



Aalto University

DesigningOpenInnovation.03

Version Control Systems – SVN, Git and GitHub

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11.03.2013

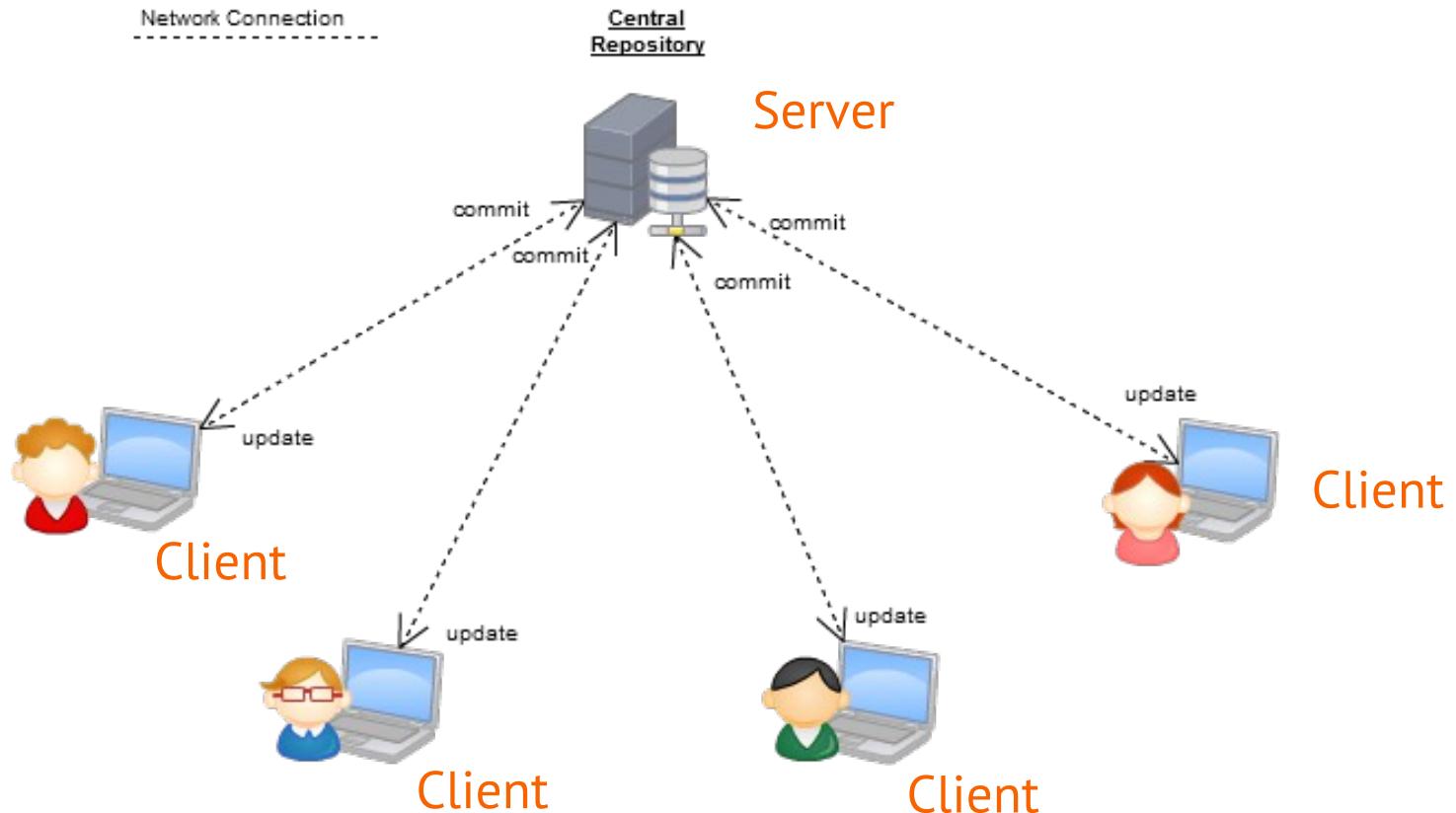


Aalto University

01.

Subversion – the central version control system

Server/client-based Version Control System



The first architecture that emerged for
versioning files and projects.

Source: <http://www.kalekold.net/index.php?post=13>

Subversion: an open Version Control System

The screenshot shows the official Apache Subversion website. At the top is the Subversion logo, featuring a blue stylized 'S' icon followed by the word 'SUBVERSION®'. Below the logo is a navigation bar with several links: 'About Subversion' (selected), 'News', 'Features', 'Documentation', 'FAQ', 'Roadmap', and 'Security'. Under 'About Subversion', there are links for 'Source Download', 'Binary Packages', and 'Release Notes'. Below this is a 'Community' section with links for 'Mailing Lists', 'Reporting Issues', 'Wiki', and 'Getting Involved'. Another 'About the ASF' section includes links for 'Licenses', 'Donate', and 'Thanks'. At the bottom of the sidebar is a search bar with a 'Go' button.

Apache™ Subversion®
"Enterprise-class centralized version control for the masses"

Welcome to subversion.apache.org, the online home of the Apache Subversion™ software project. Subversion is an open source version control system that has become one of the most popular tools for managing software development projects. The Subversion project and software have seen incredible success over the past decade. Subversion has enjoyed and continues to enjoy widespread adoption across the globe, from small teams to large corporations and the corporate world.

Subversion is developed as a project of the [Apache Software Foundation](#), and as such is part of a rich community of developers and users. We welcome you to learn more about Subversion, its features, and how it can help you manage your software development projects. We invite you to participate in the development of Apache Subversion. Here's [how to get started](#).

For helpful hints about how to get the most out of your visit to this site, see the [About This Site](#) section below.

Our Vision

Subversion exists to be universally recognized and adopted as an open-source, centralized version control system characterized by its reliability, ease of use, and efficiency. It is designed to handle large-scale projects and provide a reliable way to manage files and directories, and the changes made to them, over time, like a time machine.

News

Subversion manages files and directories, and the changes made to them, over time, like a time machine.

Source: <http://subversion.apache.org/>

Version Control System: the vocabulary (01)

* **Change**

A change (or diff) represents a specific modification to a document under version control.

* **Checkout**

A check-out (or co) is the act of creating a local working copy from the repository. A user may specify a specific revision or obtain the latest. Also refers to the same files.

* **Commit**

A commit (checkin, ci) is the action of writing or merging the changes made in the working copy back to the repository. Also refers to the same files.

* **Head**

The most recent commit.

Version Control System: the vocabulary (02)

* Conflict

A conflict occurs when different parties make changes to the same document. A user must resolve the conflict by combining the changes, or by selecting one change.

* Merge

A merge or integration is an operation in which two sets of changes are applied to a file or set of files.

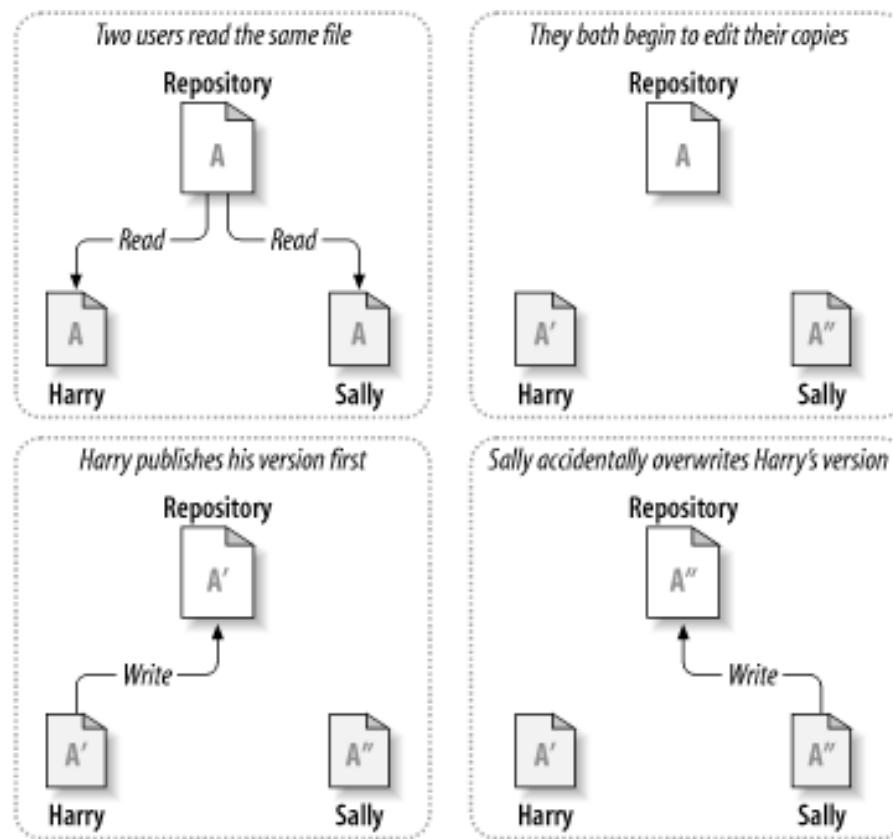
* Update

An update (or sync) merges changes made in the repository (by other people, for example) into the local working copy.

* Working copy

The working copy is the local copy of files from a repository, at a specific time or revision. Conceptually, it is a *sandbox*.

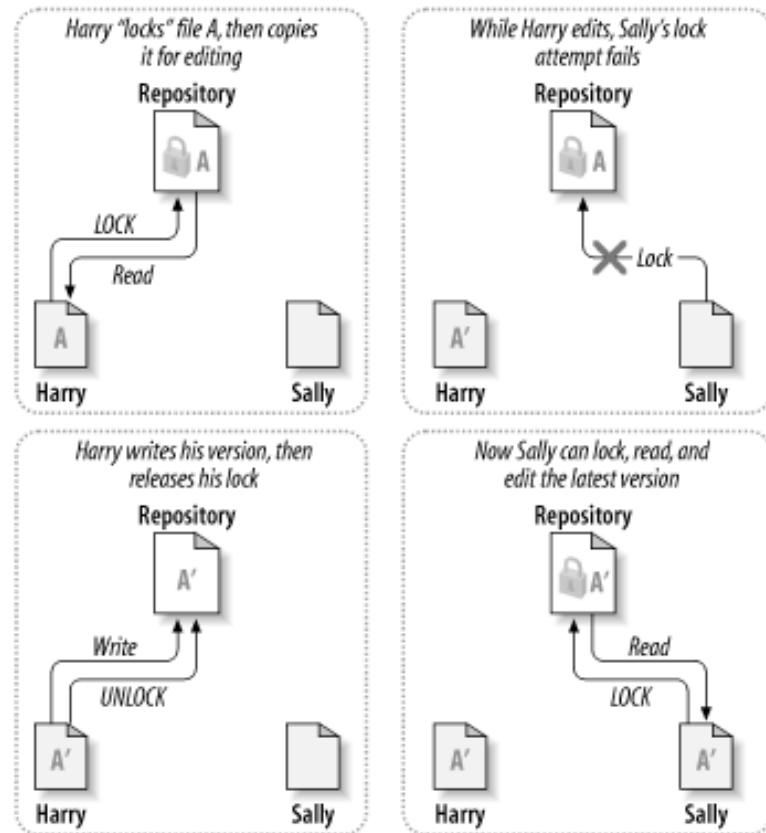
Versioning model: the problem



How will the system allow users to share information, but prevent them from accidentally overwriting?

Source: <http://svnbook.red-bean.com/en/1.6/svn.basic.version-control-basics.html>

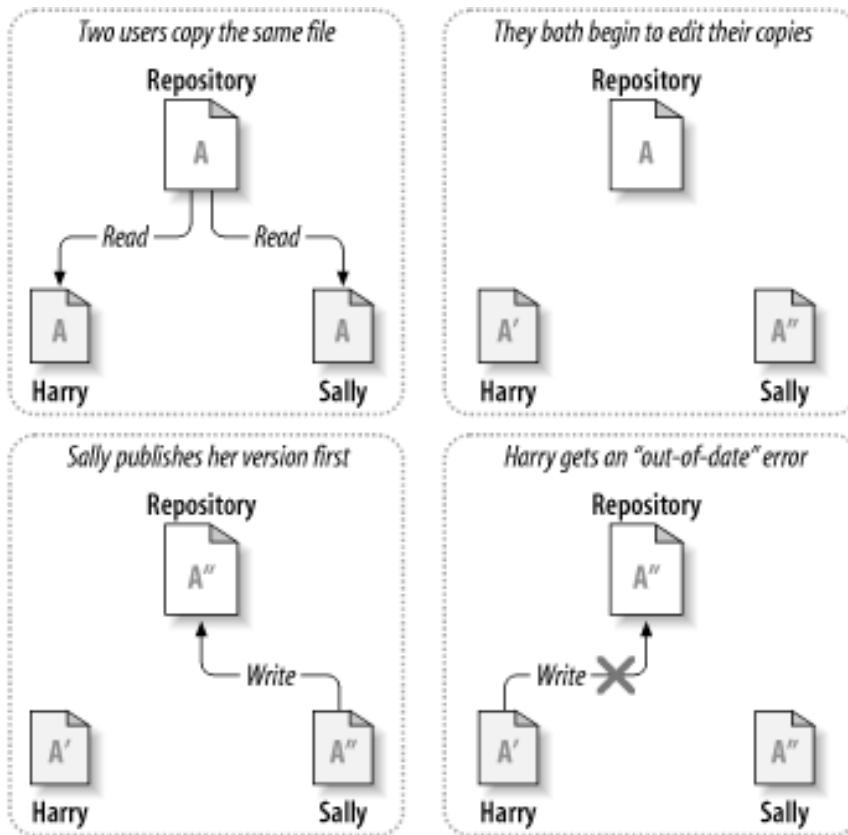
Versioning model: the lock-modify-unlock solution



In this model, the repository allows only one person to change a file at a time, by locking it.

Source: <http://svnbook.red-bean.com/en/1.6/svn.basic.version-control-basics.html>

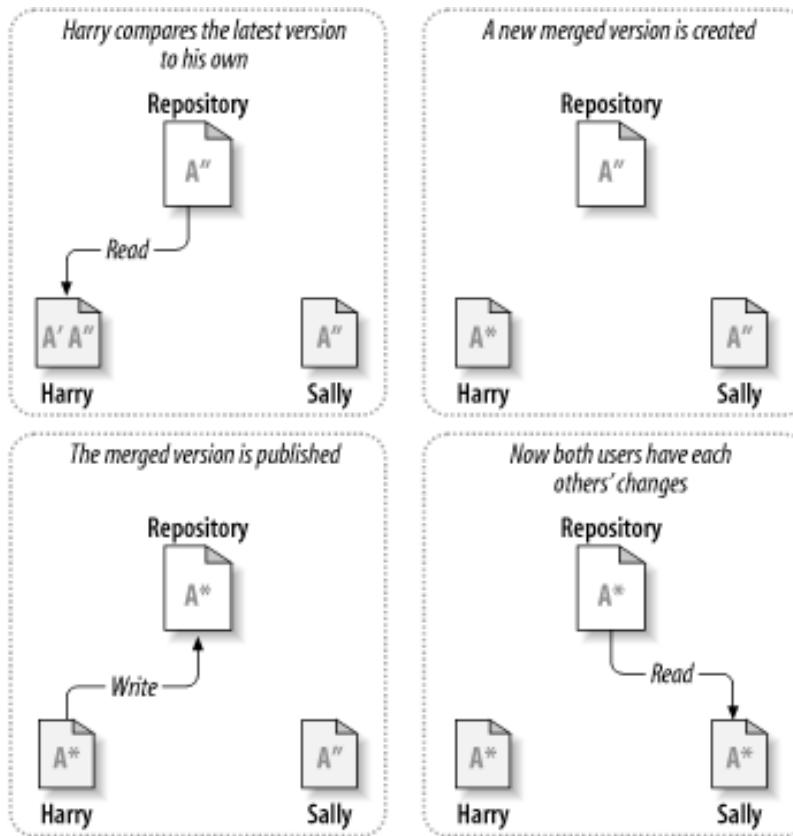
Versioning model: the copy-modify-merge solution (01)



In this model, each user's client contacts the project repository and creates a personal working copy. The private copies are merged together into a new version.

