Hello World!

i.MX PDK Windows Embedded CE 6.0

Application Note

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Contents

This document shows you how to create a simple demonstration application for the i.MX PDK for Windows Embedded CE 6.0, using the Platform Builder wizard. You also use this basic approach to create your own applications for Windows Embedded CE 6.0 platforms.

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Installation and Setup

In order to set up the application, you will need to install the following first:

- Installation of the trial version of Platform Builder
- Installation of updates to Platform Builder
- Installation of the respective BSP

Install Platform Builder

To install Windows Embedded CE™ 6.0, use these steps:

1. Install Visual Studio 2005 and also install the Visual Studio Service Pack 1. The Service Pack can be downloaded from Microsoft's website on the following link:

   http://www.microsoft.com/products/info/product.aspx?view=22&pcid=b171ab31-2771-41f6-8243-17654838fd72&crumb=srch&qu=visual+studio+2005&gpid=f5459860-188a-46a3-a825-99fc43a9c5c1

2. Insert the Windows Embedded CE 6.0 installation disk and click next on the opening window to begin the installation, see Figure 1. Also the Windows Embedded 6.0 can be obtained from the following link:

   http://www.microsoft.com/downloads/details.aspx?familyid=7E286847-6E06-4A0C-8CAC-CA7D4C09CB56&displaylang=en

3. Follow the installer instruction until the setup section. On the setup section assure that the ARM4I™ platform is selected on the "CE 6.0 Operation System" section, as shown in Figure 2, and click **Next**.

4. Follow the installation wizard until the installation is complete.
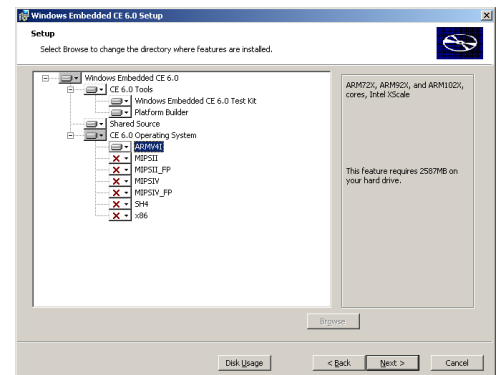
Install the Updates to Platform Builder

You need to install the updates to Platform Builder, as these are required by the i.MX Windows Embedded CE 6.0 SDK. To install the updates, use the links on the last page of this document.

Figure 1 Start Menu of the Windows Embedded CE 6.0 Disk

Figure 2 Custom Setup Options

Install the Corresponding BSP for Windows Embedded CE 6.0

You may find the respective BSP on the CD-ROM's board or download it from the following URL:

http://www.freescale.com

To install the SDK, use these steps:

1. Using either the CD or the downloaded, unzipped package, run the `"*".msi` file.

2. Follow the instructions in the installation wizard.

NOTE

To avoid installation conflicts, first make sure all previous BSP versions have been removed from the platform builder.

Creating a New Application

Platform Builder provides a wizard application that you can use to easily create a simple application for Windows Embedded CE 6.0.

NOTE

The BSP used in this example was based on the i.MX31 PDK.

To create a Hello World application, use these steps:

1. Open a Platform Builder's Workspace for the BSP currently installed. This provides a sample solution that can be used for this example.

2. In the Catalog pane, select and add the Console Window option from the Windows Embedded CE 6.0 catalog, which can be found in the following location (see Figure 3):

    ```
    CoreOS > CEBASE > Shell and
    User Interface > Shell >
    Command Shell folder
    ```

3. Build a run-time OS image with Platform Builder, using the procedures in the Platform Builder documentation. For information, see the "Building a Run-Time Image" topic in the corresponding BSP's *Windows Embedded CE 6.0 User's Guide*.

4. When you have built a run-time OS image in the workspace, set up the project by clicking **Subprojects** > Add **New Subproject** (see Figure 4). The New Project or File screen is displayed.

