Software Collaboration – A Fata Morgana ?

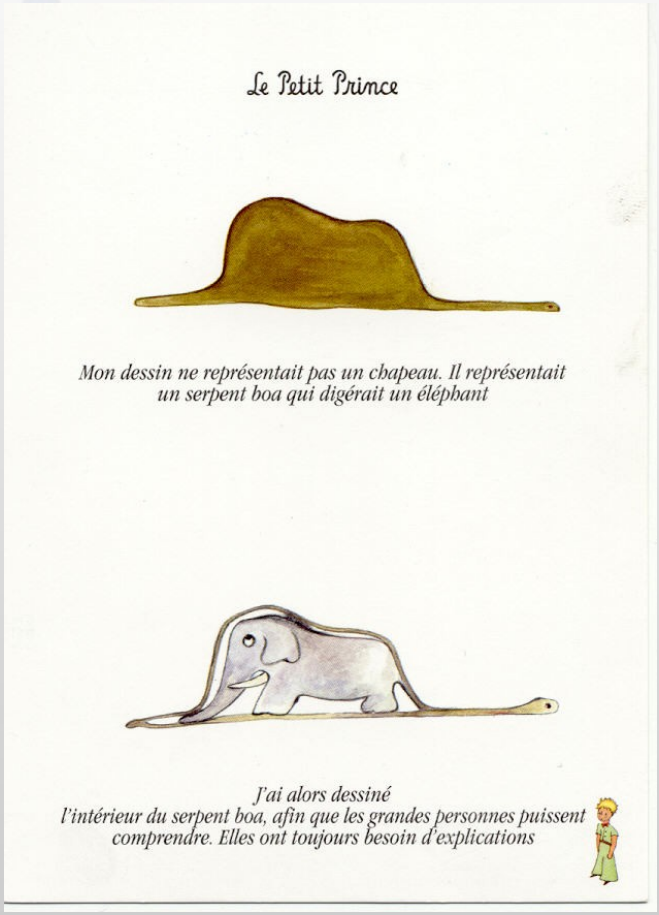
3 Software Collaboration Projects in 20 years

- TACO
- TANGO
- FABLE
- Many other @ ESRF (where I am not involved) e.g. :
  - PyMCA
  - BLISS Framework
  - ...

Little Prince - Rules of Thumb

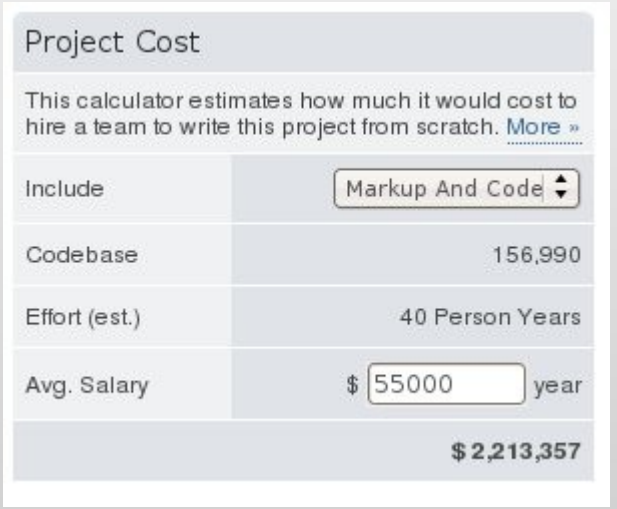
Rules of Thumb

- ***A Rule of Thumb is a lesson learned from Experience***
- ***If you do not understand this talk do not worry, just look at the pictures (or read your email ;-)) !***



Project TACO

- Started in 1988
- The first ESRF control system
- Name was only given in 1996
- Developed at ESRF then exported to FRMII, ANKA, Julich
- Peak of 5 developers, today 1.1 active developers (main developer external)
- 20 years later still runs 50% of accelerator and 80% of beamlines
- New ports (64 bit) still being added



