
open source
SOURCE
DATA
OPEN
RESEARCH
MIND

OPEN SOURCE:

rEVOLUTION OF SOCIETY VIA SOFTWARE DEVELOPMENT PRACTICES

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BRIEF HISTORY OF OPEN SOURCE

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WHAT COMES TO YOUR MIND WHEN YOU HEAR “OPEN SOURCE”

- Computer software license
- Philosophy
- Economic concept of production model

- Does “Open Source” has a definition?

- Free no cost
- Nobody owns it
- Something to do with lots of people
- You can take it and use it
- You can change it and give back
- Shared
- Distributed
- Computer networks

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OPEN SOURCE DEFINITION

- The Open Source Definition (OSD) is upheld by the entire open source community.
- It requires
  - Free re-distribution of software
  - Availability of source code with software
  - Derived works allowed
  - Integrity of author's source code be maintained
  - No discrimination against persons or groups
  - No discrimination against fields of endeavor
  - Distribution of license
  - License must not be specific to product
  - License must not restrict other software
  - License must be technology-neutral

Full details can be found at http://opensource.org/docs/osd

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OPEN SOURCE SOFTWARE

- Open Source Software is Software licensed with a **copyright license** compliant with the Open Source Definition (OSD)
- Software is distributed with its source code in a human readable format
- Software is developed in an open and collaborative way by groups of developers

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THE ORIGINS OF [TERM] “OPEN SOURCE”

- Term was introduced at the strategy session on Feb 3 1998 in Mountain View office of VA Linux
- The term was adopted by a group of activists in reaction to Netscape's January 1998 announcement of a source code release for Navigator.
- New license terms were needed to free developers’ community from the ideology of the term "free software”
- Linus Torvalds gave an all-important sanction the following day.
- Richard Stallman, pioneer of the free software movement, initially seemed to adopt the term, but later changed his mind.

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COPYRIGHT LAW

- Copyright law (1976) protects creative works from unauthorized reproduction, derivative work, distribution of copies and public display without creator's permission under various conditions for term from 70 to 120 years
- Creators are required to [explicitly] surrender the rights granted to them by copyright law if they want to permit use of their creations
- License is a mechanism to transfer copyright

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“FREE SOFTWARE MOVEMENT”

- 1950s and 1960s: software was almost always distributed with its source with little restrictions.
- 1970s: companies started to close their source and treat code as "industrial secret"
- 1983/4: Richard Stallman observes a shift from a free UNIX culture to a proprietary software culture and leaves MIT AI Lab and creates the GNU Project
- 1985: Free Software Foundation
- 1989: Copyleft and the GPL
- 1991: Linus Torvalds makes his OS available
- 1992: GNU/Linux is born
- 1993: SuSE (slackware distribution, enterprise linux)
- 1995: Red Hat
- 1995: MySQL
- 1997: Eric Raymond. "The Cathedral and the Bazaar"
- 1997: GNOME
- 1998: Netscape opens its Mozilla browser
- **1998: Open Source Initiative (OSI) is founded**
- 1999: Dell, HP, and SGI announce support for GNU/Linux
- 1999: Apache Foundation formed
- 2002: Creative Commons

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FREE SOFTWARE FOUNDATION - 1984

- The **users have the freedom to run, copy, distribute, study, change and improve the software**.
- Declared Four Freedoms
  - The freedom to run the program, for any purpose (freedom 0).
  - The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this.
  - The freedom to redistribute copies so you can help your neighbor (freedom 2).
  - The freedom to distribute copies of your modified versions to others (freedom 3). By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this.
- These freedoms had to be explicitly declared to overwrite copyright law

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SOFTWARE LICENSES BEFORE 1998

- Corporate (eg. Microsoft EULA)
  - Usually a permission to use an application only by one user on one computer
  - Not allowed to distribute or copy, no access to source code, no way to change application
- Free Software Foundation
  - Four freedoms
- Open source initiative introduced an alternative type of software licensing

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LICENSES ATTRIBUTES

Required, permitted or forbidden attributes

- License and copyright notice
- State Changes
- Commercial Use
- Modification
- Distribution
- Sublicensing
- Patent Grant
- Use Trademark
- Hold Liable

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Permitted	Commercial Use · Modification · Distribution · Sublicensing
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Required	License and copyright notice · State Changes · Disclose Source
Permitted	Commercial Use · Modification · Distribution · Patent Grant
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Other licenses

Some communities tend to have specific licenses preferred by the community. For example, Perl developers often choose the Artistic License.

Artistic License 2.0

A license that's heavily favored by the Perl community. View full license »

Required	License and copyright notice · State Changes · Disclose Source
Permitted	Commercial Use · Modification · Distribution · Sublicensing · Private Use
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Forbidden	Hold Liable

- http://choosealicense.com/licenses/

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EXAMPLES OF OPEN SOURCE SOFTWARE

- Linux / Unix / BSD/ Android - OS
- Mozilla Netscape – web browser
- Apache – web server
- mySQL – database
- pHp / Ruby - languages
- Wiki / Drupal / Wordpress – web publishing
- Sakai / OpenCourseWare – learning management system
- Simbios – bio research software
- Open Journal systems – publishing and peer review system

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HOW OPEN SOURCE SOFTWARE AFFECTS OUR DAILY LIFE

- Wake up to an alarm on your Android-OS powered phone
- Check via Mozilla browser what is traffic you will see today or what time your train leaves
- and on and on and on it goes

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OPEN SOURCE IS CHANGING THE SOCIETY

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FREE SOFTWARE IS FREE AS IN...

