

ERIKA Enterprise integration with MPLAB IDE

for the dsPIC (R) DSC platform

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Contents

1	Introduction	4
2	Installing Erika Enterprise and RT-Druid on Microsoft Windows	5
3	Building the Erika Enterprise library	6
4	History	11

1 Introduction

This document describes how to compile an **Erika Enterprise** application from the Microchip MPLAB IDE, which is the de facto standard for compilation and debugging dsPIC (R) DSC source code.

The procedure described in this document does not use the RT-Druid Eclipse graphical interface, and proposes a development flow which nicely integrates with MPLAB IDE.

The development process we propose can be described as follows:

- The user has to write an OIL File to properly configure the **Erika Enterprise** kernel;
- The user generates a custom library from an OIL File. Generating a custom library for each OIL file ensures that the application will only link useful code to the final binary image, making this way a good usage of the scarce resources which are available on the microcontrollers;
- Finally, the user either uses an MPLAB IDE project file generated by the scripts, or creates an MPLAB IDE project as usual, including the library and the include files path in the final application.

2 Installing Erika Enterprise and RT-Druid on Microsoft Windows

This document subsumes that the Erika Enterprise has been correctly installed in your system.

If you did not install Erika Enterprise yet, please follow the install instruction which you can find in the document "Erika Enterprise Tutorial for the dsPIC (R) DSC platform" which is installed together with Erika Enterprise and which can also be found in the Evidence website.

3 Building the Erika Enterprise library

The main idea of this step is that from an OIL configuration file it is possible to generate a customized library which contains a copy of the Erika Enterprise code which will be used in the final application. This ensures that the final application will only contains the needed code, optimizing in this way the final system footprint.

To create an Erika Enterprise library from an OIL File, you need to follow these steps:

1. Open a Windows command shell;
2. "cd" in the Evidence bin directory with the following command (We suppose that Erika Enterprise has been installed in `c:\Program Files\Evidence`:

```
cd c:\Program Files\Evidence\bin
```

3. Execute a batch file to generate the library from an OIL file, with the following command:

```
mplab_generatelib.bat oilfile.oil destdir
```

where `oilfile.oil` is the OIL File to be used, and `destdir` is an empty directory that will store the results of the compilation.

Warning:

Both `oilfile.oil` and `destdir` are absolute pathnames. `destdir` will be created if not existent. If the names contain spaces, please surround them by double quotes, like in the following example (Note: put the three lines on a single line!):

```
mplab_generatelib.bat  
"C:\mydir with spaces\file.oil"  
"C:\mydir with spaces\mydirectory"
```

4. As a result, a batch script is run (see Figure 3.1), and two directories are created inside `destdir`. The first directory, `Debug`, contains the products of the compilation process, and it has the same contents as what is typically generated in RT-Druid when building a project. After the execution of the batch script, it is not necessary to retain the `Debug` directory (unless you want to get access to debug information for the Erika Enterprise source code).

The second directory, `Files`, contains the files which are imported and used from MPLAB IDE. In particular, it contains the application include files, and the compiled library.

Moreover, the destination directory contains a Microchip MPLAB IDE project file, which will be used in the next steps.

```

C:\WINDOWS\system32\cmd.exe
Copying pkg/ee_api.h
Copying pkg/ee_opt.h
Copying pkg/kernel/alarms/inc/ee_alarms.h
Copying pkg/kernel/edf/inc/ee_api.h
Copying pkg/kernel/edf/inc/ee_common.h
Copying pkg/kernel/edf/inc/ee_kernel.h
Copying pkg/kernel/fp/inc/ee_api.h
Copying pkg/kernel/fp/inc/ee_common.h
Copying pkg/kernel/fp/inc/ee_kernel.h
Copying pkg/kernel/sem/inc/ee_api.h
Copying pkg/kernel/sem/inc/ee_sem.h
Copying pkg/mcu/microchip_dspic/inc/ee_mcu.h
Copying pkg/mcu/microchip_dspic/inc/ee_mcuregs.h
Copying VERSION
Copying mplab register files
Generating eecfg.h
-----
DONE... MPLAB Library successfully compiled!
The Library is stored inside:
c:\Documents and Settings\Pj\workspace\prova\mplab\Files\lib
-----
C:\Programmi\Evidence\bin>

```

Figure 3.1: The result of the execution of the `mplab_generate_lib.bat` batch file.

5. At this point, open MPLAB IDE and open the MPLAB IDE project file which has been generated by the script in the destination directory.

