Creating an Example WinCE® Image for the SH7727-20
Application Note 189

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Abstract

This explains how to build an example Windows CE 4.2 image for the SH7727-20 card engine in a Logic Product Development Starter Development Kit (SDK).

REVISION HISTORY

REV	EDITOR	DESCRIPTION	APPROVAL	DATE
A	Mike Aanenson	Release	MA	12/11/03

1   Introduction: Points to Remember

This document explains how to create an example image. Naturally various alternative configurations-- apart from the one presented here-- can be made using Platform Builder.

Assumptions:

■ The LoCE_SH7727-20_beta_002 BSP is installed on your PC. (Please see Logic's application note: "Installing the LoCE_SH7727-20_beta_002 BSP")
■ Platform Builder 4.2 is installed on your machine with support for SH3 processors.
■ You are using a Logic Product Development Display Kit. If you do not have a display kit connected, this example image will work but you will be unable to see the video output.

Noted Functionality in Example Image:

Your image will contain the following functionality if you build the image exactly as it is presented in this document. It is assumed that no files have been modified in your BSP platform folder. Also, please note that Platform Builder automatically adds components if they are deemed necessary dependents.

■	Audio	Media Player included, mp3 and wav capable
■	Display	Default display (LQ64D343 at 16BPP), cursor not enabled
■	USB Host	USB mouse and keyboard capable
■	USB Function	ActiveSync capable
■	Serial	one UART serial port, SPI port
■	CompactFlash	Memory card only. This is not hot swappable.
■	Touch	Touch driver and calibration utility
■	Standard SDK for CE .net	Most applications should run with the included API sets.
■	Apps	ActiveSync, Solitaire, WordPad, Media Player,
■	Image Memory Location	This is a RAM image.

Noted Omitted Functionality in Example Image:

■ Ethernet

This example leaves out the Ethernet Network driver because the LoCE_SH7727-20_beta_002 BSP release does not support Ethernet sharing or simultaneous use of the Ethernet controller for both debug and application communications. If you need application Ethernet, you cannot use debug ethernet.

Documentation Note:

■ Platform Builder and Windows CE are products of Microsoft; these programs are shipped with excellent documentation. The 'Help' section for Platform Builder is very useful, not only for Platform Builder, but also for Windows CE in general.

LPD Support for Platform Builder Requires a Contract

You must have a contract with Logic Product Development (LPD) in order for LPD to support Platform Builder; similarly, you must have a contract with LPD in order for LPD to provide support for general Windows CE questions.

2 Creating an Example Image: A Step by Step Guide

1. Open Platform Builder 4.2. (Your open Platform Builder windows may be different)
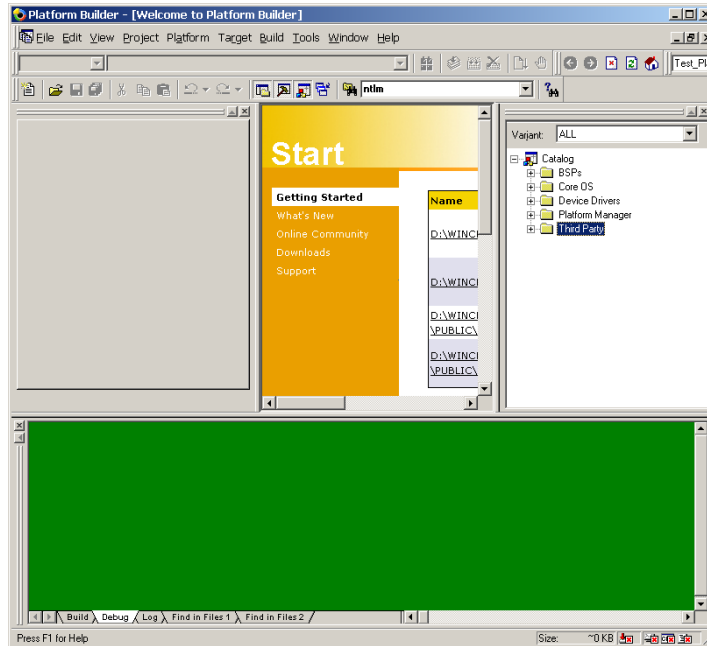

Figure 1: Open Platform Builder 4.2

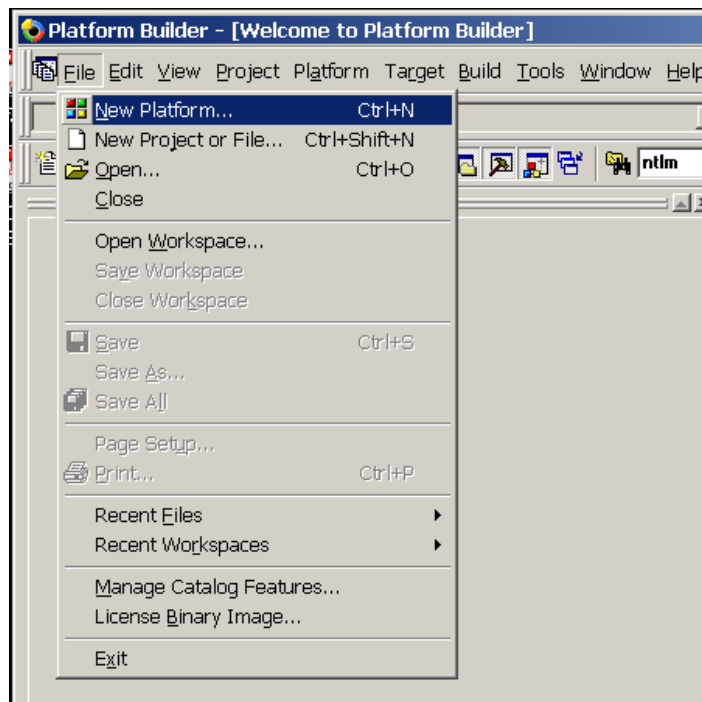2. Create a New Platform. Select '**File / New Platform**.'

Figure 2: Create a New Platform

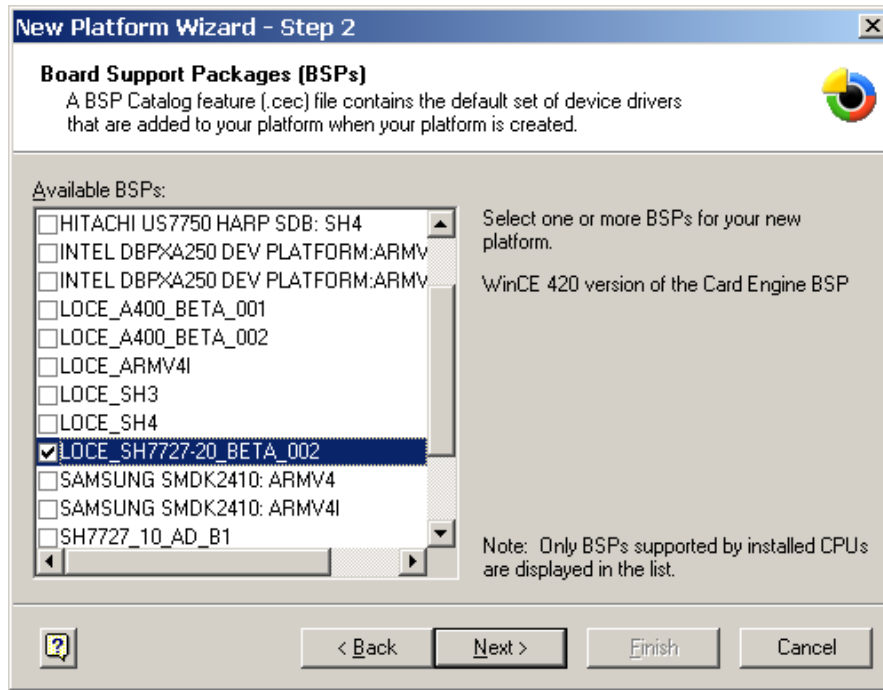3. Select 'LOCE_SH7727-20_BETA_002' BSP. Click 'Next'

Figure 3:Select 'LoCE_SH7727-20_BETA_002'

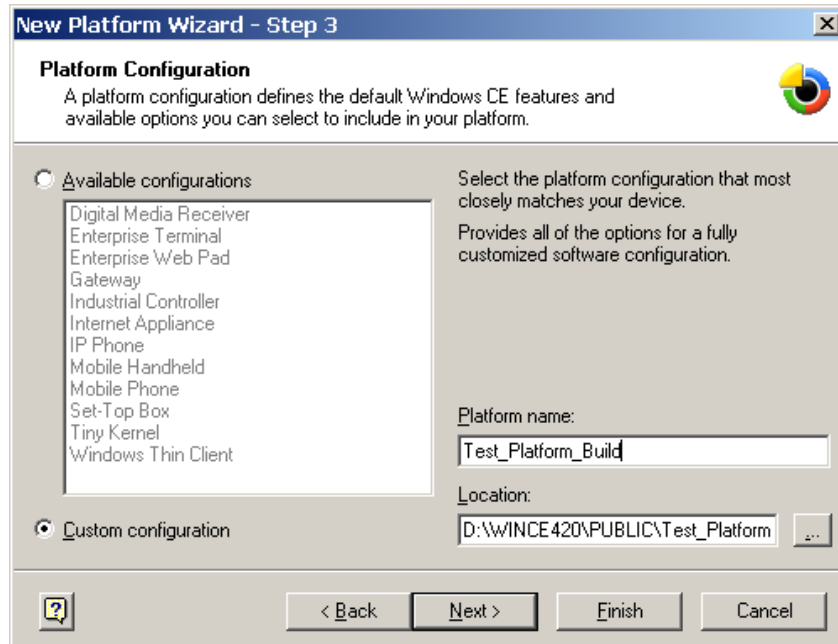4. Select 'Custom configuration'. Type a 'Platform name,' then click 'Next.'

