



# OpenPrinting 2008

PWG Meeting  
Lexington, Kentucky, October 21-23, 2008

<http://www.linuxfoundation.org/en/OpenPrinting>





# The Organizations



***OpenPrinting***

***America/Europe***

***Asia/Japan***



## What is the **Linux Standard Base (LSB)**

### ➤ **The LSB is ...**

- A set of **Common Application Interfaces** for Linux OS distributions
  - Allowing for the creation of **Linux OS Distribution-Independent Software Applications**
    - Developers can depend upon consistency between Linux OS distributions





## Motivation for Printing Interfaces ...

### ➤ Printing functionality for LSB-based applications

- Use of modern CUPS-based interfaces:
  - Poll list of available printers, ...
  - default printer, ...
  - available printer options, ...
  - list of jobs, ...
  - send job with options,
  - ...
- Use of printing GUI elements (printing dialog, job list, ...) from Qt.



### ➤ Linux OS Distribution-Independent Printer Drivers

- Easy for Printer Manufacturers and Driver Developers
- Standardized Renderer/Driver Interfaces: OpenPrinting Vector, CUPS Raster, IJS
- Standardized locations for PPD files
- Standardized printing tools: CUPS, Ghostscript, foomatic-rip



# Printing requirements in the LSB

- **Available in LSB 3.1 and earlier**
  - Only the generic “lpr” command
- **Available in LSB 3.2 (28-Jan-2008)**
  - CUPS 1.1.x convenience API
  - Printing interfaces of Qt 4.0
  - Driver interfaces OpenPrinting Vector, CUPS Raster, IJS
  - Ghostscript with at least the output devices "cups", "ijs", "opvp", "pxlmono", and "pxlcolor"
  - foomatic-rip
  - PPDs are searched in /usr/share/ppd
- **Planned for LSB 4.0 (Target: 11-Nov-2008)**
  - Full CUPS 1.1.x API (except interfaces which got dropped in 1.2.x or later)
  - SANE 1.x API (for scanning)
  - Printing interfaces of GTK 2.10.x



# Links for Printing in the LSB

- **Printing in the LSB:**

- [http://refspecs.linux-foundation.org/LSB\\_3.2.0/LSB-Printing/LSB-Printing/book1.html](http://refspecs.linux-foundation.org/LSB_3.2.0/LSB-Printing/LSB-Printing/book1.html)
- [http://refspecs.linux-foundation.org/LSB\\_3.2.0/LSB-Printing/LSB-Printing.pdf](http://refspecs.linux-foundation.org/LSB_3.2.0/LSB-Printing/LSB-Printing.pdf)
- <https://www.linuxfoundation.org/en/ProjectPlan40>
- <https://www.linuxfoundation.org/en/CUPS40>
- <https://www.linuxfoundation.org/en/SANE40>

Information Only

- **LSB DDK and distro-independent driver packages:**

- <https://www.linuxfoundation.org/images/8/84/Distro-Independent-Packages-Tokyo-July-2008.pdf>
- <https://www.linuxfoundation.org/en/OpenPrinting/WritingAndPackagingPrinterDrivers>

- **Announcement of Jockey 0.5beta1 release and introduction of driver download support in system-config-printer on the LF Driver Backports mailing list:**

- [https://lists.linux-foundation.org/pipermail/lf\\_driver\\_backport/2008-September/000642.html](https://lists.linux-foundation.org/pipermail/lf_driver_backport/2008-September/000642.html)
- [https://lists.linux-foundation.org/pipermail/lf\\_driver\\_backport/2008-September/000643.html](https://lists.linux-foundation.org/pipermail/lf_driver_backport/2008-September/000643.html)

- **Printer driver auto download implementation with system-config-printer and Jockey in Ubuntu Linux:**

- <https://blueprints.edge.launchpad.net/ubuntu/+spec/printerdriverautodownload>
- <https://blueprints.edge.launchpad.net/ubuntu/+spec/jockey-printer-driver-support>



