

Git, Repo and Gerrit Workflow

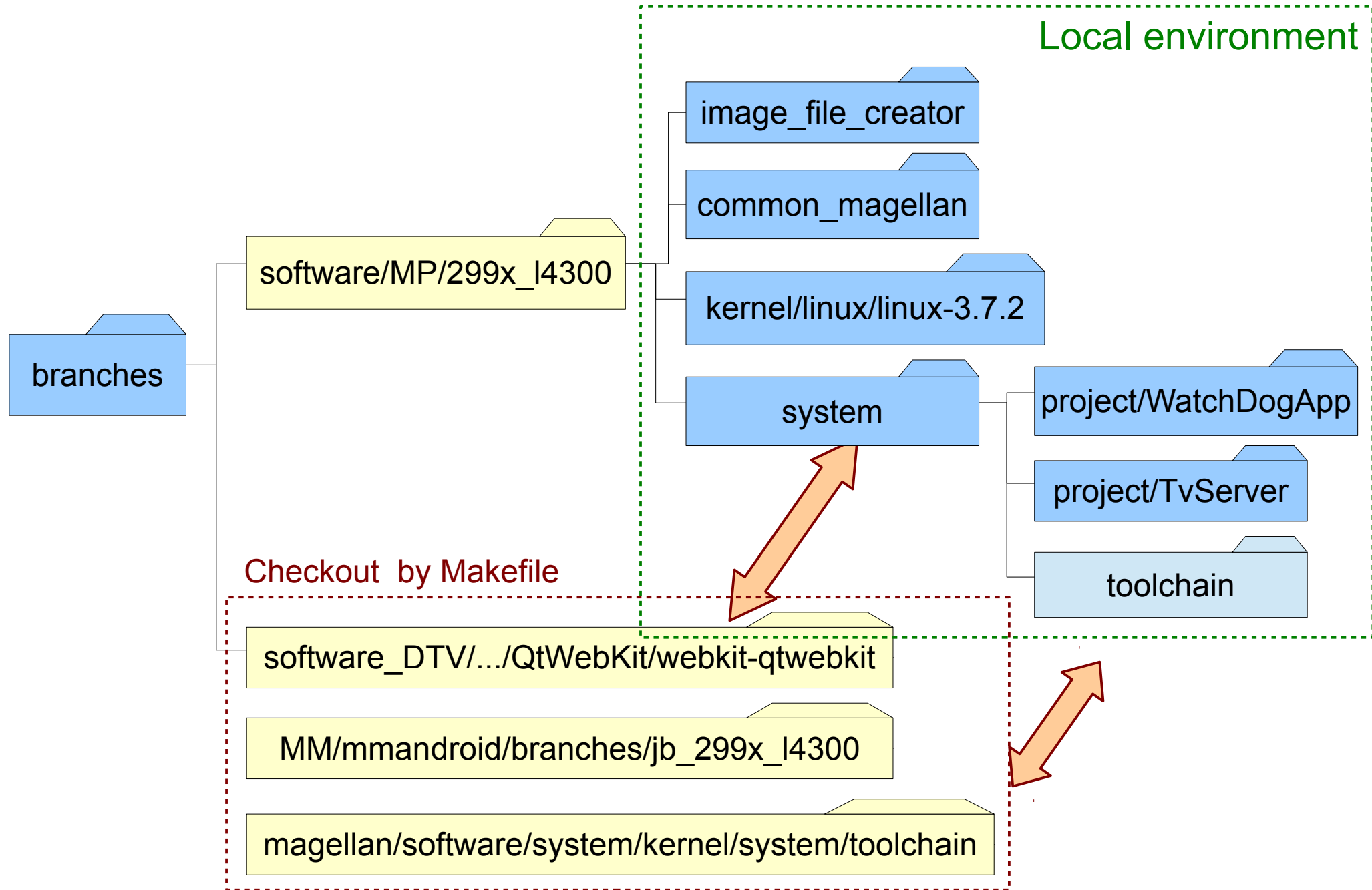
Shun-Yen Lu
shunyen@realtek.com
#3158

2013/11/08

Outline

- Introduction
- Gerrit-based Workflow
- Git/Repo/Gerrit User Guide

Current L4300 Architecture



Problems of SVN Architecture

- Slow
- Cannot see complete history
- Low flexibility – fixed file structure
 - Makefile + svn checkout/update
- No mutable code review service

Introduction – Git

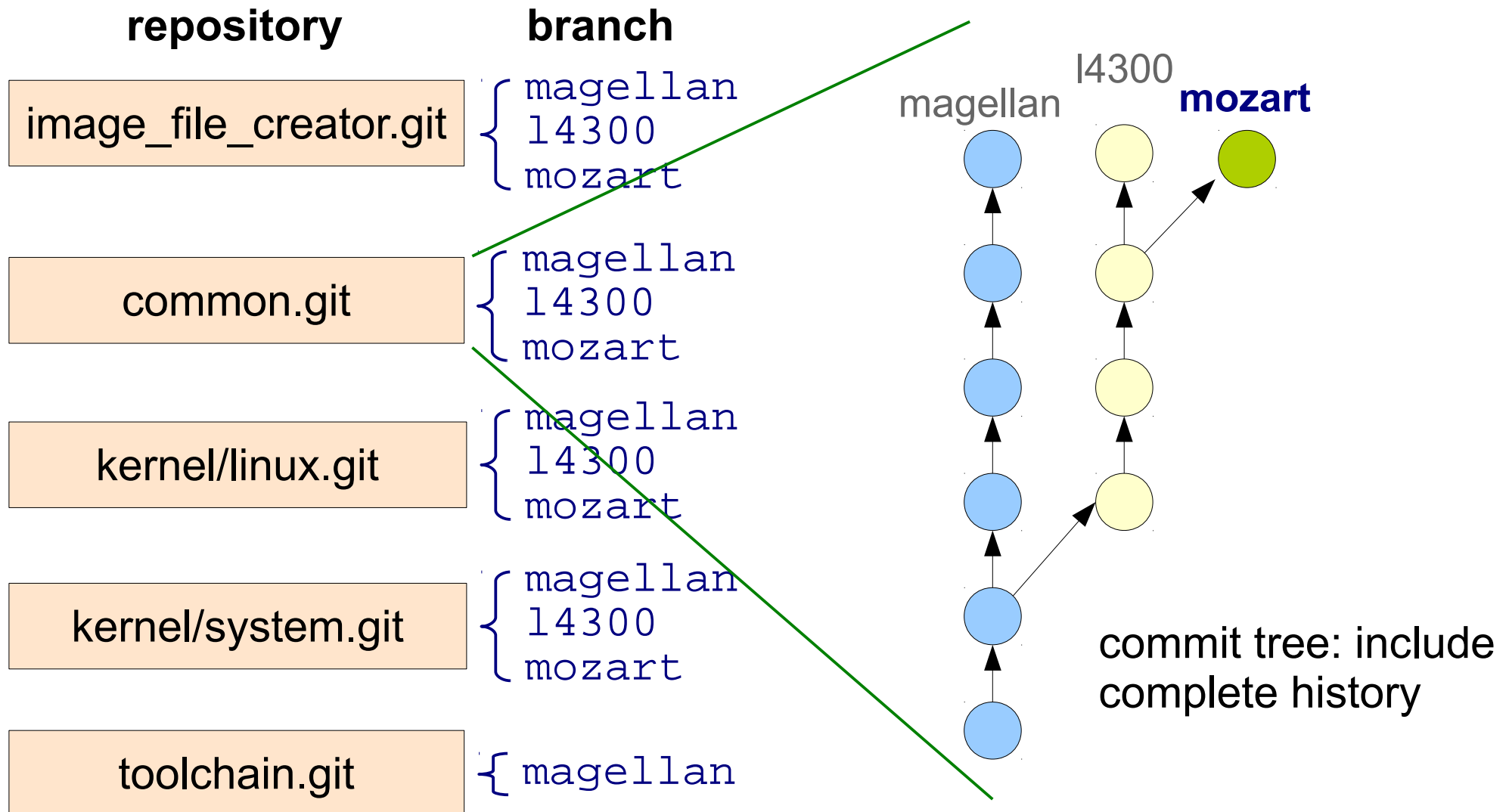


- Author
 - Linus Torvalds, Junio Hamano
- Feature
 - Distributed revision control
 - Local repository, commit, branch
→ fast & convenient
 - Branch & merge based
 - Suitable for non-linear development
 - Complete history view
 - Longer learning curve

Concept of Git Repository

Git

Small & independent repositories
Branch live inside repository



Introduction – Repo



- Android's version control framework
 - Python script + Git hook
- Use **Manifest** (XML) to manage large projects
 - Git repositories & branches
 - Repo & Gerrit server location
- Get repo
 - ```
$ wget \
http://commondatastorage.googleapis.com/git-
repo-downloads/repo
```

# Introduction – Gerrit



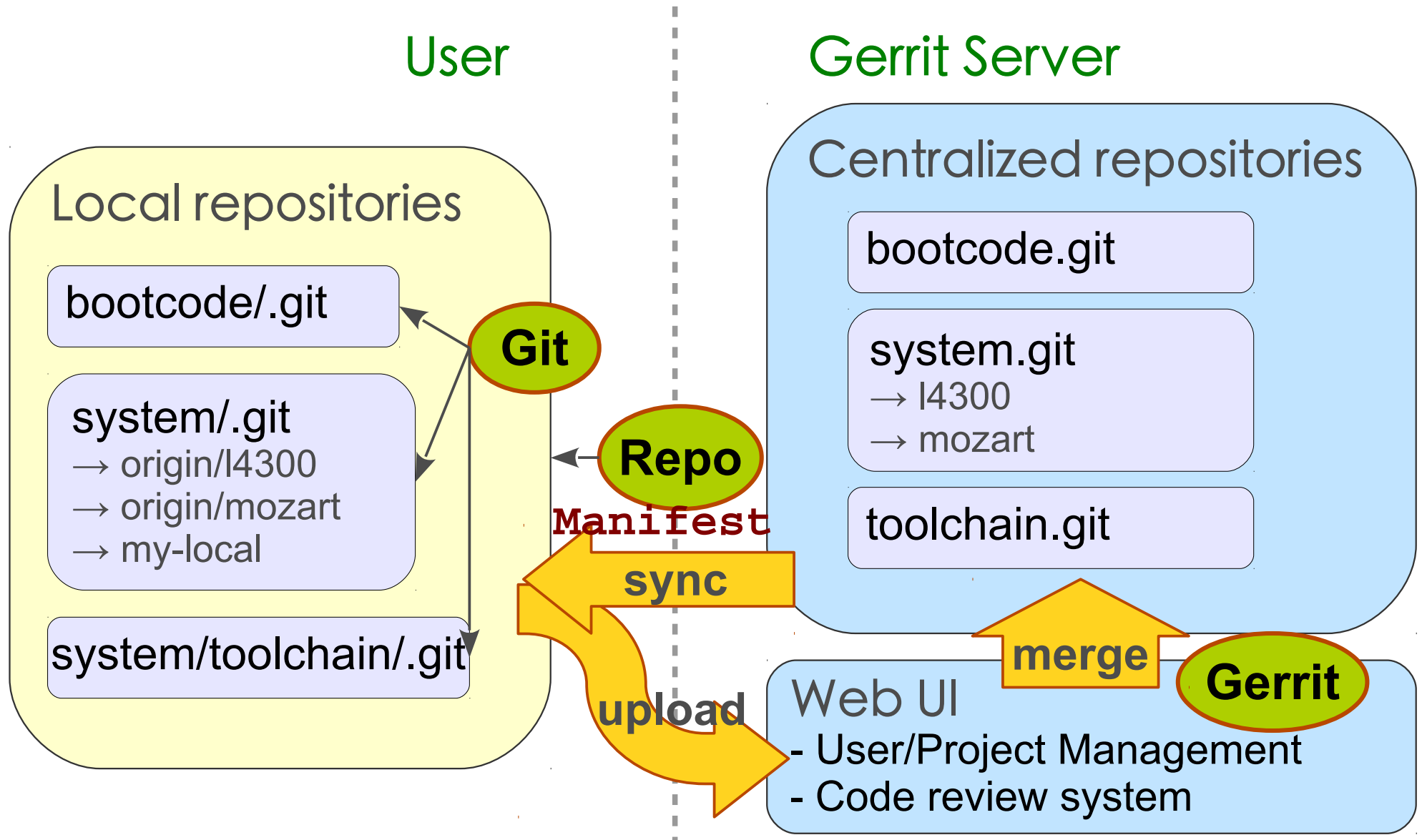
- Android's project management system
    - Integrated with Repo
    - Permission control & code review
  - Web UI
    - Admin – project, user/group management
    - User – code review framework
- `$ repo upload` → push to code review system