Figure 4: Select 'Custom configuration'

5. Select 'Custom Device with Shell and Graphical User Interface (GUI)'. Click 'Next.'
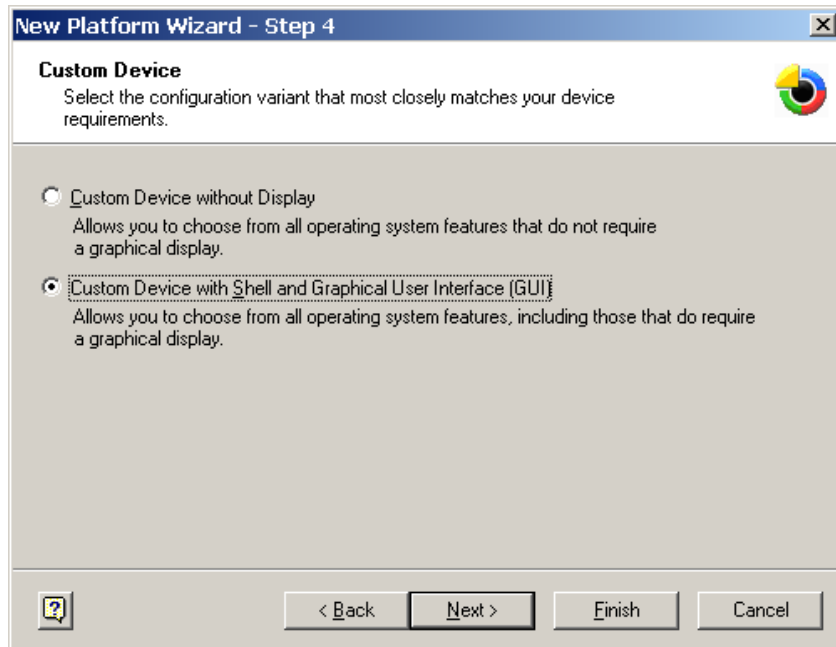
Figure 5: Custom Device

6. Add 'Standard SDK for Windows CE.NET.' Click 'Next.'
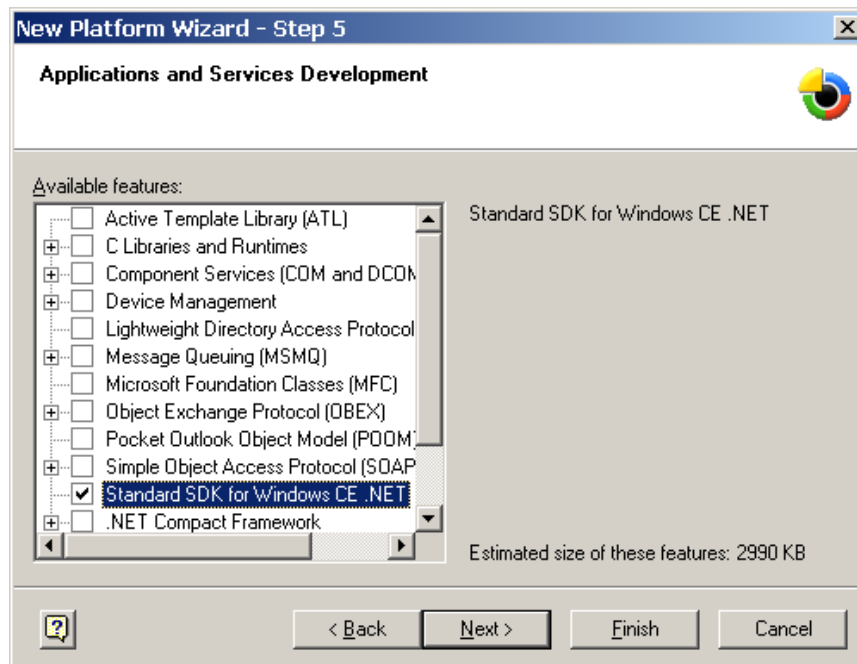
Figure 6: Add 'Standard SDK for WindowsCE.NET

7. Add 'Active Sync,' 'Games,' and 'WordPad.' Click 'Next.'
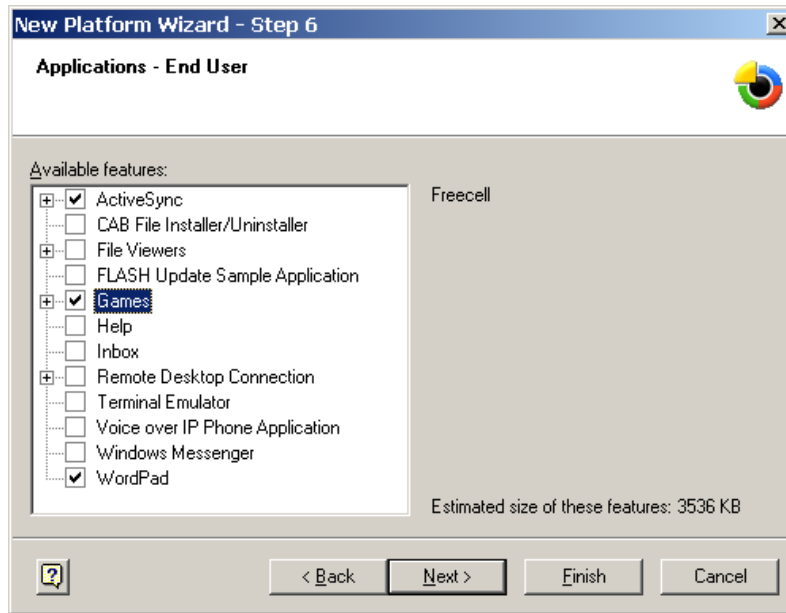
Figure 7: Adding Applications

8. Add 'USB Human Input Device (HID) Class.' Click 'Next.'
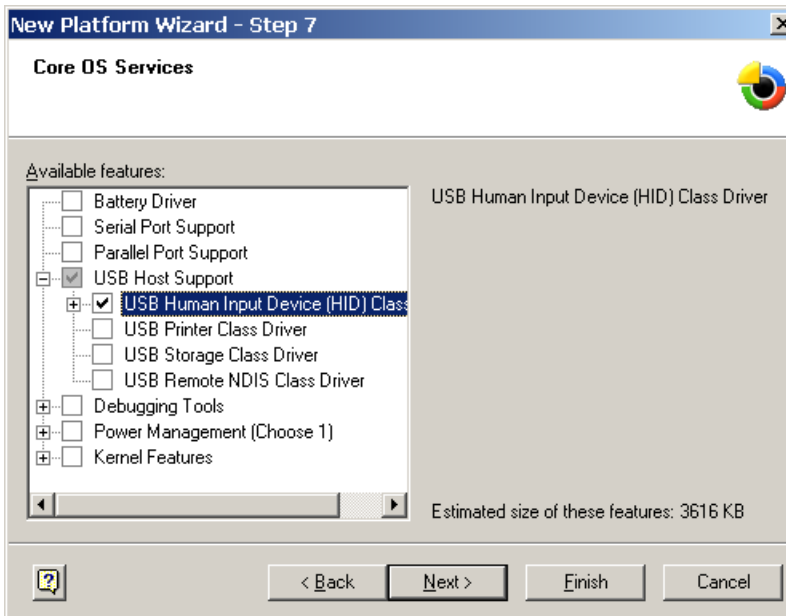
Figure 8: Add 'USB Human Input Device (HID) Class

9. Add 'Dial Up Networking (RAS/PPP)' and 'Telephony API (TAPI 2.0)'. Click 'Next.'
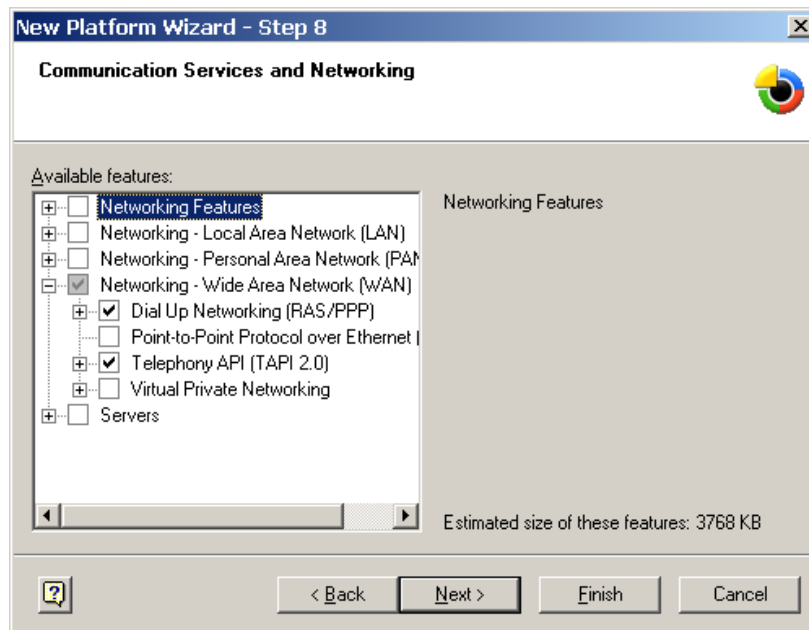
Figure 9: Adding Communication Services

