

ITRONIX WHITE PAPER**Microsoft[®] Windows[®] CE .NET 4.2: Will My Pocket PC or Windows Mobile Software Run?****Introduction**

There are two operating system options available today from Microsoft for handheld computing devices. The two systems are Windows Mobile 2003 and Windows CE .NET. Windows Mobile 2003 and Windows CE .NET use the same basic operating system kernel but the two operating systems are packaged with a different user interface and application programs.

Windows Mobile is a popular operating system in consumer based products like personal digital assistants (PDAs). Users of PDAs expect to run multiple software applications and use some of the features embedded in the Windows Mobile 2003 operating system. The Windows CE .NET version of the operating system was developed for environments where an embedded operating system is a more desirable option.

Embedded operating systems usually offer the same functionality as the consumer versions but do not allow the user access to operating system functions. In addition, embedded operating systems can be customized to run more efficiently on devices that are used for specialized purposes. Embedded operating systems are typically run on specialized hand held devices in an environment where user interaction with the operating system features is not desirable or necessary. Typical applications for a hand held device running Windows CE .NET are field force management, sales force automation, utility meter reading, inventory control and data collection. .

With the release of the Q•200, Itronix has made the decision to offer the Windows CE .NET operating system instead of the Windows Mobile operating system. This decision was based on the fact that the majority of applications and environments that this handheld will be used in will demand running a dedicated software application and no user interaction with the operating system. For most of these applications user interaction with the operating system is both unnecessary and undesirable.

Windows CE .NET offers clear advantages over Windows Mobile for vertical market applications. However, some customers may have applications that were developed for the Windows Mobile operating system that they want to run on the Q•200. To understand what it will take to get the application running on the Q•200 it is important to grasp the differences and advantages of Windows CE.NET when compared to Windows Mobile 2003.

Introduction to Microsoft Windows CE .NET

Microsoft Windows CE .NET 4.2 is the operating system available on the Q•200. Windows CE .NET is a flexible embedded operating system (OS) that enables hardware manufacturers like Itronix to provide an operating system that best meets the needs of customers with vertical market applications. Windows CE .NET has the power to run vertical market software applications yet the flexibility to provide any level of user access to the operating system as dictated by the end-user's IT department. Windows CE .NET also offers the flexibility to create operating system options for specific applications that may not require certain operating system functions or overheads. This flexibility allows end-user IT departments the ability to truly provide a tailored solution to their remote enterprise workforce.

User Perceived Differences

As evidenced by the screen shots below, the Graphical User Interface (GUI) of the operating systems when compared to each other look very different. Windows Mobile employs Pocket PC Style Today screen that provides quick access to traditional Personal Information Management (PIM) functions like Inbox, Calendar, Contacts, etc. Microsoft CE .NET has more of a traditional desktop computer look and feel. This familiar look and feel has an advantage when deployed with a user base that has limited or no Windows CE experience and where interaction with the operating system is required. The comfortable and familiar feel of the user interface will speed user adoption and acceptance of the product, in turn helping achieve the project ROI targets quicker.



Windows Mobile 2003 Today
Screen



Q• 200 Windows CE .NET 4.2
Screenshot

Along with the user interface differences there are differences in the applications that are available as part of the operating system. The following is a list of applications that are available in Windows Mobile, but are **not** present in Windows CE .NET 4.2:

- Pocket Word
- Inbox(Outlook email client)
- Contacts
- Notes
- Pocket Excel
- Calendar
- Tasks
- Calculator

Software applications that are deployed on a device like the Q•200 are specifically developed for a dedicated group of users. The functionality built into these dedicated applications is limited to the data required for a user to complete his or her job function. The applications listed above are both unnecessary and a distraction for typical users of specialized hand held devices. The absence of the of the applications listed above, along with the ability that Windows CE .NET provides to remove other applications like games will limit distractions and errors possible with Windows Mobile, contributing to overall workforce productivity.

