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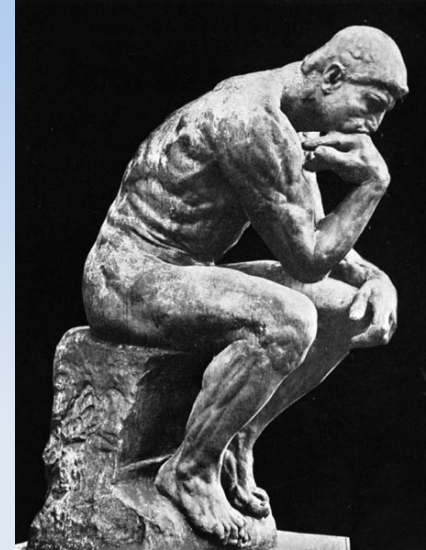


# Benefits of Open Source Practices

David Doria  
September 10, 2012

# What is Open Source?

- A philosophy
- A methodology
- Applies to:
  - software
  - hardware
  - anything
- Opposite? "Closed source"



Promotes access to the end product's source materials

# Mainstream Open Source Software

- Firefox



- Audacity



- GIMP



- Inkscape



- Linux



- OpenOffice/  
LibreOffice



# Open Source Software

- Distributed

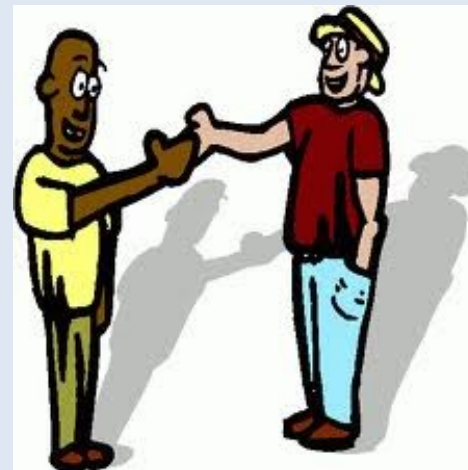


- Peer reviewed



# Benefits to you

- A wide audience for your work
- Free help
- Meeting people with similar interests
- Get feedback



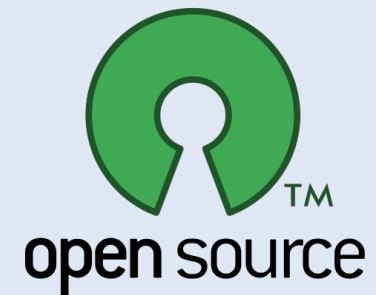
# Benefits to others

- Future users can...
  - use your work
  - improve upon your work
- Progresses the state of the art
- *Accelerates* the state of the art
- Does humanity a service



# Free Software vs Open Source

- “Free as in freedom, not free as in beer”
- "libre" vs "gratis"
- “Open source is a development methodology; free software is a social movement. For the Open Source movement, non-free software is a suboptimal solution. For the Free Software movement, non-free software is a social problem and free software is the solution.”



# Open Source Licenses

- What can you do with the object/software?  
Modify it? Distribute it? Sell it?  
Place restrictions on what the next person does with it?
- Heavy overlap with patent law and copyright law
- Open Source Initiative (OSI)  
(<http://opensource.org>)
  - A Standards Body
  - Maintains a list of "OSI Approved" licenses





# Open Source Licenses (Cont.)

- GPL (some call it poison!)
- Apache
- BSD

Comparison of the Open Source Licenses	
	Must distribute license with binaries or source
	Cannot use contribution class to restrict
	There has to be a material part for changed files
	Any change must also be added to source form
	Let's you provide warranty if you want to, normally no
	Let's you explicitly charge for providing warranty or guarantee of transfer of code
	All derived work must be under the same license
	Must share license when than it was commercial base
	How derivative works can have different license
	May not hold countries where there is a copyright law with patent in that country
	Must describe any deviation due to regulation
Apache License 2.0	•
Common Development and Distribution License	•
GNU General Public License (GPL)	•
GNU Library General Public License (LGPL)	•
Microsoft Public License (Ms-PL)	•
Microsoft Reciprocal License (Ms-RL)	•
Novell Public License 1.1 (NPL)	•
New BSD License	•
The MIT License	•

# Dual licensing



- GPL - free
- Commercial license - \$thousands

# Non-software Licenses

- Creative Commons licenses
  - Legal
  - Human readable
  - Machine readable
  - Automatically determine the usability of a resource!



# Business Models

- If everyone uses your product, they will want to know who you are, and pay you for something.