10. Add 'RAM-based Registry' and 'FAT File System'. Click 'Next.'
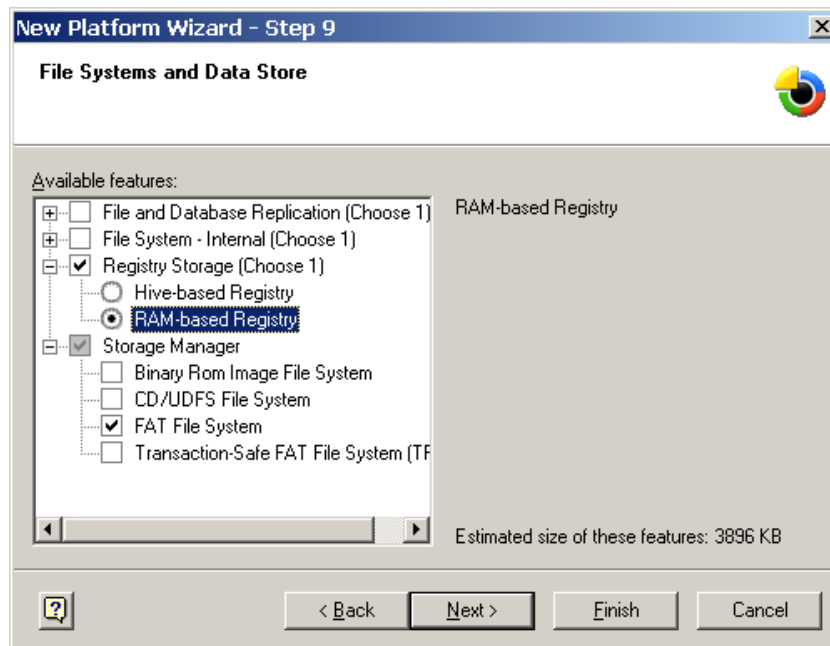
Figure 10: Adding File Systems

11. Platform Builder adds 'Fonts' automatically. Leave section blank. Click 'Next.'
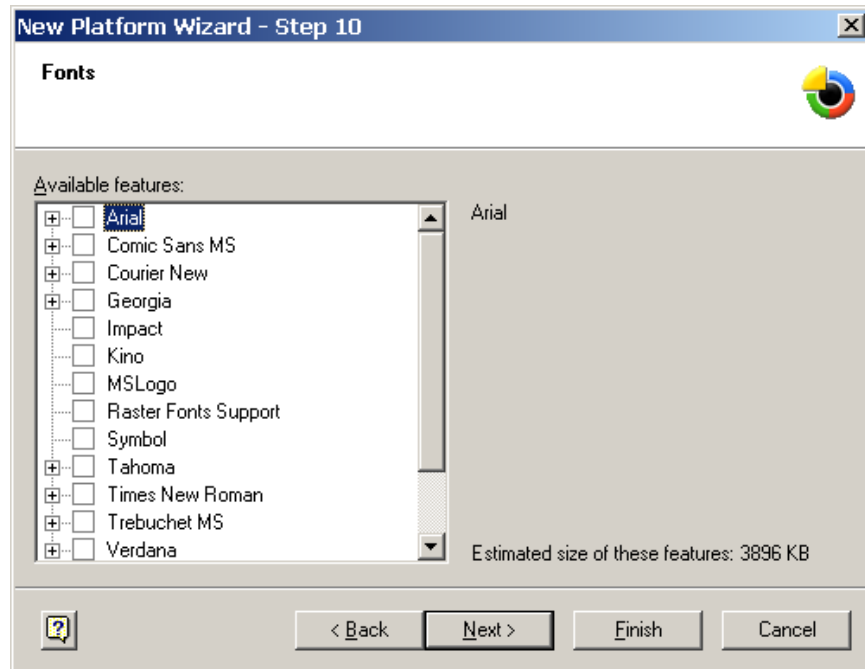
Figure 11: Fonts

12. Platform Builder adds 'International' components automatically. Leave section blank. Click 'Next.'
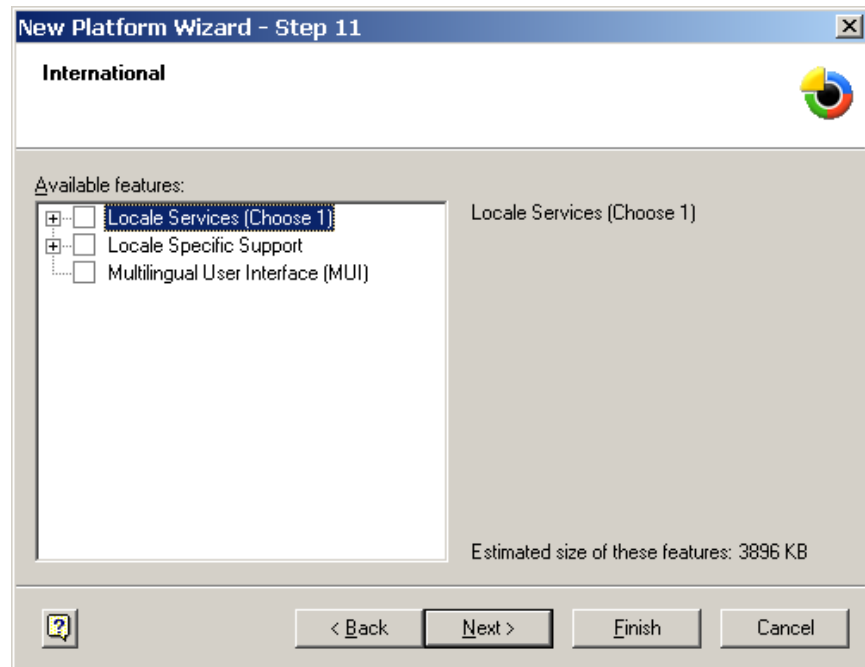
Figure 12: International Components

13. Platform Builder adds 'Internet Client Services' components automatically. Leave section blank. Click 'Next.'
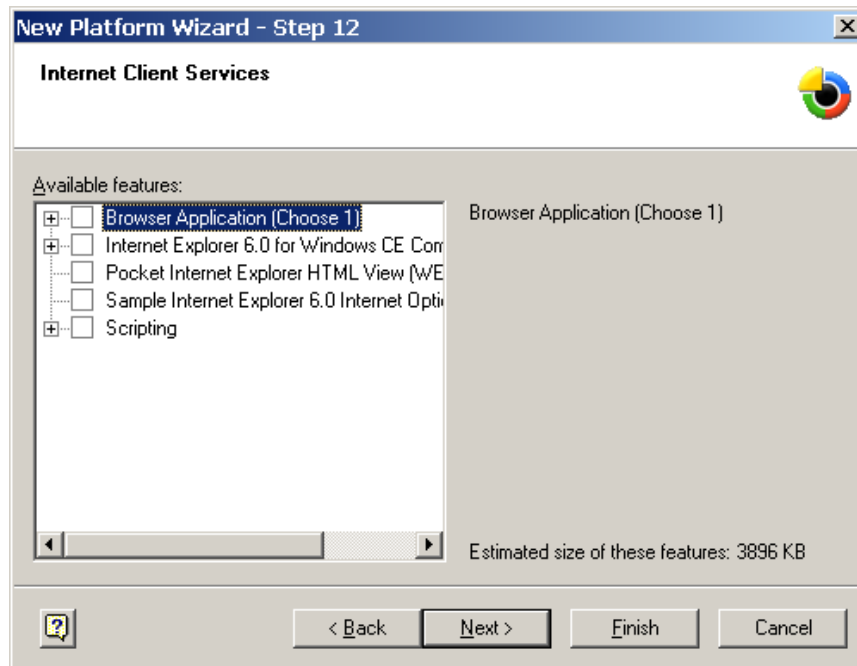
Figure 13: Internal Client Services

14. Add 'WMA and MP3 Local Playback' and 'Windows Media Player Application'. Click 'Next.'
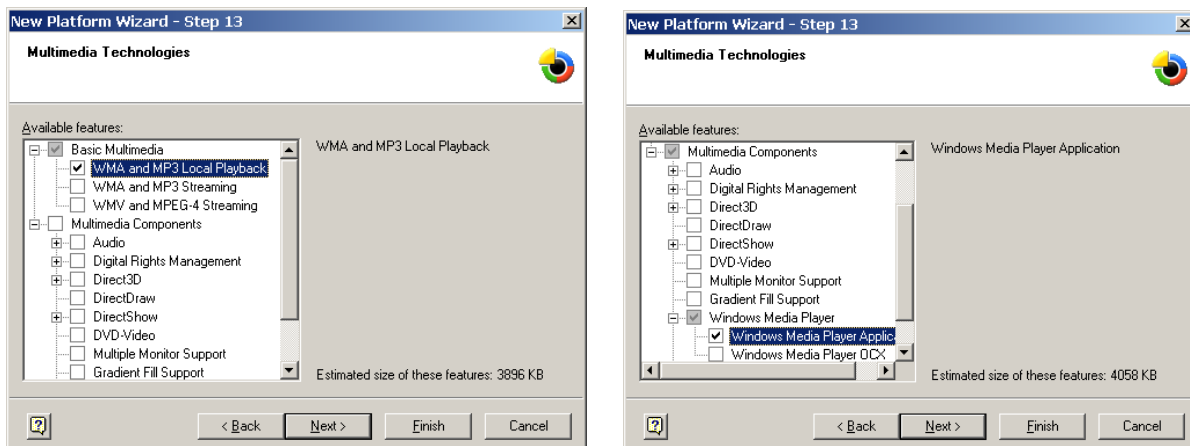
Figure 14: Adding Multimedia Technologies-- Scroll Down to Locate Components
(the components in the 'Multimedia Technologies' window are displayed here in two images)