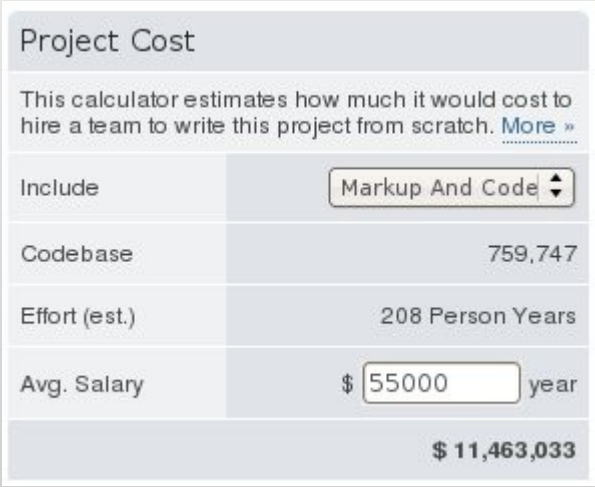
http://www.ohloh.net/projects/taco

TACO - Rules of Thumb

- ***Export a working product***
- ***Open source has a longer lifetime than closed source software.***
- ***Once having forked coming together again is VERY PAINFUL***
- ***Test, tag and release often***
- ***Unbalanced resources cause problems***

TANGO Project

- Started in 1999
- Completely new product with modern technology based on experience gained using TACO
- Tried to develop it from scratch with COSYLAB, PSI, BESSY
- First version developed at ESRF then SOLEIL joined
- Today 5 institutes use and develop TANGO
- Still room for more collaboration



http://www.ohloh.net/projects/5710

Tango

Updated 05 Oct 2008 01:36 UTC

Licenses

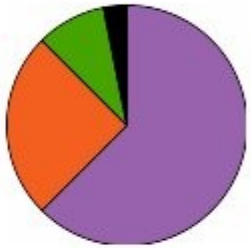
Ohloh searches the source code for individual license declarations. These licenses can differ from the project's official license.

GNU General Public License 3.0 or later	123 files
GNU General Public License 2.0	14 files
Artistic License	1 files

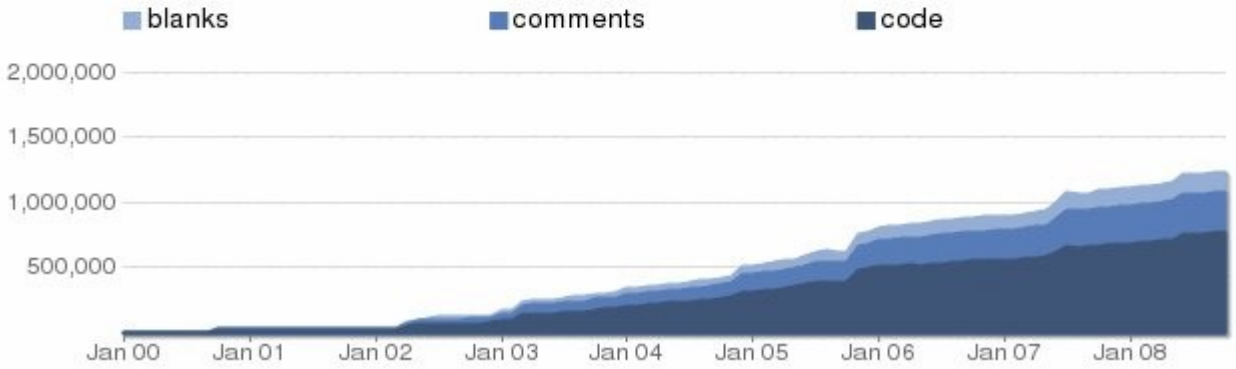
Languages

Ohloh analyzes the project source code and determines the language of each line of code, excluding comments and blanks.

