Build Procedure for OpenCms based Projects using Maven 2

May 06, 2008

Felix Noz

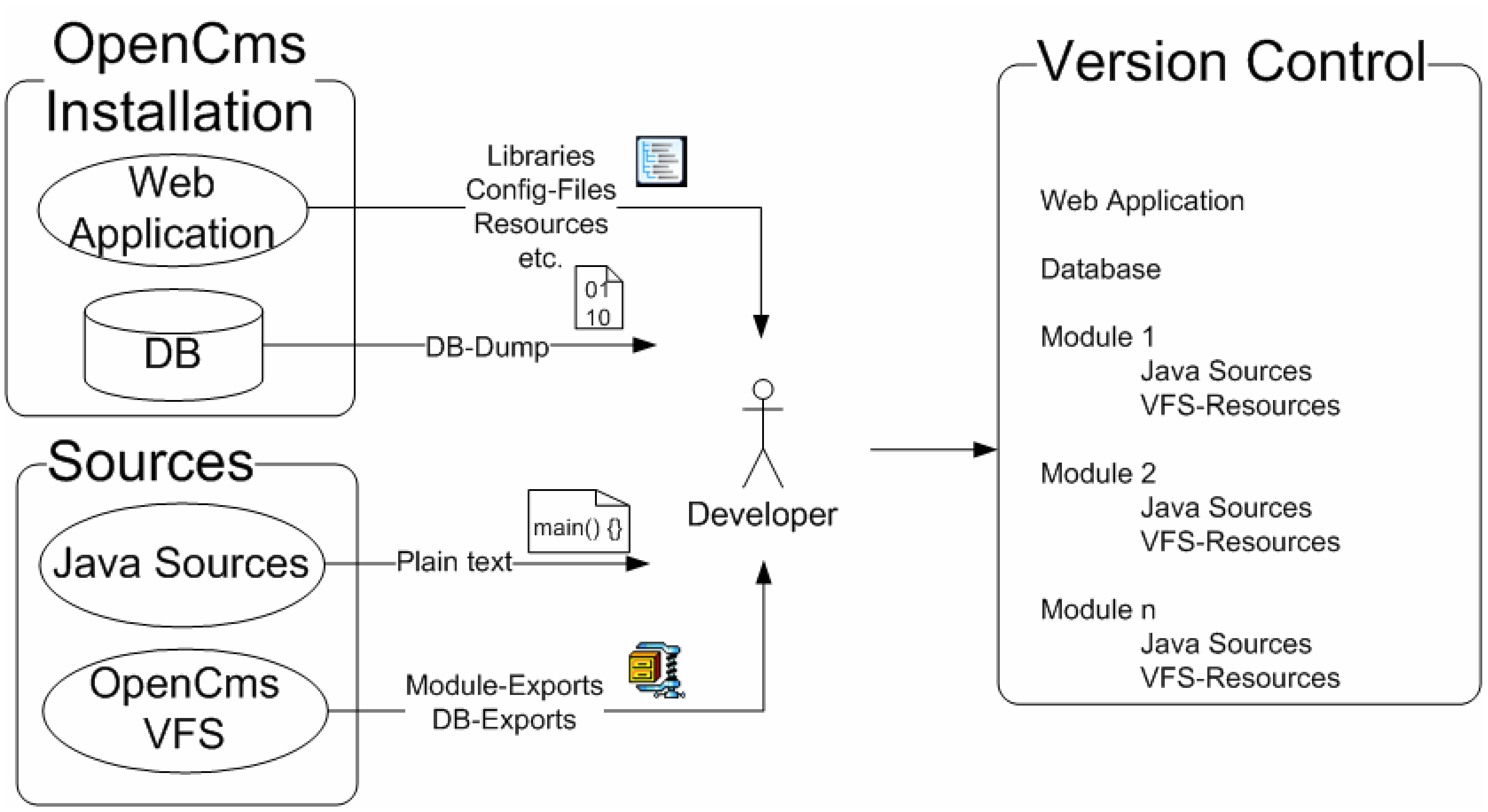
Overview

- Before Maven
- Introducing Maven
- Maven and OpenCms: Put them in touch
- Example Application
- The Open Future