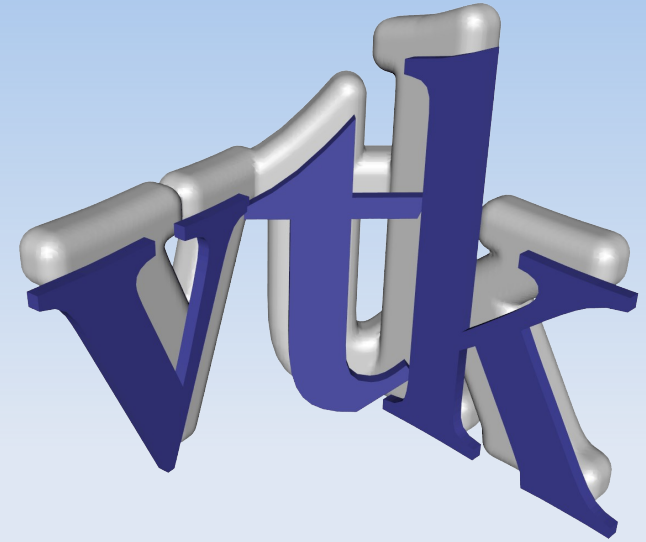
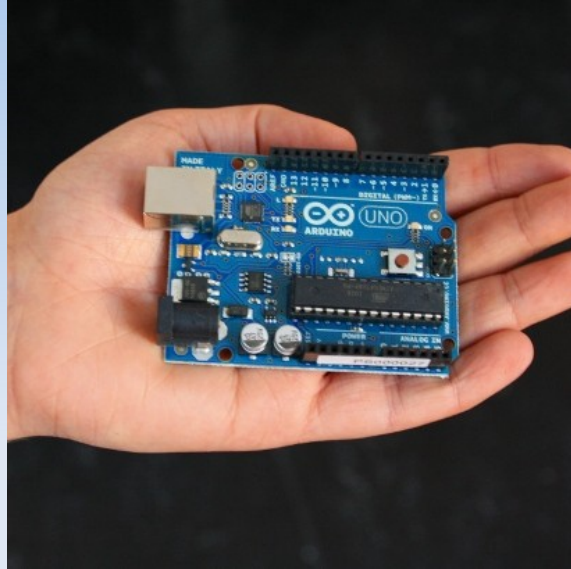
- Support
- Training
- Government contracts

OPEN PERCEPTION



- Corporate contracts
- Google Summer of Code

# Consulting



OPEN PERCEPTION



# Open Source in Scientific Research

- Often researchers have to reinvent the wheel
- Though previous work is "published", without an available implementation it is impossible to tell if it really works
- "If you haven't tested it on your own computer with your own data, you must assume it doesn't work"



# Open Source in Computer Vision/Image Processing

- Insight Toolkit (ITK, [www.itk.org](http://www.itk.org))
  - Multi-million \$ grants from NIH, etc.




- OpenCV
  - Uses their software as a lure to sell their robots!



- Visualization Toolkit (VTK, [www.vtk.org](http://www.vtk.org))



- Point Cloud Library (PCL)  pcl



# Where to share your work?

- “Social coding”
  - Sourceforge
  - Github
  - Gitorious



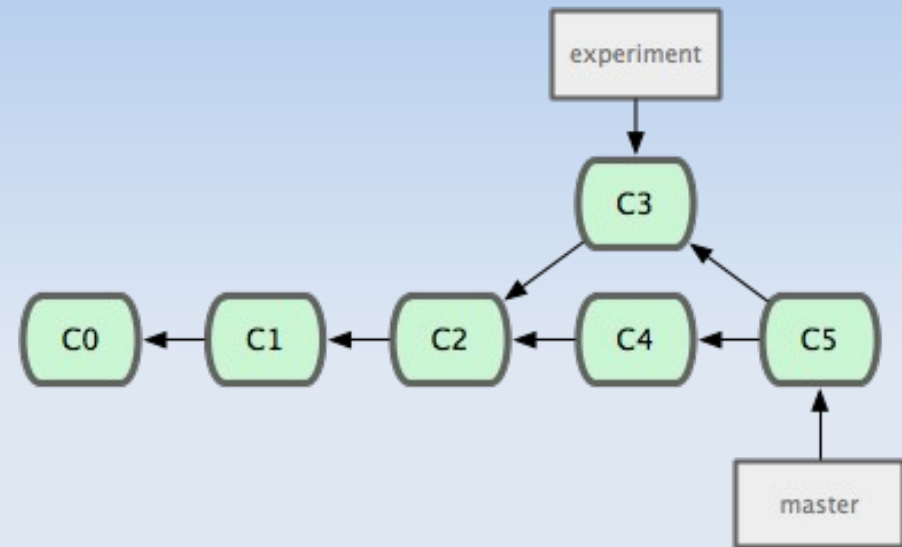
- Online journals
  - “Open access”
  - Insight Journal





# Revision Control

- Extra bonus!
- Revision history
- Backup



# Open Source Hardware

Electronics Prototyping -  
<http://www.arduino.cc/>



3D Printer - MakerBot -  
<http://www.makerbot.com/>



- Schematics
- Components lists
- Assembly instructions

# Other Open Source Things

<http://freebeer.org/>



<http://www.opensoda.org/>



# Resources

- OSI website, great reference for licenses
- RPI course – Open Source Software Practices
  - Instructor: Luiz Ibanez
- Rensselaer Center for Open Source (RCOS)



Rensselaer

CENTER FOR  
OPEN SOURCE SOFTWARE

# Questions?

