Chris Aniszczyk
(Twitter)

Stefan Lay
(SAP)

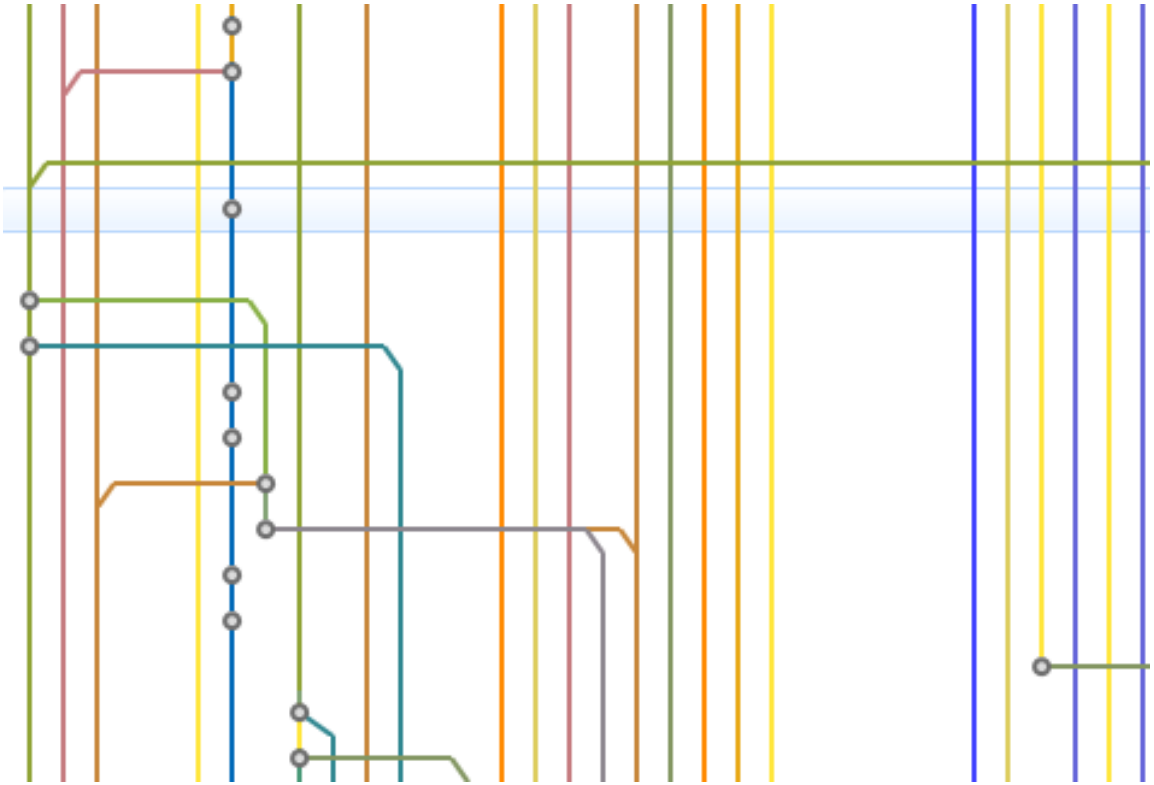
Kevin Sawicki
(GitHub)

Matthias Sohn
(SAP)

Benjamin Muskalla
(Tasktop)

The Git Tutorial

EclipseCon 2012



http://eclipse.org/jgit
http://eclipse.org/egit
http://code.google.com/p/gerrit

Agenda

Introduction

Exercises

Setup & Cloning the Sample Repository
Local Development with EGit
Gerrit Code Review
Mylyn Integration
GitHub Eclipse Support

Q & A

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Git

… a distributed revision control system built by the Linux project to facilitate code review

Distributed means no central repository

- No central authority!
- Easy offline usage
- Easy to branch a project
- Protected against manipulation by cryptographic hashes

Really good at merging

- Coordination only needed "after the fact”
- Easier to rejoin (or refresh) branches

Structured around commits (i.e. patches)

- Tools for identifying problem commits (git bisect)
- Tools for restructuring branches w/ specific commits

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Git at Eclipse

JGit is a lightweight Java library implementing Git
http://www.eclipse.org/jgit/

EGit is an Eclipse Team provider for Git based on JGit
http://www.eclipse.org/egit/

Gerrit Code Review is a Git server based on JGit adding permission control and review workflow
http://code.google.com/p/gerrit

Gerrit @ Eclipse went live ☺
https://git.eclipse.org/r/

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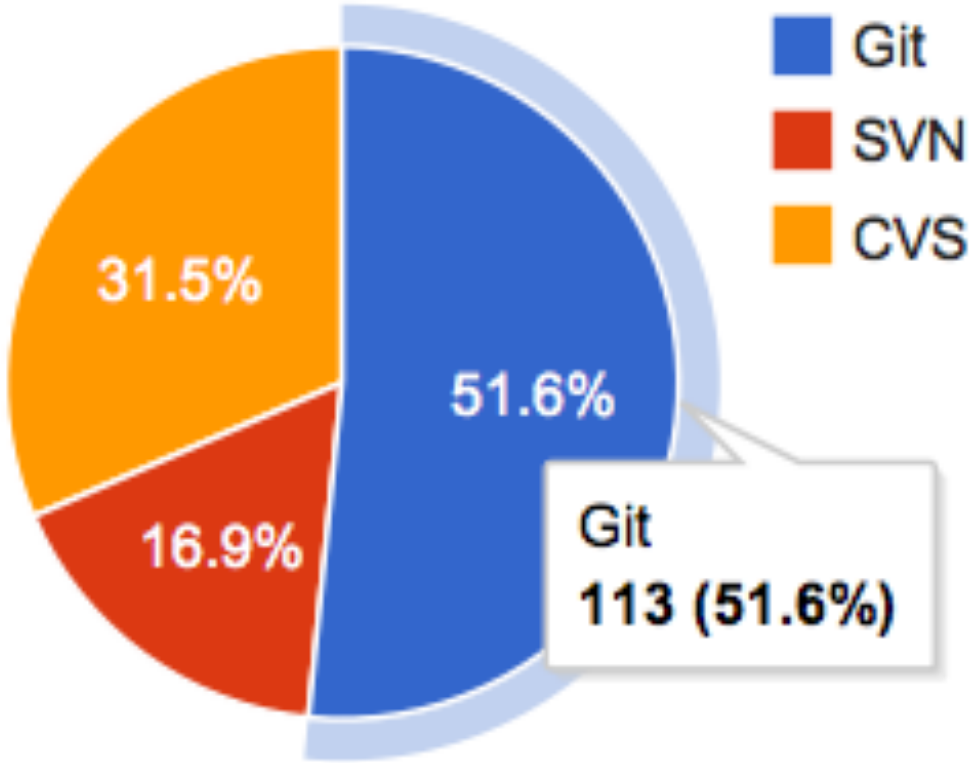
Eclipse is Moving to Git

CVS has been deprecated and will be retired end of 2012



Project & code repository breakdown as of 2012-03-25

http://eclipse.org/projects/scmcountdown.php

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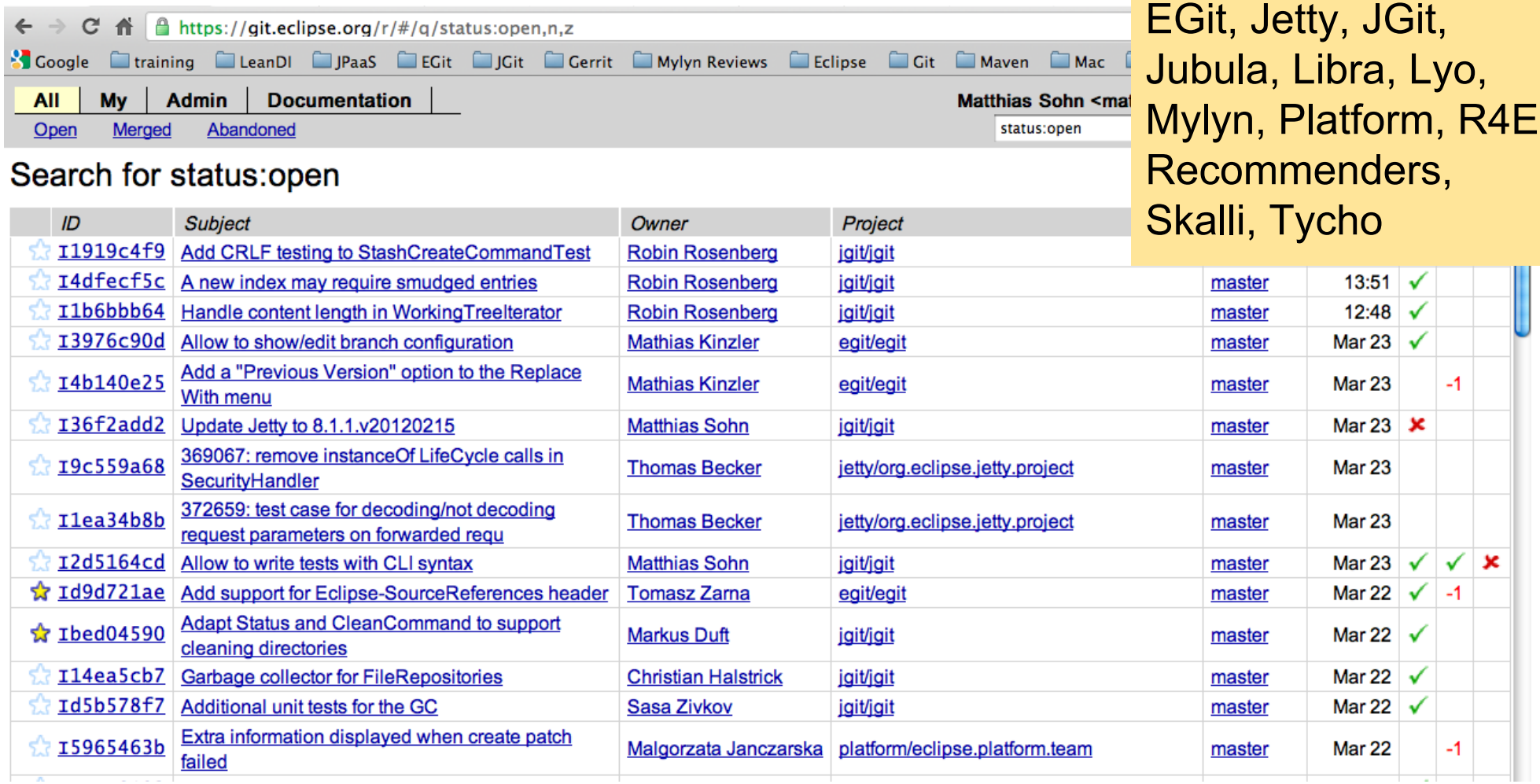
Gerrit Code Review @ Eclipse

https://git.eclipse.org/r/ is now available for all projects

now used by:

EGit, Jetty, JGit, Jubula, Libra, Lyo, Mylyn, Platform, R4E, Recommenders, Skalli, Tycho



	ID	Subject	Owner	Project					
☆	I1919c4f9	Add CRLF testing to StashCreateCommandTest	Robin Rosenberg	jgit/jgit					
☆	I4dfecf5c	A new index may require smudged entries	Robin Rosenberg	jgit/jgit	master	13:51	✓		
☆	I1b6bbb64	Handle content length in WorkingTreeIterator	Robin Rosenberg	jgit/jgit	master	12:48	✓		
☆	I3976c90d	Allow to show/edit branch configuration	Mathias Kinzler	egit/egit	master	Mar 23	✓		
☆	I4b140e25	Add a "Previous Version" option to the Replace With menu	Mathias Kinzler	egit/egit	master	Mar 23		-1	
☆	I36f2add2	Update Jetty to 8.1.1.v20120215	Matthias Sohn	jgit/jgit	master	Mar 23	✗		
☆	I9c559a68	369067: remove instanceOf LifeCycle calls in SecurityHandler	Thomas Becker	jetty/org.eclipse.jetty.project	master	Mar 23			
☆	I1ea34b8b	372659: test case for decoding/not decoding request parameters on forwarded requ	Thomas Becker	jetty/org.eclipse.jetty.project	master	Mar 23			
☆	I2d5164cd	Allow to write tests with CLI syntax	Matthias Sohn	jgit/jgit	master	Mar 23	✓	✓	✗
★	Id9d721ae	Add support for Eclipse-SourceReferences header	Tomasz Zarna	egit/egit	master	Mar 22	✓	-1	
★	Ibed04590	Adapt Status and CleanCommand to support cleaning directories	Markus Duft	jgit/jgit	master	Mar 22	✓		
☆	I14ea5cb7	Garbage collector for FileRepositories	Christian Halstrick	jgit/jgit	master	Mar 22	✓		
☆	Id5b578f7	Additional unit tests for the GC	Sasa Zivkov	jgit/jgit	master	Mar 22	✓		
☆	I5965463b	Extra information displayed when create patch failed	Malgorzata Janczarska	platform/eclipse.platform.team	master	Mar 22		-1	

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Modern Code Review – What is it ? Guido van Rossum [1]

When one developer writes code, another developer is asked to review that code

A careful line-by-line critique

Happens in a non-threatening context

Goal is cooperation, not fault-finding

Integral part of coding process

Otherwise this will happen:
Debugging someone else's broken code
– **Involuntary code review:** Not so good; emotions may flare

[1] http://code.google.com/p/rietveld/downloads/detail?name=Mondrian2006.pdf

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Code Review – Benefits Guido van Rossum [1]

Four eyes catch more bugs

Catch bugs early to save hours of debugging

Mentoring of new developers / contributors

Learn from mistakes without breaking stuff

Establish trust relationships

Prepare for more delegation

Good alternative to pair programming

asynchronous and across locations

Coding standards

Keep overall readability & code quality high

[1] http://code.google.com/p/rietveld/downloads/detail?name=Mondrian2006.pdf

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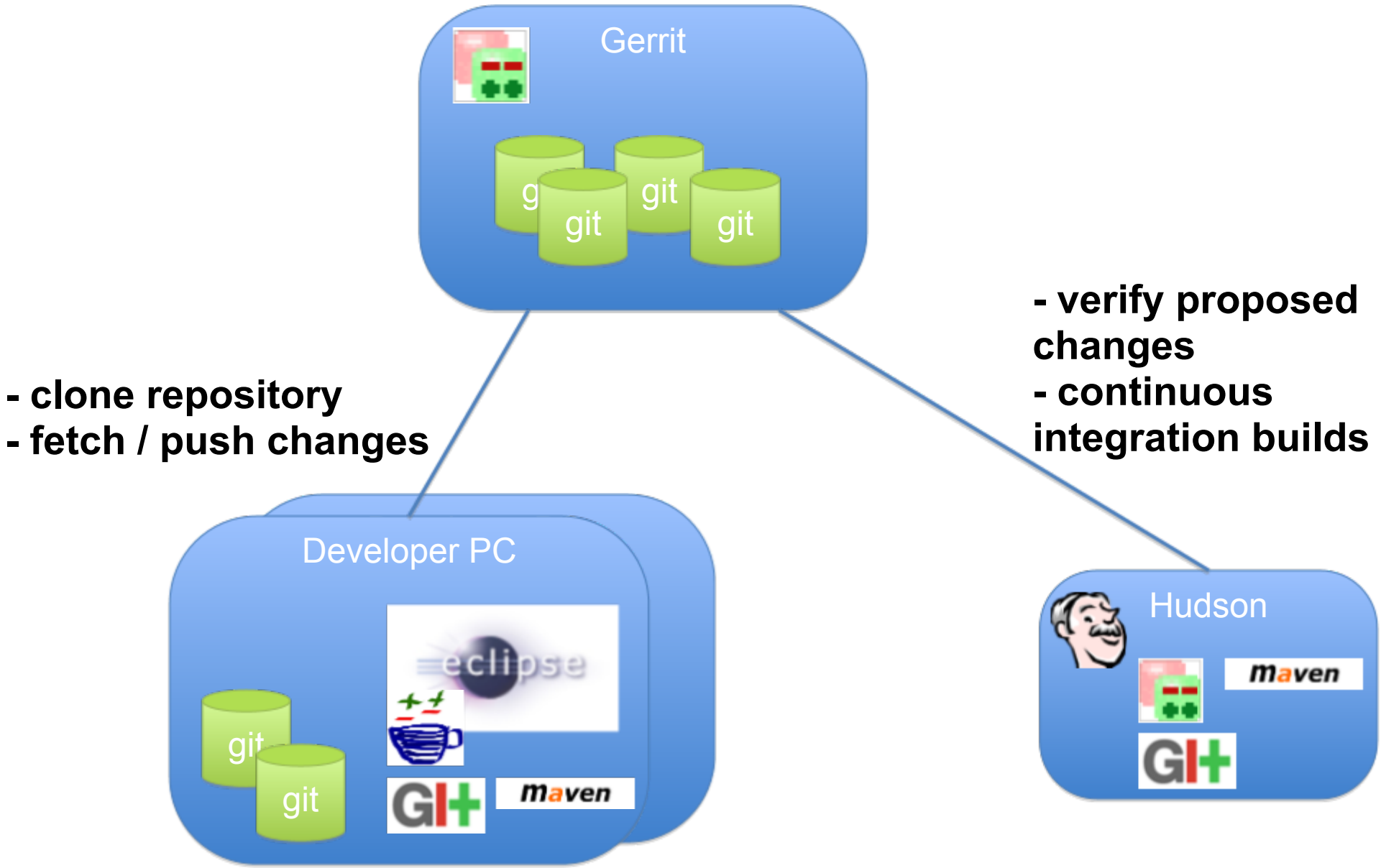

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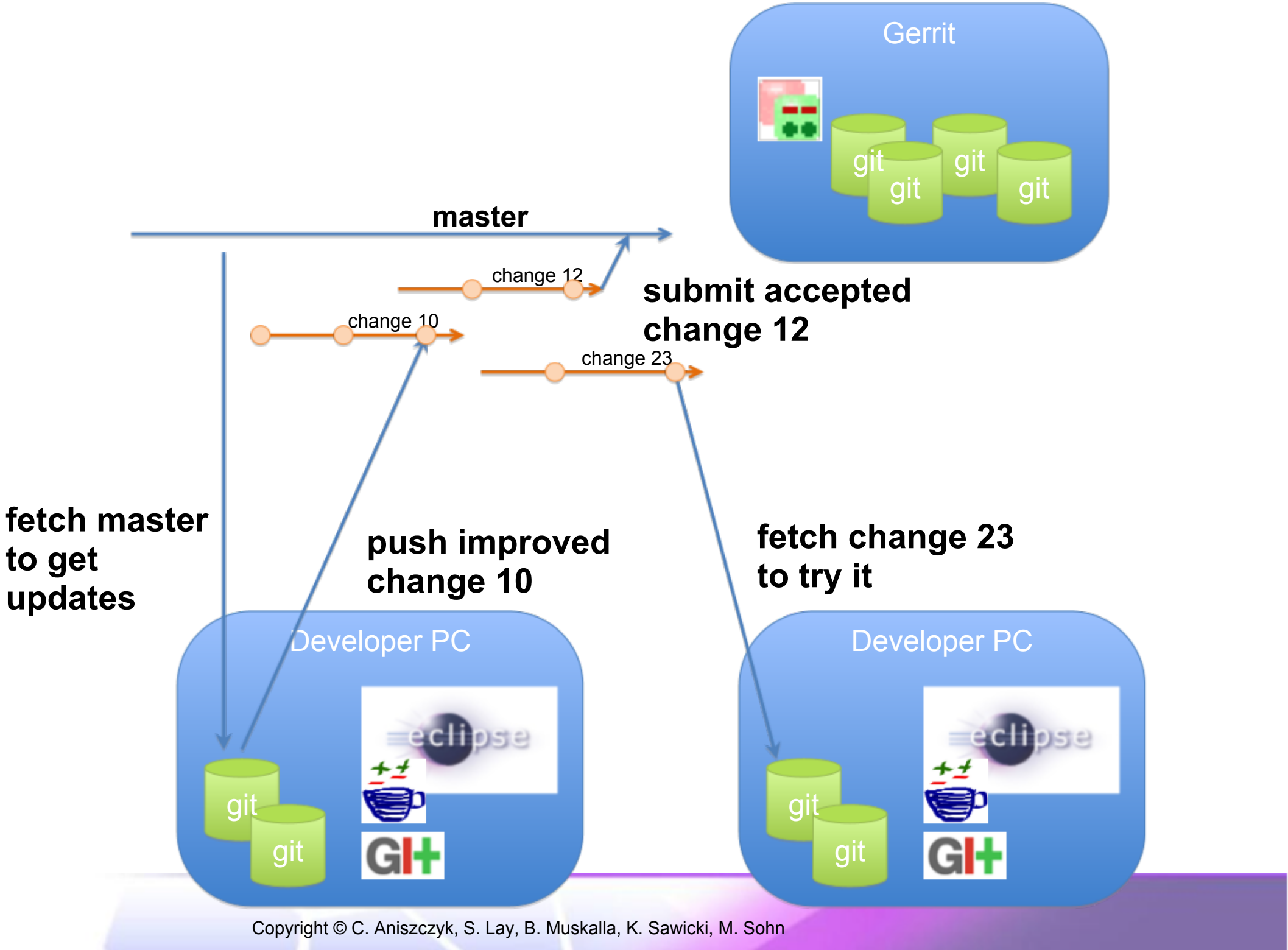