# OpenPrinting WG America /Europe Regional Group

- **Activities in 2008**

- **Google Summer of Code**

*America/Europe*

- **Active Participants (alphabetic order)**

- Norm Jacobs (SUN)
- Till Kappeter (The Linux Foundation/OpenPrinting)
- Robert Krawitz (GutenPrint)
- George Liu (Ricoh)
- Ira McDonald (High North, Inc)
- Glen Petrie (EPSON)
- Michael Sweet (Apple)

# OpenPrinting WG Asia/Japan Regional Group

- **Activities in 2008**

- **Vector Printer Driver API (OPVP)**
- **CUPS PDF Filters**

*Asia/Japan*

- **Active Participants (alphabetic order)**

- Atsushi Sekiguchi (Konica Minolta)
- Hidenori Ishii (Avasys)
- Hidenori Kanjo (BBR)
- Koji Otani (BBR)
- Naruhiko Ogasawara (Ricoh)
- Olaf Meeuwissen (Avasys)
- Osamu Mihara (Fuji Xerox)
- Takashi Kunai (The Linux Foundation)
- Tatsuya Saito (NEC Soft)
- Toshihiro Yamagishi (Turbolinux)
- Yasumasa Toratani (Canon)
- Yasushi Osonoi (The Linux Foundation)
- Yoshinari Chigusa (Ricoh)





## OpenPrinting WG Asia/Japan Regional Group

**OPFC (OpenPrinting Framework Consortium)**

TORATANI Yasumasa, OpenPrinting

PWG Meeting

Lexington, Kentucky, October 21-23, 2008





# Vector Printer Driver API (OPVP) - Activities and Current State

- **Define Printer Driver API Supporting High Level Graphics Functions**
  - Vector drawing API, such as drawing lines, bezier curves, rectangles, images, etc..
  - Renderer (such as poppler and Ghostscript) calls a driver via the API, then driver generates printer command data
- **Version 0.2 – Former Spec.**
  - API Spec. - released in 2003
  - HP PCL5, EPSON, NEC and Canon Drivers have been released so far
  - **Integrated code into many distros as “opvp” driver with GS**
- **Version 1.0 – Latest Spec.**
  - <ftp://ftp.pwg.org/pub/pwg/fsg/vector/pdapispec-1.0rc5.odt>
  - Implementation and driver testing has been completed
  - NEC and Canon Drivers have been tested
  - **Version 0.2 and 1.0 compliant “opvp” driver has been committed to GS8.63**
    - Both the opvp 0.2 compliant printer driver and the opvp 1.0 compliant printer driver work under the new “opvp” code w/o any modifications
  - **Ready to be released with Ubuntu**



# CUPS PDF Filters - Activities and Current State

- **Develop Four CUPS PDF Filters**
  - imagetopdf, pdftopdf, pdftoopvp and pdftoraster
  - Already implemented and released at <http://sourceforge.jp/projects/opfc>
- **SVN Repositories**
  - <http://svn.sourceforge.jp/cgi-bin/viewcvs.cgi/imagetopdf/?root=opfc>
  - <http://svn.sourceforge.jp/cgi-bin/viewcvs.cgi/pdftopdf/?root=opfc>
  - <http://svn.sourceforge.jp/cgi-bin/viewcvs.cgi/pdftoopvp/?root=opfc>
  - <http://svn.sourceforge.jp/cgi-bin/viewcvs.cgi/pdftoraster/trunk/?root=opfc>

CUPS PDF filters	Description
<b>imagetopdf</b>	Convert several kind of images to PDF
<b>pdftopdf</b>	Convert PDF created by application or previous CUPS filter to lay out (N-up, scaling, etc) PDF
<b>pdftoopvp</b>	Parse PDF and call a driver which is compliant with Vector Printer Driver API (OPVP)
<b>pdftoraster</b>	Parse PDF and output data for a CUPS raster compliant driver



# OpenPrinting WG Asia/Japan Regional Group - Road-Map/Next-Steps

- **Vector Printer Driver API and Implementation**
  - Maintain "opvp" code and fix bugs if found
  - Investigate further requirement, such as text, color, etc, and enhance the API
  - Develop driver example code, such as PCL6, etc
- **CUPS PDF Filters**
  - Maintain filters code and fix bugs if found
  - Implement pdftoopvp using "libpoppler" to prepare good code maintenance
    - imagetopdf, pdftopdf and pdftoraster have been implemented using external PDF library "libpoppler", but not yet pdftoopvp
- **Seek New Requirements for 2009 Activities**
  - API Standardization as well as implementation
  - Printing and scanning



