

Apache Maven Version 4.0.0 - beta X



MavenTM



Maven

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SO=BeS
SoftwareEntwicklung ▶ Beratung ▶ Schulung

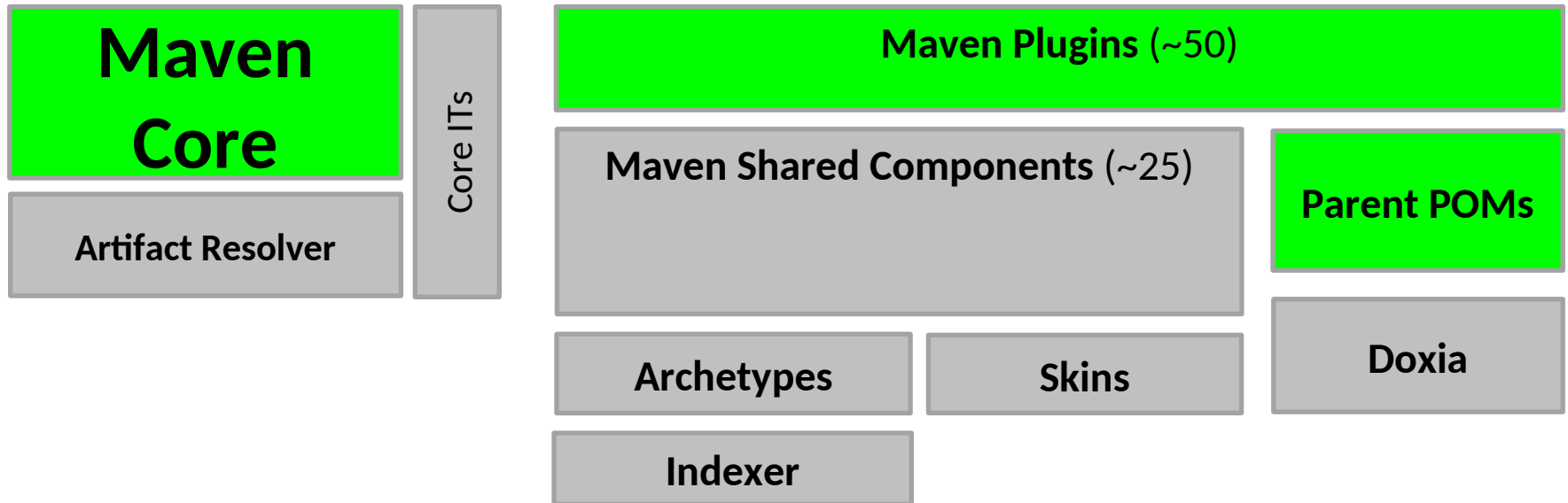
About me

- Apache Maven Committer
 - since Dec. 2013
- Apache Maven PMC Member
 - since August 2014
- Apache Software Foundation Member
 - since April 2017
- Apache Maven Project Chairman
 - Since April 2022

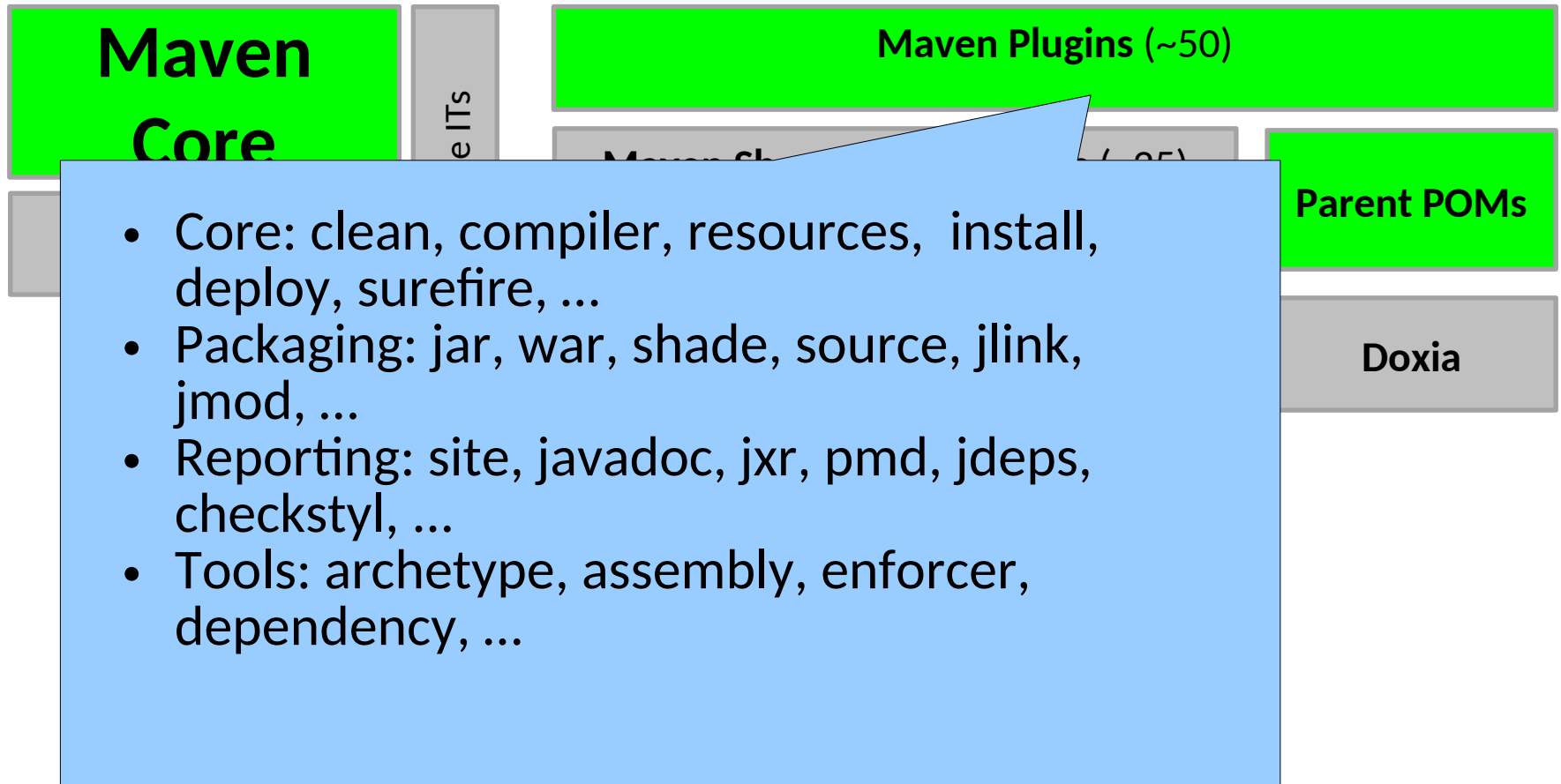
Agenda

- Apache Maven Ecosystem
- Maven Ecosystem
- Architecture
- Consumer/Build POM
- Reactor Enhancements
- Timeline
- JDK Requirement