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Local Development with EGit

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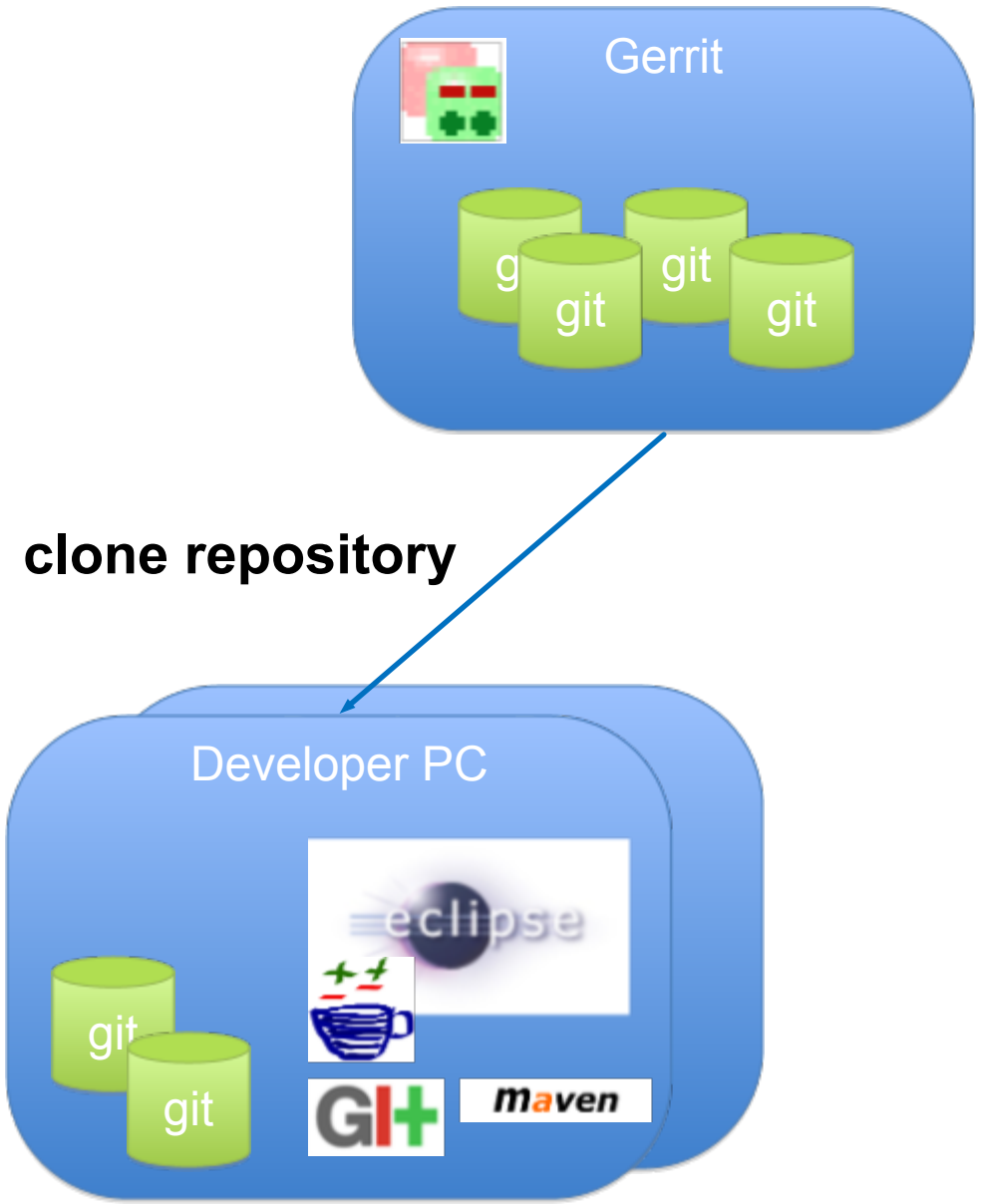

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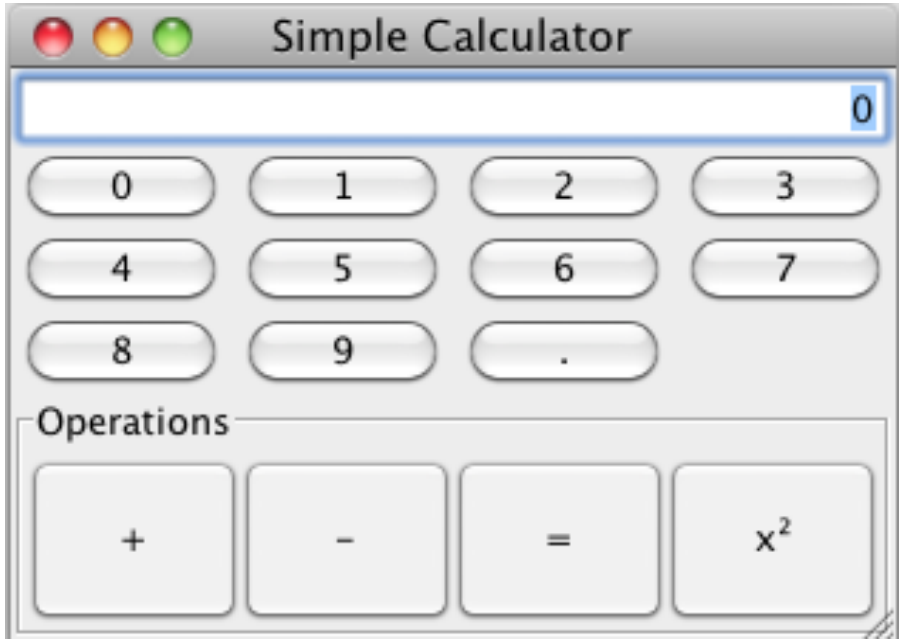
Sample Application



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Git Exercises

1. Setup & Clone the example repository
2. Develop a feature
3. Develop 2nd feature and use staging view
4. Work on branches in parallel
5. Fetch the latest state
6. Merging, Rebasing, Resolving Conflicts

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Git Exercises

7 History view

8 Reset branch to previous state

9 Change a series of commits

10 Git blame

11 Stash

12 Submodules

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Gerrit Code Review

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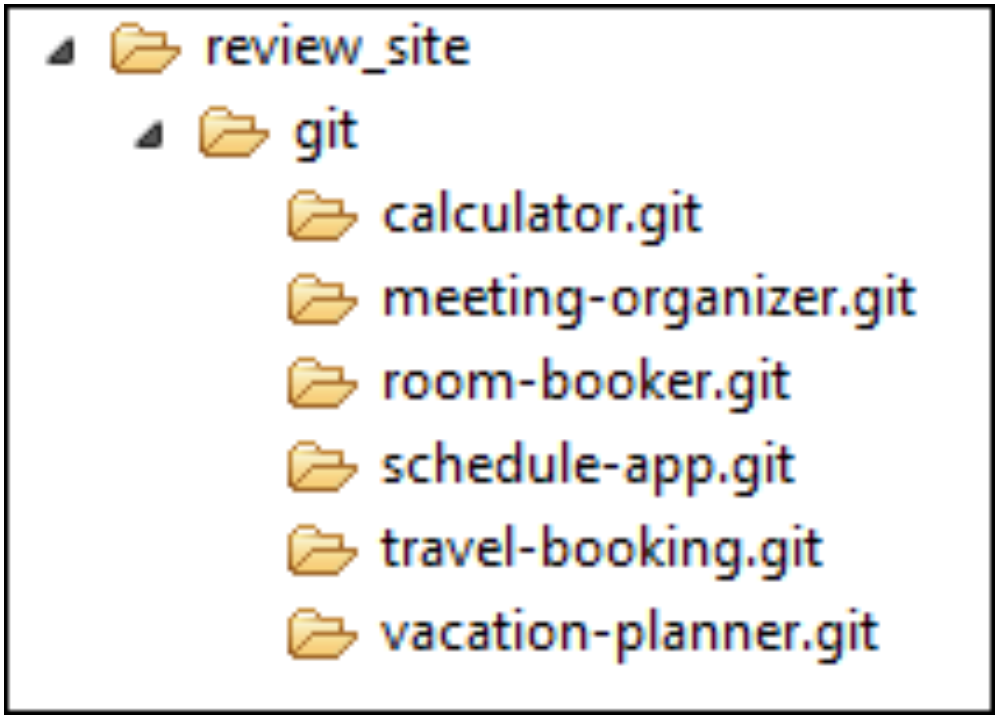
Gerrit

Server managing central Git repositories

Gerrit



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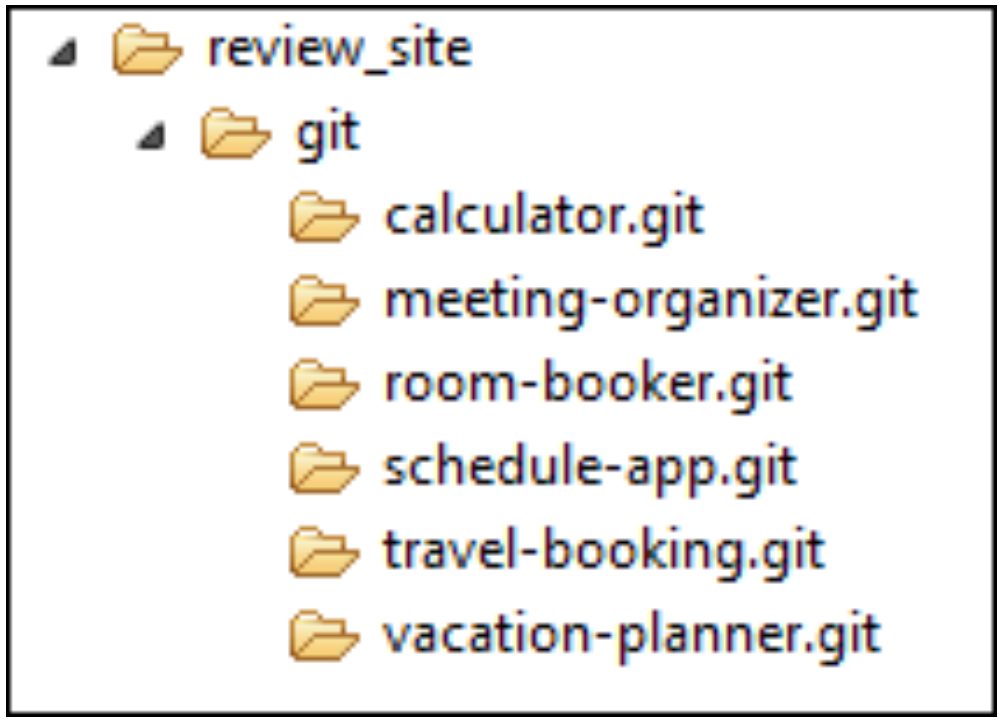
Access Control