5. Click the Projects tab, and then select
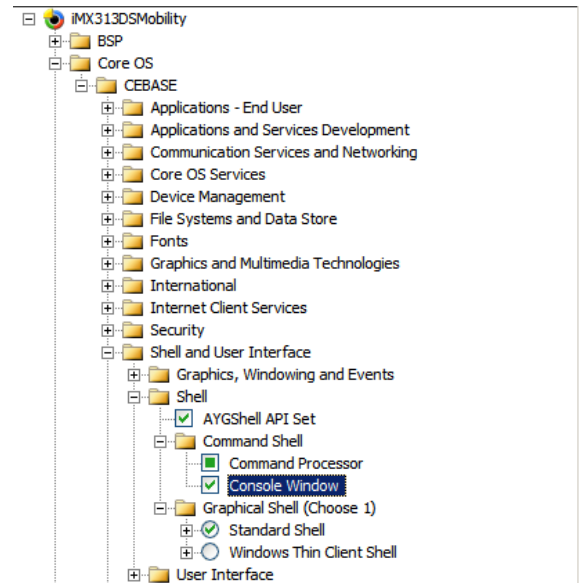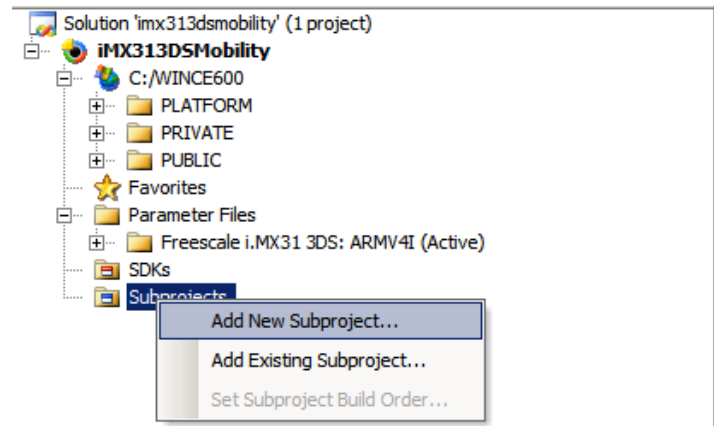
Figure 3 Adding a Console Window to the Project

Figure 4 Creating a New Project

WCE Application (see Figure 5).

6. In the Project name field, enter a name for the project, such as "HelloWorld".

By default, the project folder will be placed in: `WINCE600\Pbworkspaces\<workspace_name>\` `<project_name>`. To change this location, click the button in the Location field and select a new location. Click **Next**.

7. For this demo, select **A typical "Hello World! application**, and then click **Finish** (see Figure 6).

The new project is added to the workspace. To confirm the project, expand the Subprojects tree and view the added project name (see Figure 7).

The wizard creates all of the necessary files to compile the application, and also sets the `.exe` file to run under Windows Embedded CE 6.0.

8. To compile and create the `.exe` file for the application, right-click on the project folder at the solution's view.

9. Select **Build or Rebuild** (see Figure 8).

When the application is compiled, Platform Builder creates a new run-time image with the `<app name>.exe` file included in it.

For example, if the application is named **HelloWorld**, a file named `HelloWorld.exe` is added to the run-time image. The file is placed by default in the following folder:

`\WINCE600\` `OSDesign\<workspace>\RelDir\` `3DS_ARMV4I_Release`

10. When the application is compiled and the new run-time image with the application is created, download the run-time image to the board.

For instructions, see the *Windows Embedded CE 6.0 User's Guide*.

Figure 7 Verifying the Addition of the Project to
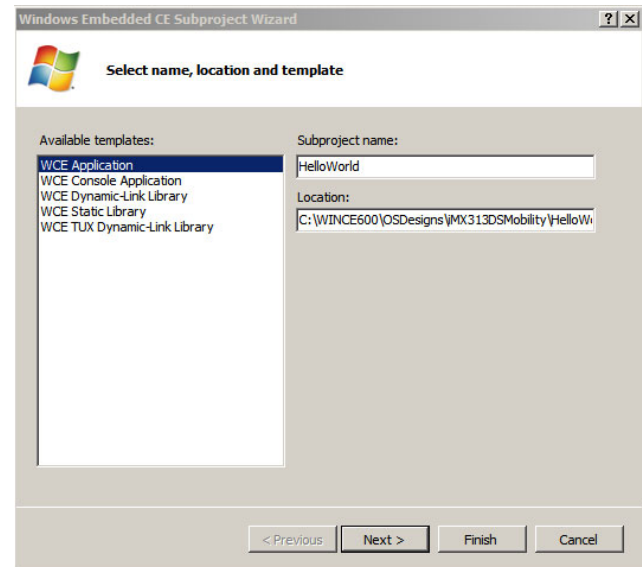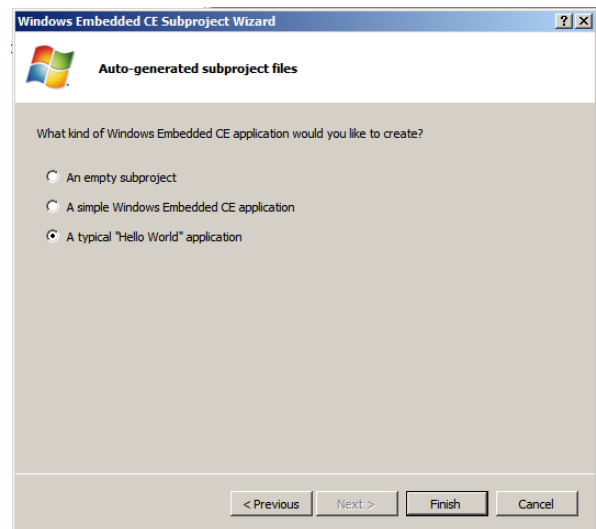the Workspace