# OpenPrinting and the Google Summer of Code 2008

Till Kampeter, OpenPrinting

PWG Meeting

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<http://www.linuxfoundation.org/en/OpenPrinting>





# Google Summer of Code – The Program

[code.google.com/soc](http://code.google.com/soc)

- **Google Summer of Code (GSoC) is a program ...**
  - ... that offers student developers stipends to write code for various open source projects.
- **Google Summer of Code (GSoC) has several goals:**
  - Get more open source code created and released for the benefit of all;
  - Inspire young developers to begin participating in open source development;
  - Help open source projects identify and bring in new developers and committers;
  - Provide students in Computer Science and related fields the opportunity to do work related to their academic pursuits (think "flip bits, not burgers");
  - Give students more exposure to real-world software development scenarios
    - distributed development, software licensing questions, mailing-list etiquette, ...

Additional slides at end of this presentation:

*How it Works*

*What is a Mentoring Organizations?*

*What is the role of a Mentoring Organizations?*



# Google Summer of Code – Projects for 2008

[code.google.com/soc/2008](http://code.google.com/soc/2008)

- **Google Summer of Code (GSoC) – 2008 General**
  - 191 participating Open Source mentoring organizations
  - 934 student participant completed their projects
  
- **Linux Foundation/OpenPrinting 2008 Projects/Students**
  - 4 Projects
    - Common Printing Dialog (CPD)
    - CUPS Filters for PDF Printing Work Flow
    - OpenPrinting Database Triage/Administration Web Application
    - PAPI Implementation for CUPS
  - 5 Students
    - Each individual worked for a 3 month period (15 people months of work effort)
  - Status
    - All students finished the GSoC successfully (Some are continuing their efforts.)
    - All the work of the students is intended to be used in the appropriate projects



# Project: The Common Printing Dialog (CPD) - 1

*[www.linuxfoundation.org/en/OpenPrinting/CommonPrintingDialog](http://www.linuxfoundation.org/en/OpenPrinting/CommonPrintingDialog)*

- **Objective:**
  - Provide a Single Print Dialog for all desktops and all applications
    - User has the same print experience for application A, B, C, ....
- **History:**
  - The CPD was designed by a team of OpenUsability Group in collaboration with OpenPrinting.
    - [www.mmiworks.net/eng/publications/labels/openPrinting.html](http://www.mmiworks.net/eng/publications/labels/openPrinting.html)
    - [wiki.openusability.org/printing/index.php/Specification](http://wiki.openusability.org/printing/index.php/Specification)
- **Activities:**
  - 1. D-Bus API to bridge applications and the CPD
  - 2. Qt/KDE based CPD
  - 3. GTK/GNOME-based CPD
- **Students:**
  - Activity 1 & 3: Lars Uebernickel
    - Master Program Computer Science at Otto-Von-Guericke University, Magdeburg, Germany.
  - Activity 2: Alexander Wauck
    - Bachelor Program Computer Science at Gustavus Adolphus, St. Peter, Minnesota
- **Mentors:**
  - Jonathan Riddell                   [KDE in Ubuntu]
  - Till Kamppeter                   [LF/Open Printing]





# Project: The Common Printing Dialog (CPD) - 2

[www.linuxfoundation.org/en/OpenPrinting/CommonPrintingDialog](http://www.linuxfoundation.org/en/OpenPrinting/CommonPrintingDialog)

## Specifications for the Common Print Dialog

### • Current State

- Specification Complete and consist of three parts:
  - Dialog UI specs:
    - The user interface design from OpenUsability (for desktop developers)
  - The CPD API:
    - The D-Bus API for invoking the dialog (for application developers)
  - The PPD extensions:
    - How to control the presentation of the driver options (for driver developers/printer manufacturers)
  - [www.linuxfoundation.org/en/OpenPrinting/CPDAPI](http://www.linuxfoundation.org/en/OpenPrinting/CPDAPI)

### • Road-Map/Next-Steps

- None at this time.



