



Maven the Beautiful City

Healthy, Viable, and Productive
Development Infrastructures

A Gentle Introduction to Maven

What is Maven?

- Build tool
 - Similar to Ant but fundamentally different which we will discuss later
- Dependency management tool
- Site management tool

What Maven really is ...

- Model for software projects
- Patterns for software development and development infrastructures
- Ultimately the basis for a new form of team collaboration
- It's ability to be a build, dependency and site tool come from having this model

Development Infrastructures

- Development Infrastructures must provide facilities for:
 - Building
 - Testing
 - Documenting
 - Continuous Integration
 - Releasing
 - Artifact/Asset Management

A consistent model and patterns makes ...

- Automation easier
 - Continuum
- Tooling easier
 - Dependency metadata
 - Standard lifecycle

Why can't I just use Ant?

- You certainly can, but Ant provides no
 - conventions
 - models
 - processes
 - order

Maven Sucks!

- <http://bluxte.net/blog/2006-09/17-52-51.html>
- <http://www.bearaway.org/wp/?p=518>
- <http://www.1060.org/blogxter/publish/5>
- The Bile Blog
- I hate XML! I want to use a real scripting language!
- Maven is restrictive! I can't do exactly what I want!

Infrastructure and Maven

- Intentional infrastructure
 - You have to invest in your infrastructure to yield returns
 - It must be carefully planned, infrastructures don't just happen
- Long-term sustainability
 - The key is keeping people involved
 - sustainability by virtue versus sustainability by force
- Healthy growth in mind
 - Some constraints are necessary
- Promotion of community
 - Create opportunities for people to interact

Questions about infrastructure

- Do you think your infrastructure is wildly different than anyone else's?
- If it is, does it need to be?
- Is your infrastructure a competitive advantage?
- Would you like help with the most difficult infrastructure problems you might face?

Inherent utility

- The infrastructure should provide a lot to make complicated tasks easier
- When complicated tasks are made easy, there is more time for the bigger picture
- What's in the bigger picture?

Maven & Social Capital

- Term coined by Jane Jacobs (The Death and Life of Great American Cities)
- People's ability to work together in groups
- Creation of real communities using the idea of patterns and conscious planning
- Concrete example of the Maven community working to improve project metadata