11. Once the OS image is loaded in the board,
    reset the board.

12. Enter the EBOOT menu (see Figure 11).

13. Use the steps in the next section to select
    the correct method for running the
    application. There are two methods; the
    one you select will depend on whether
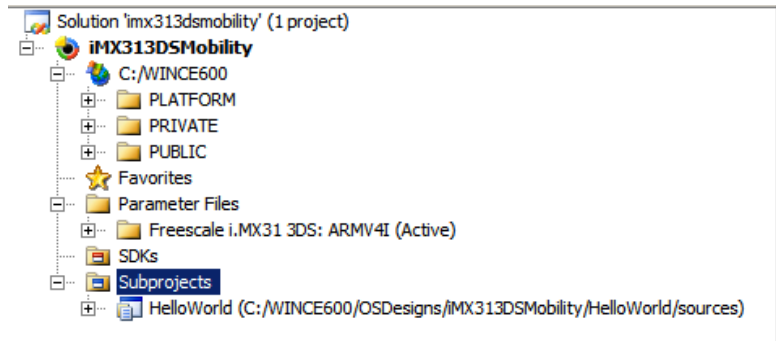   KITL is already enabled.

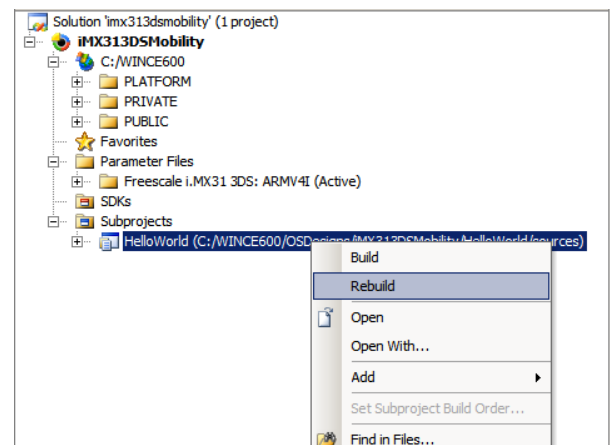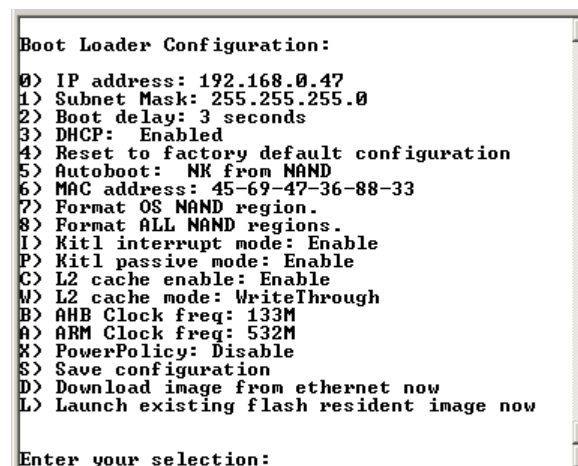Figure 8 Compiling and Building the Application


Figure 9 EBOOT Menu

Choosing a Method for Running the Application

There are two methods for running the Hello World application on the board. The method you choose depends on whether the KITL (Kernel Independent Transport Layer) option is enabled for the run-time image. Use the following instructions to determine whether the KITL option is enabled.

1. In Platform Builder, click **Project > Properties**.

2. On the Build Options tab, locate **Enable KITL (no IMGNOKITL=1)** (see Figure 10):

   - If KITL is selected, go to **Method 1** to run the application.

   - If KITL is <u>NOT</u> selected, go to **Method 2** to run the application.

