**Eclipse Kepler released**

by [Alex Blewitt](http://www.infoq.com/author/Alex-Blewitt) on Jun 26, 2013 *|* [2 Discuss](http://www.infoq.com/news/2013/06/eclipse-kepler#theCommentsSection)

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The Eclipse Foundation announced the release of Eclipse Kepler, the [eighth simultaneous release](http://wiki.eclipse.org/Simultaneous_Release) consisting of 71 Eclipse projects and over [58 million lines of code](http://waynebeaton.wordpress.com/2013/06/10/kepler-by-the-numbers/).

Eclipse Kepler builds on top of the Eclipse 4.x platform which was chosen as the basis for the future platforms since [last year's release of Eclipse Juno](http://www.infoq.com/news/2012/06/eclipse-juno). Although last year's 4.2 release was (quietly) accompanied by a 3.8 release as well, there is no such 3.9 available for those wanting to take advantage of the 4.3 updates but without the 4.x platform.

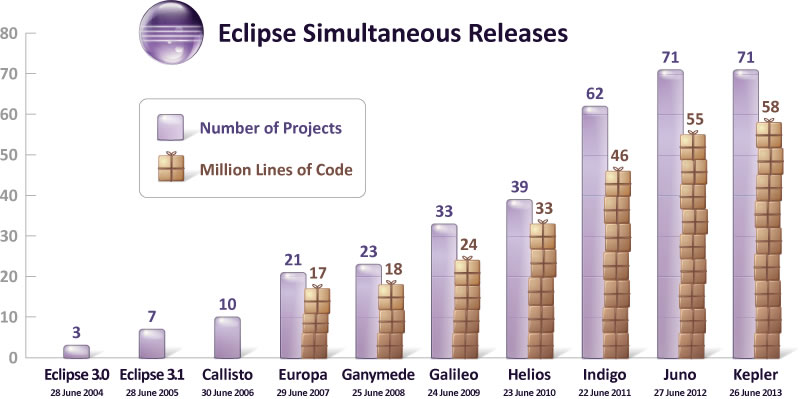
There were some initial complaints regarding the [performance of Eclipse Juno](http://www.infoq.com/news/2012/09/eclipse-juno-performance), which highlighted real world use cases that could be optimised. These were subsequently made available via an interim update site after the 4.2.1 release, and although the performance improvements were included in the 4.2.2 release in February 2013, the impact was such that some developers chose to stay with the 3.7 platform rather than upgrade to the 4.2 platform. As a result, although the satisfaction of Eclipse remains high, there was a noticeable [trend downwards](http://ianskerrett.wordpress.com/2013/06/12/eclipse-community-survey-results-for-2013/):

**Adoption of new Eclipse releases**. For the first time this year there was a noticeable decrease in the adoption of the latest Eclipse release, Eclipse 4.2. In past survey results, 75%+ of the respondents would report they were using the most recent release of Eclipse, for example in 2012 76.9% were using Eclipse 3.7 (Indigo). This year only 56% reported to be using Eclipse 4.2 (Juno) and an additional 12.9% using Eclipse 3.8. The slow down in adoption is most likely the result of the performance issues found in Eclipse 4.2.

At the same time, there was a significant drop in the overall satisfaction with Eclipse. Respondents indicating they were very satisfied or satisfied dropped from 90% in 2012 to 81% in 2013. Not very good news and hopefully something that will be addressed as the Eclipse 4.x platform continues to mature.

Fortunately, Eclipse Kepler is unlikely to suffer the same fate; many of the performance sapping bugs in Eclipse 4.2 have already been quashed and folded into the 4.2.2 release, and 4.3 continues with the performance improvements generally as well as adding new features.

In addition, the 3.x release stream has not been maintained since [January 2013](http://download.eclipse.org/eclipse/downloads/eclipse3x.html), and no further updates are planned. So whilst it was possible to skip 4.2, for users wanting to move to new features, the only upgrade path is 4.3. Some plug-ins, like EGit, have already dropped support for 3.x releases and will only concentrate on supporting 4.x going forwards.