15. Platform Builder adds 'Security' components automatically. Leave section blank. Click 'Next.'
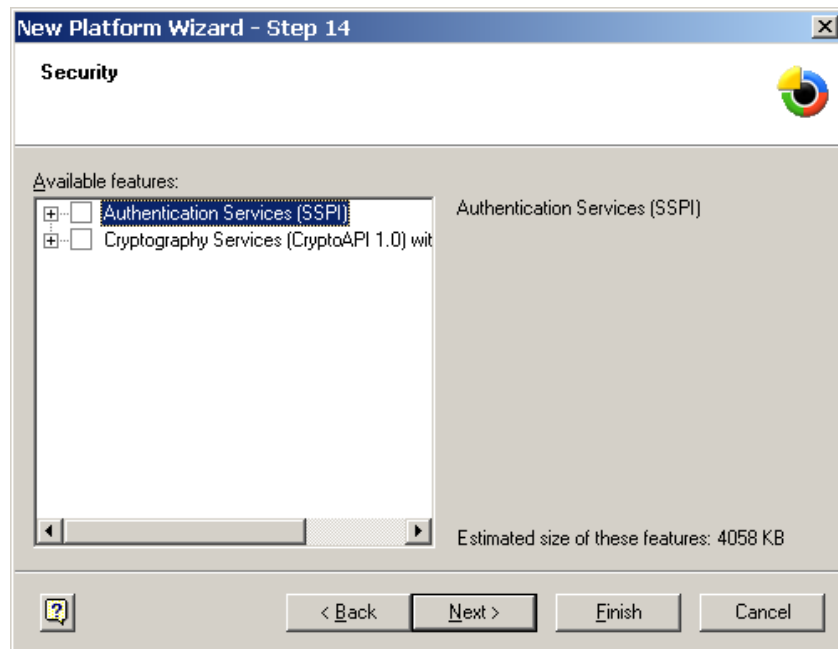
Figure 15: Security Window

16. Add 'Mouse,' 'Network User Interface,' and 'Touch Display (Stylus).' Click 'Next.'
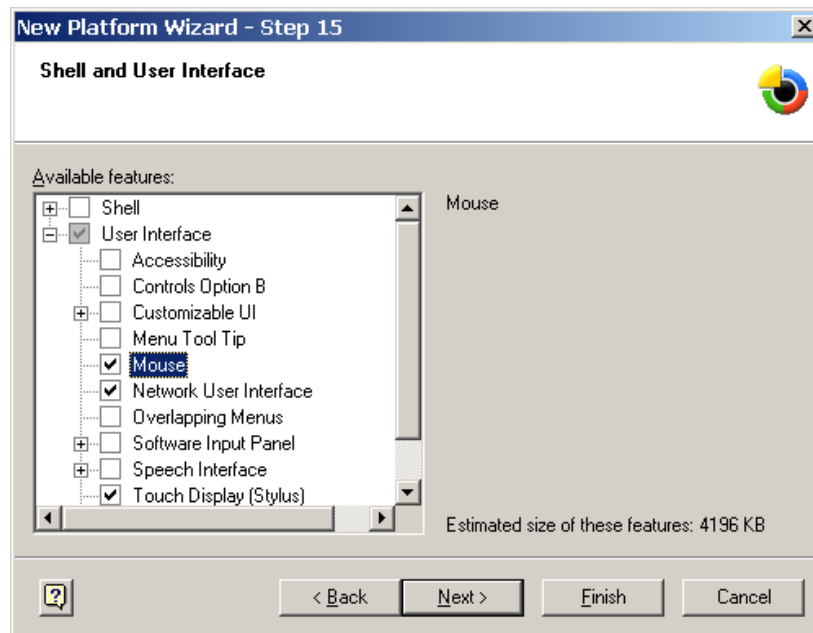
Figure 16: Shell and User Interface Window

17. Check the 'Notification acknowledged.' box. Click 'Next.'
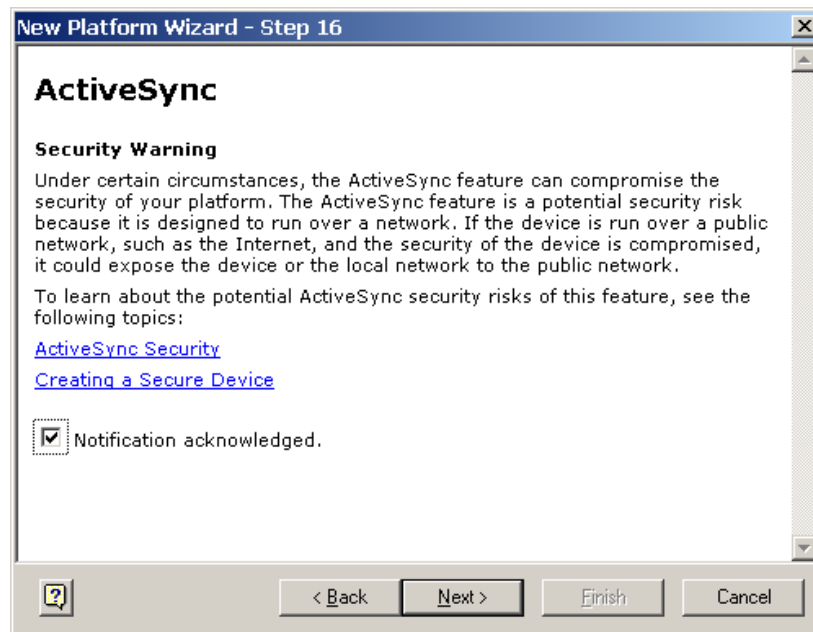
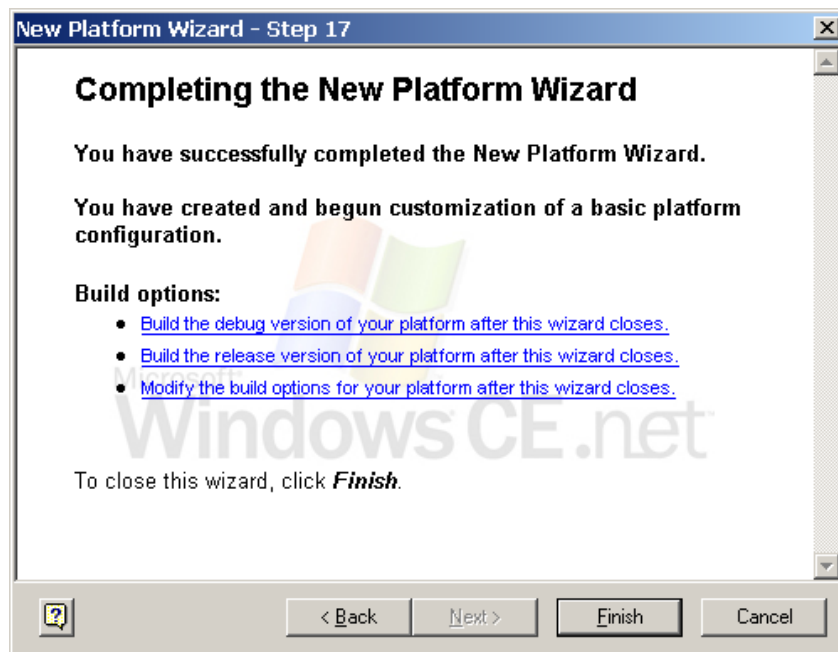*Figure 17: Notification Acknowledged*

