

The Build Process for Overture

Joey Coleman

28 August 2012 / 10th International Workshop
Overture/VDM

Outline

- 1 Git
 - Code Management with Git
 - Local file layout
 - Branch structure
 - Social process
- 2 Maven
 - Building with Maven
- 3 Build Server

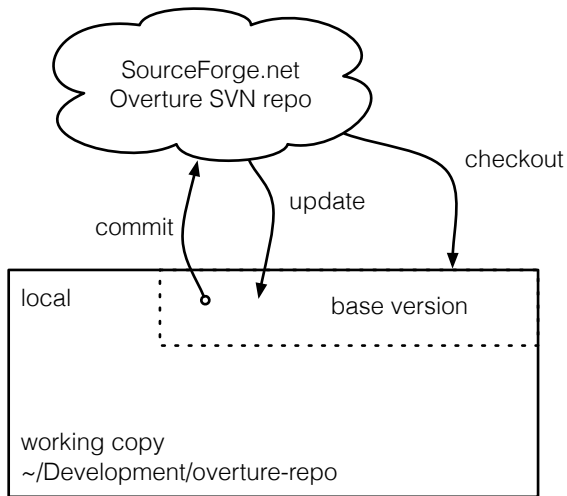
Code Management with Git

- `http://git-scm.com/`
 - PDF of S. Chacon's *Pro Git* available there
- Distributed Version Control System
- Different than Subversion!
- Better for distributed development

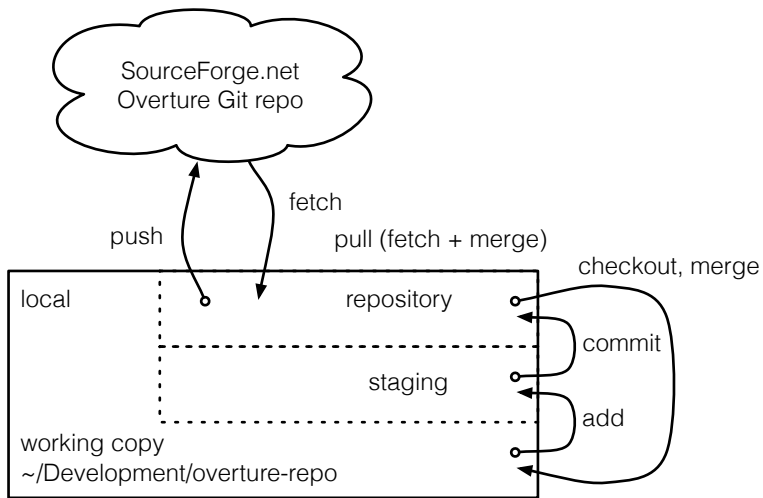
Why Git?

- Local commits, local history
- Branching is cheap
- Merging is not difficult
- Social: freedom to play

Subversion Model



Git Model



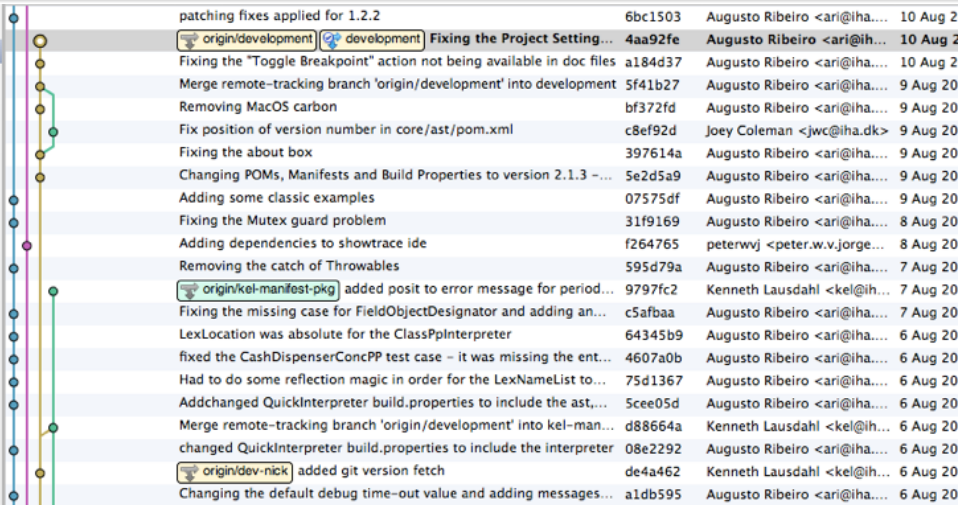
Git Branch Structure Example

The screenshot shows the Atlassian IDE's Git interface for the 'overture-tracking' repository. The interface is divided into several sections:

- FILE STATUS:** Shows 'Working Copy' and 'BRANCHES' including 'development', 'master', and 'Overture-DESTECs'. It also lists 'TAGS' (Release-1.1.1, Release-1.2.0, Release-1.2.1) and 'REMOTES' (origin, astv2, etc.).
- Commit History Table:**

Description	Commit	Author	Date
patching fixes applied for 1.2.2	6bc1503	Augusto Ribeiro <ari@iha...	10 Aug 2012 12:59
Fixing the "Toggle Breakpoint" action not being available in doc files	4aa92fe	Augusto Ribeiro <ari@iha...	10 Aug 2012 12:35
Fixing the "Toggle Breakpoint" action not being available in doc files	a184d37	Augusto Ribeiro <ari@iha...	10 Aug 2012 12:26
Merge remote-tracking branch 'origin/development' into development	5f41b27	Augusto Ribeiro <ari@iha...	9 Aug 2012 15:35
Removing MacOS carbon	bf372fd	Augusto Ribeiro <ari@iha...	9 Aug 2012 15:35
Fix position of version number in core/ast/pom.xml	c8ef92d	Joey Coleman <jwc@iha.dk>	9 Aug 2012 15:02
Fixing the about box	397614a	Augusto Ribeiro <ari@iha...	9 Aug 2012 14:50
Changing POMs, Manifests and Build Properties to version 2.1.3	5e2d5a9	Augusto Ribeiro <ari@iha...	9 Aug 2012 13:37
Adding some classic examples	07575df	Augusto Ribeiro <ari@iha...	9 Aug 2012 10:17
Fixing the Mutex guard problem	31f9169	Augusto Ribeiro <ari@iha...	8 Aug 2012 15:23
Adding dependencies to showtrace ide	f264765	peterwj <peter.w.v.jorge...	8 Aug 2012 13:30
Removing the catch of Throwables	595d79a	Augusto Ribeiro <ari@iha...	7 Aug 2012 15:34
added posit to error message for period...	9797fc2	Kenneth Lausdahl <keli@ih...	7 Aug 2012 12:08
Fixing the missing case for FieldObjectDesignator and adding an...	c5afbaa	Augusto Ribeiro <ari@iha...	7 Aug 2012 11:24
LexLocation was absolute for the ClassPpInterpreter	64345b9	Augusto Ribeiro <ari@iha...	6 Aug 2012 16:41
fixed the CashDispenserConcPP test case - it was missing the ent...	4607a0b	Augusto Ribeiro <ari@iha...	6 Aug 2012 16:35
Had to do some reflection magic in order for the LexNameList to...	75d1367	Augusto Ribeiro <ari@iha...	6 Aug 2012 16:31
Addchanged QuickInterpreter build.properties to include the ast...	5ce005d	Augusto Ribeiro <ari@iha...	6 Aug 2012 14:56
Merge remote-tracking branch 'origin/development' into kel-man...	d88664a	Kenneth Lausdahl <keli@ih...	6 Aug 2012 14:13
changed QuickInterpreter build.properties to include the interpreter	08e2292	Augusto Ribeiro <ari@iha...	6 Aug 2012 14:10
added git version fetch	de4e462	Kenneth Lausdahl <keli@ih...	6 Aug 2012 13:25
Changing the default debug time-out value and adding messages...	a1db595	Augusto Ribeiro <ari@iha...	6 Aug 2012 13:12
- Commit Details:** Shows commit 4aa92fe by Augusto Ribeiro. Parents: a184d3797b. The diff view shows changes to 'WorkbenchPropertyPage.java' and 'VdmLanguagePropertyPage.java'.
- Code Diff:** Shows a diff for 'ide/plugins/latex/src/main/java/org/overture/ide/plugins/latex/src/main/java/org/overture/ide/ui/property' with a 'Hunk 1: Lines 260-266'.