Source: <http://svnbook.red-bean.com/en/1.6/svn.basic.version-control-basics.html>

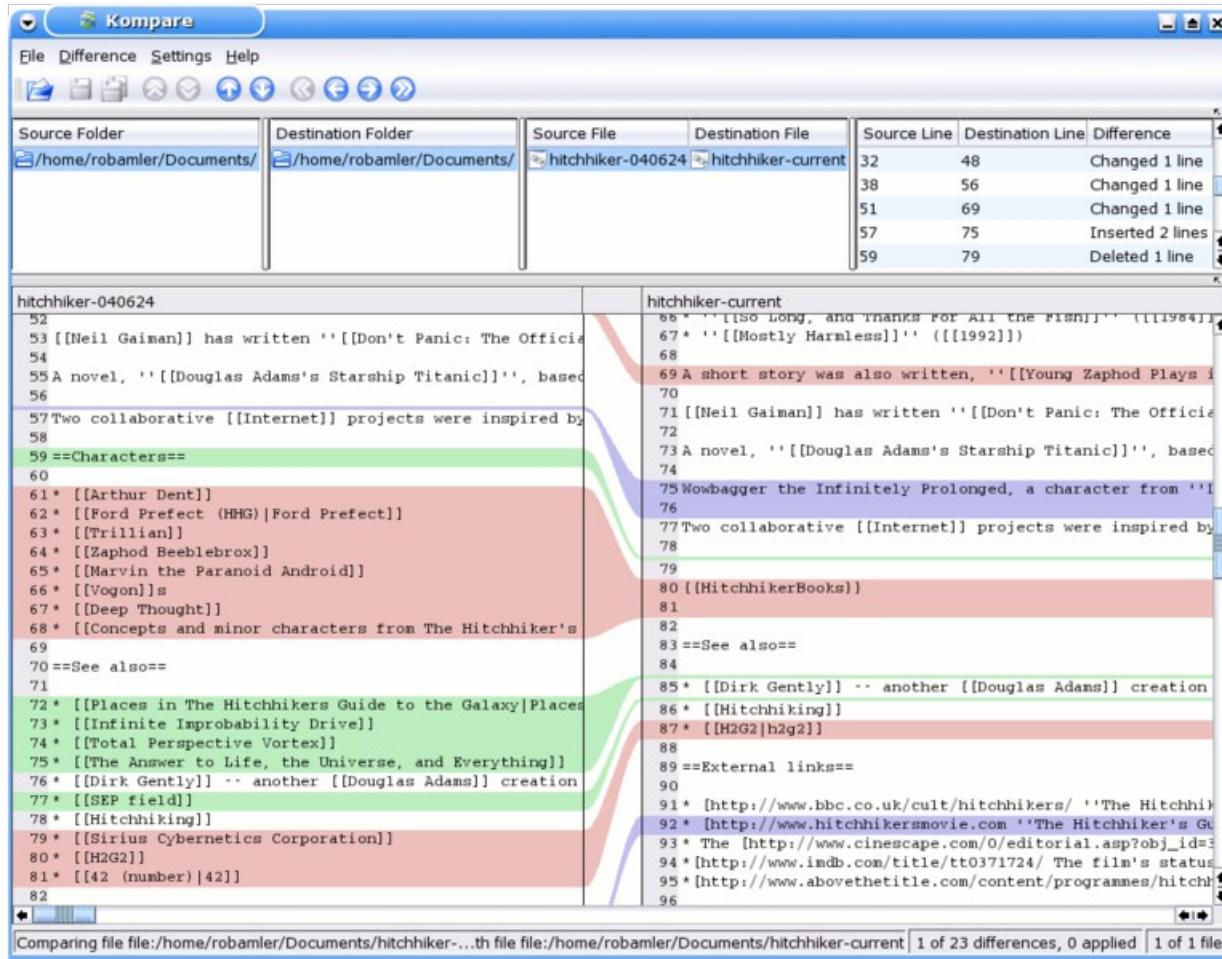
Versioning model: the copy-modify-merge solution (01)



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Source: <http://svnbook.red-bean.com/en/1.6/svn.basic.version-control-basics.html>

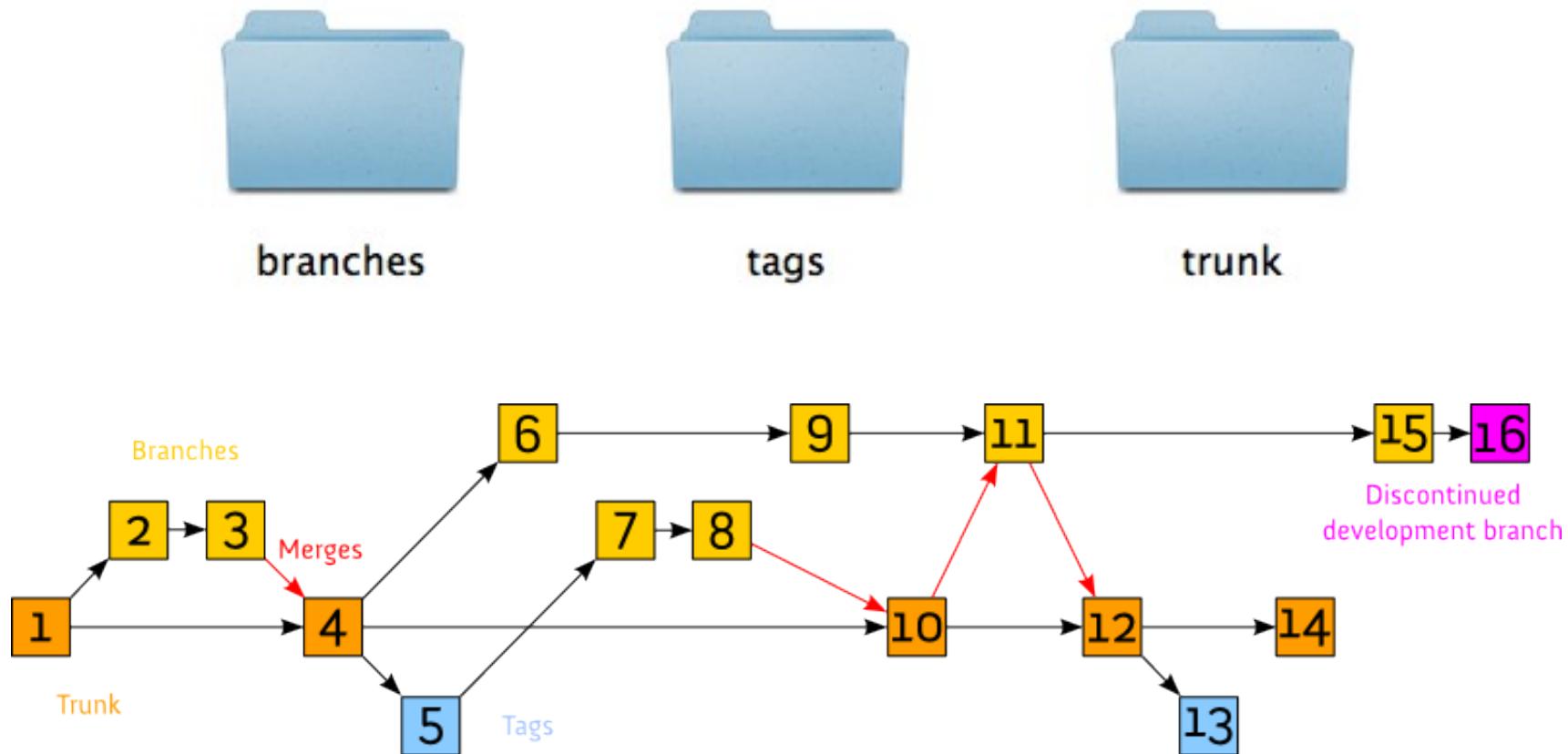
Diff: how to understand the changes



A specific software that highlights the differences and lets you choose how to retain or discard them.

Source: <http://en.wikipedia.org/wiki/Diff> <http://en.wikipedia.org/wiki/Kompare>

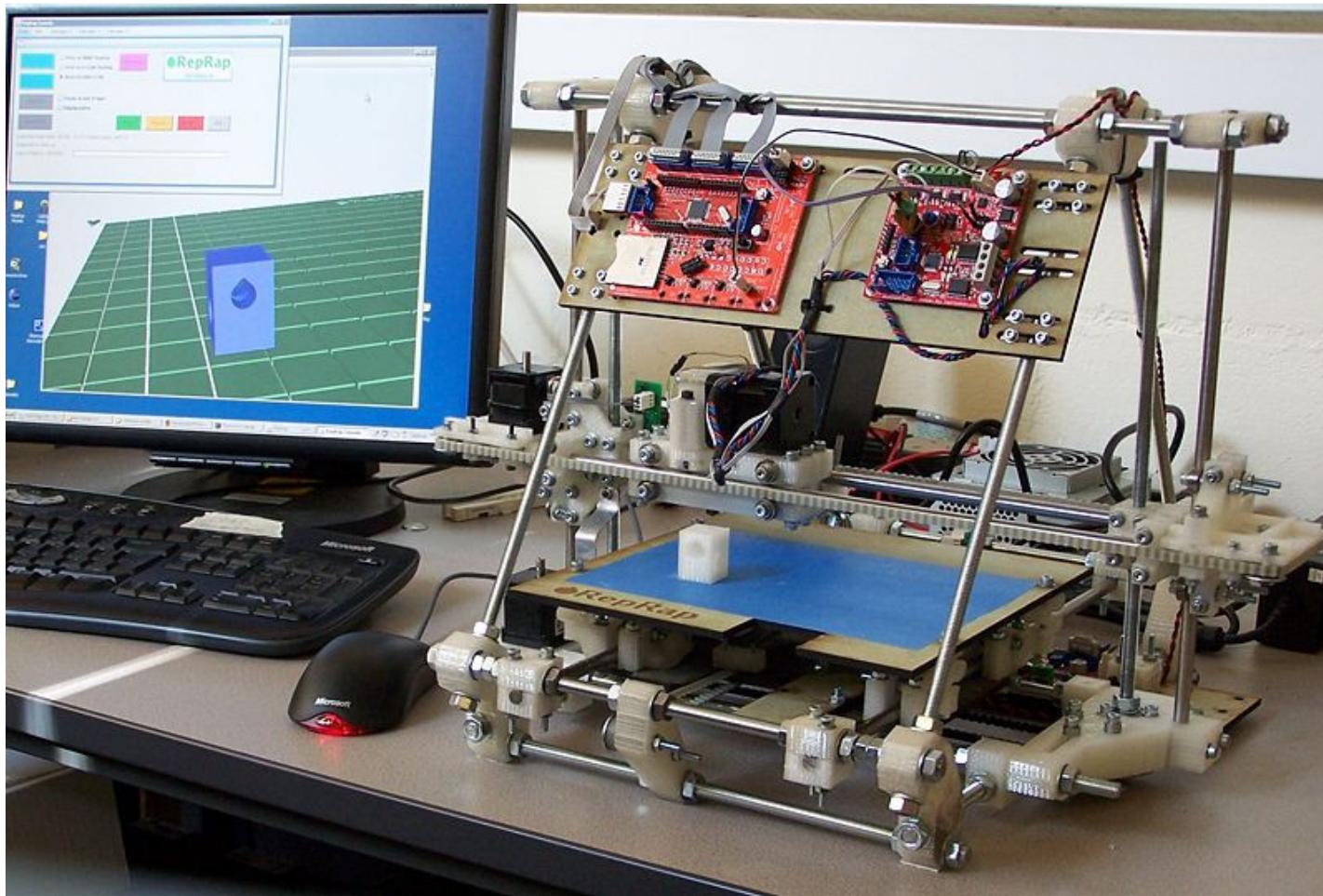
The structure of a typical Subversion project



The typical structure of the folder, and the typical workflow in Subversion.

Source: http://en.wikipedia.org/wiki/Apache_Subversion

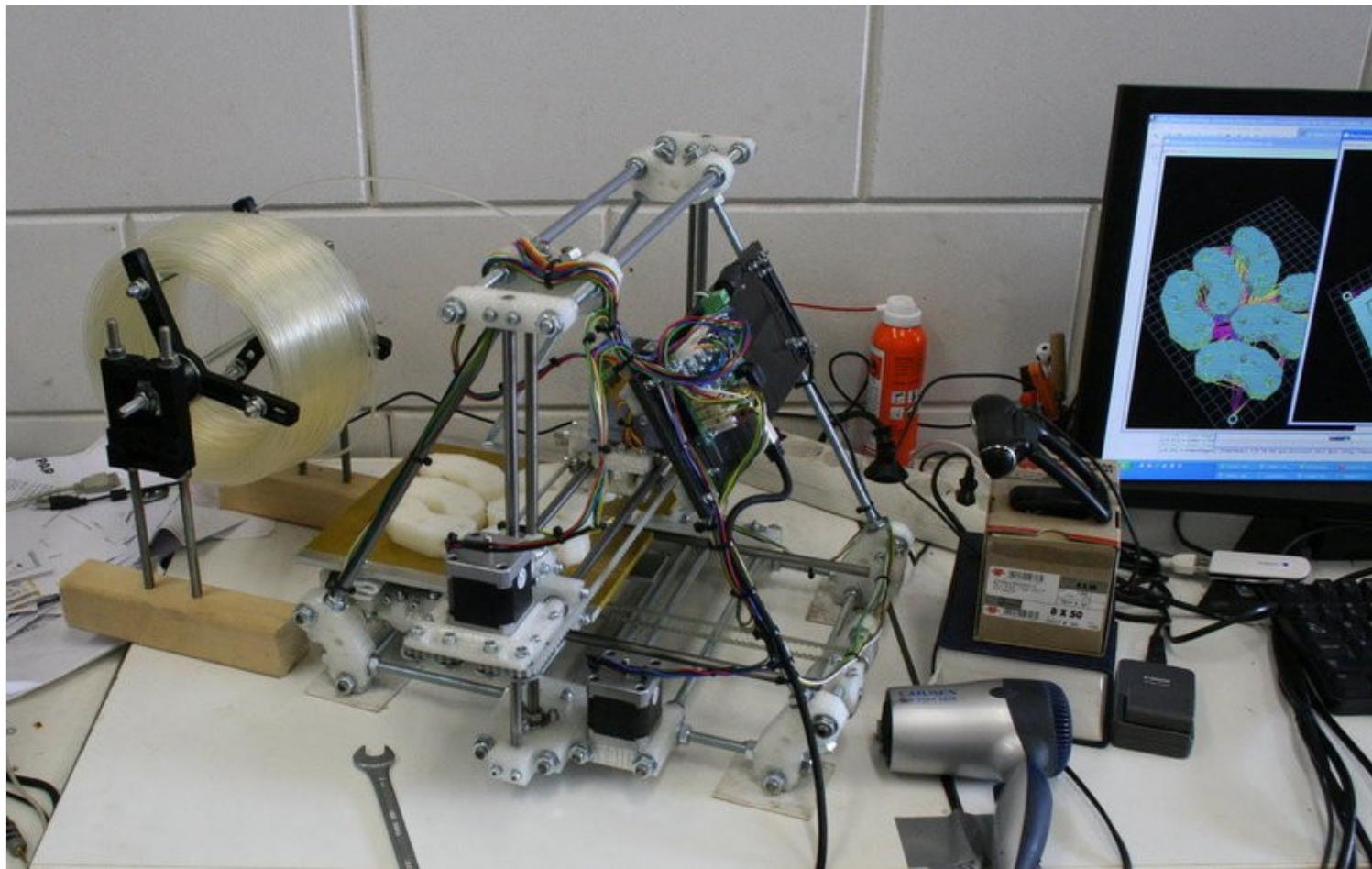
A real example: a spool for the RepRap Mendel



An open source 3D printer, that has generated
many more open source projects.

Source: <http://reprap.org/wiki/Mendel>

A spool for the RepRap Mendel: an improvement



A real example: a component for holding the cable for the RepRap

Source: <http://www.thingiverse.com/thing:3866>

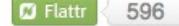
A real example, from Thingiverse

The screenshot shows the Thingiverse homepage. At the top left is the Thingiverse logo, which includes a stylized gear icon. The top right features a welcome message: "Welcome, friend. Please [register](#) or [login](#) to the Thingiverse." Below the header is a navigation bar with links: Home, About, Blog, Upload, Newest, Featured, Popular, Tools, and Parts. A search bar is located at the top right, featuring a "Google Custom Search" placeholder and a "Search" button. The main content area has a large, colorful illustration of interlocking gears in yellow, green, and pink. To the right of the illustration, the heading "What is Thingiverse?" is displayed in bold black text. Below the heading is a detailed paragraph describing the platform's mission and the increasing accessibility of fabrication tools. On the far right, there is a sidebar titled "Love Thingiverse?" with a Flattr button showing 596 clicks and a link to flattrThingiverse.com. At the bottom right of the page is a small image for "NETRAUTA.TAHMISTO".

What is Thingiverse?

Thingiverse is a place for you to share your digital designs with the world. We believe that just as computing shifted away from the mainframe into the personal computer that you use today, digital fabrication will share the same path. Infact, it is already happening: laser cutters, cnc machines, 3D printers, and even automated paper cutters are all getting cheaper by the day. These machines are useful for a huge variety of things, but you need to supply them with a digital design in order to get anything useful out of them. We're hoping that together we can create a community of people who create and share designs freely, so that all can benefit from them.

Love Thingiverse?