Gerrit



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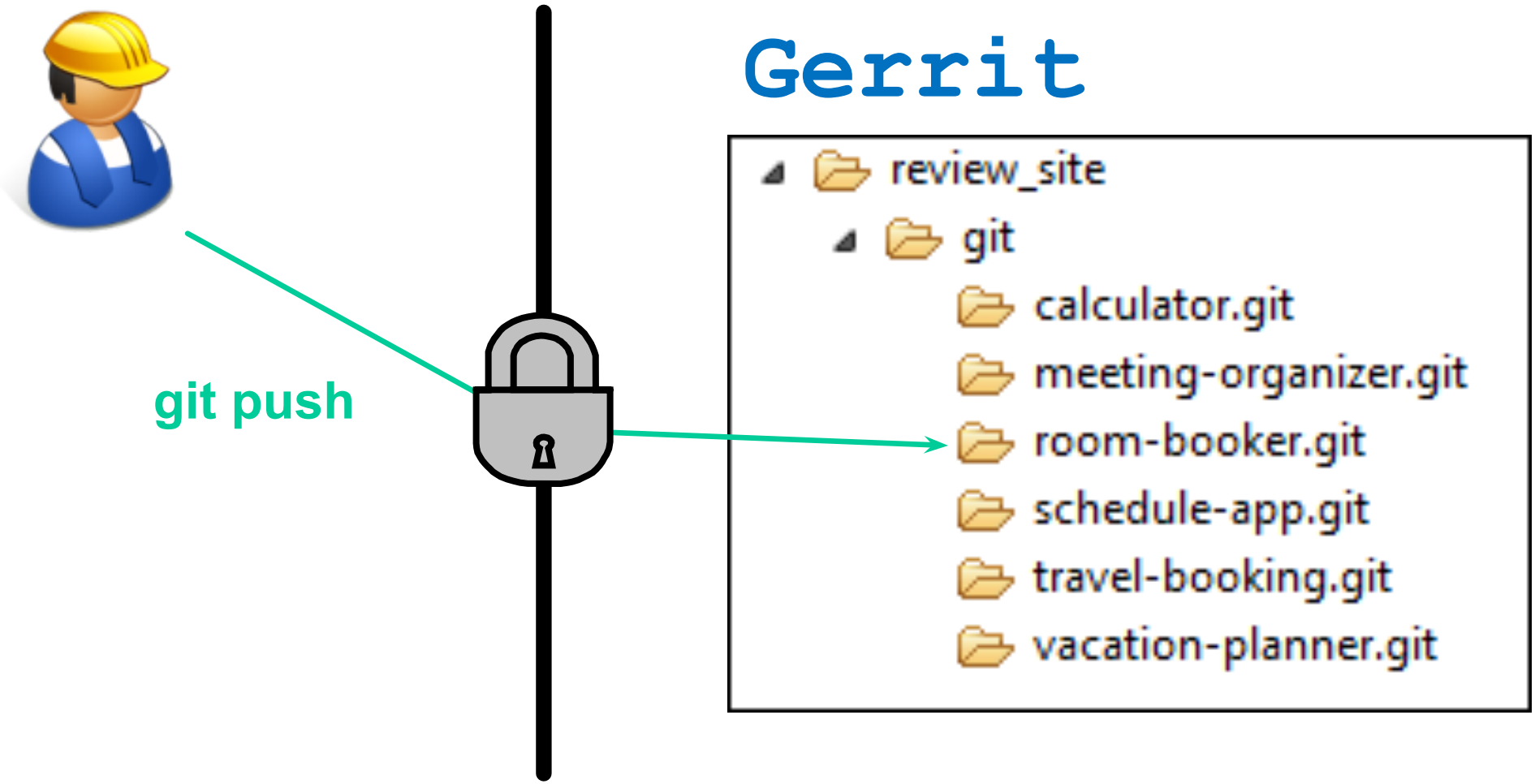
Access Control



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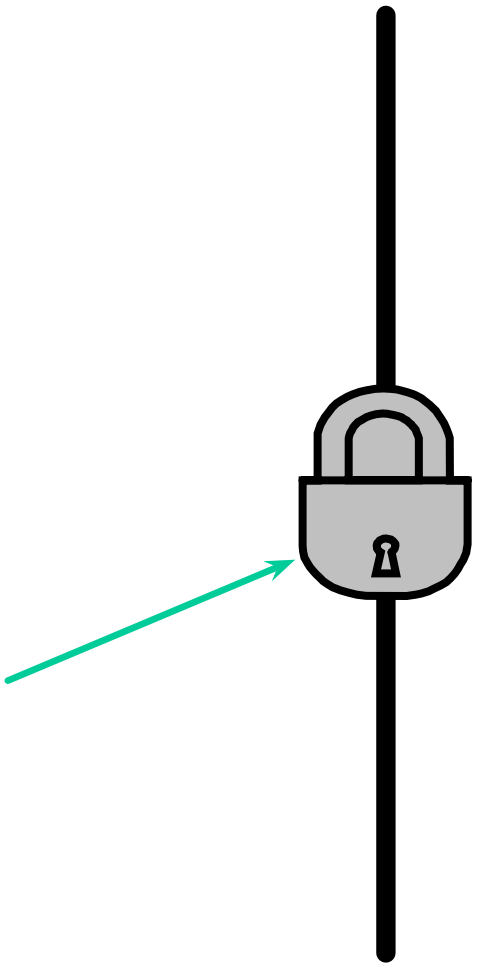

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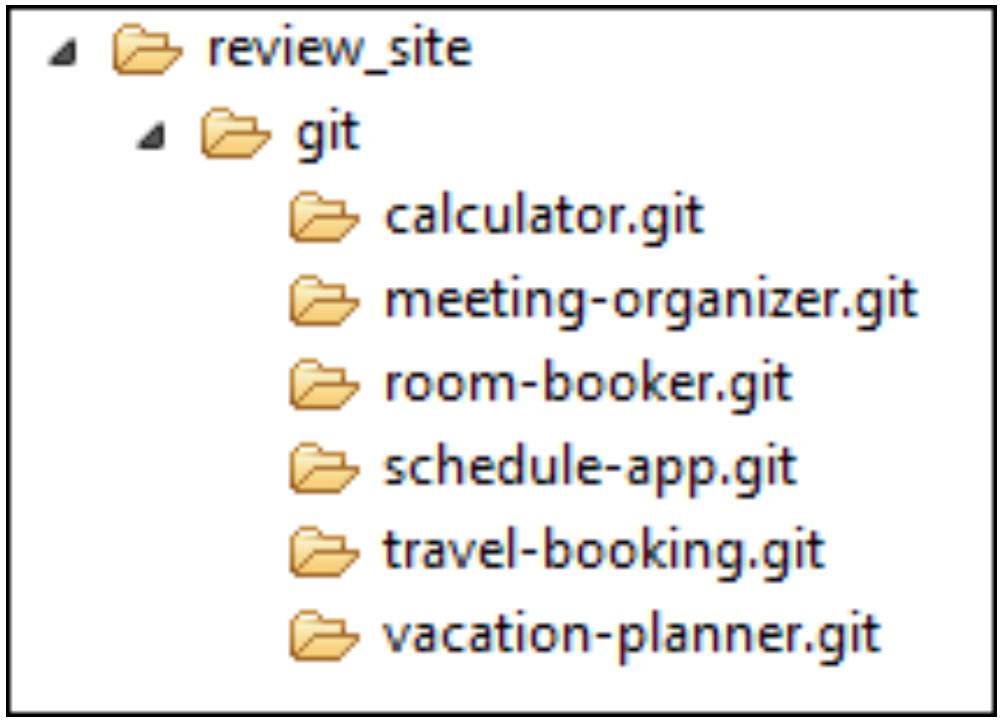

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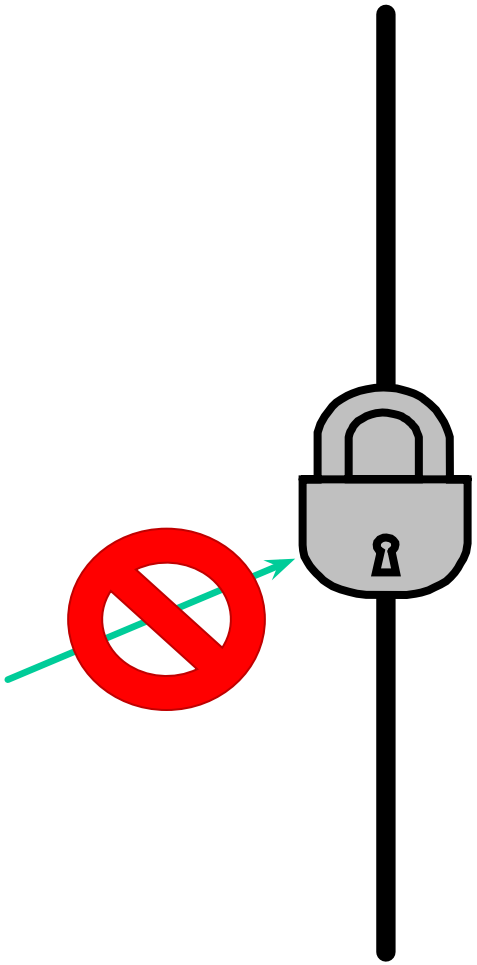

Gerrit

- review_site
  - git
    - calculator.git
    - meeting-organizer.git
    - room-booker.git
    - schedule-app.git
    - travel-booking.git
    - vacation-planner.git

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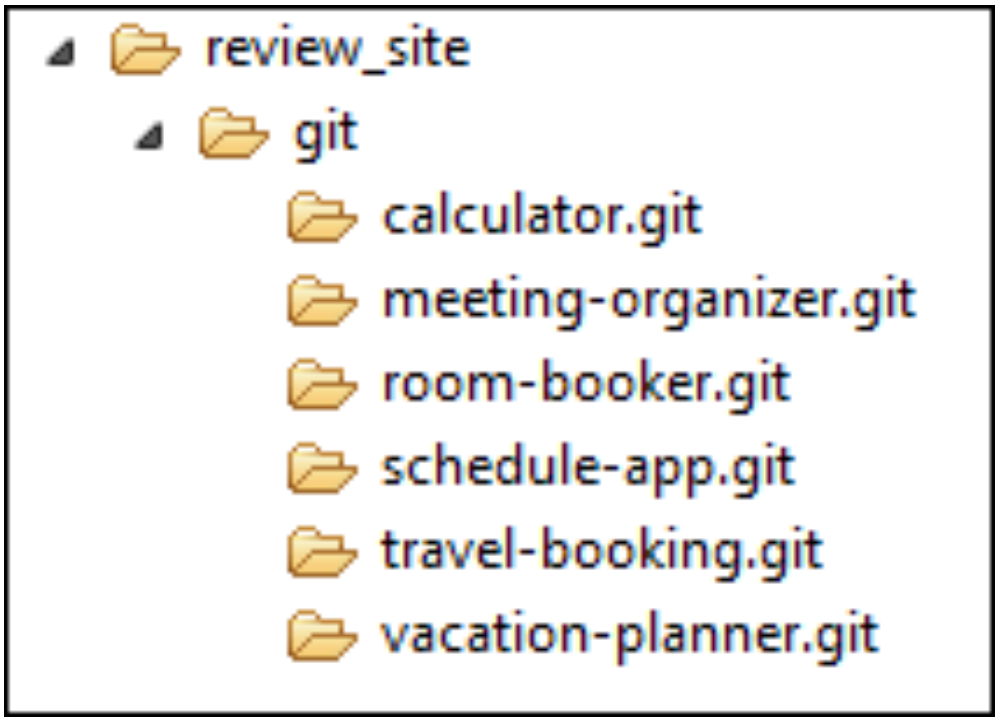
Code Review