18. Click 'Finish.'

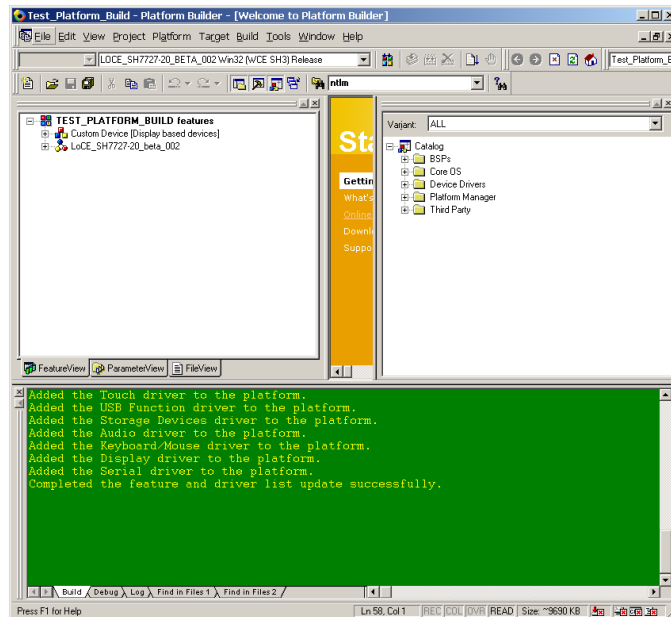*Figure 18: Click Finish*

19. Platform Builder now shows the new Platform in the Workspace window.

Figure 19: The New Platform in the Workspace Window

20. Next, 'Delete' the 'Local Area Networking' and 'PCMCIA' features from the platform. The 'LAN' feature is not used in this example image because there is only one ethernet connection and it will be used for 'Debug Ethernet.' The 'PCMCIA' feature is unnecessary because the SDK board does not support PCMCIA (instead, Memory Mapped CompactFlash is supported).
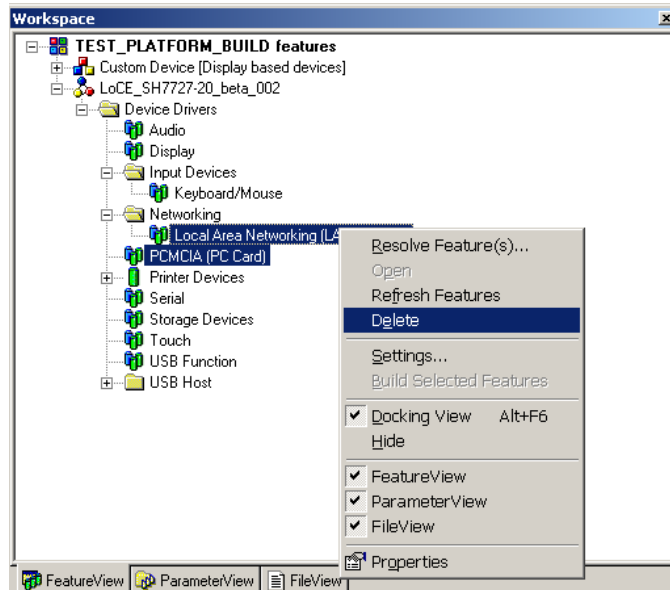
Figure 20: Delete LAN and PCMCIA

21. Note all of the *features* for this platform are listed under the BSP name in the 'Workspace' window. (If your platform is missing any of the features as displayed in Figure 21 (below), right click on the missing feature in the Catalog and click 'Add.')
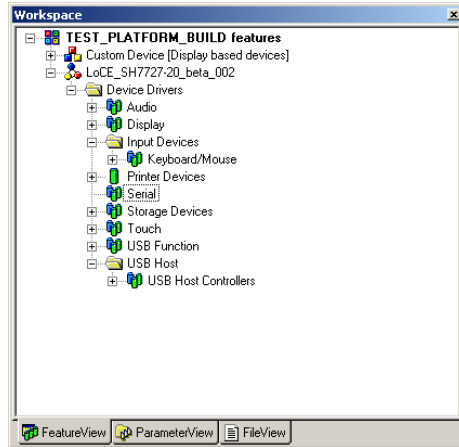
Figure 21: Features in the Workspace Window

22. Note all *components* for this Platform are listed in the 'Workspace' window. You can see that Platform Builder adds many components that were not specifically requested.
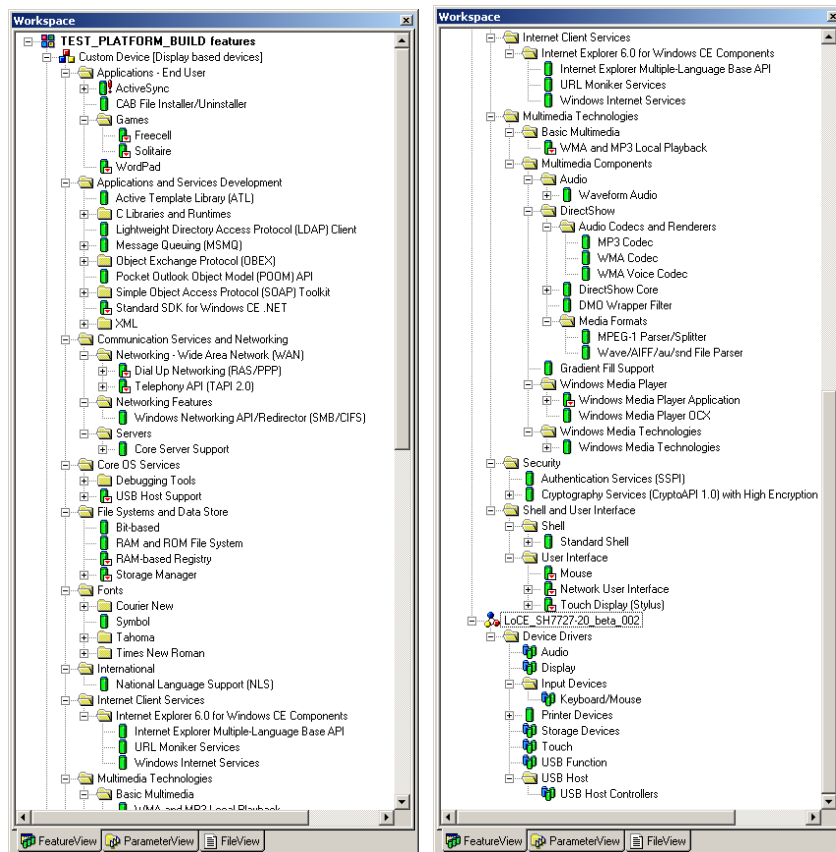

Figure 22: Components in the Workspace Window

23. Next, select the drivers for this BSP. Open the 'Platform' menu and click 'Resolve Features.'
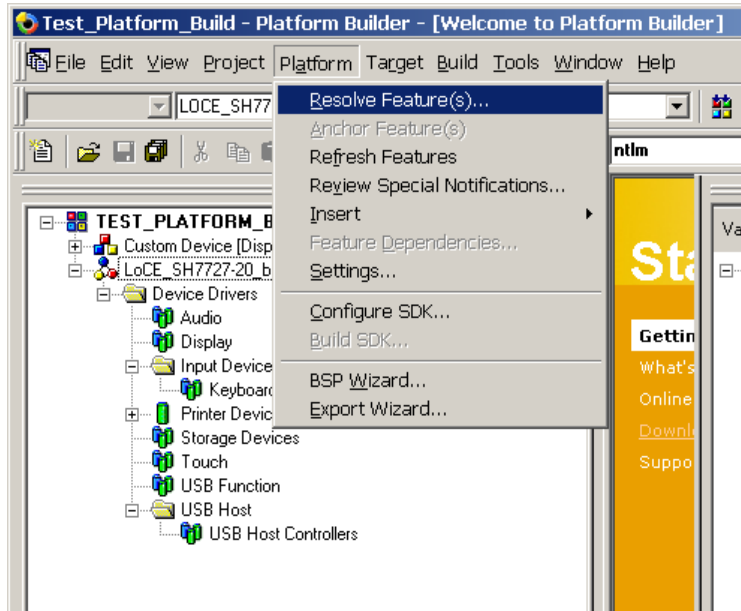
Figure 23: Click 'Resolve Features'

24. First, select the 'Audio' driver for this BSP, second the 'Display' driver, and so on.
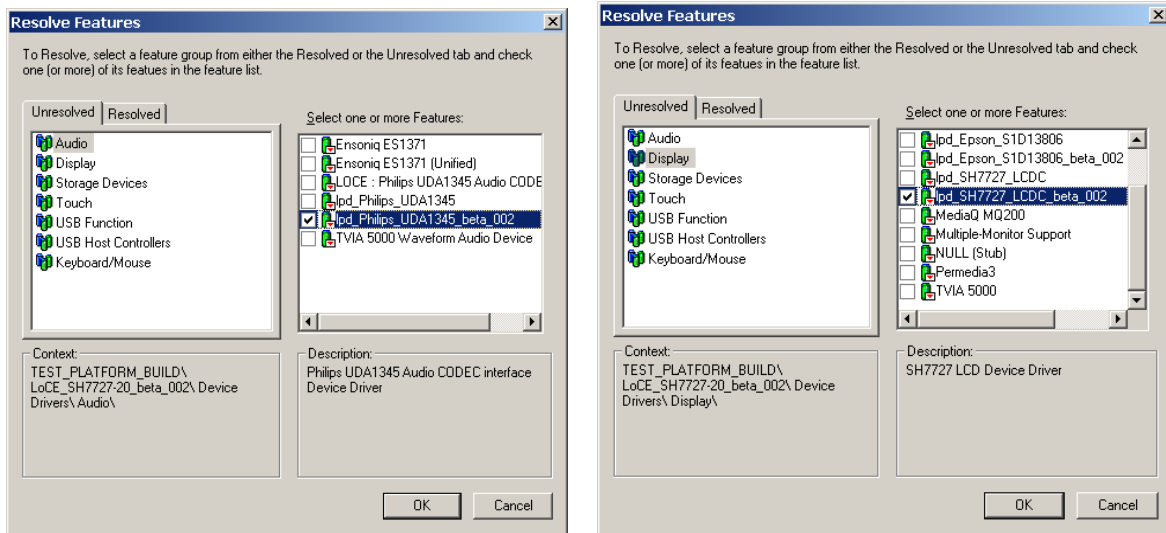
Figure 24: Select the 'Audio' and 'Display' Drivers