[Holger Voormann](http://twitter.com/howlger) has prepared another breakdown of the growth of the Eclipse project since the 3.0 release, along with a [breakdown of the projects](http://eclipsehowl.wordpress.com/2013/06/25/kepler-the-tenth-simultaneous-release/) that are included. Almost all of the projects included in Kepler now use Git; only 8 out of the 107 repositories continue to use Subversion as their repository, and with the future of [Eclipse and GitHub](http://www.infoq.com/news/2013/06/eclipse-github), this trend is likely to continue. (CVS has already been shut down at Eclipse, and only the SVN team provider remains as strictly needing an SVN repository for testing purposes.)

**New and Noteworthy**

EGit 3.0 has been released as part of Kepler, which brings a number of improvements for speed and usability of the Git tooling. Combined with the recent upgrade of Gerrit 2.6 on the [Eclipse Gerrit Review server](http://git.eclipse.org/r/), the use of Git at Eclipse is only increasing. One notable addition of the Git tooling is the use of compressed bitmaps, which enables JGit to serve repositories faster than a native cgit implementation.

Mylyn sees a new release with 3.9, bringing support for Bugzilla 4.4 and updating Gerrit support to 2.5; however, the work for [supporting Gerrit 2.6](https://bugs.eclipse.org/bugs/show_bug.cgi?id=395059) is still ongoing, and will likely be released as a point update in the near future. Markdown text in wiki comments has also been added, but only by adding an additional repository to the mix. Since the Eclipse foundation recently migrated the [Gerrit review site](http://git.eclipse.org/r/) to 2.6, this means the Mylyn Reviews can't be used with the standard Eclipse site for the time being.

Maven Web Tooling hits a 1.0 release, which allows Maven based web projects to integrate with the Web Tooling Platform and the faceted project support. This has been in development for a couple of releases, but the 1.0 release should bring stability for this plug-in for the future as well.

Java Development Tools adds a selection of [minor refactorings](http://eclipsesource.com/blogs/2013/06/14/jdt-improvements-top-eclipse-kepler-feature-6/) to allow if/else statements to be converted to switch statements, as well as support for showing logical XML nodes in debugging sessions, but support for Java 8 is still absent pending a release of the spec.

Finally, released as part of the simultaneous release train, [Eclipse Orion 3.0](http://eclipse.org/orion/) has been released. Eclipse Orion is a web-based editor (and a live demo can be seen at [OrionHub](http://orionhub.org)) that is completely rewritten in JavaScript and supports a Git-based workflow. The 2.0 release was made available in March 2013, from the 1.0 release in June 2012. Although this may not seem like a challenge to existing desktop-based IDEs, the components that make up Eclipse Orion can be embedded in other websites, making it possible to show both code editors and code diff tools on other websites.

Eclipse Kepler is available for download via the [Kepler](http://eclipse.org/kepler/) repository.

## ****Brief Instructions for Setting up Kepler under Eclipse****

If you already know Eclipse, SVN, Kepler, and Ptolemy, you may find the hugely abbreviated version of the instructions in this section useful. Details follow in the remaining sections. We recommend using the newest release of Eclipse, these instructions were last validated for Indigo in November, 2011.  The basic steps you need to follow are:

1. As of July 2014, you must have the [Java Development Kit (JDK) 1.7 installed](http://www.oracle.com/technetwork/java/javase/downloads/index.html). To test this, run

java -version

1. You must have [Ant 1.8.2](http://ant.apache.org/bindownload.cgi) or later installed. To test this, run

ant -version

1. You must have a [Subversion](http://subversion.tigris.org/) installed. To test this, run

svn --version

1. To use Kepler from within Eclipse, you must first check out Kepler **from the command line**
2. mkdir kepler
3. cd kepler
4. svn co https://code.kepler-project.org/code/kepler/trunk/modules/build-area
5. cd build-area
6. ant change-to -Dsuite=kepler
7. ant clean-cache

ant eclipse

Note that the ant change-to command uses svn to download the rest of Kepler and Ptolemy II, which can take awhile.  
**Important**: Currently, to switch between kepler-1.0.0 and the devel tree, [you **must** remove your ~/.kepler directory](http://bugzilla.ecoinformatics.org/show_bug.cgi?id=3898).  If you don't do this, then there will be no actors in the actor pane!  The easiest way is to run ant clean-cache.

