

Building with Tycho

Combining Maven and Eclipse

Johannes Serup and Maksim Sorokin
3Dfacto A/S

- Background Information
- What is Maven?
- Problem we are facing
- What is Tycho?
- Example: Birt PDE application
- Current development/Issues

- Development process
 - Maven
 - Hudson
 - Eclipse, Subversion, m2eclipse, Nabaztag...



Old school Maven



- Part of Apache Software Foundation
- Build tool
- Command line
- Popular
- Driven by Project Object Model (`pom.xml`)
- Produces maven artifacts (jar files)
- Resolve dependencies from maven repositories (local/remote location of artifacts).

- Developing an Eclipse-based product
- How do we build PDE project?
 - PDE Build?
 - Ant?
 - Dependency resolution?
- Integration with existing maven projects?

- Bridge between PDE and maven projects
- Produces eclipse bundles/features.
- Build driven by `pom.xml`
- Specify dependency in `MANIFEST.MF`
- Resolve dependencies from P2 repositories

Building Eclipse Projects with Tycho



- Plugins
- Fragments (e.g. for test)
- Features
- Update sites
- Products

An Example: BIRT PDE Application



- BIRT Application as plugin for eclipse
- Menu extensions
- Commands/handlers
- Install/uninstall using update manager

Maven project with PDE modules



Plug-in Development - birtGenerator.template.targetplatform/pom.x

File Edit Source Refactor Navigate Search Project Run Templat

Package Explorer x Plug-ins

- └─ birtGenerator-template
 - └─ birtGenerator.template [birtGenerator-template/trunk]
 - └─ birtGenerator.template.application [birtGenerator-template/trunk] **Plugin**
 - src
 - icons
 - META-INF
 - MANIFEST.MF 4316 13-08-10 14:23 jserup
 - target
 - build.properties 4133 28-07-10 14:53 jserup
 - plugin.xml 4728 14-09-10 15:24 jserup
 - pom.xml 4133 28-07-10 14:53 jserup
 - └─ birtGenerator.template.feature [birtGenerator-template/trunk] **Feature**
 - target
 - build.properties 4133 28-07-10 14:53 jserup
 - feature.xml 5148 07-10-10 17:32 jserup
 - pom.xml 4133 28-07-10 14:53 jserup
 - └─ birtGenerator.template.generator [birtGenerator-template/trunk]
 - └─ birtGenerator.template.generator.tests [birtGenerator-template/trunk]
 - └─ birtGenerator.template.site [birtGenerator-template/trunk] **Update Site**
 - target
 - web
 - index.html 4175 29-07-10 10:56 jserup
 - pom.xml 5690 23-11-10 15:31 jserup
 - site.xml 4536 27-08-10 14:32 jserup
 - uploadsite.bat 5690 23-11-10 15:31 jserup
 - └─ birtGenerator.template.targetplatform [birtGenerator-template/trunk] **Target Platform**
 - example_target.target 5656 17-11-10 14:39 jserup
 - pom.xml 4133 28-07-10 14:53 jserup
 - └─ birtGenerator.template.updater [birtGenerator-template/trunk]

```
<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/xsd/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>
  <groupId>com._3dfacto</groupId>
  <artifactId>birtGenerator.template</artifactId>
  <version>1.0.0-SNAPSHOT</version>
  <packaging>pom</packaging>
  <name>Template Parent Project</name>
  <properties>
    <tycho-version>0.10.0</tycho-version>
  </properties>
  <build>
    <plugins>
      <plugin>
        <groupId>org.sonatype.tycho</groupId>
        <artifactId>tycho-maven-plugin</artifactId>
        <version>${tycho-version}</version>
        <extensions>>true</extensions>
      </plugin>
      <plugin>
        <groupId>org.sonatype.tycho</groupId>
        <artifactId>maven- osgi - compiler - plugin </artifactId>
        <version>${tycho-version}</version>
        <configuration>
          <source>1.6</source>
          <target>1.6</target>
        </configuration>
      </plugin>
      <plugin>
        <groupId>org.sonatype.tycho</groupId>
        <artifactId>target-platform-configuration</artifactId>
        <version>${tycho-version}</version>
        <configuration>
          <resolver>p2</resolver>
          <target>
            <artifact>
              <groupId>com._3dfacto</groupId>
              <artifactId>birtGenerator.template.targetplatform</artifactId>
              <version>1.0.0-SNAPSHOT</version>
              <classifier>example_target</classifier>
            </artifact>
          </target>
          <ignoreTychoRepositories>>false</ignoreTychoRepositories>
        </configuration>
      </plugin>
    </plugins>
  </build>
</project>
```

