Maven

Introduction to Maven

Lesson Objectives

- In this lesson, you will learn:
- Maven Overview
  - What is Maven?
  - Maven's Objective
- Maven's Principles
- Benefits of Maven

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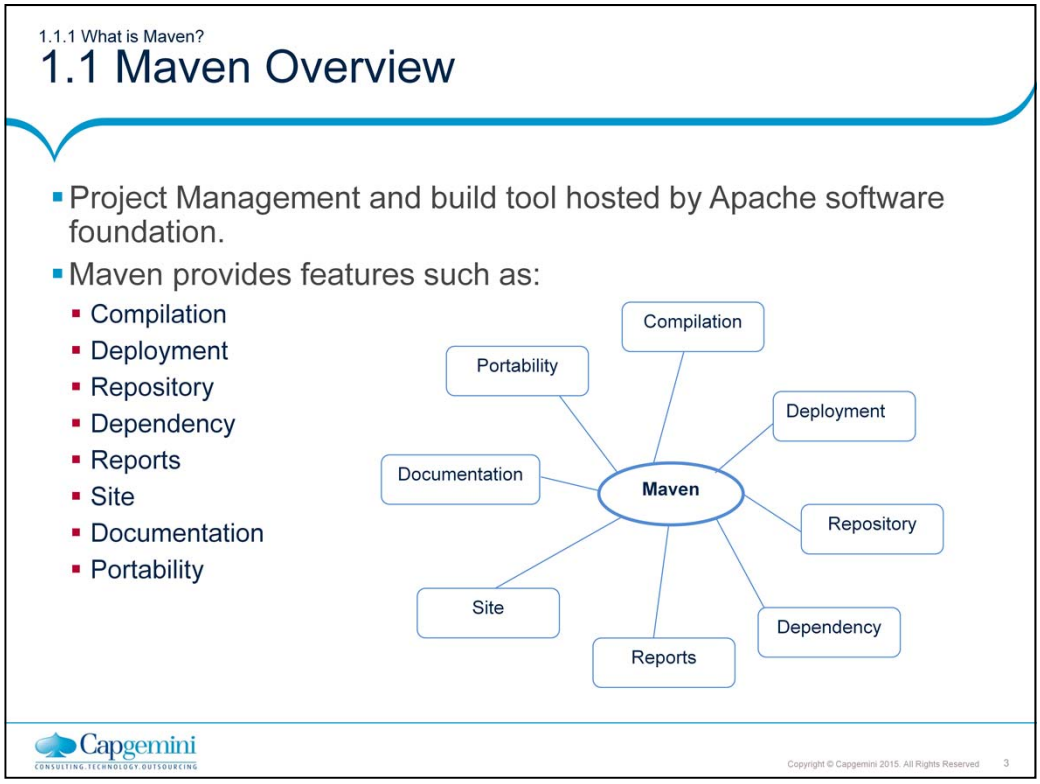
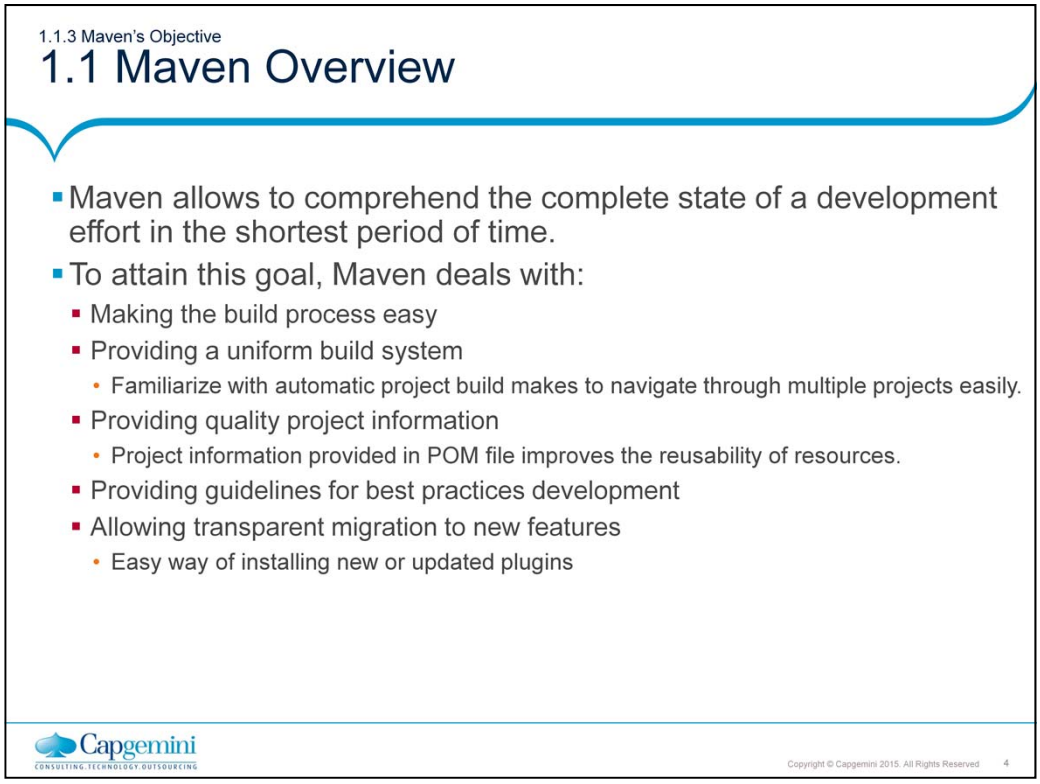