Git Branch Structure Example



Commit: 4aa92fe8c9a6a60f0ea009934602e963c7360c30 [4aa92fe]



Context: 3 Li...

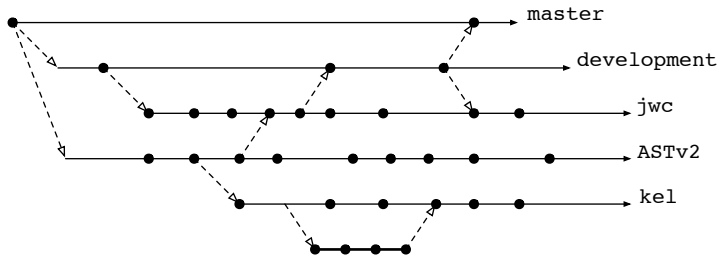
Diff...

Sho

Local file layout

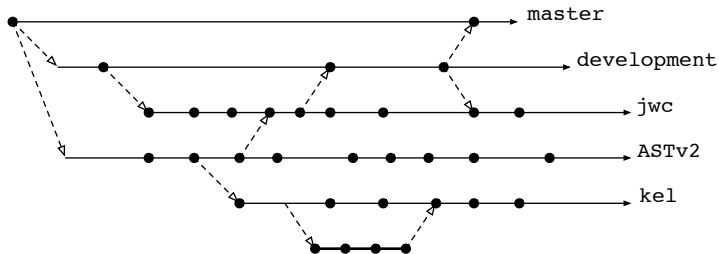
- No trunk/branches/tags hierarchy
 - This in the metadata, where it should be
- Switching branches is a Git operation
- Tags are pointers into the revision graph

Branches & Process



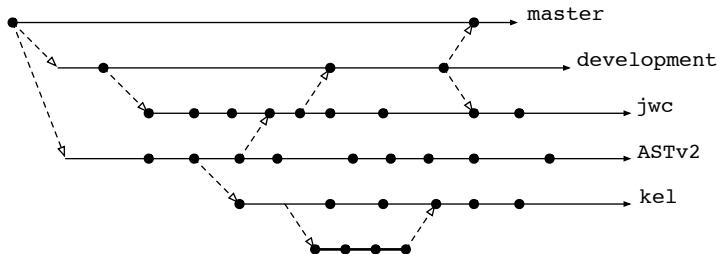
- *master* branch
 - Don't touch this one
 - Tracks released versions

Branches & Process



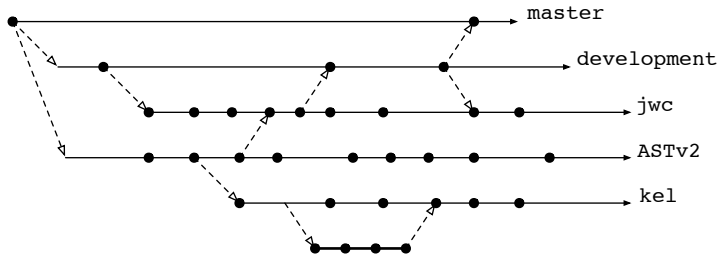
- *development* branch
 - Always compiles
 - Merge *from* regularly
 - Build server tracks this

Branches & Process



- *feature* branches
 - Longer strands of development, multiple people
 - Example: ASTv2

Branches & Process



initialled branches

- Personal playgrounds
- Don't touch anyone else's
- Example: jwc

Social Processes

- Obvious freedom to tinker and play
 - just create your own branch
- master/development/feature branches controlled
- Distributed development

What is Maven?