Example pom files



Plugin

```
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsi:schemaLocation">
  <parent>
    <groupId>com._3dfacto</groupId>
    <artifactId>birtGenerator.template</artifactId>
    <version>1.0.0-SNAPSHOT</version>
  </parent>

  <modelVersion>4.0.0</modelVersion>
  <artifactId>birtGenerator.template.application</artifactId>
  <packaging>eclipse-plugin</packaging>
  <name>Template Application Project</name>
</project>
```

Plugin test

```
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsi:schemaLocation">
  <parent>
    <artifactId>birtGenerator.template</artifactId>
    <groupId>com._3dfacto</groupId>
    <version>1.0.0-SNAPSHOT</version>
  </parent>
  <modelVersion>4.0.0</modelVersion>
  <artifactId>birtGenerator.template.generator.tests</artifactId>
  <packaging>eclipse-test-plugin</packaging>
  <name>Template Generator test</name>
</project>
```

Example pom files



Feature

```
<project
  xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 ht
  xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="htt
  <modelVersion>4.0.0</modelVersion>
  <parent>
    <artifactId>birtGenerator.template</artifactId>
    <groupId>com._3dfacto</groupId>
    <version>1.0.0-SNAPSHOT</version>
  </parent>
  <artifactId>birtGenerator.template.feature</artifactId>
  <packaging>eclipse-feature</packaging>
  <name>Template Feature</name>
</project>
```

Update site

```
<project
  xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
  xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="j
  <modelVersion>4.0.0</modelVersion>
  <parent>
    <artifactId>birtGenerator.template</artifactId>
    <groupId>com._3dfacto</groupId>
    <version>1.0.0-SNAPSHOT</version>
  </parent>
  <artifactId>birtGenerator.template.site</artifactId>
  <packaging>eclipse-update-site</packaging>
  <name>Template Update site</name>
</project>
```

Prepare PDE Project For Maven/Tycho



- Auto generate pom files
 - Plugins
 - Features
 - Update Sites
- Except
 - Reference to the target platform
 - Maintain versions manually
- `mvn [plugin-name]:[goal-name]`
- `mvn org.sonatype.tycho:maven-tycho-plugin:generate-poms -DgroupId=com.virtubuild`

CI with Hudson



Hudson [log in](#)

Hudson » [birtGenerator](#) » [birtGenerator-template](#)

- [Back to Dashboard](#)
- [Status](#)
- [Changes](#)
- [Workspace](#)
- [Build Now](#)
- [Delete Project](#)
- [Configure](#)
- [Subversion Polling Log](#)

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

- #55 [Nov 26, 2010 12:08:07 PM](#)
- #54 [Nov 26, 2010 11:57:10 AM](#)
- #53 [Nov 26, 2010 11:56:54 AM](#)
- #52 [Nov 25, 2010 12:38:46 PM](#)
- #51 [Nov 25, 2010 9:36:05 AM](#)
- #50 [Nov 25, 2010 9:32:21 AM](#)
- #49 [Nov 24, 2010 3:26:03 PM](#)
- #48 [Nov 24, 2010 1:39:45 PM](#)
- #47 [Nov 24, 2010 1:39:17 PM](#)
- #46 [Nov 23, 2010 5:29:43 PM](#)
- #45 [Nov 23, 2010 5:21:28 PM](#)
- #44 [Nov 23, 2010 5:11:49 PM](#)
- #43 [Nov 23, 2010 5:06:05 PM](#)
- #42 [Nov 23, 2010 5:03:58 PM](#)
- #41 [Nov 23, 2010 5:01:13 PM](#)
- #40 [Nov 23, 2010 4:46:09 PM](#)
- #39 [Nov 23, 2010 4:25:44 PM](#)
- #38 [Nov 23, 2010 4:22:23 PM](#)

Project name:

Description:

Discard Old Builds

Days to keep builds:
if not empty, build records are only kept up to this number of days

Max # of builds to keep:
if not empty, only up to this number of build records are kept

This build is parameterized

Disable Build (No new builds will be executed until the project is re-enabled.)

