

# Gerrit code review

Thomas Koch

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Thomas Koch

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finished music, physics

5 years software developer: PHP (RIP!), Java, Hadoop, Search,  
Crawling, ERP, Groupware

Debian Maintainer

currently: finishing computer science bachelor, ETA: Q1/2012

tags: quality, ATTAC, FSFE, FIFF, social responsibility, Romania,  
Switzerland

motivation

workflow

integration

appendix

# Outline

motivation

workflow

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appendix

# We are GIT - Resistance is futile

- ▶ Linux-Kernel
  - ▶ Apache Software Foundation (mirrors)
  - ▶ freedesktop.org
  - ▶ Debian ( $\frac{3}{4}$  of packages with a VCS)
  - ▶ DragonFly BSD
  - ▶ Fedora
  - ▶ Android
  - ▶ Wine
  - ▶ Erlang
  - ▶ GStreamer
  - ▶ GNU core utils
  - ▶ Samba
  - ▶ Perl5
  - ▶ Maemo, QT
  - ▶ KDE
  - ▶ Gnome
  - ▶ VLC, XMMS2
  - ▶ Prototype, YUI, jQuery
  - ▶ Ruby on Rails
  - ▶ Drupal, Mantis
- ...and many more<sup>a</sup>...

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<sup>a</sup><http://git.or.cz/gitwiki/GitProjects>

# Why GIT?

- ▶ fast
- ▶ merging is easy
- ▶ amazing toolset and features
- ▶ low entry barrier for new contributors

# Subversion is irrelevant

but you still need:

- ▶ repository server
- ▶ easy repository management
- ▶ access control

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- ▶ and since we're agile: code review

# Subversion is irrelevant

but you still need:

- ▶ repository server
- ▶ easy repository management
- ▶ access control
- ▶ and since we're agile: code review
- ▶ and if you like it: CLA management

we are proud and seek review <sup>1</sup>



<sup>1</sup>CC BY-NC-ND 2.0

<http://lacrimarum-valle.blogspot.com/2009/11/wendvs-cakes.html>



# Why code review?

- ▶ common code ownership
- ▶ training
- ▶ many eyes

# enter Gerrit

- ▶ initially for Android by Google
- ▶ public since ca. oct 2008
- ▶ java rewrite of googles internal code review system
- ▶ by Shawn Pearce himself!
- ▶ tightly coupled to GIT

## Gerrit users

- ▶ Eclipse
- ▶ Ebay<sup>2</sup>, Intel, Red Hat, SAP
- ▶ Couchbase, WebM, Typo3
- ▶ Assembla (dev tools as a service)<sup>3</sup>
- ▶ openAFS, QT (Nokia)
- ▶ Kitware (e.g. CMake)<sup>4</sup>
- ▶ Sandia National Laboratories
- ▶ Mobiles: Android, Qualcomm Innovation Center, MeeGo, Sony Ericsson

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<sup>2</sup><http://dj.riceweevil.com/2010/07/25-week/>

<sup>3</sup><http://blog.assembla.com/assemblablog/tabid/12618/bid/40871/Introducing-Gerrit-a-scalable-code-review-system.aspx>

<sup>4</sup><http://www.kitware.com/blog/home/post/70>

## current ASF workflow



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commit and push to gerrit



continuous integration (Jenkins)



peer review



jenkins OK, reviewer(s) OK?



merge to integration branch

### 3 main views in Gerrit UI:

- ▶ changes list
- ▶ change overview
- ▶ diff (side by side / unified)

# Gerrit Changes list

**All** | **My** | **Admin** | **Documentation** | **Mike Peer (1000002)** | [Settings](#) | [Sign Out](#)

[Open](#) | [Merged](#) | [Abandoned](#)

status:open

## Search for status:open

	ID	Subject	Owner	Project	Branch	Updated	V	R
▶	<a href="#">★ If7920700</a>	<a href="#">wrote add method and tests</a>	<a href="#">Thomas Koch</a>	<a href="#">picture-gallery</a>	<a href="#">master</a>	10:05 AM	✓	+1
	<a href="#">★ I85964541</a>	<a href="#">Add test with negative numbers.</a>	<a href="#">Thomas Koch</a>	<a href="#">picture-gallery</a>	<a href="#">master</a>	10:02 AM	✓	
	<a href="#">★ I49f6ef90</a>	<a href="#">first commit</a>	<a href="#">Thomas Koch</a>	<a href="#">helloworld</a>	<a href="#">master</a>	May 4	✗	
	<a href="#">★ I19b51bf6</a>	<a href="#">xy</a>	<a href="#">Thomas Koch</a>	<a href="#">helloworld</a>	<a href="#">master</a>	May 2	✗	