In some cases, however, the need to read a document or spreadsheet may be required. Windows CE .NET does provide the ability to view these types of files, but does not provide the ability to edit the files. The following is a list of the available viewers in Windows CE .NET.

- Word Processing Viewer
- Spreadsheet Viewer
- Presentation Viewer
- Adobe Acrobat viewer
- Image Viewer

Application Compatibility and Migration

One of the first things a developer must take note of when considering a device running Windows CE .NET is that Windows Mobile 2003 is built on top of Windows CE .NET 4.2. In other words CE .NET is the core operating system behind Windows Mobile 2003 and the emphasis in Windows Mobile 2003 is to create a familiar user interface and experience across a wide range of devices. This does not mean, however, that applications are 100% compatible between the two operating systems or between Pocket PC 2002 and Windows CE .NET.

There are questions regarding the effort and methods required to migrate an application that was originally developed for Pocket PC 2002, which is based on Windows CE 3.0, or Windows Mobile 2003 to Windows CE .NET 4.2. There are several variables to take into account when answering this question, the biggest being what development tools the application was created with.

In most cases an application that was written for either Pocket PC 2002 or Windows Mobile 2003 cannot simply be loaded on the Q•200 and run. A certain level of work will be required in order to make the application compatible with Windows CE .NET 4.2. The amount of work varies dramatically based on what development tools, language, and how the application was written. An application written in older development environments may require a re-coding of the application. However, if the application was created in a newer development environment, it may only require that the application be rebuilt or recompiled targeting the Q•200 software developers kit (SDK). Below, are descriptions of the potential work required to migrate an existing application, created in four different development environments, to Windows CE .NET.

Embedded Visual C++[®] 3.0

If the application was developed using Embedded Visual C++ 3.0 there are at least two possibilities.

- 1) If the application was written for Microsoft Pocket PC 2002 the application will need to be rebuilt using Embedded Visual C++ 4.0 targeting the Q•200 Software Developers Kit. If access to unique Q•200 hardware features is required, the Q•200 Application Programming Interface (API) will need to be used during the rebuild process as well. Applications that have a complex graphical user interface may require source code modifications in order for it to function properly
- 2) Binary Compatibility - In some small cases an existing application that was written for a Pocket PC 2002 device may run as is on a Windows CE .NET 4.2 device. This may be the case for simple background type applications that have little or no graphical user interface.

Embedded Visual[®] C++ 4.0

If an application has been written in Embedded Visual C++ 4.0 the application will most likely only need to be rebuilt targeting the Q•200 SDK and using the Q•200 API for specific hardware access. There is a slight possibility that some minor changes will need to be made to the Graphical User Interface, but this is not likely to be the case if good development practices were followed.

Visual Basic[®]

If the application is a Visual Basic application written for PPC 2002 in the Embedded Visual Basic 3.0 environment it cannot just be rebuilt. In Windows CE .NET the only path forward for applications written in Embedded Visual Basic 3.0 is to port or re-write them in Visual Basic .NET using the Visual Studio[®].NET 2003 development tools. To help with this porting, Microsoft provides a development aid that helps developers convert code developed in Embedded Visual Basic 3.0 to Visual Basic .NET code. It is difficult to quantify exactly how successful this development aid will be. The ease at which an application converts to Visual Basic .NET is dependant on the complexity of the Embedded Visual Basic 3.0 code.

.NET Applications

If the application is a .NET application written in one of the managed code languages such as C# or Visual Basic .NET, in most cases all that would be required is to rebuild the application again targeting the Q•200 SDK and using the Q•200 API within the Visual Studio 2003 environment. It is highly unlikely that any source code changes would have to be made if the application uses only the .NET Compact Framework API.

For vertical market, dedicated applications, the Q•200 with its Windows CE .NET operating system is a clear winner. The flexibility inherent in Windows CE .NET coupled with the familiar look, feel and operation, provide a sustainable and sensible solution for mission critical mobile workforce deployments.