Execute concurrent builds if necessary (beta)

Advanced Project Options

Source Code Management

None

CVS

Subversion

Modules:

Use update:

Execute test fragments

```
-----  
T E S T S  
-----  
Running com._3dfacto.birtgenerator.template.common.dataset.XstreamParserTest  
Tests run: 3, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.179 sec  
Running com._3dfacto.birtgenerator.template.common.formatter.BirtQueryFormatterTest  
Tests run: 3, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.003 sec  
Running com._3dfacto.birtgenerator.template.common.dataset.DataSetMethodsTest  
Tests run: 11, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.017 sec  
  
Results :  
  
Tests run: 17, Failures: 0, Errors: 0, Skipped: 0  
  
[INFO] All tests passed!  
[INFO]
```

Copy update site to tomcat

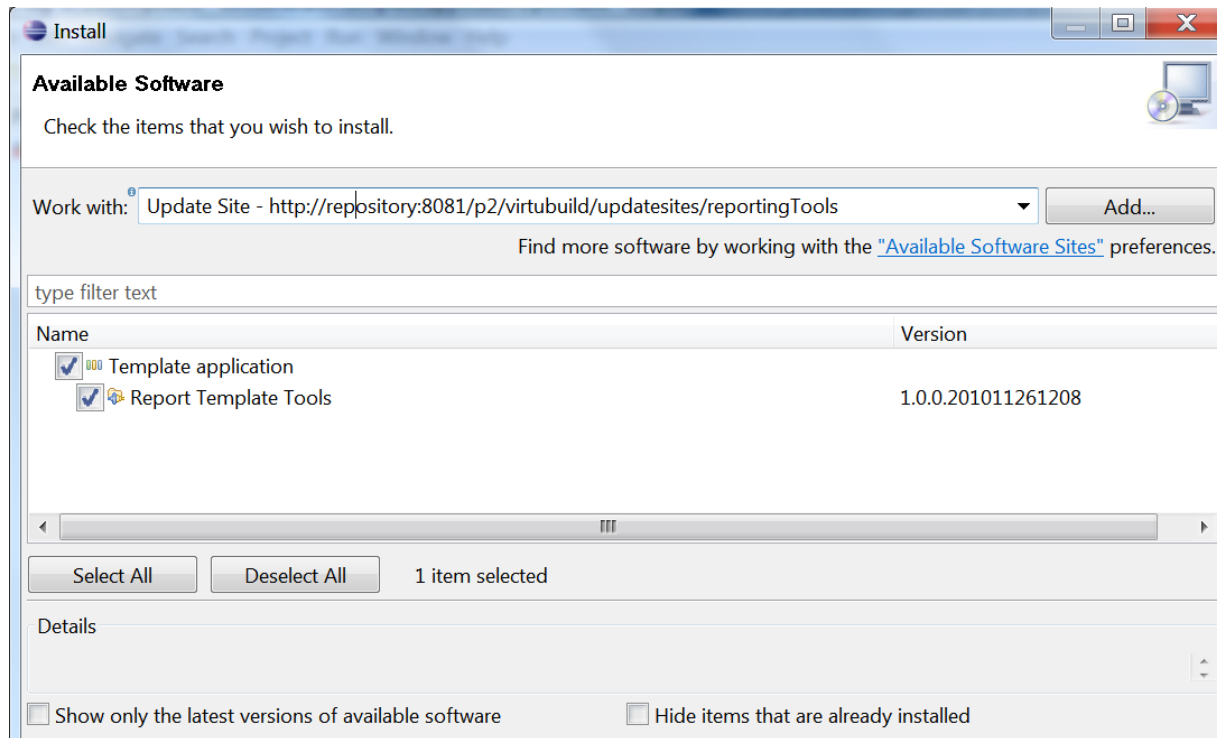
```
[scp] Authentication succeeded (password).  
[scp] Sending directory org.apache.tools.ant.taskdefs.optional.ssh.Directory@e371dc39  
[scp] Sending: artifacts.jar : 1324  
[scp] File transfer time: 0.0 Average Rate: 441,333.33 B/s  
[scp] Sending: content.jar : 4884  
[scp] File transfer time: 0.01 Average Rate: 814,000.0 B/s  
[scp] Sending: site.xml : 553  
[scp] File transfer time: 0.0 Average Rate: 184,333.33 B/s  
[scp] Sending: com._3dfacto.birtgenerator.template.feature_1.0.0.201011261208.jar : 2570
```

