INTRODUCTION TO

MAVEN

USE CASE:

INSTALL AN X-WIKI PLUG-IN

Daniele Fanì
University of Camerino
daniele.fani@unicam.it

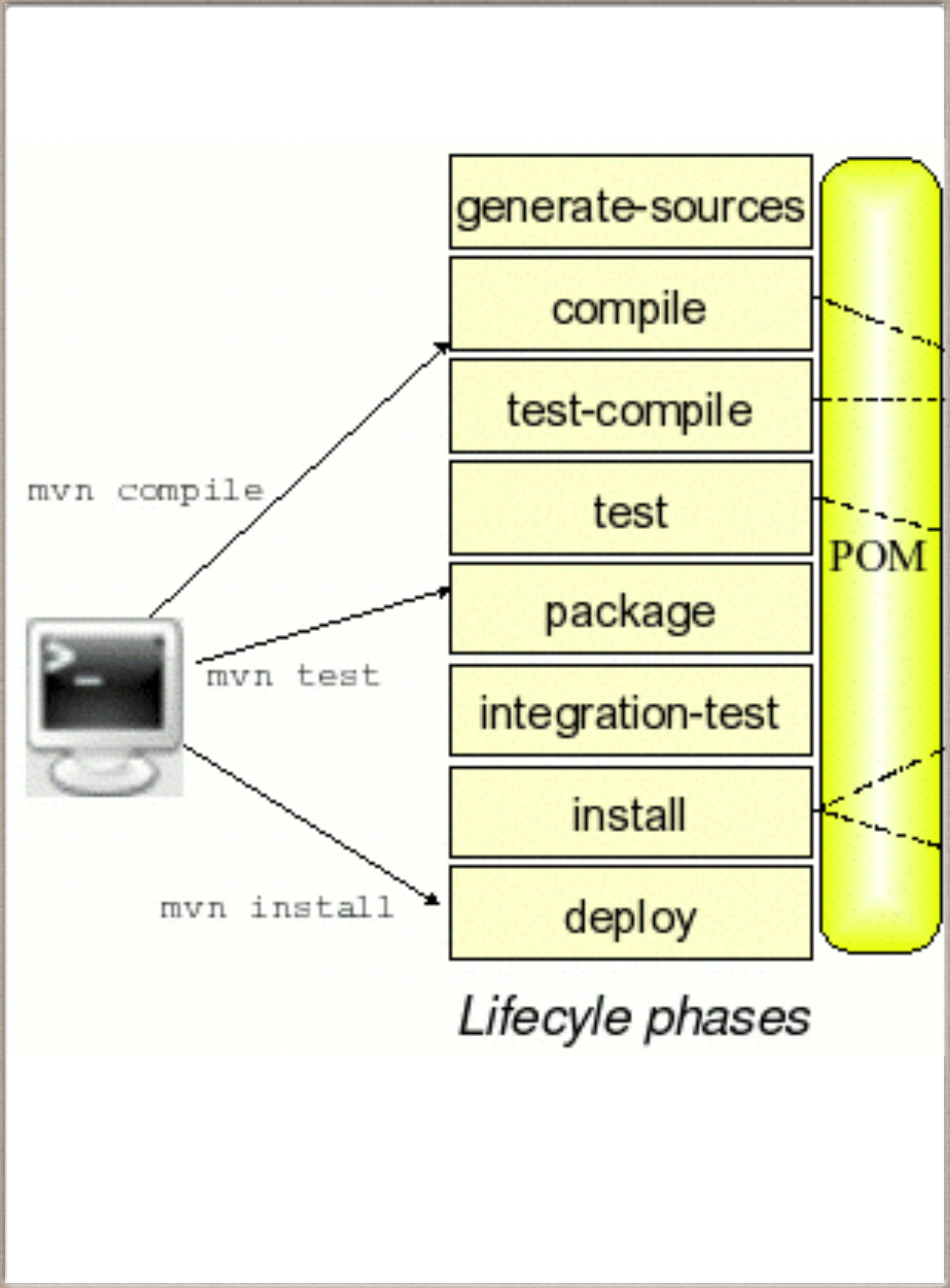
Camerino, 11 November 2014

OUTLINE

maven

"A TRUSTED EXPERT IN A PARTICULAR FIELD";

"ACCUMULATOR OF KNOWLEDGE".



MAVEN - WHAT IS IT? http://maven.apache.org

- Apache Maven is a software project management and comprehension tool;
- It is based on the concept of a Project Object Model (**POM**);
- It can manage project’s build, reporting and documentation from a central piece of information

IT IS NOT JUST A MERE BUILD TOOL

MAVEN - WHAT IS IT?

It is a <u>software project management and comprehension tool</u>

- It makes the build process of Java projects easy
- Centralize project information
- Provides guidelines for best practices development
- Allows transparent migration to new features
- Provides cross project reuse

convention over configuration

MAVEN - WHAT IS IT?

It is based on the concept of a Project Object Model (**POM**)

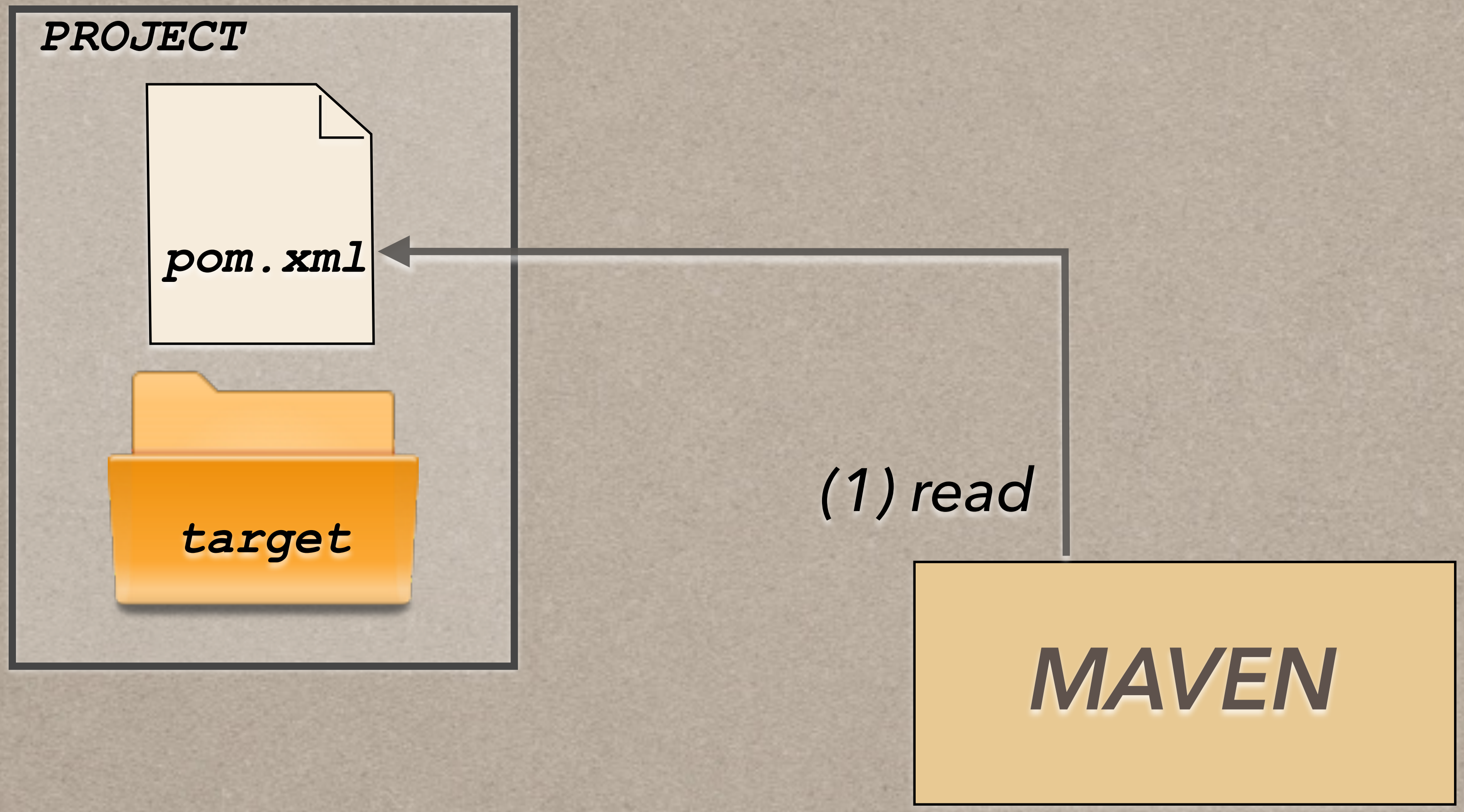
- POM is an XML declarative file containing info and configuration used to build the project
- Contains the **goals** to be executed and the **plugins** to be used
- Contains the project **dependencies**
- Contains project version, description, authors…

MAVEN - WHAT IS IT?

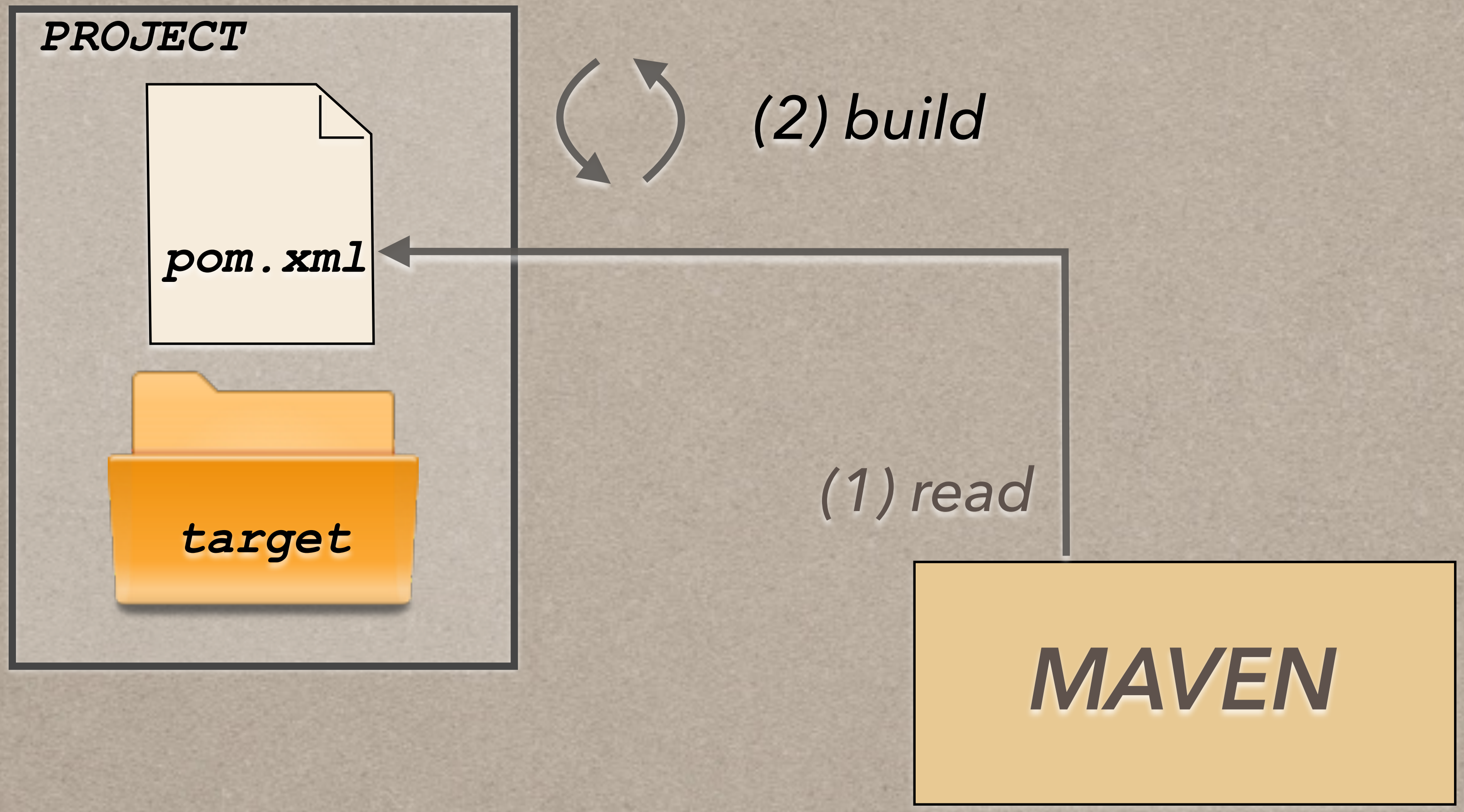
It can manage <u>project's build, reporting and documentation</u> from a central piece of information