1. Start up Eclipse in a fresh workspace or do File -> Switch Workspace -> Other and enter a new directory into the "Workspace" field.
2. In Eclipse, import the project created by running ant eclipse by selecting File -> Import -> General -> "Existing Projects into Workspace" and then browsing to the kepler directory created above, hit Finish.  The build may take 10-15 minutes, see [Bug 4191](http://bugzilla.ecoinformatics.org/show_bug.cgi?id=4191).
3. KarDoclet.java uses doclet code from tools.jar.    
   **Windows** users: if you are using Java 1.7, you will need to add tools.jar to the list of external jars.  
   Windows -> Preferences -> Java -> Installed JREs  
   Select the default JRE -> Edit -> Add External Jars -> Path to JDK/lib/tools.jar  
   where Path to JDK is the location of your JDK, such as C:\Program Files\Java\jdk1.7.0. Path to JDK/lib can be seen under existing JRE system libraries  
     
   **Mac** users usually don't need to do the above step, but if you are using Oracle JDK 1.7.0, then add tools .jar to the list of external jars:   
   Eclipse -> Preferences -> Java -> Installed JREs  
   Select the default JRE -> Edit -> Add External Jars -> Path to JDK/lib/tools.jar  
   where Path to JDK is the location of your JDK, such as /Library/Java/JavaVirtualMachines/1.7.0.jdk/Contents/Home//lib/tools.jar
4. Under Windows, you may need to removed dependencies on apple-extensions, see [Bug 4342](http://bugzilla.ecoinformatics.org/show_bug.cgi?id=4342).
5. Create a new Java Application Run Configuration by going to Run/Run Configurations.  In the main tab set the project to be the suite you want to run, e.g., "kepler", "reporting", etc.", and set the Main class: "org.kepler.Kepler"
6. See [Developing a Hello World Actor using the Kepler Build System and Eclipse](https://kepler-project.org/developers/teams/build/developing-a-hello-world-actor-using-the-kepler-build-system-and-eclipse)

## Detailed Instructions for Setting up Kepler under Eclipse

For the rest of us, the remainder of this document covers the following topics in detail:

1. [Installing Java](https://kepler-project.org/developers/reference/kepler-and-eclipse#installing-java)
2. [Installing Ant](https://kepler-project.org/developers/reference/kepler-and-eclipse#2-installing-ant)
3. [Installing Subversion](https://kepler-project.org/developers/reference/kepler-and-eclipse#3-installing-subversion)
4. [Downloading Kepler](https://kepler-project.org/developers/reference/kepler-and-eclipse#4-downloading-kepler)
5. [Downloading Eclipse](https://kepler-project.org/developers/reference/kepler-and-eclipse#5-downloading-eclipse)
6. [Configuring Eclipse](https://kepler-project.org/developers/reference/kepler-and-eclipse#6-configuring-eclipse)
7. [Installing Subversion (SVN) into Eclipse](https://kepler-project.org/developers/reference/kepler-and-eclipse#7-installing-subversion-svn)
8. [Import the projects into Eclipse](https://kepler-project.org/developers/reference/kepler-and-eclipse#8-import-the-projects)
9. [Add tools.jar to the list of external jars](https://kepler-project.org/developers/reference/kepler-and-eclipse#9-add-tools)
10. [Create a Java Application within Eclipse](https://kepler-project.org/developers/reference/kepler-and-eclipse#10-create-java-app)
11. [Updating the local copy of the Kepler sources](https://kepler-project.org/developers/reference/kepler-and-eclipse#11-updating-the-local)
12. [Adding an actor](https://kepler-project.org/developers/reference/kepler-and-eclipse#12-adding-an-actor)

