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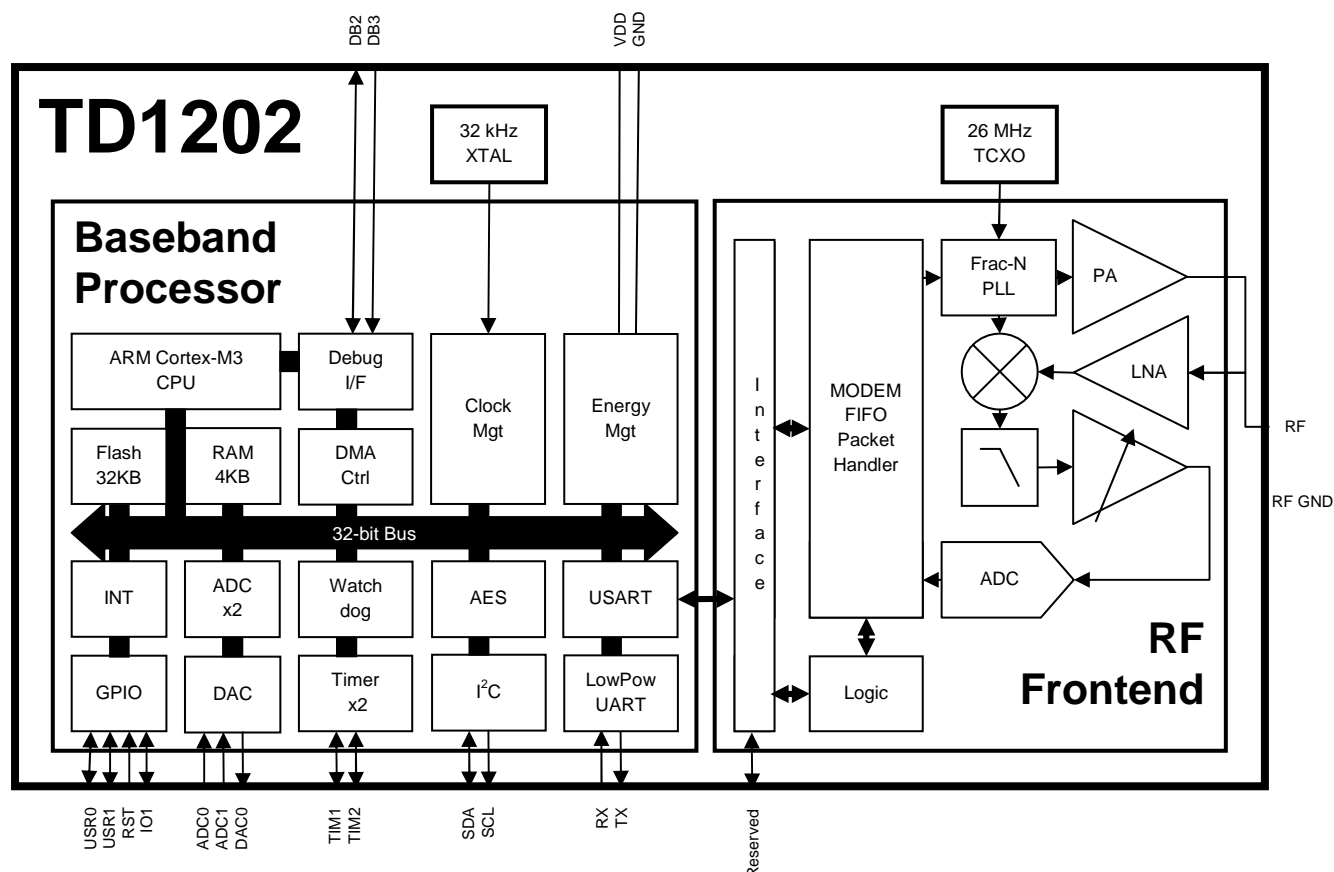
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1 Overview

This document provides instructions for installing and using an Eclipse/IAR toolchain for the Telecom Design TD1202 module.

1.1 Scope

As the TD1202 module provides access to its internal ARM® Cortex-M3 processor for developing applications, it is possible for a user or a third-party to integrate custom software and algorithms with the libraries required for accessing the SIGFOX™ radio network, thus allowing the best overall low-power performance and lower cost.



This guide focuses on the description of the installation of an Eclipse/IAR toolchain, providing step-by-step instructions.