Maven's Objectives

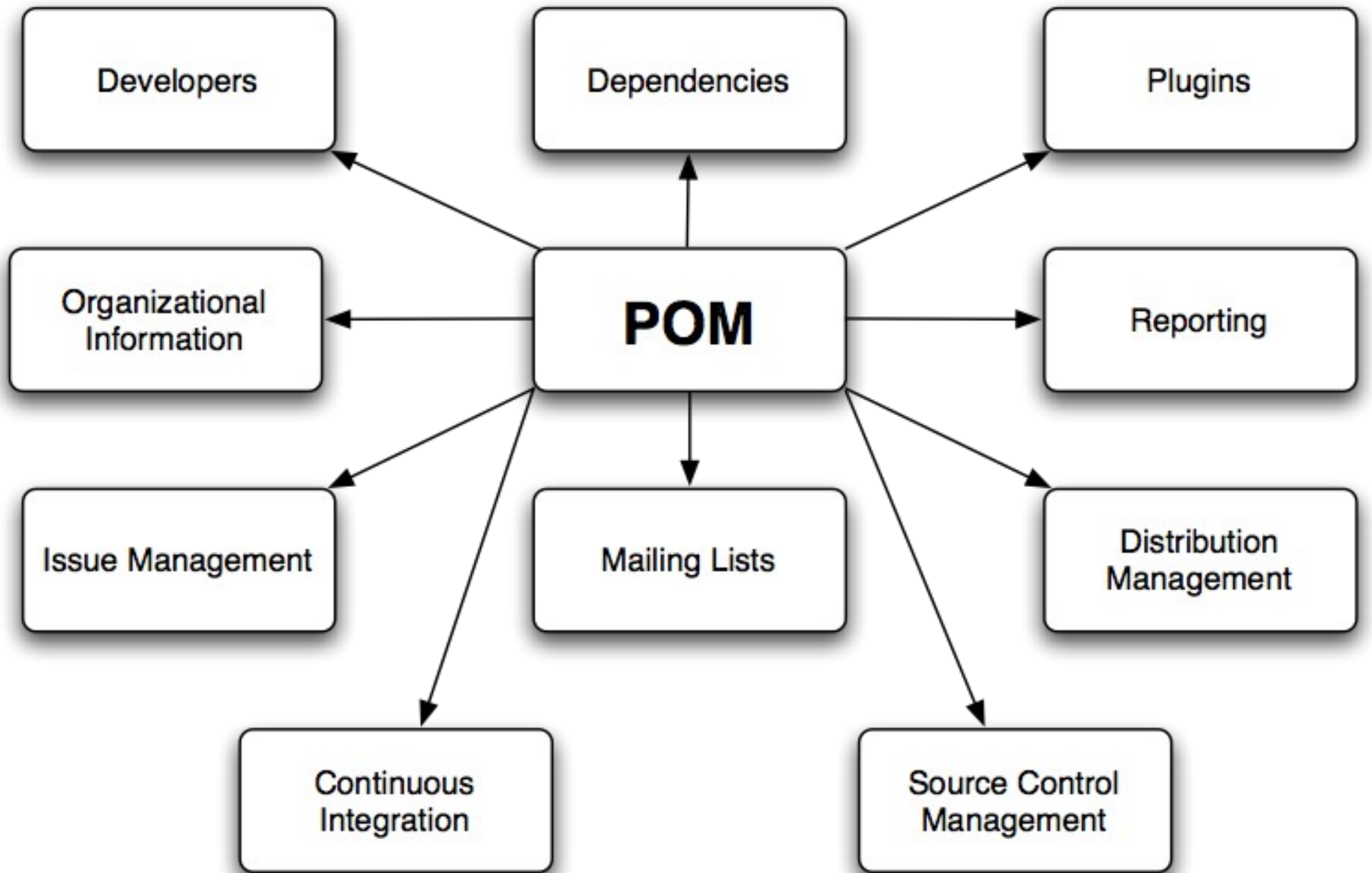
- Standards and Best Practices for build infrastructures
 - We use standard APIs and best practices when developing applications: Maven pushes this practice down to the level of infrastructure
- Provide a shared language for build infrastructure management
 - Patterns for build infrastructures
- Create healthy and robust build infrastructures that hold up to high degrees of flux

Maven's Principles

- Model driven development
- Convention over configuration
- Reuse and encapsulation of build logic
- Coherent organization of dependencies

