SUPPORTING INFORMATION FOR:

Pauliuk, S., G. Majeau-Bettez, C.L. Mutel, B. Steubing, and K. Stadler. 2015. Lifting industrial ecology modeling to a new level of quality and transparency : A call for more transparent publications and a collaborative open source software framework. *Journal of Industrial Ecology.*

Summary

This supporting information contains a detailed list of online references to programming practice in other fields, links to some software tools mentioned in the paper, and links to several blog entries on relevant topics.

Content

Appendix S1: Resources and references for scientific programming

The online resources listed below represent a snapshot of the development in early 2015. All hyperlinks were checked on Feb 12th, 2015. Some of these links may not be permanent. We apologize for any inconvenience this may cause.

I) Examples of data and software repositories from other scientific fields

Biology and biological engineering:
http://openwetware.org/wiki/Main_Page

NeuronDB, a database on neuronal properties:
http://senselab.med.yale.edu/neurondb/

Bioscience software and data:
https://www.ncbi.nlm.nih.gov/guide/data-software/

Bioinformatics:
http://etetoolkit.org/

Astronomy:
http://www.astropython.org/

Climate modelling:
http://cmip-pcmdi.llnl.gov/

II) Journal and public calls for open data and open science

Royal society: Science as an open enterprise:
https://royalsociety.org/policy/projects/science-public-enterprise/report/

Science: Making data maximally available:
http://www.sciencemag.org/content/331/6018/649.full

IEEE: Reproducible research for scientific computing:
http://www.computer.org/csdl/mags/cs/2012/04/mcs2012040013-abs.html

PNAS: Requirement for data, materials, and protocols:
http://www.pnas.org/site/authors/journal.xhtml

Nature Edtiorial: Code share
http://www.nature.com/news/code-share-1.16232

III) Open Science

Definition of open science:
http://www.openscience.org/blog/?p=269

The open science book:
http://book.openingscience.org/

Open data and content definition:
http://opendefinition.org/

Berlin declaration:
http://openaccess.mpg.de/Berlin-Declaration

IV) Data re-use and archiving:

Data archiving:
http://www.sciencedirect.com/science/article/pii/S0169534710002697

Call for more reliable statistics on global indicators:
http://www.nature.com/news/time-for-global-statistics-we-can-count-on-1.13948

V) Selected blog posts on scientific programming

http://marciovm.com/i-want-a-github-of-science/

http://blog.martinfenner.org/2014/03/10/continuous-publishing/

http://software-carpentry.org/blog/2013/05/what-does-victory-look-like.html

http://www.bbc.com/news/technology-15916677

http://bjoern.brembs.net/2014/03/what-is-the-difference-between-text-data-and-code/

http://software-carpentry.org/blog/2013/10/you-keep-using-that-word.html

http://software-carpentry.org/blog/2013/10/the-state-of-open-science.html

http://www.techrepublic.com/article/the-worlds-largest-open-source-company-doesnt-sell-software/

http://opensource.com/life/13/9/open-source-intellectual-property-lawyer

VI) Recent Advances on data sharing in the MRIO community

Eora world MRIO:
http://www.worldmrio.com/

The Industrial Ecology Lab:

http://www.isa.org.usyd.edu.au/ielab/ielab.shtml

Zeean:
http://www.zeean.net

VII) Repositories for sharing code

GitHub:
https://github.com/

BitBucket:
https://bitbucket.org/

SourceForge:
www.sourceforge.net

Google Code:
https://code.google.com/

VIII) Overview of different open source licences

A good introductory blog post on the topic:
http://fosswire.com/post/2007/04/the-differences-between-the-gpl-lgpl-and-the-bsd/

Open data commons:
http://opendatacommons.org/

A license browser by GitHub:
http://choosealicense.com/

Overview of open source licenses by opensource.org:
http://opensource.org/licenses

Link to the Europan Union Public License:
https://joinup.ec.europa.eu/software/page/eupl

IX) Overview of common open source programming languages and environments, which are relevant for industrial ecology modelling

Julia:
http://julialang.org/

Octave:
https://www.gnu.org/software/octave/

Python:
https://www.python.org/

R:
http://www.r-project.org/

Appendix S2: More about Python and the Python modules for industrial ecology

I) More about Python:

Feature on Python in Nature:
http://www.nature.com/news/programming-pick-up-python-1.16833

How to Think Like a Computer Scientist:
http://www.greenteapress.com/thinkpython/

Python the hard way:
http://learnpythonthehardway.org/

Python scientific lecture notes:
http://scipy-lectures.github.io/index.html

The Google Python style guide:
https://google-styleguide.googlecode.com/svn/trunk/pyguide.html

Google's Python class:
https://developers.google.com/edu/python/

Teaching biologists:
http://pythonforbiologists.com/

II) Links to open source software in Python in other scientific fields

PyCogent (software library for genomic biology):
http://pycogent.org/

The Radio astronomical TRAnsient detection Pipeline (TRAP):
https://www.euroscipy.org/2014/schedule/presentation/11/

Astronomy:
http://www.astropython.org/

III) Links to the Python modules for industrial ecology, their documentation and tutorials

Brightway2LCA:

Brightway2LCA homepage:
http://brightwaylca.org/

Use of ipython notebooks together with Brightway2LCA:
http://chris.mutel.org/static/images/ipython-notebooks-handout.pdf

ecospold2matrix:

Home:
https://github.com/majeau-bettez/ecospold2matrix

Documentation:
http://nbviewer.ipython.org/github/majeau-bettez/ecospold2matrix/blob/master/doc/ecospold2matrix_demo.ipynb

allocation_construct:

Home:
https://github.com/majeau-bettez/allocation_construct

Documentation:
http://onlinelibrary.wiley.com/doi/10.1111/jiec.12142/abstract

pySUT:

Home:
https://github.com/stefanpauliuk/pySUT

Documentation and tutorial:
http://nbviewer.ipython.org/github/stefanpauliuk/pySUT/blob/master/Doc/pySUT_Documentation.ipynb

pymrio:

Home:
https://github.com/konstantinstadler/pymrio

Basic documentation:
http://konstantinstadler.github.io/pymrio/index.html

Basic intro:
http://nbviewer.ipython.org/github/konstantinstadler/pymrio/blob/master/doc/notebooks/pymrio_basic_introduction.ipynb

Analyzing EXIOBASE 2:
http://nbviewer.ipython.org/github/konstantinstadler/pymrio/blob/master/doc/notebooks/pymrio_exiobase_tutorial.ipynb

Using pymrio without parser:
http://nbviewer.ipython.org/github/konstantinstadler/pymrio/blob/master/doc/notebooks/pymrio_directly_assign_attributes.ipynb

pyDSM:

Home:
https://github.com/stefanpauliuk/pyDSM

Documentation and tutorial:

http://nbviewer.ipython.org/github/stefanpauliuk/pyDSM/blob/master/Doc/pyDSM_Documentation.ipynb