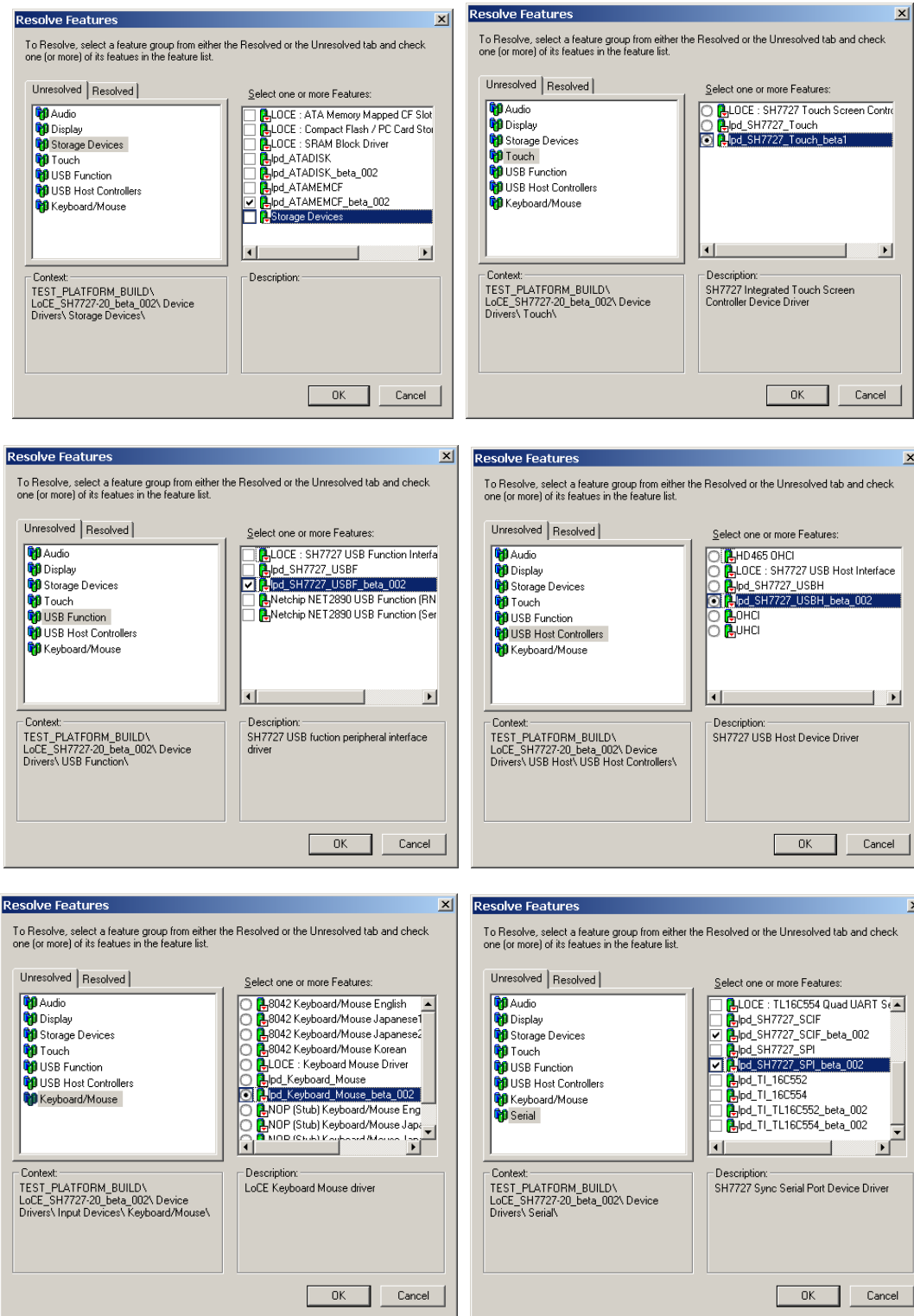25. Choosing the drivers, continued. Click 'OK' when finished.

Figure 25: Select the 'Storage Device,' 'Touch,' 'USB Function,' USB Host Contollers,' Keyboard Mouse,' and 'Serial' Drivers

26. Note the 'Workspace' windows display the drivers once all the drivers have been resolved.
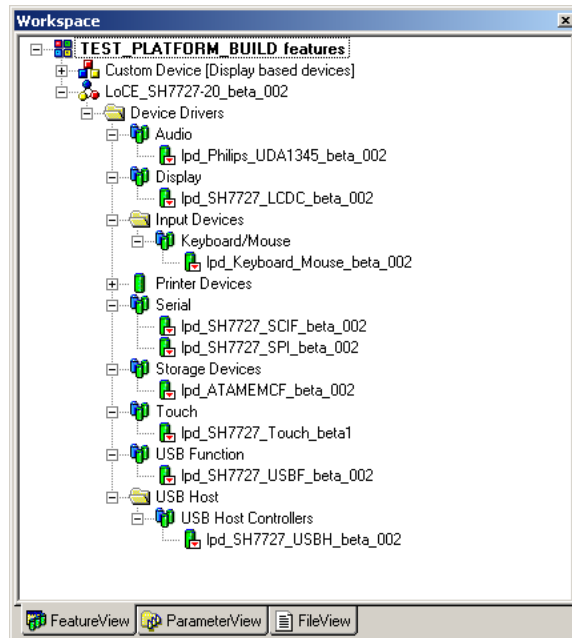
Figure 26: Drivers are Displayed in the Workspace Window Once they are Resolved

27. Next, set an 'Environment Variable.' Open the 'Platform' menu and select 'Settings.'
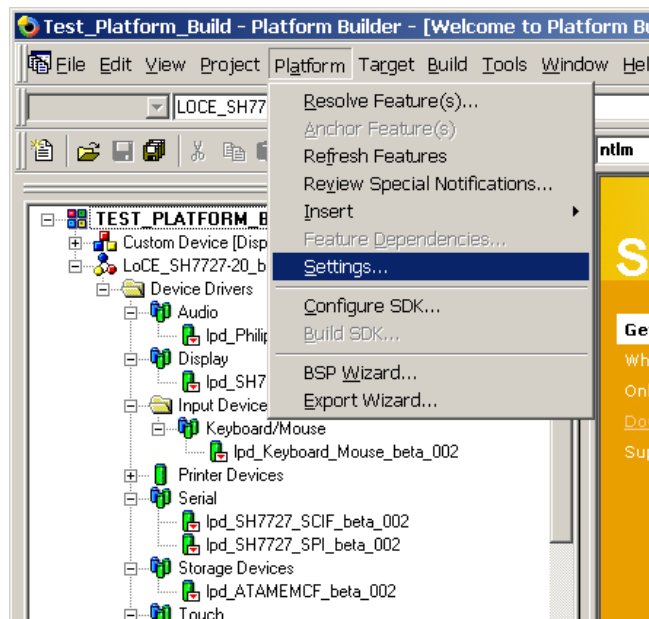
Figure 27: Set an Environment Variable

28. The 'Platform Settings' window appears. Select '*your platform name*'-- the name you entered in step 4-- to see the following screenshot. (In Figure 28, below, the platform name is 'TEST_PLATFORM_BUILD.')
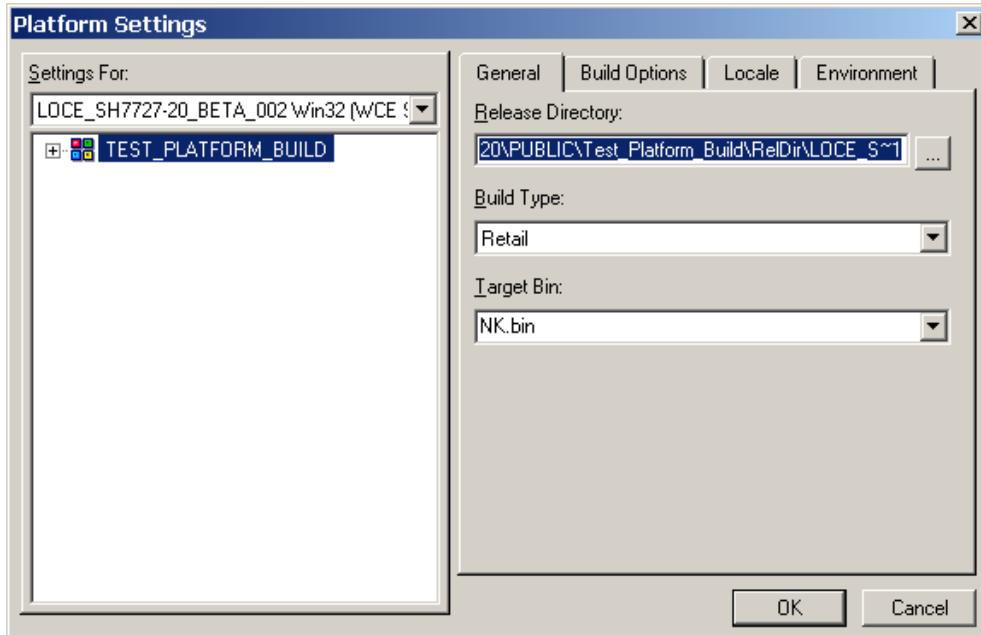
Figure 28: Platform Settings