- Build Management System
- Manages dependencies (mostly)
- For Java, it's useful
- Usually makes life easier
- Convention over configuration
- Configurations in `pom.xml`

Maven Build Lifecycle (abridged)

- Whole build cycle:
 -
 - validate
 - [download the world]
 - [generate sources]
 - compile
 - test
 - install
 - deploy
- [clean]

POMs and Repositories

- POM — Project Object Model
 - Similar to Makefiles
 - Inherits from parent
 - Records dependencies (internal and external)
- Repositories
 - Maven relies on a dependency model
 - Everything `installed` goes into a local repository
 - Everything downloaded does too
 - Deleting the local repository is sometimes needed

Maven and Eclipse

- Integration is getting better
- `mvn eclipse:eclipse`
- m2e Eclipse plugin

Sample pom.xml

```
<project xmlns="http://maven.apache.org/POM/4.0.0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
    http://maven.apache.org/maven-v4_0_0.xsd">
  <modelVersion>4.0.0</modelVersion>

  <parent>
    <groupId>org.overturetool</groupId>
    <artifactId>core</artifactId>
    <version>2.2.0</version>
  </parent>

  <groupId>org.overturetool.core</groupId>
  <artifactId>parser</artifactId>
  <name>The VDM parser</name>

  <dependencies>
    <dependency>
      <groupId>org.overturetool.core</groupId>
      <artifactId>ast</artifactId>
      <version>${project.version}</version>
    </dependency>
  </dependencies>
</project>
```

Sample pom.xml — main elements

```
<parent>
  <groupId>org.overturetool</groupId>
  <artifactId>core</artifactId>
  <version>2.2.0</version>
</parent>

<groupId>org.overturetool.core</groupId>
<artifactId>parser</artifactId>
<name>The VDM parser</name>
```

Sample pom.xml — main elements

```
<dependencies>
  <dependency>
    <groupId>org.overturetool.core</groupId>
    <artifactId>ast</artifactId>
    <version>${project.version}</version>
  </dependency>
</dependencies>
```

The Build Server

- `http://build.overturetool.org:8080/view/Overture`
- Presently builds `development` branch automatically
- Will build `master` when we need to
- Useful for checking build & test status
- Great for recording test coverage/success history

Build Server Screenshots

The screenshot shows the Jenkins web interface for the 'Overture' project. The top navigation bar includes the Jenkins logo, a search box, and a 'log in' link. Below the navigation bar, there are links for 'People', 'Build History', 'Project Relationship', and 'Check File Fingerprint'. The main content area displays the 'Overture public site' and a table of build jobs. The table has columns for 'S' (Success), 'W' (Warning), 'Name', 'Last Success', 'Last Failure', and 'Last Duration'. The jobs listed include 'Overture', 'Overture_Documentation', 'Overture_Examples', 'Overture_Examples2', 'Overture_Installer 3.7.1', 'Overture-ASTv2', 'OvertureDevelopment', and 'OvertureDevelopmentExamples'. A 'Build Queue' section shows 'No builds in the queue.' and a 'Build Executor Status' section shows two idle executors. A watermark of a cartoon character in a tuxedo is overlaid on the left side of the screenshot.

Jenkins [log in](#)

Jenkins > Overture ENABLE AUTO REFRESH

[People](#) [Build History](#) [Project Relationship](#) [Check File Fingerprint](#)

[Overture public site](#)
[DESTECS public site](#)
[Jenkins on the Windows build server](#)

All COMPASS DESTECS Main **Overture**

S	W	Name	Last Success	Last Failure	Last Duration
		Overture	2 mo 19 days (#43)	3 mo 28 days (#31)	13 min
		Overture_Documentation	2 mo 19 days (#64)	2 mo 28 days (#61)	32 sec
		Overture_Examples	5 mo 0 days (#50)	5 mo 0 days (#49)	4 min 11 sec
		Overture_Examples2	1 mo 23 days (#10)	N/A	6 min 23 sec
		Overture_Installer 3.7.1	4 mo 27 days (#24)	N/A	33 sec
		Overture-ASTv2	3 days 22 hr (#220)	1 mo 3 days (#194)	23 min
		OvertureDevelopment	51 min (#33)	18 days (#26)	13 min
		OvertureDevelopmentExamples	16 days (#18)	2 mo 28 days (#3)	3 min 54 sec

Build Queue
No builds in the queue.