As an alternative, you can generate your own MPLAN IDE Project by following these steps:

- a) Open MPLAB IDE.
 - b) Create a new Project.
 - c) Add the `libee.a` library which has been generated by the batch script under `destdir\Files\lib\libee.a` to the project. To do that, select "Add Files to Projects..." in the "Project" menu (see Figure 3.2). Then, select the `destdir\Files\lib\libee.a` (see Figure 3.3).
 - d) After that, you need to modify the Project Build Options by adding an include directory and setting the ELF format. To do that, select "Build Options..." / "Project" under the "Project" menu (see Figure 3.4). Then, add the `destdir\Files\pkg` as an include directory path (see Figure 3.5), and select ELF as output file format (see Figure 3.6).
6. Add your application files, and compile it as usually done with MPLAB IDE. The result will be similar to what showed in Figure 3.7.

3 Building the Erika Enterprise library

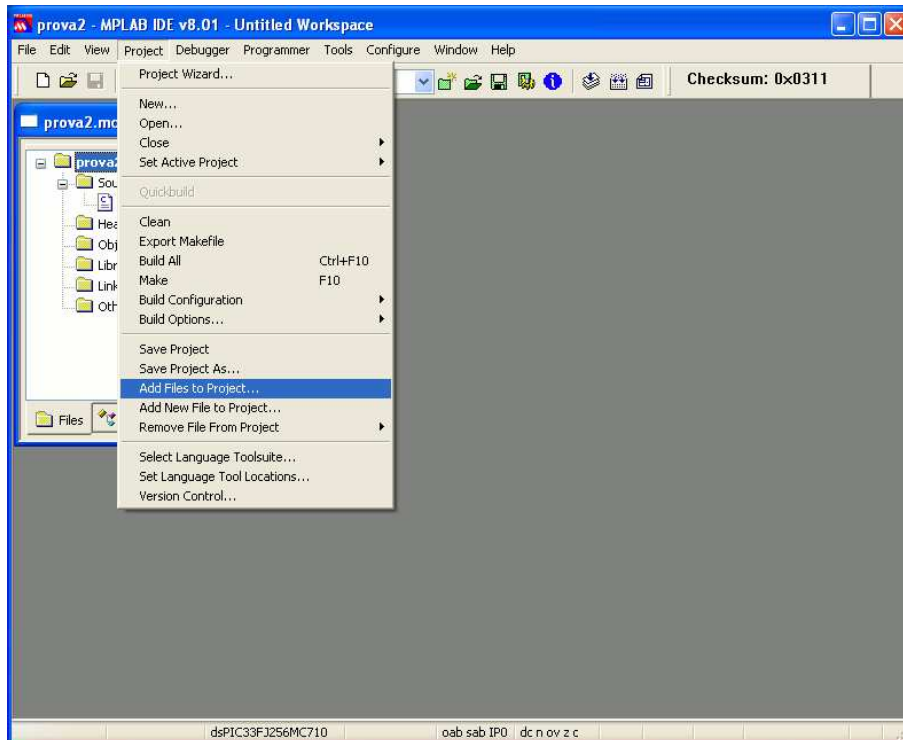


Figure 3.2: Add Files to the Project...

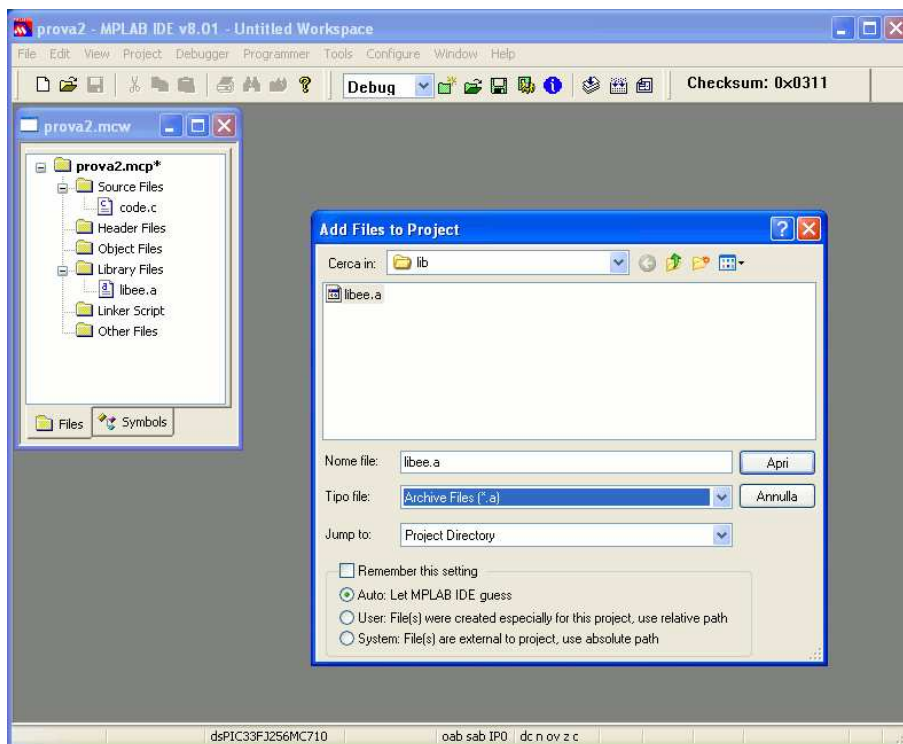


Figure 3.3: Add the Library file to the project.