Gerrit



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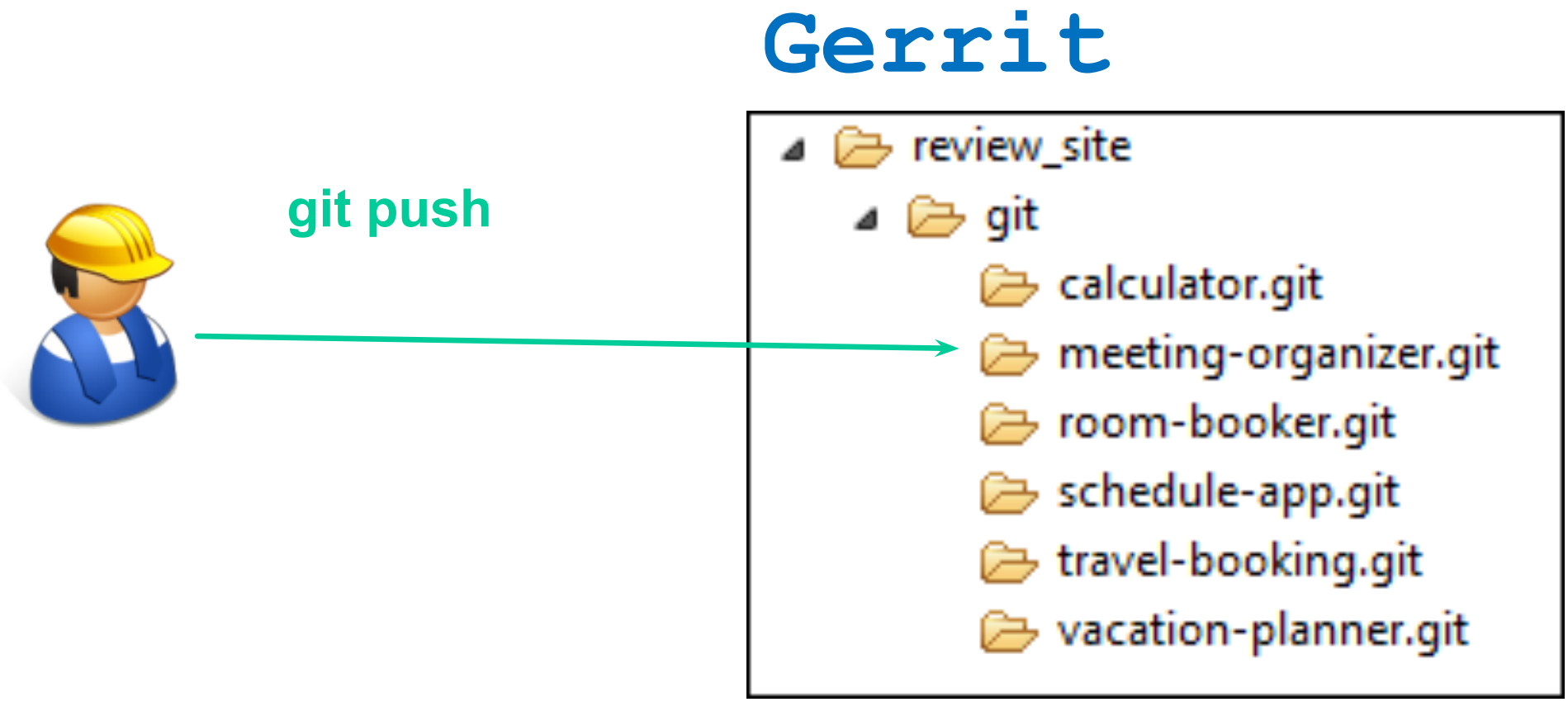
Code Review



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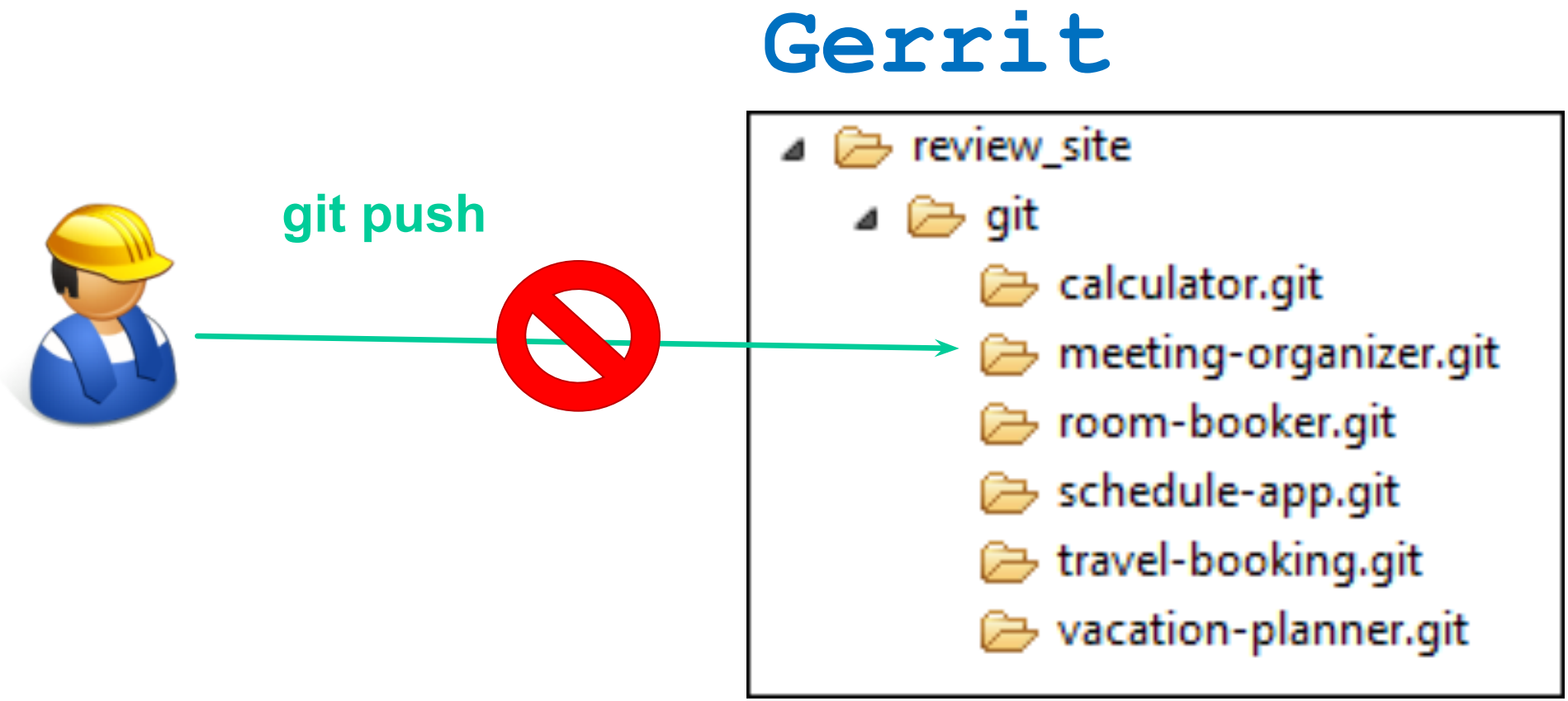
Code Review



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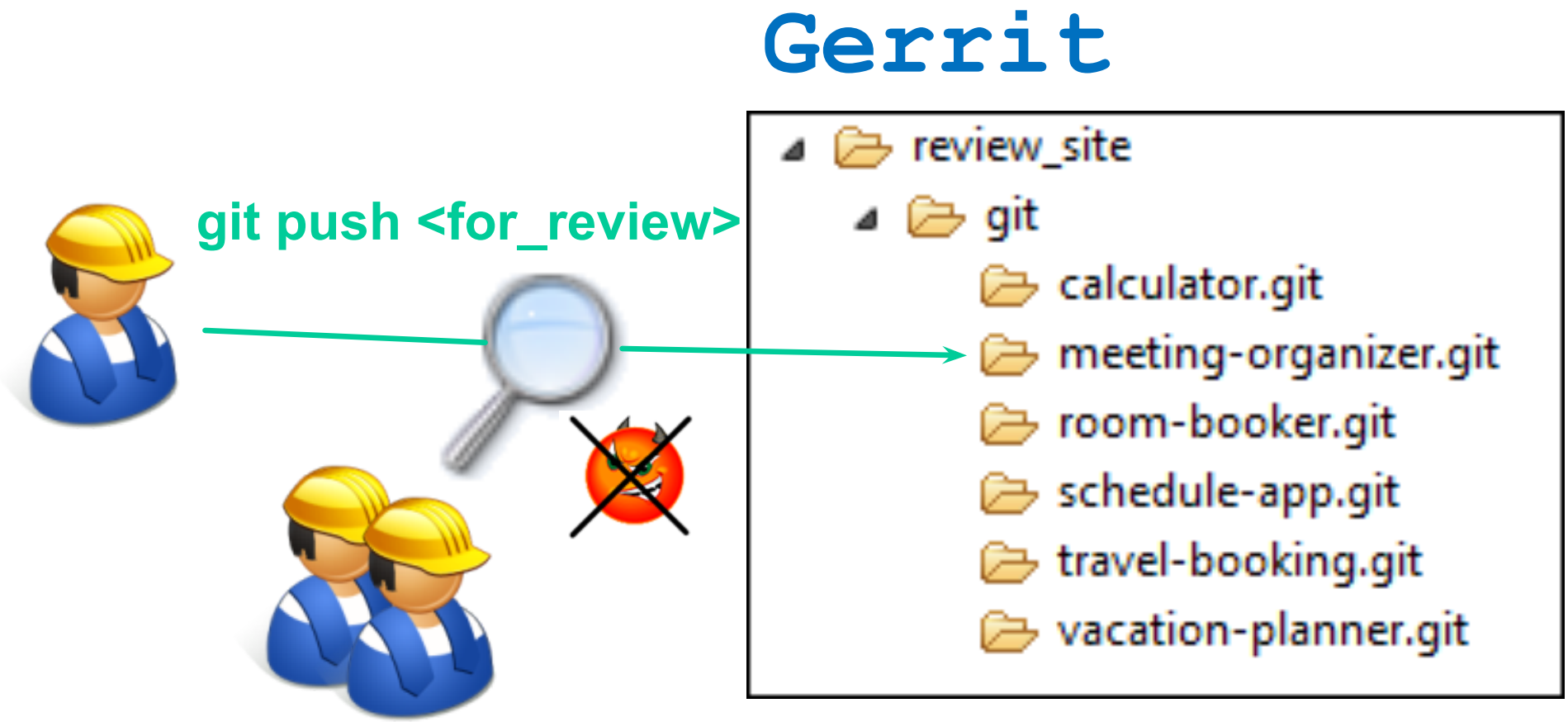
Code Review



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Gerrit

Commenting

```
11 +              prefix="scm:git:">
12 +        </supports>
13 +      </importer>
14 +    </extension>
15 +    <extension
16 +          point="org.eclipse.team.ui.scmUrlImportPages">
17 +       <scmUrlImportPage
```

Matthias Sohn Juno workbench complains: Attribute 'repository' of element …

Matthias Sohn don't know how to fix this

Tomasz Zarna You will need to update Eclipse to 3.8 M6, which is coming out this week, …

Matthias Sohn could you point me to a working I-build ? I tried I20120312 but didn't …

Tomasz Zarna Hmm, I've just upgraded t

Matthias Sohn I tried eclipse-SDK-I2012

Matthias Sohn

where can I find the p2 repo for I201

Reply … Reply 'Done'

Matthias Sohn

found http://download.eclipse.org/e

Reply … Reply 'Done'

Tomasz Zarna

I've downloaded Eclipse 4.2.0 I201
The only errors I see are related to
else to look at this?