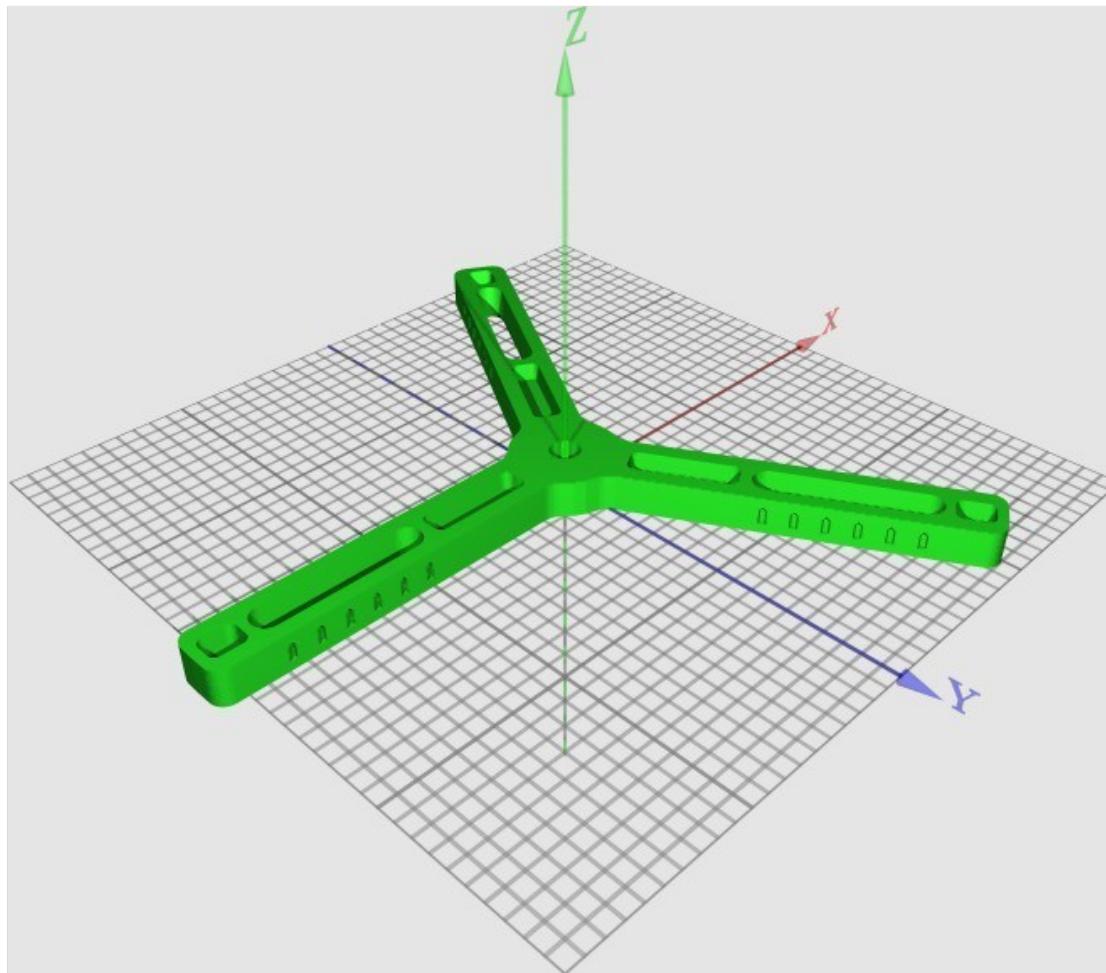
 596
([flattr](#) Thingiverse.com)



An online platform for sharing projects of physical things as Open Source.

Source: <http://www.thingiverse.com/about>

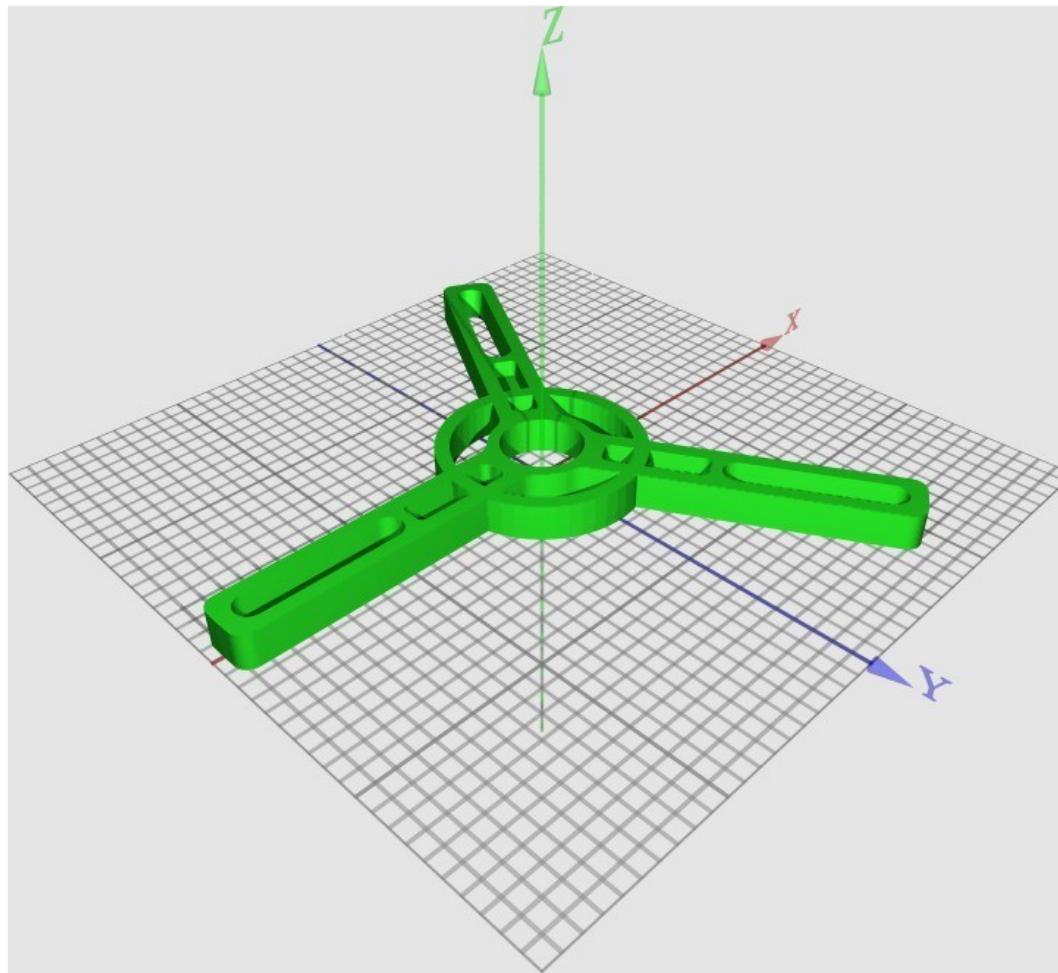
A spool for the RepRap Mendel: improvement 01



“Well i wanted to have a very simple, but bearing based spool system.” Camiel

Source: <http://www.thingiverse.com/thing:3866>

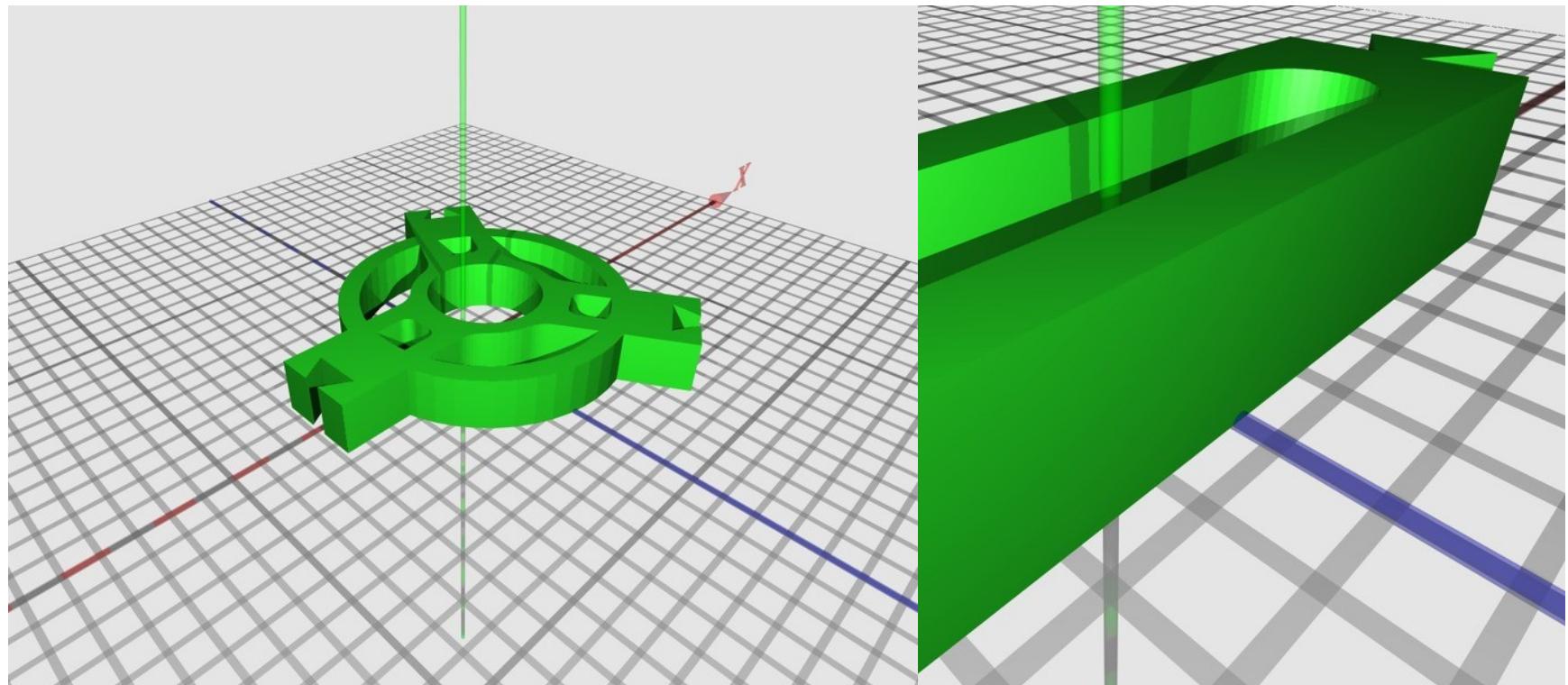
A spool for the RepRap Mendel: improvement 02



“I have changed the design to put the bearings in the spool itself. This way you can be more flexible in what you use to support the axle.” Brokentoaster

Source: <http://www.thingiverse.com/thing:3962>

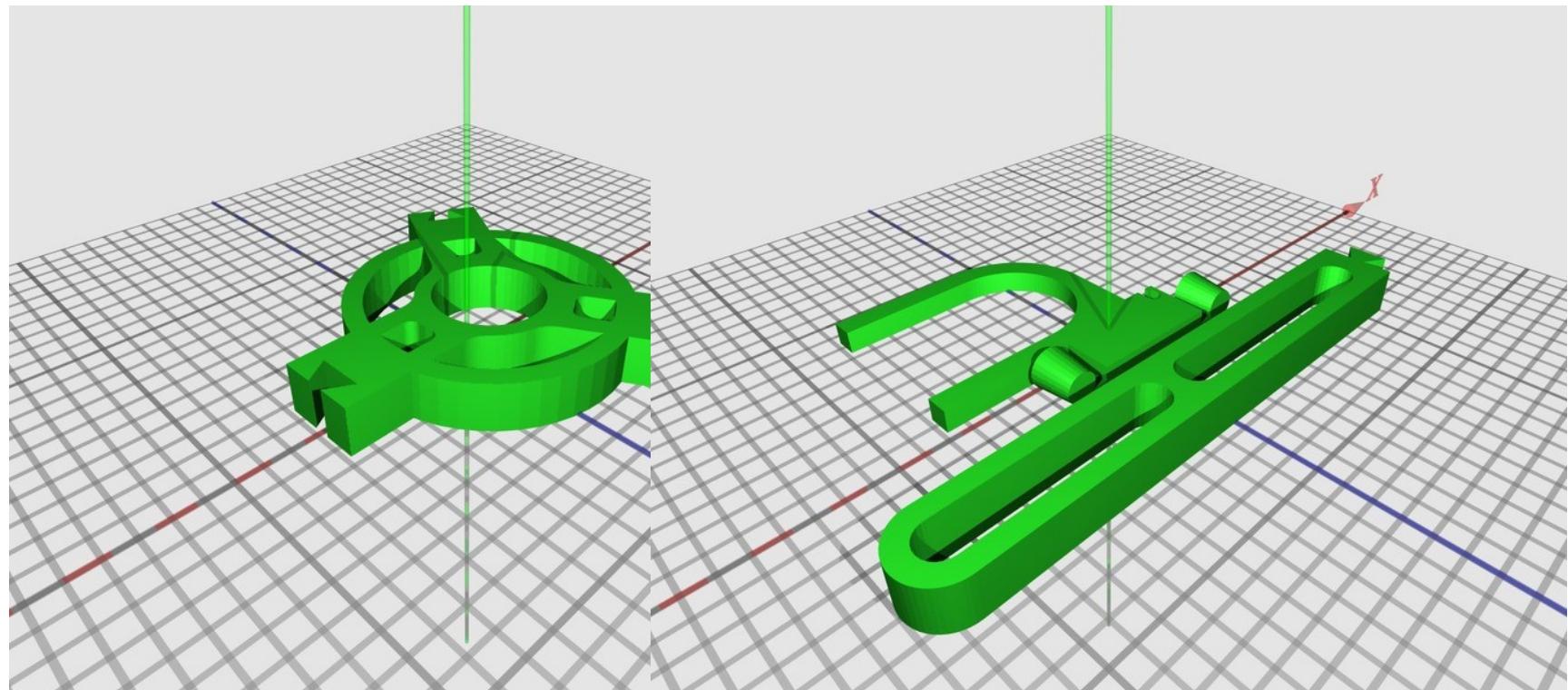
A spool for the RepRap Mendel: improvement 03



“I liked BrokenToaster’s idea of a bearing-driven filament spool holder, but that version was too big to fit on a Makerbot [...] It now fits on a Makerbot print bed!!!” Randy

Source: <http://www.thingiverse.com/thing:4337>

A spool for the RepRap Mendel: improvement 04



“This takes advantage of the larger print area on RepRaps by printing the arm as one piece, avoiding the need for a dovetail joint in the middle of the arm.” Fil

Source: <http://www.thingiverse.com/thing:11250>

SVN Client + File comparison: TortoiseSVN (Win)

TortoiseSVN *the coolest interface to (Sub)version control*

Home Donate Downloads Translations Support/Docs Other tools

 **TortoiseSVN**

About TortoiseSVN
TortoiseSVN is an easy-to-use SCM / source control software for Microsoft Windows and possibly the best standalone Apache™ Subversion® client there is. It is implemented as a Windows shell extension, which makes it integrate seamlessly into the Windows explorer. Since it's not an integration for a specific IDE you can use it with whatever development tools you like.

New version of grepWin
Posted on September 4, 2011

Subversion Client Windows
Download Now! Windows, Linux, OSX Subversion Repository Browser
www.aquafold.com

AdChoices ▾

A new version of [grepWin](#) is available. This new version contains a few bugfixes and enhancements.

List of completed [issues](#)
Download from [here](#)

Release candidate of TortoiseSVN 1.7
Posted on September 1, 2011

Info
News
[News archive](#)

The most common Subversion client for Windows.

Source: <http://tortoisessvn.net/>

SVN Client: SmartSVN (Win, Mac, Linux)

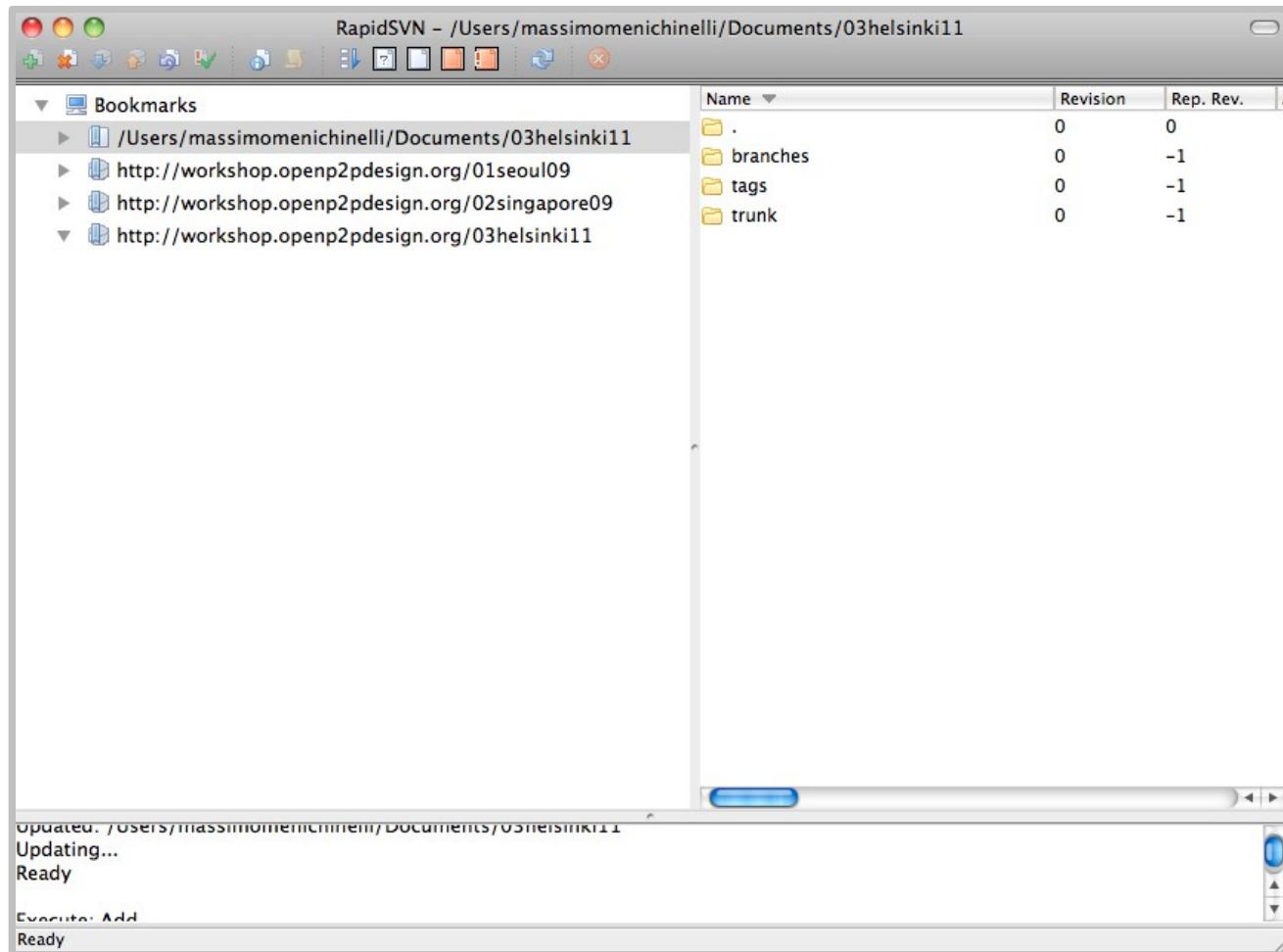


The screenshot shows the official website for SmartSVN. At the top, there's a navigation bar with the Synteko logo, menu items like SmartSVN, SmartGit, SmartCVS, SmartSynchronize, Contact, and Blog, and a search bar. A banner on the right encourages joining the dev-team and has a 'Download' button for version 6.6.9. Below the banner, the SmartSVN logo is displayed, along with a navigation menu: Home, Features, Why SmartSVN, Download, Purchase, Community, Documentation, and FAQ. A 'Printable' link is also present. The main content area features a large image of the SmartSVN application interface, which is a graphical SVN client showing a file tree, a list of files with their local and remote states, and a 'Transactions' pane. A blue callout box highlights the 'Why SmartSVN' section. To the right of the interface, the text 'The Subversion Client for Professionals' is displayed, followed by a description of SmartSVN as a graphical client for Subversion (SVN), an Open Source version control system. It emphasizes that SmartSVN targets professionals who demand a reliable, efficient and well-supported SVN client for their daily business. Another 'Download' button is located here. The overall theme is professional and user-oriented.