- **Maven** is a tool for project management and build automation.
- **Maven is not Ant++**
- Maven serves a similar purpose to the Apache Ant tool, but it is based on different concepts and works in a profoundly different manner.
- Maven is hosted by the Apache Software Foundation, where it was formerly part of the Jakarta Project**.**
- It is pronounced as “May-ven” and Maven is a Yiddish (Jewish Lang) word which means “**accumulator of knowledge**“.

Actually, there is a open source project named Jakarta Turbine which was facing complexity issues with module build processes and atlast the Apache team came up with a solution to simplify this build process which was than termed as Apache Maven.

Maven provides features such as:

- Build tool Capabilities
- Run Reports
- Generate a website
- Dependency Management
- Repositories (Reusable Plug-ins)
- Continuous Integration build systems
- Portable
- Building configuration using maven are portable to another machine without any effort



Maven allows to comprehend the complete state of a development effort in the shortest period of time. To attain this goal, Maven deals with:

Making the build process easy:

While using Maven doesn't eliminate the need to know about the underlying mechanisms, Maven does provide a lot of shielding from the details.

Providing a uniform build system:

Maven allows a project to build using its project object model (POM) and a set of plugins that are shared by all projects using Maven, providing a uniform build system. Once you familiarize yourself with how one Maven project builds you automatically know how all Maven projects build saving you immense amounts of time when trying to navigate many projects.

Providing quality project information:

Maven provides plenty of useful project information that is in part taken from your POM and in part generated from your project's sources. For example, Maven can provide:

- Change log document created directly from source control
- Cross referenced sources
- Mailing lists
- Dependency list
- Unit test reports including coverage

1.2 Maven Principles

- Maven provides following principles for creating a shared language:
  - Convention over Configuration
  - Declarative Execution
  - Coherent Organization of dependencies
- These principles allows developers to communicate more effectively at higher level of abstraction.
- It also allows team members to get on with the important work of creating value at the application level.
- It improves the software development process.