Reply … Reply 'Done'

```
18 +              importer="org.ecli
19 +              page="org.eclipse.
20 +       </scmUrlImportPage>
21 +    </extension>
22 +</plugin>
```

plugin.properties

Matthias Sohn Patch Set 8: I still see these compile problems when using todays … Mar 14

Dani Megert Patch Set 7: Matthias, something must be broken on your side (workspace). … Mar 21

Matthias Sohn Mar 22

Patch Set 8:

I tried again with 3.8 I20120320-1400 and 4.2 I20120321-0610 (Mac OS X 64bit) and still hit the same problems. Don't know what is wrong here. If you are visiting EclipseCon we could meet and have a look at my workspace.

Dani Megert Mar 22

Patch Set 7:

I looked a bit closer at the errors you get, and I suspect that you get hit by the infamous bug 73957. Please try whether importing 'org.eclipse.swt' and the SWT fragment for your platform (use File > Import... > Plug-ins and Fragments) solves the problem. Do a Project > Clean... all + rebuild after the import in case there are still errors.

Matthias Sohn Patch Set 8: I tried importing org.eclipse.swt and mac platform fragment … Mar 22

Dani Megert Patch Set 7: Very strange. I assume you already tried to re-add the … Mar 22

Matthias Sohn Mar 22

Patch Set 8:

Validating plugins in a new run configuration for an Eclipse application reveals the following problem messages:

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Gerrit

Discussing & Improving

▶ **Dependencies**

Old Version History: Base

- ▶ **Patch Set 1** c95afcec82535bee688b54574126a7c9a6dc24f8 (gitweb)
- ▶ **Patch Set 2** b2fa7dba21254ec58fc2f06bc347e493a038cf34 (gitweb)
- ▶ **Patch Set 3** 4d1462caa5eda20103a72315533fa33a8b843fa8 (gitweb)
- ▶ **Patch Set 4** 7949fe001239fbdbf4c7db4a2d34071a4ee218c4 (gitweb)
- ▶ **Patch Set 5** ccdf5a191a4324d51b8b201
- ▶ **Patch Set 6** 91839ee9352e9e71a950ba0
- ▶ **Patch Set 7** e9c2a852bce4159cdd0a601
- ▶ **Patch Set 8** 05baab28a38099a7b467d52
- ▶ **Patch Set 9** d81ab43a6f19b70e61d2356
- ▶ **Patch Set 10** ab0fdcfabdb7ce0d8157dd
- ▶ **Patch Set 11** b056027bc9b8aac7c0cffc
- ▶ **Patch Set 12** 215e96e799019fcfd3752e
- ▶ **Patch Set 13** df01f3ee42c3cf9b9a257d5
- ▶ **Patch Set 14** 80a40aa188629a879b54a
- ▶ **Patch Set 15** c8aa6a7c67816d4412736
- ▶ **Patch Set 16** f8fdf4aa75ca2302829da51
- ▼ **Patch Set 17** 33427c84410ca18d2fc98a

Author	Christian Halstrick <christia
Committer	Christian Halstrick <christian.halstrick@sap.com> Mar 13, 2
Parent(s)	3083146d136c5561d4c87c03efcb184ef4816abe Merge "Reus

```
229 +»   »   if (fanout != null && fanout.length > 0) {
```

Shawn Pearce Because of `git gc --auto` the number of loose objects should be ...

Christian Halstrick Took me a while to consume this comment. I agree: because we can assume ...

```
230 +»   »   »   pm.beginTask(JGitText.get().pruneLooseUnreferencedObjects,
231 +»   »   »   »   fanout.length);
232 +»   »   »   ObjectWalk w = null;
233 +»   »   »   try {
234 +»   »   »   »   // Expensive: create a Objectwalk which walks over all
```

Shawn Pearce

You also have to consider the reflogs here, and you aren't.

Reply ... Reply 'Done'

Christian Halstrick

Done

Reply ... Reply 'Done'

```
235 +»   »   »   »   // referenced objects.
236 +»   »   »   »   w = new ObjectWalk(repo);
237 +»   »   »   »   for (Ref f : repo.getAllRefs().values())
238 +»   »   »   »   »   w.markStart(w.parseAny(f.getObjectId()));
239 +»   »   »   »   for (Ref f : repo.getRefDatabase().getAdditionalRefs())
```

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Gerrit

Voting

Verified:

- ( ) +1 Verified
- (•) 0 No score
- ( ) -1 Fails

Code Review:

- ( ) +2 Looks good to me, approved
- ( ) +1 Looks good to me, but someone else must approve
- (•) 0 No score
- ( ) -1 I would prefer that you didn't submit this
- ( ) -2 Do not submit

IP Clean:

- ( ) +1 IP review completed
- (•) 0 No score
- ( ) -1 Unclean IP, do not check in

Cover Message:

Publish Comments Publish and Submit Cancel

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Gerrit

Do not miss:

Talk by Shawn Pearce (Gerrit founder and Project Lead)

Harnessing Peer Code Reviews

Wednesday, 14:15, Ballroom A

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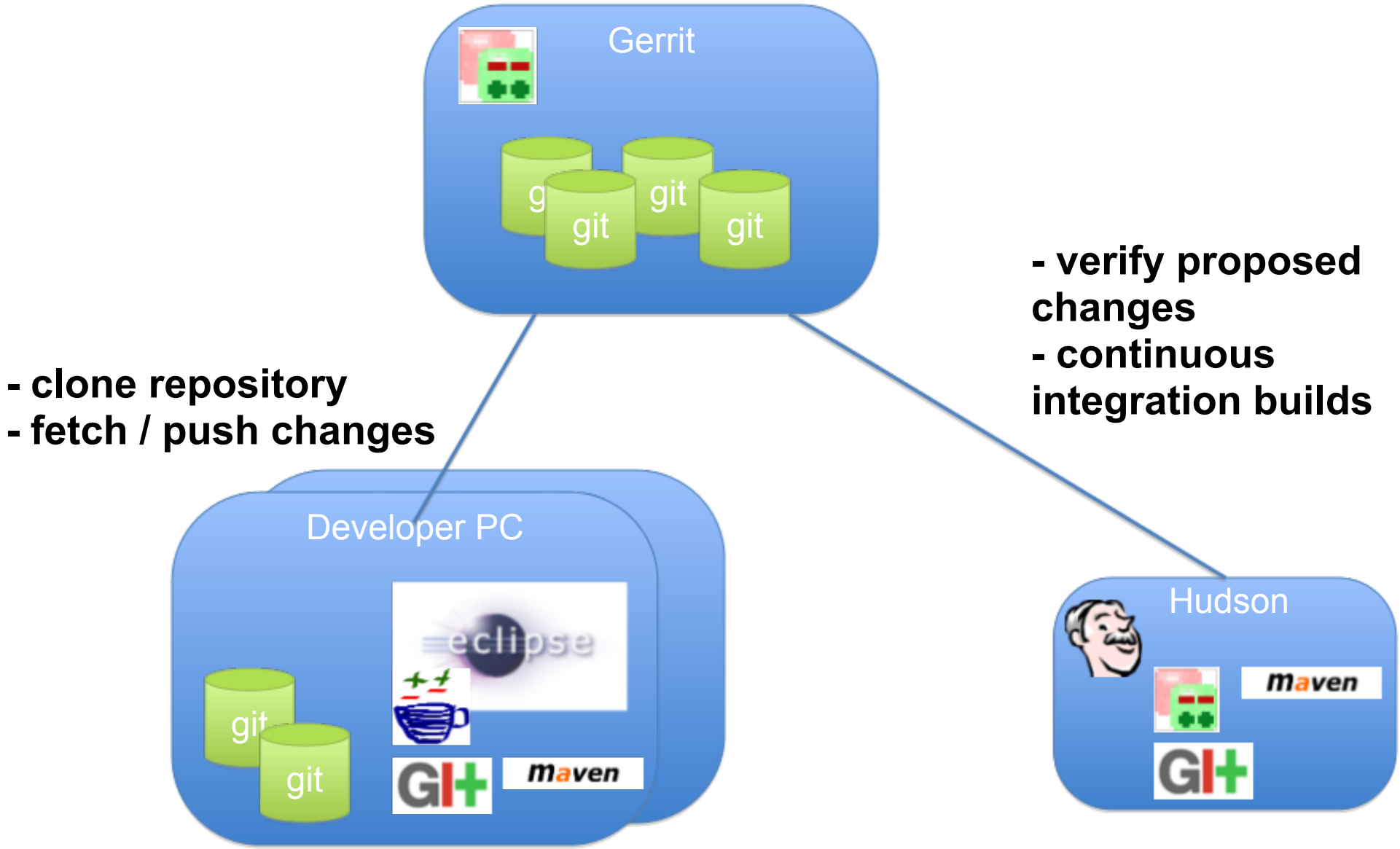
http://git.eclipse.org/r/



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Gerrit Exercises

1. Configure push to Gerrit
2. Push change to Gerrit
3. Review change
4. Improve a change
5. Submit a change to the codebase
6. View Gerrit review notes
7. Starting Demo Gerrit Server (backup)