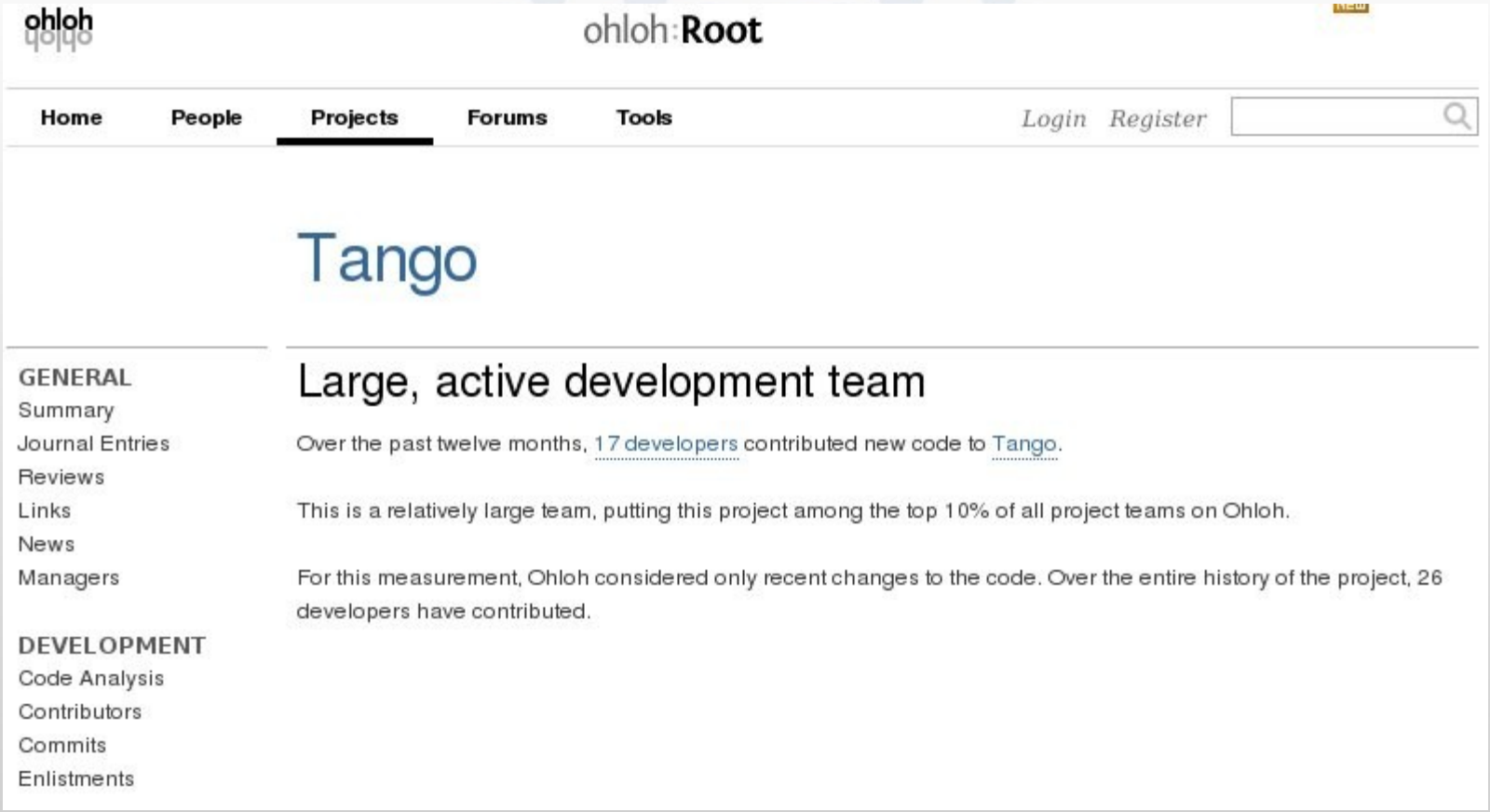
Java	60%
C++	24%
HTML	9%
Other	3%



Codebase History



TANGO Development

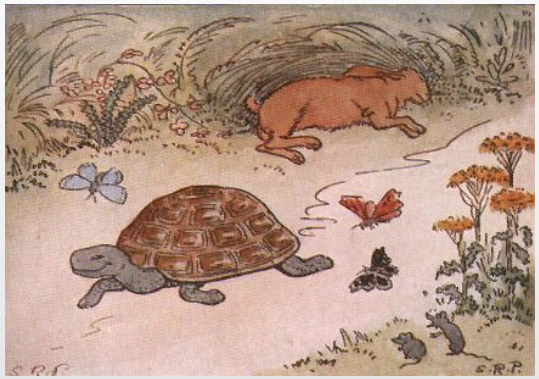


TANGO - Rules of Thumb

- ***Very hard to develop a new system from scratch in a collaboration***
- ***Need at least two to TANGO ;-)***
- ***Collaborating on a framework is not enough, need to share code which runs on top of the framework***
- ***Software needs to improve constantly***

FABLE Project

- A set of programs and graphical user interfaces to do 3D crystallography
- Started in 2006
- Collaborators are ESRF, RISOE and APS (a bit)
- Majority of developers are scientists, two are software engineers
- Developed in a mixture of languages (Python, C and Java)
- Hosted on Sourceforge



Project Cost