# Project: The Common Printing Dialog (CPD) - 3

[www.linuxfoundation.org/en/OpenPrinting/CommonPrintingDialog](http://www.linuxfoundation.org/en/OpenPrinting/CommonPrintingDialog)

## Qt/KDE based CPD

- **Current State**

- 75% of the QT/KDE GUI complete

- **Road-Map/Next-Steps**

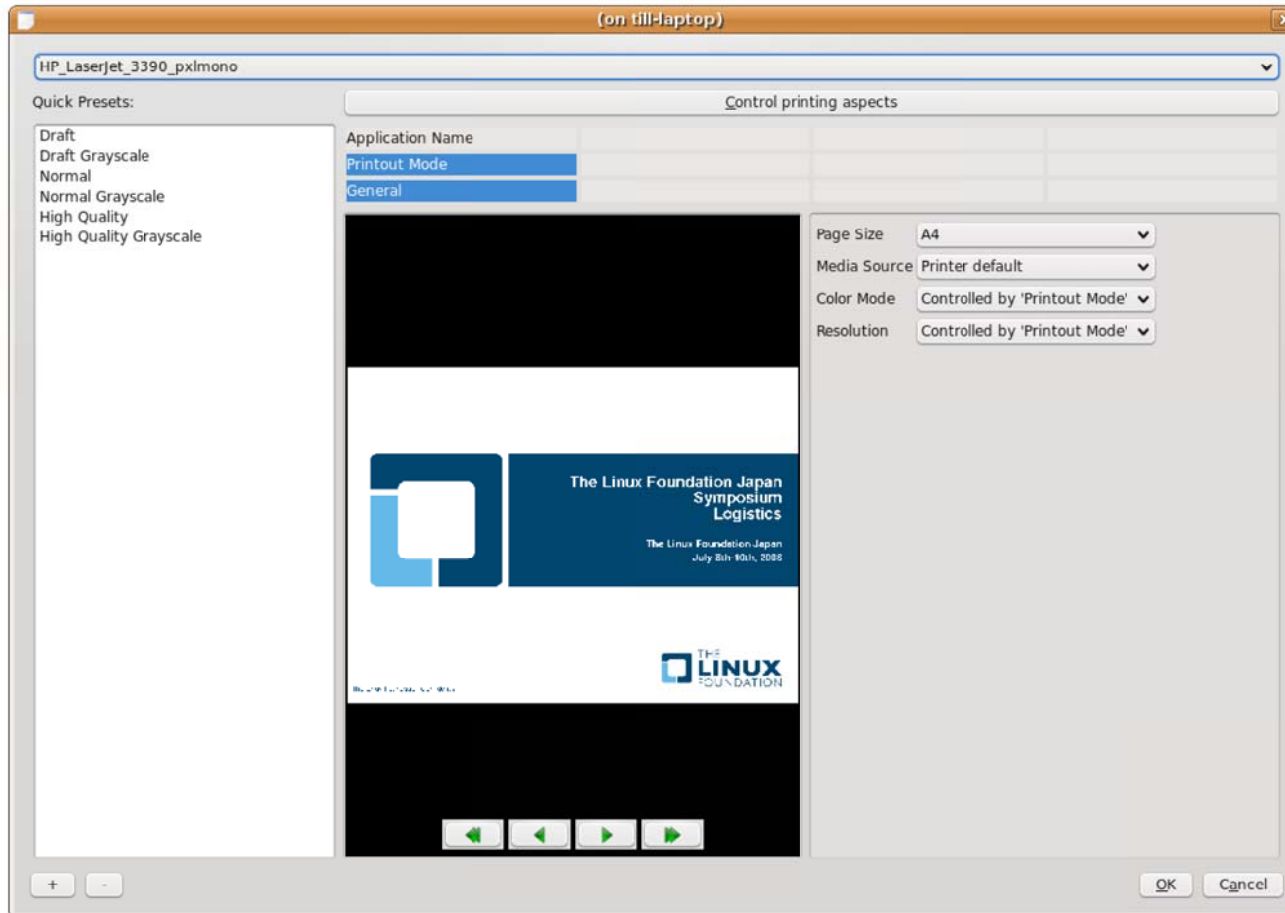
- A proposal will be made to KDE/Qt and GNOME/GTK Desktop Projects.
  - Dialog need to be completed – a number of small missing items.
    - Alex and Lars will do so in the next weeks
  - Provide patches to the GUI libraries to use CPD
    - Lars will do this work