# Git/Repo/Gerrit Framework

User

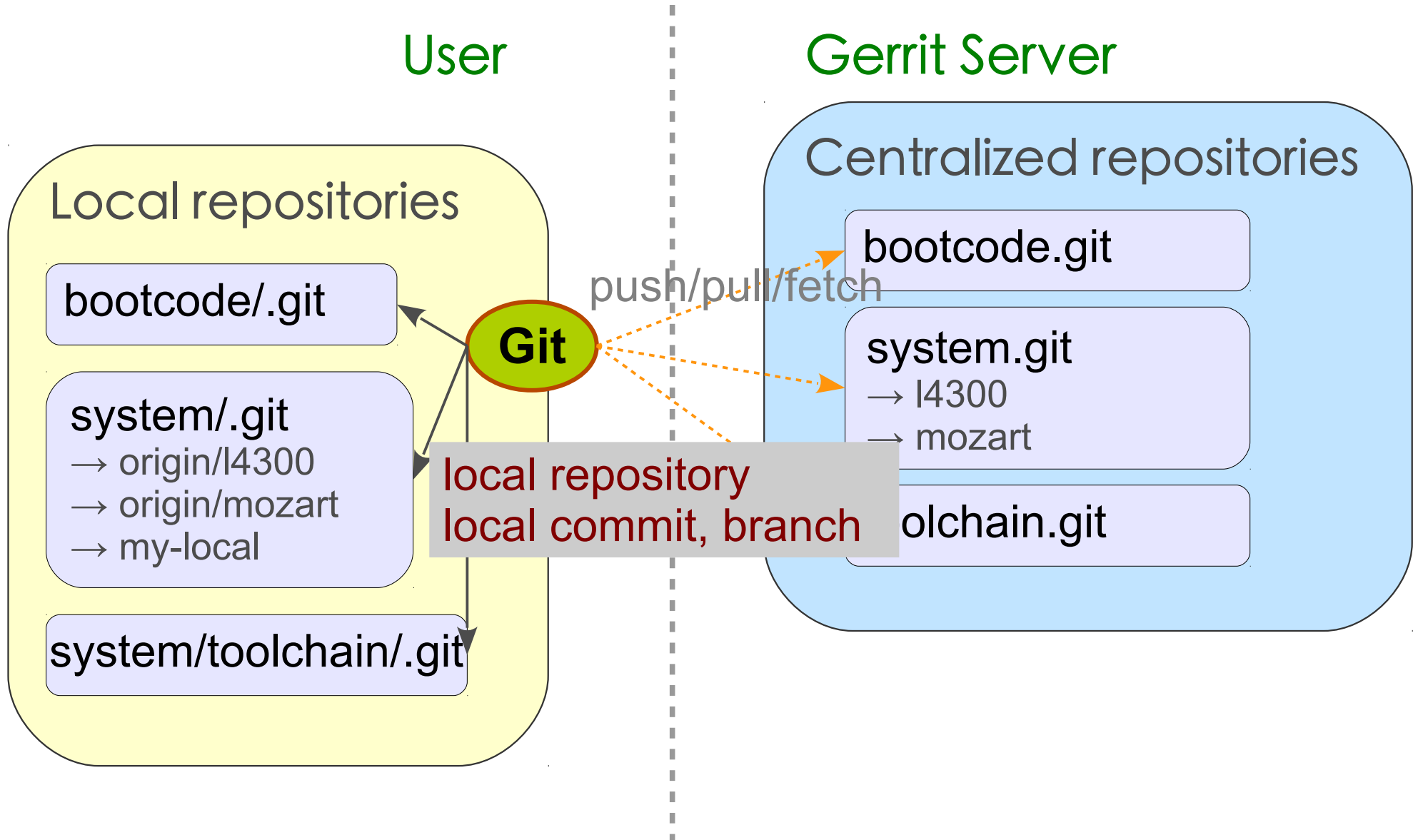
Gerrit Server



# Role of Git

User

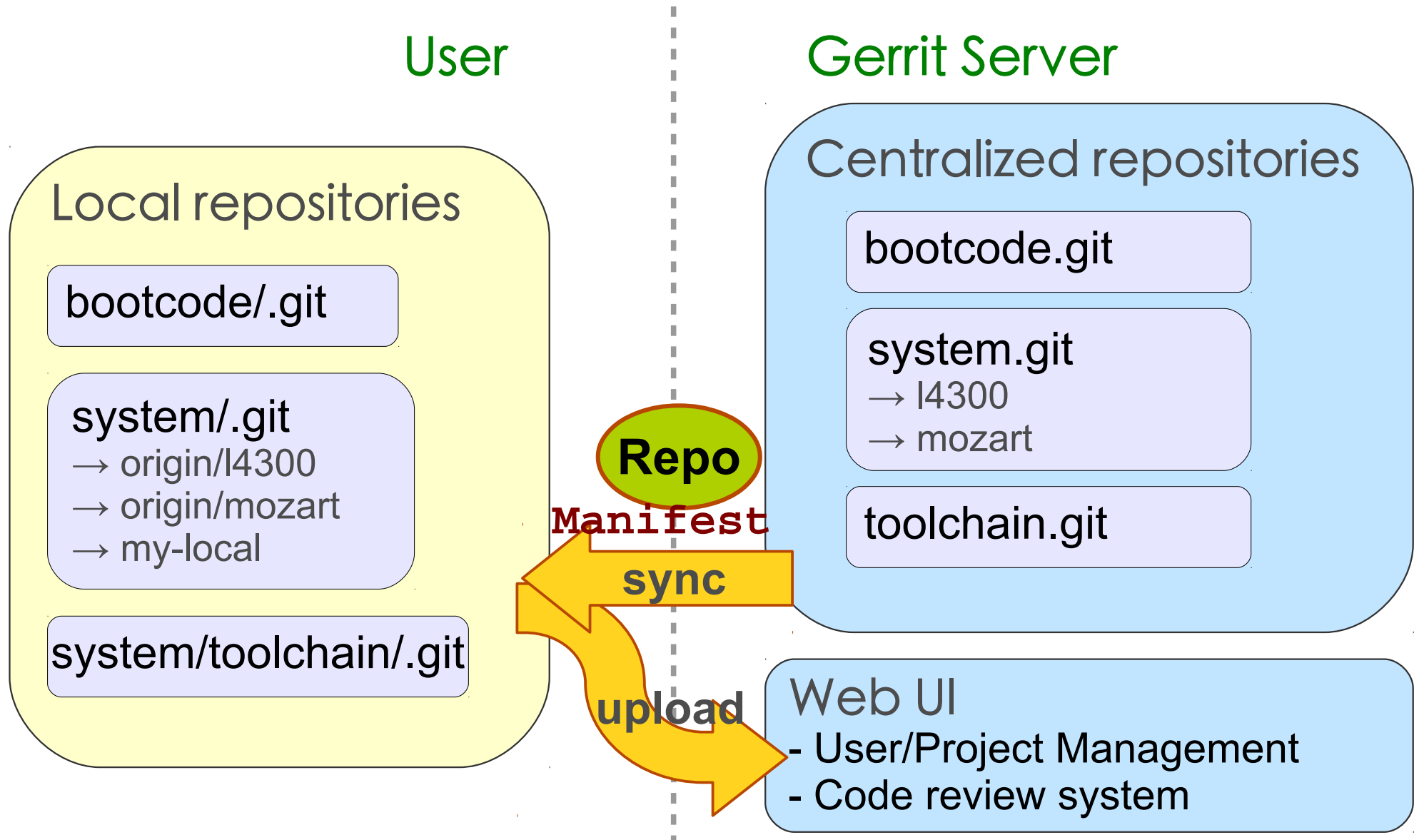
Gerrit Server



# Role of Repo

User

Gerrit Server



# Example – TSB\_Mozart.xml

```
<?xml version="1.0" encoding="UTF-8"?>

<manifest>

 <remote name="origin"
 fetch="ssh://gerrit.realtek.com.tw:20005"
 review="http://gerrit.realtek.com.tw/phoenix"
 />

 <default remote="origin" revision="master" rebase="false" />

 <project name="bootcode" path="bootcode" />
 <project name="AV_FW" path="SQA_DailyBuild/AV_FW" />
 <project name="system" path="system" />
 <project name="toolchain" path="system/toolchain" />
 <project name="common_magellan" path="common_magellan" />
 <project name="image_file_creator" path="image_file_creator" />
 <project name="kernel/linux" path="kernel/linux/linux-3.7.2" />
 <project name="kernel/system" path="kernel/system" />
 <project name="android" path="kernel/android/JB" />

</manifest>
```

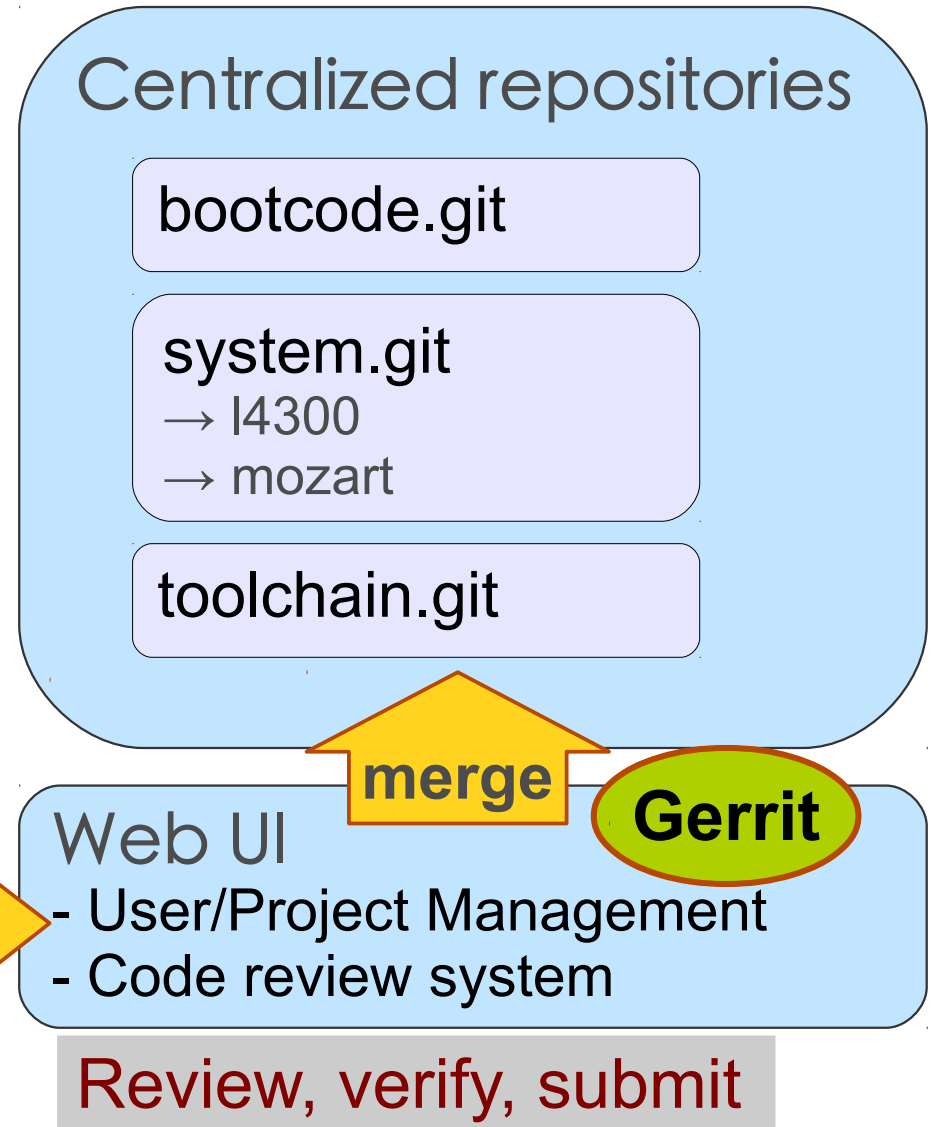
# Role of Gerrit

User

Gerrit Server



upload



# Roles of Gerrit Users

- Author
  - Solve issue, commit patch
- Reviewer
  - Check patch quality, potential side effect
- Verifier (Jenkins)
  - Check compile error
- Submitter
  - Check code convention, commit message