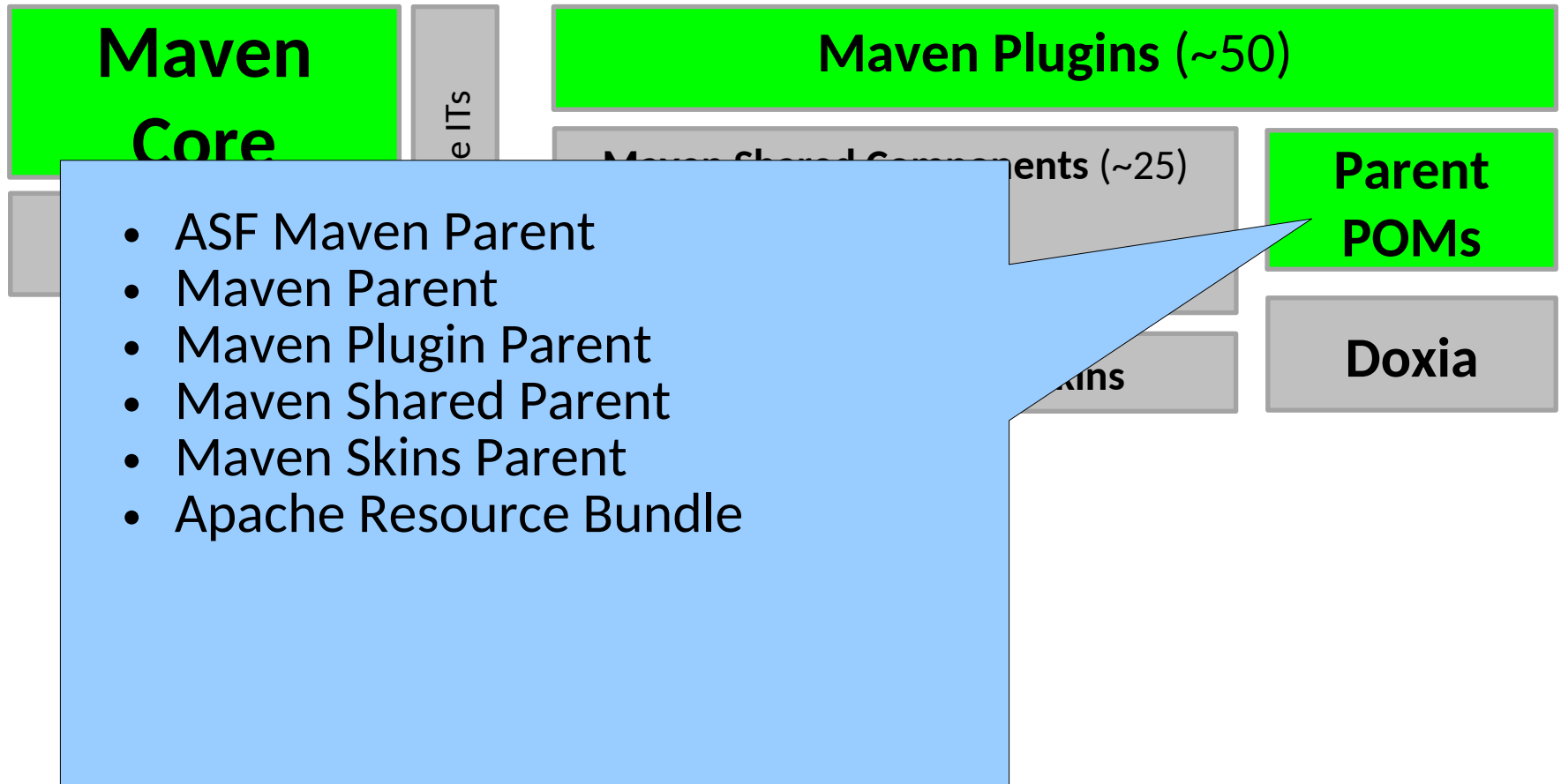
Apache Maven Ecosystem



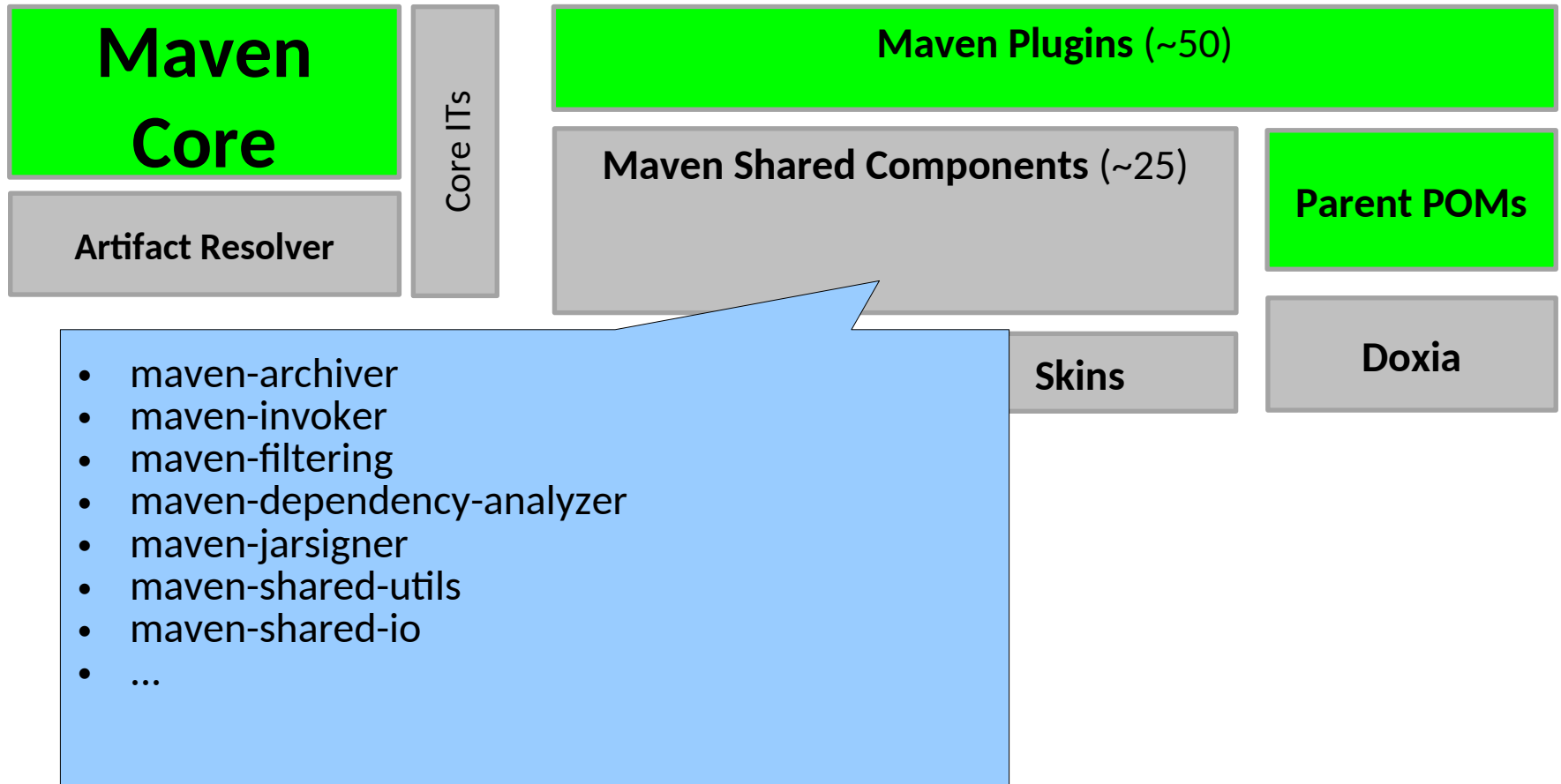
Apache Maven Ecosystem



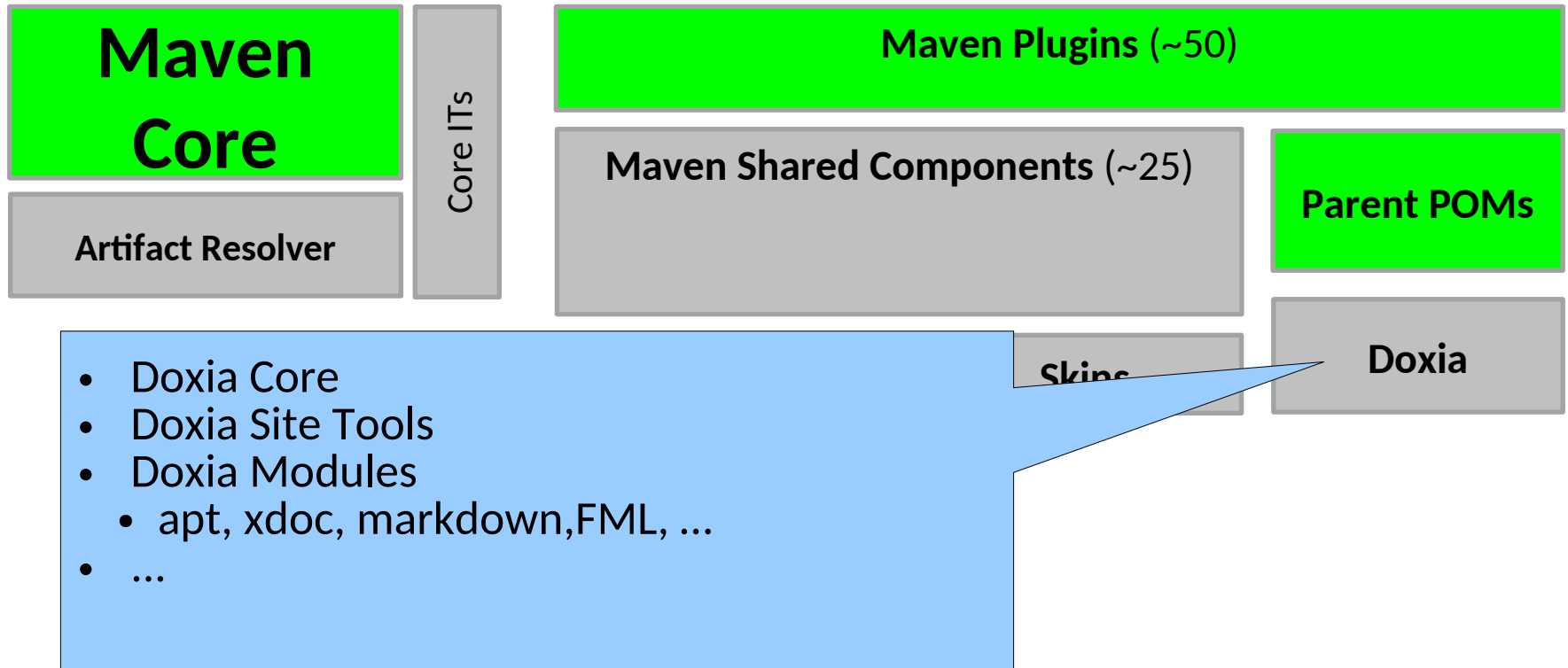
Apache Maven Ecosystem



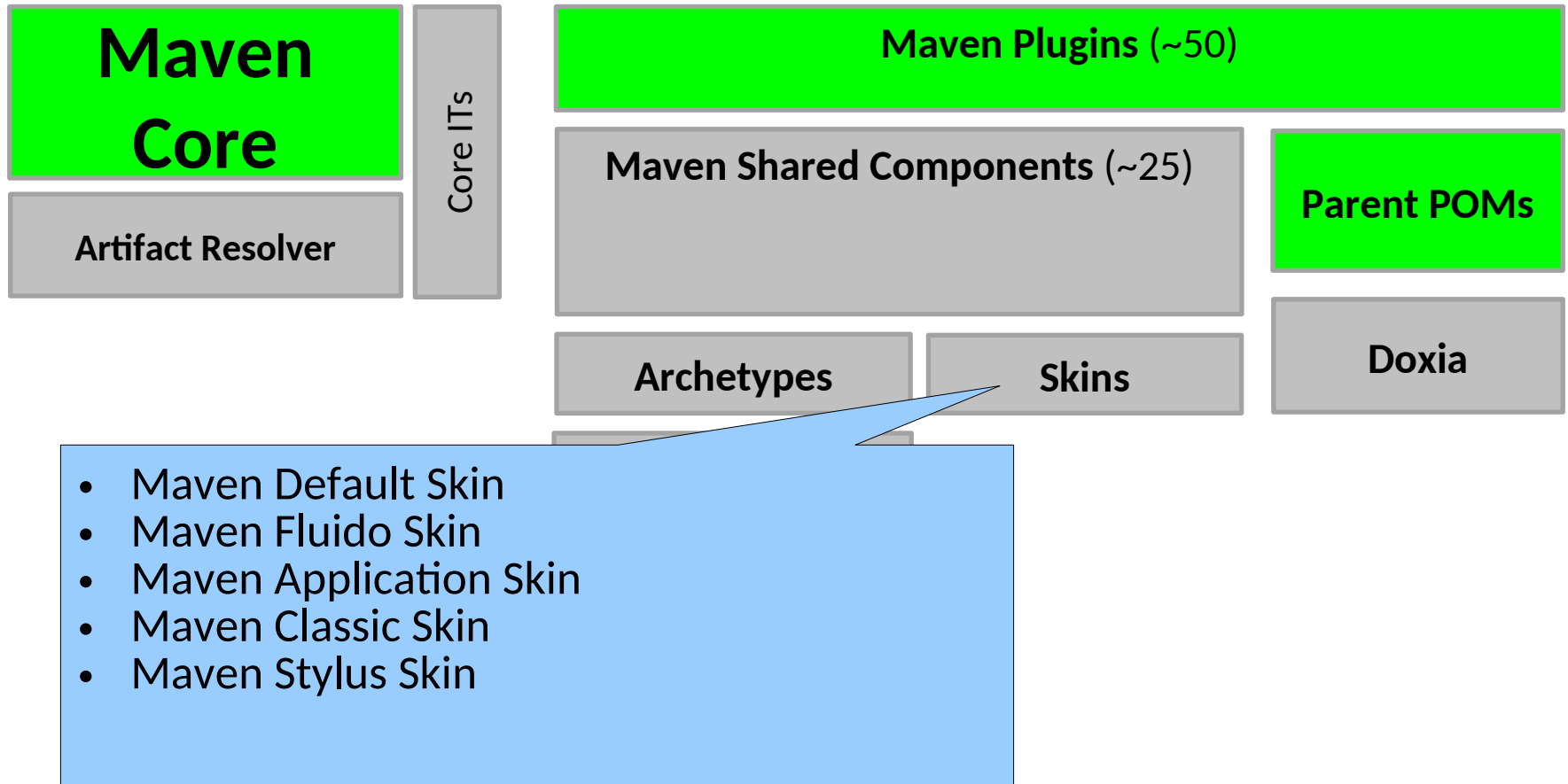
Apache Maven Ecosystem



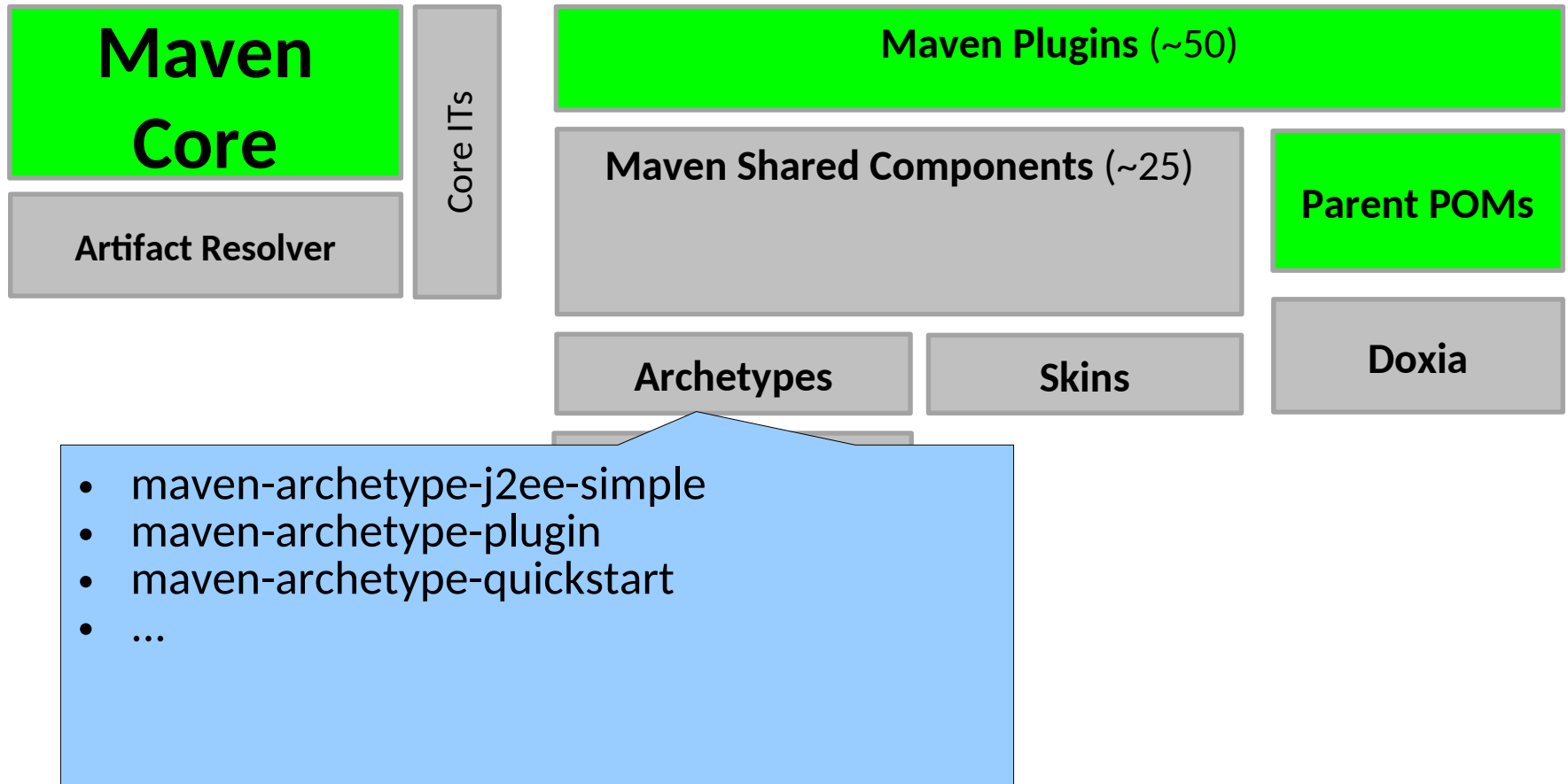
Apache Maven Ecosystem



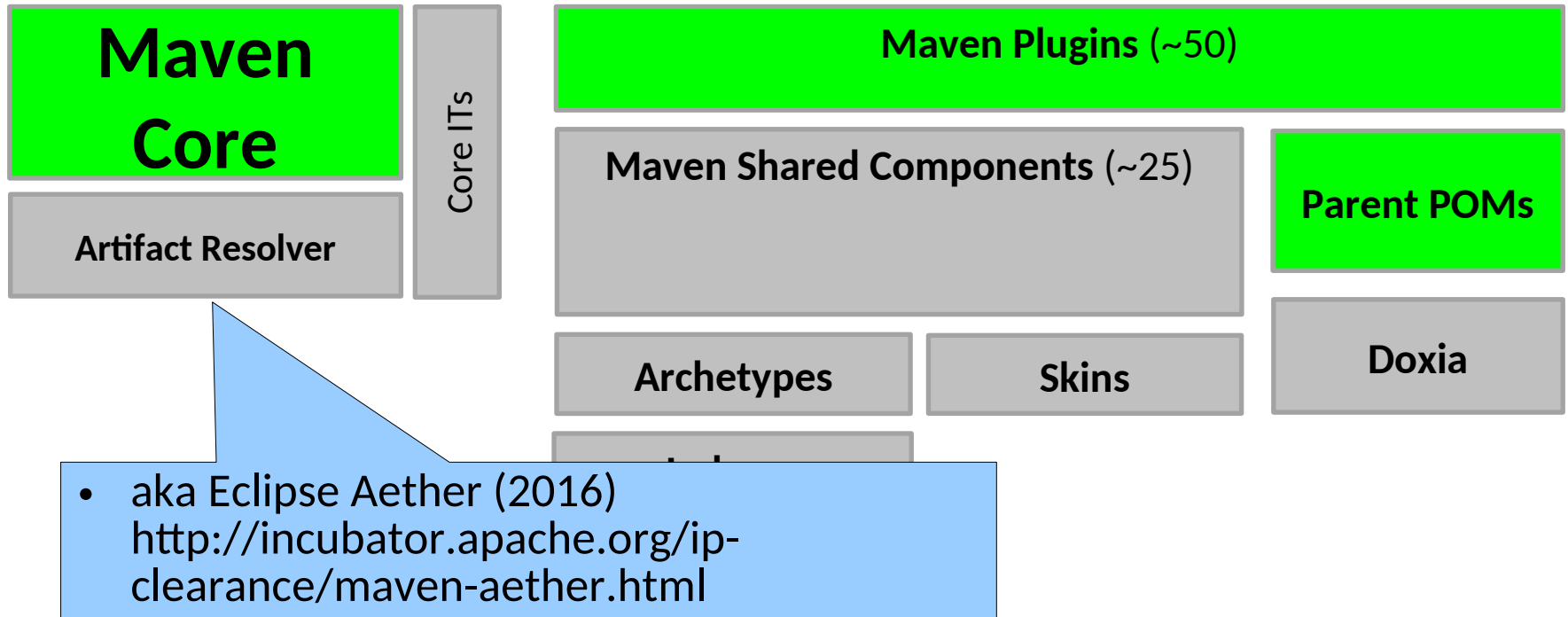
Apache Maven Ecosystem