29. Note the 'Build Options' are listed under the 'Build Options' tab.
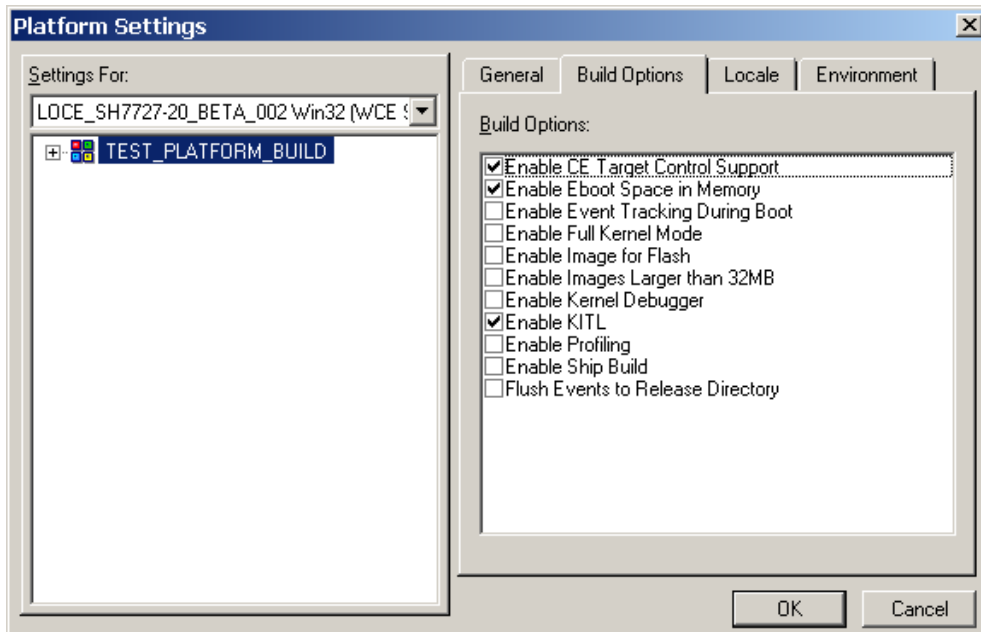
Figure 29: Build Options

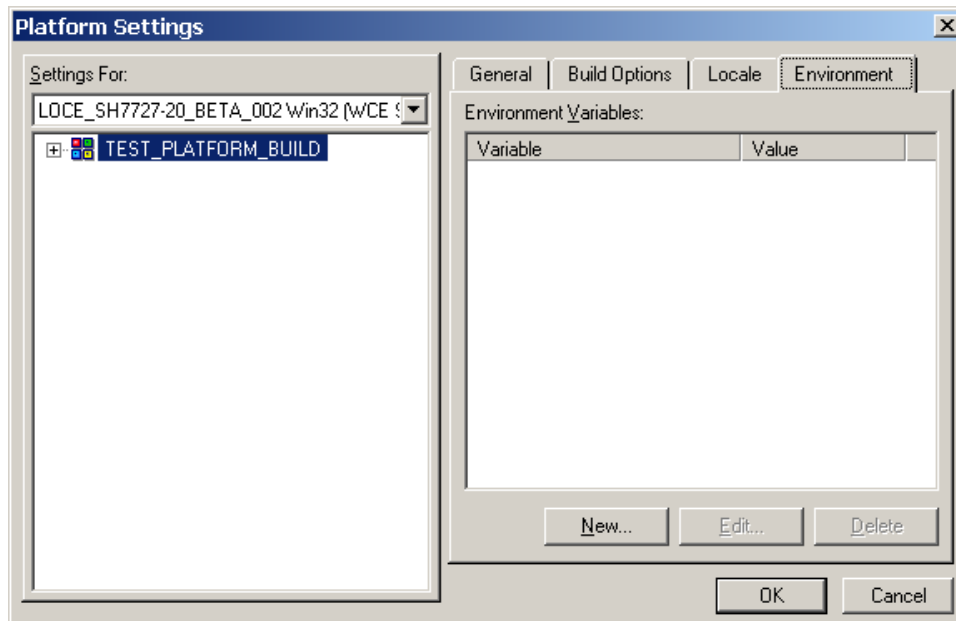30. The 'Environment Variables' are listed under the 'Environment' tab. For the sake of example, we will set a Display Mode Environment Variable for the SH7727-20 LCD Controller.

Figure 30: Environment Variables

31. In order to set a Display Mode Environment Variable, open up the SH7727_LCD.reg file with a text editor.
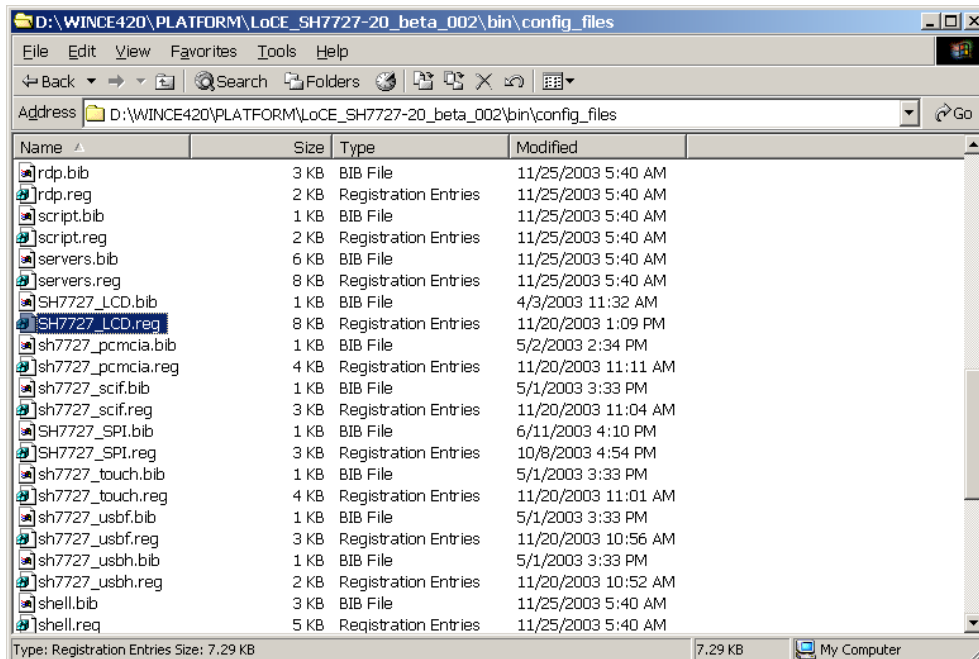
Figure 31: The SH7727_LCD.reg file, Located in the WINCE420\PLATFORM Folder

32. After opening the SH7727_LCD.reg file with a text editor, you can see the 'Environment Variables' list as well as descriptions about each variable.

For the sake of example, copy the 'LCD_VGA_16BPP' text. You will need this text to paste into a 'New Environment Variable' window in the next step. 'LCD_VGA_16BPP' is both the Sharp LQ64D343 display as well as the Logic Product Development Display Kit variable. (Note: 'LCD_VGA_16BPP' is the default LCD variable-- you may follow these same steps using an alternative variable if you need to choose another display mode.)

Figure 32: Scroll Down in the SH7727_LCD.reg file to see the Text as Displayed Above

33. In the 'Platform Settings' window, click the 'New' button and paste the 'LCD_VGA_16BPP' variable into the 'Variable Name,' then set the 'Variable Value' to '1.' Click 'OK.'
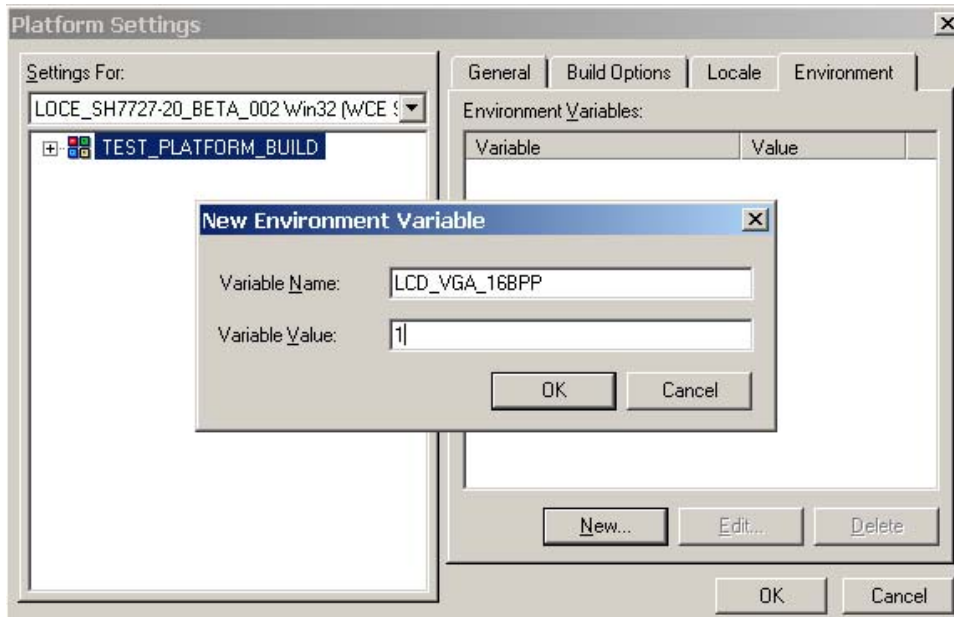