### 1. Installing Java

Currently, Kepler requires Java 1.7, which is also known as Java 7.  
Check your version of java with java -version. You should see something like:

-bash-3.2$ java -version

java version "1.7.0\_60"

Java(TM) SE Runtime Environment (build 1.7.0\_60-b19)

Java HotSpot(TM) 64-Bit Server VM (build 24.60-b09, mixed mode)

**Windows:** If your path is incorrect, then under Windows, with bash, to set your path, use something like

export PATH="/cygdrive/c/Program Files/Java jdk1.7.0\_60/bin:${PATH}"

If you don't have Java, then install the Java SE JDK from [http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html](http://java.sun.com/javase/downloads/index.jsp).  
Note that the JRE **will not work**, the JRE does not have the javac Java Compiler.

### 2. Installing Ant

You must have Ant 1.8.2 or later installed. To test this, run

ant -version

To install Ant, download it from <http://ant.apache.org/bindownload.cgi>.  
  
**Windows:** Using the cmd prompt or a cygwin bash shell , install the apache ant .tar.gz file. The .zip file does not include an ant script, it includes Python and Perl scripts that are harder to use. To install Ant, see <http://ant.apache.org/manual/index.html>, or follow these instructions (this example uses the Cygwin bash shell):

cd c:/cygwin/usr/local

tar -zxf /cygdrive/c/Doc\*/cxh.NEWTON/Desktop/apache-ant-1.8.2-bin.tar.gz

ln -s apache-ant-1.8.2 apache-ant

cd bin

ln -s ../apache-ant/bin/\* .

**Windows:** Then, set up the environment to find ant and set a few variables. Start -> My Computer -> Properties -> Advanced -> Environment Variables

1. Add c:/cygwin/usr/local/bin to the PATH
2. Create a new environment variable called ANT\_HOME and set it to c:\cygwin\usr\local\apache-ant-1.8.2 (note: use backslashes and no trailing slash)
3. Create a new environment variable called JAVA\_HOME and set to to the location of your Java Development Kit. For example c:\Program Files\Java\jdk1.7.0\_60
4. Start up a shell and type ant -version. You should see something like:

Apache Ant version 1.8.2 compiled on December 20 2011

### 3. Installing Subversion

You must have the Subversion command line tool installed, see <http://subversion.tigris.org/>. TortoiseSVN **will not work**, get the svn command line tool. To test this, run

svn --version

### 4. Downloading Kepler

To use Kepler from within Eclipse, you must first check out Kepler from the command line:

mkdir kepler

cd kepler

svn co https://code.kepler-project.org/code/kepler/trunk/modules/build-area

cd build-area

ant change-to -Dsuite=kepler

ant clean-cache

ant run

ant eclipse

Note that the ant change-to command uses svn to download the rest of Kepler and Ptolemy II, which can take awhile.  The ant change-to command can be used to select other configurations, type ant change-to to see other choices.

**Important**: Currently, to switch between kepler-1.0.0 and the devel tree, [you **must** remove your ~/.kepler directory](http://bugzilla.ecoinformatics.org/show_bug.cgi?id=3898).  If you don't do this, then there will be no actors in the actor pane!  The easiest way is to run ant clean-cache.

### 5. Downloading Eclipse

Eclipse is available from <http://www.eclipse.org>. You should download the latest version 3 stable version to be able to follow these instructions. They were generated using Eclipse Indigo, which corresponds with version 3.7.1.  
  
Eclipse comes in several varieties, if you are a Ptolemy developer, choose "Eclipse for RCP/Plug-in Developers".  
If you are a Kepler-only developer, the "Eclipse IDE for Java EE Developers", will likely work, but these instructions were tested using "Eclipse for RCP/Plug-in Developers".  
  