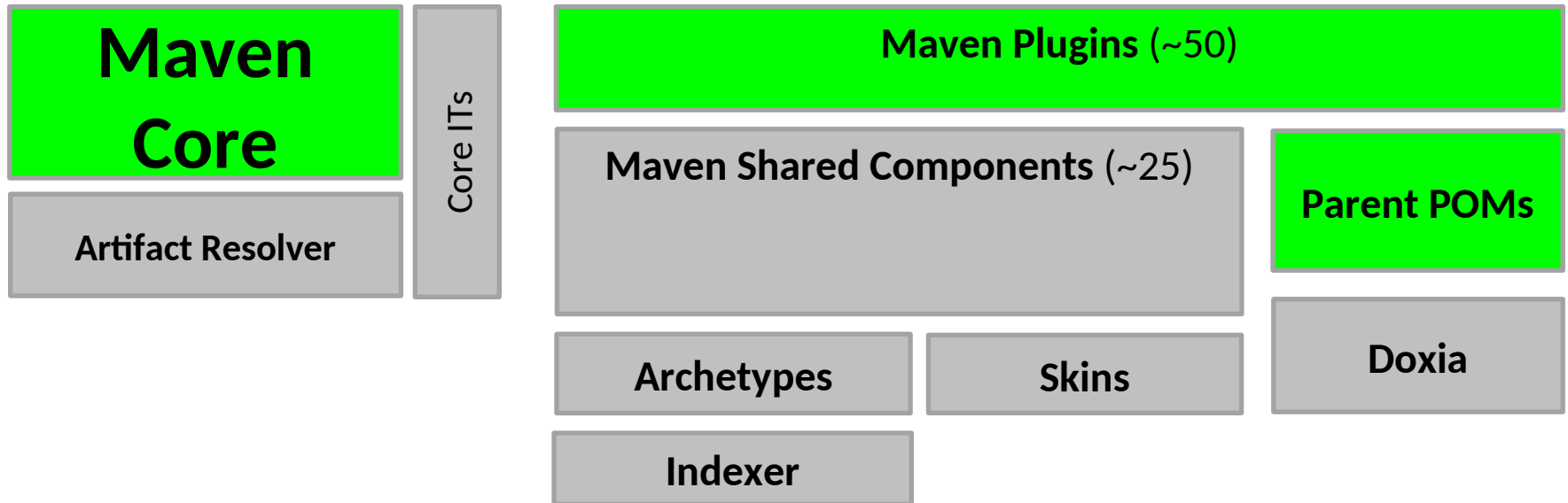
Apache Maven Ecosystem



Apache Maven Ecosystem



Apache Maven Ecosystem



Maven Ecosystem

- <https://github.com/codehaus-plexus>
 - plexus-classworlds
 - plexus-modello
 - plexus-utils
 - plexus-archiver
 - plexus-io
 - plexus-languages
 - Plexus-interpolation
 - ...

Plugins (~50)

Components (~25)

Parent POMs

Skins

Doxia

Plexus Components (~13)

MojoHaus Plugins (~80)

Maven Ecosystem

- <https://github.com/mojohaus/>
 - mrm-maven-plugin
 - versions-maven-plugin
 - build-helper-maven-plugin
 - buildnumber-maven-plugin
 - animal-sniffer-maven-plugin
 - appassembler-maven-plugin
 - jaxb2-maven-plugin
 - flatten-maven-plugin
 - exec-maven-plugin
 - rpm-maven-plugin
 - templating-maven-plugin
 - ...

Parent Plugins (~50)

Components (~25)

