"Essential skills for reproducible research computing"

Universidad Técnica Federico Santa María

3–6 January 2017

A Barba-group workshop for graduate students

`https://barbagroup.github.io/essential_skills_RRC/`

Lorena A. Barba, The George Washington University

with Barba-group members:

Gilbert Forsyth

Natalia Clementi

@gforsyth

@gilforsyth

@ncclementi

@ncclementi

A syllabus for research computing

1. command line utilities in Unix/Linux
2. an open-source scientific software ecosystem (our favorite is Python's)
3. software version control (we advocate the distributed kind: our favorite is git)
4. good practices for scientific software development: code hygiene and testing
5. knowledge of licensing options for sharing software

`https://barbagroup.github.io/essential_skills_RRC/`

Universidad Técnica Federico Santa María, Valparaíso

3 January 2017

Open Licensing

Prof. Lorena A. Barba

Mechanical and Aerospace Engineering Department
The George Washington University

@LorenaABarba

Casting Out Nines

math ∩ tech ∩ edu

4+1 Interview: Lorena Barba

Why do you advocate so strongly for open-source technology in research and education?

`http://rtalbert.org/blog/2015/interview-lorena-barba`

Free & Open-source Software (FOSS)

An invention of great impact:

- an alternative to intellectual-property instruments
- OS licenses allow people to coordinate their work freely

Open-source licenses:

People can coordinate their work freely, within the confines of copyright law, while making access and wide distribution a priority.

Open source

It's not sufficient to make the source public to read. We must attach a **license** that allows others to modify and distribute the code.

The Open Definition

"Open data and content can be freely used, modified, and shared by anyone for any purpose."

http://opendefinition.org

Open source & Reproducibility

Def.— Reproducible research

Authors provide all the necessary data and the computer codes to run the analysis again, re-creating the results.

Schwab, M., Karrenbach, N., Claerbout, J. (2000) “Making scientific computations reproducible,” *Comp. Sci. Eng.* Vol. 2(6):61–67

REPRODUCIBLE RESEARCH

Reproducible Research in Computational Harmonic Analysis

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David L. Donoho, Arian Maleki, and Morteza Shahram
Stanford University
Inam Ur Rahman
Apple Computer
Victoria Stodden
Harvard Law School

http://dx.doi.org/10.1109/MCSE.2009.15

Guide to Licenses

Everyone developing software in an academic setting should have working knowledge of software licenses.

OPEN ACCESS Freely available online

PLoS COMPUTATIONAL BIOLOGY

Education

A Quick Guide to Software Licensing for the Scientist-Programmer

Andrew Morin[1], Jennifer Urban[2], Piotr Sliz[1]*

1 Department of Biological Chemistry and Molecular Pharmacology, Harvard Medical School, Boston, Massachusetts, United States of America, **2** Samuelson Law, Technology & Public Policy Clinic, School of Law, University of California Berkeley, Berkeley, California, United States of America

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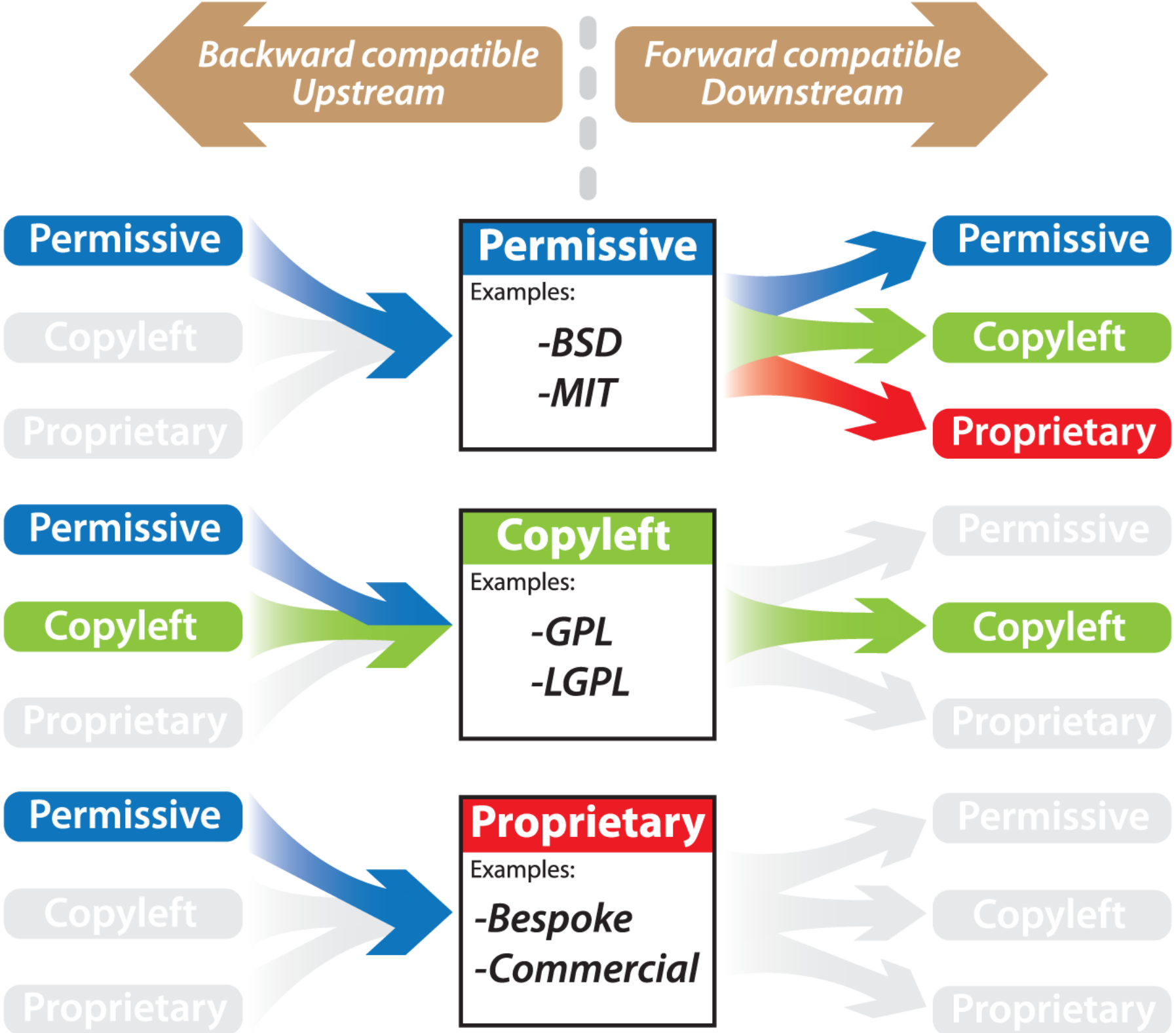
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Credit: Morin et al. (2012)

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