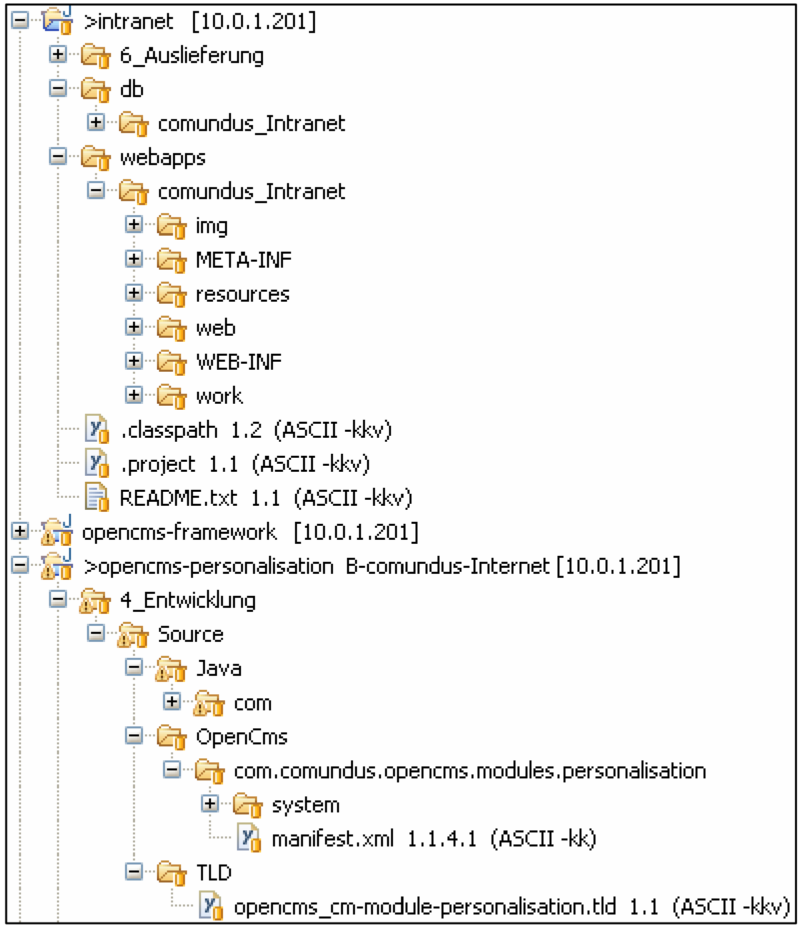
Before Maven: only version control

- Archiving
- Recovery
- Conflict management
- Change history
- Manual building and packaging

Our old versioning process



Our old versioning process: CVS repository



```
>intranet  [10.0.1.201]
    6_Auslieferung
    db
        comundus_Intranet
    webapps
        comundus_Intranet
            img
            META-INF
            resources
            web
            WEB-INF
            work
    .classpath  1.2  (ASCII -kkv)
    .project  1.1  (ASCII -kkv)
    README.txt  1.1  (ASCII -kkv)
opencms-framework  [10.0.1.201]
>opencms-personalisation  B-comundus-Internet [10.0.1.201]
    4_Entwicklung
        Source
            Java
                com
            OpenCms
                com.comundus.opencms.modules.personalisation
                    system
                    manifest.xml  1.1.4.1  (ASCII -kk)
            TLD
                opencms_cm-module-personalisation.tld  1.1  (ASCII -kkv)
```

Problems with our old versioning process

- Error prone because of the “human” factor
- Cumbersome
- Complex
- Time consuming
- Unreliable
- Too much binary data
- Redundant
- Lack of standardization
- Takes long time to get familiar with
- No process automation

Motivation

- A solution had to be found to
  - Enable plain versioning of VFS data
  - Automate the build procedure

Why Maven?

