



BUILD TOOLS

- Ant
- Maven
- Gradle (Groovy)
- sbt (Scala)
- Rake (Ruby)
- GNU Make
- ...

→ can be started from IDE

→ but is executed *INDEPENDENT* from IDE

→ so can also be used on a server, ...



<http://maven.apache.org/>

POM.XML

MAVEN BUILD SCRIPT

```
<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>org.ucll.demo</groupId>
  <artifactId>helloproject</artifactId>
  <version>0.0.1-SNAPSHOT</version>
</project>
```

Is that all?

Convention over Configuration!

MAVEN BUILD

Lifecycle Phase
validate
initialize
generate-sources
process-sources
generate-resources
process-resources
compile
process-classes
generate-test-sources
process-test-sources
test-compile
process-test-classes
test
prepare-package
package
pre-integration-test
integration-test
pre-integration-test
verify
install
deploy

- Central concept in Maven: *build lifecycle*
- A build lifecycle is made up of *phases*
- A phase is a step of the build proces

CONVENTION OVER CONFIGURATION

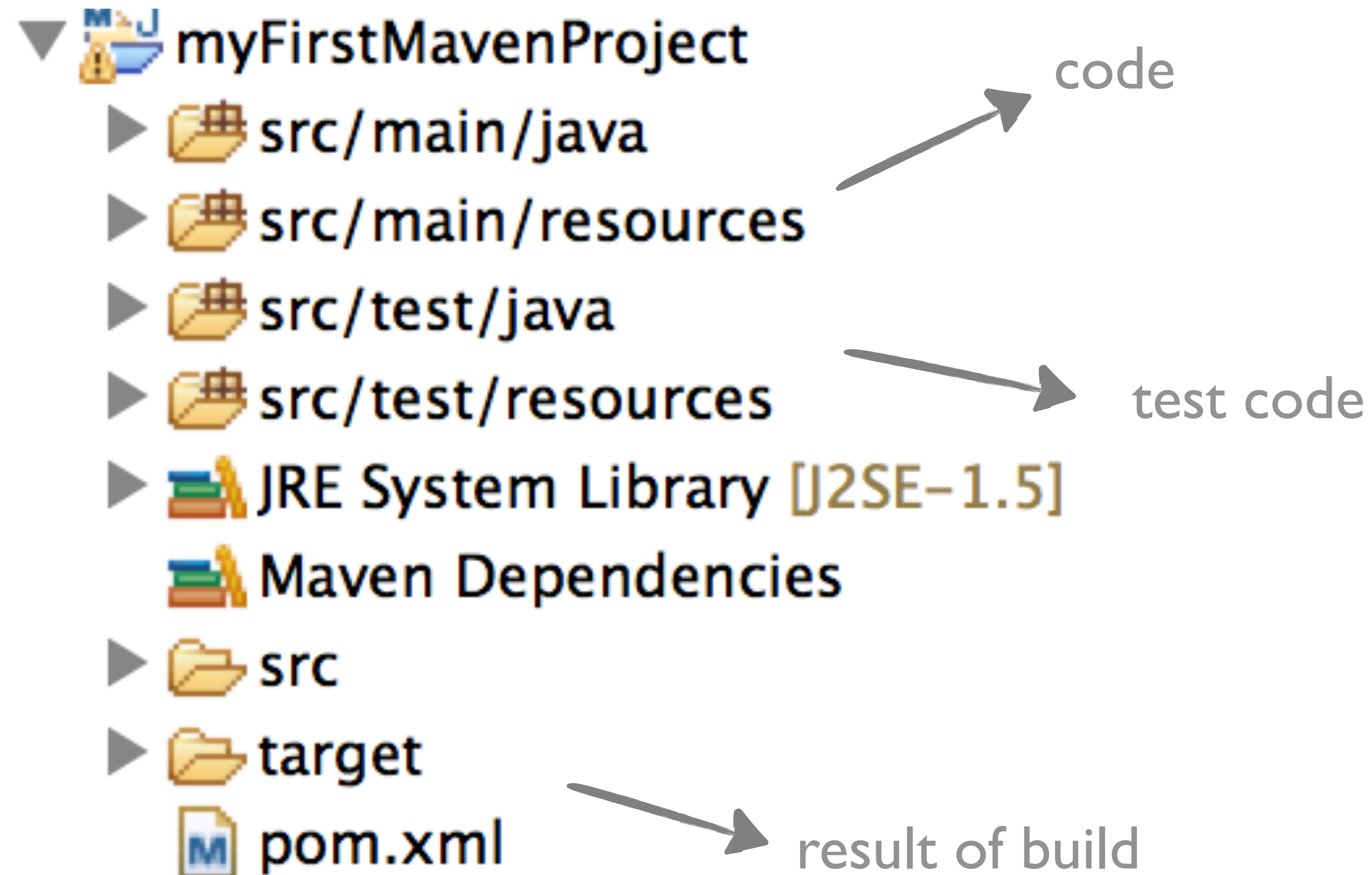
- You do not have to write anything if you
 - don't need anything extra and
 - use the project structure Maven expects


