

1 Openwince short description:

In the openwince project we develop and collect free software tools, modules, applications and peripheral drivers for the WindowsCE operating system. This software can be redistributed in terms of the GPL licence. In certain cases we use GPL with an exception (<http://openwince.sourceforge.net/gpl-exception-1>) to enable using some parts of Openwince project together with software which is not free. We were forced to use this exception because of nature of the WinCE developing. By the other hand, this is what makes the project unique, that it tries to open the WinCE development, of course in the terms of valid licenses. Project can be split to these three parts (from the content point of view): Peripheral drivers, applications, tools and utilities, project homepage.

Peripheral drivers:

The goal is to develop platform independent drivers, which could be used on different hardware platforms. Platform independency is reached by splitting these drivers in to several layers and then by the possibility to configure those drivers. We have implemented drivers for the GSM modem, i2c interface, i2cEEPROM and the touchscreen yet. In the pxa2x0 subproject we have developed platform independent processor peripheral controller drivers for the Intel pxa250 and pxa255 processors (UART, USB, AC97, SD/MMC, CompactFlash, PulseWidthModulation modulation driver).

Applications:

Those devices that are not supported by standard WinCE system can be controlled by the application that use the drivers from previous part. Those application are developed as platform independent and can be used on other hardware platforms if the interface to lower levels remains the same. Openwince project has these applications implemented: Mobile phone, SMS sender, GPS application and the LCD contrast and backlight control application.

Tools and utilities:

These are software tools needed by the embedded platforms developers. For the WinCE developer there are tools which can alternate the standard Platform Buidler IDE with user friendly interface. These are used for the development enviroment configuration according to each project specifications (cogen, ibisa). Xboot stands for the bootloader. His job is, after its downloaded to the embedded machine, to download (in cooperation with the dlc utility on the desktop PC side), store and execute WinCE image. Ioperm utility enables the input/output ports using on the Windows NT/2000/XP for all processes, while without ioperm only privileged processes has this access. This utility has been accepted and became a part of the Cygwin project (www.cygwin.org). Because the WinCE developing is not possible to be performed on the non-windows machines, we have to work on the Win machines and we use the Cygwin which provides a lot of useful and powerful tools and utilities. The most used Openwince subproject is the JTAG Tools subproject. Its platform independent, can be run on Linux or on Windows with cygwin installed. It enables the communication with any device that supports the JTAG interface (IEEE 1149.1), say, most of the embedded devices (cellular phones, PDA's, notebooks, game consoles etc.).

Homepage:

Since the project is hosted on the sourceforge.net project repository, which provides developers with most of tools which he can use (CVS repository, Bugzilla, mailing lists, RFE tracking system space for the project homepage) the homepage <http://openwince.sourceforge.net> contains only short informations about each subproject. Each subproject homepage is created and maintained by the subproject maintainer.

2 Project members:

Project was established and is maintained by Marcel Telka (telka@users.sourceforge.net)

Team Members (in alphabetical order):

Juraj Fabó (jfabo@users.sourceforge.net) project assistant for the 'Openprojekt 2003' contest

Martin Flaska (flegy@users.sourceforge.net)

Michael Hora (michaelhora@users.sourceforge.net)

Daniel Samek (disoft@users.sourceforge.net)

Members do not have specific privileges or duties. They participate in all aspects of project development, like on the architecture creating, implementation or debugging. Each sub-project is maintained and developed by some member, or some subprojects are developed with more members together. Debugging is being done by all team members. Team members have nonperiodical personal meetings, daily communication is done via the Jabber service (www.jabber.org).

3 Detailed project description:

Logical project architecture from the source repository point of view has been described above, in the short project description. Then we can look on the project from the other point of view, when under the 'project' the project builded on your computer is meant. This is when you download all packages you need to build project for your platform. There are mostly device drivers, and those are mostly stream drivers (we could say, that devices are considered as files and are controlled by Read/Write or DeviceIoControl functions). Then there are libraries, which are being linked with kernel to add required platform specific

support for the kernel (those are mostly routines and settings for power management, performance control etc.). Since each subproject has its homepage, please visit the openwince homepage and navigate to the subprojects for more detailed informations.

4 Sponsors:

Project is sponsored by ETC s.r.o. (www.etc.sk). Openwince project is developed on the platform WEP which is provided and developed by the ETC company. The EP250, which is one of the openwince subprojects, stands for the project application on custom platform WEP (code name EP250). Most used openwince subproject is the JTAG Tools subproject, which has most non-teammember contributors and it is wide-spread used.

5 Status Quo and Future plans:

These days we have implemented drivers for devices described in the first chapter. On the platform provided from our sponsor there are only few devices left unsupported, so in the next days we will add support for rest of the devices (bq26200 - temperature measurement, IrDA, BlueTooth etc.). The dlc, cogen and ibisa subprojects are able to provide users with capabilities needed to configure, build and download custom images. You can use them to build images for your platform, they are not dependent on the EP250 or pxa2x0 subproject. As mentioned above, currently most used subproject is the JTAG Tools subproject now. This is an exception in the openwince project, because there is added support for devices we do not have. This support was added by the non-team members contributors. (We hope that once we will have contributors in other subprojects as well and we will have those device or processors supported that are not available for us). Finally I would like to talk about the brux subproject. This is not platform builder dependent, it can be built on

the Linux platform as well as on the Windows (using required tool-chain). This projects creates a binary file we use for test the hardware. It provides support for processor, memory and ports initialization.

6 References:

Most specific and adequate referencies we are receiving via Openwince mailing list (<https://lists.sourceforge.net/lists/listinfo/openwince-list>).

7 Glossary:

JTAG

Industry standard IEEE1149.1, abbreviation from 'Joint Test Action Group'. Primary purpose is to enable effective and effortless boards testing and controlling. Via the JTAG interface it is possible to debug, program, verify the program and the device itself etc.

Image

After sucessful compilation and build of all source code and libraries (applications, drivers, kernel etc.) the Platform Builder enviroment creates binary file so called image. After downloading this file to the embedded machine and jumping to its start the WinCE operating system starts.

Download

The process of placing created image or any binary file to the embedded machine is called download. We support downloading via JTAG, serial port or USB port.

Bootloader

Initial, mostly small-in-size program which is loaded in to the device first. Its job is enable using of device peripherals such an USB port or PCMCIA card interface to provide higher speed rates for the binary image file downloading.

Platform builder

Enviroment for the WinCE operating system developement. Current used version is Platform Builder 4.2 Windows CE .NET.