Build Executor Status

#	Status
1	Idle
2	Idle

Icon: [S](#) [M](#) [L](#)

[Legend](#) [RSS for all](#) [RSS for failures](#) [RSS for just latest builds](#)

[Help us localize this page](#) Page generated: Aug 27, 2012 2:25:23 PM [Jenkins ver. 1.476](#)

Build Server Screenshots

Jenkins

?
log in

Jenkins
Overture
Overture-ASTv2
ENABLE AUTO REFRESH

- [Back to Dashboard](#)
- [Status](#)
- [Changes](#)
- [Workspace](#)
- [Modules](#)
- [Open Tasks](#)
- [Git Polling Log](#)
- [Maven Warnings](#)
- [Static Analysis Warnings](#)
- [Coverage Trend](#)

Build History (trend)

- #220 [Aug 23, 2012 3:31:18 PM](#)
- #219 [Aug 10, 2012 1:31:23 PM](#)
- #218 [Aug 9, 2012 10:31:13 AM](#)
- #217 [Aug 9, 2012 9:52:06 AM](#)
- #216 [Aug 8, 2012 3:27:50 PM](#)
- #215 [Aug 7, 2012 4:31:22 PM](#)
- #214 [Aug 7, 2012 11:31:22 AM](#)
- #213 [Aug 6, 2012 4:45:30 PM](#)
- #212 [Aug 6, 2012 3:00:13 PM](#)
- #211 [Aug 6, 2012 2:15:12 PM](#)
- #210 [Aug 6, 2012 1:25:06 PM](#)
- #209 [Aug 3, 2012 3:31:11 PM](#)

Project Overture-ASTv2

- [Workspace](#)
- [Recent Changes](#)
- [Latest Test Result \(4 failures / #0\)](#)

Permalinks

- [Last build \(#220\), 3 days 22 hr ago](#)
- [Last successful build \(#220\), 3 days 22 hr ago](#)
- [Last failed build \(#194\), 1 mo 3 days ago](#)
- [Last unstable build \(#220\), 3 days 22 hr ago](#)
- [Last unsuccessful build \(#220\), 3 days 22 hr ago](#)

Open Tasks Trend

Test Result Trend

Maven Warnings Trend

(just show failures) [enlarge](#)

Build Server Screenshots

The screenshot displays the Jenkins web interface for a specific build. At the top, the Jenkins logo is on the left, and a search bar and 'log in' link are on the right. Below the header, the breadcrumb trail shows 'Jenkins > Overture > Overture-ASTV2 > #220'. On the right side of the header, there is an 'ENABLE AUTO REFRESH' button.

The main content area is divided into two columns. The left column contains a vertical list of navigation links with icons: 'Back to Project', 'Status', 'Changes', 'Console Output [raw]', 'View Build Information', 'Polling Log', 'Git Build Data', 'Open Tasks', 'Test Result', 'Maven Warnings', 'Static Analysis Warnings', 'Coverage Report', 'See Fingerprints', and 'Previous Build'. The right column displays the build details for 'Build #220 (Aug 23, 2012 3:31:18 PM)'. It includes a 'Started 3 days 22 hr ago' and 'Took 23_min' status. Below this, there are sections for 'Changes' (listing a correction to a title), 'Started by an SCM change', 'Revision: 6fac6a06b55da24c7f276493c140e4cc9b641580' (with a sub-item 'origin/astv2'), 'Test Result (4 failures / #0)' (with a link to 'Show all failed tests >>>'), 'Maven Warnings: 102 warnings-' (with sub-items '101 new warnings' and '60 fixed warnings'), and 'Static Analysis Warnings: 535 warnings-' (with sub-items '102 new warnings' and '61 fixed warnings').

At the bottom of the main content area, there is a section titled 'Module Builds' which lists several modules with their respective build times:

Module	Build Time
Overture_IDE_Top-level	1.6 sec
org.overture.ide.build	2.4 sec
Overture_IDE_Builders	1.1 sec
org.overture.ide.core	6.7 sec
org.overture.ide.debug	13 sec
The_VDMJ_Debugger_for_VDM	2.7 sec