A multiplatform and freeware Subversion client.

Source: <http://www.synteko.com/smartsvn/index.html>

SVN Client: RapidSVN (Win, Mac, Linux)



An open source and multiplatform Subversion client.

Source: <http://www.rapidsvn.org/>

SVN Client: Versions (Mac)

The screenshot shows the homepage of the Versions Subversion Client for Mac website. At the top, there's a navigation bar with links for "SOFA", "Home", "Release Notes", "Support", "Buy", and "Download". Below the navigation is a large graphic featuring a green lotus flower growing out of a mound of green grass under a dark blue sky. The word "VERSIONS" is written in large white letters, with a small yellow badge containing "1.1" positioned above the letter "S". Below "VERSIONS" is the text "SUBVERSION CLIENT FOR MAC". On the left side of the main content area, there's a block of text describing the product: "Versions offers the best way to work with Subversion on the Mac. Thanks to its clear-cut approach, you'll hit the ground running." To the right of this text are two buttons: a green "Download Now" button with a download icon and a blue "Buy for €39" button with a shopping cart icon.

Versions offers the best way to work with
Subversion on the Mac. Thanks to its
clear-cut approach, you'll **hit the ground**
running.

Download Now

Buy for €39

A paid Subversion client with a great interface, but only for Mac.

Source: <http://www.versionsapp.com/>

File comparison: Kaleidoscope (Mac)

Compare files with...

KALEIDOSCOPE

Use Kaleidoscope to **spot the differences** in text and image files. Review changes in seconds with the world's **most advanced** file comparison application.

[Download](#)  [Buy for €29](#) 

[30 Day Demo](#) [Introductory Price](#)

[Learn more...](#)

 **Text Scope**
Compare text and

 **Image Scope**
Review mockups

 **Workflow**
Integrate with just

 **Details**
Skim through the



From the same developers of Versions, a file and image comparison app for Mac.

Source: <http://www.kaleidoscopeapp.com/>

File comparison: Perforce P4Merge (Win, Mac, Linux)

The screenshot shows the official website for Perforce. At the top, there's a navigation bar with links for Company, Partners, Resources, a search bar, and a menu with options like Products, Downloads, Documentation, Customers, Services, Purchase, and Support. Below the navigation, a large banner features the text "Create. Develop. Version everything with Perforce." and a detailed description of the product's capabilities. To the right of this text is a testimonial from NYSE Euronext, which includes a small photo of a smiling man and a quote: "We're really not even close to maxing out the scalability of the Perforce server." A navigation menu with items 1 through 5 is visible above the testimonial. At the bottom of the page, there are calls-to-action for "Why Perforce" and "Try Perforce", along with information about the beta release.

PERFORCE

Company Partners Resources Search

Products Downloads Documentation Customers Services Purchase Support

Create. Develop. Version everything with Perforce.

Only Perforce products have the Perforce Server – the fast version management platform that powers productive teamwork. Built from the ground up to be scalable and easy to manage, Perforce helps thousands of the world's leading organizations innovate and succeed.

NYSE Euronext. uses Perforce throughout the entire technology lifecycle of the exchange.

"We're really not even close to maxing out the scalability of the Perforce server."

1 2 3 4 5

Why Perforce Try Perforce

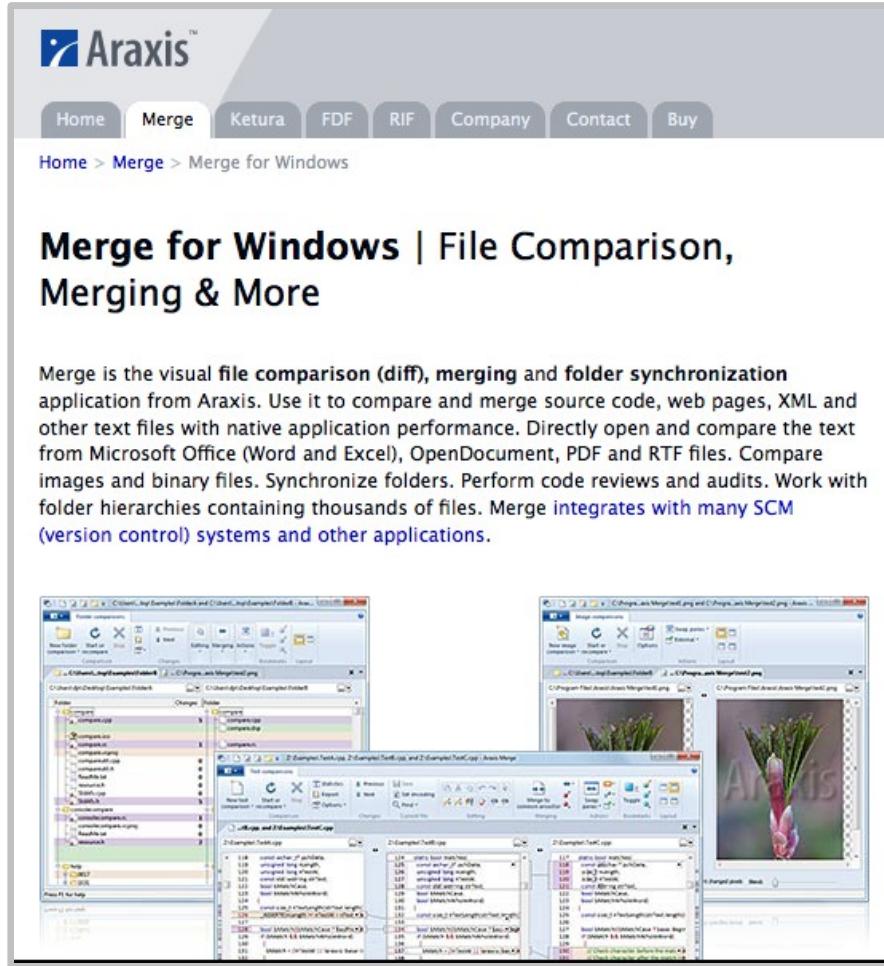
Get the fast track on better SCM... Free 2 user trial or multi-seat evaluation...

Get the Perforce 2011.1 Beta Release. Check out the [beta features](#) or [download the beta now](#).

A freeware and multiplatform file and image comparison app.

Source: http://www.perforce.com/product/components/perforce_visual_merge_and_diff_tools <http://www.andymcintosh.com/?p=33>
<http://blog.richardadleta.com/2009/02/free-diff-merge-tool-p4merge.html>

File comparison: Araxis Merge (Win)

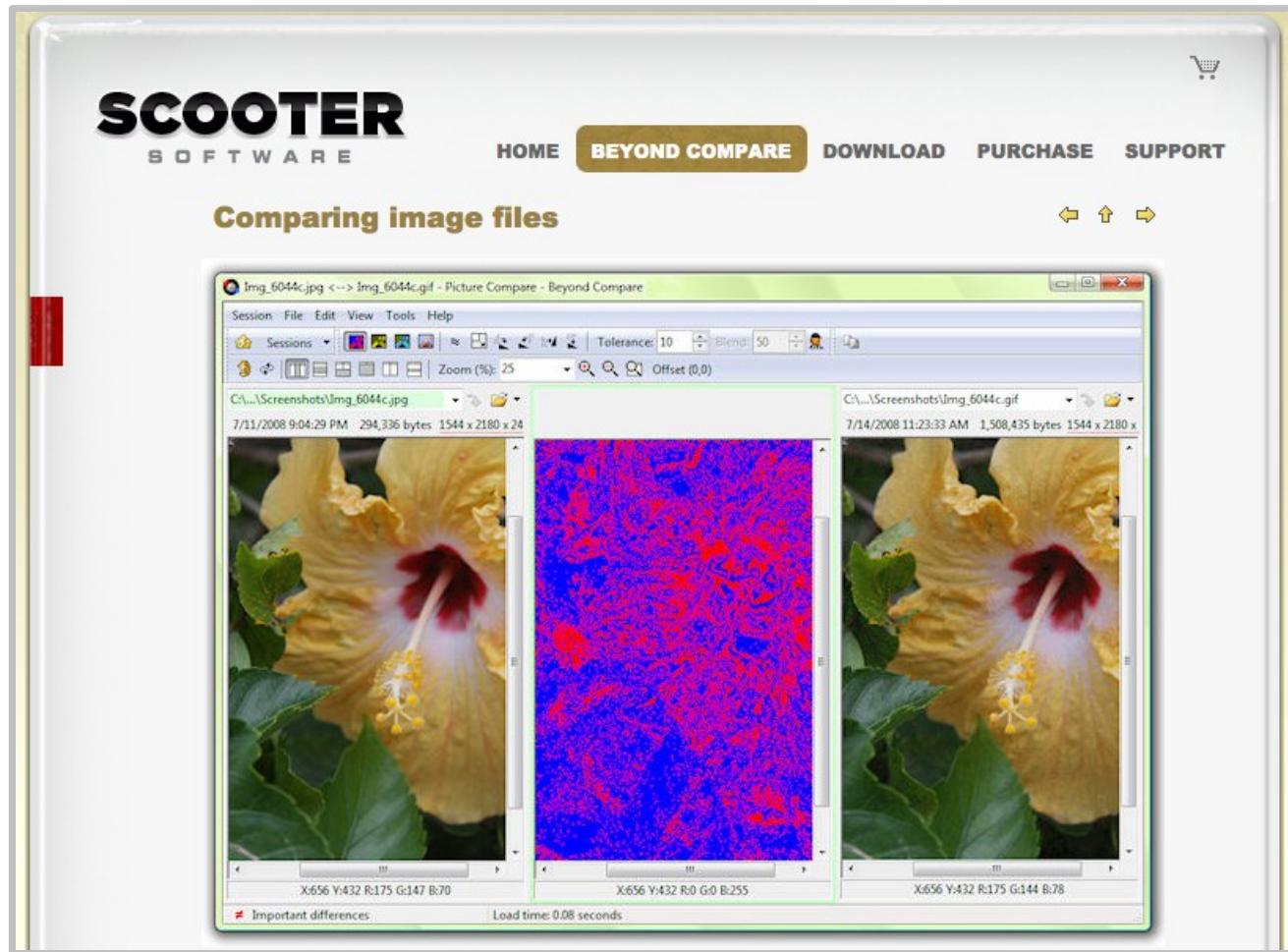


The screenshot shows the Araxis Merge application window. At the top, there's a navigation bar with links for Home, Merge (which is highlighted in blue), Ketura, FDF, RIF, Company, Contact, and Buy. Below the navigation bar, the URL 'Home > Merge > Merge for Windows' is displayed. The main title 'Merge for Windows | File Comparison, Merging & More' is centered above a descriptive paragraph. The paragraph explains that Merge is a visual file comparison (diff), merging and folder synchronization application from Araxis, designed to handle source code, web pages, XML, and other text files, as well as images and binary files. It supports native application performance, folder hierarchies with thousands of files, and integrates with many version control systems and other applications. Below the text, there are two side-by-side windows demonstrating the software's capabilities. The left window shows a file tree and a list of differences between two files, while the right window displays a visual comparison of two images.

A paid file and image comparison app for Windows.

Source: <http://www.araxis.com/merge/>

File comparison: BeyondCompare (Win, Linux)



A paid app for Linux and Windows that can compare images.

Source: <http://www.scootersoftware.com/moreinfo.php?zz=screenshot&shot=PixCompare>

File comparison: ComparePSD (Win)

The screenshot shows the pixelnovel website with the URL <http://pixelnovel.com/comparepsd/>. The page features a navigation bar with links for timeline, Do you like it?, SVN account, customers, blog, and sign in. Below the navigation is a breadcrumb trail: Home > comparepsd. A green button labeled "ComparePSD for Windows" is prominently displayed. To the right, there's a download button for "ComparePSD" for Windows, available "FREE". A sidebar on the right encourages users to "sign up for more exciting news" and includes a "Kudos!" button.

ComparePSD
compare two Adobe Photoshop files layer-by-layer
a must-have tool for Photoshop professionals

Imagine. You need to find the file with that unmerged effects among the heap of 2 mb files which were called hastily 'Untitled1.psd', 'Untitled2.psd', 'Untitled2_a.psd'. And now you have to open every single file, wait for it to load, scroll through it, and then find the effects you was looking for. Sounds familiar?

ComparePSD compares two Adobe Photoshop PSD files for you and highlights the differences. Layer by layer. Effect by effect. Simple. And did we mention that ComparePSD is absolutely free?

The bottom half of the screenshot displays a screenshot of the ComparePSD application interface. It shows two Photoshop files side-by-side: "vector.psd" and "vector2.psd". The interface allows users to compare layers and effects between the two files, highlighting differences. The application window has a menu bar with File, Search, View, Preview, and Help.

A freeware app that lets you compare Photoshop PSD files.

Source: <http://pixelnovel.com/comparepsd/>

Subversion Hosting Service: Beastalk

The screenshot displays the Beastalk homepage with a dark background featuring green leaf icons. At the top, there's a navigation bar with links: Home, Feature Tour, Partners & Tools, API, Guides, Blog, Pricing & Sign Up, and Help.

The main heading is "beanstalk" in a large, stylized green font, with a small green leaf icon above the letter "b". Below it is the tagline: "The easiest way to manage code, collaborate and deploy."

Three main sections are highlighted:

- Version Control**: Described as "Secure, private and reliable Git and Subversion hosting. View activity, browse files, compare revisions."
- Collaboration**: Described as "Review code and discuss changes. Easily integrate with your favorite ticketing, support and communication tools."
- Deployments**: Described as "Instantly deploy or rollback updates to multiple web servers for testing and production releases."

Below these sections is a screenshot of the Beastalk web interface, showing a dashboard with activity feeds and repository lists. A handwritten-style annotation says "Beanstalk has a gorgeous interface!" with an arrow pointing to the interface.

At the bottom left, a green button says "View Plans & Pricing" and "No contracts! Sign up in seconds.". At the bottom right, a yellow button says "Concerned about Security?" with a lock icon.

A paid hosting service for Subversion, but also for Mercurial and Git

Source: <http://beanstalkapp.com/>

Subversion hosting service: CloudForge

The screenshot shows the homepage of the CloudForge website. At the top, there's a navigation bar with links for CollabNet Home, Blog, Help, Status, Contact, and LOGIN. Below the navigation is a main menu with links for OVERVIEW, PRICING, PRIVATE HOSTING, PARTNERS, and TRAINING. The central part of the page features a large blue header with the text "Subversion (SVN) & Git Hosting under ONE roof". To the left, there's a sidebar with a left arrow and the text "Whether you're switching to Git or using both...". In the center, there's a "git" logo with a red diamond icon and a blue arrow pointing towards a globe. To the right, there's a right arrow. Below this, there's a section titled "CloudForge has you covered!" with a "Free 30 Day Trial" button. At the bottom, there's a section titled "Why use CloudForge dPaaS?" with six cards: "Start in Minutes" (with a team icon), "Open & Agnostic" (with a globe icon), "Integrate your systems" (with a cloud and circular arrows icon), "Cloud Deployment" (with a cloud and upload icon), "Visibility & Control" (with a chart icon), and "Enterprise Grade" (with a cloud and padlock icon). Each card has a brief description below it.

Why use CloudForge dPaaS?					
 Start in Minutes Teams, workspaces, hosted code & agile tools	 Open & Agnostic Supports any app framework or platform	 Integrate your systems Integrates with your existing tools & workflow	 Cloud Deployment One-click deployment to your preferred cloud	 Visibility & Control Across public, private, and on-premise environments	 Enterprise Grade 99.9% Uptime, Security High Availability, Supported

Subversion and Git hosting plans.