# Gerrit UI – Pending Patches

All My Admin Documentation  
Changes Drafts Watched Changes Starred Changes

Shun-Yen Lu <shunyen@realtek.com> | [Settings](#) | [Sign Out](#)

status:open

Search

Code Review Dashboard for Shun-Committer Verifier Reviewer

ID	Subject	Owner	Project	Branch	Updated	V	R
Started by Shun-Yen Lu							
★ I981c8b24	Fix bug in processing multilib	Shun-Yen Lu	rsdk/script	rsdk-1.5	7:02 PM		✓ Tony Wu
★ Idbd1e40b	Fixed name for tmpdir	Shun-Yen Lu	rsdk/script	rsdk-1.5	7:02 PM		✓ Tony Wu
★ Icd01d1a0	Fix bug in processing multilib	Shun-Yen Lu	rsdk/library	rsdk-1.5	7:01 PM		✓ Tony Wu
★ I4767dcf8	Fix bug in processing multilib	Shun-Yen Lu	rsdk/uclibc	rsdk-1.5	7:01 PM		✓ Tony Wu

## Review Requests for Shun-Yen Lu


(None)

## Recently closed

★ I5685401e	Update changelog for rsdk-1.3.7p1 (MERGED)	Shun-Yen Lu	rsdk/document	hotfix-rsdk-1.3.7p1	Jul 26	✓ Shun-Yen Lu	✓ Shun-Yen Lu
★ I97663dd9	Bump GCC version to rsdk-1.3.7p1 (MERGED)	Shun-Yen Lu	rsdk/gcc	hotfix-rsdk-1.3.7p1	Jul 26	✓ Shun-Yen Lu	✓ Tony Wu
★ I981c8b24	Fix bug in processing multilib (ABANDONED)	Shun-Yen Lu	rsdk/script	feature-mingw	Jul 26		
★ Ib981bdaf	Bump version to rsdk-1.5.6p1 (MERGED)	Shun-Yen Lu	rsdk/builder	hotfix-rsdk-1.5.6p1	Jul 26	✓ Shun-Yen Lu	✓ Shun-Yen Lu
★ I8a4d3eb3	Set 5281 as default architecture (MERGED)	Shun-Yen Lu	rsdk/binutils	hotfix-objdump	Jul 26	✓ Shun-Yen Lu	✓ Tony Wu

# Gerrit UI – Commit Review

☆ Change Ibe2411bc: Disable -mgpopt when 3081 is used

Change-Id:	Ibe2411bcc1fc5e9c4163280969ea41e580b906f2 
Owner	<a href="#">Shun-Yen Lu</a>
Project	<a href="#">rsdk/gcc</a>
Branch	<a href="#">feature-kmm</a>
Topic	
Uploaded	Apr 21, 2011 7:54 PM
Updated	Apr 25, 2011 9:25 AM
Status	<b>Merged</b>

Disable -mgpopt when 3081 is used

Change-Id: Ibe2411bcc1fc5e9c4163280969ea41e580b906f2  
Signed-off-by: Shun-Yen Lu <shunyen@realtek.com>

[Permalink](#) 

Reviewer	Verified	Code Review	
<a href="#">Shun-Yen Lu</a>	✓	+1	Verified; Looks good to me, but someone else must approve
<a href="#">Tony Wu</a>		✓	Looks good to me, approved

► Included in

► Dependencies

Old Version History:

- Patch Set 1 f20d3fcedb7ffbade0ce1d3eada62d9478041ccc
- Patch Set 2 4549ba93f619a40cabe47016111f6e8c7766adb1

Comments	<a href="#">Expand Recent</a>	<a href="#">Expand All</a>	<a href="#">Collapse All</a>
<b>Shun-Yen Lu</b> Patch Set 1: Verified; Looks good to me, but someone else must approve			Apr 22
<b>Tony Wu</b> Patch Set 1: Looks good to me, approved			Apr 22
<b>Shun-Yen Lu</b> Uploaded patch set 2.			Apr 25
<b>Tony Wu</b> Patch Set 2: Looks good to me, approved			Apr 25
<b>Shun-Yen Lu</b> Patch Set 2: Verified; Looks good to me, but someone else must approve			Apr 25
<b>Shun-Yen Lu</b>			Apr 25
Change has been successfully merged into the git repository.			



# Gerrit UI – Checkout Patch

Old Version History: Base

► Patch Set 1 f20d3fcedb7ffbade0ce1d3eada62d9478041ccc

▼ Patch Set 2 4549ba93f619a40cabe47016111f6e8c7766adb1

Author [Shun-Yen Lu](#) <shunyen@realtek.com> 2011-04-19 18:58

Committer [Shun-Yen Lu](#) <shunyen@realtek.com> 2011-04-25 09:16

Parent(s) c4cfb03532fa78a224ddaf8a5fb2024e7f61ef26 Skip asm libraries (in mips16.S) for 3081

Download checkout pull cherry-pick patch SSH HTTP  
`git fetch ssh://shunyen@repo.realtek.com:29418/rsdk/gcc refs/changes/81/1081/2 && git cherry-pick FETCH_HEAD`

Review

Revert Change

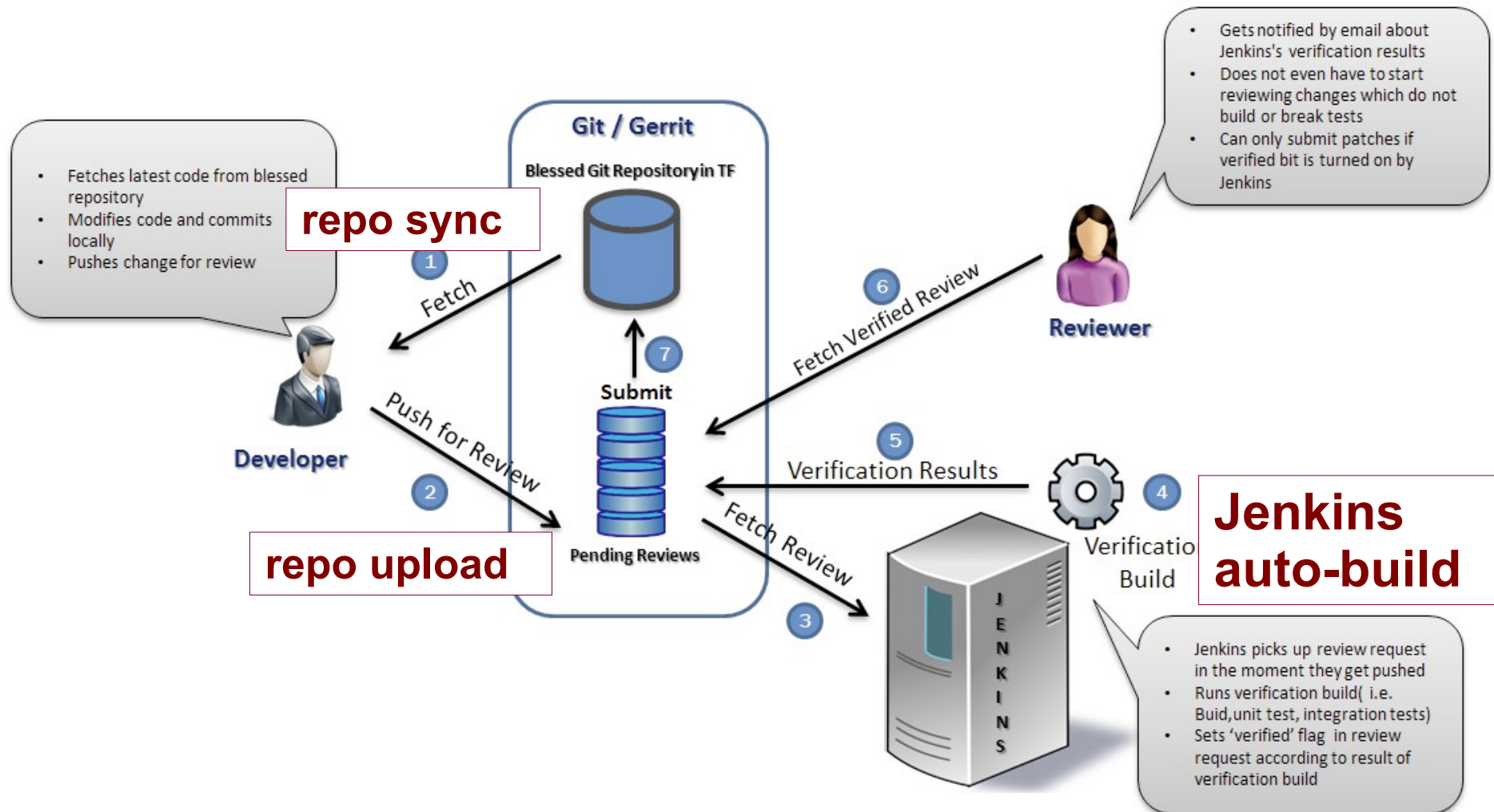
Diff All Side-by-Side

Diff All Unified

	File Path	Comments	Size	Diff	Reviewed
►	<a href="#">Commit Message</a>			<a href="#">Side-by-Side</a> <a href="#">Unified</a>	
M	<a href="#">gcc/config/mips/mips.c</a>		+3, -0	<a href="#">Side-by-Side</a> <a href="#">Unified</a>	✓
M	<a href="#">gcc/config/mips/mips.h</a>		+2, -0	<a href="#">Side-by-Side</a> <a href="#">Unified</a>	✓
			+5, -0		

# Gerrit + Jenkins


## Git / Gerrit Work Flow with Jenkins Continuous Integration



Ref: TeamForge Git /Gerrit Integration with Jenkins CI

# Demo – Gerrit + Jenkins

Change-Id:	I20b0284b885d5aa556b7f2a6f2c3bc951a1a7896 
Owner	<a href="#">Shun-Yen Lu</a>
Project	<a href="#">admin/software/monthly</a>
Branch	<a href="#">master</a>
Topic	
Uploaded	2013-11-04 14:30
Updated	2013-11-04 14:31
Status	<b>Merged</b>

★ *Commit Message* [Permalink](#) 

**report: update 2013/10 monthly summary**

Change-Id: I20b0284b885d5aa556b7f2a6f2c3bc951a1a7896  
Signed-off-by: Shun-Yen Lu <shunyen@realtek.com>

Reviewer	Verified	Code-Review
<a href="#">Jenkins</a>	✓	✓

► Included in

► Dependencies

Old Version History:

► Patch Set 1    afd51f35cfe030febd08ef0007412b12cc6deac5

Comments		<a href="#">Expand Recent</a>	<a href="#">Expand All</a>	<a href="#">Collapse All</a>
<b>Jenkins</b>				11-04 14:30
Patch Set 1:				
Build Started <a href="http://172.21.12.140:8080/job/report-checker/3269/">http://172.21.12.140:8080/job/report-checker/3269/</a>				
<b>Jenkins</b>				11-04 14:31
Patch Set 1: Verified; Looks good to me, approved				
<b>Jenkins</b>				11-04 14:31
Change has been successfully merged into the git repository.				