Parent POMs

Skins

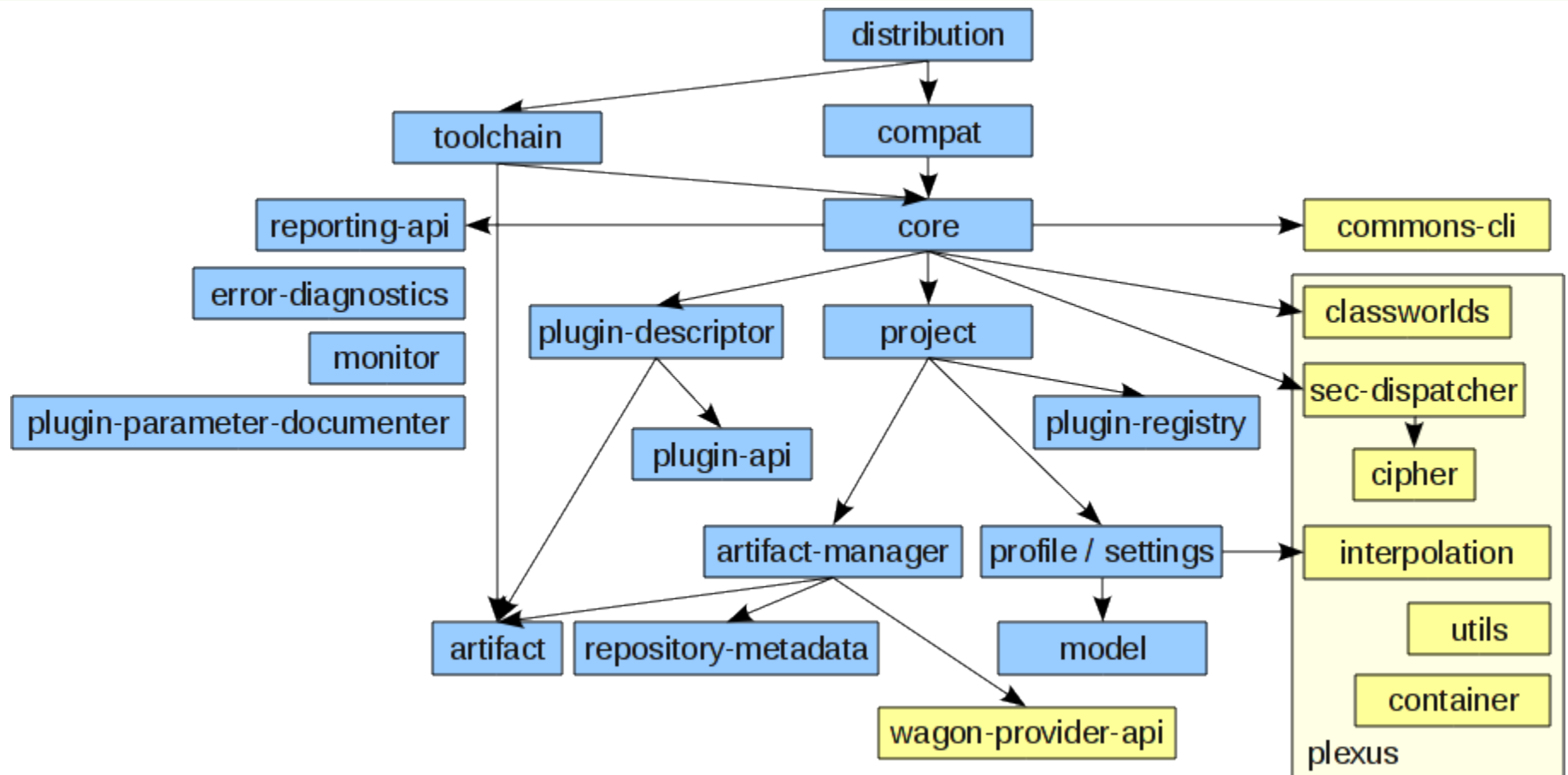
Doxia

Plexus Components (~13)

MojoHaus Plugins (~80)