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Mylyn Integration

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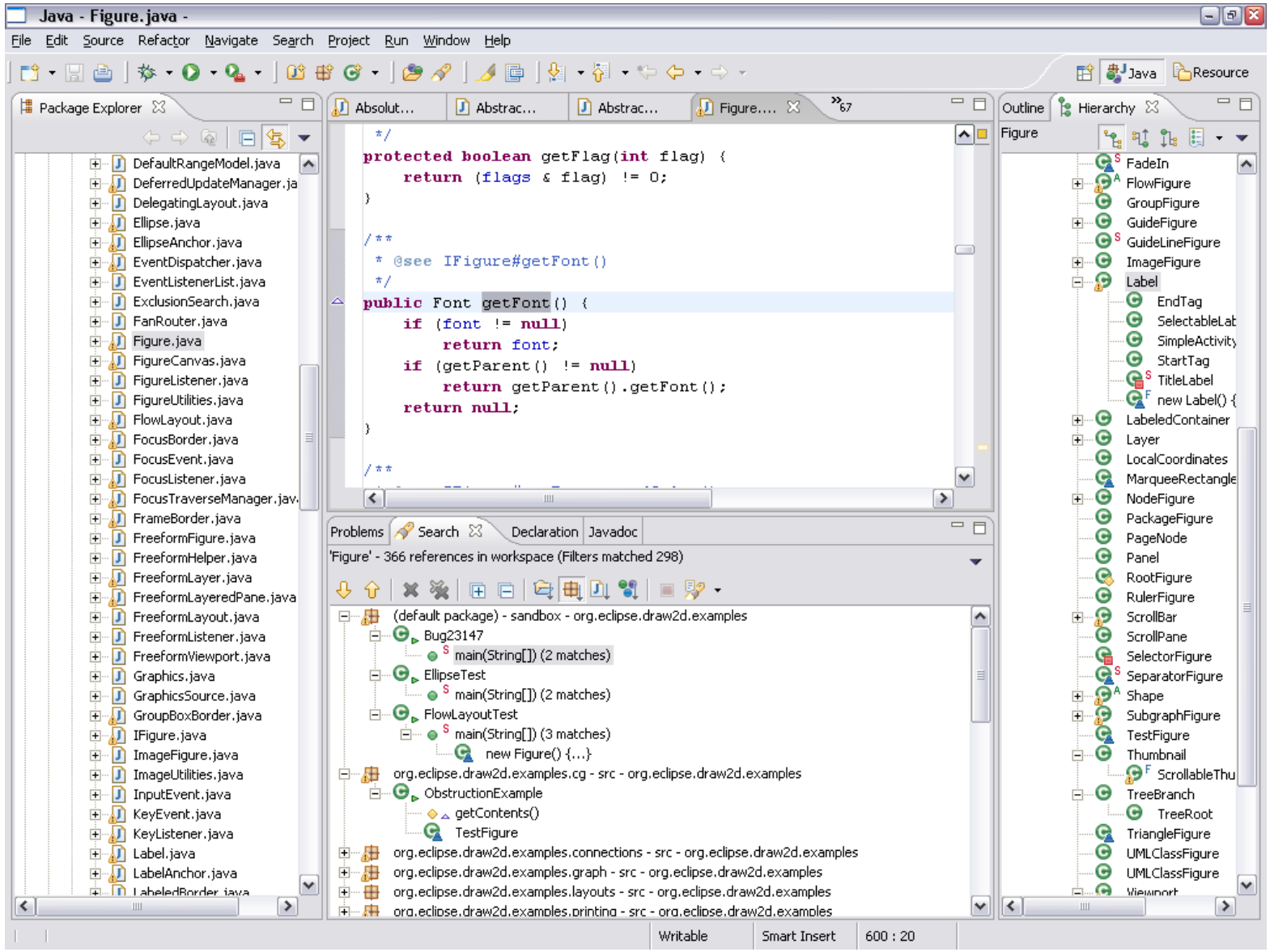
90% Irrelevant



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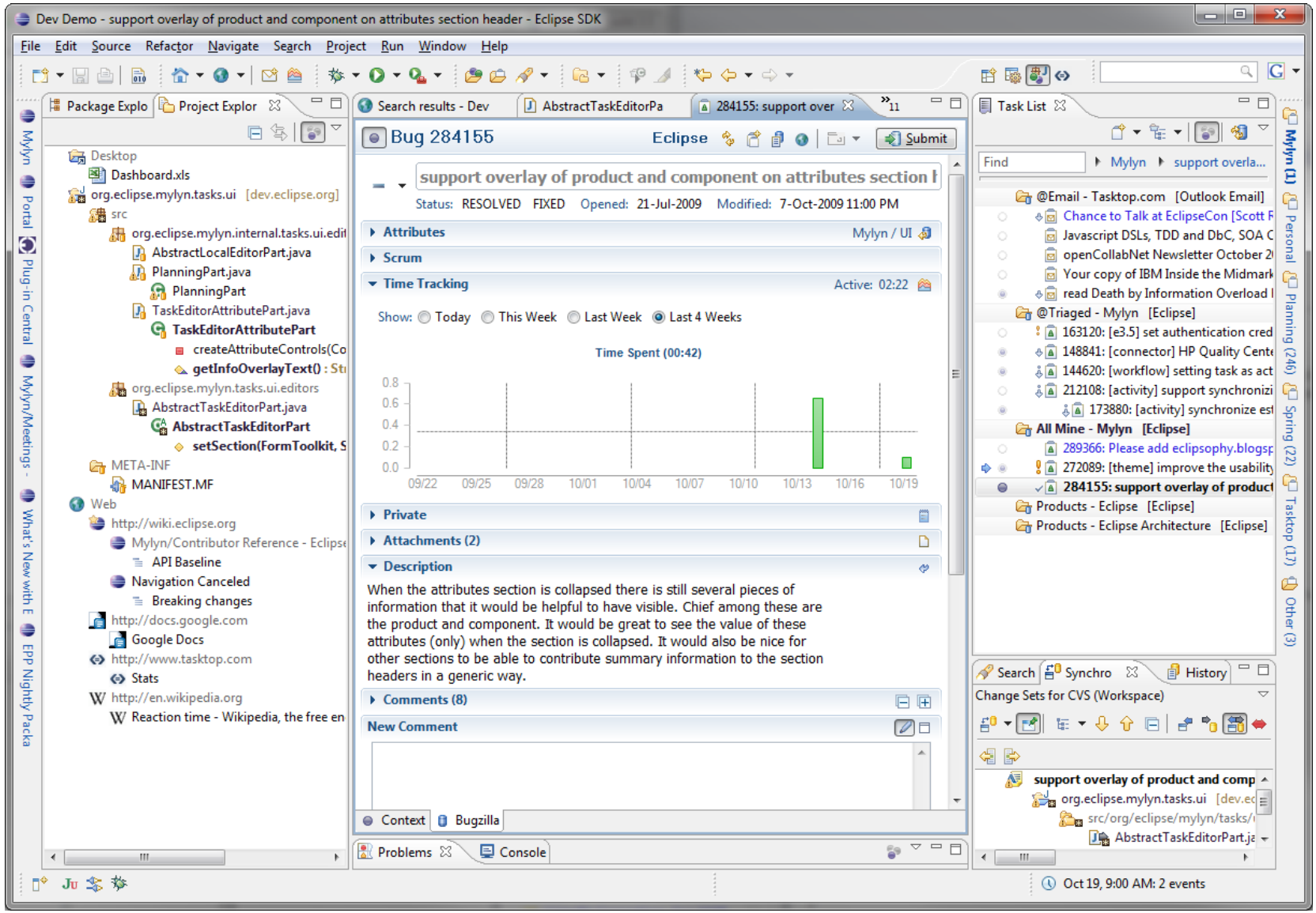
Task-focused IDE



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< Demo >

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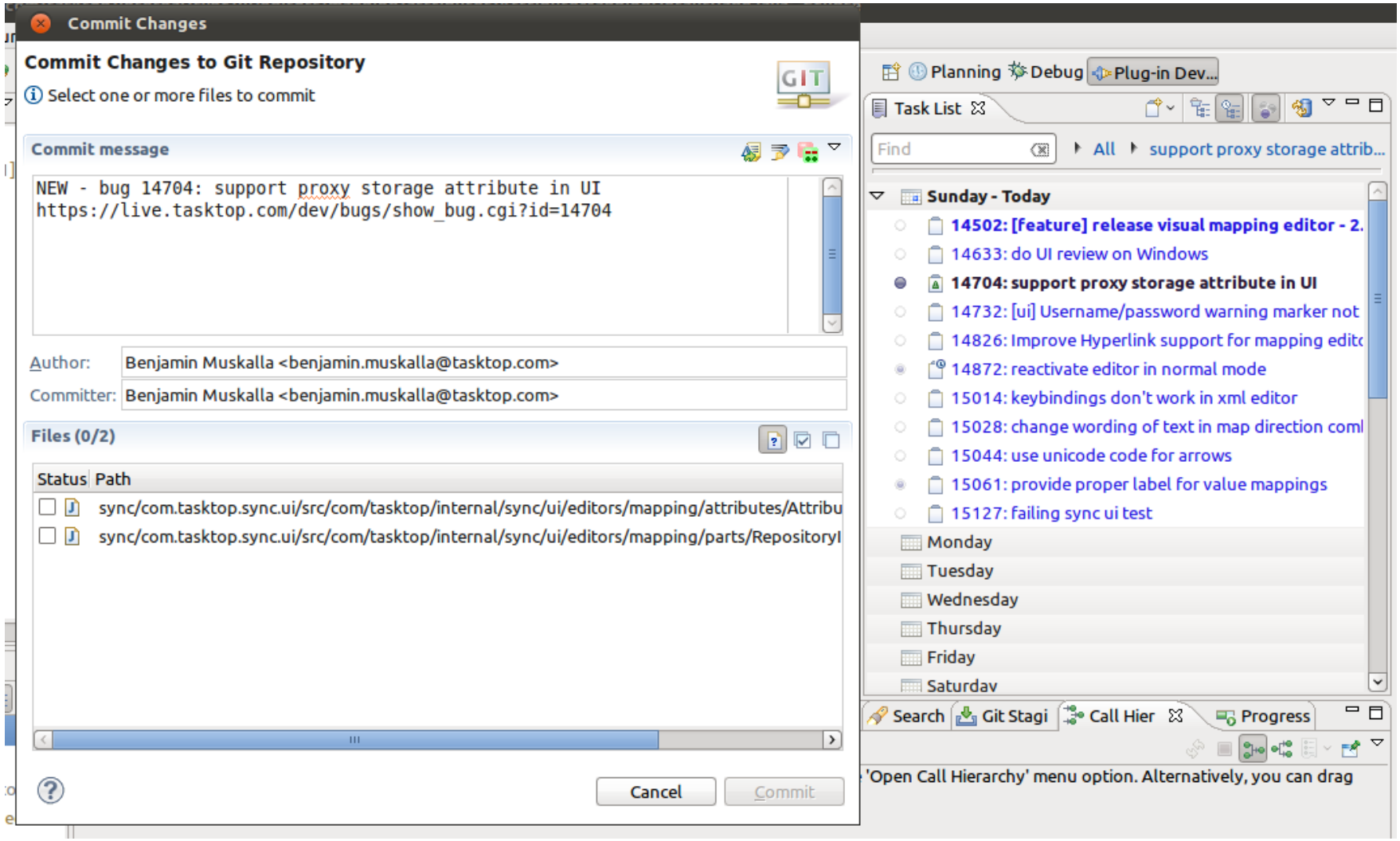
Exercises: Mylyn Integration

