

# Google and Open Source

Chris DiBona

IETF

Wednesday, November 20<sup>th</sup>, 2008





# Who am I?

---

## Open Source Programs Manager, Google Inc.

- License Compliance
- Code Release
- The Summer of Code
- Protocol and API Licensing

## Formerly:

- Slashdot
- Co-Editor Open Sources & Open Source 2.0
- Floss Weekly Podcast



# Agenda

---

Agendas destroy suspense.



# Open Source Software Use at Google.

But first, two things....



# Why do people **release** code at all?

---

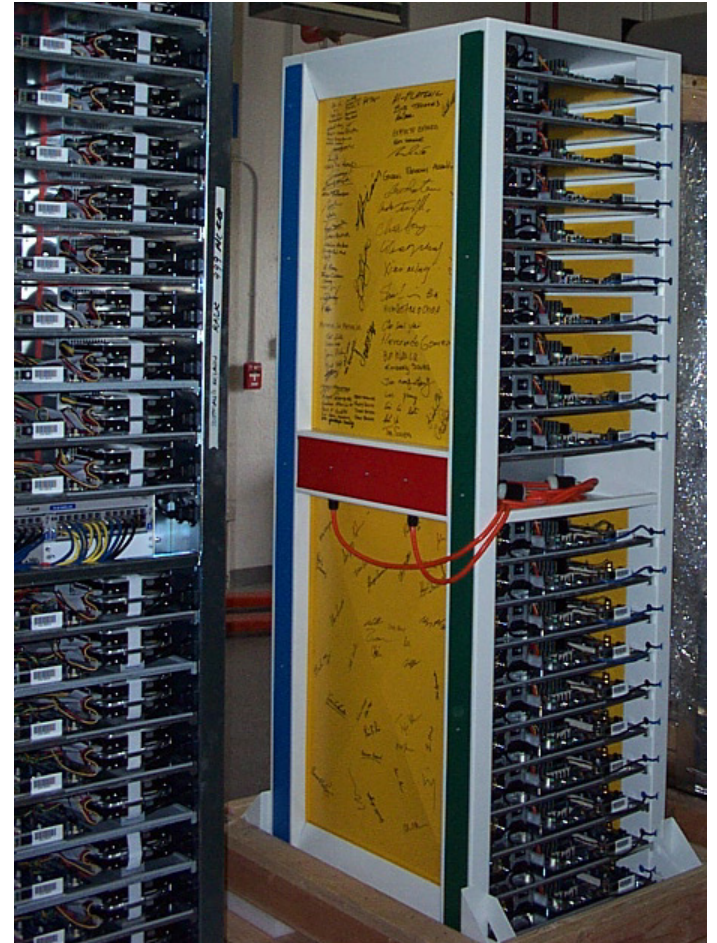
A BCG/OSDN Study found that open source developers are motivated by:

- Intellectual Curiosity/Stimulation (44.9%)
- Skills Improvement (41.3%)
- Work needs (33.8 %)
- Open Source Idealism (33.1%)
- Non-Work Functionality (29.7%)
- Professional Status (17.5%)
- Reputation building within Open Source (11%)
- Dislike/distrust of proprietary software (11.1%)



# Google Machinery

- In-house rack design
- PC-class motherboards
- Low-end storage and networking hardware
- Linux
- + in-house software





# How does Google use Open Source?

---

## As Infrastructure

- Linux kernel
- Apache Tomcat and many other Apache tools
- SSH, and other system management tools
- The Languages and compilers that we use.
- Engineers and others running Linux (Goobuntu)

## As building blocks

- Our repositories have hundreds of libraries used in Google software



## For our Platforms

---

Google Web Toolkit (Ajax toolkit for Java developers)

Android (Cell Phone operating system)

Google Gears (offline web)

Google Applications





# But Why does Google use Open Source

---

## Control and Ownership

- Maintain our independence from external software companies

## Adaptability and Flexibility

- We can drill down to repair and enhance our services
- If we want to do something out of the ordinary, we can do so without showing our hand
- No one is incentivized to hurt us

## Roots

- Appeals to the Google ethic



---

*How does Google take part?*



# Google's Open Source Programs

---

Patching and Code Release

Donations

Internal License Discipline

API/Protocol License Discipline

Industry Trade Group Participation

Open Source Infrastructure & Leadership

Summer of Code

OLPC Engineering



# Code Release

---

Over 14 million lines of code released to date

## Examples:

- Airbag Crash Reporting
- MySQL Replication Tools
- MacFuse (userspace filesystems under OS X)
- Google Web Toolkit
- Approaching 100 released packages: Search for *label:Google* on <http://code.google.com/hosting/>
- Updates for older releases like gflags, sparsehash, tcmalloc, etc..



# Open Source Infrastructure

---

Hosting on Google Code which provides:

- Reliable, scalable, clean project Hosting
- Version Control
- Issue/Bug Tracking
- Wikis

Over 155k projects of projects, now the 2<sup>nd</sup>  
Largest Repository Online



# Patching

---

Hundreds of Googlers patching into projects such as...

The Linux Kernel  
Apache Tomcat and Axis  
The Gnu Compiler Collection  
Subversion  
Python  
Perl  
MySQL  
SSH/OpenSSL  
Eclipse  
Emacs  
Vim  
Gaim  
Adium

ICU  
Wine  
Derby  
Aspell  
DSpace  
Glib  
Autoconf/automake  
Make  
Glibc  
Binutils  
Java  
Samba  
Various Emulators

**And Many More...**



# Open Source Developers...

---

Andrew Morton

- 2.6 Kernel Maintainer

Guido Van Rossum

- Python BDFL

Bram Moolenaar

- Vim creator and maintainer

Jeremy Allison

- Samba Lead Developer

And more.....



# The Summer Of Code, 2007

---

905 students

130 Organizations

Over 1500 Mentors

6200 applications

90 Countries

81% pass rate!

Over 2.3 millions lines of code





# How it Works

---

- 1) Student applies to work on a project for, say, the ASF
- 2) ASF mentors review the application and accept the student
- 3) Google pays student \$500 for being accepted
- 4) Student works with an ASF mentor to create project
- 5) Mid-Term, good students are paid \$2000 by Google
- 6) Student continues work with mentor to create project
- 7) Final: If the student has completed the goals set forth in the application and student is paid \$2000 by Google
- 8) Successful student gets t-shirt, certificate and valuable experience along with the money.



# The Summer Of Code, 2008

---

1100 students

175 Organizations

Over 5000 applications (so far)

Target: 3 million lines of code



# Why do we do all this funding?

---

Keep students coding

- *Flip Bits, not Burgers*

Ensure a healthy open source ecosystem

- Good for the Internet
- Good for Google

A great way to meet students all over the world

A great way for open source organizations to grow and thrive.

A lot of Googlers come from the Open Source World

Giving Back



# The End

---

## Questions?



cdibona@google.com

<http://code.google.com/opensource>