Source: <http://cloudforge.com/>

Subversion hosting service: Pixelnovel

The screenshot shows the Pixelnovel website with a navigation bar at the top featuring links for timeline, Do you like it?, SVN account, customers, and blog. A sign-in button is also present. Below the navigation, a breadcrumb trail shows the user is on the account page. On the left, there's a sidebar with links for home, account (which is active), and help. The main content area is titled "PIXELNOVEL ACCOUNT IS A SUBVERSION HOSTING FOR DESIGNERS". It features two columns of bullet points: one for account features and another for SVN integration. At the bottom of this section is a note about Timeline. To the right are "SEE PLANS" and "SIGN UP" buttons. A testimonial box contains a quote about Pixelnovel's benefits.

pixelnovel
version control for designers

timeline Do you like it? SVN account customers blog

sign in

account

SVN account

Pricing & plans

PIXELNOVEL ACCOUNT IS A SUBVERSION HOSTING FOR DESIGNERS

■ 3 plans for your convenience, a **free account** is available

■ View all your files online along with **previews and history***

■ Is based on Subversion (SVN), a proved version control system

■ Add more users to your account and manage their rights

* only available if used along with Timeline, the Subversion client for Adobe Creative Suite

SEE PLANS >

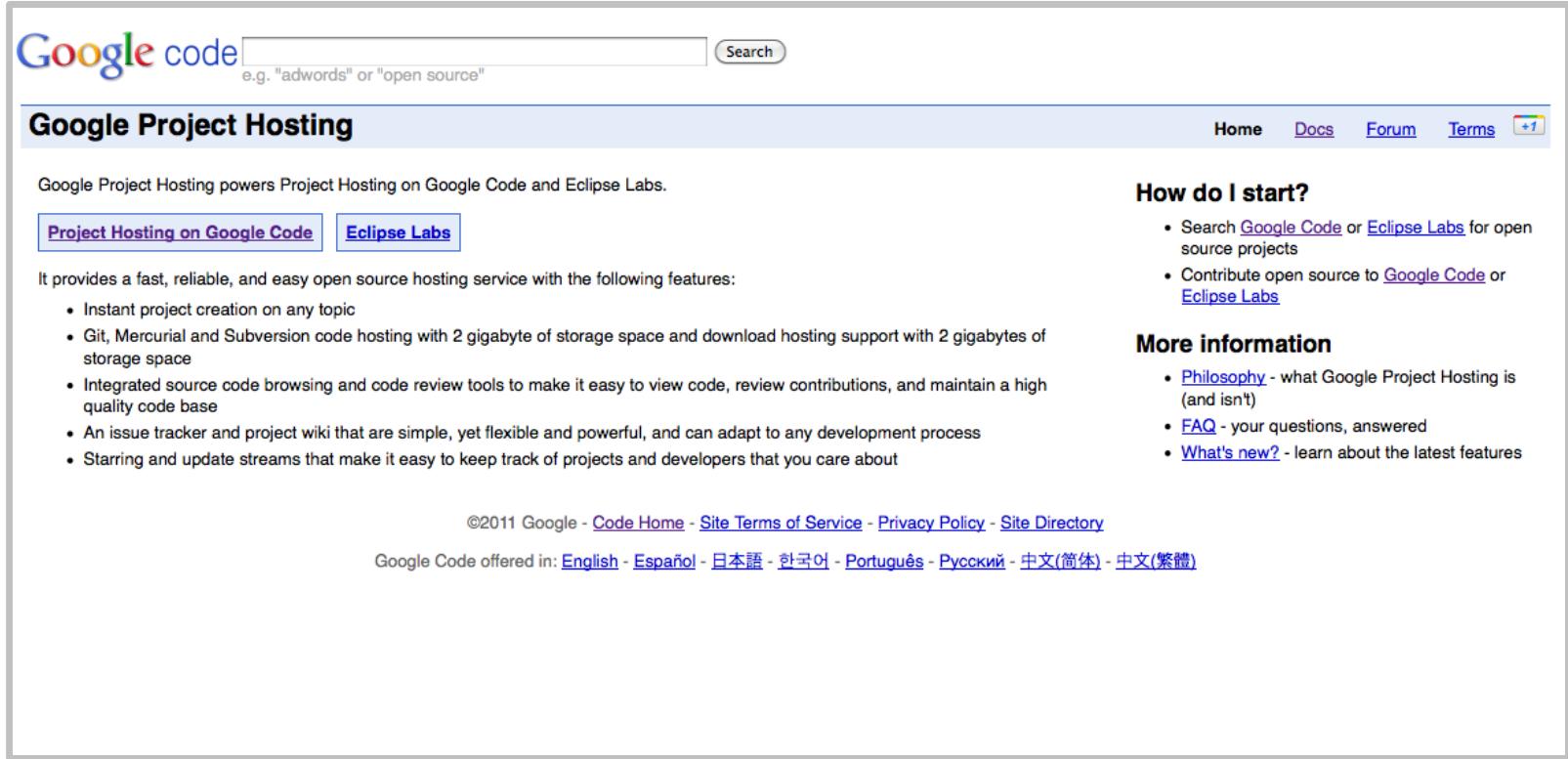
SIGN UP >

“ If you don't have your own SVN repository, a PixelNovel account will provide you with a hassle-free alternative, plus you get the extra features such as user management system and automatic back up ”

A Subversion hosting service for designers
using Adobe Photoshop

Source: <http://pixelnovel.com/svn-account/>

Subversion hosting service: Google Code



The screenshot shows the Google Project Hosting homepage. At the top, there's a search bar with the placeholder "e.g. 'adwords' or 'open source'" and a "Search" button. Below the search bar, the page title "Google Project Hosting" is displayed, along with navigation links for "Home", "Docs", "Forum", "Terms", and a link to "+1". A sub-header states "Google Project Hosting powers Project Hosting on Google Code and Eclipse Labs." Below this, two buttons are visible: "Project Hosting on Google Code" and "Eclipse Labs". A section titled "How do I start?" lists three items: "Search Google Code or Eclipse Labs for open source projects", "Contribute open source to Google Code or Eclipse Labs", and "Create a new project". Another section titled "More information" lists three items: "Philosophy - what Google Project Hosting is (and isn't)", "FAQ - your questions, answered", and "What's new? - learn about the latest features". At the bottom, there are copyright notices: "©2011 Google - [Code Home](#) - [Site Terms of Service](#) - [Privacy Policy](#) - [Site Directory](#)" and "Google Code offered in: [English](#) - [Español](#) - [日本語](#) - [한국어](#) - [Português](#) - [Русский](#) - [中文\(简体\)](#) - [中文\(繁體\)](#)".

A free hosting with Subversion and Git for
Open Source projects.

Source: <http://code.google.com/projecthosting/>

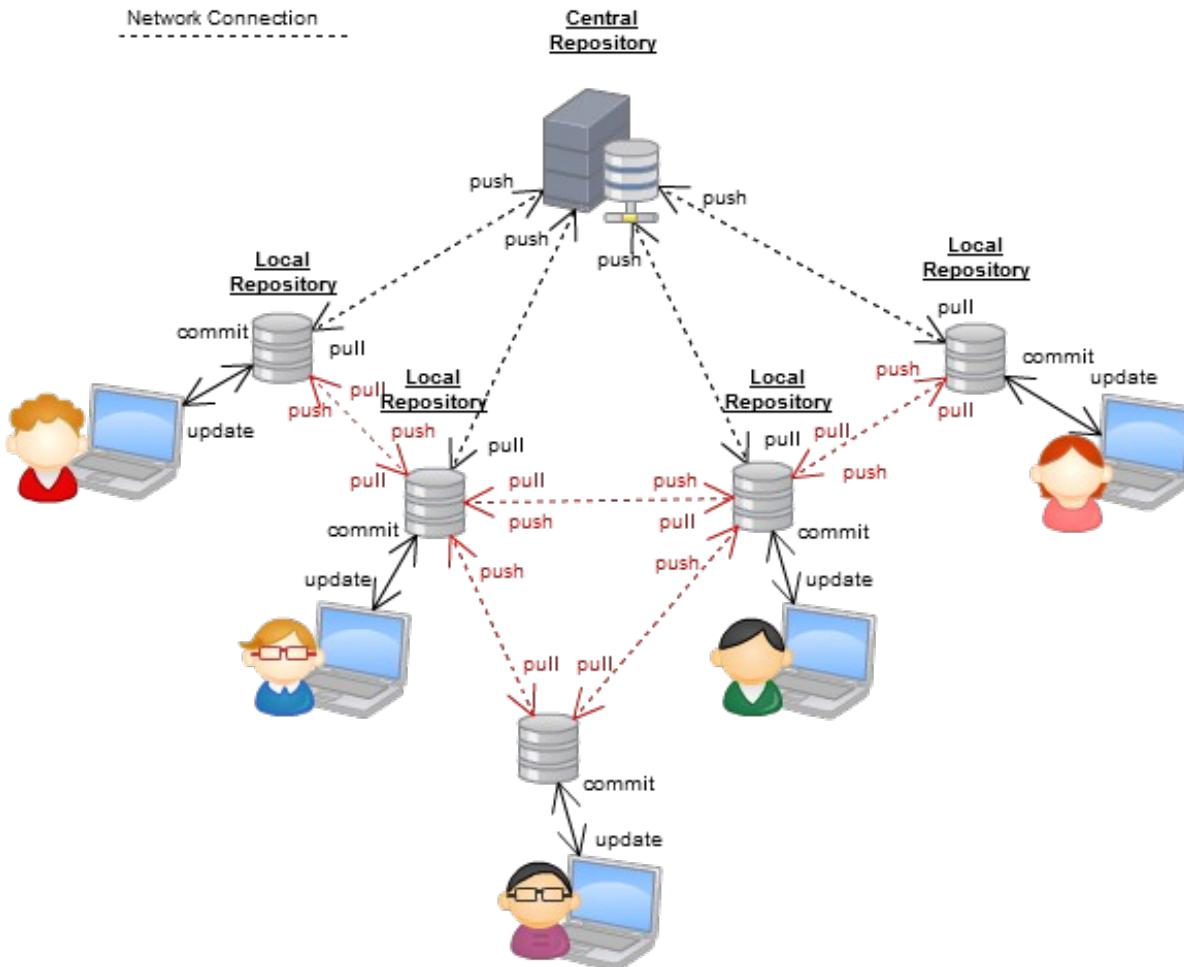


Aalto University

02.

Git – the distributed architectural engine

Distributed version control system



A distributed version control system: it may have a central repository but it is fully distributed.

Git: a distributed version control system

The screenshot shows the official Git website (<http://git-scm.com/>). At the top left is the Git logo with the tagline "everything-is-local". A search bar is at the top right. Below the header, there's a brief introduction to Git's distributed nature and its performance advantages over other SCM tools. To the right is a diagram illustrating the distributed nature of Git, showing multiple repositories connected by bidirectional red lines. Below the introduction are several navigation links: "About" (with a gear icon), "Documentation" (with a book icon), "Downloads" (with a download arrow icon), and "Community" (with a speech bubble icon). On the right side, there's a section for the "Latest stable release" (1.7.12) with a "Download for Mac" button. Below this are links for "Mac GUIs", "Tarballs", "Windows Build", and "Source Code". At the bottom left, there's a thumbnail for the book "Pro Git" by Scott Chacon.

git — everything-is-local

Search entire site...

Git is a **free and open source** distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

Git is **easy to learn** and has a **tiny footprint with lightning fast performance**. It outclasses SCM tools like Subversion, CVS, Perforce, and ClearCase with features like **cheap local branching**, convenient **staging areas**, and **multiple workflows**.

About
The advantages of Git compared to other source control systems.

Documentation
Command reference pages, Pro Git book content, videos and other material.

Downloads
GUI clients and binary releases for all major platforms.

Community
Get involved! Mailing list, chat, development and more.

Latest stable release
1.7.12
Release Notes (2012-08-20)
[Download for Mac](#)

[Mac GUIs](#) [Tarballs](#)

[Windows Build](#) [Source Code](#)

[Pro Git](#)

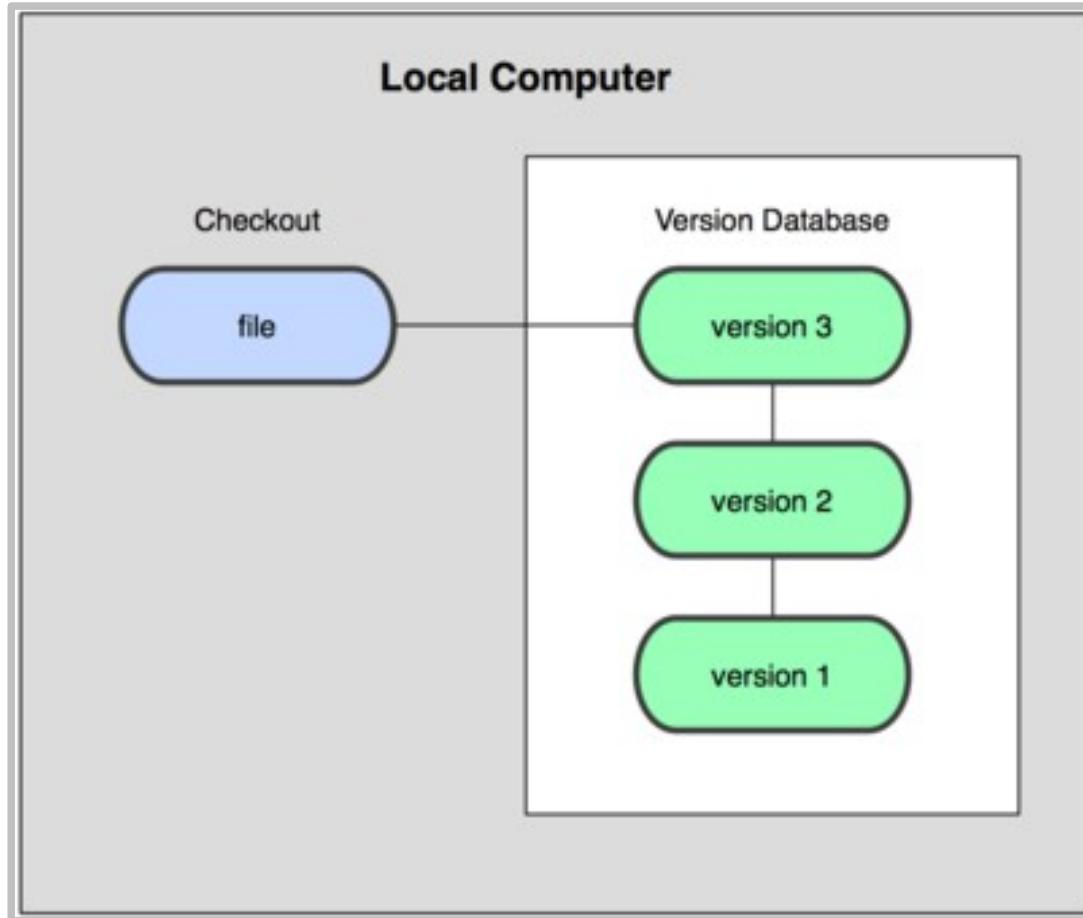
Pro Git by Scott Chacon is available to [read online for free](#). Dead tree versions are available on [Amazon.com](#).