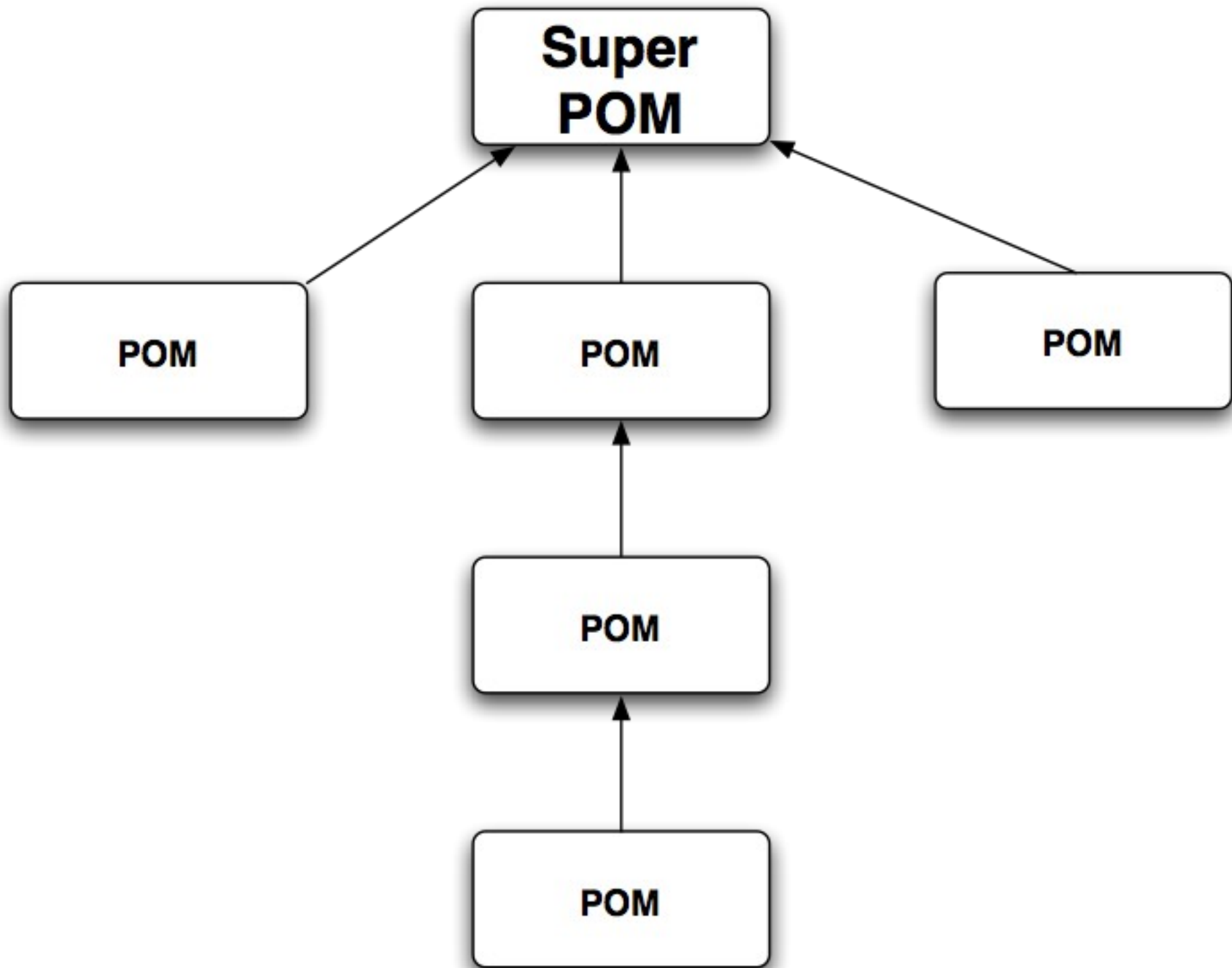
Model driven development

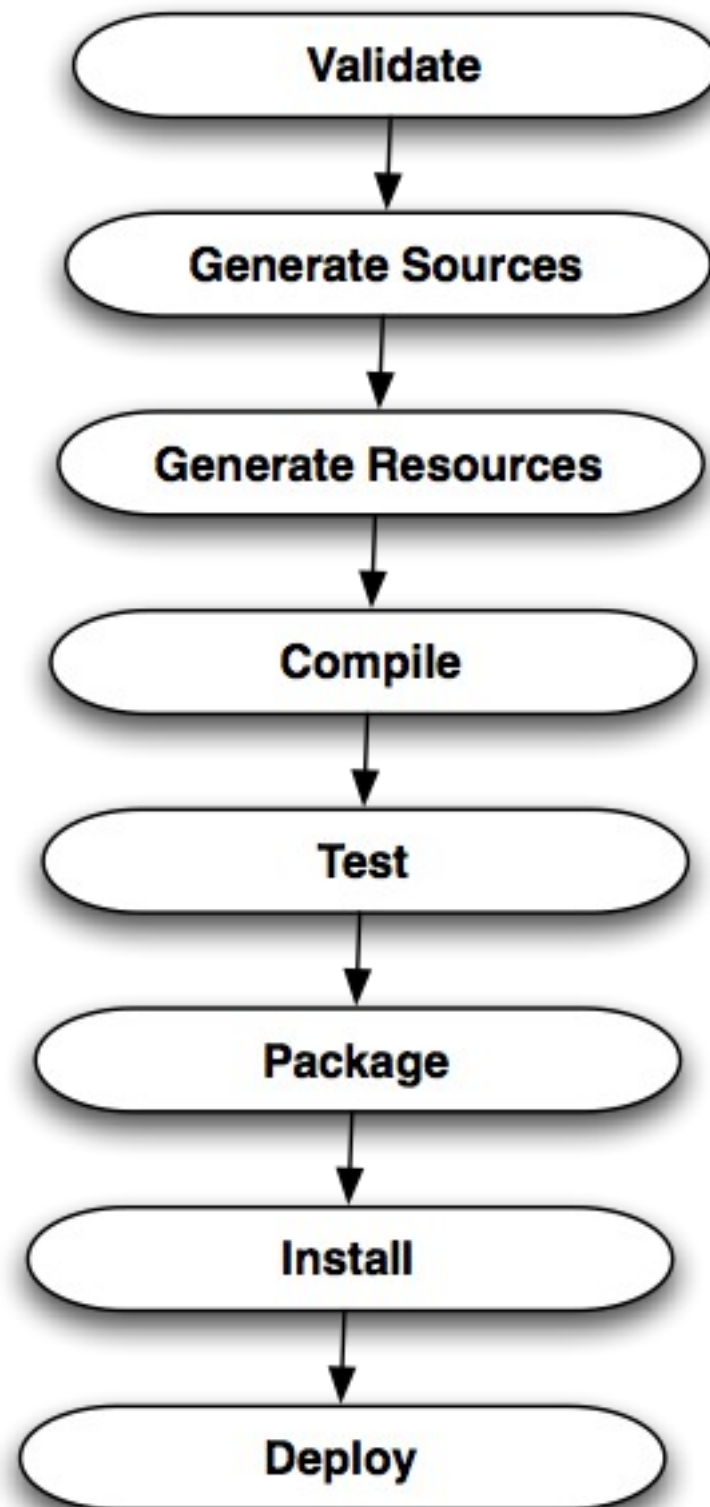
- Maven's project object model (POM)
- Maven's build life cycle