- Open-Source
- Good reputation
- Widespread use
- Plug-in Architecture
- Optional integration of ANT

Introducing Maven

- Tool for building and managing Java-based projects
- Evolved from former Apache Jakarta projects
- Maven 1
  - based on ANT
  - used legacy property files
- Maven 2
  - Complete rewrite of Maven 1
  - Redesign

Basic features of Maven

- Declarative approach
- Project Object Model: POM
- Convention over Configuration
- Dependency Management
- Customizable
- Easy to Use

Project Object Model

```
<parent>
    <groupId>com.comundus.opencms</groupId>
    <artifactId>parent</artifactId>
    <version>7.0.3</version>
    <relativePath>../parent/pom.xml</relativePath>
</parent>
<modelVersion>4.0.0</modelVersion>
<groupId>com.comundus.opencms</groupId>
<artifactId>timecheck</artifactId>
<packaging>jar</packaging>
<name>Timecheck module</name>
<version>1</version>
<description>Example module for OpenCms Days</description>

<dependencies>
    <dependency>
        <groupId>com.comundus</groupId>
        <artifactId>opencms</artifactId>
        <version>7.0.3-comundus</version>
    </dependency>
    <dependency>
        <groupId>javax.servlet</groupId>
        <artifactId>servlet-api</artifactId>
        <version>2.4</version>
        <scope>provided</scope>
    </dependency>
```