- Common use of term “free” is very wide
  - Free of charge – beer – disposable
  - Free to use – library or city park - reusable
  - Free to take and grow – puppies and software
- Open source is all of the above
  - Code is free of charge
  - You can simply use it
  - You can modify if you want

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NOT ALL FREE IS OPEN SOURCE

- Google search/docs are free to use but are not open source
- Open Office is free to use and open source

What makes a project an open source?

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THE SPIRIT OF OPEN SOURCE

- Mr. D, CS student, wanted to stay connected to other folks at his dorm and coded a new, easy to use, posting board and put it on the server and thus on the web
- He told all his friends about this new thing and soon everyone in his dorm was using it because it was easy
- Ms. L, an artist, liked using posting board to stay connected, but was quite unhappy with the colors were limited to #FFF and #00F. She created a beautiful design and asked her friend to convert her beautiful drawing into a template for the posting board
- Now everyone in the group (along with the rest of the world) can enjoying useful and beautiful product.

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HOW DO YOU BENEFIT BY GIVING AWAY

- Reusable?
  - Each programmer develops one program
  - They exchange programs' code
  - Each programmer has two programs
  - Two networks connected create larger network for both
- Disposable?
  - Each programmer brings one sandwich for lunch
  - They exchange sandwiches
  - Each programmer has one sandwich
  - Two chairs are still two chairs

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OPEN SOURCE DEVELOPMENT MODEL

- Creative person to **originate** a project and share it - core developer(s)
- **Users** that try the project, like it, use it, tell what more they want(new features) and complain when it breaks (submit bugs)
- **Contributors** improving the gadget for their own needs and **contributing** back
- Charismatic leadership to keep the project going
- Cheap computers and fast Internet to provide connectivity

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SOCIAL CONTEXT OF OPEN SOURCE

- Motivation in open source community is different from commercial world
- Common understanding principle vs. Command principle
- In the world of cheap computers and fast internet limited resource is skilled attention
- Abundance of resources leads to Gift culture and makes command relationships hard to sustain

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WHERE DOES IT WORK WELL

- Appeal of OPEN model in the fields where results can be reused for large number of users
  - Software
  - Education – MOOCs
  - Science (http://folding.stanford.edu/)
  - Open Space Technology http://www.openspaceworld.com/brief_history.htm (used at Stanford IT unconference)

OPEN SCIENCE

- http://creativecommons.org/science
- Polymath project by Tim Gowers 2009
- GalaxyZoo http://www.galaxyzoo.org/ 2007
- Folding @ home (Stanford) http://folding.stanford.edu/

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CONTENT LICENSES

- http://creativecommons.org/licenses/
- The combination of our tools and our users is a vast vast and growing digital commons, a pool of content that can be copied, distributed, edited, remixed, and built upon, all within the boundaries of copyright law.
- Font license http://scripts.sil.org/OFL

COLLECTIVE INTELLIGENCE

- Good or bad?
- Collective decisions not always are good

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MOOCS

- 2012 – Two technological factors are driving these changes: inexpensive video production and ubiquitous high-speed internet.
- Vast community of users / students
- Peer grading / helping
- Teachers learning from teachers

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CHALLENGES OF OPEN SCIENCE

- Who gets credit for the work
  - Who gets money
  - Who gets fame
- How do you protect your work
  - Is license a sufficient mechanism?

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OPEN SOURCE @ STANFORD LAB

- "Innovation Goes Public", a talk by Bruce Perens http://opensource.stanford.edu/2008/02/26/bruce-perens-talk-on-march-6
- Open source un-conference https://opensource.stanford.edu/events/first-osl-unconference Nov 2008
- Drupal
- UX group
- Linux group
- Stanford projects on Sourceforge http://sourceforge.net/directory/os:mac/freshness:recently-updated/?q=stanford

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OPEN ACCESS WEEK OCT 21 - 27

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SPREAD THE WORD, IMPROVE THE WORLD!

- Promote open source to developers
  - it is the natural way for developers to learn
  - make better developers, make better code
- Promote open source ideas in other areas
  - social activism
  - privacy protection
  - e-gov and open data
  - piracy vs copyright discussions
  - knowledge sharing
- Open source is the way to learn...
  - and also the way to teach and help!

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FROM 2008 OSL FIRST UNCONFERENCE

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REFERENCES

- Wikipedia
- The Cathedral and the Bazaar, E.Raymond
- Presentation by Bruno Souza and Fabio Kon, Open Source Initiative (OSI) - Education Working Group
- Presentation by Alolita Sharma, OSI

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