- Get a new project started in seconds
- Superior dependency management
- Extensible, with the ability to easily write plugins in Java
- Is able to publish distribute JAR, dependencies and documentation
- Contains project version, description, authors…

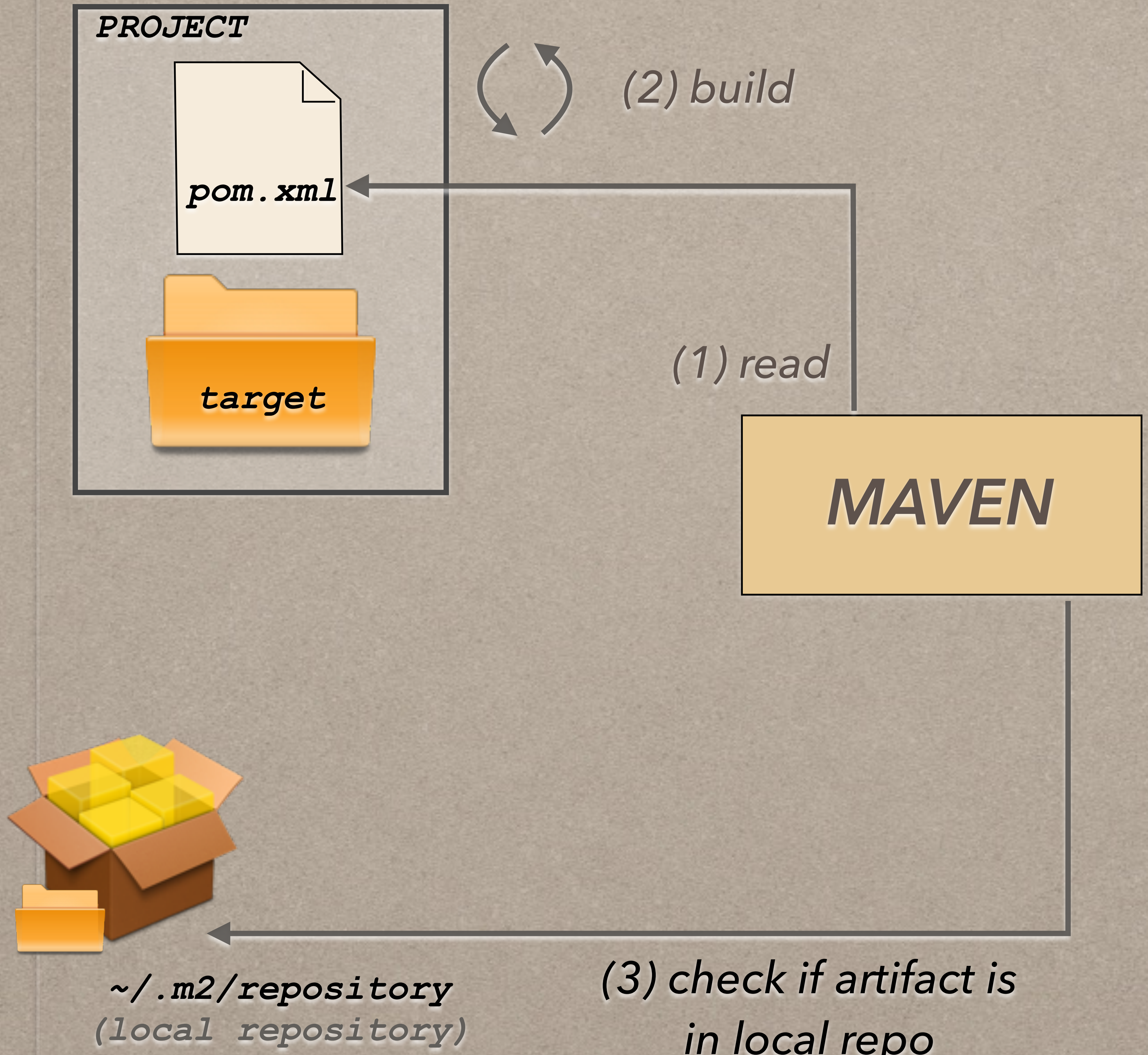
MAVEN - IN A NUTSHELL



MAVEN - IN A NUTSHELL



MAVEN - IN A NUTSHELL



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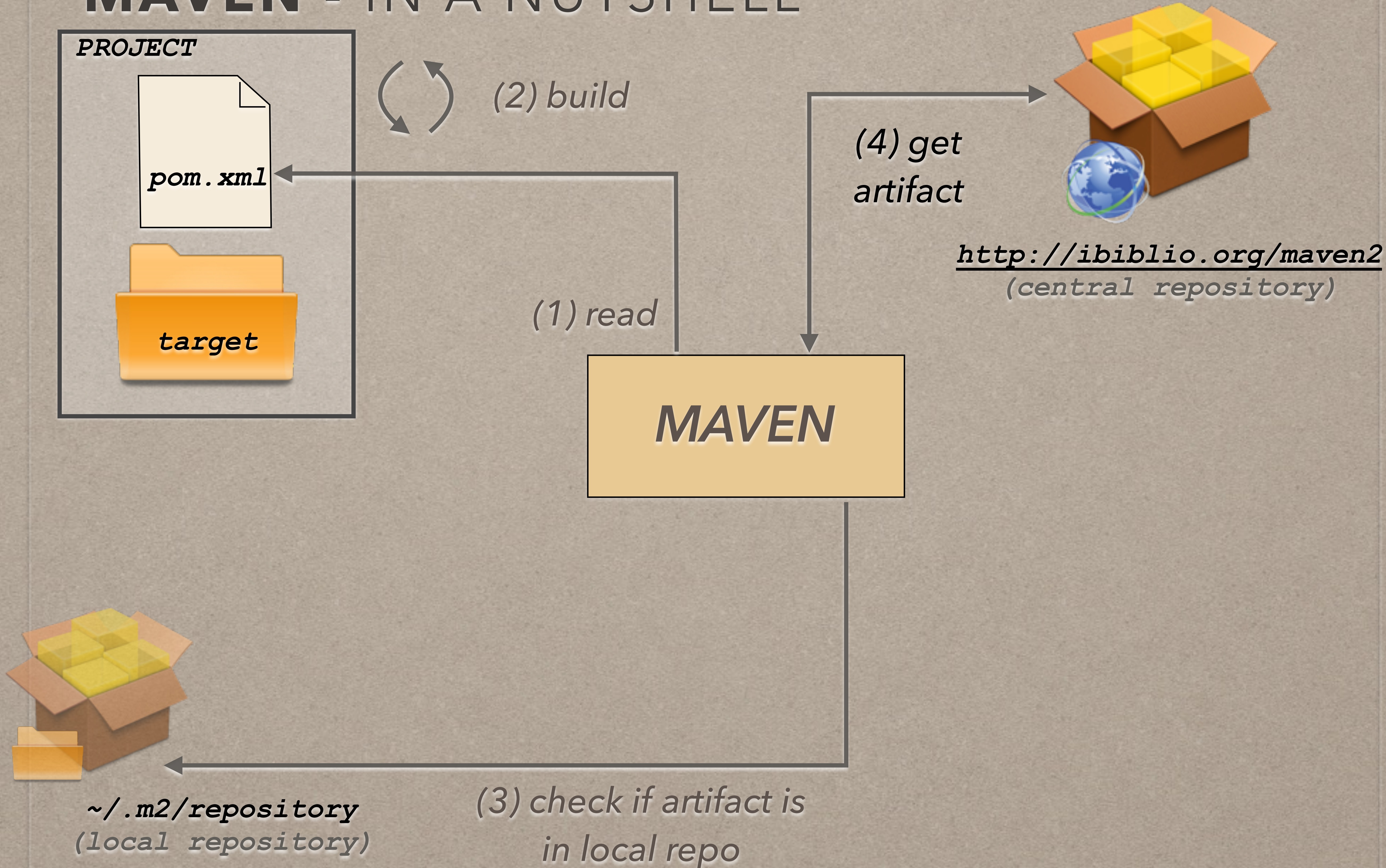
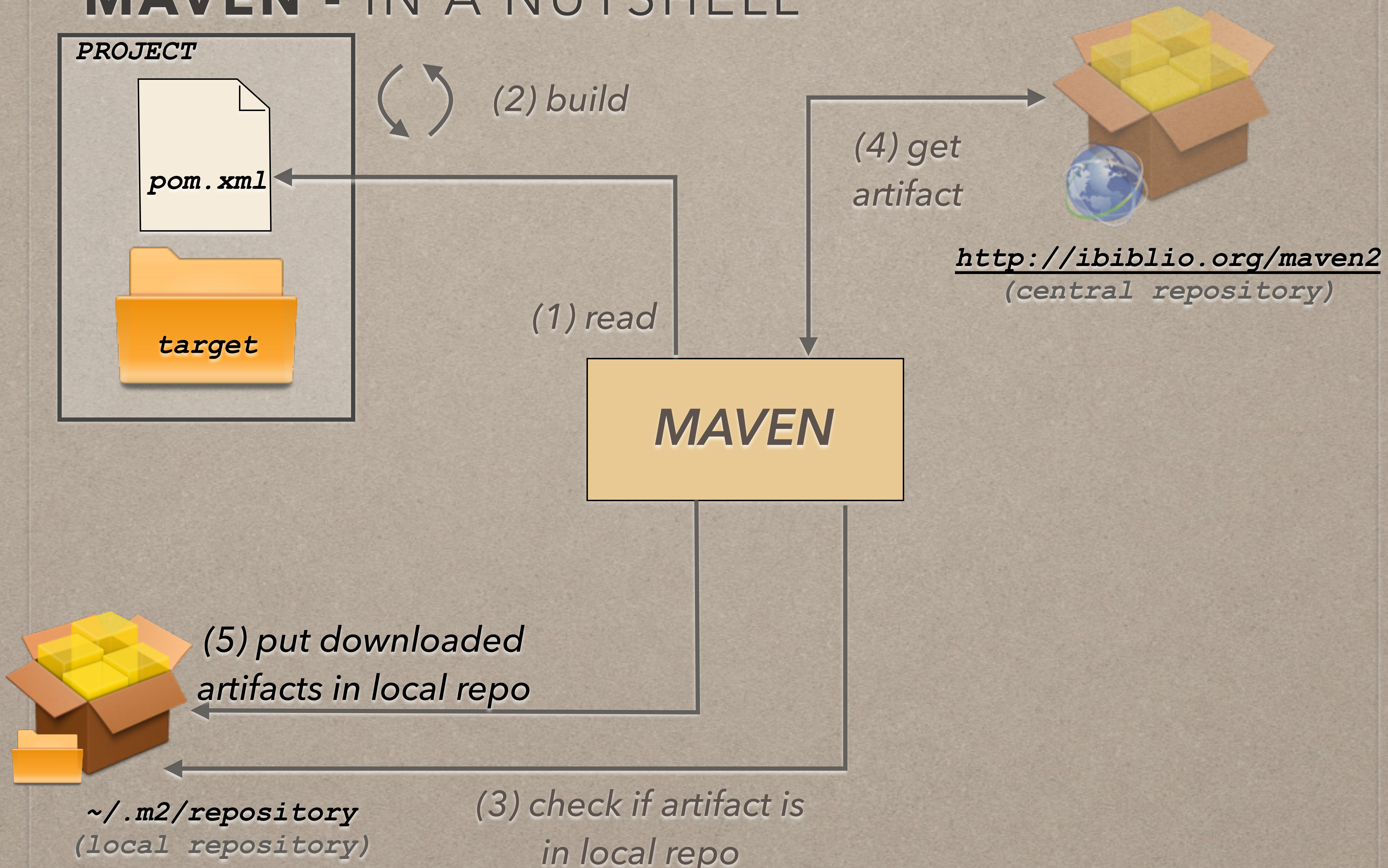
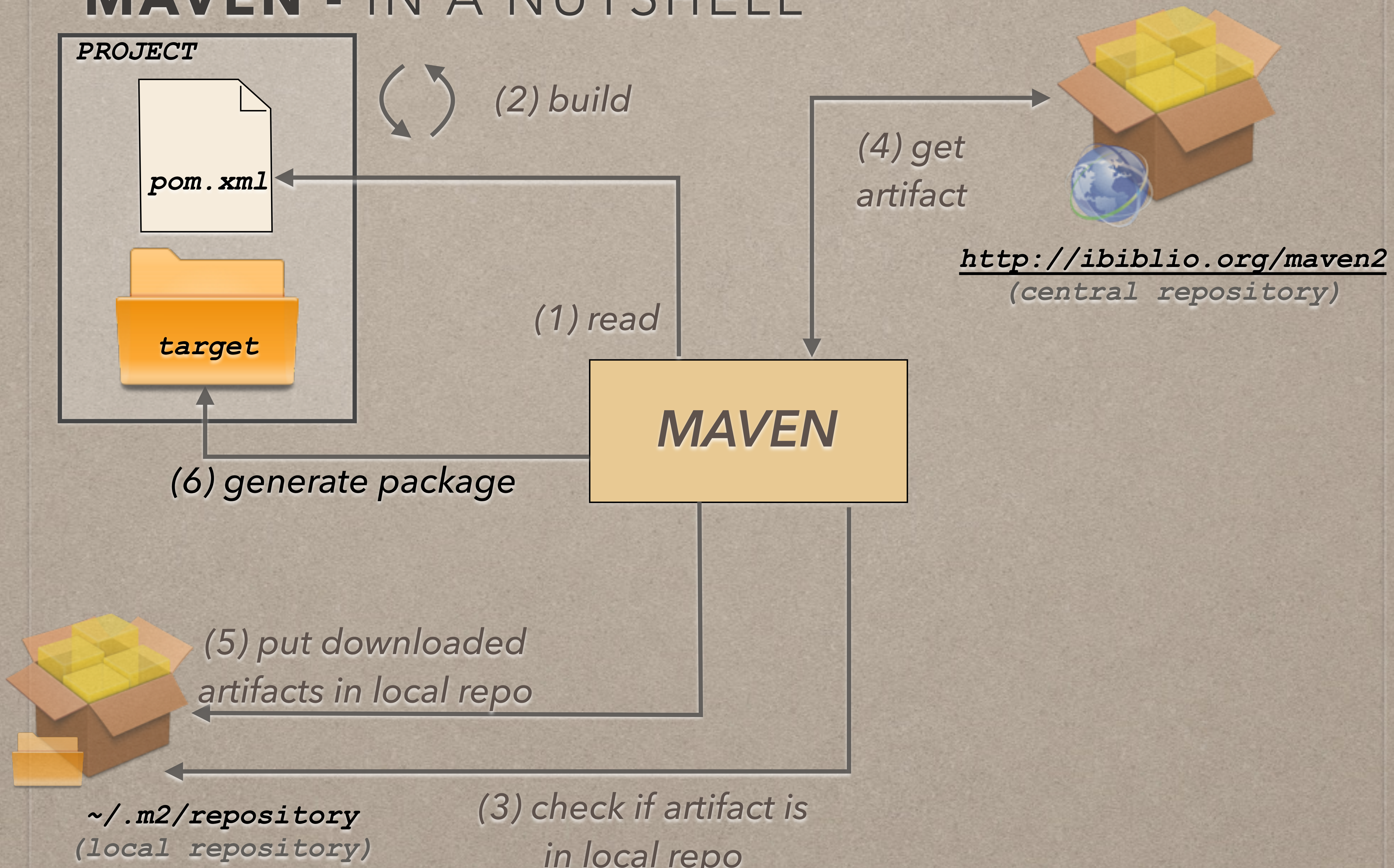


