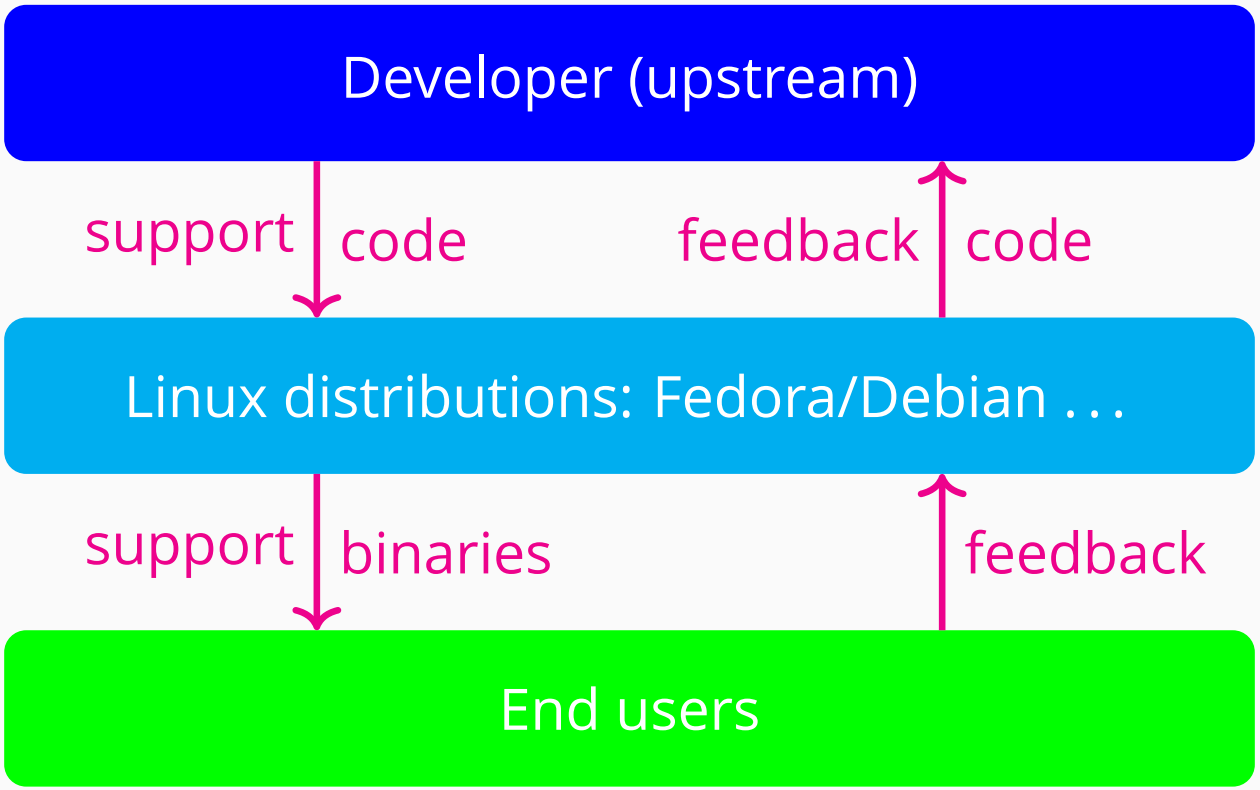
The developer—user relationship: proprietary software



The developer—user relationship: free software



The developer—user relationship: distributions



Distributions: package maintainers

- Build software:
  - including all dependencies.

[3] Fedora project: staying close to upstream.

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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 software[3].

[3] Fedora project: staying close to upstream.

NeuroFedora

Goals

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- 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 requires[4]:
  - Compulsory: Python+, Cython, GSL, Ncurses, CMake, GCC.

[4] Fedora project: nest SPEC file.

NeuroFedora example I: NEST (★★★★★)

- Build requires[4]:
  - Compulsory: Python+, Cython, GSL, Ncurses, CMake, GCC.
  - Optional: libneurosim (for PyNN), MUSIC, MPICH, OpenMPI.

[4] Fedora 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 requires[5]:

[5] Fedora project: PyNN SPEC file (WIP).

NeuroFedora example II: PyNN (★★★)

- Build requires[5]:
  - 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, Brian[6], NineML (and NEURON[7]).

[6] Requires Brian v1

[7] WIP: Requires upstream improvements.

NeuroFedora Example II: PyNN (WIP): usage

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

Installs PyNN and NEST, Brian[6], NineML (and NEURON[7]).

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

Installs PyNN and NEST.

[6] Requires Brian v1

[7] WIP: Requires upstream improvements.