Start Demo

CREATE MAVEN PROJECT

File | New | Other... | Maven | Maven Project

MAVEN PROJECT STRUCTURE



- Example: maven **package**  phase
 - build script is executed
 - phase *package* will be executed
 - but previous phases are executed first
 - all goals of these phases will be executed

- *Validate* ←
- *Compile* ←
- *Test* ←
- • *Package* ←
- *Integration-test*
- *Verify*
- *Install*
- *Deploy*

DEPENDENCY MANAGEMENT

- Manage libraries needed for
 - compiling
 - testing
 - running

JUnit, JSTL, PostgreSQL, ...

DEPENDENCY MANAGEMENT

```
<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>org.ucll.demo</groupId>
  <artifactId>helloproject</artifactId>
  <version>0.0.1-SNAPSHOT</version>
```

```
    <dependencies>
      <dependency>
        <groupId>junit</groupId>
        <artifactId>junit</artifactId>
        <version>4.12</version>
      </dependency>
    </dependencies>
  </project>
```

→ Jar is:

- downloaded and
- stored in local repository

- Extra jars needed → dependency in pom.xml

Start Demo

where did maven
find the jar?!

CREATE MAVEN PROJECT

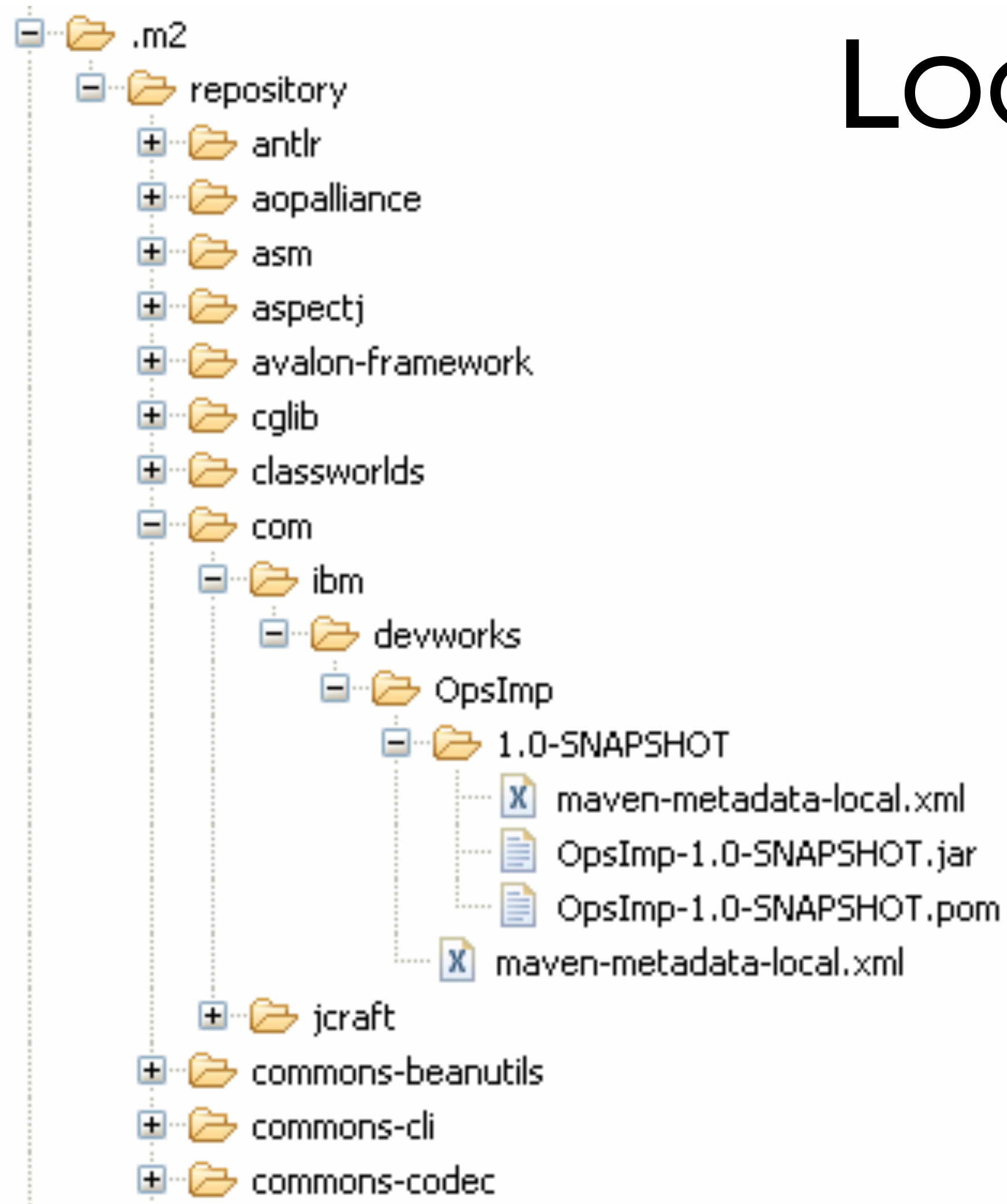
REPOSITORIES

- = directory with all the jars needed, ...
- 3 types
 - *local*: on your computer
 - *central*: provided by Maven community
 - *remote*: custom

Start Demo

DEPENDENCY MANAGEMENT

LOCAL REPOSITORY



- In Windows: C:\Documents and Settings\<your-username>\.m2
- In Unix/Mac OS X: ~/ .m2

CENTRAL REPOSITORY

search.maven.org

The Central Repository

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mvnrepository.com

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Cache Implementations

Cloud Computing

Code Analyzers

What's New in Maven



Opsgenie Core

com.opsgenie » opsgenie-core » 1.1.1

7 usages

Apache

Opsgenie Core

Last Release on Oct 8, 2017



Opsgenie Aws Core

com.opsgenie » opsgenie-aws-core » 1.1.1

4 usages

Apache

Opsgenie Aws Core

Last Release on Oct 8, 2017



Graph Core

org.scala-graph » graph-core_2.12 » 1.12.1

7 usages

Apache

Graph Core

Last Release on Oct 8, 2017

Indexed Repositories (250)