# Outline

- Introduction
- **Gerrit-based Workflow**
- Git/Repo/Gerrit User Guide


# Preparation – Gerrit

- Sign-in Gerrit server with LDAP account
  - <http://gerrit.realtek.com.tw/phoenix/>
- Set Full-Name

<a href="#">All</a>	<a href="#">My</a>	<a href="#">Projects</a>	<a href="#">Groups</a>	<a href="#">Plugins</a>	<a href="#">Documentation</a>	Shun-Yen Lu <shunyen@realtek.com> <a href="#">Settings</a> <a href="#">Sign Out</a>	
<a href="#">Changes</a>	<a href="#">Drafts</a>	<a href="#">Watched Changes</a>	<a href="#">Starred Changes</a>	<a href="#">Draft Comments</a>	status:open		<input type="text" value="Search"/>

## Settings

- [Profile](#)
- [Preferences](#)
- [Watched Projects](#)
- [Contact Information](#)
- [SSH Public Keys](#)
- [HTTP Password](#)
- [Identities](#)
- [Groups](#)

Username	shunyen 
Full Name	Shun-Yen Lu
Preferred Email	<input type="text" value="shunyen@realtek.com"/> <a href="#">Register New Email ...</a>
<input type="button" value="Save Changes"/>	

# Preparation – Gerrit

- Generate SSH-RSA key (or use existed)
  - `$ ssh-keygen (store in ~/.ssh)`
- Provide public keys to Gerrit
  - `$HOME/.ssh/id_rsa.pub`

[All](#) | [My](#) | [Projects](#) | [Groups](#) | [Plugins](#) | [Documentation](#) | Shun-Yen Lu <shunyen@realtek.com> | [Settings](#) | [Sign Out](#)

[Changes](#) | [Drafts](#) | [Watched Changes](#) | [Starred Changes](#) | [Draft Comments](#) | status:open |

## Settings

[Profile](#)  
[Preferences](#)  
[Watched Projects](#)  
[Contact Information](#)  
**[SSH Public Keys](#)**  
[HTTP Password](#)  
[Identities](#)  
[Groups](#)

	Status	Algorithm	Key	Comment
<input type="checkbox"/>		ssh-rsa	AAAAB3NzaC1yc2EAAAABIWAAAQEA5n...MeSX7Tww==	shunyen@RTRD3158
Delete		Add Key ...		

**Server Host Key**  
Fingerprint:  
d9:d6:dc:20:fd:d7:8c:9b:8f:bd:2e:52:29:c9:d6:ee  
Entry for ~/.ssh/known\_hosts:  
[repo.realtek.com]:29418 ssh-rsa AAAAB3NzaC1yc2EAAAABIWAAAIEAzjYcvGyDI.../Eouh3Ps0=

# Preparation – Gerrit

- Test Gerrit connection

- ```
$ ssh -p 20005 gerrit.realtek.com.tw \
gerrit ls-projects
kernel/linux
kernel/system
manifest
system
toolchain
```

- Set SSH user name [optional]

```
# edit $HOME/.ssh/config
Host gerrit.realtek.com.tw
    HostName gerrit.realtek.com.tw
    User shunyen
    Port 20005
```

Preparation – Git & Repo

- Setup user name and email for Git
 - `$ git config --global user.name \`
`"Shun-Yen Lu"`
 - `$ git config --global user.email \`
`shunyen@realtek.com`
- Install repo script
 - Download repo script
 - `$ wget`
`http://commondatastorage.googleapis.com/g`
`it-repo-downloads/repo`
 - Copy repo script to PATH
 - `$ cp repo /usr/bin/`

Initialize Project Directory

- To init a report submission system
 - `$ mkdir mozart_dir && cd mozart_dir`
 - `$ repo init -u
ssh://gerrit.realtek.com.tw:20005/manifest
-m TSB_Mozart.xml`
 - `$ repo sync`
- Manifest for testing
 - `$ repo init -u
ssh://gerrit.realtek.com.tw:20005/test/manifest`

Edit & Commit

- Update repository
 - `$ repo sync`
- Create a **topic branch**
 - `$ cd project-dir (ex: system)`
 - `$ repo start my-branch .`
- Edit report and create a local commit
 - `$ vim some-file.c`
 - `$ git commit -a -s`
 - **NOTE:** new commit is at local repository

Upload Commit

- Upload commits to Gerrit
 - All local commits under **topic branches** can be uploaded to Gerrit for code review
 - `$ repo upload .`
(Like svn ci)
- Merge submitted commit
 - `$ repo sync .`
(Like svn update)

Revise & Update Report

- Situation
 - When uploaded commit is need to be fixed and uploaded again (review/verify fail)
- Edit report and amend original commit
 - `$ vim some-file.c`
 - `$ git commit -a --amend`
- Upload the commit again
 - `$ repo upload .`

Report Review

- Visit Gerrit website to check difference

| | | | | | | | | |
|------------------------------|-------------------------|--------------------------------|-----------------------------|----------------------------|-----------------------|----------------------------|---|-------------------------------------|
| All | My | Differences | Projects | Groups | Plugins | Documentation | Shun-Yen Lu <shunyen@realtek.com> Settings Sign Out | |
| Side-by-Side | Unified | Commit Message | Preferences | Patch Sets | Files | status:merged admin/weekly | | <input type="text" value="Search"/> |

software_weekly_20121130.txt

☒ Reviewed & [next](#)⇒

[Commit Message](#)

[Up to change](#)

| Patch Set Base 1 | | Patch Set 1 | |
|---------------------------------|---|---|----|
| ... skipped 10 common lines ... | | | |
| 11 | ** FFP supporting tools | ** FFP supporting tools | 11 |
| 12 | *** Value examiner | *** Value examiner | 12 |
| 13 | ** CEF support in LTO (embedded CEF config & LTO tuning flow) | ** CEF support in LTO (embedded CEF config & LTO tuning flow) | 13 |
| 14 | * RenderScript study | * RenderScript study | 14 |
| 15 | | | 15 |
| 16 | ----- | ----- | 16 |
| 17 | | | 17 |
| 18 | ''' Shun-Yen Lu ''' | ''' Shun-Yen Lu ''' | 18 |
| 19 | | | 19 |
| 20 | * Toolchain Development | * Toolchain Development | 20 |
| 21 | ** Refining SDK-4.6 & RSDK-1.5 bulder | ** Fixed sqrt instruction generation | 21 |
| 22 | ** Porting MUSL library to MSDK-4.6 | ** Refining SDK-4.6 & RSDK-1.5 bulder | 22 |
| 23 | ** LTO: porting LTO-able libgcc & libstdc++ | ** Porting MUSL library to wrapper | 23 |
| 24 | ** LTO: porting LTO shared libraries | ** Porting LTO libraries | 24 |
| 25 | | | 25 |
| 26 | * Regression & Benchmark | * Regression & Benchmark | 26 |
| 27 | ** Refining DejaPython framework | ** Refining DejaPython framework | 27 |
| 28 | | | 28 |
| 29 | * Android | * Android | 29 |
| 30 | ** Studying Android build flow | ** Studying Android build flow | 30 |
| 31 | ** Building Android system | | |
| 32 | | | 31 |
| 33 | * Software Development | * Software Development | 32 |
| 34 | ** Fixed repo bug in displaying pushed branch name | | |
| 35 | ** VoIP: Gerrit code review system | ** VoIP: Gerrit code review system | 33 |
| 36 | ** DHC: Gerrit code review system | ** DHC: Gerrit code review system | 34 |
| | | ** CN: use git-svn under RD network | 35 |
| | | * Support | 36 |
| | | ** Internal: FPU instruction generation issue | 37 |
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Outline

- Introduction
- Gerrit-based Workflow
- **Git/Repo/Gerrit User Guide**

Init a Local Repository

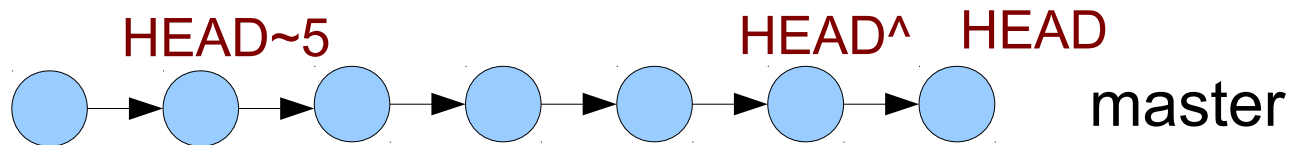
- Steps
 - `$ cd <my_work_dir>`
 - `$ git init`
 - Create a **.git** directory (no sub-directories)
 - `$ git add *`
 - Track all files
 - `$ git commit -m <message>`

Clone a Remote Repository

- Something like "svn checkout"
- Clone local repository
 - `$ git clone /local/path`
- Clone remote repository
 - `$ git clone ssh://user@host:port/path`
 - `$ git clone git://host:port/path`
 - `$ git clone http(s)://host:port/path`
 - `$ git clone ftp://host:port/path`
 - `$ git clone rsync://host:port/path`

Commit

- Every revision (patch) is a **'commit'** in Git
- Each commit has an SHA-1 hash index
 - Ex: dd12d7d505a7e660a3906bdf7d65e4823568fa70
- Special commit names
 - HEAD, ORIG_HEAD, FETCH_HEAD, MERGE_HEAD
 - HEAD^, HEAD^^, HEAD~5
 - "@{yesterday}"



Create a Commit

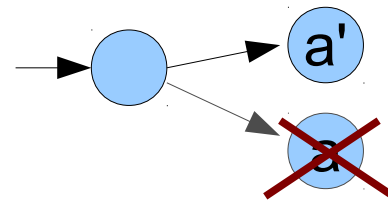
- Check current status/modification
 - `$ git status/diff`
- Add/rename/remove tracked files manually
 - `$ git add/rm/mv/reset [-p] <files>`
 - `$ git commit [-s]`
 - `-s, --sign-off`: add sign-off message
Signed-off-by: Shun-Yen Lu <shunyen@realtek.com>
- Add modified files automatically
 - `$ git commit -a [-s]`
 - `-a, --all`: automatically stage files

Check Previous Commits

- Check commits in current branch
 - `$ git log`
- Check previous commit (patch)
 - `$ git show <commit>[:file]`
- Check difference between commits
 - `$ git diff <commit1> [commit2]`

Change Commits

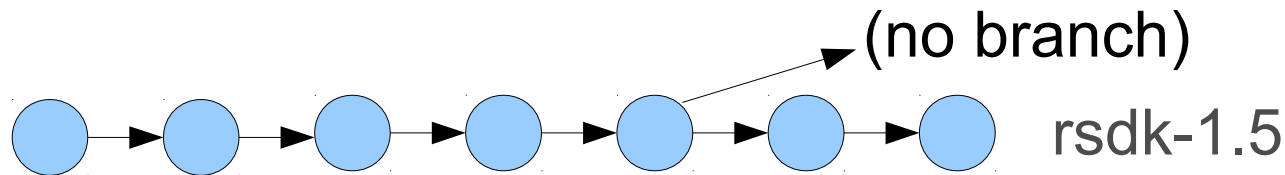
- Change current commit
 - Add/remove/rename untracked files
`$ git add/rm/mv/reset files`
 - Update current commit
`$ git commit --amend`
- Change previous commit
 - Use "git rebase" → introduced later
- **Any change results in different commit ID**
→ DO NOT revise published commits