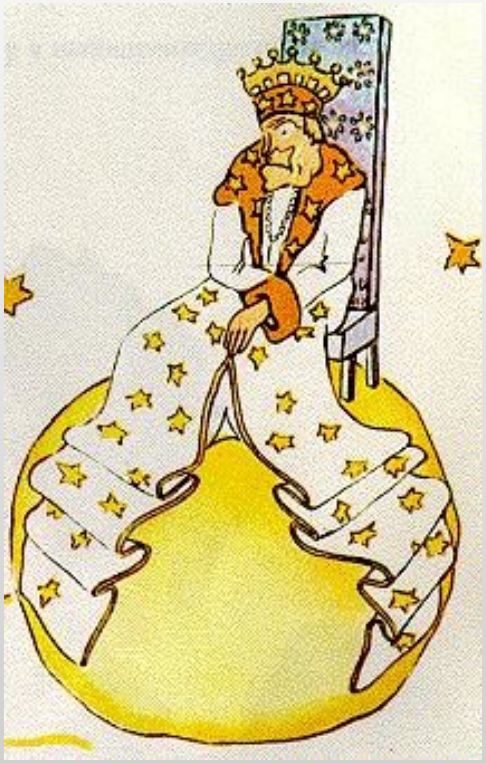
This calculator estimates how much it would cost to hire a team to write this project from scratch. More »

Include	Markup And Code
Codebase	484,358
Effort (est.)	129 Person Years
Avg. Salary	$ 55000 year
	$ 7,098,158

http://www.ohloh.net/projects/fable

FABLE - Rules of Thumb

- ***Collaborating with scientists is a whole new (more difficult ?) ball game***
- ***Mixing technologies can be solved but requires innovation***
- ***More difficult to develop when developers do not understand the domain***



Use the Source , Luke !

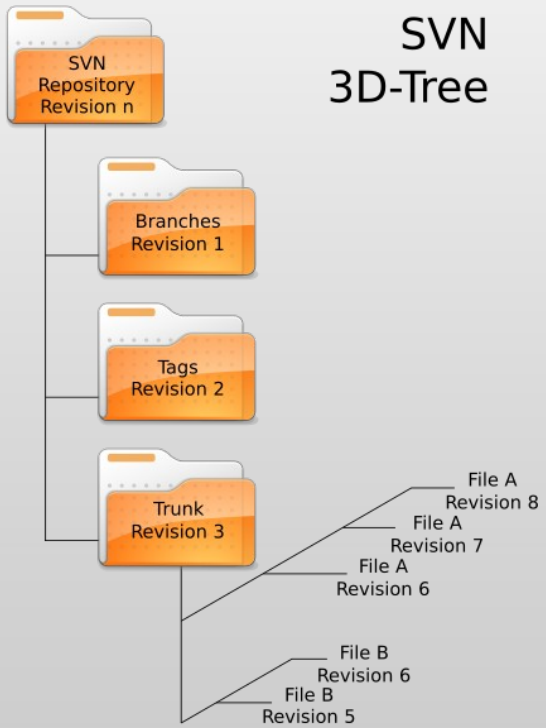
Source Code Service Providers

- Providers offer services for :
  - Source code repositories
  - Bugtracking
  - Mailing lists
  - Download
  - Statistics
  - Web site
  - Wiki