Simple Project Object Model

```
<project>
  <modelVersion>4.0.0</modelVersion>
  <groupId>org.apache.superapp</groupId>
  <artifactId>superapp</artifactId>
  <version>1.0-SNAPSHOT</version>
  <name>Maven Quick Start Archetype</name>
  <dependencies>
    <dependency>
      <groupId>junit</groupId>
      <artifactId>junit</artifactId>
      <version>3.8.1</version>
      <scope>test</scope>
    </dependency>
  </dependencies>
</project>
```



Convention over configuration

- Standard directory layout
- One primary artifact per build
- Standard naming conventions

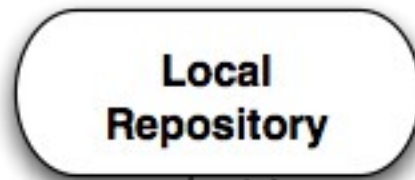
Encapsulation and reuse of build logic

- All build logic is encapsulated in plugins
- Maven is a plugin execution framework
- Plugins can be applied to all Maven projects

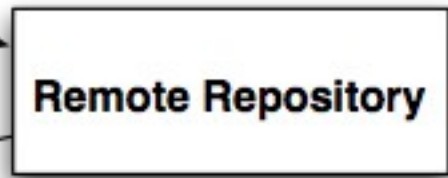
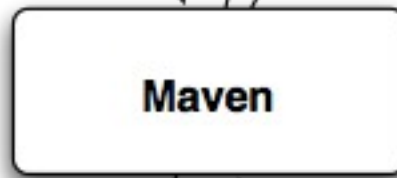
Coherent organization of dependencies

- Say what you need, not where or how to get it
 - Dependencies in Maven are requested in a declarative fashion
- Artifacts and Repositories
 - Remote repositories for the satisfaction of dependencies
 - Local repository is the developers personal analog to a set of remote repositories

