

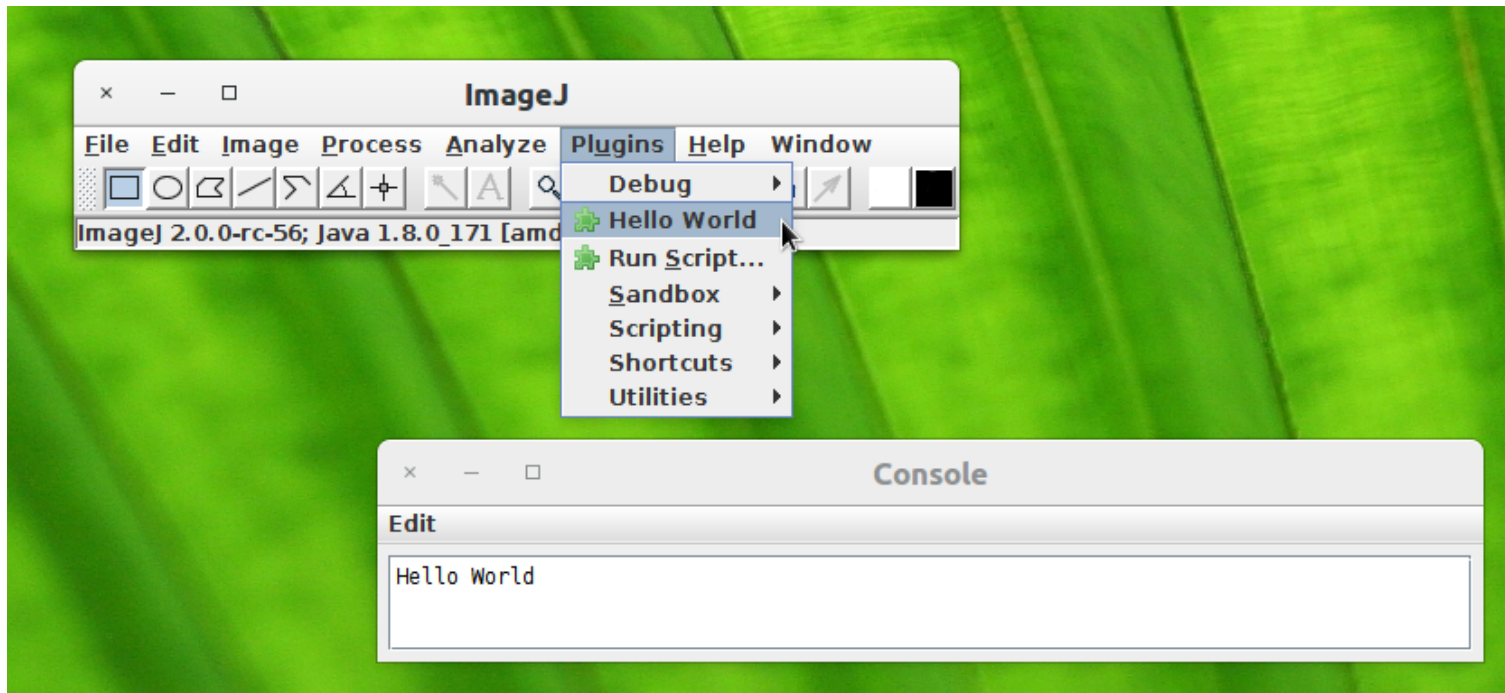
# Start a Maven Project in Eclipse (IntelliJ)



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# Session Goal

- Implement first FIJI / ImageJ plugin
- Simple “Hello World”



# Session Overview

Introduction (short)

Exercises

- Setup & Individualize Maven Project
- Open in Eclipse
- Eclipse Basics
- “Hello World”
- Run it in FIJI / ImageJ
- Upload to github

# Tools



for ImageJ Software Development



**git**



**GitHub**

- Version Control System
- Backup the Source Code
- History / Infinite Undo
- Share
- Collaborate



**eclipse**



**IntelliJ IDEA**

- Java IDE
- Write Code
- Run & Debug

**Maven™**

- Build / Compile
- Test
- Deploy
- Dependency Management



**Travis CI**



**FORUM**



***Maven***<sup>TM</sup>



- It's awesome:
  - Download source code
  - Download & install dependencies + configuration + run compiler + run linker = just one command:  
`$ mvn package`
  - ... + execute = just one command:  
`$ mvn exec:java`
  - ... + run tests = just one command:  
`$ mvn test`
- Maven can do way more and is extensible.