- Most common free ones are are :
  - Sourceforge, Savannah, CodeHaus, GoogleCode, CodePlex
- Possibility to host your own too

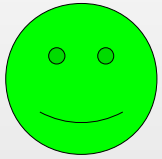
Source Code Repository

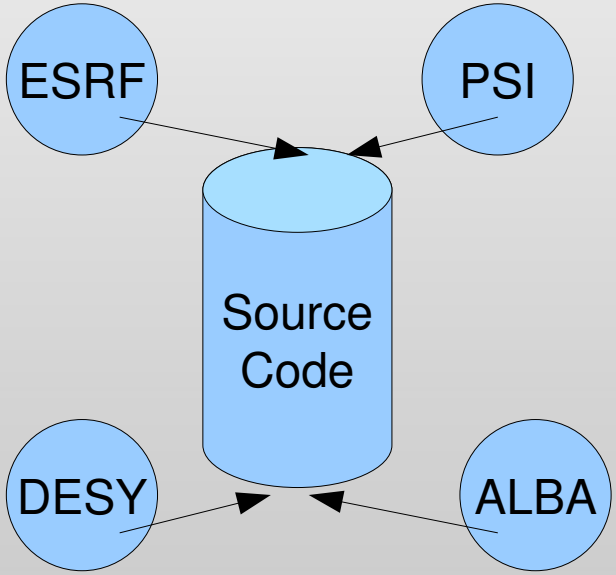
- The Source Code Repository is where you store your source code
- Many solutions exist :
  - CVS
  - Subversion
  - Git



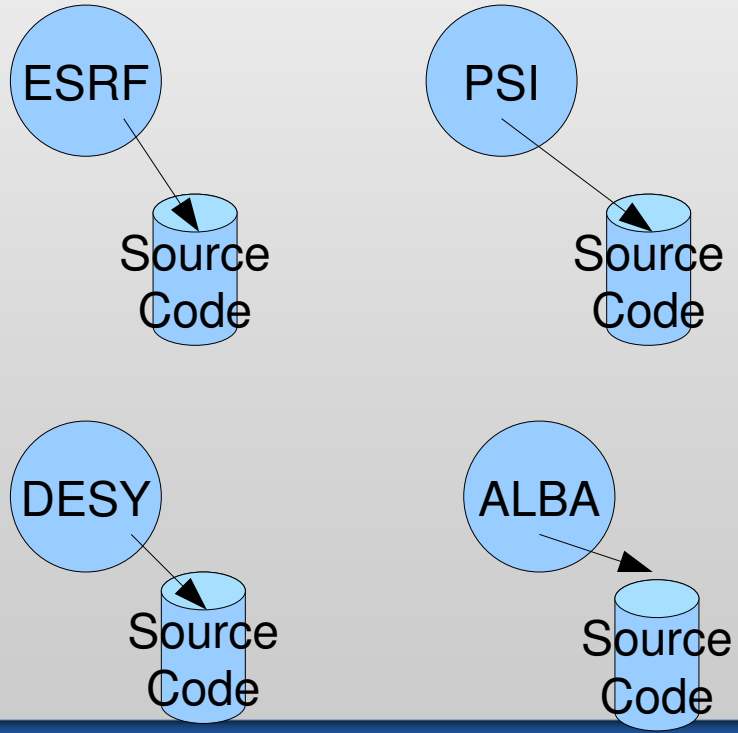
Single vs Multiple Source Code Repository