Git: a distributed version control system

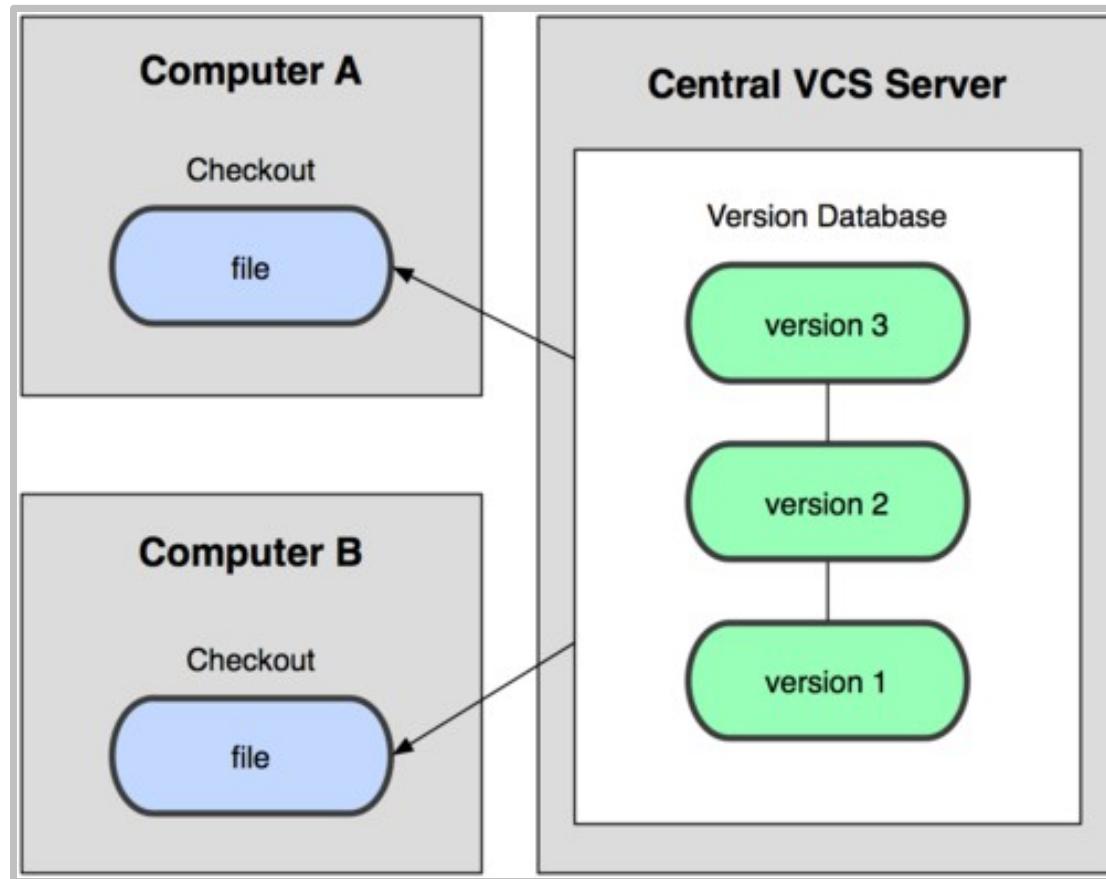


Source: <http://youtu.be/hKfo00Xc1BI>

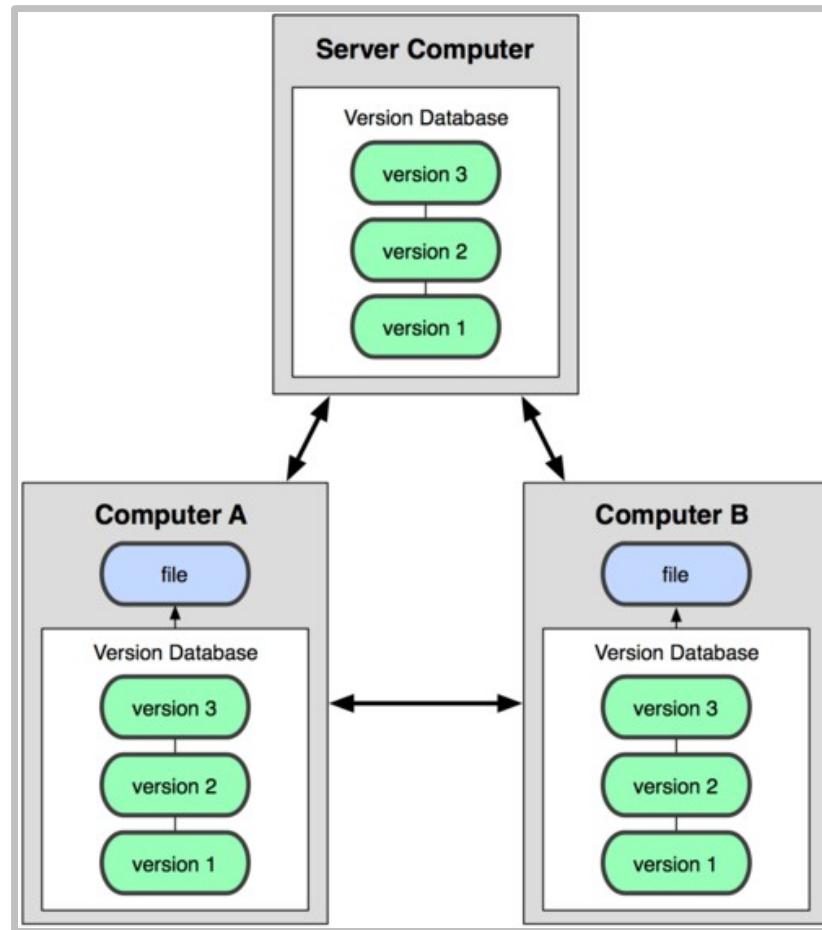
A local version control system



A centralized version control system



Git: a distributed version control system



Git: a command line tool

```
Massimos-MacBook-Air:Open-Design-Definition massimo$ git status
# On branch master
nothing to commit (working directory clean)
Massimos-MacBook-Air:Open-Design-Definition massimo$ git
usage: git [--version] [--exec-path[=<path>]] [--html-path] [--man-path] [--info-path]
           [-p|--paginate|--no-pager] [--no-replace-objects] [--bare]
           [--git-dir=<path>] [--work-tree=<path>] [--namespace=<name>]
           [-c name=value] [--help]
           <command> [<args>]

The most commonly used git commands are:
add           Add file contents to the index
bisect        Find by binary search the change that introduced a bug
branch       List, create, or delete branches
checkout     Checkout a branch or paths to the working tree
clone        Clone a repository into a new directory
commit       Record changes to the repository
diff          Show changes between commits, commit and working tree, etc
fetch        Download objects and refs from another repository
grep          Print lines matching a pattern
init          Create an empty git repository or reinitialize an existing one
log           Show commit logs
merge        Join two or more development histories together
mv            Move or rename a file, a directory, or a symlink
pull          Fetch from and merge with another repository or a local branch
push          Update remote refs along with associated objects
rebase        Forward-port local commits to the updated upstream head
reset         Reset current HEAD to the specified state
rm            Remove files from the working tree and from the index
show          Show various types of objects
status        Show the working tree status
tag           Create, list, delete or verify a tag object signed with GPG

See 'git help <command>' for more information on a specific command.
Massimos-MacBook-Air:Open-Design-Definition massimo$
```

Git: GUIs also available

GUI Clients

Git comes with built-in GUI tools for committing ([git-gui](#)) and browsing ([gitk](#)), but there are several third-party tools for users looking for platform-specific experience.

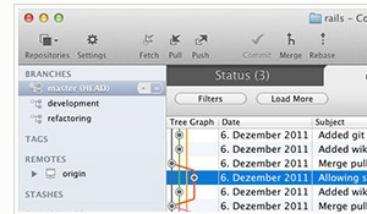
[Only show GUIs for my OS \(Mac\)](#)



GitHub for Mac

Platforms: Mac

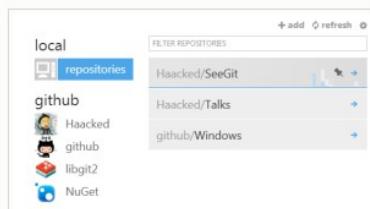
Price: Free



Tower

Platforms: Mac

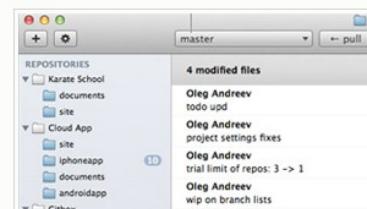
Price: \$59/user (Free 30 day trial)



GitHub for Windows

Platforms: Windows

Price: Free



Gitbox

Platforms: Mac

Price: \$9.99 / Free for personal use



Source: <http://git-scm.com/downloads/guis>

Git: a good free book

 git -everything-is-local

[About](#)

[Documentation](#)

- [Reference](#)
- [**Book**](#)
- [Videos](#)
- [External Links](#)

[Downloads](#)

[Community](#)

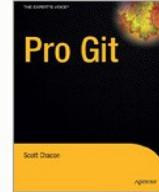
Download this book in [PDF](#), [mobi](#), or [ePub](#) form for free.

This book is translated into [German](#), [Chinese](#), [French](#), [Japanese](#) and [Dutch](#).

Partial translations available in [Arabic](#), [Czech](#), [Spanish](#), [Indonesian](#), [Italian](#), [Macedonian](#), [Polish](#), [Thai](#) and [Russian](#).

Book

The entire Pro Git book, written by Scott Chacon and published by Apress, is available here. All content is licensed under the [Creative Commons Attribution Non Commercial Share Alike 3.0 license](#). Print versions of the book are available on [Amazon.com](#).



1. Getting Started

- [1.1 About Version Control](#)
- [1.2 A Short History of Git](#)
- [1.3 Git Basics](#)
- [1.4 Installing Git](#)
- [1.5 First-Time Git Setup](#)
- [1.6 Getting Help](#)
- [1.7 Summary](#)

2. Git Basics

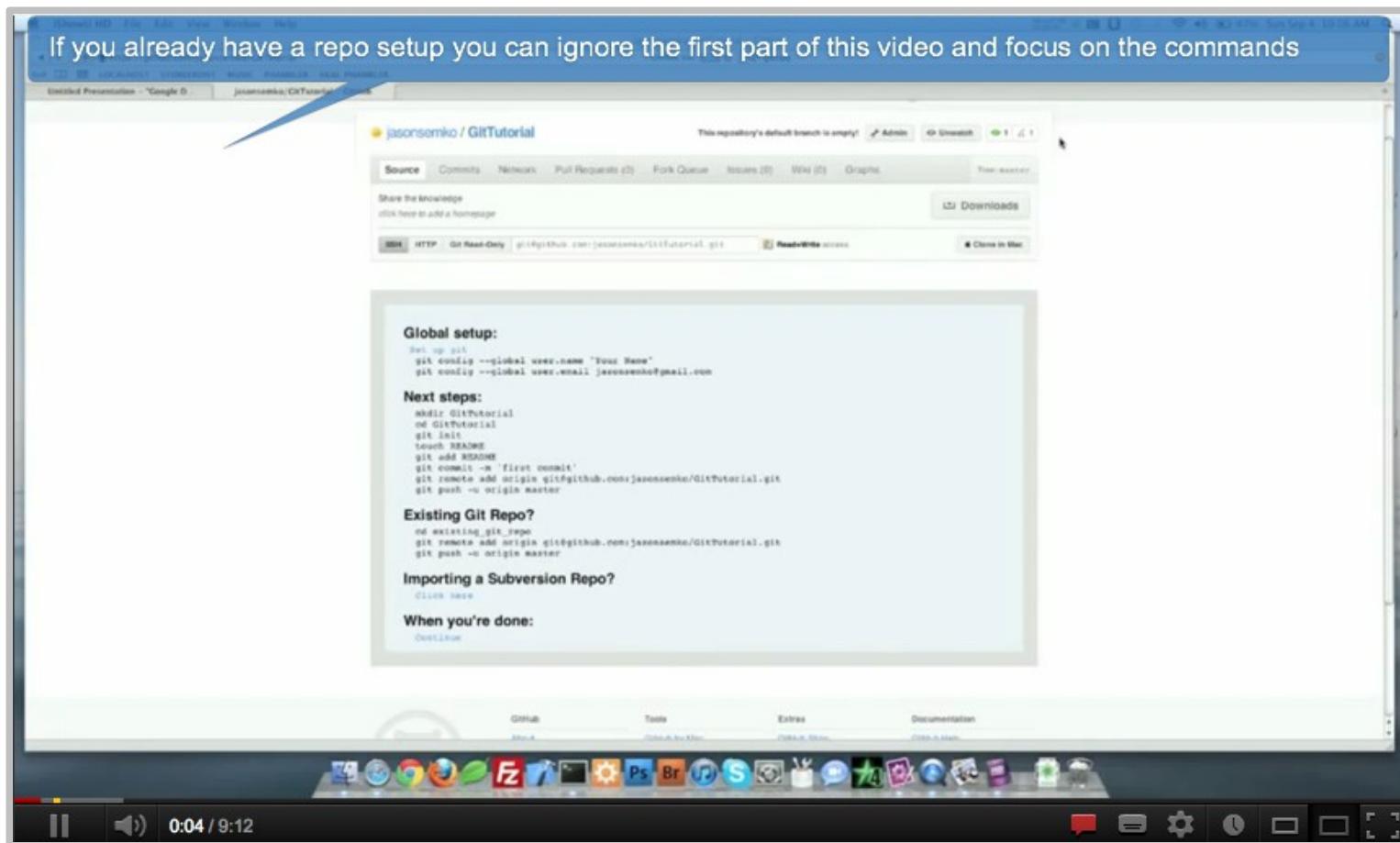
- [2.1 Getting a Git Repository](#)
- [2.2 Recording Changes to the Repository](#)
- [2.3 Viewing the Commit History](#)
- [2.4 Undoing Things](#)
- [2.5 Working with Remotes](#)
- [2.6 Tagging](#)
- [2.7 Tips and Tricks](#)