Maven checks the local repository for the required dependencies



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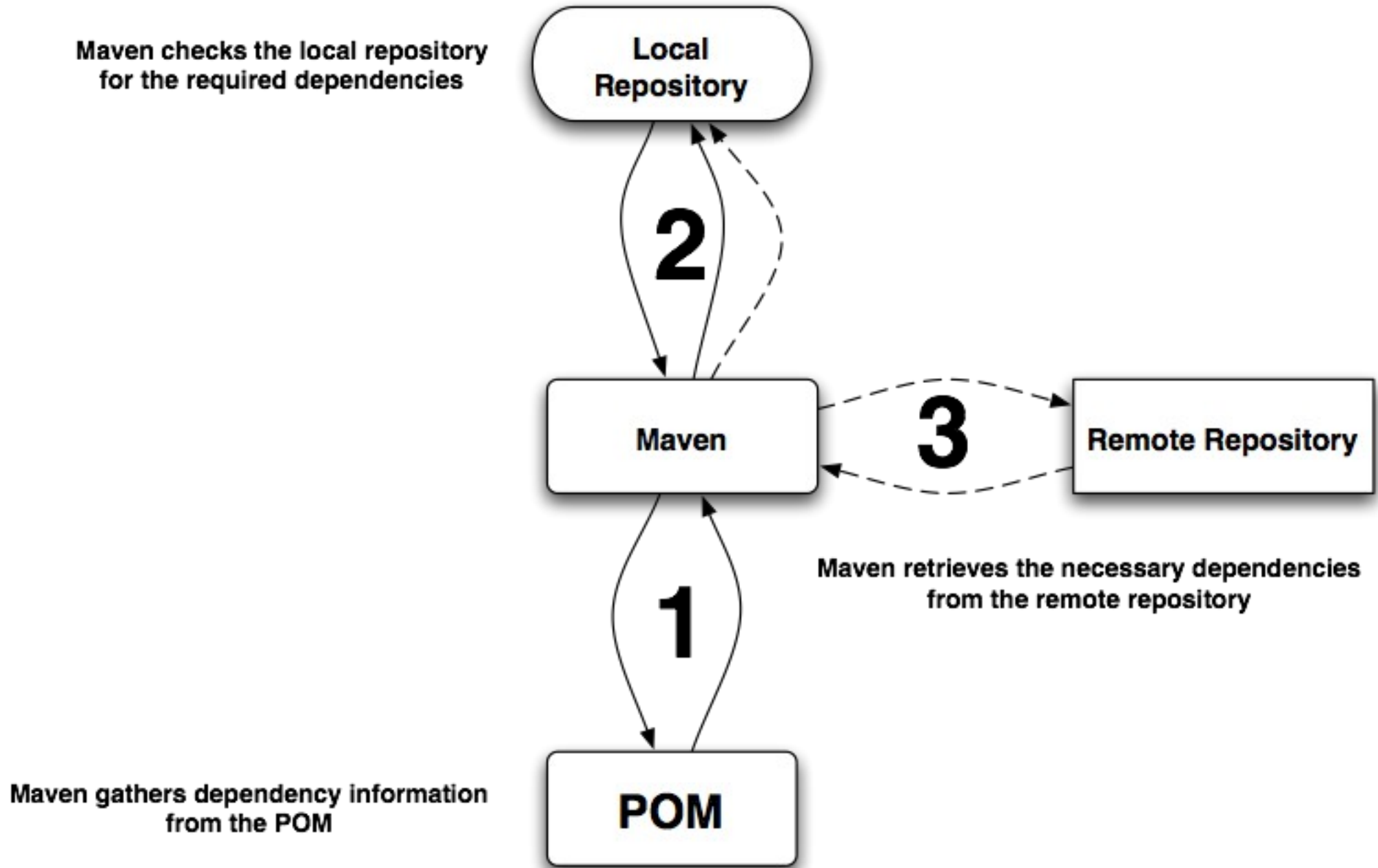
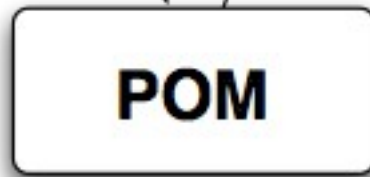


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Maven retrieves the necessary dependencies from the remote repository

1

Maven gathers dependency information from the POM



What Maven Provides

- Coherence - An orderly, logical, and aesthetically consistent relation of parts
- Reusability - Reuse not only of software components but the best practices of an entire industry
- Agility - Maven allows easier integration and project straddling
- Maintainability - Maven projects are more maintainable as there are far fewer surprises

Benefits of Maven

- Relieves the burden of project and build maintenance
- Easy for new users to embrace Best Practices
- Focus on adding value to your applications
- Draw upon the community for solutions