- A single source code repository is the ONLY solution





- Multiple source code repositories end up in forking (and failure)

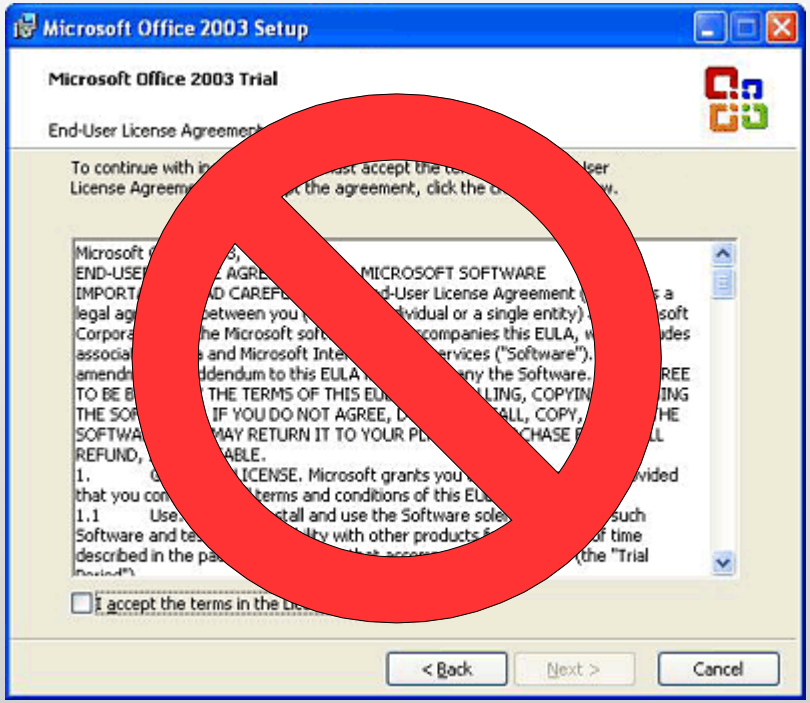


Rules of Thumb

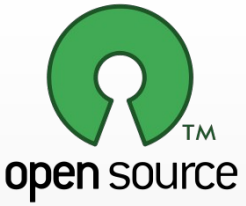
- ***Choose one code repository technology (preferably a recent one)***
- ***Store code in one publicly accessible repository***

Licensing – A Thorny Issue

- A project can get totally stuck on Licencing issues
- 72 Official Open Source licences
- 60 % of Open Source is released under GPL
- Issue your software under a Free/Open Source Licence



OPEN SOURCE !!!



Introduction

Open source doesn't just mean access to the source code.

The distribution terms of open-source software must comply with the following criteria:

1. Free Redistribution

The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.

2. Source Code

The program must include source code, and must allow distribution in source code as well as compiled form. Where some form of a product is not distributed with source code, there must be a well-publicized means of obtaining the source code for no more than a reasonable reproduction cost preferably, downloading via the Internet without charge. The source code must be the preferred form in which a programmer would modify the program. Deliberately obfuscated source code is not allowed. Intermediate forms such as the output of a preprocessor or translator are not allowed.

3. Derived Works

The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.

4. Integrity of The Author's Source Code

The license may restrict source-code from being distributed in modified form only if the license allows the distribution of "patch files" with the source code for the purpose of modifying the program at build time. The license must explicitly permit distribution of software built from modified source code. The license may require derived works to carry a different name or version number from the original software.

5. No Discrimination Against Persons or Groups

The license must not discriminate against any person or group of persons.

6. No Discrimination Against Fields of Endeavor

The license must not restrict anyone from making use of the program in a specific field of endeavor. For example, it may not restrict the program from being used in a business, or from being used for genetic research.

7. Distribution of License

The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.

8. License Must Not Be Specific to a Product

The rights attached to the program must not depend on the program's being part of a particular software distribution. If the program is extracted from that distribution and used or distributed within the terms of the program's license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the original software distribution.