1.2 Organization

Each section in this document covers a separate topic, organized as follow:

- Section 1 is this overview
- Section 2 contains the installation instructions

1.3 Relevant Documents

Additional information on the TD1202 module and on its dedicated evaluation board can be found in:

- *TD1202 Datasheet*
- *TD1202 EVB User's Guide*
- *TD1202 Reference Manual*

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2 Installation Instructions

This section provides detailed instructions on how to install the Eclipse/IAR toolchain for the TD1202 module.

Telecom Design decided to bring the integrated EFM32TG210F32 ARM® Cortex-M3 processor built into the module available for external developments. This CPU is an Energy Micro EFM32 Tiny Gecko family member, which features fast and energy-friendly processing core, modern and efficient peripherals and large RAM/Flash memory spaces.

In order to alleviate all prerequisites, Telecom Design chose to use only free tools for software development.

For the compiler toolchain itself, the size-limited IAR KickStart compiler was chosen over the free GCC compiler chain because of its established better architecture support and efficiency for generating ARM® Cortex-M3 machine code, saving up to 40% of program memory space. As the 32 KB size limitation matches exactly the total amount of memory available in the TD1202 EFM32TG210F32 CPU, this means that practically no size restriction applies. However, this choice implies that developments must be performed on a Windows platform, as this compiler toolchain is not available natively on OS X or Linux.

The separate “Eclipse IDE for C/C++” was preferred over the integrated “IAR Embedded Workbench®” because of its large industry acceptance and its flexible plugin architecture allowing an easy customization.

The installation of an additional Eclipse/IAR plugin is required to integrate the compiler toolchain into the IDE.

2.1 Eclipse Setup

The Java Runtime Environment (version 6 or later) is required in order to run the Eclipse software. It can be downloaded from:

<http://java.com/>

The latest release of the Eclipse IDE can be downloaded directly from the Eclipse Web site:

<http://www.eclipse.org/downloads/>

Unless you are interested into developments using other software languages than C/C++ or have an already existing Eclipse setup, the default bundle to choose is the “Eclipse IDE for C/C++ Developers”. At the time of this writing, the last version is nicknamed “Juno SR1”. Please select the package appropriate for your platform (Windows 32 or 64-bit).

The 130 MB downloaded file is a simple “ZIP” archive without any automatic installer, so once obtained, you must unzip the archive into a location of your choice. But as file names containing white space characters may cause problems with some plugins, we recommend using the standard location “C:\”, i.e. directly at the root of your main hard disk partition.

A directory “eclipse” is created into the chosen directory that contains the full Eclipse distribution.

2.2 IAR ARM® KickStart (Size-limited License)

The latest release of the IAR ARM® KickStart size-limited license Embedded Workbench® containing the compiler toolchain can be downloaded directly from the IAR Web site:

<http://supp.iar.com/Download/SW/?item=EWARM-KS32>

At the time of this writing, the last version is v6.50. In order to proceed to download, you will need to register with IAR if this is not already the case.

The 940+ MB file contains an automatic installer, that will first extract installation files into a temporary location, then display the following dialog window:

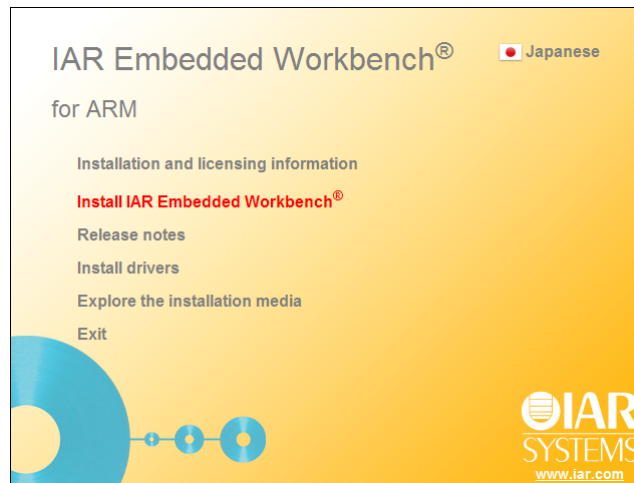


Figure 1- IAR Splash Screen

Please select the “**Install IAR Embedded Workbench®**” item from the list.