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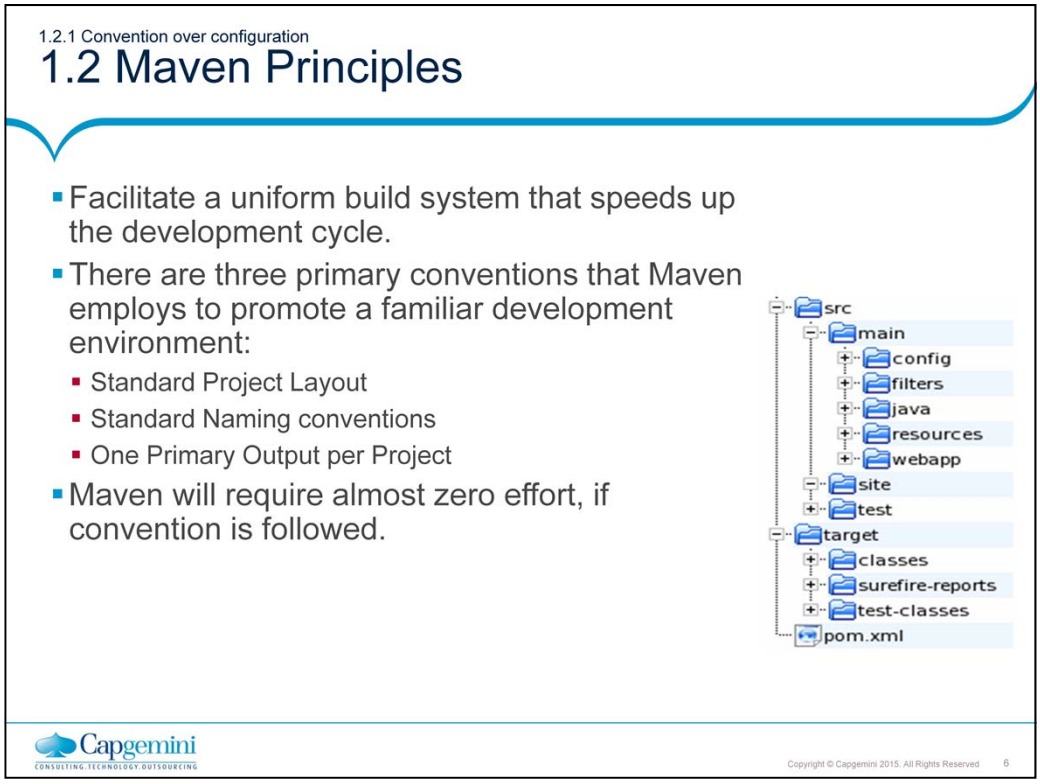


Conventions over configuration used to facilitate a uniform build system that speeds up the development cycle.

There are three primary conventions that Maven employs to promote a standardized development environment:

Standard Project Layout:

Having a common directory layout would allow for users familiar with one Maven project to immediately feel at home in another Maven project. The advantages are analogous to adopting a site-wide look-and-feel.

Standard Naming conventions

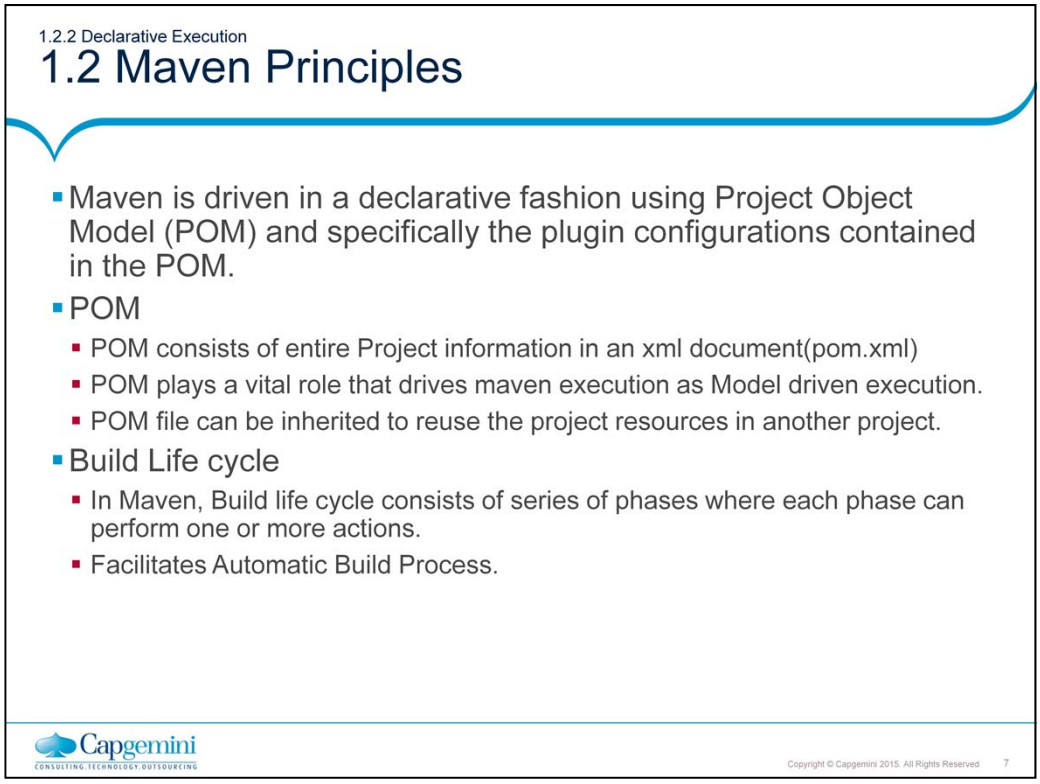
If multiple projects are involved, standard naming convention for directories provide clarity and immediate comprehension.