MAVEN - IN A NUTSHELL



MAVEN - IN A NUTSHELL



MAVEN - THE BUILD LIFECYCLE

- The process of <u>building</u> and <u>distributing</u> an artifact is clearly defined by the **lifecycle**
- Once chosen a lifecycle, POM ensures the result desired through a sequence of **build phases**
- 3 already built-in lifecycles: *default*, *clean*, *site*

MAVEN - THE BUILD LIFECYCLE

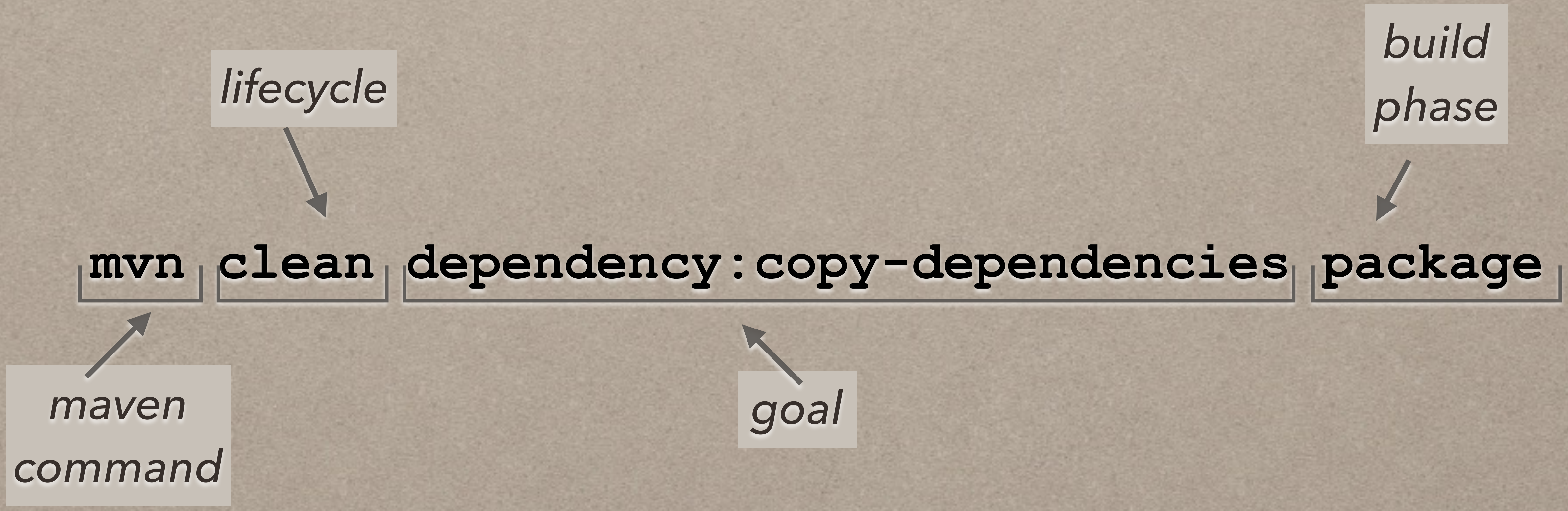
A lifecycle is made up of **build phases**, e.g. :

- ***validate***: check if the project is correct and needed information are available
- ***compile***: compile the source code
- ***package***: provides a distributable format (jar, war,..)
- **verify**: checks if the package is valid
- ***install***: install the package into the local repository
- ***deploy***: copies the package to the remote repository

MAVEN - THE BUILD LIFECYCLE

A build phase is made up of **goals**:

- It is a specific task (finer than a build phase)
- Can be bound to 0..* build phases



```
mvn clean dependency:copy-dependencies package
```

MAVEN - THE BUILD LIFECYCLE

In addition to default goals, we can add others through **plugins**:

- Provides goals to be executed to perform a task
- There are plugins for building, testing, generating files, running a web server, …
- Basic plugins are already included by default
- They can be added in the POM

MAVEN - THE BUILD LIFECYCLE

a plugin example:

a unique identifier given to a model within a group

```
…
<plugin>
   <groupId>com.mycompany.example</groupId>
   <artifactId>display-maven-plugin</artifactId>
   <version>1.0</version>
   <executions>
     <execution>
       <phase>process-test-resources</phase>
       <goals>
         <goal>time</goal>
       </goals>
     </execution>
   </executions>
 </plugin>
…
```

I could run the same goal multiple times with different configuration

display current time,
bound to process-test-resources phase

MAVEN - STANDARD ARCHETYPE

archetype: a template that, combined with user input, produce a working Maven project

```
mvn archetype:generate \
  -DarchetypeGroupId=org.apache.maven.archetypes \
  -DgroupId=com.mycompany.app \
  -DartifactId=my-app
```

generates

```
my-app
|-- pom.xml
`-- src
    |-- main
    |   `-- java
    |       `-- com
    |           `-- mycompany
    |               `-- app
    |                   `-- App.java
    `-- test
        `-- java
            `-- com
                `-- mycompany
                    `-- app
                        `-- AppTest.java
```