NeuroFedora: package metrics

- 67 packages available in total[8].
- ~130 in queue[9].

[8] src.fedoraproject.org: Neuro-SIG

[9] Pagure.io: Neuro-SIG: issues

NeuroFedora: computational neuroscience

- Available: NEST, NineML, moose, Brian2, PyLEMS.
- In queue (26)[10]: NEURON, PyNN, Brian1, NetPyne, Genesis, NeuroMLlite, pyNeuroML, pype9, HNN, libSBML ...

[10] Neuro-SIG: computational neuroscience

NeuroFedora: neuroimaging

- 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

NeuroFedora: data analysis

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

[12] Neuro-SIG: data analysis

NeuroFedora: utilities

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

[13] Neuro-SIG: utilities

NeuroFedora: plans

- Continue package imports.

[14] Pagure.io: Neuro-SIG: Documentation

[15] registry.fedoraproject.org

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- Announce to research community.

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- Announce to research community.
- RHEL/CentOS/Scientific Linux support (our cluster runs Scientific Linux).

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NeuroFedora: plans

- Continue package imports.
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- Docker images[15]!
- 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

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NeuroFedora: requirements

- More package maintainers[16].

[16] Fedora: Join the package maintainers

[17] Fedora QA: testing updates

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- More package maintainers[16].
- Testers—end users who are happy to test packages and provide feedback (QA)[17].

[16] Fedora: Join the package maintainers

[17] Fedora QA: testing updates

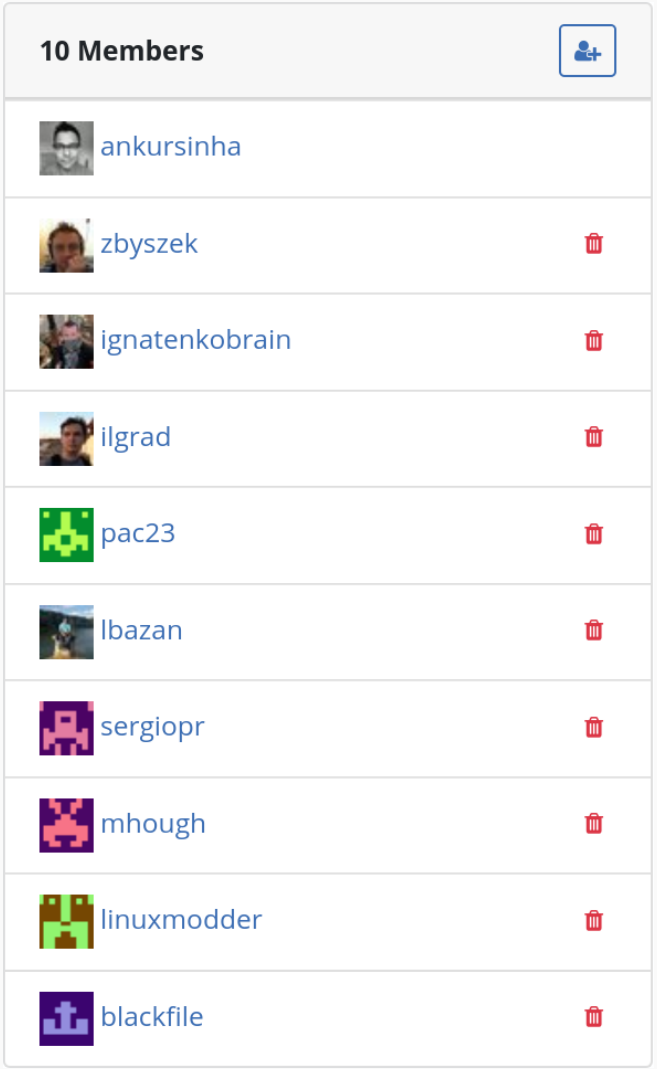
NeuroFedora: requirements

- More package maintainers[16].
- Testers—end users who are happy to test packages and provide feedback (QA)[17].
- Documentation writers/proofreaders.

[16] Fedora: Join the package maintainers

[17] Fedora QA: testing updates

NeuroFedora: current team



[0] Fedora Infrastructure

NeuroFedora: get in touch

- Landing page (until a website/docs are set up) on Fedora wiki[18].
- IRC channel: #fedora-neuro on Freenode.net[19].
- Telegram channel: @NeuroFedora[20].
- Mailing list on lists.fedoraproject.org[21].
- Software suggestion form[22].

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[19] Fedora wiki: NeuroFedora

[20] #fedora-neuro on Freenode

[21] @NeuroFedora on Telegram

[22] neuro-sig@lists.fedoraproject.org

[23] NeuroFedora: suggest software for inclusion

NeuroFedora

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