# Common Printing Dialog: Screen Shot

[wiki.openusability.org/printing/index.php/Specification](http://wiki.openusability.org/printing/index.php/Specification)

## Common Printing Dialog, Qt/KDE version





# Project: CUPS Filters: PDF Printing Work Flow - 1

[https://www.linuxfoundation.org/en/OpenPrinting/PDF\\_as\\_Standard\\_Print\\_Job\\_Format](https://www.linuxfoundation.org/en/OpenPrinting/PDF_as_Standard_Print_Job_Format)

- **Objective:**

- Provide a collection of “Filters” (Transforms) “To & From” PDF

- **History:**

- OpenPrinting Summit 2006 it was discussed and agreed to change from PostScript to PDF as the Standard Print Job Format.
- OpenPrinting/Japan has implemented the following “Filters”
  - pdf-to-pdf, image-to-pdf, pdf-to-raster, pdf-to-opvp
    - <http://sourceforge.jp/projects/opfc>
  - SVN repositories are here:
    - <http://svn.sourceforge.jp/cgi-bin/viewcvs.cgi/texttopdf/?root=opfc>
    - <http://svn.sourceforge.jp/cgi-bin/viewcvs.cgi/pdftraster/branches/?root=opfc>

- **Activities:**

- 1. Create the “To” Filter: text-to-pdf
- 2. Create the “From” Filter: pdf-to-ijs

- **Student:**

- Activity 1 & 2: Tobias Hoffmann
  - Master Program in Mathematics/Computer Science , Aachen, Germany

- **Mentor:**

- Hin-Tak Leung [Independent Developer, Laser Drivers]





# Project: CUPS Filters: PDF Printing Work Flow - 2

[https://www.linuxfoundation.org/en/OpenPrinting/PDF\\_as\\_Standard\\_Print\\_Job\\_Format](https://www.linuxfoundation.org/en/OpenPrinting/PDF_as_Standard_Print_Job_Format)

- **Current State**

- Both filters completed
- text-to-pdf: accepted for inclusion in CUPS
  - Supports full UTF8, including capability to convert CJK text
- pdf-to-ijps: rejected for inclusion in CUPS
  - CUPS current plan is only support “CUPS Raster”.

- **Road-Map/Next-Steps**

- Debian and Ubuntu/Intrepid are the first implementations of the PDF workflow.
  - They will incorporate both the OpenPrinting/Japan and the GsoC PDF “To & From” Filters.
- Release of Foomatic 4.0
- Integration of PDF filters as standard part of CUPS:
  - pdftopdf, imagetopdf, texttopdf, pdftoraster
- Release pdftoijps, pdftopvp, pstopdf, cpdftocps separately (rejected by CUPS)
- Encourage GNOME/GTK apps and OpenOffice.org to send print jobs in PDF



# Project: CUPS Filters: PDF Printing Work Flow - 3

[https://www.linuxfoundation.org/en/OpenPrinting/PDF\\_as\\_Standard\\_Print\\_Job\\_Format](https://www.linuxfoundation.org/en/OpenPrinting/PDF_as_Standard_Print_Job_Format)

- **Implementing the PDF Printing Work Flow**

- Install Foomatic 4.0 (It takes also PDF as input now)
- Add CUPS filters for PDF (to make CUPS process jobs based on PDF)
- Change cost values of CUPS filter rules to prefer PDF filters
- Patch foomatic-rip PPDs to accept PDF input
- Install newest GhostScript (more reliable PDF rendering)

[https://www.linuxfoundation.org/en/OpenPrinting/PDF\\_as\\_Standard\\_Print\\_Job\\_Format](https://www.linuxfoundation.org/en/OpenPrinting/PDF_as_Standard_Print_Job_Format)

**Information Only**



# Project: CUPS Filters: PDF Printing Work Flow - 4

[https://www.linuxfoundation.org/en/OpenPrinting/PDF\\_as\\_Standard\\_Print\\_Job\\_Format](https://www.linuxfoundation.org/en/OpenPrinting/PDF_as_Standard_Print_Job_Format)

## • Important Web Pages

### ➤ Download Filters:

- <http://sourceforge.jp/projects/opfc>
  - The package names are texttopdf and pdftoijs.