Result of build

```
Uploaded: http://repository:8081/nexus/content/repositories/snapshots/com/3dfacto/
(684 B at 4.7 KB/sec)
Uploading: http://repository:8081/nexus/content/repositories/snapshots/com/3dfacto/
2 KB

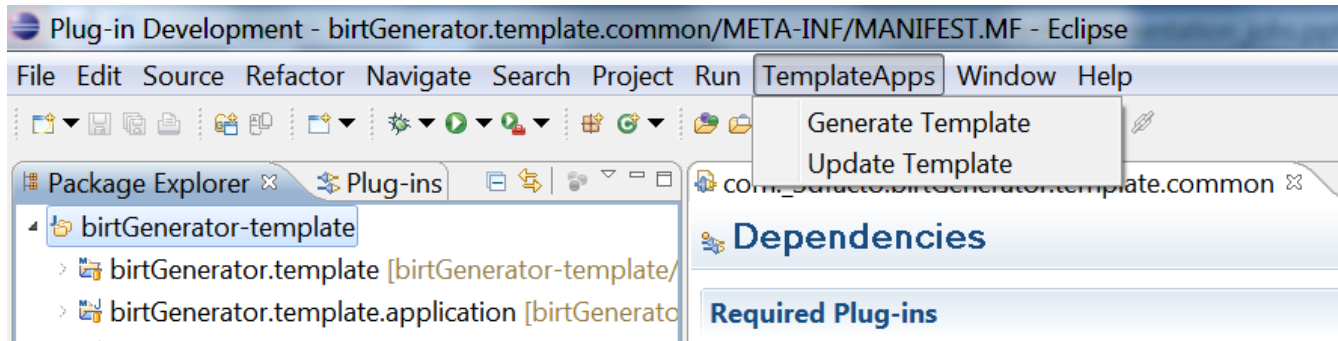
Uploaded: http://repository:8081/nexus/content/repositories/snapshots/com/3dfacto/
[INFO] -----
[INFO] Reactor Summary:
[INFO]
[INFO] Template Parent Project ..... SUCCESS [1.047s]
[INFO] Template Target Platform ..... SUCCESS [1.179s]
[INFO] Template Common Project ..... SUCCESS [6.821s]
[INFO] Template Generator Bundle ..... SUCCESS [3.403s]
[INFO] Template Updater Project ..... SUCCESS [3.769s]
[INFO] Template Application Project ..... SUCCESS [2.890s]
[INFO] Template Feature ..... SUCCESS [2.964s]
[INFO] Template Update site ..... SUCCESS [6.525s]
[INFO] Template Generator test ..... SUCCESS [11.602s]
[INFO] Template Updater test ..... SUCCESS [16.491s]
[INFO] Template Common test ..... SUCCESS [18.850s]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 1:52.517s
[INFO] Finished at: Fri Nov 26 12:10:02 CET 2010
[INFO] Final Memory: 96M/203M
[INFO] -----
Finished: SUCCESS
```

Install...



Name	Version
<input checked="" type="checkbox"/> Template application	
<input checked="" type="checkbox"/> Report Template Tools	1.0.0.201011261208

... And Run



- Improve strategy for publishing bundles
- Nexus Pro
 - Support for P2 repositories
 - Common repository for Maven and OSGi artifacts
- Map maven artifact to OSGi bundles (felix/bnd plugin for maven)

- No release strategy
- Poor documentation
- Missing features
- `pom.xml` and `MANIFEST.MF` versions should be the same
- No way to add to existing update site

- Tycho integration tests
 - <https://github.com/sonatype/sonatype-tycho/tree/master/tycho-its/projects/>
- Tycho issues tracker
 - <https://issues.sonatype.org/browse/TYCHO>
- Tycho users list
 - <https://dev.eclipse.org/mailman/listinfo/tycho-user>
- Bundle Plugin for Maven
 - <http://felix.apache.org/site/apache-felix-maven-bundle-plugin-bnd.html>
- Blogs
 - <http://maksim.sorokin.dk/it/tag/tycho/>
 - <http://mattiasholmqvist.se/2010/02/building-with-tycho-part-1-osgi-bundles/>
 - <http://divby0.blogspot.com/2010/10/jboss-tools-making-it-easier-to-build.html>

The End



Thank you for your time!