3 Building the Erika Enterprise library

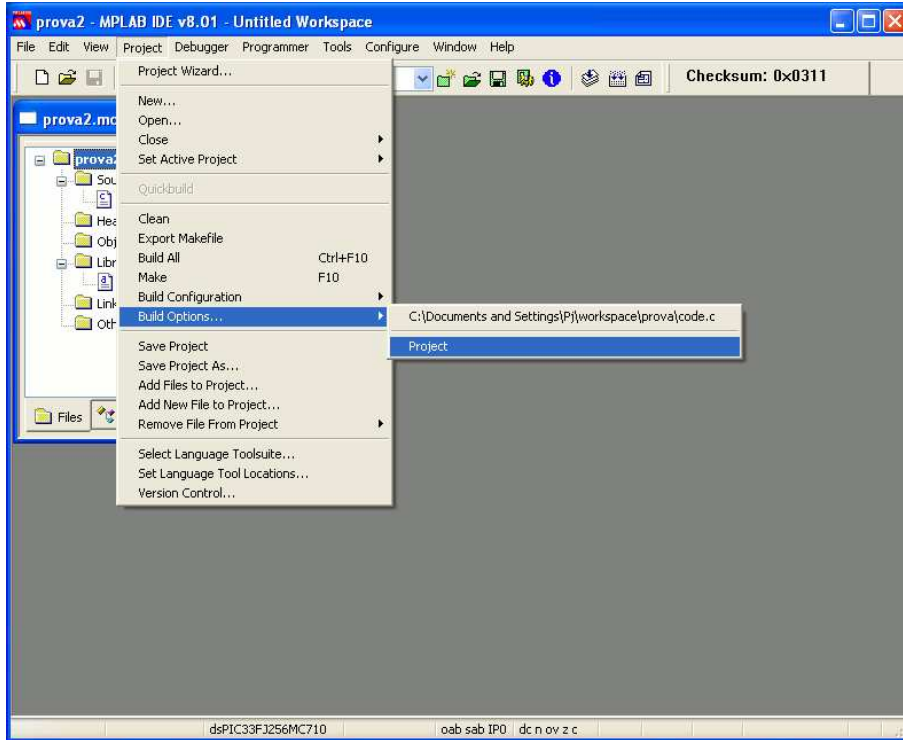


Figure 3.4: Set the project build options.

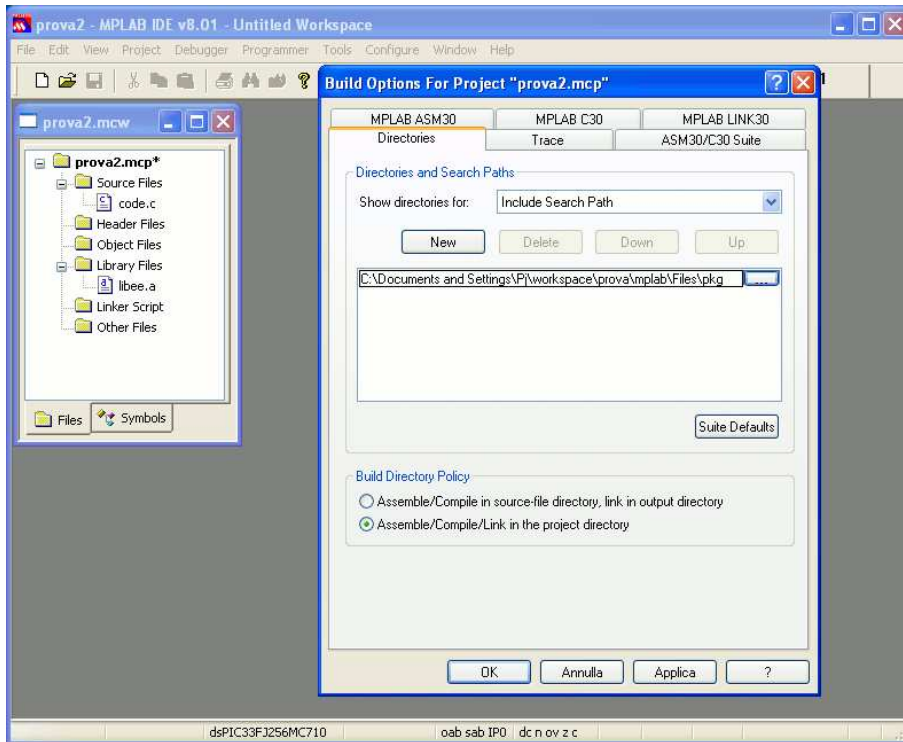


Figure 3.5: Set the additional Include path.