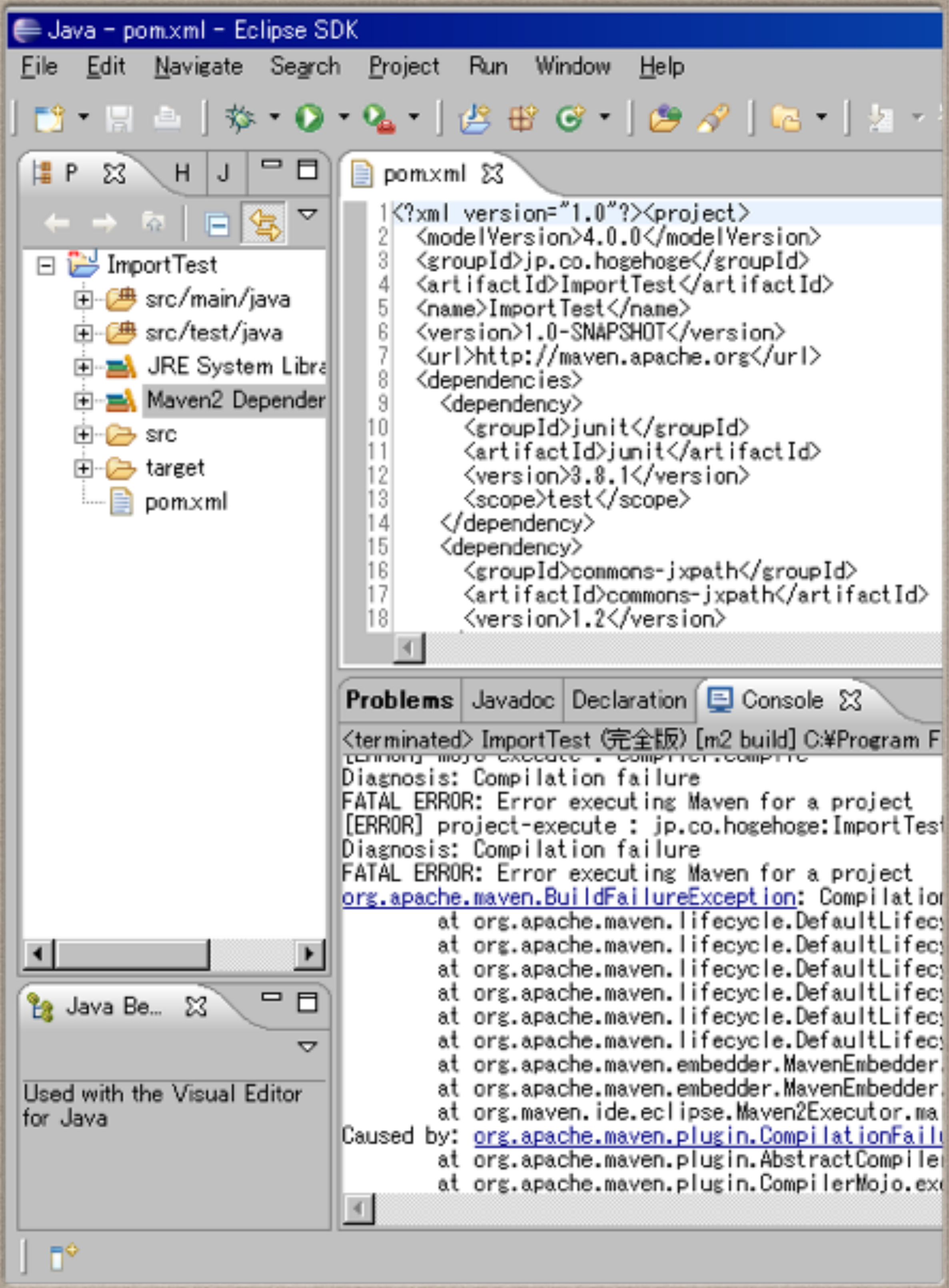
MAVEN - STANDARD ARCHETYPE

the generated 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/xsd/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>
  <groupId>com.mycompany.app</groupId>
  <artifactId>my-app</artifactId>
  <packaging>jar</packaging>
  <version>1.0-SNAPSHOT</version>
  <name>Maven Quick Start Archetype</name>
  <url>http://maven.apache.org</url>
  <dependencies></dependencies>  ←
  <build>
    <plugins></plugins>  ←
  </build>
</project>
```

maven IN eclipse

M2E - Maven Integration for Eclipse


Java - pom.xml - Eclipse SDK
File Edit Navigate Search Project Run Window Help
P H J
ImportTest
src/main/java
src/test/java
JRE System Libra
Maven2 Depender
src
target
pom.xml
pom.xml
Problems Javadoc Declaration Console
Java Be...
Used with the Visual Editor for Java

```
<?xml version="1.0"?><project>
  <modelVersion>4.0.0</modelVersion>
  <groupId>jp.co.hogehoge</groupId>
  <artifactId>ImportTest</artifactId>
  <name>ImportTest</name>
  <version>1.0-SNAPSHOT</version>
  <url>http://maven.apache.org</url>
  <dependencies>
    <dependency>
      <groupId>junit</groupId>
      <artifactId>junit</artifactId>
      <version>3.8.1</version>
      <scope>test</scope>
    </dependency>
    <dependency>
      <groupId>commons-jxpath</groupId>
      <artifactId>commons-jxpath</artifactId>
      <version>1.2</version>
```