1 Mylyn / EGit Integration



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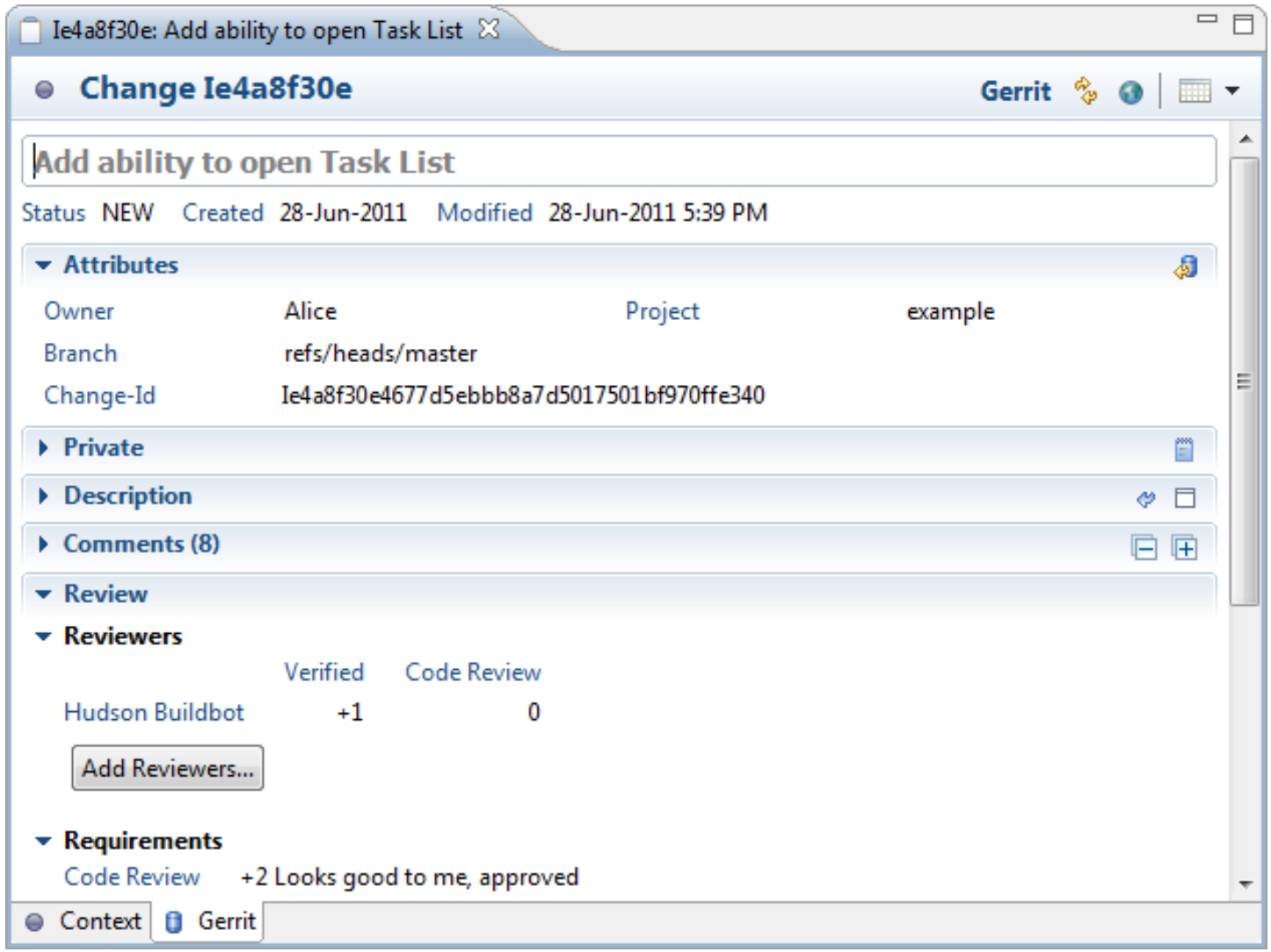
Exercises: Mylyn Integration

2 Use Gerrit from within the IDE



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Exercises: Mylyn Integration

1 Mylyn / EGit Integration

2 Use Gerrit from within the IDE

Related talk
Wednesday, 1:30PM - 2:15PM
Build, Stage, Review, Merge: Task-focused Development the Eclipse Mylyn Way

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GitHub Eclipse Support

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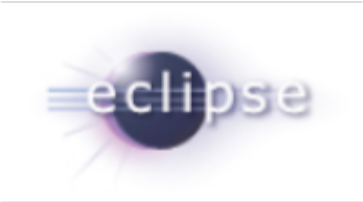
GitHub Eclipse Support



- **https://github.com/eclipse**
  - 248 mirrored repositories

- Browsing source code
- Comparing branches and tags
- Activity feeds
- Charts & graphs
- Downloading snapshots

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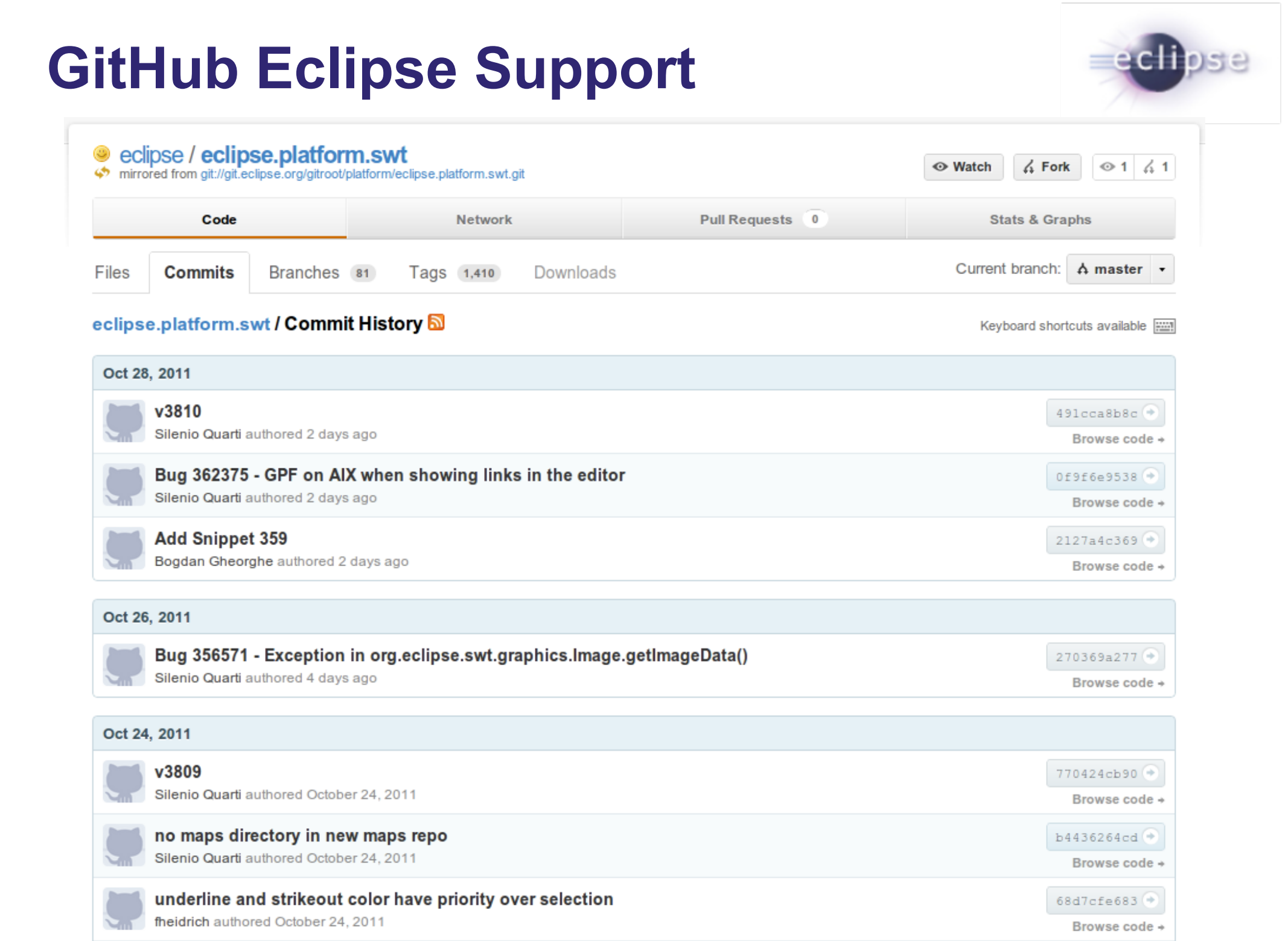
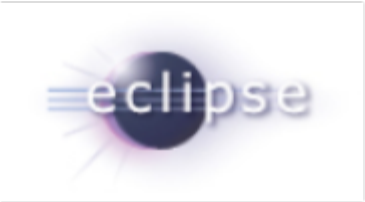
GitHub Eclipse Support



GitHub EGit Integration



GitHub Mylyn Connector

- Issues
- Gists
- Pull Requests
- Import Wizard

GitHub Java API

- Maven plugins
- Reporting
- Automating tasks

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GitHub Exercises: EGit Integration

1 Setup Share on GitHub

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Q&A

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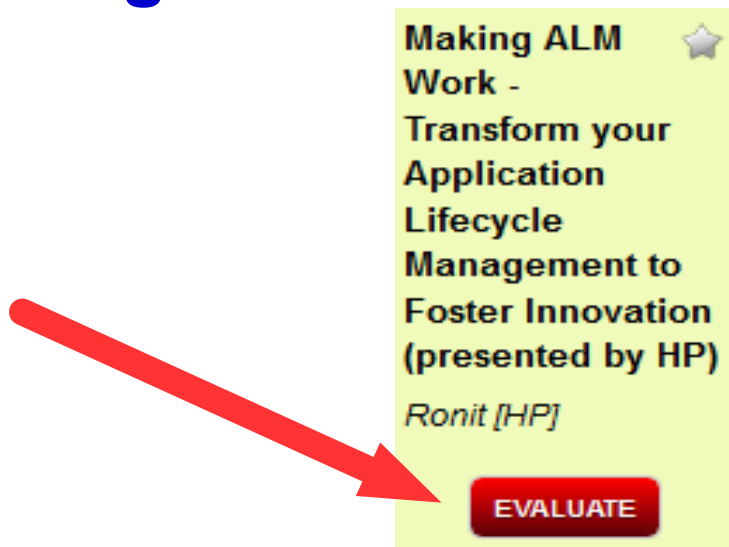
Give Feedback on the Sessions

1. **Sign In:** www.eclipsecon.org

2. **Select Session Evaluate**



3. **Vote**