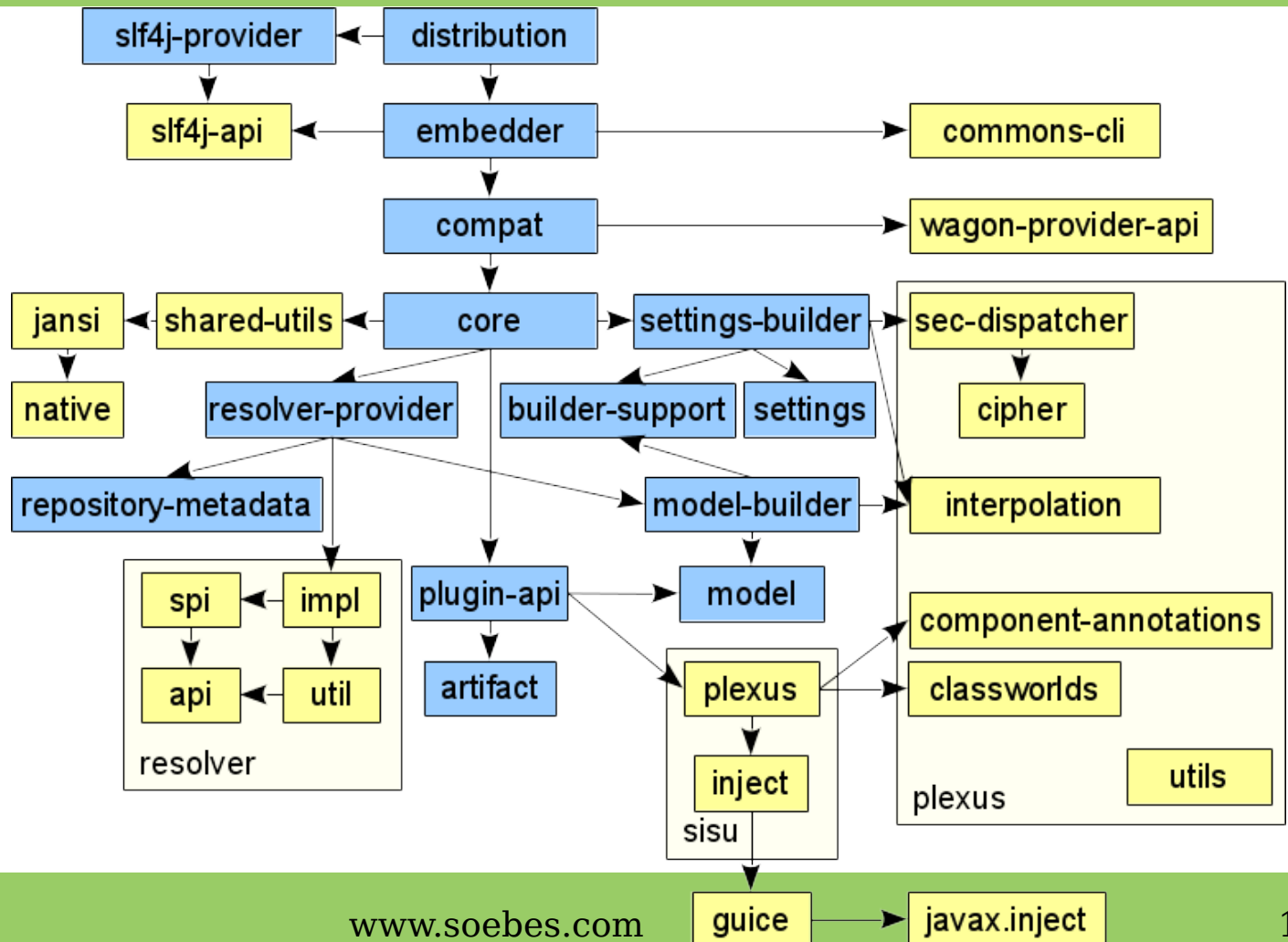
Architecture

Maven 2 - 2005



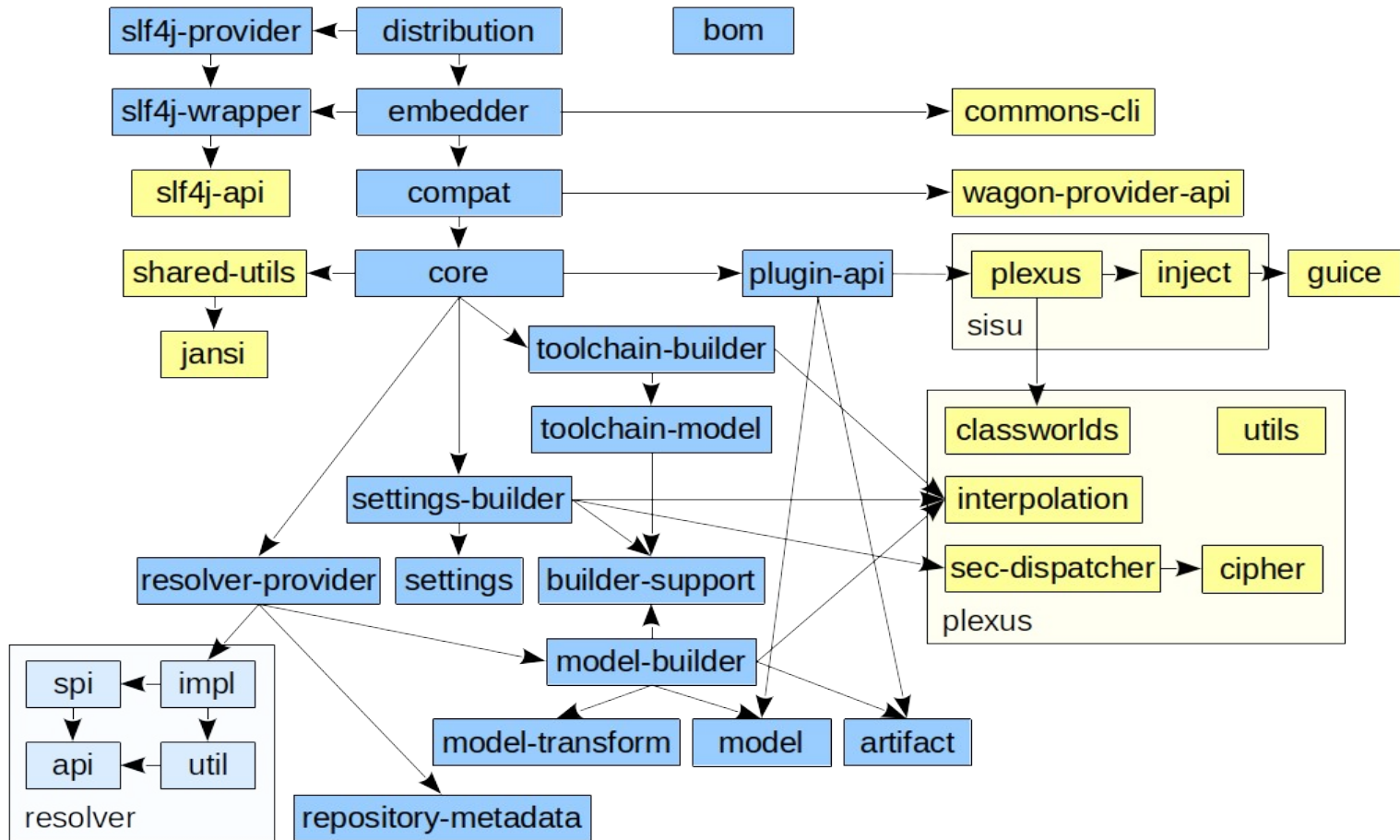
Architecture

Maven 3.5+ - 2017



Architecture

Maven 4.X - 2020-2024



Consumer / Build POM

POM V4

- ~~Maven 1 started with the story~~
~~modelVersion 3.0.0~~
- Maven 2/3 has continued the story with
modelVersion 4.0.0

```
<project ...>  
  <modelVersion>4.0.0</modelVersion>  
  ...  
</project>
```

Consumer / Build POM

POM V4

- The pom declarares the following information:
 - dependencies, dependencyManagement
 - plugins, pluginManagement
 - profiles, repositories
 - build, reporting
 - distributionManagement
 - etc.

Consumer / Build POM

POM V4

- The function of a POM:
 1. Serves as declarative description of the build process for a project.
 2. Serves as a description of the project dependency graph.

Consumer / Build POM POM V4

- Changing the POM format?
 - The POM is consumed by:
 - Apache BuildR, Gradle, Apache Ivy, sbt
 - by IDE's
 - and many other tools
 - as a description of dependencies.

Consumer / Build POM POM V4

- Requirements to change the POM format:
 - All tools would needed to be changed.
 - We have to ***fork*** Central Repository.

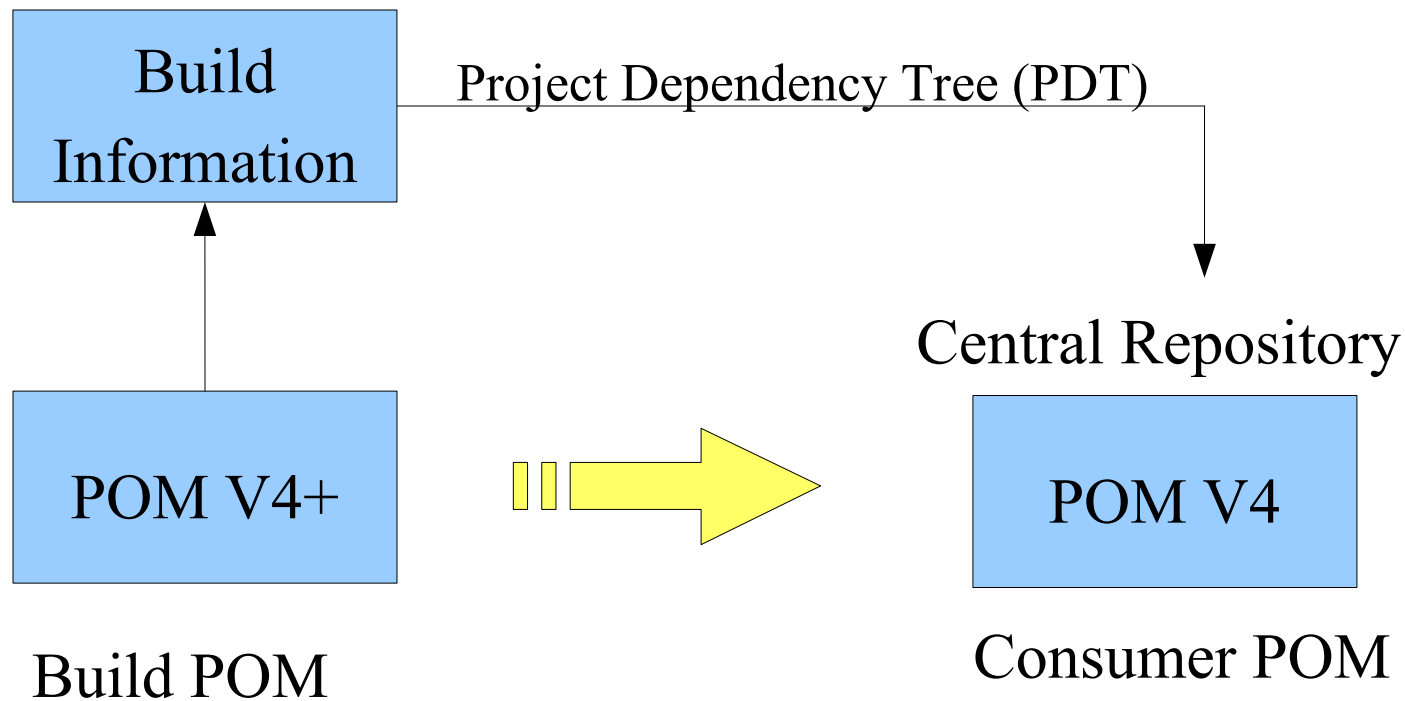
Consumer / Build POM

POM V4

- Requirements to change the POM format:
 - All tools would needed to be changed.
 - We have to *fork* Central Repository.