Figure 33: New Environment Variable

34. Note the 'Variable' is now listed under the 'Environment' Tab.
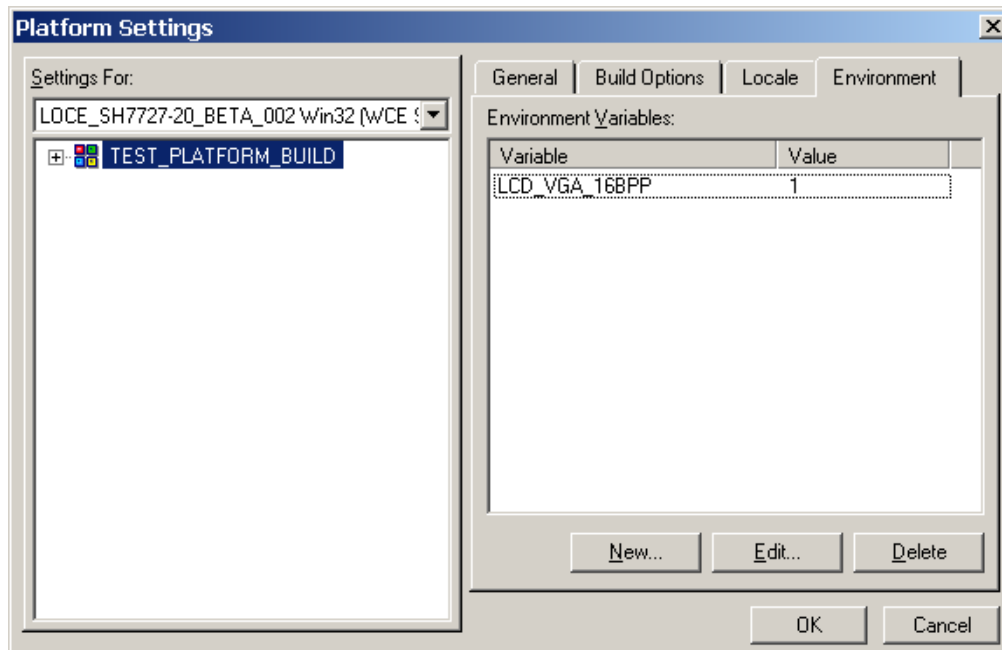

Figure 34: The Variable is Now Listed Under the 'Environment' Tab

35. Now it's time to build the Platform. Open the 'Build' menu and select 'Build Platform.'

The first time you build a platform, it can take anywhere from 5 to 25 minutes-- depending on the PC you have. Future builds after the first one are often much faster, because Platform Builder will not need to modify features that have already been built.
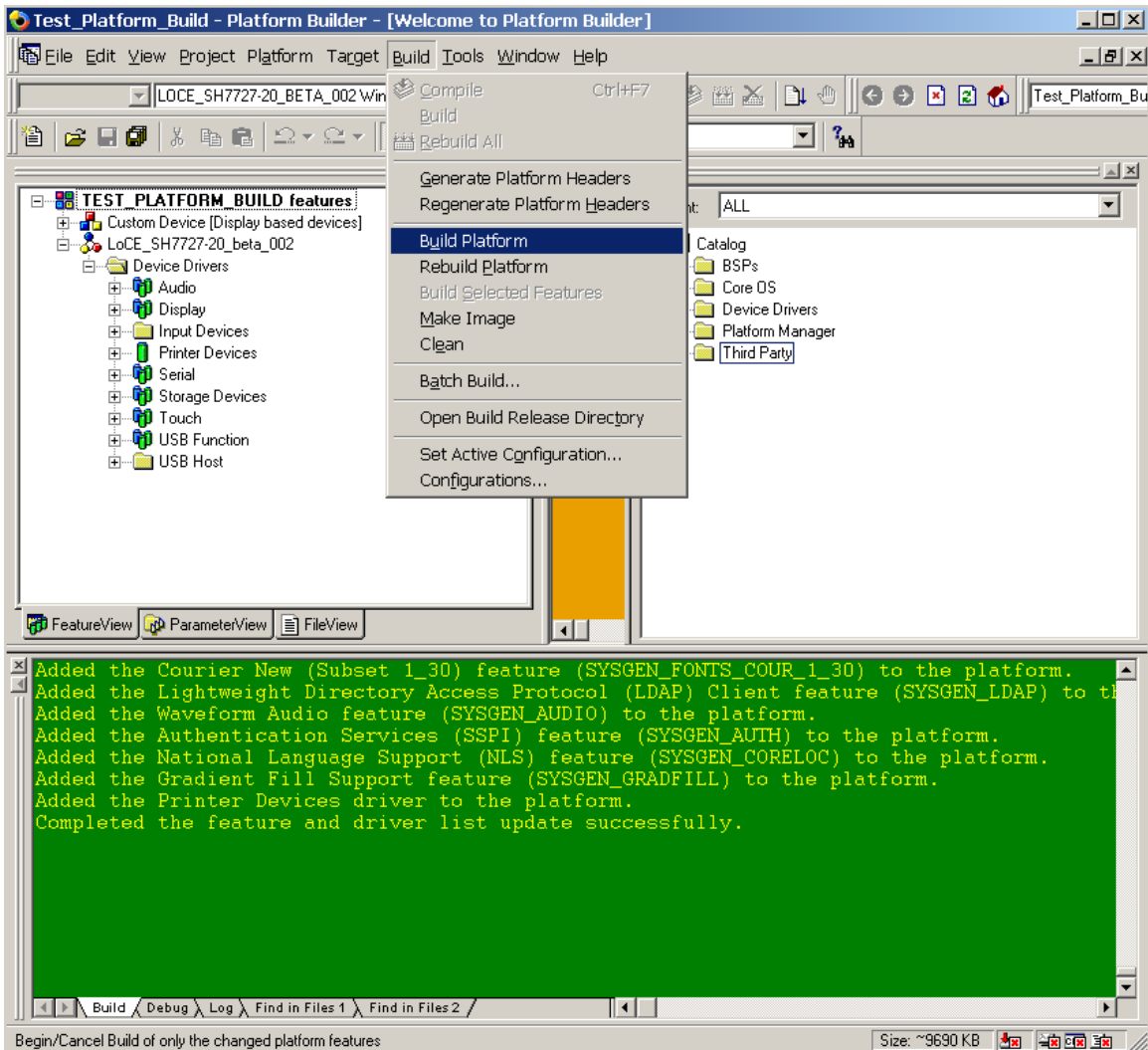

Figure 35: Build the Platform

36. When the Platform has completed the build phase, your screen will look as it does in Figure 36 (below).
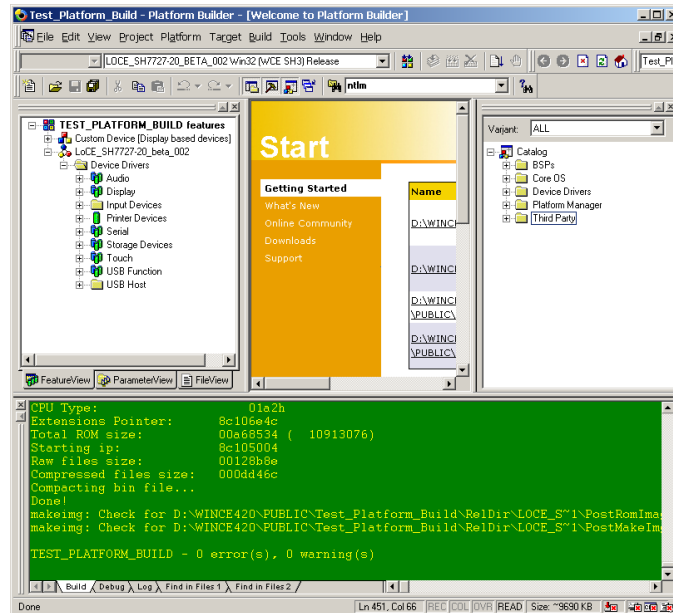

Figure 36: The Platform Build is Complete

37. Note: you will find the 'NK.bin', in the 'Public' folder on your machine. The 'NK.bin' is the file, created by Platform Builder, which you will download to the SDK.
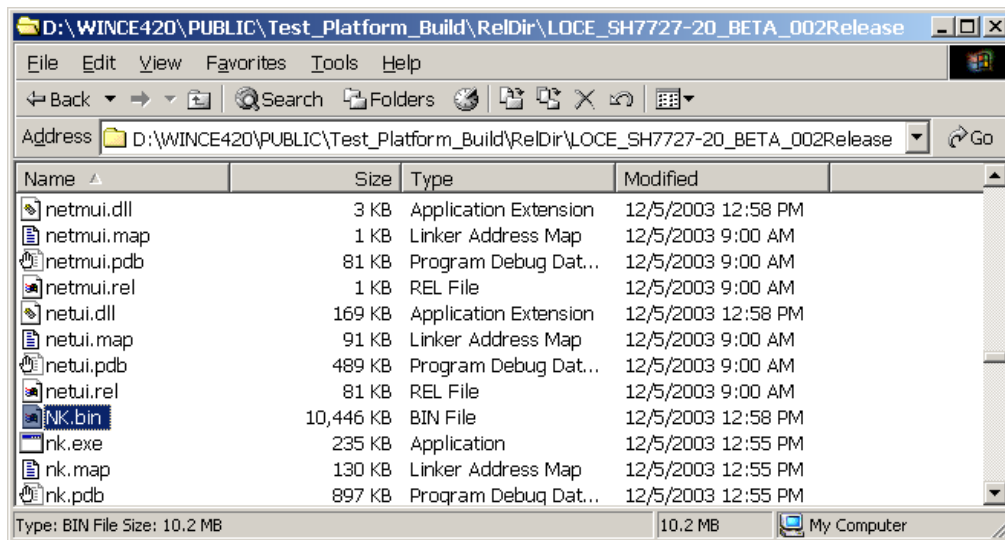

Figure 37: Locate the NK.bin in your 'Public' Folder

Congratulations, you have built a Windows CE image that will run on the SH7727-20 SDK.