Git: a good free lecture, from the same author

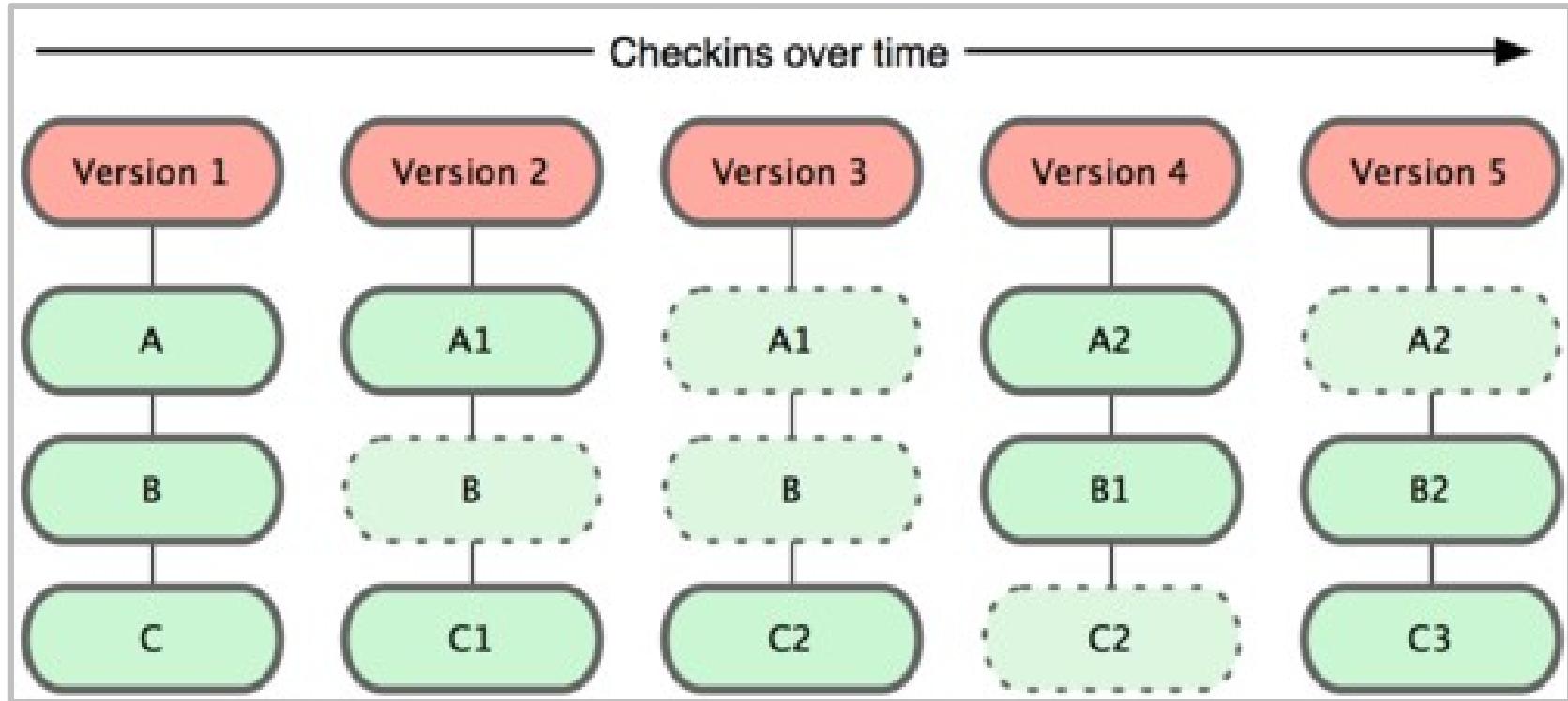


Source: <http://www.youtube.com/watch?v=ZDR433b0HJY>

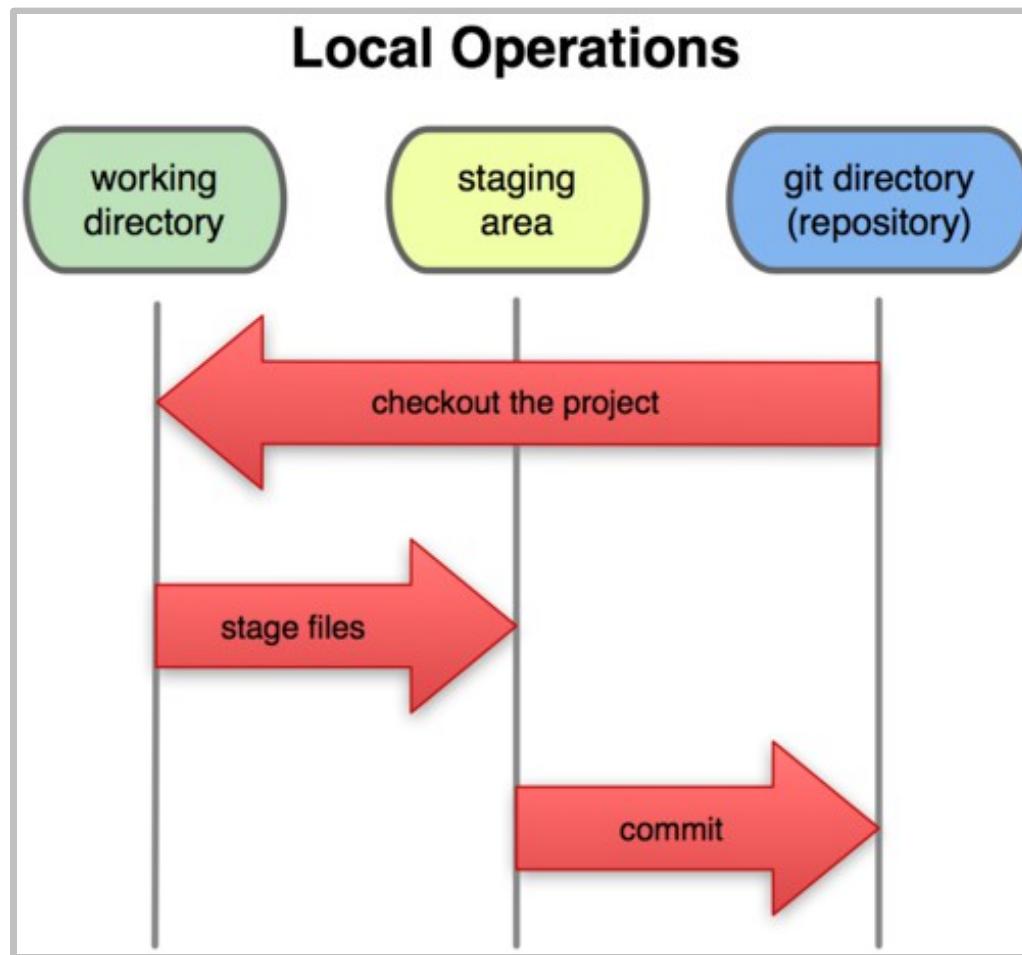
Git: good videotutorials



Git: history of a file system

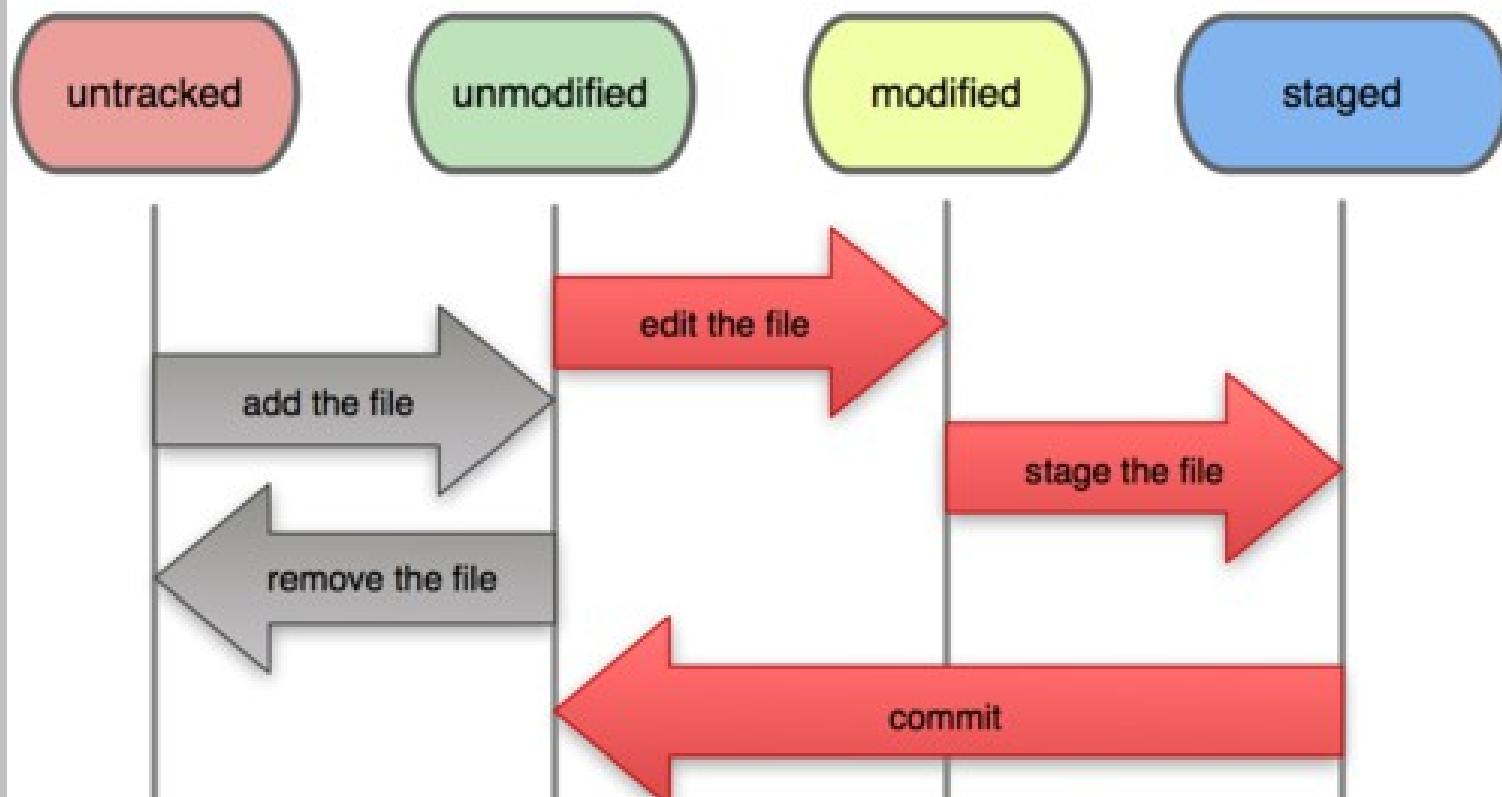


Git: architecture

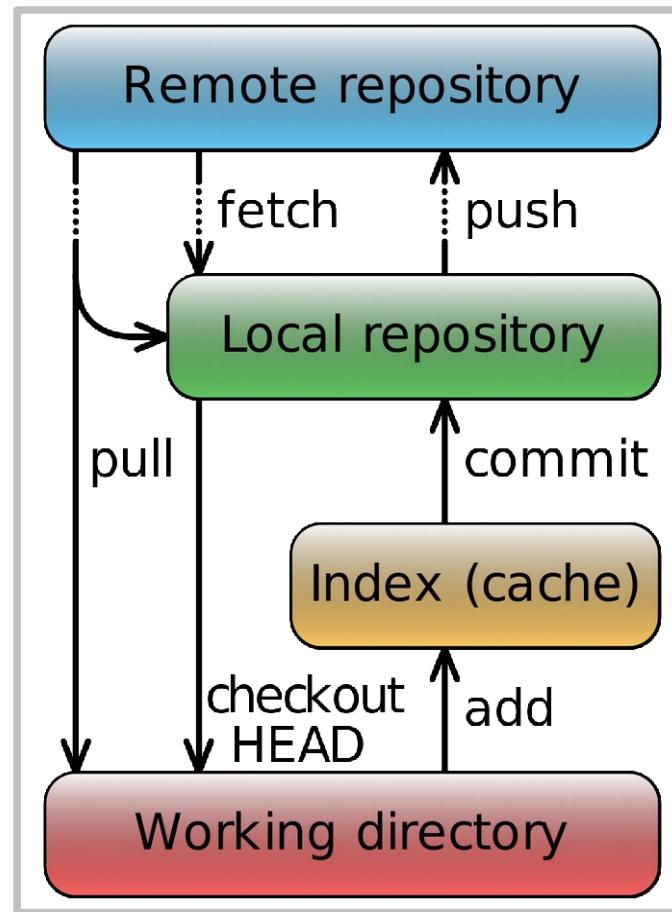


Git: history of a file

File Status Lifecycle



Git: commands and architecture





Aalto University

02.

GitHub – the easy online interface to a repository

GitHub: a platform for open source

github Explore GitHub Search Features Blog Sign in

Build software better, together.

Powerful collaboration, review, and code management for open source and private development projects.

Pick a username
Your email
Create a password
Tip: use at least one number and at least 7 characters.
By clicking on "Sign up for free" below, you agree to the [Terms of Service](#) and the [Privacy Policy](#).

[Sign up for free](#) See plans and pricing

 Great collaboration starts with communication.
Review changes, comment on lines of code, report issues, and plan the future of your project with [flexible discussion tools](#).

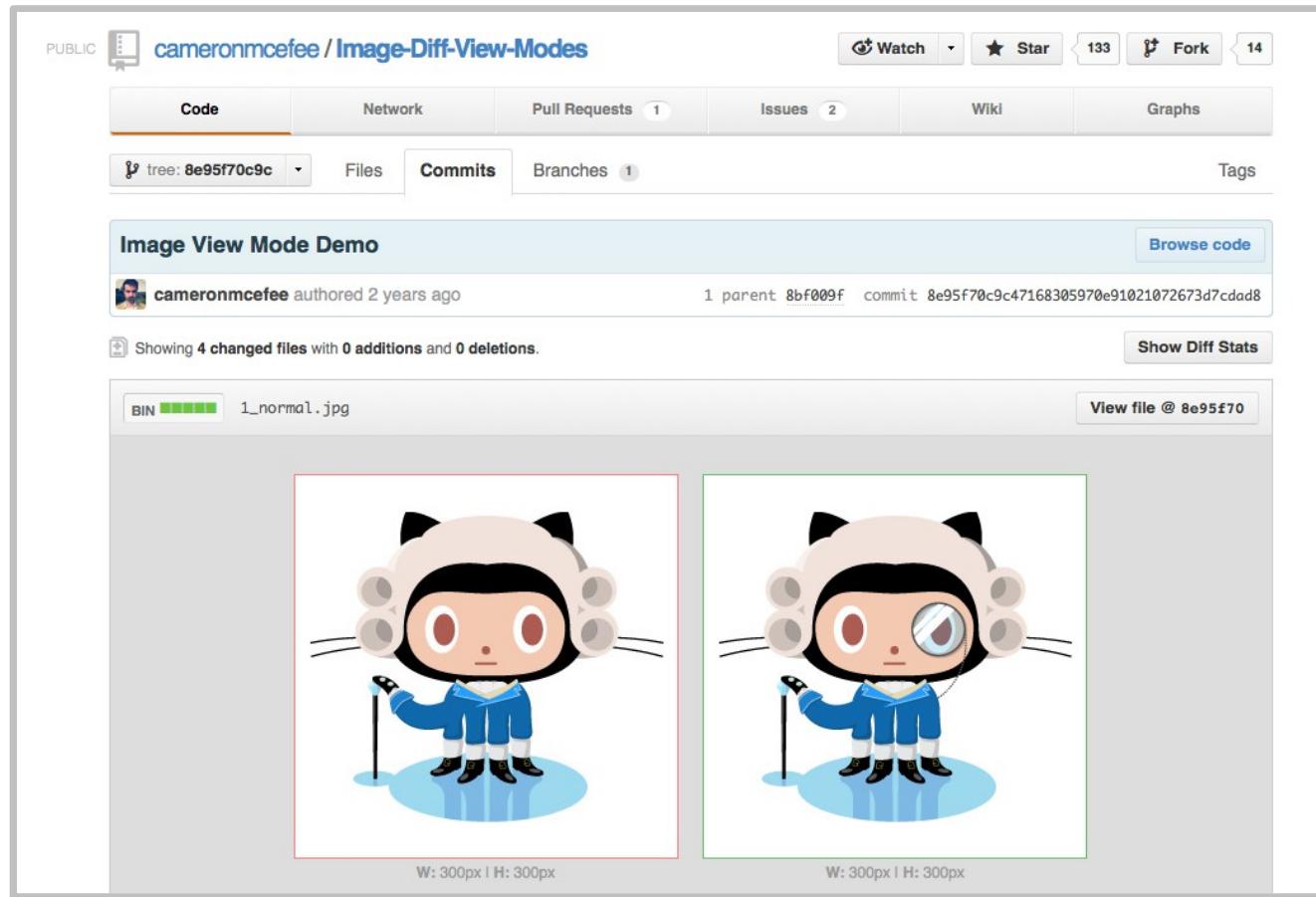
 Manage and contribute from all your devices.
Native clients for [Mac](#), [Windows](#), and [mobile](#) devices allow you to stay involved with your projects from anywhere.

 The world's largest open source community.
Share your code with the world and contribute to [the millions of public repositories](#) hosted on GitHub.

 Collaborate on private repositories when you [sign up for a paid individual or organization plan](#).

Source: <https://github.com/>

GitHub: image comparison



Source: <https://github.com/cameronmcefie/Image-Diff-View-Modes/commit/8e95f70c9c47168305970e91021072673d7cdad8?diff=0=0-100>

GitHub: good videotutorials

The screenshot shows a YouTube channel page for the user 'github'. The channel has 364 subscribers. The 'Videos' tab is selected, displaying a grid of 15 video thumbnails. Each thumbnail includes the video title, view count, and upload date. The videos are related to Git and GitHub, featuring Scott Chacon. The channel sidebar shows other subscribed channels like 'adafruit', 'thenewboston', and 'makemagazine'. The top of the page features a large GitHub logo with the tagline 'Build software better, together.'

Title	Views	Upload Date
Git & GitHub Foundations • Reflog	99 views	1 month ago
History and Collaboration with Git and GitHub - A We...	146 views	1 month ago
Scott Chacon - Git Setup And Initializing - GitHub Learnin...	1,040 views	3 months ago
Scott Chacon - Git Talk	161 views	3 months ago
Scott Chacon - Git Submodules	139 views	3 months ago
Scott Chacon - Git Setup, Init, and Cloning	49 views	3 months ago
Scott Chacon - Git Intro - Ep 1 - GitHub Learning	101 views	3 months ago
Scott Chacon - Git In 30 Minutes	319 views	3 months ago
Scott Chacon - Git Casts - Branching and Merging	329 views	3 months ago
Scott Chacon - Git Casts - Basic Snapshotting	79 views	3 months ago
Scott Chacon - C9 Empty Branch	100 views	3 months ago
Scott Chacon - C8 Distributed Workflow	169 views	3 months ago
Scott Chacon - C7 Rebase	352 views	3 months ago
Scott Chacon - C4 Git Log	174 views	3 months ago
Scott Chacon - C3 Add Interactive	253 views	3 months ago

Source: http://www.youtube.com/user/github/videos?sort=dd&tag_id=&view=0

02: Create a user (free plan)

The screenshot shows the GitHub 'Plans & Pricing' page. At the top left is the GitHub logo. To its right are links for 'Signup and Pricing', 'Explore GitHub', 'Features', 'Blog', and 'Sign in'. Below the header, the title 'Plans & Pricing' is displayed, followed by the subtext 'Join today and collaborate with the smartest developers in the world.' A yellow banner at the top left says '\$0/mo Free for open source' and 'Unlimited public repositories and unlimited public collaborators'. To the right of this banner is a blue button with white text that reads 'Create a free account', which is highlighted with a red rectangular box. Below the banner are three main plan categories: 'Micro' (\$7/mo), 'Small' (\$12/mo), and 'Medium' (\$22/mo). Each plan card lists repository counts and collaborator limits, followed by a 'Create an account' button. Underneath these are 'Business Plans': 'Bronze' (\$25/mo), 'Silver' (\$50/mo), 'Gold' (\$100/mo), and 'Platinum' (\$200/mo). Each business plan card includes repository counts, team counts, and public repository limits, along with a 'Create an organization' button. At the bottom of the page is a dark grey bar containing the text 'GitHub Enterprise' and 'Learn more about GitHub Enterprise ➔'. The URL 'https://github.com/plans' is visible at the very bottom of the page.

03: Send your username to massimo.menichinelli@aalto.fi

The screenshot shows a GitHub user profile for **openp2pdesign** (Massimo Menichinelli). The profile is highlighted with a red box around the top navigation bar. The profile information includes:

- Email: info@openp2pdesign.org
- URL: http://www.openp2pdesign.org
- Member Since: Feb 21, 2012
- Followers: 7
- Starred repos: 13
- Followed users: 31

The "Public Activity" section shows recent events:

- openp2pdesign starred rogerdudler/git-guide an hour ago
- openp2pdesign starred meancet/STL-Volume-Model-Calculator 2 hours ago
- openp2pdesign pushed to master at DigitalFabricationStudio/Slides a day ago
- openp2pdesign pushed to master at DigitalFabricationStudio/Slides a day ago
- openp2pdesign pushed to master at DigitalFabricationStudio/Slides 2 days ago
- openp2pdesign pushed to master at DigitalFabricationStudio/Slides 3 days ago
- openp2pdesign pushed to master at DigitalFabricationStudio/Slides 4 days ago

The "Repositories" section lists four repositories:

- LaserCut-Badge-Generator** (Java): A Processing program that generates a set of stencil lasercut badges taking names from a csv file.... Last updated 6 days ago.
- blackout** (Java): Forked from theleagueof/blackout. A bad-ass, unholy-mother-shut-your-mouth stencil sans-serif. Last updated 6 days ago.
- Open-Design-Exhibition** (JavaScript): An exhibition about Open Design and Open Hardware, originally created for the Open Knowledge Fest.. Last updated 6 days ago.

Source: <https://github.com/plans>

04. Download Git

The screenshot shows the official Git website at <http://git-scm.com/>. At the top left is the Git logo with the tagline "fast-version-control". A search bar is located at the top right. Below the header, there's a brief introduction to Git's purpose and performance, followed by a section about its ease of learning and speed. A prominent "Try Git" button with a GitHub icon is present. To the right, a 3D-style diagram illustrates the distributed nature of Git, showing multiple repositories connected by red arrows forming a network. The main content area is divided into several sections: "About" (with a gear icon), "Documentation" (with an open book icon), "Downloads" (with a download arrow icon), and "Community" (with a speech bubble icon). On the right side, a large monitor displays the "Latest stable release" information, specifically "1.8.1.3" with a "Release Notes (2013-02-07)" link and a "Download for Mac" button.

git --fast-version-control

Search entire site...

Git is a **free and open source** distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

Git is **easy to learn** and has a **tiny footprint with lightning fast performance**. It outclasses SCM tools like Subversion, CVS, Perforce, and ClearCase with features like **cheap local branching**, convenient **staging areas**, and **multiple workflows**.

 Learn Git in your browser for free with [Try Git](#).

About
The advantages of Git compared to other source control systems.

Documentation
Command reference pages, Pro Git book content, videos and other material.

Downloads
GUI clients and binary releases for all major platforms.

Community
Get involved! Mailing list, chat, development and more.

Latest stable release
1.8.1.3
Release Notes (2013-02-07)
[Download for Mac](#)

05. Setup Git

```
Open-Design-Definition — bash — 124x27
```

```
massimo$ git config --global user.name "Massimo Menichinelli"  
massimo$ git config --global user.email "info@openp2pdesign.org"  
massimo$
```



06. Download a client: an easy client for Mac

The screenshot shows the GitHub for Mac website. At the top, there's a banner for OS X 10.7+ with a download button for the latest version (Core Charles — September 5th 2012). Below the banner, the main heading is "Introducing GitHub for Mac" with the subtext "The easiest way to share your code with GitHub". A large orange "Download GitHub for Mac" button is prominently displayed. Below the button, it says "Free to download, free to use". The navigation bar includes "Overview", "Help", and "Release Notes". A list of features with checkmarks follows: "Clone repositories", "Browse history", "Commit changes", "Branch code", and "Share code on github.com". The main content area features a quote: "At GitHub, we think that sharing code should be as simple as possible. That's why we created GitHub for Mac." Below this, three screenshots demonstrate the app's functionality: "Synchronize branches", "Clone repositories in one click", and "Powerfully simple branching".