In October, 2011, we chose Eclipse for RCP/Plug-in Developers. The Eclipse for RCP/Plug-in Developers version includes the plugin development environment (PDE), which is needed by the backtrack facility, which is an optional part of Ptolemy II that allows models to restore their old state. If the version of Eclipse that you install does not have the PDE, then there will be build errors, which can be fixed by excluding ptolemy/backtrack/ from the build. K**epler does not use the backtracking facility**, so you may be ok with a different version of Eclipse.

1. **Mac OS X:** Download the .tar.gz file, click on it and then drag the eclipse folder to your Applications folder.   
   **Windows:** Unzip Eclipse into your program files directory  
   **Ubuntu:** "sudo apt-get install eclipse-platform eclipse-rcp"
2. Create a location to store all of your source code and workspace configuration parameters. I use ~/workspace
3. Start up Eclipse

### 6. Configuring Eclipse

**Windows:** In order to run Eclipse smoothly use the following command line:

% $ECLIPSE\_HOME/eclipse -data $WORKSPACE -vmargs -Xmx512M &

$WORKSPACE defines where your workspace directory is. If you omit it, it will default as a subdirectory of your Eclipse installation.

Every option after the -vmargs flags gets passed to the JVM running eclipse. You need to expand the maximum heap size to at least 256MB to run eclipse smoothly.

In Eclipse, under the Project menu, unselect 'Build Automatically'

There will be thousands of errors until the build is configured correctly, so skipping the build will allow you to check out and configure the projects more quickly and efficiently

Some classes will not build unless you configure the compiler to use Java 7. In Eclipse 3 you can do this by going to: **Mac OS X:** Eclipse -> Preferences -> Java -> Compiler -> Compliance and Classfiles **Windows:** Window -> Preferences -> Java -> Compiler -> Compliance and Classfiles  
and specifying the following settings:

Compiler compliance level: 1.7

Use default compliance settings: checked

Generated .class files compatibility: 1.7

Source compatibility: 1.7

Disallow identifiers called 'assert': Error

Under Windows, the versions might be 7.0 instead of 1.7 - Java 7.0 and 1.7 are the same.

### 7. Installing Subversion (SVN) into Eclipse

There are at least two Subversion plugins for Eclipse, Subversive and Subclipse.  Either will work, for a brief comparison, see [Subclipse vs. Subversion](http://chess.eecs.berkeley.edu/ptexternal/wiki/Main/Subversion#SubclipseVsSubversion).  The instructions below are for Subclipse. To use Subversive, see [Setting up Ptolemy II and Eclipse.](http://chess.eecs.berkeley.edu/ptexternal/nightly/doc/coding/eclipse.htm)

The Subclipse (<http://subclipse.tigris.org>) Eclipse plugin adds Subversion to Eclipse.   
  
Follow the [Subclipse installation instructions](http://subclipse.tigris.org/install.html). Upgrade users should see the [Subclipse update instructions](http://subclipse.tigris.org/upgrade.html), otherwise the automatic update might not work.  
  
For your convenience, an abbreviated version of the Subclipse instructions are below:

1. To download Subclipse, in Eclipse, follow these menus  
   **Mac OS X:** Help -> Software Updates -> Available Software -> Add Site  
   **Windows:** Help -> Software Updates -> Find and Install -> Search for new features to install -> New Remote Site.

Ubuntu**:** Help -> Install New Software -> Add

1. Then enter:
2. Name: Subclipse 1.4.x (Eclipse 3.2+)

URL: http://subclipse.tigris.org/update\_1.4.x

'Mac OS X:'' You will just have a URL entry.

1. In the Update sites to visit window, select Subclipse 1.4.x (Eclipse 3.2+) (not in ubuntu)
2. Click Finish (not in ubuntu)
3. In the Search Results window, expand the Subclipse 1.4.x (Eclipse 3.2+) tree and check the box next to JavaHL Adapter, Subclipse and SVNKit Adapter. If you select all of Subclipse, you may need to install other modules. ''Mac OS X:'' JavaHL is not supported? so don't bother installing it?? "Ubuntu:" also select required Subclipse, Subversion Client Adapter
4. Click Next or Install, accept the license agreement, click Finish.
5. In the "Verification" window, click "Install All"
6. In the "Install/Update" window, click Yes.
7. You will be prompted to restart Eclipse, please do so.