```
<terminated> ImportTest (完全版) [m2 build] C:¥Program F
Diagnosis: Compilation failure
FATAL ERROR: Error executing Maven for a project
[ERROR] project-execute : jp.co.hogehoge:ImportTest
Diagnosis: Compilation failure
FATAL ERROR: Error executing Maven for a project
org.apache.maven.BuildFailureException: Compilatio
        at org.apache.maven.lifecycle.DefaultLifec
        at org.apache.maven.lifecycle.DefaultLifec
        at org.apache.maven.lifecycle.DefaultLifec
        at org.apache.maven.lifecycle.DefaultLifec
        at org.apache.maven.lifecycle.DefaultLifec
        at org.apache.maven.lifecycle.DefaultLifec
        at org.apache.maven.embedder.MavenEmbedder
        at org.apache.maven.embedder.MavenEmbedder
        at org.maven.ide.eclipse.Maven2Executor.ma
Caused by: org.apache.maven.plugin.CompilationFail
        at org.apache.maven.plugin.AbstractCompile
        at org.apache.maven.plugin.CompilerMojo.exe
```

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M2E - WHAT IS IT?

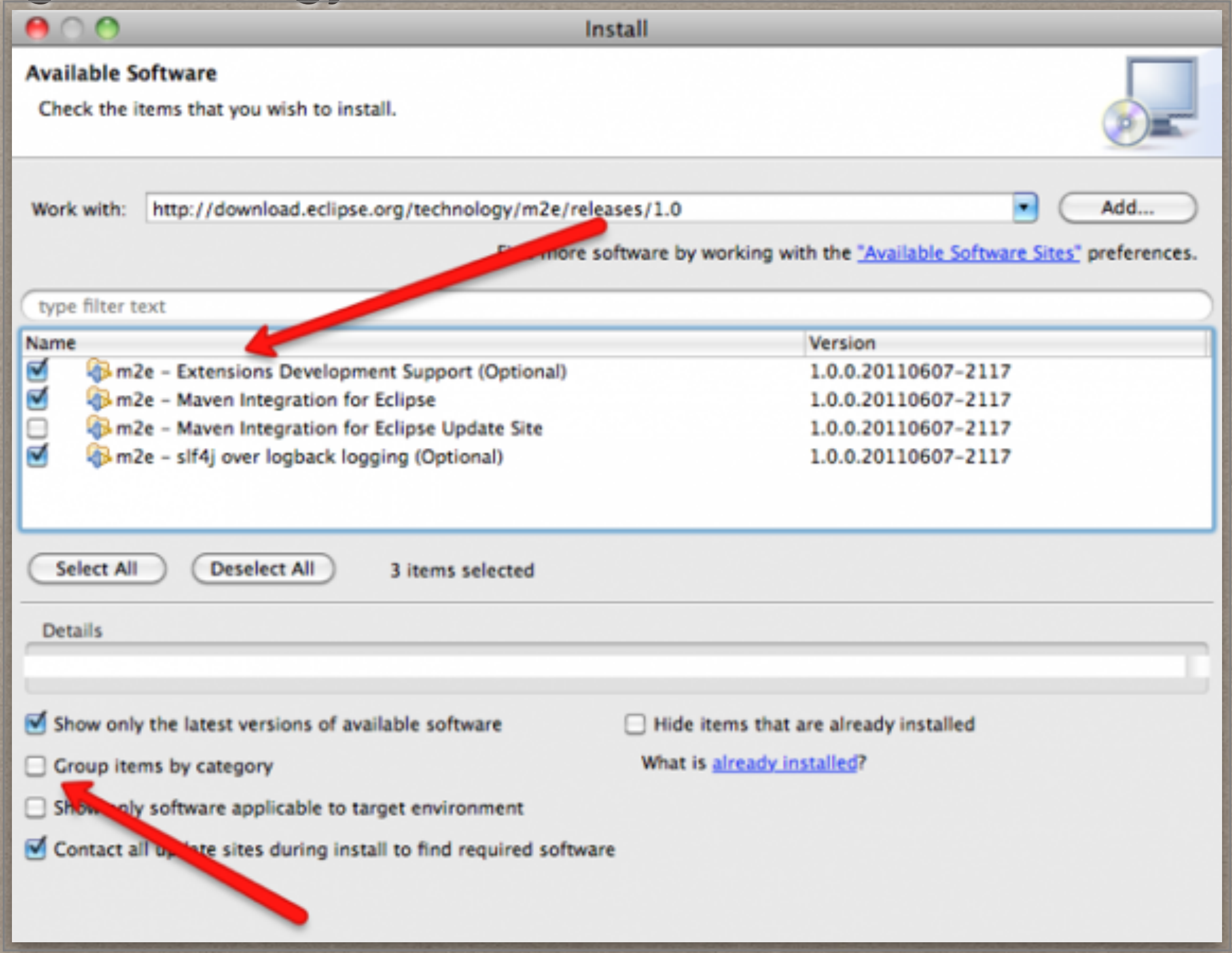
http://eclipse.org/m2e

M2Eclipse: First-class Apache Maven support in the Eclipse IDE

- Dependency management for Eclipse build path based on Maven's pom.xml
- Resolving Maven dependencies from the Eclipse workspace without installing to local Maven repository
- Automatic downloading of the required dependencies from the remote Maven repositories
- Wizards for creating new Maven projects, pom.xml and to enable Maven support on plain Java project
- Quick search for dependencies in Maven remote repositories

M2E - SETTING UP THE ENVIRONMENT

- **Eclipse** distribution **4.3+** http://www.eclipse.org/downloads/
- **m2e**, including semi-hidden m2e SDK feature http://download.eclipse.org/technology/m2e/releases/



Install

Available Software

Check the items that you wish to install.

Work with: http://download.eclipse.org/technology/m2e/releases/1.0

Find more software by working with the "Available Software Sites" preferences.

type filter text

	Name	Version
✓	m2e - Extensions Development Support (Optional)	1.0.0.20110607-2117
✓	m2e - Maven Integration for Eclipse	1.0.0.20110607-2117
	m2e - Maven Integration for Eclipse Update Site	1.0.0.20110607-2117
✓	m2e - slf4j over logback logging (Optional)	1.0.0.20110607-2117

3 items selected

Details

- [✓] Show only the latest versions of available software
- [ ] Hide items that are already installed
- [ ] Group items by category
- [ ] Show only software applicable to target environment
- [✓] Contact all update sites during install to find required software

What is already installed?

current eclipse = 4.4.1 Luna
current m2e = 1.5.0

M2E - IS IT ENOUGH?

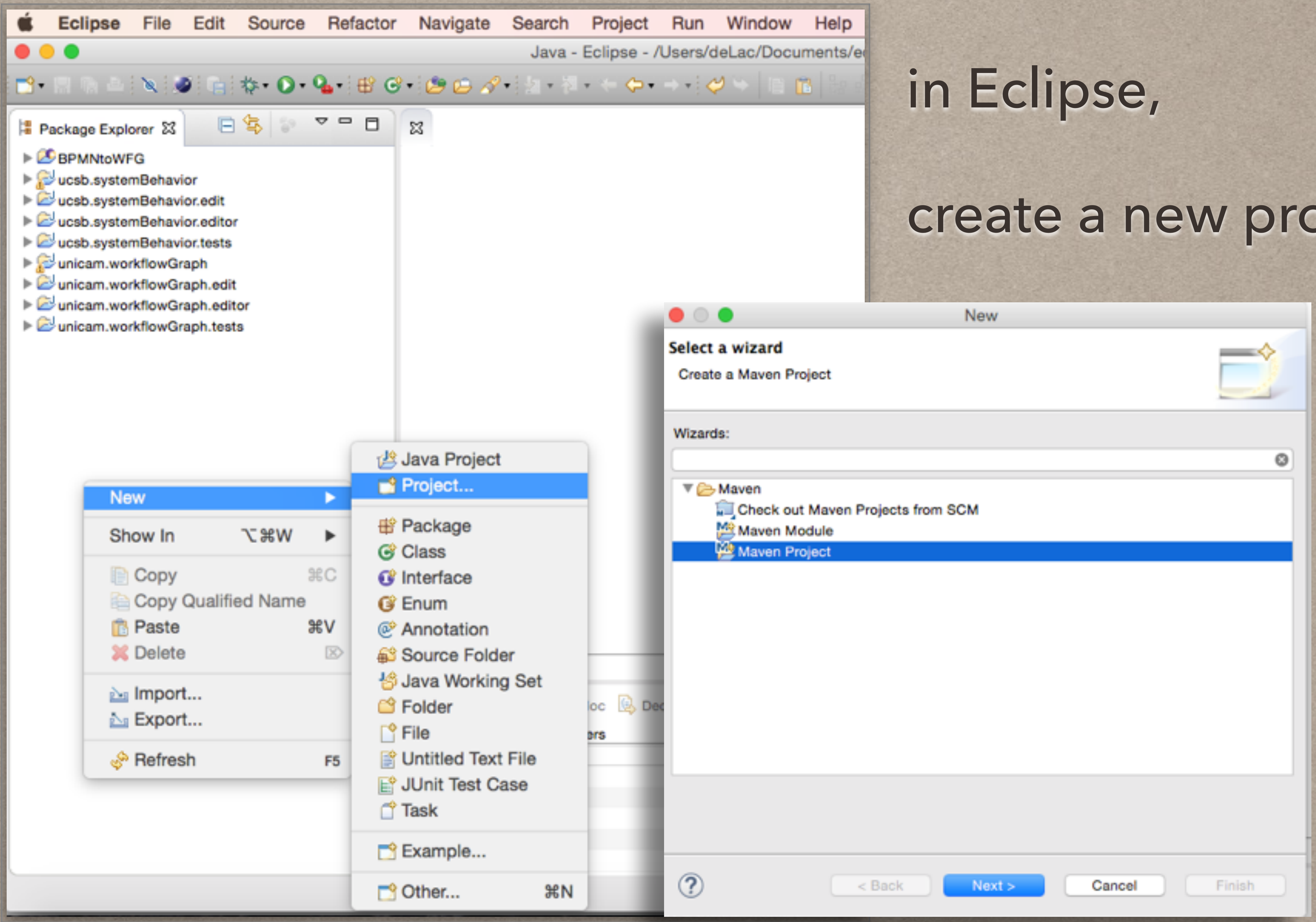
Ok, I installed the plugin **m2e**. Do I need also to install **Maven** in my system?

Nop! Although **plugin is not actually using Maven,** It uses component that is part of Maven called Maven Embedder.