Return to Previous Commit

- Create a temporal branch

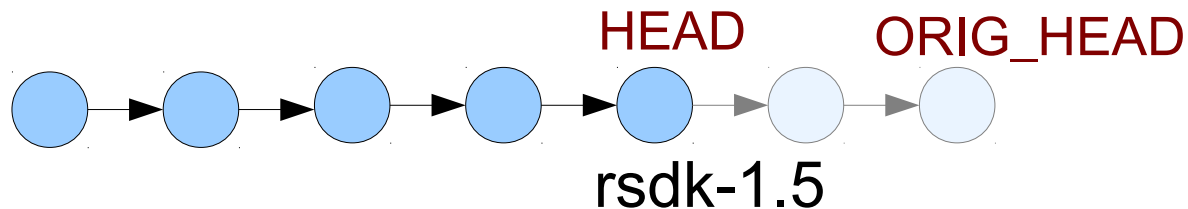
- `$ git checkout <commit_id>`



- Reset HEAD to previous commit

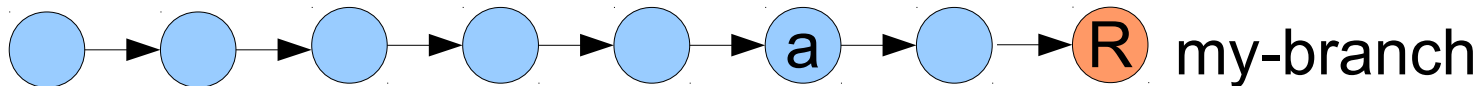
- `$ git reset [--hard] <commit_id>`

- --hard: reset all tracked files



Revert Previous Commit

- Revert an existing commit
 - Different with reset, revert records a new commit
 - `$ git revert <commit_id>`



commit 0538f398de07e19f9b5bfebc7cd7ab1f8984e5e8

Author: Shun-Yen Lu <shunyen@realtek.com>

Date: Mon Sep 26 14:41:47 2011 +0800

Revert "Fix bfd bug in 64-bit address processing"

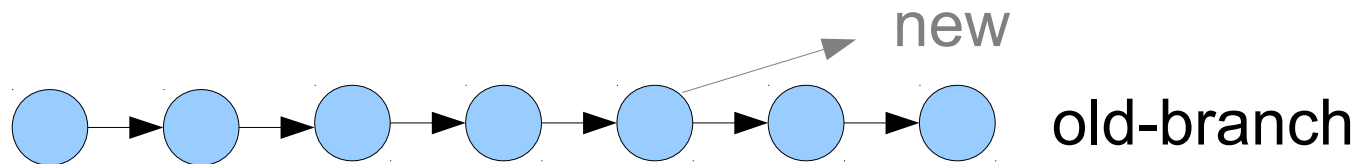
This reverts commit e4ffab3c14004f75ed88fb9a02838ac814e2cc0f.

Branch

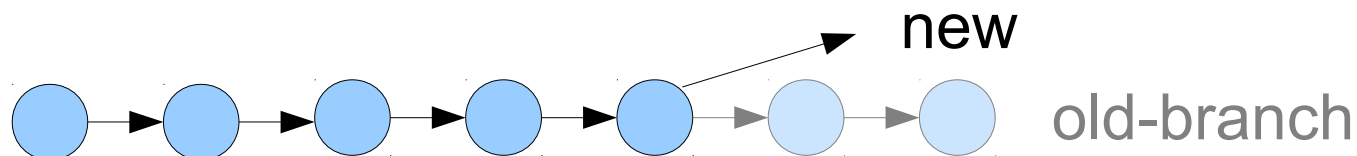
- Git is branch and merge based
 - A totally different concept with revision-based
 - Commit tree keeps branch & merge history
- A branch
 - Point to a commit in commit tree
 - A line of development
 - User can switch between branches
 - Different branches for different development topic

Create a Branch

- Create a new branch from any commit
 - `$ git branch <new> [start-point]`
 - Ex: `$ git branch new HEAD^^`



- Create & switch to a branch
 - `$ git checkout -b <new> [start-point]`



List/Checkout Branch

- List available branch

- `$ git branch`
- `$ git branch [-a/-r] (all/remote)`

```
* release
remotes/m/master -> origin/rsdk-4.4
remotes/origin/gcc-4.4
remotes/origin/gcc-4.5
remotes/origin/msdk-4.4
remotes/origin/rsdk-4.4
```

- Checkout/switch-to a branch

- `$ git checkout <branch-name>`

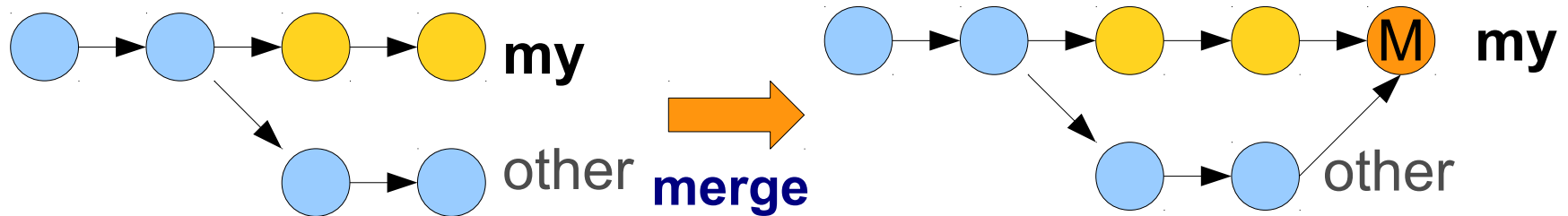
Basic Branch Operation

- Delete/rename a branch
 - `$ git branch -d <branch>`
 - `$ git branch -m <old> <new>`
- Show commits of a branch
 - `$ git log <branch>`
- Checkout specified path/file of a branch
 - `$ git checkout <branch> -- <path>`
- Show a specified path/file of a branch
 - `$ git show <branch>:<path>`

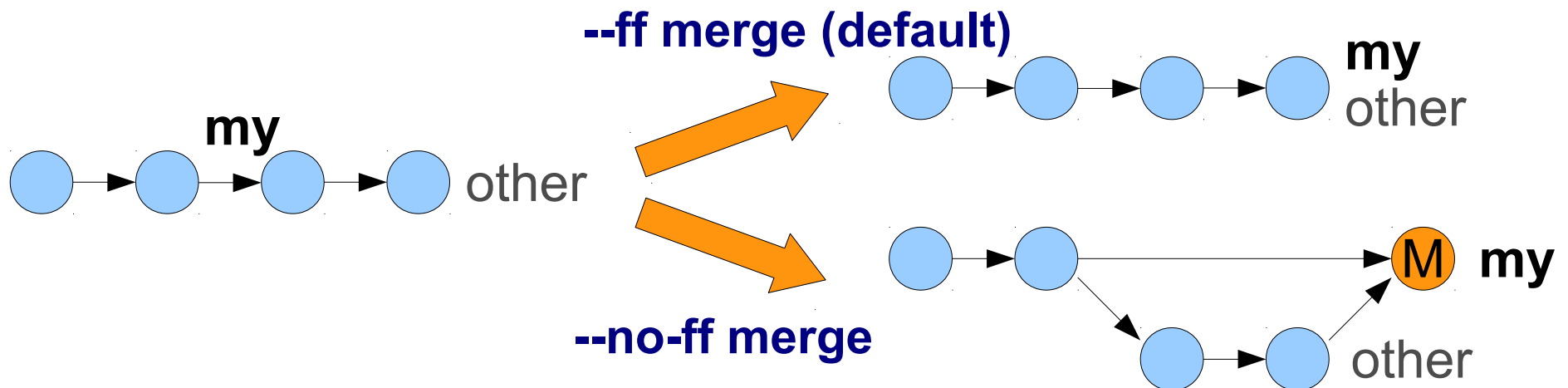
Merge Branch

- Merging branch may create a new commit

- `$ git merge <commit1> [commit2 ...]`



- Fast-forward/non-fast-forward merge

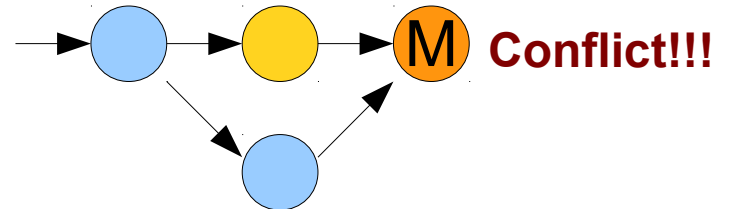


Resolve Conflicts

- Check conflicted files

- `$ git status`

```
# Unmerged paths:  
# (use "git add/rm <file>..." as appropriate to mark resolution)  
#  
#      both modified:   testfile
```



- Resolve conflict files

```
<<<<<< yours:testfile  
Conflict resolution is hard;  
let's go shopping.  
=====  
Git makes conflict resolution easy.  
>>>>>> theirs:testfile
```

Resolve Conflicts (cont'd)

- Add resolved file
 - `$ git add testfile`
- Commit again
 - `$ git commit`

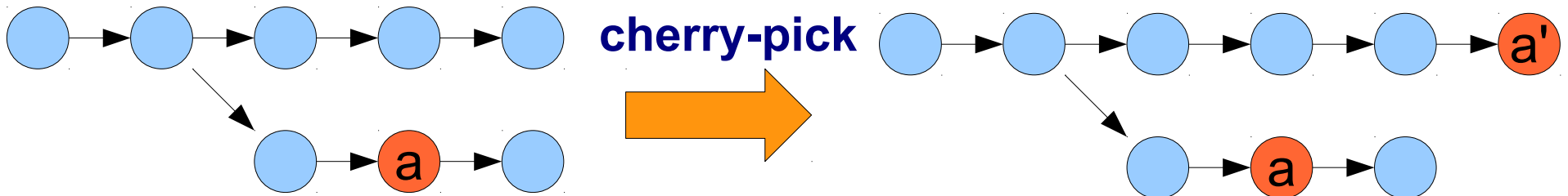
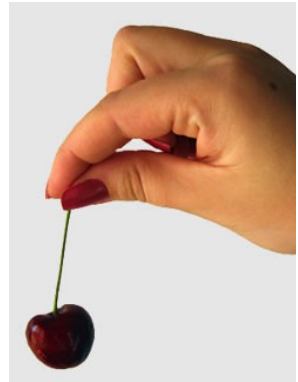
Merge branch 'master' of /remote/path

Conflicts:
testfile

```
# Changes to be committed:
#
#   modified:   testfile
#
```

Cherry-Pick

- Apply a single commit of git commit tree
 - `$ git cherry-pick <commit>`
 - Note: lead to different commit id
- Quite useful for applying a specified feature in another branch