Press '?' to view keyboard shortcuts  
Powered by [Gerrit Code Review](#) (2.1.6-rc1) | [Report Bug](#)

# Gerrit Change overview

## ☆ Change If7920700: wrote add method and tests

Change-Id:	If7920700e33249c54bb9734c164605943a5f84c
Owner:	<a href="#">Thomas Koch</a>
Project:	<a href="#">picture-gallery</a>
Branch:	<a href="#">master</a>
Topic:	
Uploaded:	May 4, 2011 7:28 PM
Updated:	May 5, 2011 10:05 AM
Status:	Review in Progress

wrote add method and tests

[Permalink](#)

Reviewer	Verified	Code Review	
<a href="#">Jenkins</a>	✓		Verified
<a href="#">Mike Peer</a> <input type="checkbox"/>		+1	Looks good to me, but someone else must approve

- Need Code Review +2 (Looks good to me, approved)

### ► Dependencies

### ▼ Patch Set 1 [f7920700e33249c54bb9734c164605943a5f84c](#) [\(gitweb\)](#)

Author	Thomas Koch <thomas@koch.ro> May 4, 2011 6:35 PM
Committer	Thomas Koch <thomas@koch.ro> May 4, 2011 6:35 PM
Download	<a href="#">checkout</a>   <a href="#">pull</a>   <a href="#">cherry-pick</a>   <a href="#">patch</a>   <a href="#">Anonymous HTTP</a>   <a href="#">SSH</a>   <a href="#">HTTP</a>   <a href="#">git fetch http://localhost:8080/p/picture-gallery refs/changes/05/5/1 &amp;&amp; git checkout FETCH_HEAD</a>

File Path	Comments	Size	Diff	Reviewed
► <a href="#">Commit Message</a>			<a href="#">Side-by-Side</a>	<a href="#">Unified</a>
M <a href="#">src/main/java/ro/koch/picturegallery/App.java</a>	<b>2 comments</b>	+5, -0	<a href="#">Side-by-Side</a>	<a href="#">Unified</a>
M <a href="#">src/test/java/ro/koch/picturegallery/AppTest.java</a>		+2, -28	<a href="#">Side-by-Side</a>	<a href="#">Unified</a>
		+7, -28		

### Comments

[Expand Recent](#) | [Expand All](#) | [Collapse All](#)

**Jenkins** Patch Set 1: Build Started <http://localhost:8079/job/picture-gallery/7/>

May 4

**Jenkins** Patch Set 1: Verified Build Successful ...

May 4



# Gerrit Change side by side diff

## Change If7920700: src/main/java/ro/koch/picturegallery/App.java

► Patch History wrote add method and tests

Ignore Whitespace: None Tab Width: 8  Syntax Coloring  Whitespace Errors  Skip Uncommented Files  Reviewed

Context: 10 lines Columns: 100  Intra-line Difference  Show Tabs  Skip Deleted Files Update

[Commit Message](#) [Up to change](#) [AppTest.java](#)

Old Version <a href="#">Download</a>	New Version <a href="#">Download</a>
(... skipping 2 common lines...)	
<pre>3/** 4 * Hello world! 5 * 6 */ 7public class App 8{ 9    public static void main( String[] args ) 10    { 11        System.out.println( "Hello Gerrit!" ); 12    } 13}</pre>	<pre>3/** 4 * Hello world! 5 * 6 */ 7public class App 8{ 9    public static void main( String[] args ) 10    { 11        System.out.println( "Hello Gerrit!" ); 12    } 13 14    public static int add( int a, int b ) 15    { 16        return a + b; 17    } 18}</pre>
	<p><b>Mike Peer</b> Could you please avoid unnecessary whitespace? 10:05 AM</p>
	<p><b>Mike Peer</b> Did you think about checking for overflows? 10:05 AM</p>

[Commit Message](#) [Up to change](#) [AppTest.java](#)

## mail notifications

From: "Mike Peer (Code Review)" <mike@peer.de>  
To: Thomas Koch <thomas@koch.ro>  
Subject: Change in picture-gallery[master]: wrote  
add method and tests

Mike Peer has posted comments on this change.