The m2eclipse is currently using the Embedder component from Maven 3.0.

So… m2e is all bundled up: it has an embedded Maven

M2E - GETTING STARTED



in Eclipse,

create a new project

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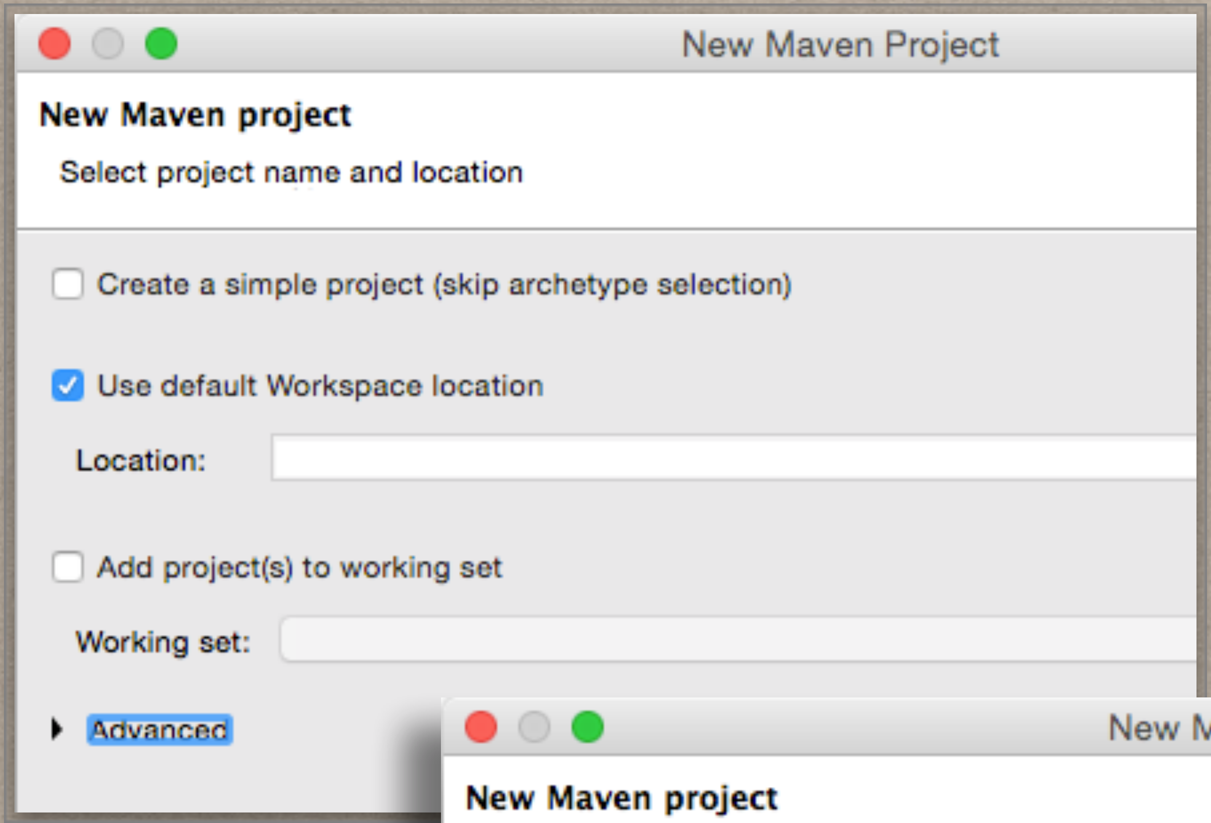
M2E - GETTING STARTED


New Maven Project

New Maven project

Select project name and location

☐ Create a simple project (skip archetype selection)

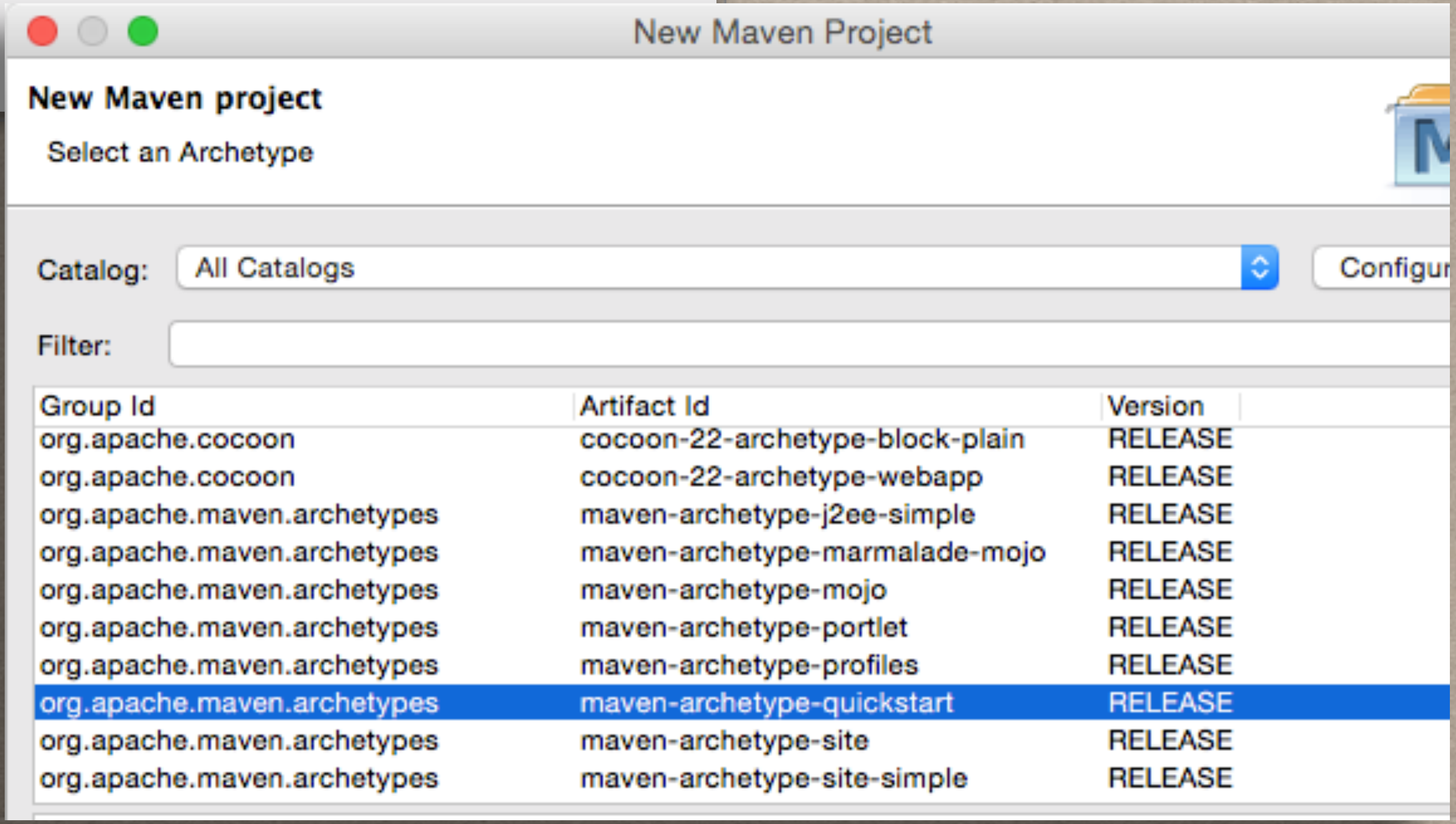
☑ Use default Workspace location

Location:

☐ Add project(s) to working set

Working set:

▸ Advanced


New Maven Project

New Maven project

Select an Archetype

Catalog: All Catalogs

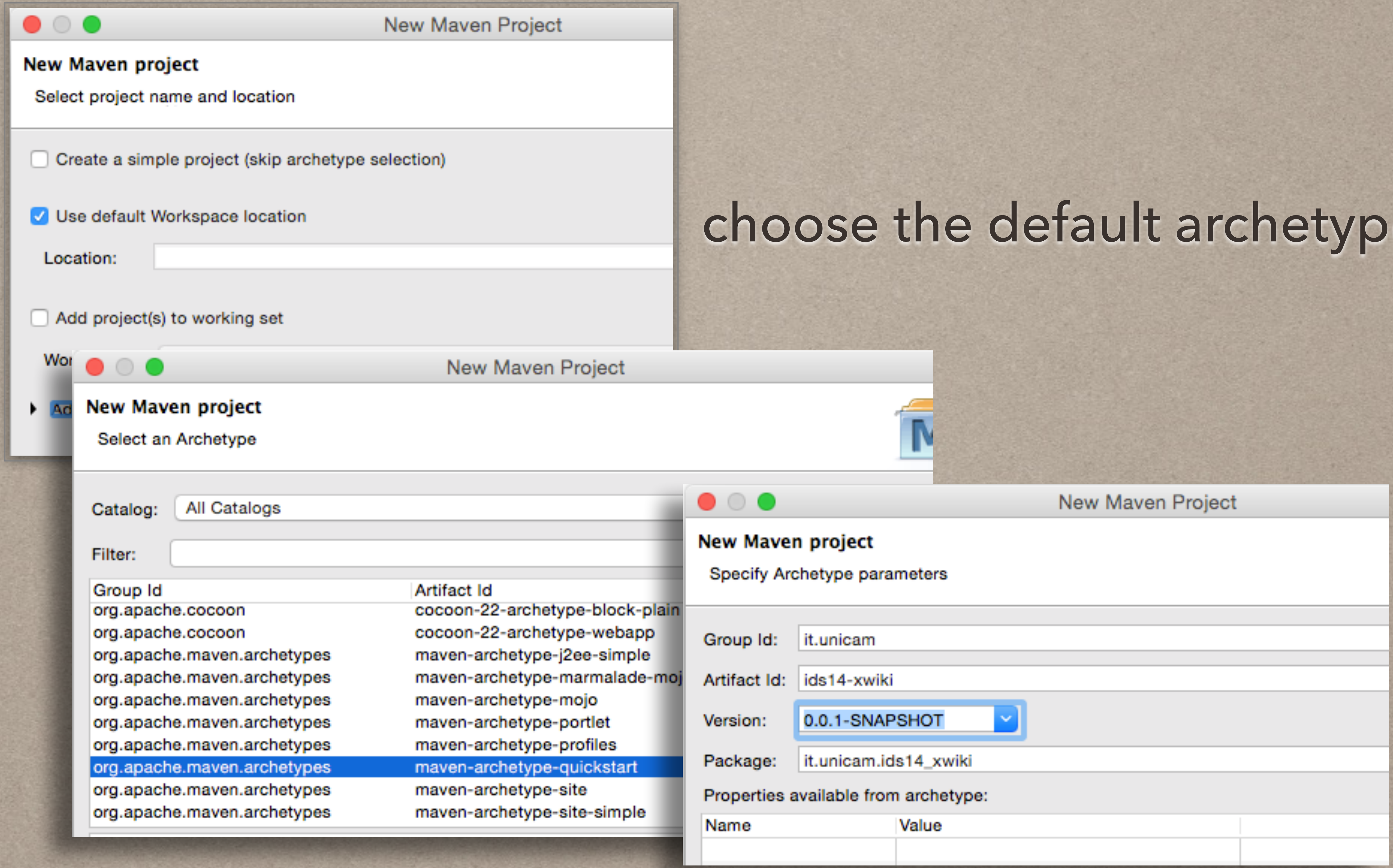
Filter:

Group Id	Artifact Id	Version
org.apache.cocoon	cocoon-22-archetype-block-plain	RELEASE
org.apache.cocoon	cocoon-22-archetype-webapp	RELEASE
org.apache.maven.archetypes	maven-archetype-j2ee-simple	RELEASE
org.apache.maven.archetypes	maven-archetype-marmalade-mojo	RELEASE
org.apache.maven.archetypes	maven-archetype-mojo	RELEASE
org.apache.maven.archetypes	maven-archetype-portlet	RELEASE
org.apache.maven.archetypes	maven-archetype-profiles	RELEASE
org.apache.maven.archetypes	maven-archetype-quickstart	RELEASE
org.apache.maven.archetypes	maven-archetype-site	RELEASE
org.apache.maven.archetypes	maven-archetype-site-simple	RELEASE

choose the default archetype

M2E - GETTING STARTED

choose the default archetype


New Maven Project

New Maven project

Select project name and location

☐ Create a simple project (skip archetype selection)

☑ Use default Workspace location

Location:

☐ Add project(s) to working set

New Maven Project

New Maven project

Select an Archetype

Catalog: All Catalogs

Filter:

Group Id	Artifact Id
org.apache.cocoon	cocoon-22-archetype-block-plain
org.apache.cocoon	cocoon-22-archetype-webapp
org.apache.maven.archetypes	maven-archetype-j2ee-simple
org.apache.maven.archetypes	maven-archetype-marmalade-moj
org.apache.maven.archetypes	maven-archetype-mojo
org.apache.maven.archetypes	maven-archetype-portlet
org.apache.maven.archetypes	maven-archetype-profiles
org.apache.maven.archetypes	maven-archetype-quickstart
org.apache.maven.archetypes	maven-archetype-site
org.apache.maven.archetypes	maven-archetype-site-simple

New Maven Project

New Maven project

Specify Archetype parameters

Group Id: it.unicam

Artifact Id: ids14-xwiki

Version: 0.0.1-SNAPSHOT

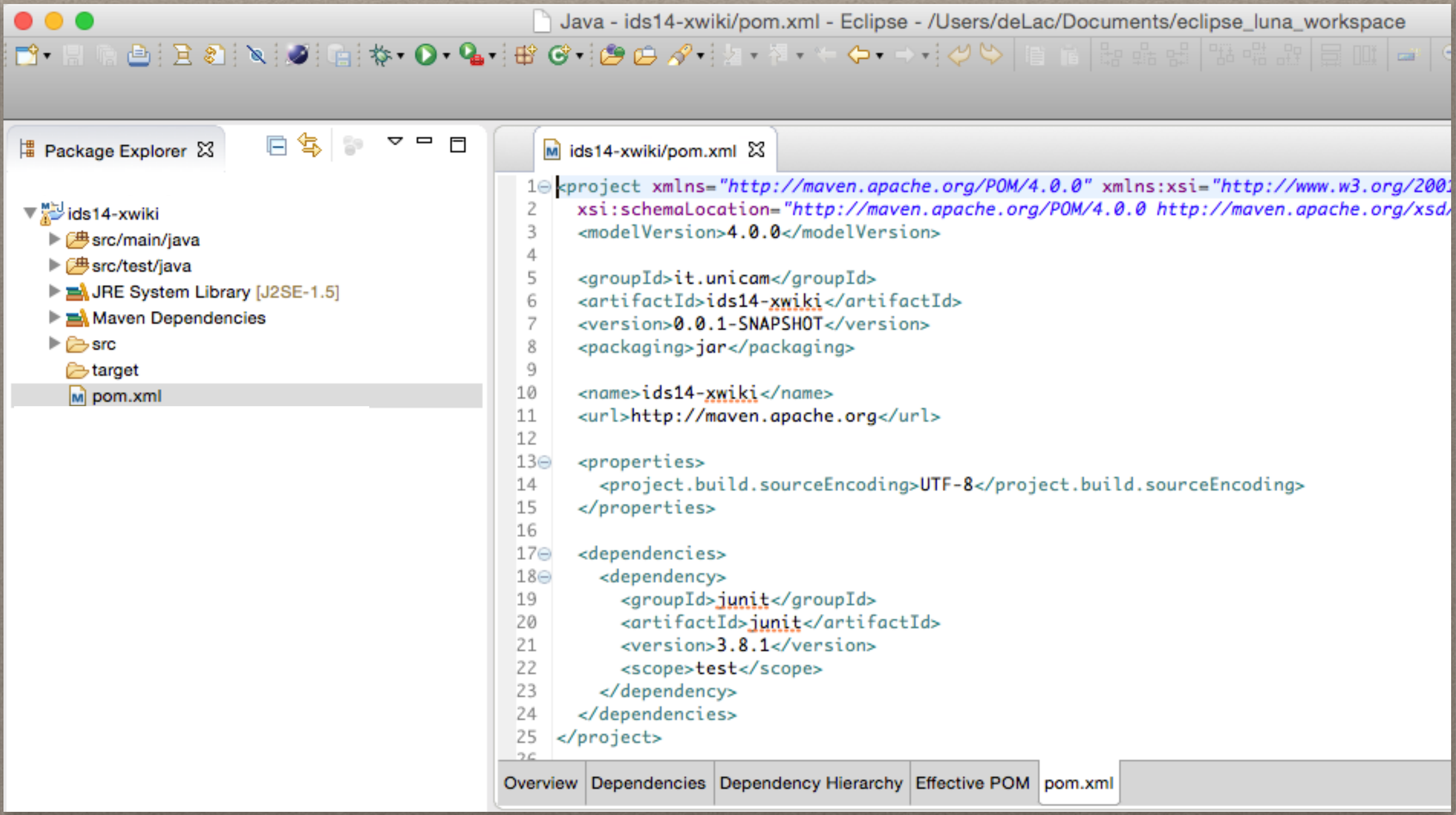
Package: it.unicam.ids14_xwiki

Properties available from archetype:

Name	Value

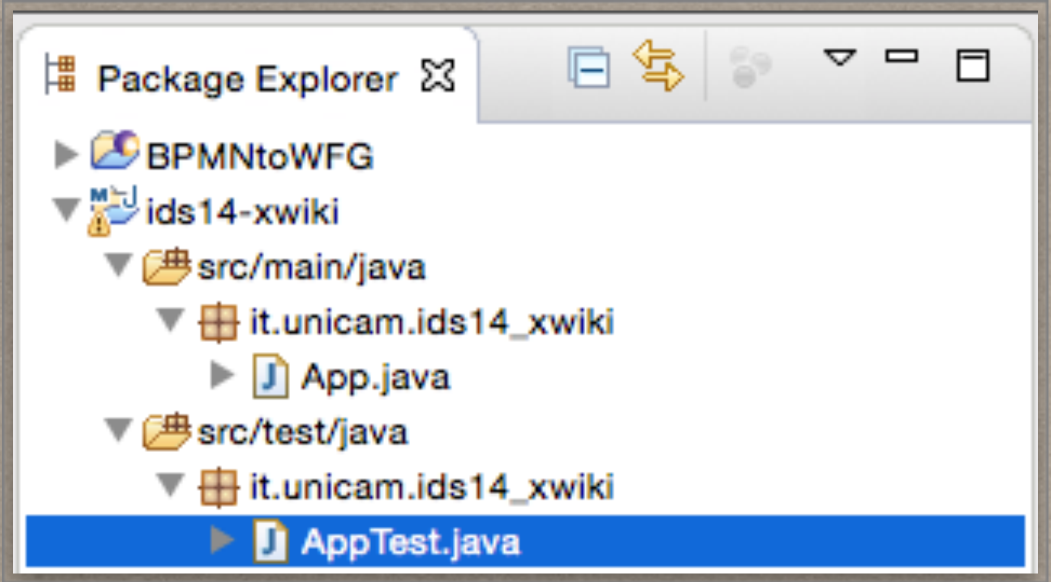
M2E - GETTING STARTED

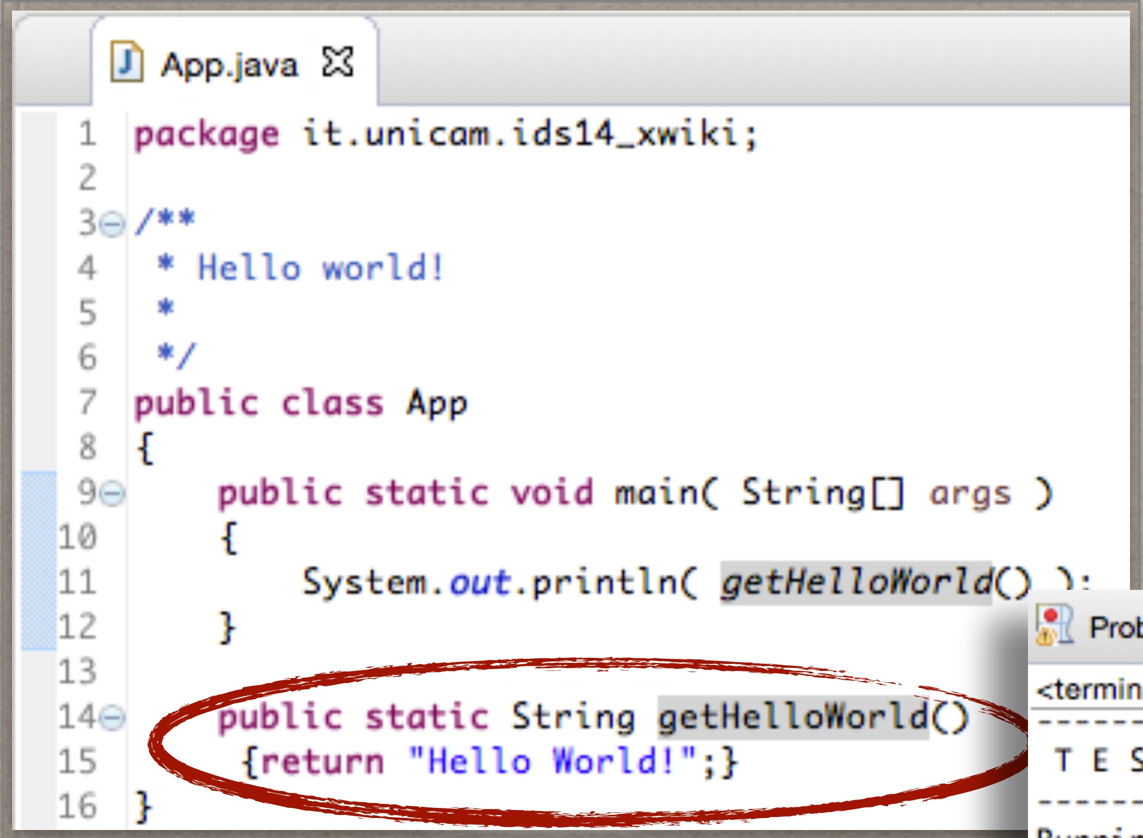
and this is the default pom.xml


Java - ids14-xwiki/pom.xml - Eclipse - /Users/deLac/Documents/eclipse_luna_workspace

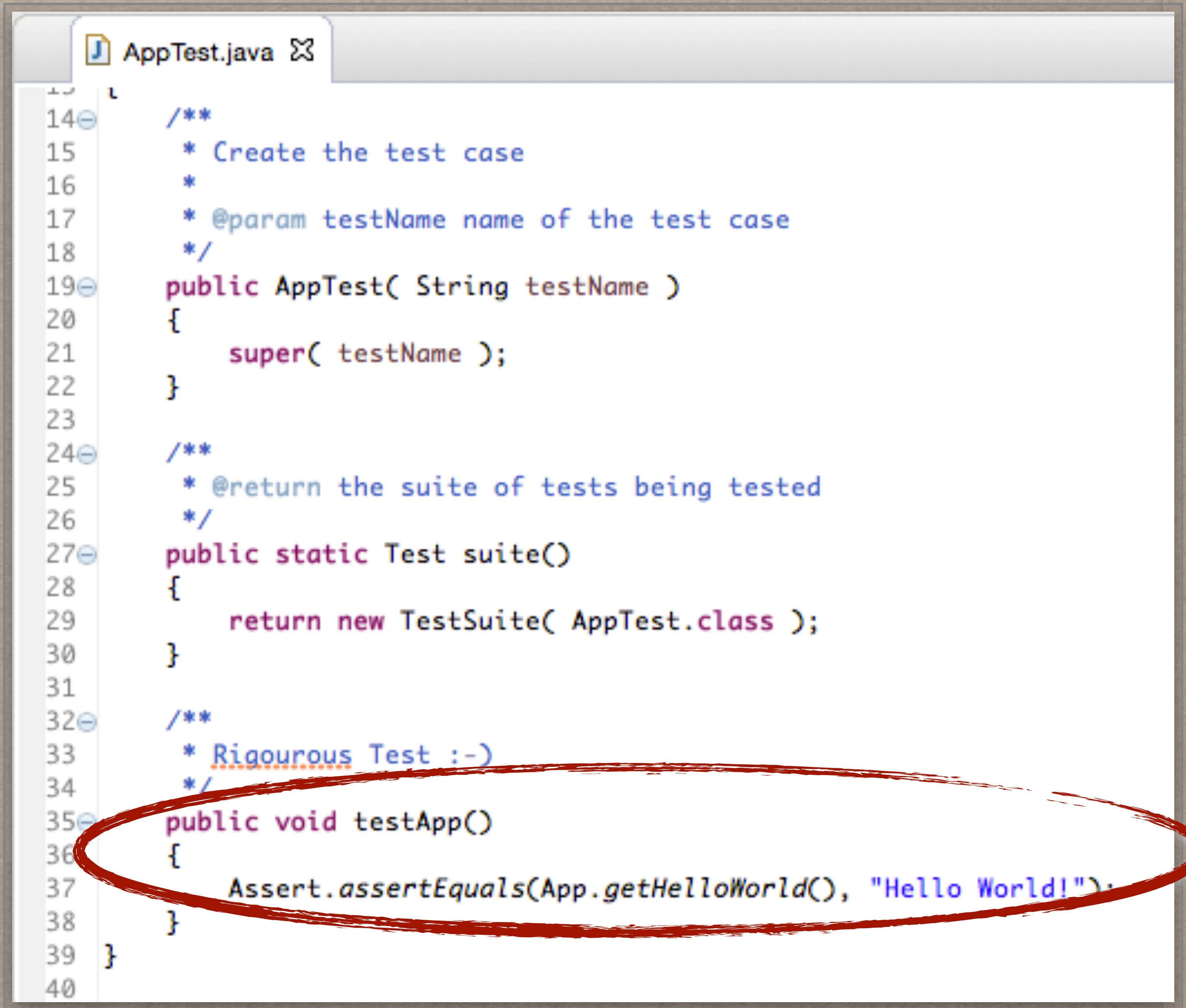
```xml
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001
  xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/
  <modelVersion>4.0.0</modelVersion>