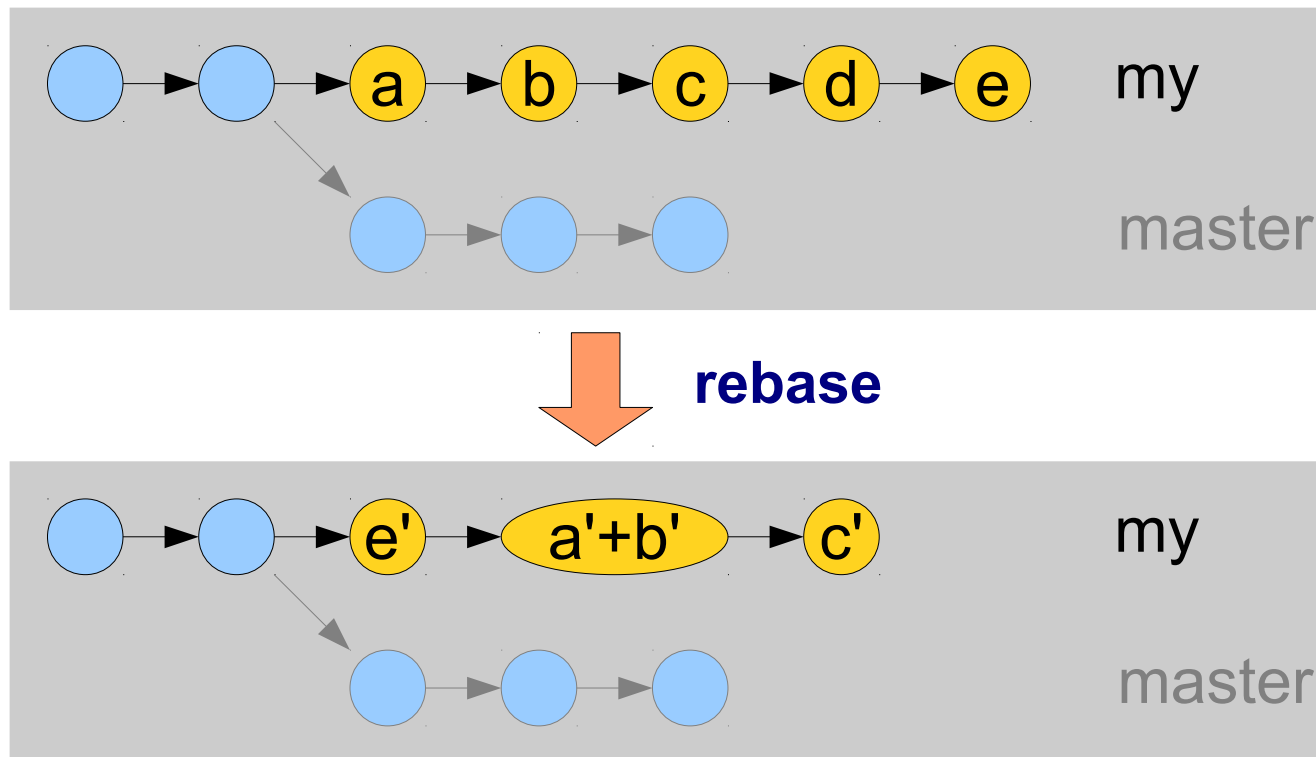


Rebase

- A very powerful command
- Forward-port commits to a updated upstream
 - `$ git [-i] rebase <upstream> [branch]`
 `[--onto newbase]`
 - -i, --interactive: interactive mode
- Major usage
 - Reorganize commits
 - Update upstream
 - Copy/paste commits

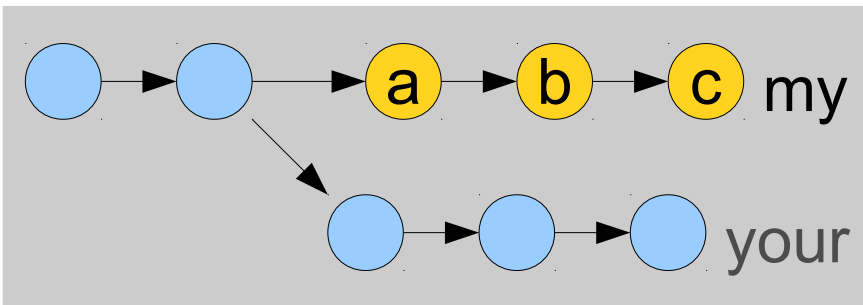
Rebase – Reorganize Commits

- Make commits and refine them later
 - Feel free to save each development state

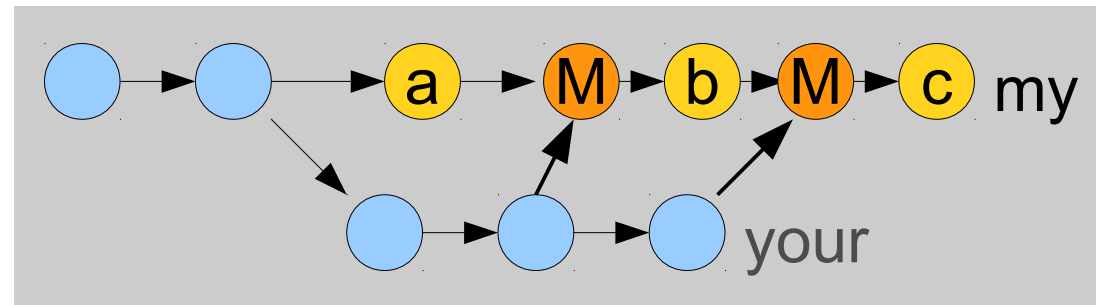


Rebase – Update Upstream

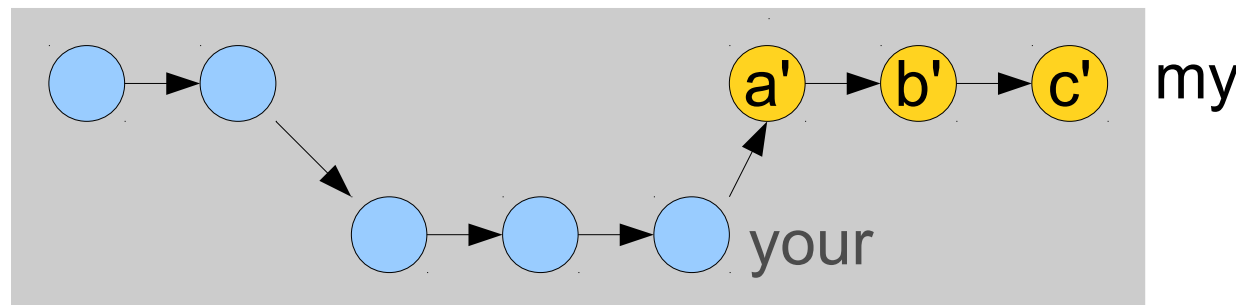
- Update branch upstream as remote branch



or



rebase

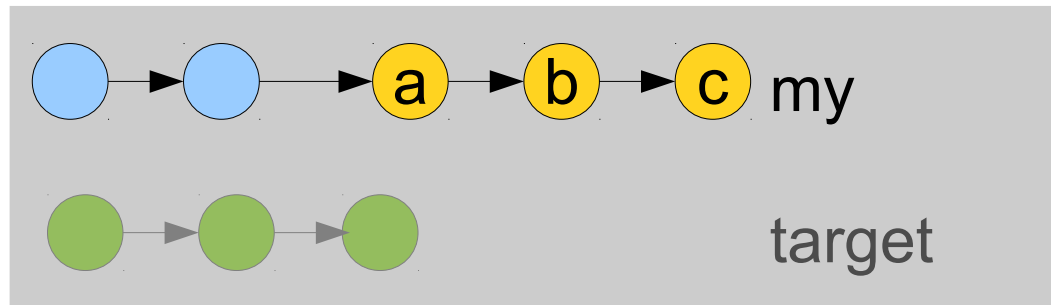


rebase

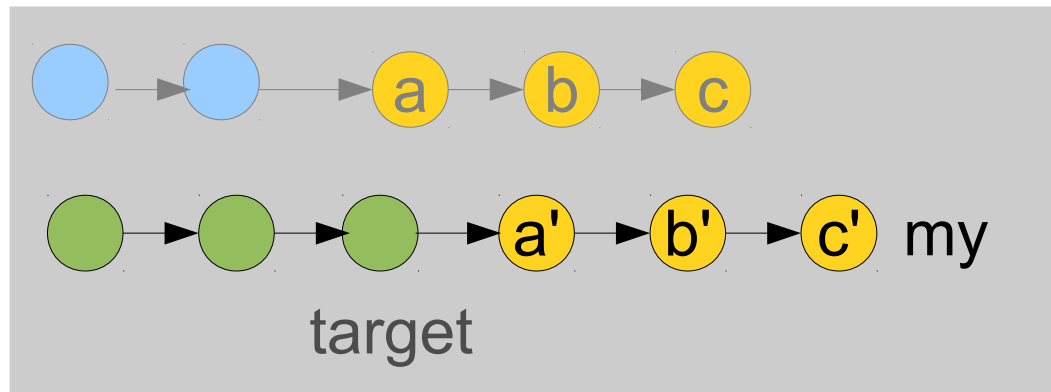
Lots of merge commits!

Rebase – Copy/Paste Commits

- Reuse previous works
 - What's yours is mine



 **rebase**



Repository Management

- Add a repository

- `$ git remote add <name> <url>`

- Example

- `$ git remote add official \`
`git://gcc.gnu.org/git/gcc.git`

- Remove a repository

- `$ git remote rm <name>`

- Show available repository

- `$ git remote show <name>`

Fetch Repository Branches

- Fetch branches
 - `$ git fetch <remote>`
 - Example
 - `$ git fetch official`
 - `$ git branch -r`

```
official/gcc-4_4-branch  
official/gcc-4_5-branch  
official/master  
origin/rsdk-4.1  
origin/rsdk-4.4  
origin/rsdk-4.5
```

Push/Pull Commits

- Push local branch to remote
 - Something like "svn commit"
 - `$ git push` (permission required)
- Pull remote branch
 - Something like "svn update"
 - `$ git pull`
- May have conflicts to resolve
- Repo uses ``repo sync/upload`` instead

Tag

- Tag is low-cost at Git (as branch)
- Add/delete tag
 - `$ git tag <name> [commit]`
 - `$ git tag -d <name>`
- Push a tag to remote repository
 - `$ git push <remote> tag <name>`
- Delete remote tag
 - `$ git push <remote> :refs/tags/<name>`



Other Useful Commands

- Clean untracked files
 - `$ git clean -f -d`
- Grep all tracked files
 - `$ git grep <pattern>`
- Get/rescue recently used commits
 - `$ git reflog`
- Binary search buggy commit
 - `$ git bisect`

Gitk – Git Repository Browser

The screenshot displays the Gitk repository browser interface. The top window shows a commit history with branches like `rsdk-1.5.6`, `remotes/origin/rsdk-1.5-rel`, and `rsdk-1.5.5p4`. The bottom window shows a detailed view of a commit with SHA1 ID `bebebedd414ca863aedcd7a8e6445d13f873396c`. The commit message is "Fix objdump bug for 3081 EXT-RI instruction". The author is Shun-Yen Lu, and the committer is also Shun-Yen Lu. The commit is part of the `rsdk-1.5` branch.