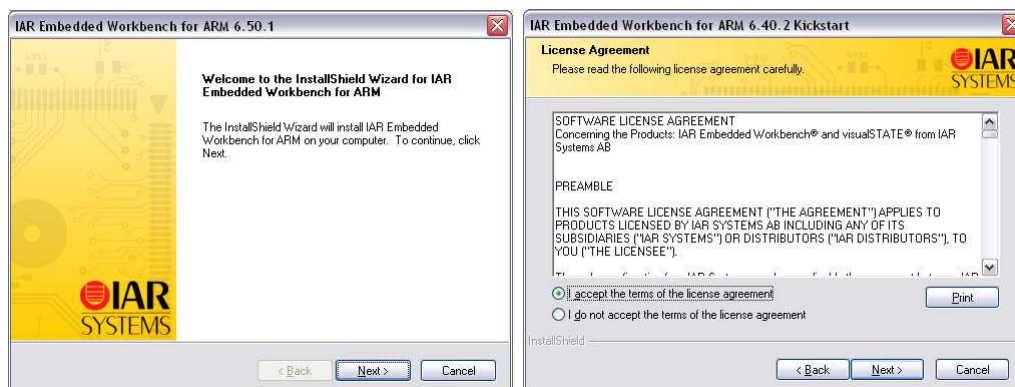


Figure 2- IAR Welcome & License Agreement

Click “**Next**”, then check the “**I accept the terms of the license agreement**” radio button and click “**Next**”.



Figure 3 - IAR Destination Folder Selection

Select the destination location or leave it as proposed, then click **“Next”**. Select the program folder or use the proposed one and click **“Next”** again.



Figure 4- IAR Final Dialog Box

Click on **“Install”**, the installation will begin.

2.3 IAR License Wizard

At the end of the IAR installation process, the IAR License Wizard will be displayed:

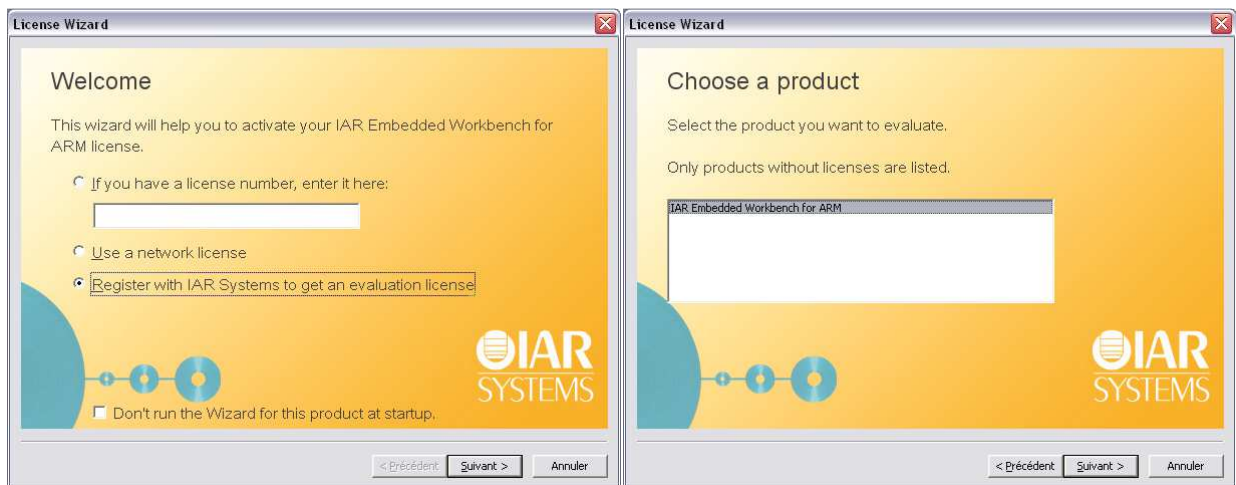


Figure 5 - License Wizard Welcome & Product Choice

Select the **“Register with IAR Systems to get an evaluation license”** option and click **“Next”**. Select the **“IAR Embedded Workbench for ARM”** in the list and click **“Next”** again.

Click on the **“Register”** button, this will bring you to the IAR Web site, where you will have to fill in a form in order to get a license for the IAR ARM® KickStart 32 KB size-limited Embedded Workbench®.

Paste the license number you will receive by email into the box below and click on the **“Next”** button twice.