  <groupId>it.unicam</groupId>
  <artifactId>ids14-xwiki</artifactId>
  <version>0.0.1-SNAPSHOT</version>
  <packaging>jar</packaging>

  <name>ids14-xwiki</name>
  <url>http://maven.apache.org</url>

  <properties>
    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
  </properties>

  <dependencies>
    <dependency>
      <groupId>junit</groupId>
      <artifactId>junit</artifactId>
      <version>3.8.1</version>
      <scope>test</scope>
    </dependency>
  </dependencies>
</project>
```

M2E - TEST

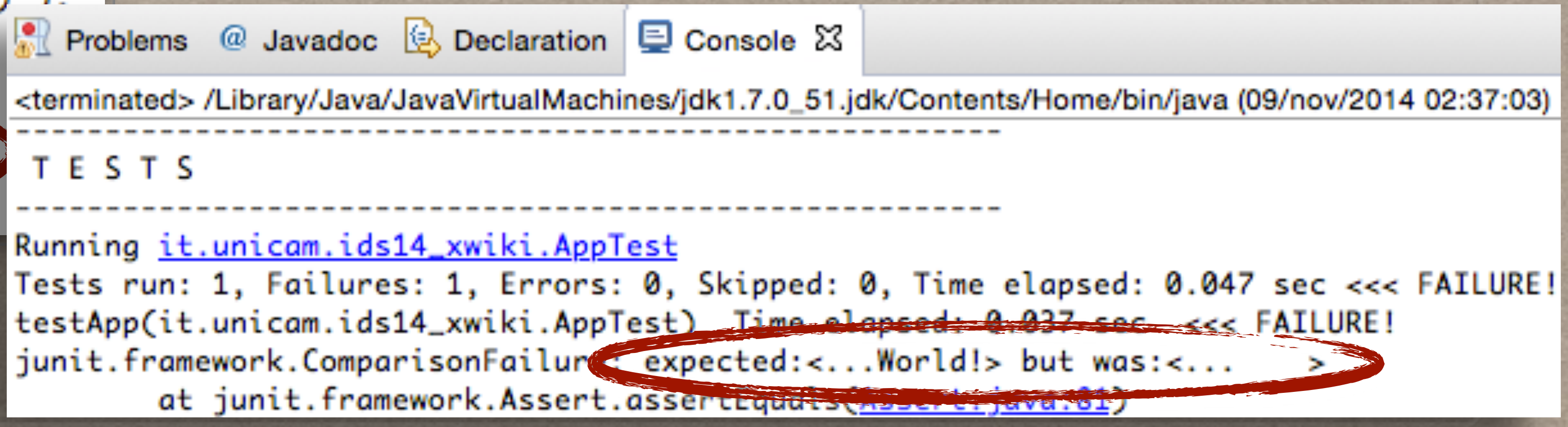



App.java

```java
package it.unicam.ids14_xwiki;