Commit history (top window):

- `rsdk-1.5.6` Merge branch 'release-rsdk-1.5.6' into rsdk-1.5-rel
- `remotes/origin/release-rsdk-1.5.6` Let external opcode support X86_64 executable
- `rsdk-1.5.5p4` Merge remote-tracking branch 'origin/hotfix-bdsl' into rsdk-1.5-rel
- Automatically drop opcodes not belongs to basic ISA (I1 - I32R2)
- Fix bug - expand 'li rx, symbol' only for BFD_RELOC_UNUSED
- Fix bug in displaying opcode information
- Fix bug in UDI opcode processing
- Remove converter.c
- Bug fix - remove redundant codes for 3081
- Merge remote-tracking branch 'hotfix-bdsl' into rsdk-1.5
- `remotes/origin/hotfix-bdsl` Disallow filling instruction to delay slot for mips16 when -ffix-bdsl is enable
- Merge "Add CEF support" into rsdk-1.5
- Add CEF support
- Fix signed immediate processing for mips16 arg 'U'
- Merge branch 'feature-lui' into rsdk-1.5
- Fix 3081 objdump bug in PC related address calculation
- `remotes/origin/feature-lui` Add 'li' MACRO to support 32-bit immediate & symbol for 3081
- Process extended-only instruction in append_insn
- Fix objdump bug for 3081 EXT-RI instruction
- Change setui as lui
- Merge remote-tracking branch 'origin/feature-kmm' into rsdk-1.5
- Add objdump support for extended-only mips16 instruction
- Add setui instruction
- Fix syntax for filling jump delay slot
- Merge remote-tracking branch 'origin/hotfix-load-use' into merge-hotfix
- `rsdk-1.5.5p3` Merge remote-tracking branch 'origin/hotfix-load-use' into rel
- Simplify source code of load-use detection
- Add warning for possible load-use in branch delay slot

Commit details (bottom window):

SHA1 ID: `bebebedd414ca863aedcd7a8e6445d13f873396c` Row: 19 / 20194

Find: next prev commit containing: Search

Diff Old version New version Lines of context: 3 Ignore space change Line diff

Author: Shun-Yen Lu <shunyen@realtek.com> 2011-06-29 14:17:23
Committer: Shun-Yen Lu <shunyen@realtek.com> 2011-06-29 14:23:18
Parent: `c628fb0d3beff40b8cc9793bfa41e444ee7caace` (Merge remote-tracking branch 'origin/feature-kmm' into rsdk-1.5)
Child: `a443901f65add52fe9656254218a69c68b304390` (Process extended-only instruction in append_insn)
Branches: `remotes/m/rsdk-1.5`, `remotes/origin/feature-mingw`, `remotes/origin/hotfix-objdump`, `remotes/origin/release-rsdk-1.5.6`
Follows: `binutils-2.19.92`, `rsdk-1.5.5p2`
Precedes: `rsdk-1.5.6`

Fix objdump bug for 3081 EXT-RI instruction

objdump doesn't take the exactly the bits it need for calculating immediate value so we have to clean the bits used to identify extended-only EXT-RI instruction (lui).

Commit log (right window):

| Author | Date |
|-------------------------------------|---------------------|
| Shun-Yen Lu <shunyen@realtek.com> | 2011-07-14 17:25:07 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-07-07 15:46:34 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-07-11 13:47:40 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-07-07 13:14:44 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-07-05 16:14:28 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-07-07 13:23:18 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-07-07 12:16:11 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-07-07 12:22:57 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-07-05 10:03:06 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-07-11 10:50:16 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-07-08 17:09:34 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-07-08 11:41:00 |
| Chung-Kai Chen <ckchen@realtek.com> | 2011-07-01 15:29:47 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-07-01 12:33:24 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-06-30 18:07:42 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-06-30 14:26:24 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-06-22 17:22:38 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-06-29 11:34:28 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-06-29 14:17:23 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-06-23 16:13:23 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-06-16 17:06:46 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-06-09 18:20:32 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-06-08 15:54:47 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-06-08 16:01:55 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-05-20 17:12:06 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-05-20 16:18:02 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-05-13 16:28:43 |
| Shun-Yen Lu <shunyen@realtek.com> | 2011-05-10 12:07:24 |

Tig – Ncurses-Based Browser

```
Terminal — ttys007 — 157x43 — %1
ssh  ssh  ssh  tig  bash
2011-07-14 17:25 Shun-Yen Lu M [rsdk-1.5.6] [HEAD] [origin/rsdk-1.5-rel] Merge branch 'release-rsdk-1.5.6' into rsdk-1.5-rel
2011-07-07 15:46 Shun-Yen Lu o [origin/release-rsdk-1.5.6] Let external opcode support X86_64 executable
2011-07-07 13:14 Shun-Yen Lu o Automatically drop opcodes not belongs to basic ISA (I1 - I32R2)
2011-07-05 16:14 Shun-Yen Lu o Fix bug - expand `li rx, symbol' only for BFD_RELOC_UNUSED
2011-07-07 13:23 Shun-Yen Lu o Fix bug in displaying opcode information
2011-07-07 12:16 Shun-Yen Lu o Fix bug in UDI opcode processing
2011-07-07 12:22 Shun-Yen Lu o Remove converter.c
2011-07-05 10:03 Shun-Yen Lu o Bug fix - remove redundant codes for 3081
2011-07-11 10:50 Shun-Yen Lu M Merge remote-tracking branch 'hotfix-bdsl' into rsdk-1.5
2011-07-08 11:41 Shun-Yen Lu M Merge "Add CEF support" into rsdk-1.5
2011-07-01 15:29 Chung-Kai Chen | o Add CEF support
2011-07-01 12:33 Shun-Yen Lu | o Fix signed immediate processing for mips16 arg `U'
2011-06-30 18:07 Shun-Yen Lu M Merge branch 'feature-lui' into rsdk-1.5
[main] 7d42758cbecfec3c9e469c10f3c30b5160af79 - commit 8 of 20194 (0%)
commit 7d42758cbecfec3c9e469c10f3c30b5160af79
Refs: v2.19.92-91-g7d42758
Author: Shun-Yen Lu <shunyen@realtek.com>
AuthorDate: Tue Jul 5 10:03:06 2011 +0800
Commit: Shun-Yen Lu <shunyen@realtek.com>
CommitDate: Mon Jul 11 11:20:31 2011 +0800

Bug fix - remove redundant codes for 3081

I forget to remove them, and these codes cause segmentation fault
under MAC OS X & Ubuntu with GCC -O2 option.

Change-Id: Ice5dfb3248ac28bcd98e44a8a0806a3d4216573
Signed-off-by: Shun-Yen Lu <shunyen@realtek.com>
---
gas/config/tc-mips.c | 3 ---
1 files changed, 0 insertions(+), 3 deletions(-)
diff --git a/gas/config/tc-mips.c b/gas/config/tc-mips.c
index 73dcc32..7437cff 100644
--- a/gas/config/tc-mips.c
+++ b/gas/config/tc-mips.c
@@ -4392,9 +4392,6 @@ mips16_macro_build (expressionS *ep, const char *name, const char *fmt,
{
    gas_assert (ep != NULL);

    if (ISA_IS_MIPS16R) {
[diff] 7d42758cbecfec3c9e469c10f3c30b5160af79 - line 1 of 32 (84%)
Cannot move beyond the first line
```

Start a Repo Project

- Init a repo project

- `$ repo init -u url [-b branch] [-m manifest]`

- Example

- `$ repo init -b froyo -u`
`git://android_url/platform/manifest.git`

- Switch to an existent manifest

- `$ repo init [-b branch] [-m manifest]`

- Example

Manifests Repository

- Manifests are managed by a Git repository

- To check available manifest branch

```
$ cd .repo/manifests
```

```
$ git branch -r
```

.repo/manifests

mater

| | | |
|-------------|-----------|-----------|
| default.xml | file1.xml | file2.xml |
| file3.xml | file4.xml | file5.xml |

branch-1

| | | |
|-------------|-----------|-----------|
| default.xml | fileA.xml | fileB.xml |
| fileC.xml | fileD.xml | fileE.xml |

branch-2

| | | |
|-------------|------------|------------|
| default.xml | filei.xml | fileii.xml |
| fileiii.xml | filevi.xml | filev.xml |

Android Repo Manifests

- `$ repo init -m <file.xml>`
 - default.xml
 - froyo-20100623.xml
 - froyo-20100629.xml
 - froyo-20100702.xml
 - froyo-20100715.xml
 - froyo-20100728.xml
 - froyo-20100729.xml
 - froyo-20100809.xml
 - froyo-20100817.xml
 - froyo-20100927.xml
 - froyo-20101201.xml
 - froyo-20110105.xml
 - froyo-20110114.xml
 - froyo-20110121.xml
 - froyo-FRF01B.xml
 - froyo-FRF13.xml
 - froyo-FRF19.xml
 - froyo-FRF23B.xml
 - froyo-FRF29B.xml
 - froyo-FRF35.xml

Android Repo Manifest Branch

- `$ repo init -b <branch>`
 - origin/cupcake
 - origin/cupcake-release
 - origin/froyo
 - origin/froyo-plus-aosp
 - origin/gingerbread
 - origin/master
 - origin/android-1.5
 - origin/android-1.5r2
 - origin/android-1.5r3
 - origin/android-1.5r4
 - origin/android-sdk-1.5-pre
 - origin/android-sdk-1.5_r1
 - origin/android-sdk-1.5_r3
 - origin/android-sdk-1.6-docs_r1
 - origin/android-sdk-1.6_r1
 - origin/android-sdk-1.6_r2
 - origin/android-sdk-tools_r2
 - origin/android-sdk-tools_r3
 - origin/android-sdk-tools_r4
 - origin/android-sdk-tools_r5

Work Directories

- Repo repository (auto-updated)
 - `.repo/repo/.git`
- Manifest repository
 - `.repo/manifests/.git`
→ provide current manifest `.repo/manifest.xml`
- Project repositories
 - `<project_path>/.git`
→ link to `.repo/projects/<project_path>.git`

Example – Android Repositories

```
.repo/repo/.git  
.repo/manifests/.git  
hardware/ril/.git  
hardware/msm7k/.git  
hardware/broadcom/wlan/.git  
hardware/ti/wlan/.git  
hardware/ti/omap3/.git  
hardware/libhardware_legacy/.git  
hardware/libhardware/.git  
vendor/sample/.git  
vendor/pv-open/.git  
vendor/aosp/.git  
vendor/htc/prebuilt-open/.git  
vendor/htc/sapphire-open/.git  
vendor/htc/dream-open/.git  
vendor/htc/common-open/.git  
...
```

Repo Sync

- Sync remote repositories
 - `$ repo sync`
- Sync without fetching remote repository
 - `$ repo sync -l`
 - Use local repositories `.repo/project.git`
- Sync and detach projects to manifest revision
 - `$ repo sync -d`
 - Remember storing current works to a branch first

Repo Info

- Check repositories information
 - `$ repo info`

```
Manifest repository: ssh://gerrit.realtek.com.tw:20005/manifest
Manifest merge branch: refs/heads/master
Manifest file: manifests/default.xml
Default branch: tsb_mozart
Manifest groups: all,-notdefault
-----
Project: AV_FW
Mount path: /Volumes/Data/mozart/SQA_DailyBuild/AV_FW
Current revision: tsb_mozart
Local Branches: 0
-----
Project: bootcode
Mount path: /Volumes/Data/mozart/bootcode
Current revision: tsb_mozart
Local Branches: 0
-----
...
```

Repo Manifest

- Manifest inspection utility
 - Dump current manifest file (.repo/manifest.xml)
`$ repo manifest -o <name.xml>`
 - Dump current HEADs in the project
`$ repo manifest -o <name.xml> -r`
- Use customized manifest
 - Move manifest to .repo/manifests
 - `$ repo init -m <name.xml>`
 - `$ repo sync -d`

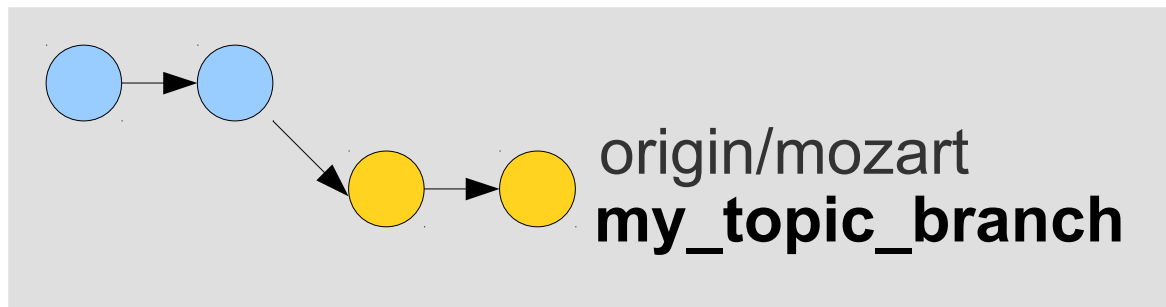
Repo Start

- Topic branch
 - A branch for a specific work
- Start a topic branch
 - `$ repo start <branch_name> [proj_list]`
Like `$ git checkout -b <name> <remote>/<revision>`
 - Work as general Git branch



