

Free software and research

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OpenECG workshop - Pisa,

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Free software and research

OR
why free software is a natural choice
in a research environment

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this presentation is at <http://softwarelibero.it/documentazione/online/ricerca-pot200307/>
source code in [ricerca.py](#)

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What is free software?

- . Free software is software that grants freedom to its users
- . Freedom is granted by use of an appropriate copyright license
- . Free licenses grant the users the right to run, study, copy, modify and redistribute modified copies of the software
- . Without a copyright license, none of the above is permitted by international copyright laws (Berne copyright convention); see also <http://www.templetons.com/brad/copymyths.html>

The four freedoms

The four software freedoms by Richard Stallman, 1985
(<http://www.gnu.org/philosophy/free-sw.html>):

0: The freedom to run the program, for any purpose

1: The freedom to study and modify the program

2: The freedom to redistribute copies

3: The freedom to release your improvements

. Freedoms 1 and 3 require access to the source code

Practical advantages: a user's view

- . Common free software is obtained at little cost
 - . It is often well maintained and standards compliant
 - . It probably does not do strange things behind your back
 - . You can have it changed or customised by anyone
 - . You can learn by looking at the code and studying it
 - . You are FREE! You can give it to a friend, copy it from your office to your home computer, you are not obliged to accept obscure end user agreements to use it legally
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Practical advantages: a developer's view

- . You have a large body of free software to start with
 - . Your program is easily diffused, because people can copy it freely
 - . If it is found useful, people may start to improve it
 - . If the license is a copyleft license, improvements are diffused
 - . Your reputation spreads as easily as your software does
 - . Commercial usage: software advertises by itself
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Practical advantages: a political view

- . A free software environment encourages:
 - . cooperation between people
 - . knowledge diffusion and mutual control
 - . standards compliance and interoperability
 - . shifting business model from license revenues to services, promoting human competence
 - . A free software environment discourages:
 - . monopolies
 - . provider lock-in
 - . forced obsolescence, unorthodox practices
 - . Software is increasingly affecting our lives: the public should have control over it
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Common misconceptions and false assessments

- . Free software is a software development model
- . Free software is technically superior / inferior
- . Free software is without cost
- . Free software is non-copyrighted material
- . Writing free software forces me to release it publicly
- . A free license will create a community around my program

Advantages in academia: scientific production

- . Works based on free software implementations are naturally apt to be published, because:
 - . working methods are fully disclosed
 - . dissemination of results is encouraged
 - . results are easily cited, reused and incrementally improved
- . Writing free software is convenient for research institutions because:
 - . it is something of which an institution can be proud
 - . it helps with giving and receiving contributions from many sources
 - . it reduces the problems linked with copyright attribution

Free software and research

- . Modern science is connaturate with the free exchange of knowledge
- . Free software is a natural product of a research environment because research
 - . grows by learning from others' results
 - . grows by accumulation of findings
 - . bases its credibility on independent scrutiny
 - . results are reliable because they are independently repeatable
- . Research languishes without cooperation

Advantages in academia: commercial applications

- . Spinoffs can be created without licensing problems
- . Good way to create and promote new standards
- . Technological transfer is eased
- . Spinoffs or internal commercial sections can coexist with internal research development and mutually benefit from each other

Encouraging the production of free software in research institutions

- Publicly funded research should disseminate its results because this
 - contributes to public knowledge
 - is a propellent to research advancement
 - creates a software base for the industry to exploit
- Research projects should aim at producing free software
- Free software should be regarded as a research achievement per se
- Spinoffs based on free software should be favoured