Inherits from parent POM

result: timecheck-1.jar

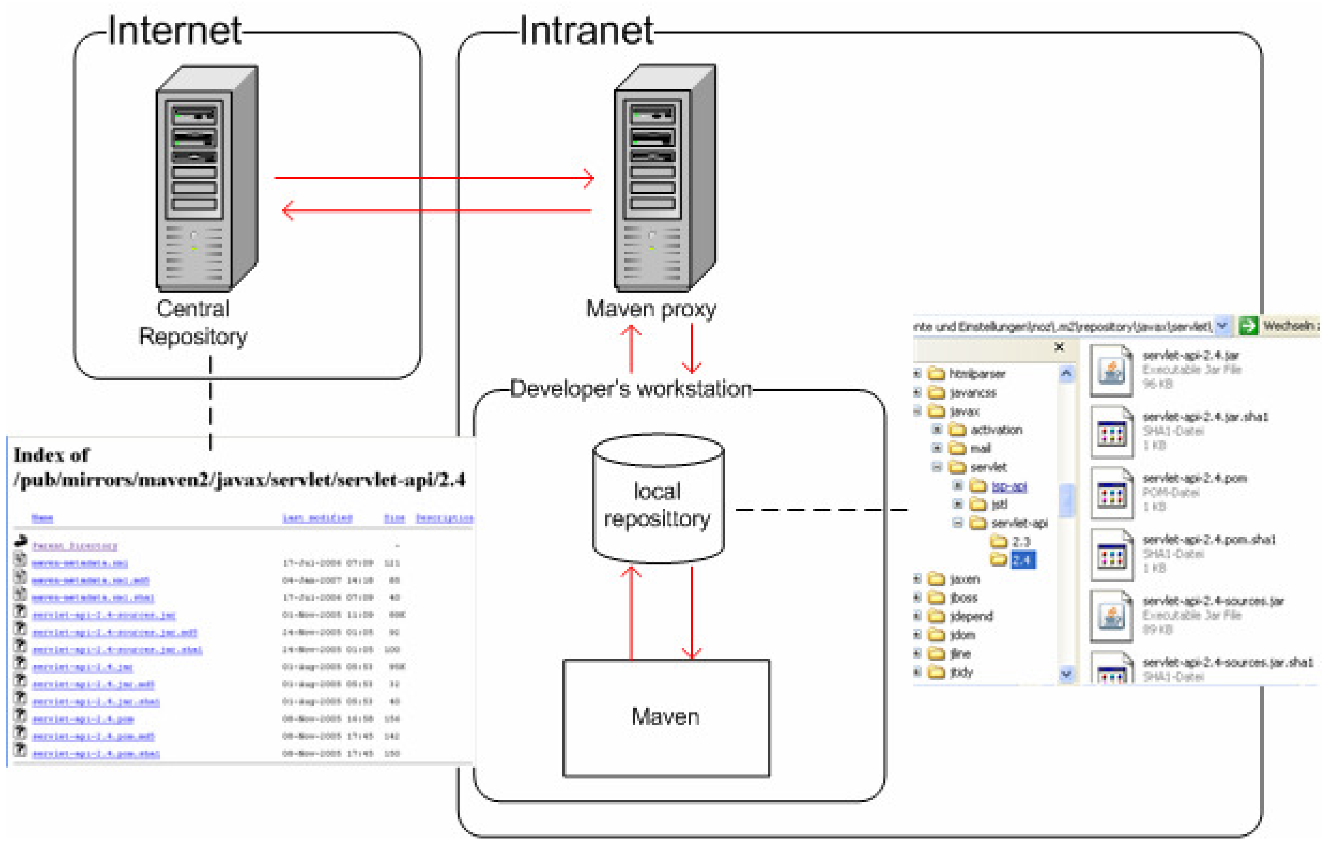
1 primary artifact per POM

Dependency to OpenCms library

Dependency to servlet library of container

Downloading dependencies

```
<dependency>
    <groupId>javax.servlet</groupId>
    <artifactId>servlet-api</artifactId>
    <version>2.4</version>
    <scope>provided</scope>
</dependency>
```



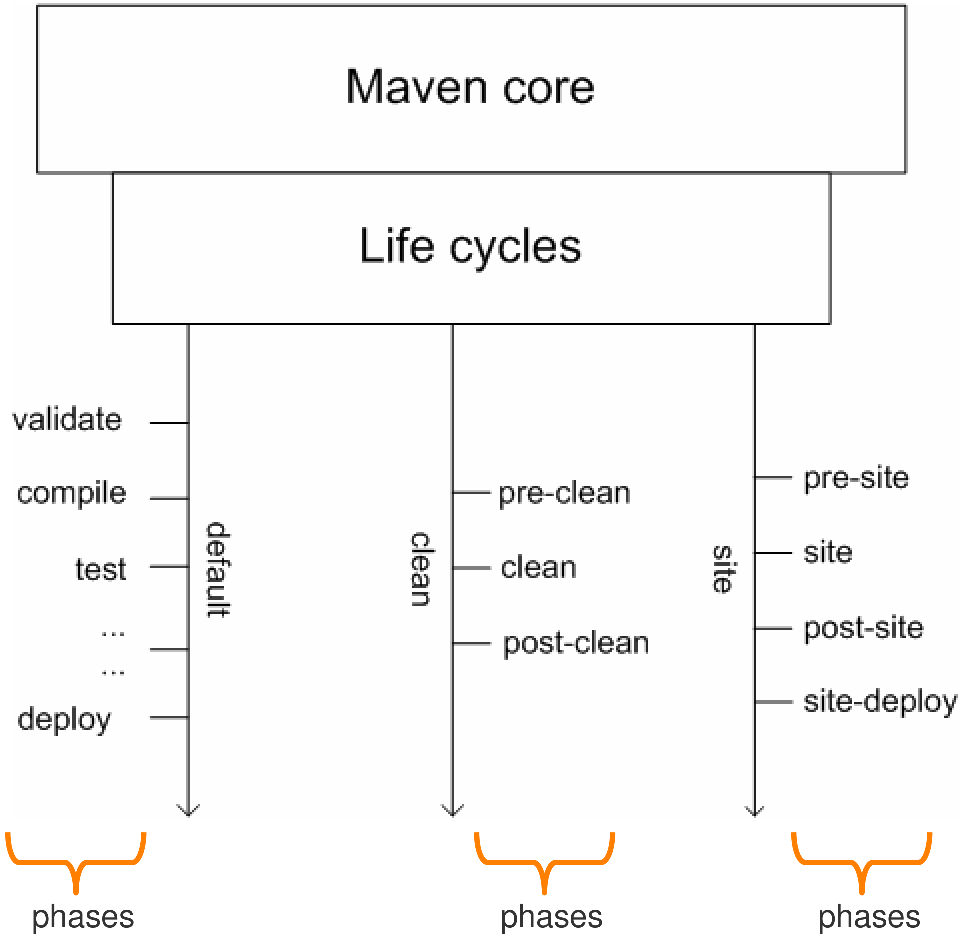
Index of /pub/mirrors/maven2/javax/servlet/servlet-api/2.4

```
Name                                   Last modified      Size  Description
Parent Directory                                            -
maven-metadata.xml                     17-Jul-2006 07:09  121
maven-metadata.xml.md5                 04-Jan-2007 14:18   65
maven-metadata.xml.sha1                17-Jul-2006 07:09   40
servlet-api-2.4-sources.jar            01-Nov-2005 11:09   60K
servlet-api-2.4-sources.jar.md5        14-Nov-2005 01:05   91
servlet-api-2.4-sources.jar.sha1       14-Nov-2005 01:05  100
servlet-api-2.4.jar                    01-Aug-2005 05:53   95K
servlet-api-2.4.jar.md5                01-Aug-2005 05:53   32
servlet-api-2.4.jar.sha1               01-Aug-2005 05:53   40
servlet-api-2.4.pom                    08-Nov-2005 16:58  156
servlet-api-2.4.pom.md5                08-Nov-2005 17:45  142
servlet-api-2.4.pom.sha1               08-Nov-2005 17:45  150
```

```
nte und Einstellungen\ncz\.m2\repository\javax\servlet\   Wechseln z

htmlparser                servlet-api-2.4.jar
javancss                  Executable Jar File
javax                     96 KB
  activation              servlet-api-2.4.jar.sha1
  mail                    SHA1-Datei
  servlet                 1 KB
    jsp-api               servlet-api-2.4.pom
    jstl                  POM-Datei
    servlet-api           1 KB
      2.3                 servlet-api-2.4.pom.sha1
      2.4                 SHA1-Datei
jaxen                     1 KB
jboss                     servlet-api-2.4-sources.jar
jdepend                   Executable Jar File
jdom                      89 KB
jline                     servlet-api-2.4-sources.jar.sha1
jtidy                     SHA1-Datei
```