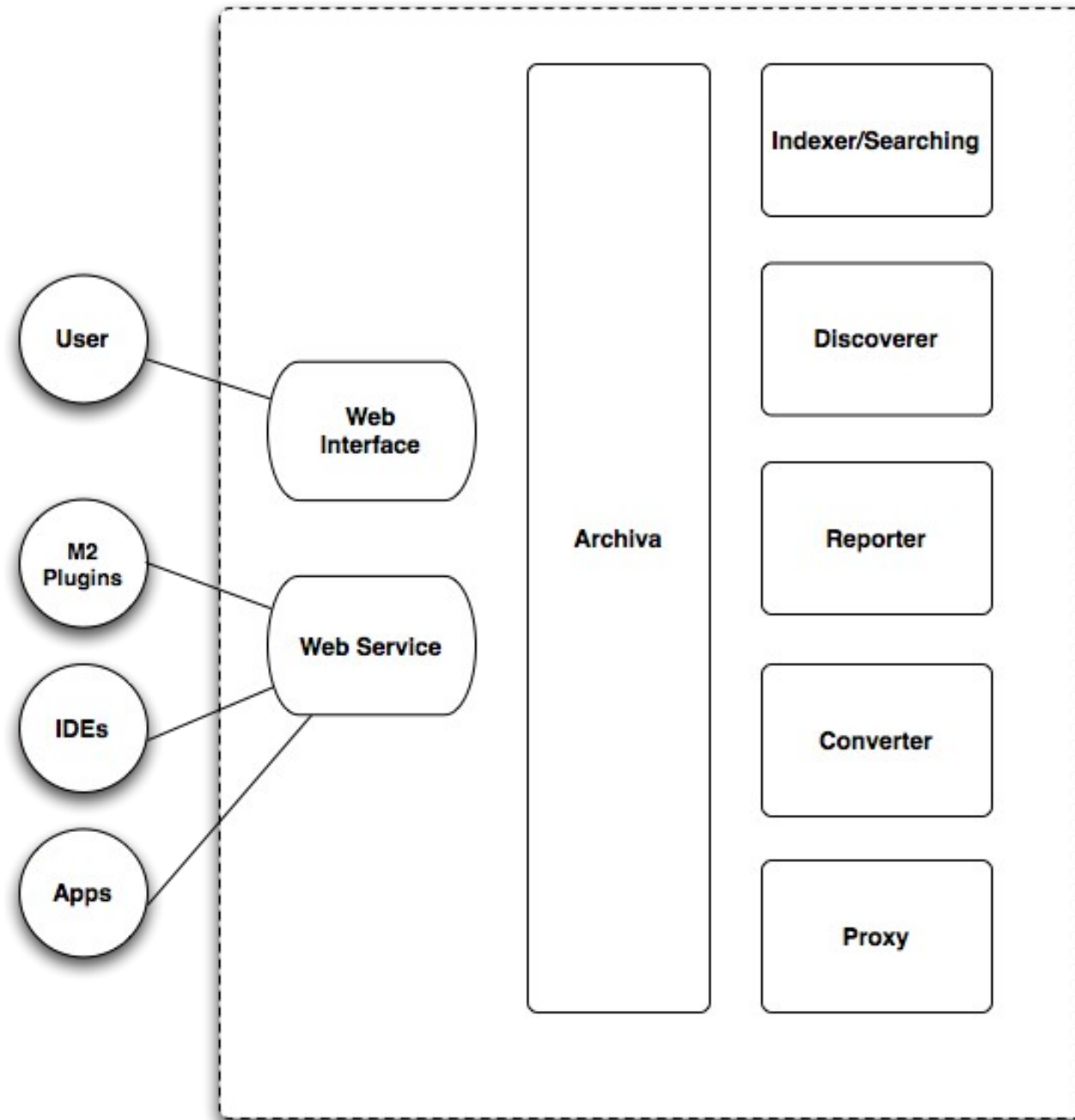
Apache Maven Projects

- Maven
- Archetype
- Archiva
- Continuum
- Doxia
- SCM
- Surefire
- Wagon
- Sandbox
 - Issue Management
 - Wiki Management