3. Click **OK**.

Figure 10 Verifying OS Image Build Options
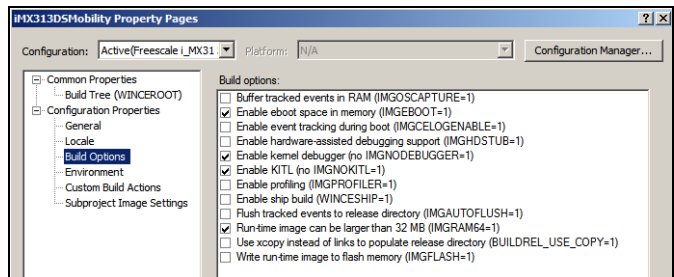
Method 1: Running the Application using a KITL-Enabled OS

1. Ensure that your board has Ethernet connectivity with Platform Builder on your host PC.

   To verify the connection, use the procedure described in the corresponding BSP's *Windows Embedded CE 6.0 User's Guide*.

2. At the EBOOT menu, confirm that **P) KITL passive mode** is set to **Disabled**.

3. Launch the OS image from the EBOOT menu by pressing **L**.

4. With the workspace open in Platform Builder, select **Target** > **Attach Device**.

5. This activates the Platform Builder debug options, and establishes the KITL connection with the board.

6. When the OS image has booted up, in Platform Builder select **Target** > **Run Programs**.

   The Run Program window is displayed.

7. Select your application and click **Run** (see Figure 11).

   In the board, a window with the message "Hello World!" message is displayed (see Figure 12).

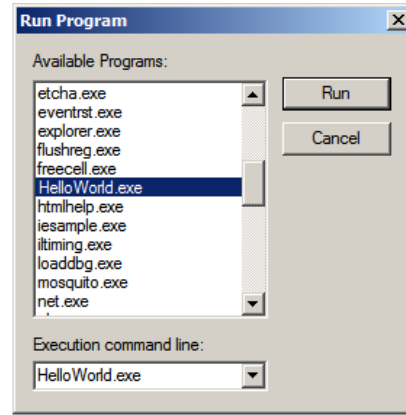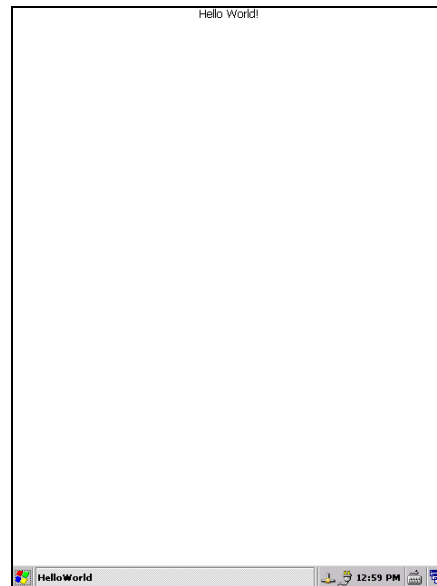Figure 11 Running the Sample Program in Platform Builder

Figure 12 Sample Program Output in 3-Stack board

Method 2: Running the Application using a KITL-Disabled OS

1. In the EBOOT menu, press **L** to launch the OS image. Confirm that **P) KITL passive mode** is set to En**abled**.

2. Using the hand-held pointer, calibrate the touch panel and tap the screen to enter the Windows CE desktop

3. On the Windows Embedded CE 6.0 desktop, select the Windows logo in the lower left corner.

4. Select **Run**. (See Figure 13)

5. The **Run** program window will appear and open the **Keyboard Input Panel**. Type the name of your application, such as **HelloWorld** (the typed entry will not be case sensitive, see Figure 14).

   In the 3-Stack board, a window with the message "Hello World!" message is displayed (see Figure 15).