Consumer / Build POM POM V4+



Consumer / Build POM

POM V4

- POM V4 a.k.a. *Consumer POM*
 - Contains only dependencies (+ dependencyManagement)
 - Remove all properties / build / modules / parent /
 - See flatten-maven-plugin
- <https://cwiki.apache.org/confluence/display/MAVEN/Build+vs+Consumer+POM>

DEMO

POM V4+ → Maven 4.X

- Core must be able to read:
 - POM V4
 - POM V4+
- Core must be able to produce POM V4

Timeline

- Maven 3.9.X (3.9.0...3.9.6 in 2023)
 - Bug fixing and improvements
 - Moved away from Wagon to Maven Resolver (aka native HTTP).
 - Plugin API changes with some hints as preparation for Maven 4.X
You might have seen some of them!
- <https://maven.apache.org/docs/history.html>
- <https://maven.apache.org/guides/mini/guide-resolver-transport.html>

Timeline

- Maven 3.9.X (3.9.0...3.9.6 in 2023)
 - Since Maven 2 ancient version of plexus-utils was injected. Not done anymore (might break something!).
 - No bootstrap of RepositorySystem (via deprecated ServiceLocator!)
 - Support for „mvn pluginPrefix:version:goal” invocation

<https://maven.apache.org/docs/history.html>

Timeline

- Maven 3.9.2+
 - Use the Force Luke:
 - Create an „.mvn“ directory.
 - New properties (only from .mvn/maven.config or CL):
 - *session.topDirectory* - reactor top
 - *session.rootDirectory* - project root (where „.mvn“ required!).

<https://maven.apache.org/docs/3.9.2/release-notes.html>

Timeline

- Maven 4 – 4.0.0-alpha-7 (June 2023)
 - Build/Consumer POM
 - A lot of reactor improvements
 - Plugin API Changes
 - Some of them are breaking changes!
See 3.9.X
 - Identify root location of multi module build („.mvn/“ ~~or POM configuration~~).

<https://cwiki.apache.org/confluence/display/MAVEN/Build+vs+Consumer+POM>

Timeline

- Maven 4 – 4.0.0-alpha-8 (20. Oct 2023)
 - Switch to Woodstox XML
 - Introduce Model Version 4.1.0
 - „root“ element in version 4.1.0
 - Glob Pattern for exclusions

```
<excludes>  
  <exclude>  
    <groupId>com.jdom.*</groupId>  
    <artifactId>*</artifactId>  
  </exclude>  
</excludes>
```

Timeline

- Maven 4 – 4.0.0-alpha-8 (20. Oct 2023)
 - „BOM“ Packaging, Trim down consumer POM
 - Core Extension in .m2
 - Alternate POM Syntax possible
 - MNG-7836

<https://maven.apache.org/docs/4.0.0-alpha-8/release-notes.html>

Timeline

- Maven 4 – 4.0.0-alpha-8 (20. Oct 2023)
 - POM Goal Ordering (MNG-7804, Model 4.1.0):

```
<execution>
  <id>400. This should be fourth</id>
  <goals>
    <goal>run</goal>
  </goals>
  <phase>clean</phase>
  <priority>400</priority>
</execution>
```

Timeline

- Maven 4 – 4.0.0-alpha-8 (20. Oct 2023)
 - Support configuration in extensions.xml (MNG-7891) (basic).
 - support for exclusions when importing BOMs

Timeline

- Maven 4 – 4.0.0-alpha-10 (11.Dec 2023)
 - Fixed broken javadoc:jar
 - Resolver fixes.

<https://maven.apache.org/docs/4.0.0-alpha-10/release-notes.html>

Timeline

- Maven 4 – 4.0.0-alpha-12 (12.Jan 2024)
 - Resolver 2.0.0-alpha-6
 - Collection filtering
 - Resolvers transitive dependency manager.
 - No resolving of projects outside the reactor.

<https://maven.apache.org/docs/4.0.0-alpha-12/release-notes.html>

Timeline

- Maven 4 – 4.0.0-alpha-13 (6. March 2024)
 - JDK 17+
 - Resolver 2.0.0-alpha-8.
 - WARN on BOM import in the same reactor.
 - Profile activation based on packaging.
 - Conflict deps vs. depMgmt. (WARN!)

Timeline

- Maven 4 – 4.0.0-beta-3 (22. May 2024)
 - fatjar type added.
 - Control path where each dep can be placed; module-path, classpath, doclet
 - Same repo Id's settings.xml vs. pom.xml not detected.

Minimum JDK Runtime Requirements

- ...
- JDK 6: Maven 3.2.X...3.2.5
- JDK 7: Maven 3.3.X...3.8.8
- JDK 8: Maven 3.9.0...3.9.8
- ~~JDK 8:Maven 4.0.0-alpha-12 (BT: 11)~~
- JDK 17: Maven 4.0.0-alpha-13....

<https://maven.apache.org/docs/history.html>

Minimum JDK Runtime Requirements

- Maven 4.0.0-alpha-13+ (12. March 2024)
 - Runtime requirement: JDK 17+
 - Buildtime requirement: JDK17+

<https://lists.apache.org/thread/bfkvvjftrxypp06yj8zj919fcz0dt2zt>

Maven 4.0.0+ - Plugins

- The following plugins:
 - maven-clean-plugin
 - maven-compiler-plugin
 - maven-deploy-plugin
 - maven-install-plugin
 - maven-jar-plugin
 - maven-resources-plugin
 - Maven-source-plugin
- Version 4.0.0-beta-1 (Maven 4 only!)

Performance

- Maven Cache Extension
 - Incremental builds works on the modified part of the project graph part only
 - Subtree support for multimodule projects to work on the part of the codebase in isolation
 - Version normalization to support project version agnostic caches
 - Project state restoration (partial) to avoid expensive tasks (code generation and similar)

<https://maven.apache.org/extensions/maven-build-cache-extension/>

Questions?

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Thank you for your attention.