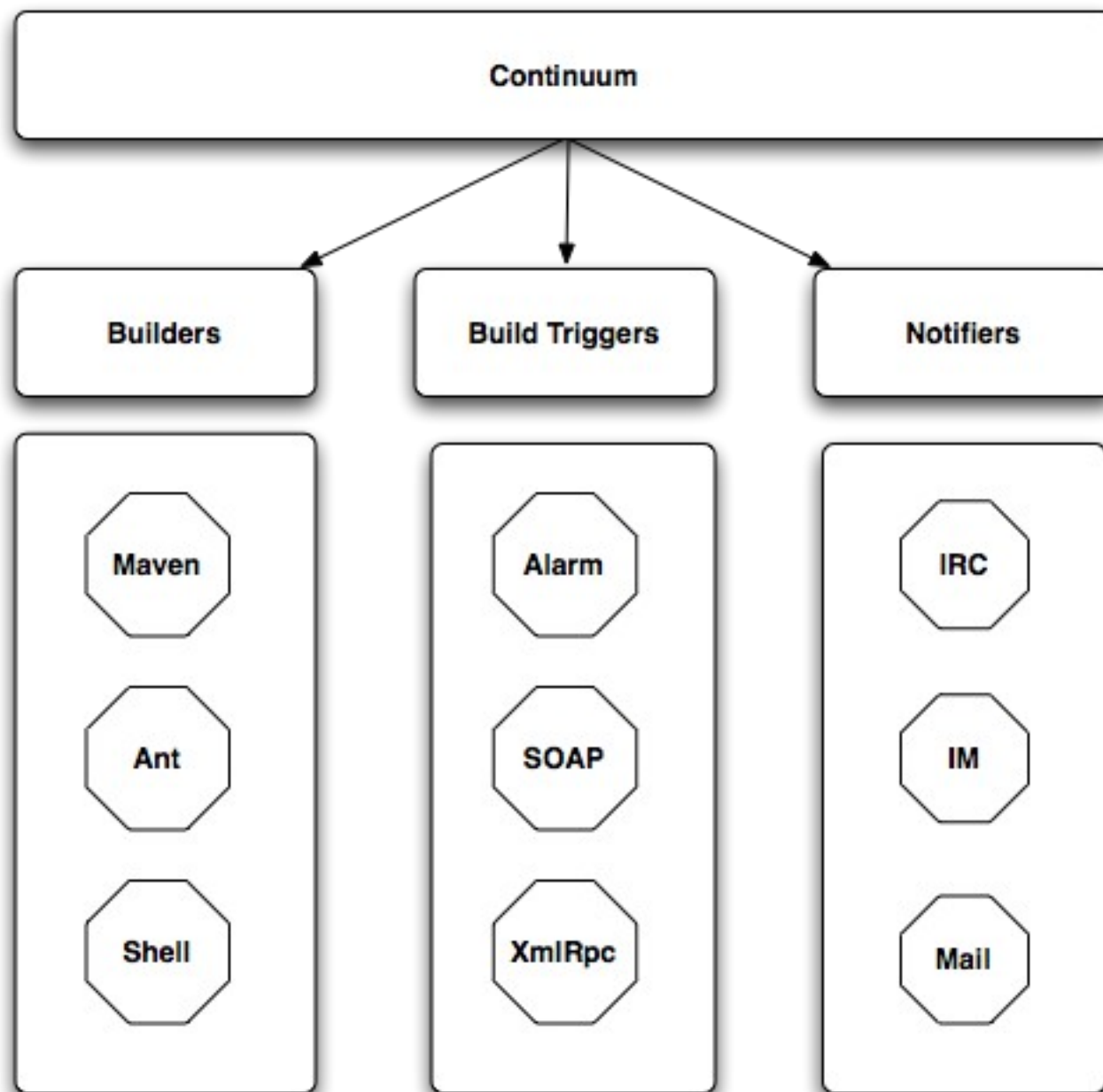
Archetypes

- A very easy way to get a project up and running
- A way to encapsulate your priorities for projects in template form
- Are distributed and sharable like any other Maven artifact