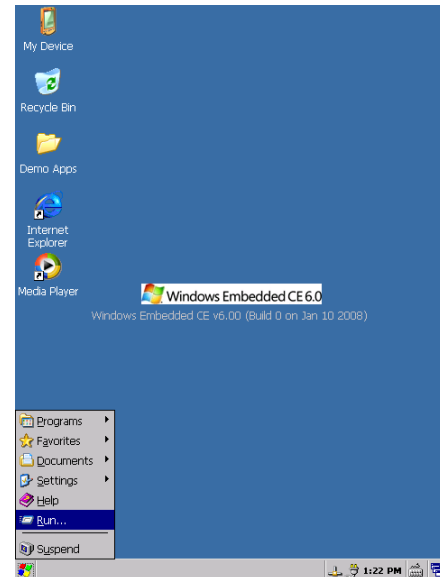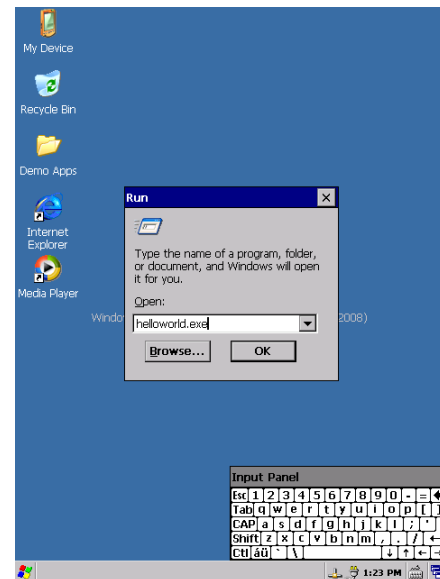Figure 13 Running an Application on Windows Embedded CE 6.0

Figure 14 Running HelloWorld.exe Application from Desktop

Modifying the Application to Create Your Own Projects

1. Edit the .cpp file, which is located in the Source Files folder of your project tree, in the following location (see Figure 15):

   ```
   Workspace File > Solution Explorer,
   (Subprojects > <app name> > source files)
   ```

2. Follow the steps in this Application Note to run your application.

Figure 15 Hello World Application Source Files
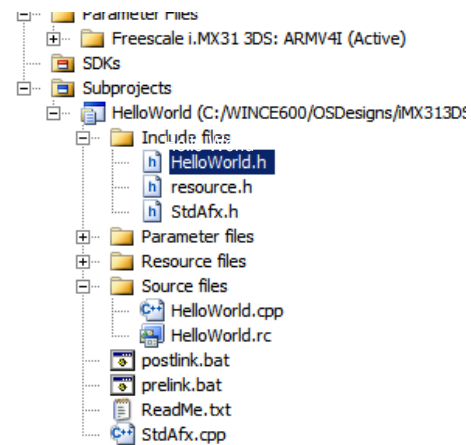
## Removing an Application from a Workspace

1. In your workspace File View tab, expand the Project tree.

2. Right-click on the project folder, and then click **Remove**.

   The .exe file will be removed from your application the next time you build an OS Run-Time Image (see Figure 16).

3. To remove all of the related files, open Windows Explorer and then remove the Application folder from:

   ```
   \PATH:>/WINCE600\OSDesigns\<workspace_name>\
   ```

Figure 16 Removing an Application from a Workspace
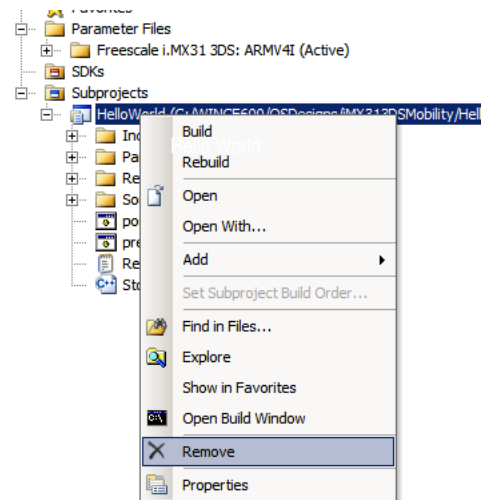
Platform Builder Updates

The link below provides updates for Platform Builder. If needed, copy the URL to your browser.

Windows Embedded CE 6.0 Platform Builder Service Pack 1

http://www.microsoft.com/downloads/details.aspx?familyid=BF0DC0E3-8575-4860-A8E3-290ADF242678&displaylang=en

Windows Embedded CE 6.0 R2

http://www.microsoft.com/downloads/details.aspx?FamilyID=f41fc7c1-f0f4-4fd6-9366-b61e0ab59565&displaylang=en

Windows Embedded CE 6.0 Cumulative Product Update Rollup 12/31/2007

http://www.microsoft.com/downloads/details.aspx?FamilyID=247033b2-f475-445a-9cd0-d80cdae0fa75&DisplayLang=en

Windows Embedded CE 6.0 Monthly Update

http://search.microsoft.com/results.aspx?mkt=en-US&setlang=en-US&q=windows+embedded+CE+6.0+monthly+update