Maven build life cycle



Maven Plug-ins

- Object orientated approach by Mojos
  - Parameter injection by Java Annotations
  - Not restricted to Java Objects
- Define goals
- Bound to phases

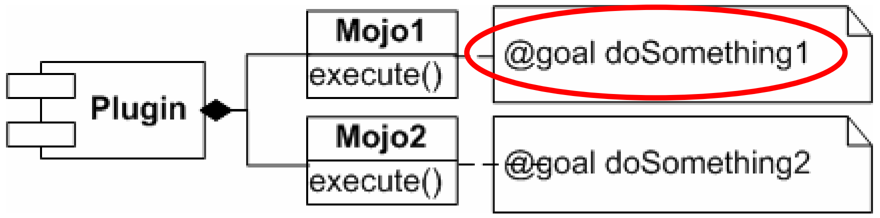
Maven Plug-ins

plug-in client

```
...
...
<plugins>
    <plugin>
        <groupId>com.comundus</groupId>
        <artifactId>test-plugin</artifactId>
        ...
        ...
        <executions>
            <execution>
                <id>execution1</id>
                <phase>clean</phase>
                <goals>
                    <goal>doSomething1</goal>
                </goals>
                <configuration>
                    ...
                    ...
                </configuration>
            </execution>
            <execution>
                <id>execution2</id>
                <phase>package</phase>
                <goals>
                    <goal>doSomething2</goal>
                </goals>
                <configuration>
                    ...
                    ...
                </configuration>
            </execution>
            ...
            ...
```

plug-in

```
...
...
<groupId>com.comundus</groupId>
<artifactId>test-plugin</artifactId>
<packaging>maven-plugin</packaging>
<version>1.0</version>
<name>Test Plugin</name>
...
...
```