One Primary Output per Project:

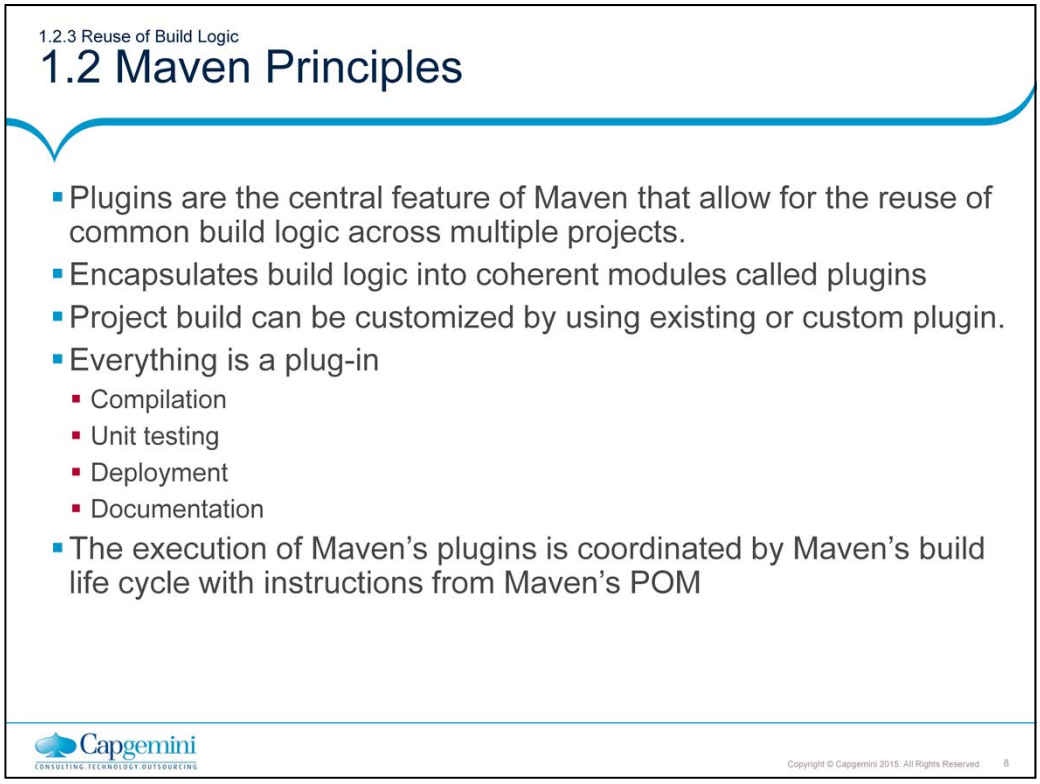
Instead of producing a single JAR file for entire project, Maven would encourage you to have three, separate projects: a project for the client portion of the application, a project for the server portion of the application, and a project for the shared utility code portion.

This separation of concerns (SoC) principle used to achieve the required engineering quality factors such as adaptability, maintainability, extendibility and reusability.

If you follow the convention, Maven will require almost zero effort - just put your source in the correct directory and Maven will take care of the rest.



Maven is driven in a declarative fashion using Maven's Project Object Model (POM) and specifically the plug-in configurations contained in the POM.

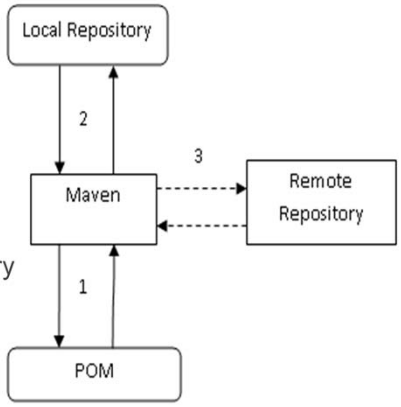


Maven uses SoC principle to promote reuse of build logic by encapsulating build logic into coherent modules called plugins. In Maven, there is a plug-in for compiling source code, a plug-in for running tests, a plug-in for creating JARs, a plug-in for creating Javadocs, and many other functions. Plugins are the key building blocks for everything in Maven.