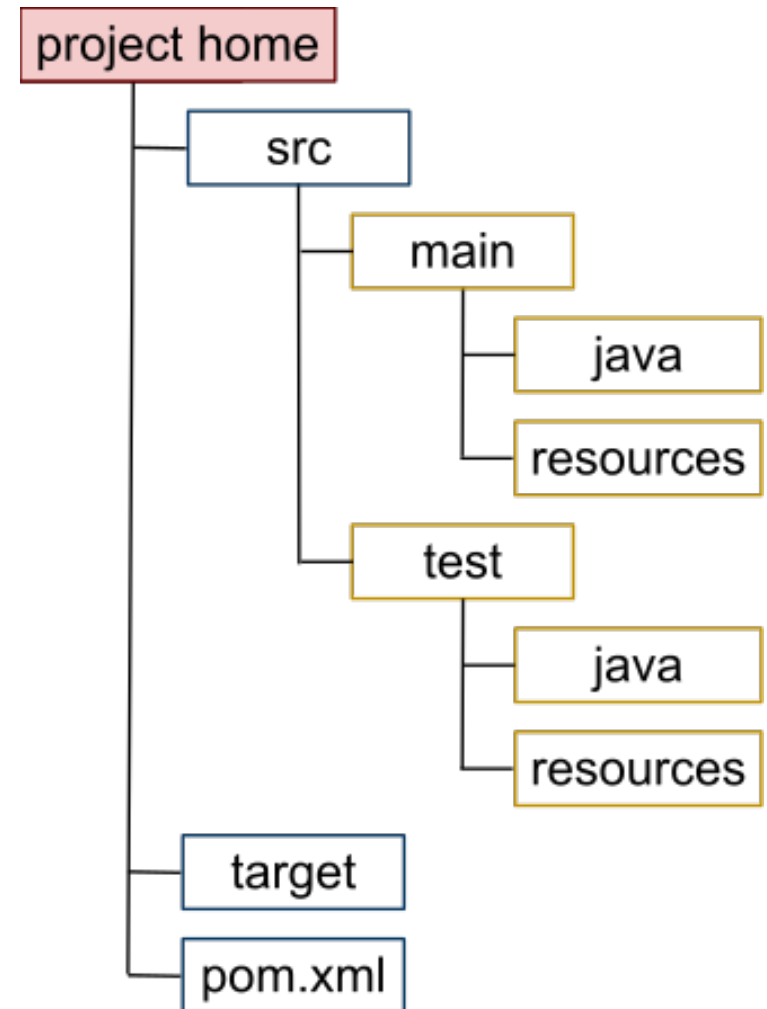
# **Maven**<sup>™</sup> How does it work?

- Dependencies are listed in pom.xml
- Maven Repository  
(Database of Java libraries + meta data)
  - <https://maven.imagej.net>
  - Local copy: ~/.m2/repository
- Artifact  
(Entry in the database)
  - Group ID: sc.fiji
  - Artifact ID: bigdataviewer-core
  - Version: 4.0.2
- Artifact can depend on many other artifacts.



# Maven Project Structure

- Basic Principle:
  - Convention over Configuration
- Default Directory Structure
- Configuration File:
  - pom.xml
  - Base on parent pom-scijava



Let's get started!

# 1<sup>st</sup> Exercise: Setup Maven Project

```
$ cd some/folder
```

```
$ git clone git@github.com:imagej/example-imagej-command.git
```

- Edit metadata: pom.xml
  - Replace imagej/example-imagej-command with your-github-user-name/your-project-name
  - Change Artifact ID, Group ID, Project name & description
  - Change Developer to your name
  - Change contributors to “none”
  - Change license, default: “Simplified BSD”
  - Change mailing list for your project, default: “forum.imagej.net”
  - Change issue management, default: “github.com/your-github-user-name/your-project-name”

```
$ mvn test
```

# 2<sup>nd</sup> Exercise: Open in Eclipse

- Start Eclipse
- File > Import ... > Existing Maven Project
- Select Root Directory  
(Directory containing pom.xml)
- Press Finish
- In Package Explore find GaussFiltering.java
- Right click on GaussFiltering.java  
> Run As > Java Application

# 3<sup>rd</sup> Exercise:

## Rename Java Class & Package

- Eclipse Key Combinations:
  - Ctrl+1 – Fix error under the cursor
  - Ctrl+3 – Find any other key combination
  - Ctrl+Space – Auto completion
  - Alt+F5 – Reload project + Maven changes
  - Ctrl+Shift+O – Organize Imports
- Rename Class GaussFiltering to HelloWorldCommand
- Move Class HelloWorldCommand to Package:  
com.my\_actual\_companies\_website.my\_project\_name

# 4<sup>th</sup> Exercise: Hello World

- In Class HelloWorldCommand
  - Replace content of method “run” with:  

```
System.out.println(“Hello World”);
```

Run it.
  - In method “main” delete everything except first two lines  
Run it.
  - Change “menuPath” to: Plugins > Hello World  
Run it.
- Optional:
  - Delete unused fields
  - Add a new field:  

```
@Parameter(type = ItemIO.OUTPUT)  
private String out;
```
  - In method run: Set the value of field “out” to “Hello World”

# 5<sup>th</sup> Exercise: Run within FIJI

Open a Terminal, change directory to where ever you pom.xml

```
$ mvn package
```

```
$ cp target/project-name-0.1.0-SNAPSHOT.jar /path/to/your/Fiji.app/jars
```

Start Fiji look for Plugins > Hello World in the menu

Or the maven way:

```
$ mvn -Dimagej.app.directory=/path/to/my/Fiji.app/ install
```

# 6<sup>th</sup> Exercise: Upload to github.com

- Remove .git folder in your Maven project
- Go to <https://github.com/your-user-name/>

Create new repository  
(Click Repositories > New)

- Follow the instructions on github



# Optional

- Have a look for a git quick start tutorial and do it.
- Read: How to Write a [Beautiful] Git Commit Message.  
<https://chris.beams.io/posts/git-commit/>
- Make sure you know how to use git interactive rebase.