9. License Must Not Restrict Other Software

The license must not place restrictions on other software that is distributed along with the licensed software. For example, the license must not insist that all other programs distributed on the same medium must be open-source software.

10. License Must Be Technology-Neutral

No provision of the license may be predicated on any individual technology or style of interface.

– Open Source Initiative, http://opensource.org/docs/osd

http://opensource.org/docs/osd

Open Source vs. Free Software

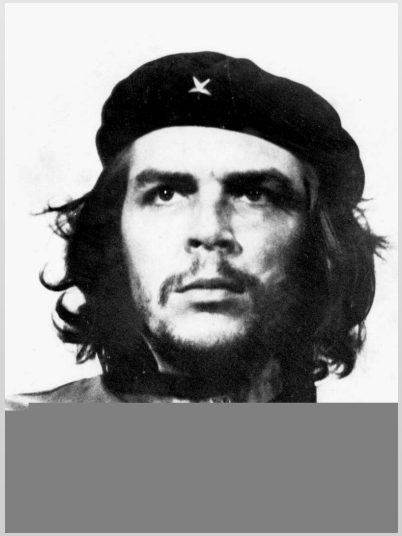
- OPEN SOURCE is not necessarily FREE SOFTWARE

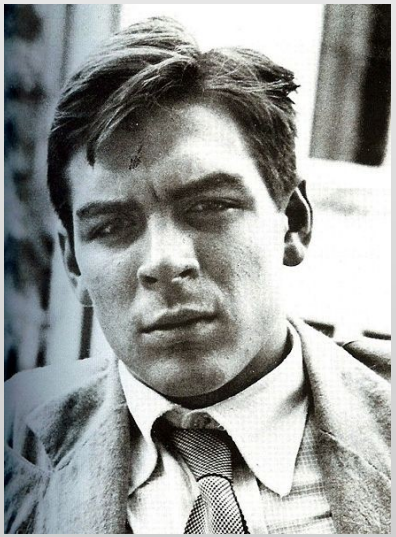
FREE as in BEER

FREE as in SPEECH

Free Software Revolution

- Free Software has changed the way software is developed
- Free Software/Open Source adopted the Scientific Method
- Join the Free Software Revolution !





Closed Source = The Dark Side of the F/Source !

- Whatever you decide to do don't adopt a closed source solution !

How to Collaborate on Software

- Have a vision of how to solve your problem
- If possible start with a working software which fits with the vision
- Appoint one or more architects (if possible spread across the collaboration)
- Setup source code on a public repository on a software provider *a la* SourceForge
- Hire developers to develop your software according your adopted methodology e.g. XP, User Requirements etc.

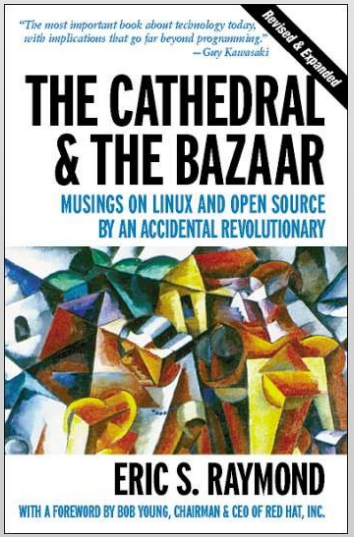
What to do to NOT Collaborate on Software

- Get stuck on Licencing issues (just make it Free !)
- Get management too involved
- Setup multiple code repositories
- Fork source code

Conclusions for WP9

- High risk if you decide to develop the software from scratch in a collaboration

- Collaborating on software is not so difficult but needs to be steered by developers with experience in developing open source in order to avoid the pitfalls



Petit Prince says

- ***"Men have forgotten this truth," said the fox. "But you must not forget it. You become responsible, forever, for what you have tamed."***

- ***A designer knows he has achieved perfection not when there is nothing left to add, but when there is nothing left to take away.***

by Antoine de St Exupery