1.2.4 Coherent Organization of dependencies

1.2 Maven Principles

- A dependency is a reference to an specific artifact that resides in a repository.
- Dependencies are requested in a declarative fashion with dependency's coordinates by looking up in repositories.
- There are two repositories available:
- Local Repository
  - By default, Maven creates your local repository in ~/.m2/repository
- Remote Repository
  - Default central Maven repository:
  - http://repo1.maven.org/maven2/



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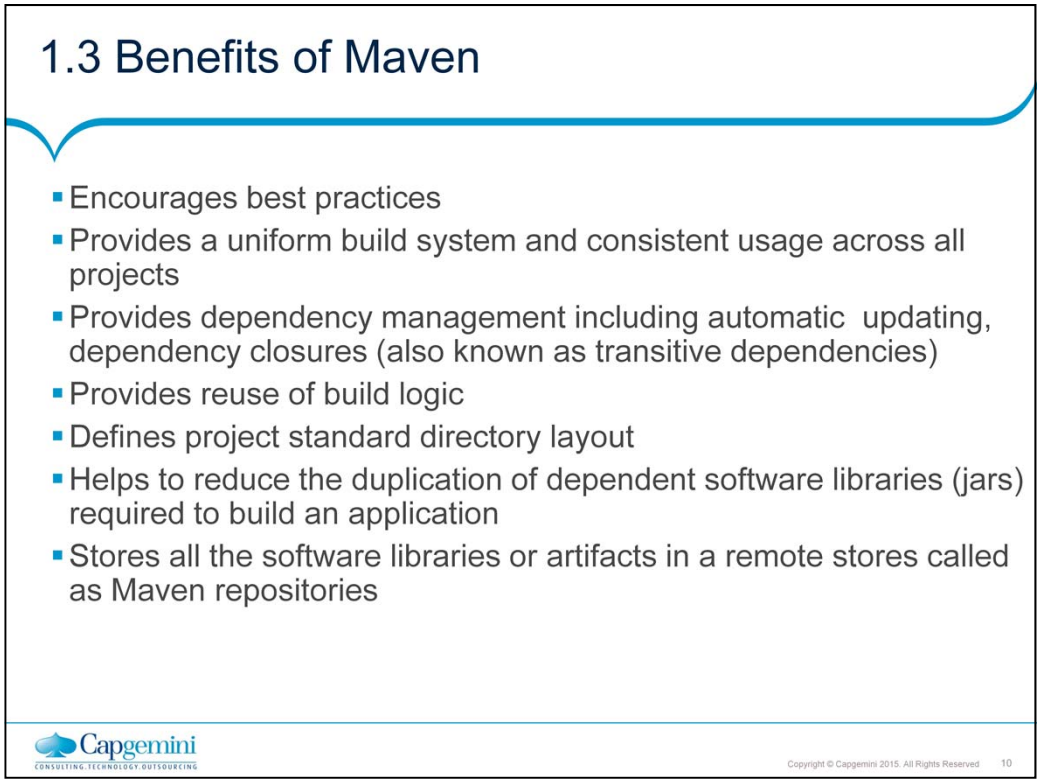
When a dependency is declared within the context of your project, Maven tries to satisfy that dependency by looking in repositories. Maven uses a local repository to resolve its dependencies. If not found one or more remote repositories are consulted to find a dependency. If found, the dependency is downloaded to the local repository and used from the local repository.



Maven can provide benefits for your build process by employing standard conventions and practices to accelerate your development cycle while at the same time helping you achieve a higher rate of success.

Summary

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Review Question

- Question1: To promote standardized development environment, Maven uses
  - Option 1: Standard directory Layout
  - Option 2: No Naming Conventions
  - Option 3: Build.xml file creation
  - Option 4: None of the above

- Question 2: Order of repository invocation:
  - Option 1: pom.xml Remote Repository, local repository
  - Option 2: pom.xml, local repository and remote repository
  - Option 3: local repository, settings.xml and remote repository

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