### 8. Import the projects into Eclipse

1. Start up Eclipse in a fresh workspace.
2. Choose File -> Import -> General -> "Existing Projects into Workspace"
3. Click Next
4. In the Import window, click the Browse button next to the "Select root directory" field and select the kepler directory that was created above and then click Next
5. The projects created when ant eclipse should be listed.
6. Click Finish. The build may take 10-15 minutes, see [Bug 4191](http://bugzilla.ecoinformatics.org/show_bug.cgi?id=4191).

### 9. Add tools.jar to the list of external jars

KarDoclet.java uses doclet code from tools.jar.  Under **Windows**, if you are using Java 1.7 or later, you will need to add tools.jar to the list of external jars or else there will be errors in the core package.  (Note that it would appear to make sense to add tools.jar before importing the packages above, but adding tools.jar seems to result in errors like "Project 'ptolemy' is missing required library: '\Ptolemy\src\lib\bsh-2.0b4.jar'")

1. Windows -> Preferences -> Java -> Installed JREs
2. Select the default JRE -> Edit -> Add External Jars -> [Path to JDK]/lib/tools.jar
   1. [Path to JDK]/lib can be seen under existing JRE system libraries
   2. Under Windows, you may need to removed dependencies on apple-extensions, see [Bug 4342](http://bugzilla.ecoinformatics.org/show_bug.cgi?id=4342).

To reduce the number of warnings reported by Eclipse, see [Lots of Eclipse Warnings](https://kepler-project.org/developers/reference/kepler-and-eclipse#lots-of-eclipse-warnings) below.

### 10. Create a Java Application within Eclipse

1. Open the Run dialog with: Run -> Run Configurations
2. In the left hand tree widget, select "Java Application"
3. In the Main tab:  
   Change the Name to kepler  
   Change the Project to kepler  
   Change the Main class to org.kepler.Kepler  
   **NOTE:** If you want to use a suite other than kepler, e.g. reporting, enter that suite for the Name and Project.
4. In the Arguments tab, add the following to the VM Arguments text area
5. -Xmx512m

-Xss5m

1. Then click Run

### 11. Updating the local copy of the Kepler sources

After installation, you can use either Eclipse to update your copy of the Kepler sources by

1. In Eclipse, bring up the Package Explorer with Windows -> Show View -> Package Explorer
2. Select all the packages with either Control-A or Command A
3. Right click and select Team -> Update.

An alternative method is to execute these commands from the command line:

cd kepler/build-area; svn update; ant update

### 12. Adding an actor

See [Developing a Hello World Actor using the Kepler Build System and Eclipse](https://kepler-project.org/developers/teams/build/documentation/developing-a-hello-world-actor-using-the-kepler-build-system-and-eclipse)

## Problems

Problems that we've run into are listed below

[Subversion client version problems](https://kepler-project.org/developers/reference/kepler-and-eclipse#subversion-client-version-problems)

[Lots of Eclipse Warnings](https://kepler-project.org/developers/reference/kepler-and-eclipse#lots-of-eclipse-warnings)

[No actors in the right hand actor pane?](https://kepler-project.org/developers/reference/kepler-and-eclipse#no-actors-in-the)

[ClassDoc Missing](https://kepler-project.org/developers/reference/kepler-and-eclipse#classdoc-missing)

[Syntax error, parameterized types are only available if source level is 1.5 or greater](https://kepler-project.org/developers/reference/kepler-and-eclipse#excluding-a-directory-from)

[Excluding A Directory From The Build](https://kepler-project.org/developers/reference/kepler-and-eclipse#excluding-a-directory-from)

[Other Problems?](https://kepler-project.org/developers/reference/kepler-and-eclipse#other-problems)