AMBROSE PROJECT

Developers: List of Useful Microsoft Links

Version	Date	Description	Author(s)
0.1	19-Aug-09	Initial Version	J. McKell, O. Smith
0.2	21-Sep-09	Updates from O'Ryan Smith	J. McKell, O. Smith
0.3	07-Oct-09	Added "PRELIMINARY" to document	J. McKell
0.4	27-Oct-09	Added information about Gesture support in Windows Mobile 6.5	J. McKell
0.5	22-Dec-09	Added additional information: Device ID, DirectShow (for Camera) GPS Intermediate Driver, GPS Sync signal, Radio Power	J. McKell

1 Introduction

This document is a jumping off point for developers seeking specific information about topics that arise frequently while developing software for Ultra Rugged Field PCs. This document consists of a series of topics with links to web locations where more information can be found. An attempt will be made to make sure that the links are up-to-date and not broken. If a broken link is found, please report it to the authors.

2 General Information

A good jumping off point for new developers is Microsoft's developer overview page. Microsoft provides steps to getting started, How To videos, Webcasts and downloads of the Windows Mobile 6 SDKs. The getting started page describes what tools are needed, how to create, build and run an application, and where to go next.

3 Bluetooth

Microsoft provides information about how to work with Bluetooth in Windows CE and Windows Mobile.

- Best Practices for Creating BT Applications
- Microsoft BT Components
- BT Application Development Reference
- Discover Bluetooth Devices
- Querying Service Capability on Remote BT Devices
- Create a Connection to a BT Device Using Winsock
- Set Socket Options
- Create a Connection to a BT Device Using a Virtual COM Port
    - Note that Microsoft recommends that you use Winsock APIs to create connections.
- Request BT notifications
- Winsock BT Extension Reference
- BT OS Reference(Non-Winsock functions)

4 USB Host

There are a number of USB Class Drivers that are built into the OS image. These include HID (Mice & keyboards), Mass Storage (USB Thumb drives, hard drives, etc), and communications (Ethernet and Serial). Printer Class drivers are included as well, but Windows Mobile does not directly support printing.

- Microsoft provides basic information about USB Serial Drivers.
- Future Technology Devices International (FTDI) supplies us with the USB to Serial device in the Dock and is supported in the OS. The drivers for FTDI chips are built into the operating system. Devices based on FTDI chips are supported in the OS. FTDI provides more information about the Virtual COM Port driver.

5 USB Client

Developers and users seek other alternatives to the default capabilities of the USB Client connection to the PC.

- [RNDIS (hard-coded IP address for ActiveSync/WMDC)](#)
- [Legacy Virtual Serial (ActiveSync)](#)
- [Mass Storage](#)

6 Network

Microsoft provides more information about a range of networking topics, including PAN and DUN.

- Personal Area Network (PAN)
  - [Personal Area Networking (PAN) Profile](#)
  - [Personal Area Network (PAN) Profile Registry Settings](#)
- Dial Up Networking (DUN)
  - [Dial-up Application Development](#)
  - [Dial-up Registry Settings](#)

7 Gesture Support

Microsoft has added additional capabilities to the 6.5 AKU with respect to gesturing. The 6.5 OS is intended to be more "finger friendly". In order for an application to take advantage of gesturing, it needs to incorporate gesture support.

- [Using Gestures in Windows Mobile 6.5](#)

8 Device ID Best Practices

There are several methods to obtain a unique device identifier for a given device. Microsoft encourages use of the interface, GetDeviceUniqueID. [This blog post](#) explains their point of view. Juniper Systems recognizes that not all developers and users are as concerned as Microsoft is with privacy and protection issues. Juniper Systems offers a [discussion of the various methods](#) of obtaining a unique device identifier.

9 DirectShow: Working With the Camera

Microsoft has provided [documentation on DirectShow](#) including application development, security and registry settings in addition to other related topics.

10 GPS Intermediate Driver

Microsoft has developed a driver to provide applications with a standardized interface and allows multiple applications to access GPS information at the same time.

- [GPS Intermediate Driver](#)

11 GPS Sourced 1 Hz Pulse

On devices that include a built-in GPS module, Juniper Systems has provided a method that can be used to synchronize software using a 1 Hertz timing pulse generated by the GPS Satellite system. This pulse can be accessed through a named event. Microsoft

provides documentation for Event Object Notification that discusses how to have access to a named event. By way of overview, the developer will call CreateEvent() with the name of the event and then use the function WaitForSingleObject() that will hold the thread until the event is signaled. There are several registry keys that are available to change the behavior of the signal.

Value	Type	Default	Description
GPS1HzEventName	String	"JS_GPS_1HZ_SIGNAL"	Name of the event to pass along 1Hz signal "
GPS1HzEnable	DWORD	1	1=Enable signal, 0=Disable signal
GPS1HZPriority256	DWORD	0x5F (95)	IST thread priority for 1 Hz signal coming from GPS module

Note that changing the priority of this or any other thread may destabilize the device and cause unintended problems with the operation of other components.

12 Radio Power Control

There are several interfaces that can be used to turn on and off the Wi-fi, Bluetooth and Cellular radios. Juniper Systems has provided a command-line program that can be used to turn on or off these radios. By using the CreateProcess() function, programmers can invoke a Juniper Systems program called RadioAction.exe that provides the ability to take various actions with radios.

Parameter	Action
0	Wi-Fi off
1	Wi-Fi on
3	Bluetooth Off
4	Bluetooth On
5	Bluetooth Discoverable
7	Cell Modem Off
8	Cell Modem On