3 Building the Erika Enterprise library

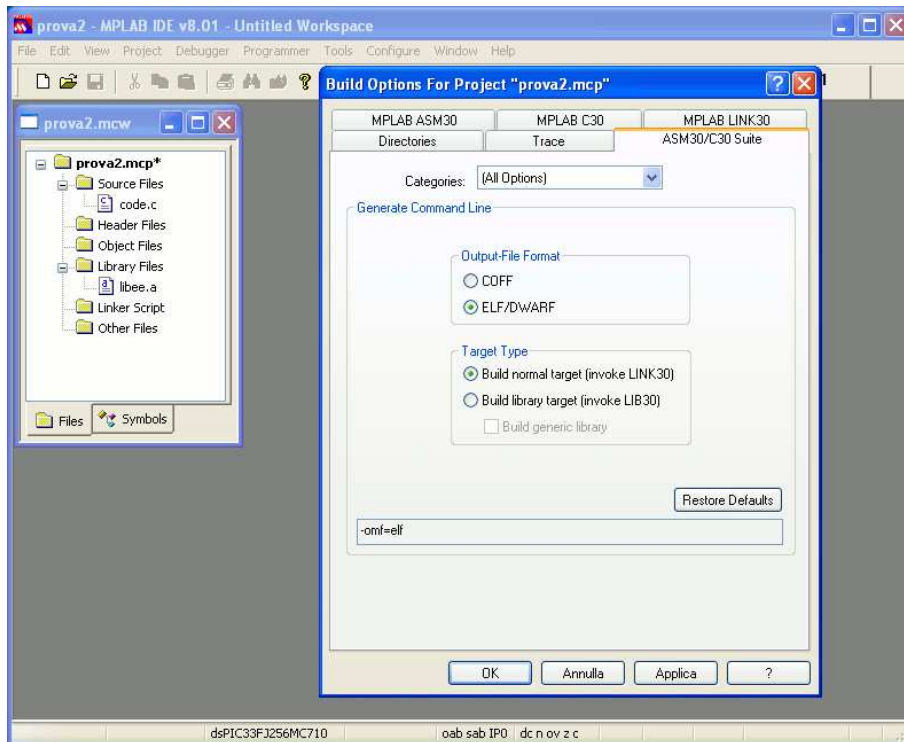


Figure 3.6: Set the output file format.

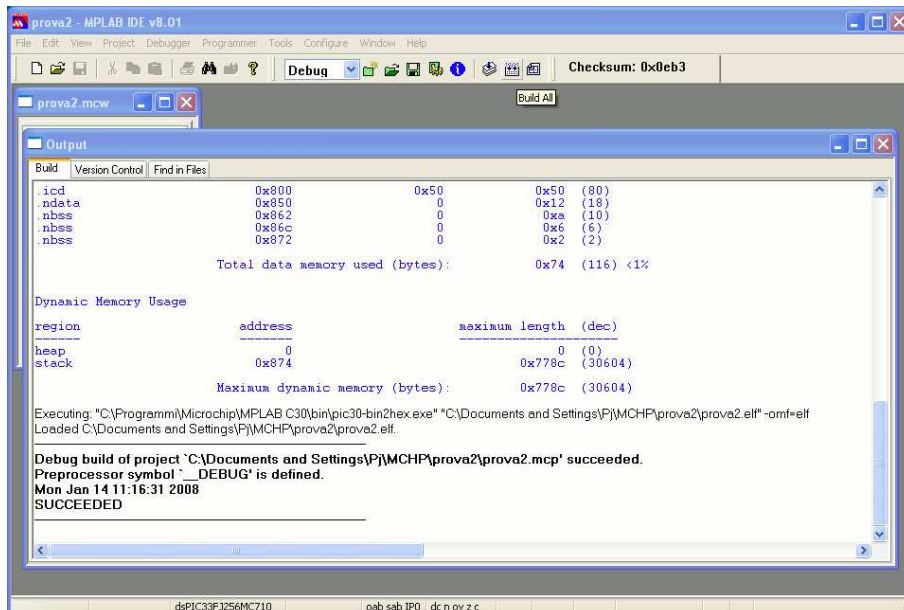


Figure 3.7: The result of the application compilation on MPLAB IDE.

4 History

Version	Comment
1.0.0	Initial revision.