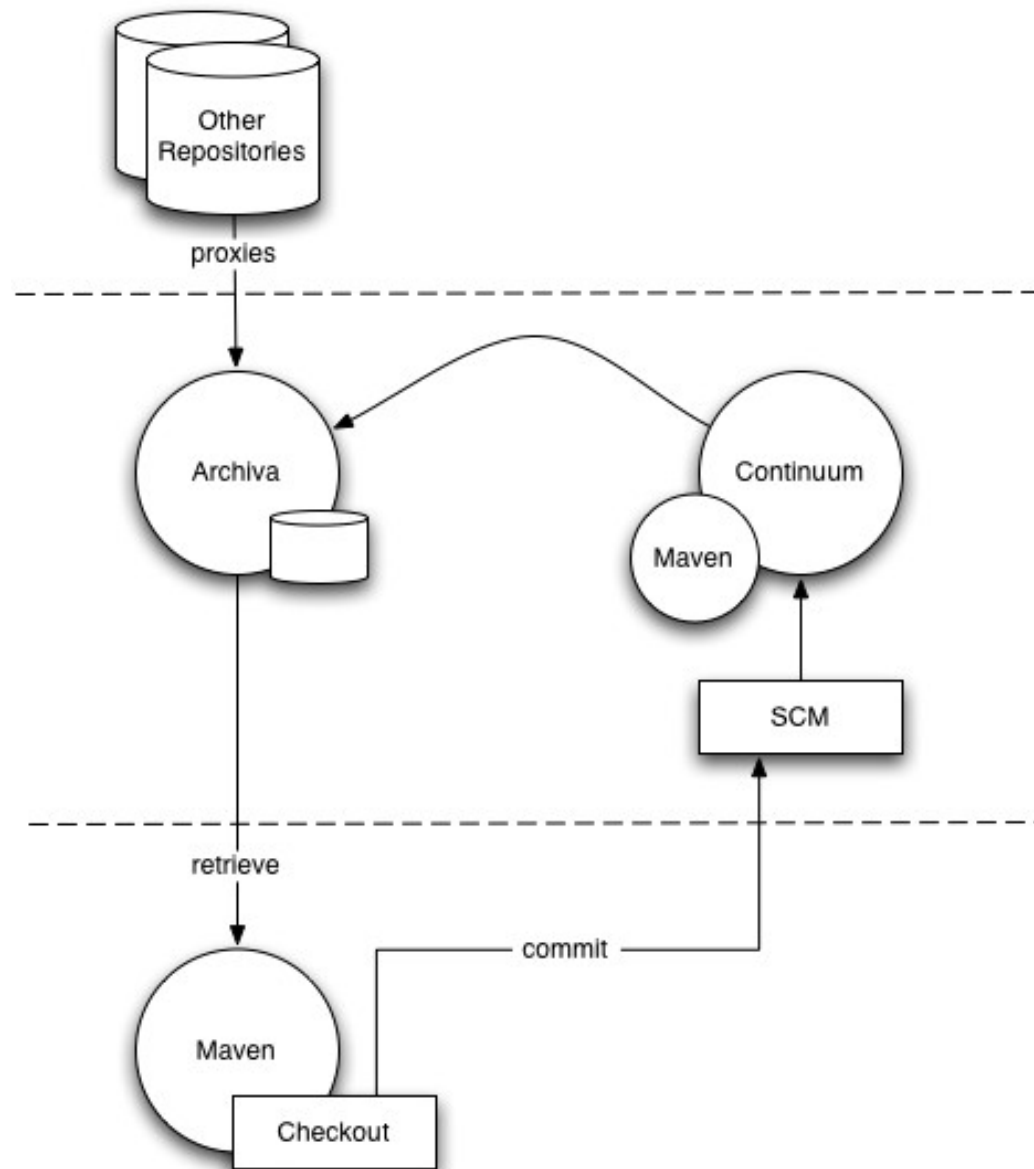
Archiva



Continuum



Artifact-based Development



Maven Doxia

- Parsers

- APT (almost plain text)
- FML (FAQ markup)
- XDoc (Maven 1.x XML format)
- Docbook
- XHTML
- Twiki
- Confluence

- Sinks

- Docbook
- Latex
- RTF
- XDoc
- XHTML
- PDF

Maven SCM

- CVS
- Subversion
- ClearCase
- Perforce
- Starteam
- Visual Source Safe
- Bazaar
- Git (in progress)
- Synergy (in progress)

Maven Surefire

- JUnit
- TestNG
- JUnit4
- Scripted testing
 - Jython
 - JRuby
- Use any source of information for tests
 - Text file
 - XML file

Maven Wagon

- HTTP/S
- SSH
- SFTP
- DAV
- FTP
- File

IDE Tooling

- Netbeans
 - <http://mavenide.codehaus.org/m2-site>
- Eclipse
 - <http://m2eclipse.codehaus.org>

Questions?

- Do have any questions about Maven?