### ➤ SVN repositories:

- <http://svn.sourceforge.jp/cgi-bin/viewcvs.cgi/texttopdf/?root=opfc>
- <http://svn.sourceforge.jp/cgi-bin/viewcvs.cgi/pdftoraster/branches/?root=opfc>

### ➤ A general web page about the PDF printing work flow with motivation, links, and instructions here:

- [https://www.linuxfoundation.org/en/OpenPrinting/PDF\\_as\\_Standard\\_Print\\_Job\\_Format](https://www.linuxfoundation.org/en/OpenPrinting/PDF_as_Standard_Print_Job_Format)

### ➤ Debian and Ubuntu include the filters

- They are all included in their CUPS packages now.
  - [https://www.linuxfoundation.org/en/OpenPrinting/PDF\\_as\\_Standard\\_Print\\_Job\\_Format](https://www.linuxfoundation.org/en/OpenPrinting/PDF_as_Standard_Print_Job_Format)

Information Only

CUPS Discussion on Filters: <http://www.cups.org/str.php?L2897>



# Project: OP Database Triage/Admin Web App - 1

- **Objective:**
  - Provide an OpenPrinting Database Triage/Admin Web Application to
    - Quickly overview of user-contributed entries
    - Easily triage of good and useless entries
    - Identify duplicates entries
    - Move of “Good” entries to the OpenPrinting database
- **History:**
  - The OpenPrinting database accepts printer entries and comments from visitors
  - There are more than 1200 new printer entries
    - Many are Spam
    - Other are not useful
- **Activities:**
  - 1. Create the Triage/Admin Web Application.
- **Student:**
  - Activity 1: Subhandkar Sett
    - Master Program Computer Science, Anna University, Chennai, India
- **Mentor:**
  - Till Kamppeter [LF/Open Printing]





# Project: OP Database Triage/Admin Web App - 2

- **Current State**

- Completed the part to triage for user-contributed printer entries.

- **Road-Map/Next-Steps**

- Subhandkar plans continued work on the project during the next 6-months as a school project.
- Complete Printer Entry Triage Facility
- Complete Triage Facility for Commenting
- Extend Upload and Triage Facility for driver packages and PPD files
- Develop Scripts for Server Administration

URL for User-Contributed Printer Entry :[http://www.openprinting.org/edit\\_printer.cgi](http://www.openprinting.org/edit_printer.cgi)



# Project: OP Database Triage/Admin Web App - 3

Scratch Pad Develop-ineoplus\_251 Canon-LBP-2900i

Save Delete Clear

Make: Canon

Model: LBP-2900i

URL: http://software.canon-europe.com/software/0023675

Functionality: Mostly

Drivers: No Driver  Default: Add Driver  
Set Default  
Remove Driver

Mechanism: Type: Laser  
Color:   
Resolution: 600 x 600 dpi  
Refill: toner cartridge

General (Parallel & USB)	Parallel	USB
IEEE-1284 Device ID String:	IEEE-1284 Device ID String:	IEEE-1284 Device ID Str
Manufacturer/MFG:	Manufacturer/MFG:	Manufacturer/MFG:
Model:	Model:	Model:

Autodetect:

Progress bar to be created  
javascript:void(0);

## Left Column:

A list of all user-contributed printer entries.

## Right Column:

A. Selecting an entry opens it in a tab on the right which can be browsed / edited.

"Delete" Button: Removes an entry (i.e. Spam)

"Save" Button: Saves changes

"Submit" Button: Submit a good entry into Foomatic.

## Future:

Future addition will add a side-by-side view entries in Foomatic removing duplicates.

Similar user interface planned for comments, PPDs and drivers.