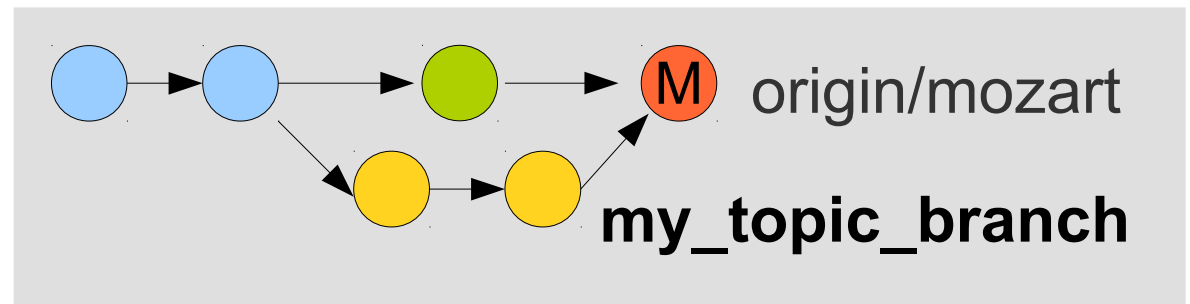
Repo Upload

- Push commits to centralized repository
 - `$ repo upload [proj_list]`



Fast-forward merge
(default)

Non-fast-forward merge



Check Started Topic Branches

- Check where topic branch will be merged into

- `$ cat .git/config`

```
[branch "my_topic_branch"]  
    remote = origin  
    merge = rsdk-1.5  
[branch "fix"]  
    remote = origin  
    merge = hotfix-rsdk-1.5.6p1
```

- `$ git config -l`

```
branch.my_topic_branch.remote=origin  
branch.my_topic_branch.merge=rsdk-1.5  
branch.fix.remote=origin  
branch.fix.merge=hotfix-rsdk-1.5.6p1
```

Repo forall

- Perform operation for specific projects list
 - `$ repo forall [proj_list] -c command`
 - Environment variables
 - `REPO_PROJECT`, `REPO_PATH`, `REPO_REMOTE`,
`REPO_LREV`, `REPO_RREV`
- Example – check all project revisions (branch)
`$ repo forall -pc 'echo $REPO_RREV'`
- Example – reset & clean all repositories
`$ repo forall -c git reset -hard`
`$ repo forall -c git clean -f -d`

Basic Repo Commands

- Help!
 - `$ repo help [command]`
- List repositories
 - `$ repo list`
- Check repository status
 - `$ repo status [proj_list]`
 - `$ repo branch`
- Prune merged topic branch
 - `$ repo prune [proj_list]`

Gerrit Admin Interface

All | My | Admin | Documentation

Shun-Yen Lu <shunyen@realtek.com>

[Groups](#) [Projects](#)

status:open

Projects Project (Git repository) & groups management

| Project Name | Project Description |
|-------------------------------------|------------------------|
| ► All-Projects | Default Access Control |
| admin/report | ADMIN report |
| admin/weekly-report | |
| cef/cef | CEF framework |
| cef/client | CEF client |
| cef/libui | CEF libui |
| cef/manifest | CEF manifest |
| debugger/debugger | RSDK debugger |
| debugger/gdb | RSDK gdb |
| debugger/insight | RSDK insight |
| debugger/manifest | DEBUGGER manifest |
| gitosis-admin | Gitosis Admin |

User Permission

- System groups
 - Administrators
 - Anonymous users
 - Registered users
 - Project owners
- Account groups
 - Customized group for permission control
 - Allow hierarchical groups

Project Permission

- Categories
 - Owner
 - Verified, Code Review, Submit
 - Read access, upload access, upload merge access
 - Push tag, push branch
 - Forge Identity
- Allow hierarchy projects
- Can specify access permission by branch

Code Review Interface

Review my/all commits

| | | | | | | | |
|-------------------------|------------------------|---------------------------------|---------------------------------|---|--|-------------------------------------|--|
| All | My | Admin | Documentation | Shun-Yen Lu <shunyen@realtek.com> Settings Sign Out | | | |
| Changes | Drafts | Watched Changes | Starred Changes | status:open | | <input type="text" value="Search"/> | |

Code Review Dashboard for Shun-Yen Lu


| | ID | Subject | Owner | Project | Branch | Updated | V | R |
|------------------------|-----------|--------------------------------|-------------|--------------|----------|---------|---|-----------|
| Started by Shun-Yen Lu | | | | | | | | |
| ★ | I981c8b24 | Fix bug in processing multilib | Shun-Yen Lu | rsdk/script | rsdk-1.5 | 7:02 PM | | ✓ Tony Wu |
| ★ | Idbd1e40b | Fixed name for tmpdir | Shun-Yen Lu | rsdk/script | rsdk-1.5 | 7:02 PM | | ✓ Tony Wu |
| ★ | Icd01d1a0 | Fix bug in processing multilib | Shun-Yen Lu | rsdk/library | rsdk-1.5 | 7:01 PM | | ✓ Tony Wu |
| ★ | I4767dcf8 | Fix bug in processing multilib | Shun-Yen Lu | rsdk/uclibc | rsdk-1.5 | 7:01 PM | | ✓ Tony Wu |

| | | | | | | | | |
|---------------------------------|--|--|--|--|--|--|--|--|
| Review Requests for Shun-Yen Lu | | | | | | | | |
| (None) | | | | | | | | |

| | | | | | | | | |
|-----------------|-----------|--|-------------|---------------|---------------------|--------|---------------|---------------|
| Recently closed | | | | | | | | |
| ★ | I5685401e | Update changelog for rsdk-1.3.7p1 (MERGED) | Shun-Yen Lu | rsdk/document | hotfix-rsdk-1.3.7p1 | Jul 26 | ✓ Shun-Yen Lu | ✓ Shun-Yen Lu |
| ★ | I97663dd9 | Bump GCC version to rsdk-1.3.7p1 (MERGED) | Shun-Yen Lu | rsdk/gcc | hotfix-rsdk-1.3.7p1 | Jul 26 | ✓ Shun-Yen Lu | ✓ Tony Wu |
| ★ | I981c8b24 | Fix bug in processing multilib (ABANDONED) | Shun-Yen Lu | rsdk/script | feature-mingw | Jul 26 | | |
| ★ | Ib981bdaf | Bump version to rsdk-1.5.6p1 (MERGED) | Shun-Yen Lu | rsdk/builder | hotfix-rsdk-1.5.6p1 | Jul 26 | ✓ Shun-Yen Lu | ✓ Shun-Yen Lu |
| ★ | I8a4d3eb3 | Set 5281 as default architecture (MERGED) | Shun-Yen Lu | rsdk/binutils | hotfix-objdump | Jul 26 | ✓ Shun-Yen Lu | ✓ Tony Wu |

Merged Commit

☆ Change Ibe2411bc: Disable -mgpopt when 3081 is used

| | |
|------------|---|
| Change-Id: | Ibe2411bcc1fc5e9c4163280969ea41e580b906f2  |
| Owner | Shun-Yen Lu |
| Project | rsdk/gcc |
| Branch | feature-kmm |
| Topic | |
| Uploaded | Apr 21, 2011 7:54 PM |
| Updated | Apr 25, 2011 9:25 AM |
| Status | Merged |

Disable -mgpopt when 3081 is used

Change-Id: Ibe2411bcc1fc5e9c4163280969ea41e580b906f2
Signed-off-by: Shun-Yen Lu <shunyen@realtek.com>

[Permalink](#) 

Pass review & verify,
merge into repo repository

| Reviewer | Verified | Code Review | |
|-----------------------------|----------|-------------|---|
| Shun-Yen Lu | ✓ | +1 | Verified; Looks good to me, but someone else must approve |
| Tony Wu | | ✓ | Looks good to me, approved |

► Included in

► Dependencies

Old Version History:


A commit is a `Patch Set'

- Patch Set 1 f20d3fcedb7ffbade0ce1d3eada62d9478041ccc
- Patch Set 2 4549ba93f619a40cabe47016111f6e8c7766adb1

| Comments | Expand Recent | Expand All | Collapse All |
|---|-------------------------------|----------------------------|------------------------------|
| Shun-Yen Lu Patch Set 1: Verified; Looks good to me, but someone else must approve | | | Apr 22 |
| Tony Wu Patch Set 1: Looks good to me, approved | | | Apr 22 |
| Shun-Yen Lu Uploaded patch set 2. | | | Apr 25 |
| Tony Wu Patch Set 2: Looks good to me, approved | | | Apr 25 |
| Shun-Yen Lu Patch Set 2: Verified; Looks good to me, but someone else must approve | | | Apr 25 |
| Shun-Yen Lu | | | Apr 25 |
| Change has been successfully merged into the git repository. | | | |

Abandoned Commit

☆ Change Ie2a313cd: Fix LOAD-USE error in strlen.S

| | |
|------------|---|
| Change-Id: | Ie2a313cdac13fd28472c2969526bc3a6f282a823  |
| Owner | Shun-Yen Lu |
| Project | rsdk/newlib |
| Branch | rsdk-4.4 |
| Topic | |
| Uploaded | Mar 9, 2011 10:51 AM |
| Updated | Mar 11, 2011 5:27 PM |
| Status | Abandoned |

Fix LOAD-USE error in strlen.S

Change-Id: Ie2a313cdac13fd28472c2969526bc3a6f282a823
Signed-off-by: Shun-Yen Lu <shunyen@realtek.com>

[Permalink](#) 

Review fails & abandoned the commit

| Reviewer | Verified | Code Review |
|-----------------------------|----------|--|
| Shun-Yen Lu | | +1 Looks good to me, but someone else must approve |
| Tony Wu | | ✗ Do not submit |

► Dependencies

Old Version History:

► Patch Set 1 bd94d1e2b2d28d9e2e543170af5aca405cf5852c

| Comments | Expand Recent | Expand All | Collapse All |
|--|-------------------------------|----------------------------|------------------------------|
| Shun-Yen Lu Patch Set 1: Looks good to me, but someone else must approve Hit by ... | | | Mar 9 |
| Tony Wu Patch Set 1: Do not submit If this block is in noreorder block, then, a ... | | | Mar 11 |
| Shun-Yen Lu | | | Mar 11 |
| Patch Set 1: Abandoned | | | |
| Need further revision. merge with memcpy issue | | | |

Change-Ids

- Users may want to refine their commits when code review fails
 - but commit ID changes when
 - `$ git commit -amend`
 - `$ git rebase`
- Gerrit uses Change-Id to identify commits

```
commit 057fc5842d3f22a53df3cd8183e50012d636741c
Merge: d2eefd7 24602fa
Author: Shun-Yen Lu <shunyen@realtek.com>
Date: Thu Jul 14 17:29:25 2011 +0800
```

```
Merge branch 'release-rsdk-1.5.6' into rsdk-1.5
```

```
Change-Id: I4a9ff9f77cf9d251d4a4f29a858f88874870c534
```

Revise Uploaded Commits

- Same Change-Id but different commit Id
 - Look as a updated Patch Set (commit)
- Example workflow
 - `$ repo upload [proj_list]` → 1st patch-set
 - `$ git commit --amend` or `rebase` → revise
 - `$ repo upload [proj_list]` → 2nd patch-set
- Note: cannot revise merged/abandoned commits

On-line Resources

- [Git User's Manual](#)
- [Git Magic](#)
- [Git for the lazy](#)
- [Git Pro](#)
- [Why Git is Better than X](#)
- [Using Git and Repo](#)
- [Gerrit Code Review for Git](#)
- [A successful Git branching model](#)