Change subject: wrote add method and tests

.....  
Patch Set 1: Looks good to me, but someone else must  
approve

(2 inline comments)

good enough.

.....  
File src/main/java/ro/koch/picturegallery/App.java

Line 13:

Could you please avoid unnecessary whitespace?

Line 16: return a + b;

Did you think about checking for overflows?

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## Mylyn (eclipse) integration

# Mylyn changes list

Outline Task List

Find  All Activate...

all open changes [loca]

- 2: xy
- 1: first commit
- 6: Add test with negative numbers.**
- 5: wrote add method and tests

**wrote add method and tests**  
Change 5 (task) , P3 [loca]  
Assigned to Thomas Koch  
Estimate: 0 hours

All	My	Admin	Documentation	
Open	Merged	Abandoned		status:open

Search for status:open

ID	Subject	Owner	Project	Branch	Updated	V	R
1f7920700	wrote add method and tests	Thomas Koch	picture-gallery	master	10:05 AM	✓	+1
185964541	Add test with negative numbers.	Thomas Koch	picture-gallery	master	10:02 AM	✓	
149f6ef90	first commit	Thomas Koch	helloworld	master	May 4	✗	
119e51bf6	xy	Thomas Koch	helloworld	master	May 2	✗	



## Mylyn change details - attributes

▼ Attributes 			
Owner	Thomas Koch	Project	picture-gallery
Branch	refs/heads/maste		
Change-Id	I8596454156c4688abd1006cad8297d5aa7eb9331		

## Mylyn change details - comments

### ▼ Comments (4)

1: Jenkins, May 11, 2011 4:59 PM

Patch Set 1:

Build Started <http://localhost:8079/job/picture-gallery/8/>

2: Jenkins, May 6, 2011 3:02 PM

Patch Set 1: I would prefer that you didn't submit this

Build Unstable

<http://localhost:8079/job/picture-gallery/8/> : UNSTABLE

3: Thomas Koch, May 13, 2011 5:08 PM

Uploaded patch set 2.

4: Jenkins, May 10, 2011 6:05 AM

Patch Set 2:

Build Started <http://localhost:8079/job/picture-gallery/9/>

## Mylyn change details - reviewers

### ▼ Review

### ▼ Reviewers

	Verified	Code Review
Jenkins	+1	0
Mike Peer		+1

Add Reviewers...

### ▼ Requirements

Code Review +2 Looks good to me, approved

### ▼ Depends On

[4](#): changed hello message to great gerrit by Thomas Koch

### ▼ Needed By

[6](#): Add test with negative numbers. by Thomas Koch

## Mylyn change details - patch sets

### ▼ Patch Sets

#### ▼ Patch Set 1

 /COMMIT\_MSG

 src/main/java/ro/koch/picturegallery/App.java

 src/test/java/ro/koch/picturegallery/AppTest.java

Fetch...

#### ▼ Patch Set 2

 /COMMIT\_MSG

 src/test/java/ro/koch/picturegallery/AppTest.java

Fetch...

## Jenkins integration

# Jenkins trigger and post result

## Jenkins

Jenkins » [picture-gallery](#)

 [Back to Dashboard](#)

 [Status](#)

 [Changes](#)

 [Workspace](#)

 [Build Now](#)

 [Delete Project](#)

 [Configure](#)

 [Modules](#)

 **Build History** [\(trend\)](#)

 #9	<a href="#">May 5, 2011 8:01:44 AM</a>
 #8	<a href="#">May 4, 2011 5:29:00 PM</a>
 #7	<a href="#">May 4, 2011 5:28:47 PM</a>
 #6	<a href="#">May 4, 2011 4:28:34 PM</a>

 [6.2](#)  
 [6.1](#)  
 [5.1](#)  
 [4.1](#)

## Project picture-gallery

An online picture gallery



[Workspace](#)



[Recent Changes](#)



[Latest Test Result](#)(no failures)

## Permalinks

- [Last build \(#9\), 3 hr 46 min ago](#)

# Jenkins trigger and post result

## Jenkins

### Trigger a Gerrit event manually

#### Search

Type in a [Gerrit search query](#) and click the search button to find your changes.