Central

Sonatype Releases

Spring Plugins

Spring Libs

Atlassian

JBoss Releases

Nuxeo Releases

XWiki Releases

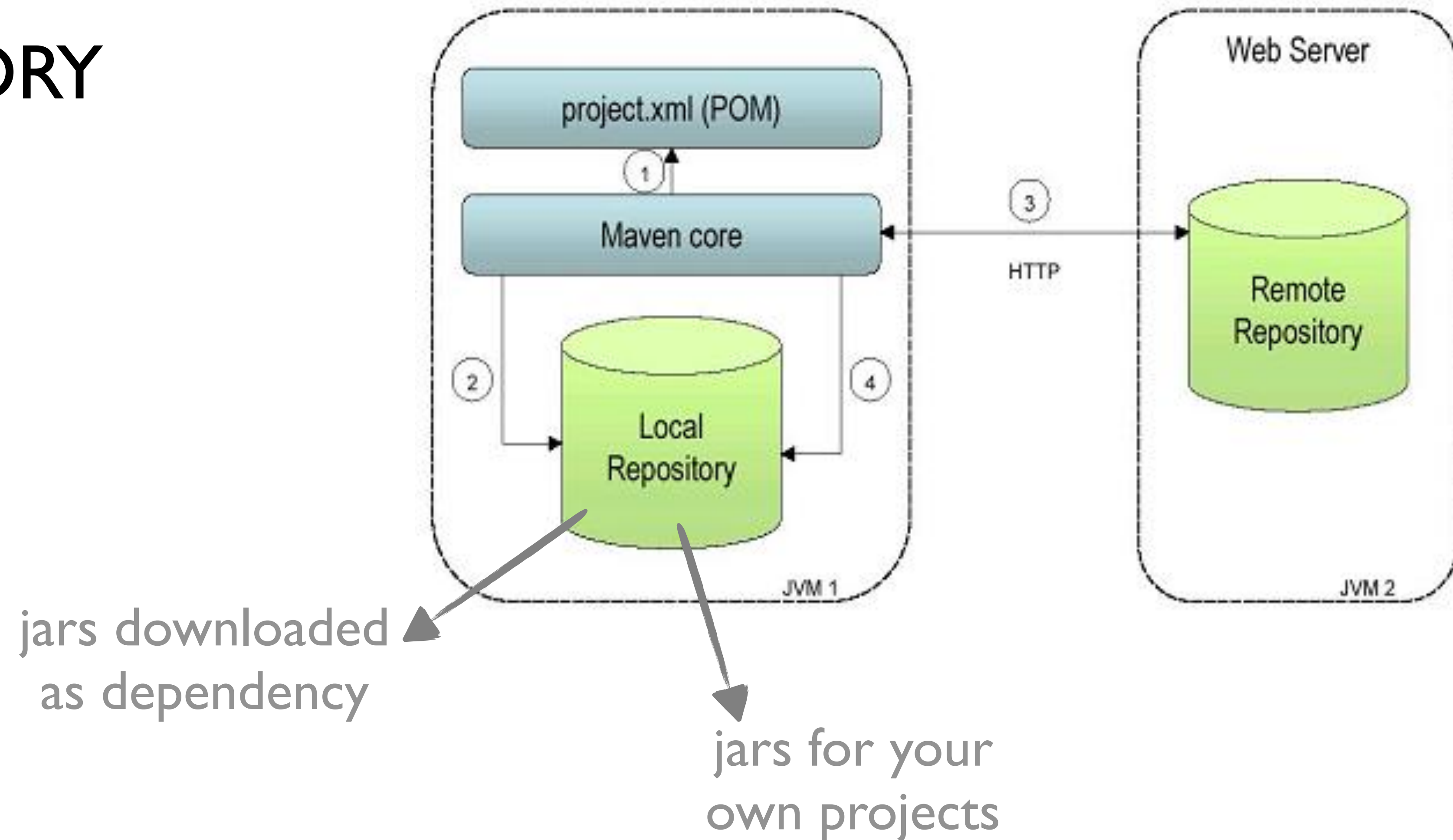
Apache Releases

Clojars

Popular Tags

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REPOSITORY



- In Windows: C:\Documents and Settings\\.m2
- In Unix/Mac OS X: ~/.m2

???