## OpenPrinting database: Further Info

The OpenPrinting server will allow login via an Linux Foundation Account

Contribution of printer entries or comments only possible when logged in (to avoid changes from bots)

Administrators/Moderators can triage entries via the Web Application

Contribution of PPDs or driver packages can be done by a Web Application or a Hot Folder

Allows automatic inclusion of contributions from trusted users (i.e. printer manufacturers/driver developers)



# Project: PAPI Implementation for CUPS - 1

- **Objective:**
  - Provide an Implementation of PAPI Configured for CUPS
- **History:**
  - The Printing API (PAPI) is a printing-system-independent API for the communication between applications and the printing system
- **Activities:**
  - 1. Create an instantiation of PAPI configured to work with CUPS
- **Student:**
  - Activity 1: Cherif Yaya
    - Bachelor Program in Computer Science, Technological University of Compiegne, France
- **Mentor:**
  - Norm Jacobs [SUN]



# Project: PAPI Implementation for CUPS - 2

- **Current State**
  - ????
- **Road-Map/Next-Steps**
  - ????



# OpenPrinting and the Future

- **Common Printing Dialog**
  - Finishing the code and getting it into GNOME and KDE
- **Collaboration with OpenUsability**
  - Design of further printing UIs: Job list, printer setup tool, add-printer wizard
- **Automatic download of driver packages**
  - First client implementation exists: system-config-printer with Jockey
  - Set up server administration: Upload authentication, automated signing and indexing by scripts, ...
  - Create key for signing the package which will get included by the distributions.
- **Printer self-validation program**
  - Branding of validated printers?
- **OpenPrinting Summit 2009**
  - On the Linux Foundation Collaboration Summit (April)
- **Google Summer of Code 2009**
  - We will participate again, ideas welcome!



Questions?



**Any questions?**



Supporting

Supporting



# Google Summer of Code – How it Works

[code.google.com/soc](http://code.google.com/soc)

- **The Steps**

- Open source projects who'd like to participate in *Google Summer of Code* in 2008 should choose an organization administrator(s) to represent them;
- Organization administrators will submit the project's application for participation on-line;
- Google will notify the organization administrators of acceptance, and an account for the organization will be created in the *Google Summer of Code* web application;
- Students submit project proposals on-line to work with particular mentoring organizations;
- Mentoring organizations rank student proposals and perform any other due diligence on their potential mentees; student proposals are matched with a mentor;
- Google allocates a particular number of student slots to each organization;
- Students are notified of acceptance;
- Students begin learning more about their mentoring organization and its community before coding work starts;
- Students begin coding work at the official start of the program, provided they've interacted well with their community up until the program start date;
- Mentors and students provide mid-term progress evaluations;
- Mentors provide a final evaluation of student progress at close of program; students submit a final review of their mentor and the program;
- Student uploads completed code to a Google Code hosted project.





# Google Summer of Code - What is a Mentoring Organizations?

*code.google.com/soc*

- **A group running an active free/open source software project.**
- **The project does not need to be a legally incorporated entity.**
  - Find a list of past mentoring organizations on the GSoC 2005, 2006, 2007 and 2008 pages.
- **Mentoring organizations must produce and release software under an Open Source Initiative approved license in order to participate in the program.**



# Google Summer of Code - What is the role of a Mentoring Organizations?

[code.google.com/soc](http://code.google.com/soc)

- **Each mentoring organization is expected to provide:**
  - A pool of project ideas for students to choose from, publicly published by the mentoring organization as an "Ideas" list;
  - An organization administrator to act as the project's main point of contact for Google;
  - A person or group responsible for review and ranking of student applications, both those proposals which tie into the organization's "Ideas" list and "blue-sky" proposals;
  - A person or group of people responsible for monitoring the progress of each accepted student and to mentor her/him as the project progresses;
  - A person or group responsible for taking over for a student's assigned mentor in the event they are unable to continue mentoring, e.g. take a vacation, have a family emergency;
  - A written evaluation of each student participant, including how s/he worked with the group, whether s/he should be invited back should we do another *Google Summer of Code*, etc.
- **Additional Responsibilities**
  - A mentoring organization should actively encourage each student developer to participate in the project's community in whichever way makes the most sense for the project, be it development mailing lists, idling in the project's IRC channel, participating in the project's forum, etc.
  - A truly successful mentoring organization will work diligently to ensure that as many of their students as possible remain active project participants long after the conclusion of the program.