Query String

Search

#### Search Result

Select the patch sets you want to trigger by clicking their rows. Then click the trigger button to trigger them.

	Change Nr.	Patch Set	Subject	Owner	Revision	Project	Branch	Updated	V	R
▶ <input type="checkbox"/>	5	1	wrote add method and tests	Thomas Koch	f7920700	picture-gallery	master	5/5/11 8:05 AM	✓	+1
▶ <input type="checkbox"/>	6	1	Add test with negative numbers.	Thomas Koch	ae61023c	picture-gallery	master	5/5/11 8:02 AM	✓	
▶ <input type="checkbox"/>	6	2	Add test with negative numbers.	Thomas Koch	89821473	picture-gallery	master	5/5/11 8:02 AM	✓	

#### Trigger

Trigger Selected

# Jenkins plugin

- ▶ fast (gerrit ssh stream)
- ▶ global configuration

## more integration

- ▶ Mylyn (eclipse)
- ▶ Jenkins
- ▶ GitWeb
- ▶ Email notifications
- ▶ Auth: OpenID, LDAP, HTTP (Browser)
- ▶ build your own: hooks, streaming API

e.g. parse Issuetracker IDs from commit messages and post to Jira/Mantis/Bugzilla

## clickable Issuetracker IDs

in gerrit.config:

```
[commentlink "bugzilla"]
  match = "(bug\\s+#?)(\\d+)"
  link = http://bugs.example.com/show_bug.cgi?id=$2

[commentlink "tracker"]
  match = ([Bb]ug:\\s+)(\\d+)"
  html = $1<a href=\"http://trak.example.com/$2\">$2</a>
```

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# permissions

- ▶ verified (-1..+1)
- ▶ code review (-2..+2)
- ▶ forge identity (Author, Committer)
- ▶ owner (administer all settings)
- ▶ push branch (Update, Create, Delete/Force)
- ▶ push tag (Signed/Annotated)
- ▶ read access (Read, Upload)
- ▶ submit

## multiple versions of a change

Change-Id: I8596454156c4688abd1006cad8297d5aa7eb9331  
(There's a hook for that.)

## search (WebUI or cmdline)

```
ssh -p 29418 t61 gerrit query --format=JSON \  
project:picture-gallery status:open owner:thomas@koch.ro
```

Search for:

- ▶ age, owner, reviewer, project, branch, message, file, status, votes
- ▶ issue-tracker IDs: tr:ID / bug:ID
- ▶ topic
- ▶ starred (like bookmarked)

## CLA and contact store

<i>Full Name</i>	<input type="text" value="Thomas Koch"/>
<i>Preferred Email</i>	<input type="text" value="thomas@koch.ro"/> ▼ <input type="button" value="Register New Email ..."/>

### The following offline contact information is stored encrypted.

Contact information will only be made available to administrators if it is necessary to reach you through non-email based communication. Received data is stored encrypted with a strong public/private key pair algorithm, and this site does not have the private key. Once saved, you will be unable to retrieve previously stored contact details.

<i>Mailing Address</i>	<input type="text" value="Finkernstrasse 11"/> <input type="text" value="8280 Kreuzlingen"/>
<i>Country</i>	<input type="text" value="Switzerland"/>
<i>Phone Number</i>	<input type="text" value="+41 71 670 0240"/>
<i>Fax Number</i>	<input type="text"/>

## more goodies

- ▶ topic
- ▶ star changes
- ▶ hooks (after the fact)
- ▶ replication

## commit policies / Change Submit Action

- ▶ Fast Forward Only
- ▶ Merge If Necessary
- ▶ Always Merge
- ▶ Cherry Pick

Shawn Pearce: Under cherry-pick the dependency data in Gerrit means nothing. If a change is submitted and it cherry-picks clean onto the branch tip, it gets patched onto the branch and marked merged, even if one or more dependent changes is not ready for submission.

# cmdline tools over SSH

user:

- ▶ ls-projects
- ▶ query
- ▶ review
- ▶ stream-events

admin:

- ▶ create-account
- ▶ create-group
- ▶ create-project
- ▶ gsql
- ▶ suexec
- ▶ ...

# Questions?

`http://www.koch.ro`

`http://identi.ca/thkoch`