At GitHub, we think that sharing code should be as simple as possible.
That's why we created GitHub for Mac.

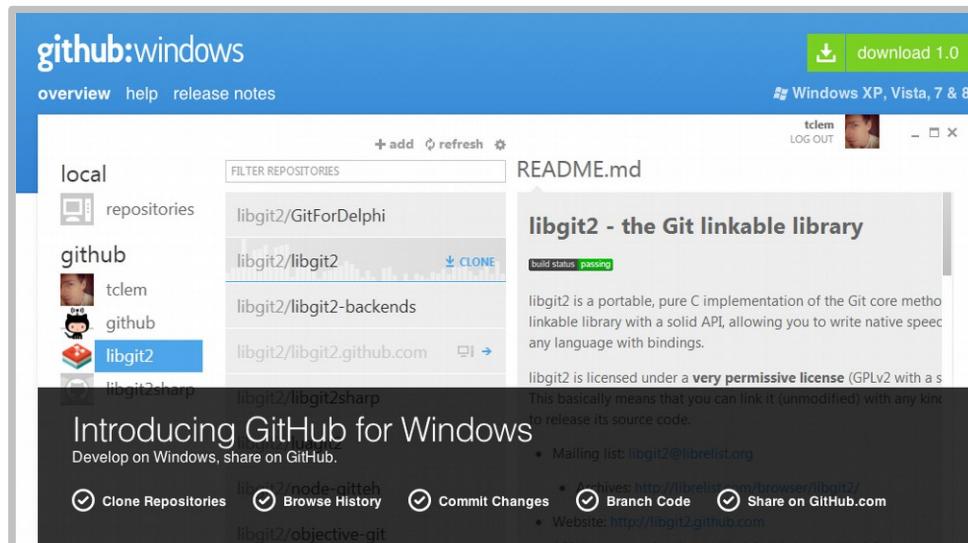
Synchronize branches
The sync button pushes your changes to GitHub and pulls down other's changes in one operation, letting you quickly share local

Clone repositories in one click
When you add repositories to GitHub for Mac, we automatically match them up with any organizations you belong to. Want to pull down

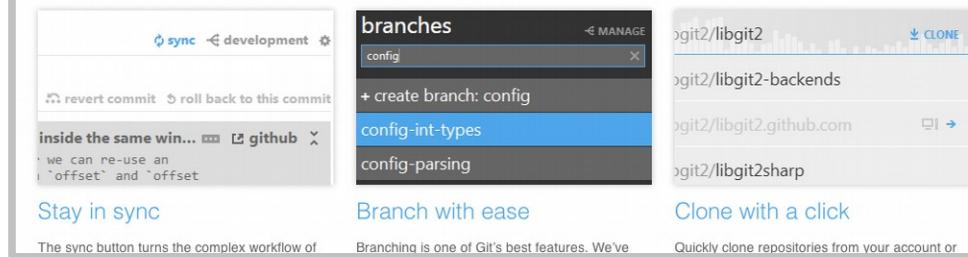
Powerfully simple branching
Branching is one of Git's best features. We've made it easy to try out remote branches, create new local branches and publish

Source: <http://mac.github.com/>

06. Download a client: an easy client for Windows



The easiest way to use Git on Windows. Period.



06. An app for your mobile

The screenshot displays the GitHub mobile website. At the top, there's a header with the GitHub logo and the text "github:mobile". To the right, there are links for "GitHub for Android" and "GitHub Issues for iPhone". Below the header, a large dark banner features the text "Create, manage, and discuss on the go." In the center, there are two download links: "ANDROID APP ON Google play" and "Available in the App Store". To the right of the banner, two smartphones are shown side-by-side, each displaying the GitHub for Android app interface. The left phone is black and the right one is white. Both screens show a feed of GitHub notifications and repository details.

GitHub for Android

Watched Assigned

167 github/speakerdeck
Log in using Twitter/GitHub/Facebook
jonmagic yesterday 6

108 github/speakerdeck
View the number of hits your presenta...
jonmagic Apr 4, 2012 2

Gist 2790516
mattgraham
gistfile1.css

```
1 /* Smartphones (portrait and landscape)
2 @media only screen
3 and (min-device-width : 320px)
4 and (max-device-width : 480px) {
5   /* Styles */
6 }
7
8 /* Smartphones (landscape) -----
9 @media only screen
```

play News Repositories

holman closed pull request 184 on play/play
4 days ago

holman commented on pull request 184 on play/play
Drahshly want to finna dross Gemfile look in

06. An app for your mobile

The screenshot displays the GitHub Issues for iPhone application interface, organized into three main sections:

- Favorites**: A section for managing favorite repositories.
- Issue Dashboard**: A summary view of issues, including a list of issues and a navigation bar with filters for Created, Assigned, Mentioned, and Watching.
- Issue Filters**: A modal dialog for filtering issues based on assignees, milestones, and labels.

At the bottom, there is a promotional banner for the App Store.

Favorites

Quickly add the repositories you care about to your favorites so they're easy to access in the future. You can also save repositories with filters so you only see the issues that matter to you.

Issue Dashboard

Stay connected with the issues you're watching, created, or been assigned and never miss the discussion.

Issue Filters

Filter issues by assignees, milestones, and labels. You can also sort the issues by creation date and whether issues are opened or closed.

Available in the **App Store**

06. Download a client: SourceTree



06. Download a client: GitX(L)

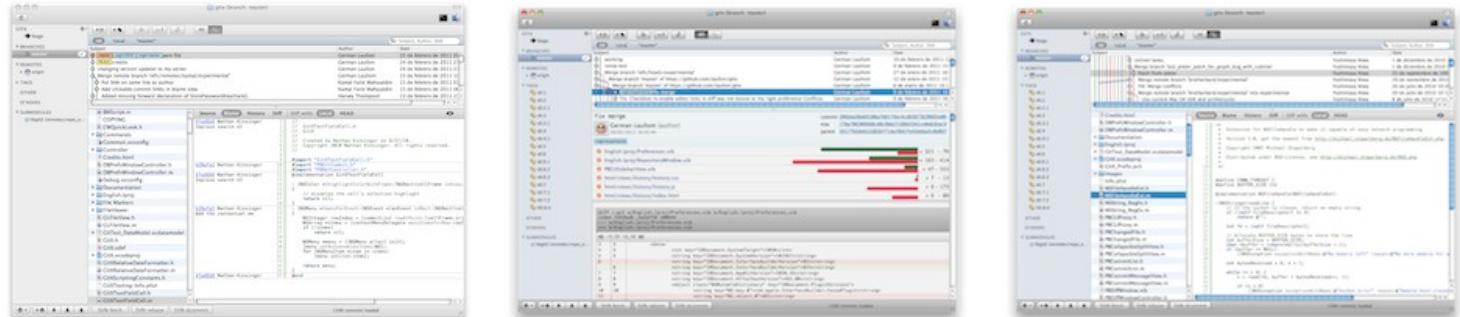


GitX (L)

Open Source Mac OS X Git client

[Download GitX \(L\) v0.8.4](#)

[License GPL v2](#)



Commit view

- Commit/Parents/Tree SHA links
- File changes counts
- File Diffs
- Commit Tags and Refs

File view

- Source Code Highlight
- Blame
- File History (log)
- Diff with local and HEAD

Sidebar

- Branches
- Remotes
- Stashes
- Submodules

Stage view

- Unstaged/Staged files
- Stage/Discard by lines
- Amend
- File diff

Git, a simple guide...

git - the simple guide

just a simple guide for getting started with git. no deep shit ;)



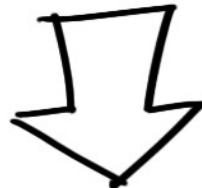
by Roger Dudler

credits to @tfnico, @fhd and Namics

this guide in deutsch, español, français, italiano, nederlands, português, русский, тürkçe,

ไทย, 日本語, 中文, 한국어

please report issues on [github](#)



On GitHub itself ;)

The screenshot shows a GitHub repository page for 'rogerdudler / git-guide'. The repository is public and has 488 stars, 100 forks, and 6 pull requests. The 'Code' tab is selected. A note at the top says 'git - the simple guide — [Read more](#)' with a link to <http://rogerdudler.github.com/git-guide>. Below this are download options: 'Clone in Mac', 'ZIP', 'HTTP', 'Git Read-Only', and the URL 'https://github.com/rogerdudler/git-guide.git'. A 'Read-Only access' button is also present. The commit history table shows the following commits:

name	age	message	history
css	8 months ago	comment text align changed to left [rogerdudler]	View
files	8 months ago	added cheat sheet [rogerdudler]	View
img	8 months ago	added cheat sheet [rogerdudler]	View
js	8 months ago	initial work [rogerdudler]	View
.gitignore	7 months ago	Simplified chinese version complete [dotnil]	View
README.md	7 months ago	use markdown as the readme syntax [dotnil]	View
index.de.html	a month ago	[UPD] translated to turkish [mcka]	View
index.es.html	a month ago	[UPD] translated to turkish [mcka]	View
index.fr.html	a month ago	[UPD] translated to turkish [mcka]	View

Source: <https://github.com/rogerdudler/git-guide>

07. Learn Markdown

The screenshot shows the Daring Fireball website with a dark gray background. At the top left is the site's logo, a white star inside a circle. To its right is the text "DARING FIREBALL". Below the logo, there are two lines of text: "By JOHN GRUBER" and "Markdown: Syntax". A horizontal navigation bar follows, containing five items: "Main", "Basics", "Syntax" (which is highlighted in blue), "License", and "Dingus". On the left side of the main content area, there is a sidebar with links: "ARCHIVE", "MEMBERSHIP", "PROJECTS", "CONTACT", "COLOPHON", "RSS FEED", and "SPONSORSHIP". The main content area contains a list of sections under the heading "Markdown: Syntax":

- [Overview](#)
 - [Philosophy](#)
 - [Inline HTML](#)
 - [Automatic Escaping for Special Characters](#)
- [Block Elements](#)
 - [Paragraphs and Line Breaks](#)
 - [Headers](#)
 - [Blockquotes](#)
 - [Lists](#)
 - [Code Blocks](#)
 - [Horizontal Rules](#)
- [Span Elements](#)

Source: <http://daringfireball.net/projects/markdown/syntax>
<http://en.wikipedia.org/wiki/Markdown>

07. Learn GitHub Markdown

The screenshot shows a web browser displaying the GitHub Flavored Markdown documentation. The title "githubflavoredmarkdown" is at the top left. At the top right are "Support" and "Back to GitHub" buttons. Below the title, there's a section titled "Introduction to GFM". It contains text about GFM's differences from standard Markdown, links to source and result examples, and a note about Redcarpet. To the right, a "Markdown Cheat Sheet" sidebar provides a keyboard shortcut (M) to display a cheat sheet. The main content then discusses "Differences from traditional Markdown", specifically "Newlines" and "Multiple underscores in words".

Introduction to GFM

Github uses what we're calling "GitHub Flavored Markdown" (GFM) for messages, issues, and comments. It differs from standard Markdown (SM) in a few significant ways and adds some additional functionality.

If you're not already familiar with Markdown, you should spend 15 minutes and go over the excellent [Markdown Syntax Guide](#) at Daring Fireball.

If you prefer to learn by example, see the following source and result:

- [Source](#)
- [Result](#)

If you're interested in how we render Markdown files, you might want to check out [Redcarpet](#), our Ruby interface to the [Sundown](#) library.

Differences from traditional Markdown

Newlines

The biggest difference that GFM introduces is in the handling of linebreaks. With SM you can hard wrap paragraphs of text and they will be combined into a single paragraph. We find this to be the cause of a huge number of unintentional formatting errors. GFM treats newlines in paragraph-like content as real line breaks, which is probably what you intended.

The next paragraph contains two phrases separated by a single newline character:

Roses are red
Violets are blue

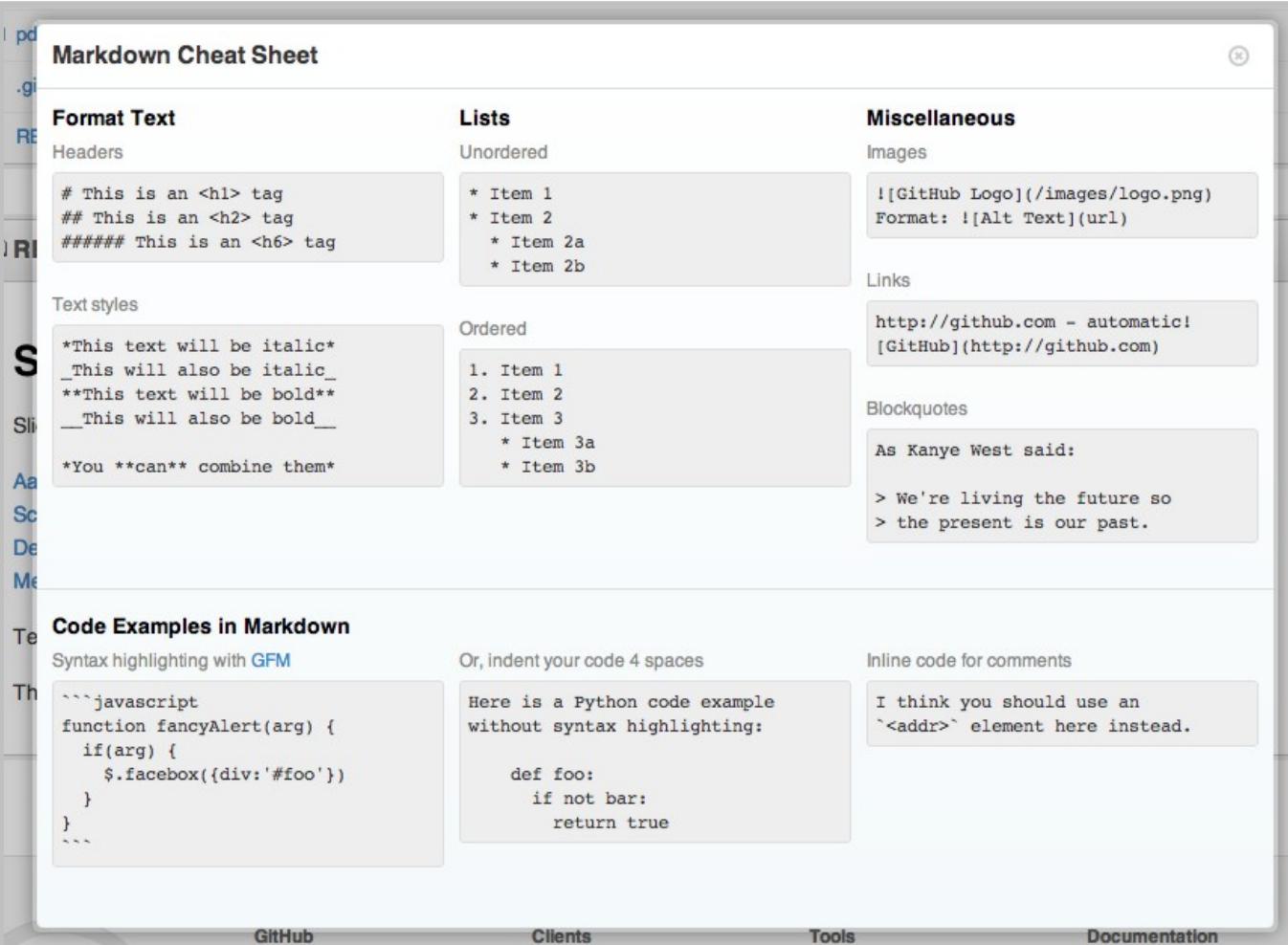
becomes

Roses are red Violets are blue

Multiple underscores in words

It is not reasonable to italicize just *part* of a word, especially when you're dealing with code and names often appear with multiple underscores. Therefore, GFM ignores multiple underscores in words.

07. Learn GitHub Markdown



The screenshot shows the GitHub Markdown Cheat Sheet, a guide to using GitHub's flavor of Markdown. It is organized into several sections:

- Format Text**:
 - Headers**:

```
# This is an <h1> tag
## This is an <h2> tag
##### This is an <h6> tag
```
 - Text styles**:

```
*This text will be italic*
_This will also be italic_
**This text will be bold**
__This will also be bold__

*You **can** combine them*
```
- Lists**:
 - Unordered**:
 - * Item 1
 - * Item 2
 - * Item 2a
 - * Item 2b
 - Ordered**:
 1. Item 1
 2. Item 2
 3. Item 3
 - * Item 3a
 - * Item 3b
- Miscellaneous**:
 - Images**:

```
![GitHub Logo](/images/logo.png)
Format: ! [Alt Text] (url)
```
 - Links**:

```
http://github.com - automatic!
[GitHub](http://github.com)
```
 - Blockquotes**:

```
As Kanye West said:

> We're living the future so
> the present is our past.
```
 - Inline code for comments**:

```
I think you should use an
`<addr>` element here instead.
```
- Code Examples in Markdown**:
 - Syntax highlighting with GFM**:

```
```javascript
function fancyAlert(arg) {
 if(arg) {
 $.facebox({div:'#foo'})
 }
}
```
```
 - Or, indent your code 4 spaces**:

```
Here is a Python code example
without syntax highlighting:

def foo:
  if not bar:
    return true
```
 - Inline code for comments**:

```
I think you should use an
`<addr>` element here instead.
```



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03.

Exercise:

In the PersonalProfiles repository,
create a folder name.surname with
your bio and your picture inside it.



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Thank you!!

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