The Maven VFS Plug-in

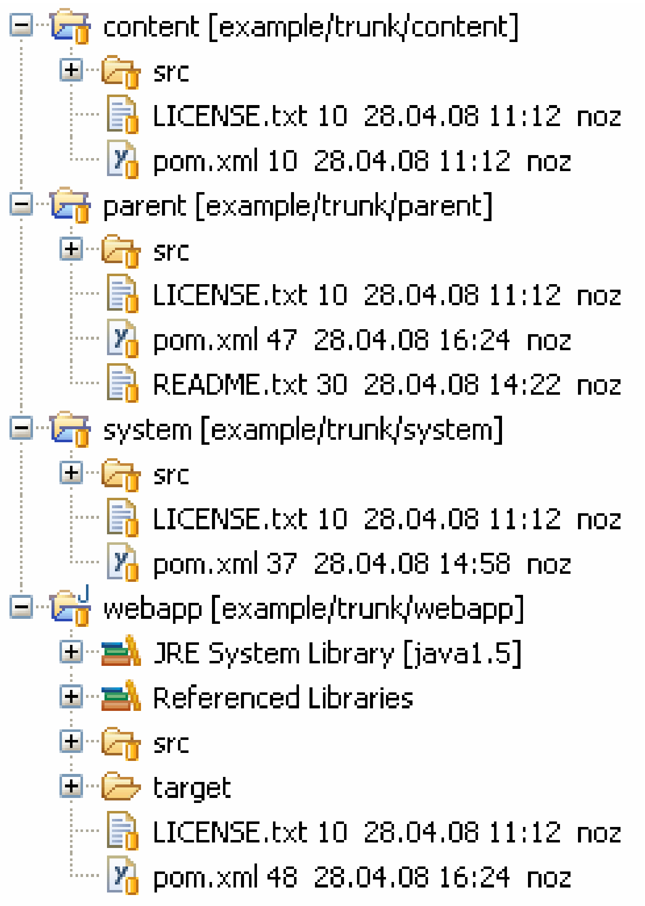
- OpenCms from scratch
- Transforms VFS to RFS resources and vv
  - #synclist.txt
  - VFS data
  - VFS metadata
- Creates a running OpenCms installation

VFS Plug-in Goals

- clean
- setup
- importusers
- module
- sync
- publish
- createorgunits
- exportusers