Figure 6 - IAR License Register & Confirm

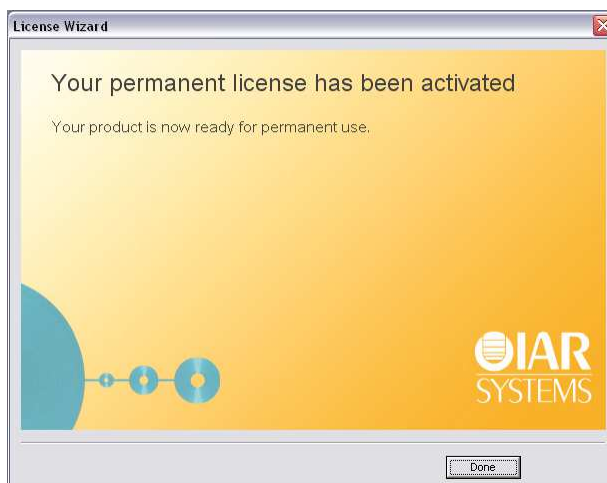


Figure 7 - License Activated

Once the License has been requested, a final confirmation window will appear, click on the “**Done**” button.

2.4 Optional J-Link SWD Debugger

At your option, you may want to use either a separate Segger J-Link JTAG/SWD Emulator with USB interface (<http://www.segger.com/jlink.html>) or an EFM32 Tiny Gecko Starter Kit from Energy Micro (<http://www.energymicro.com/tools/efm32-tiny-gecko-starter-kit>), featuring an integrated Segger J-Link programmer/debugger as well as a built-in Advanced Energy Monitoring capability.

Please install the required drivers provided with the above debugger, or choose the ones from the IAR Embedded Workbench® installation screen:

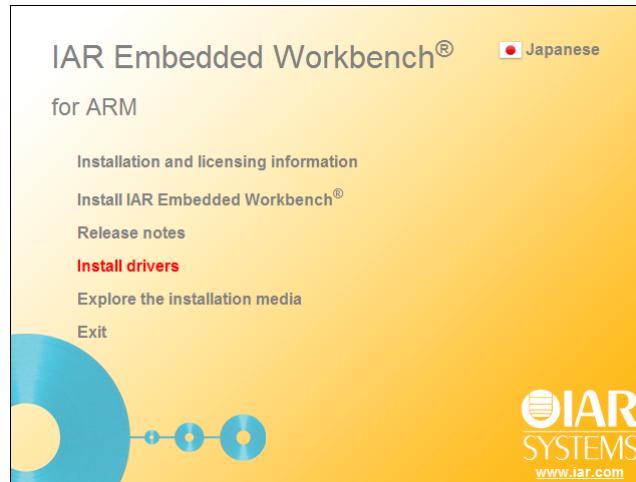


Figure 8- Install IAR Drivers

In order to use the built-in Advanced Energy Monitoring capability from the Energy Micro EFM32 Tiny Gecko Starter Kit, you may need to perform the following hardware modifications on the board:

- Place a jumper between the 2 bottom row breakout pins “VMCU” and “3V3”
- Place a wire and jumper between the slider switch bottom-right pin and the 2x10 0.1” pitch shrouded header top-right pin

With these proposed modifications, the Advanced Energy Monitoring system will be able to monitor the external TD1202 device instead of the built-in EFM32 CPU.

2.5 Eclipse IAR Plugin

The installation of the required Eclipse IAR plugin is better performed from within Eclipse itself.

Navigate to the Eclipse installation directory and launch the “**eclipse.exe**” application. This will bring up a dialog window asking for a “workspace” location:

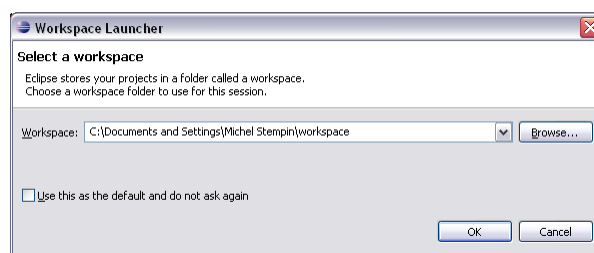


Figure 9- Eclipse Workspace Launcher

The Eclipse “workspace” is the location where Eclipse will store all the files related to your development projects. If you intend to have a single workspace for all your work, you may check the appropriate box to use it as a default and not be asked for it at every launch. Click “**OK**”, the main Eclipse window will appear:

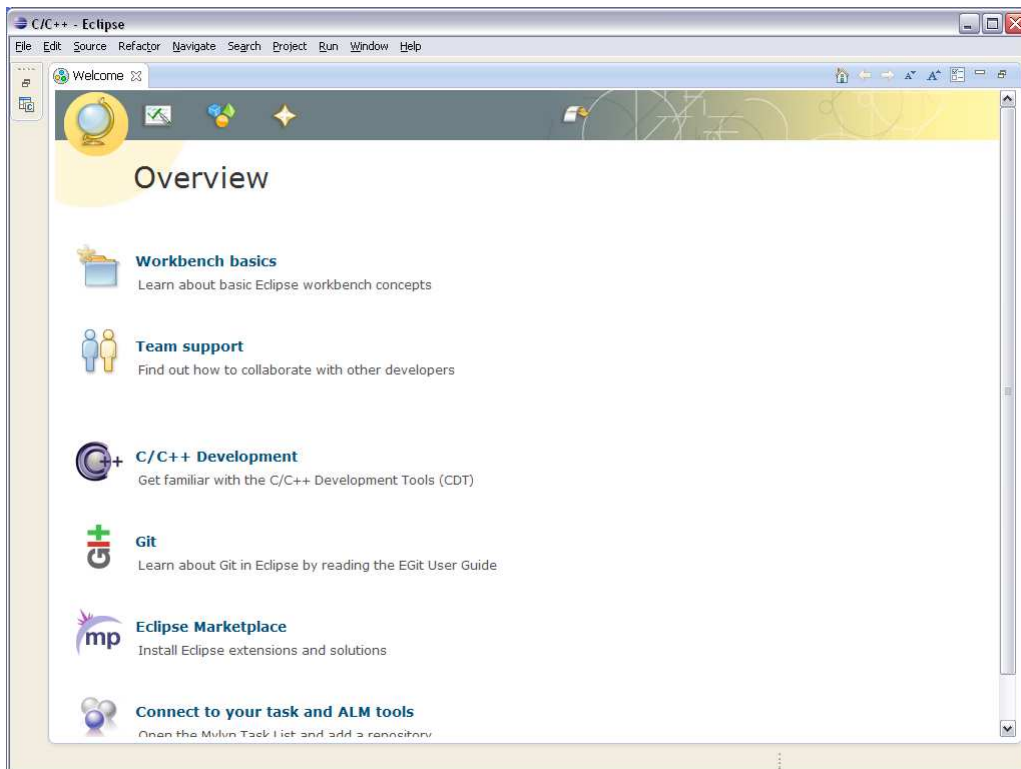


Figure 10- Eclipse Welcome Screen

To install IAR Embedded Workbench for Eclipse, choose **“Help>Install New Software”** from the menus:

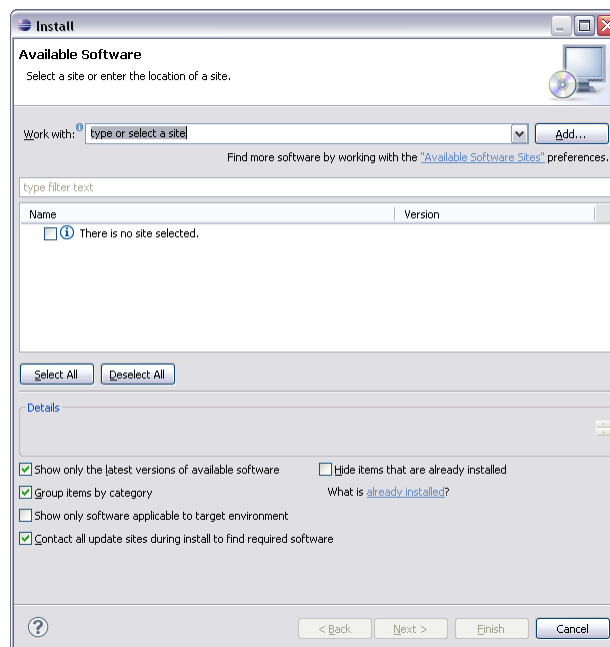


Figure 11- Eclipse Install New Software Dialog

Click on the **“Add”** button and use the update site that matches your IAR Embedded Workbench version. For IAR Embedded Workbench for ARM 6.50, this is:

<http://eclipse-update.iar.com/arm/6.50/>

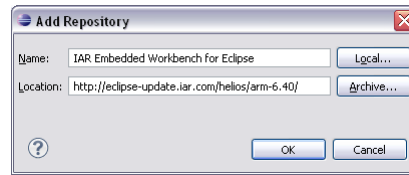


Figure 12- Add an Eclipse Software Repository

Fill in the fields as appropriate and click “OK”, Eclipse will fetch the available software package from the provided repository URL and display a list:

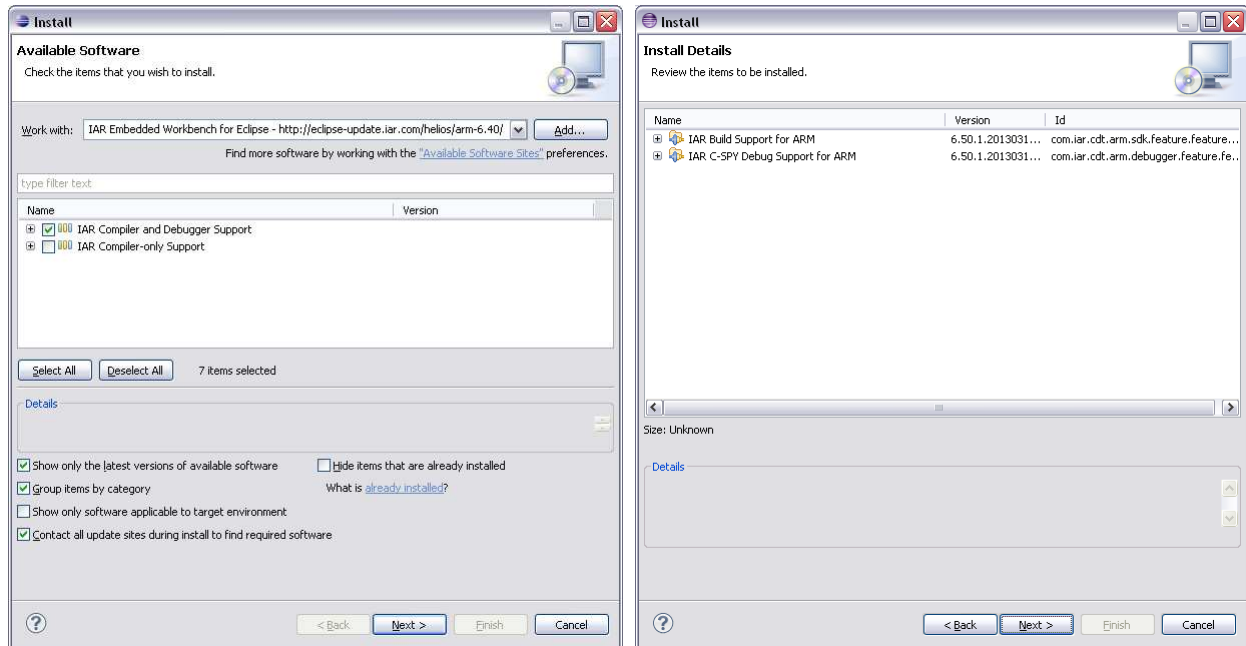


Figure 13- Eclipse Software Install Details

Check the box in front of the “IAR Compiler and Debugger Support” item in the list, then click “Next” twice.



Figure 14- Eclipse Software License Review

Check the **“I accept the terms of the license agreements”** radio button and click **“Finish”**, the installation will begin. Acknowledge any security warning that may occur by pressing on the **“OK”** button if required.

Eventually, Eclipse will need to be restarted for the changes to take effect:

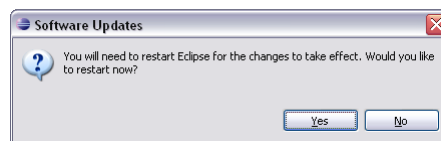


Figure 15- Restart Eclipse

Please accept by pressing **“Yes”**.

2.6 Additional Eclipse Plugins

Although not mandatory, a few plugins are recommended for getting an efficient team development environment and documentation tools under the Eclipse IDE:

- The “EGit – Git Team Provider” plugin is available from **“Help>Eclipse Marketplace...”** in the menus. This plugin provides an integration of the Git software version system into Eclipse. You will need to install an additional “Subversive SVN Connector” to have it working: the “Native JavaHL 1.7.7” connector is recommended. The installation is very similar to the plugin above
- The “Eclox” plugin is available from <http://home.gna.org/eclox/#download> and can be installed like the Eclipse IAR plugin. This plugin is a simple doxygen (<http://www.doxygen.org/>) frontend plugin for Eclipse, providing an integrated multi-language code documentation tool into the Eclipse IDE

DOCUMENT CHANGE LIST

Revision 1.0

- First Release

Revision 1.1

- Changed Eclipse Revision to Juno SR1
- Changed IAR Revision to 6.50

Revision 1.2

- Changed Eclipse Revision to Juno SR2
- Changed IAR Eclipse plugin Revision to 6.50
- Fixed typo in Figure 5 Legend

Revision 1.3

- Changed contact information

Revision 1.4

- Changed contact information

NOTES:

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