/**
 * Hello world!
 *
 */
public class App
{
    public static void main( String[] args )
    {
        System.out.println( getHelloWorld() );
    }

    public static String getHelloWorld()
     {return "Hello World!";}
}
```


AppTest.java

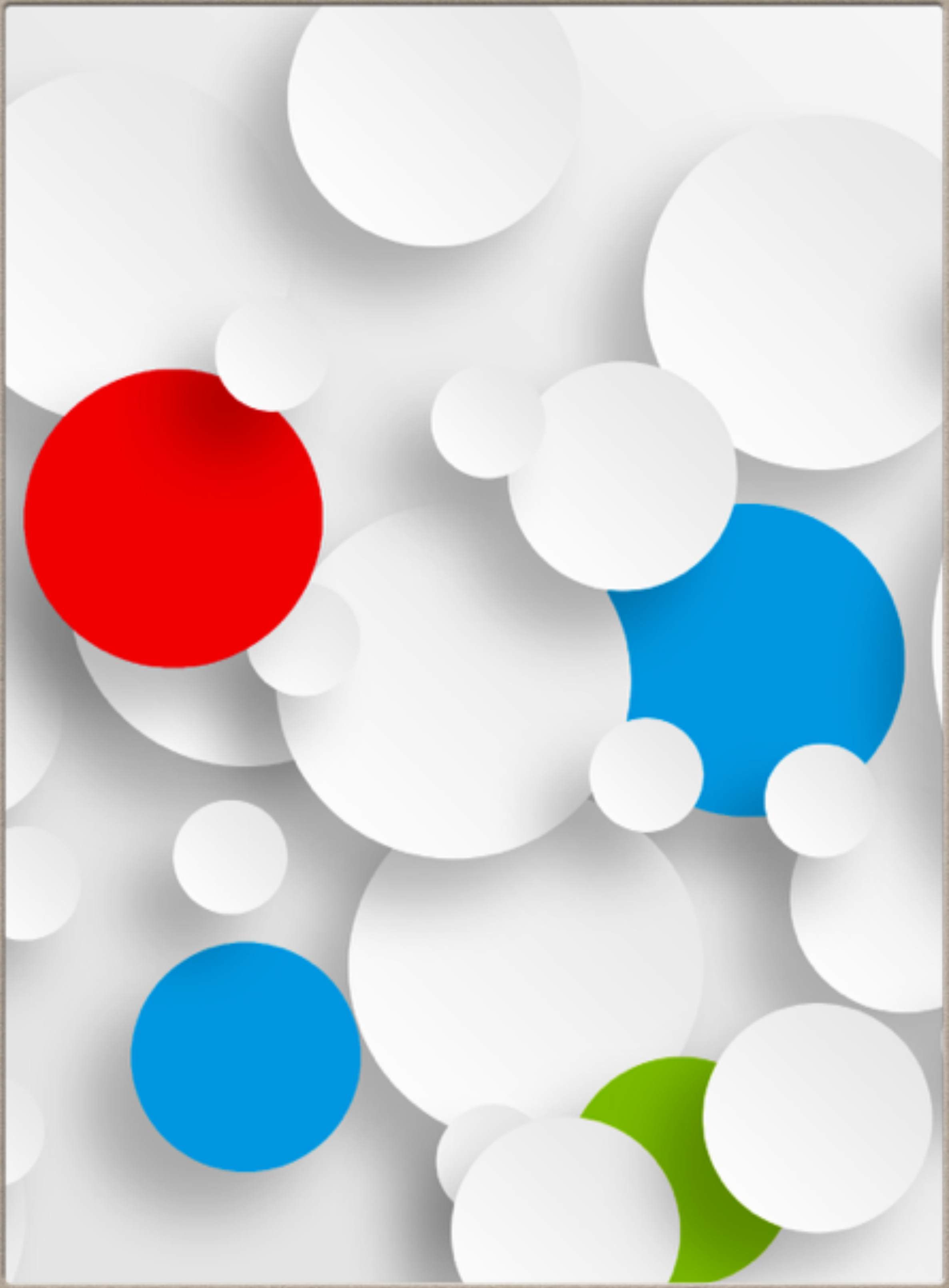
```java
{
    /**
     * Create the test case
     *
     * @param testName name of the test case
     */
    public AppTest( String testName )
    {
        super( testName );
    }

    /**
     * @return the suite of tests being tested
     */
    public static Test suite()
    {
        return new TestSuite( AppTest.class );
    }

    /**
     * Rigourous Test :-)
     */
    public void testApp()
    {
        Assert.assertEquals(App.getHelloWorld(), "Hello World!");
    }
}
```



```
<terminated> /Library/Java/JavaVirtualMachines/jdk1.7.0_51.jdk/Contents/Home/bin/java (09/nov/2014 02:37:03)
-------------------------------------------------------
 T E S T S
-------------------------------------------------------
Running it.unicam.ids14_xwiki.AppTest
Tests run: 1, Failures: 1, Errors: 0, Skipped: 0, Time elapsed: 0.047 sec <<< FAILURE!
testApp(it.unicam.ids14_xwiki.AppTest)  Time elapsed: 0.037 sec  <<< FAILURE!
junit.framework.ComparisonFailure: expected:<...World!> but was:<...     >
	at junit.framework.Assert.assertEquals(Assert.java:81)
```

XWIKI

THE BEST WAY TO ORGANIZE INFORMATION



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X-WIKI - WHAT IS IT?

http://www.xwiki.org/xwiki/

- First generation wikis are used to collaborate on content
- Second generation wikis can be used to create collaborative web applications.
- **XWiki** can be used either as a first generation wiki or a second generation one
- XWiki is the toolkit for the web!

X-WIKI - WHAT IS IT?

http://www.xwiki.org/xwiki/

examples of applications:

- A blogging application
- An RSS feed aggregator
- Mashups. For example combining Google Maps with Delicious with Flickr with Google Base with Google Calendar with...
- Collaborative authoring of documents in real time
- Form-based applications to enter collections of items
- A Poll/Survey application
- A Forum application

X-WIKI - WHAT IS IT?

http://www.xwiki.org/xwiki/

examples of applications:

- MyXWiki.org is a free service offered by XWiki SAS for non-profit organizations and individuals.
- For company needs, XWiki SAS offers XWiki Cloud and professional hosting and support services.
- Organizations evaluating wikis can also download a standard distribution of XWiki Enterprise for this purpose.

X-WIKI RENDERING FRAMEWORK

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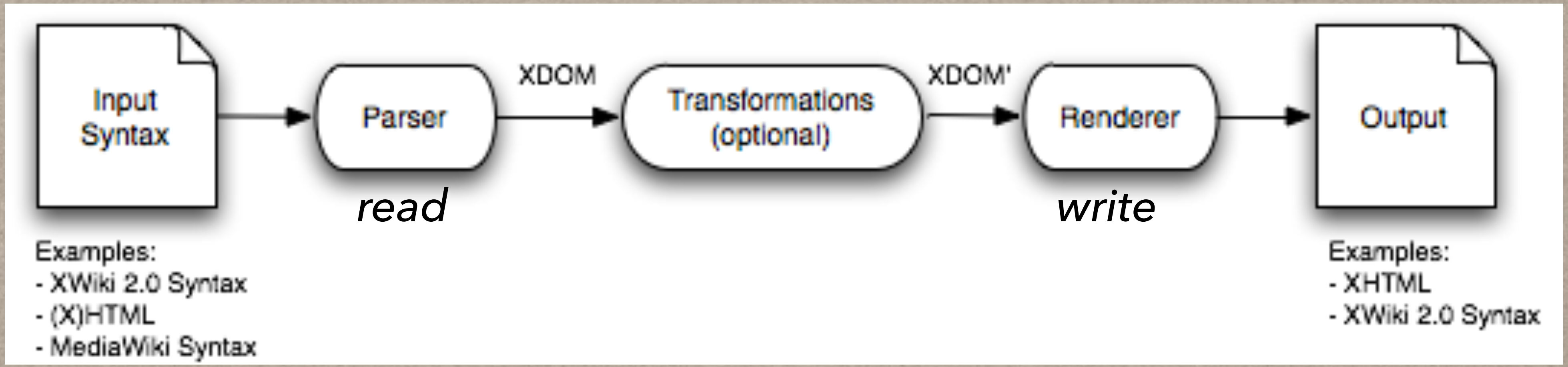
X-WIKI RENDERING - WHAT IS IT?

http://rendering.xwiki.org

Mission: Transform some textual input content in a given syntax into an output content in another syntax.



the input in a given syntax is transformed in XDOM object, which is an AST representing the input into structured blocks. It could be transformed in a modified XDOM, then is used to generate the output

X-WIKI RENDERING - SUPPORTED SYNTAXES

	input	output
XWiki 2.1	yes	yes
XWiki 1.0	yes	no
HTML 4.01	yes	yes
XHTML 1.0	yes	yes
Plain Text	yes	yes
XDOM	yes	yes
XML 1.0	yes	yes
MediaWiki	yes	yes
APT	yes	yes
…….		

Input Syntax

It means there's a Parser that can be used to parse this syntax into a XDOM object

Output Syntax

It means there's a Renderer that can be used to render an XDOM into this syntax

HOW TO ADD X-WIKI RENDER WITH MAVEN

Daniele Fanì

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X-WIKI RENDERING WITH MAVEN

http://rendering.xwiki.org/xwiki/GettingStarted

The **XWiki Rendering** JARs are available in the **Maven Central Repository** since XWiki Rendering 3.2 Milestone 3.

justs add dependency to xwiki-rendering-parser-xwiki21 and the xwiki-common-component-default. These will import all the needed libraries (but macros).

```
 <dependencies>
   <dependency>
     <groupId>org.xwiki.rendering</groupId>
     <artifactId>xwiki-rendering-syntax-xwiki21</artifactId>
     <version>4.1.3</version>
   </dependency>
   <dependency>
     <groupId>org.xwiki.commons</groupId>
     <artifactId>xwiki-commons-component-default</artifactId>
     <version>6.2.3</version>
   </dependency>
    </dependencies>
</project>
```

X-WIKI RENDERING WITH MAVEN

http://rendering.xwiki.org/xwiki/GettingStarted

XWiki Rendering supports 2 cases:

- If you're not inside a wiki the Link and Image Renderers will only handle links and images pointing to URLs and not handle them if they point to a document.
- To decide if it's inside a wiki or not, the code checks to see if it can find a component implementing the WikiModel interface. This interfaces exposes methods corresponding to features that any wiki should have. This allows you to integrate XWiki Rendering with your own wiki.

X-WIKI RENDERING WITH MAVEN

Example:

Parse content written in XWiki Syntax 2.1, look for all links and wrap them with **italics** and render the whole thing in XWiki Syntax 2.1.

```java
// =========== Initialize Rendering components and allow getting instances ===========
EmbeddableComponentManager componentManager = new EmbeddableComponentManager();
componentManager.initialize(this.getClass().getClassLoader());
// =========== Parse XWiki 2.1 Syntax using a Parser. ===========
Parser parser = componentManager.getInstance(Parser.class, Syntax.XWIKI_2_1.toIdString());
XDOM xdom = parser.parse(new StringReader("This a [[link>MyPage]]"));
// =========== Find all links and make them italic ===========
for (Block block : xdom.getBlocks(new ClassBlockMatcher(LinkBlock.class),
Block.Axes.DESCENDANT)) {
    Block parentBlock = block.getParent();
    Block newBlock = new FormatBlock(Collections.<Block>singletonList(block), Format.ITALIC);
    parentBlock.replaceChild(newBlock, block);
}
// ===========  Generate XWiki 2.1 Syntax as output for example ===========
WikiPrinter printer = new DefaultWikiPrinter();
BlockRenderer renderer = componentManager.getInstance(BlockRenderer.class,
Syntax.XWIKI_2_1.toIdString());
renderer.render(xdom, printer);
Assert.assertEquals("This a //[[link>MyPage]]//", printer.toString());
```

X-WIKI RENDERING WITH MAVEN

To add new Syntax, Parser and Test, visit:

http://rendering.xwiki.org/xwiki/Extending

list of test suite available:

http://rendering.xwiki.org/xwiki/CompatibilityTestSuite