"Maven Style" Projects: Mandatory subprojects

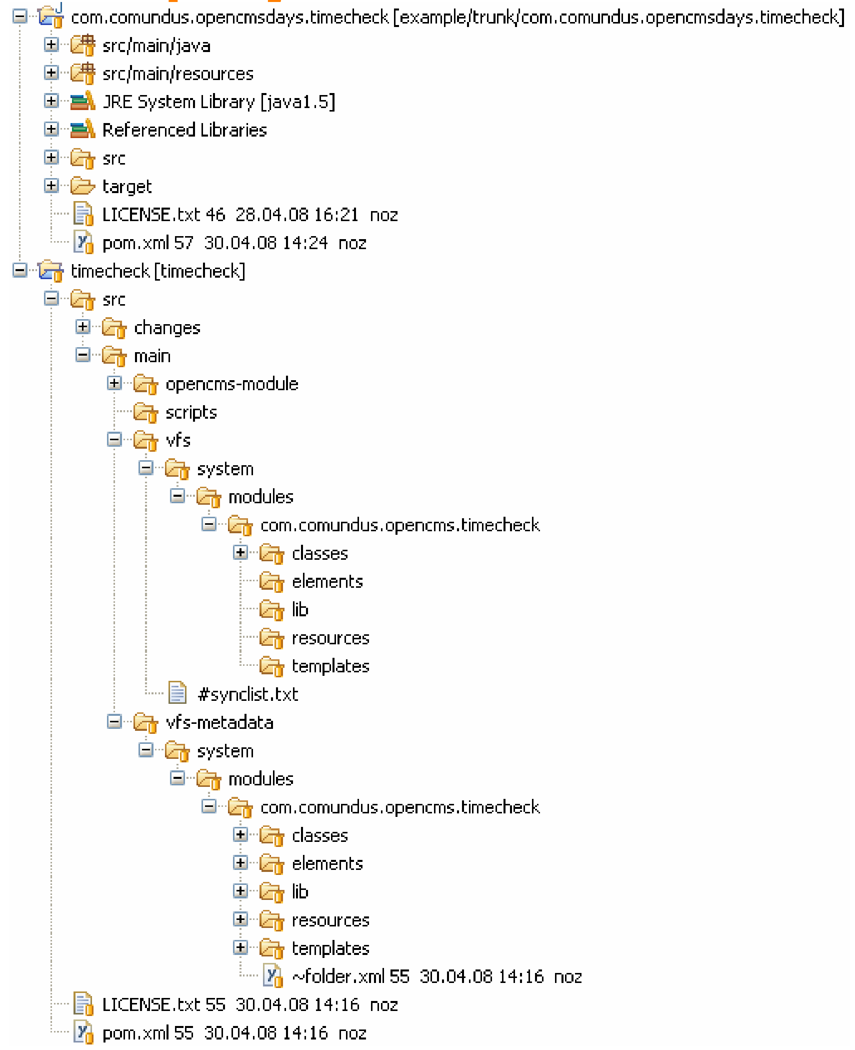
- parent
  - Contains the parent POM
  - Includes modules
- webapp
  - Goals: setup, importusers
- system
  - Goals: module, sync, publish
- content
  - Goals: sync, publish



```
content [example/trunk/content]
    src
    LICENSE.txt 10  28.04.08 11:12  noz
    pom.xml 10  28.04.08 11:12  noz
parent [example/trunk/parent]
    src
    LICENSE.txt 10  28.04.08 11:12  noz
    pom.xml 47  28.04.08 16:24  noz
    README.txt 30  28.04.08 14:22  noz
system [example/trunk/system]
    src
    LICENSE.txt 10  28.04.08 11:12  noz
    pom.xml 37  28.04.08 14:58  noz
webapp [example/trunk/webapp]
    JRE System Library [java1.5]
    Referenced Libraries
    src
    target
    LICENSE.txt 10  28.04.08 11:12  noz
    pom.xml 48  28.04.08 16:24  noz
```

“Maven style” projects: Additional subprojects

- Additional subprojects
  - Defined by packaging
  - Java Subprojects
    - Java source code
    - Resources
  - VFS Subprojects
    - VFS Resources
    - VFS Resources Metadata
    - Module descriptors



```
com.comundus.opencmsdays.timecheck [example/trunk/com.comundus.opencmsdays.timecheck]
    src/main/java
    src/main/resources
    JRE System Library [java1.5]
    Referenced Libraries
    src
    target
    LICENSE.txt 46  28.04.08 16:21  noz
    pom.xml 57  30.04.08 14:24  noz
timecheck [timecheck]
    src
        changes
        main
            opencms-module
            scripts
            vfs
                system
                    modules
                        com.comundus.opencms.timecheck
                            classes
                            elements
                            lib
                            resources
                            templates
                #synclist.txt
            vfs-metadata
                system
                    modules
                        com.comundus.opencms.timecheck
                            classes
                            elements
                            lib
                            resources
                            templates
                            ~folder.xml 55  30.04.08 14:16  noz
    LICENSE.txt 55  30.04.08 14:16  noz
    pom.xml 55  30.04.08 14:16  noz
```

A simple example application

Open Project Workspace

The open future

- Maven VFS-Plug-in will go Open Source
  - http://www.comundus.com
- Ideas
  - Integrated SVN support
  - Packaging for OpenCms modules
  - Incremental builds
  - Integration into the OpenCms core

Conclusion

- OpenCms projects can be completely versioned
- Well defined repository
- Real concurrent versioning
- Automated build process

Thank you very much.

http://www.comundus.com